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EDITORIAL NOTICE.

Orders are now being accepted for the sixth edition of the 'Catalogue of Cometary Orbits' and the third edition of the 'Catalogue of Orbits of Unnumbered Minor Planets', which will be issued immediately following this batch of MPCs. The previous editions were published in 1986. The catalogues cost $15.00 apiece, although subscribers to the MPCs can purchase them for $7.50 apiece and have their accounts debited by this amount. The 1292 entries in the comet catalogue represent a 9-percent increase over the 1986 edition, but since some of the statistical tables are omitted they are contained in only 96 pages; new features are a table giving the 'original' and 'future' barycentric reciprocal semimajor axes for the 264 long-period comets with well-determined orbits and a listing of the correspondences of provisional and Roman numeral designations in order of the former. Since there are now as many as 11 706 orbits of unnumbered minor planets (a 64-percent increase over 1986), it was decided to omit the one-opposition P-L, T-2 and T-3 orbits; these have been conveniently published elsewhere, and a special tabulation simply lists the objects that have still been observed at only one opposition; since the number of orbits (given to the precision utilized for one-opposition orbits in the MPCs) actually published in the catalogue, 6965, is slightly smaller than in the 1986 edition, the book has been kept down to 153 pages. It has been decided not to issue another edition of the companion 'Catalogue of Discoveries and Identifications of Minor Planets' at this time.

Versions of the two catalogues are also available on MS-DOS 5.25-inch 2S2D diskettes. The comet diskette, containing the general catalogue (including the comet names) and the original and future orbits in ASCII files, costs $75.00. The orbits of the unnumbered minor planets (which include all the P-L, T-2 and T-3 orbits and give both low-precision and high-precision values for 1973 multiple-opposition and 153 long-arc objects) are contained in condensed form (readily convertible to ASCII) on a pair of diskettes for a cost of $100.00; a third diskette (at no extra charge) contains the orbital elements of the 4295 numbered minor planets at the epoch 1990 Nov. 5.0 ET. Most of these orbits are as in the 1990 edition of 'Efemeridy Malykh Planet', published on behalf of IAU Commission 20 by the Institute of Theoretical Astronomy, Leningrad, although there are many additional and updated orbits. The diskette catalogues include programs (8087 coprocessor required) for extracting orbits of specific objects and for calculating ephemerides. The diskette catalogues of comets and minor planets can be purchased together for a total cost of $150.00. The files of orbits (but not the programs) are also available on magnetic tape (for twice the price) and by e-mail (for half the price).

Although the subscription cost to these Circulars has remained unchanged since April 1986, there has been a substantial increase in the number of pages issued and therefore in the production cost. Accordingly, the monthly subscription costs to these Circulars will be increased, starting next month, to $18.00 for regular (invoiced) accounts and to $11.00 for special (non-invoiced) accounts, respectively. As noted last month, MPC subscribers can also receive the diskette edition of the MPCs for $30.00 per diskette; a program supplied on an initial diskette allows the user to extract orbits from the MPCs month by month in the format used on the diskettes containing the orbit catalogues.

* * * * *

ERRATA.

MPC	Line	
14978	3	The observer and measurer should be given as C. Pollas.
15223	-18	For 1989 Feb. 28 read 1981 Feb. 28
15323	28 to 32	The observations of (1917) on 1989 10 27 should carry the note 1.
15387	-15	For 1976 Nov. 11 read 1976 Nov. 22
15395	6	Planet (4250). Add H = 11.5 G = 0.25
15405	-12	For (MPC 12671) read (MPC 12671, d)

* * * * *

CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Mag.	N Obs.
1950 BY	1950 01	28.37361	08 53 06.52	+17 57 13.8	MPC 5483		1 760
1950 BY	1950 01	28.39304	08 53 05.20	+17 57 17.9	MPC 5483		1 760
1987 FF1	1989 10	04.34340	00 59 05.32	-19 03 50.2	MPC15326	16.3	675
1987 FF1	1989 10	04.37083	00 59 03.60	-19 03 59.7	MPC15326		675
1987 FF1	1989 10	06.36024	00 57 14.98	-19 13 27.2	MPC15326		675
1987 FF1	1989 10	06.39549	00 57 12.98	-19 13 35.5	MPC15326		675
1987 SK	1987 09	23.95528	00 42 18.68	+04 52 24.8	MPC15295		2 095
1989 ME	1989 09	01.38543	19 22 53.76	-38 55 40.1	MPC15160	17.1	474
366	1966 05	11.59105	14 45 29.77	-30 31 22.6	MPC 2705		420
366	1982 03	21.24236	11 41 03.36	-00 58 50.1	MPC 6771		688
366	1982 03	21.30278	11 41 00.32	-00 58 40.8	MPC 6771		688

Note 1: 1950 BY = (3798). 2: originally erroneously given as 1987 SK1.

* * * * *

DELETED OBSERVATIONS.

The following observations are to be deleted.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Obs.
1987 BQ1	1987 01	29.16181	07 58 54.11	+16 44 25.0	MPC11929	809
1987 BQ1	1987 01	29.17222	07 58 53.35	+16 44 28.7	MPC11929	809

1988 RE9 *	1988 09 05.23229	22 17 37.30	-14 04 40.4	MPC14820				809
1988 RE9	1988 09 05.23854	22 17 36.97	-14 04 39.8	MPC14820				809
1988 RE9	1988 09 05.24479	22 17 36.63	-14 04 39.0	MPC14820				809

* * * * *

IDENTIFICATION CHANGES.

Continuation to MPC 15282.

Object	Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
A921 XA *	1921 12 05.97021	03 02.9	+23 39	A921 WA	13.8		024
1935 DM *	1935 02 26.88573	09 15 35.53	+12 44 35.6	1935 CN			012
1935 DM	1935 03 04.01335	09 11 17.68	+12 52 45.2	1935 CN			012
1935 DM	1935 03 07.00286	09 09 37.97	+13 05 12.4	1935 CN			012
1935 DM	1935 03 07.93075	09 08 20.49	+13 06 51.8	1935 CN			012
1935 DM	1935 03 09.01007	09 07 37.37	+13 09 03.3	1935 CN			012
1936 RQ *	1936 09 11.92437	22 08 07.26	-11 35 37.8	1936 QF1			024
1978 RZ16*	1978 09 05.85157	22 11 57.94	-11 12 19.8	1978 QY	17.0		095
1978 TQ9 *	1978 10 04.04780	02 18 01.23	+10 13 13.0	1978 SD6	17.5		095
1987 TZ *	1987 10 02.96355	01 18 10.93	+13 05 02.3	1987 SV1	17.0V		095
1987 TA1 *	1987 10 01.27187	23 58 38.35	-03 53 57.8	1987 SH1			809
1987 TA1	1987 10 01.27673	23 58 38.08	-03 53 59.1	1987 SH1			809
1987 TA1	1987 10 01.28160	23 58 37.77	-03 54 00.1	1987 SH1			809
1987 TA1	1987 10 01.34201	23 58 34.37	-03 54 15.6	1987 SH1			809
1987 TA1	1987 10 01.34687	23 58 34.06	-03 54 16.7	1987 SH1			809
1987 TA1	1987 10 01.35173	23 58 33.77	-03 54 18.3	1987 SH1			809
1989 UM3 *	1989 10 24.56875	00 31 30.46	+06 04 03.3	1989 TJ1			391
1989 UM3	1989 10 24.58958	00 31 29.00	+06 03 51.1	1989 TJ1			391

* * * * *

IDENTIFICATIONS.

The following list of identifications with numbered minor planets continues that on MPC 15282.

	Note		Note		Note
A903 BE = (3735)	1	1934 PY = (3858)	1	1935 DM = (3453)	1
1936 PD = (3942)	1	1951 CC = (3420)	1	1952 HT3 = (3485)	1
1954 FD = (186)	2	1958 AG = (3871)	1	1962 TF = (3516)	1
1967 EP1 = (3417)	2	1980 XS1 = (3720)	1	1982 BQ8 = (3549)	1
1984 DK2 = (3516)	1	1984 GD1 = (3657)	1	1987 RH1 = (3770)	1

Note 1: identification by S. Nakano. 2: identification by G. V. Williams.

* * * * *

ROMAN NUMERAL DESIGNATIONS OF COMETS IN 1988.

As noted on MPC 14384, the designation 1987 XXXVI was given to P/Parker-Hartley (1989i). The designation 1987 XXXVII is now given to P/Helin-Roman-Alu 1 (1989w). The following tabulation continues that on MPC 13925.

Comet	T	Name	Year/letter	Ref.
1988 I	Jan. 10.1	Ichimura	1987d1	MPC 12710
1988 II	Jan. 18.8	Jensen-Shoemaker	1987g1	MPC 14904
1988 III	Feb. 14.2	Shoemaker-Holt	1988g	MPC 13452
1988 IV	Mar. 3.1	Furuyama	1987f1	MPC 13459

1988	V	Mar. 31.1	Liller	1988a	MPC 13459
1988	VI	May 10.0	P/Reinmuth 1	1987r	IAUC 4424
1988	VII	May 21.4	P/Shoemaker-Holt 1	1987z	MPC 14592
1988	VIII	May 23.8	P/Ge-Wang	1988o	IAUC 4681
1988	IX	June 6.1	P/Finlay	1988f	IAUC 4586
1988	X	June 27.8	(SMM 3)	1988l	IAUC 4648
1988	XI	Aug. 7.4	P/Shoemaker-Holt 2	1989j	MPC 14747
1988	XII	Aug. 21.8	(SMM 4)	1988m	IAUC 4660
1988	XIII	Sept.10.2	P/Helin-Roman-Crockett	1989b	MPC 14460
1988	XIV	Sept.16.7	P/Tempel 2	1987g	IAUC 4312
1988	XV	Sept.17.6	Machholz	1988j	MPC 13591
1988	XVI	Oct. 6.3	P/West-Hartley	1989k	MPC 14747
1988	XVII	Oct. 12.1	(SMM 5)	1988n	IAUC 4668
1988	XVIII	Oct. 12.2	P/Longmore	1987c1	IAUC 4493
1988	XIX	Oct. 24.9	(SMM 7)	1988q	IAUC 4692
1988	XX	Oct. 31.8	Yanaka	1989a	MPC 14747
1988	XXI	Nov. 2.1	Shoemaker	1989f	MPC 14460
1988	XXII	Nov. 18.4	(SMM 6)	1988p	IAUC 4684
1988	XXIII	Dec. 5.2	P/Bradfield 2	1989c	MPC 14322
1988	XXIV	Dec. 11.7	Yanaka	1988r	MPC 14322

* * * * *

OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

012 Uccle. 0.4-m double astrograph. Observer T. Pauwels.
046 Klet. Observers A. Mrkos and Z. Vavrova.
056 Skalnate Pleso. 0.3-m f/5 astrograph. Observer P. Rychtarcik. Communicated by J. Svoren.
372 Geisei. Observer T. Seki.
391 Sendai Astronomical Observatory, Ayashi Station. 0.12-m reflector and 0.20-m reflector. Observer M. Koishikawa.
400 Kitami. Observer K. Endate. Measured by K. Watanabe.
401 Oosato. Observer Y. Yamagishi. Measured by S. Hayakawa.
404 Yamamoto. 0.20-m reflector. Observer S. Otomo. Measured by M. Koisikawa.
413 Siding Spring. Uppsala Southern Schmidt. Observer R. H. McNaught.
503 Cambridge. Observer J. D. Shanklin.
552 San Vittore. Observers C. Vacchi, G. Sassi and E. Colombini.
657 Victoria. Observers J. Tatum and D. Balam.
675 Palomar. 1.5-m reflector and 0.46-m Schmidt. Observers J. Alu, R. Coker, J. Gibson, E. Helin, K. Lawrence, C. Mikolajczak and B. Roman.
688 Lowell Observatory, Anderson Mesa Station. 0.33-m photographic telescope. Observer B. A. Skiff. Communicated by E. Bowell.
801 Oak Ridge. 1.5-m reflector. Observers R. E. McCrosky and C.-Y. Shao.
807 Cerro Tololo. CTIO Schmidt + prototype CCD camera. Observers B. Weller, R. Coker and K. J. Meech. Measured by K. J. Meech.
875 Yorii Observatory. Observers M. Arai and H. Mori.
892 YGCO Hoshikawa and Nagano stations. 0.25-m f/4.0 reflector. Observer S. Hayakawa. Communicated by T. Kobayashi.
896 Yatsugatake South Base Observatory. Observers Y. Kushida and R. Kushida. Measured by O. Muramatsu.
897 YGCO Chiyoda Station. Observer T. Kojima. 0.25-m f/3.4 Wright-Schmidt camera.
978 Conder Brow. Observers D. Buczynski and G. Marsh.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
		Periodic Comet Schwassmann-Wachmann 1					
/1974 II	1989	10 19.75973	23 32 44.03	+06 10 59.8	13.7T		046
/1974 II	1989	10 19.77380	23 32 43.75	+06 10 58.1			046
/1974 II	1989	10 22.79016	23 31 47.73	+06 03 49.3	13.5T		046
/1974 II	1989	10 22.80422	23 31 47.40	+06 03 46.5			046
/1974 II	1989	10 24.49861	23 31 18.0	+05 59 56	14 T		897
/1974 II	1989	10 24.53912	23 31 17.15	+05 59 45.5			897
/1974 II	1989	10 24.54861	23 31 16.87	+05 59 47.0			897
/1974 II	1989	10 24.76979	23 31 13.30	+05 59 14.8	13.6T		046
/1974 II	1989	10 24.78113	23 31 13.17	+05 59 13.6			046
/1974 II	1989	10 27.14368	23 30 34.82	+05 53 59.6			801
/1974 II	1989	10 28.78212	23 30 10.50	+05 50 27.7	16.0T		046
/1974 II	1989	10 28.78924	23 30 10.29	+05 50 26.1			046
/1974 II	1989	10 29.44167	23 30 00.94	+05 49 04.6	14 T		897
/1974 II	1989	10 29.45642	23 30 00.76	+05 49 02.7		1	897
/1974 II	1989	11 02.46400	23 29 08.74	+05 40 59.4	14.5T	2	897
/1974 II	1989	11 04.85556	23 28 42.71	+05 36 33.5	16.0T		552
/1974 II	1989	11 04.89236	23 28 42.21	+05 36 29.6			552
		Periodic Comet Smirnova-Chernykh					
/1984 V	1989	11 02.92986	02 19 31.95	+08 02 43.6			046
/1984 V	1989	11 02.94410	02 19 31.39	+08 02 42.3			046
		Periodic Comet Helin-Roman-Alu 1					
/1987 XXXVI	1988	08 10.38003	23 00 47.99	-20 11 13.1			675
/1987 XXXVI	1988	08 10.40104	23 00 47.24	-20 11 17.2			675
/1987 XXXVI	1988	08 12.38733	22 59 49.25	-20 20 21.2			675
/1987 XXXVI	1989	10 25.28091	01 47 14.35	+01 20 25.8			801
/1987 XXXVI	1989	10 26.25260	01 46 39.98	+01 18 26.3			675
/1987 XXXVI	1989	10 28.23750	01 45 29.63	+01 14 35.9			675
/1987 XXXVI	1989	10 31.68194	01 43 29.81	+01 08 29.3	17.5T		372
		Comet Shoemaker-Holt-Rodriquez (1988h)					
/1988h	1989	10 29.72757	10 00 50.18	-61 40 02.6	15 T	3	413
		Periodic Comet Gehrels 2					
/1989n	1989	10 25.31143	02 29 33.65	+14 36 51.9			801
/1989n	1989	11 02.49722	02 24 47.78	+13 39 39.1	15 T		897
/1989n	1989	11 02.52529	02 24 46.61	+13 39 27.2			897
/1989n	1989	11 03.03264	02 24 28.34	+13 35 47.9			056
/1989n	1989	11 03.09861	02 24 25.92	+13 35 21.5			056
		Periodic Comet Brorsen-Metcalf					
/1989o	1989	08 09.38490	04 52 42.91	+41 27 05.0			657
/1989o	1989	08 30.48500	08 41 28.86	+31 04 24.4			657
/1989o	1989	09 06.50922	09 26 22.03	+24 25 31.6			657
		Comet Okazaki-Levy-Rudenko (1989r)					
/1989r	1989	10 03.75455	14 37 25.03	+30 32 25.6			046
/1989r	1989	10 03.75698	14 37 24.91	+30 32 24.6			046
/1989r	1989	10 16.73508	14 22 31.63	+29 05 13.7			046
/1989r	1989	10 16.73647	14 22 31.48	+29 05 13.1			046
/1989r	1989	10 17.72941	14 21 12.00	+28 56 06.0			046
/1989r	1989	10 17.73027	14 21 11.98	+28 56 05.1			046
/1989r	1989	10 18.74064	14 19 48.80	+28 46 07.7			046
/1989r	1989	10 18.74174	14 19 48.73	+28 46 06.8			046
/1989r	1989	10 19.72571	14 18 25.39	+28 35 45.4			046

/1989r	1989	10	19.72675	14	18	25.33	+28	35	45.2			046
/1989r	1989	10	22.72755	14	13	56.41	+27	59	05.3			046
/1989r	1989	10	22.72859	14	13	56.34	+27	59	04.9			046
/1989r	1989	10	23.72002	14	12	22.03	+27	45	00.2			046
/1989r	1989	10	23.72106	14	12	21.98	+27	44	58.3			046
/1989r	1989	10	24.71782	14	10	44.44	+27	29	38.2			046
/1989r	1989	10	24.71907	14	10	44.38	+27	29	37.2			046
/1989r	1989	10	24.78807	14	10	37.58	+27	28	30.9			503
/1989r	1989	10	25.71528	14	09	03.88	+27	12	59.4			046
/1989r	1989	10	25.71632	14	09	03.81	+27	12	58.7			046
/1989r	1989	10	26.71829	14	07	19.85	+26	54	48.0			046
/1989r	1989	10	26.71933	14	07	19.68	+26	54	46.8			046
/1989r	1989	10	27.71215	14	05	33.63	+26	35	11.2			046
/1989r	1989	10	27.71326	14	05	33.58	+26	35	10.9			046
/1989r	1989	10	28.71493	14	03	43.59	+26	13	39.2			046
/1989r	1989	10	31.75204	13	57	50.93	+24	55	45.9			503
/1989r	1989	11	02.85035	13	53	31.9	+23	48	35	4	T	372
/1989r	1989	11	10.83715	13	35	22.2	+17	05	02			896
/1989r	1989	11	17.83024	13	18	26.3	+06	13	30			896
/1989r	1989	11	17.84505	13	18	24.7	+06	11	48			896
/1989r	1989	11	18.83646	13	16	01.00	+04	08	10.3			896
/1989r	1989	11	18.84803	13	15	59.44	+04	06	37.8			896
/1989r	1989	11	19.83296	13	13	37.48	+01	55	06.5			896
/1989r	1989	11	19.84592	13	13	35.61	+01	53	16.9			896
/1989r	1989	11	20.82717	13	11	15.45	-00	26	46.4			896
/1989r	1989	11	20.85009	13	11	12.14	-00	30	11.6			896
/1989r	1989	11	21.83151	13	08	52.28	-02	59	24.2			896
/1989r	1989	11	21.84945	13	08	49.76	-03	02	12.7			896
/1989r	1989	11	21.85243	13	08	49.27	-03	02	45.6			401

Comet Helin-Roman-Alu (1989v)

/1989v	1989	10	22.76441	22	27	12.09	+12	04	50.5			046
/1989v	1989	10	22.77159	22	27	09.10	+12	05	23.8			046
/1989v	1989	10	23.75156	22	21	52.50	+13	03	21.2			046
/1989v	1989	10	23.75590	22	21	50.95	+13	03	39.4			046
/1989v	1989	10	24.74867	22	16	32.66	+14	01	54.3			046
/1989v	1989	10	24.75301	22	16	31.14	+14	02	12.2			046
/1989v	1989	10	25.11856	22	14	33.68	+14	23	32.2			801
/1989v	1989	10	26.10574	22	09	20.77	+15	20	37.4			801
/1989v	1989	10	26.15313	22	09	06.39	+15	23	23.5			675
/1989v	1989	10	26.73385	22	06	04.35	+15	56	30.8			046
/1989v	1989	10	27.91329	21	59	57.78	+17	03	06.1			503
/1989v	1989	10	28.11667	21	58	55.33	+17	14	28.3			675
/1989v	1989	11	01.45174	21	37	28.81	+21	05	46.1			892
/1989v	1989	11	01.46389	21	37	25.19	+21	06	24.6			892
/1989v	1989	11	02.44225	21	32	48.35	+21	55	41.7	14	T	897
/1989v	1989	11	02.45486	21	32	44.93	+21	56	18.6			897
/1989v	1989	11	04.42187	21	23	44.81	+23	31	59.7			892
/1989v	1989	11	04.43924	21	23	40.83	+23	32	37.5			892
/1989v	1989	11	20.44375	20	23	36.96	+33	55	38.1			892
/1989v	1989	11	20.45764	20	23	34.53	+33	56	08.3			892
/1989v	1989	11	24.42014	20	11	43.93	+35	56	44.8			892
/1989v	1989	11	24.43403	20	11	41.29	+35	57	07.9			892
/1989v	1989	11	25.76220	20	07	54.87	+36	35	24.8			503

Periodic Comet Helin-Roman-Alu 2

/1989y	1989	10	26.36806	03	09	56.64	+12	53	57.1	16.0	T	675
/1989y	1989	10	28.35052	03	09	24.95	+12	36	26.9			675

/1989y	1989	10	29.36701	03	09	06.68	+12	27	28.1				675
/1989y	1989	10	30.60772	03	08	43.72	+12	16	35.6	16	T		413
/1989y	1989	10	30.61111	03	08	43.62	+12	16	27.7	16.5	T		400
/1989y	1989	10	30.62847	03	08	43.29	+12	16	18.5				400
/1989y	1989	11	01.28965	03	08	10.39	+12	01	27.4				657
/1989y	1989	11	02.62049	03	07	41.83	+11	49	42.0	16.0	T		400
/1989y	1989	11	02.63854	03	07	41.61	+11	49	34.0				400
/1989y	1989	11	02.70625	03	07	39.77	+11	48	56.8	17	T		372
			Periodic Comet Sanguin										
/1989z	1989	05	09.29708	16	34	38.23	+00	34	56.3	22	N	4	807
/1989z	1989	05	10.24201	16	34	05.84	+00	41	08.0			4	807
/1989z	1989	05	11.25027	16	33	30.58	+00	47	44.3			4	807
			Comet Aarseth-Brewington (1989a1)										
/1989a1	1989	11	19.06076	16	17	34.40	+26	54	27.1				688
/1989a1	1989	11	19.06840	16	17	34.42	+26	54	04.1				688
/1989a1	1989	11	19.36562	16	17	37.54	+26	41	28.3	8	T		892
/1989a1	1989	11	20.06424	16	17	47.14	+26	10	49.1			5	688
/1989a1	1989	11	20.06840	16	17	47.03	+26	10	40.0			5	688
/1989a1	1989	11	20.37743	16	17	51.20	+25	57	07.1	8.5	T		892
/1989a1	1989	11	20.38368	16	17	51.03	+25	56	51.0	8.5	T	6	372
/1989a1	1989	11	20.38437	16	17	50.95	+25	56	53.1				892
/1989a1	1989	11	20.39653	16	17	51.10	+25	56	17.1				372
/1989a1	1989	11	20.39919	16	17	51.40	+25	56	10.5	8.5	T		404
/1989a1	1989	11	20.40278	16	17	51.49	+25	56	03.0				404
/1989a1	1989	11	21.36944	16	18	03.71	+25	13	08.9				875
/1989a1	1989	11	22.06078	16	18	12.70	+24	42	04.8			7	688
/1989a1	1989	11	22.06701	16	18	12.80	+24	41	46.4			7	688
/1989a1	1989	11	22.24085	16	18	15.74	+24	33	54.4				978
/1989a1	1989	11	22.25813	16	18	15.54	+24	33	04.8				978
/1989a1	1989	11	22.72847	16	18	21.49	+24	11	40.1				012
/1989a1	1989	11	22.73403	16	18	21.48	+24	11	22.1				012
/1989a1	1989	11	22.75041	16	18	21.72	+24	10	38.1				503
/1989a1	1989	11	23.05868	16	18	25.76	+23	56	28.9			8	688
/1989a1	1989	11	23.06424	16	18	25.82	+23	56	13.9			8	688
/1989a1	1989	11	23.75265	16	18	34.82	+23	24	18.2				503
/1989a1	1989	11	24.37813	16	18	43.27	+22	54	56.0	7.5	T		391
/1989a1	1989	11	24.38507	16	18	43.14	+22	54	35.1				391
/1989a1	1989	11	25.75184	16	19	01.16	+21	48	51.2				503
/1989a1	1989	11	27.74593	16	19	27.60	+20	09	15.2				503
/1989a1	1989	11	28.05660	16	19	31.62	+19	53	17.7				688
/1989a1	1989	11	28.72292	16	19	40.76	+19	18	38.0				012
/1989a1	1989	11	28.72778	16	19	40.86	+19	18	22.5				012
/1989a1	1989	11	30.05729	16	19	58.61	+18	07	16.5				688
			Periodic Comet Tuttle-Giacobini-Kresak										
/1989b1	1989	11	09.50032	10	40	32.21	+05	37	41.5	19.5	N	9	675
/1989b1	1989	11	09.50648	10	40	33.32	+05	37	36.5			9	675
/1989b1	1989	11	09.51264	10	40	34.48	+05	37	31.6			9	675
/1989b1	1989	11	10.48793	10	43	34.75	+05	23	43.2			9	675
/1989b1	1989	11	10.49506	10	43	35.99	+05	23	37.9			9	675
/1989b1	1989	11	10.50101	10	43	37.10	+05	23	32.0			9	675

Note 1: coma 0′.7 x 1′.0, fanshaped tail in p.a. 50 . 2: coma diameter 1′.5. 3: strongly condensed. 4: stellar. 5: forked tail extending 15′ to north-northeast and north-northwest. 6: 5′ tail in p.a. 345 . 7: 20′ tail in p.a. 17 . 8: tail in p.a. 20 . 9: stellar within the limits of seeing.

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
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. (1950)	Decl.	Mag.	N	Obs.
010 Caussols								
A. Maury, CERGA Caussols, F-06460 Saint Vallier de Thiey, France								
Observers A. Maury, C. Pollas								
Measurer R. Chemin								
0.9-m Schmidt telescope								
1989 UQ	*	1989 10	26.94097	01 30 52.71	+03 34 04.6	14		010
1989 UQ		1989 10	26.97685	01 30 41.68	+03 32 47.0			010
1989 UQ		1989 10	26.98659	01 30 38.65	+03 32 26.1			010
1989 UQ		1989 10	31.02257	01 11 04.83	+01 09 21.7			010
1989 UQ		1989 10	31.03646	01 11 00.76	+01 08 53.4			010
1989 UQ		1989 10	31.04271	01 10 58.92	+01 08 40.7			010
1989 UQ		1989 10	31.04965	01 10 56.98	+01 08 27.9			010
1989 UR		1989 10	25.99167	01 21 45.45	+29 45 31.7	16		010
1989 UR		1989 10	26.03333	01 21 36.32	+29 44 01.1			010
1989 UR		1989 10	31.06736	01 03 32.48	+26 20 07.6			010
1989 UR		1989 10	31.08090	01 03 29.47	+26 19 30.5			010
1989 UR		1989 10	31.08819	01 03 27.80	+26 19 09.1			010
1989 UR		1989 10	31.09630	01 03 26.22	+26 18 49.8			010

017 Hoher List
E. W. Elst, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180 Brussels, Belgium
Observers E. W. Elst, P. Van den Eijnde
Measurer E. W. Elst

1931 GC	1970 11 19.90139	03 39 51.90	+31 46 31.2			017
1931 GC	1970 11 22.91597	03 36 42.78	+31 40 31.9			017
1931 GC	1970 11 23.79306	03 35 47.96	+31 38 36.1			017
1931 GC	1970 11 23.91806	03 35 39.78	+31 38 19.1			017
1931 GC	1970 11 25.02778	03 34 30.24	+31 35 38.9			017
1931 GC	1970 11 25.14097	03 34 23.33	+31 35 22.8			017
1931 GC	1970 11 25.86250	03 33 38.76	+31 33 31.8			017
1931 GC	1970 11 25.97431	03 33 31.54	+31 33 16.6			017
1931 GC	1970 11 26.04653	03 33 27.13	+31 33 04.9		17.2	017
1980 TY14	1970 11 25.02778	03 53 33.02	+30 35 51.2			017
1980 TY14	1970 11 25.14097	03 53 24.87	+30 35 44.8			017
1980 TY14	1970 11 25.86250	03 52 33.72	+30 35 04.6			017
1980 TY14	1970 11 25.97431	03 52 25.17	+30 34 59.4			017
1980 TY14	1970 11 26.04653	03 52 20.19	+30 34 55.4		16.3	017
1980 TY14	1970 11 26.91458	03 51 18.42	+30 33 55.6			017
1157	1970 11 19.90139	03 47 28.48	+33 38 06.6			017
1157	1970 11 22.91597	03 44 39.81	+33 31 04.0			017
1157	1970 11 23.79306	03 43 50.96	+33 28 50.3			017
1157	1970 11 23.91806	03 43 43.61	+33 28 30.5			017
1157	1970 11 25.02778	03 42 41.76	+33 25 27.8			017
1157	1970 11 25.14097	03 42 35.55	+33 25 10.6			017
1157	1970 11 25.86250	03 41 55.82	+33 23 06.1			017
1157	1970 11 26.91458	03 40 57.72	+33 20 00.6			017
1532	1970 11 25.86250	03 54 07.47	+33 58 05.2			017
1532	1970 11 26.91458	03 53 04.66	+33 55 05.3			017
3181	1989 10 27.88889	02 22 39.39	+14 44 41.2		17.0	017
3181	1989 10 27.93472	02 22 36.49	+14 44 18.1			017
3329	1970 11 19.90139	03 37 24.00	+31 33 55.0			017
3329	1970 11 22.91597	03 34 16.75	+31 32 15.1			017
3329	1970 11 23.79306	03 33 22.57	+31 31 30.4			017
3329	1970 11 23.91806	03 33 14.69	+31 31 24.0			017
3329	1970 11 25.02778	03 32 06.17	+31 30 18.3			017
3329	1970 11 25.14097	03 31 59.40	+31 30 11.6			017
3329	1970 11 25.86250	03 31 15.42	+31 29 21.0			017
3329	1970 11 26.91458	03 30 11.74	+31 28 07.0			017

026 Zimmerwald
P. Wild, Astronomisches Institut der Universitat, Sidlerstrasse 5, CH-3012 Berne, Switzerland
Observers P. Wild, T. Schildknecht
Measurers P. Wild, U. Hugentobler
0.4-m Schmidt telescope

1989 DA	1989 03 05.90000	10 09 55.88	+21 32 35.3			026
1989 SY	1989 10 23.94444	02 11 00.95	+16 51 52.5		15.0	026
1989 SY	1989 10 24.92396	02 09 51.92	+16 58 00.8			026
1989 SY	1989 11 08.00764	01 52 57.70	+18 18 15.7		15.0	026
1989 SY	1989 11 08.08611	01 52 51.89	+18 18 39.1			026
1512	1989 10 23.94444	02 11 38.78	+17 03 55.0		15.8	026
1512	1989 10 24.92396	02 10 59.88	+17 01 31.2			026

033 Tautenburg
S. Marx, Karl Schwarzschild Observatorium, DDR-6901 Tautenburg, Democratic Republic of Germany

Observer F. Borngen
1.3-m Schmidt telescope
SAOC

1982	UJ3		1989	09	07.04028	03	15	32.86	+17	39	03.6	17.7	033
1982	UJ3		1989	09	07.09028	03	15	34.63	+17	39	06.3		033
1985	TE1		1989	09	07.04028	03	11	31.38	+17	30	34.5	17.8	033
1985	TE1		1989	09	07.09028	03	11	33.13	+17	30	40.4		033
1989	RY2	*	1989	09	07.04028	03	11	34.46	+18	43	09.8	18.7	033
1989	RY2		1989	09	07.09028	03	11	35.27	+18	43	20.9		033
1989	UC4	*	1989	10	23.94873	03	49	32.99	+21	48	40.0	18.9	033
1989	UC4		1989	10	23.99595	03	49	31.12	+21	48	36.6		033
1989	UC4		1989	10	26.01111	03	48	12.73	+21	45	41.0		033
1989	UD4	*	1989	10	23.94873	03	50	26.28	+22	15	55.7	18.6	033
1989	UD4		1989	10	23.99595	03	50	24.67	+22	15	47.1		033
1989	UD4		1989	10	26.01111	03	49	17.15	+22	09	02.5		033
1989	UE4	*	1989	10	23.94873	03	53	48.92	+21	15	27.7	17.4	033
1989	UE4		1989	10	23.99595	03	53	47.31	+21	15	13.4		033
1989	UE4		1989	10	26.01111	03	52	36.96	+21	04	43.4		033
1989	UF4	*	1989	10	23.94873	03	54	55.17	+22	01	01.7	18.2	033
1989	UF4		1989	10	23.99595	03	54	53.11	+22	00	49.0		033
1989	UF4		1989	10	26.01111	03	53	24.88	+21	51	22.9		033
1989	UG4	*	1989	10	23.94873	03	56	12.52	+20	29	38.8	19.1	033
1989	UG4		1989	10	23.99595	03	56	10.81	+20	29	39.9		033
1989	UG4		1989	10	26.01111	03	54	57.69	+20	29	42.0		033
1989	UH4	*	1989	10	23.94873	03	56	27.69	+22	45	21.8	17.9	033
1989	UH4		1989	10	23.99595	03	56	26.09	+22	45	13.3		033
1989	UH4		1989	10	26.01111	03	55	17.15	+22	38	28.6		033
1989	UJ4	*	1989	10	23.94873	03	57	17.89	+21	12	55.3	18.2	033
1989	UJ4		1989	10	23.99595	03	57	16.06	+21	12	26.2		033
1989	UJ4		1989	10	26.01111	03	55	58.82	+20	50	58.3		033
1989	UK4	*	1989	10	23.94873	03	57	50.50	+19	58	02.8	18.7	033
1989	UK4		1989	10	23.99595	03	57	48.11	+19	58	05.7		033
1989	UK4		1989	10	26.01111	03	56	07.40	+20	00	08.2		033
1989	UL4	*	1989	10	23.94873	04	02	09.34	+23	00	14.7	18.4	033
1989	UL4		1989	10	23.99595	04	02	07.11	+23	00	04.8		033
1989	UL4		1989	10	26.01111	04	00	33.53	+22	52	33.6		033
26			1989	10	23.94873	04	01	18.52	+21	13	15.2	12.9	033
26			1989	10	23.99595	04	01	16.63	+21	13	13.5		033
26			1989	10	26.01111	03	59	55.06	+21	11	45.5		033
178			1989	10	23.94873	03	51	13.56	+20	02	32.9	14.1	033
178			1989	10	23.99595	03	51	11.52	+20	02	28.9		033
178			1989	10	26.01111	03	49	42.55	+19	59	24.1		033
637			1989	09	07.04028	03	11	29.10	+18	03	05.3	17.0	033
637			1989	09	07.09028	03	11	29.46	+18	03	07.1		033
2264			1989	10	23.94873	03	56	57.17	+20	29	35.8	16.4	033
2264			1989	10	23.99595	03	56	55.37	+20	29	30.9		033
2264			1989	10	26.01111	03	55	39.45	+20	25	44.9		033
2278			1989	10	23.94873	04	00	14.80	+20	22	00.3	19.2	033
2278			1989	10	23.99595	04	00	12.69	+20	21	58.1		033
2278			1989	10	26.01111	03	58	42.22	+20	20	14.2		033
2383			1989	09	07.04028	03	13	02.17	+19	09	22.3	17.5	033
2383			1989	09	07.09028	03	13	03.08	+19	09	31.7		033
2406			1989	09	07.04028	03	13	07.11	+18	29	11.1	16.3	033
2406			1989	09	07.09028	03	13	09.50	+18	29	27.0		033
2659			1989	09	07.04028	03	20	19.19	+17	00	56.7	16.9	033
2659			1989	09	07.09028	03	20	20.02	+17	00	58.6		033
3191			1989	09	07.04028	03	17	40.65	+17	10	12.4	17.3	033
3191			1989	09	07.09028	03	17	41.37	+17	10	16.8		033

3641	1989	09	07.04028	03	10	08.51	+17	46	57.5	16.0	033
3641	1989	09	07.09028	03	10	08.87	+17	47	12.4		033
4246	1989	10	23.94873	03	56	43.26	+21	28	37.6	18.1	033
4246	1989	10	23.99595	03	56	40.84	+21	28	35.6		033
4246	1989	10	26.01111	03	54	57.60	+21	26	33.6		033

046 Klet
A. Mrkos, Dept. of Astronomy and Astrophysics, Charles University,
Svedska 8, C-15000 Prague 5, Czechoslovakia
Observers A. Mrkos, Z. Vavrova
0.6-m Maksutov reflector

1979 XQ	1989	10	25.83976	01	08	22.60	+05	50	40.3		046
1979 XQ	1989	10	25.85422	01	08	21.95	+05	50	38.6		046
1979 XQ	1989	10	26.84282	01	07	29.31	+05	48	27.4		046
1979 XQ	1989	10	26.85694	01	07	28.57	+05	48	26.5		046
1979 XQ	1989	10	27.84375	01	06	37.36	+05	46	24.2		046
1979 XQ	1989	10	27.85781	01	06	36.59	+05	46	22.1		046
1979 XQ	1989	11	02.85694	01	01	54.68	+05	36	37.4		046
1979 XQ	1989	11	02.87118	01	01	54.23	+05	36	36.0		046
1980 DE1	1989	10	22.89450	02	05	33.90	+12	30	12.8		046
1980 DE1	1989	10	22.90868	02	05	33.23	+12	30	11.2		046
1980 DE1	1989	10	23.89207	02	04	44.29	+12	28	19.8		046
1980 DE1	1989	10	23.90625	02	04	43.57	+12	28	18.4		046
1980 DE1	1989	10	24.87164	02	03	55.22	+12	26	25.9		046
1980 DE1	1989	10	24.88576	02	03	54.54	+12	26	25.9		046
1980 DE1	1989	10	28.88565	02	00	33.63	+12	18	36.9		046
1980 DE1	1989	10	28.90284	02	00	33.03	+12	18	36.6		046
1981 EH26	1989	10	04.95640	00	57	29.84	+02	07	55.6		046
1981 EH26	1989	10	04.96913	00	57	29.33	+02	07	51.5		046
1981 EH26	1989	10	05.98215	00	56	46.84	+02	02	29.1		046
1981 EH26	1989	10	05.99622	00	56	46.23	+02	02	24.9		046
1982 SQ2	1989	10	26.84282	01	09	09.24	+05	05	50.0	p	046
1982 SQ2	1989	10	26.85694	01	09	08.68	+05	05	44.0	p	046
1982 SQ2	1989	10	27.84375	01	08	26.29	+04	57	49.3		046
1982 SQ2	1989	10	27.85781	01	08	25.70	+04	57	46.8		046
1985 RL1	1989	10	25.87604	02	16	18.98	+13	14	38.1		046
1985 RL1	1989	10	25.89028	02	16	18.09	+13	14	28.1		046
1985 RL1	1989	10	26.87934	02	15	26.32	+13	03	48.6		046
1985 RL1	1989	10	26.89340	02	15	25.41	+13	03	38.6		046
1985 RL1	1989	10	27.87743	02	14	33.82	+12	53	00.8		046
1985 RL1	1989	10	27.89149	02	14	33.05	+12	52	51.3		046
1985 VN	1989	10	22.86053	01	14	33.36	+10	28	52.5	16.2	046
1985 VN	1989	10	22.87465	01	14	32.85	+10	28	39.5		046
1985 VN	1989	10	23.85706	01	13	56.14	+10	14	42.3		046
1985 VN	1989	10	23.87118	01	13	55.56	+10	14	30.2		046
1985 VN	1989	10	24.83553	01	13	20.24	+10	00	52.7		046
1985 VN	1989	10	24.84965	01	13	19.68	+10	00	40.4		046
1985 VN	1989	10	28.85208	01	11	02.15	+09	05	27.5		046
1985 VN	1989	10	28.86615	01	11	01.76	+09	05	17.2		046
1986 WB1	1989	10	05.91294	00	34	48.58	+09	29	52.3		046
1986 WB1	1989	10	05.92723	00	34	47.71	+09	29	47.8		046
1986 WL1	1989	10	03.90437	23	44	34.81	-09	35	03.3	M	046
1986 WL1	1989	10	03.91850	23	44	34.06	-09	35	05.0	M	046
1986 WL1	1989	10	04.89269	23	43	39.85	-09	36	48.9	U	046
1986 WL1	1989	10	04.90686	23	43	38.89	-09	36	47.6	U	046
1986 WL1	1989	10	05.87573	23	42	45.94	-09	38	18.8		046
1986 WL1	1989	10	05.88991	23	42	45.21	-09	38	18.2		046
1987 BC2	1989	10	22.82639	00	34	29.76	+12	15	03.4	16.3	046

1987	BC2		1989	10	22.84051	00	34	29.21	+12	14	57.9		046
1987	BC2		1989	10	23.82344	00	33	51.25	+12	08	08.3		046
1987	BC2		1989	10	23.83756	00	33	50.72	+12	08	00.9		046
1987	BC2		1989	10	24.80081	00	33	15.32	+12	01	21.8		046
1987	BC2		1989	10	24.81493	00	33	14.79	+12	01	15.4		046
1987	BC2		1989	10	28.81944	00	31	04.19	+11	34	05.1		046
1987	BC2		1989	10	28.83351	00	31	03.88	+11	33	59.5		046
1988	EN		1989	10	05.98215	00	52	12.23	+00	25	33.4		046
1988	EN		1989	10	05.99622	00	52	11.56	+00	25	29.6	V	046
1989	OB		1989	09	22.80281	21	56	28.22	+27	57	48.3		046
1989	OB		1989	09	22.81410	21	56	29.47	+27	58	05.0		046
1989	OB		1989	09	22.83229	21	56	31.36	+27	58	33.7		046
1989	OB		1989	09	22.84361	21	56	32.47	+27	58	50.7		046
1989	OB		1989	09	24.78615	22	00	20.32	+28	45	05.2		046
1989	OB		1989	09	24.79326	22	00	21.09	+28	45	16.4		046
1989	RM2		1989	09	07.96080	23	49	36.45	+07	10	57.4	16.3	046
1989	RM2		1989	09	07.97498	23	49	35.89	+07	10	56.6		046
1989	RM2		1989	09	09.02610	23	48	45.81	+07	07	51.1		046
1989	RM2		1989	09	09.03877	23	48	45.21	+07	07	48.2		046
1989	RU2		1989	10	03.90437	23	42	13.21	-11	28	06.2	16.6	046
1989	RU2		1989	10	03.91850	23	42	12.44	-11	28	06.4		046
1989	RU2		1989	10	04.89269	23	41	25.54	-11	27	25.9		046
1989	RU2		1989	10	04.90686	23	41	24.84	-11	27	26.0		046
1989	RU2		1989	10	05.87573	23	40	39.47	-11	26	31.2		046
1989	RU2		1989	10	05.88991	23	40	38.77	-11	26	30.9		046
1989	RW2	*	1989	09	07.96080	23	55	47.73	+09	34	41.4	16.7	046
1989	RW2		1989	09	07.97498	23	55	47.11	+09	34	35.0		046
1989	RW2		1989	09	09.02610	23	55	02.58	+09	29	11.5		046
1989	RW2		1989	09	09.03877	23	55	01.94	+09	29	07.1		046
1989	RX2	*	1989	09	07.96080	23	56	05.95	+06	23	58.4	16.4	046
1989	RX2		1989	09	07.97498	23	56	05.39	+06	23	51.8		046
1989	RX2		1989	09	09.02610	23	55	27.61	+06	15	15.3		046
1989	RX2		1989	09	09.03877	23	55	27.03	+06	15	09.2		046
1989	SF		1989	10	03.97278	00	59	07.57	+12	22	52.1		046
1989	SF		1989	10	03.99153	00	59	06.23	+12	22	49.3		046
1989	SF		1989	10	05.94830	00	57	04.81	+12	15	06.7		046
1989	SF		1989	10	05.96242	00	57	03.97	+12	15	03.8		046
1989	SF		1989	10	22.82639	00	40	05.68	+10	54	12.6	16.8	046
1989	SF		1989	10	22.84051	00	40	04.79	+10	54	07.2		046
1989	SF		1989	10	23.82344	00	39	12.74	+10	49	09.7		046
1989	SF		1989	10	23.83756	00	39	11.93	+10	49	05.1		046
1989	SF		1989	10	24.80081	00	38	22.04	+10	44	13.1		046
1989	SF		1989	10	24.81493	00	38	21.49	+10	44	09.8		046
1989	SF		1989	10	28.81944	00	35	09.50	+10	24	30.3		046
1989	SF		1989	10	28.83351	00	35	08.95	+10	24	26.8		046
1989	SP		1989	10	03.93962	00	38	33.85	+09	23	21.2	16.5	046
1989	SP		1989	10	03.95380	00	38	33.27	+09	23	10.8		046
1989	SP		1989	10	04.92608	00	37	52.51	+09	11	10.7		046
1989	SP		1989	10	04.93887	00	37	51.84	+09	10	59.8		046
1989	SP		1989	10	05.91294	00	37	11.01	+08	58	57.0		046
1989	SP		1989	10	05.92723	00	37	10.33	+08	58	45.6		046
1989	SX		1989	10	22.89450	02	07	58.11	+14	04	12.0	16.5	046
1989	SX		1989	10	22.90868	02	07	57.24	+14	04	14.4		046
1989	SX		1989	10	23.89207	02	07	02.16	+14	07	04.8		046
1989	SX		1989	10	23.90625	02	07	01.34	+14	07	07.2		046
1989	SX		1989	10	24.87164	02	06	06.75	+14	09	51.1		046
1989	SX		1989	10	24.88576	02	06	05.96	+14	09	53.1		046
1989	TD		1989	10	03.93962	00	30	30.26	+10	14	33.5	16.6	046

1989	TD		1989	10	03.95380	00	30	29.77	+10	14	31.8		046
1989	TD		1989	10	04.92608	00	29	43.74	+10	10	51.3		046
1989	TD		1989	10	04.93887	00	29	42.89	+10	10	47.2		046
1989	TD		1989	10	05.91294	00	28	57.32	+10	07	05.9		046
1989	TD		1989	10	05.92723	00	28	56.48	+10	07	00.9		046
1989	TE		1989	09	09.02610	23	54	22.89	+08	35	52.3		046
1989	TE		1989	09	09.03877	23	54	22.43	+08	35	51.4		046
1989	TE		1989	09	22.86531	23	44	41.38	+07	41	13.8		046
1989	TE		1989	09	22.87799	23	44	40.79	+07	41	10.0		046
1989	TE		1989	10	03.87000	23	37	36.25	+06	36	59.0	16.8	046
1989	TE		1989	10	03.88418	23	37	35.80	+06	36	55.1		046
1989	TE		1989	10	04.82434	23	37	06.09	+06	31	11.2		046
1989	TE		1989	10	04.83846	23	37	05.61	+06	31	08.3		046
1989	TE		1989	10	05.80472	23	36	36.45	+06	25	15.9		046
1989	TE		1989	10	05.81896	23	36	35.98	+06	25	09.9		046
1989	TV		1989	10	04.95640	00	54	25.79	+01	43	32.9	16.6	046
1989	TV		1989	10	04.96913	00	54	25.43	+01	43	17.7		046
1989	TV		1989	10	05.98215	00	54	00.98	+01	22	27.1		046
1989	TV		1989	10	05.99622	00	54	00.57	+01	22	11.9		046
1989	TB1		1989	10	26.84282	01	03	53.57	+08	13	55.4	16.8	046
1989	TB1		1989	10	26.85694	01	03	52.97	+08	13	50.7		046
1989	TB1		1989	10	27.84375	01	02	58.13	+08	10	12.1		046
1989	TB1		1989	10	27.85781	01	02	57.24	+08	10	06.5		046
1989	TB1		1989	11	02.85694	00	57	53.07	+07	50	03.5		046
1989	TB1		1989	11	02.87118	00	57	52.41	+07	50	00.8		046
1989	TW1	*	1989	10	03.87000	23	34	48.66	+08	50	14.9	16.9	046
1989	TW1		1989	10	03.88418	23	34	48.09	+08	50	06.8		046
1989	TW1		1989	10	04.82434	23	34	06.20	+08	41	27.2		046
1989	TW1		1989	10	04.83846	23	34	05.49	+08	41	19.4		046
1989	TW1		1989	10	05.80472	23	33	23.62	+08	32	21.2		046
1989	TW1		1989	10	05.81896	23	33	22.75	+08	32	12.1		046
1989	TZ1	*	1989	10	03.93962	00	36	47.71	+09	35	17.2		046
1989	TZ1		1989	10	03.95380	00	36	47.04	+09	35	06.8	U	046
1989	TA2	*	1989	10	03.93962	00	38	17.65	+08	32	08.6	16.5	046
1989	TA2		1989	10	03.95380	00	38	16.73	+08	32	12.0		046
1989	TA2		1989	10	04.92608	00	37	07.78	+08	35	44.1		046
1989	TA2		1989	10	04.93887	00	37	06.79	+08	35	48.4		046
1989	TA2		1989	10	05.91294	00	35	57.77	+08	39	15.2		046
1989	TA2		1989	10	05.92723	00	35	56.89	+08	39	19.6		046
1989	TB2	*	1989	10	03.97278	00	51	59.50	+12	18	07.5	16.9	046
1989	TB2		1989	10	03.99153	00	51	58.30	+12	18	02.6		046
1989	TB2		1989	10	05.94830	00	50	01.15	+12	06	31.3		046
1989	TB2		1989	10	05.96242	00	50	00.26	+12	06	26.9		046
1989	TC2	*	1989	10	04.92608	00	33	36.76	+10	08	56.4	17.0	046
1989	TC2		1989	10	04.93887	00	33	35.93	+10	08	52.9		046
1989	TC2		1989	10	05.91294	00	32	43.22	+10	04	08.4	U	046
1989	TC2		1989	10	05.92723	00	32	42.54	+10	04	05.2		046
1989	TD2	*	1989	10	04.95640	00	50	01.05	+02	36	08.7	16.5	046
1989	TD2		1989	10	04.96913	00	50	00.38	+02	36	00.5		046
1989	TD2		1989	10	05.98215	00	49	13.32	+02	26	33.0		046
1989	TD2		1989	10	05.99622	00	49	12.50	+02	26	22.9		046
1989	TE2	*	1989	10	04.95640	00	53	14.15	+00	50	59.6	16.7	046
1989	TE2		1989	10	04.96913	00	53	13.48	+00	50	58.2		046
1989	TE2		1989	10	05.98215	00	52	19.53	+00	46	17.8	V	046
1989	TE2		1989	10	05.99622	00	52	18.41	+00	46	13.9		046
1989	TF2	*	1989	10	04.95640	00	57	02.19	+00	06	29.0	16.7	046
1989	TF2		1989	10	04.96913	00	57	01.45	+00	06	26.2		046
1989	TF2		1989	10	05.98215	00	55	52.65	+00	03	11.5		046
1989	TF2		1989	10	05.99622	00	55	51.65	+00	03	06.9		046

1989	TJ2	*	1989	10	05.94830	00	51	41.58	+13	33	09.9	16.5	046
1989	TJ2		1989	10	05.96242	00	51	40.73	+13	33	06.5		046
1989	TJ2		1989	10	22.82639	00	35	00.89	+12	18	37.3	16.7	046
1989	TJ2		1989	10	22.84051	00	35	00.02	+12	18	34.6		046
1989	TJ2		1989	10	23.82344	00	34	08.76	+12	13	45.9		046
1989	TJ2		1989	10	23.83756	00	34	08.04	+12	13	42.7		046
1989	TJ2		1989	10	24.80081	00	33	19.35	+12	08	58.9		046
1989	TJ2		1989	10	24.81493	00	33	18.49	+12	08	55.3		046
1989	TJ2		1989	10	28.81944	00	30	10.14	+11	49	34.7		046
1989	TJ2		1989	10	28.83351	00	30	09.71	+11	49	35.6		046
1989	UL		1989	10	22.89450	02	08	49.19	+13	54	12.3	16.8	046
1989	UL		1989	10	22.90868	02	08	48.33	+13	54	05.9		046
1989	UL		1989	10	23.89207	02	08	01.31	+13	47	12.2		046
1989	UL		1989	10	23.90625	02	08	00.66	+13	47	07.6		046
1989	UL		1989	10	24.87164	02	07	14.05	+13	40	18.5		046
1989	UL		1989	10	24.88576	02	07	13.35	+13	40	15.0		046
1989	UL		1989	10	28.88565	02	03	59.13	+13	11	37.3		046
1989	UL		1989	10	28.90284	02	03	58.23	+13	11	30.2		046
1989	UO		1989	11	02.92986	02	19	09.10	+09	47	21.1	16.6	046
1989	UO		1989	11	02.94410	02	19	08.39	+09	47	20.0		046
1989	UT		1989	10	22.89450	02	07	20.79	+12	28	35.8	16.5	046
1989	UT		1989	10	22.90868	02	07	19.92	+12	28	36.5		046
1989	UT		1989	10	23.89207	02	06	15.62	+12	30	37.1		046
1989	UT		1989	10	23.90625	02	06	14.72	+12	30	38.8		046
1989	UT		1989	10	24.87164	02	05	11.01	+12	32	34.0		046
1989	UT		1989	10	24.88576	02	05	10.11	+12	32	35.8		046
1989	UT		1989	10	28.88565	02	00	45.23	+12	40	23.1		046
1989	UT		1989	10	28.90284	02	00	44.20	+12	40	24.6		046
1989	UU		1989	10	25.91013	02	23	05.96	+08	54	34.3	16.7	046
1989	UU		1989	10	25.91267	02	23	05.94	+08	54	33.1		046
1989	UU		1989	10	25.92431	02	23	05.14	+08	54	29.2		046
1989	UU		1989	10	25.92691	02	23	05.16	+08	54	28.5		046
1989	UU		1989	10	26.91667	02	22	15.92	+08	50	00.8		046
1989	UU		1989	10	26.93079	02	22	15.03	+08	49	57.8		046
1989	UU		1989	11	02.92986	02	16	25.87	+08	19	49.2		046
1989	UU		1989	11	02.94410	02	16	25.23	+08	19	47.5		046
1989	UE3		1989	10	25.91013	02	18	47.45	+07	14	37.6	16.8	046
1989	UE3		1989	10	25.91267	02	18	47.42	+07	14	36.6		046
1989	UE3		1989	10	25.92431	02	18	46.79	+07	14	34.9		046
1989	UE3		1989	10	25.92691	02	18	46.79	+07	14	34.3		046
1989	UE3		1989	10	26.91667	02	17	53.70	+07	09	59.8		046
1989	UE3		1989	10	26.93079	02	17	53.25	+07	09	55.8		046
1989	UE3		1989	11	02.92986	02	11	41.46	+06	39	35.9		046
1989	UE3		1989	11	02.94410	02	11	40.80	+06	39	37.3		046
1989	UF3		1989	10	25.91267	02	24	48.95	+08	13	43.9		046
1989	UF3		1989	10	25.92691	02	24	48.11	+08	13	43.4		046
1989	UF3		1989	10	26.91667	02	23	50.99	+08	13	32.6		046
1989	UF3		1989	10	26.93079	02	23	49.92	+08	13	34.1		046
1989	UG3		1989	10	25.91013	02	23	46.01	+06	40	49.0	16.7	046
1989	UG3		1989	10	25.91267	02	23	46.01	+06	40	47.3		046
1989	UG3		1989	10	25.92431	02	23	45.27	+06	40	46.5		046
1989	UG3		1989	10	25.92691	02	23	45.22	+06	40	45.4		046
1989	UG3		1989	10	26.91667	02	22	50.90	+06	37	50.8		046
1989	UG3		1989	10	26.93079	02	22	50.18	+06	37	47.5		046
1989	UG3		1989	11	02.92986	02	16	25.38	+06	19	36.6		046
1989	UG3		1989	11	02.94410	02	16	24.74	+06	19	36.1		046
1989	UR3		1989	10	25.91013	02	13	46.32	+08	59	36.6	16.6	046
1989	UR3		1989	10	25.91267	02	13	46.36	+08	59	35.9		046
1989	UR3		1989	10	25.92431	02	13	45.70	+08	59	32.5		046

1989	UR3		1989	10	25.92691	02	13	45.71	+08	59	32.7		046
1989	UR3		1989	10	26.91667	02	12	53.38	+08	53	46.0		046
1989	UR3		1989	10	26.93079	02	12	52.64	+08	53	41.8		046
1989	US3		1989	10	25.87604	02	23	22.83	+14	08	50.2	16.7	046
1989	US3		1989	10	25.89028	02	23	21.96	+14	08	44.1		046
1989	US3		1989	10	27.87743	02	21	38.74	+13	58	19.7		046
1989	US3		1989	10	27.89149	02	21	37.82	+13	58	14.1		046
1989	US3		1989	11	02.89549	02	16	24.83	+13	26	27.4		046
1989	US3		1989	11	02.90972	02	16	24.07	+13	26	23.0		046
1989	UM4	*	1989	10	22.82639	00	46	54.85	+12	25	41.1	16.6	046
1989	UM4		1989	10	22.84051	00	46	54.30	+12	25	30.8		046
1989	UM4		1989	10	23.82344	00	46	18.86	+12	13	18.8		046
1989	UM4		1989	10	23.83756	00	46	18.24	+12	13	07.4		046
1989	UM4		1989	10	24.80081	00	45	44.59	+12	01	14.5		046
1989	UM4		1989	10	24.81493	00	45	44.10	+12	01	04.8		046
1989	UM4		1989	10	28.81944	00	43	34.43	+11	12	11.9		046
1989	UM4		1989	10	28.83351	00	43	34.00	+11	12	01.3		046
1989	UN4	*	1989	10	22.89450	02	02	39.05	+13	41	11.9	16.9	046
1989	UN4		1989	10	22.90868	02	02	38.32	+13	41	10.4		046
1989	UN4		1989	10	23.89207	02	01	48.88	+13	35	49.1		046
1989	UN4		1989	10	23.90625	02	01	47.96	+13	35	44.5		046
1989	UN4		1989	10	24.87164	02	00	59.17	+13	30	28.1		046
1989	UN4		1989	10	24.88576	02	00	58.45	+13	30	26.0		046
1989	UN4		1989	10	28.88565	01	57	36.39	+13	08	15.3		046
1989	UN4		1989	10	28.90284	01	57	35.82	+13	08	12.0		046
1989	UO4	*	1989	10	22.89450	02	02	41.03	+11	46	56.7	16.8	046
1989	UO4		1989	10	22.90868	02	02	39.98	+11	46	49.6		046
1989	UO4		1989	10	23.89207	02	01	45.76	+11	38	17.4		046
1989	UO4		1989	10	23.90625	02	01	45.28	+11	38	14.4		046
1989	UO4		1989	10	24.87164	02	00	51.44	+11	29	48.4	M	046
1989	UO4		1989	10	24.88576	02	00	50.66	+11	29	39.9	M	046
1989	UP4	*	1989	10	22.89450	02	02	51.11	+13	43	50.9	16.9	046
1989	UP4		1989	10	22.90868	02	02	50.41	+13	43	47.0		046
1989	UP4		1989	10	23.89207	02	02	03.40	+13	40	04.0		046
1989	UP4		1989	10	23.90625	02	02	02.80	+13	40	00.6		046
1989	UP4		1989	10	28.88565	01	58	05.03	+13	20	46.0		046
1989	UP4		1989	10	28.90284	01	58	04.47	+13	20	41.3		046
1989	UQ4	*	1989	10	22.89450	02	04	08.23	+11	42	50.9	16.7	046
1989	UQ4		1989	10	22.90868	02	04	07.54	+11	42	44.2		046
1989	UQ4		1989	10	23.89207	02	03	23.86	+11	34	19.6		046
1989	UQ4		1989	10	23.90625	02	03	23.25	+11	34	13.4		046
1989	UQ4		1989	10	24.87164	02	02	40.03	+11	25	55.3		046
1989	UQ4		1989	10	24.88576	02	02	39.57	+11	25	50.7		046
1989	UR4	*	1989	10	22.89450	02	05	35.18	+10	25	41.8	16.7	046
1989	UR4		1989	10	22.90868	02	05	34.36	+10	25	38.2		046
1989	UR4		1989	10	23.89207	02	04	40.14	+10	21	33.3		046
1989	UR4		1989	10	23.90625	02	04	39.43	+10	21	31.2		046
1989	UR4		1989	10	24.87164	02	03	45.59	+10	17	29.0		046
1989	UR4		1989	10	24.88576	02	03	44.88	+10	17	25.1		046
1989	UR4		1989	10	28.90284	02	00	00.64	+10	00	49.3	U	046
1989	US4	*	1989	10	22.89450	02	10	42.18	+13	33	56.0	17.0	046
1989	US4		1989	10	22.90868	02	10	41.45	+13	33	52.3		046
1989	US4		1989	10	23.89207	02	09	51.09	+13	28	55.3		046
1989	US4		1989	10	23.90625	02	09	50.51	+13	28	53.2	I	046
1989	US4		1989	10	24.87164	02	09	00.57	+13	23	58.3		046
1989	US4		1989	10	24.88576	02	08	59.82	+13	23	55.1		046
1989	US4		1989	10	28.88565	02	05	32.13	+13	03	25.4		046
1989	US4		1989	10	28.90284	02	05	31.54	+13	03	20.8		046
1989	UT4	*	1989	10	25.83976	01	07	00.85	+07	20	53.3	16.7	046

1989	UT4		1989	10	25.85422	01	07	00.18	+07	20	44.4		046
1989	UT4		1989	10	26.84282	01	06	18.65	+07	10	48.1		046
1989	UT4		1989	10	26.85694	01	06	18.09	+07	10	40.5		046
1989	UT4		1989	10	27.84375	01	05	37.95	+07	00	53.4		046
1989	UT4		1989	10	27.85781	01	05	37.32	+07	00	45.1		046
1989	UT4		1989	11	02.85694	01	02	00.64	+06	04	45.0		046
1989	UT4		1989	11	02.87118	01	02	00.14	+06	04	38.3		046
1989	UU4	*	1989	10	25.87604	02	11	44.51	+12	03	44.0	16.6	046
1989	UU4		1989	10	25.89028	02	11	43.93	+12	03	40.8		046
1989	UU4		1989	10	26.87934	02	10	57.17	+11	59	32.6	I	046
1989	UU4		1989	10	26.89340	02	10	56.16	+11	59	30.9		046
1989	UU4		1989	10	27.87743	02	10	09.29	+11	55	20.6		046
1989	UU4		1989	10	27.89149	02	10	08.68	+11	55	16.3		046
1989	UV4	*	1989	10	25.87604	02	20	18.19	+12	26	08.2		046
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1989	UV4		1989	10	26.89340	02	19	26.13	+12	18	36.0		046
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1989	UV4		1989	11	02.90972	02	13	26.24	+11	26	12.9		046
1989	UW4	*	1989	10	25.87604	02	22	15.89	+14	20	18.4	16.6	046
1989	UW4		1989	10	25.89028	02	22	15.08	+14	20	14.1		046
1989	UW4		1989	10	26.87934	02	21	25.12	+14	17	01.4		046
1989	UW4		1989	10	26.89340	02	21	24.44	+14	16	57.9		046
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1989	UY4		1989	10	26.93079	02	23	48.58	+08	34	45.3		046
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79			1989	10	04.85808	22	59	09.93	-02	02	01.4		046
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523	1989	10	05.91294	00	38	44.17	+11	01	24.1	046
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534	1989	10	05.87573	23	39	35.70	-07	36	04.8	046
534	1989	10	05.88991	23	39	35.07	-07	36	08.6	046
617	1989	10	25.91013	02	23	07.20	+09	52	51.5	046
617	1989	10	25.91267	02	23	07.21	+09	52	51.4	046
617	1989	10	25.92431	02	23	06.63	+09	52	51.7	046
617	1989	10	25.92691	02	23	06.69	+09	52	50.9	046
617	1989	10	26.91667	02	22	28.95	+09	52	38.6	046
617	1989	10	26.93079	02	22	28.30	+09	52	39.4	046
617	1989	11	02.92986	02	18	00.89	+09	51	39.4	046
617	1989	11	02.94410	02	18	00.30	+09	51	39.5	046
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1130	1989	10	23.87118	01	17	20.58	+09	00	58.4	046
1130	1989	10	24.83553	01	16	31.97	+08	54	08.4	046
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1130	1989	10	28.85208	01	13	21.01	+08	26	46.8	046
1130	1989	10	28.86615	01	13	20.31	+08	26	40.7	046
1199	1989	10	23.78883	00	26	04.01	+11	33	32.4	046
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1267	1989	10	26.84282	01	05	03.47	+06	49	45.2	046
1267	1989	10	26.85694	01	05	02.73	+06	49	43.0	046
1267	1989	10	27.84375	01	04	11.67	+06	46	48.3	046
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1406	1989	09	22.87799	23	37	21.46	+07	16	26.7	046
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1825	1989	10	04.87243	22	55	59.54	-00	31	01.4	046
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1825	1989	10	05.85397	22	55	24.15	-00	35	17.4	046
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1948	1989	10	22.90868	02	05	24.35	+14	13	49.1	046
1948	1989	10	23.89207	02	04	27.38	+14	10	35.5	046
1948	1989	10	23.90625	02	04	26.67	+14	10	33.3	046
1965	1989	10	25.87604	02	23	48.76	+11	01	31.9	046
1965	1989	10	25.89028	02	23	47.89	+11	01	26.5	046
1965	1989	10	27.87743	02	21	57.70	+10	53	26.9	046
1965	1989	10	27.89149	02	21	56.97	+10	53	25.2	046
2053	1989	10	04.85808	22	54	56.61	-02	17	35.2	046
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2106	1989	10	04.89269	23	37	05.29	-09	03	52.0	046

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2106	1989	10	05.88991	23	36	26.70	-09	10	13.0	046
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2279	1989	11	02.92986	02	12	25.09	+08	36	40.4	046
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2492	1989	10	26.85694	01	09	24.95	+07	25	06.6	046
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3123	1989	10	26.91667	02	13	21.81	+09	35	12.2		046
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1989 AK    1989 02 04.83773  06 34 52.67  +26 01 07.6                    071
1989 AZ1   1989 02 07.73392  06 34 28.61  +23 09 24.1                    071
1989 AZ1   1989 02 07.76250  06 34 27.85  +23 09 34.2                    071
1989 AZ1   1989 02 07.81291  06 34 26.65  +23 09 46.8                    071
1989 AN3   1989 02 04.90730  08 29 22.91  +21 09 00.5                    071
1989 AN3   1989 02 04.95909  08 29 19.16  +21 09 25.4                    071
1989 BB    1989 02 04.95909  07 57 49.57  +25 43 26.6                    071
1989 BB    1989 02 05.08954  07 57 39.81  +25 42 38.3                    071
1989 BY    1989 02 04.90730  08 31 56.61  +21 37 34.8                    071
1989 BY    1989 02 04.95909  08 31 53.52  +21 37 53.6                    071
1989 BE1   1989 02 05.82753  07 24 25.43  +23 44 59.0                    071
1989 BE1   1989 02 05.86604  07 24 24.50  +23 45 07.7                    071
1989 BE1   1989 02 06.77982  07 23 49.92  +23 48 01.1                    071
1989 BE1   1989 02 06.82368  07 23 48.08  +23 48 09.7                    071
1989 BS1   1989 02 04.98010  09 08 39.20  +18 02 29.1                    071
1989 BS1   1989 02 05.02339  09 08 36.19  +18 02 39.1                    071
1989 BU1   1989 02 04.98010  09 15 32.25  +16 44 43.3                    071
1989 BU1   1989 02 05.02339  09 15 29.94  +16 44 53.2                    071
1989 CD    1989 02 04.98010  09 18 01.72  +17 56 20.2                    071
1989 CD    1989 02 05.02339  09 17 59.13  +17 56 35.0                    071
1989 CH    1989 02 04.98010  09 14 18.72  +15 49 07.8                    071
1989 CH    1989 02 05.02339  09 14 16.62  +15 49 42.0                    071
1989 CL    1989 02 04.98010  09 16 32.00  +15 47 20.0                    071
1989 CL    1989 02 05.02339  09 16 29.74  +15 47 33.8                    071
1989 CL1   1989 02 05.00181  10 45 38.31  +11 34 07.3                    071
1989 CL1   1989 02 05.04590  10 45 36.60  +11 34 19.8                    071
1989 CU8   1989 02 05.00181  10 41 09.66  +10 48 46.0                    071
1989 CU8   1989 02 05.04590  10 41 07.70  +10 48 57.9                    071
1989 CV8 * 1989 02 04.78715  06 32 53.19  +25 05 10.3                    071
1989 CV8   1989 02 04.83773  06 32 52.08  +25 05 13.5                    071
1989 CW8 * 1989 02 04.81459  07 15 50.08  +21 06 44.1                    071
1989 CW8   1989 02 04.86082  07 15 49.12  +21 06 48.3                    071
```

1989	CX8	*	1989	02	04.90730	08	28	30.92	+22 52 59.5	071
1989	CX8		1989	02	04.95909	08	28	28.39	+22 53 15.8	071
1989	CY8	*	1989	02	04.95909	07	52	01.32	+25 49 51.0	071
1989	CY8		1989	02	05.08954	07	51	51.89	+25 49 38.2	071
1989	CZ8	*	1989	02	05.00181	10	39	14.48	+11 45 48.4	071
1989	CZ8		1989	02	05.04590	10	39	13.14	+11 46 18.5	071
1989	CA9	*	1989	02	05.82753	07	06	50.57	+22 30 42.0	071
1989	CA9		1989	02	05.86604	07	06	49.55	+22 30 47.2	071
140			1989	02	04.81459	07	22	15.48	+22 51 03.5	071
140			1989	02	04.86082	07	22	13.98	+22 51 04.4	071
140			1989	02	06.77982	07	20	50.04	+22 54 49.7	071
140			1989	02	06.82368	07	20	48.55	+22 54 56.4	071
213			1989	02	04.81459	07	02	20.02	+21 21 29.6	071
213			1989	02	04.86082	07	02	18.23	+21 21 38.2	071
275			1989	02	04.81459	07	15	38.41	+20 16 59.4	071
275			1989	02	04.86082	07	15	36.48	+20 17 08.8	071
275			1989	02	05.82753	07	14	57.50	+20 20 43.4	071
275			1989	02	05.86604	07	14	55.63	+20 20 53.1	071
333			1989	02	06.08964	11	50	27.11	+01 40 34.1	071
333			1989	02	06.13582	11	50	25.80	+01 40 39.4	071
559			1989	02	05.85354	06	21	42.75	+22 35 23.8	071
559			1989	02	05.91425	06	21	40.98	+22 35 35.7	071
783			1989	02	05.98947	10	47	52.39	+10 15 02.6	071
783			1989	02	06.04682	10	47	49.77	+10 15 29.9	071
791			1989	02	05.89191	08	22	25.92	+18 24 24.1	071
791			1989	02	05.92807	08	22	24.31	+18 24 35.7	071
800			1989	02	04.78715	06	31	57.78	+26 47 10.7	071
800			1989	02	04.83773	06	31	56.25	+26 47 04.8	071
873			1989	02	06.08964	11	56	37.70	+02 21 47.6	071
873			1989	02	06.13582	11	56	37.07	+02 21 58.4	071
939			1989	02	06.77982	07	10	55.55	+24 23 31.2	071
939			1989	02	06.82368	07	10	53.65	+24 23 29.0	071
1018			1989	02	06.08964	11	49	10.55	+04 03 11.7	071
1018			1989	02	06.13582	11	49	08.98	+04 03 17.7	071
1104			1989	02	05.95320	09	29	14.10	+16 45 26.7	071
1104			1989	02	06.02634	09	29	09.40	+16 46 00.1	071
1111			1989	02	06.06748	11	14	35.31	+07 24 17.1	071
1111			1989	02	06.11273	11	14	33.86	+07 24 30.9	071
1491			1989	02	06.77982	07	20	52.47	+23 38 46.8	071
1491			1989	02	06.82368	07	20	50.71	+23 38 45.0	071
1492			1989	02	04.98010	09	20	54.60	+15 23 43.5	071
1492			1989	02	05.02339	09	20	51.59	+15 24 08.7	071
1492			1989	02	05.95320	09	19	54.19	+15 32 22.8	071
1492			1989	02	06.02634	09	19	49.42	+15 33 03.4	071
1577			1989	02	05.73767	06	21	00.01	+22 03 11.5	071
1577			1989	02	05.79231	06	20	59.14	+22 03 20.7	071
1577			1989	02	05.85354	06	20	57.85	+22 03 35.4	071
1577			1989	02	05.91425	06	20	57.32	+22 03 40.6	071
1577			1989	02	05.97130	06	20	56.26	+22 03 52.2	071
1653			1989	02	05.73767	06	23	42.60	+24 38 26.9	071
1653			1989	02	05.79231	06	23	41.94	+24 38 19.2	071
1653			1989	02	05.97130	06	23	39.95	+24 37 51.9	071
1737			1989	02	04.90730	08	36	00.13	+23 12 10.3	071
1737			1989	02	04.95909	08	35	57.47	+23 12 12.6	071
1762			1989	02	04.81459	07	03	56.42	+20 15 08.9	071
1762			1989	02	04.86082	07	03	54.90	+20 15 29.9	071
1804			1989	02	04.98010	09	21	12.54	+16 25 44.4	071
1804			1989	02	05.02339	09	21	09.66	+16 25 52.8	071
1804			1989	02	05.95320	09	20	11.18	+16 28 52.9	071

1804		1989	02	06.02634	09	20	06.28	+16	29	04.7	071
2334		1989	02	05.00181	10	45	10.94	+11	30	12.0	071
2334		1989	02	05.04590	10	45	08.98	+11	30	31.0	071
2365		1989	02	05.85354	06	25	33.08	+21	50	37.4	071
2448		1989	02	04.98010	09	26	15.55	+18	30	23.0	071
2448		1989	02	05.02339	09	26	13.26	+18	30	45.8	071
2448		1989	02	05.95320	09	25	27.15	+18	41	11.6	071
2448		1989	02	06.02634	09	25	23.30	+18	42	00.4	071
2519		1989	02	04.98010	09	27	01.00	+17	51	33.9	071
2519		1989	02	05.02339	09	26	58.78	+17	51	43.1	071
2519		1989	02	05.95320	09	26	15.81	+17	55	25.8	071
2519		1989	02	06.02634	09	26	12.03	+17	55	43.6	071
2554		1989	02	06.77982	07	22	01.90	+21	36	40.8	071
2554		1989	02	06.82368	07	21	59.46	+21	36	41.8	071
2712		1989	02	04.98010	09	13	34.34	+15	10	03.1	071
2712		1989	02	05.02339	09	13	31.69	+15	10	18.3	071
2848		1989	02	04.90730	08	22	43.66	+20	07	08.0	071
2848		1989	02	04.95909	08	22	41.09	+20	07	15.9	071
3001		1989	02	04.78715	06	34	54.27	+25	13	34.6	071
3001		1989	02	04.83773	06	34	52.30	+25	13	03.4	071
3086		1989	02	04.78715	06	28	38.10	+26	32	42.9	071
3086		1989	02	04.83773	06	28	35.94	+26	32	01.5	071
3706		1989	02	05.98947	10	33	54.27	+10	19	12.6	071
3706		1989	02	06.04682	10	33	51.44	+10	19	37.7	071
3721		1989	02	04.95909	08	02	04.74	+22	48	31.6	071
3721		1989	02	05.08954	08	01	56.51	+22	48	22.7	071
3999		1989	02	07.73392	06	37	30.85	+23	15	21.7	071
3999		1989	02	07.76250	06	37	30.07	+23	15	19.8	071
3999		1989	02	07.81291	06	37	28.90	+23	15	16.2	071
4084		1989	02	04.90730	08	19	28.62	+22	40	55.9	071
4084		1989	02	04.95909	08	19	26.11	+22	41	04.9	071
4179		1989	02	05.75941	06	27	58.22	+23	13	23.8	071
4179		1989	02	05.79231	06	28	02.16	+23	13	22.1	071
4179		1989	02	05.80828	06	28	05.10	+23	13	23.0	071
4208		1989	02	05.00181	10	29	39.24	+10	30	25.0	071
4208		1989	02	05.04590	10	29	37.75	+10	30	44.5	071

091 Aurec-sur-Loire
R. Chanal, Observatore de Nurol, F-43110 Aurec-sur-Loire, France
0.41-m reflector
AGK3, SAOC

1989	OB	1989	08	25.94792	21	28	53.93	+12	05	31.8	091
1989	OB	1989	08	25.96180	21	28	53.98	+12	06	07.5	091
1989	PB	1989	08	23.96528	00	51	34.81	+46	01	57.3	091
264		1989	10	22.92083	01	36	05.41	+02	16	21.4	091
264		1989	10	26.98750	01	32	15.54	+02	16	45.1	091
365		1989	10	23.91250	00	17	51.42	-01	43	50.1	091

095 Crimean Astrophysical Observatory
N. S. Chernykh, Crimean Astrophysical Observatory, P.O. Nauchnyj,
Crimea 334413, U.S.S.R.
Yu. V. Batrakov, Institute for Theoretical Astronomy,
Naberezhnaya Kutuzova 10, Leningrad 191187, U.S.S.R.
Observers N. S. Chernykh, L. I. Chernykh, L. G. Karachkina,
L. V. Zhuravleva

1933	SD	1988	09	14.82986	22	27	43.91	-04	45	51.2	16.0V	E	095
1933	SD	1988	09	14.85069	22	27	43.23	-04	45	59.6	15.0V	E	095
1933	SD	1988	09	16.80903	22	26	49.88	-05	04	19.9	15.0V		095
1933	SD	1988	09	16.82986	22	26	49.12	-05	04	31.3	15.0V		095

1950	TF	1987	10	28.06987	03	48	52.70	+29	22	04.0		15.8V	095
1953	TS2	1987	08	29.00850	00	28	54.04	-04	42	27.6		E	095
1953	TS2	1987	08	31.99616	00	27	26.54	-04	57	59.4		E	095
1953	TS2	1987	09	04.00266	00	25	42.46	-05	14	34.8		E	095
1953	TS2	1987	09	24.90455	00	08	26.80	-07	12	56.6		E	095
1953	TS2	1987	09	27.88465	00	05	41.64	-07	26	55.4		E	095
1964	TA2	1988	09	17.94509	00	36	33.61	+09	17	49.7			095
1966	PK	1987	08	29.00850	00	19	52.26	-01	42	48.4			095
1966	PK	1987	09	04.00266	00	17	05.72	-02	04	16.8			095
1966	PK	1987	09	24.90455	00	02	53.36	-03	36	14.4			095
1966	PK	1987	09	27.88465	00	00	37.84	-03	49	05.2			095
1973	SG4	1988	09	17.94509	00	33	40.95	+06	05	19.5		E	095
1973	SW4	1988	08	08.88542	21	46	29.12	-12	34	17.0		16.5V	095
1973	SW4	1988	08	08.90625	21	46	27.90	-12	34	20.1		16.5V	095
1975	LQ	1987	08	31.99616	00	21	23.10	+00	35	56.1			095
1975	LQ	1987	09	04.00266	00	19	45.09	+00	13	11.9			095
1975	LQ	1987	09	24.90455	00	04	18.80	-02	46	36.0			095
1975	LQ	1987	09	27.88465	00	01	54.20	-03	12	05.9			095
1975	QO	1988	08	08.88542	21	58	00.86	-14	59	54.7			095
1975	QO	1988	08	08.90625	21	57	59.59	-14	59	51.5			095
1975	RP	1987	09	04.00266	00	11	51.24	+01	44	49.0			095
1975	RP	1987	09	24.90455	23	57	39.25	+00	06	35.2			095
1975	RP	1987	09	27.88465	23	55	31.16	-00	08	16.9		E	095
1976	SW3	1987	09	04.00266	00	14	42.73	+01	17	27.0			095
1976	SW3	1987	09	24.90455	00	01	38.96	-00	57	39.4			095
1976	SW3	1987	09	27.88465	23	59	35.07	-01	18	06.8			095
1976	YY	1987	08	31.99616	00	44	13.16	+00	45	33.1			095
1976	YY	1987	09	04.00266	00	43	04.13	+00	40	23.2		E	095
1976	YY	1987	09	24.90455	00	28	36.33	-00	21	26.5		E	095
1976	YY	1987	09	27.88465	00	25	57.54	-00	31	53.5			095
1977	DD1	1988	08	08.88542	21	22	33.98	-14	26	22.4		15.0V	E 095
1977	DD1	1988	08	08.90625	21	22	32.70	-14	26	30.2		15.0V	E 095
1977	DD1	1988	08	09.87153	21	21	37.66	-14	34	31.6		15.5V	095
1977	DD1	1988	08	09.89236	21	21	36.36	-14	34	45.6		15.5V	095
1978	PY2	1987	09	04.00266	00	23	13.42	+03	29	34.2			E 095
1978	PY2	1987	09	24.90455	00	08	23.22	+01	31	25.2			E 095
1978	PY2	1987	09	27.88465	00	05	59.55	+01	12	16.8			E 095
1978	RS	1988	08	08.88542	21	35	29.48	-13	58	18.6			095
1978	RS	1988	08	08.90625	21	35	28.25	-13	58	22.6			095
1978	RS	1988	08	09.87153	21	34	34.67	-14	00	59.0			095
1978	RS	1988	08	09.89236	21	34	33.26	-14	01	02.1			095
1978	RX1	1988	09	15.87281	23	34	42.41	-08	24	13.4			E 095
1978	RX1	1988	09	15.88670	23	34	41.89	-08	24	16.4			E 095
1978	SH3	1988	09	17.94509	00	41	48.00	+09	04	06.7			095
1978	VK8	1987	09	24.90455	00	30	59.76	-00	41	35.5			E 095
1978	VK8	1987	09	27.88465	00	28	38.07	-00	56	54.0			E 095
1979	MM8	1987	09	24.90455	00	01	33.44	-00	11	28.3			095
1979	YQ	1987	10	22.87821	01	09	45.79	-09	41	57.7			E 095
1980	FJ1	1988	09	15.87281	23	14	00.01	-06	41	01.7		16.0V	095
1980	FJ1	1988	09	15.88670	23	13	59.39	-06	40	59.1		16.0V	095
1980	FV1	1988	09	15.97662	01	58	56.48	+19	06	32.9		16.5V	095
1980	FV1	1988	09	15.99745	01	58	56.09	+19	06	40.7		16.5V	095
1980	RJ	1987	10	28.06987	03	48	52.99	+30	37	03.3			095
1980	RC1	1988	09	15.97662	01	47	28.51	+17	07	33.5			095
1980	RC1	1988	09	15.99745	01	47	28.19	+17	07	32.1			095
1980	TV2	1987	10	28.06987	03	37	32.05	+28	17	17.0		15.8V	095
1980	TS4	1987	09	24.90455	00	31	57.16	+00	20	51.9			E 095
1981	ED19	1987	09	24.90455	00	25	16.84	+01	32	35.2		16.0V	E 095

1981	ED28	1987	09	24.90455	00	10	14.50	-01	16	05.1	16.2V	095
1981	EO34	1987	09	04.00266	00	21	53.18	+02	58	47.6	E	095
1981	EO34	1987	09	24.90455	00	10	55.14	-00	55	57.4		095
1981	EO34	1987	09	27.88465	00	09	01.85	-01	31	34.8		095
1981	EO42	1987	10	28.00252	03	19	04.25	+24	39	15.6	E	095
1981	QT	1988	09	14.82986	22	34	30.86	-06	36	59.9	15.5V	095
1981	QT	1988	09	14.85069	22	34	29.55	-06	37	07.3	15.5V	095
1981	QT	1988	09	16.80903	22	32	52.22	-06	46	03.3	15.5V	095
1981	QT	1988	09	16.82986	22	32	51.00	-06	46	10.7	15.5V	095
1981	QT3	1987	09	04.00266	00	20	27.98	+01	51	00.6		095
1981	QT3	1987	09	24.90455	00	05	26.91	+00	46	38.8		095
1981	QT3	1987	09	27.88465	00	03	09.29	+00	36	29.1	E	095
1982	UP2	1987	10	28.00252	03	39	01.94	+21	18	54.8	16.5V	095
1982	UG7	1988	08	08.97917	22	50	01.90	-02	19	29.2		095
1982	UG7	1988	08	09.00000	22	50	01.25	-02	19	32.9		095
1982	UG7	1988	08	09.96215	22	49	38.18	-02	21	52.2		095
1982	UG7	1988	08	09.96264	22	49	37.41	-02	21	58.1		095
1982	UG7	1988	09	14.82986	22	25	19.19	-05	47	03.4		095
1982	UG7	1988	09	14.85069	22	25	18.39	-05	47	12.4		095
1982	UG7	1988	09	16.80903	22	24	11.84	-05	59	53.0		095
1982	UG7	1988	09	16.82986	22	24	11.11	-06	00	02.7		095
1982	VK12	1987	08	31.99616	00	34	24.79	+00	07	13.7		095
1982	VK12	1987	09	04.00266	00	33	01.35	-00	04	29.4		095
1982	VK12	1987	09	24.90455	00	19	45.62	-01	42	48.0		095
1982	VK12	1987	09	27.88465	00	17	34.00	-01	57	38.2		095
1983	XG	1988	09	17.86455	23	30	11.96	+01	31	48.1		095
1984	SC1	1988	09	15.87281	23	28	22.25	-08	09	04.0	16.0V	095
1984	SC1	1988	09	15.88670	23	28	21.07	-08	08	58.3	16.0V	095
1985	CG	1987	09	24.90455	23	55	49.11	-06	51	11.0	16.2V E	095
1985	CG	1987	09	27.88465	23	53	02.71	-07	09	17.7	16.5V E	095
1985	GB	1987	09	24.90455	00	01	05.62	-02	11	45.6		095
1985	SM3	1988	08	08.97917	22	54	09.12	-03	57	34.6	16.5V	095
1985	SM3	1988	08	09.00000	22	54	08.18	-03	57	30.2	16.5V	095
1985	SM3	1988	08	09.96215	22	53	31.76	-03	57	33.4	15.5V	095
1985	SM3	1988	08	09.98264	22	53	30.75	-03	57	34.0	15.5V	095
1985	SM3	1988	09	14.82986	22	20	14.62	-05	23	02.9	15.0V	095
1985	SM3	1988	09	14.85069	22	20	13.45	-05	23	06.6	15.0V	095
1985	SM3	1988	09	16.80903	22	18	32.56	-05	29	15.0	16.0V	095
1985	SM3	1988	09	16.82986	22	18	31.48	-05	29	19.2	16.0V	095
1985	UK	1988	08	08.88542	21	21	53.62	-14	01	39.3	15.0V E	095
1985	UK	1988	08	08.90625	21	21	52.16	-14	01	43.9	15.0V E	095
1985	UK	1988	08	09.87153	21	20	53.52	-14	04	22.8	15.0V	095
1985	UK	1988	08	09.89236	21	20	52.39	-14	04	27.9	15.0V	095
1987	QH7	1987	09	04.00266	00	18	06.66	-00	36	16.2		095
1987	QH7	1987	09	24.90455	00	05	01.64	-00	10	04.5		095
1987	QH7	1987	09	27.88465	00	02	43.91	-00	07	16.7		095
1987	QN7	1987	09	04.00266	00	20	48.43	-02	40	00.0	15.8V	095
1987	QN7	1987	09	24.90455	00	10	36.14	-06	04	49.1	15.5V	095
1987	QN7	1987	09	27.88465	00	08	44.18	-06	33	40.5	15.5V	095
1987	QS12*	1987	08	31.99616	00	16	46.38	+01	01	26.5	16.0V E	095
1987	QT12*	1987	08	31.99616	00	32	25.50	+03	27	52.4	16.0V E	095
1987	RF	1987	09	02.90625	22	57	59.18	-02	42	44.7		095
1987	RG	1987	08	31.99616	00	49	08.38	+00	17	44.4	E	095
1987	RL5 *	1987	09	04.00266	00	04	34.58	-03	03	40.6	16.0V E	095
1987	RM5 *	1987	09	04.00266	00	05	47.41	-03	28	00.2	16.0V E	095
1987	RN5 *	1987	09	04.00266	00	09	26.85	+00	25	13.6	16.0V E	095
1987	RN5	1987	09	24.90455	23	53	33.82	-01	04	40.5	16.2V E	095
1987	RO5 *	1987	09	04.00266	00	10	55.92	-01	57	49.7	15.5V	095

1987	RO5		1987	09	24.90455	23	59	44.22	-04	09	36.6	15.5V	095
1987	RO5		1987	09	27.88465	23	57	59.21	-04	28	11.0	15.5V	095
1987	RP5	*	1987	09	04.00266	00	11	13.49	+02	40	33.0	N	095
1987	RQ5	*	1987	09	04.00266	00	12	35.73	-02	00	37.6	16.2V	095
1987	RR5	*	1987	09	04.00266	00	14	52.80	-05	24	25.7	N	095
1987	RR5		1987	09	24.90455	23	57	59.16	-07	16	48.4	E	095
1987	RS5	*	1987	09	04.00266	00	16	37.74	+02	12	47.1		095
1987	RT5	*	1987	09	04.00266	00	18	22.20	-03	36	56.2	16.2V	095
1987	RT5		1987	09	24.90455	00	01	20.84	-06	10	37.6	16.0V	095
1987	RT5		1987	09	27.88465	23	58	43.49	-06	29	36.4	16.0V	095
1987	RU5	*	1987	09	04.00266	00	18	26.22	-01	09	28.4	15.8V	095
1987	RU5		1987	09	24.90455	23	58	47.62	-01	17	15.8	15.8V	095
1987	RU5		1987	09	27.88465	23	55	50.97	-01	18	41.5	16.0V E	095
1987	RV5	*	1987	09	04.00266	00	18	54.39	+00	47	03.6	16.4V	095
1987	RW5	*	1987	09	04.00266	00	20	20.02	-04	02	03.3	16.4V M	095
1987	RX5	*	1987	09	04.00266	00	22	32.04	+01	47	31.7	16.0V	095
1987	RY5	*	1987	09	04.00266	00	23	38.69	+00	18	22.6	16.2V	095
1987	RY5		1987	09	24.90455	00	07	31.70	-02	28	57.6	16.2V M	095
1987	RY5		1987	09	27.88465	00	05	05.65	-02	52	16.7	16.2V	095
1987	RZ5	*	1987	09	04.00266	00	23	50.95	+01	45	21.1		095
1987	RA6	*	1987	09	04.00266	00	25	56.78	+02	23	48.4	16.2V	095
1987	RB6	*	1987	09	04.00266	00	27	29.68	-02	53	02.7	16.0V	095
1987	RB6		1987	09	24.90455	00	07	53.17	-04	48	13.8	16.0V	095
1987	RB6		1987	09	27.88465	00	04	50.80	-05	03	12.8	16.0V	095
1987	RC6	*	1987	09	04.00266	00	28	35.78	+02	27	03.8	16.2V	095
1987	RD6	*	1987	09	04.00266	00	28	37.40	-05	41	11.4	16.2V E	095
1987	RE6	*	1987	09	04.00266	00	29	42.76	-00	21	06.0	16.2V M	095
1987	RE6		1987	09	24.90455	00	12	34.26	-00	53	37.6	16.5V	095
1987	RE6		1987	09	27.88465	00	09	47.21	-00	58	52.6	16.5V	095
1987	RF6	*	1987	09	04.00266	00	31	26.87	-02	09	19.3	16.2V	095
1987	RF6		1987	09	24.90455	00	17	01.55	-03	53	55.1	16.2V	095
1987	RF6		1987	09	27.88465	00	14	41.44	-04	08	52.8	16.2V	095
1987	RG6	*	1987	09	04.00266	00	31	38.80	-01	52	38.4	16.2V	095
1987	RG6		1987	09	24.90455	00	17	09.08	-03	46	33.5	16.2V	095
1987	RG6		1987	09	27.88465	00	14	49.33	-04	02	40.8	16.2V	095
1987	RH6	*	1987	09	04.00266	00	35	26.84	-01	24	55.4	16.4V M	095
1987	RJ6	*	1987	09	04.00266	00	35	59.02	+00	52	38.4	16.2V	095
1987	RK6	*	1987	09	04.00266	00	36	14.78	-04	32	33.9	16.2V	095
1987	RL6	*	1987	09	04.00266	00	36	41.12	+01	59	19.8	16.4V	095
1987	RM6	*	1987	09	04.00266	00	36	51.26	-03	07	50.2	16.0V	095
1987	RM6		1987	09	24.90455	00	20	02.50	-03	45	04.0	16.0V	095
1987	RM6		1987	09	27.88465	00	17	16.97	-03	49	36.9	16.0V	095
1987	RN6	*	1987	09	04.00266	00	41	40.05	-05	03	09.0	16.2V E	095
1987	RN6		1987	09	24.90455	00	27	45.35	-06	46	14.2	16.2V E	095
1987	RN6		1987	09	27.88465	00	25	26.01	-06	59	54.6	16.5V E	095
1987	RO6	*	1987	09	04.00266	00	43	04.12	+02	06	09.9	16.0V E	095
1987	RO6		1987	09	24.90455	00	30	14.50	+00	05	37.4	16.2V E	095
1987	SJ		1987	09	03.04861	00	51	50.29	+08	46	44.6		095
1987	SJ		1987	09	17.96529	00	47	05.85	+07	09	29.0		095
1987	SJ		1987	09	23.95528	00	43	41.77	+06	17	26.8		095
1987	SJ		1987	10	23.82188	00	26	39.58	+01	59	11.9		095
1987	SK		1987	09	03.04861	00	55	53.70	+05	50	27.2		095
1987	SK		1987	10	23.82188	00	16	26.66	+02	42	28.4		095
1987	SO		1987	09	02.97917	00	02	24.46	+11	12	38.2		095
1987	SO		1987	09	17.88890	23	50	34.09	+10	51	16.0		095
1987	SO		1987	09	26.89957	23	42	52.72	+10	10	23.7		095
1987	SB1		1987	09	04.00266	00	43	04.50	+01	08	08.2	E	095
1987	SB1		1987	09	24.90455	00	31	28.13	-03	04	11.9	E	095
1987	SB1		1987	09	27.88465	00	29	23.70	-03	40	56.7	E	095

1987	SC1	1987	08	31.99616	00	45	21.09	-01	15	10.8	M	095
1987	SC1	1987	09	27.88465	00	32	37.76	-04	45	50.0	E	095
1987	SG1	1987	09	24.90455	23	57	35.08	-02	01	55.1		095
1987	SG1	1987	09	27.88465	23	55	31.16	-02	41	23.1	E	095
1987	SJ1	1987	09	04.00266	00	11	32.32	+03	06	58.4	E	095
1987	SJ1	1987	09	24.90455	23	57	47.31	+01	09	30.4	E	095
1987	SJ1	1987	09	27.88465	23	55	35.38	+00	50	07.2	E	095
1987	SK1	1987	09	04.00266	00	20	08.90	-01	46	27.0		095
1987	SK1	1987	09	24.90455	00	00	59.96	-02	27	14.0		095
1987	SK1	1987	09	27.88465	23	57	53.82	-02	33	10.4		095
1987	SL1	1987	09	04.00266	00	18	53.28	+01	38	31.5		095
1987	SL1	1987	09	24.90455	00	01	50.72	+00	22	38.0		095
1987	SL1	1987	09	27.88465	23	59	04.22	+00	09	48.9		095
1987	SP1	1987	09	04.00266	00	29	03.19	+03	31	09.5	16.0V N	095
1987	SG2	1987	09	04.00266	00	38	52.72	+01	48	07.4	16.2V	095
1987	SG2	1987	09	24.90455	00	25	24.52	-00	57	00.2	16.0V	095
1987	SG2	1987	09	27.88465	00	23	01.83	-01	22	53.0	16.0V	095
1987	SH2	1987	09	24.90455	00	27	17.08	-00	45	23.0	E	095
1987	SH2	1987	09	27.88465	00	24	55.20	-01	19	08.3		095
1987	SJ2	1987	09	27.88465	00	30	04.62	-00	46	02.6	E	095
1987	SZ2	1987	09	24.90455	00	19	24.01	-04	46	36.9	16.0V	095
1987	SZ2	1987	09	27.88465	00	16	13.50	-04	49	28.5	16.0V	095
1987	SA3	1987	09	27.88465	00	21	55.52	-06	40	43.2	16.0V	095
1987	SB3	1987	09	04.00266	00	43	27.28	-04	01	50.2	E	095
1987	SB3	1987	09	24.90455	00	26	19.26	-04	25	51.2		095
1987	SB3	1987	09	27.88465	00	23	17.92	-04	27	52.8		095
1987	SC3	1987	09	24.90455	00	30	04.94	-06	04	20.0	E	095
1987	SC3	1987	09	27.88465	00	27	56.09	-06	20	57.2	E	095
1987	SD3	1987	09	24.90455	00	30	40.80	-04	00	05.9	E	095
1987	SE3	1987	09	24.90455	00	32	16.52	-05	11	13.6	E	095
1987	SE3	1987	09	27.88465	00	29	41.80	-05	28	39.2	E	095
1987	SZ3	1987	09	24.97946	01	33	00.55	-04	04	30.3	E	095
1987	SZ3	1987	10	22.87821	01	14	48.56	-06	47	23.0	E	095
1987	SA4	1987	09	04.00266	00	17	03.67	+00	12	26.8		095
1987	SA4	1987	09	24.90455	00	09	40.34	-02	00	34.4		095
1987	SA4	1987	09	27.88465	00	08	08.65	-02	21	51.4		095
1987	SB6	1987	09	27.88465	23	59	38.40	+01	29	01.1	16.0V E	095
1987	SC6	1987	08	31.99616	00	18	52.86	+01	36	29.8		095
1987	SC6	1987	09	04.00266	00	17	14.96	+01	24	22.5		095
1987	SC6	1987	09	24.90455	00	03	06.43	-00	17	22.8		095
1987	SC6	1987	09	27.88465	00	00	56.45	-00	32	40.5		095
1987	SE6	1987	09	24.90455	00	09	28.63	+00	52	57.6	16.2V E	095
1987	SE6	1987	09	27.88465	00	07	15.80	+00	39	05.1	16.2V E	095
1987	SF6	1987	09	04.00266	00	21	33.52	+02	17	45.4	M	095
1987	SF6	1987	09	24.90455	00	10	31.94	-00	59	07.4		095
1987	SF6	1987	09	27.88465	00	08	35.81	-01	29	02.4		095
1987	SG6	1987	09	27.88465	00	23	00.41	+01	17	23.7	16.0V E	095
1987	SO9	1987	09	27.88465	00	22	50.82	-00	44	36.2		095
1987	SN11	1987	09	24.90455	00	09	00.06	+00	04	40.2		095
1987	SN11	1987	09	27.88465	00	06	48.09	-00	11	30.1		095
1987	SP11	1987	09	04.00266	00	20	34.06	-00	44	01.8	M	095
1987	SP11	1987	09	24.90455	00	06	25.87	-03	12	04.3		095
1987	SQ11	1987	09	24.90455	00	07	41.60	-01	09	29.4	16.4V	095
1987	SQ11	1987	09	27.88465	00	04	58.57	-01	17	01.2	16.2V	095
1987	ST11	1987	09	24.97946	01	02	23.38	-00	32	09.4		095
1987	SA13	1987	09	24.90455	23	56	28.23	-02	12	51.4	E	095
1987	SD13	1987	09	04.00266	00	20	05.63	-01	40	54.4	16.0V	095
1987	SD13	1987	09	24.90455	00	04	15.52	-03	23	17.8	16.0V	095
1987	SD13	1987	09	27.88465	00	01	36.72	-03	38	11.1	16.0V	095

1987	SG13	1987	09	04.00266	00	21	56.14	-02	19	34.0			095
1987	SG13	1987	09	24.90455	00	02	47.12	-03	28	23.9			095
1987	SG13	1987	09	27.88465	23	59	41.24	-03	37	57.9			095
1987	SO27*	1987	09	24.90455	23	52	39.14	-00	52	55.5	16.0V	E	095
1987	SP27*	1987	09	24.90455	23	53	39.25	-02	24	50.2	16.2V	E	095
1987	SQ27*	1987	09	24.90455	23	53	53.14	-02	18	28.4	16.2V	E	095
1987	SR27*	1987	09	24.90455	23	54	37.66	-03	28	22.5	16.0V	E	095
1987	SS27*	1987	09	24.90455	23	56	35.86	-03	18	26.6	16.2V	E	095
1987	ST27*	1987	09	24.90455	23	57	02.38	-00	20	37.1	16.2V	E	095
1987	SU27*	1987	09	24.90455	23	57	13.74	-04	26	45.6	16.2V	E	095
1987	SV27*	1987	09	24.90455	23	57	27.33	-00	58	53.2	16.2V	E	095
1987	SW27*	1987	09	24.90455	23	57	43.32	-00	32	11.6	16.2V		095
1987	SX27*	1987	09	24.90455	23	57	48.80	-07	38	05.3	16.2V	N	095
1987	SY27*	1987	09	24.90455	23	59	25.47	-03	36	36.8	16.0V		095
1987	SY27	1987	09	27.88465	23	57	15.58	-04	07	27.5	16.0V	E	095
1987	SZ27*	1987	09	24.90455	00	00	07.93	-04	31	00.2	16.5V		095
1987	SZ27	1987	09	27.88465	23	57	54.89	-04	54	48.8	16.2V		095
1987	SA28*	1987	09	24.90455	00	02	40.99	-05	01	19.8	16.2V		095
1987	SB28*	1987	09	24.90455	00	03	59.81	-00	04	55.4	16.2V		095
1987	SC28*	1987	09	24.90455	00	06	29.59	-06	20	18.6	16.4V		095
1987	SD28*	1987	09	24.90455	00	07	55.00	-02	42	35.3	16.5V	M	095
1987	SE28*	1987	09	24.90455	00	09	08.36	-08	11	12.3	16.5V	E	095
1987	SF28*	1987	09	24.90455	00	09	16.12	+00	08	20.9	16.4V		095
1987	SG28*	1987	09	24.90455	00	09	21.62	-04	34	12.4	16.2V		095
1987	SG28	1987	09	27.88465	00	07	04.05	-04	55	22.3	16.0V		095
1987	SH28*	1987	09	24.90455	00	09	49.13	+01	15	26.2	16.2V	N	095
1987	SJ28*	1987	09	24.90455	00	10	07.07	-02	09	04.1			095
1987	SK28*	1987	09	24.90455	00	10	37.73	-04	38	13.3	16.4V		095
1987	SK28	1987	09	27.88465	00	07	07.00	-04	41	23.8	16.5V		095
1987	SL28*	1987	09	24.90455	00	13	51.14	-00	06	59.2	16.2V		095
1987	SL28	1987	09	27.88465	00	10	15.87	-00	12	42.0	16.0V		095
1987	SM28*	1987	09	24.90455	00	14	09.63	-07	57	32.0	16.0V	E	095
1987	SM28	1987	09	27.88465	00	11	20.74	-08	14	08.6	16.2V	E	095
1987	SN28*	1987	09	24.90455	00	14	18.69	-00	23	29.8	16.2V		095
1987	SO28*	1987	09	24.90455	00	16	02.46	+00	01	42.0	16.0V		095
1987	SO28	1987	09	27.88465	00	12	50.31	-00	02	02.7	16.2V		095
1987	SP28*	1987	09	24.90455	00	16	19.81	-02	52	13.5	16.2V		095
1987	SQ28*	1987	09	24.90455	00	16	38.88	-00	25	49.4	16.0V		095
1987	SQ28	1987	09	27.88465	00	14	20.65	-00	45	52.9	15.8V		095
1987	SR28*	1987	09	24.90455	00	16	39.60	+01	22	30.0	16.0V	E	095
1987	SR28	1987	09	27.88465	00	14	28.02	+01	06	24.0	16.0V	E	095
1987	SS28	1987	09	04.00266	00	34	17.52	-00	59	09.8	16.0V		095
1987	SS28*	1987	09	24.90455	00	16	51.76	-01	44	51.8	16.0V		095
1987	SS28	1987	09	27.88465	00	13	53.96	-01	51	52.5	15.8V		095
1987	ST28*	1987	09	24.90455	00	16	55.03	-08	21	08.8	16.0V	E	095
1987	SU28*	1987	09	24.90455	00	17	02.70	-01	09	48.6	16.0V		095
1987	SV28*	1987	09	24.90455	00	17	19.42	-06	43	52.8	16.0V		095
1987	SV28	1987	09	27.88465	00	14	40.34	-06	55	30.6	16.2V		095
1987	SW28*	1987	09	24.90455	00	17	46.94	-01	48	10.5	16.0V		095
1987	SW28	1987	09	27.88465	00	15	27.85	-02	07	36.9	16.2V		095
1987	SX28*	1987	09	24.90455	00	18	23.84	-02	35	28.6	16.2V		095
1987	SX28	1987	09	27.88465	00	16	00.98	-02	49	45.1	16.2V		095
1987	SY28*	1987	09	24.90455	00	18	53.72	-00	45	14.8	16.2V		095
1987	SY28	1987	09	27.88465	00	16	35.22	-01	07	43.3	16.0V		095
1987	SZ28	1987	09	04.00266	00	33	57.71	-00	43	48.0	16.2V	M	095
1987	SZ28*	1987	09	24.90455	00	19	35.67	-02	25	59.8	16.2V		095
1987	SZ28	1987	09	27.88465	00	17	01.30	-02	40	51.7	16.5V		095
1987	SA29*	1987	09	24.90455	00	20	11.58	-08	04	08.6	16.2V	E	095
1987	SA29	1987	09	27.88465	00	18	04.00	-08	19	45.2	16.2V	E	095

1987	SB29*	1987	09	24.90455	00	22	13.92	-01	32	00.2		16.4V	095
1987	SB29	1987	09	27.88465	00	19	02.59	-01	57	47.4		16.5V	095
1987	SC29*	1987	09	24.90455	00	22	53.56	+00	45	27.4		16.2V E	095
1987	SC29	1987	09	27.88465	00	20	13.18	+00	25	54.3		16.2V E	095
1987	SD29*	1987	09	24.90455	00	25	31.28	-01	31	25.7		16.2V	095
1987	SD29	1987	09	27.88465	00	22	45.87	-01	29	47.8		16.5V	095
1987	SE29*	1987	09	24.90455	00	25	52.23	-01	40	13.8		16.2V	095
1987	SF29*	1987	09	24.90455	00	26	34.80	+01	21	53.8		16.2V E	095
1987	SF29	1987	09	27.88465	00	24	54.69	+00	46	05.1		16.2V E	095
1987	SG29*	1987	09	24.90455	00	28	33.05	-01	30	55.0		16.5V N	095
1987	SH29*	1987	09	24.97946	00	56	37.53	-03	09	44.5		16.2V E	095
1987	SJ29*	1987	09	24.97946	00	57	07.10	-07	12	24.8		16.0V E	095
1987	SK29*	1987	09	24.97946	01	03	56.04	+00	47	10.2		16.5V E	095
1987	SL29*	1987	09	24.97946	01	04	24.29	-03	38	47.8		15.8V	095
1987	SM29*	1987	09	24.97946	01	04	54.45	-03	54	15.0		16.2V	095
1987	SN29*	1987	09	24.97946	01	15	40.28	-03	18	20.8		16.2V	095
1987	SO29*	1987	09	24.97946	01	16	18.50	-00	18	46.3		16.5V	095
1987	SP29*	1987	09	24.97946	01	19	38.53	-02	58	22.1		16.2V	095
1987	SQ29*	1987	09	24.97946	01	23	09.51	-04	49	22.4		16.0V	095
1987	SR29*	1987	09	24.97946	01	24	58.66	-01	09	00.4		16.0V	095
1987	SS29*	1987	09	24.97946	01	28	30.85	-01	45	11.2		16.2V	095
1987	ST29*	1987	09	24.97946	01	29	44.62	-05	07	21.1		16.2V E	095
1987	SU29*	1987	09	24.97946	01	31	10.68	-04	00	20.8		16.2V E	095
1987	SV29*	1987	09	27.88465	23	54	35.37	-03	58	37.8		16.2V E	095
1987	SW29*	1987	09	27.88465	23	58	35.40	-03	01	53.5		16.5V	095
1987	SX29*	1987	09	27.88465	00	05	48.48	+00	57	13.1		16.2V E	095
1987	SY29*	1987	09	27.88465	00	07	55.07	-01	46	21.0		16.2V	095
1987	SZ29*	1987	09	27.88465	00	26	46.82	+00	50	33.0		16.2V E	095
1987	SA30*	1987	09	27.88465	00	30	21.46	-02	45	49.0		16.0V E	095
1987	UD9 *	1987	10	22.80529	23	53	52.06	-08	45	46.5		15.0V	095
1987	UE9 *	1987	10	22.87821	00	50	22.63	-06	28	57.1		16.2V	095
1987	UF9 *	1987	10	22.87821	00	56	12.72	-02	53	54.8		16.0V	095
1987	UG9 *	1987	10	22.87821	01	00	37.54	-05	12	18.5		16.2V	095
1987	UH9 *	1987	10	22.87821	01	02	25.88	-03	47	55.6		16.5V	095
1987	UJ9 *	1987	10	22.87821	01	06	45.37	-05	16	16.4		16.2V	095
1987	UK9 *	1987	10	22.87821	01	08	26.14	-05	47	50.6		16.2V M	095
1987	UL9 *	1987	10	28.00252	03	13	37.42	+21	03	05.0		15.5V E	095
1987	UM9 *	1987	10	28.00252	03	22	08.70	+23	59	03.1		16.5V	095
1987	UN9 *	1987	10	28.00252	03	28	53.20	+18	51	13.5		16.2V	095
1987	UO9 *	1987	10	28.00252	03	28	54.24	+15	55	13.0		15.0V E	095
1987	UP9 *	1987	10	28.00252	03	31	19.50	+24	18	36.8		16.0V	095
1987	UQ9 *	1987	10	28.00252	03	31	41.96	+20	05	54.3		16.0V	095
1987	UR9 *	1987	10	28.00252	03	32	16.36	+18	10	05.3		16.2V	095
1987	US9 *	1987	10	28.00252	03	32	32.66	+24	31	01.0		16.5V E	095
1987	UT9 *	1987	10	28.00252	03	38	36.91	+19	01	20.8		16.5V	095
1987	UU9 *	1987	10	28.00252	03	39	18.04	+16	31	15.2		15.5V E	095
1987	UV9 *	1987	10	28.00252	03	50	19.48	+22	43	25.8		15.8V E	095
1987	VA1	1987	10	28.00252	03	21	52.94	+24	23	22.3			095
1987	VB1	1987	10	28.00252	03	22	02.89	+23	44	08.8			095
1987	VC1	1987	10	28.00252	03	23	59.64	+20	55	21.8			095
1988	PG1	1988	08	08.97917	22	31	08.31	-03	46	35.6		16.0V	095
1988	PG1	1988	08	09.00000	22	31	07.20	-03	46	33.8		16.0V	095
1988	PG1	1988	08	09.96215	22	30	19.20	-03	42	29.7		16.0V	095
1988	PG1	1988	08	09.98264	22	30	17.79	-03	42	19.5		16.0V	095
1988	PH1	1988	08	08.97917	22	32	21.12	-03	23	41.4		14.0V	095
1988	PH1	1988	08	09.00000	22	32	20.04	-03	23	34.7		14.0V	095
1988	PH1	1988	08	09.96215	22	31	29.35	-03	18	22.3		14.0V	095
1988	PH1	1988	08	09.98264	22	31	28.35	-03	18	19.3		14.0V	095
1988	PM1	1988	08	08.97917	22	54	16.88	-05	19	19.0		16.0V	095

1988	PM1		1988	08	09.00000	22	54	16.07	-05	19	22.3	16.0V	095
1988	PM1		1988	08	09.96215	22	53	55.77	-05	23	22.7	15.5V	095
1988	PM1		1988	08	09.98264	22	53	54.93	-05	23	22.2	15.5V	095
1988	PM1		1988	09	14.82986	22	31	32.40	-09	08	12.3	15.5V	095
1988	PM1		1988	09	14.85069	22	31	31.76	-09	08	21.2	15.5V	095
1988	PM1		1988	09	16.80903	22	30	27.93	-09	19	39.0	15.5V	095
1988	PM1		1988	09	16.82986	22	30	27.00	-09	19	47.0	15.5V	095
1988	PR1		1988	08	08.97917	22	56	24.80	-02	37	23.4	15.5V	095
1988	PR1		1988	08	09.00000	22	56	24.00	-02	37	35.4	15.0V	095
1988	PR1		1988	08	09.96215	22	55	54.26	-02	44	29.3	15.5V	095
1988	PR1		1988	08	09.98264	22	55	53.37	-02	44	47.1	15.0V	095
1988	PR1		1988	09	14.82986	22	31	45.36	-08	03	21.0	15.5V	095
1988	PR1		1988	09	14.85069	22	31	44.38	-08	03	29.4	15.5V	095
1988	PR1		1988	09	16.80903	22	30	32.01	-08	20	20.4	15.5V	095
1988	PR1		1988	09	16.82986	22	30	31.15	-08	20	34.1	15.5V	095
1988	PX1		1988	09	15.87281	23	20	32.16	-07	10	19.1	16.5V	095
1988	PX1		1988	09	15.88670	23	20	31.59	-07	10	26.4	16.5V	095
1988	PB2		1988	09	17.86455	23	43	36.37	+01	11	39.1	16.0V	095
1988	PR3		1988	08	09.96215	22	33	38.66	-05	14	45.2	16.0V	095
1988	PR3		1988	08	09.98264	22	33	37.70	-05	14	41.4	16.0V	095
1988	PL4	*	1988	08	08.88542	21	23	32.84	-16	06	10.4	15.0V E	095
1988	PL4		1988	08	08.90625	21	23	37.52	-16	06	09.0	15.0V E	095
1988	PL4		1988	08	09.87153	21	22	50.38	-16	03	24.3	15.0V	095
1988	PL4		1988	08	09.89236	21	22	49.04	-16	03	23.3	15.0V	095
1988	PM4	*	1988	08	08.88542	21	26	55.78	-11	22	39.6	16.0V	095
1988	PM4		1988	08	08.90625	21	26	54.59	-11	22	45.8	16.0V	095
1988	PN4	*	1988	08	08.88542	21	31	09.16	-13	00	37.9	16.0V	095
1988	PN4		1988	08	08.90625	21	31	08.28	-13	00	51.7	16.0V	095
1988	PO4	*	1988	08	08.88542	21	37	47.04	-15	42	57.7	16.0V	095
1988	PO4		1988	08	08.90625	21	37	45.76	-15	43	01.1	16.0V	095
1988	PP4	*	1988	08	08.88542	21	46	32.91	-14	39	13.8	16.0V	095
1988	PP4		1988	08	08.90625	21	46	32.26	-14	39	28.6	16.0V	095
1988	PQ4	*	1988	08	08.88542	21	46	48.25	-14	22	12.1	16.5V	095
1988	PQ4		1988	08	08.90625	21	46	47.47	-14	22	16.5	16.5V	095
1988	PR4	*	1988	08	08.88542	21	48	02.45	-14	29	59.4	16.0V	095
1988	PR4		1988	08	08.90625	21	48	01.51	-14	30	05.1	16.0V	095
1988	PS4	*	1988	08	08.97917	22	37	28.49	-03	12	11.1	16.0V	095
1988	PS4		1988	08	09.00000	22	37	27.61	-03	12	16.8	16.0V	095
1988	PS4		1988	08	09.96215	22	36	57.81	-03	17	36.4	15.5V	095
1988	PS4		1988	08	09.98264	22	36	57.07	-03	17	41.1	15.5V	095
1988	PT4	*	1988	08	08.97917	22	39	37.20	-09	57	36.5	15.0V E	095
1988	PT4		1988	08	09.00000	22	39	36.12	-09	57	37.1	15.0V E	095
1988	PT4		1988	08	09.96215	22	38	52.04	-09	59	13.5	15.5V	095
1988	PT4		1988	08	09.98264	22	38	50.89	-09	59	14.5	15.5V	095
1988	PT4		1988	09	14.82986	22	06	39.85	-11	10	39.0	15.5V	095
1988	PT4		1988	09	14.85069	22	06	39.38	-11	10	37.7	15.5V	095
1988	PT4		1988	09	16.80903	22	05	23.68	-11	12	00.7	16.0V	095
1988	PT4		1988	09	16.82986	22	05	22.90	-11	12	04.9	16.0V	095
1988	PU4	*	1988	08	08.97917	22	50	57.46	-08	46	48.8	15.2V	095
1988	PU4		1988	08	09.00000	22	50	56.64	-08	46	53.7	15.2V	095
1988	PU4		1988	08	09.96215	22	50	24.20	-08	51	28.2	15.5V	095
1988	PU4		1988	08	09.98264	22	50	23.36	-08	51	34.1	15.5V	095
1988	PU4		1988	09	14.82986	22	24	37.61	-12	01	49.6	15.5V	095
1988	PU4		1988	09	14.85069	22	24	36.70	-12	01	54.1	15.5V	095
1988	PU4		1988	09	16.80903	22	23	18.53	-12	10	44.1	15.5V	095
1988	PU4		1988	09	16.82986	22	23	17.63	-12	10	49.3	15.5V	095
1988	PV4	*	1988	08	09.87153	21	11	56.39	-13	50	30.3	15.5V E	095
1988	PV4		1988	08	09.89236	21	11	55.64	-13	50	38.2	15.5V E	095
1988	PW4	*	1988	08	09.87153	21	12	41.90	-17	19	15.2	15.5V E	095

1988	PW4		1988	08	09.89236	21	12	40.97	-17	19	20.9		095
1988	PX4	*	1988	08	09.87153	21	33	52.37	-17	42	54.7		095
1988	PX4		1988	08	09.89236	21	33	52.10	-17	43	01.4		095
1988	PY4	*	1988	08	09.96215	22	36	12.69	-07	51	07.2		095
1988	PY4		1988	08	09.98264	22	36	12.26	-07	51	08.8		095
1988	PZ4	*	1988	08	09.96215	22	45	46.34	-07	17	15.3		095
1988	PZ4		1988	08	09.98264	22	45	45.59	-07	17	20.8		095
1988	PA5	*	1988	08	09.96215	22	52	30.28	-11	01	49.3		095
1988	PA5		1988	08	09.98264	22	52	29.44	-11	01	54.1		095
1988	PB5	*	1988	08	09.96215	22	53	40.16	-08	03	56.5		095
1988	PB5		1988	08	09.98264	22	53	40.49	-08	03	52.3		095
1988	PC5	*	1988	08	09.96215	22	54	30.09	-02	58	12.4		095
1988	PC5		1988	08	09.98264	22	54	29.54	-02	58	13.6		095
1988	QA		1988	08	08.88542	21	51	26.82	-11	55	19.2		095
1988	QA		1988	08	08.90625	21	51	25.76	-11	55	24.0		095
1988	QV		1988	08	08.88542	21	56	44.23	-09	11	02.2		095
1988	QV		1988	08	08.90625	21	56	43.22	-09	11	08.5		095
1988	RA		1988	09	16.97569	01	04	52.72	+12	18	49.9		095
1988	RA		1988	09	16.99306	01	04	51.27	+12	19	14.3		095
1988	RK		1988	09	17.86455	23	29	33.34	-02	03	12.8		095
1988	RP		1988	09	17.86455	23	26	16.10	+01	17	07.6		095
1988	RU		1988	09	17.86455	23	13	43.75	+03	11	37.6		095
1988	RZ11		1988	09	15.87281	22	57	35.24	-10	13	08.8		095
1988	RZ11		1988	09	15.88670	22	57	34.75	-10	13	12.9		095
1988	RM13	*	1988	09	14.82986	22	11	48.77	-08	06	14.7		095
1988	RM13		1988	09	14.85069	22	11	47.93	-08	06	28.4		095
1988	RN13	*	1988	09	14.82986	22	27	22.65	-08	09	47.4		095
1988	RN13		1988	09	14.85069	22	27	22.56	-08	09	46.2		095
1988	RO13	*	1988	09	14.92708	00	50	26.62	+21	35	25.9		095
1988	RO13		1988	09	14.94792	00	50	25.67	+21	35	26.8		095
1988	RO13		1988	09	16.97569	00	48	44.88	+21	44	56.8		095
1988	RO13		1988	09	16.99306	00	48	43.93	+21	45	02.9		095
1988	RP13	*	1988	09	14.92708	00	52	14.13	+20	24	18.8		095
1988	RP13		1988	09	14.94792	00	52	13.46	+20	24	19.9		095
1988	RP13		1988	09	16.97569	00	50	52.70	+20	23	19.6		095
1988	RP13		1988	09	16.99306	00	50	52.09	+20	23	17.4		095
1988	RQ13	*	1988	09	14.92708	00	56	59.98	+15	31	07.3		095
1988	RQ13		1988	09	14.94792	00	56	59.26	+15	31	03.4		095
1988	RQ13		1988	09	16.97569	00	55	33.88	+15	30	37.2		095
1988	RQ13		1988	09	16.99306	00	55	33.09	+15	30	37.2		095
1988	RR13	*	1988	09	15.87281	22	57	16.55	-09	38	59.0		095
1988	RR13		1988	09	15.88670	22	57	16.42	-09	38	45.7		095
1988	RS13	*	1988	09	15.87281	23	13	16.75	-04	55	07.0		095
1988	RT13	*	1988	09	15.87281	23	15	41.24	-11	44	50.5		095
1988	RT13		1988	09	15.88670	23	15	40.57	-11	44	53.5		095
1988	RU13	*	1988	09	15.87281	23	19	09.18	-09	45	42.8	M	095
1988	RU13		1988	09	15.88670	23	19	08.79	-09	45	43.2	M	095
1988	RV13	*	1988	09	15.87281	23	19	18.19	-06	59	29.0		095
1988	RV13		1988	09	15.88670	23	19	17.81	-06	59	23.1		095
1988	RW13	*	1988	09	15.87281	23	21	21.17	-10	05	50.1		095
1988	RW13		1988	09	15.88670	23	21	20.22	-10	05	47.4		095
1988	RX13	*	1988	09	15.87281	23	32	27.01	-09	23	07.5	M	095
1988	RX13		1988	09	15.88670	23	32	26.69	-09	23	12.9	M	095
1988	RY13	*	1988	09	15.87281	23	33	14.60	-10	06	12.7	M	095
1988	RY13		1988	09	15.88670	23	33	13.90	-10	06	08.1	M	095
1988	RZ13	*	1988	09	15.88670	23	14	26.08	-05	34	23.5		095
1988	RA14	*	1988	09	15.97662	01	45	55.97	+19	53	12.7		095
1988	RA14		1988	09	15.99745	01	45	55.74	+19	53	14.7		095
1988	RB14	*	1988	09	15.97662	01	53	29.44	+17	08	35.9		095

1988	RB14		1988	09	15.99745	01	53	29.19	+17	08	30.6		16.5V 095
1988	RC14	*	1988	09	15.97662	01	59	39.46	+23	03	47.1		16.0V 095
1988	RC14		1988	09	15.99745	01	59	38.97	+23	03	47.5		16.0V 095
1988	RD14	*	1988	09	15.97662	02	01	57.50	+25	22	24.4		16.5V E 095
1988	RD14		1988	09	15.99745	02	01	57.28	+25	22	22.8		16.5V E 095
1988	RE14	*	1988	09	15.99745	01	43	21.85	+16	51	34.3		16.5V E 095
1988	RF14	*	1988	09	15.99745	02	01	23.30	+16	59	18.0		16.5V 095
1988	SA		1988	09	15.87281	23	24	21.41	-07	56	48.4		15.5V 095
1988	SA		1988	09	15.88670	23	24	20.67	-07	56	51.3		15.5V 095
1988	SC		1988	09	15.87281	23	27	33.63	-07	28	25.6		16.5V 095
1988	SC		1988	09	15.88670	23	27	33.47	-07	28	24.3		16.5V 095
1988	SD		1988	09	15.87281	23	27	59.88	-07	40	04.4		15.5V 095
1988	SD		1988	09	15.88670	23	27	59.17	-07	40	06.5		15.5V 095
1988	SM3	*	1988	09	16.80903	22	11	04.92	-07	19	27.8		16.0V 095
1988	SM3		1988	09	16.82986	22	11	04.42	-07	19	48.2		16.0V 095
1988	SN3	*	1988	09	16.89444	23	52	49.50	-08	28	53.1		15.5V E 095
1988	SN3		1988	09	16.91146	23	52	48.80	-08	29	01.4		15.5V E 095
1988	SO3	*	1988	09	16.89444	23	54	45.36	-07	51	02.2		15.5V E 095
1988	SO3		1988	09	16.91146	23	54	44.41	-07	51	09.1		15.5V E 095
1988	SP3	*	1988	09	16.89444	23	55	56.78	-04	06	17.6		16.0V 095
1988	SP3		1988	09	16.91146	23	55	55.88	-04	06	31.1		16.0V 095
1988	SQ3	*	1988	09	16.89444	23	58	32.49	-10	27	47.0		16.0V 095
1988	SQ3		1988	09	16.91146	23	58	31.74	-10	27	55.7		16.0V 095
1988	SR3	*	1988	09	16.89444	23	59	12.93	-05	16	57.1		16.0V 095
1988	SR3		1988	09	16.91146	23	59	12.12	-05	17	02.8		16.0V 095
1988	SS3	*	1988	09	16.89444	00	06	13.35	-08	38	21.8		16.5V 095
1988	SS3		1988	09	16.91146	00	06	12.60	-08	38	26.0		16.5V 095
1988	ST3	*	1988	09	16.89444	00	10	04.58	-08	34	20.8		16.5V 095
1988	ST3		1988	09	16.91146	00	10	03.85	-08	34	19.8		16.5V 095
1988	SU3	*	1988	09	16.89444	00	13	00.96	-06	43	04.8		16.5V 095
1988	SU3		1988	09	16.91146	00	13	00.09	-06	43	08.6		16.5V 095
1988	SV3	*	1988	09	16.89444	00	13	18.56	-11	19	25.3		15.0V 095
1988	SV3		1988	09	16.91146	00	13	17.61	-11	19	28.0		15.0V 095
1988	SW3	*	1988	09	16.89444	00	13	40.45	-03	06	10.2		16.5V E 095
1988	SW3		1988	09	16.91146	00	13	39.95	-03	06	13.8		16.5V E 095
1988	SX3	*	1988	09	16.89444	00	14	56.42	-09	39	48.7		16.0V 095
1988	SX3		1988	09	16.91146	00	14	55.60	-09	39	51.6		16.0V 095
1988	SY3	*	1988	09	16.89444	00	15	24.50	-04	10	05.1		16.5V 095
1988	SY3		1988	09	16.91146	00	15	23.84	-04	10	10.2		16.5V 095
1988	SZ3	*	1988	09	16.89444	00	19	30.70	-04	04	29.8		16.5V 095
1988	SZ3		1988	09	16.91146	00	19	30.08	-04	04	33.2		16.5V 095
1988	SA4	*	1988	09	16.89444	00	20	18.92	-06	08	40.3		15.0V 095
1988	SA4		1988	09	16.91146	00	20	17.99	-06	08	42.2		15.0V 095
1988	SB4	*	1988	09	16.89444	00	20	40.85	-09	09	22.6		15.0V 095
1988	SB4		1988	09	16.91146	00	20	39.96	-09	09	29.5		15.0V 095
1988	SC4	*	1988	09	16.89444	00	30	46.39	-07	33	13.2		16.5V E 095
1988	SC4		1988	09	16.91146	00	30	45.69	-07	33	18.6		16.5V E 095
1988	SD4	*	1988	09	16.97569	00	43	21.12	+20	09	29.4		15.5V 095
1988	SD4		1988	09	16.99306	00	43	20.28	+20	09	26.3		15.5V 095
1988	SE4	*	1988	09	16.97569	00	50	32.91	+12	25	31.0		15.8V E 095
1988	SE4		1988	09	16.99306	00	50	31.99	+12	25	28.0		15.8V E 095
1988	SE4		1988	09	17.94509	00	49	47.90	+12	22	46.0		16.5V E 095
1988	SF4	*	1988	09	16.97569	00	53	15.50	+13	35	57.3		16.0V 095
1988	SF4		1988	09	16.99306	00	53	14.70	+13	35	54.9		16.0V 095
1988	SG4	*	1988	09	16.97569	00	56	21.24	+18	57	15.5		16.0V 095
1988	SG4		1988	09	16.99306	00	56	20.56	+18	57	15.6		16.0V 095
1988	SH4	*	1988	09	16.97569	00	56	38.35	+12	48	08.4		E 095
1988	SH4		1988	09	16.99306	00	56	37.49	+12	48	06.1		E 095
1988	SJ4	*	1988	09	16.97569	00	59	37.15	+20	58	02.8		16.5V 095

1988	SJ4		1988	09	16.99306	00	59	36.54	+20	58	01.7	16.5V	095
1988	SK4	*	1988	09	16.97569	01	03	53.23	+18	22	20.6	16.5V	095
1988	SK4		1988	09	16.99306	01	03	52.57	+18	22	15.5	16.5V	095
1988	SL4	*	1988	09	16.97569	01	08	29.63	+21	32	13.4	15.0V	095
1988	SL4		1988	09	16.99306	01	08	29.20	+21	32	12.5	15.0V E	095
1988	SM4	*	1988	09	16.97569	01	12	49.90	+17	01	39.7	16.0V	095
1988	SM4		1988	09	16.99306	01	12	48.78	+17	01	36.2	16.0V	095
1988	SN4	*	1988	09	17.86455	23	20	24.98	-01	23	18.8	16.4V	095
1988	SO4	*	1988	09	17.86455	23	20	45.39	-00	40	32.9	15.5V	095
1988	SP4	*	1988	09	17.86455	23	26	57.20	-03	52	09.5	M	095
1988	SQ4	*	1988	09	17.86455	23	36	30.96	+01	12	40.6	16.0V	095
1988	SR4	*	1988	09	17.86455	23	36	52.38	+02	34	44.3	16.2V M	095
1988	SS4	*	1988	09	17.94509	00	26	17.95	+11	29	54.2	15.5V	095
1988	ST4	*	1988	09	17.94509	00	26	44.34	+09	10	42.2	16.5V	095
1988	SU4	*	1988	09	17.94509	00	28	38.42	+11	43	02.8	16.2V	095
1988	SV4	*	1988	09	17.94509	00	35	28.20	+10	29	32.0	15.5V	095
1988	SW4	*	1988	09	17.94509	00	35	52.09	+08	30	29.0		095
1988	SX4	*	1988	09	17.94509	00	43	25.02	+10	40	43.4	15.8V	095
1988	TG1		1988	09	15.97662	01	43	18.79	+23	12	48.9	E	095
1988	TG1		1988	09	15.99745	01	43	18.22	+23	12	49.3	E	095
1988	TC2		1988	09	17.94509	00	40	05.92	+08	10	06.0		095
1988	UQ		1988	09	15.97662	01	42	48.74	+19	51	32.9	16.0V E	095
1988	UQ		1988	09	15.99745	01	42	48.59	+19	51	36.5	16.0V E	095
1989	AQ		1987	09	20.88978	23	29	51.04	-06	32	32.7	16.2V	095
1989	EO1		1987	09	02.97917	00	30	39.50	+08	21	59.8		095
1989	VP	*	1989	11	04.83361	01	24	44.96	+21	02	23.0	14.0V	095
1989	VP		1989	11	06.87362	01	23	32.47	+20	12	14.7	14.0V	095
1989	VP		1989	11	06.89028	01	23	31.87	+20	11	46.1		095
2780	P-L		1988	09	15.87281	22	56	32.25	-09	45	28.8	16.0V E	095
2780	P-L		1988	09	15.88670	22	56	31.76	-09	45	35.9	16.0V E	095
4581	P-L		1987	10	28.00252	03	51	53.10	+19	29	36.9	E	095
9522	P-L		1988	09	15.87281	23	11	09.08	-08	25	41.3		095
9522	P-L		1988	09	15.88670	23	11	08.47	-08	25	44.2		095
18			1988	08	08.97917	23	02	24.46	-06	03	29.8	V	095
18			1988	08	09.00000	23	02	24.23	-06	03	42.6		095
18			1988	08	09.96215	23	02	12.33	-06	13	49.9	V	095
18			1988	08	09.98264	23	02	12.18	-06	14	04.9	V	095
39			1987	09	04.00266	00	03	48.26	-04	24	35.4	E	095
45			1988	09	15.87281	23	08	52.04	-09	18	49.2		095
45			1988	09	15.88670	23	08	51.47	-09	18	56.1		095
63			1988	08	08.88542	21	56	16.26	-15	48	24.9	V	095
63			1988	08	08.90625	21	56	15.25	-15	48	29.7	V	095
76			1987	08	29.00850	00	07	01.21	+02	18	04.1	E	095
76			1987	09	04.00266	00	03	49.70	+01	56	07.0	E	095
76			1987	10	22.80529	23	34	01.38	-01	41	51.8	E	095
91			1987	10	28.00252	03	17	09.04	+20	16	01.2		095
97			1988	08	08.97917	23	01	03.58	-04	12	57.5		095
97			1988	08	09.00000	23	01	02.91	-04	13	06.1		095
97			1988	08	09.96215	23	00	37.02	-04	20	12.5	V	095
97			1988	08	09.98264	23	00	36.40	-04	20	22.7	V	095
97			1988	09	14.82986	22	35	24.27	-10	08	23.2	E	095
97			1988	09	14.85069	22	35	23.18	-10	08	33.9	E	095
97			1988	09	16.80903	22	33	56.82	-10	28	11.6		095
97			1988	09	16.82986	22	33	55.75	-10	28	24.2		095
118			1988	09	16.89444	00	19	07.25	-09	11	53.4		095
118			1988	09	16.91146	00	19	06.23	-09	11	57.4		095
134			1988	09	17.94509	00	32	49.64	+10	28	11.3		095
150			1988	08	08.97917	22	55	22.80	-03	56	55.7		095
150			1988	08	09.00000	22	55	22.09	-03	56	59.7		095

150	1988	08	09.96215	22	54	52.46	-04	00	02.0		095
150	1988	08	09.98264	22	54	51.69	-04	00	05.8		095
150	1988	09	14.82986	22	29	59.78	-06	48	49.7		095
150	1988	09	14.85069	22	29	58.96	-06	48	56.3		095
150	1988	09	16.80903	22	28	41.65	-06	58	33.7		095
150	1988	09	16.82986	22	28	40.78	-06	58	40.9		095
161	1987	08	31.99616	00	51	26.93	-01	03	54.4	E	095
161	1987	09	24.90455	00	30	31.44	-01	19	48.2	E	095
161	1987	09	27.88465	00	27	18.24	-01	22	26.6		095
161	1987	10	22.80529	00	03	37.10	-01	16	58.3	E	095
174	1988	08	08.88542	21	41	55.83	-16	36	53.8		095
174	1988	08	08.90625	21	41	54.59	-16	36	54.4		095
174	1988	08	09.87153	21	40	57.77	-16	36	44.3		095
174	1988	08	09.89236	21	40	56.41	-16	36	44.1		095
180	1988	08	08.97917	23	06	06.62	-05	13	21.5		095
180	1988	08	09.00000	23	06	05.78	-05	13	25.4		095
180	1988	08	09.96215	23	05	32.31	-05	16	36.0	E	095
180	1988	08	09.98264	23	05	31.60	-05	16	42.2	E	095
180	1988	09	14.82986	22	38	03.87	-07	55	50.3	E	095
180	1988	09	14.85069	22	38	02.77	-07	55	58.4	E	095
180	1988	09	16.80903	22	36	31.93	-08	04	41.2	E	095
180	1988	09	16.82986	22	36	30.96	-08	04	48.5	E	095
184	1988	08	08.97917	22	35	14.45	-08	56	46.1		095
184	1988	08	09.00000	22	35	13.58	-08	56	51.0		095
184	1988	08	09.96215	22	34	37.05	-09	00	11.3		095
184	1988	08	09.98264	22	34	36.25	-09	00	15.2		095
184	1988	09	14.82986	22	09	30.11	-11	14	25.9		095
184	1988	09	14.85069	22	09	29.38	-11	14	29.8		095
184	1988	09	16.80903	22	08	18.02	-11	20	33.9		095
184	1988	09	16.82986	22	08	17.42	-11	20	38.1		095
195	1988	09	14.82986	22	37	52.19	-13	30	35.8	E	095
195	1988	09	14.85069	22	37	51.07	-13	30	37.5	E	095
195	1988	09	16.80903	22	36	18.82	-13	34	33.7	E	095
195	1988	09	16.82986	22	36	17.82	-13	34	37.0	E	095
200	1988	09	17.86455	23	17	55.65	+01	22	55.8		095
202	1987	09	24.97946	01	20	49.47	-02	46	26.7		095
202	1987	10	22.87821	01	01	20.62	-05	24	27.4		095
251	1988	08	08.88542	21	31	48.67	-10	13	46.6		095
251	1988	08	08.90625	21	31	47.74	-10	13	54.8		095
251	1988	08	09.87153	21	31	06.26	-10	19	44.7		095
251	1988	08	09.89236	21	31	05.28	-10	19	50.4		095
270	1988	09	17.94509	00	42	26.74	+09	33	03.0		095
288	1988	09	16.89444	00	25	55.81	-03	07	52.5	E	095
288	1988	09	16.91146	00	25	55.08	-03	07	57.4	E	095
295	1988	08	09.87153	21	14	15.29	-13	07	40.7		095
295	1988	08	09.89236	21	14	14.21	-13	07	47.7		095
302	1987	08	29.00850	00	30	13.79	+01	47	22.0		095
302	1987	08	31.99616	00	28	41.00	+01	41	45.8		095
302	1987	09	04.00266	00	26	53.48	+01	34	53.8		095
302	1987	09	24.90455	00	09	27.98	+00	20	56.4		095
302	1987	09	27.88465	00	06	36.19	+00	08	34.2		095
302	1987	10	22.80529	23	46	17.25	-01	11	20.7	E	095
303	1988	09	15.97662	01	55	12.92	+17	54	46.9		095
303	1988	09	15.99745	01	55	12.40	+17	54	48.2		095
307	1988	09	16.89444	00	26	36.24	-07	31	00.6		095
307	1988	09	16.91146	00	26	35.44	-07	31	07.2		095
308	1988	08	08.88542	21	37	10.55	-09	20	39.4		095
308	1988	08	08.90625	21	37	09.45	-09	20	46.1		095
308	1988	08	09.87153	21	36	23.12	-09	25	45.9	E	095

308	1988	08	09.89236	21	36	21.93	-09	25	54.5		095
329	1987	09	24.97946	01	28	14.60	+01	49	30.8	E	095
329	1987	10	22.87821	01	07	14.26	-03	27	41.6		095
358	1988	08	08.88542	22	00	52.88	-09	28	54.6	E	095
358	1988	08	08.90625	22	00	52.04	-09	29	00.4	E	095
372	1988	08	08.88542	21	58	05.84	-14	43	37.2		095
372	1988	08	08.90625	21	58	04.69	-14	43	37.7		095
399	1988	09	17.86455	23	39	14.99	+00	59	25.7		095
418	1988	09	17.94509	00	14	30.03	+13	30	18.4	E	095
447	1987	10	28.00252	03	39	19.68	+16	38	56.7	E	095
469	1988	09	17.86455	23	40	57.00	+04	42	30.7	E	095
482	1987	08	29.00850	00	34	31.94	+04	06	19.4	E	095
482	1987	08	31.99616	00	33	18.80	+03	45	18.0	E	095
482	1987	09	04.00266	00	31	56.04	+03	22	58.8	E	095
482	1987	09	24.90455	00	19	12.98	+00	23	31.4	E	095
482	1987	09	27.88465	00	17	10.06	-00	03	29.6		095
482	1987	10	22.80529	00	02	04.98	-03	23	59.2		095
490	1987	08	29.00850	00	09	44.87	+02	15	00.8	E	095
490	1987	09	04.00266	00	06	51.27	+01	37	39.6	E	095
490	1987	09	24.90455	23	53	49.62	-00	57	15.7	E	095
490	1987	09	27.88465	23	51	51.20	-01	20	14.5	E	095
490	1987	10	22.80529	23	38	42.25	-04	03	47.7		095
495	1988	09	17.86455	23	26	25.66	-02	34	42.8		095
510	1988	09	17.94509	00	27	45.66	+08	55	20.3		095
514	1988	08	08.97917	22	27	33.85	-04	14	08.6	E	095
514	1988	08	09.00000	22	27	33.17	-04	14	13.0	E	095
514	1988	08	09.96215	22	26	54.76	-04	16	38.2	E	095
514	1988	08	09.98264	22	26	53.88	-04	16	42.7	E	095
514	1988	09	14.82986	22	00	51.90	-06	28	24.2	E	095
514	1988	09	14.85069	22	00	51.08	-06	28	31.9	E	095
514	1988	09	16.80903	21	59	40.48	-06	35	54.1	E	095
514	1988	09	16.82986	21	59	39.77	-06	35	58.9	E	095
519	1987	10	28.00252	03	26	03.16	+19	11	25.4		095
542	1988	08	08.88542	21	53	50.67	-09	11	12.8		095
542	1988	08	08.90625	21	53	49.82	-09	11	24.2		095
553	1987	09	24.97946	01	26	46.50	-00	28	11.5		095
553	1987	10	22.87821	01	00	10.78	-02	19	06.6		095
558	1987	09	24.97946	01	24	21.63	-01	24	05.1		095
558	1987	10	22.87821	01	04	15.02	-04	19	58.0		095
559	1987	09	24.97946	01	15	24.43	-07	03	49.3	E	095
559	1987	10	22.87821	00	53	09.82	-09	23	41.6	E	095
586	1988	08	08.97917	22	49	30.17	-05	05	05.6		095
586	1988	08	09.00000	22	49	29.40	-05	05	08.8		095
586	1988	08	09.96215	22	48	55.76	-05	08	19.9		095
586	1988	08	09.96264	22	48	54.92	-05	08	24.5		095
586	1988	09	14.82986	22	23	35.20	-07	42	23.9		095
586	1988	09	14.85069	22	23	34.30	-07	42	30.5		095
586	1988	09	16.80903	22	22	16.72	-07	50	50.6		095
586	1988	09	16.82986	22	22	15.88	-07	50	57.1		095
595	1988	09	16.89444	00	27	08.85	-09	17	56.0		095
595	1988	09	16.91146	00	27	07.89	-09	17	56 9		095
607	1988	09	14.92708	01	00	45.72	+22	01	34.9	E	095
607	1988	09	14.94792	01	00	44.88	+22	01	34.9	E	095
607	1988	09	16.97569	00	59	22.55	+21	59	14.8	E	095
607	1988	09	16.99306	00	59	21.83	+21	59	16.4	E	095
611	1988	09	17.86455	23	24	58.53	+02	25	16.1		095
627	1988	08	08.88542	21	32	54.06	-13	58	13.1		095
627	1988	08	08.90625	21	32	53.10	-13	58	21.9		095
627	1988	08	09.87153	21	32	08.63	-14	04	24.3		095

627	1988	08	09.89236	21	32	07.52	-14	04	33.2		095
633	1987	09	24.97946	01	33	31.04	-03	13	44.1	E	095
633	1987	10	22.87821	01	14	22.39	-06	27	24.2	E	095
677	1988	09	17.94509	00	14	23.92	+15	04	20.7	E	095
709	1988	08	08.97917	22	44	29.76	-04	22	32.0		095
709	1988	08	09.00000	22	44	28.59	-04	22	27.0		095
709	1988	08	09.96215	22	43	42.02	-04	19	41.0		095
709	1988	08	09.98264	22	43	40.89	-04	19	38.6		095
723	1988	08	08.97917	22	26	53.81	-07	46	11.2	E	095
723	1988	08	09.00000	22	26	53.06	-07	46	18.1	E	095
723	1988	08	09.96215	22	26	16.47	-07	51	05.5	E	095
723	1988	08	09.98264	22	26	15.77	-07	51	11.5	E	095
723	1988	09	14.82986	22	01	08.93	-11	10	21.6		095
723	1988	09	14.85069	22	01	08.43	-11	10	27.7		095
723	1988	09	16.80903	22	00	00.79	-11	19	59.4	E	095
723	1988	09	16.82986	22	00	00.05	-11	20	05.5		095
727	1988	08	09.87153	21	24	45.29	-17	32	43.4		095
727	1988	08	09.89236	21	24	44.16	-17	32	56.6		095
741	1987	09	24.97946	01	28	26.27	-04	21	04.3		095
741	1987	10	22.87821	01	06	02.56	-06	35	02.2		095
748	1988	09	17.94509	00	41	12.64	+07	41	21.4		095
795	1987	09	24.90455	00	16	57.78	-07	09	53.7	E	095
795	1987	09	27.88465	00	13	58.15	-07	12	05.8	E	095
795	1987	10	22.80529	23	51	39.69	-06	55	16.5		095
806	1987	10	28.00252	03	12	44.16	+18	17	03.8	E	095
829	1987	10	28.06987	04	00	24.43	+32	33	23.8	E	095
851	1987	08	29.00850	00	31	32.94	+01	04	40.6		095
851	1987	08	31.99616	00	29	53.07	+00	49	21.0		095
851	1987	09	04.00266	00	27	59.30	+00	32	33.9		095
851	1987	09	24.90455	00	10	17.30	-01	48	28.3		095
851	1987	09	27.88465	00	07	26.17	-02	09	38.5		095
851	1987	10	22.80529	23	47	05.00	-04	30	10.9		095
903	1988	08	08.97917	23	00	37.01	-05	10	20.5		095
903	1988	08	09.00000	23	00	36.35	-05	10	27.8		095
903	1988	08	09.96215	23	00	09.78	-05	16	08.0	V	095
903	1988	08	09.98264	23	00	09.09	-05	16	16.2		095
903	1988	09	14.82986	22	38	10.64	-09	25	51.5	E	095
903	1988	09	14.85069	22	38	09.78	-09	25	59.2	E	095
903	1988	09	16.80903	22	36	58.58	-09	39	15.5	E	095
903	1988	09	16.82986	22	36	57.77	-09	39	24.7	E	095
920	1987	10	22.80529	23	43	06.19	-00	12	35.5	E	095
933	1987	09	24.90455	00	29	40.78	-03	19	05.9	E	095
933	1987	09	27.88465	00	27	02.08	-03	41	18.8		095
933	1987	10	22.80529	00	06	20.95	-06	12	40.6		095
950	1988	09	17.86455	23	34	24.46	+02	04	16.4		095
961	1987	10	22.80529	23	43	13.25	-08	16	09.9		095
984	1988	09	15.97662	01	41	58.06	+24	30	15.5	E	095
984	1988	09	15.99745	01	41	57.33	+24	30	20.9	E	095
1044	1987	08	31.99616	00	47	44.25	-01	27	21.4	E	095
1044	1987	09	24.90455	00	29	51.11	-03	16	47.8	E	095
1044	1987	09	27.88465	00	27	09.03	-03	30	29.8		095
1044	1987	10	22.80529	00	07	05.50	-04	46	46.6		095
1048	1987	10	28.00252	03	51	38.13	+20	03	56.0	E	095
1076	1988	08	09.96215	23	05	42.04	-06	52	42.3	E	095
1076	1988	08	09.98264	23	05	41.19	-06	52	49.0	E	095
1076	1988	09	14.82986	22	37	07.16	-10	40	21.5	E	095
1076	1988	09	14.85069	22	37	05.93	-10	40	26.1	E	095
1076	1988	09	16.80903	22	35	30.31	-10	52	07.3	E	095
1076	1988	09	16.82986	22	35	29.17	-10	52	15.4	E	095

1079	1988	08	08.97917	23	04	21.71	-05	45	46.8		095
1079	1988	08	09.00000	23	04	21.07	-05	45	49.9		095
1079	1988	09	14.82986	22	37	15.75	-08	16	00.0	E	095
1079	1988	09	14.85069	22	37	14.79	-08	16	07.5	E	095
1079	1988	09	16.80903	22	35	48.48	-08	23	57.5	E	095
1079	1988	09	16.82986	22	35	47.54	-08	24	04.6	E	095
1091	1988	09	15.87281	23	29	02.17	-05	07	11.7		095
1091	1988	09	15.88670	23	29	01.78	-05	07	13.4		095
1109	1988	08	08.97917	22	30	37.53	-03	33	14.3		095
1109	1988	08	09.00000	22	30	36.77	-03	33	18.0		095
1109	1988	08	09.96215	22	29	59.10	-03	35	42.0		095
1109	1988	08	09.98264	22	29	58.18	-03	35	46.4		095
1109	1988	09	14.82986	22	04	44.66	-05	46	07.5		095
1109	1988	09	14.85069	22	04	43.86	-05	46	14.0		095
1109	1988	09	16.80903	22	03	35.79	-05	53	35.1		095
1109	1988	09	16.82986	22	03	34.95	-05	53	40.6		095
1117	1988	08	08.97917	22	57	44.94	-06	57	32.3		095
1117	1988	08	09.00000	22	57	44.32	-06	57	40.5		095
1117	1988	08	09.96215	22	57	17.78	-07	04	40.8		095
1117	1988	08	09.98264	22	57	17.04	-07	04	50.5		095
1117	1988	09	14.82986	22	31	39.60	-12	05	41.9		095
1117	1988	09	14.85069	22	31	38.64	-12	05	48.2		095
1117	1988	09	16.80903	22	30	27.23	-12	18	42.1		095
1117	1988	09	16.82986	22	30	26.41	-12	18	50.5		095
1124	1988	09	16.89444	00	04	32.41	-05	01	53.5		095
1124	1988	09	16.91146	00	04	31.49	-05	01	56.0		095
1145	1987	08	29.00850	00	13	24.12	+02	34	11.2	E	095
1145	1987	09	04.00266	00	08	43.63	+02	23	05.6	E	095
1157	1987	10	28.06987	03	18	18.53	+31	25	06.9	E	095
1159	1988	09	15.97662	02	11	54.71	+25	03	43.4	E	095
1159	1988	09	15.99745	02	11	54.06	+25	03	49.4	E	095
1173	1988	09	14.92708	00	49	22.78	+14	35	28.4		095
1173	1988	09	14.94792	00	49	22.19	+14	35	26.3		095
1173	1988	09	16.97569	00	48	27.30	+14	31	31.1		095
1173	1988	09	16.99306	00	48	26.81	+14	31	29.8		095
1173	1988	09	17.94509	00	48	00.68	+14	29	34.3		095
1184	1987	08	29.00850	00	18	01.30	+01	05	27.4		095
1184	1987	08	31.99616	00	15	52.02	+01	06	11.2	E	095
1184	1987	09	04.00266	00	13	30.68	+01	06	03.8		095
1184	1987	09	24.90455	23	53	53.72	+00	47	44.0	E	095
1185	1987	08	31.99616	00	48	50.10	-05	15	18.4	E	095
1185	1987	09	24.90455	00	30	59.04	-07	32	15.2	E	095
1185	1987	09	27.88465	00	28	02.53	-07	48	00.2	E	095
1185	1987	10	22.80529	00	05	22.75	-08	56	13.2	E	095
1207	1988	09	16.89444	23	52	21.41	-08	22	05.6	E	095
1207	1988	09	16.91146	23	52	20.55	-08	22	10.3	E	095
1218	1988	09	16.89444	00	07	07.97	-04	35	42.2		095
1218	1988	09	16.91146	00	07	06.84	-04	35	49.4		095
1238	1987	10	28.00252	03	22	48.47	+16	30	11.1	E	095
1239	1987	10	28.00252	03	19	51.32	+16	56	27.6	E	095
1240	1988	09	14.92708	00	53	37.83	+18	25	44.5		095
1240	1988	09	14.94792	00	53	36.90	+18	25	46.6		095
1240	1988	09	16.97569	00	52	06.14	+18	29	22.6		095
1240	1988	09	16.99306	00	52	05.37	+18	29	22.1		095
1289	1987	10	28.00252	03	47	27.40	+18	28	33.8		095
1295	1988	09	17.86455	23	38	42.74	-01	31	03.1		095
1336	1987	08	29.00850	00	21	33.82	-02	48	10.4		095
1336	1987	08	31.99616	00	19	58.71	-03	02	16.6		095
1336	1987	09	04.00266	00	18	13.10	-03	17	15.2		095

1336	1987	09	24.90455	00	02	53.26	-05	09	02.5		095
1336	1987	09	27.88465	00	00	32.02	-05	24	04.2		095
1336	1987	10	22.80529	23	44	20.25	-06	49	20.6		095
1338	1988	09	14.82986	22	34	57.62	-05	54	58.4		095
1338	1988	09	14.85069	22	34	56.44	-05	55	02.5		095
1344	1987	10	28.00252	03	34	59.20	+17	09	59.4		095
1354	1987	10	28.00252	03	30	03.22	+22	01	35.0		095
1368	1988	09	16.89444	00	03	28.55	-10	14	22.7		095
1368	1988	09	16.91146	00	03	27.44	-10	14	22.7		095
1376	1988	09	15.87281	23	21	53.47	-05	20	01.4	E	095
1376	1988	09	15.88670	23	21	52.85	-05	20	07.3	E	095
1383	1988	08	08.97917	22	35	42.92	-08	48	28.4		095
1383	1988	08	09.00000	22	35	42.11	-08	48	33.0		095
1383	1988	08	09.96215	22	35	08.00	-08	51	55.5		095
1383	1988	08	09.98264	22	35	07.35	-08	51	59.5		095
1383	1988	09	14.82986	22	09	48.07	-11	17	51.6		095
1383	1988	09	14.85069	22	09	47.38	-11	17	55.6		095
1383	1988	09	16.80903	22	08	38.17	-11	24	21.4		095
1383	1988	09	16.82986	22	08	37.34	-11	24	25.9		095
1412	1988	09	15.87281	23	16	56.47	-13	49	07.7	E	095
1412	1988	09	15.88670	23	16	55.87	-13	49	14.3	E	095
1413	1987	08	31.99616	00	14	18.84	+02	23	12.4	E	095
1413	1987	09	04.00266	00	12	44.18	+02	04	24.8		095
1413	1987	09	24.90455	23	59	15.44	-00	26	25.6		095
1413	1987	09	27.88465	23	57	11.42	-00	49	03.7	E	095
1413	1987	10	22.80529	23	42	41.44	-03	34	36.6		095
1415	1988	09	17.94509	00	31	43.00	+07	01	53.6	E	095
1426	1988	09	15.97662	01	52	27.37	+21	19	00.1		095
1426	1988	09	15.99745	01	52	26.67	+21	19	02.5		095
1438	1988	08	08.97917	23	05	33.52	-02	22	50.9		095
1438	1988	08	09.00000	23	05	32.80	-02	22	56.0		095
1467	1988	08	08.97917	22	27	40.99	-08	00	17.4	E	095
1467	1988	08	09.00000	22	27	40.03	-08	00	15.3	E	095
1467	1988	08	09.96215	22	26	48.99	-07	57	26.8	E	095
1467	1988	08	09.98264	22	26	47.90	-07	57	24.4	E	095
1469	1988	09	17.86455	23	23	10.82	+02	03	10.2		095
1502	1987	10	22.80529	23	39	45.69	-00	12	07.5	E	095
1512	1988	09	15.87281	23	25	22.38	-06	58	02.5		095
1512	1988	09	15.88670	23	25	21.88	-06	58	02.8		095
1526	1988	08	08.88542	21	37	37.38	-17	53	28.0	E	095
1526	1988	08	08.90625	21	37	36.02	-17	53	29.2	E	095
1536	1988	09	17.86455	23	08	19.66	-03	59	39.6	E	095
1537	1988	08	08.97917	22	39	18.96	-01	30	45.4		095
1537	1988	08	09.00000	22	39	18.29	-01	30	49.2		095
1537	1988	08	09.96215	22	38	49.85	-01	32	24.9	E	095
1537	1988	08	09.98264	22	38	49.15	-01	32	28.8	E	095
1537	1988	09	14.82986	22	14	52.82	-04	03	40.8	E	095
1537	1988	09	14.85069	22	14	52.20	-04	03	46.3	E	095
1537	1988	09	16.80903	22	13	43.33	-04	14	14.4	E	095
1537	1988	09	16.82986	22	13	42.55	-04	14	20.0	E	095
1541	1987	08	29.00850	00	28	52.88	+02	31	44.1		095
1541	1987	09	04.00266	00	25	17.50	+02	17	06.8		095
1541	1987	09	24.90455	00	09	02.58	+01	04	01.1	E	095
1541	1987	09	27.88465	00	06	30.62	+00	52	18.8	E	095
1541	1987	10	22.80529	23	48	04.81	-00	30	48.5	E	095
1576	1987	10	28.00252	03	47	36.20	+18	37	06.8		095
1578	1988	09	15.87281	22	57	58.25	-07	48	37.4	E	095
1578	1988	09	15.88670	22	57	57.68	-07	48	38.9	E	095
1590	1987	10	28.00252	03	48	46.04	+19	39	48.4	E	095

1610	1987	10	28.00252	03	32	07.42	+22	30	12.6		095
1617	1988	08	08.88542	21	51	53.17	-09	10	03.2		095
1617	1988	08	08.90625	21	51	52.30	-09	10	12.1		095
1639	1988	09	17.86455	23	26	26.89	+04	18	34.6	E	095
1641	1988	09	14.92708	00	49	00.12	+14	24	52.7		095
1641	1988	09	14.94792	00	48	59.17	+14	24	51.6		095
1641	1988	09	16.97569	00	47	29.58	+14	24	23.2		095
1641	1988	09	16.99306	00	47	28.76	+14	24	23.8		095
1641	1988	09	17.94509	00	46	45.64	+14	23	57.9		095
1661	1988	09	17.94509	00	50	40.23	+10	51	05.6	E	095
1671	1988	09	17.86455	23	31	04.47	-02	34	55.8		095
1679	1987	08	31.99616	00	44	37.35	+03	06	22.7	E	095
1679	1987	09	04.00266	00	43	23.30	+02	42	06.0	E	095
1679	1987	09	24.90455	00	31	29.06	-00	28	09.6	E	095
1679	1987	09	27.88465	00	29	30.74	-00	56	28.8	E	095
1704	1988	09	16.80903	22	30	23.68	-07	38	22.7		095
1704	1988	09	16.82986	22	30	22.71	-07	38	30.3		095
1710	1987	10	28.06987	03	35	29.15	+31	54	00.0		095
1717	1988	08	08.97917	22	53	50.53	-08	54	29.2		095
1717	1988	08	09.00000	22	53	49.52	-08	54	32.5		095
1717	1988	08	09.96215	22	53	03.85	-08	56	37.1		095
1717	1988	08	09.98264	22	53	02.80	-08	56	40.7		095
1717	1988	09	14.82986	22	16	23.51	-10	37	20.1		095
1717	1988	09	14.85069	22	16	22.42	-10	37	24.2		095
1717	1988	09	16.80903	22	14	31.36	-10	41	17.7		095
1717	1988	09	16.82986	22	14	30.25	-10	41	21.9		095
1731	1988	09	15.87281	23	21	50.57	-07	05	11.5		095
1731	1988	09	15.88670	23	21	50.05	-07	05	15.6		095
1733	1988	08	08.88542	22	00	07.90	-09	58	44.9		095
1733	1988	08	08.90625	22	00	06.73	-09	58	53.2		095
1734	1988	09	17.86455	23	37	34.00	-00	17	39.4		095
1735	1987	08	29.00850	00	34	47.65	-01	39	18.6		095
1735	1987	08	31.99616	00	32	55.15	-01	40	01.6		095
1735	1987	09	04.00266	00	30	52.19	-01	41	17.1		095
1735	1987	09	24.90455	00	13	27.63	-01	57	54.2		095
1735	1987	09	27.88465	00	10	46.34	-02	00	18.4		095
1735	1987	10	22.80529	23	51	03.94	-02	01	05.2		095
1736	1987	10	22.87821	00	51	58.83	-01	09	00.6	E	095
1739	1987	10	28.00252	03	17	01.10	+16	03	40.6	E	095
1762	1987	08	29.00850	00	23	50.75	+01	38	37.8		095
1762	1987	08	31.99616	00	22	25.94	+01	26	16.4		095
1762	1987	09	04.00266	00	20	50.18	+01	12	40.9		095
1762	1987	09	24.90455	00	06	21.12	-00	42	23.0		095
1762	1987	09	27.88465	00	04	03.58	-00	59	53.4		095
1762	1987	10	22.80529	23	47	54.69	-03	00	24.4		095
1773	1988	09	16.89444	23	57	00.22	-09	55	51.8		095
1773	1988	09	16.91146	23	56	59.31	-09	55	58.5		095
1774	1987	09	04.00266	00	05	13.90	+00	37	05.0	E	095
1842	1987	08	29.00850	00	15	02.28	-01	24	51.2		095
1842	1987	08	31.99616	00	13	12.04	-01	49	36.3	E	095
1842	1987	09	04.00266	00	11	08.14	-02	15	44.0		095
1842	1987	09	24.90455	23	53	21.56	-05	26	14.8	E	095
1888	1988	09	14.92708	00	43	23.50	+13	07	49.2		095
1888	1988	09	14.94792	00	43	22.72	+13	07	45.4		095
1888	1988	09	16.97569	00	41	54.78	+12	59	14.4		095
1888	1988	09	16.99306	00	41	53.83	+12	59	08.6		095
1888	1988	09	17.94509	00	41	11.38	+12	55	00.2		095
1897	1988	09	15.87281	23	20	18.20	-12	52	13.6		095
1897	1988	09	15.88670	23	20	17.58	-12	52	16.6		095

1907		1988	09	15.87281	23	09	52.76	-06	59	20.3	095
1907		1988	09	15.88670	23	09	52.27	-06	59	21.9	095
1911		1988	09	17.86455	23	35	51.97	-00	23	38.6	095
1930		1988	08	09.87153	21	16	13.58	-16	37	33.4	095
1930		1988	08	09.89236	21	16	12.24	-16	37	34.2	095
1946		1987	10	28.00252	03	09	52.89	+25	19	14.4	E 095
1970		1988	08	08.88542	21	36	25.62	-12	43	06.9	095
1970		1988	08	08.90625	21	36	24.60	-12	43	09.8	095
2032		1987	10	28.00252	03	25	00.70	+19	22	31.4	095
2034		1988	09	16.89444	23	54	15.99	-07	45	06.6	E 095
2034		1988	09	16.91146	23	54	14.84	-07	45	08.9	E 095
2037		1987	10	28.00252	03	14	06.20	+22	38	23.4	E 095
2057		1988	09	15.87281	23	11	50.01	-06	19	06.5	095
2057		1988	09	15.88670	23	11	49.53	-06	19	09.3	095
2080		1987	08	31.99616	00	23	14.11	-01	21	44.3	095
2080		1987	09	04.00266	00	21	07.62	-01	31	54.2	095
2080		1987	09	24.90455	00	01	29.94	-03	00	13.2	095
2080		1987	09	27.88465	23	58	23.32	-03	12	51.4	095
2080		1987	10	22.80529	23	37	28.19	-04	15	52.8	E 095
2110		1988	09	15.87281	23	20	52.97	-05	37	28.8	E 095
2110		1988	09	15.88670	23	20	52.37	-05	37	34.3	E 095
2133		1987	09	24.97946	01	14	15.43	-06	10	48.4	095
2133		1987	10	22.87821	00	50	01.28	-07	11	38.8	095
2138		1987	08	31.99616	00	36	50.30	-05	21	58.1	E 095
2138		1987	09	04.00266	00	35	11.95	-05	40	22.5	E 095
2138		1987	09	24.90455	00	19	54.84	-07	51	33.4	E 095
2138		1987	09	27.88465	00	17	26.67	-08	08	26.0	E 095
2138		1987	10	22.80529	23	59	25.44	-09	38	25.9	E 095
2175		1987	10	28.00252	03	41	55.76	+19	14	16.5	095
2179		1987	08	31.99616	00	51	49.40	+01	30	00.3	E 095
2181		1987	09	27.88465	00	30	09.01	-01	15	21.0	E 095
2207		1988	08	08.97917	22	48	18.58	-07	12	43.1	095
2207		1988	08	09.00000	22	48	18.14	-07	12	48.1	095
2207		1988	08	09.96215	22	47	55.48	-07	15	49.0	095
2207		1988	08	09.96264	22	47	55.01	-07	15	53.0	095
2207		1988	09	16.80903	22	30	46.90	-09	27	53.2	095
2207		1988	09	16.82986	22	30	46.34	-09	27	57.1	095
2276		1988	09	17.86455	23	07	51.06	-02	12	52.2	E 095
2323		1987	08	29.00850	00	18	05.68	+00	35	48.6	095
2323		1987	08	31.99616	00	16	27.65	+00	28	17.6	E 095
2323		1987	09	04.00266	00	14	40.50	+00	19	56.4	095
2323		1987	09	24.90455	23	59	30.90	-00	52	30.8	095
2323		1987	09	27.88465	23	57	10.66	-01	03	35.7	E 095
2323		1987	10	22.80529	23	40	16.25	-02	17	54.6	095
2339		1988	09	15.87281	23	01	46.04	-10	27	11.7	E 095
2339		1988	09	15.88670	23	01	45.39	-10	27	12.0	E 095
2351		1988	09	17.86455	23	27	56.77	-00	45	20.2	095
2382		1987	10	28.06987	03	54	45.19	+32	52	18.0	E 095
2398		1987	09	24.97946	01	19	27.89	+01	25	20.6	E 095
2398		1987	10	22.87821	00	53	45.08	-01	05	36.2	E 095
2399		1988	08	08.97917	22	32	06.54	-09	09	35.1	095
2399		1988	08	09.00000	22	32	05.73	-09	09	53.5	095
2399		1988	08	09.96215	22	31	31.41	-09	17	55.9	095
2399		1988	08	09.98264	22	31	30.72	-09	18	09.5	095
2439		1988	09	15.87281	23	16	01.32	-05	06	09.5	E 095
2439		1988	09	15.88670	23	16	00.74	-05	06	15.4	E 095
2501		1988	09	17.86455	23	36	36.04	-04	19	25.8	E 095
2566		1988	09	16.89444	00	05	34.67	-06	47	13.1	095
2566		1988	09	16.91146	00	05	33.80	-06	47	18.4	095

2580	1987	10	28.00252	03	47	20.94	+16	52	08.9	E 095
2584	1987	10	28.00252	03	41	09.38	+19	31	19.2	095
2599	1988	09	15.87281	23	21	27.64	-05	33	56.3	E 095
2599	1988	09	15.88670	23	21	26.92	-05	33	54.5	E 095
2607	1988	08	09.87153	21	26	38.25	-18	19	12.8	E 095
2607	1988	08	09.89236	21	26	37.06	-18	19	19.2	095
2659	1988	08	08.97917	22	38	59.36	-08	21	57.2	095
2659	1988	08	09.00000	22	38	58.62	-08	22	04.1	095
2659	1988	08	09.96215	22	38	23.68	-08	25	49.3	095
2659	1988	08	09.98264	22	38	22.73	-08	25	53.0	095
2659	1988	09	14.82986	22	13	30.41	-11	00	35.7	095
2659	1988	09	14.85069	22	13	29.59	-11	00	40.6	095
2668	1987	10	28.00252	03	17	19.60	+23	48	07.4	095
2674	1988	09	17.86455	23	27	55.48	-03	09	04.4	M 095
2678	1987	08	29.00850	00	30	24.22	-02	11	16.9	095
2678	1987	08	31.99616	00	28	42.85	-02	23	54.2	095
2678	1987	09	04.00266	00	26	46.92	-02	37	37.5	095
2678	1987	09	24.90455	00	08	26.83	-04	28	06.6	095
2678	1987	09	27.88465	00	05	28.64	-04	43	31.1	095
2690	1988	09	15.87281	23	25	06.31	-14	20	06.3	I 095
2690	1988	09	15.88670	23	25	05.58	-14	20	04.2	E 095
2691	1988	09	14.82986	22	12	27.44	-08	42	12.6	095
2691	1988	09	14.85069	22	12	26.47	-08	42	20.1	095
2691	1988	09	16.80903	22	10	53.39	-08	48	33.0	095
2691	1988	09	16.82986	22	10	52.47	-08	48	38.3	095
2693	1987	09	24.97946	00	58	57.98	-07	05	12.0	E 095
2707	1987	08	29.00850	00	29	16.32	-01	01	21.4	095
2707	1987	08	31.99616	00	27	55.84	-01	12	16.4	095
2707	1987	09	04.00266	00	26	25.20	-01	24	04.6	095
2707	1987	09	24.90455	00	12	36.16	-02	59	15.0	095
2707	1987	09	27.88465	00	10	22.56	-03	13	06.1	095
2707	1987	10	22.80529	23	53	53.94	-04	41	47.8	095
2713	1988	08	08.88542	21	30	04.00	-15	35	27.7	095
2713	1988	08	08.90625	21	30	02.87	-15	35	30.8	095
2713	1988	08	09.87153	21	29	14.05	-15	38	59.5	095
2713	1988	08	09.89236	21	29	12.95	-15	39	04.4	095
2741	1987	08	31.99616	00	43	26.93	-02	51	20.6	095
2741	1987	09	04.00266	00	41	50.90	-03	15	51.4	E 095
2741	1987	09	24.90455	00	26	56.62	-06	13	47.0	095
2741	1987	09	27.88465	00	24	31.58	-06	38	06.8	095
2760	1988	09	17.94509	00	46	30.36	+10	47	56.2	095
2844	1988	08	08.88542	21	58	29.29	-13	57	08.5	095
2844	1988	08	08.90625	21	58	28.17	-13	57	16.4	095
2845	1988	09	15.88670	23	15	01.34	-10	08	51.6	095
2854	1988	09	15.97662	01	51	21.79	+20	49	33.0	095
2854	1988	09	15.99745	01	51	21.38	+20	49	32.9	095
2890	1988	09	14.82986	22	27	21.60	-12	58	52.4	095
2890	1988	09	14.85069	22	27	20.27	-12	58	50.8	095
2890	1988	09	16.80903	22	25	26.56	-12	59	21.3	095
2890	1988	09	16.82986	22	25	25.36	-12	59	22.6	095
2919	1988	08	08.88542	21	54	45.22	-11	56	02.0	095
2919	1988	08	08.90625	21	54	44.28	-11	56	09.0	095
2928	1988	08	09.87153	21	14	43.35	-14	19	46.3	095
2928	1988	08	09.89236	21	14	42.27	-14	19	51.1	095
2931	1988	09	17.86455	23	44	25.65	-03	36	51.8	E 095
2984	1988	09	15.87281	23	17	21.75	-09	51	06.5	095
2984	1988	09	15.88670	23	17	21.36	-09	51	12.0	095
2996	1987	10	28.00252	03	22	35.22	+23	59	22.2	095
3024	1987	09	24.97946	01	11	26.80	+00	50	32.1	E 095

3072	1988	09	15.87281	23	27	59.85	-07	30	50.0		095
3078	1987	10	28.00252	03	21	56.54	+21	09	18.2		095
3119	1987	09	24.90455	00	01	43.84	-07	16	47.8	E	095
3119	1987	09	27.88465	23	59	26.85	-07	33	02.3	E	095
3119	1987	10	22.80529	23	43	11.81	-09	05	19.9	E	095
3161	1988	09	15.87281	23	12	57.25	-06	05	43.2		095
3161	1988	09	15.88670	23	12	56.84	-06	05	44.3		095
3212	1987	09	24.97946	01	23	12.56	-05	00	16.4		095
3274	1987	09	24.90455	00	15	23.31	+00	48	14.0	E	095
3274	1987	09	27.88465	00	13	10.80	+00	34	53.6	E	095
3285	1987	10	28.06987	03	31	17.20	+32	53	30.0		095
3291	1987	09	04.00266	00	20	07.80	+00	46	52.3		095
3291	1987	09	24.90455	00	06	13.24	-00	58	53.4	E	095
3364	1988	09	15.87281	23	13	28.44	-09	22	32.4		095
3364	1988	09	15.88670	23	13	27.96	-09	22	44.9	M	095
3373	1988	09	14.82986	22	05	08.68	-09	57	53.7		095
3373	1988	09	14.85069	22	05	07.91	-09	57	59.7		095
3373	1988	09	16.80903	22	03	40.83	-10	10	18.3		095
3373	1988	09	16.82986	22	03	39.87	-10	10	25.2		095
3409	1987	10	28.00252	03	46	15.88	+19	11	59.8		095
3427	1988	09	17.86455	23	22	58.04	-00	07	14.3		095
3432	1988	09	15.97662	02	07	57.39	+16	54	48.6		095
3432	1988	09	15.99745	02	07	57.20	+16	54	56.6		095
3444	1988	08	08.97917	22	48	49.22	-10	08	34.8	E	095
3444	1988	08	09.00000	22	48	48.18	-10	08	35.8	E	095
3444	1988	08	09.96215	22	48	06.75	-10	10	26.1		095
3444	1988	08	09.96264	22	48	05.86	-10	10	29.0		095
3444	1988	09	14.82986	22	14	01.67	-11	34	05.7		095
3444	1988	09	14.85069	22	14	00.53	-11	34	05.7		095
3444	1988	09	16.80903	22	12	14.79	-11	36	50.6		095
3444	1988	09	16.82986	22	12	13.81	-11	36	53.0		095
3452	1987	09	04.00266	00	07	28.35	-03	34	53.4	E	095
3453	1988	09	17.86455	23	11	11.61	+01	19	29.3	E	095
3559	1988	09	17.94509	00	35	30.82	+10	04	54.0		095
3637	1988	09	14.92708	00	55	52.44	+14	27	13.6		095
3637	1988	09	14.94792	00	55	51.76	+14	27	02.5		095
3637	1988	09	16.97569	00	54	32.96	+14	10	04.0		095
3637	1988	09	16.99306	00	54	32.37	+14	09	55.3		095
3637	1988	09	17.94509	00	53	54.07	+14	01	37.7	E	095
3652	1988	08	08.88542	21	25	53.06	-10	17	47.5		095
3652	1988	08	08.90625	21	25	51.78	-10	17	50.9		095
3652	1988	08	09.87153	21	25	02.56	-10	21	09.3		095
3652	1988	08	09.89236	21	25	01.36	-10	21	14.9		095
3690	1988	09	17.94509	00	39	51.16	+11	42	42.6		095
3704	1988	09	14.92708	00	51	17.11	+13	06	48.0		095
3704	1988	09	14.94792	00	51	16.25	+13	06	40.6		095
3704	1988	09	16.97569	00	49	47.97	+12	56	25.1		095
3704	1988	09	16.99306	00	49	47.09	+12	56	21.2		095
3704	1988	09	17.94509	00	49	04.24	+12	51	18.4		095
3723	1987	08	31.99616	00	21	11.84	-00	15	40.7		095
3723	1987	09	27.88465	23	57	19.85	-02	58	32.1		095
3726	1987	08	31.99616	00	29	40.84	-01	33	57.4		095
3726	1987	09	04.00266	00	28	05.74	-01	48	13.8		095
3726	1987	09	24.90455	00	13	27.32	-03	40	10.6		095
3726	1987	09	27.88465	00	11	06.62	-03	56	00.7		095
3726	1987	10	22.80529	23	54	19.94	-05	31	52.7		095
3728	1987	08	31.99616	00	44	16.10	-02	13	55.1		095
3728	1987	09	04.00266	00	43	18.96	-02	54	28.8	E	095
3729	1987	08	29.00850	00	33	57.91	-01	34	52.3		095

3729	1987	08	31.99616	00	31	49.72	-01	27	15.7			095
3729	1987	09	04.00266	00	29	25.97	-01	20	25.0			095
3729	1987	09	24.90455	00	08	07.72	-00	44	03.0			095
3729	1987	09	27.88465	00	04	50.35	-00	39	23.4			095
3736	1987	09	24.97946	01	32	27.74	-03	52	15.8		E	095
3736	1987	10	22.87821	01	13	04.36	-06	56	09.2			095
3738	1987	09	04.00266	00	33	20.40	+03	34	24.8		E	095
3738	1987	09	27.88465	00	11	03.35	+01	29	19.2		E	095
3739	1987	10	22.87821	01	02	10.90	-02	21	07.3			095
3740	1987	08	29.00850	00	17	24.38	+00	58	34.4			095
3740	1987	09	04.00266	00	14	08.11	+01	04	03.2			095
3740	1987	09	24.90455	23	56	12.88	+00	54	39.4		E	095
3740	1987	09	27.88465	23	53	15.53	+00	51	32.3		E	095
3748	1987	10	28.00252	03	52	55.58	+23	06	14.9		E	095
3769	1987	09	04.00266	00	42	44.64	-02	52	47.7		E	095
3769	1987	09	24.90455	00	25	36.50	-04	38	08.0			095
3769	1987	09	27.88465	00	22	37.64	-04	53	01.0			095
3769	1987	10	22.80529	23	59	55.50	-06	10	58.2			095
3779	1987	10	28.00252	03	50	20.00	+16	23	23.6		E	095
3896	1987	10	28.00252	03	49	25.88	+20	19	16.0		E	095
3910	1988	09	15.87281	23	32	45.24	-05	49	58.5		E	095
3910	1988	09	15.88670	23	32	44.56	-05	50	02.0		E	095
3911	1988	09	14.92708	00	50	02.74	+12	16	08.8	15.5V	E	095
3911	1988	09	14.94792	00	50	02.12	+12	15	58.6	15.5V	E	095
3911	1988	09	16.97569	00	48	52.64	+12	03	17.2	15.5V	E	095
3911	1988	09	16.99306	00	48	52.01	+12	03	08.8	15.5V	E	095
3911	1988	09	17.94509	00	48	18.37	+11	57	00.6			095
3916	1987	09	24.90455	00	07	36.20	-00	33	28.9			095
3916	1987	09	27.88465	00	05	24.25	-00	46	21.7			095
3918	1988	09	15.87281	23	35	49.24	-06	33	59.8		E	095
3918	1988	09	15.88670	23	35	48.53	-06	34	09.9		E	095
3927	1988	09	16.80903	22	24	15.89	-05	56	21.7	16.0V		095
3927	1988	09	16.82986	22	24	14.87	-05	56	30.6	16.0V		095
3929	1988	08	08.97917	22	40	48.14	-07	54	22.5			095
3929	1988	08	09.00000	22	40	47.33	-07	54	31.6			095
3929	1988	08	09.96215	22	40	12.79	-07	59	47.9			095
3929	1988	08	09.98264	22	40	11.96	-07	59	53.8			095
3929	1988	09	14.82986	22	12	08.85	-11	54	49.3			095
3929	1988	09	14.85069	22	12	08.04	-11	54	52.9			095
3930	1987	09	04.00266	00	19	24.90	+00	46	51.0			095
3930	1987	09	24.90455	00	04	39.29	-00	43	55.4			095
3930	1987	09	27.88465	00	02	24.34	-00	57	22.4			095
3940	1988	09	16.97569	00	46	07.76	+12	42	40.3		E	095
3940	1988	09	16.99306	00	46	06.94	+12	42	19.0		E	095
3940	1988	09	17.94509	00	45	25.86	+12	25	07.1			095
3942	1988	09	16.89444	00	00	24.45	-03	37	52.9			095
3942	1988	09	16.91146	00	00	23.23	-03	37	56.3			095
3947	1988	09	14.92708	01	12	37.96	+15	32	06.2			095
3947	1988	09	14.94792	01	12	37.12	+15	32	03.4			095
3947	1988	09	16.97569	01	11	34.09	+15	26	56.2			095
3947	1988	09	16.99306	01	11	33.54	+15	26	53.0			095
3951	1988	09	14.92708	00	56	05.03	+16	43	09.2	15.0V		095
3951	1988	09	14.94792	00	56	04.21	+16	43	06.8	15.0V		095
3951	1988	09	16.97569	00	54	48.66	+16	40	42.3			095
3951	1988	09	16.99306	00	54	47.88	+16	40	40.9			095
3962	1987	09	24.90455	00	18	32.36	-00	13	51.7			095
3962	1987	09	27.88465	00	16	24.12	-00	26	52.6			095
3968	1988	08	08.88542	21	21	36.26	-14	17	07.6		E	095
3968	1988	08	08.90625	21	21	34.96	-14	17	11.8		E	095

3973		1988	08	08.97917	23	02	58.20	-10	07	20.4	095
3973		1988	08	09.00000	23	02	57.57	-10	07	27.0	095
3973		1988	08	09.96215	23	02	31.89	-10	11	25.0	E 095
3973		1988	08	09.98264	23	02	31.05	-10	11	31.3	E 095
3973		1988	09	14.82986	22	36	02.89	-12	56	59.7	E 095
3973		1988	09	14.85069	22	36	01.96	-12	57	04.7	E 095
3973		1988	09	16.80903	22	34	43.08	-13	02	33.3	095
3973		1988	09	16.82986	22	34	42.28	-13	02	38.5	095
3982		1988	09	17.94509	00	22	13.90	+13	19	56.5	095
3992		1987	09	24.97946	01	05	17.27	+00	32	37.2	095
3992		1987	10	22.87821	00	46	25.13	-02	56	54.1	095
4022		1988	09	14.92708	01	04	43.63	+16	32	04.2	095
4022		1988	09	14.94792	01	04	42.78	+16	32	02.1	095
4022		1988	09	16.97569	01	03	16.30	+16	27	48.8	095
4022		1988	09	16.99306	01	03	15.46	+16	27	46.0	095
4033		1987	09	04.00266	00	18	02.53	-05	30	39.4	16.4V E 095
4040		1987	08	29.00850	00	29	13.16	-00	21	51.2	095
4040		1987	08	31.99616	00	27	40.20	-00	32	39.0	095
4040		1987	09	04.00266	00	25	54.88	-00	44	32.0	095
4040		1987	09	27.88465	00	07	20.42	-02	37	03.0	095
4043		1988	09	16.97569	01	06	41.35	+16	42	28.9	095
4043		1988	09	16.99306	01	06	40.47	+16	42	25.0	095
4113		1987	09	24.97946	01	04	11.81	-03	05	13.5	095
4122		1987	10	28.06987	03	55	07.15	+30	45	29.3	E 095
4143		1987	10	28.00252	03	34	04.20	+16	32	58.0	16.2V E 095
4188		1987	08	29.00850	00	27	44.28	-04	05	38.3	095
4188		1987	08	31.99616	00	26	45.86	-04	30	15.7	095
4188		1987	09	04.00266	00	25	31.72	-04	56	22.8	E 095
4188		1987	09	24.90455	00	11	37.81	-08	09	15.8	E 095
4233		1988	09	17.86455	23	25	44.22	-02	05	04.8	095

293 Burlington remote site
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0.20-m f/4.0 astrograph
SAOC

4250		1989	08	26.24618	23	25	46.58	-07	48	41.1	293
4250		1989	08	26.26424	23	25	45.88	-07	48	44.4	293

330 Purple Mountain Observatory
J.-x. Zhang, Purple Mountain Observatory, Nanking, Peoples Republic of China
Observers Y.-l. Ge, J.-h. Lu, T.-w. Lu, Q. Wang, S.-l. Wei, J.-x. Yang

1984	AO1	*	1984	01	02.52324	05	15	45.13	+25	12	42.3	330
1984	AP1	*	1984	01	03.65796	07	55	35.08	+18	10	18.2	330
1984	AP1		1984	01	09.74333	07	49	33.32	+18	54	00.8	330
1984	EJ2	*	1984	03	02.61516	11	36	28.32	+00	04	28.4	330
1984	UR		1984	10	21.63317	01	37	57.07	+04	15	19.7	330
1984	UR		1984	10	25.54216	01	33	54.77	+04	17	33.9	330
1984	UR		1984	10	29.57637	01	29	55.95	+04	21	44.2	330
1984	UW		1984	11	22.63757	03	19	32.85	+26	58	50.6	330
1984	UX		1984	11	22.63757	03	19	16.74	+30	09	49.0	330
1984	UC5	*	1984	10	26.59654	03	04	01.48	+14	29	32.5	330
1984	WN4	*	1984	11	22.68444	04	48	44.06	+23	28	14.3	330
1984	WN4		1984	11	25.65733	04	45	24.07	+23	17	25.8	330
1984	WO4	*	1984	11	29.68645	05	24	33.61	+20	54	44.5	330
7			1984	11	29.68645	05	40	54.76	+24	00	34.3	330
19			1984	03	02.61516	11	28	24.20	+01	34	45.2	330
24			1984	10	22.64566	02	47	50.30	+16	15	02.2	330
24			1984	10	25.63314	02	45	34.17	+16	05	28.6	330
30			1984	03	28.66288	13	21	47.84	-11	58	14.9	330

33	1984	04	22.61811	14	28	41.26	-16	06	10.5	330
37	1984	10	19.53250	01	27	43.32	+10	59	58.3	330
40	1984	12	22.67056	06	37	25.48	+23	20	08.5	330
40	1984	12	28.57362	06	30	31.10	+23	39	08.4	330
48	1984	10	20.60262	02	31	29.08	+09	33	04.3	330
48	1984	11	22.57403	02	08	11.50	+06	47	49.0	330
66	1984	12	24.62192	05	48	09.60	+28	45	05.8	330
73	1984	03	28.66288	13	17	48.76	-08	52	57.5	330
74	1984	01	03.51491	05	10	17.74	+16	48	36.1	330
74	1984	01	09.67597	05	06	27.08	+16	49	58.5	330
76	1984	03	28.66288	13	20	34.24	-08	51	34.9	330
90	1984	11	22.68444	04	29	43.97	+21	35	50.0	330
90	1984	11	25.65733	04	27	09.23	+21	31	40.6	330
108	1984	03	29.57465	10	37	24.30	+09	05	00.7	330
119	1984	04	22.55979	13	18	39.68	-08	01	01.3	330
124	1984	11	29.68645	05	35	12.52	+19	06	51.1	330
125	1984	03	02.61516	11	36	02.84	+02	39	32.0	330
126	1984	01	02.61873	07	26	00.73	+26	44	44.8	330
131	1984	10	21.55817	01	17	41.99	+02	18	22.5	330
138	1984	01	08.64336	09	21	10.62	+20	10	06.8	330
140	1984	01	02.52324	05	08	34.42	+21	13	24.9	330
144	1984	10	24.60953	02	56	32.03	+10	59	40.0	330
144	1984	10	26.67084	02	54	43.66	+10	56	27.7	330
156	1984	12	22.62125	06	44	56.40	+14	29	19.9	330
156	1984	12	24.71741	06	42	55.88	+14	25	11.2	330
159	1984	10	20.50124	00	42	56.77	-03	44	58.7	330
160	1984	01	09.81764	09	52	27.66	+17	56	22.8	330
166	1984	02	26.62538	10	51	43.41	+16	46	05.3	330
174	1984	10	28.58126	01	50	34.55	+28	56	29.6	330
174	1984	11	25.51635	01	29	12.52	+26	34	52.7	330
175	1984	01	09.81764	09	38	23.26	+18	12	36.9	330
180	1984	10	19.53250	01	17	05.40	+09	31	58.5	330
187	1984	11	22.63757	03	23	23.83	+27	40	01.8	330
189	1984	03	29.65938	12	55	59.06	-07	38	24.2	330
191	1984	02	07.65910	10	18	53.65	+07	09	31.0	330
198	1984	11	29.63784	05	22	44.58	+26	52	02.8	330
199	1984	01	02.57185	05	36	36.67	+23	13	54.3	330
199	1984	01	08.52252	05	31	56.14	+23	27	04.4	330
204	1984	10	26.59654	03	16	46.69	+13	54	04.0	330
206	1984	12	28.52536	05	27	07.60	+18	12	21.1	330
213	1984	01	03.51491	04	55	45.92	+16	32	29.0	330
213	1984	01	09.67597	04	51	42.65	+16	41	19.6	330
229	1984	11	22.68444	04	30	24.48	+23	45	03.9	330
229	1984	11	25.65733	04	27	53.89	+23	41	05.9	330
253	1984	10	20.60262	02	39	05.93	+08	12	45.2	330
253	1984	11	22.57403	02	13	41.14	+04	55	30.6	330
256	1984	01	09.72528	08	12	19.58	+02	15	55.8	330
257	1984	02	07.54729	09	41	48.03	+19	22	39.9	330
259	1984	01	02.52324	05	29	33.78	+23	26	16.6	330
259	1984	01	02.57185	05	29	31.61	+23	26	15.4	330
261	1984	02	26.62538	10	57	02.89	+13	14	11.9	330
262	1984	10	22.64566	02	59	26.49	+17	04	25.3	330
262	1984	10	25.63314	02	56	47.19	+17	11	06.2	330
266	1984	01	09.72528	08	23	51.65	+00	24	59.9	330
268	1984	02	07.54729	09	42	35.07	+15	06	46.3	330
276	1984	10	19.60611	02	05	45.77	+12	34	24.7	330
282	1984	10	25.70753	02	43	26.40	-00	21	56.6	330
284	1984	10	22.64566	02	47	52.23	+19	47	30.5	330
284	1984	10	25.63314	02	44	54.96	+19	24	31.1	330

288	1984	10	20.60262	02	42	57.79	+09	25	14.6	330
288	1984	11	22.57403	02	16	19.67	+07	26	08.8	330
291	1984	10	21.63317	01	23	47.69	+06	22	47.0	330
291	1984	10	25.55953	01	19	58.85	+05	57	41.9	330
291	1984	10	29.57637	01	16	15.08	+05	33	25.9	330
292	1984	10	24.60953	02	43	23.35	+13	26	35.3	330
292	1984	10	26.67084	02	41	07.15	+13	29	30.1	330
292	1984	10	30.61384	02	36	41.01	+13	34	45.6	330
297	1984	03	29.54688	10	39	07.31	+05	38	23.1	330
305	1984	04	22.55979	13	18	26.78	-08	47	57.0	330
308	1984	10	21.55817	01	18	55.93	+05	38	13.5	330
308	1984	10	21.63317	01	18	52.38	+05	37	39.8	330
309	1984	10	25.60571	02	53	07.97	+20	53	11.7	330
312	1984	10	19.53250	01	13	02.49	+11	57	38.2	330
321	1984	10	21.55817	01	04	52.97	+05	29	07.4	330
322	1984	12	28.52536	05	21	16.41	+19	51	45.5	330
323	1984	01	03.63921	07	58	19.13	+30	57	27.1	330
324	1984	01	09.81764	09	39	14.20	+19	21	23.9	330
332	1984	02	07.54729	09	57	45.99	+16	36	27.6	330
333	1984	03	28.66288	13	14	44.65	-10	09	26.2	330
335	1984	02	07.65910	10	04	46.46	+11	23	09.5	330
335	1984	02	26.57954	09	47	27.10	+13	27	52.3	330
335	1984	03	02.56308	09	43	04.14	+13	58	49.7	330
344	1984	10	26.59654	03	15	05.90	+15	58	58.6	330
344	1984	11	25.60872	02	41	09.77	+16	25	45.7	330
349	1984	02	26.62538	11	01	13.52	+16	47	27.8	330
351	1984	12	28.52536	05	22	54.90	+20	04	34.1	330
352	1984	01	02.66560	08	25	15.67	+14	40	28.8	330
352	1984	01	08.59544	08	19	17.24	+14	47	50.8	330
363	1984	02	07.61119	10	49	47.51	+16	56	34.5	330
371	1984	10	29.62637	02	07	56.06	+23	57	35.1	330
371	1984	10	30.54509	02	07	06.19	+23	52	27.2	330
373	1984	02	26.62538	11	01	57.45	+15	51	49.3	330
379	1984	03	02.61516	11	43	22.51	+01	48	14.3	330
395	1984	01	02.66560	08	18	09.73	+16	41	06.4	330
395	1984	01	08.56766	08	13	18.31	+16	50	01.4	330
401	1984	12	24.57123	05	36	24.05	+29	47	34.0	330
404	1984	10	25.70753	02	43	33.24	-02	13	38.8	330
405	1984	11	29.68645	05	34	56.75	+22	15	43.2	330
418	1984	10	26.51841	01	58	18.88	+19	26	21.6	330
419	1984	10	19.53250	01	11	24.67	+10	39	26.5	330
422	1984	01	03.63921	07	56	41.03	+29	00	11.3	330
432	1984	10	24.54008	01	51	24.54	-07	19	15.2	330
438	1984	11	22.68444	04	49	18.68	+26	29	03.3	330
447	1984	02	07.61119	10	51	14.37	+14	41	39.0	330
461	1984	01	02.57185	05	44	50.98	+21	19	44.8	330
468	1984	01	02.57185	05	48	07.29	+24	01	16.6	330
476	1984	12	24.62192	05	47	37.59	+28	20	30.4	330
480	1984	10	28.58126	01	51	01.95	+25	49	47.4	330
497	1984	11	29.63784	05	16	52.85	+30	48	36.0	330
504	1984	12	28.62466	07	30	58.51	+22	23	02.6	330
510	1984	10	19.60611	02	11	26.11	+10	52	32.0	330
514	1984	12	24.66984	06	12	08.74	+23	00	34.1	330
530	1984	02	26.59759	11	05	14.73	+12	33	45.9	330
538	1984	12	28.49758	05	18	18.13	+15	14	06.1	330
540	1984	10	24.60953	02	45	32.68	+13	12	21.1	330
540	1984	10	26.67084	02	43	33.26	+12	57	13.3	330
540	1984	10	30.61384	02	39	38.50	+12	27	47.0	330
544	1984	12	24.57123	05	17	57.35	+29	57	25.3	330

552	1984	01	03.68574	08	00	21.49	+15	41	39.8	330
552	1984	01	09.77111	07	55	26.19	+15	43	11.8	330
553	1984	12	24.57123	05	28	53.91	+26	06	39.9	330
557	1984	12	28.62466	07	23	17.16	+22	47	46.6	330
566	1984	01	08.64336	09	09	44.94	+21	22	08.1	330
568	1984	11	22.63757	03	24	29.78	+25	44	06.9	330
604	1984	01	02.61873	07	25	15.59	+28	54	19.3	330
607	1984	12	24.57123	05	15	26.09	+28	25	43.8	330
620	1984	02	07.58340	10	45	11.09	+14	10	01.0	330
623	1984	01	03.63921	07	50	05.09	+29	37	31.2	330
625	1984	01	03.68574	08	09	30.30	+16	18	18.3	330
625	1984	01	09.77111	08	04	08.82	+16	50	30.6	330
629	1984	01	02.52324	05	22	59.48	+23	31	40.4	330
629	1984	01	08.52252	05	18	21.81	+23	49	07.6	330
636	1984	10	25.55953	01	31	22.84	+07	42	08.5	330
636	1984	10	29.57637	01	27	53.48	+07	36	38.3	330
645	1984	03	29.65938	12	55	52.56	-08	32	06.4	330
650	1984	10	19.60611	02	02	28.05	+12	58	13.2	330
658	1984	12	28.57362	06	41	03.81	+25	22	18.6	330
665	1984	01	02.61873	07	09	46.18	+27	51	26.7	330
673	1984	10	25.60571	02	43	16.40	+16	25	07.9	330
677	1984	12	24.66984	06	21	34.11	+23	03	00.0	330
723	1984	12	28.52536	05	34	51.03	+16	02	08.7	330
733	1984	03	29.54688	10	35	07.14	+05	22	35.6	330
735	1984	10	24.60953	02	57	25.14	+14	13	49.5	330
735	1984	10	26.67084	02	54	52.52	+14	30	18.2	330
742	1984	10	20.60262	02	40	46.61	+06	44	01.3	330
742	1984	11	22.57403	02	12	39.93	+06	42	00.8	330
752	1984	10	20.50124	00	51	24.65	-04	21	20.7	330
754	1984	10	24.54008	01	52	34.58	-06	37	03.6	330
755	1984	10	26.59654	03	09	01.39	+14	17	38.7	330
755	1984	11	25.60872	02	46	52.56	+12	31	29.2	330
770	1984	02	07.61119	10	40	23.60	+16	44	52.1	330
787	1984	10	25.70753	02	40	34.31	+01	46	27.3	330
791	1984	02	07.61119	10	32	45.17	+17	19	32.0	330
815	1984	11	29.63784	05	20	57.52	+30	40	37.1	330
824	1984	12	22.62125	06	29	10.75	+14	44	53.6	330
824	1984	12	24.71741	06	27	16.08	+14	48	34.3	330
851	1984	10	26.59654	03	11	45.06	+13	33	05.0	330
856	1984	01	02.66560	08	24	42.76	+15	03	03.5	330
856	1984	01	08.59544	08	20	01.55	+15	54	40.8	330
858	1984	12	24.62192	05	41	45.22	+28	07	31.8	330
861	1984	01	08.64336	09	19	46.38	+18	17	31.9	330
882	1984	10	26.51841	01	49	33.90	+19	10	43.0	330
891	1984	01	03.51491	04	56	49.35	+15	03	12.4	330
891	1984	01	09.67597	04	52	46.07	+15	31	59.1	330
897	1984	12	28.52536	05	19	41.55	+19	46	40.9	330
905	1984	10	22.64566	03	02	57.28	+17	32	51.1	330
905	1984	10	25.63314	03	00	02.50	+17	35	19.1	330
908	1984	10	25.70753	02	49	42.36	-02	04	19.4	330
927	1984	03	29.65938	12	56	09.73	-08	16	01.2	330
929	1984	04	22.61811	14	23	38.60	-16	26	49.2	330
930	1984	01	08.68988	09	46	03.68	+26	08	22.5	330
940	1984	01	02.52324	05	20	13.47	+25	41	37.2	330
942	1984	01	08.68988	09	38	36.47	+27	18	05.8	330
956	1984	10	24.60953	02	49	53.79	+11	22	37.1	330
956	1984	10	26.64307	02	47	54.95	+11	06	00.9	330
956	1984	10	30.61384	02	43	59.03	+10	33	59.9	330
966	1984	12	24.57123	05	19	40.50	+27	48	08.9	330

989	1984	01	03.58957	06	43	21.07	+06	16	44.0	330
991	1984	12	24.62192	05	46	08.26	+24	37	47.7	330
999	1984	01	03.58957	06	42	50.79	+09	13	25.9	330
1002	1984	10	28.58126	02	03	34.15	+27	37	13.0	330
1002	1984	10	29.62637	02	02	29.98	+27	34	43.8	330
1002	1984	10	30.54509	02	01	32.96	+27	32	25.6	330
1002	1984	11	25.51635	01	40	20.42	+25	49	15.4	330
1013	1984	10	19.53250	01	31	53.04	+08	47	34.7	330
1043	1984	02	07.65910	10	05	48.92	+08	41	31.2	330
1043	1984	02	26.55176	09	51	59.48	+10	39	26.8	330
1056	1984	02	07.58340	10	33	35.89	+15	31	35.7	330
1082	1984	01	02.57185	05	43	08.75	+21	11	28.1	330
1084	1984	03	29.65938	13	04	57.80	-06	03	49.2	330
1086	1984	10	29.62637	02	18	02.06	+26	39	18.3	330
1086	1984	10	30.54509	02	17	15.42	+26	35	59.5	330
1088	1984	01	08.68988	09	50	33.05	+25	38	54.0	330
1107	1984	12	28.62466	07	21	16.67	+21	00	10.7	330
1114	1984	01	09.72528	08	07	25.15	+04	31	30.8	330
1129	1984	01	02.66560	08	18	43.67	+13	44	18.2	330
1129	1984	01	08.59544	08	13	55.52	+13	41	14.5	330
1135	1984	03	29.65938	12	48	28.14	-07	58	45.3	330
1185	1984	11	22.68444	04	51	07.41	+21	39	37.6	330
1185	1984	11	25.65733	04	47	53.04	+21	46	35.8	330
1199	1984	10	26.51841	01	57	21.13	+17	19	51.9	330
1222	1984	10	28.55348	01	56	00.90	+28	59	05.9	330
1229	1984	11	29.68645	05	35	48.33	+22	07	16.8	330
1236	1984	10	24.60953	02	49	02.93	+10	39	53.3	330
1236	1984	10	26.67084	02	46	34.31	+10	51	12.6	330
1236	1984	10	30.61384	02	41	43.47	+11	12	57.4	330
1244	1984	12	28.62466	07	15	33.96	+20	40	36.8	330
1268	1984	03	29.65938	12	51	50.90	-07	56	52.3	330
1291	1984	04	22.61811	14	25	59.10	-14	11	23.6	330
1299	1984	10	20.50124	00	47	09.77	-02	26	16.5	330
1305	1984	02	07.54729	09	47	43.43	+16	56	39.6	330
1328	1984	10	26.59654	03	15	27.37	+17	48	48.2	330
1328	1984	11	25.60872	02	54	02.11	+15	23	17.2	330
1346	1984	01	09.72528	08	14	52.01	+02	04	01.9	330
1348	1984	01	08.64336	09	15	38.65	+22	28	29.4	330
1352	1984	10	24.60953	02	37	33.31	+12	06	32.4	330
1352	1984	10	26.67084	02	35	51.51	+11	55	08.8	330
1352	1984	10	30.61384	02	32	32.86	+11	33	23.4	330
1362	1984	01	03.68574	07	57	08.70	+15	00	51.8	330
1362	1984	01	09.77111	07	51	33.53	+16	03	28.4	330
1426	1984	10	29.59859	02	10	04.57	+26	03	22.1	330
1470	1984	12	24.62192	05	49	41.18	+28	01	30.4	330
1482	1984	10	21.55817	01	04	54.66	+03	07	46.2	330
1495	1984	03	29.63159	12	54	06.96	-05	35	25.7	330
1551	1984	10	20.50124	01	00	32.74	-00	42	13.6	330
1567	1984	10	20.60262	02	28	54.28	+06	57	57.5	330
1567	1984	11	22.57403	02	01	56.88	+06	57	03.2	330
1585	1984	02	07.65910	09	59	04.02	+08	02	12.9	330
1585	1984	02	26.57954	09	43	48.20	+12	30	58.0	330
1585	1984	03	02.56308	09	40	13.65	+13	36	39.9	330
1587	1984	11	22.63757	03	03	01.08	+29	36	55.7	330
1623	1984	02	26.55176	09	51	59.90	+15	08	48.6	330
1635	1984	10	19.60611	01	54	06.77	+10	27	49.0	330
1670	1984	11	22.68444	04	30	14.73	+23	56	34.1	330
1670	1984	11	25.65733	04	27	14.55	+24	03	23.6	330

1671	1984	10	21.63317	01	26	52.87	+05	13	25.0	330
1671	1984	10	25.55953	01	23	51.72	+04	44	45.2	330
1671	1984	10	29.57637	01	20	55.35	+04	17	16.7	330
1687	1984	01	08.64336	09	14	21.69	+18	11	49.5	330
1734	1984	12	24.71741	06	29	55.53	+09	59	45.1	330
1736	1984	12	22.62125	06	40	41.13	+14	51	56.0	330
1736	1984	12	24.71741	06	38	24.97	+14	56	49.3	330
1737	1984	02	07.65910	10	13	45.11	+11	09	47.0	330
1737	1984	02	26.55176	09	57	01.68	+11	41	16.2	330
1776	1984	01	03.56144	06	59	56.71	+09	17	58.2	330
1824	1984	12	24.62192	05	43	49.18	+26	16	12.5	330
1833	1984	01	03.56144	06	59	39.26	+10	24	35.1	330
1844	1984	01	03.51491	05	06	37.67	+18	36	51.9	330
1844	1984	01	09.64819	05	02	20.71	+18	55	50.9	330
1854	1984	10	21.63317	01	26	48.55	+06	40	43.1	330
1881	1984	04	22.61811	14	26	31.45	-14	47	47.2	330
1953	1984	10	19.57833	02	08	28.98	+10	04	19.7	330
1972	1984	01	03.63921	07	42	15.66	+28	22	11.8	330
1985	1984	01	03.63921	07	52	45.99	+28	08	46.9	330
1986	1984	10	21.63317	01	27	04.23	+05	48	58.4	330
1986	1984	10	25.55953	01	24	12.16	+05	30	46.5	330
1986	1984	10	29.54859	01	21	25.10	+05	13	32.1	330
2014	1984	04	22.55979	13	21	48.05	-06	34	31.6	330
2026	1984	12	24.62192	05	50	01.78	+26	15	38.8	330
2107	1984	12	24.71741	06	30	11.26	+11	25	23.1	330
2112	1984	01	03.68574	08	11	26.51	+15	16	40.4	330
2112	1984	01	09.74333	08	05	06.93	+15	24	27.5	330
2137	1984	01	03.63921	07	49	45.57	+30	04	40.8	330
2194	1984	10	21.60539	01	22	38.21	+02	24	07.9	330
2196	1984	01	03.58957	06	57	53.22	+08	54	25.3	330
2228	1984	12	28.57362	06	29	59.72	+21	05	24.4	330
2309	1984	01	03.58957	07	02	18.56	+09	03	15.0	330
2323	1984	03	29.57465	10	45	20.73	+10	06	01.8	330
2333	1984	10	19.60611	02	04	31.31	+09	06	34.7	330
2360	1984	11	29.63784	05	27	05.28	+26	55	23.1	330
2376	1984	12	24.66984	06	21	14.79	+26	19	03.7	330
2409	1984	01	09.74333	08	03	46.34	+17	51	50.3	330
2532	1984	11	29.63784	05	18	34.80	+30	44	15.0	330
2659	1984	12	24.66984	06	15	23.44	+21	35	08.2	330
2667	1984	11	25.58094	02	43	47.09	+15	12	07.8	330
2677	1984	10	21.53039	01	09	23.61	+05	33	55.9	330
2757	1984	01	08.52252	05	19	58.58	+24	10	55.5	330
2776	1984	12	24.71741	06	39	38.33	+14	03	41.0	330
3174	1984	11	25.60872	02	49	41.86	+14	56	40.8	330
3204	1984	10	24.60953	02	46	07.40	+12	32	28.7	330
3204	1984	10	26.64307	02	44	38.01	+12	25	50.0	330
3204	1984	10	30.61384	02	41	36.84	+12	12	38.6	330
3958	1988	11	05.49330	01	54	46.48	+16	23	15.5	330
3958	1988	11	05.52628	01	54	44.56	+16	23	11.9	330
3958	1988	11	08.45892	01	52	10.25	+16	18	34.9	330
3958	1988	11	08.49017	01	52	08.69	+16	18	32.4	330
3958	1988	11	10.50127	01	50	28.97	+16	15	25.1	330
3958	1988	11	10.52905	01	50	27.55	+16	15	22.6	330
3958	1988	11	13.57975	01	48	08.01	+16	10	51.4	330
3958	1988	11	15.50405	01	46	48.31	+16	08	11.9	330
3958	1988	11	15.53044	01	46	47.10	+16	08	08.4	330
3958	1988	11	27.46757	01	41	13.10	+15	58	36.1	330
3958	1988	11	27.49535	01	41	12.57	+15	58	36.2	330

364 JCPM Kagoshima Station
M. Takeishi, Odori 4, Hamatonbetsu Esashigun, Hokkaido 098-57, Japan
Observer M. Mukai
Measurer M. Takeishi
0.25-m f/4.2 Wright Schmidt telescope

1980	RZ3		1989	10	23.63815	02	05	07.34	+19	14	01.3		364
1980	RZ3		1989	10	23.65556	02	05	06.21	+19	14	00.1		364
1982	SX2		1989	10	21.54931	02	07	49.11	+18	03	11.5	16	364
1982	SX2		1989	10	21.56667	02	07	47.84	+18	03	09.2		364
1982	SX2		1989	10	23.63819	02	05	31.18	+18	00	42.3		364
1982	SX2		1989	10	23.65556	02	05	29.90	+18	00	41.1		364
1985	QM4		1989	10	21.58542	01	55	33.51	+09	15	57.1	17	364
1985	QM4		1989	10	21.60278	01	55	32.44	+09	15	53.3		364
1985	QM4		1989	10	26.53819	01	50	50.08	+09	02	44.3		364
1985	QM4		1989	10	26.55486	01	50	49.06	+09	02	39.4		364
1985	QM4		1989	10	28.57292	01	48	54.39	+08	57	30.6		364
1985	QM4		1989	10	28.59375	01	48	53.10	+08	57	27.5		364
1989	SX		1989	11	02.56111	01	58	00.63	+14	32	21.0	16	364
1989	SX		1989	11	02.57847	01	57	59.72	+14	32	22.4		364
1989	SX		1989	11	04.59722	01	56	13.03	+14	37	15.0		364
1989	SX		1989	11	04.61528	01	56	12.07	+14	37	17.2		364
1989	UN		1989	11	02.56111	01	59	22.46	+15	18	14.0	16.5	364
1989	UN		1989	11	02.57847	01	59	21.45	+15	18	07.3		364
1989	UN		1989	11	04.59722	01	57	17.03	+15	12	09.1		364
1989	UN		1989	11	04.61528	01	57	15.82	+15	12	05.0		364
1989	US	*	1989	10	21.58542	01	58	03.21	+09	40	12.6	16	364
1989	US		1989	10	21.60278	01	58	02.01	+09	40	09.6		364
1989	US		1989	10	23.53681	01	55	59.79	+09	37	08.5		364
1989	US		1989	10	23.55417	01	55	58.63	+09	37	06.9		364
1989	US		1989	10	26.53819	01	52	50.05	+09	32	33.9		364
1989	US		1989	10	26.55486	01	52	48.98	+09	32	32.3		364
1989	US		1989	10	28.57292	01	50	42.72	+09	29	40.4		364
1989	US		1989	10	28.59375	01	50	41.38	+09	29	37.6		364
1989	US		1989	11	04.52014	01	43	52.41	+09	21	55.8		364
1989	US		1989	11	04.53819	01	43	51.36	+09	21	54.3		364
1989	UR3	*	1989	10	21.62361	02	17	30.71	+09	25	07.7	16.5	364
1989	UR3		1989	10	21.64097	02	17	29.69	+09	25	01.6		364
1989	UR3		1989	10	23.57500	02	15	49.04	+09	13	26.8		364
1989	UR3		1989	10	23.59236	02	15	48.06	+09	13	20.0		364
1989	UT3		1989	11	01.55903	03	09	51.72	+16	46	58.3	17	364
1989	UT3		1989	11	01.57639	03	09	50.71	+16	46	56.9		364
1989	UX3	*	1989	10	21.58542	02	03	52.66	+09	34	03.9	17	364
1989	UX3		1989	10	21.60278	02	03	51.41	+09	33	55.7		364
1989	UX3		1989	10	28.57292	01	56	44.35	+09	11	30.3		364
1989	UX3		1989	10	28.59375	01	56	43.07	+09	11	22.9		364
1989	UX3		1989	11	04.55833	01	49	49.32	+08	51	00.6		364
1989	UX3		1989	11	04.57569	01	49	48.04	+08	50	55.7		364
1989	VQ	*	1989	11	01.51806	01	57	41.05	+09	10	10.6	16.5	364
1989	VQ		1989	11	01.53542	01	57	39.99	+09	10	08.2		364
1989	VQ		1989	11	04.55833	01	55	01.29	+09	03	09.4		364
1989	VQ		1989	11	04.57569	01	55	00.32	+09	03	07.0		364
280			1989	10	21.54931	02	04	37.00	+17	21	50.0		364
280			1989	10	21.56667	02	04	35.94	+17	21	47.3		364
280			1989	10	23.63819	02	02	42.85	+17	17	50.6		364
280			1989	10	23.65556	02	02	41.92	+17	17	27.1		364
298			1989	10	21.54931	02	06	02.90	+17	34	13.0		364
298			1989	10	21.56667	02	06	01.71	+17	34	09.7		364
298			1989	10	23.63819	02	03	43.00	+17	29	11.6		364

298		1989	10	23.65556	02	03	41.77	+17	29	09.0	364
991		1989	11	01.55903	03	06	59.27	+16	32	35.0	364
991		1989	11	01.57639	03	06	58.09	+16	32	30.5	364
1482		1989	10	21.58542	01	58	15.89	+08	53	33.9	364
1482		1989	10	21.60278	01	58	14.95	+08	53	29.3	364
1482		1989	10	26.53819	01	54	05.05	+08	34	29.1	364
1482		1989	10	26.55486	01	54	04.23	+08	34	24.8	364
1482		1989	10	28.57292	01	52	22.54	+08	26	49.9	364
1482		1989	10	28.59375	01	52	21.41	+08	26	43.9	364
2357		1989	10	28.57292	01	50	29.52	+09	32	34.9	17 364
2357		1989	10	28.59375	01	50	28.65	+09	32	29.7	364
2376		1989	10	21.58542	02	04	29.42	+09	26	03.6	364
2376		1989	10	21.60278	02	04	28.48	+09	26	01.8	364
2376		1989	10	26.53819	02	00	33.17	+09	10	27.3	364
2376		1989	10	26.55486	02	00	32.35	+09	10	23.0	364
2376		1989	10	28.57292	01	58	56.00	+09	04	07.7	364
2376		1989	10	28.59375	01	58	55.12	+09	04	02.2	364
2376		1989	11	01.51806	01	55	50.70	+08	52	20.7	364
2376		1989	11	01.53542	01	55	49.89	+08	52	17.2	364
2376		1989	11	04.55833	01	53	31.79	+08	43	44.0	364
2376		1989	11	04.57569	01	53	30.99	+08	43	41.8	364
2914		1989	10	21.62361	02	12	19.63	+08	53	37.4	364
2914		1989	10	21.64097	02	12	18.56	+08	53	31.2	364
3036		1989	10	08.56250	02	17	12.97	+17	57	51.6	364
3036		1989	10	08.57986	02	17	12.17	+17	57	54.5	364
3036		1989	10	21.56667	02	04	34.59	+18	28	24.6	364
3036		1989	10	21.84931	02	04	35.73	+18	28	23.2	364
3036		1989	10	23.63819	02	02	26.20	+18	31	53.4	364
3036		1989	10	23.65556	02	02	25.05	+18	31	54.4	364

372 Geisei
T. Seki, Kamimachi 2-9-35, Kochi, Japan
Observer T. Seki
0.60-m reflector

1978 VE15		1989	10	23.66598	02	48	00.60	+11	57	57.8	17 372
1978 VE15		1989	10	31.70590	02	40	47.02	+11	41	49.2	17 372
1978 VE15		1989	10	31.72049	02	40	46.65	+11	41	48.9	372
1978 VE15		1989	11	02.67743	02	38	55.38	+11	38	01.1	17 372
1978 VE15		1989	11	02.68924	02	38	54.80	+11	38	00.6	372
1989 UX	*	1989	10	23.63959	01	51	31.61	+09	56	06.7	17 372
1989 UX		1989	10	24.67326	01	50	33.96	+10	02	18.2	17 372
1989 UZ	*	1989	10	23.71424	03	12	52.99	+26	26	16.2	18.5 372
1989 UZ		1989	10	26.67882	03	10	38.86	+26	15	20.2	18.5 372
1989 UZ		1989	10	28.79583	03	08	58.60	+26	06	43.9	18 372
1989 UZ		1989	10	28.80903	03	08	58.16	+26	06	41.8	372
1989 UD3	*	1989	10	26.62500	01	46	38.50	+09	49	55.7	17 372
1989 UD3		1989	10	28.72083	01	44	48.34	+09	38	08.7	17 372
1989 UD3		1989	11	02.65417	01	40	42.02	+09	11	49.5	17 372
1989 UJ3	*	1989	10	30.46111	00	46	52.12	+14	55	56.2	18 372
1989 UJ3		1989	10	30.47465	00	46	51.48	+14	55	55.3	372
1989 UJ3		1989	10	31.63889	00	45	52.55	+14	53	27.8	18 372
1989 UJ3		1989	11	02.58437	00	44	19.14	+14	49	25.8	18 372
1989 UK3	*	1989	10	30.46111	00	48	28.95	+14	15	11.6	16.5 372
1989 UK3		1989	10	30.47465	00	48	28.39	+14	15	04.8	372
1989 UK3		1989	10	31.66111	00	47	48.29	+14	06	25.8	17 372
1989 UK3		1989	11	02.60972	00	46	46.18	+13	52	22.9	17 372
1989 UK3		1989	11	17.41493	00	41	27.08	+12	16	22.5	16.5 372
1989 UK3		1989	11	17.52118	00	41	25.76	+12	15	46.1	372

1989	UO3	*	1989	10	28.76701	03	06	51.51	+10	10	52.4	16.5	372
1989	UO3		1989	10	28.77917	03	06	50.97	+10	10	46.9		372
1989	UO3		1989	10	30.76534	03	05	03.21	+10	00	12.7	16.5	372
1989	UO3		1989	11	02.72361	03	02	16.81	+09	44	40.6	17	372
1989	UO3		1989	11	02.73438	03	02	16.05	+09	44	37.7		372

374 Minami-Oda
T. Nomura, 1-8, Yamate 1 Chome, Tarumi-Ku, Kobe 655, Japan
Observer T. Nomura
Measurer K. Kawanishi
0.25-m f/3.4 Schmidt camera
AGK3

1989	SJ		1989	10	23.50038	00	51	47.87	+08	58	28.2		374
1989	SJ		1989	10	23.52122	00	51	47.04	+08	58	18.2		374
1989	SJ		1989	10	23.54135	00	51	46.20	+08	58	14.1		374
1989	SK		1989	10	23.56080	01	44	17.56	+22	00	16.1	16.0	374
1989	SK		1989	10	23.58163	01	44	17.03	+22	00	04.5		374
1989	SL		1989	10	23.56080	01	44	53.20	+18	24	31.1	16.0	374
1989	SL		1989	10	23.58163	01	44	52.13	+18	24	14.1		374
1989	TG1		1989	10	23.56080	01	47	16.11	+20	31	01.6	16.0	374
1989	TG1		1989	10	23.58163	01	47	15.99	+20	30	58.8		374
1989	UV	*	1989	10	23.61913	03	07	05.37	+25	01	33.3	16.0	374
1989	UV		1989	10	23.63997	03	07	04.29	+25	01	34.0		374
1989	UV		1989	10	23.66010	03	07	03.20	+25	01	40.4		374
1989	VG		1989	11	02.70454	03	25	34.79	+20	44	16.8	16.0	374
1989	VG		1989	11	02.72606	03	25	33.69	+20	44	13.6		374
1989	VG		1989	11	02.75141	03	25	32.02	+20	44	10.6		374

385 Nihondaira Observatory, Oohira Station
M. Kizawa, 1458-10, Minami Numagami, Shizuoka 420, Japan
Observers W. Kakei, M. Kizawa, T. Urata
Measurer M. Kizawa
0.3-m f/5.6 reflector
AGK3

1985	TM1		1989	10	26.62014	01	28	51.47	+12	45	57.0	15	385
1985	TM1		1989	10	26.63819	01	28	50.19	+12	46	00.4		385
1989	TD1		1989	10	20.59213	01	37	14.18	+13	03	57.2		385
1989	TD1		1989	10	20.60984	01	37	13.09	+13	03	53.1		385
1989	TD1		1989	10	26.62014	01	31	53.14	+12	32	02.0	16	385
1989	TD1		1989	10	26.63819	01	31	52.14	+12	31	57.1		385
1989	TD1		1989	10	29.53200	01	29	28.81	+12	16	46.2		385
1989	TD1		1989	10	29.57569	01	29	26.80	+12	16	32.3		385
1989	TD1		1989	10	29.58623	01	29	25.58	+12	16	29.8		385
1989	TD1		1989	10	29.59711	01	29	25.71	+12	16	23.8		385
1989	TT1		1989	10	26.62014	01	33	53.75	+12	13	41.2	16.5	385
1989	TT1		1989	10	26.63819	01	33	52.57	+12	13	29.5		385
1989	TT1		1989	10	29.57569	01	31	23.05	+11	49	18.0		385
1989	TT1		1989	10	29.59711	01	31	22.07	+11	49	05.1		385
1989	UF1		1989	10	29.53200	01	27	34.85	+12	37	32.2	16.5	385
1989	UF1		1989	10	29.58623	01	27	31.71	+12	37	11.7		385
1989	UY2		1989	11	04.56632	02	59	13.71	+14	48	45.1	15.5	385
1989	UY2		1989	11	04.59965	02	59	11.55	+14	48	40.5		385
1989	VU	*	1989	11	04.56632	02	58	44.81	+15	37	38.9	16	385
1989	VU		1989	11	04.59965	02	58	42.84	+15	37	38.7		385
1989	VV	*	1989	11	04.56632	03	01	27.00	+15	00	57.9	16.5	385
1989	VV		1989	11	04.59965	03	01	24.94	+15	00	49.6		385
1989	VV		1989	11	19.53160	02	47	03.53	+14	13	33.7		385
1989	VV		1989	11	19.55243	02	47	02.20	+14	13	31.8		385

310		1989	10	29.59711	01	34	14.93	+11	33	45.2	385
3397		1989	10	26.62014	01	32	19.52	+12	35	12.1	385
3397		1989	10	26.63819	01	32	17.83	+12	35	15.7	385
3397		1989	10	29.53200	01	27	49.76	+12	49	20.6	385
3397		1989	10	29.58623	01	27	44.21	+12	49	39.5	385

391 Sendai Observatory, Ayashi Station
M. Koishikawa, Sendai Municipal Observatory, 1-1 Sakuragaoka-koen, Sendai 980, Japan
Observer M. Koishikawa
0.20-m reflector

1989 TJ1		1989	10	29.54722	00	28	14.53	+05	40	53.5	p	391
1989 TJ1		1989	10	29.56806	00	28	13.67	+05	40	49.1		391
1989 TJ1		1989	10	30.53681	00	27	42.05	+05	37	11.0		391
1989 TJ1		1989	10	30.55764	00	27	41.39	+05	37	03.6		391
1989 TJ1		1989	11	02.53750	00	26	12.85	+05	26	35.4		391
1989 TJ1		1989	11	02.55833	00	26	12.20	+05	26	31.3		391
1989 TJ1		1989	11	04.53403	00	25	20.36	+05	20	10.8		391
1989 TJ1		1989	11	04.55486	00	25	19.94	+05	20	07.1		391
1989 UH1		1989	11	02.67014	02	41	17.03	+14	41	27.2	15.5	391
1989 UH1		1989	11	02.69097	02	41	15.86	+14	41	16.7		391
1989 UH1		1989	11	04.57778	02	39	36.21	+14	24	04.4	16.0	391
1989 UH1		1989	11	04.59861	02	39	35.02	+14	23	51.6		391
1989 UH1		1989	11	07.51389	02	37	01.53	+13	57	27.9	16	391
1989 UH1		1989	11	07.53472	02	37	00.27	+13	57	14.2		391
1989 UH1		1989	11	07.63090	02	36	54.87	+13	56	26.8		391
1989 VO	*	1989	11	04.67708	03	45	52.74	+25	33	29.9	16	391
1989 VO		1989	11	04.69792	03	45	51.64	+25	33	28.2		391
1989 VO		1989	11	07.55625	03	43	19.33	+25	27	36.2		391
1989 VO		1989	11	07.58368	03	43	17.87	+25	27	33.4		391
1989 VO		1989	11	21.68611	03	29	45.63	+24	45	42.3		391
713		1989	11	02.67014	02	43	13.23	+14	59	21.0		391
713		1989	11	02.69097	02	43	12.27	+14	59	12.5		391

392 JCPM Sapporo Station
K. Watanabe, 3-8-B203, Ashibetsu Chuo 3 Jo 4 Chome, Shiroishi-Ku, Sapporo 005, Japan
Observer K. Watanabe
0.30-m f/2.7 Schmidt camera

1989 UA1		1989	10	30.56337	01	00	46.11	+11	30	46.8	16.0	392

399 Kushiro
H. Kaneda, 2-15-2H, Kawazoe 8 Jo 2 Chome, Minami-Ku, Sapporo 005, Japan
Observer S. Ueda
Measurer H. Kaneda
0.16-m f/3.8 Wright-Schmidt camera
AGK3, SAOC

1949 QL		1989	11	02.47257	02	12	16.03	+26	08	34.5	15.5	399
1949 QL		1989	11	02.48796	02	12	15.00	+26	08	30.3		399
1949 QL		1989	11	02.50498	02	12	13.77	+26	08	27.0		399
1949 QL		1989	11	03.49306	02	11	09.90	+26	04	56.3	15.5	399
1949 QL		1989	11	03.50764	02	11	08.71	+26	04	52.9		399
1949 QL		1989	11	03.52813	02	11	07.52	+26	04	47.7		399
1955 SG1		1987	09	27.50718	00	27	12.56	+05	53	42.2	16	399
1955 SG1		1987	09	27.52188	00	27	11.81	+05	53	35.2		399
1955 SG1		1987	09	27.53866	00	27	10.78	+05	53	26.9		399
1974 QU1		1987	09	27.56331	01	01	49.82	+07	30	31.9	15.5	399
1974 QU1		1987	09	27.57812	01	01	49.07	+07	30	27.2		399

1974	QU1		1987	09	27.60069	01	01	48.15	+07	30	19.9	399
1988	FL3		1989	09	29.69514	02	30	38.75	-05	02	05.2	16 399
1988	FL3		1989	09	29.71250	02	30	38.19	-05	02	16.5	399
1988	FL3		1989	10	29.69688	02	04	31.10	-08	49	58.4	15.5 399
1988	FL3		1989	11	02.53472	02	01	01.04	-09	01	27.8	15.5 399
1988	FL3		1989	11	02.54896	02	01	00.37	-09	01	30.0	399
1988	FL3		1989	11	02.56933	02	00	59.23	-09	01	31.7	399
1988	XR5	*	1988	12	02.44745	03	11	16.34	+17	03	20.4	16.5 399
1988	XR5		1988	12	02.46216	03	11	15.61	+17	03	22.6	399
1989	EE		1989	03	12.55770	11	08	25.82	+09	29	03.7	16.5 399
1989	EE		1989	03	12.57234	11	08	25.14	+09	29	21.0	399
1989	SR		1989	10	29.47269	00	11	35.93	+11	10	57.1	16.5 399
1989	SR		1989	10	29.49688	00	11	35.14	+11	10	45.2	399
1989	SR		1989	10	29.51701	00	11	34.68	+11	10	35.3	399
1989	SS		1989	10	23.52188	00	15	16.20	+12	04	20.9	16.5 399
1989	SS		1989	10	23.53750	00	15	15.66	+12	04	12.1	399
1989	SS		1989	10	23.55521	00	15	15.08	+12	04	03.0	399
1989	SS		1989	10	29.47269	00	12	17.76	+11	17	07.3	16.5 399
1989	SS		1989	10	29.49688	00	12	17.17	+11	16	57.2	399
1989	SS		1989	10	29.51701	00	12	16.55	+11	16	46.7	399
1989	ST		1989	10	23.52188	00	13	46.57	+11	28	07.8	16.5 399
1989	ST		1989	10	23.53750	00	13	46.06	+11	28	01.3	399
1989	ST		1989	10	23.55521	00	13	45.47	+11	27	56.1	399
1989	ST		1989	10	29.47269	00	11	35.28	+10	52	26.6	16.5 399
1989	ST		1989	10	29.49688	00	11	34.71	+10	52	18.7	399
1989	ST		1989	10	29.51701	00	11	34.47	+10	52	13.3	399
1989	SU		1989	10	29.47269	00	23	30.45	+10	32	47.3	16.5 399
1989	SU		1989	10	29.49688	00	23	29.66	+10	32	41.0	399
1989	SU		1989	10	29.51701	00	23	29.06	+10	32	34.2	399
1989	UA1		1989	10	30.57813	01	00	45.53	+11	30	44.8	399
1989	UG1	*	1989	10	26.63472	02	32	42.71	+17	19	14.2	16 399
1989	UG1		1989	10	26.65174	02	32	41.68	+17	19	14.3	399
1989	UG1		1989	10	29.54097	02	29	32.63	+17	20	24.3	16 399
1989	UG1		1989	10	29.55660	02	29	31.62	+17	20	23.3	399
1989	UG1		1989	10	29.57326	02	29	30.43	+17	20	25.3	399
1989	UH1	*	1989	10	26.67363	02	47	21.22	+15	44	22.1	16 399
1989	UH1		1989	10	26.68889	02	47	20.39	+15	44	13.9	399
1989	UH1		1989	10	26.70521	02	47	19.53	+15	44	03.9	399
1989	UH1		1989	10	29.59861	02	44	51.80	+15	18	20.6	16 399
1989	UH1		1989	10	29.61389	02	44	50.96	+15	18	10.9	399
1989	UH1		1989	10	29.63403	02	44	49.99	+15	18	02.4	399
1989	UJ1	*	1989	10	26.67363	02	49	13.83	+16	54	30.5	16.5 399
1989	UJ1		1989	10	26.68889	02	49	13.09	+16	54	26.8	399
1989	UJ1		1989	10	26.70521	02	49	12.23	+16	54	26.7	399
1989	UJ1		1989	10	29.59861	02	46	43.21	+16	51	12.1	16.5 399
1989	UJ1		1989	10	29.61389	02	46	42.25	+16	51	11.4	399
1989	UJ1		1989	10	29.63403	02	46	41.30	+16	51	10.3	399
1989	UK1	*	1989	10	26.67363	02	52	56.58	+15	51	07.8	16 399
1989	UK1		1989	10	26.68889	02	52	55.89	+15	50	54.7	399
1989	UK1		1989	10	26.70521	02	52	55.22	+15	50	41.3	399
1989	UK1		1989	10	29.59861	02	51	00.15	+15	12	40.1	16 399
1989	UK1		1989	10	29.61389	02	50	59.47	+15	12	28.0	399
1989	UK1		1989	10	29.63403	02	50	58.57	+15	12	11.7	399
1989	UL1	*	1989	10	26.67363	02	56	44.35	+15	44	16.2	16 399
1989	UL1		1989	10	26.68889	02	56	43.46	+15	44	16.9	399
1989	UL1		1989	10	26.70521	02	56	42.50	+15	44	17.0	399
1989	UL1		1989	10	29.59861	02	53	40.71	+15	45	38.8	16.5 399
1989	UL1		1989	10	29.61389	02	53	39.67	+15	45	38.9	399
1989	UL1		1989	10	29.63403	02	53	38.53	+15	45	39.8	399

1989	UM1		1989	10	26.67363	02	58	38.88	+15	09	00.6	16.5	399
1989	UM1		1989	10	26.68889	02	58	37.85	+15	08	58.7		399
1989	UM1		1989	10	26.70521	02	58	36.91	+15	08	55.5		399
1989	UM1		1989	10	29.59861	02	55	42.97	+15	03	54.9	16	399
1989	UM1		1989	10	29.61389	02	55	42.01	+15	03	54.0		399
1989	UM1		1989	10	29.63403	02	55	40.81	+15	03	52.0		399
1989	UN1		1989	10	26.67363	03	00	41.13	+15	56	05.2	16	399
1989	UN1		1989	10	26.68889	03	00	40.56	+15	55	58.5		399
1989	UN1		1989	10	26.70521	03	00	39.89	+15	55	49.9		399
1989	UN1		1989	10	29.59861	02	58	52.46	+15	32	50.7	16	399
1989	UN1		1989	10	29.61389	02	58	51.71	+15	32	43.3		399
1989	UN1		1989	10	29.63403	02	58	51.04	+15	32	33.1		399
1989	UO1		1989	11	20.45069	02	38	03.88	+10	26	55.1	16	399
1989	UO1		1989	11	20.46667	02	38	02.99	+10	26	49.9		399
1989	UO1		1989	11	20.48125	02	38	02.47	+10	26	46.0		399
1989	UB2		1989	11	02.65486	03	26	28.28	+19	59	55.0	16.5	399
1989	UB2		1989	11	02.66979	03	26	27.44	+19	59	52.2		399
1989	UB2		1989	11	02.69902	03	26	25.70	+19	59	48.5		399
1989	UB2		1989	11	03.60694	03	25	36.10	+19	57	34.1	16	399
1989	UB2		1989	11	03.62153	03	25	35.26	+19	57	32.5		399
1989	UB2		1989	11	03.63819	03	25	34.36	+19	57	29.7		399
1989	UW2		1989	11	20.45069	02	37	14.46	+09	37	02.4	16	399
1989	UW2		1989	11	20.46667	02	37	13.88	+09	36	58.4		399
1989	UW2		1989	11	20.48125	02	37	13.31	+09	36	53.3		399
1989	VC	*	1989	11	02.47257	02	07	12.09	+25	11	36.7	16	399
1989	VC		1989	11	02.48796	02	07	10.90	+25	11	33.5		399
1989	VC		1989	11	02.50498	02	07	09.85	+25	11	29.2		399
1989	VC		1989	11	03.49306	02	06	12.82	+25	08	20.8	16	399
1989	VC		1989	11	03.50764	02	06	12.04	+25	08	19.4		399
1989	VC		1989	11	03.52813	02	06	10.88	+25	08	15.6		399
1989	VF	*	1989	11	02.59306	03	09	49.90	+20	58	44.4	17	399
1989	VF		1989	11	02.62436	03	09	48.08	+20	58	45.9		399
1989	VF		1989	11	03.55417	03	08	56.68	+20	58	49.0	16.5	399
1989	VF		1989	11	03.56875	03	08	55.72	+20	58	48.1		399
1989	VF		1989	11	03.58576	03	08	54.69	+20	58	48.5		399
1989	VG	*	1989	11	02.59306	03	25	41.38	+20	44	22.2	16.5	399
1989	VG		1989	11	02.60764	03	25	40.65	+20	44	21.1		399
1989	VG		1989	11	02.62436	03	25	39.66	+20	44	18.6		399
1989	VG		1989	11	03.60694	03	24	46.51	+20	43	04.5	16.5	399
1989	VG		1989	11	03.62153	03	24	45.60	+20	43	01.7		399
1989	VG		1989	11	03.63819	03	24	44.48	+20	43	00.6		399
1989	VM		1989	11	20.45069	02	36	00.28	+10	20	58.6	16	399
1989	VM		1989	11	20.46667	02	35	59.77	+10	20	52.9		399
1989	VM		1989	11	20.48125	02	35	59.02	+10	20	46.6		399
1989	WB	*	1989	11	19.48750	04	00	38.92	+19	51	40.8	16	399
1989	WB		1989	11	19.50243	04	00	37.78	+19	51	41.5		399
1989	WB		1989	11	21.52361	03	58	37.55	+19	55	36.8	15	399
1989	WB		1989	11	21.53825	03	58	36.70	+19	55	37.8		399
1989	WB		1989	11	21.55451	03	58	35.62	+19	55	39.3		399
1989	WC	*	1989	11	19.48750	04	01	48.06	+22	34	46.1	16.5	399
1989	WC		1989	11	19.50243	04	01	47.29	+22	34	44.1		399
1989	WC		1989	11	21.52361	03	59	50.41	+22	27	53.7	16	399
1989	WC		1989	11	21.53825	03	59	49.45	+22	27	49.9		399
1989	WC		1989	11	21.55451	03	59	48.55	+22	27	45.9		399
1989	WD	*	1989	11	19.48750	04	09	12.55	+20	36	58.6	16	399
1989	WD		1989	11	19.50243	04	09	11.61	+20	36	58.3		399
1989	WD		1989	11	21.52361	04	06	53.61	+20	37	45.2	16	399
1989	WD		1989	11	21.53825	04	06	52.50	+20	37	46.6		399
1989	WK	*	1989	11	21.57396	04	13	41.22	+19	55	42.5	16	399

1989	WK		1989	11	21.58924	04	13	40.22	+19 55 36.0	399
1989	WK		1989	11	21.60625	04	13	39.04	+19 55 32.0	399
1989	WK		1989	11	22.61736	04	12	29.63	+19 51 25.5 16	399
1989	WK		1989	11	22.63194	04	12	28.68	+19 51 21.2	399
4261			1987	09	27.50718	00	30	59.77	+08 04 21.5 16	399
4261			1987	09	27.52188	00	30	59.14	+08 04 16.9	399
4261			1987	09	27.53866	00	30	58.33	+08 04 12.8	399

400 Kitami
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Sapporo 005, Japan
Observers K. Endate, T. Fujii, A. Takahashi, M. Yanai
Measurer K. Watanabe
0.16-m f/3.3 reflector, 0.20-m f/4.8 reflector and 0.20-m f/4.0 reflector
AGK3, SAOC

1976	EC		1989	11	02.55521	03	23	11.55	+16 29 28.5 16.5	400
1976	EC		1989	11	02.57465	03	23	10.47	+16 29 25.1	400
1979	UQ		1989	10	09.71979	01	20	21.00	+13 00 53.0 15.5	400
1979	UQ		1989	10	09.73507	01	20	20.25	+13 00 46.9	400
1979	UQ		1989	10	09.74653	01	20	19.70	+13 00 38.6	400
1979	UQ		1989	10	24.42778	01	08	09.84	+11 14 05.0 16.0	400
1979	UQ		1989	10	24.44583	01	08	08.82	+11 13 57.7	400
1979	UQ		1989	10	24.45920	01	08	08.26	+11 13 50.8	400
1980	DE1		1989	10	30.54618	01	59	10.63	+12 15 21.9 16.5	400
1980	DE1		1989	10	30.56285	01	59	10.01	+12 15 19.7	400
1982	UJ3		1989	10	30.57778	03	03	30.53	+15 15 29.4 16.5	400
1982	UJ3		1989	10	30.59653	03	03	29.61	+15 15 26.1	400
1982	UJ3		1989	11	02.51840	03	00	36.42	+14 58 11.4 16.5	400
1982	UJ3		1989	11	02.53785	03	00	35.39	+14 58 07.0	400
1985	TE1		1989	10	30.57778	03	00	31.40	+16 17 34.8 16.5	400
1985	TE1		1989	10	30.59653	03	00	30.27	+16 17 30.4	400
1989	SF		1989	10	21.62917	00	41	10.65	+11 00 18.5 16.5	400
1989	SF		1989	10	21.64375	00	41	09.89	+11 00 15.4	400
1989	SH		1989	10	21.42674	01	01	33.78	+19 07 02.5 15.5	400
1989	SH		1989	10	21.44410	01	01	32.78	+19 07 00.1	400
1989	SH		1989	10	21.45590	01	01	32.20	+19 06 57.4	400
1989	TP1		1989	11	02.53125	01	18	47.43	+07 46 05.9 16.0	400
1989	TP1		1989	11	02.55278	01	18	46.61	+07 45 59.9	400
1989	TV1		1989	10	09.58681	01	26	33.87	+09 27 47.7 16.5	400
1989	TV1		1989	10	09.60243	01	26	33.08	+09 27 46.0	400
1989	TV1		1989	10	09.61354	01	26	32.40	+09 27 41.6	400
1989	UL		1989	10	30.54618	02	02	39.02	+12 59 41.1 16.5	400
1989	UL		1989	10	30.56285	02	02	38.13	+12 59 37.8	400
1989	UM		1989	11	02.47951	01	47	34.50	+14 29 00.6 16.5	400
1989	UM		1989	11	02.49479	01	47	33.64	+14 28 56.7	400
1989	UT		1989	10	25.56944	02	04	25.06	+12 34 00.1 15.5	400
1989	UT		1989	10	25.58750	02	04	23.88	+12 34 01.2	400
1989	UA1	*	1989	10	24.42778	01	06	01.82	+11 37 57.0 16.0	400
1989	UA1		1989	10	24.44583	01	06	00.92	+11 37 56.2	400
1989	UA1		1989	10	24.45920	01	06	00.32	+11 37 55.4	400
1989	UB1	*	1989	10	25.56042	02	35	34.23	+18 37 38.4 16.5	400
1989	UB1		1989	10	25.58333	02	35	32.97	+18 37 37.3	400
1989	UB1		1989	10	25.59931	02	35	32.05	+18 37 36.8	400
1989	UB1		1989	10	29.46354	02	31	52.14	+18 36 14.7 16.5	400
1989	UB1		1989	10	29.48229	02	31	51.24	+18 36 17.2	400
1989	UB1		1989	10	30.54583	02	30	50.10	+18 35 42.6 16.5	400
1989	UB1		1989	10	30.56667	02	30	49.04	+18 35 42.7	400
1989	UC1	*	1989	10	25.57500	03	05	24.89	+23 19 50.6 16.5	400
1989	UC1		1989	10	25.59444	03	05	23.94	+23 19 43.6	400

1989	UC1		1989	10	25.60833	03	05	23.14	+23	19	40.2		400
1989	UC1		1989	10	29.53125	03	01	40.99	+22	57	46.6	16.5	400
1989	UC1		1989	10	29.54931	03	01	39.97	+22	57	42.3		400
1989	UC1		1989	10	29.56319	03	01	39.21	+22	57	37.9		400
1989	US1	*	1989	10	29.46354	02	32	02.48	+18	32	36.9	16.5	400
1989	US1		1989	10	29.48229	02	32	01.02	+18	32	43.5		400
1989	US1		1989	10	30.54583	02	30	44.79	+18	37	55.1	16.5	400
1989	US1		1989	10	30.56667	02	30	43.35	+18	37	59.7		400
1989	US1		1989	11	17.42292	02	10	35.73	+19	49	14.1	16.0	400
1989	US1		1989	11	17.44236	02	10	34.59	+19	49	20.2		400
1989	US1		1989	11	17.45417	02	10	34.04	+19	49	23.0		400
1989	UT1	*	1989	10	29.46354	02	34	14.13	+17	54	18.9	16.5	400
1989	UT1		1989	10	29.48229	02	34	13.07	+17	54	20.2		400
1989	UT1		1989	10	30.54583	02	33	14.69	+17	54	20.2	16.5	400
1989	UT1		1989	10	30.56667	02	33	13.40	+17	54	16.5		400
1989	UU1		1989	10	29.58056	02	59	12.08	+27	49	28.7	16.0	400
1989	UU1		1989	10	29.59861	02	59	10.87	+27	49	22.4		400
1989	UU1		1989	10	29.61319	02	59	10.02	+27	49	19.0		400
1989	UO2	*	1989	10	21.51146	02	09	39.28	+13	12	59.0	16.5	400
1989	UO2		1989	10	21.52743	02	09	38.56	+13	12	46.5		400
1989	UO2		1989	10	21.53854	02	09	38.25	+13	12	42.1		400
1989	UO2		1989	10	30.54618	02	03	33.20	+11	42	22.6	16.0	400
1989	UO2		1989	10	30.56285	02	03	32.55	+11	42	13.9		400
1989	UQ2	*	1989	10	29.58056	03	02	10.89	+28	13	41.2	16.5	400
1989	UQ2		1989	10	29.59861	03	02	09.63	+28	13	45.1		400
1989	UQ2		1989	10	29.61319	03	02	08.76	+28	13	45.8		400
1989	UQ2		1989	11	02.53819	02	58	10.69	+28	24	12.6	16.5	400
1989	UQ2		1989	11	02.55833	02	58	09.54	+28	24	14.3		400
1989	UQ2		1989	11	02.57014	02	58	08.73	+28	24	17.7		400
1989	UT2		1989	11	02.47951	01	49	33.29	+14	58	55.7	16.0	400
1989	UT2		1989	11	02.49479	01	49	32.63	+14	58	47.1		400
1989	UX2	*	1989	10	30.57778	02	59	29.49	+15	43	51.6	16.5	400
1989	UX2		1989	10	30.59653	02	59	28.39	+15	43	49.5		400
1989	UX2		1989	11	02.51840	02	56	29.87	+15	27	55.6	16.0	400
1989	UX2		1989	11	02.53785	02	56	28.51	+15	27	50.5		400
1989	UX2		1989	11	21.55417	02	37	47.52	+13	49	06.6	16.0	400
1989	UX2		1989	11	21.57153	02	37	46.68	+13	49	01.9		400
1989	UY2	*	1989	10	30.57778	03	04	27.55	+14	59	07.8	16.5	400
1989	UY2		1989	10	30.59653	03	04	26.70	+14	59	06.5		400
1989	UY2		1989	11	02.51840	03	01	24.19	+14	53	06.0	16.5	400
1989	UY2		1989	11	02.53785	03	01	22.94	+14	53	04.1		400
1989	UH3	*	1989	10	29.58056	02	57	01.78	+26	35	40.8	16.0	400
1989	UH3		1989	10	29.59861	02	57	00.46	+26	35	43.5		400
1989	UH3		1989	10	29.61319	02	56	59.64	+26	35	46.5		400
1989	UH3		1989	11	04.49861	02	50	10.32	+26	42	45.7	16.5	400
1989	UH3		1989	11	04.51667	02	50	09.08	+26	42	46.5		400
1989	UH3		1989	11	04.52986	02	50	08.04	+26	42	50.5		400
1989	VG		1989	11	04.58819	03	23	53.05	+20	41	39.3	16.5	400
1989	VG		1989	11	04.60995	03	23	51.76	+20	41	37.2		400
1989	VG		1989	11	04.62431	03	23	50.98	+20	41	37.4		400
1989	VR	*	1989	11	02.55521	03	20	49.31	+16	10	24.2	17	400
1989	VR		1989	11	02.57465	03	20	48.33	+16	10	21.7		400
1989	VR		1989	11	17.45174	03	08	04.21	+15	13	04.9	17	400
1989	VR		1989	11	17.46701	03	08	03.29	+15	12	58.9		400
1989	VS	*	1989	11	02.62049	03	08	29.19	+12	21	16.6	16.0	400
1989	VS		1989	11	02.63854	03	08	28.25	+12	21	13.6		400
1989	VS		1989	11	17.42188	02	57	54.09	+11	57	26.3	16.0	400
1989	VS		1989	11	17.43785	02	57	53.08	+11	57	30.6		400
1989	WF		1989	11	02.55521	03	20	49.17	+16	30	10.7	16.5	400

1989	WF		1989	11	02.57465	03	20	47.97	+16	30	13.4		400
1989	WF	*	1989	11	17.45174	03	06	03.67	+16	04	58.8	16.0	400
1989	WF		1989	11	17.46701	03	06	02.82	+16	04	57.2		400
1989	WF		1989	11	17.47813	03	06	01.92	+16	04	55.9		400
135			1989	10	25.56042	02	35	38.92	+18	45	34.0	10.0	400
135			1989	10	25.58333	02	35	37.49	+18	45	29.4		400
135			1989	10	25.59931	02	35	36.39	+18	45	25.4		400
135			1989	10	29.46354	02	31	34.21	+18	29	58.9	11.0	400
135			1989	10	29.48229	02	31	33.05	+18	29	55.3		400
135			1989	10	30.54583	02	30	25.76	+18	25	28.0	11.0	400
135			1989	10	30.56667	02	30	24.43	+18	25	22.9		400
389			1989	10	29.58056	03	01	44.73	+28	08	23.2	12.0	400
389			1989	10	29.59861	03	01	43.66	+28	08	18.9		400
389			1989	10	29.61319	03	01	42.81	+28	08	15.2		400
389			1989	11	02.53819	02	57	59.02	+27	51	28.7	12.0	400
389			1989	11	02.55833	02	57	57.89	+27	51	24.0		400
711			1989	10	09.71979	01	21	15.46	+13	28	09.5	14.0	400
711			1989	10	09.73507	01	21	14.35	+13	28	06.7		400
711			1989	10	09.74653	01	21	13.68	+13	28	05.7		400
1470			1989	10	25.56042	02	35	00.99	+18	21	25.8	15.5	400
1470			1989	10	25.58333	02	34	59.93	+18	21	22.3		400
1470			1989	10	25.59931	02	34	59.01	+18	21	18.7		400
1470			1989	10	29.46354	02	31	50.08	+18	09	55.7	15.5	400
1470			1989	10	29.48229	02	31	49.20	+18	09	51.4		400
1470			1989	10	30.54583	02	30	56.48	+18	06	35.0	15.5	400
1470			1989	10	30.56667	02	30	55.47	+18	06	30.2		400
1635			1989	10	30.57778	03	07	06.57	+15	40	59.6	15.0	400
1635			1989	10	30.59653	03	07	05.61	+15	40	54.8		400
1984			1989	10	30.61111	03	07	35.82	+12	58	11.7	15.5	400
1984			1989	10	30.62847	03	07	34.90	+12	58	09.0		400
1984			1989	11	02.62049	03	05	12.57	+12	44	06.7	16.0	400
1984			1989	11	02.63854	03	05	11.96	+12	43	57.9		400
2120			1989	10	30.57778	03	00	37.86	+16	22	44.8	15.0	400
2120			1989	10	30.59653	03	00	37.06	+16	22	36.1		400
2341			1989	11	21.55417	02	39	51.03	+13	57	06.9	14.0	400
2341			1989	11	21.57153	02	39	50.12	+13	57	09.1		400
2659			1989	10	30.57778	03	04	46.82	+15	30	47.7	16.0	400
2659			1989	10	30.59653	03	04	45.93	+15	30	46.2		400
3976			1989	11	02.47951	01	51	24.42	+14	32	04.6	15.5	400
3976			1989	11	02.49479	01	51	23.77	+14	31	57.4		400

401 Oosato
Y. Yamagishi, 884-1, Tudashinden, Oosato, Saitama 360-01, Japan
Observers Y. Yamagishi, S. Hayakawa
Measurer S. Hayakawa

475			1989	10	29.51875	02	29	56.58	+17	14	16.3		401
475			1989	10	29.53993	02	29	54.60	+17	14	31.6		401

402 Dynic Astronomical Observatory
A. Sugie, Dynic Astronomical Observatoty, Taga 270, Taga-Cho, Inukami-Gun, Shiga-Ken, 522-03, Japan
0.60-m f/5.0 reflector
SAOC

1982	UE		1989	10	29.69935	03	53	24.04	+14	31	11.9	15.5	402
1982	UE		1989	10	30.63194	03	52	41.36	+14	31	04.7	15.5	402
1989	UW1	*	1989	10	29.58750	03	24	27.05	+10	19	52.9	14.0	402
1989	UW1		1989	10	30.59861	03	23	33.16	+10	21	32.8	14.0	402
1989	UW1		1989	11	10.77778	03	12	43.35	+10	44	00.1	14.0	402
1989	UW1		1989	11	10.79219	03	12	42.39	+10	44	02.4	14.0	402

1989	UX1	*	1989	10	29.58750	03	25	25.17	+13	08	06.0	16.0	402
1989	UX1		1989	10	30.59861	03	24	38.81	+13	03	54.5	16.0	402
1989	UY1	*	1989	10	29.58750	03	33	44.86	+13	27	03.9	16.0	402
1989	UY1		1989	10	30.59861	03	33	01.45	+13	18	34.2	16.0	402
1989	UA2	*	1989	10	29.69935	03	40	10.59	+14	03	01.8	14.0	402
1989	UA2		1989	10	30.63194	03	39	24.89	+14	03	00.6	14.0	402
1989	UA2		1989	11	10.77778	03	28	42.62	+14	03	14.2	14.0	402
1989	UA2		1989	11	10.79219	03	28	41.66	+14	03	11.8	14.0	402
1989	UA2		1989	11	21.62326	03	17	11.46	+14	07	45.4	14.0	402
1989	UA2		1989	11	21.64375	03	17	10.06	+14	07	45.8	14.0	402
1989	UZ2	*	1989	10	30.66875	03	44	12.89	-01	10	41.5	15.0	402
1989	UZ2		1989	10	30.68611	03	44	11.84	-01	10	44.6	15.0	402
1989	UZ2		1989	11	02.63611	03	41	47.27	-01	22	22.5	15.0	402
1989	UZ2		1989	11	02.65376	03	41	46.48	-01	22	27.0	15.0	402
1989	UL3	*	1989	10	30.66875	03	33	14.92	+01	10	05.8	14.5	402
1989	UL3		1989	11	02.65376	03	30	34.76	+01	15	05.7	14.5	402

403 Kani
T. Furuta, Mitsuike 17-2, Kakiya-Cho, Tokai, Aichi-Ken 477, Japan
Observers Y. Mizuno, T. Furuta
Measurer T. Furuta

1979	XQ		1989	10	17.53194	01	16	19.35	+06	12	35.5		403
1979	XQ		1989	10	17.53889	01	16	18.79	+06	12	33.5		403
1979	XQ		1989	10	23.49514	01	10	31.9	+05	56	17		403
1979	XQ		1989	10	23.50972	01	10	30.72	+05	56	17.8		403
1982	SX2		1989	10	23.55863	02	05	36.57	+18	00	49.1		403
1982	SX2		1989	10	23.56979	02	05	35.83	+18	00	47.7		403
1982	UP6		1989	11	02.48715	01	57	59.83	+16	04	58.2		403
1982	UP6		1989	11	04.57882	01	56	08.41	+15	35	17.8		403
1982	UP6		1989	11	04.58958	01	56	08.02	+15	35	10.7		403
1985	RL1		1989	10	26.57778	02	15	41.84	+13	07	04.7		403
1989	OA		1989	08	28.53681	20	34	18.91	-10	30	24.1		403
1989	SC		1989	09	29.56632	23	49	49.1	+00	57	59		403
1989	SC		1989	09	29.58264	23	49	48.34	+00	57	55.4		403
1989	SC		1989	10	04.58090	23	44	50.92	+00	52	33.4		403
1989	SE		1989	10	04.56944	00	17	54.97	+02	05	54.7		403
1989	SE		1989	10	04.58403	00	17	54.06	+02	05	58.9		403
1989	SE		1989	10	07.58090	00	15	12.23	+02	13	56.5		403
1989	SE		1989	10	07.59514	00	15	11.5	+02	14	01		403
1989	SP		1989	10	08.53160	00	35	22.1	+08	26	22		403
1989	SQ		1989	10	08.51771	00	06	32.0	+09	45	17		403
1989	SQ		1989	10	08.53160	00	06	31.42	+09	45	12.9		403
1989	SQ		1989	10	17.48542	23	59	36.94	+09	02	03.8		403
1989	SQ		1989	10	17.50903	23	59	35.95	+09	01	56.6		403
1989	SX		1989	11	02.48715	01	58	04.83	+14	32	10.6	15.5	403
1989	SX		1989	11	02.49792	01	58	04.17	+14	32	11.5		403
1989	SX		1989	11	04.57882	01	56	14.02	+14	37	12.5		403
1989	SX		1989	11	04.58958	01	56	13.27	+14	37	14.1		403
1989	TC1		1989	10	20.51944	01	13	14.83	+08	29	40.7		403
1989	TC1		1989	10	20.53403	01	13	14.00	+08	29	34.3		403
1989	TC1		1989	10	23.49514	01	10	40.6	+08	13	01		403
1989	TC1		1989	10	23.50972	01	10	39.55	+08	12	54.2		403
1989	TV1	*	1989	10	08.59618	01	27	27.43	+09	31	39.4	16.5	403
1989	TV1		1989	10	08.60799	01	27	26.7	+09	31	37		403
1989	UD		1989	10	26.61736	02	25	38.31	+11	02	01.1		403
1989	UD		1989	10	26.63264	02	25	37.49	+11	01	58.4		403
1989	UD		1989	11	02.51146	02	20	01.8	+10	37	56		403
1989	UD		1989	11	02.52222	02	20	01.3	+10	37	55		403
1989	UT	*	1989	10	23.53090	02	06	39.32	+12	29	55.1	15.5	403

1989	UT		1989	10	23.54201	02	06	38.66	+12	29	56.4		403
1989	UT		1989	10	29.51285	02	00	03.99	+12	41	39.0		403
1989	UT		1989	10	29.52396	02	00	03.27	+12	41	38.8		403
1989	UM1	*	1989	10	28.63507	02	56	41.81	+15	05	37.7	16.0	403
1989	UM1		1989	10	28.64618	02	56	41.11	+15	05	39.6		403
1989	UM1		1989	10	29.57639	02	55	44.5	+15	04	00		403
1989	UM1		1989	10	29.59476	02	55	43.31	+15	03	58.5		403
1989	UN1	*	1989	10	28.63507	02	59	29.10	+15	40	36.6	16.0	403
1989	UN1		1989	10	28.64618	02	59	28.77	+15	40	31.7		403
1989	UN1		1989	10	29.57639	02	58	53.54	+15	33	04.6		403
1989	UN1		1989	10	29.59476	02	58	52.5	+15	32	54		403
1989	UO1	*	1989	10	28.63507	02	59	54.03	+13	02	40.0	16.0	403
1989	UO1		1989	10	28.64618	02	59	53.32	+13	02	35.0		403
1989	UO1		1989	10	29.57639	02	58	58.49	+12	55	25.7		403
1989	UO1		1989	10	29.59476	02	58	57.47	+12	55	16.0		403
1989	UO1		1989	11	02.53472	02	54	59.30	+12	24	57.7		403
1989	UO1		1989	11	02.54549	02	54	58.77	+12	24	56.6		403
1989	UP1	*	1989	10	28.63507	03	02	32.3	+07	24	40	15.5	403
1989	UP1		1989	10	28.65799	03	02	31.0	+07	24	40		403
1989	UP1		1989	10	29.57639	03	01	38.7	+07	24	26		403
1989	UP1		1989	10	29.59479	03	01	37.9	+07	24	25		403
1989	UQ1	*	1989	10	28.63507	03	04	17.2	+07	34	25	15.0	403
1989	UQ1		1989	10	28.65799	03	04	16.2	+07	34	18		403
1989	UQ1		1989	10	29.57639	03	03	26.8	+07	28	42		403
1989	UQ1		1989	10	29.59479	03	03	25.9	+07	28	35		403
1989	UQ1		1989	11	04.60313	02	57	44.75	+06	54	45.9		403
1989	UQ1		1989	11	04.61389	02	57	44.10	+06	54	42.4		403
1989	UQ1		1989	11	10.59097	02	51	59.52	+06	26	22.7		403
1989	UQ1		1989	11	10.59861	02	51	59.06	+06	26	21.0		403
1989	UR1	*	1989	10	28.68160	03	12	41.66	+14	19	19.6	16.0	403
1989	UR1		1989	10	28.69271	03	12	40.93	+14	19	18.7		403
1989	UR1		1989	10	29.60868	03	11	57.46	+14	15	40.4		403
1989	UR1		1989	10	29.61979	03	11	56.78	+14	15	38.6		403
1989	US3	*	1989	10	26.57778	02	22	46.5	+14	05	09	16.0	403
1989	US3		1989	10	26.59236	02	22	45.6	+14	05	07		403
1989	US3		1989	10	29.54340	02	20	11.58	+13	49	33.2		403
1989	US3		1989	10	29.55417	02	20	11.04	+13	49	31.2		403
1989	UT3	*	1989	10	28.68160	03	13	09.9	+16	49	17	16.5	403
1989	UT3		1989	10	28.69271	03	13	08.4	+16	49	19		403
1989	UT3		1989	10	29.60868	03	12	23.5	+16	48	49		403
1989	UT3		1989	10	29.61979	03	12	22.7	+16	48	49		403
1989	UU3	*	1989	10	29.59479	02	59	50.54	+13	12	14.3	16.5	403
1989	UU3		1989	11	02.53472	02	56	25.95	+12	45	25.7		403
1989	UU3		1989	11	02.54549	02	56	25.29	+12	45	20.3		403
1989	VE	*	1989	11	02.58785	03	31	22.88	+17	27	18.0	15.5	403
1989	VE		1989	11	02.59896	03	31	22.41	+17	27	13.8		403
1989	VE		1989	11	04.63021	03	29	52.01	+17	11	11.4		403
1989	VE		1989	11	04.64097	03	29	51.46	+17	11	05.3		403
1989	WE	*	1989	11	20.61285	04	01	19.0	+08	25	57	15.5	403
1989	WE		1989	11	21.59722	04	00	27.22	+08	23	01.8		403
1989	WE		1989	11	21.60764	04	00	26.66	+08	23	00.1		403
2069	T-2		1989	10	26.61736	02	23	15.58	+10	11	21.9		403
2069	T-2		1989	10	26.63264	02	23	14.84	+10	11	16.6		403
2069	T-2		1989	11	02.51146	02	18	02.20	+09	26	02.6		403
2069	T-2		1989	11	02.52222	02	18	01.56	+09	25	59.3		403
617			1989	10	26.61736	02	22	40.32	+09	52	48.1		403
1512			1989	10	20.63090	02	13	49.36	+17	11	42.6		403
1512			1989	10	23.55863	02	11	54.20	+17	04	50.8		403
1512			1989	10	23.56979	02	11	53.79	+17	04	48.7		403

1877		1989	09	08.58403	23	52	02.43	+00	02	49.5		403
1965		1989	10	20.59757	02	28	30.89	+11	22	31.2		403
1965		1989	10	20.60868	02	28	30.37	+11	22	28.2		403
2081		1989	10	20.59757	02	31	08.66	+11	16	53.5		403
2081		1989	10	20.60868	02	31	08.10	+11	16	50.0		403
2081		1989	10	26.61736	02	25	07.88	+10	55	12.0		403
2081		1989	11	02.51146	02	18	08.51	+10	30	50.0		403
2081		1989	11	02.52222	02	18	07.84	+10	30	50.6		403
2480		1989	10	23.49514	01	14	29.49	+06	46	34.8		403
2480		1989	10	23.50972	01	14	28.72	+06	46	31.1		403
3297		1989	10	20.59757	02	29	34.14	+10	50	50.1		403
3297		1989	10	20.60868	02	29	33.73	+10	50	48.1		403
3297		1989	10	23.58958	02	27	18.69	+10	39	26.0		403
3297		1989	10	23.60417	02	27	18.04	+10	39	22.4		403
3297		1989	10	26.61736	02	24	57.12	+10	27	48.5		403
3297		1989	10	26.63264	02	24	56.32	+10	27	44.8		403

413 Siding Spring
R. H. McNaught, Siding Spring Observatory, Coonabarabran, N.S.W. 2357, Australia
Observers P. McKenzie, R. H. McNaught, D. H. Morgan, K. S. Russell, A. Savage, S. B. Tritton, M. Hartley, S. M. Hughes
Measurer R. H. McNaught, A. Pickup
1.2-m U. K. Schmidt Telescope and (1) Uppsala Southern Schmidt

1989	MD		1979	08	14.55076	20	58	59.94	-22	10	00.0		413
1989	MD		1979	08	14.59590	20	58	57.71	-22	10	03.9		413
1989	MD		1983	04	17.52122	12	37	02.51	-07	50	05.6		413
1989	MD		1983	04	17.56288	12	37	00.48	-07	49	55.7		413
1989	TN1		1989	11	01.49576	23	23	49.44	+06	30	08.5		413
1989	TN1		1989	11	01.52948	23	23	49.04	+06	30	11.2		413
1989	UP		1989	10	27.70139	04	19	51.81	+00	06	54.6		413
1989	UP		1989	10	27.70341	04	19	53.60	+00	07	02.7		413
1989	UP		1989	10	27.70624	04	19	56.03	+00	07	14.0		413
1989	UP		1989	10	28.75964	04	36	44.07	+01	20	17.1	V	413
1989	UP		1989	11	01.73854	05	52	48.74	+06	46	50.3	F	413
1989	UP		1989	11	01.74063	05	52	51.05	+06	46	58.3	V	413
1989	VB	*	1989	11	01.41050	23	41	07.24	-03	34	44.0		413
1989	VB		1989	11	01.45564	23	41	41.59	-03	28	52.9	16 V	413
1989	VB		1989	11	04.50134	00	19	41.03	+02	36	56.7	16 V	413
1989	VB		1989	11	05.63432	00	32	24.09	+04	38	27.0	t	413
1917			1989	10	27.44416	23	57	11.17	-56	36	55.1	12.9V 1	413
1917			1989	10	27.44907	23	57	14.22	-56	37	09.1	1	413
1917			1989	10	27.45388	23	57	17.20	-56	37	22.6	1	413
1917			1989	10	29.44664	00	18	43.22	-57	57	52.5	1	413
1917			1989	10	29.45012	00	18	45.29	-57	57	59.8	1	413
1917			1989	11	19.52618	02	52	26.76	-57	30	15.0		413
1917			1989	11	19.53045	02	52	27.82	-57	30	09.8		413
1917			1989	11	20.51098	02	56	29.98	-57	11	38.2	14.5V	413
1917			1989	11	20.57348	02	56	43.65	-57	10	25.7		413
3629			1989	10	25.44834	23	04	17.10	+01	25	42.3		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

1981	RP2		1989	09	05.37398	18	00	08.22	-23	12	26.6	16.4	474
1981	RP2		1989	09	05.38498	18	00	08.85	-23	12	22.8		474

1981	XA		1989	06	29.53412	20	26	21.03	-39	59	03.3	17.9	474
1981	XA		1989	06	29.55918	20	26	19.55	-39	59	25.9		474
1981	XA		1989	06	30.64280	20	25	17.57	-40	15	51.8	18.0	474
1981	XA		1989	06	30.66439	20	25	16.24	-40	16	11.5		474
1981	XA		1989	07	28.56465	19	47	28.52	-45	57	08.0	18.3	474
1981	XA		1989	07	28.58647	19	47	26.52	-45	57	18.3		474
1985	TB		1989	09	23.58823	23	50	42.02	-32	23	36.6		474
1985	TB		1989	09	23.61170	23	50	38.91	-32	23	32.9		474
1988	BN		1989	06	29.58823	21	14	08.45	-34	46	35.4	17.9	474
1988	BN		1989	06	29.60814	21	14	07.14	-34	46	34.7		474
1988	BN		1989	07	01.64512	21	12	00.74	-34	45	00.9	17.9	474
1988	BN		1989	07	01.65877	21	11	59.81	-34	45	00.0		474
1988	BN		1989	07	28.67617	20	36	35.90	-33	34	32.7	17.3	474
1988	BN		1989	07	28.68716	20	36	35.00	-33	34	29.5		474
1988	BZ		1989	06	30.56317	17	58	27.97	-55	14	32.6	17.7	474
1988	BZ		1989	06	30.57637	17	58	26.65	-55	14	26.8		474
1988	BZ		1989	07	29.56124	17	26	27.04	-49	58	33.8	17.7	474
1988	BZ		1989	07	29.57409	17	26	26.63	-49	58	23.4		474
1989	FB		1989	07	28.34666	11	14	21.07	-29	50	12.6	18.7	474
1989	FB		1989	07	28.37513	11	14	21.34	-29	50	34.7		474
1989	FB		1989	07	29.36506	11	14	32.57	-30	04	21.1		474
1989	FB		1989	07	29.39365	11	14	32.82	-30	04	42.2		474
1989	JA		1989	07	28.73936	04	40	04.22	-20	57	41.2	18.1	474
1989	JA		1989	07	28.75244	04	40	03.94	-20	57	27.7		474
1989	JA		1989	07	29.74874	04	39	53.56	-20	39	52.8	18.7	474
1989	JA		1989	07	29.76355	04	39	53.33	-20	39	36.4		474
1989	JA		1989	09	23.64390	04	19	21.88	-09	03	17.7	18.2	474
1989	JA		1989	09	23.65848	04	19	20.39	-09	03	09.3		474
1989	ME		1989	09	25.44679	19	23	18.61	-34	30	12.1	17.7	474
1989	ME		1989	09	25.46201	19	23	18.87	-34	30	02.6		474
1989	NA		1989	07	28.64295	20	19	15.13	-40	58	00.9	t	474
1989	NA		1989	07	28.64810	20	19	15.24	-40	58	07.5	t	474
1989	NA		1989	09	02.60424	20	50	13.93	-46	43	09.9	17.5	474
1989	NA		1989	09	02.61240	20	50	14.57	-46	43	07.6		474
1989	NA		1989	09	04.38000	20	52	34.33	-46	35	39.1	17.7	474
1989	NA		1989	09	04.39076	20	52	35.18	-46	35	36.1		474
1989	NA		1989	09	23.50565	21	21	08.94	-43	37	47.8	17.8	474
1989	NA		1989	09	23.51913	21	21	10.19	-43	37	36.8		474
1989	OC		1989	09	03.35916	16	48	36.21	-25	21	52.0	19.3	474
1989	OC		1989	09	03.38068	16	48	39.15	-25	21	47.9		474
1989	OC		1989	09	23.36589	17	37	08.05	-24	20	26.9	18.8	474
1989	OC		1989	09	23.39448	17	37	12.09	-24	20	21.2		474
1989	OM		1989	09	25.54830	19	49	28.46	-42	51	50.9	18.2	474
1989	OM		1989	09	25.56821	19	49	29.77	-42	51	34.0		474
1989	RA		1989	09	24.50698	22	31	14.17	-07	07	26.4	18.4	474
1989	RS1		1989	09	24.53939	22	48	11.75	-10	04	22.6		474
1989	RS1		1989	09	24.55223	22	48	14.37	-10	04	36.7		474
1989	RN2		1989	09	28.60259	23	52	30.13	+03	08	59.7	17.4	474
1989	RN2		1989	09	28.62088	23	52	29.13	+03	08	58.0		474
1989	RN2		1989	09	30.54637	23	50	50.14	+03	06	17.3	17.5	474
1989	RN2		1989	09	30.56799	23	50	48.94	+03	06	15.8		474
1989	SM5	*	1989	09	23.54031	22	31	42.90	-06	39	14.4	18 t	474
1989	SM5		1989	09	23.55883	22	31	42.39	-06	39	12.3	t	474
1989	SM5		1989	09	24.50698	22	31	18.61	-06	37	06.3	t	474
1989	SN5	*	1989	09	24.59066	23	55	48.69	+03	20	02.2	t	474
1989	SN5		1989	09	24.61022	23	55	47.63	+03	19	52.2	t	474
1989	SN5		1989	09	26.50681	23	54	11.20	+03	04	13.7	17.1 t	474
1989	SN5		1989	09	26.52503	23	54	10.22	+03	04	05.0	t	474
1989	SN5		1989	09	30.54637	23	50	47.39	+02	30	15.1	17.3	474

1989	SN5		1989	09	30.56799	23	50	46.19	+02	30	04.1			474
1989	SO5	*	1989	09	24.59066	23	57	14.23	+03	30	01.9		t	474
1989	SO5		1989	09	24.61022	23	57	13.11	+03	29	56.6		t	474
1989	SO5		1989	09	25.59532	23	56	18.42	+03	24	14.9	18.8	t	474
1989	SO5		1989	09	25.61462	23	56	17.26	+03	24	07.6		t	474
1989	SO5		1989	09	26.50681	23	55	28.07	+03	18	53.6	19.0	t	474
1989	SO5		1989	09	26.52503	23	55	27.05	+03	18	45.9		t	474
1989	SO5		1989	09	30.54637	23	51	46.33	+02	54	55.7	19.2	t	474
1989	SO5		1989	09	30.56799	23	51	45.03	+02	54	47.8		t	474
1989	UP		1989	11	03.61225	06	33	14.06	+09	26	50.8			474
1989	UP		1989	11	03.62995	06	33	36.35	+09	28	20.0			474
1989	UP		1989	11	04.64245	06	55	33.41	+10	48	10.9			474
1989	UP		1989	11	04.65652	06	55	51.03	+10	49	15.1			474
1989	UQ		1989	11	04.51572	00	50	32.59	-01	16	48.0	17.6	t	474
1989	UQ		1989	11	04.52671	00	50	29.58	-01	17	08.9		t	474
1989	VB		1989	11	03.42926	00	06	53.57	+00	34	23.0		t	474
1989	VB		1989	11	03.46190	00	07	16.36	+00	38	12.7		t	474
1989	VB		1989	11	04.44037	00	18	58.66	+02	30	29.3		t	474
1989	VB		1989	11	04.47648	00	19	22.73	+02	34	31.4		t	474
944			1989	09	03.64897	23	05	26.03	-55	40	16.4	16.9		474
944			1989	09	03.68682	23	05	23.45	-55	40	16.4			474
944			1989	09	05.42227	23	03	26.11	-55	41	18.8	17.2		474
944			1989	09	05.44470	23	03	24.53	-55	41	19.2			474
1226			1989	07	28.67617	20	37	01.24	-33	41	38.2	16.1		474
1226			1989	07	28.68716	20	37	00.43	-33	41	39.5			474
2421			1989	09	04.34169	17	37	21.06	-28	27	14.6	17.3		474
2421			1989	09	04.35697	17	37	21.50	-28	27	14.9			474
2421			1989	09	05.34649	17	37	51.73	-28	27	59.4	17.2		474
2421			1989	09	05.35749	17	37	52.05	-28	28	00.1			474
4196			1989	07	29.70742	21	14	53.40	-14	46	33.9	16.1		474
4196			1989	07	29.72206	21	14	52.81	-14	46	36.6			474
4196			1989	09	02.53578	20	53	42.08	-16	28	49.0	17.6		474
4196			1989	09	02.55036	20	53	41.64	-16	28	51.5			474
4196			1989	09	04.41322	20	52	49.71	-16	33	08.7	17.5		474
4196			1989	09	04.43451	20	52	49.06	-16	33	11.7			474

494 Stakenbridge
B. Manning, Moonrakers, Stakenbridge, Churchill, Kidderminster, Worcs. DY10 3LS, England

1989	UA3	*	1989	10	31.97603	03	15	25.69	+15	07	36.9	17 V		494
1989	UA3		1989	10	31.99427	03	15	24.67	+15	07	30.3			494
1989	UA3		1989	11	04.96159	03	11	45.13	+14	44	38.1			494
1989	UA3		1989	11	04.98209	03	11	43.84	+14	44	31.5			494
1989	UA3		1989	11	05.94684	03	10	49.06	+14	38	56.4			494
1989	UB3	*	1989	10	31.97603	03	15	45.06	+14	51	28.3	16.5V		494
1989	UB3		1989	10	31.99427	03	15	44.06	+14	51	28.3			494
1989	UB3		1989	11	04.96159	03	12	10.21	+14	53	09.8			494
1989	UB3		1989	11	04.98209	03	12	08.98	+14	53	11.6			494
1989	UB3		1989	11	05.94684	03	11	14.82	+14	53	35.2			494
1989	UN3	*	1989	10	31.97603	03	17	31.10	+14	39	52.2	17 V		494
1989	UN3		1989	10	31.99427	03	17	30.24	+14	39	47.8			494
1989	UN3		1989	11	05.94684	03	14	17.48	+14	17	50.7			494

552 San Vittore
E. Colombini, Via S. Vittore 44, I-40136 Bologna, Italy
Observers C. Vacchi, G. Sassi
Measurers C. Vacchi, V. Goretti, E. Colombini
0.45-m f/5 reflector
AGK3, SAOC

1989 TG	1989 11 04.85556	23 29 05.89	+05 41 55.3		17.5		552
1989 TG	1989 11 04.89236	23 29 05.59	+05 41 53.0				552
1235	1989 11 04.85556	23 30 20.18	+06 03 19.0		15.0		552
1235	1989 11 04.89236	23 30 18.27	+06 03 57.8				552
2393	1989 11 04.85556	23 27 59.64	+05 37 25.7		13.0		552
2393	1989 11 04.89236	23 27 59.84	+05 37 13.6				552

567 Osservatorio Chaonis
J. M. Baur, Via Zara 20, I-33083 Chions, Italy
Observers J. M. Baur, G. Carniel
Measurer J. M. Baur
0.6-m f/3 Wright-Schmidt reflector
AGK3

1989 TD	1989 11 04.88125	00 15 36.50	+08 17 01.5		17.5		567
1989 TD	1989 11 04.89375	00 15 36.50	+08 16 59.8				567
1989 TD	1989 11 04.90903	00 15 36.50	+08 16 58.1				567
1989 TD	1989 11 17.78542	00 19 03.38	+08 07 01.5				567
1989 TD	1989 11 17.80347	00 19 03.86	+08 07 02.1				567
1989 TD	1989 11 17.82153	00 19 04.36	+08 07 02.6				567

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

1989 OB	1989 08 05.27257	21 26 09.77	-00 50 30.9				657
1989 OB	1989 08 05.30937	21 26 09.76	-00 49 16.3				657
1989 UP	1989 11 01.34382	05 44 39.17	+06 08 38.1				657
1989 UP	1989 11 01.35562	05 44 53.45	+06 09 43.5				657
1989 UP	1989 11 02.38062	06 06 34.90	+07 38 41.4				657
273	1989 08 05.27257	21 31 11.11	-00 07 19.7				657
273	1989 08 05.30937	21 31 09.44	-00 07 55.6				657
273	1989 08 05.37257	21 31 06.55	-00 08 56.1				657
1316	1989 08 04.30521	21 28 00.30	+33 18 00.1				657
1316	1989 08 09.31361	21 23 46.21	+34 05 11.5				657
4197	1989 11 01.13479	21 37 12.40	+04 05 41.0				657

660 Leuschner Observatory
M. Richmond, Astronomy Department, University of California, Campbell Hall, Berkeley, CA 94720
Observer M. Richmond

1989 WA	1989 11 21.425	01 41 09.5	+16 39 57				660

662 Lick
M. Richmond, Astronomy Department, University of California, Campbell Hall, Berkeley, CA 94720
Observer M. Richmond
1-m Neckel reflector + CCD

1989 WA	* 1989 11 20.29792	01 41 39.48	+16 49 55.0		16.4R		662
1989 WA	1989 11 20.34236	01 41 38.29	+16 49 31.1				662
1989 WA	1989 11 20.37569	01 41 37.41	+16 49 12.9				662
1989 WA	1989 11 20.42534	01 41 36.11	+16 48 46.2				662

675 Palomar
E. Helin, MS 183-501, Jet Propulsion Laboratory, Pasadena, CA 91109, U.S.A. (2)
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)
J. Mueller, Palomar Observatory, Palomar Mountain, CA 92060, U.S.A. (7)

Observers J. Alu (2, S), J. Bures (2, S), T. Gehrels (4, L), E. Helin (2, S), H. E. Holt (3, S), K. Lawrence (2, S), D. Levy (3, S), D. Mendenhall (7, L), C. Mikolajczak (2, S), J. Mueller (7, L), B. Roman (2, S), C. S. Shoemaker (3, S), E. M. Shoemaker (3, S), S. Swanson (2, S)
Measurers J. Alu (2), B. Roman (2), C. S. Shoemaker (3), D. Tracy (2), C. J. van Houten (4), I. van Houten-Groeneveld (4), A. Wisse (4)
1.5-m reflector + CCD (C), 1.2-m (L) and 0.46-m (S) Schmidt telescopes

1979 UQ	1989 09 03.45781	01 35 10.97	+14 37 03.3		17	3	675
1979 UQ	1989 09 03.49688	01 35 11.31	+14 37 07.6			3	675
1987 FF1	1989 10 27.17656	00 39 26.03	-19 42 47.9		16.5	2	675
1987 FF1	1989 10 27.20017	00 39 24.92	-19 42 43.9			2	675
1987 FF1	1989 10 29.12569	00 38 04.00	-19 38 43.7			2	675
1987 FF1	1989 10 29.15625	00 38 02.60	-19 38 39.3			2	675
1988 LB	1989 10 27.26233	02 17 06.93	+30 50 55.4		17.0	2	675
1988 LB	1989 10 27.28507	02 17 05.39	+30 50 44.7			2	675
1988 LB	1989 10 29.24063	02 15 08.12	+30 37 44.1			2	675
1988 NH	1989 10 27.25660	02 08 15.00	-04 09 30.2		16.6	2	675
1988 NH	1989 10 27.27917	02 08 13.79	-04 09 39.9			2	675
1988 NH	1989 10 29.22431	02 06 37.76	-04 20 47.8			2	675
1988 NH	1989 10 29.24583	02 06 36.67	-04 20 55.4			2	675
1988 PP	1989 10 26.44271	04 13 07.38	+02 34 04.5		16.5	2	675
1988 PP	1989 10 26.46632	04 13 06.45	+02 33 59.1			2	675
1988 PP	1989 10 28.42292	04 11 53.33	+02 24 50.4			2	675
1988 PP	1989 10 28.45990	04 11 51.58	+02 24 40.7			2	675
1989 PC	1984 06 26.42743	18 26 57.70	+02 45 33.8		15.2	2	675
1989 PC	1984 06 26.45035	18 26 56.55	+02 45 19.5			2	675
1989 RB	1989 10 26.14167	22 38 02.73	-06 05 58.0		16.0	2	675
1989 RB	1989 10 26.16441	22 38 02.97	-06 05 34.6			2	675
1989 RZ	1989 10 26.14740	23 17 21.89	+28 03 23.1		14.5	2	675
1989 RZ	1989 10 26.17049	23 17 20.31	+28 03 30.1			2	675
1989 TC	1989 10 26.18021	23 35 35.13	+11 57 11.8		16.0	2	675
1989 TC	1989 10 26.20833	23 35 33.10	+11 57 24.2			2	675
1989 TC	1989 10 28.12882	23 33 30.23	+12 12 55.5			2	675
1989 TC	1989 10 28.15226	23 33 28.82	+12 13 08.5			2	675
1989 TO	1989 10 26.18819	23 38 28.51	+31 04 22.8		15.5	2	675
1989 TO	1989 10 26.21441	23 38 26.40	+31 04 24.5			2	675
1989 TO	1989 10 28.13507	23 36 06.46	+31 06 39.1			2	675
1989 TO	1989 10 28.15833	23 36 04.67	+31 06 41.5			2	675
1989 TP	1989 10 26.23247	00 14 38.19	+19 08 06.7		16.5	2	675
1989 TP	1989 10 26.25885	00 14 37.98	+19 07 13.9			2	675
1989 TP	1989 10 28.17031	00 14 25.01	+18 04 40.1			2	675
1989 TP	1989 10 28.19323	00 14 24.71	+18 03 54.6			2	675
1989 TS	1989 10 26.38003	02 44 35.04	+00 35 47.3		16.5	2	675
1989 TS	1989 10 26.40625	02 44 32.32	+00 36 08.8			2	675
1989 TS	1989 10 27.25122	02 43 07.50	+00 47 27.3		16.0	2	675
1989 TS	1989 10 28.27986	02 41 23.01	+01 01 23.5			2	675
1989 TS	1989 10 28.30729	02 41 20.13	+01 01 45.3			2	675
1989 TS	1989 10 29.27170	02 39 42.11	+01 14 57.8			2	675
1989 TS	1989 10 29.30208	02 39 38.95	+01 15 21.8			2	675
1989 TT	1989 10 26.38646	03 18 31.99	-07 46 10.5		16.0	2	675
1989 TT	1989 10 26.41233	03 18 31.07	-07 46 35.3			2	675
1989 TT	1989 10 28.33941	03 17 33.09	-08 16 33.6			2	675
1989 TV	1989 10 26.24583	00 47 13.54	-04 48 44.2		16.5	2	675
1989 TV	1989 10 26.27205	00 47 13.11	-04 49 07.1			2	675
1989 TV	1989 10 28.20486	00 46 54.70	-05 16 51.9			2	675
1989 TZ	1989 10 26.13594	22 18 48.30	+05 48 55.2		16.5	2	675
1989 TZ	1989 10 26.15868	22 18 49.15	+05 48 42.5			2	675
1989 TZ	1989 10 28.14653	22 20 07.55	+05 33 14.9			2	675
1989 UP	1989 10 28.43802	04 31 29.52	+00 54 33.7			2	675

1989	UP		1989	10	28.47361	04	32	01.38	+00	56	59.6		2 675
1989	UR	*	1989	10	28.20278	01	13	59.97	+28	23	16.3	18 R	7 675
1989	UR		1989	10	28.25139	01	13	49.15	+28	21	25.1		7 675
1989	UR		1989	10	29.23264	01	10	16.91	+27	41	12.9		7 675
1989	UR		1989	10	29.24653	01	10	13.94	+27	40	40.5		7 675
1989	UR		1989	11	01.16667	00	59	31.93	+25	28	11.5		7 675
1989	UR		1989	11	01.21875	00	59	20.2	+25	25	45.1		7 675
1989	UC2	*	1989	10	26.18819	23	33	14.81	+31	55	41.6	16.7	2 675
1989	UC2		1989	10	26.21441	23	33	14.14	+31	55	14.7		2 675
1989	UC2		1989	10	28.13507	23	32	34.32	+31	23	13.4		2 675
1989	UC2		1989	10	28.15833	23	32	33.74	+31	22	50.3		2 675
1989	UD2	*	1989	10	26.34462	02	59	19.45	+06	35	50.6	16.2	2 675
1989	UD2		1989	10	26.36806	02	59	17.06	+06	36	16.5		2 675
1989	UD2		1989	10	27.31476	02	57	41.09	+06	54	54.3	16.5	2 675
1989	UD2		1989	10	27.33750	02	57	38.61	+06	55	17.8		2 675
1989	UD2		1989	10	29.33594	02	54	12.54	+07	34	50.1		2 675
1989	UD2		1989	10	29.36076	02	54	10.04	+07	35	18.8		2 675
1989	UD2		1989	10	29.36701	02	54	09.10	+07	35	26.4		2 675
1989	UD2		1989	10	29.39861	02	54	05.68	+07	36	04.3		2 675
1989	UE2	*	1989	10	26.35017	03	13	32.38	+02	45	03.2	16.0	2 675
1989	UE2		1989	10	26.37361	03	13	31.30	+02	44	44.8		2 675
1989	UE2		1989	10	28.35625	03	12	01.44	+02	20	09.0		2 675
1989	UF2	*	1989	10	27.21736	02	14	10.06	+15	35	59.5	16.5	2 675
1989	UF2		1989	10	27.23958	02	14	08.80	+15	35	27.6		2 675
1989	UF2		1989	10	29.22986	02	12	19.25	+14	45	34.7		2 675
1989	UF2		1989	10	29.25122	02	12	17.96	+14	45	02.2		2 675
1989	UG2	*	1989	10	27.26788	02	20	58.87	-01	39	27.9	15.7	2 675
1989	UG2		1989	10	27.29063	02	20	56.23	-01	38	56.8		2 675
1989	UG2		1989	10	29.27170	02	17	10.73	-00	51	44.2		2 675
1989	UG2		1989	10	29.30208	02	17	07.04	-00	51	02.0		2 675
1989	UH2	*	1989	10	27.27917	02	02	42.51	-04	38	50.6	15.5	2 675
1989	UH2		1989	10	29.22431	01	59	17.82	-04	13	47.7		2 675
1989	UH2		1989	10	29.24583	01	59	15.45	-04	13	30.2		2 675
1989	UJ2	*	1989	10	27.30816	02	56	03.74	+14	10	26.9	16.2	2 675
1989	UJ2		1989	10	27.33194	02	56	02.32	+14	10	42.3		2 675
1989	UJ2		1989	10	29.32361	02	54	10.76	+14	31	42.0		2 675
1989	UJ2		1989	10	29.34878	02	54	09.31	+14	31	56.4		2 675
1989	UK2	*	1989	10	27.36615	02	47	12.51	+27	29	57.8	15.5	2 675
1989	UK2		1989	10	27.39184	02	47	11.05	+27	29	30.1		2 675
1989	UK2		1989	10	29.32951	02	45	25.75	+26	52	48.1		2 675
1989	UK2		1989	10	29.35469	02	45	24.20	+26	52	19.0		2 675
1989	UL2	*	1989	10	27.37917	03	11	14.93	+04	44	29.8	17.5	2 675
1989	UL2		1989	10	29.41736	03	10	00.67	+04	08	33.4		2 675
1989	UL2		1989	10	29.44774	03	09	59.56	+04	08	02.6		2 675
1989	UM2	*	1989	10	27.43229	03	46	57.72	+18	25	30.0	17.0	2 675
1989	UM2		1989	10	27.46024	03	46	56.10	+18	25	02.0		2 675
1989	UM2		1989	10	29.43160	03	45	07.83	+17	51	51.0		2 675
1989	UM2		1989	10	29.46128	03	45	06.12	+17	51	22.0		2 675
1989	UN2	*	1989	10	27.26788	02	12	35.50	-06	10	55.1	16.8	2 675
1989	UN2		1989	10	27.29063	02	12	34.12	-06	11	19.2		2 675
1989	UN2		1989	10	29.22431	02	10	42.71	-06	45	33.0		2 675
1989	UN2		1989	10	29.24583	02	10	41.47	-06	45	55.9		2 675
1989	UC3	*	1989	10	27.26788	02	21	11.87	-04	14	54.4	16.0	2 675
1989	UC3		1989	10	27.29063	02	21	10.33	-04	14	57.5		2 675
1989	UC3		1989	10	29.28767	02	19	00.56	-04	18	40.7		2 675
1989	UP3	*	1989	10	26.34462	03	08	31.43	+09	02	35.2	17.0	2 675
1989	UP3		1989	10	26.36806	03	08	30.36	+09	02	17.8		2 675
1989	UP3		1989	10	29.36701	03	06	21.15	+08	29	03.8		2 675
1989	UQ3	*	1989	10	26.34462	03	09	10.00	+10	07	23.6	17.0	2 675

1989	UQ3		1989	10	26.36806	03	09	09.01	+10	07	02.9		2 675
1989	UQ3		1989	10	29.36701	03	07	24.71	+09	17	41.5		2 675
1989	UV3	*	1989	10	27.25122	02	36	59.55	-00	01	07.2	16.5	2 675
1989	UV3		1989	10	27.27917	02	36	57.10	-00	00	52.6		2 675
1989	UV3		1989	10	29.27170	02	33	30.52	+00	23	51.0		2 675
1989	UV3		1989	10	29.30208	02	33	27.41	+00	24	15.9		2 675
1989	UW3	*	1989	10	27.43229	03	31	54.51	+22	22	39.6	16.5	2 675
1989	UW3		1989	10	27.46024	03	31	53.18	+22	22	23.0		2 675
1989	UW3		1989	10	29.46128	03	30	18.72	+22	03	35.0		2 675
1989	UY3	*	1989	10	27.42326	03	17	12.15	+30	29	04.6	16.5	2 675
1989	UY3		1989	10	27.45417	03	17	10.52	+30	28	36.8		2 675
1989	UY3		1989	10	29.45434	03	15	43.39	+30	00	39.2		2 675
1989	VA	*	1989	11	02.42586	04	05	17.66	+27	18	53.7	15.5	3 675
1989	VA		1989	11	03.44184	03	55	06.61	+25	17	57.5		3 675
1989	VA		1989	11	04.44861	03	45	00.78	+23	11	31.9		3 675
1989	VA		1989	11	05.26822	03	36	52.88	+21	24	23.9		3 675
1989	VA		1989	11	05.45677	03	34	56.91	+20	59	15.4		3 675
1989	VB		1989	11	03.13177	00	03	17.44	-00	03	30.7	16.5	3 675
1989	VB		1989	11	05.16597	00	27	20.06	+03	47	18.2	16.7	3 675
1989	VB		1989	11	05.30469	00	28	47.77	+04	02	02.5		3 675
1989	VB		1989	11	05.36788	00	29	28.14	+04	08	42.4		3 675
2023	P-L	*	1960	09	24.45000	00	53	54.57	+06	32	08.6	17.9	4 675
2023	P-L		1960	09	26.37010	00	52	29.37	+06	23	40.7		4 675
2023	P-L		1960	09	28.43822	00	50	55.61	+06	14	21.3		4 675
2023	P-L		1960	09	28.45140	00	50	54.95	+06	14	16.4		4 675
2023	P-L		1960	09	29.44510	00	50	09.51	+06	09	41.4		4 675
2023	P-L		1960	10	17.30420	00	36	40.58	+04	46	31.3		4 675
2023	P-L		1960	10	22.27920	00	33	22.28	+04	25	30.9		4 675
2023	P-L		1960	10	25.37570	00	31	29.96	+04	13	31.1		4 675
2023	P-L		1960	10	26.36840	00	30	56.11	+04	09	52.3		4 675
2050	P-L	*	1960	09	24.45000	00	53	09.41	+07	56	25.0	18.3	4 675
2050	P-L		1960	09	26.37010	00	51	48.65	+07	46	52.8		4 675
2050	P-L		1960	09	28.45140	00	50	17.01	+07	35	59.1		4 675
2050	P-L		1960	09	29.44510	00	49	32.44	+07	30	35.9		4 675
2050	P-L		1960	10	17.30420	00	36	08.04	+05	46	31.6		4 675
2050	P-L		1960	10	22.27920	00	33	05.63	+05	20	04.1		4 675
2050	P-L		1960	10	25.37570	00	31	30.20	+05	05	18.5		4 675
2050	P-L		1960	10	26.36840	00	31	03.04	+05	00	55.1		4 675
4018	P-L	*	1960	09	24.37573	00	22	41.22	+04	15	28.2	17.4	4 675
4018	P-L		1960	09	25.42780	00	21	41.51	+04	12	53.3		4 675
4018	P-L		1960	09	26.30558	00	20	51.76	+04	10	40.7		4 675
4018	P-L		1960	09	28.36808	00	18	52.86	+04	05	19.7		4 675
4018	P-L		1960	10	17.27085	00	01	40.20	+03	16	00.7		4 675
4018	P-L		1960	10	22.22293	23	58	07.52	+03	06	34.8		4 675
4018	P-L		1960	10	24.35836	23	56	47.57	+03	03	22.3		4 675
4018	P-L		1960	10	26.32573	23	55	41.39	+03	00	57.3		4 675
4600	P-L	*	1960	09	24.41183	00	20	03.63	+00	00	54.1	18.2	4 675
4600	P-L		1960	09	26.31530	00	18	41.88	-00	08	37.5		4 675
4600	P-L		1960	09	27.40836	00	17	54.50	-00	14	05.6		4 675
4600	P-L		1960	09	28.39725	00	17	11.74	-00	19	01.9		4 675
4600	P-L		1960	10	17.28198	00	04	18.65	-01	45	31.0		4 675
4600	P-L		1960	10	22.23406	00	01	28.48	-02	03	41.4		4 675
4600	P-L		1960	10	25.25350	23	59	55.11	-02	13	27.9		4 675
4600	P-L		1960	10	26.31531	23	59	24.22	-02	16	38.7		4 675
6040	P-L	*	1960	09	24.33613	00	11	31.31	+03	55	12.6	16.4	4 675
6040	P-L		1960	09	25.32502	00	10	42.08	+03	50	40.6		4 675
6040	P-L		1960	09	26.27573	00	09	54.88	+03	46	14.6		4 675
6040	P-L		1960	09	28.32780	00	08	12.80	+03	36	34.9		4 675
6040	P-L		1960	10	17.27085	23	55	31.01	+02	15	37.0		4 675

6040	P-L		1960	10	22.22293	23	53	47.31	+02	01	54.2		4 675
6040	P-L		1960	10	24.35836	23	53	18.09	+01	57	26.6		4 675
6040	P-L		1960	10	26.32573	23	53	00.71	+01	54	11.8		4 675
9073	P-L	*	1960	10	17.21390	23	34	30.32	-00	05	27.5	18.1	4 675
9073	P-L		1960	10	22.15559	23	32	19.85	-00	13	43.1		4 675
9073	P-L		1960	10	24.18787	23	31	35.53	-00	16	20.6		4 675
9073	P-L		1960	10	26.26113	23	30	56.12	-00	18	29.6		4 675
9540	P-L		1960	09	24.35002	23	47	59.34	-02	39	08.3		4 675
9540	P-L	*	1960	10	17.22501	23	31	56.12	-03	47	15.9	18.3	4 675
9540	P-L		1960	10	22.16324	23	30	00.27	-03	52	10.7		4 675
9540	P-L		1960	10	24.23753	23	29	23.89	-03	52	59.7		4 675
9540	P-L		1960	10	26.27157	23	28	55.48	-03	53	02.7		4 675
2200	T-2		1973	09	19.19948	00	43	22.00	+04	56	42.3		4 675
2200	T-2		1973	09	19.25006	00	43	19.30	+04	56	26.9		4 675
2200	T-2		1973	09	20.26458	00	42	27.12	+04	51	05.1		4 675
2200	T-2		1973	09	24.36181	00	38	49.59	+04	28	47.0		4 675
2200	T-2		1973	09	24.42847	00	38	45.76	+04	28	23.7		4 675
2200	T-2		1973	09	25.25642	00	38	01.32	+04	23	43.3		4 675
2200	T-2		1973	09	25.32031	00	37	57.73	+04	23	22.0		4 675
2200	T-2		1973	09	29.26632	00	34	20.23	+04	00	48.8		4 675
2200	T-2	*	1973	09	29.33073	00	34	16.55	+04	00	26.1	18.6	4 675
2200	T-2		1973	09	30.22257	00	33	27.21	+03	55	15.9		4 675
2200	T-2		1973	09	30.28785	00	33	23.49	+03	54	53.8		4 675
2200	T-2		1973	10	04.30208	00	29	41.39	+03	31	39.4		4 675
2200	T-2		1973	10	04.36476	00	29	37.71	+03	31	17.5		4 675
2200	T-2		1973	10	05.32917	00	28	45.15	+03	25	45.0		4 675
2200	T-2		1973	10	05.39132	00	28	41.61	+03	25	24.3		4 675
2285	T-2		1973	09	25.25642	00	45	00.98	+04	18	24.0		4 675
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2285	T-2		1973	09	29.26632	00	41	21.14	+04	12	37.4		4 675
2285	T-2	*	1973	09	29.33073	00	41	17.45	+04	12	31.0	17.7	4 675
2285	T-2		1973	09	30.22257	00	40	27.89	+04	11	07.4		4 675
2285	T-2		1973	09	30.28785	00	40	24.17	+04	11	00.9		4 675
2285	T-2		1973	10	04.30208	00	36	37.97	+04	04	38.4		4 675
2285	T-2		1973	10	04.36476	00	36	34.34	+04	04	32.8		4 675
2285	T-2		1973	10	05.32917	00	35	39.66	+04	03	00.5		4 675
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3306	T-2		1973	09	19.22500	00	31	45.04	-02	14	14.0		4 675
3306	T-2		1973	09	19.27865	00	31	41.85	-02	14	25.8		4 675
3306	T-2		1973	09	20.30278	00	30	42.68	-02	18	32.6		4 675
3306	T-2		1973	09	24.38750	00	26	38.12	-02	34	52.5		4 675
3306	T-2		1973	09	24.45434	00	26	33.81	-02	35	08.5		4 675
3306	T-2		1973	09	25.28125	00	25	43.30	-02	38	23.6		4 675
3306	T-2		1973	09	25.34601	00	25	39.18	-02	38	39.6		4 675
3306	T-2		1973	09	29.29219	00	21	32.11	-02	53	43.7		4 675
3306	T-2		1973	09	29.35694	00	21	27.85	-02	53	56.9		4 675
3306	T-2		1973	09	30.23524	00	20	32.83	-02	57	09.2		4 675
3306	T-2		1973	09	30.24826	00	20	31.92	-02	57	12.9		4 675
3306	T-2	*	1973	09	30.30174	00	20	28.30	-02	57	24.1	18.5	4 675
3306	T-2		1973	09	30.31476	00	20	27.65	-02	57	27.4		4 675
3306	T-2		1973	10	04.31493	00	16	16.44	-03	11	00.5		4 675
3306	T-2		1973	10	04.32708	00	16	15.71	-03	11	01.3		4 675
3306	T-2		1973	10	04.37674	00	16	12.45	-03	11	11.5		4 675
3306	T-2		1973	10	04.38889	00	16	11.76	-03	11	11.1		4 675
3306	T-2		1973	10	05.34167	00	15	13.09	-03	14	13.2		4 675
3306	T-2		1973	10	05.35382	00	15	12.04	-03	14	10.2		4 675
3306	T-2		1973	10	05.40347	00	15	09.05	-03	14	22.6		4 675
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4265	T-2		1973	09	19.22500	00	46	43.36	-02	36	55.7		4 675

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4265 T-2    1973 09 24.38750  00 42 20.30  -02 45 35.4                4 675
4265 T-2    1973 09 24.45434  00 42 16.71  -02 45 41.4                4 675
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4265 T-2  * 1973 09 29.29219  00 37 59.22  -02 53 03.0          16.6  4 675
4265 T-2    1973 09 29.35694  00 37 55.73  -02 53 07.7                4 675
4265 T-2    1973 09 30.24826  00 37 07.89  -02 54 20.7                4 675
4265 T-2    1973 09 30.31476  00 37 04.12  -02 54 25.3                4 675
4265 T-2    1973 10 04.32708  00 33 27.75  -02 59 19.5                4 675
4265 T-2    1973 10 04.38889  00 33 24.30  -02 59 24.8                4 675
4265 T-2    1973 10 05.35382  00 32 32.44  -03 00 23.6                4 675
4265 T-2    1973 10 05.41597  00 32 29.04  -03 00 27.0                4 675
3045 T-3    1977 10 07.28125  01 32 39.58  +04 14 00.1                4 675
3045 T-3    1977 10 11.30000  01 29 13.13  +04 10 28.1                4 675
3045 T-3    1977 10 11.36771  01 29 09.49  +04 10 25.2                4 675
3045 T-3    1977 10 12.29826  01 28 20.98  +04 09 35.7                4 675
3045 T-3    1977 10 12.36441  01 28 17.39  +04 09 33.4                4 675
3045 T-3  * 1977 10 16.27309  01 24 52.78  +04 06 30.0          17.0  4 675
3045 T-3    1977 10 16.28368  01 24 52.18  +04 06 31.2                4 675
3045 T-3    1977 10 16.33872  01 24 49.27  +04 06 27.4                4 675
3045 T-3    1977 10 16.34931  01 24 48.73  +04 06 29.3                4 675
3045 T-3    1977 10 17.27552  01 24 00.25  +04 05 48.2                4 675
3045 T-3    1977 10 17.28628  01 23 59.70  +04 05 47.8                4 675
3045 T-3    1977 10 17.34236  01 23 56.71  +04 05 44.4                4 675
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3045 T-3    1977 10 21.39792  01 20 25.90  +04 03 21.6                4 675
3045 T-3    1977 10 21.45799  01 20 22.76  +04 03 19.8                4 675
3045 T-3    1977 10 22.39844  01 19 34.53  +04 02 50.7                4 675
3045 T-3    1977 10 22.45920  01 19 31.47  +04 02 49.5                4 675
2047        1989 10 27.42326  03 29 16.93  +27 18 59.3          16.0  2 675
2047        1989 10 29.45434  03 25 42.87  +27 53 07.8                2 675
3848        1986 05 03.26979  13 40 05.75  -07 17 26.2          16.5  2 675

691 Kitt Peak, Steward Observatory
T. Gehrels, Space Sciences Building, University of Arizona,
   Tucson, AZ 85721, U.S.A.
Observers D. Rabinowitz, J. V. Scotti
0.91-m SPACEWATCH telescope
SAOC 1984
1989 UP   * 1989 10 27.35742  04 14 44.44  -00 17 52.6                691
1989 UP     1989 10 27.44718  04 16 00.04  -00 12 10.1                691
1989 UP     1989 10 27.50679  04 16 51.03  -00 08 19.9                691
1989 UP     1989 10 27.53229  04 17 12.90  -00 06 42.4                691
1989 UP     1989 10 28.29678  04 29 18.63  +00 44 40.6                691
1989 UP     1989 10 28.30666  04 29 27.77  +00 45 22.2          15.8V 691
1989 UP     1989 10 28.31447  04 29 34.94  +00 45 54.7                691
1989 UP     1989 10 28.33446  04 29 53.32  +00 47 18.8                691
1989 UP     1989 10 28.34925  04 30 06.81  +00 48 20.2                691
1989 UP     1989 10 28.35678  04 30 13.71  +00 48 52.1                691
1989 UP     1989 10 29.31477  04 46 21.56  +01 58 50.2                691
1989 UP     1989 10 29.32844  04 46 35.15  +01 59 52.4          15.8V 691
1989 UP     1989 10 29.37963  04 47 26.12  +02 03 46.8                691
1989 UP     1989 10 30.51630  05 08 02.59  +03 33 55.9                691
1989 UP     1989 11 02.41666  06 07 19.16  +07 42 34.8                691
1989 UP     1989 11 02.44363  06 07 52.12  +07 44 54.4                691
1989 UP     1989 11 03.36110  06 27 48.80  +09 02 35.0                691
1989 UP     1989 11 03.39490  06 28 31.12  +09 05 25.7                691
```

698 Mt. Bigelow
C. Shoemaker, P.O. Box 984, Flagstaff, AZ 86002, U.S.A.
Observers E. S. Bus, M. Nolan
Measurers E. S. Bus, S. J. Bus
1.5-m reflector + CCD
SAOC primary net

1865	1989 11 19.33039	03 37 56.65	-26 08 41.8			698
1865	1989 11 19.33350	03 37 55.87	-26 09 09.4			698

760 Goethe Link
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road,
Flagstaff, AZ 86001, U.S.A.
Observers F. K. Edmondson, W. T. Hughes
Measurer B. A. Skiff
0.25-m refractor
PDS scanning microdensitometer
AGK3 and Perth 70 secondary nets, global solutions

1950 BA1	1950 01 28.41386	09 02 30.59	+23 54 22.0			760
1950 BA1	1950 01 28.43400	09 02 29.41	+23 54 29.1			760
1950 PO	1950 08 14.21671	21 50 17.06	-08 10 56.8			760
1950 PO	1950 08 14.27297	21 50 13.55	-08 10 51.0			760
1950 PP	1950 08 14.21671	21 48 16.24	-08 07 40.4			760
1950 PP	1950 08 14.27297	21 48 12.44	-08 07 29.1			760
1950 PR	1950 08 14.21671	21 44 13.00	-10 41 51.4			760
1950 PR	1950 08 14.27297	21 44 09.99	-10 42 17.4			760
1950 PT	1950 08 14.21671	21 48 53.73	-12 02 02.1			760
1950 PT	1950 08 14.27297	21 48 50.87	-12 02 16.0			760
1954 HG	1954 04 26.27326	14 05 30.59	-04 14 33.1			760
1954 HG	1954 04 26.31839	14 05 27.76	-04 14 17.9			760
1955 SY	1955 09 18.20166	01 08 15.28	-00 27 13.2			760
1955 SY	1955 09 18.24055	01 08 13.94	-00 27 35.6			760
1955 SA1	1955 09 18.20166	01 01 31.62	-00 07 51.7			760
1955 SA1	1955 09 18.24055	01 01 28.19	-00 07 35.8			760
54	1950 01 28.37361	08 38 37.08	+20 30 55.9			760
54	1950 01 28.39304	08 38 35.89	+20 30 56.6			760
58	1955 09 18.20166	01 10 08.41	+03 32 37.3			760
58	1955 09 18.24055	01 10 06.87	+03 32 23.5			760
96	1950 08 14.21671	21 51 09.26	-12 12 21.2			760
96	1950 08 14.27297	21 51 06.36	-12 12 24.6			760
143	1950 08 14.32089	22 05 10.70	-14 26 31.2			760
143	1950 08 14.36740	22 05 08.03	-14 26 35.9			760
306	1950 08 14.32089	22 13 02.33	-12 08 35.4			760
306	1950 08 14.36740	22 13 00.12	-12 09 03.8			760
390	1950 01 28.37361	08 32 05.93	+18 22 22.7			760
390	1950 01 28.39304	08 32 04.63	+18 22 19.8			760
400	1950 01 28.41386	09 10 15.70	+21 07 33.6			760
400	1950 01 28.43400	09 10 14.50	+21 07 34.3			760
485	1954 09 01.22672	00 04 46.91	+07 52 04.6			760
485	1954 09 01.26073	00 04 45.73	+07 51 51.0			760
538	1955 09 18.20166	01 11 15.65	-00 22 06.3			760
538	1955 09 18.24055	01 11 14.41	-00 22 22.5			760
3096	1955 09 18.20166	01 15 17.39	+00 31 57.4			760
3096	1955 09 18.24055	01 15 16.21	+00 31 30.2			760
3883	1954 04 26.27326	14 13 32.58	+01 06 27.0			760
3883	1954 04 26.31839	14 13 30.25	+01 06 45.4			760
3914	1950 08 14.21671	21 50 39.99	-12 37 53.4			760
3914	1950 08 14.27297	21 50 36.77	-12 37 56.2			760
3957	1955 09 18.20166	00 53 35.05	+05 04 12.3			760
3957	1955 09 18.24055	00 53 33.66	+05 03 57.4			760

3982 1954 09 01.22672 23 52 41.47 +10 57 48.4 760
3982 1954 09 01.26073 23 52 39.81 +10 57 39.6 760
4118 1950 08 14.21671 21 42 56.07 -09 48 45.6 760
4118 1950 08 14.27297 21 42 52.89 -09 48 51.0 760

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
AC
1931 TR1 1989 08 27.33146 01 14 35.63 +14 35 30.0 801
1931 TR1 1989 10 26.18815 00 38 10.49 +05 49 21.3 801
1938 HE 1988 07 14.08806 12 49 14.53 +01 11 55.1 i 801
1964 VE 1989 10 01.27615 23 12 45.74 +24 39 43.8 t 801
1964 VE 1989 10 27.06188 23 12 19.78 +12 36 30.6 801
1968 HP 1988 09 16.12665 21 39 23.81 -14 30 13.8 W 801
1971 UK 1989 07 29.31725 22 53 20.41 +03 03 19.3 801
1971 UK 1989 10 25.07609 22 21 45.77 -04 04 56.2 801
1978 UU1 1989 10 26.20866 01 02 39.51 +00 01 41.6 801
1979 SL11 1988 04 14.17877 12 49 52.10 +01 18 17.5 801
1981 ER14 1989 08 27.28806 00 21 42.87 +10 47 03.8 801
1981 EO42 1987 10 24.35385 03 22 10.67 +24 36 13.9 801
1982 HL 1986 02 09.21465 09 17 46.60 +25 23 29.3 t 801
1982 SF 1989 10 27.24012 02 42 22.16 +04 21 06.8 801
1982 TF2 1989 10 25.16377 23 27 38.99 -00 28 22.3 801
1982 TF2 1989 10 26.12636 23 27 35.31 -00 29 44.1 801
1982 TF2 1989 10 27.10514 23 27 33.54 -00 30 53.9 801
1985 RL1 1989 09 25.33266 02 36 06.85 +17 53 08.7 801
1986 AE 1989 09 25.07104 20 43 43.02 +26 22 53.0 801
1986 UU 1989 10 25.01073 20 41 58.34 -09 57 37.8 T 801
1988 FJ 1989 10 26.16574 23 35 07.95 +03 10 13.7 801
1989 JA 1989 10 26.25340 03 03 56.52 -02 11 51.4 W 801
1989 OB 1989 10 25.14007 23 26 29.57 +33 08 52.3 801
1989 OB 1989 10 26.07807 23 29 34.42 +33 04 40.5 801
1989 PA 1989 10 24.98605 20 05 29.62 +04 12 29.7 801
1989 SC1 1989 10 25.16377 23 27 31.45 -00 24 00.6 801
1989 SC1 1989 10 26.12636 23 27 28.56 -00 25 32.1 801
1989 SC1 1989 10 27.10514 23 27 27.46 -00 26 52.2 801
951 1989 10 25.39461 08 45 30.57 +15 53 04.2 E 801
951 1989 10 26.37787 08 46 49.71 +15 45 45.7 801
1865 1989 10 26.30545 04 20 56.65 +12 28 40.9 801
2711 1989 10 26.28047 03 25 46.24 +03 57 01.5 801
4228 1989 10 27.01062 20 54 24.61 -11 21 45.5 801

807 Cerro Tololo
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road,
Flagstaff, AZ 86001, U.S.A.
Observer S. J. Bus
Measurer S. J. Bus
0.60-m Schmidt
1935 SA2 1989 10 04.24306 01 48 08.53 +12 47 42.9 807
1938 HE 1989 10 03.29167 02 25 50.74 +03 42 42.8 807
1971 QP 1989 10 04.24306 01 54 40.31 +15 02 27.6 807
1978 TU7 1989 10 28.26389 02 46 35.96 +01 47 28.8 807
1982 SF 1989 10 04.35000 02 56 20.91 +07 00 40.2 807
1982 SF 1989 10 28.26389 02 41 28.63 +04 14 51.6 807
1983 AN 1989 10 03.29167 02 30 41.40 +03 02 32.6 807
1985 PZ1 1989 10 28.15972 02 28 13.47 +00 10 38.3 807

1988	RR10		1989	10	03.18750	01	07	57.12	-04	23	00.5	807
1988	RR10		1989	10	30.08958	00	55	53.23	-06	11	26.7	807
1988	RD12		1989	10	04.24306	01	51	09.77	+15	17	02.2	807
1988	RD12		1989	10	29.16667	01	38	28.38	+14	16	30.1	807
1988	RD12		1989	10	31.14097	01	37	28.54	+14	11	09.2	807
1988	RE12		1989	10	03.29167	02	39	25.94	+02	58	18.3	807
1988	RE12		1989	10	28.15972	02	28	16.28	+01	04	26.8	807
1988	SP2		1989	10	04.35000	03	00	00.40	+05	01	49.2	807
1988	SP2		1989	10	28.26389	02	49	43.47	+03	26	50.9	807
1988	SA3		1989	10	02.25000	02	17	38.72	+26	05	05.0	807
1988	SA3		1989	10	28.21111	02	02	28.21	+26	01	42.5	807
1988	SL3		1989	10	02.35417	02	54	19.04	-15	29	46.2	807
1988	SL3		1989	10	28.31597	02	42	27.02	-17	08	51.2	807
1989	SL		1989	10	29.16667	01	40	00.80	+17	28	05.1	15.5 807
1989	SL		1989	10	31.14097	01	38	22.91	+17	07	42.6	807
1989	TY		1989	10	29.11458	00	14	37.99	+11	02	12.7	807
1989	TH2	*	1989	10	03.29167	02	35	47.83	+03	16	03.0	807
1989	TH2		1989	10	28.15972	02	17	21.97	+00	12	20.9	807
1989	UZ3	*	1989	10	29.16667	01	37	44.56	+16	09	15.2	17.0 807
1989	UZ3		1989	10	31.14097	01	36	29.75	+15	40	59.8	807
1989	UA4	*	1989	10	29.16667	01	41	47.48	+15	47	44.2	807
1989	UA4		1989	10	31.14097	01	40	13.35	+15	42	32.7	807
1989	UB4	*	1989	10	29.16667	01	50	20.15	+16	38	45.1	16.8 807
1989	UB4		1989	10	31.14097	01	47	56.30	+16	47	36.4	807
5141	T-2		1989	10	28.21111	02	02	50.53	+27	40	47.4	807
2035	T-3		1989	10	29.16667	01	41	27.79	+17	40	15.3	807
2035	T-3		1989	10	31.14097	01	40	23.78	+17	34	51.0	807
5010	T-3		1989	10	03.29167	02	33	22.03	+01	45	05.6	807
5010	T-3		1989	10	28.15972	02	22	14.15	+00	12	24.2	807
105			1989	10	04.35000	02	58	28.49	+03	02	44.0	807
310			1989	10	04.24306	01	54	32.58	+13	46	44.9	807
348			1989	10	04.35000	02	50	21.50	+03	36	04.1	807
538			1989	10	03.18750	01	09	34.20	-01	24	04.6	807
869			1989	10	04.35000	02	59	59.37	+07	09	22.4	807
869			1989	10	28.26389	02	42	32.95	+04	55	42.6	807
884			1989	10	02.25000	02	03	58.70	+23	58	10.6	807
890			1989	10	04.35000	02	52	09.89	+04	01	58.5	807
1017			1989	10	30.08958	00	59	53.04	-06	21	21.0	807
1107			1989	10	04.35000	03	02	18.22	+07	08	18.4	807
1449			1989	10	28.15972	02	20	36.97	+02	41	43.3	807
1533			1989	10	03.29167	02	28	49.19	+02	09	59.7	807
1970			1989	10	02.25000	02	22	56.24	+24	48	53.1	807
1970			1989	10	28.21111	02	01	28.81	+23	51	56.1	807
2288			1989	10	28.26389	02	55	06.57	+03	39	25.1	807
2567			1989	10	04.35000	03	06	22.54	+04	04	53.3	807
2567			1989	10	28.26389	02	50	32.82	+01	38	08.4	807
2670			1989	10	02.25000	02	08	09.26	+27	13	40.2	807
2778			1989	10	03.18750	01	16	41.82	-01	33	31.6	807
2795			1989	10	04.24306	01	52	13.05	+13	35	35.8	807
2895			1989	10	02.35417	02	49	34.16	-17	31	58.1	807
2895			1989	10	28.31597	02	37	57.69	-19	26	24.7	807
3029			1989	10	29.16667	01	42	44.10	+16	37	03.6	807
3029			1989	10	31.14097	01	40	43.21	+16	25	32.3	807
3613			1989	10	03.18750	01	12	04.24	-03	48	01.6	807
3627			1989	10	04.35000	02	59	42.64	+04	54	10.5	807
3627			1989	10	28.26389	02	39	26.73	+03	28	10.9	807
3649			1989	10	03.18750	01	11	19.84	-03	05	37.0	807
3649			1989	10	30.08958	00	52	43.27	-04	53	22.0	807

809 European Southern Observatory
W. Landgraf, Rua Anita Garibaldi 14/301, BR-22041 Rio de Janeiro, Brazil (2)
H. Debehogne, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180 Brussels, Belgium (3)
Observers H. Debehogne, W. Landgraf
GPO 0.4-m astrograph

1988 JF		1989 06 05.42465	01 35 14.90	-00 09 27.4		18.2	2	809
1988 JF		1989 06 05.42951	01 35 15.30	-00 09 24.0			2	809
1989 LX	*	1989 06 05.42465	01 31 39.98	+00 05 34.2			2	809
1989 LX		1989 06 05.42951	01 31 40.39	+00 05 37.3			2	809
1989 LX		1989 06 10.38542	01 41 46.73	+00 55 30.0			2	809
1989 LX		1989 06 10.39100	01 41 47.10	+00 55 32.4			2	809
1989 LX		1989 06 14.40903	01 49 55.58	+01 34 41.4			2	809
1989 LX		1989 06 14.41597	01 49 56.34	+01 34 45.7			2	809
1989 LX		1989 06 14.42465	01 49 57.14	+01 34 49.7			2	809
1989 LX		1989 06 14.42951	01 49 57.89	+01 34 53.1			2	809
1989 LX		1989 06 15.37170	01 51 51.96	+01 43 51.0			2	809
1989 LX		1989 06 15.37865	01 51 52.91	+01 43 56.6			2	809
1989 LX		1989 06 15.38785	01 51 53.94	+01 44 01.2			2	809
1989 LX		1989 06 15.39271	01 51 54.53	+01 44 04.2			2	809
348		1989 06 14.40903	01 46 51.14	+01 58 32.6			2	809
348		1989 06 14.41597	01 46 51.62	+01 58 35.3			2	809
348		1989 06 14.42465	01 46 52.30	+01 58 38.0			2	809
348		1989 06 14.42951	01 46 52.70	+01 58 39.9			2	809
893		1989 06 05.42465	01 31 09.10	-00 09 37.8			2	809
893		1989 06 05.42951	01 31 09.47	-00 09 34.9			2	809
893		1989 06 14.40903	01 44 57.76	+00 25 43.7			2	809
893		1989 06 14.41597	01 44 58.35	+00 25 46.0			2	809
893		1989 06 14.42465	01 44 59.16	+00 25 47.3			2	809
893		1989 06 14.42951	01 44 59.59	+00 25 48.6			2	809
1903		1989 06 05.40451	22 58 21.34	-08 31 44.0		15.3	2	809
1903		1989 06 05.40938	22 58 21.53	-08 31 43.5			2	809
1903		1989 06 05.41424	22 58 21.73	-08 31 43.1			2	809
2627		1989 06 05.40451	22 58 17.57	-08 13 21.5		16.0	2	809
2627		1989 06 05.40938	22 58 17.78	-08 13 20.2			2	809
2627		1989 06 05.41424	22 58 18.00	-08 13 19.1			2	809
2644		1989 06 05.40451	23 00 37.41	-08 32 02.2		14.2	2	809
2644		1989 06 05.40938	23 00 37.85	-08 31 59.0			2	809
2644		1989 06 05.41424	23 00 38.24	-08 31 57.1			2	809
4197		1989 10 07.09236	00 29 53.58	+05 07 28.4		16.0	3	809
4197		1989 10 07.10208	00 29 51.23	+05 07 28.4			3	809
4197		1989 10 07.11181	00 29 48.94	+05 07 28.1			3	809
4197		1989 10 12.06076	00 08 19.73	+05 04 14.6			3	809
4197		1989 10 12.06424	00 08 18.66	+05 04 14.4			3	809

871 Akou
K. Kawanishi, 2045-1, Kariya, Akou, Hyogo-Ken 678-02, Japan
0.20-m f/4.8 reflector

1989 SL		1989 10 29.65104	01 39 36.07	+17 22 55.9			871
1989 SL		1989 10 29.66840	01 39 35.28	+17 22 47.7			871
1989 TG1		1989 10 28.65659	01 43 06.13	+19 23 28.3			871
1989 TG1		1989 10 28.67395	01 43 05.43	+19 23 19.0			871
1989 UV		1989 10 28.61840	03 03 05.88	+25 08 04.4		16.0	871
1989 UV		1989 10 28.63576	03 03 04.75	+25 08 07.9			871
1989 UE4		1989 11 24.62257	03 27 06.91	+17 43 18.7		16.0	871

872 Tokushima
T. Furuta, Mitsuike 17-2, Kakiya-Cho, Tokai, Aichi-Ken 477, Japan
Observer M. Iwamoto

Measurer T. Furuta
0.25-m Wright-Schmidt

1977	QU2		1989	10	29.50521	01	46	02.14	+09	10	31.9		872
1977	QU2		1989	10	29.51988	01	46	01.25	+09	10	23.1		872
1977	QU2		1989	10	30.49353	01	45	12.77	+09	03	11.6		872
1984	SG1		1989	11	02.52917	02	40	56.14	+20	42	29.3	16.0	872
1984	SG1		1989	11	02.54314	02	40	55.62	+20	42	24.9		872
1985	QM4		1989	10	29.50521	01	48	01.7	+08	55	13		872
1985	QM4		1989	10	29.51988	01	48	01.2	+08	55	12		872
1985	QM4		1989	10	30.49353	01	47	06.7	+08	52	52		872
1985	QM4		1989	10	30.50848	01	47	05.9	+08	52	48		872
1989	UU	*	1989	10	23.60671	02	24	59.4	+09	05	01	16.0	872
1989	UU		1989	10	23.62118	02	24	58.5	+09	04	57		872
1989	UU		1989	10	29.53733	02	20	04.95	+08	38	30.8		872
1989	UU		1989	10	29.55163	02	20	04.09	+08	38	28.6		872
1989	UU		1989	11	02.56829	02	16	43.79	+08	21	25.8		872
1989	UU		1989	11	02.58220	02	16	42.96	+08	21	23.1		872
1989	UW	*	1989	10	23.63709	02	40	25.1	+10	19	10	16.0	872
1989	UW		1989	10	23.65199	02	40	24.2	+10	18	59		872
1989	UW		1989	10	29.56771	02	35	35.07	+09	50	38.1		872
1989	UW		1989	10	29.58212	02	35	34.29	+09	50	34.0		872
1989	UE3	*	1989	10	29.53733	02	15	34.71	+06	58	13.8	16.0	872
1989	UE3		1989	10	29.55168	02	15	33.93	+06	58	10.7		872
1989	UE3		1989	11	02.56829	02	12	00.60	+06	41	07.2		872
1989	UE3		1989	11	02.58220	02	11	59.87	+06	41	03.2		872
1989	UF3	*	1989	10	29.53733	02	21	19.3	+08	13	15	16.5	872
1989	UF3		1989	10	29.55168	02	21	18.4	+08	13	18		872
1989	UF3		1989	11	02.56829	02	17	25.1	+08	13	27		872
1989	UF3		1989	11	02.58220	02	17	24.0	+08	13	26		872
1989	UG3	*	1989	10	29.55168	02	20	26.3	+06	30	30	16.5	872
1989	UG3		1989	11	02.56829	02	16	45.2	+06	20	30		872
1989	UG3		1989	11	02.58220	02	16	44.4	+06	20	26		872

875 Yorii
M. Arai, 2695, Tomita, Saitama, 369-12 Japan
Observers M. Arai, H. Mori
Measurer H. Mori
0.30-m f/3.8 reflector

1949	QL		1989	11	02.70633	02	12	00.26	+26	07	45.5	16	875
1989	VH	*	1989	11	02.59962	03	04	34.34	+24	02	58.7	17	875
1989	VH		1989	11	02.62022	03	04	33.23	+24	02	51.4		875
1989	VH		1989	11	04.61420	03	02	54.12	+23	50	16.9	17	875
1989	VH		1989	11	04.63619	03	02	52.93	+23	50	09.1		875
1989	VH		1989	11	20.51325	02	49	51.67	+22	00	03.6	17	875
1989	VH		1989	11	20.53090	02	49	50.82	+21	59	55.6		875
1989	VJ	*	1989	11	02.59962	03	06	43.73	+22	30	24.6	16.5	875
1989	VJ		1989	11	02.62022	03	06	42.61	+22	30	17.6		875
1989	VJ		1989	11	04.59453	03	04	51.11	+22	18	39.1	16.5	875
1989	VK	*	1989	11	02.59962	03	09	38.58	+22	24	00.9	17	875
1989	VK		1989	11	02.62022	03	09	37.68	+22	23	56.5		875
1989	VK		1989	11	04.57300	03	08	13.91	+22	14	18.3	17	875
1989	VK		1989	11	04.59453	03	08	12.83	+22	14	12.4		875
1989	VL	*	1989	11	02.59962	03	09	55.97	+22	16	06.0	16	875
1989	VL		1989	11	02.62022	03	09	54.47	+22	16	14.7		875
1989	VL		1989	11	04.57300	03	07	37.03	+22	27	03.4	16	875
1989	VL		1989	11	04.59453	03	07	35.45	+22	27	09.7		875

877 Okutama
N. Kawasato, 3-51, Hana-Koganei, Kodaira, Tokyo 187, Japan

Observer T. Hioki
Measurers N. Kawasato, T. Hioki, S. Hayakawa
0.30-m f/3.8 hyperboloid astrocamera

1971	QP		1989	11	02.57986	01	29	04.32	+11	52	13.8	16.5	877
1971	QP		1989	11	02.59826	01	29	03.43	+11	52	08.1		877
1985	TM1		1989	10	29.62257	01	25	29.37	+12	55	27.2	16.5	877
1985	TM1		1989	10	29.64063	01	25	28.30	+12	55	32.5		877
1988	RU		1989	10	08.67431	02	04	37.2	+14	24	27	17 N	877
1988	RU		1989	10	08.69263	02	04	36.5	+14	24	27	N	877
1989	TM1		1989	10	29.58576	01	47	38.16	+14	53	28.4		877
1989	TM1		1989	10	29.60330	01	47	37.00	+14	53	30.9		877
1989	TM1		1989	11	02.61285	01	43	25.43	+14	54	44.4		877
1989	TM1		1989	11	02.63021	01	43	24.21	+14	54	45.3		877
1989	TT1		1989	10	29.62257	01	31	20.68	+11	48	50.6		877
1989	TT1		1989	10	29.64063	01	31	19.71	+11	48	43.6		877
1989	TT1		1989	11	01.59093	01	28	56.07	+11	24	41.3		877
1989	TT1		1989	11	01.64028	01	28	53.39	+11	24	20.2		877
1989	TT1		1989	11	02.59826	01	28	08.94	+11	16	38.5		877
1989	TT1		1989	11	04.57465	01	26	39.37	+11	00	56.9		877
1989	TT1		1989	11	04.59201	01	26	38.39	+11	00	48.4		877
1989	TG2	*	1989	10	09.69178	02	08	17.4	+14	45	32	17.5 W	877
1989	TG2		1989	10	09.70799	02	08	16.7	+14	45	34	W	877
1989	TG2		1989	11	04.60602	01	43	17.08	+14	09	19.5	17.5 N	877
1989	TG2		1989	11	04.62362	01	43	16.04	+14	09	18.0	N	877
1989	UM		1989	10	29.58576	01	51	18.03	+14	51	41.8		877
1989	UM		1989	10	29.60330	01	51	16.90	+14	51	38.4		877
1989	UM		1989	11	04.60602	01	45	38.68	+14	16	50.5	W	877
1989	UM		1989	11	04.62362	01	45	37.53	+14	16	44.8	W	877
1989	UF1		1989	11	01.59093	01	25	21.94	+12	20	06.1		877
1989	UF1		1989	11	02.57986	01	24	41.61	+12	14	34.4	17.5	877
1989	UF1		1989	11	02.59826	01	24	40.85	+12	14	28.0		877
1989	UF1		1989	11	04.57465	01	23	24.15	+12	03	38.7	17 N	877
1989	UF1		1989	11	04.59201	01	23	23.41	+12	03	37.2	N	877
1989	UR1		1989	11	04.67049	03	06	54.45	+13	51	04.1	17 N	877
1989	UR1		1989	11	04.68935	03	06	53.43	+13	50	59.9	N	877
1989	UR2	*	1989	10	29.58576	01	49	18.50	+14	26	48.7	17.5	877
1989	UR2		1989	10	29.60330	01	49	17.68	+14	26	46.2		877
1989	UR2		1989	11	02.61285	01	46	00.08	+14	15	23.7	W	877
1989	UR2		1989	11	02.63021	01	45	59.03	+14	15	17.0	W	877
1989	US2	*	1989	10	29.58576	01	50	15.58	+14	21	03.5	16.5	877
1989	US2		1989	10	29.60330	01	50	15.01	+14	20	52.4		877
1989	US2		1989	11	02.61285	01	48	00.98	+13	25	05.3	N	877
1989	US2		1989	11	02.63021	01	47	59.81	+13	24	47.2	N	877
1989	US2		1989	11	04.60602	01	47	00.39	+12	58	04.1		877
1989	US2		1989	11	04.62362	01	46	59.83	+12	57	52.1		877
1989	UT2	*	1989	10	29.58576	01	52	47.60	+15	35	42.0	17	877
1989	UT2		1989	10	29.60330	01	52	46.80	+15	35	35.4		877
1989	UU2	*	1989	10	29.58576	01	52	56.22	+14	05	45.5	17 N	877
1989	UU2		1989	10	29.60330	01	52	55.53	+14	05	39.9	N	877
1989	UU2		1989	11	02.61285	01	49	22.75	+13	55	53.7		877
1989	UU2		1989	11	02.63021	01	49	22.03	+13	55	53.2		877
1989	UV2	*	1989	10	29.62257	01	31	01.51	+13	01	46.3	17.5 N	877
1989	UV2		1989	10	29.64063	01	31	00.73	+13	01	30.3	N	877
1989	UV2		1989	11	02.57986	01	28	42.10	+12	06	19.8		877
1989	UV2		1989	11	02.59826	01	28	41.61	+12	06	05.0		877
1989	UW2	*	1989	10	29.65660	02	53	10.56	+11	49	45.2	17	877
1989	UW2		1989	10	29.67465	02	53	09.94	+11	49	40.2		877
1989	UW2		1989	11	01.71114	02	50	54.91	+11	30	08.3		877
1989	UW2		1989	11	01.73137	02	50	54.21	+11	30	01.4		877

1989	UW2		1989 11 02.64416	02	50	13.38	+11	24	07.6		877
1989	UW2		1989 11 02.66285	02	50	12.68	+11	24	02.1		877
1989	UW2		1989 11 04.63324	02	48	43.85	+11	11	26.0		877
1989	UW2		1989 11 04.65660	02	48	42.78	+11	11	17.6		877
1989	VM		1989 11 01.71114	02	49	34.83	+12	26	40.2		877
1989	VM		1989 11 01.73137	02	49	33.73	+12	26	33.2		877
1989	VM	*	1989 11 02.64416	02	48	53.47	+12	20	05.9	17	877
1989	VM		1989 11 02.66285	02	48	52.53	+12	19	57.2		877
1989	VM		1989 11 04.63923	02	47	23.47	+12	06	01.4	17.5 W	877
1989	VM		1989 11 04.65659	02	47	22.55	+12	05	53.8	W	877
1989	VN		1989 11 01.71114	02	50	27.82	+12	22	43.9		877
1989	VN		1989 11 01.73137	02	50	27.11	+12	22	40.6		877
1989	VN	*	1989 11 02.64416	02	49	41.83	+12	19	52.4	17.5	877
1989	VN		1989 11 02.66285	02	49	40.98	+12	19	48.8		877
1989	VN		1989 11 04.63923	02	48	02.51	+12	13	50.0	17.5 W	877
1989	VN		1989 11 04.65659	02	48	01.33	+12	13	49.0	W	877
1989	WL	*	1989 11 21.64531	03	50	06.77	+15	36	50.7	16.0	877
1989	WL		1989 11 21.66354	03	50	05.55	+15	36	52.8	16.0	877
1989	WL		1989 11 24.57534	03	46	53.07	+15	39	56.1		877
3976			1989 10 29.58576	01	54	24.9	+15	08	47	16.5 N	877
3976			1989 10 29.60330	01	54	24.2	+15	08	40	N	877

881 Toyota
T. Furuta, Mitsuike 17-2, Kakiya-Cho, Tokai, Aichi-Ken 477, Japan
Observer K. Suzuki
Measurer T. Furuta
0.31-m f/5.7 reflector

1989	VE		1989 11 02.55382	03	31	24.48	+17	27	36.2	15.5	881
1989	VE		1989 11 02.57778	03	31	23.29	+17	27	24.2		881
1989	VE		1989 11 04.59132	03	29	53.95	+17	11	32.1		881
1989	VE		1989 11 04.61493	03	29	52.93	+17	11	20.9		881
1989	VG		1989 11 02.52500	03	25	44.80	+20	44	28.8	16.5	881
1989	VG		1989 11 02.53958	03	25	43.87	+20	44	25.6		881
1989	VG		1989 11 04.57292	03	23	54.07	+20	41	42.1		881

883 Shizuoka
M. Kizawa, 1458-10, Minami Numagami, Shizuoka 420, Japan
Observer M. Kizawa
0.31-m f/6.4 reflector

1989	UY2		1989 11 17.51971	02	45	51.96	+14	23	13.2		883
1989	UY2		1989 11 17.54256	02	45	50.34	+14	23	11.0		883
1989	VU		1989 11 17.55675	02	45	16.85	+15	38	25.9		883
1989	VU		1989 11 17.56829	02	45	16.24	+15	38	25.7		883
2120			1989 11 17.51971	02	46	45.65	+13	57	56.0		883
2120			1989 11 17.54256	02	46	44.38	+13	57	46.1		883
2341			1989 11 17.51971	02	43	40.65	+13	58	24.3		883
2341			1989 11 17.54256	02	43	38.79	+13	58	23.5		883

888 Gekko
Y. Oshima, Gekko Observatory, Kan-nami, Shizuoka 419-01, Japan
Observer Y. Oshima
0.5-m f/4 reflector

1964	VE		1989 10 09.62500	23	10	08.22	+20	55	19.5	16.0	888
1964	VE		1989 10 09.65833	23	10	07.76	+20	54	22.1		888
1964	VE		1989 10 20.50417	23	10	10.96	+15	42	07.7	16.0	888
1964	VE		1989 10 25.60625	23	11	42.22	+13	16	56.6	16.5	888
1964	VE		1989 10 25.63889	23	11	42.92	+13	16	01.4		888
1964	VE		1989 11 04.47778	23	17	27.60	+08	55	54.1	16.0	888
1964	VE		1989 11 04.51042	23	17	28.96	+08	55	05.3		888

1968	HP	1989	11	20.61389	05	07	28.08	+14	19	43.2	17.0	888
1968	HP	1989	11	20.65347	05	07	25.82	+14	19	38.4		888
1975	VD	1989	10	09.64147	00	24	47.07	+04	47	28.2	16.5	888
1975	VD	1989	10	09.67500	00	24	45.20	+04	47	28.5		888
1975	VD	1989	10	25.65069	00	13	25.90	+04	54	19.0	17.0	888
1975	VD	1989	10	25.68403	00	13	24.88	+04	54	20.7		888
1975	VD	1989	10	26.58889	00	13	00.61	+04	55	24.0	17.0	888
1975	VD	1989	10	26.62222	00	12	59.60	+04	55	26.2		888
1979	SL11	1989	10	09.55139	23	54	49.76	-14	17	21.5	17.0	888
1979	SL11	1989	10	09.58472	23	54	47.91	-14	17	11.1		888
1979	SL11	1989	10	09.61667	23	54	46.19	-14	17	01.6		888
1979	SL11	1989	10	23.52569	23	44	53.95	-12	51	34.3	17.0	888
1979	SL11	1989	10	23.55833	23	44	52.78	-12	51	19.7		888
1979	SL11	1989	10	29.46806	23	42	15.16	-12	06	45.3	17.0	888
1979	SL11	1989	10	29.50069	23	42	14.38	-12	06	29.9		888
1979	SL11	1989	11	04.48611	23	40	35.18	-11	17	17.5	17.0	888
1979	SL11	1989	11	04.51875	23	40	34.68	-11	17	01.8		888
1979	VN	1989	10	25.73611	04	33	29.22	+18	17	50.3	17.5	888
1979	VN	1989	10	25.76875	04	33	28.06	+18	17	41.8		888
1979	VN	1989	11	01.78194	04	28	56.17	+17	44	32.8	17.5	888
1979	VN	1989	11	01.81528	04	28	53.56	+17	44	09.8		888
1979	VN	1989	11	20.54444	04	12	14.68	+16	09	43.6	17.0	888
1979	VN	1989	11	20.57708	04	12	12.69	+16	09	33.9		888
1979	VN	1989	11	21.60694	04	11	12.64	+16	04	31.7	17.5	888
1979	VN	1989	11	21.64028	04	11	10.10	+16	04	20.7		888
1980	VX1	1989	10	04.68056	00	10	32.28	+02	46	51.6	17.5	888
1980	VX1	1989	10	04.71389	00	10	30.39	+02	46	45.8		888
1980	VX1	1989	10	25.59792	23	53	58.62	+02	01	12.3	18.0	888
1980	VX1	1989	10	25.63056	23	53	57.43	+02	01	09.4		888
1980	VX1	1989	10	26.58056	23	53	23.99	+01	59	59.5	18.0	888
1980	VX1	1989	10	26.61389	23	53	22.73	+01	59	55.2		888
1981	EE37	1989	10	23.58750	00	24	54.24	+02	31	37.0	17.0	888
1981	EE37	1989	10	23.62083	00	24	52.76	+02	31	36.4		888
1981	EE37	1989	10	29.53958	00	21	27.29	+02	32	30.2	16.5	888
1981	EE37	1989	10	29.57361	00	21	26.22	+02	32	33.0		888
1981	EE37	1989	11	01.58403	00	20	08.36	+02	35	06.5	17.0	888
1981	EE37	1989	11	01.61597	00	20	07.62	+02	35	07.9		888
1982	HL	1989	11	01.79028	05	09	19.29	+23	43	12.9	17.5	888
1982	HL	1989	11	01.82292	05	09	18.33	+23	43	16.0		888
1982	HL	1989	11	20.56111	04	56	24.31	+24	05	30.2	17.0	888
1982	HL	1989	11	20.59375	04	56	22.50	+24	05	32.3		888
1984	HC2	1989	10	23.59583	00	18	05.02	-06	57	24.2	16.5	888
1984	HC2	1989	10	23.62917	00	18	03.75	-06	57	31.0		888
1984	HC2	1989	10	29.54792	00	14	35.52	-07	08	09.4	17.0	888
1984	HC2	1989	10	29.58194	00	14	34.49	-07	08	11.6		888
1984	TB	1989	11	01.58403	00	20	59.91	+02	24	49.4	17.5	888
1984	TB	1989	11	01.61597	00	20	59.02	+02	24	44.1		888
1984	TB	1989	11	02.50069	00	20	36.40	+02	22	51.9	17.0	888
1984	TB	1989	11	02.53264	00	20	35.55	+02	22	48.4		888
1984	UW	1989	11	20.62222	05	24	06.13	+29	38	18.3	17.0	888
1984	UW	1989	11	20.66181	05	24	03.85	+29	38	13.8		888
1985	QH4	1989	10	04.75278	02	31	43.52	+19	48	58.4	17.5	888
1985	QH4	1989	10	04.78472	02	31	42.22	+19	49	00.9		888
1985	QH4	1989	10	09.70556	02	28	19.03	+19	52	12.1	17.0	888
1985	QH4	1989	10	09.73750	02	28	17.38	+19	52	12.4		888
1985	QH4	1989	10	23.66597	02	15	34.28	+19	37	43.8	16.5	888
1985	QH4	1989	11	01.64514	02	06	17.63	+19	12	48.4	16.5	888
1985	QH4	1989	11	01.67778	02	06	15.54	+19	12	42.2		888

1985	TM1		1989	10	23.65764	01	32	15.78	+12	36	17.7	16	888
1985	TM1		1989	10	23.69097	01	32	13.38	+12	36	25.4		888
1985	TM1		1989	10	24.63889	01	31	07.60	+12	39	29.8	16.0	888
1985	TM1		1989	10	24.67292	01	31	05.23	+12	39	36.1		888
1985	TM1		1989	10	25.65903	01	29	57.34	+12	42	49.4	16.0	888
1985	TM1		1989	10	25.69236	01	29	54.95	+12	42	55.8		888
1986	CG		1989	10	25.67500	02	27	19.48	+23	23	57.6	17.5	888
1986	CG		1989	10	25.70833	02	27	17.71	+23	23	47.4		888
1986	CG		1989	11	02.54653	02	20	18.56	+22	39	08.8	17.0	888
1986	CG		1989	11	02.57917	02	20	16.77	+22	38	55.8		888
1986	CG		1989	11	20.47986	02	05	28.39	+20	35	43.0	17.5	888
1986	CG		1989	11	20.51389	02	05	26.88	+20	35	29.2		888
1988	EC		1989	10	04.55556	22	16	43.28	+01	34	06.2	17.0	888
1988	EC		1989	10	04.58889	22	16	41.41	+01	34	25.1		888
1988	EC		1989	10	09.52639	22	13	05.08	+02	18	31.7	17.0	888
1988	EC		1989	10	09.55972	22	13	03.80	+02	18	48.5		888
1988	EC		1989	10	18.43750	22	09	41.42	+03	34	55.2	17.0	888
1988	EC		1989	10	20.41806	22	09	27.74	+03	51	29.4		888
1988	EC		1989	10	20.45139	22	09	27.48	+03	51	46.5		888
1989	TD1		1989	10	29.61042	01	29	24.65	+12	16	24.3	16	888
1989	TD1		1989	10	29.64306	01	29	22.97	+12	16	16.1		888
1989	TS1		1989	10	29.48403	23	55	56.79	+02	05	40.5	17.0	888
1989	TS1		1989	10	29.51597	23	55	55.99	+02	05	39.7		888
1989	TS1		1989	11	02.49306	23	54	30.42	+02	04	02.4	17.0	888
1989	TS1		1989	11	02.52431	23	54	29.72	+02	04	02.3		888
1989	TS1		1989	11	19.40903	23	50	36.79	+02	08	07.9	17.0	888
1989	TS1		1989	11	19.44028	23	50	36.53	+02	08	08.4		888
1989	TU1		1989	10	29.61875	02	11	42.35	+23	10	18.3	15.5	888
1989	TU1		1989	10	29.65139	02	11	40.73	+23	10	03.3		888
1989	TU1		1989	11	01.63750	02	09	25.04	+22	46	09.1	16.0	888
1989	TU1		1989	11	01.67014	02	09	23.51	+22	45	52.4		888
1989	TU1		1989	11	04.57570	02	07	13.99	+22	21	09.9	16.0	888
1989	TU1		1989	11	04.60903	02	07	12.39	+22	20	52.8		888
1989	TU1		1989	11	19.50903	01	58	14.36	+20	04	20.2	16.0	888
1989	TU1		1989	11	19.54167	01	58	13.44	+20	04	02.2		888
1989	UG		1989	10	26.65556	03	10	33.97	+26	38	12.0	17.0	888
1989	UG		1989	10	26.68687	03	10	31.80	+26	38	12.6		888
1989	UG		1989	10	29.62708	03	07	05.58	+26	39	21.4	17.0	888
1989	UG		1989	10	29.65972	03	07	03.12	+26	39	21.5		888
1989	UG		1989	11	01.69722	03	03	21.69	+26	38	24.8	16.5	888
1989	UG		1989	11	01.72986	03	03	19.21	+26	38	23.2		888
1989	UG		1989	11	02.55486	03	02	18.35	+26	37	46.8	16.5	888
1989	UG		1989	11	02.58750	03	02	15.91	+26	37	45.3		888
1989	UG		1989	11	04.62153	02	59	44.61	+26	35	35.3	16.5	888
1989	UG		1989	11	04.65347	02	59	42.14	+26	35	33.0		888
1989	UG		1989	11	19.55278	02	42	04.67	+25	57	23.7	16.0	888
1989	UG		1989	11	19.58542	02	42	02.50	+25	57	16.4		888
1989	UY	*	1989	10	23.68264	03	13	05.75	+26	42	09.2	17.0	888
1989	UY		1989	10	23.71528	03	13	04.11	+26	41	58.1		888
1989	UY		1989	10	24.65556	03	12	25.63	+26	36	38.8	17.0	888
1989	UY		1989	10	24.68958	03	12	24.20	+26	36	27.2		888
1989	UY		1989	10	25.71944	03	11	40.95	+26	30	28.8	17.0	888
1989	UY		1989	10	25.75208	03	11	39.50	+26	30	17.3		888
1989	UY		1989	10	26.65556	03	11	01.07	+26	24	54.4	17.0	888
1989	UY		1989	10	26.68687	03	10	59.77	+26	24	43.3		888
1989	UY		1989	10	29.63472	03	08	49.73	+26	06	12.8	16.5	888
1989	UY		1989	10	29.66736	03	08	48.20	+26	06	00.0		888
1989	UY		1989	11	01.70556	03	06	28.25	+25	45	36.3	16.5	888
1989	UY		1989	11	01.71319	03	06	27.70	+25	45	33.6		888

1989	UY		1989	11	01.73819	03	06	26.53	+25	45	22.6		888
1989	UY		1989	11	01.74583	03	06	26.17	+25	45	19.5		888
1989	UY		1989	11	04.62917	03	04	09.44	+25	24	47.7	16.5	888
1989	UY		1989	11	04.66181	03	04	07.81	+25	24	33.1		888
1989	UY		1989	11	19.56042	02	52	15.05	+23	24	56.8	16.0	888
1989	UY		1989	11	19.59375	02	52	13.47	+23	24	39.6		888
1989	UZ		1989	10	29.63472	03	08	18.62	+26	03	15.2	18.0	888
1989	UZ		1989	10	29.66736	03	08	16.94	+26	03	07.7		888
1989	UZ		1989	11	01.70556	03	05	47.48	+25	49	35.1	17.5	888
1989	UZ		1989	11	01.71319	03	05	46.95	+25	49	32.3		888
1989	UZ		1989	11	01.73819	03	05	45.49	+25	49	07.1		888
1989	UZ		1989	11	01.74583	03	05	45.22	+25	49	22.9		888
1989	UD1	*	1989	10	25.59792	23	53	52.74	+02	00	55.4	18.0	888
1989	UD1		1989	10	25.63056	23	53	51.59	+02	00	55.1		888
1989	UD1		1989	10	26.58056	23	53	21.49	+02	00	56.0	18.0	888
1989	UD1		1989	10	26.61389	23	53	20.51	+02	00	54.3		888
1989	UD1		1989	10	29.47639	23	52	00.76	+02	01	45.1	18.0	888
1989	UD1		1989	10	29.50833	23	51	59.79	+02	01	47.3		888
1989	UE1	*	1989	10	25.65069	00	14	09.30	+04	50	38.9	18.0	888
1989	UE1		1989	10	25.68403	00	14	08.57	+04	50	31.7		888
1989	UE1		1989	10	26.58889	00	13	51.94	+04	47	19.2	18.0	888
1989	UE1		1989	10	26.62222	00	13	51.24	+04	47	12.9		888
1989	UE1		1989	10	29.49236	00	13	08.72	+04	38	04.1	17.5	888
1989	UE1		1989	10	29.52431	00	13	08.31	+04	37	58.5		888
1989	UE1		1989	11	01.57639	00	12	41.15	+04	30	03.8	18.0	888
1989	UE1		1989	11	01.60764	00	12	40.90	+04	29	56.7		888
1989	UE1		1989	11	04.50278	00	12	34.07	+04	24	14.4	17.5	888
1989	UE1		1989	11	04.53542	00	12	33.92	+04	24	09.9		888
1989	UF1	*	1989	10	25.65903	01	30	35.72	+12	59	53.3	17.0	888
1989	UF1		1989	10	25.69236	01	30	34.03	+12	59	40.6		888
1989	UF1		1989	10	29.61042	01	27	31.29	+12	37	01.2	16.5	888
1989	UF1		1989	10	29.64306	01	27	29.73	+12	36	51.4		888
1989	UF1		1989	11	01.62917	01	25	20.36	+12	19	50.7	16.5	888
1989	UF1		1989	11	01.66181	01	25	18.99	+12	19	40.2		888
1989	UF1		1989	11	04.56736	01	23	24.26	+12	03	45.6	17.5	888
1989	UF1		1989	11	04.60069	01	23	22.89	+12	03	34.7		888
1989	UF1		1989	11	19.49306	01	17	22.77	+10	59	31.4	17.0	888
1989	UF1		1989	11	19.52569	01	17	22.38	+10	59	24.7		888
1989	UF1		1989	11	21.49306	01	17	07.68	+10	53	52.2	17.0	888
1989	UF1		1989	11	21.52639	01	17	07.46	+10	53	47.4		888
1989	US1		1989	11	20.47986	02	07	45.34	+19	59	21.3	16	888
1989	US1		1989	11	20.51389	02	07	43.37	+19	59	30.5		888
1989	US1		1989	11	21.53819	02	06	50.32	+20	02	39.5	17.0	888
1989	US1		1989	11	21.57083	02	06	48.61	+20	02	45.6		888
1989	UV1	*	1989	10	29.53958	00	22	41.64	+02	24	10.5	17.5	888
1989	UV1		1989	10	29.57361	00	22	40.69	+02	24	06.6		888
1989	UV1		1989	11	01.58403	00	21	29.29	+02	17	28.8	17.5	888
1989	UV1		1989	11	01.61597	00	21	28.45	+02	17	24.4		888
1989	UV1		1989	11	04.55069	00	20	31.28	+02	12	15.8	18.0	888
1989	UV1		1989	11	04.58403	00	20	30.63	+02	12	13.4		888
1989	UZ1	*	1989	10	29.68264	03	23	49.55	+23	54	14.4	17.0	888
1989	UZ1		1989	10	29.71319	03	23	48.04	+23	53	49.1		888
1989	UZ1		1989	11	01.72153	03	21	28.67	+23	11	49.2	17.0	888
1989	UZ1		1989	11	01.75417	03	21	27.01	+23	11	21.3		888
1989	UZ1		1989	11	04.63750	03	19	06.02	+22	29	45.7	17.0	888
1989	UZ1		1989	11	04.67014	03	19	04.22	+22	29	15.1		888
1989	UZ1		1989	11	21.55417	03	05	27.82	+18	23	00.6	17.5	888
1989	UZ1		1989	11	21.58750	03	05	26.21	+18	22	31.8		888

1989	UB2	*	1989	10	29.70556	03	29	52.83	+20	08	37.9	17.0	888
1989	UB2		1989	10	29.73681	03	29	51.25	+20	08	34.2		888
1989	UB2		1989	11	01.76597	03	27	15.72	+20	02	02.0	17.0	888
1989	UB2		1989	11	01.79896	03	27	13.87	+20	01	58.2		888
1989	UB2		1989	11	04.64583	03	24	38.42	+19	54	58.1	17.0	888
1989	UB2		1989	11	04.67847	03	24	36.53	+19	54	52.6		888
1989	UB2		1989	11	20.48819	03	09	17.16	+19	06	18.7	17.0	888
1989	UB2		1989	11	20.52222	03	09	15.17	+19	06	11.9		888
1989	VL		1989	11	19.56042	02	49	28.93	+23	35	36.6	16	888
1989	VL		1989	11	19.59375	02	49	26.61	+23	35	43.9		888
1989	VL		1989	11	21.54583	02	47	11.82	+23	42	48.8	16.5	888
1989	VL		1989	11	21.57917	02	47	09.45	+23	42	55.6		888
1989	VT	*	1989	11	01.79028	05	09	18.26	+23	59	59.3	16.5	888
1989	VT		1989	11	01.82292	05	09	17.66	+24	00	09.1		888
1989	VT		1989	11	02.68958	05	09	02.70	+24	04	33.8	16.5	888
1989	VT		1989	11	02.72222	05	09	02.03	+24	04	43.6		888
1989	VT		1989	11	04.71389	05	08	20.93	+24	14	48.8	16.5	888
1989	VT		1989	11	04.74583	05	08	20.12	+24	14	58.7		888
1989	VT		1989	11	20.60625	04	58	08.66	+25	34	59.1	15.5	888
1989	VT		1989	11	20.64583	04	58	06.32	+25	35	10.2		888
1989	VW	*	1989	11	04.70556	04	00	24.40	+21	59	50.3	17.5	888
1989	VW		1989	11	04.73750	04	00	23.11	+21	59	49.7		888
1989	VW		1989	11	19.57708	03	49	42.86	+21	52	09.8	17.0	888
1989	VW		1989	11	19.60903	03	49	41.34	+21	52	09.8		888
1989	VW		1989	11	20.53681	03	48	59.01	+21	51	25.1	17.0	888
1989	VW		1989	11	20.56944	03	48	57.46	+21	51	23.8		888
1989	WG	*	1989	11	20.54444	04	10	26.62	+16	11	31.7	16.5	888
1989	WG		1989	11	20.57708	04	10	24.49	+16	11	34.6		888
1989	WG		1989	11	21.56250	04	09	20.05	+16	12	47.4	17.0	888
1989	WG		1989	11	21.59583	04	09	17.77	+16	12	50.3		888
1989	WG		1989	11	21.60694	04	09	17.31	+16	12	52.4		888
1989	WG		1989	11	21.64028	04	09	15.08	+16	12	55.4		888
1989	WH	*	1989	11	20.54444	04	11	48.09	+16	26	24.3	17.0	888
1989	WH		1989	11	20.57708	04	11	46.42	+16	26	09.2		888
1989	WH		1989	11	21.60694	04	10	51.72	+16	19	02.9	17.5	888
1989	WH		1989	11	21.64028	04	10	49.89	+16	18	49.9		888
1989	WJ	*	1989	11	20.55278	04	34	56.87	+21	07	34.9	17.5	888
1989	WJ		1989	11	20.58542	04	34	54.65	+21	07	47.6		888
1989	WJ		1989	11	21.61528	04	33	46.31	+21	14	16.8	18.0	888
1989	WJ		1989	11	21.64861	04	33	44.04	+21	14	29.9		888
3524	P-L		1989	10	09.68889	01	31	47.42	+24	58	21.1	17.0	888
3524	P-L		1989	10	09.72153	01	31	45.37	+24	58	20.1		888
3524	P-L		1989	10	23.60417	01	16	45.13	+24	38	52.8	17.5	888
3524	P-L		1989	10	23.63750	01	16	42.86	+24	38	47.5		888
3524	P-L		1989	10	29.55625	01	10	36.07	+24	20	37.9	17.0	888
3524	P-L		1989	10	29.59028	01	10	33.99	+24	20	31.5		888
3524	P-L		1989	11	04.55903	01	04	56.47	+23	58	09.8	17.5	888
3524	P-L		1989	11	04.59236	01	04	54.65	+23	58	02.1		888
4020	P-L		1989	10	04.58056	22	57	56.57	-04	06	42.0	17.0	888
4020	P-L		1989	10	04.61389	22	57	55.39	-04	06	52.0		888
6543	P-L		1989	10	25.74375	04	51	41.56	+21	31	07.2	18.0	888
6543	P-L		1989	10	25.77708	04	51	40.62	+21	31	05.8		888
6543	P-L		1989	11	02.57083	04	47	47.32	+21	26	51.9	18.0	888
6543	P-L		1989	11	02.60417	04	47	46.27	+21	26	50.6		888
6543	P-L		1989	11	20.55278	04	34	32.73	+21	09	09.2	17.5	888
6543	P-L		1989	11	20.58542	04	34	31.08	+21	09	07.0		888
70			1989	10	26.70868	03	11	05.61	+16	23	34.6	12.0	888
70			1989	10	26.73229	03	11	04.16	+16	23	33.0		888
162			1989	10	09.69028	02	41	37.56	+15	27	40.3	15.0	888

162	1989	10	09.70903	02	41	36.84	+15	27	37.9			888
178	1989	10	29.65313	03	46	47.13	+19	53	02.3	13.5		888
178	1989	10	29.69479	03	46	44.95	+19	52	56.5			888
184	1989	10	09.69028	02	35	36.64	+16	42	00.4	14.5		888
184	1989	10	09.70903	02	35	35.93	+16	41	58.4			888
312	1989	10	26.59965	03	18	55.50	+27	10	48.2	14.0		888
312	1989	10	26.62326	03	18	54.28	+27	10	46.2			888
312	1989	10	26.63646	03	18	53.70	+27	10	43.8			888
312	1989	10	26.65799	03	18	52.48	+27	10	43.2			888
312	1989	11	02.56250	03	12	24.60	+27	05	52.8	14		888
312	1989	11	02.59514	03	12	22.52	+27	05	48.9			888
321	1989	10	09.62292	01	57	37.03	+10	58	12.3	15.0		888
321	1989	10	09.64583	01	57	35.99	+10	58	08.7			888
389	1989	11	19.55278	02	41	33.13	+26	13	00.0	12.5		888
389	1989	11	19.58542	02	41	31.29	+26	12	46.5			888
396	1989	10	26.67118	03	17	30.54	+19	47	26.4	15.0		888
396	1989	10	26.69549	03	17	29.34	+19	47	21.8			888
449	1989	10	26.70868	03	19	41.63	+14	52	26.2	13.5		888
449	1989	10	26.73229	03	19	40.40	+14	52	21.2			888
584	1989	11	02.75903	07	39	45.21	+25	20	04.2	13.0		888
584	1989	11	02.78958	07	39	46.19	+25	19	56.8			888
636	1989	10	09.62292	02	01	18.21	+10	12	28.4	14.0		888
636	1989	10	09.64583	02	01	17.09	+10	12	27.5			888
661	1989	10	09.54306	23	25	49.04	+02	20	24.7	15.0		888
661	1989	10	09.57639	23	25	47.64	+02	20	19.2			888
661	1989	10	20.43472	23	19	39.14	+01	53	29.7	15.0		888
661	1989	10	20.48264	23	19	37.77	+01	53	23.6			888
673	1989	11	02.57083	04	50	38.65	+21	21	01.0	15		888
673	1989	11	02.60417	04	50	37.48	+21	20	58.6			888
968	1989	10	09.69028	02	41	34.24	+14	08	53.5	15.5		888
968	1989	10	09.70903	02	41	33.73	+14	08	44.6			888
1060	1989	10	29.69792	03	30	16.49	+17	58	14.4	16.5		888
1060	1989	10	29.72917	03	30	14.55	+17	58	01.0			888
1077	1989	10	25.65590	02	56	12.16	+25	40	46.6	15.5		888
1077	1989	10	25.67674	02	56	10.84	+25	40	47.9			888
1109	1989	10	25.68854	02	52	58.01	+20	52	35.3	15.5		888
1109	1989	10	25.70938	02	52	56.95	+20	52	28.8			888
1121	1989	10	25.65069	00	13	51.68	+05	24	29.4	16	E	888
1121	1989	10	25.68403	00	13	50.32	+05	24	27.9		E	888
1121	1989	10	26.58889	00	13	15.47	+05	23	09.3	16	E	888
1121	1989	10	26.62222	00	13	14.04	+05	23	05.8		E	888
1121	1989	10	29.49236	00	11	32.23	+05	19	39.4	16		888
1121	1989	10	29.52431	00	11	31.13	+05	19	38.4			888
1146	1989	10	26.70868	03	19	40.65	+13	21	32.8	15.5		888
1146	1989	10	26.73229	03	19	39.65	+13	21	22.7			888
1201	1989	10	23.62396	03	29	16.63	+14	44	01.6	15.5		888
1201	1989	10	23.64479	03	29	15.59	+14	43	54.8			888
1201	1989	10	26.70868	03	27	05.89	+14	25	48.0	16.0		888
1201	1989	10	26.73229	03	27	04.89	+14	25	38.7			888
1204	1989	10	29.55868	02	30	51.26	+16	54	49.2	14.5		888
1204	1989	10	29.58785	02	30	49.20	+16	54	45.8			888
1222	1989	11	02.70521	04	36	28.34	+24	36	00.8	16.5		888
1222	1989	11	02.73229	04	36	27.12	+24	35	51.7			888
1255	1989	10	25.68854	02	58	16.18	+20	40	55.1	15.0		888
1255	1989	10	25.70938	02	58	15.22	+20	40	47.3			888
1296	1989	10	20.48125	00	06	31.53	+04	51	06.4	16.0		888
1296	1989	10	20.50347	00	06	30.45	+04	50	50.5			888
1378	1989	11	20.60625	04	58	07.05	+25	09	16.8	16.5		888
1378	1989	11	20.64583	04	58	04.50	+25	09	16.9			888

1447		1989	11	02.70521	04	39	13.00	+25	15	29.9	888
1447		1989	11	02.73229	04	39	11.86	+25	15	33.3	888
1454		1989	10	25.65590	03	02	20.90	+24	14	43.4	16.5 888
1454		1989	10	25.67674	03	02	19.63	+24	14	44.0	888
1475		1989	10	29.53958	00	20	34.21	+02	09	47.1	16.0 888
1475		1989	10	29.57361	00	20	33.37	+02	09	36.1	888
1475		1989	11	01.58403	00	19	33.24	+01	52	12.1	16 888
1475		1989	11	01.61597	00	19	32.64	+01	52	01.3	888
1479		1989	10	29.59965	02	36	14.00	+20	17	25.8	15.0 888
1479		1989	10	29.63993	02	36	11.40	+20	17	26.4	888
1482		1989	10	09.62292	02	07	54.97	+09	39	17.4	16.0 888
1482		1989	10	09.64583	02	07	54.02	+09	39	13.1	888
1522		1989	11	04.69792	03	59	44.51	+19	22	38.4	17 888
1522		1989	11	04.72986	03	59	42.64	+19	22	40.0	888
1578		1989	11	04.69792	03	59	06.56	+20	10	00.5	16.0 888
1578		1989	11	04.72986	03	59	05.32	+20	09	57.1	888
1879		1989	10	29.65313	03	33	58.99	+20	38	59.4	15.5 888
1879		1989	10	29.69479	03	33	56.97	+20	38	51.1	888
1911		1989	10	25.68854	03	11	15.45	+19	49	24.7	16.0 888
1911		1989	10	25.70938	03	11	14.60	+19	49	21.6	888
1911		1989	10	26.67847	03	10	38.40	+19	47	02.6	16.0 888
1911		1989	10	26.70972	03	10	37.22	+19	46	57.8	888
2007		1989	10	29.59965	02	41	54.42	+17	47	24.9	16.0 888
2007		1989	10	29.63993	02	41	51.81	+17	47	18.9	888
2177		1989	11	01.65347	02	29	08.81	+14	11	44.2	17.0 888
2177		1989	11	01.68611	02	29	07.14	+14	11	37.3	888
2406		1989	10	25.68854	03	09	12.26	+20	01	03.0	16.0 888
2406		1989	10	25.70938	03	09	10.83	+20	01	01.2	888
2509		1989	10	29.59965	02	46	05.73	+20	32	49.9	16.5 888
2509		1989	10	29.63993	02	46	03.18	+20	32	41.3	888
2913		1989	10	26.63646	03	17	46.01	+25	44	22.5	15.5 888
2913		1989	10	26.65799	03	17	44.63	+25	44	32.2	888
2913		1989	11	02.56250	03	10	05.52	+26	34	44.0	16.0 888
2913		1989	11	02.59514	03	10	03.14	+26	34	57.0	888
3069		1989	10	04.58056	22	56	37.31	-04	20	48.2	16.0 888
3069		1989	10	04.61389	22	56	36.65	-04	20	55.6	888
3077		1989	10	26.67118	03	12	32.24	+20	36	04.7	16.0 888
3077		1989	10	26.67847	03	12	31.34	+20	35	54.4	16 E 888
3077		1989	10	26.69549	03	12	30.84	+20	35	54.2	888
3077		1989	10	26.70972	03	12	29.46	+20	35	45.8	E 888
3194		1989	10	23.62396	03	29	07.98	+13	32	40.1	17.0 888
3194		1989	10	23.64479	03	29	07.01	+13	32	43.8	888
3397		1989	10	29.61042	01	27	42.79	+12	49	40.7	16.5 888
3397		1989	10	29.64306	01	27	39.68	+12	49	51.8	888
3433		1989	10	25.65590	03	05	10.14	+25	49	03.8	15.5 888
3433		1989	10	25.67674	03	05	08.95	+25	49	04.4	888

894 Kiyosato
S. Miyasaka, 3-8-501, 4 Chome, Nagayama, Tama, Tokyo 206, Japan
Observer S. Miyasaka
Measurer K. Miyasaka, S. Miyasaka
0.25-m reflector

1935	SA2	1989	11	02.57478	01	18	24.95	+12	44	52.3	894
1935	SA2	1989	11	02.60418	01	18	23.28	+12	44	51.1	894
1935	SA2	1989	11	02.62299	01	18	22.10	+12	44	52.5	894
1938	HE	1989	10	23.58970	02	07	23.78	+01	43	01.5	894
1938	HE	1989	10	23.61704	02	07	22.24	+01	42	51.0	894
1938	HE	1989	10	23.64263	02	07	20.62	+01	42	46.3	894
1980	RZ3	1989	10	23.58029	02	05	11.10	+19	14	01.4	894

1980	RZ3		1989	10	23.63419	02	05	07.52	+19 14 00.5	894
1983	AN		1989	10	23.62539	02	14	03.88	+01 43 47.4	F 894
1983	AN		1989	10	23.65179	02	14	02.38	+01 43 45.6	894

896 Yatsugatake South Base Observatory
O. Muramatsu, 119-1, 2-8 Sakurazutsumi, Musashino, Tokyo 180, Japan
Observers R. Kushida, Y. Kushida
Measurer O. Muramatsu
0.20-m f/4.0, 0.20-m f.4.8 and 0.16-m f/4.8 reflectors

274			1989	04	01.68056	13	31	29.88	-03 32 25.9	896
311			1989	03	29.65631	13	28	17.33	-04 33 46.2	896
311			1989	04	01.68056	13	26	01.46	-04 20 24.4	896
761			1989	03	29.67089	13	29	41.44	-09 06 23.7	896
864			1989	03	29.65631	13	27	13.55	-03 52 54.1	896
864			1989	04	01.68056	13	24	31.77	-03 29 33.9	896
872			1989	03	29.67089	13	26	27.80	-08 25 37.6	896
1095			1989	03	29.65631	13	27	10.25	-03 53 28.1	896
1095			1989	04	01.68056	13	25	10.76	-03 30 45.4	896
1171			1989	03	29.65631	13	24	48.35	-04 35 39.9	896
1171			1989	04	01.68056	13	22	44.73	-04 21 59.0	896
1183			1989	03	29.67089	13	24	06.52	-08 57 56.6	896
2300			1989	03	01.67014	11	21	52.13	+06 47 45.3	896
2300			1989	03	01.70486	11	21	50.45	+06 47 58.7	896
2405			1989	04	01.68056	13	24	51.53	-05 36 22.8	896
2653			1989	03	29.67089	13	30	53.97	-08 59 23.2	896

897 YGCO Chiyoda Station
T. Kojima, 45 Shimonakamori, Chiyoda-cyo, Ora-Gun,
Gunma-ken, 370-07 Japan
Observer T. Kojima
0.25-m f/3.4 Wright-Schmidt camera

1949	QL		1989	10	23.52708	02	23	14.44	+26 31 09.0	16.5	897
1949	QL		1989	10	23.56562	02	23	11.80	+26 31 07.1		897
1989	TQ1		1989	10	29.44907	01	14	24.58	-01 11 31.9	15.5	897
1989	TQ1		1989	10	29.46395	01	14	23.69	-01 11 27.5		897
1989	UU1	*	1989	10	29.49792	02	59	17.27	+27 49 54.0	16	897
1989	UU1		1989	10	29.53611	02	59	14.86	+27 49 44.1		897
1989	UU1		1989	11	02.47292	02	55	09.72	+27 29 19.2	16	897
1989	UU1		1989	11	02.50833	02	55	07.31	+27 29 07.6		897
1989	UP2	*	1989	10	29.51319	03	03	59.14	+18 58 09.6	16	897
1989	UP2		1989	10	29.55139	03	03	55.99	+18 58 06.7		897
1989	UP2		1989	11	02.48507	02	59	22.8	+19 13 01	16	897
1989	UP2		1989	11	02.51696	02	59	20.85	+19 13 08.6		897
1989	VD	*	1989	11	02.56667	03	25	47.11	+36 54 53.2	15.5	897
1989	VD		1989	11	02.60486	03	25	44.79	+36 54 49.5		897
389			1989	10	29.49792	03	01	49.51	+28 08 44.5		897
389			1989	10	29.53611	03	01	47.37	+28 08 35.3		897
812			1989	10	23.52708	02	20	49.29	+26 14 48.8	15	897
812			1989	10	23.56562	02	20	46.43	+26 14 53.4		897
2406			1989	10	29.51319	03	05	22.45	+19 53 44.4	15.5	897
2406			1989	10	29.55139	03	05	19.93	+19 53 38.7		897
2406			1989	11	02.48507	03	01	07.69	+19 44 09.9	15.5	897
2406			1989	11	02.51696	03	01	05.49	+19 44 04.9		897
2683			1989	11	02.48507	02	56	03.00	+18 53 41.1	16	897
2683			1989	11	02.51696	02	56	01.24	+18 53 33.3	16	897

978 Conder Brow
G. M. Hurst, 16 Westminster Close, Kempshott Rise, Basingstoke,
Hants. RG22 4PP, England

Observer D. G. Buczynski
Measurer B. Manning
0.55-m reflector
AGK3

1989 UA3	1989 11 06.03958	03 10 43.61	+14 38 25.6	978
1989 UB3	1989 11 06.03958	03 11 09.51	+14 53 35.5	978

* * * * *

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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. J-P indicates that only the perturbations by the outer planets were considered, and a and n are then related by a gravitational constant augmented by the masses of the inner planets. For the one-opposition orbits, equinox 1950.0 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.

Periodic Comet Helin-Roman-Alu 1 (1987 XXXVII)
Epoch 1987 Oct. 12.0 ET = JDE 2447080.5 Marsden
T 1987 Oct. 12.79881 ET

		(1950.0)	P	Q
q 3.7089827				
n 0.10371419	Peri.	216.38843	+0.32106395	+0.93310167
a 4.4865301	Node	72.83601	-0.82393376	+0.35954122
e 0.1733071	Incl.	9.76082	-0.46695942	+0.00716799
P 9.50				

From 18 observations 1988 Aug. 10-1989 Oct. 31, mean residual 1".4.

Periodic Comet Helin-Roman-Alu 2 (1989y)
T 1989 Nov. 5.67467 ET Nakano

		(1950.0)	P	Q
q 1.9416134				
n 0.11857917	Peri.	202.70417	+0.70623861	-0.70621005
a 4.1032733	Node	202.46842	+0.66794011	+0.68802900
e 0.5268135	Incl.	7.50910	+0.23469776	+0.16698343
P 8.31				

From 10 observations 1989 Oct. 26-Nov. 2.

Comet Okazaki-Levy-Rudenko (1989r)
Epoch 1989 Nov. 10.0 ET = JDE 2447840.5
T 1989 Nov. 11.91653 ET Nakano

		(1950.0)	P	Q
q 0.6423668				
z -0.0004628	Peri.	150.57406	-0.07435477	-0.03893711
+/-0.0000340	Node	274.81232	+0.60068599	+0.79587209
e 1.0002973	Incl.	90.15044	+0.79601992	-0.60421149

From 107 observations 1989 Aug. 24-Nov. 21, mean residual 1".0.

Comet Helin-Roman-Alu (1989v)
T 1989 Dec. 15.93684 ET Nakano

		(1950.0)	P	Q
q 1.0474223				
	Peri.	68.11529	+0.28162021	-0.95451269
	Node	7.82117	+0.36620404	+0.01255751
e 0.9909463	Incl.	46.04129	+0.88689608	+0.29790576

From 36 observations 1989 Oct. 1-Nov. 24.

Comet Aarseth-Brewington (1989a1)
T 1989 Dec. 27.88605 ET Marsden

		(1950.0)	P	Q
q 0.3005990				
	Peri.	205.27205	-0.87740830	+0.40623321
	Node	345.20824	+0.37088405	+0.23695331
e 1.0	Incl.	88.37784	-0.30430197	-0.88251216

From 20 observations 1989 Nov. 19-30.

Periodic Comet Tuttle-Giacobini-Kresak (1989b1)
Epoch 1990 Jan. 29.0 ET = JDE 2447920.5
T 1990 Feb. 8.20820 ET Kobayashi

		(1950.0)	P	Q
q 1.0679807				
n 0.18036206	Peri.	61.58419	-0.91695358	+0.38594403
a 3.1024580	Node	140.87692	-0.39853781	-0.87382360
e 0.6557630	Incl.	9.23001	-0.01907235	-0.29576936
P 5.46				

From 38 observations 1973-1989, mean residual 1".5. Nongravitational parameters A1 = -0.36, A2 = -0.0065.

Periodic Comet Sanguin (1989z)
Epoch 1990 Apr. 19.0 ET = JDE 2448000.5
T 1990 Apr. 2.19763 ET Marsden

		(1950.0)	P	Q
q	1.8136321			
n	0.07887147	Peri.	162.83797	+0.96384100	+0.26628427
a	5.3850459	Node	181.81386	-0.26619811	+0.96038153
e	0.6632095	Incl.	18.72212	-0.01221059	+0.08221920

P 12.50
From 30 observations 1977-1989, mean residual 1".3.

Periodic Comet Wild 2 (1989t)
Epoch 1990 Dec. 15.0 ET = JDE 2448240.5
T 1990 Dec. 16.92531 ET Yeomans

		(1950.0)	P	Q
q	1.5780577			
n	0.15461877	Peri.	41.57286	-0.99801567	-0.04889379
a	3.4379106	Node	135.57632	+0.03136297	-0.93238549
e	0.5409835	Incl.	3.24939	+0.05459931	-0.35814341

P 6.37
From 145 observations 1978-1989, mean residual 1".1. Nongravitational parameters A1 = 0.00, A2 = +0.0257.

One-opposition minor planets

Planet	H	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1984 UR	13.5	841027	22.83	306.91	48.08	7.23	0.1830	2.3332	30	7		G
1987 QH7	15.0	870922	352.93	9.84	4.48	4.43	0.3315	2.5803	40	0		N
1987 RO5	11.1	870912	352.31	213.95	157.03	6.38	0.2974	3.9176	23	3		F
1987 RT5	14.1	870912	28.10	194.48	119.04	3.01	0.1843	2.1329	24	3		F
1987 RU5	12.7	870912	26.95	311.15	3.71	8.65	0.2076	2.6280	23	3		F
1987 RY5	12.2	870912	57.40	104.76	164.11	6.37	0.2791	2.7285	23	3		F
1987 RB6	13.2	870912	63.66	217.51	60.15	3.15	0.1341	2.1812	23	3		F
1987 RF6	11.4	870912	267.15	17.04	88.03	3.50	0.1140	2.9291	23	3		F
1987 RM6	12.9	870912	18.97	299.99	27.69	6.77	0.2197	2.7135	23	3		F
1987 RN6	11.6	870912	335.11	307.79	80.03	5.95	0.0597	2.9957	24	3		F
1987 SB1	13.0	870922	31.30	149.85	169.76	13.70	0.1713	2.6684	42	0		N
1987 SC1	14.5	870922	338.03	260.38	139.11	5.32	0.2522	2.5746	27	8		N
1987 SK1	14.0	870922	327.09	31.38	11.83	5.69	0.1547	2.2722	28	0		N
1987 SL1	13.5	870922	321.57	53.59	358.67	2.49	0.1676	2.4451	28	0		N
1987 SP1	14.5	870922	9.95	354.80	351.79	5.29	0.1804	2.2944	25	5		N
1987 SG2	13.0	870922	297.53	277.12	166.71	6.87	0.1673	2.5706	24	0		N
1987 SH2	14.0	870922	12.09	176.59	171.63	8.61	0.0870	2.2954	8	0		N
1987 SJ2	15.0	870922	37.51	171.30	139.40	2.70	0.1797	2.4025	26	0	D	N
1987 SZ2	14.5	870922	343.29	356.06	26.57	7.23	0.1411	2.2452	6	4		N
1987 SB3	15.0	870922	11.08	312.81	31.81	6.24	0.1867	2.2623	24	8		N
1987 SC3	12.5	870922	45.76	158.95	124.48	6.65	0.3170	3.4961	6	0		N
1987 SD3	14.0	870922	356.12	210.09	158.08	8.74	0.1600	2.7014	3	6		N
1987 SE3	14.5	870922	358.39	267.98	96.38	4.41	0.0970	2.4734	6	8		N
1987 SZ3	13.5	871012	15.10	223.81	125.81	6.24	0.2830	2.3738	58	8		N
1987 SA4	15.5	870922	347.06	231.57	157.03	2.83	0.3626	2.5918	27	0		N
1987 SC6	12.0	870922	33.97	151.94	162.33	1.17	0.1559	3.1908	32	0		N
1987 SE6	15.0	870922	352.47	351.38	22.19	0.17	0.2615	2.4777	6	4	E	N
1987 SF6	14.5	870922	4.33	180.72	172.27	5.71	0.2337	2.4331	28	0		N
1987 SO9	14.5	870922	270.90	327.78	138.01	2.23	0.1232	2.1965	8	7		N
1987 SP11	15.0	870922	4.73	207.12	145.31	3.03	0.1843	2.3976	21	0		N
1987 SQ11	14.5	870922	338.70	19.38	14.54	3.80	0.2281	2.4570	11	5		N
1987 ST11	14.5	870922	354.24	326.83	47.14	5.33	0.1318	2.3313	7	0		N
1987 SA13	13.5	870922	17.21	155.18	173.29	9.39	0.2645	3.2486	8	0		N
1987 SD13	14.0	870922	333.40	333.48	64.75	1.92	0.1935	2.3635	75	0	D	N
1987 SS28	14.5	870922	2.13	335.99	21.86	4.62	0.1454	2.2615	24	3		N
1987 SZ28	15.5	870922	12.28	258.91	83.08	1.77	0.1967	2.1235	24	3		N

1987	VA1	11.5	871121	208.86	176.19	31.76	14.09	0.0861	2.9880	29	7	D	N
1987	VB1	14.0	871121	12.33	14.11	17.62	5.67	0.2696	2.5691	29	6	D	N
1987	VC1	13.0	871121	12.88	7.25	29.81	4.88	0.0842	2.5870	29	7		N
1988	PG1	13.5	880827	359.40	20.59	314.68	12.20	0.1968	2.7187	64	0		N
1988	PM1	13.0	881006	14.47	164.38	165.95	2.44	0.2269	2.3718	89	0		N
1988	PX1	14.5	880807	357.04	180.84	159.30	7.14	0.1265	2.3521	34	6		N
1988	QA	13.0	880827	338.03	207.45	153.87	2.52	0.2132	2.6702	33	0		N
1988	QV	14.0	880827	355.98	177.55	156.25	6.83	0.1381	2.4431	15	8		N
1988	RZ11	13.0	881006	3.58	339.25	7.09	5.23	0.2945	3.1839	53	8		N
1988	SA	15.5	880916	31.61	272.84	11.98	4.69	0.3741	2.4353	2	9	E	N
1988	SC	15.5	880916	338.89	13.80	2.28	10.10	0.0891	2.4115	4	9	E	N
1988	SD	15.0	880916	21.19	308.63	13.55	5.04	0.1546	2.3204	8	0		N
1988	UQ	12.0	881026	10.55	130.69	240.28	7.98	0.2032	3.0842	47	8		N
1989	AN3	13.0	890114	57.69	292.10	117.17	5.34	0.1475	2.2826	31	9		B
1989	BE1	13.5	890114	22.15	335.99	107.59	4.00	0.1537	2.4445	11	7		B
1989	BU1	11.5	890203	67.33	21.33	38.94	0.53	0.0733	3.0712	7	9	F	N
1989	EE	12.0	890404	29.61	319.65	163.37	29.05	0.2743	3.1537	66	9		N
1989	LX		890603	350.50	279.77	88.94	10.77	0.1574	2.3230	10	0	E	B
1989	OC	15.0	890822	5.57	326.64	306.53	8.00	0.2997	2.3911	64	0		B
1989	OM	13.5	890822	355.53	288.41	25.64	17.06	0.2899	2.9352	58	0		B
1989	RA	15.5	890911	357.31	172.35	175.65	9.17	0.2188	2.3560	23	0		B
1989	RZ	13.0	891001	333.87	81.67	340.50	21.13	0.3396	2.4093	51	0		M
1989	RN2	13.0	890911	36.41	312.83	349.74	11.12	0.2181	3.1643	29	0		B
1989	SC	14.0	891001	45.85	287.31	354.78	7.76	0.3234	2.3937	11	7	E	N
1989	SF	13.5	891001	322.18	92.75	325.17	3.74	0.0884	2.1579	35	0		G
1989	SL	13.5	891001	7.15	129.97	242.03	6.59	0.1337	2.2486	30	0		M
1989	SP	13.0	891001	28.11	132.17	201.93	15.42	0.1303	2.7376	9	0		M
1989	SQ	12.5	891001	334.13	107.00	301.51	4.24	0.2315	2.3641	18	8		N
1989	SR	11.5	891021	6.20	127.50	239.89	8.86	0.0942	2.9877	30	0		N
1989	ST	13.5	891001	32.43	22.46	291.96	4.50	0.2736	2.2709	30	0		N
1989	SU	13.0	891021	35.88	30.28	291.77	4.12	0.2383	2.5364	30	0		N
1989	SX	13.5	891001	359.27	355.22	27.41	6.69	0.3012	2.5594	35	0		G
1989	SY	13.0	891001	333.77	45.34	25.61	12.75	0.2867	2.5627	39	0		M
1989	SN5	15.0	890911	321.76	203.35	210.61	3.20	0.2309	2.2304	6	6		B
1989	SO5	16.5	890911	315.89	137.95	277.39	1.80	0.1633	2.3127	6	8		B
1989	TC	13.5	891001	356.67	9.62	1.70	23.96	0.0449	1.8862	27	0		B
1989	TG	12.5	891001	342.73	53.77	330.83	9.12	0.1102	3.0056	31	0		M
1989	TO	13.0	891001	322.78	98.67	340.09	21.70	0.3001	2.3313	24	8		B
1989	TP	14.5	891001	35.32	107.24	220.28	22.80	0.1010	1.7975	24	8		B
1989	TT	13.5	891001	356.57	221.86	172.82	16.96	0.2797	2.5957	27	7		M
1989	TV	14.0	891001	355.76	192.57	185.98	15.54	0.2937	2.5482	24	0		M
1989	TY	14.3	891021	124.82	265.66	333.41	9.16	0.1297	2.9740	27	5		B
1989	TM1	14.0	891021	339.73	37.11	21.45	9.83	0.1677	2.5879	25	8		N
1989	TN1	14.0	891001	337.89	56.98	341.63	11.14	0.2322	2.7452	28	9		M
1989	TT1	13.5	891021	327.20	204.00	223.22	5.07	0.1028	2.4004	26	0		N
1989	TU1	13.0	891021	345.32	160.56	260.00	6.69	0.2874	2.6689	41	0		N
1989	TW1	15.0	891001	329.01	180.23	239.59	5.90	0.3058	2.3477	2	6		G
1989	TA2	13.5	891001	3.19	2.34	3.44	15.60	0.1842	2.6194	2	6		G
1989	TJ2	14.0	891001	313.53	108.63	323.31	4.92	0.1323	2.2728	23	0		G
1989	UG	13.0	891110	48.25	331.10	1.95	6.72	0.2562	2.3084	27	0		N
1989	UL	12.5	891021	344.44	193.57	217.09	6.40	0.0898	2.8097	9	0		M
1989	UN	14.0	891021	8.26	8.56	12.14	3.37	0.1268	2.1457	12	8		N
1989	UO	14.0	891021	350.80	334.40	72.34	3.28	0.2043	2.3749	10	6		G
1989	UT	13.0	891021	349.14	14.11	32.64	10.04	0.1836	2.5059	7	0		G
1989	UZ	12.0	891021	220.25	292.12	260.85	10.17	0.1226	2.9665	9	9		N
1989	UD1	14.5	891021	15.65	352.35	1.94	6.59	0.0777	2.2609	4	6		N
1989	UE1	14.5	891021	3.94	96.76	273.85	1.51	0.2392	2.3809	10	0		N
1989	UF1	14.0	891110	1.37	123.93	269.17	1.79	0.2177	2.4129	27	0		N
1989	UH1	13.5	891110	16.38	164.77	216.95	6.68	0.1450	2.3879	12	0		N

1989 UM1	13.0	891021	6.88	335.89	53.44	3.87	0.1054	2.2894	3	0	E	N
1989 UN1	13.5	891021	352.10	198.28	214.72	6.08	0.2956	2.8191	3	0	E	N
1989 UR1	12.5	891021	285.73	327.63	159.29	2.48	0.0874	2.8390	7	6		N
1989 US1	14.0	891110	16.25	345.99	31.15	13.30	0.2231	2.5903	23	0		N
1989 UV1	13.5	891110	346.22	34.43	20.55	0.63	0.3981	3.7904	6	6	E	N
1989 UW1	11.0	891110	15.55	310.41	71.24	9.31	0.2447	2.7192	12	4		N
1989 UZ1	15.5	891110	26.00	121.85	236.97	9.19	0.3211	2.2935	23	8		N
1989 UD2	14.5	891021	17.17	313.12	47.12	25.04	0.3157	2.4557	3	8		B
1989 US2	15.0	891110	14.82	152.05	222.09	7.74	0.2479	2.2105	6	6		N
1989 UW2	10.5	891110	192.71	5.84	205.99	11.46	0.0257	3.1303	22	0		N
1989 UY2	13.0	891110	35.98	288.62	64.12	3.04	0.2079	2.3204	18	8		N
1989 UA3	15.0	891021	19.11	179.71	188.95	2.28	0.2190	2.2255	5	6		M
1989 UB3	14.5	891021	356.31	341.19	63.52	4.17	0.2368	2.3527	5	6	E	M
1989 UD3	14.5	891110	359.20	220.34	177.40	0.95	0.1769	2.2737	7	3		N
1989 UF3	12.5	891021	1.55	339.76	51.77	12.39	0.0726	2.8808	8	7		G
1989 UG3	13.5	891021	7.05	294.24	88.44	4.90	0.1545	2.6175	8	0		G
1989 UJ3	13.5	891110	79.52	290.38	359.09	13.13	0.1607	2.5572	3	4		N
1989 UR3	13.5	891021	33.05	170.51	166.84	3.15	0.2559	2.6632	5	0		M
1989 US3	11.5	891021	141.49	31.59	214.83	3.01	0.1135	2.7027	8	0	E	M
1989 UT3	12.5	891110	33.50	314.58	50.02	7.84	0.1300	3.1241	4	5	E	N
1989 UM4	13.0	891021	344.68	183.56	217.95	13.41	0.1568	2.6949	6	8		G
1989 UN4	13.0	891021	354.37	167.74	230.28	2.13	0.1056	2.7819	6	6	E	G
1989 UO4	14.5	891021	3.45	179.19	206.70	4.59	0.0968	2.2113	2	4	E	G
1989 UP4	13.0	891021	18.28	9.57	353.90	1.18	0.2014	3.2110	6	6		G
1989 UQ4	13.0	891021	359.24	183.68	208.23	9.21	0.1522	2.9371	2	6	E	G
1989 UR4	13.5	891021	331.49	355.80	72.74	1.80	0.1474	2.5300	6	7		G
1989 US4	12.5	891021	240.18	307.52	219.99	2.03	0.1683	2.7367	6	7	E	G
1989 UT4	14.5	891021	339.57	206.34	206.25	6.06	0.1758	2.2652	8	8		G
1989 UU4	12.5	891021	336.08	289.29	134.11	0.74	0.1259	3.1403	2	5	E	G
1989 UV4		891021	324.41	228.31	206.88	6.27	0.0825	2.6091	8	7		G
1989 UW4	12.5	891021	358.69	3.12	33.11	2.34	0.0856	2.9989	2	6	E	G
1989 UX4	14.5	891021	30.19	201.79	145.23	3.39	0.1951	2.3338	8	8		G
1989 VW	11.0	891130	282.62	112.03	50.51	8.64	0.2137	3.9110	16	6		N

1987 SJ2 = 1987 RT1 (S. Nakano)
1987 SD13 = 1987 TA1 = 1987 WG3 (S. Nakano)
1987 VA1 = 1987 WD4 (F. N. Bowman, MPC 13145)
1987 VB1 = 1989 WE4 (F. N. Bowman, MPC 13145)
1989 BU1 = 1989 CG4 (S. Nakano)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(13) Egeria Obs. 243 M 132.79282 Peri. 81.14608
H 6.71 G 0.15 Opp. 34 n 0.23832034 Node 42.75550
rms res. 1".03 (M-P) 1910-1988 e 0.0863467 Incl. 16.51736

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(16) Psyche Obs. 557 M 318.68079 Peri. 227.52906
H 5.98 G 0.22 Opp. 39 n 0.19718127 Node 149.86092
rms res. 0".85 (M-P) 1903-1988 e 0.1335093 Incl. 3.09474

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(21) Lutetia Obs. 369 M 64.05787 Peri. 249.64397
H 7.33 G 0.16 Opp. 38 n 0.25920453 Node 80.44797
rms res. 0".85 (M-P) 1913-1988 e 0.1607790 Incl. 3.06905

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(28) Bellona Obs. 323 M 134.42901 Peri. 343.45779
H 7.17 G 0.22 Opp. 45 n 0.21274471 Node 144.00336
rms res. 1".00 (M-P) 1906-1988 e 0.1484656 Incl. 9.40563

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(32) Pomona Obs. 200 M 354.58161 Peri. 338.79772
H 7.50 G 0.11 Opp. 39 n 0.23702417 Node 219.95194
rms res. 1".76 (M-P) 1910-1986 e 0.0840004 Incl. 5.53344

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(35) Leukothea Obs. 145 M 317.53120 Peri. 214.46835
H 8.54 G 0.15 Opp. 28 n 0.19017411 Node 353.31471
rms res. 1".29 (M-P) 1925-1986 e 0.2235416 Incl. 7.92283

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(47) Aglaja Obs. 170 M 36.40996 Peri. 313.10797
H 7.86 G 0.13 Opp. 37 n 0.20170921 Node 2.89991
rms res. 1".49 (M-P) 1901-1987 e 0.1319774 Incl. 4.98166

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(49) Pales Obs. 268 M 78.81323 Peri. 111.21598
H 7.91 G 0.39 Opp. 42 n 0.18227965 Node 285.55829
rms res. 1".27 (M-P) 1908-1989 e 0.2367123 Incl. 3.18365

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(55) Pandora Obs. 122 M 201.69890 Peri. 3.22694
H 7.68 G 0.35 Opp. 31 n 0.21505770 Node 10.17135
rms res. 1".27 (M-P) 1913-1987 e 0.1444267 Incl. 7.19553

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(61) Danae Obs. 86 M 7.47905 Peri. 11.90578
H 7.66 G 0.08 Opp. 27 n 0.19108910 Node 333.38823
rms res. 1".70 (M-P) 1909-1987 e 0.1621005 Incl. 18.20595

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(71) Niobe Obs. 112 M 97.11616 Peri. 266.33649
H 7.26 G 0.37 Opp. 23 n 0.21560922 Node 315.76305
rms res. 1".08 (M-P) 1907-1986 e 0.1750866 Incl. 23.29323

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(72) Feronia Obs. 115 M 127.02737 Peri. 102.45225
H 9.00 G 0.23 Opp. 28 n 0.28867563 Node 207.58889
rms res. 1".66 (M-P) 1909-1984 e 0.1200208 Incl. 5.41568

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(77) Frigga Obs. 123 M 2.49534 Peri. 61.17488
H 8.57 G 0.26 Opp. 37 n 0.22608388 Node 0.95449
rms res. 1".64 (M-P) 1908-1986 e 0.1338874 Incl. 2.42642

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(80) Sappho Obs. 348 M 278.26392 Peri. 138.76295
H 8.10 G 0.30 Opp. 35 n 0.28326273 Node 218.35055
rms res. 1".19 (M-P) 1903-1986 e 0.1998042 Incl. 8.66197

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(81) Terpsichore Obs. 80 M 300.12340 Peri. 50.91545
H 8.49 G 0.15 Opp. 30 n 0.20437589 Node 0.92851
rms res. 1".37 (M-P) 1909-1987 e 0.2092358 Incl. 7.80616

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(82) Alkmene Obs. 146 M 18.19984 Peri. 109.99940
H 8.51 G 0.34 Opp. 34 n 0.21469670 Node 25.30395
rms res. 1".70 (M-P) 1916-1987 e 0.2205892 Incl. 2.83210

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(83) Beatrix Obs. 156 M 305.52372 Peri. 166.25978
H 8.89 G 0.30 Opp. 30 n 0.25992555 Node 27.23761
rms res. 1".37 (M-P) 1916-1986 e 0.0821747 Incl. 4.96891

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(84) Klio Obs. 88 M 55.46434 Peri. 14.62309
H 9.26 G 0.15 Opp. 27 n 0.27133755 Node 327.21663
rms res. 1".55 (M-P) 1909-1987 e 0.2357635 Incl. 9.32371

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(85) Io Obs. 322 M 279.03908 Peri. 122.45096
H 7.56 G 0.05 Opp. 35 n 0.22801365 Node 202.86208
rms res. 1".14 (M-P) 1904-1986 e 0.1932082 Incl. 11.96653

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(88) Thisbe Obs. 313 M 259.01389 Peri. 35.31128
H 7.05 G 0.17 Opp. 39 n 0.21412181 Node 276.27757
rms res. 1".06 (M-P) 1904-1987 e 0.1638409 Incl. 5.21871

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(91) Aegina Obs. 214 M 134.77358 Peri. 72.83001
H 8.79 G 0.15 Opp. 38 n 0.23636623 Node 10.39487
rms res. 1".54 (M-P) 1902-1985 e 0.1041254 Incl. 2.11380

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(92) Undina Obs. 162 M 105.52817 Peri. 245.44900
H 6.74 G 0.33 Opp. 38 n 0.17206247 Node 101.42989
rms res. 1".40 (M-P) 1911-1988 e 0.0904465 Incl. 9.89957

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(97) Klotho Obs. 190 M 30.48554 Peri. 267.88364
H 7.70 G 0.25 Opp. 35 n 0.22626319 Node 159.50172
rms res. 1".07 (M-P) 1916-1988 e 0.2597153 Incl. 11.76286

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(98) Ianthe Obs. 59 M 230.31179 Peri. 157.08835
H 8.92 G 0.15 Opp. 24 n 0.22388466 Node 353.66859
rms res. 1".65 (M-P) 1927-1987 e 0.1886107 Incl. 15.56679

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(99) Dike Obs. 56 M 316.06328 Peri. 194.97795
H 9.42 G 0.15 Opp. 22 n 0.22708593 Node 41.22596
rms res. 1".72 (M-P) 1915-1987 e 0.1992525 Incl. 13.90152

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(100) Hekate Obs. 139 M 94.77927 Peri. 181.82786
H 7.79 G 0.25 Opp. 41 n 0.18046579 Node 127.20581
rms res. 1".65 (M-P) 1909-1987 e 0.1549127 Incl. 6.39294

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(102) Miriam Obs. 132 M 320.51929 Peri. 145.92138
H 9.23 G 0.15 Opp. 31 n 0.22691871 Node 210.65005
rms res. 1".36 (M-P) 1902-1988 e 0.2524071 Incl. 5.14772

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(107) Camilla Obs. 128 M 139.70922 Peri. 295.98649
H 7.09 G 0.15 Opp. 36 n 0.15157213 Node 173.48350
rms res. 1".60 (M-P) 1917-1988 e 0.0841868 Incl. 9.92817

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(108) Hecuba Obs. 135 M 339.88406 Peri. 175.92438
H 8.27 G 0.25 Opp. 32 n 0.16922204 Node 350.15514
rms res. 1".01 (M-P) 1901-1985 e 0.0564101 Incl. 4.28081

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(111) Ate Obs. 178 M 39.72312 Peri. 165.84603
H 7.89 G 0.04 Opp. 30 n 0.23587810 Node 305.38127
rms res. 1".10 (M-P) 1908-1988 e 0.0999935 Incl. 4.91316

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(113) Amalthea Obs. 146 M 108.44958 Peri. 79.57350
H 8.63 G 0.26 Opp. 36 n 0.26914867 Node 123.01991
rms res. 1".83 (M-P) 1919-1988 e 0.0879963 Incl. 5.03892

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(115) Thyra Obs. 292 M 358.25006 Peri. 96.16338
H 7.51 G 0.14 Opp. 30 n 0.26843580 Node 308.60207
rms res. 1".20 (M-P) 1917-1987 e 0.1923723 Incl. 11.58041

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(116) Sirona Obs. 184 M 71.56376 Peri. 94.07674
H 7.86 G 0.25 Opp. 39 n 0.21385523 Node 63.52764
rms res. 1".37 (M-P) 1904-1986 e 0.1381779 Incl. 3.57023

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(118) Peitho Obs. 100 M 33.37320 Peri. 33.04228
H 9.01 G 0.25 Opp. 30 n 0.25895217 Node 47.17582
rms res. 1".98 (M-P) 1910-1984 e 0.1619424 Incl. 7.74535

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(119) Althaea Obs. 147 M 306.18066 Peri. 169.89196
H 8.44 G 0.25 Opp. 30 n 0.23760905 Node 203.27072
rms res. 1".41 (M-P) 1913-1984 e 0.0802821 Incl. 5.76246

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(120) Lachesis Obs. 157 M 95.13870 Peri. 237.61721
H 7.73 G 0.17 Opp. 37 n 0.17930127 Node 340.98494
rms res. 1".44 (M-P) 1907-1987 e 0.0645103 Incl. 6.96115

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(122) Gerda Obs. 165 M 280.39588 Peri. 333.28671
H 7.68 G 0.25 Opp. 39 n 0.17062560 Node 178.37186
rms res. 1".71 (M-P) 1901-1988 e 0.0513986 Incl. 1.63864

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(125) Liberatrix Obs. 204 M 343.54092 Peri. 107.88781
H 9.06 G 0.36 Opp. 37 n 0.21690603 Node 168.77633
rms res. 1".23 (M-P) 1903-1988 e 0.0802084 Incl. 4.66281

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(129) Antigone Obs. 392 M 270.46872 Peri. 108.94247
H 7.05 G 0.37 Opp. 32 n 0.20300594 Node 135.85185
rms res. 0".81 (M-P) 1923-1988 e 0.2130539 Incl. 12.22329

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(136) Austria Obs. 82 M 19.87515 Peri. 131.77149
H 9.71 G 0.25 Opp. 31 n 0.28504898 Node 186.04285
rms res. 1".73 (M-P) 1912-1986 e 0.0847095 Incl. 9.57422

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(145) Adeona Obs. 127 M 182.18363 Peri. 44.85979
H 8.05 G 0.01 Opp. 29 n 0.22559052 Node 77.07291
rms res. 1".12 (M-P) 1938-1987 e 0.1460916 Incl. 12.62128

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(146) Lucina Obs. 98 M 206.66448 Peri. 144.05934
H 8.15 G 0.13 Opp. 35 n 0.21962564 Node 83.72146
rms res. 1".51 (M-P) 1910-1987 e 0.0646140 Incl. 13.09717

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(148) Gallia Obs. 501 M 218.31974 Peri. 251.65797
H 7.60 G 0.13 Opp. 29 n 0.21353007 Node 144.74594
rms res. 0".78 (M-P) 1908-1985 e 0.1852156 Incl. 25.31938

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(158) Koronis Obs. 107 M 187.00015 Peri. 142.45173
H 9.49 G 0.25 Opp. 28 n 0.20274628 Node 278.12507
rms res. 1".43 (M-P) 1905-1984 e 0.0521043 Incl. 0.99993

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(172) Baucis Obs. 105 M 64.63516 Peri. 358.97883
H 8.80 G 0.25 Opp. 30 n 0.26841063 Node 331.65360
rms res. 1".31 (M-P) 1910-1985 e 0.1130916 Incl. 10.01772

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(174) Phaedra Obs. 97 M 134.52999 Peri. 288.96381
H 8.40 G 0.25 Opp. 28 n 0.20380067 Node 327.42672
rms res. 1".87 (M-P) 1901-1987 e 0.1433364 Incl. 12.13153

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(176) Iduna Obs. 58 M 278.63767 Peri. 180.84207
H 8.32 G 0.15 Opp. 23 n 0.17292799 Node 200.40271
rms res. 1".61 (M-P) 1921-1988 e 0.1643719 Incl. 22.56149

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(183) Istria Obs. 34 M 24.53178 Peri. 264.10087
H 9.78 G 0.25 Opp. 16 n 0.21124872 Node 141.65061
rms res. 1".22 (M-P) 1906-1988 e 0.3498231 Incl. 26.42486

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(186) Celuta Obs. 84 M 134.36659 Peri. 315.33747
H 9.08 G 0.29 Opp. 20 n 0.27146141 Node 14.29525
rms res. 1".52 (M-P) 1914-1988 e 0.1506660 Incl. 13.17643

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(188) Menippe Obs. 60 M 44.74341 Peri. 67.86015
H 9.31 G 0.25 Opp. 22 n 0.21487324 Node 240.95765
rms res. 1".87 (M-P) 1916-1983 e 0.1778434 Incl. 11.73172

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(194) Prokne Obs. 142 M 281.06309 Peri. 163.05011
H 7.66 G 0.15 Opp. 34 n 0.23290978 Node 158.99585
rms res. 1".61 (M-P) 1913-1986 e 0.2379435 Incl. 18.52545

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(195) Eurykleia Obs. 112 M 296.39687 Peri. 117.90265
H 9.05 G 0.15 Opp. 28 n 0.20188128 Node 6.82337
rms res. 1".43 (M-P) 1913-1988 e 0.0446670 Incl. 6.96512

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(196) Philomela Obs. 317 M 295.65506 Peri. 218.36684
H 6.64 G 0.47 Opp. 41 n 0.17944242 Node 72.10293
rms res. 0".91 (M-P) 1909-1988 e 0.0269992 Incl. 7.25951

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(199) Byblis Obs. 29 M 190.38060 Peri. 174.81178
H 8.80 G 0.15 Opp. 13 n 0.17193279 Node 88.91791
rms res. 1".74 (M-P) 1951-1984 e 0.1589777 Incl. 15.34404

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(201) Penelope Obs. 169 M 36.65151 Peri. 179.91926
H 8.48 G 0.14 Opp. 33 n 0.22489333 Node 156.64298
rms res. 1".17 (M-P) 1923-1988 e 0.1794811 Incl. 5.75140

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(204) Kallisto Obs. 77 M 178.65218 Peri. 55.13864
H 9.00 G 0.25 Opp. 27 n 0.22537284 Node 204.96521
rms res. 1".93 (M-P) 1918-1986 e 0.1739457 Incl. 8.27397

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(215) Oenone Obs. 102 M 148.75608 Peri. 319.05357
H 9.62 G 0.25 Opp. 33 n 0.21425191 Node 24.68381
rms res. 1".97 (M-P) 1905-1986 e 0.0366616 Incl. 1.68784

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(219) Thusnelda Obs. 74 M 84.08663 Peri. 142.30496
H 9.43 G 0.25 Opp. 25 n 0.27268843 Node 200.41513
rms res. 1".78 (M-P) 1913-1988 e 0.2237126 Incl. 10.84688

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(222) Lucia Obs. 181 M 49.71149 Peri. 179.82820
H 9.42 G 0.15 Opp. 32 n 0.17800072 Node 79.97109
rms res. 1".46 (M-P) 1905-1988 e 0.1470357 Incl. 2.15998

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(224) Oceana Obs. 98 M 278.65420 Peri. 281.81688
H 8.71 G 0.25 Opp. 30 n 0.22921416 Node 352.64382
rms res. 1".93 (M-P) 1910-1986 e 0.0456820 Incl. 5.84091

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(232) Russia Obs. 137 M 5.21909 Peri. 49.78620
H 10.27 G 0.15 Opp. 24 n 0.24211453 Node 152.17574
rms res. 1".58 (M-P) 1913-1989 e 0.1786427 Incl. 6.08783

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(234) Barbara Obs. 128 M 277.88892 Peri. 191.22685
H 8.97 G 0.04 Opp. 29 n 0.26748323 Node 144.07502
rms res. 1".34 (M-P) 1916-1988 e 0.2443254 Incl. 15.36423

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(424) Gratia Obs. 50 M 60.47071 Peri. 330.99062
H 9.63 G 0.15 Opp. 23 n 0.21344558 Node 98.89422
rms res. 1".81 (M-P) 1902-1986 e 0.1105125 Incl. 8.21349

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(427) Galene Obs. 73 M 9.45365 Peri. 9.33444
H 9.41 G 0.15 Opp. 24 n 0.19227578 Node 297.43272
rms res. 2".01 (M-P) 1905-1987 e 0.1173231 Incl. 5.12726

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(429) Lotis Obs. 104 M 314.88284 Peri. 168.04089
H 9.77 G 0.15 Opp. 23 n 0.23408467 Node 219.67622
rms res. 1".35 (M-P) 1901-1988 e 0.1216297 Incl. 9.50523

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(434) Hungaria Obs. 74 M 258.25628 Peri. 123.78553
H 11.47 G 0.38 Opp. 18 n 0.36360680 Node 174.79056
rms res. 1".40 (M-P) 1917-1984 e 0.0740011 Incl. 22.50822

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(435) Ella Obs. 132 M 268.05064 Peri. 332.02944
H 10.23 G 0.15 Opp. 26 n 0.25705827 Node 22.78262
rms res. 1".46 (M-P) 1920-1988 e 0.1542895 Incl. 1.81362

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(439) Ohio Obs. 76 M 102.51733 Peri. 232.20440
H 9.72 G 0.15 Opp. 20 n 0.17800781 Node 201.53078
rms res. 1".53 (M-P) 1909-1986 e 0.0687273 Incl. 19.17179

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(440) Theodora Obs. 53 M 165.81782 Peri. 178.63293
H 11.82 G 0.25 Opp. 15 n 0.29984575 Node 291.61390
rms res. 1".71 (M-P) 1921-1987 e 0.1070657 Incl. 1.59532

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(442) Eichsfeldia Obs. 79 M 16.16624 Peri. 85.55092
H 9.97 G 0.15 Opp. 26 n 0.27438837 Node 134.44893
rms res. 2".15 (M-P) 1901-1986 e 0.0710688 Incl. 6.06671

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(451) Patientia Obs. 242 M 269.35101 Peri. 343.24174
H 6.65 G 0.20 Opp. 38 n 0.18395539 Node 89.00330
rms res. 1".08 (M-P) 1902-1988 e 0.0708936 Incl. 15.23615

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(459) Signe Obs. 67 M 333.65508 Peri. 19.40831
H 10.46 G 0.25 Opp. 18 n 0.23238349 Node 29.18409
rms res. 2".06 (M-P) 1921-1987 e 0.2088144 Incl. 10.28174

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(460) Scania Obs. 87 M 323.08950 Peri. 161.09350
H 10.76 G 0.15 Opp. 27 n 0.21996005 Node 204.93197
rms res. 1".82 (M-P) 1904-1987 e 0.1034700 Incl. 4.62716

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(472) Roma Obs. 62 M 153.50370 Peri. 295.54012
H 9.15 G 0.25 Opp. 20 n 0.24290010 Node 126.88196
rms res. 1".79 (M-P) 1944-1983 e 0.0930941 Incl. 15.81208

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(853) Nansenia Obs. 32 M 289.81599 Peri. 59.92353
H 11.68 G 0.25 Opp. 18 n 0.28035183 Node 182.42817
rms res. 2".16 (M-P) 1920-1984 e 0.1055373 Incl. 9.21201

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(869) Mellena Obs. 85 M 112.07775 Peri. 106.03841
H 12.1 G 0.25 Opp. 19 n 0.22330829 Node 154.86327
rms res. 1".65 (M-P) 1917-1987 e 0.2176335 Incl. 7.83419

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(892) Seeligeria Obs. 63 M 219.14553 Peri. 288.97622
H 9.45 G 0.15 Opp. 19 n 0.16945306 Node 175.47885
rms res. 2".40 (M-P) 1918-1987 e 0.0893781 Incl. 21.32632

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(901) Brunsia Obs. 66 M 159.22202 Peri. 67.68768
H 11.79 G 0.25 Opp. 19 n 0.29721771 Node 264.79257
rms res. 1".32 (M-P) 1918-1987 e 0.2215694 Incl. 3.44717

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(909) Ulla Obs. 100 M 327.32388 Peri. 229.58189
H 8.81 G 0.15 Opp. 19 n 0.14836053 Node 146.58941
rms res. 1".37 (M-P) 1920-1980 e 0.1034883 Incl. 18.84518

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(917) Lyka Obs. 65 M 58.10960 Peri. 359.44565
H 11.51 G 0.25 Opp. 27 n 0.26806550 Node 343.14471
rms res. 2".14 (M-P) 1919-1987 e 0.2002621 Incl. 5.13060

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(926) Imhilde Obs. 22 M 119.57414 Peri. 171.87748
H 10.5 G 0.25 Opp. 12 n 0.19143391 Node 48.99124
rms res. 2".18 (M-P) 1920-1987 e 0.1820565 Incl. 16.32839

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(933) Susi Obs. 76 M 60.87813 Peri. 12.00920
H 12.60 G 0.25 Opp. 14 n 0.27026684 Node 140.97445
rms res. 1".57 (M-P) 1927-1989 e 0.1638701 Incl. 5.53715

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(935) Clivia Obs. 73 M 276.67511 Peri. 57.73312
H 13.27 G 0.25 Opp. 11 n 0.29816477 Node 346.07613
rms res. 1".12 (M-P) 1920-1988 e 0.1459630 Incl. 4.02180

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(936) Kunigunde Obs. 62 M 171.95834 Peri. 257.00490
H 10.08 G 0.25 Opp. 23 n 0.17774522 Node 61.81551
rms res. 2".03 (M-P) 1920-1984 e 0.1752030 Incl. 2.36899

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(941) Murray Obs. 66 M 304.44869 Peri. 334.01386
H 11.55 G 0.15 Opp. 16 n 0.21196646 Node 52.19077
rms res. 1".27 (M-P) 1920-1988 e 0.1931841 Incl. 6.62507

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(950) Ahrensa Obs. 50 M 289.93887 Peri. 347.13360
H 11.3 G 0.25 Opp. 18 n 0.26986888 Node 181.30903
rms res. 1".94 (M-P) 1904-1988 e 0.1601145 Incl. 23.48971

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(966) Muschi Obs. 65 M 221.69374 Peri. 178.29143
H 10.02 G 0.25 Opp. 23 n 0.21948242 Node 72.14493
rms res. 2".05 (M-P) 1923-1988 e 0.1287819 Incl. 14.41152

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(975) Perseverantia Obs. 88 M 142.54901 Peri. 54.70022
H 10.38 G 0.25 Opp. 23 n 0.20655213 Node 38.44937
rms res. 1".98 (M-P) 1924-1986 e 0.0317949 Incl. 2.56147

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(976) Benjamina Obs. 75 M 297.08370 Peri. 301.73110
H 9.35 G 0.15 Opp. 23 n 0.17169611 Node 245.00622
rms res. 1".19 (M-P) 1930-1987 e 0.0998548 Incl. 7.58452

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(977) Philippa Obs. 40 M 124.05695 Peri. 97.62946
H 9.74 G 0.15 Opp. 18 n 0.17900475 Node 75.55811
rms res. 1".71 (M-P) 1914-1988 e 0.0262516 Incl. 15.18116

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(989) Schwassmannia Obs. 32 M 150.67911 Peri. 164.53191
H 12.2 G 0.25 Opp. 10 n 0.22727365 Node 243.05106
rms res. 2".13 (M-P) 1922-1983 e 0.2520544 Incl. 14.69146

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1009) Sirene Obs. 56 M 168.02413 Peri. 184.93366
H 14.1 G 0.25 Opp. 5 n 0.23137417 Node 229.15736
rms res. 2".06 (M-P) 1923-1988 e 0.4543857 Incl. 15.76716

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(1187) Afra Obs. 77 M 359.55219 Peri. 74.63640
H 11.35 G 0.15 Opp. 13 n 0.22977377 Node 326.92545
rms res. 1".74 (M-P) 1929-1984 e 0.2211557 Incl. 10.71738

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(1423) Jose Obs. 64 M 335.18221 Peri. 319.53468
H 11.23 G 0.25 Opp. 19 n 0.20379314 Node 58.31100
rms res. 1".62 (M-P) 1936-1985 e 0.0779636 Incl. 2.91019

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(1452) Hunnia Obs. 35 M 163.88750 Peri. 95.70970
H 11.9 G 0.25 Opp. 6 n 0.17878840 Node 20.95346
rms res. 2".29 (M-P) 1938-1982 e 0.1940869 Incl. 14.19315

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(1603) Neva Obs. 89 M 283.44322 Peri. 255.69916
H 10.94 G 0.15 Opp. 20 n 0.21542610 Node 129.75069
rms res. 1".49 (M-P) 1907-1987 e 0.0924191 Incl. 8.55858

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(1619) Ueta Obs. 100 M 249.94176 Peri. 327.62893
H 12.21 G 0.25 Opp. 17 n 0.29370390 Node 61.11408
rms res. 1".52 (M-P) 1931-1985 e 0.1755411 Incl. 6.21292

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(1620) Geographos Obs. 593 M 212.33877 Peri. 276.61248
H 15.82 G 0.25 Opp. 16 n 0.70963226 Node 336.69967
rms res. 0".97 (M-P) 1951-1986 e 0.3354856 Incl. 13.31896

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(1626) Sadeya Obs. 54 M 123.88840 Peri. 148.73804
H 11.40 G 0.25 Opp. 9 n 0.27139830 Node 279.05594
rms res. 1".75 (M-P) 1927-1983 e 0.2754985 Incl. 25.31340

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(1630) Milet Obs. 95 M 39.07671 Peri. 95.38140
H 11.4 G 0.25 Opp. 16 n 0.18624651 Node 54.30123
rms res. 0".91 (M-P) 1936-1987 e 0.1591700 Incl. 4.54572

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Filenko
(1637) Swings Obs. 61 M 62.14128 Peri. 228.16631
H 10.2 G 0.25 Opp. 18 n 0.18336747 Node 21.21352
rms res. 1".63 (M-P) 1907-1988 e 0.0529282 Incl. 14.09139

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1673) van Houten Obs. 59 M 172.89955 Peri. 202.95633
H 11.0 G 0.25 Opp. 13 n 0.18019901 Node 208.31135
rms res. 1".71 (M-P) 1937-1988 e 0.1786695 Incl. 3.58188

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1680) Per Brahe Obs. 130 M 145.34323 Peri. 156.73316
H 11.3 G 0.25 Opp. 22 n 0.21928537 Node 83.10723
rms res. 1".37 (M-P) 1902-1988 e 0.1825752 Incl. 4.26288

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1686) de Sitter Obs. 78 M 263.33558 Peri. 297.31372
H 10.8 G 0.25 Opp. 18 n 0.17587566 Node 6.26065
rms res. 1".83 (M-P) 1933-1986 e 0.1678172 Incl. 0.62086

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1717) Arlon Obs. 84 M 14.40098 Peri. 115.59755
H 12.44 G 0.25 Opp. 13 n 0.30292459 Node 340.04155
rms res. 1".77 (M-P) 1930-1988 e 0.1296225 Incl. 6.18935

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1732) Heike Obs. 48 M 127.40572 Peri. 209.58949
H 10.8 G 0.25 Opp. 17 n 0.18888177 Node 155.42949
rms res. 1".77 (M-P) 1906-1987 e 0.1181190 Incl. 10.79318

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1737) Severny Obs. 58 M 341.39728 Peri. 229.58241
H 11.0 G 0.25 Opp. 12 n 0.18855413 Node 327.13817
rms res. 1".85 (M-P) 1950-1986 e 0.0442124 Incl. 9.36654

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1843) Jarmila Obs. 48 M 214.73957 Peri. 30.85546
H 11.5 G 0.25 Opp. 12 n 0.22837151 Node 266.59472
rms res. 1".41 (M-P) 1935-1987 e 0.1708359 Incl. 8.44256

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1844) Susilva Obs. 49 M 317.18303 Peri. 68.29647
H 11.2 G 0.25 Opp. 10 n 0.18797053 Node 99.21142
rms res. 1".33 (M-P) 1953-1986 e 0.0436399 Incl. 11.80655

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1851) Lacroute Obs. 28 M 44.60693 Peri. 345.52766
H 12.0 G 0.25 Opp. 6 n 0.17943041 Node 24.66671
rms res. 0".74 (M-P) 1950-1988 e 0.1852300 Incl. 1.66586

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1852) Carpenter Obs. 35 M 322.18191 Peri. 351.73389
H 10.7 G 0.25 Opp. 11 n 0.18848730 Node 95.26657
rms res. 1".40 (M-P) 1931-1986 e 0.0676253 Incl. 11.20592

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1858) Lobachevskij Obs. 55 M 353.28620 Peri. 14.80210
H 11.7 G 0.25 Opp. 13 n 0.22227605 Node 271.80945
rms res. 2".13 (M-P) 1936-1988 e 0.0779824 Incl. 1.65608

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1868) Thersites Obs. 38 M 156.42132 Peri. 169.69213
H 9.6 G 0.25 Opp. 7 n 0.08140847 Node 197.11435
rms res. 1".27 (M-P) 1960-1984 e 0.1088471 Incl. 16.79904

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1875) 1969 QQ Obs. 35 M 226.59152 Peri. 140.08634
H 12.2 G 0.25 Opp. 8 n 0.17856371 Node 193.48324
rms res. 1".07 (M-P) 1969-1986 e 0.1770624 Incl. 13.42510

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1876) Napolitania Obs. 24 M 353.94172 Peri. 243.19896
H 14.7 G 0.25 Opp. 4 n 0.35807804 Node 303.94784
rms res. 1".37 (M-P) 1970-1974 e 0.0476964 Incl. 23.11516

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1878) Hughes Obs. 42 M 105.80654 Peri. 288.05331
H 11.88 G 0.25 Opp. 11 n 0.20533823 Node 187.48531
rms res. 2".07 (M-P) 1933-1988 e 0.0108455 Incl. 1.77678

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1881) Shao Obs. 37 M 287.01596 Peri. 72.43146
H 11.0 G 0.25 Opp. 12 n 0.17527968 Node 217.67460
rms res. 2".06 (M-P) 1940-1986 e 0.1115804 Incl. 9.88490

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1883) Rimito Obs. 18 M 185.96102 Peri. 330.18576
H 13.2 G 0.25 Opp. 6 n 0.26275189 Node 74.40773
rms res. 2".11 (M-P) 1942-1987 e 0.2619465 Incl. 25.47704

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1885) Herero Obs. 35 M 62.42117 Peri. 5.02947
H 13.6 G 0.25 Opp. 7 n 0.29194286 Node 325.99277
rms res. 1".45 (M-P) 1948-1982 e 0.2470092 Incl. 5.66133

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1902) Shaposhnikov Obs. 61 M 352.92147 Peri. 270.04058
H 9.49 G 0.15 Opp. 15 n 0.12450467 Node 59.06858
rms res. 1".18 (M-P) 1940-1986 e 0.2244301 Incl. 12.50077

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1924) Horus Obs. 38 M 274.35841 Peri. 152.07831
H 13.2 G 0.25 Opp. 7 n 0.27553598 Node 349.88609
rms res. 1".30 (M-P) 1960-1987 e 0.1328605 Incl. 2.73346

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1950) Wempe Obs. 48 M 336.75384 Peri. 52.48928
H 13.84 G 0.25 Opp. 11 n 0.30643944 Node 69.52792
rms res. 1".27 (M-P) 1942-1985 e 0.0849148 Incl. 4.22237

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1954) Kukarkin Obs. 20 M 127.84129 Peri. 69.21890
H 12.1 G 0.25 Opp. 6 n 0.19607301 Node 278.18893
rms res. 1".59 (M-P) 1952-1984 e 0.3117998 Incl. 14.86881

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1955) McMath Obs. 52 M 109.25563 Peri. 153.05844
H 12.08 G 0.25 Opp. 13 n 0.20446490 Node 257.90416
rms res. 1".36 (M-P) 1949-1989 e 0.0646857 Incl. 1.00131

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1964) Luyten Obs. 24 M 153.77084 Peri. 162.54513
H 13.4 G 0.25 Opp. 6 n 0.25452463 Node 238.25295
rms res. 1".39 (M-P) 1933-1983 e 0.1931075 Incl. 2.37064

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1968) Mehltretter Obs. 49 M 180.15313 Peri. 162.27049
H 11.7 G 0.25 Opp. 13 n 0.21736020 Node 71.25436
rms res. 2".19 (M-P) 1932-1987 e 0.1113105 Incl. 4.60157

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1970) 1954 ER Obs. 30 M 264.45566 Peri. 191.49283
H 12.20 G 0.15 Opp. 8 n 0.21272815 Node 312.13910
rms res. 1".34 (M-P) 1949-1986 e 0.1604119 Incl. 7.08984

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1979) Sakharov Obs. 31 M 289.93678 Peri. 220.27286
H 13.6 G 0.25 Opp. 6 n 0.26946926 Node 202.26077
rms res. 0".92 (M-P) 1960-1984 e 0.0996500 Incl. 6.05531

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1982) Cline Obs. 33 M 36.56510 Peri. 278.57989
H 12.90 G 0.25 Opp. 9 n 0.28068330 Node 42.15497
rms res. 1".67 (M-P) 1957-1985 e 0.2488647 Incl. 6.84028

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1983) Bok Obs. 28 M 52.69436 Peri. 345.96188
H 12.7 G 0.25 Opp. 7 n 0.23205574 Node 23.35790
rms res. 1".77 (M-P) 1950-1987 e 0.0983453 Incl. 9.39375

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1985) Hopmann Obs. 29 M 323.90654 Peri. 228.42609
H 11.2 G 0.25 Opp. 9 n 0.17792779 Node 305.23418
rms res. 1".53 (M-P) 1929-1984 e 0.1427347 Incl. 17.24709

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1992) Galvarino Obs. 20 M 63.96111 Peri. 91.29304
H 12.1 G 0.25 Opp. 7 n 0.19037086 Node 182.42233
rms res. 1".48 (M-P) 1968-1987 e 0.0450666 Incl. 10.55273

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1995) Hajek Obs. 26 M 28.80730 Peri. 131.94966
H 12.6 G 0.25 Opp. 8 n 0.24518347 Node 46.73410
rms res. 1".26 (M-P) 1941-1985 e 0.0565701 Incl. 10.81452

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1996) Adams Obs. 30 M 325.18025 Peri. 353.40172
H 12.1 G 0.25 Opp. 9 n 0.24081458 Node 0.59695
rms res. 1".97 (M-P) 1961-1988 e 0.1383222 Incl. 15.11241

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1997) Leverrier Obs. 22 M 332.73688 Peri. 0.15525
H 13.3 G 0.25 Opp. 7 n 0.30006725 Node 352.78602
rms res. 2".09 (M-P) 1950-1985 e 0.2057211 Incl. 6.06320

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1998) Titius Obs. 46 M 185.61005 Peri. 243.89616
H 12.50 G 0.25 Opp. 9 n 0.26195462 Node 351.57605
rms res. 1".41 (M-P) 1938-1987 e 0.0648437 Incl. 7.63582

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(1999) Hirayama Obs. 39 M 24.62560 Peri. 347.96142
H 10.7 G 0.25 Opp. 11 n 0.17877140 Node 147.93295
rms res. 1".88 (M-P) 1940-1987 e 0.1081788 Incl. 12.46499

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2000) Herschel Obs. 38 M 277.19777 Peri. 129.67274
H 11.36 G 0.25 Opp. 7 n 0.26828223 Node 291.60368
rms res. 0".97 (M-P) 1934-1985 e 0.2991938 Incl. 22.74284

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2003) Harding Obs. 68 M 30.64346 Peri. 64.62608
H 11.8 G 0.25 Opp. 11 n 0.18362070 Node 64.52405
rms res. 1".24 (M-P) 1952-1989 e 0.1179408 Incl. 1.87975

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2004) Lexell Obs. 33 M 316.02218 Peri. 58.10634
H 12.8 G 0.25 Opp. 10 n 0.30792499 Node 4.15673
rms res. 1".31 (M-P) 1938-1988 e 0.0791142 Incl. 2.49737

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2006) Polonskaya Obs. 13 M 178.10121 Peri. 23.96329
H 13.0 G 0.25 Opp. 4 n 0.27814168 Node 0.56307
rms res. 1".33 (M-P) 1955-1980 e 0.1926676 Incl. 4.91601

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2007) McCuskey Obs. 40 M 196.92070 Peri. 184.22509
H 11.7 G 0.25 Opp. 13 n 0.26797412 Node 16.73455
rms res. 2".07 (M-P) 1951-1985 e 0.1177672 Incl. 3.05182

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2010) Chebyshev Obs. 117 M 231.86824 Peri. 28.23209
H 11.54 G 0.25 Opp. 10 n 0.18059152 Node 8.91138
rms res. 0".92 (M-P) 1931-1988 e 0.1802586 Incl. 2.42826

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2011) Veteraniya Obs. 26 M 76.04305 Peri. 3.45093
H 12.7 G 0.25 Opp. 7 n 0.26706898 Node 338.25050
rms res. 2".28 (M-P) 1955-1983 e 0.1485209 Incl. 6.18438

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2013) Tucapel Obs. 36 M 110.00610 Peri. 237.63292
H 12.1 G 0.25 Opp. 11 n 0.28423243 Node 96.16893
rms res. 1".36 (M-P) 1942-1988 e 0.2253773 Incl. 7.51191

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2019) 1935 SX1 Obs. 30 M 106.53570 Peri. 23.95209
H 12.2 G 0.25 Opp. 10 n 0.29380891 Node 251.78139
rms res. 1".66 (M-P) 1931-1988 e 0.1654145 Incl. 4.04706

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2023) Asaph Obs. 22 M 202.12264 Peri. 356.83121
H 11.6 G 0.25 Opp. 5 n 0.20184178 Node 2.83234
rms res. 1".40 (M-P) 1952-1988 e 0.2786259 Incl. 22.31720

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2025) 1953 LG Obs. 40 M 162.96066 Peri. 298.48040
H 10.7 G 0.25 Opp. 12 n 0.17395562 Node 330.26725
rms res. 1".48 (M-P) 1935-1986 e 0.0969810 Incl. 6.99067

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2026) Cottrell Obs. 23 M 30.35542 Peri. 209.46042
H 13.2 G 0.25 Opp. 11 n 0.25765480 Node 310.99219
rms res. 1".93 (M-P) 1951-1989 e 0.1168469 Incl. 2.46313

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2027) Shen-Guo Obs. 28 M 274.53779 Peri. 355.93169
H 11.7 G 0.25 Opp. 10 n 0.18750535 Node 55.01078
rms res. 1".36 (M-P) 1953-1987 e 0.0924982 Incl. 11.01180

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2031) BAM Obs. 51 M 353.78281 Peri. 213.38826
H 13.3 G 0.25 Opp. 11 n 0.29516103 Node 168.83662
rms res. 1".75 (M-P) 1939-1986 e 0.1724029 Incl. 4.75212

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2033) Basilea Obs. 36 M 43.78664 Peri. 134.02936
H 13.7 G 0.25 Opp. 9 n 0.29697002 Node 321.29227
rms res. 1".44 (M-P) 1953-1983 e 0.1115271 Incl. 8.46530

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2043) Ortutay Obs. 57 M 258.78743 Peri. 51.29792
H 11.0 G 0.25 Opp. 16 n 0.17972232 Node 321.72203
rms res. 2".11 (M-P) 1908-1987 e 0.1072937 Incl. 3.09634

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2046) Leningrad Obs. 33 M 309.08704 Peri. 275.50530
H 11.0 G 0.25 Opp. 11 n 0.17586366 Node 74.25871
rms res. 1".35 (M-P) 1929-1985 e 0.1820486 Incl. 2.73736

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2047) Smetana Obs. 19 M 53.72874 Peri. 305.14518
H 13.7 G 0.25 Opp. 5 n 0.38485196 Node 36.07928
rms res. 1".35 (M-P) 1971-1983 e 0.0030883 Incl. 25.27970

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2048) Dwornik Obs. 33 M 15.40630 Peri. 105.36862
H 13.79 G 0.40 Opp. 5 n 0.36091134 Node 157.10367
rms res. 1".14 (M-P) 1973-1979 e 0.0427292 Incl. 23.74933

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2057) Rosemary Obs. 42 M 41.02523 Peri. 19.55147
H 14.7 G 0.25 Opp. 7 n 0.18259553 Node 14.94056
rms res. 0".97 (M-P) 1934-1988 e 0.2378207 Incl. 1.43775

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2058) Roka Obs. 62 M 350.54782 Peri. 180.79760
H 10.7 G 0.25 Opp. 12 n 0.17931113 Node 95.09494
rms res. 1".10 (M-P) 1938-1986 e 0.1595094 Incl. 2.54294

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2062) Aten Obs. 70 M 24.49990 Peri. 147.89174
H 16.96 G 0.25 Opp. 2 n 1.03742294 Node 108.02885
rms res. 1".73 (M-P) 1976-1978 e 0.1826013 Incl. 18.93699

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2065) Spicer Obs. 42 M 244.75655 Peri. 64.89671
H 12.2 G 0.25 Opp. 9 n 0.22206111 Node 328.14126
rms res. 1".52 (M-P) 1955-1986 e 0.2326137 Incl. 6.44608

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2068) Dangreen Obs. 24 M 69.39540 Peri. 319.08693
H 11.7 G 0.25 Opp. 7 n 0.21366853 Node 95.64495
rms res. 1".61 (M-P) 1948-1985 e 0.1007572 Incl. 12.90164

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2073) Janacek Obs. 34 M 232.47446 Peri. 0.86628
H 12.7 G 0.25 Opp. 9 n 0.22010295 Node 84.68696
rms res. 1".62 (M-P) 1972-1987 e 0.1108384 Incl. 2.96355

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2090) Mizuho Obs. 53 M 272.29741 Peri. 337.87649
H 11.02 G 0.25 Opp. 12 n 0.18356868 Node 339.69134
rms res. 1".64 (M-P) 1951-1988 e 0.1430491 Incl. 11.83399

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2103) 1960 FL Obs. 57 M 82.79228 Peri. 240.19739
H 10.63 G 0.15 Opp. 12 n 0.17632978 Node 291.67451
rms res. 1".39 (M-P) 1930-1988 e 0.1866050 Incl. 7.67748

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2104) Toronto Obs. 28 M 34.35793 Peri. 293.22220
H 9.9 G 0.25 Opp. 8 n 0.17258929 Node 252.09447
rms res. 1".01 (M-P) 1951-1986 e 0.1080684 Incl. 18.38627

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2107) Ilmari Obs. 22 M 94.44271 Peri. 176.24349
H 11.5 G 0.25 Opp. 9 n 0.23160407 Node 220.98225
rms res. 1".22 (M-P) 1941-1986 e 0.0792185 Incl. 8.84252

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2114) Wallenquist Obs. 49 M 126.50572 Peri. 219.74605
H 10.9 G 0.25 Opp. 11 n 0.17317912 Node 0.92878
rms res. 1".31 (M-P) 1953-1987 e 0.1537454 Incl. 0.55998

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Sumzina
(2116) Mtskheta Obs. 39 M 153.67206 Peri. 174.01611
H 12.3 G 0.25 Opp. 10 n 0.23672972 Node 170.39887
rms res. 1".52 (M-P) 1933-1987 e 0.0589731 Incl. 9.07570

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell
(2895) Memnon Obs. 17 M 344.54480 Peri. 273.47304
H 9.23 G 0.15 Opp. 5 n 0.08293031 Node 133.35922
rms res. 1".14 (M-P) 1977-1989 e 0.0513436 Incl. 27.25428

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3453) Dostoevsky Obs. 26 M 184.54408 Peri. 317.89042
H 11.8 G 0.25 Opp. 7 n 0.26696740 Node 300.44566
rms res. 1".52 (M-P) 1935-1988 e 0.0843186 Incl. 4.50598

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3485) Barucci Obs. 31 M 236.54943 Peri. 339.59628
H 12.9 G 0.25 Opp. 6 n 0.25875787 Node 315.10535
rms res. 0".96 (M-P) 1952-1987 e 0.1663275 Incl. 1.80629

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3516) Rusheva Obs. 55 M 188.83961 Peri. 206.53921
H 12.3 G 0.25 Opp. 5 n 0.20155658 Node 161.47357
rms res. 0".66 (M-P) 1962-1986 e 0.0829866 Incl. 2.31793

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3549) Hapke Obs. 24 M 217.46643 Peri. 209.91776
H 13.0 G 0.25 Opp. 5 n 0.21530660 Node 284.16610
rms res. 1".26 (M-P) 1973-1987 e 0.1703911 Incl. 7.56370

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3657) 1978 ST6 Obs. 13 M 71.57832 Peri. 101.73077
H 12.7 G 0.25 Opp. 5 n 0.28013531 Node 236.93981
rms res. 1".06 (M-P) 1925-1987 e 0.1314734 Incl. 5.78867

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3735) 1983 XS Obs. 36 M 266.62195 Peri. 250.00364
H 11.6 G 0.25 Opp. 5 n 0.17982603 Node 299.59375
rms res. 1".20 (M-P) 1903-1987 e 0.1464953 Incl. 5.23905

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3770) 1974 QT1 Obs. 32 M 214.88148 Peri. 20.37524
H 14.4 G 0.25 Opp. 4 n 0.30332298 Node 344.98933
rms res. 1".01 (M-P) 1948-1987 e 0.1801631 Incl. 6.35443

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3871) 1982 DR2 Obs. 16 M 171.88966 Peri. 207.53872
H 12.4 G 0.25 Opp. 5 n 0.17240788 Node 273.53696
rms res. 1".03 (M-P) 1958-1988 e 0.0815468 Incl. 15.58971

(4266)* 1940 YE = 1957 YA = 1978 NR7
Discovered 1940 Dec. 28 by Y. Vaisala at Turku.
Id. S. Nakano (MPC 10401)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell
M 176.46772 (1950.0) P Q
n 0.17377692 Peri. 158.05186 -0.51289774 -0.84061107
a 3.1803481 Node 322.17776 +0.73931234 -0.32946702
e 0.1677017 Incl. 16.49343 +0.43629482 -0.42991222
P 5.67 H 11.9 G 0.25
Residuals in seconds of arc

401228 062	0.3+	0.9+	780713 675	1.9+	1.9-	Y	870108 398	2.2+	1.7+
401228 062	0.3+	0.0	870107 657	1.9-	0.6-		870108 398	1.2+	0.2-
410101 062	0.6-	0.5+	870107 657	0.1-	0.1+		870125 881	1.3-	1.1-
410101 062	1.2+	1.4+	870108 010	0.1-	0.8+		870125 881	0.1+	0.7-
410118 062	0.0	0.6-	870108 010	0.9+	0.2-		870125 887	0.0	0.9-
571220 024	0.7-	1.1+	870108 010	0.3-	1.3-		880521 474	0.6+	1.3+
780710 675	(6.1-	4.3+)Y	870108 657	0.4-	0.3-		880521 474	0.0	1.1+
780711 675	(1.3-	6.9+)Y	870108 657	2.7-	1.2-				

(4267)* 1971 QP = 1978 PP = 1982 TN2
Discovered 1971 Aug. 18 by T. M. Smirnova at the Crimean Astrophysical Observatory.
Id. B. G. Marsden (MPC 8907), W. Landgraf (ibid.), F. Bowman (ibid.), O. Kippes (ibid.), L. D. Schmadel (ibid.)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell
M 29.64450 (1950.0) P Q
n 0.27765913 Peri. 91.43373 +0.91045741 +0.41205059
a 2.3269912 Node 244.23368 -0.39351057 +0.83632798
e 0.2027598 Incl. 2.27822 -0.12734492 +0.36162109
P 3.55 H 14.0 G 0.25

Residuals in seconds of arc

710818 095	0.4-	0.8-	821014 095	0.2+	0.7-	821114 095	0.8-	0.3-
710824 095	1.1+	0.2+	821020 095	1.1-	0.3-	891004 807	1.0+	0.1-
710830 095	0.4-	0.4-	821025 095	1.6+	0.5+	891102 877	1.5-	1.1+
780808 095	0.2-	0.9+	821109 095	0.3+	0.0	891102 877	(1.6-	2.5+)

(4268)* 1972 TW3 = 1972 RH2 = 1942 RC1 = 1982 BG3

Discovered 1972 Oct. 5 by T. M. Smirnova at the Crimean Astrophysical Observatory.

Id. B. G. Marsden (d, MPC 9064), T. Kobayashi (MPC 14471)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5

M 344.87235		(1950.0)	P	Kobayashi Q
n 0.22984400	Peri.	18.69293	+0.95129672	-0.30827525
a 2.6394530	Node	359.26036	+0.27253483	+0.84244860
e 0.2578664	Incl.	4.24950	+0.14408092	+0.44186732
P 4.29	H	13.8	G 0.25	

Residuals in seconds of arc

420914 062	0.2-	2.1+	721013 095	1.8-	1.8-	890907 046	1.5+	0.4+
420915 062	0.4-	0.7-	820118 033	0.1-	0.8-	890908 046	1.5-	1.8-
720911 095	0.3-	0.2-	820118 033	0.0	0.6-	890908 046	0.4-	0.2-
721005 095	1.7+	2.5+	890907 046	1.6+	0.8-			

(4269)* 1974 FN = 1974 HV = 1955 UL1 = 1968 QU1 = 1977 DN7 = 1978 RZ16 = 1988 PT4

Discovered 1974 Mar. 22 by C. Torres at Cerro El Roble.

Id. C. M. Bardwell (d, MPC 5347), S. Nakano

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5

M 142.56381		(1950.0)	P	Nakano Q
n 0.29553050	Peri.	322.31709	+0.49484986	+0.86866973
a 2.2322072	Node	337.31470	-0.78191362	+0.43348227
e 0.1644007	Incl.	3.44318	-0.37912360	+0.23980414
P 3.34	H	13.9	G 0.25	

Residuals in seconds of arc

551025 760	1.0+	0.0	740425 805	0.6-	0.6-	880809 095	0.2+	0.3-
551025 760	0.9+	1.9-	770219 381	1.1-	0.5-	880914 095	(4.8-	1.3-)
680828 095	0.0	1.6-	770219 381	1.3-	0.3-	880914 095	1.5+	1.0+
740322 805	0.3-	0.2-	780905 095	2.5-	2.0+	880916 095	1.6-	1.2+
740323 805	(0.1+	4.3+)	880808 095	1.2+	1.1-	880916 095	1.0-	2.2-
740422 805	0.8+	0.8-	880809 095	0.0	0.3+			
740424 805	0.4+	1.3-	880809 095	2.2+	1.3-			

(4270)* 1975 TJ6 = 1984 BW

Discovered 1975 Oct. 1 at the El Leoncito Station of the Felix Aguilar Observatory.

Id. B. G. Marsden (MPC 8674), T. Furuta (ibid.)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5

M 236.55610		(1950.0)	P	Bowell Q
n 0.27046444	Peri.	320.11802	+0.07160781	-0.98249901
a 2.3680776	Node	125.10223	+0.96031229	+0.02131669
e 0.1820636	Incl.	12.13287	+0.26957860	+0.18504405
P 3.64	H	13.6	G 0.25	

Residuals in seconds of arc

751001 808	1.9+	1.4-	780707 675	0.3+	0.6+	840221 046	0.8-	2.3-
751002 808	0.4-	1.0-	780708 675	1.5-	1.4-	840221 046	(4.7-	1.8+)
751004 808	1.3+	1.2-	840129 046	0.2+	0.5+	840222 046	0.5-	1.5-
751004 808	0.5+	0.7-	840129 046	0.4-	1.2+	840222 046	(3.5-	1.7-)
751008 808	0.5-	0.7-	840204 046	(1.2+	3.5-)	861007 801	1.1-	2.7+
751008 808	0.4-	0.6-	840204 046	0.0	0.5-	880317 801	1.4+	1.4-

(4271)* 1976 GQ6 = 1976 KN1 = 1985 BB2 = 1987 MZ

Discovered 1976 Apr. 3 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. B. G. Marsden (d, MPC 9064), C. M. Bardwell (MPC 12143)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M	138.64843	(1950.0)	P	Q
n	0.18774812	Peri. 130.86436	+0.35953275	+0.93087690
a	3.0205473	Node 159.92051	-0.90283153	+0.36458114
e	0.0865225	Incl. 10.88647	-0.23586315	+0.02342622
P	5.25	H 11.8	G 0.25	

Residuals in seconds of arc

760403	095	2.0-	0.9-	870626	675	0.2+	2.1+	880909	033	1.3+	0.4+
760407	095	1.0+	0.6-	870628	675	(5.0+	0.8+)	880914	801	0.5+	0.8+
760530	095	0.5+	0.9-	870824	801	0.0	0.6-	881007	801	2.6-	1.7-
850130	511	0.0	0.7+	880909	033	1.2+	1.0-				

(4272)* 1977 EG5 = 1953 VT = 1953 VV3 = 1975 XD6 = 1982 QN1

Discovered 1977 Mar. 12 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Id. T. Kobayashi (MPC 14613)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M	316.23038	(1950.0)	P	Q
n	0.27035892	Peri. 183.41101	+0.99156808	-0.12908406
a	2.3686937	Node 184.05899	+0.12237613	+0.96170716
e	0.2489559	Incl. 9.27159	+0.04262433	+0.24177807
P	3.65	H 13.1	G 0.25	

Residuals in seconds of arc

531103	760	1.6+	0.8-	770314	381	0.4+	1.2+	820820	809	0.7-	3.7+
531103	760	0.4-	0.2+	770314	381	1.6+	0.6-	820820	809	0.3-	3.0+
531110	760	0.6-	2.2-	770315	381	0.2+	0.5+	820820	809	0.3+	2.6-
531110	760	0.5+	2.3-	770315	381	1.5-	0.8+	820821	809	(1.3-	7.2+)
751206	809	0.2-	1.3+	820816	809	0.1-	1.1-	820821	809	(1.0-	10.2+)
751206	809	0.2+	1.0+	820816	809	0.4-	0.7-	820821	809	1.5-	4.0+
751207	809	0.5-	0.5+	820816	809	0.0	0.6-	890629	801	1.6+	1.3-
751207	809	0.6-	1.6+	820818	809	0.9+	0.3+	890729	801	1.5-	1.5-
770312	381	0.1-	1.0+	820818	809	0.4+	0.1+				
770312	381	0.7+	1.2+	820818	809	0.1+	0.3+				

(4273)* 1978 UU1 = 1952 WB = 1961 CU

Discovered 1978 Oct. 29 at the Purple Mountain Observatory.

Id. C. M. Bardwell (MPC 12203), L. D. Schmadel (ibid.)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bardwell

M	3.21345	(1950.0)	P	Q
n	0.26599402	Peri. 240.93508	+0.98983171	-0.13581214
a	2.3945366	Node 126.83909	+0.14180508	+0.91884460
e	0.2259022	Incl. 3.02883	+0.01115840	+0.37051272
P	3.71	H 14.0	G 0.25	

Residuals in seconds of arc

521116	760	0.8+	0.9-	781029	330	1.4+	0.4+	890926	809	0.5-	0.1-
521116	760	0.1+	0.1-	781101	095	0.2-	0.2+	890928	809	0.0	0.3+
610215	033	0.9+	0.1-	781103	330	0.2-	0.8-	890928	809	1.1-	0.1+
610215	033	0.9-	0.6+	781107	330	0.3+	0.1+	890928	809	1.7-	0.8-
610217	033	2.7-	0.7+	781126	330	(2.0-	6.4-)	891026	801	2.0+	0.2+
610217	033	3.1+	0.7-	890926	809	0.0	0.5+				
781009	095	2.4-	0.2+	890926	809	0.4-	0.0				

(4274)* 1980 RZ3 = 1980 TK7 = 1949 QP1 = 1973 AM4

Discovered 1980 Sept. 6 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. S. Nakano (d, MPC 10752), T. Kobayashi (MPC 14015)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M	3.35696	(1950.0)	P	Q	
n	0.22325260	Peri.	12.05677	+0.94501209	-0.32665508
a	2.6911529	Node	7.06924	+0.28838025	+0.80960562
e	0.2338547	Incl.	7.36086	+0.15423676	+0.48768350
P	4.41	H	12.8	G	0.25

Residuals in seconds of arc

490824	760	2.8-	1.0+	891008	364	4.4-	0.7-	891021	400	3.3+	2.1-
490824	760	2.5+	0.1+	891008	364	1.9-	0.3+	891021	364	0.7-	0.4+
730103	095	3.1+	7.6+	891008	877	1.8+	4.8-	891021	364	1.7-	0.3+
800906	095	3.1-	2.1+	891008	877	1.9+	0.4+	891023	894	1.5+	1.0+
801010	095	1.1-	3.0+	891021	400	3.1+	0.8-	891023	894	1.7-	0.8-
801015	095	2.7-	5.0+	891021	400	3.8+	2.7-				

(4275)* 1981 EW14 = 1931 VO

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

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bardwell

M	143.37317	(1950.0)	P	Q	
n	0.22786872	Peri.	46.78956	+0.91603358	-0.39027722
a	2.6546844	Node	335.73312	+0.27045901	+0.77140389
e	0.1782608	Incl.	13.01452	+0.29619993	+0.50261291
P	4.33	H	14.4	G	0.25

Residuals in seconds of arc

311108	024	0.1+	0.1-	810312	413	1.5-	0.0	870828	809	1.9-	0.6+
810209	413	1.3-	0.1+	810409	413	1.4-	0.9+	870830	809	0.8-	0.2+
810212	413	2.4+	0.3+	810501	413	2.6-	0.8+	870830	809	1.1-	0.1-
810301	413	(4.7+	0.5-)	810503	413	1.9+	0.7-	870830	809	1.4+	0.3+
810306	413	(3.4+	2.4-)	850220	675	2.1+	0.2+	870903	809	1.8-	0.8+
810308	413	0.5-	0.1+	850222	675	1.4+	0.2+	870918	071	(0.6-	9.7-)
810308	413	1.7+	0.3-	850223	675	1.7-	2.1+	870918	071	(3.8+	3.2-)
810312	413	1.6+	0.7-	870828	809	1.7+	0.3+				
810312	413	(2.9-	0.8+)	870828	809	0.9+	0.3+				

(4276)* 1981 XA

Discovered 1981 Dec. 2 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bardwell

M	258.09468	(1950.0)	P	Q	
n	0.34594304	Peri.	3.27011	+0.18313128	-0.91913381
a	2.0097081	Node	76.39285	+0.89358120	+0.00771645
e	0.2037639	Incl.	21.03050	+0.40984823	+0.39386990
P	2.85	H	14.4	G	0.25

Residuals in seconds of arc

811005	688	0.7-	0.2-	850101	675	0.8-	1.1+	880122	801	2.3-	1.6+
811005	688	0.9+	1.3-	850102	675	1.6-	1.0+	880123	801	2.3+	0.9+
811202	688	2.1-	2.3-	850218	801	0.5+	1.1+	880215	801	0.1-	0.6-
811202	688	1.1+	1.4-	850224	691	0.1+	0.0	880317	801	(10.3+	0.4-)
811205	801	1.3-	1.4+	850224	691	0.2+	0.1+	890629	474	0.2-	0.6+
811205	801	0.2+	1.8+	850224	691	0.3+	0.0	890629	474	0.5-	1.0+
811220	688	0.6+	1.7+	850320	691	0.1-	1.6-	890630	474	0.2+	0.8+
811220	688	2.3+	0.3-	850320	691	0.4+	1.4-	890630	474	0.0	0.5+
811223	675	0.6-	0.0	850320	691	0.6+	1.0-	890728	474	0.3+	0.9-
841223	293	1.7+	1.2-	850321	801	0.8+	0.5-	890728	474	0.7+	1.3-

(4277)* 1982 AF = 1936 YF = 1962 QD = 1973 AP1
Discovered 1982 Jan. 15 by A. Mrkos at Klet.
Id. T. Kobayashi (MPC 13855)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M	321.24241	(1950.0)	P	Q
n	0.21925440	Peri. 94.53522	+0.80982914	-0.56438351
a	2.7237704	Node 299.90620	+0.43774044	+0.76304978
e	0.1382911	Incl. 10.64661	+0.39058939	+0.31500206
P	4.50	H 12.4	G 0.25	

Residuals in seconds of arc

361221	020	1.9+	1.5+	730104	095	0.1-	2.8-	820118	046	1.6-	0.3+
361221	020	2.1+	3.8+	820115	046	0.3+	1.1-	890907	046	0.5+	0.6+
620829	760	1.2-	0.3-	820115	046	1.0-	2.1-	890907	046	0.2+	0.6+
620829	760	0.2+	2.4-	820116	046	2.3-	0.4+	890908	046	1.1-	0.1-
730101	095	2.0-	4.6+	820116	046	1.4-	0.3-	890908	046	1.5+	0.1+
730102	095	0.4+	3.9-	820118	046	2.9+	0.9-				

(4278)* 1982 SF = 1977 EQ2 = 1987 BQ1 = 1987 BU3
Discovered 1982 Sept. 22 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Id. E. Goffin (MPC 12011), S. Nakano (d)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M	3.06119	(1950.0)	P	Q
n	0.28879228	Peri. 234.81917	+0.93220416	-0.35799017
a	2.2667954	Node 146.06758	+0.35528428	+0.87702662
e	0.1768464	Incl. 5.47674	+0.06905416	+0.32041746
P	3.41	H 13.9	G 0.25	

Residuals in seconds of arc

770312	381	0.6-	0.3+	870123	809	1.3+	1.1-	870131	809	0.1-	0.9-
770312	381	0.2-	0.8-	870123	809	0.8+	0.4+	870202	809	1.4-	0.4+
770315	381	0.4+	0.2+	870123	809	(0.3+	4.0-)	870202	809	0.8+	1.1-
770315	381	0.3-	1.2-	870123	809	(1.8+	4.8-)	870203	809	0.2-	1.1+
820916	095	1.4+	1.1-	870127	809	(2.4-	1.8+)	870203	809	0.5+	1.0+
820922	688	(3.7-	1.4-)	870127	809	1.4-	1.2+	870203	809	1.4+	0.3+
820922	688	0.5-	0.2+	870128	809	0.7-	0.8-	870203	809	0.3-	1.0+
821009	688	0.9+	0.6-	870128	809	0.5+	0.8-	870203	809	0.8-	1.7+
821009	688	0.4-	1.0-	870128	809	0.8+	0.1+	870203	809	(0.5+	2.7+)
821017	688	0.7-	0.9-	870128	809	0.4-	0.6-	870205	809	0.2+	0.4-
821017	688	0.5+	0.4-	870128	809	0.2-	0.4+	870205	809	0.0	1.1-
870122	809	(2.9-	0.4-)	870129	809	(1.8+	2.0+)	891004	807	0.5+	1.4+
870122	809	(0.5-	2.4-)	870129	809	1.0+	0.5+	891027	801	1.1-	0.2+
870122	809	0.1-	1.4-	870130	809	0.6+	0.5-	891028	807	0.4-	1.0+
870122	809	1.3+	1.0-	870130	809	1.1-	0.3-				
870122	809	0.9-	0.6-	870131	809	1.3-	1.3+				

(4279)* 1982 WB = 1978 RW16
Discovered 1982 Nov. 19 at Osservatorio San Vittore.
Id. S. J. Bus (MPC 10625)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M	317.18665	(1950.0)	P	Q
n	0.27104280	Peri. 160.69485	+0.40688759	-0.91046549
a	2.3647077	Node 265.23842	+0.82797033	+0.40186440
e	0.2068998	Incl. 4.26592	+0.38588551	+0.09776295
P	3.64	H 14.5	G 0.25	

Residuals in seconds of arc

770518	675	1.2-	1.3+	821209	552	1.3-	0.8+	870221 552 (2.3- 0.8+)
770519	675	0.5+	0.7+	821209	552	1.0+	1.0+	870221 552 0.7- 0.0
780901	675	0.1-	0.6+	821214	688	1.3+	0.3+	870223 552 0.8+ 0.8-
780902	675	0.5+	1.1+	821214	688	1.4-	1.3-	870223 552 0.3+ 0.2-
821119	552	(3.4-	0.3+)	821215	552	0.3+	1.5-	891004 552 0.3+ 0.7-
821119	552	1.9-	0.2+	821215	552	1.2+	0.2-	891004 552 0.6+ 0.9-
821120	552	0.3-	2.0+	821219	552	(2.2-	0.7+)	891005 552 0.3+ 0.2-
821120	552	0.7-	1.8+	821219	552	(4.3-	0.1+)	891005 552 0.4+ 0.9-
821121	552	(3.0-	1.5+)	830109	552	1.5+	0.2+	891008 413 0.2- 0.1+
821121	552	(2.3-	1.7+)	830109	552	0.4-	0.2-	891008 413 0.4- 0.4-
821205	552	0.3+	0.3-	830110	552	(0.1+	2.2+)	891026 552 0.2+ 0.5+
821205	552	0.1-	0.2-	830110	552	(1.1-	2.5+)	891026 552 0.2- 0.0

(4280)* 1985 PF2 = 1969 EM1 = 1978 TQ9 = 1982 VQ12 = 1989 UX3

Discovered 1985 Aug. 13 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M	333.20338	(1950.0)	P	Q	
n	0.26900609	Peri. 0.88946	+0.61835042	-0.78339720	
a	2.3766285	Node 50.91764	+0.72051617	+0.53323584	
e	0.0088737	Incl. 4.63323	+0.31384583	+0.31929355	
P	3.66	H 13.5	G 0.25		

Residuals in seconds of arc

690313	095	0.4+	1.0+	850824	095	1.4-	1.1+	891028 364 0.3- 0.9+
781004	095	0.7-	1.7+	850919	095	2.1+	0.4-	891028 364 0.2+ 2.6-
821113	095	(22.1+	8.7+)	850920	095	0.7+	2.7+	891104 364 1.1+ 1.1+
850813	095	0.1-	2.1-	891021	364	2.4+	2.4+	891104 364 2.6- 1.0-
850817	095	1.8-	0.7-	891021	364	0.1+	2.4-	

(4281)* 1985 TE1 = 1981 SW4 = 1981 UT18

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

Id. C. M. Bardwell (MPC 10391)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bardwell

M	357.32173	(1950.0)	P	Q	
n	0.25492863	Peri. 208.85046	+0.80508264	-0.59316029	
a	2.4633359	Node 187.53180	+0.54661387	+0.74299716	
e	0.1115837	Incl. 0.73236	+0.23033718	+0.31002594	
P	3.87	H 13.6	G 0.25		

Residuals in seconds of arc

770908	675	0.1-	0.1-	851016	049	(4.4-	3.3+)	851112 095 2.1- 0.2-
770908	675	0.3+	1.4-	851018	095	2.0-	2.0+	870401 675 (6.0+ 0.2-)
770909	675	0.3-	0.3-	851020	688	0.9+	0.5+	870401 675 (8.2+ 1.5-)
810925	095	0.8+	1.6-	851020	688	0.6+	0.1-	870403 675 1.7- 0.2+
811026	095	2.5+	2.1-	851024	049	0.1-	1.3+	870403 675 1.0+ 1.2-
850920	095	0.4+	1.4+	851024	049	0.0	1.2+	890907 033 0.2- 1.3+
850921	095	2.3-	1.3+	851104	046	0.3+	0.3-	890907 033 0.3- 1.2+
851015	688	1.2+	0.9+	851104	046	0.7+	2.2-	891030 400 1.1+ 1.6-
851015	688	0.9-	0.3+	851107	688	1.1-	0.5-	891030 400 0.3+ 1.2-
851016	049	(4.4-	2.0+)	851107	688	0.6+	0.2-	

(4282)* 1987 UQ1 = 1959 EJ = 1983 RT

Discovered 1987 Oct. 28 by S. Ueda and H. Kaneda at Kushiro.

Id. T. Kobayashi (MPC 12582)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M 168.72884		(1950.0)	P	Q
n 0.26646434	Peri.	101.22688	+0.39733541	-0.91727598
a 2.3917180	Node	325.32213	+0.82229886	+0.36894982
e 0.1459157	Incl.	2.72063	+0.40736858	+0.14993598
P 3.70	H	13.1	G 0.25	

Residuals in seconds of arc

590227	690	(6.0-	2.9-)	830908	046	2.8-	0.5+	871115	400	1.1-	0.2+
590310	690	1.5-	1.6-	871028	399	0.4-	2.3-	890402	809	0.3+	0.4-
590311	690	1.8-	3.3-	871028	399	0.8+	2.5-	890402	809	0.1-	0.5+
590312	690	0.3-	2.1-	871028	399	0.7+	0.1-	890402	809	1.4+	0.2-
590313	690	0.1-	1.4-	871113	400	0.5-	2.3+	890406	809	0.2+	3.4+
830904	688	2.7+	0.7+	871113	400	0.3-	1.7+	890406	809	0.6+	3.4+
830904	688	2.3+	0.0	871113	400	0.3-	1.4+	890406	809	1.6+	3.0+
830905	046	2.1+	0.8+	871114	400	0.6+	1.4+	890407	809	(1.5+	6.6+)
830906	046	0.5+	0.9-	871114	400	0.2+	2.2+	890407	809	(2.5+	5.2+)
830907	046	0.8-	1.5-	871114	400	0.0	1.2+	890407	809	(4.3+	3.8+)
830907	046	1.2-	2.2-	871115	400	1.5-	0.4+				
830908	046	0.9-	0.8-	871115	400	0.8-	0.5+				

(4283)* 1988 BZ = 1952 BC1 = 1986 QA2

Discovered 1988 Jan. 23 by C. S. Shoemaker at Palomar.

Id. C. M. Bardwell (MPC 13040)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bardwell

M 147.02401		(1950.0)	P	Q
n 0.27284365	Peri.	166.77228	-0.70845940	-0.67048787
a 2.3542911	Node	327.46734	+0.60445074	-0.41531952
e 0.1701765	Incl.	24.18245	+0.36431385	-0.61478103
P 3.61	H	12.7	G 0.25	

Residuals in seconds of arc

520126	711	0.7+	1.1+ Y	860830	809	0.1-	0.5-	890630	474	0.8-	0.8+
860828	809	0.3-	0.8+	880123	675	0.1-	1.0-	890630	474	0.7-	0.7+
860828	809	0.0	0.8+	880125	675	0.4-	0.1+	890729	474	0.8+	0.7-
860828	809	0.4+	0.9+	880216	675	0.4+	0.3+	890729	474	0.5+	0.4-
860830	809	0.3-	0.5-	880217	675	0.0	0.7+				
860830	809	0.3-	0.5-	880319	675	0.3+	0.2-				

(4284)* 1988 FL3 = 1959 RZ = 1970 NF

Discovered 1988 Mar. 16 by S. Ueda and H. Kaneda at Kushiro.

Id. T. Kobayashi (MPC 14793)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M 48.87546		(1950.0)	P	Q
n 0.26485471	Peri.	166.65322	+0.55993343	+0.81694722
a 2.4013986	Node	137.17199	-0.77757139	+0.57569617
e 0.2715715	Incl.	11.72116	-0.28610713	+0.03422211
P 3.72	H	12.1	G 0.25	

Residuals in seconds of arc

590903	024	0.2+	2.6-	880321	399	0.6-	1.2+	890929	399	2.1+	0.6-
700712	095	0.4+	0.0	880321	399	1.8-	1.6-	891029	399	1.8-	1.2+
880316	399	1.9+	2.1-	880408	399	0.7+	1.6-	891102	399	1.2-	1.1-
880317	399	1.3-	2.8-	880408	399	0.6+	0.7+	891102	399	0.6+	1.3-
880317	399	1.3-	1.2-	880408	399	1.2+	0.3+	891102	399	0.4+	0.2-
880317	399	3.5-	1.3+	880413	399	2.5+	0.3-				
880321	399	0.5+	1.1+	890929	399	0.5+	0.0				

(4285)* 1988 NH = 1980 TF1 = 1987 DT1

Discovered 1988 July 11 by E. Helin at Palomar.

Id. C. M. Bardwell (MPC 13591)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bardwell
M 144.62386 (1950.0) P Q
n 0.22918773 Peri. 77.77828 -0.59777543 +0.79574885
a 2.6444893 Node 154.72381 -0.79510757 -0.57303728
e 0.1589708 Incl. 13.15874 -0.10231566 -0.19598989
P 4.30 H 12.4 G 0.25
Residuals in seconds of arc

801005 809	0.2-	0.9+	880713 675	0.1+	0.2-	891006 675	0.5+	3.4-
801005 809	0.2-	0.8+	880807 675	0.6-	1.5-	891027 675	0.2+	1.3+
870223 010	1.5-	1.2-	880807 675	0.3-	3.2-	891027 675	0.7-	0.5-
870223 010	0.7+	2.7-	891004 675	0.2-	1.8-	891029 675	0.4+	1.6+
870223 010	0.2+	1.7-	891004 675	1.2-	2.5-	891029 675	0.4+	1.2+
880711 675	0.4+	0.8-	891006 675	1.8+	0.1-			

(4286)* 1988 PU4 = 1951 EM = 1959 WC = 1974 XV = 1976 GU = 1978 PW1
= 1979 WC4 = 1983 QM1 = 1983 RE9 = 1986 EC1
Discovered 1988 Aug. 8 by L. I. Chernykh at the Crimean Astrophysical Observatory.
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
M 32.78420 (1950.0) P Q
n 0.19765621 Peri. 254.75034 +0.87277833 -0.48677351
a 2.9187423 Node 134.36259 +0.46499998 +0.80661121
e 0.0779951 Incl. 2.90138 +0.14843522 +0.33530570
P 4.99 H 11.6 G 0.25
Residuals in seconds of arc

510313 024	0.6-	0.2-	791117 095	3.1-	0.5-	880809 095	0.2-	0.5+
591130 760	0.7+	0.6+	830816 095	0.8-	0.4-	880809 095	0.6+	1.3-
741214 330	2.1+	0.2-	830913 095	1.4-	1.2-	880809 095	1.0-	1.3-
760401 095	2.4+	0.4-	860305 688	0.2+	0.8-	880914 095	0.1+	1.2-
760402 095	1.3-	3.0+	860305 688	0.4-	2.8-	880914 095	0.3-	0.1+
760404 095	0.3+	1.3-	860312 809	1.6-	0.6-	880916 095	2.6+	0.7-
780808 095	1.8-	3.3+	880808 095	1.2+	0.5-	880916 095	1.9+	0.4-

(4287)* 1989 RU2 = 1949 HM = 1953 TU2 = 1972 JS1 = 1972 KN = 1986 WH8
Discovered 1989 Sept. 7 by A. Mrkos at Klet.
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
M 35.51859 (1950.0) P Q
n 0.30042410 Peri. 256.60092 +0.62835622 +0.77420754
a 2.2079007 Node 52.58939 -0.67155722 +0.58913723
e 0.1861982 Incl. 5.48823 -0.39265680 +0.23134391
P 3.28 H 13.3 G 0.25
Residuals in seconds of arc

490420 760	3.7+	1.1+	861130 381	0.5+	0.1-	890909 046	0.3+	2.3+
490420 760	2.6+	0.9-	861130 381	0.1+	0.2-	891003 046	0.9-	2.2-
531014 760	0.8-	1.8-	861201 381	0.8+	0.5+	891003 046	1.5-	2.8-
531014 760	1.3-	0.3+	861201 381	0.3-	0.1+	891004 046	1.0+	0.8-
720509 095	2.1-	1.5+	890907 046	0.2-	0.5+	891004 046	1.2+	1.5-
720511 095	4.1-	1.3-	890908 046	0.1-	0.9+	891005 046	0.8+	0.9+
720516 095	1.2-	1.8-	890908 046	0.3+	2.6+	891005 046	0.7+	0.3+

(4288)* 1989 TQ1 = A921 XA = 1951 XD1 = 1959 SJ = 1962 JG = 1980 NU
= 1983 EQ3 = 1983 HA2
Discovered 1989 Oct. 8 by T. Kojima at the Chiyoda Observatory.
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi
M 4.61990 (1950.0) P Q
n 0.23124843 Peri. 324.06452 +0.97695296 -0.13026266
a 2.6287554 Node 44.39204 +0.20277017 +0.81384994
e 0.1752825 Incl. 13.98813 -0.06668715 +0.56628607
P 4.26 H 11.6 G 0.25

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

211205	024	(0.02-	0.03+)X	620507	760	1.3-	1.1-	891008	897	0.8-	1.3+
511205	711	2.1+	8.1- Y	620507	760	2.8-	1.8-	891008	897	0.4-	1.0+
511222	711	7.4-	0.4- Y	800711	808	0.1-	2.8-	891020	897	0.7+	0.3+
511222	711	7.4+	1.1+ Y	800711	808	0.4+	3.5-	891020	897	0.0	0.6+
590930	024	2.0-	0.2-	830315	095	0.8-	2.5+	891029	897	0.3-	1.0+
620504	760	3.8+	2.1-	830416	033	0.3-	1.4+	891029	897	0.4-	1.2+
620504	760	5.3+	0.9+	830416	033	2.1-	0.9+				

(4289)* 1989 UA2 = 1968 UX2 = 1973 DA = 1975 XF7 = 1978 PX4 = 1980 BH1 = 1980 DF2 = 1982 VR1

Discovered 1989 Oct. 29 by A. Sugie at the Dynic Astronomical Observatory.

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M	344.59040		(1950.0)	P	Q
n	0.28315421	Peri.	340.27895	+0.56090029	-0.82273230
a	2.2967869	Node	75.50012	+0.77174563	+0.47929775
e	0.1563400	Incl.	5.46526	+0.29966573	+0.30558999
P	3.48	H	12.2	G 0.25	

Residuals in seconds of arc

681023	095	1.3+	1.4-	780807	323	0.2-	2.1-	891029	402	2.2-	0.1-
730227	029	2.0-	0.0	780807	323	1.6+	0.3-	891030	402	0.9+	0.8+
730227	029	1.8-	0.1-	780809	323	0.9-	1.9-	891110	402	0.1+	0.7+
730309	029	2.2-	0.2+	800123	095	1.0+	2.1-	891110	402	0.3-	1.7-
751201	095	0.3-	1.0+	800220	095	3.2+	3.1-	891121	402	0.6+	1.0+
751203	095	3.6+	2.7-	821115	704	2.4-	1.2+	891121	402	0.3-	0.5+

(4290)* 1989 UK3 = 1973 TY = 1977 KF1 = 1984 UU = 1987 FC

Discovered 1989 Oct. 30 by T. Seki at Geisei.

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M	38.54843		(1950.0)	P	Q
n	0.18731786	Peri.	87.37432	+0.86776007	+0.47888556
a	3.0251709	Node	243.98349	-0.49411968	+0.80267769
e	0.0901378	Incl.	8.50409	-0.05327471	+0.35549564
P	5.26	H	11.7	G 0.25	

Residuals in seconds of arc

731002	095	2.0-	0.3+	841030	046	0.4+	1.2-	891030	372	0.1-	0.2+
770518	675	3.9+	2.1-	841031	046	1.2-	2.1-	891031	372	0.0	0.6+
770519	675	2.0-	2.0-	841031	688	2.3+	1.8+	891102	372	1.2-	1.0+
841026	688	3.0+	0.3-	841031	688	1.5+	1.3-	891117	372	1.1-	0.6+
841026	688	2.6+	1.7-	870327	688	0.9+	0.3+	891117	372	0.1+	0.0
841029	046	3.0-	0.7-	870327	688	2.5-	2.5+				
841029	046	2.7-	0.1-	891030	372	1.0+	1.1+				

(4291)* 1989 VH = 1958 VE1 = 1982 KR = 1984 WN = 1988 OJ

Discovered 1989 Nov. 2 by M. Arai and H. Mori at the Yorii Observatory.

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M	143.17764		(1950.0)	P	Q
n	0.19138330	Peri.	7.44622	-0.29252246	+0.93177132
a	2.9821766	Node	245.74434	-0.88901945	-0.34781573
e	0.0733149	Incl.	13.64100	-0.35224286	+0.10405013
P	5.15	H	11.6	G 0.25	

Residuals in seconds of arc

581113	760	0.5+	1.3-	841118	688	2.6-	1.4-	891102	875	2.7+	0.9-
581113	760	0.3+	0.1+	841124	688	0.9-	1.3-	891102	875	1.8+	0.5-
820521	688	0.5-	1.9-	841124	688	1.4-	1.7-	891104	875	0.2+	0.0
820521	688	0.6-	2.5-	880722	033	0.6-	0.2+	891104	875	0.6-	0.7+
820528	688	2.3+	2.4-	880723	033	0.5-	0.1-	891120	875	0.5+	0.3-
820528	688	1.1-	1.7-	880723	033	0.3-	0.1+	891120	875	0.4+	0.7-
841118	688	0.5-	1.4-	880724	033	0.4-	0.3+				

(4292)* 1989 VO = 1938 QE = 1955 KK = 1957 WH2 = 1959 ES = 1979 QW2 = 1986 AB1 = 1988 PX3

Discovered 1989 Nov. 4 by M. Koishikawa at the Ayashi Station of the Sendai Astronomical Observatory.

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M	304.49422		(1950.0)	P	Q
n	0.21619038	Peri.	144.38654	-0.27201545	-0.96151714
a	2.7494456	Node	321.35623	+0.86789134	-0.22779227
e	0.0507291	Incl.	3.54669	+0.41565878	-0.15360816
P	4.56	H	11.6	G 0.25	

Residuals in seconds of arc

380824	024(27.9-	31.9+)X	790822	809	0.5+	0.0	860111	688	1.0+	0.1+	
550521	839	0.7-	2.5-	790823	809	1.1+	0.1-	880807	046	2.4-	1.6-
571123	760	0.4-	0.2-	790823	809	0.2+	0.3+	880807	046	0.7+	0.2+
571123	760	0.2-	0.0	790826	809	0.1-	0.2+	891104	391	2.0+	0.6-
590306	690	0.4-	1.5-	790826	809	0.2+	0.1-	891104	391	2.3+	0.1+
590307	690	0.3-	2.1-	790826	809	0.1-	0.3-	891107	391	1.9-	0.4-
590309	690	(4.8+	2.1+)	790826	095	0.1+	2.3-	891107	391	0.8-	0.4+
590310	690	2.0-	1.4-	790830	809	1.0+	0.5-	891121	391	0.4-	3.4-
790822	809	0.8+	0.4-	790830	809	0.0	0.7-				
790822	809	0.4+	0.1+	860111	688	0.5-	0.3+				

(4293)* 1989 VT = 1941 FC = 1950 EV = 1957 SE = 1962 WQ = 1971 UF3 = 1977 FR1

Discovered 1989 Nov. 1 by Y. Oshima at the Gekko Observatory.

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Oishi

M	322.43515		(1950.0)	P	Q
n	0.21959804	Peri.	51.53493	-0.32674747	-0.93487088
a	2.7209282	Node	58.07943	+0.80816380	-0.35249065
e	0.2245172	Incl.	9.40858	+0.49000751	-0.04203305
P	4.49	H	12.2	G 0.25	

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

410318	012(0.12+	0.05-)X	621124	760(0.03+	0.01+)X	891102	888	0.1-	0.5+		
500314	062	0.7+	1.8+	711029	095	2.0+	0.1+	891104	888	0.0	0.3+
500314	062	1.3+	2.3+	770326	095	0.1+	1.3-	891104	888	0.1-	0.5+
500321	062	1.4-	0.3-	891101	888	0.3+	1.4-	891120	888	0.3+	0.0
570924	760	2.5-	1.4+	891101	888	0.4+	1.2-	891120	888	1.6-	0.6-
570924	760	0.5+	1.3+	891102	888	0.3-	0.7+				

(4294)* 4016 P-L = 1974 SS = 1979 WR5

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

Id. K. Hurukawa (MPC 9299)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M	59.58885		(1950.0)	P	Q
n	0.20989111	Peri.	31.92893	+0.97934275	-0.20002476
a	2.8041852	Node	339.54703	+0.16305106	+0.86783632
e	0.0221024	Incl.	4.86396	+0.11959151	+0.45480790
P	4.70	H	12.8	G 0.25	

Residuals in seconds of arc

600924	675	0.8+	0.3-		740921	095	1.7-	2.4+		880914	809	0.7-	1.6+
600925	675	0.7+	1.3-		740923	095	2.4-	1.9+		880914	809	0.5-	1.7+
600926	675	0.1-	0.1-		791018	675	1.0-	0.0		880918	809	0.2+	0.9-
600928	675	0.0	0.0		791018	675	1.8+	1.4+		880918	809	0.3+	0.9-
600928	675	0.7+	0.6-		791117	095	1.3-	0.3+		880918	809	0.2+	1.1-
601017	675	0.0	0.5+		860206	801	0.6+	1.5+		881005	807	1.8+	1.0-
601022	675	0.7+	1.3-		880911	809	0.9-	0.6+		881007	807	1.8+	1.3-
601024	675	0.7+	0.3-		880911	809	0.8-	0.6+		881103	807	1.0+	1.7-
601026	675	0.4-	1.0-		880911	809	0.8-	0.7+		881105	807	0.6+	0.8-
740919	095	(3.4-	1.0-)		880914	809	0.9-	1.7+					

(4295)* 6032 P-L = 1979 OV15 = 1983 SG

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

Id. K. Hurukawa (MPC 8395), W. Landgraf (ibid.)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M	215.88801		(1950.0)	P	Q
n	0.25711737	Peri.	28.18060	+0.95998346	+0.27858551
a	2.4493364	Node	315.61270	-0.26402087	+0.86611974
e	0.1590258	Incl.	2.34884	-0.09340628	+0.41500206
P	3.83	H	13.7	G 0.25	

Residuals in seconds of arc

600924	675	0.4+	0.0		830910	095	2.1-	2.3-		830930	071	0.5-	2.3+
600925	675	0.0	0.2-		830913	095	(4.6-	2.4-)		830930	071	0.8+	0.1-
600926	675	0.2-	0.1+		830928	071	(1.2+ | 4.0+)		831001	046	(3.7- | 2.0-)
600928	675	0.2-	0.5+		830928	071	2.0+	0.1-		831001	046	2.0-	2.2-
601017	675	0.2-	0.5-		830928	071	(3.8+ | 0.7+)		831005	046	(2.6- | 5.4-)
601022	675	0.1-	0.2-		830928	071	2.0+	1.7+		831005	046	(2.3-	4.9-)
601024	675	0.4+	0.9+		830928	071	1.0-	1.5-		870924	095	1.6+	1.1+
601026	675	0.4-	0.3+		830928	071	2.4+	0.7+		870925	095	1.9-	0.3-
790730	095	0.4-	0.9+		830929	046	2.6-	0.7-					
830903	095	1.9+	0.1+		830929	046	(4.3-	0.7-)					

1925 BA = 1972 YV = 1989 VD

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M	330.35647		(1950.0)	P	Q
n	0.22627087	Peri.	139.07277	+0.14831972	-0.97604739
a	2.6671675	Node	301.82637	+0.85144984	+0.20789825
e	0.1634459	Incl.	10.79685	+0.50302528	-0.06410782
P	4.36	H	11.5	G 0.25	

Residuals in seconds of arc

250121	024	0.2-	1.4-		250315	024	0.6+	0.9+		891102	897	0.7-	0.1-
250122	024	(9.1+	5.8-)		721230	095	0.5+	1.2+					
250216	024	0.9-	0.5-		891102	897	0.5+	0.1+					

1931 VS = 1931 XH = 1989 VL

Id. K. Reinmuth (d, RI 530), T. Kobayashi

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M	349.75515		(1950.0)	P	Q
n	0.23753672	Peri.	13.23659	+0.65087284	-0.74492638
a	2.5821544	Node	36.47187	+0.67213410	+0.47572110
e	0.1765928	Incl.	14.26344	+0.35298767	+0.46773297
P	4.15	H	13.0	G 0.25	

Residuals in seconds of arc

311115	024	1.4+	1.2-		891102	875	0.4-	1.6+		891119	888	2.9+	0.5+
311212	024	2.5+	0.6-		891104	875	0.5+	0.9-		891121	888	2.7-	0.7+
311231	024	3.8-	0.3+		891104	875	0.7+	1.7-		891121	888	2.9-	0.4+
891102	875	0.3-	0.0		891119	888	1.4+	0.6+					

1962 SR = 1987 SX20
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M 181.42652		(1950.0)	P	Q
n 0.23296832	Peri.	58.98550	+0.95048938	+0.27365078
a 2.6158016	Node	284.78636	-0.31066545	+0.84825207
e 0.1578691	Incl.	8.76039	+0.00754379	+0.45341337
P 4.23	H	12.5	G 0.25	

Residuals in seconds of arc

620926 033	0.2+	0.1+	620930 033	0.1-	0.0	870918 095	0.2+	0.2-
620927 033	0.3-	0.2+	620930 033	0.2+	0.3-	870923 095	0.2-	0.2+

1967 UQ = 1983 EQ1 = 1985 VE3
Id. T. Kobayashi (MPC 12581; unpublished)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M 340.04422		(1950.0)	P	Q
n 0.27192929	Peri.	51.28601	-0.48052194	-0.87535775
a 2.3595656	Node	67.51213	+0.78558351	-0.45669067
e 0.1650777	Incl.	3.31086	+0.38981689	-0.15868976
P 3.62	H	13.9	G 0.25	

Residuals in seconds of arc

671013 029	0.0	0.7+	671030 029	0.1-	0.0	830311 381	0.2-	0.3+
671014 029	0.4+	0.0	671031 029	0.3-	0.3-	830311 381	0.1+	0.6-
671014 029	0.5-	0.0	671031 029	0.2+	0.5+	851110 095	0.8+	1.3-
671030 029	0.2-	0.5+	671031 029	0.3+	0.4+	851120 095	0.5-	0.1-

1971 QW1 = 1989 CS3
Id. S. Nakano (MPC 14470)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M 109.93434		(1950.0)	P	Q
n 0.18761647	Peri.	199.26956	+0.67068187	-0.73706493
a 3.0219602	Node	208.79498	+0.70117087	+0.66658135
e 0.0825868	Incl.	9.94577	+0.24196124	+0.11137590
P 5.25	H	11.8	G 0.25	

Residuals in seconds of arc

710830 095	1.1+	0.4+	870920 095	0.4-	0.7+	890207 809	0.4+	0.1+
710916 095	0.1+	1.0+	871002 095	0.3-	0.8+	890207 809	0.3-	0.1-
710927 095	(1.2+	9.9+)	890205 809	0.6-	0.0	890207 809	0.6+	0.4-
711011 095	1.4-	1.0-	890205 809	0.4+	0.0			
870918 095	0.8+	1.8-	890205 809	0.4-	0.5+			

1975 SJ = 1975 VH2 = 1984 SV4 = 1989 VG
Id. T. Kobayashi (d, MPC 13436; unpublished)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M 344.60182		(1950.0)	P	Q
n 0.21572043	Peri.	28.58395	+0.51844171	-0.85447120
a 2.7534373	Node	30.22324	+0.77145372	+0.45065919
e 0.1018144	Incl.	3.77298	+0.36888663	+0.25842844
P 4.57	H	12.6	G 0.25	

Residuals in seconds of arc

750930 675	0.6+	1.9-	891102 881	3.8-	0.9-	891103 399	0.2+	1.9+
751001 675	0.3+	1.2-	891102 399	3.4+	0.2+	891103 399	1.1-	0.2+
751002 675	1.4+	0.8-	891102 399	4.5+	0.2+	891103 399	3.7-	0.5+
751102 095	1.3-	3.5+	891102 399	3.6+	1.0-	891104 881	3.3+	0.9-
840919 071	0.5-	0.1-	891102 374	3.0-	2.6+	891104 400	1.9+	1.7-
840919 071	0.5+	1.4+	891102 374	1.7-	1.1+	891104 400	1.2+	2.0-
891102 881	2.0-	1.4+	891102 374	(5.4-	0.2+)	891104 400	1.7+	0.5-

1975 YE = 1979 SN5 = 1979 UU2
Id. S. Nakano (MPC 11346), N. S. Chernykh (d, ibid.)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M	318.57071	(1950.0)	P	Q
n	0.20161459	Peri. 254.18296	+0.17596979	-0.98409510
a	2.8804129	Node 185.84685	+0.96958285	+0.17753871
e	0.2340963	Incl. 13.81194	+0.17012857	+0.00606905
P	4.89	H 12.5	G 0.25	

Residuals in seconds of arc

751231	808	0.0	0.2+	760106	808	1.1+	0.2+	891003	071	0.1-	1.8-
751231	808	1.2-	0.2+	790923	095	1.0+	0.6+	891008	403	(1.1+	44.1-)Y
760103	808	0.2-	0.1+	791016	095	1.4-	1.4+	891008	403	(1.1+	36.1-)Y
760103	808	0.1+	0.1-	891002	071	2.3-	1.3-	891009	403	1.6+	1.1+
760106	808	0.2+	0.1+	891003	071	1.1+	0.3+				

1976 GU3 = 1978 TM9 = 1987 EF1
Id. E. Bowell (MPC 10613), S. Nakano
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M	132.36753	(1950.0)	P	Q
n	0.17335496	Peri. 159.13292	-0.82899989	+0.55849240
a	3.1855067	Node 54.85207	-0.51798365	-0.74719134
e	0.1403094	Incl. 2.03787	-0.21083673	-0.36026565
P	5.69	H 12.5	G 0.25	

Residuals in seconds of arc

760402	095	1.5+	0.9+	760430	808	1.3-	1.3-	781005	675	0.9-	1.3-
760405	095	2.6+	0.2+	760430	808	0.8-	0.6-	870304	688	0.8+	1.0+
760423	808	0.9+	0.3-	760502	095	1.2-	0.4-	870304	688	1.1-	1.8+
760423	808	0.5+	0.3-	760503	808	0.3+	0.1+	870321	046	1.0+	2.4-
760427	808	0.6-	0.6+	760503	808	1.0-	0.7+	870321	046	1.2-	1.0-
760427	808	0.7-	0.7+	781004	675	1.1+	0.8+	870531	801	0.2+	0.1-

1976 GM7 = 1978 RX16
Id. S. J. Bus (MPC 10613)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M	164.39669	(1950.0)	P	Q
n	0.16917460	Peri. 334.54641	-0.85049135	-0.52557867
a	3.2377696	Node 173.62705	+0.50888856	-0.83218737
e	0.0606130	Incl. 10.78618	+0.13302965	-0.17672364
P	5.83	H 11.9	G 0.25	

Residuals in seconds of arc

760404	095	0.6-	1.8-	780901	675	0.3+	0.2-	870110	413	1.3+	0.0
760423	095	0.4+	0.8+	780902	675	0.4-	0.3+	870227	801	1.0-	0.1+
760503	095	0.2+	1.1+	870110	413	0.4-	0.4+	870402	801	0.3+	0.3-

1976 SM2 = 1979 OQ15 = 1989 UX2
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M	21.62149	(1950.0)	P	Q
n	0.30728212	Peri. 167.86796	+0.99923188	-0.03876604
a	2.1749262	Node 194.35745	+0.03374213	+0.92550304
e	0.1294499	Incl. 1.32429	+0.01992782	+0.37675099
P	3.21	H 14.1	G 0.25	

Residuals in seconds of arc

760924	095	1.1-	1.0+	761026	095	3.0-	1.7-	891102	400	0.3-	1.7-
760928	095	3.5+	1.0+	790730	095	0.2-	0.1+	891102	400	1.8-	0.6-
760929	095	0.8-	0.6-	891030	400	0.0	0.3-	891121	400	0.1-	0.0
761025	095	1.3+	0.8-	891030	400	1.2+	3.6+	891121	400	1.0+	0.1-

1976 UR15 = 1989 VU
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Oishi

M	5.37237	(1950.0)	P	Q	
n	0.23045589	Peri.	340.57688	+0.86483723	-0.48489552
a	2.6347841	Node	49.12809	+0.48036846	+0.72385617
e	0.0562383	Incl.	9.90908	+0.14595448	+0.49082439
P	4.28	H 14.1	G 0.25		

Residuals in seconds of arc

761022	381	0.4-	0.2+	761118	381	0.6+	0.0	891117	883	1.8-	0.4+
761022	381	0.4+	0.0	761118	381	0.4+	0.6-	891117	883	0.3-	0.1+
761024	381	0.5-	0.7+	891104	385	0.2-	0.0				
761024	381	0.4-	0.3-	891104	385	2.4+	0.4-				

1977 AL1 = 1975 VD10
Id. S. Nakano (MPC 12447)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M	126.72370	(1950.0)	P	Q	
n	0.23291023	Peri.	253.18087	+0.86695054	+0.46062611
a	2.6162366	Node	79.04321	-0.35054294	+0.83500165
e	0.1585651	Incl.	11.17756	-0.35428296	+0.30099141
P	4.23	H 12.7	G 0.25		

Residuals in seconds of arc

751107	808	0.2-	1.6+	770112	675	0.7+	0.1-	881014	894	0.6-	1.0-
751107	808	0.9+	1.4+	770113	675	0.5-	1.1+	881014	894	2.4+	0.7+
751108	808	0.2-	0.5-	770113	095	0.1-	0.3-	881110	894	0.7+	0.9+
751108	808	0.8-	1.6-	770120	095	0.2-	0.3-	881110	894	2.1-	1.3-

1978 VZ3 = 1977 QE5 = 1987 RN5
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano

M	104.05312	(1950.0)	P	Q	
n	0.20475702	Peri.	46.29614	+0.60794984	-0.79396865
a	2.8508720	Node	6.26503	+0.71949856	+0.54916999
e	0.0745526	Incl.	1.72343	+0.33573623	+0.26081814
P	4.81	H 13.0	G 0.25		

Residuals in seconds of arc

770819	675	0.7-	1.7-	781107	675	0.1+	0.2-	870904	095	0.1-	3.6+
770819	675	1.4+	0.4-	781108	675	0.8-	0.4-	870924	095	0.8-	1.6-
781105	675	0.9-	0.0	781129	675	0.6+	0.4+				
781106	675	0.4+	0.5-	781130	675	0.7+	0.5-				

1978 VP10 = 1989 SE1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M	40.09181	(1950.0)	P	Q	
n	0.25910201	Peri.	247.65145	+0.84430469	+0.53163606
a	2.4368130	Node	80.17350	-0.46311665	+0.78699467
e	0.0681369	Incl.	3.90927	-0.26957848	+0.31305348
P	3.80	H 14.6	G 0.25		

Residuals in seconds of arc

781105	675	0.4-	0.5-	781129	675	0.6+	0.2-	890926	809	1.0-	0.3-
781106	675	0.3+	0.0	781130	675	0.5-	0.3-	890928	809	1.9+	0.1+
781107	675	0.0	0.2+	890926	809	0.6-	0.3+	890928	809	1.1+	0.1+
781108	675	0.0	0.8+	890926	809	1.2-	0.6-	890928	809	0.2-	0.3+

1978 VP11 = 1989 VN
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 32.03824 (1950.0) P Q
n 0.17469726 Peri. 256.25302 +0.98355382 +0.17222633
a 3.1691747 Node 93.80918 -0.13734502 +0.90880535
e 0.1726550 Incl. 3.12567 -0.11729550 +0.38001439
P 5.64 H 13.0 G 0.25
Residuals in seconds of arc

781105	675	0.2-	0.7-	781130	675	0.0	0.3+	891102 877 2.1+ 0.4-
781106	675	0.3+	0.2-	891101	877	2.9-	1.5+	891104 877 1.4+ 2.5-
781107	675	0.2+	1.2+	891101	877	1.8+	1.9+	891104 877 2.8- 0.4-
781108	675	0.4-	0.5-	891102	877	0.5+	0.2-	

1979 UQ = 1949 YE = 1978 JS3
Id. S. J. Bus (MPC 13165), S. Nakano
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 356.95268 (1950.0) P Q
n 0.29378993 Peri. 135.91870 +0.93890749 -0.34142308
a 2.2410196 Node 244.09076 +0.30089566 +0.87551026
e 0.1749131 Incl. 2.76517 +0.16707643 +0.34192407
P 3.35 H 13.5 G 0.25
Residuals in seconds of arc (or two decimals in units of degrees)

491223	020(0.16-	0.00-)X		791021	330	0.0	1.1+	890903 675 0.0 0.2-
780509	675	0.7-	0.4-	791023	046	0.5+	1.7+	891009 400 0.6- 1.4+
780510	675	0.6+	0.1+	791023	046	1.0+	1.0+	891009 400 0.1+ 1.5+
791017	095	1.4-	0.0	791025	046	0.2+	1.6+	891009 400 0.8+ 2.2-
791019	046	0.9-	1.1-	791025	046	(4.3-	1.3-)	891024 400 (8.7- 0.7-)
791019	046	0.8-	1.3-	791027	330	0.3-	1.8-	891024 400(10.9- 0.1-)
791020	046	1.6+	0.2+	791117	095	1.7-	1.1-	891024 400 (9.7- 1.1-)
791020	046	1.7+	0.7-	890903	675	0.6-	0.4-	

1979 UD1 = 1984 SH4 = 1989 UU
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 23.94349 (1950.0) P Q
n 0.19991447 Peri. 227.35763 +0.99914959 -0.00543716
a 2.8967260 Node 132.90960 +0.01989556 +0.93180852
e 0.0906874 Incl. 3.19897 -0.03611457 +0.36290952
P 4.93 H 12.5 G 0.25
Residuals in seconds of arc

790922	095	0.3-	0.4+	840928	033	0.6-	0.3-	891026 046 1.7- 2.0-
790928	095	0.6+	0.1+	891023	872	1.0+	2.0+ Y	891029 872 0.9- 0.8+
791016	095	0.1+	0.2-	891023	872	1.5-	2.0+ Y	891029 872 2.7- 2.3+
791024	033	(2.4-	11.3+)	891025	046	0.8+	0.4+	891102 872 (0.9- 5.2+)
791024	033	(2.5-	10.2+)	891025	046	2.4+	0.2-	891102 872 (2.7- 5.9+)
791025	033	(0.4-	12.5+)	891025	046	0.6-	0.9-	891102 046 0.4- 0.9-
791111	095	0.1+	1.3-	891025	046	1.6+	0.9-	891102 046 0.8+ 0.9+
840928	033	0.4+	0.7+	891026	046	0.8+	2.7-	

1980 TL13 = 1978 LP = 1989 TG1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 199.79932 (1950.0) P Q
n 0.21324599 Peri. 330.58883 -0.92630440 +0.08881516
a 2.7747019 Node 220.24350 -0.12224621 -0.99009134
e 0.1441894 Incl. 34.52571 -0.35639306 +0.10877045
P 4.62 H 11.0 G 0.25

Residuals in seconds of arc

780609	095	0.6-	1.7+	891004	374	1.0-	2.6+	891023	374	(47.1-	18.0+)
801011	095	0.4+	4.4+	891007	374	1.0+	2.1-	891023	374	(33.7-	31.4+)
801015	095	0.7+	1.3-	891007	374	0.8+	2.8+	891028	871	1.7+	2.2-
801017	095	0.5+	1.4+	891021	871	0.8-	2.5-	891028	871	4.1+	2.4+
891004	374	4.5-	0.4+	891021	871	2.0-	4.0-				

1981 EQ = 1989 UA4
Id. S. J. Bus
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M	138.63020	(1950.0)	P	Q	
n	0.17360306	Peri.	226.72076	-0.52329302	+0.85128088
a	3.1824710	Node	11.90348	-0.71764923	-0.41585871
e	0.1549534	Incl.	10.76870	-0.45950407	-0.31997250
P	5.68	H	13.1	G	0.25

Residuals in seconds of arc

810212	413	0.5+	0.1-	810306	809	0.2+	0.7+	810308	809	0.5+	0.7+
810213	413	1.2-	0.2+	810306	809	0.1+	0.4+	810312	809	0.9-	1.1-
810301	809	0.3+	0.6-	810306	809	0.1+	0.2+	810312	809	0.8-	0.4+
810301	809	0.4+	0.5-	810307	809	0.5+	0.3-	810312	809	0.5-	0.2+
810301	809	0.0	0.3-	810307	809	0.7+	0.3-	891029	807	0.3+	0.2+
810305	809	0.6-	0.2-	810307	809	1.0+	0.1-	891031	807	0.3-	0.2-
810305	809	0.5-	0.2-	810308	809	0.3+	0.8+				
810305	809	0.5-	0.5-	810308	809	0.4+	0.7+				

1981 JG = 1955 UO1 = 1972 TF4 = 1989 VE
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano

M	24.63588	(1950.0)	P	Q	
n	0.17535679	Peri.	149.76154	+0.94509827	-0.25028495
a	3.1612234	Node	226.33332	+0.20989250	+0.95772724
e	0.0575198	Incl.	16.88562	+0.25046835	+0.14183077
P	5.62	H	11.5	G	0.25

Residuals in seconds of arc

551025	760	0.3+	0.1+	810503	688	1.3-	0.0	891102	403	0.3-	2.4-
551025	760	0.5-	1.0+	810505	675	1.6-	0.5+	891102	403	0.2+	1.4-
721005	095	0.3+	0.0	810506	675	0.8+	0.1-	891104	881	0.9+	2.5+
810411	675	0.1-	0.7+	810511	675	0.2+	0.0	891104	881	2.0+	2.5+
810411	675	1.6+	0.8+	891102	881	0.6+	0.1-	891104	403	1.0-	0.3+
810503	688	0.4+	0.9-	891102	881	0.9-	0.9-	891104	403	1.7-	0.7-

1981 YS1 = 1971 BS1 = 1988 QG1 = 1988 UZ
Id. T. Kobayashi, B. G. Marsden (d, MPC 15384)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M	45.12744	(1950.0)	P	Q	
n	0.26764896	Peri.	290.73813	+0.10150958	-0.99418727
a	2.3846556	Node	153.35831	+0.93988737	+0.08401968
e	0.3010591	Incl.	4.58967	+0.32604837	+0.06732282
P	3.68	H	13.6	G	0.25

Residuals in seconds of arc

710127	095	1.5-	7.2-	820120	330	3.2-	1.8+	880916	807	2.3+	1.2-
811220	330	0.1+	0.9+	880818	511	0.1-	0.8-	881016	071	2.7-	0.3-
811223	330	0.5+	1.9+	880818	511	1.4-	1.5-	881016	071	3.2-	1.0+
820116	330	(25.9+	17.7-)	880914	807	1.7+	0.8-				
820119	095	0.9+	0.6+	880915	807	2.1+	1.0-				

1982 UE = 1979 YV7 = 1980 BL6
Id. S. Nakano (MPC 13605)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano

M	10.35509	(1950.0)	P	Q
n	0.28932866	Peri. 292.39885	+0.95489081	-0.28740587
a	2.2639975	Node 84.36789	+0.29250926	+0.86695548
e	0.2236934	Incl. 4.30531	+0.05120417	+0.40716834
P	3.41	H 13.5	G 0.25	

Residuals in seconds of arc

791223	095	0.2+	3.1+	821014	095	0.4-	0.9+	891029	402	0.5+	0.0
800122	095	0.1-	2.1-	821017	688	0.9+	0.5-	891030	402	0.0	1.6-
821011	688	0.7+	0.2-	821017	688	0.7-	0.7-				
821011	688	0.1-	0.5-	821021	095	0.7-	1.9+				

1983 CO3 = 1972 AJ
Id. T. Kobayashi (MPC 11242)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M	69.44552	(1950.0)	P	Q
n	0.18116162	Peri. 223.64822	-0.80929348	-0.53693963
a	3.0933229	Node 282.41473	+0.58328299	-0.68662178
e	0.1598804	Incl. 14.11711	+0.06946236	-0.49014932
P	5.44	H 13.0	G 0.25	

Residuals in seconds of arc

720114	029	0.2-	0.8-	830212	809	1.4+	0.6+	830220	809	0.1-	0.1-
720115	029	1.3-	0.4-	830218	809	1.2-	0.7-	890401	474	1.1+	0.0
720116	029	1.5+	0.6-	830218	809	1.0-	0.4-	890401	474	1.0+	0.4-
720117	029	0.1-	1.8+	830218	809	0.8-	0.5-	890403	474	1.2-	0.6+
830212	809	1.1+	0.4+	830220	809	0.2-	0.1+	890403	474	0.9-	0.1-
830212	809	1.2+	0.4+	830220	809	0.2-	0.0				

1984 FU = 1986 XD3 = 1989 RY2
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Bardwell

M	222.10082	(1950.0)	P	Q
n	0.28758220	Peri. 157.39121	-0.99916435	-0.00327431
a	2.2731543	Node 22.53605	-0.01694099	-0.87395874
e	0.1083263	Incl. 6.10217	+0.03719693	-0.48598910
P	3.43	H 14.0	G 0.25	

Residuals in seconds of arc

840227	095	0.4+	1.2+	840331	046	(6.8+	2.1+)	861204	010	1.5+	1.3-
840322	046	0.7+	1.5+	840405	046	0.2-	0.6-	861204	010	0.0	0.6-
840322	046	1.5-	0.3+	840405	046	0.6-	1.6-	890907	033	0.4+	0.1+
840331	046	1.0+	0.2-	861204	010	0.7-	2.3+	890907	033	0.2-	0.4+

1984 SM = 1949 OH1
Id. K. W. Fabrin (MPC 10513)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M	192.61740	(1950.0)	P	Q
n	0.28381564	Peri. 48.30062	+0.73702843	+0.66806802
a	2.2932171	Node 269.51171	-0.64648932	+0.65271219
e	0.1436176	Incl. 5.87436	-0.19708032	+0.35728409
P	3.47	H 13.0	G 0.25	

Residuals in seconds of arc

490725	690	2.6+	2.2-	881207	399	(3.1-	0.0)	881211	399	0.7+	0.6-
490726	690	1.5-	0.5-	881207	399	1.0-	1.7-	881212	054	0.7+	0.5-
490729	690	0.1+	0.8-	881207	399	1.6+	0.6+	881213	054	0.2-	0.2+
840924	054	2.2-	0.6-	881207	399	1.0+	1.2-	890106	801	1.4-	0.0
840929	054	0.7-	1.0+	881210	801	0.2+	0.6-	890110	054	0.5+	0.5+
841026	054	2.3+	2.6+	881211	399	2.7-	0.6-	890110	054	0.7+	0.3-
881201	054	0.5+	0.4+	881211	399	0.9-	0.4+				
881207	801	0.2+	0.4+	881211	399	0.3-	1.4-				

1984 SG1 = 1986 AB2
Id. S. Nakano (MPC 11425)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Nakano
M 9.47316		(1950.0)	P	Q
n 0.21252425	Peri.	96.15323	+0.91849916	-0.39161830
a 2.7809803	Node	286.91246	+0.33637910	+0.84657972
e 0.0815173	Incl.	3.27881	+0.20786630	+0.36046898
P 4.64	H	12.5	G 0.25	

Residuals in seconds of arc

840925	688	0.1+	1.0+	840929	046	2.0-	2.2+	860117	688	1.4+	0.6+
840925	688	1.1+	0.4-	840930	046	0.3+	0.3-	860117	688	0.9+	0.0
840927	046	1.7+	1.0-	840930	046	2.2-	1.1-	891102	872	1.8-	0.3+
840927	046	2.1+	1.2-	860112	688	2.3-	0.5-	891102	872	1.9+	0.4-
840929	046	1.1-	1.0+	860112	688	(8.5-	0.1+)				

1985 CP1 = 1972 HZ = 1987 SW28

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Nakano
M 302.98027		(1950.0)	P	Q
n 0.21545653	Peri.	55.38400	-0.84354133	+0.53584155
a 2.7556908	Node	156.95229	-0.51804006	-0.79401784
e 0.0978726	Incl.	5.30834	-0.14167752	-0.28707057
P 4.57	H	12.5	G 0.25	

Residuals in seconds of arc

720419	095	0.0	0.0	850216	809	0.7+	0.7-	850221	809	0.4-	0.4+
850210	809	0.0	0.8+	850216	809	1.0+	0.7-	850221	809	0.6-	0.0
850210	809	0.5+	0.8+	850217	809	0.1+	0.0	850221	809	0.5-	0.3-
850210	809	0.8+	0.8+	850217	809	0.6+	0.0	850222	809	0.5-	0.4-
850211	809	0.7-	0.5-	850217	809	0.5+	0.1+	850222	809	0.6-	0.4-
850211	809	0.6-	0.2-	850218	809	0.2+	0.7-	850222	809	0.6-	0.5-
850211	809	0.1-	0.4-	850218	809	0.2+	0.6-	850224	809	0.7+	0.1-
850213	809	1.2-	0.5+	850218	809	0.5+	0.5-	850224	809	0.8+	0.3-
850213	809	1.0-	0.2+	850219	809	0.7-	1.2+	850224	809	0.9+	0.4-
850213	809	1.0-	0.2-	850219	809	0.7-	0.6+	850225	809	0.2+	0.2+
850215	809	0.5+	0.6-	850219	809	0.4-	0.2+	850225	809	0.2+	0.6+
850215	809	0.4+	0.7-	850220	809	0.2-	1.0+	850225	809	0.4+	0.5+
850215	809	0.6+	0.7-	850220	809	0.2-	0.8+	870924	095	0.7+	1.0+
850216	809	0.3+	0.4-	850220	809	0.1-	0.6+	870927	095	0.7-	1.0-

1985 RG = 1989 UB2

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Kobayashi
M 8.26032		(1950.0)	P	Q
n 0.26213682	Peri.	10.38890	+0.93446533	-0.35604023
a 2.4179688	Node	10.46995	+0.32540269	+0.85040125
e 0.2098905	Incl.	0.99183	+0.14452552	+0.38736685
P 3.76	H	14.4	G 0.25	

Residuals in seconds of arc

850823 095	0.4+	1.1-	891029 888	0.9+	1.3-	891103 399	3.0-	0.9-
850914 688	1.0+	0.9+	891029 888	1.6+	1.0-	891103 399	2.8-	0.3-
850914 688	0.3-	1.8+	891101 888	0.8+	0.2-	891103 399	1.9-	0.6-
850915 095	1.5-	0.5-	891101 888	0.5+	1.0+	891104 888	1.8+	1.4+
850918 688	1.6-	0.2+	891102 399	0.8+	0.4-	891104 888	0.2+	0.6+
850918 688	1.8+	0.6-	891102 399	1.0+	1.0-	891120 888	0.2-	1.4+
850920 095	0.2-	0.3-	891102 399	0.0	0.3-	891120 888	0.1-	1.1+

1985 WA

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Marsden
M 293.41157		(1950.0)	P	Q
n 0.20528661	Peri.	350.94765	+0.82647586	-0.55094401
a 2.8459611	Node	43.15565	+0.52650757	+0.68363523
e 0.6014274	Incl.	9.74312	+0.19931738	+0.47864766
P 4.80	H	18.0	G 0.25	

From 33 observations 1985 Oct. 14-1986 Jan. 19, mean residual 0".8.

1985 XR = 1989 UE3

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Green
M 345.66075		(1950.0)	P	Q
n 0.22952418	Peri.	282.20322	+0.71917189	-0.69265765
a 2.6419043	Node	121.66744	+0.65993061	+0.65617028
e 0.0835859	Incl.	3.70032	+0.21744745	+0.29944272
P 4.29	H	12.5	G 0.25	

Residuals in seconds of arc

851213 010	2.1-	0.2+	891025 046	0.6+	0.4+	891102 872	0.6-	0.6+
851217 010	1.7-	0.8-	891025 046	2.8+	0.5+	891102 872	0.1-	0.0
851217 010	3.8+	0.5+	891026 046	(6.8-	0.7-)	891102 046	1.6-	1.5-
851219 010	(9.4+	0.1+)	891026 046	2.0-	0.8-	891102 046	0.1+	3.3+
891025 046	1.0-	0.8-	891029 872	0.5+	0.6-			
891025 046	0.6+	1.1-	891029 872	0.7+	0.1+			

1986 CG

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P)				Oishi
M 300.40789		(1950.0)	P	Q
n 0.21143208	Peri.	204.35028	-0.36093218	-0.92499095
a 2.7905491	Node	266.98701	+0.87393033	-0.29099585
e 0.1817503	Incl.	6.83387	+0.32553609	-0.24436276
P 4.66	H	13.4	G 0.25	

Residuals in seconds of arc

860114 889	1.9+	0.3-	860213 809	0.6-	0.2+	860217 809	0.1+	0.0
860208 889	(2.2-	3.1-)	860213 809	0.4-	0.2+	860302 889	1.5+	0.5+
860208 889	1.1-	2.2-	860213 809	0.5-	0.2+	860302 889	0.6+	0.7+
860209 889	1.1+	1.8+	860214 809	1.2-	0.4-	860317 889	1.1-	0.9-
860209 889	(3.0+	0.1-)	860214 809	0.6-	0.4-	860317 889	0.4+	0.6+
860210 809	0.1-	0.3-	860214 809	0.3-	0.4-	860317 889	0.7+	0.6+
860210 809	0.0	0.1-	860215 809	1.1-	0.2-	891025 888	0.2-	0.9-
860210 809	0.2+	0.0	860215 809	0.9-	0.3-	891025 888	0.2+	0.8-
860211 809	0.3-	0.5+	860215 809	1.0-	0.3-	891102 888	0.5+	0.3+
860211 809	0.1-	0.4+	860216 809	0.6+	0.2+	891102 888	1.0+	0.6-
860211 809	0.0	0.4+	860216 809	0.8+	0.2+	891120 888	0.6-	0.7+
860212 809	0.1+	0.4-	860216 809	0.9+	0.2+	891120 888	0.9-	1.4+
860212 809	0.0	0.4-	860217 809	0.2-	0.0			
860212 809	0.5+	0.5-	860217 809	0.0	0.2+			

1986 TJ2 = 1979 SM1 = 1984 AP1
Id. D. W. E. Green, S. Nakano
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Green

M 269.53645		(1950.0)	P	Q
n 0.28774036	Peri.	313.68716	+0.24644198	-0.96449978
a 2.2723212	Node	121.81838	+0.91818236	+0.20101801
e 0.1351978	Incl.	6.41255	+0.31017335	+0.17126565
P 3.43	H 13.5		G 0.25	

Residuals in seconds of arc

790921	808	0.8+	0.5+	860901	675	1.1-	1.0-	861105 688 0.0 0.1+
790921	808	1.1-	0.6+	860905	675	(2.4+	2.5-)	861105 688 1.4+ 0.5-
840103	330	1.9+	0.1-	860905	675	0.3-	0.4+	861202 688 0.0 0.7-
840109	330	1.8-	0.8+	861007	688	0.6+	0.8+	861202 688 0.4- 0.6-
860901	675	(10.4-	2.1-)	861007	688	(3.1+	1.6+)	

1986 WL1 = 1984 DL1
Id. S. Nakano (MPC 11640)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano

M 283.83165		(1950.0)	P	Q
n 0.28471625	Peri.	41.86089	+0.14555687	-0.98670004
a 2.2883832	Node	39.92770	+0.87510229	+0.09428353
e 0.0562925	Incl.	6.47355	+0.46152919	+0.13241467
P 3.46	H 13.5		G 0.25	

Residuals in seconds of arc

840226	095	0.5+	0.0	861204	046	(6.6+	1.2-)	891003 046 1.4- 0.7+
840305	095	0.2-	0.7+	861204	046	(6.7+	0.3+)	891003 046 0.3- 0.6+
861125	046	2.4-	1.1-	861207	046	1.3-	0.8+	891004 046 1.1+ 2.0-
861125	046	1.0-	0.4-	861207	046	1.9+	0.6+	891004 046 1.1- 0.7+
861129	046	0.7-	0.7+	861209	046	4.1+	0.4-	891005 046 0.2+ 0.6-
861129	046	0.5-	0.3-	861209	046	(7.9+	0.9-)	891005 046 1.2+ 1.3+

1987 GK = 1989 TH2
Id. S. J. Bus
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M 200.23716		(1950.0)	P	Q
n 0.23691350	Peri.	26.93709	-0.96782659	+0.24740281
a 2.5866808	Node	167.13520	-0.25151040	-0.94587177
e 0.1693036	Incl.	11.88756	-0.00736242	-0.21004390
P 4.16	H 13.4		G 0.25	

Residuals in seconds of arc

870224	809	0.1+	0.5-	870301	809	0.1+	0.1+	870307 809 0.6+ 0.1-
870224	809	0.0	0.2-	870302	809	0.5+	0.2+	870307 809 0.6+ 0.1-
870224	809	0.2+	0.1-	870302	809	0.5+	0.2+	870308 809 0.5- 0.2-
870225	809	0.9-	0.2+	870302	809	0.6+	0.1+	870308 809 0.6- 0.1+
870225	809	0.6-	0.1+	870303	809	0.1+	0.6-	870308 809 0.7- 0.2-
870225	809	0.5-	0.1-	870303	809	0.5+	0.4-	870309 809 0.2- 0.1-
870226	809	0.2-	0.3-	870303	809	0.8+	0.2-	870309 809 0.2- 0.2+
870226	809	0.3+	0.4-	870304	809	0.9+	0.2+	870309 809 0.2- 0.1-
870226	809	0.4+	0.0	870304	809	0.4+	0.2+	870310 809 0.8- 0.0
870227	809	0.1-	0.1+	870304	809	0.3+	0.2+	870310 809 0.6- 0.1-
870227	809	0.2-	0.2+	870305	809	0.4+	0.3+	870310 809 0.6- 0.2-
870227	809	0.1+	0.2+	870305	809	0.5+	0.4+	870401 675 (14.0- 0.3+)
870228	809	0.6-	0.1+	870305	809	0.9+	0.1+	870401 675 (13.1- 1.2-)
870228	809	0.4-	0.1+	870306	809	0.6-	0.2+	870403 675 (9.9- 1.6+)
870228	809	0.2-	0.0	870306	809	0.7-	0.0	870403 675 (9.8- 2.2-)
870301	809	0.2-	0.3+	870306	809	0.3-	0.1-	891003 807 0.8+ 0.3-
870301	809	0.2+	0.3+	870307	809	0.4+	0.0	891028 807 0.8- 0.3+

1987 QN7 = 1979 UK1 = 1989 EA11
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 168.21876 (1950.0) P Q
n 0.24426896 Peri. 230.73036 +0.92645274 -0.37264228
a 2.5344947 Node 151.03410 +0.37022159 +0.87660213
e 0.2684478 Incl. 6.29874 +0.06798017 +0.30447732
P 4.03 H 14.0 G 0.25
Residuals in seconds of arc

791021	805	0.1-	0.7+	870823	675	0.3+	2.3+	870924	095	0.1+	2.0-
791023	805	0.5-	0.0	870828	675	0.7-	0.6-	870927	095	0.3+	3.6-
791023	805	0.1-	1.3+	870828	675	0.7+	1.1+	890305	033	0.4+	0.7-
870823	675	0.5+	0.3+	870904	095	0.5-	0.7+	890305	033	0.5-	0.1+

1987 RG6 = 1978 WK13
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 197.40915 (1950.0) P Q
n 0.20233089 Peri. 199.88885 +0.63761894 +0.76820962
a 2.8736164 Node 109.77002 -0.69823497 +0.60780455
e 0.0433608 Incl. 3.49763 -0.32543819 +0.20106618
P 4.87 H 13.0 G 0.25
Residuals in seconds of arc

781129	675	0.0	0.3-	870904	095	0.1+	0.1-	870927	095	0.1+	0.7-
781130	675	0.0	0.3+	870924	095	0.2-	0.8+				

1987 SJ1 = 1969 UQ1 = 1969 VT
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 205.84901 (1950.0) P Q
n 0.27215704 Peri. 149.74678 +0.99020092 +0.13926805
a 2.3582538 Node 202.25476 -0.13296285 +0.91760687
e 0.2245531 Incl. 1.56180 -0.04269683 +0.37229295
P 3.62 H 15.0 G 0.25
Residuals in seconds of arc

691016	095	0.7-	0.5+	870924	095	0.4-	2.1+	870929	688	0.1-	0.5-
691111	095	0.3+	1.0+	870927	809	0.2-	0.0	871001	809	0.2-	0.3-
870904	095	1.5-	4.3+	870927	809	0.2-	0.1+	871001	809	0.1-	0.3-
870921	688	1.2+	0.9-	870927	809	0.3-	0.0	871001	809	0.1+	0.3-
870921	688	1.5+	1.3-	870927	095	0.2+	0.9+	871002	809	0.4-	0.5-
870924	809	0.5-	0.7-	870928	809	0.4+	0.1-	871002	809	0.5-	0.4-
870924	809	0.3-	0.6-	870928	809	0.5+	0.1+	871002	809	0.4-	0.5-
870924	809	0.0	0.8-	870929	688	1.8+	1.4-				

1987 SG13 = 1987 WZ2 = 1954 UV = 1989 EX6
Id. S. Nakano (d, MPC 13674; unpublished)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 179.19999 (1950.0) P Q
n 0.29772012 Peri. 27.84663 +0.64707979 -0.76180625
a 2.2212535 Node 21.87587 +0.68330116 +0.56163090
e 0.1143863 Incl. 4.71740 +0.33821186 +0.32283428
P 3.31 H 14.5 G 0.25
Residuals in seconds of arc

541022	760	0.5-	1.1+	871001	809	0.0	0.6+	871002	809	0.1-	1.0-
870904	095	3.4-	0.3-	871001	809	0.1+	0.5+	871002	809	0.1-	1.0-
870924	095	1.2+	1.1+	871001	809	0.8+	0.2-	871002	809	0.2+	1.1-
870927	809	0.1+	0.2-	871001	809	1.0+	0.2-	871117	010	1.0+	0.3-
870927	809	0.3+	0.0	871001	809	1.3+	0.4-	871117	010	0.9-	0.2-
870927	809	0.2+	0.1+	871001	809	1.2+	0.4-	871117	010	1.3-	0.2-
870927	095	2.9-	0.5+	871001	809	1.3+	0.5-	890306	033	0.6-	1.0-
871001	809	0.0	0.6+	871001	809	1.3+	0.6-	890306	033	0.6-	1.1-

1988 BN
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bardwell
M 115.43323 (1950.0) P Q
n 0.22675460 Peri. 217.42694 -0.93945342 +0.02050823
a 2.6633729 Node 319.33311 +0.24172951 -0.66786217
e 0.2259403 Incl. 31.66212 -0.24288703 -0.74400237
P 4.35 H 12.5 G 0.25
Residuals in seconds of arc

880119 372	2.2+	1.3-	880212 894	0.3+	0.6-	880414 801	0.3-	0.8+
880120 372	(0.8-	3.8-)	880212 894	0.2+	1.5+	890629 474	0.6+	0.4+
880123 372	0.5+	1.1+	880213 675	(9.9-	2.1-)	890629 474	0.4-	0.3+
880125 372	0.3-	0.7-	880213 894	(3.4-	0.6-)	890701 474	1.6-	0.8-
880129 372	0.3-	1.3+	880213 894	0.7-	1.9+	890701 474	2.1-	0.7-
880208 372	0.3-	0.5-	880218 871	(3.0+	2.2+)	890728 474	1.4+	0.6+
880208 372	0.4-	0.6-	880221 372	1.0-	1.9-	890728 474	2.0+	0.5+
880211 675	(13.5-	2.3-)	880221 372	0.0	0.8-			

1988 PP = 1978 EA1
Id. E. Helin (1989 obs.), C. M. Bardwell
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Bardwell
M 191.67676 (1950.0) P Q
n 0.23157073 Peri. 85.39557 -0.78592915 +0.59557071
a 2.6263210 Node 131.05170 -0.61766061 -0.74383893
e 0.0835697 Incl. 12.72924 -0.02847341 -0.30331367
P 4.26 H 12.0 G 0.25
Residuals in seconds of arc

780305 095	0.2-	0.4+	880811 675	0.0	0.4-	891026 675	0.3-	0.6+
880716 675	1.3-	0.2+	880905 675	0.8+	0.2+	891028 675	2.1+	0.1-
880717 675	0.5-	0.3-	880905 675	0.6-	0.9+	891028 675	1.8-	0.4+
880809 675	1.5+	1.2-	891026 675	0.3+	0.8-			

1988 PB2 = 1935 UV = 1975 EX4 = 1980 EO
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 34.13345 (1950.0) P Q
n 0.18590444 Peri. 51.65713 +0.79223782 -0.60873517
a 3.0404911 Node 345.67688 +0.49252763 +0.67895407
e 0.0696735 Incl. 9.87683 +0.36024404 +0.41044227
P 5.30 H 12.0 G 0.25
Residuals in seconds of arc

351020 754	0.8+	1.1-	880813 511	1.0+	0.9-	880818 511	0.5-	0.2-
750315 095	0.3-	0.2-	880814 511	0.7+	1.0+	880917 095	0.3-	0.8+
800315 095	0.4+	0.4+	880814 511	1.6-	2.2+			
880813 511	0.1-	1.1-	880818 511	0.0	0.5-			

1988 RK = 1954 SL
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 87.72892 (1950.0) P Q
n 0.26073994 Peri. 193.54285 +0.98609545 -0.16543130
a 2.4266020 Node 175.88066 +0.16543100 +0.96823742
e 0.1876085 Incl. 12.67033 +0.01575939 +0.18748010
P 3.78 H 14.5 G 0.25
Residuals in seconds of arc

540923 760	1.1+	0.1-	880908 675	0.5+	0.6+	880917 095	0.1+	0.2+
540923 760	2.6+	2.0+	880909 675	1.4+	0.7-	881004 807	0.4+	0.7-
540927 760	3.2-	0.0	880911 071	0.9-	0.1+			
540927 760	0.7-	1.1-	880911 071	1.2-	0.4-			

1988 RR10
Id. S. J. Bus (1989 obs.)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M 80.68928	(1950.0)	P	Q	
n 0.08442808	Peri. 122.71485	+0.29481312	+0.95195483	
a 5.1460988	Node 163.79743	-0.94557765	+0.30313521	
e 0.0595861	Incl. 17.27655	-0.13772482	-0.04348607	
P 11.67	H 13.5	G 0.25		

Residuals in seconds of arc

880914 807	0.5-	0.3-	881007 807	0.1-	0.2-	881105 807	0.3-	0.1+
880915 807	0.5+	0.4-	881008 807	0.4+	0.4-	891003 807	0.2-	0.2-
880916 807	0.1-	1.3+	881008 807	0.1+	0.2+	891030 807	0.2+	0.2+
881005 807	0.2+	0.2-	881103 807	0.2-	0.0			

1988 RD12
Id. S. J. Bus (1989 obs.)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M 56.55983	(1950.0)	P	Q	
n 0.08151914	Peri. 344.21024	+0.80491785	+0.59288854	
a 5.2678047	Node 339.37005	-0.53665545	+0.70987994	
e 0.0686483	Incl. 3.95460	-0.25319593	+0.38020212	
P 12.09	H 11.9	G 0.25		

Residuals in seconds of arc

880914 807	0.3-	0.1-	881008 807	0.2-	0.7-	891004 807	0.1+	0.2-
880915 807	0.2+	0.5+	881103 807	0.2-	0.1-	891029 807	0.4-	0.0
881004 807	0.3-	0.4-	881106 807	0.0	0.3-	891031 807	0.2+	0.2+
881005 807	0.4+	0.8+	881108 807	0.3+	0.3+			

1988 RE12
Id. S. J. Bus (1989 obs.)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M 45.39663	(1950.0)	P	Q	
n 0.08433599	Peri. 161.08063	+0.90707898	+0.42001228	
a 5.1498440	Node 173.85725	-0.41218730	+0.89979790	
e 0.1397448	Incl. 15.30146	-0.08549482	+0.11812458	
P 11.69	H 14.2	G 0.25		

Residuals in seconds of arc

880914 807	1.2-	0.2-	881005 807	0.2-	1.4+	881108 807	0.4+	0.1+
880915 807	0.7+	0.2-	881008 807	0.4-	0.0	891003 807	0.5-	0.0
880916 807	0.8+	0.3+	881103 807	0.3+	0.7-	891028 807	0.5+	0.0
881004 807	0.5+	0.6-	881106 807	0.9-	0.1-			

1988 SP2
Id. S. J. Bus (1989 obs.)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M 52.75428	(1950.0)	P	Q	
n 0.08320405	Peri. 159.29355	+0.85763892	+0.51271827	
a 5.1964458	Node 169.58560	-0.49727707	+0.84652205	
e 0.1575827	Incl. 12.68417	-0.13103818	+0.14324940	
P 11.85	H 13.1	G 0.25		

Residuals in seconds of arc

880916 807	0.1+	0.5+	881005 807	0.7+	0.1-	881107 807	0.1-	0.9+
880918 807	0.7+	0.1-	881008 807	0.7-	1.4-	891004 807	0.1-	0.4-
881004 807	0.8-	0.2-	881105 807	0.2+	0.7+	891028 807	0.2+	0.3+

1988 SA3
Id. S. J. Bus (1989 obs.)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell
M 344.21908 (1950.0) P Q
n 0.08314115 Peri. 50.72346 +0.59813406 -0.80127143
a 5.1990665 Node 2.66197 +0.60902471 +0.44302148
e 0.0588572 Incl. 17.71638 +0.52088823 +0.40211448
P 11.85 H 12.8 G 0.25
Residuals in seconds of arc

880916	807	0.6-	0.4-	881008	807	1.4+	0.3+	891002	807	0.5+	0.1+
880918	807	0.4-	1.0-	881104	807	0.9-	0.1+	891028	807	0.5-	0.2-
881004	807	0.3+	0.9+	881106	807	0.0	0.1+				

1988 SL3
Id. S. J. Bus (1989 obs.)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell
M 43.92014 (1950.0) P Q
n 0.08337187 Peri. 216.27255 +0.88068386 +0.30680964
a 5.1894701 Node 121.90422 -0.26818956 +0.95097873
e 0.0904993 Incl. 25.15993 -0.39047444 +0.03882387
P 11.82 H 12.4 G 0.25
Residuals in seconds of arc

880916	807	0.5-	0.4+	881005	807	0.9+	0.4-	891002	807	0.2-	0.0
880918	807	0.6-	0.9+	881007	807	0.2-	0.0	891028	807	0.1+	0.2+
880919	807	0.2+	0.2+	881104	807	0.1-	0.7-				
881004	807	0.7+	0.0	881107	807	0.5-	0.6-				

1988 TC2 = 1981 UV17 = 1981 WA6
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 105.19864 (1950.0) P Q
n 0.27595050 Peri. 81.88676 +0.99917921 -0.02814145
a 2.3365915 Node 279.72236 +0.01405099 +0.91540565
e 0.2010667 Incl. 1.69399 +0.03799300 +0.40154769
P 3.57 H 14.0 G 0.25
Residuals in seconds of arc

811024	095	0.9+	5.0-	881003	046	1.4+	0.1+	881004	046	0.8+	0.3+
811124	095	0.9-	4.4+	881003	046	1.1+	0.4-	881009	046	0.8-	0.4-
880917	095	2.3-	2.1+	881004	046	0.8+	0.2-	881009	046	1.3-	0.5-

1988 VB3 = 1972 TX3 = 1978 XF = 1987 QT9
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kaneda
M 128.18071 (1950.0) P Q
n 0.18934242 Peri. 123.27250 +0.91386916 +0.39587395
a 3.0035678 Node 213.65941 -0.40507962 +0.87400417
e 0.0830728 Incl. 9.36077 -0.02745293 +0.28178100
P 5.21 H 12.1 G 0.25
Residuals in seconds of arc

721005	095	0.2-	1.1+	881115	897	1.6-	0.8+	881207	054	0.6-	0.4+
781207	801	0.0	0.0	881115	875	2.7+	1.7-	881207	054	0.5-	1.6-
870826	095	0.2+	0.6-	881115	875	1.0+	1.4-	881212	054	0.5+	1.3+
881110	897	0.2+	2.3+	881115	875	1.3+	2.7-	881212	054	0.7-	0.1-
881110	897	0.8-	0.0	881129	897	0.6-	1.6+				
881115	897	0.7-	0.5-	881129	897	0.1-	0.5+				

1989 AE1 = 1931 VG1 = 1967 GB1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kaneda
M 117.95540 (1950.0) P Q
n 0.26077183 Peri. 301.52754 +0.81091712 -0.56026650
a 2.4263993 Node 93.06849 +0.57765781 +0.72039827
e 0.2680882 Incl. 9.73584 +0.09340712 +0.40881264
P 3.78 H 11.8 G 0.25
Residuals in seconds of arc

311104	690	1.5-	0.7-	890104	400	0.7- 2.2+	890129	400 0.6+ 0.3-
311106	690	0.8+	0.3+	890106	400	1.5+ 1.6-	890129	400 1.5+ 0.2+
670411	033	2.6-	0.3+	890106	400	0.3+ 0.1-	890129	400 0.6+ 0.6+
670411	033	2.6+	0.2-	890125	400	1.2- 0.4-	890130	400 1.4- 0.8-
890104	400	0.8-	0.3+	890125	400	1.0+ 0.1+	890130	400 1.1- 1.4-
890104	400	0.4-	0.9+	890125	400	0.2+ 0.3+		

1989 BS1 = 1955 UC1 = 1982 DF5 = 1982 DV6
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Bardwell
M 135.74255 (1950.0) P Q
n 0.27393991 Peri. 74.92372 +0.64739756 -0.76191084
a 2.3480105 Node 334.69931 +0.68084337 +0.58946366
e 0.1296313 Incl. 2.57362 +0.34253277 +0.26837373
P 3.60 H 14.0 G 0.25
Residuals in seconds of arc

551020	760	0.8-	0.8-	890129	046	0.4+ 1.5-	890204	071 1.2- 1.3-
551020	760	1.0+	0.3-	890130	046	0.6+ 0.9-	890205	071 2.4- 0.2+
820222	010	1.1-	1.1-	890130	046	1.4+ 1.0-	890305	033 0.4- 0.4+
820227	010	0.1+	1.3-	890131	046	1.5+ 1.4+	890305	033 0.8- 0.6+
890129	046	1.2-	0.1+	890131	046	2.6+ 2.1+		

1989 CM = 1989 EG6 = 1976 SQ2 = 1982 VR12 = 1987 UZ3
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kaneda
M 114.52226 (1950.0) P Q
n 0.18225116 Peri. 21.80186 +0.66334482 -0.74830034
a 3.0809821 Node 26.64331 +0.68503905 +0.60482299
e 0.1592910 Incl. 0.57510 +0.30115637 +0.27246239
P 5.41 H 13.0 G 0.25
Residuals in seconds of arc

760924	095	2.0-	0.4+	890204	399	0.9+ 0.5-	890211	399 1.3- 0.2-
760929	095	1.4+	0.9+	890204	399	1.7+ 0.4+	890211	399 1.6- 2.0+
821113	095	0.2+	3.0-	890204	399	1.8- 1.7+	890307	033 0.2- 0.4-
871021	399	1.2-	0.3+	890205	399	(6.3+ 4.0+)	890310	033 0.3+ 1.3-
871021	399	0.2+	0.6+	890205	399	1.2+ 1.9+	890310	033 0.3- 0.5-
871021	399	0.5+	0.5+	890205	399	2.7+ 0.7-		
890204	399	0.7+	0.8+	890211	399	1.4- 0.7-		

1989 CL3 = 1973 TT = 1978 WF2
Id. S. Nakano (MPC 14623)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell
M 133.43754 (1950.0) P Q
n 0.21002295 Peri. 147.30951 +0.87300053 -0.47640504
a 2.8030115 Node 241.48356 +0.41801515 +0.84119858
e 0.2288368 Incl. 6.82651 +0.25126363 +0.25577957
P 4.69 H 12.6 G 0.25

Residuals in seconds of arc

731001	095	1.3-	3.9+	890207	809	2.2+	0.4-	890302	809	1.9-	0.1-
781129	675	0.7-	1.3-	890207	809	2.5+	0.4-	890303	809	0.2-	1.3+
781130	675	0.7+	0.5-	890207	809	1.3+	0.1-	890303	809	0.5-	0.8+
870918	095	0.6-	1.0-	890302	809	0.2-	0.2-	890303	809	0.7-	0.4+
870923	095	1.7+	1.7-	890302	809	0.4-	0.2+	890303	809	1.0-	0.4+
890204	809	2.3+	0.3-	890302	809	0.8-	0.2-	890303	809	1.8-	0.1+
890204	809	1.9+	0.2+	890302	809	1.5-	0.0	890303	809	1.5-	0.1+
890204	809	2.2+	0.4-	890302	809	2.2-	0.4-				

1989 CU8 = 1984 DB2 = 1986 RM5

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Bardwell	
M	114.90069		(1950.0)	P	Q
n	0.20017799	Peri.	63.10545	+0.15450128	-0.98792736
a	2.8941833	Node	18.01745	+0.89289885	+0.13470262
e	0.0179673	Incl.	2.10348	+0.42291962	+0.07651627
P	4.92	H	12.5	G 0.25	

Residuals in seconds of arc

840226	095	0.3-	1.6-	860908	809	0.3-	0.5+	890213	809	0.1-	0.9-
860906	809	0.5+	0.5+	860910	809	0.9+	0.1+	890213	809	0.0	0.9-
860906	809	0.8+	0.6+	860910	809	1.0+	0.0	890213	809	0.1+	0.9-
860906	809	1.0+	0.5+	860910	809	1.0+	0.1+	890217	809	0.4-	0.4+
860908	809	0.6-	1.0+	860910	809	0.9+	0.1+	890217	809	0.3-	0.4+
860908	809	0.5-	1.1+	860910	809	1.1+	0.3+	890217	809	0.1-	0.4+
860908	809	0.3-	1.0+	860910	809	1.2+	0.3+	890218	809	1.1+	1.5-
860908	809	0.4-	0.4+	890205	071	1.3-	0.4-	890218	809	1.6+	1.8-
860908	809	0.3-	0.4+	890205	071	2.8-	1.1+				

1989 FB

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Bardwell	
M	13.30459		(1950.0)	P	Q
n	0.92623888	Peri.	333.57010	+0.99330513	+0.06217197
a	1.0422871	Node	23.48602	+0.00749784	+0.80634805
e	0.2503287	Incl.	14.14096	-0.11527662	+0.58816449
P	1.06	H	17.0	G 0.25	

From 18 observations 1989 Apr. 1-July 29, mean residual 1".2.

1989 PA

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Bardwell	
M	295.00820		(1950.0)	P	Q
n	0.36411895	Peri.	124.64692	+0.58650261	-0.71531496
a	1.9422592	Node	284.77547	+0.55272618	+0.69634778
e	0.1118321	Incl.	23.13585	+0.59203755	+0.05851730
P	2.71	H	13.5	G 0.25	

From 6 observations 1989 July 7-Oct. 24, mean residual 0".4.

1989 RB = 1985 SL5 = 1985 TK = 1985 TR1

Id. B. G. Marsden, S. Nakano (d, MPC 12360), F. N. Bowman (ibid.)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Marsden	
M	14.46048		(1950.0)	P	Q
n	0.24023308	Peri.	323.36807	+0.80865882	+0.58826614
a	2.5628019	Node	0.63451	-0.42754636	+0.59204920
e	0.3236934	Incl.	19.64529	-0.40407304	+0.55083636
P	4.10	H	14.0	G 0.25	

Residuals in seconds of arc

850921 095	(8.9-	18.2+)	890905 675	0.3+	0.5+	891004 675	0.5+	0.3+
851012 688	0.0	0.5-	890905 675	0.3+	1.7+	891004 675	0.2-	0.2+
851015 688	3.3-	0.0	890907 675	0.7+	1.0-	891026 675	0.7-	0.2-
851015 688	0.5+	0.9+	890907 675	0.1+	1.4-	891026 675	0.7-	0.7+
851015 688	1.4+	1.2-	891001 675	2.4-	0.1+			
851015 688	2.1+	0.1-	891001 675	0.9+	0.1+			

1989 SE = 1981 TN1 = 1981 WQ5 = 1985 SW5

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Ichikawa
M 6.35190		(1950.0)	P	Q
n 0.24235436	Peri.	346.97214	+0.99528971	+0.09534399
a 2.5478256	Node	7.62212	-0.07276214	+0.85428571
e 0.2866579	Incl.	7.60237	-0.06406304	+0.51098479
P 4.07	H	14.3	G 0.25	

Residuals in seconds of arc

811002 095	4.1+	0.3+	890923 403	1.7+	2.0-	891007 403	1.4-	1.0+
811124 095	1.6-	1.3-	890924 403	0.8+	1.0- Y	891007 403	0.9-	3.6+
850921 095	3.3-	0.8-	891004 403	0.5+	0.2-			
890923 403	0.3+	1.8-	891004 403	0.3-	1.7+			

1989 SH = 1936 RQ = 1968 UE = 1978 QO

Id. S. Nakano, T. Kobayashi

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Nakano
M 3.43687		(1950.0)	P	Q
n 0.18756153	Peri.	38.73756	+0.96260899	-0.26196859
a 3.0225503	Node	336.17486	+0.18587645	+0.82393865
e 0.1193894	Incl.	9.83038	+0.19706315	+0.50249135
P 5.25	H	11.5	G 0.25	

Residuals in seconds of arc

360911 024	1.7+	2.9-	890929 400	(1.5-	6.0+)	891009 400	0.4-	0.4-
681022 095	1.7+	3.0-	890929 400	(0.8+	6.8+)	891009 400	0.5+	0.5-
780831 095	1.5-	0.8+	890930 400	(3.1-	8.4+)	891021 400	0.1+	0.1-
780905 095	0.2+	1.3+	890930 400	(4.4-	8.4+)	891021 400	1.1-	0.7+
890929 400	0.5-	3.9+	890930 400	(3.2-	7.4+)	891021 400	0.5-	0.1+

1989 SJ = 1978 VY9 = 1985 QB4

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Nakano
M 343.55773		(1950.0)	P	Q
n 0.26314688	Peri.	77.33140	+0.78824576	-0.61503566
a 2.4117823	Node	320.61809	+0.55161648	+0.72062083
e 0.1845568	Incl.	1.80583	+0.27274143	+0.32005743
P 3.75	H	12.5	G 0.25	

Residuals in seconds of arc

781105 675	0.1+	0.1+	850820 071	1.0-	0.6+	891004 374	3.2-	0.3+
781106 675	0.1+	0.5+	890930 374	0.4+	1.1+	891007 374	2.0-	2.1-
781107 675	1.0-	0.8+	890930 374	2.3+	2.7+	891007 374	3.2+	1.7-
781108 675	0.7+	0.0	890930 374	1.2-	1.0+	891023 374	3.2-	0.8+
850819 071	1.1-	0.5-	891004 871	1.8+	1.3+	891023 374	0.3-	3.4-
850819 071	0.1+	0.3-	891004 374	2.1-	1.5+	891023 374	2.0+	2.0-
850819 071	1.8+	0.6+	891004 871	2.9+	0.6-			

1989 SC1 = 1948 TM1 = 1972 TM7 = 1975 NP = 1982 QY2 = 1988 HQ

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Bardwell
M 18.48972		(1950.0)	P	Q
n 0.28753387	Peri.	52.52335	+0.90960319	+0.41462545
a 2.2734090	Node	282.96700	-0.38927666	+0.82811233
e 0.1685300	Incl.	1.56439	-0.14520922	+0.37724755
P 3.43	H	13.5	G 0.25	

Residuals in seconds of arc

481010	012(42.2+	6.3+)	880420	413	0.1-	0.8+	891025	801	0.1-	1.3+
481105	012(53.4+	12.5+)	880420	413	0.5+	0.1+	891026	801	0.2-	0.4+
721006	095(25.8+	16.3+)	890925	801	0.6-	1.4-	891027	801	1.1-	0.7+
750711	095	0.1- 0.4+	891001	801	0.8+	0.4-				
820817	095	0.1+ 0.1-	891001	801	0.7+	0.3+				

1989 TD = 1982 TN1 = 1982 VF6

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Marsden	
M	7.14977	(1950.0)		P	Q
n	0.27857360	Peri.	50.57795	+0.99751116	+0.05628005
a	2.3219005	Node	306.15499	-0.06903202	+0.90217869
e	0.2549627	Incl.	3.01540	+0.01435492	+0.42767530
P	3.54	H	15.0	G 0.25	

Residuals in seconds of arc

821014	095	0.1+ 0.6-	891004	046	2.1+	1.4-	891010	567	1.0-	0.3+
821108	095	0.0 0.2+	891005	046	(6.8+	3.8+)	891104	567	0.6-	1.3-
891003	046	0.6- 1.2-	891005	567	0.6+	0.7-	891104	567	0.4-	1.5-
891003	046	2.8+ 0.2+	891005	046	(5.0+	2.2+)	891104	567	0.3-	1.3-
891004	567	0.9+ 0.3+	891005	567	0.6-	0.1+	891117	567	0.3+	0.9+
891004	046	(5.0+ 0.2-)	891009	567	1.1-	2.2+	891117	567	0.3+	1.0+
891004	567	1.1- 0.7+	891009	567	1.9-	1.2+	891117	567	0.5+	1.0+

1989 TS = 1971 VJ

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Nakano	
M	22.51962	(1950.0)		P	Q
n	0.21842248	Peri.	297.13830	+0.85227739	+0.31956546
a	2.7306876	Node	47.69000	+0.05243450	+0.73551379
e	0.2744687	Incl.	34.05574	-0.52045545	+0.59740889
P	4.51	H	13.0	G 0.25	

Residuals in seconds of arc

711110	029	0.7+ 0.7-	891005	675	1.6+	0.1-	891028	675	0.0	0.3+
711110	029	0.8+ 0.2-	891005	675	0.3-	0.8-	891028	675	0.4-	0.3-
711119	029	1.3- 0.6+	891026	675	1.1-	0.1+	891029	675	0.2+	0.3+
891001	675	0.2+ 0.2+	891026	675	1.2-	0.7+	891029	675	0.4+	0.7-
891001	675	0.8- 0.8+	891027	675	1.1+	0.3-				

1989 TC1 = 1962 WT = 1977 QM4 = 1985 TT2

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Ichikawa	
M	44.43449	(1950.0)		P	Q
n	0.25393400	Peri.	80.07310	+0.78125743	+0.62413662
a	2.4697691	Node	241.30741	-0.57683434	+0.71606237
e	0.1261253	Incl.	0.62069	-0.23853506	+0.31258304
P	3.88	H	13.0	G 0.25	

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

621126	760(0.18-	0.13-)X	891008	403	1.7-	2.2-	891020	403	0.7+	0.4+
770818	095	0.1+ 0.4-	891008	403	0.3+	1.2- Y	891020	403	0.3+	1.0-
851014	010	3.8+ 2.8+	891009	403	0.0	1.5-	891023	403	(4.5+	3.9+)Y
851015	010	4.7- 0.7-	891009	403	0.8+	1.8+	891023	403	0.3+	1.9+

1989 TJ1 = 1979 OE3

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Nakano	
M	33.17393	(1950.0)		P	Q
n	0.21038260	Peri.	18.69073	+0.89072373	+0.45402569
a	2.7998217	Node	314.28693	-0.42079034	+0.80556277
e	0.0814890	Incl.	1.73900	-0.17189161	+0.38069581
P	4.68	H	13.0	G 0.25	

Residuals in seconds of arc

790724	675	3.0+	0.7-	891009	391	1.5-	2.2+	891030 391 (4.6- 1.6-)
790724	413	1.8-	2.5-	891009	391	0.4-	2.4+	891102 391 0.9- 0.4-
790725	675	1.1-	3.2+	891029	391	0.8+	0.5+	891102 391 1.4- 0.4-
891008	391	1.9+	1.3-	891029	391	1.3-	0.9+	891104 391 2.5+ 0.8-
891008	391	0.4+	3.1-	891030	391	(5.1-	1.1+)	891104 391 (4.5+ 0.7-)

1989 TP1 = 1972 VG1 = 1977 RO3 = 1983 TE2
Id. H. Kaneda, T. Kobayashi

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Kobayashi
M 347.36000		(1950.0)	P	Q
n 0.16993693	Peri.	212.19376	+0.79331005	-0.60881622
a 3.2280794	Node	185.31085	+0.56172043	+0.73282857
e 0.1542147	Incl.	0.86973	+0.23479635	+0.30381754
P 5.80	H	11.9	G 0.25	

Residuals in seconds of arc

721109	095	0.1+	1.1-	831009	688	(6.1+	1.1+)	891009 400 1.0+ 0.1+
770912	095	1.3-	1.4+	831012	688	0.8+	1.3-	891018 400 0.5- 2.3+
770918	095	0.7+	0.1-	831012	688	1.5+	0.0	891102 400 1.5- 1.9+
831005	688	0.9-	2.5-	891009	400	0.2-	1.4-	891102 400 1.0- 1.1+
831009	688	0.1+	0.1+	891009	400	0.9+	0.9-	

1989 TS1 = 1972 GL1

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P)				Oishi
M 15.51110		(1950.0)	P	Q
n 0.08427392	Peri.	346.27639	+0.97496959	+0.22227815
a 5.1523826	Node	0.92902	-0.16172464	+0.72493651
e 0.0498030	Incl.	18.59039	-0.15257600	+0.65196586
P 11.70	H	9.6	G 0.25	

Residuals in seconds of arc

720409	805	0.8-	0.7+	891023	888	0.3-	0.0	891029 888 0.2- 0.4+
720409	805	1.0+	0.5-	891023	888	1.1-	0.6-	891102 888 0.7+ 0.7-
720410	805	0.2+	0.3+	891024	888	0.8+	0.3+	891102 888 0.0 0.3-
720410	805	0.6-	0.8-	891025	888	0.4-	0.6-	891119 888 0.4+ 1.3+
891009	888	1.2+	0.2+	891025	888	0.5-	1.4-	891119 888 0.2+ 0.3+
891009	888	1.0-	0.7+	891029	888	0.5+	0.2+	

1989 UD = 1972 TM1 = 1977 OG = 1980 BU4 = 1983 TG

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (M-P)				Ichikawa
M 39.48648		(1950.0)	P	Q
n 0.17551082	Peri.	245.79044	+0.91760787	+0.39497261
a 3.1593673	Node	90.91980	-0.34655072	+0.84995935
e 0.1648775	Incl.	2.55867	-0.19467508	+0.34866278
P 5.62	H	11.9	G 0.25	

Residuals in seconds of arc

721007	095	1.4+	4.6-	831005	046	0.2+	0.1-	891023 403 1.5- 1.2+
770722	095	2.7-	0.4+	831005	046	0.6+	0.1-	891026 403 0.9+ 0.3-
800122	095	1.1+	0.3-	891020	403	1.2-	0.6+	891026 403 0.1+ 0.3+
831001	046	3.0+	0.9+	891020	403	1.1-	0.3+	891102 403 0.1- 0.4+ Y
831001	046	1.2+	1.5+	891023	403	2.5-	0.9-	891102 403 0.5+ 1.6+ Y

1989 UM = 1977 EL6

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Kobayashi
M 49.80830		(1950.0)	P	Q
n 0.27265846	Peri.	12.96895	+0.67586587	+0.73654900
a 2.3553569	Node	299.55951	-0.67886232	+0.60814205
e 0.2103672	Incl.	1.74411	-0.28696910	+0.29607231
P 3.61	H	14.0	G 0.25	

Residuals in seconds of arc

770312	381(15.2+	2.8-)	891021	400	1.3-	3.0-	891102	400	1.7-	0.7-
770312	381(15.3+	2.9-)	891021	400	0.5+	2.6-	891102	400	1.3-	0.6+
770314	381	1.5+ 0.9+	891025	400	3.0+	2.7+	891104	877	3.5+	2.5-
770314	381	1.3+ 0.3+	891025	400	2.7+	1.3+	891104	877	1.0+	2.1-
770315	381	2.4- 0.0	891029	877	2.7-	1.8+				
770315	381	0.3- 1.2-	891029	877	3.4-	4.6+				

1989 UP

Epoch 1989 Oct. 21.0 ET = JDE 2447820.5				Bardwell	
M	345.92279	(1950.0)		P	Q
n	0.38833924	Peri.	17.18403	+0.34241596	-0.93802344
a	1.8606379	Node	52.82424	+0.85388984	+0.28693384
e	0.4720637	Incl.	3.85075	+0.39194829	+0.19437337
P	2.54	H	20.0	G 0.25	

From 28 observations 1989 Oct. 27-Nov. 4.

1989 UQ

Epoch 1989 Oct. 21.0 ET = JDE 2447820.5				Marsden	
M	203.90573	(1950.0)		P	Q
n	1.12576286	Peri.	14.89103	-0.97445910	+0.22456378
a	0.9151763	Node	178.08572	-0.20825369	-0.90242333
e	0.2664325	Incl.	1.28757	-0.08402294	-0.36769992
P	0.88	H	19.5	G 0.25	

From 9 observations 1989 Oct. 26-Nov. 4.

1989 UR

Epoch 1989 Oct. 21.0 ET = JDE 2447820.5				Bardwell	
M	259.33094	(1950.0)		P	Q
n	0.88181685	Peri.	289.10640	-0.94557362	-0.29259898
a	1.0770035	Node	234.12712	+0.32281650	-0.89858296
e	0.3497417	Incl.	10.12098	-0.04098832	-0.32700842
P	1.12	H	20.0	G 0.25	

From 12 observations 1989 Oct. 25-Nov. 1.

1989 US = 1934 VK = 1973 YU1 = 1976 UD1

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P)				Nakano	
M	4.97929	(1950.0)		P	Q
n	0.30438688	Peri.	330.52885	+0.97090277	-0.23388195
a	2.1887003	Node	43.09643	+0.23179798	+0.86387684
e	0.1532855	Incl.	4.31866	+0.06014570	+0.44611213
P	3.24	H	13.5	G 0.25	

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

341107	094(0.04+	0.02-)X	891021	364	1.0+	0.2+	891026	364	1.0+	0.2-
731220	095	0.3+ 1.4+	891021	364	0.3+	1.2-	891028	364	0.2-	0.3+
731221	095	0.3- 1.5-	891023	364	0.6-	0.5+	891028	364	0.2+	0.8-
761022	026	0.1+ 0.1+	891023	364	0.7-	0.5+	891104	364	0.2-	0.4+
761024	026	0.0 0.3-	891026	364	0.5+	0.0	891104	364	0.1-	0.3-

1989 UY = 1955 XF = 1978 YW1

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P)				Oishi	
M	319.20488	(1950.0)		P	Q
n	0.17366924	Peri.	201.94679	+0.02869471	-0.97000089
a	3.1816688	Node	247.09847	+0.95161608	+0.10042602
e	0.0998671	Incl.	15.19225	+0.30594681	-0.22138855
P	5.68	H	11.7	G 0.25	

Residuals in seconds of arc

551206 760	(0.5+	5.4+)	891024 888	1.8+	0.5-	891101 888	1.3+	0.2-
551206 760	(0.7+	5.2+)	891024 888	2.3+	0.4-	891101 888	1.1-	0.4+
551213 760	0.3+	0.4+	891025 888	0.0	0.2+	891101 888	0.6-	0.1-
551213 760	0.2-	1.7+	891025 888	0.3-	0.4+	891101 888	0.5-	0.0
781222 095	0.2+	0.7+	891026 888	1.1-	0.7+	891104 888	1.3-	0.5+
781231 095	0.3-	1.6-	891026 888	0.3+	0.9+	891104 888	1.4-	0.3+
891023 888	(7.4+	0.5+)	891029 888	0.2+	0.8-	891119 888	0.1+	0.9-
891023 888	(3.8+	0.4+)	891029 888	0.2+	0.8-	891119 888	0.1+	1.0-

1989 UO1 = 1975 JA = 1988 HK

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Ichikawa	
M 42.23896		(1950.0)		P	Q
n 0.29553167	Peri.	135.25269		+0.87805046	+0.47800146
a 2.2322058	Node	196.23732		-0.45907166	+0.82753857
e 0.1849519	Incl.	4.77595		-0.13520577	+0.29443934
P 3.34	H	12.6	G	0.25	

Residuals in seconds of arc

750510 095	0.0	0.0	891028 403	0.3-	0.4-	891029 403	1.8+	0.3-
880417 046	1.8+	2.4+	891028 403	0.7-	0.3-	891102 403	1.6-	1.9-
880417 046	1.8-	2.5-	891029 403	0.0	1.0+	891102 403	0.7+	1.9+

1989 UQ1 = 1978 JS = 1981 EY1 = 1982 QD3 = 1984 DG2

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Ichikawa	
M 17.61159		(1950.0)		P	Q
n 0.29441603	Peri.	213.67137		+0.99744350	-0.05747470
a 2.2378413	Node	149.53842		+0.06830576	+0.94142051
e 0.1790504	Incl.	4.80475		-0.02099505	+0.33230121
P 3.35	H	12.8	G	0.25	

Residuals in seconds of arc

780505 095	1.2+	0.1-	840226 095	0.5+	0.5+	891104 403	1.0-	0.2-
810308 809	0.8-	1.3-	891028 403	(8.6-	2.3+)Y	891104 403	0.9-	0.3-
810308 809	0.6-	0.5-	891028 403	3.9-	3.6+ Y	891110 403	0.3+	0.9-
810308 809	0.8-	0.1+	891029 403	1.6+	0.9- Y	891110 403	0.3+	0.7-
820817 095	0.1-	0.8-	891029 403	4.0+	1.3- Y			

1989 UO3 = 1975 VV = 1985 QZ3 = 1987 DO2

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Kobayashi	
M 326.22915		(1950.0)		P	Q
n 0.28093577	Peri.	288.10077		+0.28878679	-0.95660746
a 2.3088622	Node	145.03913		+0.90196130	+0.25825809
e 0.1028120	Incl.	3.88117		+0.32104205	+0.13492562
P 3.51	H	13.8	G	0.25	

Residuals in seconds of arc

751101 095	0.1+	0.4-	850821 071	0.5-	1.3+	891028 372	0.1+	1.4-
751107 095	(1.6-	8.3-)	850821 071	0.4-	0.2-	891030 372	0.1-	0.3-
850819 071	0.2-	0.8-	870223 010	0.1-	0.3-	891102 372	1.7+	0.8+
850819 071	0.6+	0.3+	870223 010	0.2+	0.0	891102 372	0.0	1.3+
850819 071	1.0+	0.2+	870223 010	0.1-	0.2+			
850820 071	0.3-	1.0-	891028 372	1.8-	0.1+			

1989 UE4 = 1985 VK3

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Nakano	
M 294.27718		(1950.0)		P	Q
n 0.24262266	Peri.	251.13497		-0.55043859	-0.82737990
a 2.5459469	Node	232.77427		+0.80899610	-0.49555598
e 0.1412906	Incl.	8.05857		+0.20625873	-0.26432322
P 4.06	H	13.0	G	0.25	

Residuals in seconds of arc

851110 095	1.2+	0.2+	891023 033	0.1-	0.0	891026 033	0.1-	0.2+
851120 095	1.1-	0.1+	891023 033	0.3+	0.1-	891124 871	0.0	0.4-

1989 VA

Epoch 1989 Oct. 21.0 ET = JDE 2447820.5 Marsden

M 145.10695		(1950.0)		P	Q
n 1.58343481	Peri.	2.80867		-0.67640630	+0.65531776
a 0.7290141	Node	224.95151		-0.68465769	-0.72771211
e 0.5919532	Incl.	28.41583		-0.27151124	+0.20246907
P 0.62	H	17.0	G	0.25	

From 5 observations 1989 Nov. 2-5.

1989 VB

Epoch 1989 Oct. 21.0 ET = JDE 2447820.5 Marsden

M 5.00416		(1950.0)		P	Q
n 0.39174706	Peri.	329.52572		+0.99025766	-0.13734334
a 1.8498317	Node	38.38957		+0.13404466	+0.89560160
e 0.4566030	Incl.	2.11767		+0.03770679	+0.42312479
P 2.52	H	20.0	G	0.25	

From 12 observations 1989 Nov. 1-5.

1989 VM = 1971 QD1 = 1980 DH = 1986 GL2

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano

M 351.95043		(1950.0)		P	Q
n 0.17516277	Peri.	195.22599		+0.70845231	-0.69870579
a 3.1635574	Node	209.87861		+0.66657381	+0.70876682
e 0.0575223	Incl.	11.52448		+0.23189367	+0.09726154
P 5.63	H	11.5	G	0.25	

Residuals in seconds of arc

710819 095	0.4+	1.8-	800223 046	0.4-	0.5-	891104 877	1.7-	0.3-
800219 046	0.6+	0.7+	800223 046	0.0	0.3-	891104 877	3.4-	0.5-
800219 046	0.8-	0.1+	860404 095	1.4-	5.2-	891120 399	0.8+	1.4+
800220 046	0.2+	1.8+	891101 877	0.9-	2.4-	891120 399	2.8+	1.4+
800220 046	0.8+	0.1-	891101 877	3.4-	0.8-	891120 399	0.5+	0.4+
800221 046 (8.8- 37.2-)			891102 877	3.4+	0.7-			
800221 046(15.5- 24.7-)			891102 877	2.3+	1.5-			

2023 P-L = 1987 SL12

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M 158.77606		(1950.0)		P	Q
n 0.18217702	Peri.	359.85419		+0.78393927	+0.62080233
a 3.0818180	Node	321.76848		-0.56956847	+0.71492383
e 0.1631382	Incl.	0.61200		-0.24704450	+0.32169610
P 5.41	H	13.0	G	0.25	

Residuals in seconds of arc

600924 675	1.2-	0.5-	601022 675	0.1-	0.2+	870916 809	1.4-	2.0+
600926 675	0.2-	0.7-	601025 675	0.4-	0.1-	870916 095	0.5-	3.0-
600928 675	0.7+	0.9+	601026 675	0.1-	0.4-	870918 809	0.0	0.2+
600928 675	0.1+	0.4-	870828 095	1.8+	3.2-	870918 809	0.1+	0.1+
600929 675	1.2+	1.5-	870916 809	1.7-	1.8+	870918 809	0.1+	0.1-
601017 675	0.2+	1.3+	870916 809	1.6-	1.8+			

2050 P-L = 1975 WT = 1977 FB2
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi
M 297.80479 (1950.0) P Q
n 0.26620046 Peri. 137.50799 +0.97085411 -0.23893387
a 2.3932984 Node 236.32486 +0.21337087 +0.89735599
e 0.2233331 Incl. 1.29347 +0.10915658 +0.37102942
P 3.70 H 14.0 G 0.25
Residuals in seconds of arc

600924	675	2.9+	0.7+	601017	675	(6.5-	2.1-)	751128 095	0.3+	1.7-
600926	675	1.2+	0.6-	601022	675	2.8-	0.1+	770326 095	0.6+	1.4+
600928	675	1.5-	1.4-	601025	675	0.3+	2.1+			
600929	675	1.6-	2.2-	601026	675	0.3+	3.3+			

4018 P-L = 1989 UV
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 338.86484 (1950.0) P Q
n 0.23979114 Peri. 73.70810 +0.39163513 -0.92006152
a 2.5659498 Node 353.20808 +0.80690128 +0.34886929
e 0.2426743 Incl. 5.05842 +0.44219029 +0.17826111
P 4.11 H 13.5 G 0.25
Residuals in seconds of arc

600924	675	0.3-	0.3+	601022	675	0.3-	0.5+	891023 374	2.1-	2.3+
600925	675	0.4-	0.3+	601024	675	0.0	0.1-	891028 871	1.8+	1.3-
600926	675	0.1+	0.0	601026	675	0.5+	0.5-	891028 871	0.6-	1.3+
600928	675	0.1+	0.4-	891023	374	1.1+	0.3-			
601017	675	0.5+	0.4-	891023	374	0.2-	1.9-			

4600 P-L = 1988 RG11
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi
M 305.93771 (1950.0) P Q
n 0.17408916 Peri. 341.69154 -0.47064846 -0.88202565
a 3.1765441 Node 136.37716 +0.81355190 -0.44383126
e 0.1658189 Incl. 1.89556 +0.34150158 -0.15825473
P 5.66 H 12.7 G 0.25
Residuals in seconds of arc

600924	675	0.3-	0.6-	601017	675	0.1-	0.3-	880914 807	0.1+	0.1+
600926	675	0.4+	0.0	601022	675	0.2-	0.2-	880915 807	0.3-	0.2-
600927	675	0.2-	0.1+	601025	675	0.2+	0.0			
600928	675	0.2-	0.2+	601026	675	0.3-	0.4+			

6040 P-L = 1957 WW = 1989 TD1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Oishi
M 11.62536 (1950.0) P Q
n 0.30668070 Peri. 57.05935 +0.99984388 +0.00168915
a 2.1777687 Node 302.83813 -0.00872308 +0.91284710
e 0.2057052 Incl. 1.19949 +0.01536612 +0.40829808
P 3.21 H 14.2 G 0.25
Residuals in seconds of arc

571126	760	0.3+	0.0	601024	675	0.3-	0.4-	891026 385	0.1+	0.8-
571126	760	0.5-	0.7+	601026	675	0.6+	0.5+	891026 385	0.0	0.1+
600924	675	0.2-	0.5+	891002	385	0.9-	1.5-	891029 385	1.9-	0.5+
600925	675	0.1+	0.6+	891002	385	0.9-	0.2-	891029 385	1.8+	0.1+
600926	675	0.1+	0.4-	891009	385	0.8+	0.3+	891029 385	2.1+	1.8-
600928	675	0.1-	0.6-	891009	385	0.6-	1.1+	891029 888	(3.2-	2.9+)
601017	675	0.6-	0.7+	891020	385	0.3+	0.3-	891029 888	(3.2-	5.0+)
601022	675	0.1+	0.1+	891020	385	0.4-	1.1+			

9073 P-L = 1977 RQ5 = 1988 RC12
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi
M 51.85790 (1950.0) P Q
n 0.17572151 Peri. 22.87027 +0.99124111 -0.13009344
a 3.1568415 Node 344.55298 +0.10407921 +0.87548596
e 0.1444044 Incl. 4.89604 +0.08129314 +0.46540309
P 5.61 H 12.8 G 0.25
Residuals in seconds of arc

601017	675	0.0	0.1+	601026	675	0.1-	0.1-	880915	807	0.1+	0.1+
601022	675	0.3-	0.8+	770909	095	0.2+	0.2-	881006	807	0.8+	0.2-
601024	675	0.0	0.3-	880914	807	0.5-	0.1+	881007	807	0.8-	0.8-

9540 P-L = 1989 TV1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 25.37434 (1950.0) P Q
n 0.23929400 Peri. 329.84390 +0.96604647 +0.25815279
a 2.5695025 Node 15.20651 -0.22826874 +0.87192357
e 0.1253908 Incl. 2.30577 -0.12102730 +0.41606061
P 4.12 H 13.5 G 0.25
Residuals in seconds of arc

600924	675	0.0	0.1-	601026	675	0.3+	0.3-	891009	400	0.8+	1.9+
601017	675	0.0	1.1+	891008	403	0.3-	1.7-	891009	400	0.0	0.1+
601022	675	0.9-	0.1-	891008	403(10.6-		1.4-)Y				
601024	675	0.7+	0.8-	891009	400	0.5-	0.1-				

2200 T-2 = 1968 DO = 1985 YH2
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kaneda
M 144.40359 (1950.0) P Q
n 0.25908675 Peri. 309.36132 +0.25764693 +0.96623656
a 2.4369086 Node 335.56889 -0.88479694 +0.23500259
e 0.1284262 Incl. 0.30886 -0.38826851 +0.10564420
P 3.80 H 13.8 G 0.25
Residuals in seconds of arc

680227	095	0.0	0.1+	730925	675	0.8+	0.5-	731004	675	0.1+	0.9-
730919	675	0.4+	0.5+	730925	675	1.3+	0.2-	731004	675	1.5-	1.1-
730919	675	0.4-	0.8+	730929	675	1.3+	1.4+	731005	675	0.1-	1.6-
730920	675	2.0-	1.5-	730929	675	1.9+	1.0+	731005	675	0.4-	0.9-
730924	675	1.5-	1.5+	730930	675	1.0+	0.3+	851217	010	0.1+	0.3+
730924	675	2.6-	0.6+	730930	675	1.6+	0.8+	851217	010	0.1-	0.2-

2285 T-2 = 1987 RE6
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 114.72078 (1950.0) P Q
n 0.21043977 Peri. 43.88742 +0.59551982 -0.80290433
a 2.7993146 Node 9.66664 +0.68667687 +0.49165769
e 0.1347947 Incl. 9.07067 +0.41693048 +0.33707173
P 4.68 H 13.5 G 0.25
Residuals in seconds of arc

730925	675	1.7+	0.7-	730930	675	0.2-	0.1-	870904	095	0.9+	0.3-
730925	675	2.4+	0.1+	731004	675	1.5+	1.5-	870924	095	0.5+	1.7-
730929	675	1.8-	2.2+	731004	675	2.2+	1.0-	870927	095	1.7-	2.5+
730929	675	1.4-	1.7+	731005	675	1.1-	0.6-				
730930	675	0.9-	0.4+	731005	675	2.0-	1.0-				

3306 T-2 = 1989 SW3
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi
M 325.76336 (1950.0) P Q
n 0.30958786 Peri. 22.20545 +0.51104226 -0.85829464
a 2.1641138 Node 37.10656 +0.77653390 +0.43778873
e 0.1254227 Incl. 4.42450 +0.36855246 +0.26771504
P 3.18 H 16.4 G 0.25
Residuals in seconds of arc

730919 675	0.5+	1.5-	730930 675	0.1-	0.4+	731005 675	1.0-	2.0+
730919 675	0.5+	0.3-	730930 675	0.9-	0.5-	731005 675	2.1+	1.5-
730920 675	1.9-	0.5-	730930 675	2.1-	0.2-	731005 675	0.9-	0.1-
730924 675	0.9+	0.8+	730930 675	1.0+	0.6-	890926 809	1.0-	0.8-
730924 675	0.5+	0.6+	731004 675	1.3-	1.0-	890926 809	0.2+	0.0
730925 675	0.1-	1.3+	731004 675	0.4-	0.5+	890926 809	0.4+	0.3-
730925 675	1.2+	0.6+	731004 675	0.8-	0.4-	890928 809	0.3-	0.9+
730929 675	0.8-	0.1-	731004 675	0.6+	2.3+	890928 809	0.2-	0.1+
730929 675	0.4-	1.0+	731005 675	3.0+	3.2-	890928 809	0.4+	0.0

4265 T-2 = 1989 UB1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi
M 44.90139 (1950.0) P Q
n 0.18880049 Peri. 310.95531 +0.92543469 +0.36811262
a 3.0093126 Node 27.79751 -0.26314095 +0.79490118
e 0.1102120 Incl. 11.10201 -0.27263066 +0.48231236
P 5.22 H 12.0 G 0.25
Residuals in seconds of arc

730919 675	0.6-	0.5+	730929 675	0.1-	0.2+	891025 400	0.8-	0.3-
730919 675	0.3-	0.8+	730930 675	0.2+	0.9+	891025 400	0.7-	0.6-
730920 675	0.0	0.2+	730930 675	0.7-	1.7+	891029 400	3.0-	1.5-
730924 675	0.3+	1.0-	731004 675	1.3+	0.6+	891029 400	0.2-	1.4+
730924 675	0.5+	0.6-	731004 675	1.0+	0.8-	891030 400	1.9+	0.1-
730925 675	0.2-	1.7-	731005 675	1.1-	0.1+	891030 400	4.3+	0.6+
730925 675	2.4+	0.9-	731005 675	0.7-	0.4+			
730929 675	1.8-	0.5-	891025 400	1.6-	0.6+			

3045 T-3 = 1989 UT1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi
M 54.42819 (1950.0) P Q
n 0.16809584 Peri. 298.98491 +0.86638355 +0.48037643
a 3.2516072 Node 32.85571 -0.32375700 +0.74835164
e 0.0867161 Incl. 14.56660 -0.38021172 +0.45739295
P 5.86 H 11.5 G 0.25
Residuals in seconds of arc

771007 675	1.4-	1.3-	771016 675	0.0	0.3+	771021 675	0.1+	0.6+
771011 675	2.0+	0.2+	771016 675	0.5+	2.7+	771022 675	1.1-	2.4-
771011 675	1.7+	0.8+	771017 675	0.6-	0.5+	771022 675	0.4+	1.9-
771012 675	0.0	1.4-	771017 675	0.2-	0.6+	891029 400	0.1+	1.1-
771012 675	0.6-	0.3-	771017 675	0.2+	0.5-	891029 400	0.1-	0.1+
771016 675	0.4-	0.1+	771017 675	0.5+	0.0	891030 400	0.9+	2.4+
771016 675	0.8-	1.7+	771021 675	0.1-	0.5+	891030 400	0.7-	1.2-

* * * * *

NEW NAMES OF MINOR PLANETS.

(2673) Lossignol = 1980 KN
Discovered 1980 May 22 by H. Debehogne at the European Southern Observatory.
The family name of friends of the discoverer.

(2852) Declercq = 1981 QU2
Discovered 1981 Aug. 23 by H. Debehogne at the European Southern Observatory.
The family name of the wife of the discoverer.

(3002) Delasalle = 1982 FB3
Discovered 1982 Mar. 20 by H. Debehogne at the European Southern Observatory.
Named for St. Jean-Baptiste de la Salle, founder of the Freres des Ecoles Chretiennes in France during the eighteenth century. The Freres are teachers who prepare pupils for the higher education. The discoverer has both studied and taught in their schools, and he wishes to honor all his fellow teachers and pupils.

(3138) Ciney = 1980 KL
Discovered 1980 May 22 by H. Debehogne at the European Southern Observatory.
Named for the chief town of the Condroz, in the province of Namur, where the discoverer studied maintains a residence. Ciney is renowned for its schools, its horse and cattle fairs and its casting houses.

(3274) Maillen = 1981 QO2
Discovered 1981 Aug. 23 by H. Debehogne at the European Southern Observatory.
Named for the discoverer’s birthplace, a village of 1000 inhabitants in Wallony, 15 km south of Namur.

(3342) Fivesparks = 1982 BD3
Discovered 1982 Jan. 27 at the Oak Ridge Observatory.
Named in honor of Newton and Margaret Mayall, who have enriched the literature for amateur astronomers with their delightful and informative books entitled "Sundials" and "Skyshooting"; who have preserved the papers and memorabilia of Annie Jump Cannon; and who carried the AAVSO through the difficult period of moving its headquarters from the Harvard College Observatory. The name, which refers to the Mayalls’ residence in Cambridge, Massachusetts, was suggested by B. L. Welther, who also wrote the citation.

(3365) Recogne = 1985 CG2
Discovered 1985 Feb. 13 by H. Debehogne at the European Southern Observatory.
Named for a high point in the Ardennes, in the Province de Luxembourg.

(3374) Namur = 1980 KO
Discovered 1980 May 22 by H. Debehogne at the European Southern Observatory.
Named for the principal town in the Belgian province of the same name, a place where the discoverer studied. Namur is at the confluence of the Meuse and the Sambre rivers, and it was there that Julius Caesar battled Belgian tribes in 59 and 57 B.C.

(3389) Sinzot = 1984 DU
Discovered 1984 Feb. 25 by H. Debehogne at the European Southern Observatory.
The family name of the discoverer’s maternal grandmother.

(3390) Demanet = 1984 ES1
Discovered 1984 Mar. 2 by H. Debehogne at the European Southern Observatory.
The family name of the discoverer’s paternal grandmother.

(3411) Debetencourt = 1980 LK
Discovered 1980 June 2 by H. Debehogne at the European Southern Observatory.
The family name of the mother of Georges Roland, codiscoverer of the naked-eye comet Arend-Roland 1957 III.

(3450) Dommanget = 1983 QJ
Discovered 1983 Aug. 31 by H. Debehogne at the European Southern Observatory.
Named in honor of Jean Dommanget, head of the department of astrometry and celestial mechanics at the Royal Observatory of Belgium (1967-89), for his more than 40 years of continuous research activity in double-star astronomy and on related problems concerning astrometry and image quality. He participated in the ESO site survey in South Africa (1955-57) and was acting director of the Boyden Observatory (1964-65). He served as president of IAU Commission 26 during 1970-73 and since 1980 has been coordinator on double stars for the Hipparcos Input Catalogue Consortium.

(3840) Mimistrobell = 1980 TN4
Discovered 1980 Oct. 9 by C. S. Shoemaker on films taken by S. J. Bus at Palomar.
Named in honor of Mary E. (Mimi) Strobell, geologist with the U.S. Geological Survey. Early in her career she was a member of a team that conducted some of the earliest airborne magnetic surveys in the United States. In recent years she has coordinated much of the detailed information used to establish the extensive nomenclature of features on the terrestrial planets and on the satellites of the giant planets.

(3846) Hazel = 1980 TK5
Discovered 1980 Oct. 9 by C. S. Shoemaker on films taken by S. J. Bus at Palomar.
Named in honor of Hazel Arthur Spellmann (1896-1968), mother of the discoverer.

(3854) George = 1983 EA
Discovered 1983 Mar. 13 by C. S. Shoemaker and E. M. Shoemaker at Palomar.
Named in honor of George Estel Shoemaker (1904-1960), father of the second discoverer.

(3873) Roddy = 1984 WB
Discovered 1984 Nov. 21 by C. S. Shoemaker and E. M. Shoemaker at Palomar.
Named in honor of David J. Roddy, geologist with the U.S. Geological Survey. A leading investigator of impact and explosion craters, Roddy is best known for his work on the impact crater of Devonian age at Flynn Creek, Tennessee, the structure of craters produced by large field experiments with high explosives, and numerical modeling of large impacts.

(3880) Kaiserman = 1984 WK
Discovered 1984 Nov. 21 by C. S. Shoemaker and E. M. Shoemaker at Palomar.
Named in honor of Michael Kaiserman, American aeronautical engineer and enthusiastic supporter of research in astronomy.

(3888) Hoyt = 1984 FO
Discovered 1984 Mar. 28 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named in memory of William Graves Hoyt (1921-1985), American journalist and historian. His books "Planets ‘X’ and Pluto", "Lowell and Mars", and "Coon Mountain Controversies" (about Meteor Crater, Arizona), written while he was resident historian at Lowell Observatory, are widely recognized as major contributions to the history of planetary science.

(3910) Liszt = 1988 SF

Discovered 1988 Sept. 16 by E. W. Elst at Haute Provence.

Named in memory of Franz Liszt (1811-1886), legendary master of the piano and a courageous fighter for progress in the musical art. A grand and many-sided composer, his works ranged from Hungarian rhapsodies to symphonic poems. While a student at the University of Bonn, the discoverer became acquainted with Lady Elisabeth von Loe-Schultz, who was privileged to have known the composer. At her home the discoverer regularly played before a small audience of students several of Liszt’s famous piano etudes. Name endorsed by F. Borngen, Tautenburg, who independently proposed the name for another minor planet, and who notes that from 1848 to 1861 Liszt was the conductor of the court orchestra in Weimar, not far from Tautenburg.

(3972) Richard = 1981 JD3

Discovered 1981 May 6 by C. S. Shoemaker on films taken by S. J. Bus at Palomar.

Named in honor of Richard Arthur Spellmann, brother of the discoverer. Spellmann, a chemical engineer, was a pioneer in the application of computers to the control of petroleum refinery processes. He has also dedicated much of his time to the needs of his community and served as the mayor of El Cerrito, California.

(3977) Maxine = 1983 LM

Discovered 1983 June 14 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named in honor of Maxine Shoemaker Heath, sister of the second discoverer. An entomologist at the University of Illinois, Heath is a leading authority on the cicadas of North America and Argentina. Her research on thermoregulation in cicadas, in collaboration with James E. Heath, led to their discovery of several species of warm-blooded cicadas in the forests and thorn scrub of Argentina.

(3985) Raybatson = 1985 CX

Discovered 1985 Feb. 12 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named in honor of Raymond M. Batson, planetary cartographer with the U.S. Geological Survey. Batson was responsible for detailed maps and mosaics of the lunar surface derived from the television images returned from five Surveyor spacecraft landed on the Moon in the 1960s. Later he organized and led a group to carry out systematic cartography of Mercury, Venus, Mars and the satellites of the outer planets. About 500 published maps and photomosaics have been prepared by Batson’s group.

(4029) Bridges = 1982 KC1

Discovered 1982 May 24 by C. S. Shoemaker and S. J. Bus at Palomar.

Named in honor of Patricia M. Bridges, planetary cartographer with the U.S. Geological Survey. Based on intimate familiarity with the moon’s surface, gained from long hours at the eyepiece of the 0.6-m Clark refractor at Lowell Observatory, and later on minutely detailed knowledge gleaned from spacecraft images, Bridges’ shaded relief maps of the moon,

other satellites and the terrestrial planets, rendered with extraordinary skill by means of the airbrush, are generally regarded as unsurpassed.

(4031) Mueller = 1985 CL

Discovered 1985 Feb. 12 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named in honor of Jean Mueller, observer for the Second Palomar Sky Survey with the 1.2-m Oschin Telescope at Palomar Observatory. She has made numerous discoveries of supernovae and earth-approaching asteroids in the course of this survey.

(4082) Swann = 1984 SW3

Discovered 1984 Sept. 27 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named in honor of Gordon A. Swann, geologist at Northern Arizona University. As principal investigator for the geological field investigations conducted at the Apollo 14 and 15 lunar landing sites, Swann forged a close knit and effective exploration effort that linked geologists, mission control engineers and the astronaut crew. The result was a rich return of geologic data from the first manned lunar missions planned explicitly for scientific exploration.

(4083) Jody = 1985 CV

Discovered 1985 Feb. 12 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named in honor of Joan D. (Jody) Swann, planetary data librarian at the U.S. Geological Survey. Her 25 years of experience in nearly every phase of lunar and planetary exploration have enabled her to establish the world's most complete and functional archive of photographs, maps, spacecraft images and supporting data on the solid bodies of the solar system. Recently, she has utilized this archive to prepare outstanding color mosaics of Mars.

(4085) Weir = 1985 JR

Discovered 1985 May 13 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named in honor of Doris Blackman Weir, geologist with the U.S. Geological Survey. As technical editor for the branch of astrogeology, she has made significant contributions to the quality of hundreds of maps and scientific papers published on the planets and satellites.

(4171) Carrasco = 1982 FZ1

Discovered 1982 Mar. 23 by C. S. Shoemaker and Q. R. Passey at Palomar.

Named in honor of Juan Carrasco, senior night assistant at the Palomar Observatory. The safe operation of the famous 5-m Hale telescope is entrusted chiefly to Carrasco's capable hands.

(4226) Damiaan = 1989 RE

Discovered 1989 Sept. 1 by E. W. Elst at Haute Provence.

Named for the Flemish priest Jozef De Veuster (1840-1889) on the occasion of the 100th anniversary of his death. At the age of 19 he entered the Congregation of the Fathers of the Sacred Hearts (Picpus Fathers) and chose for himself the new name of Damiaan. In 1863 Pater Damiaan (Father Damiaan) was sent as a missionary to Hawaii, where he was ordained a priest one year later. After eight years on Kohala he asked to be transferred to the leper colony at Kalawao on the island of Molokai. There he devoted all his energy to the improvement of the conditions at the settlement until he finally contracted leprosy himself. Name endorsed by E. Goffin, who found the identifications involving this planet.

EPHEMERIDES.

1989 UR a,e,i = 1.08, 0.35, 10 Elements MPC 15567

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	23 30.59	-06 22.0	0.189	1.047	103.5	66.4	18.6
1989	12 05	23 20.43	-11 53.7					
1989	12 10	23 10.91	-17 10.6	0.194	0.986	84.7	84.0	19.1
1989	12 15	23 01.16	-22 15.8					
1989	12 20	22 50.16	-27 11.9	0.201	0.924	67.1	101.4	19.8

1989 UQ a,e,i = 0.92, 0.27, 1 Elements MPC 15567

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	23 40.77	-08 45.5	0.189	1.051	104.8	65.2	18.1
1989	12 05	23 35.15	-09 13.5					
1989	12 10	23 30.98	-09 32.4	0.205	1.013	92.2	76.2	18.5
1989	12 15	23 27.66	-09 46.2					
1989	12 20	23 24.66	-09 58.1	0.215	0.972	80.5	86.9	18.9
1989	12 25	23 21.46	-10 11.2					
1989	12 30	23 17.52	-10 28.5	0.219	0.926	68.5	98.8	19.4
1990	01 04	23 12.21	-10 53.3					
1990	01 09	23 04.80	-11 28.8	0.217	0.878	55.1	113.2	20.1

1989 VA a,e,i = 0.73, 0.59, 28 Elements MPC 15569

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	00 58.64	-19 04.9	0.284	1.139	115.9	51.1	16.3
1989	12 05	00 46.79	-21 51.8					
1989	12 10	00 38.63	-23 47.6	0.364	1.109	100.3	60.9	17.0
1989	12 15	00 33.09	-25 10.1					
1989	12 20	00 29.42	-26 10.7	0.440	1.065	88.2	67.4	17.5
1989	12 25	00 27.04	-26 56.7					
1989	12 30	00 25.49	-27 33.6	0.506	1.007	77.8	72.7	17.9
1990	01 04	00 24.33	-28 05.2					
1990	01 09	00 23.14	-28 34.4	0.558	0.932	68.1	78.2	18.1

1989 VB a,e,i = 1.85, 0.46, 2 Elements MPC 15569

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	02 52.93	+22 25.8	0.191	1.167	159.5	17.3	17.5
1989	12 05	03 05.54	+23 20.7					
1989	12 10	03 16.28	+23 59.5	0.258	1.224	155.1	19.8	18.4
1989	12 15	03 25.79	+24 27.5					
1989	12 20	03 34.50	+24 48.5	0.336	1.284	149.3	23.0	19.1
1989	12 25	03 42.74	+25 04.7					
1989	12 30	03 50.75	+25 17.9	0.424	1.347	143.0	26.1	19.8
1990	01 04	03 58.70	+25 29.0					
1990	01 09	04 06.69	+25 38.7	0.525	1.411	136.5	28.7	20.5

Periodic Comet Helin-Roman-Alu 2 (1989y) Elements MPC 15520

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1989	11 30	02 58.33	+08 33.1	1.011	1.954	156.1	11.8	15.9
1989	12 10	02 57.81	+08 01.7					
1989	12 20	02 59.96	+07 55.8	1.148	1.982	136.6	19.9	16.3
1989	12 30	03 04.89	+08 12.8					
1990	01 09	03 12.48	+08 48.3	1.346	2.024	119.8	24.9	16.7
1990	01 19	03 22.41	+09 37.0					
1990	01 29	03 34.36	+10 34.2	1.589	2.080	105.4	27.2	17.2
1990	02 08	03 48.02	+11 35.5					
1990	02 18	04 03.06	+12 37.3	1.861	2.148	92.7	27.4	17.7
1990	02 28	04 19.22	+13 36.8					
1990	03 10	04 36.28	+14 31.4	2.152	2.225	81.1	26.2	18.1

1990 03 20	04 54.01	+15 19.4					
1990 03 30	05 12.26	+15 59.6	2.451	2.311	70.1	24.0	18.6
1990 04 09	05 30.85	+16 30.8					
1990 04 19	05 49.64	+16 52.6	2.749	2.403	59.6	21.1	19.0
1990 04 29	06 08.52	+17 04.8					
1990 05 09	06 27.36	+17 07.2	3.037	2.499	49.3	17.8	19.4
1990 05 19	06 46.06	+17 00.0					
1990 05 29	07 04.55	+16 43.7	3.306	2.599	39.1	14.2	19.7
1990 06 08	07 22.76	+16 18.8					
1990 06 18	07 40.61	+15 45.8	3.547	2.702	28.8	10.4	20.1

1989 UP a,e,i = 1.86, 0.47, 4 Elements MPC 15567

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	11 12.40	+17 03.9	0.129	0.983	84.9	87.6	18.4
1989 12 05	11 27.04	+16 48.9					
1989 12 10	11 38.30	+16 34.9	0.166	0.996	89.0	81.4	18.7
1989 12 15	11 47.09	+16 23.7					
1989 12 20	11 53.88	+16 16.6	0.199	1.022	95.4	73.5	18.9
1989 12 25	11 58.84	+16 15.3					
1989 12 30	12 02.04	+16 20.7	0.227	1.059	103.4	64.5	19.0
1990 01 04	12 03.47	+16 32.9					
1990 01 09	12 03.14	+16 51.8	0.252	1.107	113.1	54.8	19.0
1990 01 14	12 01.05	+17 17.0					
1990 01 19	11 57.18	+17 47.7	0.275	1.161	124.4	44.4	19.0
1990 01 24	11 51.57	+18 22.3					
1990 01 29	11 44.36	+18 58.6	0.300	1.221	137.1	33.3	19.1
1990 02 03	11 35.84	+19 33.4					
1990 02 08	11 26.42	+20 03.9	0.332	1.285	150.3	22.3	19.1
1990 02 13	11 16.55	+20 27.6					
1990 02 18	11 06.69	+20 43.2	0.376	1.351	162.4	12.8	19.2

1989 FB a,e,i = 1.04, 0.25, 14 Elements MPC 15563

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	12 13.77	+28 05.3	0.517	1.011	77.7	72.4	17.9
1989 12 10	12 35.31	+28 01.3					
1989 12 20	12 54.37	+28 04.1	0.520	1.094	87.7	64.0	17.8
1989 12 30	13 10.41	+28 24.9					
1990 01 09	13 22.59	+29 12.2	0.485	1.167	99.6	56.2	17.6
1990 01 19	13 29.84	+30 32.0					
1990 01 29	13 30.35	+32 28.4	0.427	1.226	114.6	46.9	17.2
1990 02 08	13 21.61	+34 54.8					
1990 02 18	13 00.96	+37 26.8	0.369	1.269	132.8	34.9	16.6

Comet Aarseth-Brewington (1989a1) Elements MPC 15520

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1989 11 30	16 19.97	+18 10.5	1.278	0.816	39.7	50.5	7.7
1989 12 05	16 21.17	+13 15.4					
1989 12 10	16 22.73	+07 18.4	1.130	0.597	31.9	60.5	6.0
1989 12 15	16 25.53	-00 14.8					
1989 12 20	16 32.24	-10 12.2	0.983	0.386	22.6	78.8	3.8
1989 12 25	16 50.37	-22 59.2					
1989 12 30	17 33.74	-36 02.0	0.950	0.308	18.2	87.0	2.8
1990 01 04	18 42.27	-43 52.2					
1990 01 09	19 51.36	-45 34.2	1.136	0.471	24.3	59.4	5.0
1990 01 14	20 44.96	-43 55.6					
1990 01 19	21 23.41	-41 06.6	1.403	0.691	27.0	40.3	7.1
1990 01 24	21 51.33	-38 05.2					
1990 01 29	22 12.42	-35 12.4	1.678	0.905	26.2	28.7	8.7

Comet Helin-Roman-Alu (1989v) Elements MPC 15520

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1989 12 20	19 08.66	+46 10.5	0.783	1.050	71.9	63.0	10.7
1989 12 30	18 45.53	+49 30.9					
1990 01 09	18 20.42	+52 52.1	0.824	1.121	76.1	58.4	11.1
1990 01 19	17 50.18	+56 25.0					
1990 01 29	17 09.37	+60 09.1	0.818	1.273	89.3	50.7	11.6
1990 02 08	16 09.68	+63 29.5					
1990 02 18	14 46.74	+64 56.5	0.818	1.473	108.8	39.4	12.2
1990 02 28	13 16.81	+62 48.4					
1990 03 10	12 07.22	+57 14.1	0.906	1.696	126.4	28.1	13.1
1990 03 20	11 23.98	+50 03.7					
1990 03 30	10 59.47	+42 51.6	1.134	1.929	129.4	23.6	14.1
1990 04 09	10 46.58	+36 22.9					
1990 04 19	10 40.86	+30 49.4	1.487	2.165	119.4	23.8	15.2
1990 04 29	10 39.73	+26 06.8					
1990 05 09	10 41.66	+22 06.4	1.923	2.400	105.6	23.9	16.2
1990 05 19	10 45.69	+18 39.2					
1990 05 29	10 51.20	+15 37.6	2.406	2.632	91.3	22.6	17.1
1990 06 08	10 57.77	+12 55.7					
1990 06 18	11 05.11	+10 29.1	2.906	2.861	77.4	20.3	17.9

(4257) 1987 QA a,e,i = 1.65, 0.47, 41 Elements MPC 15397

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	22 35.05	-56 42.9	0.807	0.915	60.5	69.3	17.7
1989 12 30	23 07.71	-59 35.2					
1990 01 09	23 45.00	-62 09.2	0.709	0.875	59.7	75.9	17.5
1990 01 19	00 29.05	-64 17.9					
1990 01 29	01 24.73	-65 41.7	0.538	0.905	65.5	81.8	17.2
1990 02 08	02 40.03	-65 26.3					
1990 02 18	04 19.35	-60 46.4	0.329	0.995	81.6	79.3	16.2
1990 02 28	06 05.89	-44 54.9					
1990 03 10	07 31.96	-12 54.1	0.215	1.120	121.2	49.3	14.7
1990 03 20	08 32.09	+15 40.2					
1990 03 30	09 14.51	+29 46.7	0.399	1.259	122.5	42.0	16.1
1990 04 09	09 46.63	+35 59.3					
1990 04 19	10 12.75	+38 35.3	0.689	1.401	110.2	42.3	17.5
1990 04 29	10 35.32	+39 21.0					
1990 05 09	10 55.77	+39 04.3	0.998	1.538	100.0	40.3	18.4

Comet Okazaki-Levy-Rudenko (1989r) Elements MPC 15520

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1989 12 20	10 40.4	-81 56.9	0.766	1.009	69.2	65.6	8.0
1989 12 30	03 26.8	-82 44.0					
1990 01 09	02 14.8	-75 34.9	1.222	1.310	72.0	45.5	10.1
1990 01 19	02 04.0	-70 13.4					
1990 01 29	02 05.78	-66 10.5	1.662	1.611	69.7	35.0	11.7
1990 02 08	02 12.81	-63 02.0					
1990 02 18	02 22.69	-60 33.2	2.050	1.903	67.4	28.7	12.9
1990 02 28	02 34.46	-58 35.6					
1990 03 10	02 47.62	-57 04.3	2.380	2.185	66.6	24.7	13.8
1990 03 20	03 01.85	-55 55.8					
1990 03 30	03 17.01	-55 08.1	2.655	2.457	67.7	22.1	14.5
1990 04 09	03 32.97	-54 39.9					
1990 04 19	03 49.66	-54 29.8	2.885	2.719	70.4	20.4	15.1
1990 04 29	04 07.03	-54 37.2					
1990 05 09	04 25.06	-55 01.2	3.083	2.973	74.3	19.1	15.7
1990 05 19	04 43.70	-55 40.8					
1990 05 29	05 02.98	-56 35.1	3.263	3.219	78.6	18.0	16.1

Periodic Comet Van Biesbroeck Elements MPC 13042

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1989 12 20	12 49.30	-01 43.6	4.410	4.272	75.5	12.9	20.3
1989 12 30	12 55.39	-02 07.6					
1990 01 09	13 00.52	-02 23.8	4.006	4.175	93.0	13.6	20.0
1990 01 19	13 04.52	-02 31.3					
1990 01 29	13 07.22	-02 29.3	3.610	4.078	111.7	13.0	19.7
1990 02 08	13 08.48	-02 17.1					
1990 02 18	13 08.19	-01 54.7	3.253	3.981	131.9	10.7	19.4
1990 02 28	13 06.30	-01 22.2					
1990 03 10	13 02.90	-00 41.0	2.970	3.883	153.3	6.6	19.0
1990 03 20	12 58.19	+00 06.7					
1990 03 30	12 52.51	+00 57.8	2.791	3.784	173.1	1.8	18.7
1990 04 09	12 46.35	+01 48.4					
1990 04 19	12 40.28	+02 34.3	2.730	3.686	159.2	5.6	18.7
1990 04 29	12 34.84	+03 11.9					
1990 05 09	12 30.52	+03 38.5	2.777	3.588	137.6	10.9	18.8
1990 05 19	12 27.66	+03 52.5					
1990 05 29	12 26.49	+03 53.4	2.903	3.490	117.5	14.9	19.0
1990 06 08	12 27.10	+03 41.2					
1990 06 18	12 29.45	+03 17.1	3.074	3.392	99.5	17.2	19.1
1990 06 28	12 33.48	+02 42.0					
1990 07 08	12 39.08	+01 57.1	3.258	3.296	83.2	17.8	19.2
1990 07 18	12 46.10	+01 03.8					
1990 07 28	12 54.44	+00 03.1	3.431	3.201	68.5	17.2	19.2
1990 08 07	13 03.98	-01 03.7					
1990 08 17	13 14.60	-02 15.5	3.577	3.108	55.0	15.5	19.2
1990 08 27	13 26.23	-03 31.4					
1990 09 06	13 38.80	-04 50.2	3.686	3.018	42.3	13.0	19.1
1990 09 16	13 52.23	-06 10.9					
1990 09 26	14 06.51	-07 32.6	3.751	2.930	30.4	10.0	19.0

4600 P-L a,e,i = 3.18, 0.17, 2 Elements MPC 15570

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	03 33.62	+16 18.7	1.874	2.845	167.5	4.3	16.7
1989 12 10	03 26.09	+15 56.8					
1989 12 20	03 20.29	+15 42.3	1.961	2.818	144.2	11.8	17.0
1989 12 30	03 16.75	+15 37.6					
1990 01 09	03 15.78	+15 43.4	2.134	2.792	122.8	17.2	17.4

1988 PP a,e,i = 2.63, 0.08, 13 Elements MPC 15559

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	03 44.19	+00 57.2	1.891	2.827	157.5	7.7	16.1
1989 12 10	03 35.80	+01 05.6					
1989 12 20	03 29.03	+01 32.0	1.998	2.820	139.6	13.1	16.4
1989 12 30	03 24.44	+02 14.5					
1990 01 09	03 22.32	+03 10.3	2.189	2.812	120.0	17.6	16.8

(4286) 1988 PU4 a,e,i = 2.92, 0.08, 3 Elements MPC 15545

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	05 50.23	+19 52.2	1.822	2.766	159.2	7.3	15.6
1989 12 10	05 41.54	+19 51.8					
1989 12 20	05 32.18	+19 52.8	1.798	2.779	174.7	1.9	15.3
1989 12 30	05 23.23	+19 55.4					
1990 01 09	05 15.75	+20 00.4	1.888	2.792	151.5	9.7	15.8
1990 01 19	05 10.51	+20 08.3					
1990 01 29	05 07.89	+20 19.7	2.075	2.806	129.5	15.7	16.2
1990 02 08	05 08.03	+20 34.3					
1990 02 18	05 10.80	+20 51.4	2.326	2.821	110.0	19.2	16.5

9073 P-L a,e,i = 3.16, 0.14, 5 Elements MPC 15571

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	06 19.72	+30 16.2	2.095	3.002	152.1	8.8	17.3
1989	12 10	06 11.42	+30 25.2					
1989	12 20	06 01.95	+30 26.6	2.052	3.030	172.4	2.5	17.0
1989	12 30	05 52.34	+30 19.5					
1990	01 09	05 43.72	+30 04.8	2.126	3.058	157.6	7.0	17.3
1990	01 19	05 36.95	+29 44.7					
1990	01 29	05 32.60	+29 22.3	2.306	3.086	135.4	12.9	17.7
1990	02 08	05 30.91	+28 59.8					
1990	02 18	05 31.85	+28 39.0	2.563	3.115	115.2	16.7	18.1

(4294) 4016 P-L a,e,i = 2.80, 0.02, 5 Elements MPC 15547

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	06 27.54	+30 12.2	1.886	2.786	150.5	10.0	17.0
1989	12 10	06 19.11	+30 23.3					
1989	12 20	06 09.09	+30 26.4	1.814	2.791	171.7	2.9	16.6
1989	12 30	05 58.63	+30 19.8					
1990	01 09	05 49.04	+30 04.2	1.856	2.795	158.7	7.3	16.8
1990	01 19	05 41.40	+29 42.0					
1990	01 29	05 36.42	+29 16.5	2.004	2.800	136.3	14.1	17.2
1990	02 08	05 34.42	+28 50.7					
1990	02 18	05 35.39	+28 26.5	2.227	2.804	116.0	18.5	17.6

1988 PB2 a,e,i = 3.04, 0.07, 10 Elements MPC 15559

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	06 45.96	+36 51.3	2.034	2.899	145.2	11.2	16.5
1989	12 10	06 38.08	+37 15.2					
1989	12 20	06 28.25	+37 27.1	1.953	2.911	163.7	5.5	16.2
1989	12 30	06 17.57	+37 23.8					
1990	01 09	06 07.39	+37 04.6	1.984	2.922	158.8	7.0	16.3
1990	01 19	05 58.90	+36 32.2					
1990	01 29	05 52.93	+35 50.9	2.121	2.934	138.7	12.8	16.6
1990	02 08	05 49.92	+35 05.2					
1990	02 18	05 49.92	+34 18.7	2.341	2.947	118.8	17.1	17.0

2200 T-2 a,e,i = 2.44, 0.13, 0 Elements MPC 15571

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	06 46.92	+23 25.7	1.858	2.735	146.4	11.5	17.9
1989	12 10	06 38.76	+23 34.5					
1989	12 20	06 28.65	+23 42.6	1.766	2.742	171.0	3.2	17.5
1989	12 30	06 17.66	+23 48.3					
1990	01 09	06 07.06	+23 50.5	1.789	2.746	163.7	5.8	17.7
1990	01 19	05 58.04	+23 49.8					
1990	01 29	05 51.45	+23 47.5	1.922	2.749	139.8	13.4	18.1
1990	02 08	05 47.77	+23 45.0					
1990	02 18	05 47.11	+23 43.1	2.137	2.750	118.5	18.4	18.5

(4269) 1974 FN a,e,i = 2.23, 0.16, 3 Elements MPC 15539

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 28.72	+22 51.2	1.908	2.583	123.2	18.6	18.2
1989	12 10	08 26.51	+23 04.8					
1989	12 20	08 21.09	+23 26.5	1.722	2.591	145.3	12.5	17.8
1989	12 30	08 12.70	+23 53.7					
1990	01 09	08 02.01	+24 21.5	1.623	2.597	169.6	3.9	17.3
1990	01 19	07 50.16	+24 45.1					
1990	01 29	07 38.55	+25 00.6	1.639	2.599	163.6	6.1	17.5
1990	02 08	07 28.55	+25 06.6					
1990	02 18	07 21.16	+25 03.6	1.765	2.599	139.7	14.2	17.9

(4028) 1982 DV2 a,e,i = 2.55, 0.15, 3 Elements MPC 14334

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	08 26.36	+14 48.5	1.341	2.201	142.0	16.0	16.2
1989 12 30	08 20.92	+15 01.7					
1990 01 09	08 12.88	+15 28.1	1.252	2.218	165.3	6.5	15.8
1990 01 19	08 03.38	+16 03.4					
1990 01 29	07 53.82	+16 43.0	1.264	2.237	168.2	5.1	15.7
1990 02 08	07 45.71	+17 21.5					
1990 02 18	07 40.14	+17 55.3	1.376	2.259	145.1	14.5	16.3
1990 02 28	07 37.73	+18 22.2					
1990 03 10	07 38.64	+18 40.9	1.568	2.284	124.7	21.0	16.8

1978 VV5 a,e,i = 2.33, 0.14, 2 Elements MPC 14013

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	08 28.57	+17 36.3	1.345	2.208	142.3	15.8	17.6
1989 12 30	08 23.21	+17 58.9					
1990 01 09	08 14.87	+18 32.8	1.210	2.178	166.1	6.2	17.0
1990 01 19	08 04.56	+19 13.2					
1990 01 29	07 53.73	+19 54.5	1.175	2.149	168.3	5.3	16.9
1990 02 08	07 44.12	+20 31.3					
1990 02 18	07 37.15	+21 00.1	1.240	2.121	144.1	15.9	17.4
1990 02 28	07 33.67	+21 19.7					
1990 03 10	07 34.01	+21 29.6	1.381	2.096	123.2	23.4	17.8

1986 WQ2 a,e,i = 1.84, 0.04, 22 Elements MPC 13456

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1989 12 20	08 37.51	+26 26.2	1.036	1.909	-2.54	-3.9	15.8
1989 12 30	08 31.03	+30 00.2					
1990 01 09	08 20.02	+33 44.4	0.955	1.915	-3.00	-4.7	15.3
1990 01 19	08 05.72	+37 13.2					
1990 01 29	07 50.38	+40 03.4	0.980	1.920	-2.67	-8.4	15.5
1990 02 08	07 36.86	+42 03.2					
1990 02 18	07 27.43	+43 14.6	1.099	1.923	-1.85	-11.2	16.0
1990 02 28	07 23.27	+43 47.1					
1990 03 10	07 24.53	+43 50.9	1.276	1.925	-1.30	-10.7	16.5

1982 DK a,e,i = 2.59, 0.26, 12 Elements MPC 10828

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	08 26.72	+23 07.3	1.364	2.236	143.9	15.0	16.2
1989 12 30	08 22.50	+24 43.0					
1990 01 09	08 15.16	+26 31.0	1.214	2.181	166.2	6.2	15.5
1990 01 19	08 05.54	+28 21.2					
1990 01 29	07 55.03	+30 02.1	1.166	2.130	164.0	7.3	15.4
1990 02 08	07 45.48	+31 24.2					
1990 02 18	07 38.52	+32 23.1	1.217	2.081	141.2	17.3	15.8
1990 02 28	07 35.26	+32 58.8					
1990 03 10	07 36.21	+33 13.9	1.339	2.038	121.1	24.7	16.2

1985 SE1 a,e,i = 2.26, 0.23, 5 Elements MPC 10390

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	08 37.48	+12 54.2	1.645	2.471	138.8	15.2	17.8
1989 12 30	08 30.40	+13 16.9					
1990 01 09	08 20.95	+13 52.6	1.557	2.514	162.8	6.6	17.4
1990 01 19	08 10.12	+14 37.1					
1990 01 29	07 59.18	+15 25.8	1.579	2.553	169.2	4.1	17.4
1990 02 08	07 49.46	+16 13.5					
1990 02 18	07 41.97	+16 56.5	1.713	2.589	145.6	12.4	17.9
1990 02 28	07 37.30	+17 32.8					
1990 03 10	07 35.67	+18 01.1	1.934	2.623	124.1	18.3	18.4

1987 RY a,e,i = 3.24, 0.16, 0 Elements MPC 13607

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	08 32.80	+19 14.6	2.887	3.710	141.8	9.4	17.7
1989	12 30	08 27.30	+19 35.2					
1990	01 09	08 20.36	+19 59.7	2.760	3.719	165.2	3.9	17.4
1990	01 19	08 12.53	+20 25.5					
1990	01 29	08 04.51	+20 50.2	2.752	3.727	170.6	2.5	17.3
1990	02 08	07 57.02	+21 11.5					
1990	02 18	07 50.70	+21 28.3	2.865	3.734	147.1	8.3	17.7
1990	02 28	07 46.03	+21 39.7					
1990	03 10	07 43.29	+21 45.8	3.076	3.739	125.3	12.5	18.0

1931 GC a,e,i = 2.76, 0.10, 9 Elements MPC 14340

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	08 39.05	+30 26.6	1.979	2.818	141.7	12.5	15.9
1989	12 30	08 32.77	+31 02.4					
1990	01 09	08 24.00	+31 35.2	1.844	2.797	162.5	6.1	15.5
1990	01 19	08 13.61	+31 58.8					
1990	01 29	08 02.75	+32 08.6	1.818	2.776	163.4	5.8	15.4
1990	02 08	07 52.79	+32 02.4					
1990	02 18	07 44.83	+31 41.1	1.903	2.755	142.7	12.6	15.8
1990	02 28	07 39.63	+31 07.7					
1990	03 10	07 37.51	+30 25.4	2.073	2.733	122.1	17.9	16.1

1984 HS1 a,e,i = 2.23, 0.13, 2 Elements MPC 14192

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	08 42.95	+15 53.3	1.690	2.513	138.6	15.0	18.4
1989	12 30	08 36.78	+16 08.6					
1990	01 09	08 27.97	+16 34.3	1.553	2.508	162.5	6.8	17.9
1990	01 19	08 17.36	+17 06.8					
1990	01 29	08 06.15	+17 41.8	1.523	2.501	171.3	3.4	17.7
1990	02 08	07 55.75	+18 14.7					
1990	02 18	07 47.38	+18 42.5	1.605	2.491	146.8	12.6	18.2
1990	02 28	07 41.83	+19 03.5					
1990	03 10	07 39.49	+19 17.0	1.775	2.479	124.8	19.2	18.6

1985 PB a,e,i = 2.23, 0.18, 5 Elements MPC 10166

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	08 45.86	+12 16.0	1.255	2.083	136.7	18.9	16.9
1989	12 30	08 40.48	+12 42.5					
1990	01 09	08 32.03	+13 27.3	1.173	2.124	160.3	9.0	16.5
1990	01 19	08 21.61	+14 25.4					
1990	01 29	08 10.73	+15 29.7	1.186	2.166	171.9	3.7	16.4
1990	02 08	08 01.04	+16 32.6					
1990	02 18	07 53.86	+17 28.3	1.304	2.207	148.4	13.6	17.0
1990	02 28	07 49.93	+18 13.6					
1990	03 10	07 49.47	+18 47.1	1.504	2.248	127.2	20.6	17.5

(3945) 1982 PL a,e,i = 3.13, 0.26, 2 Elements MPC 14007

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	08 43.98	+20 26.8	2.762	3.568	139.5	10.3	17.7
1989	12 30	08 38.33	+20 51.1					
1990	01 09	08 31.10	+21 18.8	2.654	3.605	162.9	4.6	17.5
1990	01 19	08 22.86	+21 47.0					
1990	01 29	08 14.34	+22 12.8	2.662	3.641	172.2	2.1	17.3
1990	02 08	08 06.33	+22 33.8					
1990	02 18	07 59.49	+22 48.7	2.793	3.674	148.8	8.0	17.8
1990	02 28	07 54.35	+22 57.2					
1990	03 10	07 51.19	+22 59.4	3.025	3.706	126.8	12.4	18.1

1988 KA a,e,i = 2.14, 0.19, 4 Elements MPC 13303

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	08 51.66	+20 26.7	1.712	2.529	137.7	15.2	16.9
1989	12 30	08 45.36	+21 11.7					
1990	01 09	08 36.24	+22 04.4	1.584	2.537	161.8	7.0	16.5
1990	01 19	08 25.12	+22 58.7					
1990	01 29	08 13.25	+23 48.1	1.565	2.543	171.1	3.4	16.3
1990	02 08	08 02.09	+24 27.2					
1990	02 18	07 52.94	+24 53.7	1.659	2.544	146.8	12.3	16.8
1990	02 28	07 46.65	+25 07.7					
1990	03 10	07 43.64	+25 10.6	1.843	2.543	124.7	18.7	17.2

1982 TQ2 a,e,i = 2.18, 0.15, 5 Elements MPC 10292

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	08 54.13	+20 54.3	1.557	2.375	137.3	16.3	18.1
1989	12 30	08 47.53	+21 11.0					
1990	01 09	08 37.94	+21 33.6	1.447	2.400	161.4	7.5	17.7
1990	01 19	08 26.35	+21 56.7					
1990	01 29	08 14.14	+22 15.2	1.443	2.422	172.2	3.2	17.5
1990	02 08	08 02.89	+22 25.4					
1990	02 18	07 53.91	+22 26.3	1.550	2.443	147.6	12.5	18.0
1990	02 28	07 48.00	+22 18.6					
1990	03 10	07 45.47	+22 03.5	1.745	2.460	125.7	19.1	18.5

1985 BB a,e,i = 2.97, 0.03, 2 Elements MPC 14019

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	08 45.38	+20 40.5	2.255	3.068	139.2	12.1	18.8
1989	12 30	08 40.36	+21 09.1					
1990	01 09	08 33.31	+21 42.8	2.115	3.067	162.4	5.5	18.5
1990	01 19	08 24.86	+22 17.8					
1990	01 29	08 15.88	+22 50.2	2.088	3.066	172.2	2.5	18.3
1990	02 08	08 07.36	+23 16.5					
1990	02 18	08 00.20	+23 34.9	2.177	3.065	148.7	9.6	18.7
1990	02 28	07 55.07	+23 44.7					
1990	03 10	07 52.36	+23 46.4	2.362	3.063	126.9	15.0	19.0

(3982) 1984 JP1 a,e,i = 2.26, 0.22, 5 Elements MPC 14174

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	08 51.01	+12 07.2	1.962	2.752	135.5	14.5	17.4
1989	12 30	08 44.89	+12 05.6					
1990	01 09	08 36.38	+12 15.5	1.814	2.754	158.7	7.4	17.0
1990	01 19	08 26.20	+12 35.0					
1990	01 29	08 15.35	+13 01.3	1.775	2.753	171.6	3.0	16.7
1990	02 08	08 05.02	+13 30.9					
1990	02 18	07 56.28	+14 00.2	1.853	2.748	149.2	10.6	17.1
1990	02 28	07 49.89	+14 26.8					
1990	03 10	07 46.29	+14 48.6	2.026	2.740	126.9	16.8	17.5

1981 QZ2 a,e,i = 3.20, 0.15, 2 Elements MPC 8384

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	08 45.76	+17 26.2	2.892	3.685	138.4	10.2	18.1
1989	12 30	08 40.93	+17 47.4					
1990	01 09	08 34.52	+18 14.3	2.734	3.680	161.5	4.9	17.8
1990	01 19	08 27.01	+18 44.6					
1990	01 29	08 19.04	+19 15.4	2.691	3.673	174.3	1.5	17.6
1990	02 08	08 11.34	+19 44.1					
1990	02 18	08 04.61	+20 08.7	2.771	3.664	150.5	7.6	17.9
1990	02 28	07 59.38	+20 27.9					
1990	03 10	07 56.04	+20 41.0	2.954	3.655	128.4	12.3	18.2

1981 OH a,e,i = 2.33, 0.23, 15 Elements MPC 13455

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	08 54.50	+09 23.6	1.874	2.651	133.6	15.6	18.2
1989 12 30	08 49.02	+10 10.0					
1990 01 09	08 41.14	+11 13.5	1.752	2.686	157.2	8.2	17.9
1990 01 19	08 31.58	+12 30.2					
1990 01 29	08 21.33	+13 54.5	1.738	2.718	173.3	2.4	17.6
1990 02 08	08 11.57	+15 19.3					
1990 02 18	08 03.37	+16 38.6	1.843	2.748	150.8	10.1	18.1
1990 02 28	07 57.47	+17 48.3					
1990 03 10	07 54.30	+18 46.3	2.047	2.774	128.3	16.3	18.5

1988 TG1 a,e,i = 3.02, 0.08, 9 Elements MPC 13860

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	08 50.83	+10 28.8	2.096	2.876	134.9	14.0	15.6
1989 12 30	08 46.08	+10 06.4					
1990 01 09	08 39.25	+09 55.1	1.959	2.889	156.9	7.7	15.2
1990 01 19	08 30.99	+09 54.3					
1990 01 29	08 22.14	+10 02.4	1.927	2.903	170.4	3.2	15.0
1990 02 08	08 13.70	+10 16.8					
1990 02 18	08 06.58	+10 34.7	2.011	2.918	151.5	9.3	15.4
1990 02 28	08 01.43	+10 53.4					
1990 03 10	07 58.66	+11 10.2	2.191	2.932	130.2	15.0	15.8

1985 RD4 a,e,i = 2.24, 0.12, 4 Elements MPC 14021

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	08 56.93	+22 33.6	1.187	2.021	137.0	19.4	16.3
1989 12 30	08 52.51	+22 54.5					
1990 01 09	08 44.39	+23 22.3	1.088	2.040	160.0	9.5	15.8
1990 01 19	08 33.65	+23 49.7					
1990 01 29	08 21.89	+24 09.8	1.081	2.061	172.3	3.7	15.5
1990 02 08	08 11.09	+24 17.4					
1990 02 18	08 02.87	+24 11.5	1.173	2.084	149.1	14.1	16.1
1990 02 28	07 58.19	+23 53.6					
1990 03 10	07 57.37	+23 25.9	1.345	2.108	128.1	21.8	16.7

2527 P-L a,e,i = 3.15, 0.28, 15 Elements MPC 12689

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	08 49.86	-02 00.0	2.028	2.758	129.2	16.0	17.5
1989 12 30	08 45.50	-02 09.4					
1990 01 09	08 39.18	-01 57.1	1.927	2.814	148.7	10.5	17.3
1990 01 19	08 31.56	-01 23.0					
1990 01 29	08 23.47	-00 29.2	1.923	2.871	160.7	6.5	17.1
1990 02 08	08 15.87	+00 39.6					
1990 02 18	08 09.58	+01 57.3	2.028	2.928	150.2	9.6	17.4
1990 02 28	08 05.21	+03 17.6					
1990 03 10	08 03.08	+04 35.0	2.233	2.985	131.4	14.4	17.8

1978 RC9 a,e,i = 2.23, 0.17, 4 Elements MPC 15063

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	09 01.95	+20 55.2	1.794	2.590	135.5	15.4	18.6
1989 12 30	08 56.22	+21 19.7					
1990 01 09	08 47.64	+21 50.8	1.652	2.595	159.1	7.8	18.1
1990 01 19	08 36.95	+22 23.4					
1990 01 29	08 25.26	+22 52.3	1.616	2.597	173.8	2.3	17.8
1990 02 08	08 13.99	+23 12.8					
1990 02 18	08 04.42	+23 22.9	1.695	2.597	149.7	11.1	18.3
1990 02 28	07 57.47	+23 22.5					
1990 03 10	07 53.64	+23 12.9	1.868	2.593	127.3	17.7	18.7

1977 TG7 a,e,i = 3.13, 0.17, 3 Elements MPC 12578

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	08 56.61	+19 59.4	1.890	2.691	136.5	14.6	16.8
1989 12 30	08 52.76	+20 29.6					
1990 01 09	08 46.52	+21 07.0	1.773	2.715	159.3	7.3	16.4
1990 01 19	08 38.54	+21 47.3					
1990 01 29	08 29.79	+22 25.4	1.759	2.741	174.8	1.9	16.1
1990 02 08	08 21.40	+22 56.9					
1990 02 18	08 14.41	+23 18.9	1.858	2.769	151.9	9.7	16.6
1990 02 28	08 09.56	+23 30.6					
1990 03 10	08 07.30	+23 32.2	2.052	2.798	130.3	15.7	17.0

1984 SC1 a,e,i = 2.57, 0.18, 14 Elements MPC 14019

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	09 08.66	+34 30.7	2.053	2.839	135.4	14.1	18.5
1989 12 30	09 02.30	+35 19.9					
1990 01 09	08 53.09	+36 04.6	1.945	2.867	155.1	8.3	18.2
1990 01 19	08 41.83	+36 37.2					
1990 01 29	08 29.72	+36 51.7	1.944	2.894	161.1	6.3	18.2
1990 02 08	08 18.16	+36 45.3					
1990 02 18	08 08.40	+36 19.1	2.056	2.918	144.6	11.3	18.5
1990 02 28	08 01.28	+35 36.8					
1990 03 10	07 57.21	+34 43.1	2.259	2.940	124.7	16.1	18.9

4530 P-L a,e,i = 2.15, 0.17, 1 Elements MPC 10030

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	09 05.90	+14 42.4	1.392	2.184	132.9	19.3	18.7
1989 12 30	09 00.94	+14 57.2					
1990 01 09	08 52.71	+15 26.7	1.286	2.223	156.5	10.2	18.3
1990 01 19	08 42.10	+16 06.4					
1990 01 29	08 30.43	+16 50.6	1.277	2.261	176.8	1.4	17.9
1990 02 08	08 19.35	+17 32.6					
1990 02 18	08 10.29	+18 07.9	1.375	2.297	152.2	11.6	18.5
1990 02 28	08 04.20	+18 33.9					
1990 03 10	08 01.52	+18 49.8	1.564	2.330	130.0	19.1	19.1

1981 EX19 a,e,i = 2.15, 0.21, 1 Elements MPC 10040

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	09 10.17	+14 42.2	1.759	2.525	131.9	16.8	18.5
1989 12 30	09 05.01	+15 00.8					
1990 01 09	08 56.99	+15 31.9	1.620	2.548	155.6	9.2	18.1
1990 01 19	08 46.80	+16 12.0					
1990 01 29	08 35.46	+16 56.2	1.583	2.567	177.9	0.8	17.7
1990 02 08	08 24.32	+17 38.8					
1990 02 18	08 14.66	+18 15.5	1.662	2.583	153.2	9.9	18.2
1990 02 28	08 07.43	+18 43.8					
1990 03 10	08 03.18	+19 02.8	1.840	2.595	130.3	17.0	18.7

1981 RV4 a,e,i = 2.32, 0.13, 7 Elements MPC 14188

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	09 06.45	+07 37.0	1.843	2.589	130.2	16.9	17.2
1989 12 30	09 02.24	+07 42.4					
1990 01 09	08 55.44	+08 05.2	1.689	2.602	152.5	10.0	16.8
1990 01 19	08 46.63	+08 44.2					
1990 01 29	08 36.71	+09 36.4	1.634	2.612	171.3	3.3	16.4
1990 02 08	08 26.84	+10 36.4					
1990 02 18	08 18.20	+11 38.4	1.693	2.620	154.5	9.4	16.8
1990 02 28	08 11.68	+12 37.2					
1990 03 10	08 07.86	+13 29.0	1.852	2.625	132.3	16.3	17.2

1981 EP13 a,e,i = 2.15, 0.12, 5 Elements MPC 10159

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 12.22	+17 45.1	1.579	2.357	132.4	18.0	18.7
1989	12 30	09 07.32	+17 50.2					
1990	01 09	08 59.21	+18 05.4	1.439	2.370	155.8	9.8	18.2
1990	01 19	08 48.60	+18 26.7					
1990	01 29	08 36.65	+18 49.3	1.396	2.381	178.4	0.6	17.7
1990	02 08	08 24.89	+19 08.0					
1990	02 18	08 14.81	+19 19.8	1.466	2.389	153.1	10.8	18.3
1990	02 28	08 07.45	+19 23.4					
1990	03 10	08 03.40	+19 18.8	1.630	2.396	130.3	18.4	18.8

1985 RP a,e,i = 2.29, 0.23, 8 Elements MPC 10293

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 07.48	+06 26.0	1.358	2.124	129.5	21.0	17.7
1989	12 30	09 03.66	+06 39.1					
1990	01 09	08 56.70	+07 16.1	1.260	2.177	151.8	12.3	17.3
1990	01 19	08 47.41	+08 14.7					
1990	01 29	08 37.01	+09 29.4	1.252	2.231	171.2	3.9	17.0
1990	02 08	08 27.02	+10 51.6					
1990	02 18	08 18.82	+12 12.7	1.351	2.284	154.6	10.7	17.5
1990	02 28	08 13.33	+13 25.9					
1990	03 10	08 11.01	+14 27.2	1.543	2.335	132.9	18.1	18.1

1984 SU3 a,e,i = 2.64, 0.31, 6 Elements MPC 9415

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 12.17	+24 13.9	2.068	2.839	133.8	14.5	18.6
1989	12 30	09 06.76	+25 00.7					
1990	01 09	08 58.84	+25 51.4	1.968	2.897	156.6	7.7	18.3
1990	01 19	08 49.10	+26 39.9					
1990	01 29	08 38.51	+27 20.7	1.976	2.953	170.8	3.1	18.1
1990	02 08	08 28.24	+27 49.3					
1990	02 18	08 19.35	+28 04.1	2.103	3.006	151.0	9.2	18.5
1990	02 28	08 12.62	+28 05.5					
1990	03 10	08 08.49	+27 55.6	2.329	3.056	129.3	14.6	19.0

1983 GC2 a,e,i = 2.42, 0.19, 2 Elements MPC 14190

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 07.71	+19 40.7	1.660	2.447	133.9	16.8	17.3
1989	12 30	09 04.58	+20 09.7					
1990	01 09	08 58.36	+20 49.8	1.471	2.405	156.5	9.4	16.8
1990	01 19	08 49.50	+21 36.4					
1990	01 29	08 38.92	+22 23.3	1.380	2.363	175.7	1.8	16.3
1990	02 08	08 28.04	+23 03.5					
1990	02 18	08 18.36	+23 32.2	1.398	2.321	152.7	11.3	16.7
1990	02 28	08 11.16	+23 47.3					
1990	03 10	08 07.24	+23 48.8	1.507	2.278	130.2	19.4	17.0

1985 TP3 a,e,i = 2.28, 0.21, 4 Elements MPC 11740

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 14.82	+14 16.7	1.577	2.341	130.7	18.6	18.2
1989	12 30	09 09.89	+14 15.4					
1990	01 09	09 01.92	+14 27.0	1.464	2.387	154.1	10.4	17.8
1990	01 19	08 51.67	+14 48.5					
1990	01 29	08 40.28	+15 15.5	1.447	2.432	177.0	1.2	17.4
1990	02 08	08 29.20	+15 43.1					
1990	02 18	08 19.76	+16 07.3	1.544	2.474	154.7	9.8	18.0
1990	02 28	08 12.90	+16 25.4					
1990	03 10	08 09.11	+16 36.4	1.737	2.514	132.2	17.0	18.5

1973 SW4 a,e,i = 2.45, 0.15, 3 Elements MPC 15402

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 13.49	+17 11.3	1.723	2.491	131.9	17.1	17.2
1989	12 30	09 09.13	+17 21.9					
1990	01 09	09 01.91	+17 42.7	1.596	2.523	155.1	9.4	16.8
1990	01 19	08 52.49	+18 10.0					
1990	01 29	08 41.92	+18 38.9	1.569	2.554	179.5	0.2	16.3
1990	02 08	08 31.50	+19 04.6					
1990	02 18	08 22.50	+19 23.7	1.655	2.584	154.8	9.4	16.9
1990	02 28	08 15.83	+19 34.6					
1990	03 10	08 12.03	+19 36.8	1.839	2.612	132.3	16.3	17.4

1954 UO2 a,e,i = 3.19, 0.18, 2 Elements MPC 14612

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 07.84	+14 55.1	2.122	2.880	132.6	14.6	17.1
1989	12 30	09 04.33	+15 11.1					
1990	01 09	08 58.60	+15 37.4	1.991	2.914	155.2	8.1	16.8
1990	01 19	08 51.21	+16 11.2					
1990	01 29	08 42.92	+16 48.7	1.963	2.948	178.6	0.5	16.4
1990	02 08	08 34.70	+17 25.6					
1990	02 18	08 27.49	+17 58.3	2.051	2.983	156.3	7.7	16.9
1990	02 28	08 22.01	+18 24.4					
1990	03 10	08 18.74	+18 42.6	2.242	3.018	134.0	13.7	17.3

1969 UP1 a,e,i = 2.19, 0.03, 6 Elements MPC 11728

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 13.93	+25 01.5	1.318	2.119	133.6	19.7	17.0
1989	12 30	09 11.13	+25 54.4					
1990	01 09	09 04.51	+26 55.9	1.188	2.122	155.3	11.2	16.5
1990	01 19	08 54.71	+27 57.1					
1990	01 29	08 43.00	+28 47.6	1.149	2.125	169.4	4.9	16.2
1990	02 08	08 31.27	+29 19.0					
1990	02 18	08 21.35	+29 27.8	1.211	2.129	150.7	13.1	16.6
1990	02 28	08 14.61	+29 15.4					
1990	03 10	08 11.73	+28 45.6	1.357	2.133	129.7	21.0	17.1

1983 AG2 a,e,i = 2.32, 0.34, 22 Elements MPC 8061

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 50.62	+50 15.4	0.768	1.568	126.6	30.3	14.6
1989	12 30	09 42.60	+49 19.8					
1990	01 09	09 26.63	+47 49.0	0.703	1.604	143.7	21.3	14.2
1990	01 19	09 05.60	+45 23.6					
1990	01 29	08 43.89	+41 58.1	0.705	1.654	156.2	13.9	14.0
1990	02 08	08 25.80	+37 47.8					
1990	02 18	08 13.60	+33 22.2	0.798	1.715	147.2	18.2	14.5
1990	02 28	08 07.55	+29 07.0					
1990	03 10	08 06.92	+25 16.2	0.976	1.783	129.7	25.4	15.2

1985 GB a,e,i = 3.26, 0.10, 2 Elements MPC 10039

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 08.66	+19 29.9	2.412	3.172	133.6	13.0	17.1
1989	12 30	09 05.35	+19 52.7					
1990	01 09	08 59.92	+20 22.6	2.229	3.153	156.1	7.3	16.7
1990	01 19	08 52.78	+20 56.5					
1990	01 29	08 44.61	+21 30.4	2.151	3.135	176.7	1.0	16.3
1990	02 08	08 36.28	+22 00.3					
1990	02 18	08 28.72	+22 23.2	2.192	3.117	155.3	7.6	16.7
1990	02 28	08 22.68	+22 37.5					
1990	03 10	08 18.76	+22 42.6	2.336	3.100	133.0	13.5	17.0

1979 ML a,e,i = 2.54, 0.25, 8 Elements MPC 12202

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 11.84	+11 47.1	2.374	3.106	130.6	13.9	18.5
1989	12 30	09 07.92	+12 10.9					
1990	01 09	09 01.79	+12 47.4	2.172	3.084	153.5	8.2	18.1
1990	01 19	08 53.84	+13 34.7					
1990	01 29	08 44.72	+14 29.3	2.075	3.059	176.3	1.2	17.7
1990	02 08	08 35.34	+15 26.7					
1990	02 18	08 26.66	+16 22.2	2.099	3.031	156.3	7.5	18.0
1990	02 28	08 19.51	+17 12.1					
1990	03 10	08 14.53	+17 53.9	2.232	3.000	133.2	14.0	18.3

1988 VS a,e,i = 3.93, 0.16, 5 Elements MPC 14025

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 07.43	+09 37.6	2.701	3.425	130.8	12.6	17.0
1989	12 30	09 04.35	+09 33.9					
1990	01 09	08 59.54	+09 40.6	2.543	3.445	152.5	7.6	16.7
1990	01 19	08 53.42	+09 56.7					
1990	01 29	08 46.55	+10 20.5	2.488	3.466	172.1	2.2	16.4
1990	02 08	08 39.63	+10 49.3					
1990	02 18	08 33.36	+11 20.1	2.552	3.488	158.1	6.1	16.7
1990	02 28	08 28.32	+11 50.1					
1990	03 10	08 24.96	+12 16.9	2.724	3.512	136.5	11.2	17.0

1971 UT1 a,e,i = 3.16, 0.21, 2 Elements MPC 13593

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 13.41	+13 48.4	2.747	3.472	130.9	12.4	18.5
1989	12 30	09 09.53	+14 04.0					
1990	01 09	09 03.84	+14 28.4	2.596	3.505	153.7	7.2	18.3
1990	01 19	08 56.76	+14 59.5					
1990	01 29	08 48.88	+15 34.4	2.552	3.536	177.0	0.8	17.9
1990	02 08	08 40.94	+16 09.8					
1990	02 18	08 33.67	+16 42.7	2.630	3.565	158.0	6.0	18.3
1990	02 28	08 27.69	+17 11.0					
1990	03 10	08 23.46	+17 33.1	2.818	3.593	135.4	11.2	18.6

1986 JT a,e,i = 2.91, 0.26, 8 Elements MPC 12439

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 14.31	+06 15.6	2.795	3.487	127.9	12.9	18.6
1989	12 30	09 10.74	+06 10.2					
1990	01 09	09 05.31	+06 16.7	2.573	3.457	149.5	8.3	18.3
1990	01 19	08 58.34	+06 35.2					
1990	01 29	08 50.36	+07 04.3	2.453	3.425	168.7	3.2	17.9
1990	02 08	08 42.08	+07 41.7					
1990	02 18	08 34.26	+08 24.1	2.454	3.391	158.0	6.3	18.0
1990	02 28	08 27.59	+09 08.0					
1990	03 10	08 22.65	+09 50.1	2.566	3.354	136.2	11.8	18.3

1988 VB3 a,e,i = 3.00, 0.08, 9 Elements MPC 15561

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 13.65	+03 32.7	2.523	3.210	126.8	14.2	17.3
1989	12 30	09 10.31	+03 17.2					
1990	01 09	09 05.03	+03 15.8	2.344	3.219	147.8	9.4	17.0
1990	01 19	08 58.21	+03 28.8					
1990	01 29	08 50.43	+03 55.4	2.263	3.226	165.6	4.4	16.8
1990	02 08	08 42.46	+04 33.1					
1990	02 18	08 35.11	+05 18.2	2.298	3.233	157.4	6.8	16.9
1990	02 28	08 29.07	+06 06.5					
1990	03 10	08 24.85	+06 54.1	2.442	3.238	136.9	12.1	17.2

1987 QD1 a,e,i = 3.22, 0.15, 9 Elements MPC 14196

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	09 13.48	+12 50.3	2.839	3.558	130.6	12.1	17.2
1989 12 30	09 10.05	+13 16.4					
1990 01 09	09 04.85	+13 52.4	2.670	3.575	153.2	7.1	16.9
1990 01 19	08 58.26	+14 36.0					
1990 01 29	08 50.83	+15 24.3	2.608	3.591	176.6	0.9	16.5
1990 02 08	08 43.25	+16 13.5					
1990 02 18	08 36.23	+17 00.3	2.668	3.606	158.5	5.8	16.8
1990 02 28	08 30.39	+17 41.8					
1990 03 10	08 26.21	+18 16.2	2.841	3.620	135.8	11.0	17.2

1988 VD1 a,e,i = 2.90, 0.11, 13 Elements MPC 14026

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	09 22.49	+31 06.3	2.425	3.172	132.4	13.2	16.1
1989 12 30	09 17.94	+31 44.2					
1990 01 09	09 10.90	+32 22.3	2.275	3.182	153.0	8.1	15.8
1990 01 19	09 01.86	+32 54.7					
1990 01 29	08 51.63	+33 16.2	2.230	3.191	164.8	4.6	15.6
1990 02 08	08 41.29	+33 22.5					
1990 02 18	08 31.90	+33 12.6	2.302	3.198	150.3	8.8	15.9
1990 02 28	08 24.32	+32 47.5					
1990 03 10	08 19.14	+32 10.0	2.476	3.205	129.9	13.8	16.2

2390 T-3 a,e,i = 2.39, 0.07, 8 Elements MPC 12701

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	09 24.91	+26 31.7	1.695	2.458	131.4	17.5	17.9
1989 12 30	09 22.01	+27 14.1					
1990 01 09	09 15.75	+28 02.9	1.528	2.444	152.7	10.6	17.5
1990 01 19	09 06.58	+28 51.0					
1990 01 29	08 55.44	+29 30.2	1.457	2.430	168.3	4.7	17.1
1990 02 08	08 43.79	+29 53.1					
1990 02 18	08 33.22	+29 56.0	1.494	2.415	152.6	10.9	17.4
1990 02 28	08 25.03	+29 39.5					
1990 03 10	08 20.08	+29 06.4	1.625	2.399	131.3	18.1	17.8

1982 UP a,e,i = 2.18, 0.14, 2 Elements MPC 10040

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	09 25.46	+11 48.0	1.480	2.221	127.5	20.6	18.0
1989 12 30	09 22.49	+11 49.6					
1990 01 09	09 16.21	+12 08.7	1.345	2.251	150.0	12.6	17.6
1990 01 19	09 07.16	+12 43.0					
1990 01 29	08 56.37	+13 27.9	1.299	2.281	174.2	2.5	17.1
1990 02 08	08 45.28	+14 16.9					
1990 02 18	08 35.41	+15 03.4	1.361	2.309	158.6	9.0	17.5
1990 02 28	08 27.93	+15 42.7					
1990 03 10	08 23.57	+16 12.0	1.520	2.336	135.6	17.3	18.1

1982 PR a,e,i = 3.13, 0.20, 1 Elements MPC 13856

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	09 21.12	+16 56.7	2.552	3.273	130.1	13.3	17.3
1989 12 30	09 17.54	+17 16.4					
1990 01 09	09 11.93	+17 44.2	2.403	3.308	152.8	7.8	17.0
1990 01 19	09 04.71	+18 17.1					
1990 01 29	08 56.51	+18 51.7	2.359	3.343	176.7	1.0	16.6
1990 02 08	08 48.15	+19 24.3					
1990 02 18	08 40.43	+19 51.7	2.436	3.376	158.8	6.1	17.0
1990 02 28	08 34.07	+20 12.0					
1990 03 10	08 29.57	+20 24.2	2.622	3.408	136.1	11.7	17.4

1965 SO a,e,i = 2.45, 0.19, 3 Elements MPC 14182

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 26.53	+19 19.3	2.149	2.877	129.5	15.3	17.7
1989	12 30	09 22.78	+19 50.1					
1990	01 09	09 16.44	+20 30.1	1.980	2.888	152.3	9.1	17.3
1990	01 19	09 07.94	+21 15.1					
1990	01 29	08 58.01	+22 00.0	1.913	2.896	174.8	1.8	16.9
1990	02 08	08 47.71	+22 39.3					
1990	02 18	08 38.15	+23 09.0	1.965	2.901	157.0	7.6	17.3
1990	02 28	08 30.29	+23 27.2					
1990	03 10	08 24.83	+23 33.6	2.123	2.904	134.1	14.2	17.7

1988 TF1 a,e,i = 2.71, 0.06, 5 Elements MPC 13860

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 22.62	+10 32.1	2.111	2.821	127.7	16.0	16.6
1989	12 30	09 19.53	+10 22.3					
1990	01 09	09 14.03	+10 25.2	1.936	2.829	149.7	10.1	16.3
1990	01 19	09 06.51	+10 39.8					
1990	01 29	08 57.68	+11 03.9	1.858	2.837	172.0	2.8	15.9
1990	02 08	08 48.50	+11 33.9					
1990	02 18	08 39.99	+12 05.9	1.895	2.844	159.8	6.9	16.1
1990	02 28	08 33.05	+12 36.2					
1990	03 10	08 28.32	+13 01.8	2.039	2.850	137.3	13.7	16.5

1985 TC a,e,i = 2.27, 0.19, 3 Elements MPC 10402

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 28.31	+10 35.0	1.615	2.337	126.4	19.8	17.8
1989	12 30	09 25.10	+10 34.7					
1990	01 09	09 18.80	+10 51.4	1.481	2.378	148.9	12.3	17.4
1990	01 19	09 09.96	+11 23.3					
1990	01 29	08 59.49	+12 06.4	1.437	2.417	172.7	3.0	17.0
1990	02 08	08 48.72	+12 54.9					
1990	02 18	08 39.02	+13 42.6	1.504	2.454	159.6	8.1	17.3
1990	02 28	08 31.47	+14 24.7					
1990	03 10	08 26.77	+14 58.0	1.672	2.489	136.6	15.9	17.9

1942 RJ a,e,i = 2.22, 0.23, 6 Elements MPC 11628

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 31.32	+11 58.3	1.841	2.548	126.2	18.2	18.2
1989	12 30	09 27.21	+11 49.9					
1990	01 09	09 20.20	+11 54.9	1.689	2.582	149.0	11.3	17.8
1990	01 19	09 10.80	+12 11.6					
1990	01 29	08 59.85	+12 37.0	1.632	2.612	173.1	2.6	17.4
1990	02 08	08 48.58	+13 06.4					
1990	02 18	08 38.25	+13 35.6	1.691	2.639	159.4	7.6	17.7
1990	02 28	08 29.90	+14 01.0					
1990	03 10	08 24.22	+14 20.1	1.856	2.662	136.1	15.0	18.2

1986 CL1 a,e,i = 2.60, 0.16, 17 Elements MPC 12318

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 26.53	+02 39.7	2.112	2.780	123.6	17.2	17.1
1989	12 30	09 23.24	+01 30.9					
1990	01 09	09 17.39	+00 34.2	1.895	2.750	143.7	12.2	16.7
1990	01 19	09 09.29	-00 07.7					
1990	01 29	08 59.55	-00 32.6	1.769	2.718	160.8	6.8	16.4
1990	02 08	08 49.16	-00 40.2					
1990	02 18	08 39.22	-00 32.2	1.753	2.686	155.8	8.7	16.4
1990	02 28	08 30.77	-00 12.3					
1990	03 10	08 24.62	+00 14.5	1.842	2.652	136.5	14.9	16.7

1987 QD6 a,e,i = 3.06, 0.12, 11 Elements MPC 15415

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 22.34	+02 53.2	2.760	3.416	124.6	13.7	16.6
1989	12 30	09 19.55	+02 46.9					
1990	01 09	09 14.90	+02 54.5	2.556	3.413	145.6	9.4	16.2
1990	01 19	09 08.71	+03 16.4					
1990	01 29	09 01.47	+03 51.6	2.447	3.408	164.9	4.3	15.9
1990	02 08	08 53.85	+04 37.7					
1990	02 18	08 46.59	+05 31.0	2.455	3.401	160.1	5.7	16.0
1990	02 28	08 40.35	+06 27.4					
1990	03 10	08 35.70	+07 22.9	2.577	3.394	139.5	10.9	16.3

(4022) 1981 TL4 a,e,i = 2.36, 0.13, 5 Elements MPC 14332

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 31.18	+11 29.9	1.955	2.656	126.1	17.4	17.3
1989	12 30	09 28.08	+11 19.2					
1990	01 09	09 22.23	+11 21.5	1.771	2.659	148.3	11.2	16.9
1990	01 19	09 14.01	+11 35.7					
1990	01 29	09 04.13	+11 59.5	1.681	2.659	171.9	3.0	16.4
1990	02 08	08 53.66	+12 28.9					
1990	02 18	08 43.79	+12 59.3	1.705	2.658	160.7	7.0	16.6
1990	02 28	08 35.60	+13 27.0					
1990	03 10	08 29.86	+13 49.0	1.836	2.654	137.5	14.6	17.1

1988 VW a,e,i = 3.19, 0.10, 1 Elements MPC 15418

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 25.79	+14 41.3	2.360	3.069	128.4	14.6	17.4
1989	12 30	09 23.15	+14 50.8					
1990	01 09	09 18.32	+15 10.5	2.193	3.087	150.6	9.0	17.1
1990	01 19	09 11.68	+15 38.0					
1990	01 29	09 03.84	+16 10.2	2.124	3.106	174.6	1.7	16.7
1990	02 08	08 55.63	+16 43.2					
1990	02 18	08 47.95	+17 13.2	2.173	3.125	161.2	5.8	17.0
1990	02 28	08 41.56	+17 37.6					
1990	03 10	08 37.08	+17 54.5	2.332	3.144	138.4	12.1	17.4

(3983) 1984 SX a,e,i = 2.45, 0.12, 3 Elements MPC 14174

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 29.85	+16 45.7	1.598	2.337	128.1	19.4	16.2
1989	12 30	09 28.69	+16 47.5					
1990	01 09	09 24.33	+17 02.1	1.409	2.312	149.8	12.4	15.7
1990	01 19	09 17.03	+17 27.0					
1990	01 29	09 07.52	+17 57.7	1.307	2.289	174.1	2.5	15.1
1990	02 08	08 57.06	+18 28.1					
1990	02 18	08 47.15	+18 52.4	1.311	2.267	160.6	8.3	15.4
1990	02 28	08 39.17	+19 07.0					
1990	03 10	08 34.12	+19 10.0	1.413	2.247	137.4	17.4	15.8

1975 RP a,e,i = 3.24, 0.14, 1 Elements MPC 13584

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 28.20	+13 52.6	3.024	3.706	127.5	12.1	17.9
1989	12 30	09 25.26	+14 05.0					
1990	01 09	09 20.52	+14 25.9	2.824	3.708	149.9	7.7	17.6
1990	01 19	09 14.29	+14 53.8					
1990	01 29	09 07.04	+15 26.1	2.727	3.708	173.6	1.7	17.2
1990	02 08	08 59.39	+15 59.7					
1990	02 18	08 52.03	+16 31.7	2.753	3.707	162.3	4.6	17.4
1990	02 28	08 45.60	+16 59.5					
1990	03 10	08 40.63	+17 21.3	2.894	3.704	139.4	10.0	17.7

1982 SE1 a,e,i = 3.20, 0.16, 4 Elements MPC 14017

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	09 31.93	+12 29.2	2.604	3.283	126.2	14.0	17.4
1989 12 30	09 29.03	+12 29.4					
1990 01 09	09 24.10	+12 39.6	2.435	3.313	148.4	8.9	17.1
1990 01 19	09 17.49	+12 58.2					
1990 01 29	09 09.74	+13 22.8	2.363	3.341	171.9	2.4	16.7
1990 02 08	09 01.59	+13 50.3					
1990 02 18	08 53.85	+14 17.4	2.412	3.370	163.1	4.9	16.9
1990 02 28	08 47.21	+14 41.4					
1990 03 10	08 42.26	+15 00.2	2.573	3.397	140.3	10.8	17.3

(4202) 1985 CB2 a,e,i = 3.02, 0.08, 10 Elements MPC 15228

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	09 29.93	+10 48.3	2.578	3.256	126.1	14.1	16.5
1989 12 30	09 27.73	+11 11.3					
1990 01 09	09 23.47	+11 47.3	2.372	3.250	148.2	9.2	16.2
1990 01 19	09 17.44	+12 34.6					
1990 01 29	09 10.13	+13 30.4	2.264	3.242	171.9	2.5	15.8
1990 02 08	09 02.24	+14 30.2					
1990 02 18	08 54.59	+15 29.5	2.276	3.234	163.1	5.1	15.9
1990 02 28	08 47.97	+16 24.0					
1990 03 10	08 43.01	+17 10.6	2.401	3.225	140.0	11.4	16.3

(3971) 1979 YM8 a,e,i = 2.85, 0.18, 13 Elements MPC 14170

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	09 38.25	+06 52.1	2.401	3.047	122.7	15.8	16.9
1989 12 30	09 34.99	+06 17.8					
1990 01 09	09 29.49	+05 55.4	2.227	3.079	144.2	10.8	16.6
1990 01 19	09 22.09	+05 45.0					
1990 01 29	09 13.37	+05 46.3	2.146	3.110	165.5	4.6	16.3
1990 02 08	09 04.15	+05 57.2					
1990 02 18	08 55.34	+06 14.9	2.182	3.139	162.4	5.5	16.4
1990 02 28	08 47.72	+06 36.2					
1990 03 10	08 41.95	+06 57.6	2.332	3.166	141.1	11.4	16.8

1976 GL3 a,e,i = 2.92, 0.08, 3 Elements MPC 14185

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	09 34.16	+14 05.4	2.372	3.059	126.3	15.0	17.5
1989 12 30	09 31.87	+14 22.9					
1990 01 09	09 27.33	+14 51.9	2.188	3.070	148.4	9.7	17.2
1990 01 19	09 20.83	+15 30.0					
1990 01 29	09 12.93	+16 13.9	2.101	3.080	172.5	2.4	16.8
1990 02 08	09 04.44	+16 59.0					
1990 02 18	08 56.27	+17 40.8	2.131	3.090	163.0	5.4	17.0
1990 02 28	08 49.27	+18 15.9					
1990 03 10	08 44.11	+18 42.1	2.272	3.098	139.8	11.9	17.4

1983 GA2 a,e,i = 2.41, 0.14, 5 Elements MPC 14190

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	09 32.74	+07 52.4	1.660	2.359	124.3	20.1	16.8
1989 12 30	09 32.09	+07 26.9					
1990 01 09	09 28.45	+07 18.3	1.453	2.329	145.1	14.0	16.3
1990 01 19	09 22.01	+07 27.8					
1990 01 29	09 13.33	+07 54.8	1.328	2.299	167.3	5.4	15.8
1990 02 08	09 03.51	+08 35.8					
1990 02 18	08 53.90	+09 25.1	1.306	2.269	162.9	7.3	15.8
1990 02 28	08 45.85	+10 16.4					
1990 03 10	08 40.43	+11 03.3	1.384	2.241	140.5	16.4	16.2

1975 TR4 a,e,i = 2.67, 0.04, 21 Elements MPC 14012

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 33.65	-14 14.5	2.104	2.654	113.5	19.9	16.6
1989	12 30	09 32.24	-15 36.7					
1990	01 09	09 28.36	-16 37.5	1.924	2.661	129.6	16.5	16.3
1990	01 19	09 22.26	-17 11.5					
1990	01 29	09 14.50	-17 13.9	1.810	2.669	143.7	12.6	16.1
1990	02 08	09 05.95	-16 43.1					
1990	02 18	08 57.63	-15 41.3	1.786	2.676	148.0	11.3	16.0
1990	02 28	08 50.54	-14 14.5					
1990	03 10	08 45.48	-12 31.6	1.858	2.684	138.4	14.2	16.2

(3980) 1983 XU a,e,i = 3.12, 0.17, 2 Elements MPC 14173

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 35.09	+16 52.1	2.042	2.748	126.9	16.6	17.1
1989	12 30	09 33.50	+17 12.4					
1990	01 09	09 29.36	+17 43.8	1.886	2.774	148.8	10.6	16.8
1990	01 19	09 23.01	+18 23.4					
1990	01 29	09 15.10	+19 06.5	1.823	2.803	172.3	2.7	16.4
1990	02 08	09 06.59	+19 47.6					
1990	02 18	08 58.50	+20 22.1	1.874	2.832	162.5	6.0	16.6
1990	02 28	08 51.79	+20 46.9					
1990	03 10	08 47.16	+21 00.4	2.031	2.863	139.8	12.9	17.1

1980 FV1 a,e,i = 3.03, 0.11, 9 Elements MPC 10952

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 40.76	+23 43.4	2.238	2.941	127.3	15.4	18.3
1989	12 30	09 38.12	+24 03.9					
1990	01 09	09 32.90	+24 30.5	2.077	2.963	148.9	9.9	18.0
1990	01 19	09 25.46	+24 58.8					
1990	01 29	09 16.46	+25 23.8	2.013	2.986	169.4	3.5	17.7
1990	02 08	09 06.87	+25 40.6					
1990	02 18	08 57.74	+25 46.0	2.064	3.009	159.4	6.6	17.9
1990	02 28	08 50.01	+25 39.1					
1990	03 10	08 44.39	+25 20.4	2.223	3.032	137.7	12.7	18.3

1985 RD3 a,e,i = 2.19, 0.12, 2 Elements MPC 11743

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 41.91	+14 06.4	1.455	2.169	124.5	22.0	18.4
1989	12 30	09 40.94	+14 25.4					
1990	01 09	09 36.48	+15 02.9	1.310	2.197	146.4	14.3	18.0
1990	01 19	09 28.87	+15 55.4					
1990	01 29	09 18.90	+16 57.0	1.247	2.225	171.3	3.8	17.5
1990	02 08	09 07.93	+17 59.0					
1990	02 18	08 57.55	+18 53.4	1.289	2.252	162.9	7.4	17.8
1990	02 28	08 49.16	+19 34.8					
1990	03 10	08 43.74	+20 00.7	1.431	2.278	139.4	16.5	18.3

(3949) 1985 UL a,e,i = 2.21, 0.03, 4 Elements MPC 14008

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 40.75	+09 13.5	1.484	2.182	123.0	22.2	16.8
1989	12 30	09 40.47	+08 43.6					
1990	01 09	09 36.85	+08 31.0	1.302	2.175	143.9	15.5	16.3
1990	01 19	09 30.07	+08 36.7					
1990	01 29	09 20.77	+08 59.4	1.198	2.169	167.0	5.9	15.8
1990	02 08	09 10.16	+09 35.3					
1990	02 18	08 59.78	+10 17.9	1.194	2.163	164.5	7.0	15.8
1990	02 28	08 51.12	+11 00.6					
1990	03 10	08 45.32	+11 37.8	1.289	2.157	141.6	16.6	16.3

6299 P-L a,e,i = 2.79, 0.16, 13 Elements MPC 8910

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 35.14	-03 51.3	1.717	2.352	118.6	21.5	18.5
1989	12 30	09 35.55	-04 37.1					
1990	01 09	09 33.23	-04 59.9	1.541	2.358	137.1	16.5	18.1
1990	01 19	09 28.42	-04 55.7					
1990	01 29	09 21.67	-04 22.3	1.436	2.368	155.5	9.9	17.7
1990	02 08	09 13.91	-03 20.9					
1990	02 18	09 06.31	-01 57.3	1.426	2.380	160.2	8.1	17.7
1990	02 28	08 59.97	-00 20.0					
1990	03 10	08 55.80	+01 20.9	1.517	2.395	144.3	14.0	18.0

(3964) 1974 RG1 a,e,i = 2.76, 0.17, 9 Elements MPC 14168

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 47.74	+18 27.9	2.443	3.107	124.5	15.1	17.6
1989	12 30	09 44.94	+18 37.3					
1990	01 09	09 39.73	+18 54.9	2.258	3.126	146.6	10.0	17.3
1990	01 19	09 32.43	+19 18.1					
1990	01 29	09 23.56	+19 43.2	2.169	3.144	170.2	3.0	16.9
1990	02 08	09 13.97	+20 05.7					
1990	02 18	09 04.60	+20 22.3	2.199	3.160	163.8	5.0	17.1
1990	02 28	08 56.35	+20 30.6					
1990	03 10	08 49.94	+20 29.7	2.343	3.174	140.6	11.4	17.5

(3990) 1987 SO3 a,e,i = 3.95, 0.24, 9 Elements MPC 14177

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 39.88	+03 46.8	3.296	3.896	121.1	12.5	16.8
1989	12 30	09 37.80	+03 43.3					
1990	01 09	09 34.13	+03 51.2	3.114	3.937	142.2	8.8	16.6
1990	01 19	09 29.13	+04 10.4					
1990	01 29	09 23.15	+04 39.9	3.025	3.979	163.2	4.1	16.3
1990	02 08	09 16.73	+05 17.4					
1990	02 18	09 10.42	+06 00.2	3.054	4.019	165.8	3.5	16.3
1990	02 28	09 04.76	+06 45.1					
1990	03 10	09 00.20	+07 29.0	3.201	4.059	145.6	7.9	16.7

1981 EN26 a,e,i = 2.79, 0.16, 8 Elements MPC 10619

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 39.21	+03 53.4	1.857	2.512	121.2	19.6	17.7
1989	12 30	09 39.55	+03 31.8					
1990	01 09	09 37.25	+03 28.7	1.641	2.485	141.3	14.3	17.3
1990	01 19	09 32.47	+03 46.0					
1990	01 29	09 25.63	+04 24.0	1.503	2.461	162.7	6.9	16.8
1990	02 08	09 17.58	+05 19.9					
1990	02 18	09 09.43	+06 28.3	1.468	2.438	165.8	5.7	16.7
1990	02 28	09 02.31	+07 41.8					
1990	03 10	08 57.23	+08 53.2	1.537	2.418	144.8	13.7	17.0

1982 XQ1 a,e,i = 3.21, 0.10, 2 Elements MPC 12000

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	12 20	09 43.43	+12 52.8	2.500	3.154	123.7	15.0	17.7
1989	12 30	09 42.24	+13 00.8					
1990	01 09	09 38.87	+13 20.4	2.275	3.134	145.3	10.3	17.3
1990	01 19	09 33.52	+13 50.2					
1990	01 29	09 26.59	+14 27.7	2.142	3.114	168.8	3.5	16.9
1990	02 08	09 18.77	+15 09.0					
1990	02 18	09 10.90	+15 49.8	2.124	3.095	166.9	4.2	16.9
1990	02 28	09 03.83	+16 26.1					
1990	03 10	08 58.30	+16 54.9	2.219	3.075	143.6	11.1	17.3

1977 AL1 a,e,i = 2.62, 0.16, 11 Elements MPC 15551

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 12 20	09 50.72	+24 22.2	2.297	2.975	125.2	15.7	17.6
1989 12 30	09 48.94	+25 23.8					
1990 01 09	09 44.50	+26 34.8	2.120	2.989	146.4	10.5	17.3
1990 01 19	09 37.64	+27 49.8					
1990 01 29	09 28.88	+29 01.8	2.039	3.001	164.9	4.9	17.0
1990 02 08	09 19.11	+30 03.3					
1990 02 18	09 09.40	+30 48.8	2.074	3.011	157.5	7.2	17.1
1990 02 28	09 00.80	+31 15.5					
1990 03 10	08 54.19	+31 23.5	2.217	3.019	136.9	13.0	17.5

(4058) 1986 JV a,e,i = 3.01, 0.10, 11 Elements MPC 14467

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990 01 09	09 45.44	+28 02.0	2.440	3.302	146.2	9.5	16.7
1990 01 19	09 39.24	+29 03.5					
1990 01 29	09 31.34	+30 01.4	2.346	3.304	163.8	4.8	16.4
1990 02 08	09 22.51	+30 49.8					
1990 02 18	09 13.65	+31 24.0	2.369	3.304	157.5	6.6	16.5
1990 02 28	09 05.67	+31 41.7					
1990 03 10	08 59.36	+31 42.8	2.501	3.303	137.6	11.7	16.8
1990 03 20	08 55.19	+31 29.0					
1990 03 30	08 53.38	+31 02.8	2.714	3.301	117.9	15.5	17.1

(3986) 1985 SF2 a,e,i = 2.25, 0.13, 5 Elements MPC 14175

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990 01 09	09 49.74	+08 53.0	1.159	2.021	141.1	17.8	16.0
1990 01 19	09 43.47	+08 41.3					
1990 01 29	09 34.36	+08 47.0	1.078	2.044	164.3	7.5	15.5
1990 02 08	09 23.70	+09 06.5					
1990 02 18	09 13.16	+09 33.6	1.093	2.069	167.6	5.9	15.5
1990 02 28	09 04.33	+10 02.1					
1990 03 10	08 58.41	+10 26.2	1.204	2.096	144.9	15.8	16.1
1990 03 20	08 55.93	+10 42.2					
1990 03 30	08 56.92	+10 48.0	1.390	2.125	124.9	22.7	16.6

1978 SD7 a,e,i = 2.23, 0.20, 4 Elements MPC 13854

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990 01 09	09 49.37	+07 28.5	1.843	2.676	140.6	13.5	18.1
1990 01 19	09 42.59	+07 50.9					
1990 01 29	09 33.70	+08 28.1	1.713	2.675	164.2	5.7	17.7
1990 02 08	09 23.54	+09 16.2					
1990 02 18	09 13.23	+10 09.7	1.696	2.670	167.7	4.5	17.6
1990 02 28	09 03.90	+11 03.1					
1990 03 10	08 56.55	+11 51.0	1.792	2.662	144.3	12.6	18.0
1990 03 20	08 51.77	+12 30.2					
1990 03 30	08 49.82	+12 58.6	1.974	2.650	122.7	18.5	18.4

(4044) 5142 T-3 a,e,i = 3.04, 0.09, 11 Elements MPC 14340

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990 01 09	09 45.94	+22 52.9	2.391	3.252	145.8	9.8	16.7
1990 01 19	09 40.24	+23 57.6					
1990 01 29	09 32.91	+25 02.9	2.296	3.262	166.5	4.0	16.4
1990 02 08	09 24.66	+26 02.9					
1990 02 18	09 16.34	+26 52.3	2.319	3.272	161.6	5.5	16.5
1990 02 28	09 08.83	+27 27.9					
1990 03 10	09 02.88	+27 48.4	2.455	3.281	140.3	11.1	16.8
1990 03 20	08 58.96	+27 54.4					
1990 03 30	08 57.30	+27 47.5	2.675	3.289	119.9	15.3	17.2

(3974) Verveer a,e,i = 2.60, 0.11, 13 Elements MPC 14171

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990	01 09	09 53.98	+34 31.4	1.555	2.419	143.7	13.9	15.4
1990	01 19	09 47.12	+35 34.2					
1990	01 29	09 37.28	+36 25.4	1.458	2.401	158.2	8.8	15.0
1990	02 08	09 25.68	+36 54.6					
1990	02 18	09 14.00	+36 55.0	1.462	2.384	152.8	10.9	15.1
1990	02 28	09 03.88	+36 25.6					
1990	03 10	08 56.62	+35 29.9	1.560	2.369	135.0	17.2	15.4
1990	03 20	08 52.85	+34 14.2					
1990	03 30	08 52.65	+32 44.4	1.728	2.356	117.0	22.2	15.8

1981 QT3 a,e,i = 3.17, 0.07, 6 Elements MPC 13589

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990	01 09	09 46.99	+19 41.7	2.378	3.234	145.1	10.0	17.0
1990	01 19	09 41.23	+20 11.5					
1990	01 29	09 33.82	+20 43.8	2.252	3.221	167.7	3.7	16.6
1990	02 08	09 25.45	+21 14.0					
1990	02 18	09 16.95	+21 38.1	2.241	3.207	165.4	4.4	16.6
1990	02 28	09 09.21	+21 53.2					
1990	03 10	09 02.99	+21 57.7	2.345	3.194	142.9	10.8	17.0
1990	03 20	08 58.78	+21 51.6					
1990	03 30	08 56.85	+21 35.7	2.536	3.180	122.0	15.4	17.3

1988 RN a,e,i = 2.62, 0.13, 14 Elements MPC 13682

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990	01 09	09 56.74	+17 43.9	1.450	2.309	142.4	15.0	15.4
1990	01 19	09 49.35	+17 20.8					
1990	01 29	09 39.34	+17 01.0	1.356	2.325	166.5	5.7	14.9
1990	02 08	09 27.89	+16 40.4					
1990	02 18	09 16.49	+16 15.9	1.367	2.343	168.0	5.0	14.9
1990	02 28	09 06.59	+15 46.1					
1990	03 10	08 59.29	+15 10.5	1.485	2.363	144.3	14.2	15.4
1990	03 20	08 55.15	+14 29.6					
1990	03 30	08 54.23	+13 44.1	1.684	2.386	123.6	20.4	15.9

(3954) Mendelssohn a,e,i = 2.15, 0.09, 3 Elements MPC 14010

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990	01 09	09 52.55	+10 02.0	1.316	2.171	141.0	16.6	18.6
1990	01 19	09 47.35	+10 36.0					
1990	01 29	09 39.22	+11 28.6	1.183	2.149	164.8	6.9	18.0
1990	02 08	09 29.13	+12 34.2					
1990	02 18	09 18.51	+13 44.1	1.149	2.127	169.1	5.0	17.8
1990	02 28	09 08.96	+14 49.4					
1990	03 10	09 01.92	+15 42.9	1.215	2.105	144.7	15.8	18.3
1990	03 20	08 58.20	+16 20.7					
1990	03 30	08 58.11	+16 41.6	1.357	2.084	123.7	23.5	18.7

(4157) 1988 XD2 a,e,i = 2.67, 0.16, 13 Elements MPC 14940

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990	01 09	09 59.08	+29 39.8	2.137	2.983	143.1	11.4	16.4
1990	01 19	09 53.19	+30 59.3					
1990	01 29	09 45.01	+32 16.0	2.015	2.961	160.1	6.5	16.1
1990	02 08	09 35.31	+33 21.5					
1990	02 18	09 25.14	+34 08.9	2.005	2.937	156.3	7.8	16.1
1990	02 28	09 15.68	+34 34.3					
1990	03 10	09 07.99	+34 37.1	2.101	2.911	137.4	13.3	16.4
1990	03 20	09 02.77	+34 19.9					
1990	03 30	09 00.35	+33 46.1	2.276	2.884	118.1	17.8	16.7

1978 TT2 a,e,i = 2.88, 0.02, 3 Elements MPC 13051

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990	01 09	09 56.65	+16 41.8	2.007	2.848	142.2	12.2	16.9
1990	01 19	09 51.51	+17 19.2					
1990	01 29	09 44.34	+18 03.0	1.882	2.845	165.4	5.0	16.5
1990	02 08	09 35.88	+18 48.1					
1990	02 18	09 27.08	+19 28.7	1.867	2.843	168.6	3.9	16.4
1990	02 28	09 18.97	+20 00.4					
1990	03 10	09 12.47	+20 20.3	1.965	2.840	145.6	11.4	16.8
1990	03 20	09 08.19	+20 27.5					
1990	03 30	09 06.42	+20 22.5	2.150	2.837	124.5	16.9	17.2

1981 SY1 a,e,i = 2.26, 0.15, 4 Elements MPC 13855

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990	01 09	10 02.94	+12 29.2	1.741	2.570	139.5	14.4	17.5
1990	01 19	09 56.85	+12 49.0					
1990	01 29	09 48.23	+13 19.9	1.595	2.555	163.5	6.3	17.0
1990	02 08	09 37.89	+13 57.2					
1990	02 18	09 26.97	+14 35.1	1.557	2.538	170.9	3.5	16.8
1990	02 28	09 16.77	+15 08.3					
1990	03 10	09 08.46	+15 32.5	1.631	2.518	146.3	12.6	17.2
1990	03 20	09 02.81	+15 45.7					
1990	03 30	09 00.19	+15 47.3	1.792	2.496	124.5	19.3	17.6

(4068) 1973 SW a,e,i = 5.26, 0.08, 17 Elements MPC 14598

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990	01 09	09 49.19	+00 01.8	4.082	4.847	136.9	8.0	16.5
1990	01 19	09 45.80	+00 20.1					
1990	01 29	09 41.54	+00 48.3	3.925	4.849	157.4	4.5	16.2
1990	02 08	09 36.74	+01 25.1					
1990	02 18	09 31.79	+02 08.8	3.882	4.852	167.5	2.5	16.1
1990	02 28	09 27.08	+02 56.7					
1990	03 10	09 23.01	+03 46.1	3.961	4.855	151.3	5.6	16.3
1990	03 20	09 19.87	+04 34.3					
1990	03 30	09 17.88	+05 19.2	4.145	4.859	131.0	8.9	16.5

1988 SO2 a,e,i = 2.27, 0.12, 5 Elements MPC 15418

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990	01 09	09 57.07	+05 51.4	1.209	2.049	138.2	18.7	16.8
1990	01 19	09 53.71	+06 13.8					
1990	01 29	09 47.35	+07 01.1	1.079	2.035	160.7	9.2	16.2
1990	02 08	09 38.87	+08 09.5					
1990	02 18	09 29.63	+09 30.6	1.041	2.024	171.5	4.1	15.9
1990	02 28	09 21.23	+10 54.0					
1990	03 10	09 15.13	+12 09.5	1.100	2.015	148.7	14.8	16.5
1990	03 20	09 12.22	+13 10.1					
1990	03 30	09 12.86	+13 52.1	1.236	2.011	127.9	23.1	16.9

1931 TC2 a,e,i = 2.67, 0.25, 8 Elements MPC 12578

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990	01 09	10 07.44	+17 43.6	2.449	3.264	140.0	11.2	18.1
1990	01 19	10 01.28	+18 13.1					
1990	01 29	09 53.30	+18 46.7	2.327	3.283	163.3	5.0	17.8
1990	02 08	09 44.14	+19 20.0					
1990	02 18	09 34.63	+19 48.6	2.322	3.299	169.7	3.1	17.7
1990	02 28	09 25.66	+20 09.0					
1990	03 10	09 18.02	+20 19.4	2.437	3.313	146.8	9.4	18.1
1990	03 20	09 12.28	+20 19.2					
1990	03 30	09 08.74	+20 09.0	2.648	3.324	125.1	14.2	18.4

1987 SJ5 a,e,i = 2.91, 0.24, 9 Elements MPC 15415

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990	01 09	10 01.41	+01 54.8	2.764	3.532	135.3	11.3	18.6
1990	01 19	09 56.67	+02 07.7					
1990	01 29	09 50.39	+02 34.3	2.583	3.512	157.2	6.2	18.2
1990	02 08	09 43.04	+03 13.0					
1990	02 18	09 35.26	+04 01.0	2.514	3.491	169.5	2.9	18.0
1990	02 28	09 27.74	+04 54.6					
1990	03 10	09 21.18	+05 49.3	2.566	3.467	150.9	8.0	18.2
1990	03 20	09 16.11	+06 41.1					
1990	03 30	09 12.88	+07 27.1	2.720	3.442	129.4	13.0	18.5

1967 UQ a,e,i = 2.36, 0.17, 3 Elements MPC 15549

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990	01 09	10 06.27	+17 10.2	1.117	1.974	140.1	18.6	16.5
1990	01 19	10 03.08	+17 57.7					
1990	01 29	09 56.51	+18 56.9	1.022	1.984	162.5	8.6	16.0
1990	02 08	09 47.59	+19 58.1					
1990	02 18	09 37.88	+20 50.5	1.018	1.997	169.3	5.2	15.8
1990	02 28	09 29.12	+21 25.9					
1990	03 10	09 22.84	+21 40.0	1.108	2.016	147.2	15.5	16.4
1990	03 20	09 19.87	+21 32.9					
1990	03 30	09 20.46	+21 07.0	1.271	2.038	127.3	22.9	16.9

1988 VH a,e,i = 2.58, 0.17, 12 Elements MPC 14199

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990	01 09	10 07.95	-05 43.3	2.244	2.971	129.8	14.7	17.8
1990	01 19	10 02.85	-06 05.0					
1990	01 29	09 55.82	-06 07.0	2.091	2.983	149.7	9.6	17.5
1990	02 08	09 47.45	-05 48.6					
1990	02 18	09 38.54	-05 11.6	2.038	2.993	161.8	5.9	17.3
1990	02 28	09 30.00	-04 19.7					
1990	03 10	09 22.69	-03 18.8	2.098	3.001	150.1	9.5	17.5
1990	03 20	09 17.24	-02 15.1					
1990	03 30	09 14.02	-01 13.9	2.258	3.006	130.7	14.6	17.9

1975 AN a,e,i = 2.37, 0.32, 22 Elements MPC 10527

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990	01 09	10 19.51	-12 59.2	1.760	2.441	123.2	19.7	18.0
1990	01 19	10 12.48	-14 28.9					
1990	01 29	10 02.88	-15 30.8	1.666	2.509	140.9	14.3	17.8
1990	02 08	09 51.56	-16 00.5					
1990	02 18	09 39.71	-15 57.6	1.661	2.573	151.5	10.6	17.7
1990	02 28	09 28.60	-15 25.4					
1990	03 10	09 19.37	-14 31.7	1.760	2.635	145.0	12.5	18.0
1990	03 20	09 12.72	-13 25.8					
1990	03 30	09 08.98	-12 16.5	1.949	2.694	129.2	16.7	18.4

(4211) 1987 RT a,e,i = 3.20, 0.20, 1 Elements MPC 15233

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990	01 09	10 07.19	+12 18.4	2.958	3.751	138.5	10.0	17.9
1990	01 19	10 02.45	+12 45.0					
1990	01 29	09 56.27	+13 18.6	2.819	3.766	161.6	4.7	17.6
1990	02 08	09 49.12	+13 56.0					
1990	02 18	09 41.59	+14 33.9	2.795	3.780	174.3	1.5	17.4
1990	02 28	09 34.34	+15 08.9					
1990	03 10	09 28.00	+15 38.1	2.894	3.791	150.8	7.3	17.8
1990	03 20	09 23.04	+15 59.7					
1990	03 30	09 19.77	+16 13.0	3.095	3.802	128.8	11.8	18.1

2023 P-L a,e,i = 3.08, 0.16, 1 Elements MPC 15569

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990 01 09	10 08.54	+11 29.7	2.794	3.584	137.9	10.6	18.6
1990 01 19	10 03.88	+11 54.1					
1990 01 29	09 57.64	+12 26.5	2.639	3.585	161.1	5.1	18.3
1990 02 08	09 50.31	+13 03.9					
1990 02 18	09 42.53	+13 42.7	2.598	3.584	174.8	1.4	18.0
1990 02 28	09 34.99	+14 19.1					
1990 03 10	09 28.37	+14 50.1	2.679	3.581	151.1	7.7	18.4
1990 03 20	09 23.21	+15 13.6					
1990 03 30	09 19.85	+15 28.3	2.862	3.577	129.1	12.5	18.7

1276 T-2 a,e,i = 2.44, 0.15, 3 Elements MPC 15079

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990 01 09	10 13.85	+15 50.4	1.329	2.162	138.0	17.7	17.1
1990 01 19	10 09.63	+16 25.3					
1990 01 29	10 02.35	+17 11.0	1.234	2.189	161.0	8.4	16.7
1990 02 08	09 52.94	+17 59.8					
1990 02 18	09 42.80	+18 43.3	1.235	2.217	171.7	3.7	16.5
1990 02 28	09 33.43	+19 14.7					
1990 03 10	09 26.19	+19 29.8	1.338	2.248	148.9	13.2	17.1
1990 03 20	09 21.88	+19 28.2					
1990 03 30	09 20.77	+19 11.2	1.524	2.280	128.1	20.2	17.6

1987 PL a,e,i = 2.99, 0.10, 9 Elements MPC 15246

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990 01 09	10 11.67	+05 21.0	2.519	3.286	134.7	12.3	17.7
1990 01 19	10 06.89	+05 15.6					
1990 01 29	10 00.34	+05 21.5	2.355	3.285	157.1	6.7	17.4
1990 02 08	09 52.55	+05 37.5					
1990 02 18	09 44.20	+06 00.8	2.301	3.284	172.5	2.3	17.1
1990 02 28	09 36.09	+06 28.2					
1990 03 10	09 28.97	+06 56.0	2.366	3.281	152.8	8.0	17.4
1990 03 20	09 23.45	+07 21.0					
1990 03 30	09 19.90	+07 40.6	2.534	3.277	131.0	13.3	17.8

1981 UB10 a,e,i = 2.38, 0.16, 8 Elements MPC 15410

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990 01 09	10 19.05	+23 08.8	1.798	2.615	138.3	14.5	17.6
1990 01 19	10 13.44	+24 11.8					
1990 01 29	10 05.17	+25 17.5	1.693	2.639	159.6	7.5	17.2
1990 02 08	09 55.01	+26 17.3					
1990 02 18	09 44.14	+27 03.2	1.695	2.660	164.3	5.8	17.2
1990 02 28	09 33.85	+27 30.1					
1990 03 10	09 25.32	+27 36.2	1.808	2.680	144.6	12.4	17.6
1990 03 20	09 19.33	+27 23.1					
1990 03 30	09 16.24	+26 53.8	2.007	2.697	124.1	17.9	18.0

1985 TW1 a,e,i = 2.24, 0.20, 8 Elements MPC 14195

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1990 01 09	10 21.56	+09 13.4	1.533	2.327	134.1	17.7	17.6
1990 01 19	10 15.51	+09 08.3					
1990 01 29	10 06.62	+09 17.4	1.428	2.369	157.8	9.0	17.2
1990 02 08	09 55.76	+09 37.2					
1990 02 18	09 44.23	+10 02.5	1.423	2.409	175.1	2.0	16.9
1990 02 28	09 33.42	+10 28.0					
1990 03 10	09 24.57	+10 48.7	1.530	2.447	151.2	11.3	17.5
1990 03 20	09 18.47	+11 01.5					
1990 03 30	09 15.42	+11 05.0	1.728	2.483	129.2	18.2	18.0