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CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Mag.	N Obs.
1987 WC *	1987 11	21.32014	04 29 48.28	+38 04 46.0	MPC12520	19	1 675
1987 WC	1987 11	21.34201	04 29 43.41	+38 06 12.8	MPC12520		1 675

Note 1: measurements by J. Gibson of the beginning and middle of the trail.

* * * * *

DELETED OBSERVATION.

The following observation is to be deleted.

Object	Date	UT	R. A. (1950)	Decl.	Reference	N Obs.
1969 PB1 *	1969 08	09.20714	21 23 28.07	-10 01 29.1	MPC 8959	1 805

Note 1: this redesignation of (1176) is to be eliminated, because the same observation was published as both (1176) and (1709) on MPC 3488; the identification with (1709) is correct.

* * * * *

IDENTIFICATION CHANGES.

Continuation to MPC 12494.

Object	Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
1957 WH2 *	1957 11	23.26734	02 50 22.24	+22 11 52.3	1957 WG	17.1	760
1957 WH2	1957 11	23.31317	02 50 19.83	+22 11 40.3	1957 WG		760

* * * * *

IDENTIFICATIONS.

The following list of identifications with numbered minor planets continues that on MPC 12360. The identifications are by L. D. Schmadel.

	Note		Note		Note
A906 YJ =	(1707)	A909 SC =	(1641)	A924 OD =	(801)
1926 VA =	(831)	1927 EC =	(279)	1929 EL =	(1356)
1929 PO =	(2373)	1930 BK =	(1124) 1	1930 DX =	(1604)
1935 QU =	(2319)	1936 FA2 =	(2017)	1939 FA1 =	(823)
1943 EJ1 =	(822)	1943 SG =	(1789)	1945 KB =	(27)
1945 WC =	(813)	1948 QR =	(1646)	1948 TN2 =	(1595)
1948 VR =	(1494)	1949 CG =	(2017)	1949 FP1 =	(2085)
1949 HR1 =	(3094)	1949 WO =	(1972)	1950 RM1 =	(513)

1950 YD	= (32)		1951 CD1	= (694)		1953 EJ1	= (2672)	
1953 LH	= (1503)		1954 HL	= (2297)		1955 FK1	= (2334)	
1956 KA	= (2811)		1957 AL	= (2670)		1957 BJ1	= (1639)	
1957 UH	= (3295)		1957 WE	= (3454)		1957 YZ	= (1428)	
1958 XA1	= (767)		1958 XB1	= (765)		1959 JT	= (340)	
1959 NR	= (463)		1959 SQ	= (856)		1959 XK	= (539)	
1960 KC	= (994)		1961 CM	= (2377)		1961 GJ	= (2692)	
1961 OA	= (1472)		1961 PD	= (2425)		1962 JX	= (1905)	
1962 KB	= (1378)		1962 KC	= (2957)		1962 LA	= (1130)	
1963 NB	= (2569)		1964 XN	= (523)		1965 AN1	= (2728)	
1966 OB	= (2007)		1966 UD1	= (2989)		1967 CM	= (994)	
1967 JU	= (2679)		1967 UH	= (2268)		1967 UW	= (1521)	1
1968 KV	= (1723)		1968 OM1	= (1847)		1968 TP	= (2235)	
1969 ME	= (384)		1969 OE1	= (2117)		1970 HN	= (790)	
1970 JG	= (2378)		1970 JT	= (1205)		1971 BK3	= (2743)	
1971 DE2	= (1345)		1971 RD	= (1437)		1972 LM1	= (1128)	
1973 UD6	= (1798)		1973 YE4	= (3019)		1974 DG2	= (2458)	
1974 TX1	= (1433)		1975 BH	= (3106)		1975 EE6	= (991)	1
1975 NW1	= (1251)		1975 XW	= (1939)		1976 JS8	= (2501)	
1976 UR4	= (3179)		1976 YU7	= (1800)	1	1977 QF5	= (2835)	
1977 RF8	= (2169)	1	1977 TW4	= (3008)		1977 XL	= (2483)	
1978 EE7	= (2474)		1978 JF	= (2330)		1978 NA4	= (2299)	
1978 PR1	= (3016)		1978 PR2	= (3644)		1978 TS1	= (157)	
1978 TJ5	= (1218)		1978 VQ12	= (1218)		1978 VT13	= (2034)	
1978 VN16	= (2357)		1978 XL1	= (1228)		1979 BQ	= (2501)	
1979 BB2	= (2455)		1979 FL2	= (697)		1979 FY2	= (341)	
1979 FL3	= (244)		1979 HL4	= (3117)		1979 MH9	= (3097)	
1979 ON15	= (2330)		1979 OS16	= (3131)		1979 VU2	= (2201)	
1979 VO3	= (3023)		1979 WJ3	= (2948)		1979 YT	= (2382)	
1979 YT1	= (2450)		1979 YA2	= (2958)		1979 YW2	= (3655)	
1979 YT6	= (2948)		1979 YT7	= (2723)		1980 BL3	= (1202)	
1980 ES	= (2753)		1980 FW9	= (3577)		1980 FL10	= (2880)	
1980 FJ12	= (283)		1980 KQ1	= (2857)		1980 RW3	= (2907)	
1980 TG13	= (3147)		1980 TW14	= (2665)		1980 UX	= (2831)	
1980 XC1	= (2831)		1981 RM5	= (1577)		1981 ST5	= (2848)	
1981 SW5	= (2915)		1981 TR2	= (2527)		1981 TK3	= (3088)	
1981 TA4	= (3049)		1981 UZ11	= (3088)		1981 WH4	= (2470)	
1981 WR6	= (2571)		1981 YM	= (2308)		1981 YB2	= (2405)	
1981 YG2	= (2828)		1981 YL2	= (2591)		1982 DX2	= (47)	
1982 DK5	= (2334)		1982 SW4	= (3254)		1983 CY3	= (1620)	
1983 NE	= (3295)		1984 FK1	= (2095)		1984 YZ4	= (2377)	

Note 1: in contradiction to earlier statements.

* * * * *

IDENTIFICATION WITH A COMET.

S. Nakano has made another cometary identification (cf. MPC 12025) among the minor-planet designations:

1925 QD = P/Whipple

* * * * *

ROMAN NUMERAL DESIGNATIONS OF COMETS IN 1986.

The following tabulation continues that on MPC 11376. The above identification of P/Whipple with 1925 QD is given the comet designation 1926 VIII.

Comet	T	Name	Year/letter	Ref.
1986 I	Jan. 16.5	P/Boethin	1985n	MPC 10156
1986 II	Jan. 24.4	P/Ashbrook-Jackson	1985a	IAUC 4048
1986 III	Feb. 9.5	P/Halley	1982i	MPC 10634
1986 IV	Mar. 11.3	Shoemaker	1986b	MPC 12307
1986 V	Mar. 14.1	P/Holmes	1986f	IAUC 4225
1986 VI	Mar. 19.1	P/Wirtanen	1985q	NK 517
1986 VII	Apr. 4.7	P/Kojima	1985o	MPC 11624
1986 VIII	Apr. 23.5	P/Machholz	1986e	MPC 11153
1986 IX	May 6.5	Churyumov-Solodovnikov	1986i	MPC 12453
1986 X	May 27.4	P/Shajn-Schaldach	1985i	NK 496
1986 XI	June 9.0	P/Singer Brewster	1986d	NK 497
1986 XII	June 25.1	P/Whipple	1985h	IAUC 4088
1986 XIII	Sept. 2.2	P/Lovas 2	1986p	MPC 12124
1986 XIV	Nov. 17.2	Shoemaker	1987o	MPC 12008
1986 XV	Nov. 22.8	P/Wiseman-Skiff	1987b	MPC 12124
1986 XVI	Nov. 22.9	P/Urata-Niijima	1986o	MPC 12128
1986 XVII	Dec. 17.5	Levy	1987a	MPC 12124
1986 XVIII	Dec. 24.9	Terasako	1987d	MPC 12200

* * * * *

OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

012 Uccle. Observers H. Debehogne and T. Pauwels.
054 Brorfelde. Observers K. Augustesen and P. Jensen.
091 Aurec-sur-Loire. 0.41-m reflector. Observer R. Chanal.
372 Geisei. Observer T. Seki.
387 Tokyo-Dodaira. 0.50-m Schmidt telescope. Observer M. Noguchi. Measured by H. Kosai.
391 Sendai Observatory, Ayashi Station. 0.20-m reflector. Observer M. Koishikawa.
397 Sapporo Science Center. 0.60-m reflector. Observer K. Watanabe.
415 Kambah, near Canberra. Observer D. Herald.
501 Herstmonceux. University of Aston 0.61-m Hewitt Satellite Tracking Camera. Observers P. Strugnell and M. White.
503 Cambridge. Observer J. D. Shanklin.
552 San Vittore. 0.45-m reflector. Observers G. Sassi and C. Vacchi. Measured by C. Vacchi, V. Goretti and E. Colombini.
568 Mauna Kea. 2.24-m reflector. Observer K. J. Meech.
657 Victoria. Observers D. D. Balam and J. Tatum.
675 Palomar. Observers J. Gibson, C. Kowal, C. Shoemaker and E. Shoemaker. Measured by S. J. Bus, J. Gibson and C. Shoemaker.
691 University of Arizona, Kitt Peak. 0.91-m SPACEWATCH telescope, CCD in scanning mode. Observer J. V. Scotti.
695 Kitt Peak. 2.13-m reflector. Observer D. Jewitt. Measured by K. J. Meech.
801 Oak Ridge Observatory. Observers R. E. McCrosky and C.-Y. Shao.
807 Cerro Tololo. 1.5-m and Schmidt telescopes. Observer K. J. Meech.
809 European Southern Observatory. GPO 0.40-m astrograph. Observer H. Bohnhardt. Reduced by L. Kohoutek.
892 YGCO Hoshikawa and Nagano Stations. Observer S. Hayakawa.
893 Sendai. 0.41-m reflector. Observer T. Yusa. Measured by M. Koishikawa.
975 Valencia. Observers A. Lopez G., J. A. Lopez O., R. Lopez M. and J. Artes P.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
		Periodic Comet Schwassmann-Wachmann 1					
/1974 II	1987	09 17.14955	20 04 35.71	-21 21 58.8			695
/1974 II	1987	09 17.15628	20 04 35.66	-21 21 58.6			695
/1974 II	1987	09 26.09804	20 03 48.80	-21 16 01.7			807
/1974 II	1987	09 26.15292	20 03 48.66	-21 15 58.9			807
/1974 II	1987	09 27.21910	20 03 46.97	-21 15 06.9			807
		Comet Cernis (1983 XII)					
/1983 XII	1987	05 01.21495	17 15 37.71	-63 29 33.7			807
/1983 XII	1987	05 01.27734	17 15 35.05	-63 29 38.0			807
/1983 XII	1987	05 01.29749	17 15 34.06	-63 29 39.4			807
/1983 XII	1987	05 01.30693	17 15 33.64	-63 29 40.2			807
		Periodic Comet Taylor					
/1984 II	1984	01 08.31979	06 54 37.30	+20 17 28.2			675
		Comet Shoemaker (1985 XII)					
/1985 XII	1987	09 26.36118	04 25 54.03	+03 07 02.0			807
/1985 XII	1987	09 26.36601	04 25 53.92	+03 07 01.6			807
/1985 XII	1987	09 26.37080	04 25 53.78	+03 07 01.8			807
/1985 XII	1987	09 26.37557	04 25 53.71	+03 07 01.7			807
/1985 XII	1987	09 26.38519	04 25 53.49	+03 07 01.1			807
/1985 XII	1987	09 26.38964	04 25 53.36	+03 07 00.4			807
/1985 XII	1987	11 16.32603	03 56 23.74	+02 35 00.2	19.7N	1	691
/1985 XII	1987	11 16.33661	03 56 23.25	+02 35 00.6	16.5T		691
		Periodic Comet Giacobini-Zinner					
/1985 XIII	1985	09 13.11597	05 59 29.18	+20 53 35.6		2	012
		Comet Hartley (1985 XIV)					
/1985 XIV	1987	09 26.06079	15 36 29.94	-40 44 55.3			807
/1985 XIV	1987	09 27.03124	15 36 59.83	-40 40 56.0			807
/1985 XIV	1987	09 27.06968	15 37 00.45	-40 40 51.8			807
		Comet Hartley-Good (1985 XVII)					
/1985 XVII	1985	10 21.84167	19 55 03.93	-04 41 50.7			012
/1985 XVII	1985	10 24.82882	19 38 12.58	-01 54 25.3		3	012
/1985 XVII	1985	10 24.83715	19 38 09.60	-01 53 58.6		3	012
		Periodic Comet Halley					
/1986 III	1985	11 28.76111	01 29 41.79	+15 27 30.6			975
/1986 III	1985	12 13.80163	23 22 26.77	+04 16 56.1			975
/1986 III	1985	12 13.80678	23 22 25.95	+04 16 54.2			975
/1986 III	1986	01 06.75417	22 02 15.50	-03 49 48.4			975
/1986 III	1986	01 08.76319	21 58 14.15	-04 13 58.4			975
/1986 III	1986	01 08.76979	21 58 13.39	-04 14 02.7			975
/1986 III	1986	01 10.80485	21 54 19.26	-04 37 14.0			975
/1986 III	1986	01 11.78021	21 52 29.90	-04 48 09.2			975
/1986 III	1986	01 11.78684	21 52 29.15	-04 48 13.8			975
/1986 III	1986	01 14.77465	21 47 02.98	-05 20 51.4			975
/1986 III	1986	05 01.85624	10 51 58.35	-17 35 00.3			975
/1986 III	1986	05 01.86046	10 51 57.75	-17 34 49.8			975
/1986 III	1986	05 03.86785	10 46 27.81	-16 01 43.7			975
/1986 III	1986	05 03.87306	10 46 27.34	-16 01 23.9			975
/1986 III	1986	05 06.87465	10 39 59.54	-14 03 58.2			975
/1986 III	1987	04 27.88194	09 48 52.29	-06 58 31.9			091

/1986 III	1987	11	23.82326	10 34 25.75	-09	35	53.4	18.5T	372
/1986 III	1987	11	23.83889	10 34 25.65	-09	35	56.3		372
				Comet Churyumov-Solodovnikov (1986 IX)					
/1986 IX	1987	09	26.98736	14 02 13.19	-74	32	21.5		807
/1986 IX	1987	09	26.99145	14 02 13.56	-74	32	20.3		807
/1986 IX	1987	09	26.99692	14 02 13.87	-74	32	19.0		807
/1986 IX	1987	09	27.00352	14 02 14.40	-74	32	17.4		807
/1986 IX	1987	09	27.01147	14 02 14.91	-74	32	15.8		807
/1986 IX	1987	09	27.01924	14 02 15.39	-74	32	14.0		807
				Comet Shoemaker (1986 XIV)					
/1986 XIV	1987	08	22.31395	15 13 19.31	+14	26	33.7		568
/1986 XIV	1987	08	26.36108	15 12 51.30	+14	21	11.1		568
/1986 XIV	1987	09	25.02474	15 14 24.17	+13	42	49.2		801
				Periodic Comet Kohoutek					
/1986k	1987	10	21.44590	07 46 08.68	+22	19	47.5		657
/1986k	1987	10	21.46257	07 46 10.75	+22	19	38.4		657
/1986k	1987	11	16.44698	08 30 42.40	+18	13	59.9	18.6N	4 691
/1986k	1987	11	16.45488	08 30 43.01	+18	13	55.6	15 T	691
/1986k	1987	11	19.38165	08 34 31.24	+17	45	15.6		801
/1986k	1987	12	13.30139	08 54 07.07	+14	08	41.6		657
				Comet Wilson (1986l)					
/1986l	1986	11	26.74097	19 50 00.00	-06	34	43.8		012
/1986l	1987	05	26.07257	08 26 56.41	-22	24	27.3		809
/1986l	1987	05	27.05461	08 28 23.27	-21	24	03.4		809
/1986l	1987	05	28.02487	08 29 45.34	-20	27	37.5		809
/1986l	1987	05	30.02979	08 32 24.30	-18	39	59.9		809
/1986l	1987	05	30.08312	08 32 28.43	-18	37	18.0		809
/1986l	1987	05	30.98170	08 33 35.69	-17	52	49.7		809
/1986l	1987	05	31.09839	08 33 43.97	-17	47	13.2		809
/1986l	1987	11	16.42145	09 36 28.11	+03	26	07.5		5 691
/1986l	1987	11	16.43054	09 36 27.77	+03	26	10.6		691
				Comet Sorrells (1986n)					
/1986n	1986	11	26.80729	03 18 27.23	+28	17	42.1		012
/1986n	1986	11	26.82431	03 18 20.28	+28	17	29.9		6 012
/1986n	1986	11	28.89236	03 04 03.78	+27	51	38.4		012
/1986n	1986	11	29.11653	03 02 31.05	+27	48	29.2		6 012
				Periodic Comet Howell					
/1987h	1987	11	17.04821	00 29 25.70	-03	48	28.4		801
				Periodic Comet Klemola					
/1987i	1987	10	13.20833	00 22 27.46	-03	59	45.6		657
/1987i	1987	10	19.25382	00 22 06.73	-04	49	11.1		657
/1987i	1987	10	23.23785	00 22 13.12	-05	15	12.0		657
/1987i	1987	11	17.08166	00 30 03.10	-06	03	57.0		801
				Comet Torres (1987j)					
/1987j	1987	05	02.09875	12 39 58.90	-36	25	18.5		807
				Periodic Comet Reinmuth 2					
/1987l	1987	11	16.98692	21 22 59.15	-08	34	02.5		801
/1987l	1987	11	24.96748	21 37 48.39	-07	21	57.3		801

Periodic Comet Brooks 2

/1987m	1987	11	17.10770	00	31	46.43	-02	26	19.4			801
/1987m	1987	11	21.49583	00	34	46.37	-02	14	29.8	15	T	892
/1987m	1987	11	21.53541	00	34	47.68	-02	14	17.6			892
/1987m	1987	11	22.49704	00	35	31.58	-02	11	07.6	15	T	892
/1987m	1987	11	22.54317	00	35	33.77	-02	10	55.0			892

Periodic Comet Borrelly

/1987p	1987	11	21.57476	02	51	52.23	-25	00	32.7			892
/1987p	1987	11	21.57777	02	51	51.92	-25	00	23.0			892
/1987p	1987	11	21.61249	02	51	48.30	-24	58	38.1			892
/1987p	1987	11	21.62158	02	51	47.43	-24	58	10.8			892
/1987p	1987	11	22.55295	02	50	17.58	-24	10	26.8			892
/1987p	1987	11	22.58657	02	50	14.05	-24	08	41.7			892
/1987p	1987	12	02.48368	02	35	53.31	-14	15	41.7			892
/1987p	1987	12	07.80361	02	29	56.72	-08	07	34.1			503
/1987p	1987	12	12.53661	02	25	57.10	-02	25	48.0			391
/1987p	1987	12	13.54306	02	25	16.70	-01	12	30.2			391
/1987p	1987	12	13.58056	02	25	15.16	-01	09	46.2			391
/1987p	1987	12	14.48611	02	24	42.44	-00	03	53.0			391
/1987p	1987	12	14.51258	02	24	41.33	-00	01	58.1			391

Comet Bradfield (1987s)

/1987s	1987	10	21.74722	16	51	29.13	-04	38	09.4			012
/1987s	1987	10	21.75556	16	51	30.61	-04	37	57.9			012
/1987s	1987	11	05.73958	17	46	07.16	+01	50	35.0	5.5	T	552
/1987s	1987	11	06.71319	17	50	02.06	+02	18	47.6			552
/1987s	1987	11	07.70903	17	54	05.45	+02	47	58.9			552
/1987s	1987	11	15.70521	18	28	58.31	+06	54	24.7			552
/1987s	1987	11	16.36215	18	32	02.47	+07	15	31.8			391
/1987s	1987	11	16.38090	18	32	07.70	+07	16	06.9			391
/1987s	1987	11	16.40035	18	32	13.13	+07	16	44.2			391
/1987s	1987	11	16.70799	18	33	40.45	+07	26	38.4			552
/1987s	1987	11	17.35938	18	36	46.15	+07	47	43.3			391
/1987s	1987	11	17.37743	18	36	51.26	+07	48	18.9			391
/1987s	1987	11	17.40729	18	36	59.81	+07	49	17.4			391
/1987s	1987	11	17.71007	18	38	27.23	+07	59	07.2			552
/1987s	1987	11	18.71076	18	43	18.54	+08	31	47.4			552
/1987s	1987	11	18.76424	18	43	34.30	+08	33	32.6			091
/1987s	1987	11	19.35451	18	46	28.67	+08	52	55.1			391
/1987s	1987	11	19.37535	18	46	34.82	+08	53	35.6			391
/1987s	1987	11	19.39896	18	46	41.77	+08	54	22.6			391
/1987s	1987	11	20.35159	18	51	27.72	+09	25	49.5			391
/1987s	1987	11	20.40550	18	51	43.96	+09	27	36.5			391
/1987s	1987	11	20.72049	18	53	19.84	+09	38	01.6	7		012
/1987s	1987	11	21.70521	18	58	22.46	+10	10	45.1			552
/1987s	1987	11	22.35434	19	01	44.88	+10	32	27.5			391
/1987s	1987	11	22.35920	19	01	46.37	+10	32	35.0			892
/1987s	1987	11	22.38223	19	01	53.57	+10	33	19.6			391
/1987s	1987	11	22.40492	19	02	00.64	+10	34	06.1			391
/1987s	1987	11	22.45017	19	02	14.75	+10	35	35.7			892
/1987s	1987	11	23.77906	19	09	17.93	+11	20	04.0			503
/1987s	1987	11	24.35851	19	12	25.36	+11	39	32.2			391
/1987s	1987	11	24.39462	19	12	37.07	+11	40	44.3			391
/1987s	1987	11	24.42719	19	12	47.74	+11	41	50.8			892
/1987s	1987	11	25.34948	19	17	51.22	+12	12	52.5			391
/1987s	1987	11	25.37517	19	17	59.44	+12	13	44.5			391
/1987s	1987	11	26.37344	19	23	33.78	+12	47	18.4			391
/1987s	1987	11	27.72955	19	31	18.00	+13	32	52.5			503

/1987s	1987	11	27.75374	19	31	26.33	+13	33	40.4		501
/1987s	1987	11	29.38108	19	40	58.36	+14	28	14.0		391
/1987s	1987	11	29.72329	19	43	01.14	+14	39	38.2		503
/1987s	1987	11	30.35573	19	46	49.20	+15	00	42.2		391
/1987s	1987	11	30.39948	19	47	05.00	+15	02	09.0		391
/1987s	1987	12	02.44930	19	59	42.71	+16	09	40.8		892
/1987s	1987	12	02.46180	19	59	47.39	+16	09	59.4		892
/1987s	1987	12	07.75043	20	34	22.39	+18	56	43.4	8	503
/1987s	1987	12	08.87183	20	42	02.42	+19	29	55.9		503
/1987s	1987	12	10.72614	20	54	57.30	+20	22	47.9		501
/1987s	1987	12	11.33799	20	59	16.22	+20	39	38.7		397
/1987s	1987	12	11.35500	20	59	23.41	+20	40	06.9		397
/1987s	1987	12	11.72949	21	02	02.88	+20	50	14.4		501
/1987s	1987	12	14.46829	21	21	43.01	+22	00	07.0		391

Comet Rudenko (1987u)

/1987u	1987	11	10.81111	10	59	58.64	-26	19	47.1		892
/1987u	1987	11	10.82540	10	59	56.45	-26	21	19.6		892
/1987u	1987	11	10.82922	10	59	55.85	-26	21	43.1		892
/1987u	1987	11	27.56043	09	50	25.70	-57	56	42.7		415
/1987u	1987	11	28.56448	09	42	43.91	-59	38	02.5		415
/1987u	1987	12	08.48303	07	37	17.04	-71	53	24.1		415
/1987u	1987	12	10.51888	06	59	28.44	-73	02	17.8		415
/1987u	1987	12	13.51799	06	01	25.60	-73	43	58.0		415
/1987u	1987	12	14.49332	05	43	05.99	-73	43	22.3		415

Periodic Comet Gehrels 1

/1987v	1987	11	16.35242	04	19	23.25	+32	27	10.3	19.3N	691
/1987v	1987	11	16.36023	04	19	22.88	+32	27	11.1	16.7T	691

Comet Levy (1987y)

/1987y	1987	10	21.10903	15	30	29.69	+15	31	48.4		657
/1987y	1987	10	21.76319	15	33	58.20	+15	22	57.0	9	012
/1987y	1987	11	19.06564	17	31	30.85	+09	14	47.3		691
/1987y	1987	11	19.07027	17	31	31.58	+09	14	45.2	17 T	691

Periodic Comet Shoemaker-Holt

/1987z	1987	11	16.20464	00	54	27.51	+06	42	39.8	18.7N A	691
/1987z	1987	11	16.21361	00	54	27.36	+06	42	38.7		691
/1987z	1987	11	17.12774	00	54	12.69	+06	39	45.2		801
/1987z	1987	11	22.45844	00	53	06.16	+06	25	12.7	16 T	892
/1987z	1987	11	22.53072	00	53	05.42	+06	25	01.7		892
/1987z	1987	11	24.23922	00	52	51.08	+06	21	06.3		691
/1987z	1987	11	24.25115	00	52	50.95	+06	21	05.2		691
/1987z	1987	11	24.42129	00	52	50.06	+06	20	44.8	16 T	892
/1987z	1987	11	24.46168	00	52	49.76	+06	20	40.7		892

Periodic Comet Mueller

/1987a1	1987	10	27.73125	01	05	55.3	+12	15	40	18.5T	372
/1987a1	1987	11	16.25580	00	55	38.99	+11	59	47.2	17 T B	691
/1987a1	1987	11	16.26782	00	55	38.69	+11	59	47.4	20.2N	691
/1987a1	1987	11	24.26433	00	53	44.87	+12	00	32.5	19.9N C	691
/1987a1	1987	11	24.27730	00	53	44.73	+12	00	32.3		691

Comet Ichimura (1987d1)

/1987d1	1987	11	24.52135	03	44	41.64	-24	19	23.7	9 T	892
/1987d1	1987	11	24.52725	03	44	38.76	-24	20	27.8		892

/1987d1	1987	11	24.53287	03	44	36.59	-24	21	20.5		892
/1987d1	1987	11	25.57743	03	36	28.83	-27	18	43.5	7 T	387
/1987d1	1987	11	25.58420	03	36	25.31	-27	19	56.4	8 T	372
/1987d1	1987	11	25.58681	03	36	23.97	-27	20	23.1	7 T	387
/1987d1	1987	11	25.70243	03	35	25.57	-27	40	22.5		372
/1987d1	1987	11	26.46254	03	28	49.96	-29	54	52.7		415
/1987d1	1987	11	27.50250	03	18	48.57	-33	05	07.3		415
/1987d1	1987	11	27.65389	03	17	13.40	-33	33	38.2	7 T	372
/1987d1	1987	11	28.55532	03	07	21.43	-36	22	17.8		415
/1987d1	1987	11	30.26667	02	45	30.34	-41	46	16.8		675
/1987d1	1987	12	06.44539	00	42	27.68	-57	40	03.4		415
/1987d1	1987	12	06.44968	00	42	20.85	-57	40	32.2		415
/1987d1	1987	12	08.46550	23	48	36.07	-60	12	46.6		415
/1987d1	1987	12	10.51098	22	53	41.78	-61	11	38.9		415
/1987d1	1987	12	14.48510	21	23	40.99	-59	43	22.5	D	415

Comet Furuyama (1987f1)

/1987f1	1987	11	25.61215	05	02	58.67	+23	00	20.8	11 T	372
/1987f1	1987	11	25.63438	05	02	52.13	+22	59	12.8	12 T	387
/1987f1	1987	11	25.64583	05	02	48.82	+22	58	42.0	12 T	387
/1987f1	1987	11	25.81840	05	01	59.75	+22	50	42.7		372
/1987f1	1987	11	27.61632	04	53	26.32	+21	24	28.3	10 T	372
/1987f1	1987	11	29.49479	04	44	19.46	+19	49	15.1		892
/1987f1	1987	11	29.50590	04	44	16.09	+19	48	40.0		892
/1987f1	1987	11	29.52569	04	44	10.24	+19	47	36.1		892
/1987f1	1987	11	30.49618	04	39	24.58	+18	56	31.4		391
/1987f1	1987	11	30.55868	04	39	06.00	+18	53	11.9		391
/1987f1	1987	11	30.69132	04	38	26.48	+18	46	05.4		391
/1987f1	1987	11	30.76147	04	38	05.77	+18	42	18.5		893
/1987f1	1987	12	01.74896	04	33	12.96	+17	48	46.9	9 T	372
/1987f1	1987	12	02.49618	04	29	31.64	+17	07	34.3		892
/1987f1	1987	12	02.50694	04	29	28.50	+17	06	59.2		892
/1987f1	1987	12	12.30451	03	41	53.41	+07	35	04.2		657
/1987f1	1987	12	12.51146	03	40	56.45	+07	22	59.9		391
/1987f1	1987	12	13.55035	03	36	10.70	+06	22	20.4		391
/1987f1	1987	12	13.61076	03	35	54.52	+06	18	49.3		391
/1987f1	1987	12	14.55312	03	31	40.65	+05	24	23.3		391

Comet Jensen-Shoemaker (1987g1)

/1987g1	1987	09	24.38889	00	53	56.70	+21	47	28.5		675
/1987g1	1987	09	24.41979	00	53	55.37	+21	46	51.2		675
/1987g1	1987	10	17.36527	00	36	08.86	+13	06	38.5		675
/1987g1	1987	10	19.35381	00	34	41.21	+12	18	24.5		675
/1987g1	1987	10	25.86398	00	30	11.76	+09	40	46.0	16 T	054
/1987g1	1987	10	25.88134	00	30	11.04	+09	40	21.4		054
/1987g1	1987	11	24.16996	00	18	22.94	-00	43	49.9	17.0T	675
/1987g1	1987	11	26.21892	00	18	10.18	-01	19	09.6		675
/1987g1	1987	11	27.27621	00	18	05.60	-01	36	55.9		675
/1987g1	1987	12	08.71363	00	18	40.07	-04	28	11.5	17 T	054
/1987g1	1987	12	11.75461	00	19	14.42	-05	07	29.6	17 T E	054
/1987g1	1987	12	12.77611	00	19	28.10	-05	20	06.7	E	054

Note 1: 2′.8 tail in p.a. 136 . 2: dark plate, difficult to measure, comet very diffuse. 3: dark plate, difficult to measure. 4: 5′.4 tail in p.a. 270 . 5: > 6′ tail in p.a. 138 . 6: guiding error. 7: mean of two plates. 8: images trailed. 9: very diffuse. A: 30" tail in p.a. 60 . B: 69" tail in p.a. 225 . C: 76" tail in p.a. 231 . D: poor star field, comet very diffuse. E: short, faint tail to northwest.

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 outside reference star set
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.
006 Barcelona						
J. M. Codina, Fabra Observatory, E-08022 Barcelona, Spain						
Observers J. M. Codina, J. Nunez, N. Torras						
0.38-m f/11 Mailhat astrograph						
AGK3, SAOC						
1	1982 05	25.90556	15 02 18.41	-09 08 17.0		006
1	1982 05	25.91319	15 02 18.03	-09 08 17.5		006
1	1982 06	22.92917	14 46 47.16	-10 20 42.4		006
1	1982 06	22.93542	14 46 47.06	-10 20 44.0		006
1	1982 06	22.94306	14 46 46.96	-10 20 45.6		006
1	1982 07	08.87465	14 46 15.05	-11 35 15.6		006
1	1982 07	08.88264	14 46 15.12	-11 35 18.0		006
1	1982 07	08.88715	14 46 15.14	-11 35 19.6		006
2	1982 06	15.86973	12 57 16.74	+21 50 10.3		006
2	1982 06	15.87882	12 57 17.02	+21 50 07.8		006
2	1982 06	28.90278	13 05 31.68	+20 37 21.7		006
2	1982 06	28.90972	13 05 31.99	+20 37 19.2		006

2		1982	07	08.90139	13	13	35.43	+19 29 49.8	006
2		1982	07	08.90833	13	13	35.79	+19 29 46.8	006
3		1982	07	08.92917	17	54	44.40	-05 11 11.5	006
3		1982	07	08.93889	17	54	43.93	-05 11 13.1	006
4		1982	10	07.83819	21	04	10.62	-24 43 18.5	006
4		1982	10	07.85347	21	04	10.99	-24 43 15.8	006
4		1982	11	05.80625	21	26	34.79	-22 25 09.7	006
4		1982	11	05.81389	21	26	35.27	-22 25 06.6	006
4		1982	11	05.81875	21	26	35.57	-22 25 04.9	006
4		1982	11	15.80000	21	37	57.53	-21 17 37.6	006
4		1982	11	15.80833	21	37	58.13	-21 17 33.9	006
4		1982	11	23.80451	21	48	02.09	-20 17 20.0	006
4		1982	11	23.81076	21	48	02.58	-20 17 16.9	006
6		1982	05	12.90972	11	35	39.44	+17 38 19.7	006
6		1982	05	12.92153	11	35	39.42	+17 38 17.9	006
8		1982	01	20.88958	05	22	00.92	+21 05 41.3	006
8		1982	01	20.89861	05	22	00.69	+21 05 43.5	006
8		1982	01	25.82222	05	21	04.15	+21 27 00.3	006
8		1982	01	25.82847	05	21	04.10	+21 27 01.9	006
8		1982	01	27.81736	05	20	57.84	+21 35 31.9	006
8		1982	01	27.82361	05	20	57.84	+21 35 33.5	006
8		1982	01	29.82639	05	21	01.13	+21 44 03.2	006
8		1982	01	29.85000	05	21	01.21	+21 44 09.2	006
9		1982	11	11.89583	00	21	28.99	-04 42 16.6	006
9		1982	11	11.90417	00	21	28.85	-04 42 14.9	006
9		1982	12	14.85139	00	29	32.83	-01 22 04.1	006
9		1982	12	14.85868	00	29	33.12	-01 22 00.4	006
9		1982	12	27.81111	00	40	33.57	+00 37 34.3	006
9		1982	12	27.81806	00	40	33.97	+00 37 38.4	006
9		1982	12	29.89722	00	42	39.64	+00 58 18.6	006
9		1982	12	29.90556	00	42	40.16	+00 58 23.5	006
12		1982	10	19.80139	23	59	14.18	+11 03 53.3	006
12		1982	10	19.81042	23	59	13.93	+11 03 47.4	006
12		1982	12	22.75486	00	26	47.80	+06 44 41.5	006
12		1982	12	22.76319	00	26	48.36	+06 44 42.6	006
15		1982	01	20.84514	04	50	42.92	+28 56 43.0	006
15		1982	01	20.85417	04	50	42.84	+28 56 38.8	006
15		1982	01	29.79167	04	51	28.34	+27 54 16.5	006
15		1982	01	29.80208	04	51	28.47	+27 54 12.4	006
15		1982	02	01.81319	04	52	19.85	+27 35 13.7	006
15		1982	02	01.81944	04	52	19.96	+27 35 11.1	006
15		1982	02	05.79549	04	53	53.76	+27 11 46.9	006
15		1982	02	08.89965	04	55	26.03	+26 54 43.6	006
15		1982	02	08.91563	04	55	26.54	+26 54 38.4	006
16		1982	03	18.87708	10	35	28.28	+09 56 16.0	006
16		1982	03	18.88750	10	35	27.87	+09 56 18.9	006
19		1982	12	03.86875	00	54	57.95	+05 33 15.3	006
19		1982	12	03.87778	00	54	58.14	+05 33 16.1	006
19		1982	12	22.79132	01	07	18.18	+06 36 10.8	006
19		1982	12	22.79792	01	07	18.50	+06 36 12.7	006
29		1982	11	04.89722	22	44	34.55	-07 13 53.4	006
29		1982	11	04.90764	22	44	34.68	-07 13 51.2	006
29		1982	12	09.87569	23	06	04.85	-04 01 20.5	006
29		1982	12	09.88438	23	06	05.36	-04 01 16.6	006
29		1982	12	09.89132	23	06	05.75	-04 01 13.6	006
39		1982	10	07.89236	20	10	10.54	-16 57 53.4	006
39		1982	10	07.90417	20	10	11.00	-16 57 55.0	006
39		1982	11	19.78333	20	56	00.60	-16 49 54.5	006
39		1982	11	19.79444	20	56	01.51	-16 49 52.7	006

39		1982	11	19.80243	20	56	02.19	-16	49	51.4	006
40		1982	02	24.90556	10	32	13.49	+16	04	40.2	006
40		1982	02	24.91597	10	32	12.85	+16	04	44.4	006
40		1982	03	02.85486	10	26	14.36	+16	43	07.7	006
40		1982	03	02.86528	10	26	13.70	+16	43	11.6	006
40		1982	03	12.82361	10	16	55.87	+17	35	10.2	006
40		1982	03	12.83351	10	16	55.38	+17	35	12.6	006
354		1982	03	09.88125	08	43	58.79	+19	41	46.7	006
354		1982	03	09.89097	08	43	58.60	+19	41	51.6	006
433		1982	04	02.95972	07	22	56.50	+04	28	16.1	006
433		1982	04	21.89691	08	24	46.05	-00	01	01.2	006
433		1982	04	26.86389	08	40	28.05	-01	05	43.1	006
433		1982	05	14.87674	09	35	43.11	-04	47	23.5	006
471		1982	02	08.89965	04	56	58.02	+27	19	46.7	006
471		1982	02	08.91563	04	56	58.39	+27	19	51.2	006
532		1982	02	26.78681	08	24	47.97	+31	48	55.9	006
532		1982	02	26.79722	08	24	47.61	+31	48	59.1	006
532		1982	02	26.80833	08	24	47.25	+31	49	02.9	006
532		1982	03	05.81250	08	21	49.09	+32	18	28.8	006
532		1982	03	05.82292	08	21	48.89	+32	18	31.0	006
532		1982	03	16.83310	08	20	26.11	+32	42	57.2	006

010 Caussols
J.-L. Heudier, CERGA Caussols, F-06460 Saint Vallier de Thiey, France
Observers R. Chemin, J.-L. Heudier, C. Labeyrie, T. Laverge, C. Pollas
0.9-m Schmidt telescope
Observations in association with INAS

1987	SW1	1987	09	21.98403	00	16	28.24	+13	49	44.2	010
1987	SW1	1987	09	22.01528	00	16	27.11	+13	49	23.8	010

033 Tautenburg
S. Marx, Karl Schwarzschild Observatorium, DDR-6901 Tautenburg,
Democratic Republic of Germany
Observers F. Borngen, C. Hogner, H. Lochel, A. Seyfarth, H. Meusinger,
F. Ludwig
Measurer F. Borngen
1.3-m Schmidt telescope
SAOC

1928	UF	1987	11	26.02674	06	23	27.06	+23	09	31.0		17.7	033
1928	UF	1987	11	26.06771	06	23	25.66	+23	09	34.1			033
1961	BC	1961	02	15.88611	05	07	08.35	+23	37	08.2			033
1961	BC	1961	02	15.92778	05	07	08.92	+23	37	10.7			033
1961	BC	1961	02	17.82083	05	07	44.00	+23	41	42.8			033
1961	BC	1961	02	17.86250	05	07	44.83	+23	41	46.0			033
1961	BC	1961	02	17.90903	05	07	45.55	+23	41	50.5			033
1961	CC1	1961	02	15.88611	05	02	06.86	+24	55	33.6			033
1961	CC1	1961	02	17.82083	05	03	19.02	+24	57	40.5			033
1961	CC1	1961	02	17.86250	05	03	20.48	+24	57	41.5			033
1961	CC1	1961	02	17.90903	05	03	22.41	+24	57	45.7			033
1961	CD1	1961	02	15.88611	05	04	16.34	+23	46	18.4			033
1961	CD1	1961	02	15.92778	05	04	18.61	+23	46	25.9			033
1961	CD1	1961	02	17.82083	05	05	54.04	+23	52	15.3			033
1961	CD1	1961	02	17.86250	05	05	55.63	+23	52	19.8			033
1961	CD1	1961	02	17.90903	05	05	58.41	+23	52	30.3			033
1961	CE1	1961	02	15.88611	05	08	22.35	+23	36	21.1			V 033
1961	CE1	1961	02	15.92778	05	08	23.74	+23	36	23.7			V 033
1976	UG15	1987	09	29.93750	00	43	38.32	-00	29	46.6		16.8	033
1976	UG15	1987	09	29.98611	00	43	36.07	-00	30	06.8			033
1976	UG15	1987	09	30.93194	00	42	54.07	-00	36	30.2			033

1976	UG15		1987	09	30.98333	00	42	51.61	-00	36	51.7		033
1976	UG15		1987	10	01.96250	00	42	07.81	-00	43	25.2		033
1979	QL8		1987	11	26.02674	06	19	55.52	+22	20	37.6	19.4	033
1979	QL8		1987	11	26.06771	06	19	53.54	+22	20	35.2		033
1982	FQ2		1987	09	29.98611	00	39	28.29	-02	05	33.0	20.0 W	033
1982	FQ2		1987	09	30.93194	00	38	37.24	-02	13	06.5		033
1982	FQ2		1987	09	30.98333	00	38	34.32	-02	13	31.9		033
1982	FQ2		1987	10	01.96250	00	37	41.18	-02	21	18.1	W	033
1983	PA		1987	10	02.09722	06	42	21.92	+44	01	59.3	16.4	033
1983	PA		1987	10	02.11806	06	42	24.40	+44	01	55.0		033
1983	PA		1987	10	02.14792	06	42	28.18	+44	01	48.0		033
1987	CJ		1987	04	24.88437	10	37	46.63	+13	06	55.0		033
1987	CJ		1987	04	24.92049	10	37	46.76	+13	06	58.0	V	033
1987	CJ		1987	04	27.90000	10	38	05.72	+13	09	46.6		033
1987	CJ		1987	04	27.92986	10	38	05.88	+13	09	47.3	18.5	033
1987	CJ		1987	04	29.89306	10	38	24.96	+13	10	51.6		033
1987	CJ		1987	04	29.93160	10	38	25.25	+13	10	52.5		033
1987	HU		1987	04	24.90764	10	39	36.47	+10	25	13.2	V	033
1987	HU		1987	04	29.93160	10	41	12.45	+10	20	55.0		033
1987	HT2	*	1987	04	27.90000	10	40	36.74	+13	19	19.0		033
1987	HT2		1987	04	27.92986	10	40	37.10	+13	19	17.7	19.9	033
1987	SS9		1987	09	30.93194	00	36	22.86	-00	31	09.7	18.3	033
1987	SS9		1987	09	30.98333	00	36	20.48	-00	31	25.8		033
1987	SS9		1987	10	01.96250	00	35	37.41	-00	36	24.3		033
1987	SX9	*	1987	09	29.93750	00	33	41.74	-01	08	18.7	19.1	033
1987	SX9		1987	09	29.98611	00	33	38.95	-01	08	36.4		033
1987	SY9	*	1987	09	29.93750	00	34	32.54	-02	28	52.9	18.4	033
1987	SY9		1987	09	29.98611	00	34	30.57	-02	29	22.5		033
1987	SY9		1987	09	30.93194	00	33	54.29	-02	38	57.0		033
1987	SY9		1987	09	30.98333	00	33	52.16	-02	39	28.5		033
1987	SY9		1987	10	01.96250	00	33	14.49	-02	49	19.8		033
1987	SZ9	*	1987	09	29.93750	00	34	34.47	-01	17	37.7	19.3	033
1987	SZ9		1987	09	29.98611	00	34	31.98	-01	17	52.0		033
1987	SZ9		1987	09	30.93194	00	33	45.99	-01	22	21.9		033
1987	SZ9		1987	09	30.98333	00	33	43.44	-01	22	36.4		033
1987	SA10	*	1987	09	29.93750	00	35	03.10	-02	26	21.5	19.2	033
1987	SA10		1987	09	29.98611	00	35	00.43	-02	26	34.7		033
1987	SA10		1987	09	30.93194	00	34	09.91	-02	31	00.2		033
1987	SA10		1987	09	30.98333	00	34	06.98	-02	31	15.3		033
1987	SA10		1987	10	01.96250	00	33	14.24	-02	35	46.8	W	033
1987	SB10	*	1987	09	29.93750	00	35	41.78	-01	08	30.3	18.0	033
1987	SB10		1987	09	29.98611	00	35	39.29	-01	08	49.1		033
1987	SB10		1987	09	30.93194	00	34	52.98	-01	14	47.6		033
1987	SB10		1987	09	30.98333	00	34	50.31	-01	15	07.1		033
1987	SB10		1987	10	01.96250	00	34	02.08	-01	21	14.2		033
1987	SC10	*	1987	09	29.93750	00	35	44.09	-01	55	48.8	18.9	033
1987	SC10		1987	09	29.98611	00	35	41.12	-01	55	52.9		033
1987	SC10		1987	09	30.93194	00	34	42.45	-01	57	11.1		033
1987	SC10		1987	09	30.98333	00	34	39.16	-01	57	15.3		033
1987	SD10	*	1987	09	29.93750	00	36	08.37	-02	07	00.6	18.1	033
1987	SD10		1987	09	29.98611	00	36	05.76	-02	07	28.5		033
1987	SD10		1987	09	30.93194	00	35	16.07	-02	16	32.4		033
1987	SD10		1987	09	30.98333	00	35	13.25	-02	17	03.0		033
1987	SD10		1987	10	01.96250	00	34	21.66	-02	26	21.8		033
1987	SE10	*	1987	09	29.93750	00	36	24.47	-02	49	55.4	19.5	033
1987	SE10		1987	09	29.98611	00	36	21.69	-02	49	53.8		033
1987	SE10		1987	09	30.93194	00	35	26.40	-02	49	24.2		033
1987	SE10		1987	09	30.98333	00	35	23.23	-02	49	21.6		033
1987	SF10	*	1987	09	29.93750	00	36	26.95	-03	11	09.8	19.4	033

1987	SF10	1987	09	29.98611	00	36	23.95	-03	11	05.8		033
1987	SF10	1987	09	30.93194	00	35	26.31	-03	09	52.4		033
1987	SF10	1987	09	30.98333	00	35	23.08	-03	09	50.1		033
1987	SG10*	1987	09	29.93750	00	37	30.69	-00	44	05.5	19.0	033
1987	SG10	1987	09	29.98611	00	37	28.34	-00	44	27.3		033
1987	SG10	1987	09	30.93194	00	36	42.80	-00	51	26.0		033
1987	SG10	1987	09	30.98333	00	36	40.16	-00	51	50.0		033
1987	SH10*	1987	09	29.93750	00	38	17.73	-02	01	11.8	19.3	033
1987	SH10	1987	09	29.98611	00	38	15.17	-02	01	17.5		033
1987	SH10	1987	09	30.93194	00	37	27.09	-02	03	19.5		033
1987	SH10	1987	09	30.98333	00	37	24.43	-02	03	23.7		033
1987	SJ10*	1987	09	29.93750	00	38	33.69	-00	43	08.4	19.2	033
1987	SJ10	1987	09	29.98611	00	38	31.04	-00	43	27.5		033
1987	SJ10	1987	09	30.93194	00	37	38.84	-00	49	47.3		033
1987	SJ10	1987	09	30.98333	00	37	35.90	-00	50	08.4		033
1987	SK10*	1987	09	29.93750	00	39	06.47	-02	38	10.6	17.7	033
1987	SK10	1987	09	29.98611	00	39	03.65	-02	38	23.2		033
1987	SK10	1987	09	30.93194	00	38	10.88	-02	42	12.3		033
1987	SK10	1987	09	30.98333	00	38	07.84	-02	42	24.6		033
1987	SK10	1987	10	01.96250	00	37	12.82	-02	46	15.7		033
1987	SL10*	1987	09	29.93750	00	39	12.84	-02	45	51.0	18.5	033
1987	SL10	1987	09	29.98611	00	39	11.09	-02	46	09.8		033
1987	SL10	1987	09	30.93194	00	38	37.77	-02	52	23.2		033
1987	SL10	1987	09	30.98333	00	38	35.81	-02	52	43.6		033
1987	SL10	1987	10	01.96250	00	38	00.97	-02	59	07.4		033
1987	SM10*	1987	09	29.93750	00	40	29.47	-01	50	15.8	18.6	033
1987	SM10	1987	09	29.98611	00	40	25.88	-01	49	30.8		033
1987	SM10	1987	09	30.93194	00	39	17.21	-01	35	06.6		033
1987	SM10	1987	09	30.98333	00	39	13.23	-01	34	18.7		033
1987	SM10	1987	10	01.96250	00	38	01.53	-01	19	13.8		033
1987	SN10*	1987	09	29.93750	00	40	58.30	-00	29	55.8	18.3	033
1987	SN10	1987	09	29.98611	00	40	56.03	-00	30	23.2		033
1987	SN10	1987	09	30.93194	00	40	12.33	-00	39	17.1		033
1987	SN10	1987	09	30.98333	00	40	09.85	-00	39	46.3		033
1987	SN10	1987	10	01.96250	00	39	24.51	-00	48	56.5		033
1987	SO10*	1987	09	29.93750	00	41	14.96	-02	51	37.9	19.6	033
1987	SO10	1987	09	29.98611	00	41	12.88	-02	51	50.0		033
1987	SO10	1987	09	30.93194	00	40	32.11	-02	55	52.5		033
1987	SO10	1987	09	30.98333	00	40	29.72	-02	56	06.7		033
1987	SO10	1987	10	01.96250	00	39	47.35	-03	00	17.0	W	033
1987	SP10*	1987	09	29.93750	00	41	49.93	-01	17	24.2	18.4	033
1987	SP10	1987	09	29.98611	00	41	48.03	-01	17	48.1		033
1987	SP10	1987	09	30.93194	00	41	11.48	-01	25	40.4		033
1987	SP10	1987	09	30.98333	00	41	09.41	-01	26	06.3		033
1987	SP10	1987	10	01.96250	00	40	31.34	-01	34	13.7		033
1987	SQ10*	1987	09	29.93750	00	42	14.94	-03	14	10.0	18.9	033
1987	SQ10	1987	09	29.98611	00	42	12.58	-03	14	27.7		033
1987	SQ10	1987	09	30.93194	00	41	27.56	-03	20	10.8		033
1987	SQ10	1987	09	30.98333	00	41	25.09	-03	20	29.1		033
1987	SQ10	1987	10	01.96250	00	40	38.35	-03	26	20.4	W	033
1987	SR10*	1987	09	29.93750	00	42	19.29	-01	43	56.0	18.7	033
1987	SR10	1987	09	29.98611	00	42	17.43	-01	44	32.2		033
1987	SR10	1987	09	30.93194	00	41	41.45	-01	56	23.2		033
1987	SR10	1987	09	30.98333	00	41	39.46	-01	57	02.7		033
1987	SR10	1987	10	01.96250	00	41	02.06	-02	09	15.1		033
1987	SS10*	1987	09	29.93750	00	43	10.50	-02	47	03.1	19.1	033
1987	SS10	1987	09	29.98611	00	43	08.70	-02	47	37.8		033
1987	SS10	1987	09	30.93194	00	42	33.74	-02	58	49.9		033
1987	SS10	1987	09	30.98333	00	42	31.60	-02	59	26.8		033

1987	ST10*	1987	09	29.93750	00	43	35.15	-00	43	13.3		18.9	033
1987	ST10	1987	09	29.98611	00	43	32.62	-00	43	29.1			033
1987	ST10	1987	09	30.93194	00	42	43.37	-00	48	39.1			033
1987	ST10	1987	09	30.98333	00	42	40.58	-00	48	56.5			033
1987	ST10	1987	10	01.96250	00	41	49.30	-00	54	15.5			033
1987	SU10*	1987	09	29.93750	00	44	00.23	-00	30	23.8		19.1	033
1987	SU10	1987	09	29.98611	00	43	57.91	-00	30	38.0			033
1987	SU10	1987	09	30.93194	00	43	12.96	-00	35	14.8			033
1987	SU10	1987	09	30.98333	00	43	10.41	-00	35	30.2			033
1987	SU10	1987	10	01.96250	00	42	23.64	-00	40	15.5			W 033
1987	SV10*	1987	09	29.93750	00	44	21.43	-01	44	36.9		18.2	033
1987	SV10	1987	09	29.98611	00	44	18.58	-01	44	52.0			033
1987	SV10	1987	09	30.93194	00	43	24.59	-01	49	39.2			033
1987	SV10	1987	09	30.98333	00	43	21.48	-01	49	56.0			033
1987	SV10	1987	10	01.96250	00	42	25.13	-01	54	49.0			033
1987	SW10*	1987	09	29.93750	00	45	24.99	-01	07	48.7		17.4	033
1987	SW10	1987	09	29.98611	00	45	22.36	-01	07	58.6			033
1987	SW10	1987	09	30.93194	00	44	31.65	-01	11	02.0			033
1987	SW10	1987	09	30.98333	00	44	28.78	-01	11	12.0			033
1987	SW10	1987	10	01.96250	00	43	36.11	-01	14	19.0			033
1987	SX10*	1987	09	29.93750	00	45	25.65	-03	12	11.0		18.8	033
1987	SX10	1987	09	29.98611	00	45	22.96	-03	12	20.3			033
1987	SX10	1987	09	30.93194	00	44	31.26	-03	14	52.4			033
1987	SX10	1987	09	30.98333	00	44	28.30	-03	15	01.7			033
1987	SX10	1987	10	01.96250	00	43	34.53	-03	17	34.9			033
1987	SY10*	1987	09	29.93750	00	45	40.74	-03	36	53.7		19.0	N 033
1987	SY10	1987	09	29.98611	00	45	38.44	-03	37	19.0			033
1987	SZ10*	1987	09	29.93750	00	45	45.64	-01	16	18.9		17.3	033
1987	SZ10	1987	09	29.98611	00	45	43.27	-01	16	28.0			033
1987	SZ10	1987	09	30.93194	00	44	57.50	-01	19	16.6			033
1987	SZ10	1987	09	30.98333	00	44	54.93	-01	19	25.9			033
1987	SZ10	1987	10	01.96250	00	44	07.35	-01	22	18.6			033
1987	SA11*	1987	09	30.06944	03	13	41.27	+12	23	10.7		18.4	033
1987	SA11	1987	09	30.10208	03	13	40.98	+12	23	08.9			033
1987	SB11*	1987	09	30.06944	03	13	59.82	+13	02	09.1		18.9	033
1987	SB11	1987	09	30.10208	03	13	59.44	+13	02	06.6			033
1987	SC11*	1987	09	30.06944	03	14	47.49	+13	44	58.6		19.2	033
1987	SC11	1987	09	30.10208	03	14	46.92	+13	44	54.5			033
1987	SD11*	1987	09	30.06944	03	19	51.53	+11	21	11.3		18.2	033
1987	SD11	1987	09	30.10208	03	19	51.20	+11	21	06.0			033
1987	SE11*	1987	09	30.06944	03	20	24.35	+10	55	03.1		18.5	033
1987	SE11	1987	09	30.10208	03	20	23.93	+10	54	56.3			033
1987	SF11*	1987	09	30.06944	03	21	00.85	+12	39	31.5		18.6	033
1987	SF11	1987	09	30.10208	03	21	00.78	+12	39	16.0			033
1987	WQ1 *	1987	11	26.02674	06	17	55.20	+22	11	52.0		18.3	033
1987	WQ1	1987	11	26.06771	06	17	53.81	+22	11	53.9			033
1987	WR1 *	1987	11	26.02674	06	23	55.20	+21	29	49.5		19.1	033
1987	WR1	1987	11	26.06771	06	23	53.53	+21	29	43.9			033
1987	WS1 *	1987	11	26.02674	06	25	15.33	+22	55	32.1		18.1	033
1987	WS1	1987	11	26.06771	06	25	13.95	+22	55	37.7			033
1987	WT1 *	1987	11	26.02674	06	26	30.17	+22	20	24.0		18.8	033
1987	WT1	1987	11	26.06771	06	26	28.86	+22	20	27.1			033
1987	WU1 *	1987	11	26.02674	06	27	48.47	+22	23	30.9		18.0	033
1987	WU1	1987	11	26.06771	06	27	46.92	+22	23	34.4			033
1987	WV1 *	1987	11	26.02674	06	28	39.14	+21	48	39.4		18.6	033
1987	WV1	1987	11	26.06771	06	28	37.77	+21	48	39.9			033
1987	WW1 *	1987	11	26.02674	06	30	21.27	+23	33	57.8		17.8	033
1987	WW1	1987	11	26.06771	06	30	19.81	+23	33	57.9			033
1987	WX1 *	1987	11	26.04722	07	05	25.39	+18	33	06.1		18.4	033

1987	WX1		1987	11	26.08889	07	05	25.11	+18	33	05.7		033
1987	WY1	*	1987	11	26.04722	07	07	31.74	+17	20	01.2	18.6	033
1987	WY1		1987	11	26.08889	07	07	30.99	+17	20	00.9		033
1987	WZ1	*	1987	11	26.04722	07	08	35.41	+18	53	35.8	18.4	033
1987	WZ1		1987	11	26.08889	07	08	34.26	+18	53	22.7		033
1987	WA2	*	1987	11	26.04722	07	10	02.54	+16	45	07.6	17.9	033
1987	WA2		1987	11	26.08889	07	10	01.68	+16	45	05.1		033
1987	WB2	*	1987	11	26.04722	07	10	33.18	+16	48	06.6	19.2	033
1987	WB2		1987	11	26.08889	07	10	31.84	+16	47	56.9		033
1987	WC2	*	1987	11	26.04722	07	10	47.35	+19	02	59.7	18.3	033
1987	WC2		1987	11	26.08889	07	10	47.06	+19	02	59.6		033
1987	WD2	*	1987	11	26.04722	07	11	50.99	+16	37	29.9	18.4	033
1987	WD2		1987	11	26.08889	07	11	50.25	+16	37	27.3		033
1987	WE2	*	1987	11	26.04722	07	12	37.38	+17	17	36.7	17.6	033
1987	WE2		1987	11	26.08889	07	12	36.52	+17	17	44.6		033
1987	WF2	*	1987	11	26.04722	07	12	42.00	+19	21	38.2	18.6	033
1987	WF2		1987	11	26.08889	07	12	41.30	+19	21	55.2		033
1987	WG2	*	1987	11	26.04722	07	12	54.41	+18	12	41.6	17.3	033
1987	WG2		1987	11	26.08889	07	12	54.21	+18	12	50.1		033
1987	WH2	*	1987	11	26.04722	07	14	07.23	+17	38	20.0	18.5	033
1987	WH2		1987	11	26.08889	07	14	06.02	+17	38	11.1		033
1987	WJ2	*	1987	11	26.04722	07	15	50.22	+19	23	43.8	18.6	033
1987	WJ2		1987	11	26.08889	07	15	49.34	+19	23	33.3		033
1987	WK2	*	1987	11	26.04722	07	16	46.25	+17	17	23.6	18.7	033
1987	WK2		1987	11	26.08889	07	16	45.40	+17	17	25.5		033
1987	WL2	*	1987	11	26.04722	07	17	40.08	+16	45	31.3	17.2	033
1987	WL2		1987	11	26.08889	07	17	39.47	+16	45	36.7		033
1987	WM2	*	1987	11	26.06771	06	24	07.09	+22	22	34.3	18.4	033
40			1961	02	15.88611	05	00	14.29	+23	21	53.6		033
40			1961	02	15.92778	05	00	15.99	+23	21	58.1		033
40			1961	02	17.82083	05	01	31.71	+23	26	22.6		033
40			1961	02	17.86250	05	01	33.41	+23	26	26.1		033
40			1961	02	17.90903	05	01	35.28	+23	26	34.1		033
296			1987	11	26.02674	06	18	50.68	+21	17	34.9	16.5	033
296			1987	11	26.06771	06	18	48.81	+21	17	36.4		033
403			1987	11	26.04722	07	06	22.90	+16	32	59.1	13.8	033
403			1987	11	26.08889	07	06	22.03	+16	32	48.1		033
750			1987	09	29.93750	00	39	05.90	-01	54	24.8	16.3	033
750			1987	09	29.98611	00	39	03.15	-01	54	39.7		033
750			1987	09	30.93194	00	38	10.88	-01	59	41.4		033
750			1987	09	30.98333	00	38	07.98	-01	59	58.5		033
750			1987	10	01.96250	00	37	13.61	-02	05	07.2		033
1070			1987	04	24.88437	10	37	10.04	+10	57	45.6		033
1070			1987	04	24.90764	10	37	09.96	+10	57	49.3		033
1070			1987	04	24.92049	10	37	09.93	+10	57	52.2		033
1070			1987	04	24.93056	10	37	09.87	+10	57	54.0		033
1070			1987	04	27.90000	10	37	06.43	+11	06	16.1		033
1070			1987	04	27.92986	10	37	06.45	+11	06	20.8	17.3	033
1070			1987	04	29.89306	10	37	09.60	+11	11	12.7		033
1070			1987	04	29.93160	10	37	09.65	+11	11	17.6		033
1450			1987	09	30.06944	03	22	23.89	+13	27	08.2	15.7	033
1450			1987	09	30.10208	03	22	23.66	+13	27	07.9		033
1570			1987	11	26.02674	06	22	58.91	+20	57	51.6	17.2	033
1570			1987	11	26.06771	06	22	57.45	+20	57	50.3		033
1914			1987	11	26.04722	07	09	14.35	+18	41	12.1	17.8	033
1914			1987	11	26.08889	07	09	13.20	+18	41	14.9		033
2066			1987	09	30.06944	03	17	15.69	+12	42	17.2	18.1	033
2066			1987	09	30.10208	03	17	15.02	+12	42	12.1		033
2525			1987	11	26.02674	06	22	33.40	+23	11	36.1	16.4	033

2525	1987	11	26.06771	06	22	31.86	+23	11	38.4		033
2634	1987	11	26.04722	07	17	56.37	+16	58	13.5	15.9	033
2634	1987	11	26.08889	07	17	55.70	+16	58	14.8		033
2905	1987	04	24.88437	10	42	09.38	+11	15	36.8		033
2905	1987	04	24.90764	10	42	09.24	+11	15	31.7		033
2905	1987	04	24.92049	10	42	09.17	+11	15	29.0		033
2905	1987	04	24.93056	10	42	09.10	+11	15	26.7		033
2905	1987	04	27.90000	10	42	02.24	+11	03	56.0		033
2905	1987	04	27.92986	10	42	02.22	+11	03	49.2	17.2	033
2905	1987	04	29.89306	10	42	05.32	+10	55	35.8		033
2905	1987	04	29.93160	10	42	05.42	+10	55	26.1		033
3477	1987	09	30.06944	03	25	19.12	+13	45	30.7	17.7 E	033
3477	1987	09	30.10208	03	25	18.60	+13	45	21.1		033
3478	1987	04	24.88437	10	41	32.16	+12	44	31.9		033
3478	1987	04	24.92049	10	41	32.20	+12	44	30.6		033
3478	1987	04	27.90000	10	41	42.94	+12	41	10.1		033
3478	1987	04	27.92986	10	41	43.10	+12	41	07.5	17.8	033
3478	1987	04	29.89306	10	41	58.00	+12	38	06.2	V	033
3478	1987	04	29.93160	10	41	58.29	+12	38	03.0	I	033

047 Poznan
H. Hurnik, Astronomical Observatory, Adam Mickiewicz University,
Sloneczna 36, PL-60286 Poznan, Poland
Observer W. Naskrecki
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SAOC

1	1985	12	18.03715	11	12	40.51	+17	00	46.8		047
1	1986	02	11.89998	11	19	13.40	+22	01	52.8		047
4	1986	08	18.00569	01	17	56.46	-02	33	37.5		047
4	1986	09	05.04304	01	14	15.78	-04	12	38.3		047
4	1986	09	05.05103	01	14	15.57	-04	12	42.0		047
4	1986	09	24.95207	01	00	29.16	-06	31	01.6		047
4	1986	09	25.93603	00	59	37.17	-06	37	41.0		047
4	1986	09	27.93615	00	57	49.42	-06	50	57.8		047
4	1986	09	28.95789	00	56	53.42	-06	57	34.5		047
4	1986	10	01.93821	00	54	07.28	-07	16	16.8		047
4	1986	10	23.90627	00	34	44.67	-08	46	52.6		047
4	1986	10	27.87259	00	31	57.38	-08	52	11.7		047
4	1986	11	06.79844	00	26	35.06	-08	49	37.0		047
4	1986	12	18.77950	00	32	07.57	-05	17	11.1		047
4	1986	12	30.68932	00	40	48.76	-03	38	01.7		047
4	1987	01	04.68801	00	45	09.91	-02	53	22.0		047
15	1985	10	08.98789	01	16	59.60	+31	09	39.1		047
15	1985	10	10.98580	01	15	10.23	+31	04	45.8		047
15	1985	10	11.99968	01	14	14.13	+31	01	44.8		047
16	1985	12	17.99583	04	38	55.60	+17	27	50.6		047
18	1985	12	18.01737	07	06	33.06	+07	46	30.7		047
18	1986	01	28.73455	06	26	49.57	+12	16	02.2		047
18	1986	02	03.73193	06	24	06.37	+13	04	10.7		047
18	1986	02	10.79269	06	22	28.57	+13	59	15.4		047
18	1986	02	11.86421	06	22	22.72	+14	07	22.5		047
18	1986	02	14.78718	06	22	19.01	+14	29	09.6		047
24	1986	02	10.82324	09	11	17.87	+17	27	17.5		047
24	1986	02	11.88921	09	10	24.56	+17	31	03.9		047
24	1986	03	17.90344	08	51	19.97	+18	41	04.0		047
28	1986	09	24.96990	01	15	21.74	-03	15	10.2		047
28	1986	09	25.04029	01	15	18.61	-03	15	41.9		047
28	1986	09	25.95174	01	14	41.91	-03	22	34.0		047
28	1986	09	28.03727	01	13	14.93	-03	38	15.0		047

28	1986	09	28.96553	01	12	35.20	-03	45	16.7	047
28	1986	10	01.00765	01	11	05.93	-04	00	32.3	047
28	1986	10	23.91634	00	53	31.87	-06	26	53.3	047
28	1986	11	03.88882	00	46	27.53	-07	08	17.5	047
41	1986	08	15.06472	23	33	21.57	+03	03	30.9	047
41	1986	09	24.99383	23	04	49.56	-02	51	09.5	047
41	1986	09	25.90465	23	04	13.76	-02	59	13.0	047
41	1986	09	25.96376	23	04	11.33	-02	59	44.1	047
45	1986	02	10.79998	07	29	41.82	+17	31	14.0	047
45	1986	02	11.87394	07	29	00.58	+17	35	47.7	047
45	1986	02	14.79898	07	27	16.94	+17	47	53.0	047
48	1986	02	10.81282	08	32	14.44	+11	01	57.5	047
48	1986	02	11.88123	08	31	27.60	+11	07	05.9	047
85	1986	08	17.99389	00	41	40.09	+14	23	25.7	047
85	1986	09	05.01945	00	39	04.52	+13	02	35.0	047
85	1986	09	25.00485	00	27	42.14	+09	51	25.6	047
85	1986	09	25.91597	00	27	04.50	+09	40	50.8	047
85	1986	09	25.97604	00	27	01.78	+09	40	09.1	047
85	1986	09	28.93846	00	24	57.70	+09	05	05.4	047
85	1986	09	30.95071	00	23	33.11	+08	40	51.5	047
85	1986	10	01.88335	00	22	54.31	+08	29	29.0	047
85	1986	10	23.89568	00	10	26.14	+04	12	51.1	047
85	1986	10	24.84967	00	10	05.81	+04	03	13.4	047
85	1986	10	27.90036	00	09	09.85	+03	33	35.4	047
88	1986	08	15.04979	22	30	27.99	-01	25	59.9	047
88	1986	08	16.98000	22	29	00.11	-01	29	31.7	047
88	1986	08	17.94806	22	28	14.84	-01	31	29.4	047
88	1986	09	04.90973	22	13	35.08	-02	27	53.9	047
88	1986	09	04.92896	22	13	34.07	-02	27	58.7	047
88	1986	09	09.98472	22	09	44.98	-02	47	56.4	047
88	1986	09	18.93399	22	04	02.62	-03	23	08.5	047
88	1986	09	24.98193	22	01	10.55	-03	45	04.5	047
88	1986	09	25.89375	22	00	49.78	-03	48	07.9	047
88	1986	09	27.89317	22	00	07.84	-03	54	41.9	047
88	1986	09	27.91425	22	00	07.31	-03	54	46.8	047
88	1986	10	01.86458	21	59	04.17	-04	06	40.6	047
88	1986	11	03.77503	22	06	46.57	-04	33	19.6	047
88	1986	11	06.78458	22	08	49.03	-04	28	38.8	047
93	1986	09	05.06431	00	47	34.66	+04	28	18.2	047
93	1986	09	25.01631	00	31	17.98	+03	53	00.7	047
93	1986	09	25.92692	00	30	27.23	+03	50	48.1	047
93	1986	09	27.90278	00	28	37.20	+03	45	51.2	047
93	1986	09	28.94861	00	27	38.46	+03	43	13.2	047
93	1986	09	30.97016	00	25	45.30	+03	38	03.1	047
135	1985	10	08.95702	23	46	29.90	+00	22	00.7	047
194	1986	08	15.08069	00	31	04.82	-00	57	51.1	047
194	1986	09	05.00277	00	30	02.91	-06	31	00.4	047
196	1986	10	14.00492	02	45	07.67	+09	20	54.1	047
196	1986	10	14.02582	02	45	06.83	+09	20	52.2	047
196	1986	10	14.08769	02	45	04.19	+09	20	42.9	047
196	1986	10	24.94233	02	36	58.23	+08	53	24.9	047
196	1986	11	03.93198	02	28	47.62	+08	29	37.2	047
196	1986	11	06.86649	02	26	23.14	+08	23	25.3	047
196	1986	11	07.87448	02	25	33.92	+08	21	22.4	047
196	1986	11	11.91179	02	22	20.49	+08	13	57.2	047
196	1986	11	25.82830	02	12	33.05	+07	58	49.4	047
196	1986	11	26.79053	02	11	58.46	+07	58	25.3	047
196	1986	11	28.83764	02	10	48.49	+07	58	01.4	047
196	1986	11	29.83233	02	10	16.23	+07	57	59.0	047

216		1985	10	16.06773	04	23	42.08	+16	52	13.9	047
216		1985	11	04.94098	04	17	39.79	+13	20	41.1	047
216		1985	12	17.98333	03	47	04.83	+06	58	13.0	047
532		1985	10	16.08370	04	50	27.27	+05	27	36.9	047
532		1985	11	04.95487	04	41	44.39	+04	41	41.9	047

054 Brorfelde
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Observers K. Augustesen, P. Jensen
Measurer P. Jensen
0.45-m Schmidt
Observations in part in association with INAS

1975	VG9		1987	09	29.94095	23	26	19.19	+11	45	57.8	16.7		054
1975	VG9		1987	09	29.95831	23	26	18.21	+11	45	53.6			054
1975	VG9		1987	09	30.91068	23	25	28.03	+11	41	52.6			054
1975	VG9		1987	09	30.92804	23	25	27.13	+11	41	48.2			054
1975	VG9		1987	10	01.91456	23	24	36.01	+11	37	35.3			054
1979	MV6		1987	10	02.96780	00	52	28.21	+09	16	36.2			054
1980	OG		1987	10	30.98227	02	21	07.45	+03	49	13.1			054
1981	DZ		1987	10	25.84072	23	37	26.40	+08	34	59.8	18.5	V	054
1981	ET		1987	10	02.96780	00	48	20.43	+09	36	16.3			054
1982	TD1		1987	10	02.96780	00	56	32.72	+07	44	11.6			054
1982	TD1		1987	10	25.86398	00	37	50.02	+06	50	41.7	17.0		054
1982	TD1		1987	10	25.88134	00	37	49.25	+06	50	38.6			054
1983	VE		1987	10	01.89107	22	33	47.40	-03	06	22.6			054
1986	JT		1987	10	02.96780	01	01	12.68	+09	31	40.7	17.8		054
1986	RL		1987	11	20.01329	05	42	47.61	+23	28	35.2			054
1986	RL		1987	11	20.02787	05	42	46.95	+23	28	33.8			054
1986	RL		1987	11	20.99037	05	42	07.14	+23	26	01.0	17.0		054
1987	SO		1987	10	25.84072	23	30	34.44	+07	32	34.8	16.5		054
1987	SL3		1987	10	01.89107	22	28	14.90	-01	49	27.0			054
1987	SM3		1987	10	01.89107	22	28	02.49	-01	53	42.1			054
1987	SN3		1987	10	01.89107	22	29	54.87	-02	57	36.4			054
1987	SO3		1987	10	01.89107	22	30	52.94	-03	10	18.9			054
1987	SE4		1987	10	25.84072	23	39	06.45	+06	44	25.2	16.5		054
1987	SU4		1987	10	01.89107	22	29	53.95	-00	12	23.7			054
1987	SA5		1987	10	02.96780	00	53	04.76	+08	49	33.0	18.0		054
1987	SB5		1987	10	01.91456	23	36	56.35	+10	15	41.2			054
1987	SF5		1987	10	02.96780	00	54	06.92	+11	11	39.1	17.5		054
1987	SF5		1987	10	25.86398	00	33	12.33	+09	34	04.7	17.5		054
1987	SF5		1987	10	25.88134	00	33	11.54	+09	34	00.1			054
1987	SH5		1987	10	02.96780	00	55	28.94	+10	57	56.9	18.0		054
1987	SJ5		1987	10	02.96780	00	55	34.29	+07	52	35.8	16.7		054
1987	SK5		1987	10	02.96780	00	54	55.28	+10	00	09.6	17.5		054
1987	SL5		1987	10	02.96780	00	55	53.25	+10	53	31.6	17.3		054
1987	SL5		1987	10	25.86398	00	36	58.31	+07	43	59.0	17.5		054
1987	SL5		1987	10	25.88134	00	36	57.49	+07	43	50.5			054
1987	SM5		1987	10	02.96780	00	55	58.17	+08	07	23.0	17.5		054
1987	SM5		1987	10	25.86398	00	33	32.47	+08	48	40.1	17.5		054
1987	SM5		1987	10	25.88134	00	33	31.64	+08	48	41.1			054
1987	SO5		1987	10	02.96780	00	57	02.33	+10	44	05.1	17.0		054
1987	SP5		1987	10	25.86398	00	33	52.81	+08	16	25.5	18.0		054
1987	SP5		1987	10	25.88134	00	33	51.97	+08	16	26.0			054
1987	TH	*	1987	10	02.96780	01	06	39.84	+09	38	05.2	17.0		054
1987	UN		1987	10	30.98227	02	10	31.68	+04	22	38.3			054
1987	UN		1987	11	14.80773	01	55	11.03	+05	36	21.2			054
1987	UN		1987	11	14.82509	01	55	09.99	+05	36	26.6			054
1987	UO		1987	10	30.98227	02	14	13.94	+04	10	37.0			054

1987	UF1		1987	10	30.98227	02	08	05.62	+03	07	44.8		054
1987	UD2	*	1987	10	25.86398	00	35	16.10	+09	17	37.7	17.0	054
1987	UD2		1987	10	25.88134	00	35	15.42	+09	17	30.8		054
1987	UE2	*	1987	10	25.86398	00	35	24.97	+10	43	24.0	17.0	054
1987	UE2		1987	10	25.88134	00	35	24.25	+10	43	19.8		054
1987	UF2	*	1987	10	25.86398	00	35	56.94	+09	26	55.0	18.0	054
1987	UF2		1987	10	25.88134	00	35	55.92	+09	26	45.1		054
1987	UG2	*	1987	10	25.86398	00	36	21.41	+10	27	15.1	17.5	054
1987	UG2		1987	10	25.88134	00	36	20.63	+10	27	08.2		054
1987	UH2	*	1987	10	25.86398	00	38	32.97	+07	44	46.1	17.2	054
1987	UH2		1987	10	25.88134	00	38	32.49	+07	44	36.5		054
1987	UJ2	*	1987	10	25.86398	00	39	49.90	+08	08	30.8	16.8	054
1987	UJ2		1987	10	25.88134	00	39	49.36	+08	08	20.6		054
1987	UK2	*	1987	10	25.86398	00	40	28.86	+11	04	15.6	17.8	054
1987	UK2		1987	10	25.88134	00	40	27.82	+11	04	07.7		054
1987	UL2	*	1987	10	25.86398	00	40	34.01	+11	26	49.3	17.3	054
1987	UL2		1987	10	25.88134	00	40	33.32	+11	26	40.5		054
1987	UM2	*	1987	10	25.86398	00	41	57.78	+09	58	54.3	16.5	054
1987	UM2		1987	10	25.88134	00	41	57.22	+09	58	39.0		054
1987	UN2	*	1987	10	25.86398	00	43	45.09	+07	04	44.4	18.3 V	054
1987	UN2		1987	10	25.88134	00	43	44.11	+07	04	44.0		054
1987	UO2	*	1987	10	25.86398	00	45	12.39	+08	06	07.2	18.5 V	054
1987	UO2		1987	10	25.88134	00	45	11.81	+08	05	58.8		054
1987	UP2	*	1987	10	25.86398	00	46	07.28	+10	21	49.8	15.5	054
1987	UP2		1987	10	25.88134	00	46	06.73	+10	21	41.2		054
1987	UQ2	*	1987	10	30.98227	02	07	11.03	+05	03	00.8	18.5 V	054
1987	UR2	*	1987	10	30.98227	02	23	42.47	+05	35	24.1	17.5	054
1987	US2	*	1987	10	25.84072	23	27	42.28	+08	31	17.5	18.0	054
1987	UT2	*	1987	10	25.84072	23	28	31.91	+07	51	07.5	17.8	054
51			1987	10	30.98227	02	13	23.16	+02	30	22.3		054
147			1987	10	02.96780	00	52	31.46	+08	11	34.4		054
156			1987	10	01.91456	23	37	15.24	+10	54	37.5		054
213			1987	10	30.98227	02	12	16.98	+02	15	01.6		054
232			1987	10	30.98227	02	06	16.60	+04	22	43.8		054
549			1987	10	01.89107	22	30	42.24	-03	49	31.5		054
703			1987	10	02.96780	01	06	41.32	+09	00	15.2		054
1349			1987	10	01.89107	22	26	26.25	+00	17	01.4		054
1645			1987	10	02.96780	01	04	12.16	+08	29	26.7		054
2303			1987	10	30.98227	02	17	31.77	+03	49	57.2		054
2331			1987	10	01.89107	22	25	04.49	-03	53	33.2		054
2519			1987	11	20.99037	05	47	16.37	+23	09	11.6		054
2606			1987	10	02.96780	00	53	26.34	+07	02	51.0		054
2704			1987	10	02.96780	00	59	34.94	+08	21	52.9		054
2739			1987	11	20.99037	05	45	35.95	+23	44	59.1		054
2964			1987	09	29.94095	23	21	33.48	+09	44	51.0		054
2964			1987	09	29.95831	23	21	32.34	+09	44	51.9		054
2964			1987	09	30.91068	23	20	35.15	+09	45	29.0		054
2964			1987	09	30.92804	23	20	34.12	+09	45	29.4		054
2964			1987	10	01.91456	23	19	35.86	+09	46	01.6		054
3280			1987	10	02.96780	00	48	24.76	+08	41	43.9		054
3459			1987	10	30.98227	02	14	39.55	+04	33	41.1		054
3710			1987	10	02.96780	00	52	45.30	+08	23	00.1		054

071 Bulgarian National Observatory
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Observers E. W. Elst, V. Shkodrov, V. Ivanova

1982	TL1		1987	09	21.90769	00	55	04.17	+05	29	34.5	18	071
1982	TL1		1987	09	21.92888	00	55	03.25	+05	29	32.4		071
1987	SJ		1987	09	21.90769	00	44	55.37	+06	35	49.8	16	071

1987	SJ		1987	09	21.92888	00	44	54.58	+06	35	39.6		071
1987	SK		1987	09	21.90769	00	44	07.00	+05	01	06.4	16.8	071
1987	SK		1987	09	21.92888	00	44	05.83	+05	01	02.0		071
1987	SV2		1987	09	21.90769	00	47	39.88	+06	03	02.6	16.8	071
1987	SV2		1987	09	21.92888	00	47	39.06	+06	02	57.4		071
1987	SW2		1987	09	21.90769	00	49	57.31	+04	38	19.1	17.5	071
1987	SW2		1987	09	21.92888	00	49	56.20	+04	38	16.7		071
1987	SX2		1987	09	21.90769	00	54	40.02	+04	06	47.1	17.7	071
1987	SX2		1987	09	21.92888	00	54	38.84	+04	06	42.8		071
1987	SG4		1987	09	20.98781	00	35	23.60	+00	36	26.7	17.2	071
1987	SG4		1987	09	21.00596	00	35	22.67	+00	36	22.0		071
1987	SO9	*	1987	09	20.98781	00	29	21.36	+00	05	37.4	17.4	071
1987	SO9		1987	09	21.00596	00	29	20.27	+00	05	34.9		071
1987	SP9	*	1987	09	20.98781	00	32	51.01	+01	18	23.6	18	071
1987	SP9		1987	09	21.00596	00	32	50.41	+01	17	42.1		071
1987	SQ9	*	1987	09	20.98781	00	33	59.66	-00	21	39.2	17.6	071
1987	SQ9		1987	09	21.00596	00	33	58.68	-00	21	46.7		071
1987	SR9	*	1987	09	20.98781	00	38	57.20	-01	39	16.4	17.4	071
1987	SR9		1987	09	21.00596	00	38	56.07	-01	39	17.2		071
1987	SS9	*	1987	09	20.98781	00	43	22.56	+00	19	48.6	17.8	071
1987	SS9		1987	09	21.00596	00	43	21.78	+00	19	41.9		071
1987	ST9	*	1987	09	21.90769	00	43	43.26	+05	59	06.5	16.8	071
1987	ST9		1987	09	21.92888	00	43	42.02	+05	59	00.2		071
1987	SU9	*	1987	09	21.90769	00	46	52.44	+06	18	37.9	17.5	071
1987	SU9		1987	09	21.92888	00	46	51.27	+06	18	37.3		071
1987	SV9	*	1987	09	21.90769	00	47	53.44	+04	15	07.0	18	071
1987	SV9		1987	09	21.92888	00	47	52.67	+04	14	54.9		071
1987	SW9	*	1987	09	21.90769	00	54	07.97	+02	49	33.9	17.5	071
1987	SW9		1987	09	21.92888	00	54	07.16	+02	49	29.7		071
208			1987	09	21.90769	00	56	55.05	+06	20	13.2	16	071
208			1987	09	21.92888	00	56	54.12	+06	20	09.5		071
513			1987	09	21.90769	00	48	19.10	+04	18	34.0	16	071
513			1987	09	21.92888	00	48	18.35	+04	18	24.1		071
2281			1987	09	21.90769	00	41	18.83	+05	38	22.3	16.8	071
2281			1987	09	21.92888	00	41	17.80	+05	38	13.4		071
2640			1987	09	21.90769	00	51	35.11	+06	19	41.3	17.5	071
2640			1987	09	21.92888	00	51	33.96	+06	19	39.3		071
2776			1987	09	21.90769	00	46	45.82	+05	02	08.8	16.8	071
2776			1987	09	21.92888	00	46	44.82	+05	02	00.7		071
2848			1987	09	21.90769	00	54	09.58	+06	35	49.4	16.2	071
2848			1987	09	21.92888	00	54	08.88	+06	35	46.9		071
2946			1987	09	21.90769	00	43	33.49	+05	29	08.0	16.7	071
2946			1987	09	21.92888	00	43	32.62	+05	29	02.8		071

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

1025			1987	08	20.96528	22	15	34.32	+00	59	54.9		091
1025			1987	08	22.02833	22	14	37.11	+00	36	19.9		091
1025			1987	08	29.97685	22	07	21.42	-02	28	39.5		091
1025			1987	08	30.01562	22	07	19.30	-02	29	30.2		091
1610			1987	11	18.87917	03	09	54.08	+21	43	51.9		091
3225			1987	08	19.91111	19	05	00.44	+19	33	53.2		091
3225			1987	08	20.89143	19	04	54.51	+19	11	18.4		091
3225			1987	08	20.90972	19	04	54.25	+19	10	52.9		091
3225			1987	08	21.90625	19	04	50.87	+18	47	44.0		091
3225			1987	08	21.94932	19	04	50.64	+18	46	41.2		091

220 Kavalur
R. Rajamohan, Indian Institute of Astrophysics, Bangalore 560034, India
0.45-m f/3 Schmidt
SAOC

1987 WB1	*	1987 11 27.79514	04 06 25.3	+08 48 57		15.5		220
1987 WB1		1987 11 28.83681	04 05 29.8	+08 48 50				220

293 Burlington remote site
T. Handley, 13 Linden Avenue, Burlington, NJ 08016, U.S.A.
0.20-m f/4.0 astrograph
SAOC

1977 QA1		1987 09 26.37917	00 12 34.52	+01 38 14.4				293
1977 QA1		1987 09 26.39236	00 12 33.79	+01 38 06.5				293
1986 EM1		1987 10 23.15556	01 42 08.97	+11 13 26.6				293
1986 EM1		1987 10 23.16875	01 42 07.97	+11 13 26.5				293

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

1981 JQ		1987 11 29.68437	03 19 52.55	+22 47 41.4		17		372
1981 JQ		1987 11 29.69861	03 19 51.43	+22 47 37.0				372
1981 JQ		1987 12 14.40451	03 06 41.92	+22 21 59.0				372
1981 JQ		1987 12 14.41563	03 06 41.76	+22 21 58.9		17		372
1981 JQ		1987 12 16.66042	03 05 09.30	+22 18 32.5		17		372
1987 WW		1987 10 27.77674	03 54 59.37	+23 53 26.0		18		372
1987 WW		1987 10 27.79062	03 54 58.31	+23 53 25.9				372
1987 WW	*	1987 11 18.68229	03 31 07.40	+23 35 30.4		16.5		372
1987 WW		1987 11 18.69410	03 31 06.59	+23 35 29.3				372
1987 WW		1987 11 23.65764	03 25 16.91	+23 23 47.1				372
1987 WW		1987 11 23.66944	03 25 15.94	+23 23 45.4				372
1987 WW		1987 11 29.68437	03 18 39.61	+23 07 38.7		17		372
1987 WW		1987 11 29.69861	03 18 38.94	+23 07 38.0				372
1987 WX	*	1987 11 18.73056	04 01 17.15	+15 25 01.0		17		372
1987 WX		1987 11 18.74236	04 01 16.45	+15 25 02.2				372
1987 WY	*	1987 11 25.64236	04 50 58.5	+15 42 32		17		372
1987 WY		1987 11 25.65486	04 50 57.6	+15 42 25				372
1987 WY		1987 11 29.74479	04 46 58.19	+15 04 19.9		17		372
1987 WY		1987 11 29.75729	04 46 57.51	+15 04 16.5				372
1987 WY		1987 12 01.77708	04 44 57.80	+14 45 59.4		17		372
1987 WY		1987 12 01.78958	04 44 56.95	+14 45 51.0				372
1987 WY		1987 12 16.67153	04 31 08.71	+12 48 50.9				372
1987 WY		1987 12 16.68333	04 31 08.03	+12 48 46.9				372
1987 WY		1987 12 19.65799	04 28 47.96	+12 30 03.6				372
1987 WY		1987 12 19.67188	04 28 47.39	+12 29 59.8				372
1987 XC	*	1987 12 14.52951	03 06 00.6	+21 30 24		18		372
1987 XC		1987 12 14.54166	03 06 00.5	+21 30 26				372
1987 XC		1987 12 16.64167	03 04 35.03	+21 38 55.5		18		372
2382		1987 12 14.52951	03 08 19.43	+21 43 31.0		17		372
2382		1987 12 14.54166	03 08 19.10	+21 43 22.1				372
2382		1987 12 16.64167	03 07 11.54	+21 16 14.8		17		372

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

1987 YA	*	1987 12 18.62708	04 45 36.00	+19 06 40.3		17		391
1987 YA		1987 12 18.63403	04 45 35.74	+19 06 42.2				391
1987 YA		1987 12 20.50347	04 44 11.71	+19 02 02.4		17		391
1987 YA		1987 12 20.50694	04 44 11.43	+19 02 00.6				391

1987 YA	1987	12	20.61424	04	44	06.33	+19	01	46.9	391
1987 YA	1987	12	20.61771	04	44	06.32	+19	01	52.0	391
1987 YA	1987	12	21.57708	04	43	25.51	+18	59	36.1	17 391
1987 YA	1987	12	21.58056	04	43	25.29	+18	59	33.4	391
1987 YA	1987	12	21.65764	04	43	21.59	+18	59	18.4	391
1987 YA	1987	12	21.66111	04	43	21.48	+18	59	21.8	391
2816	1987	12	20.50347	04	44	53.79	+18	58	35.9	16 391
2816	1987	12	20.50694	04	44	53.52	+18	58	34.7	391
2816	1987	12	20.61424	04	44	47.31	+18	58	49.3	391
2816	1987	12	20.61771	04	44	47.17	+18	58	53.9	391
2816	1987	12	21.57708	04	43	54.97	+19	00	41.9	16 391
2816	1987	12	21.58056	04	43	54.62	+19	00	43.3	391
2816	1987	12	21.65764	04	43	50.23	+19	00	49.2	391
2816	1987	12	21.66111	04	43	50.12	+19	00	53.1	391

392 JCPM Sapporo Station
H. Kaneda, 12-7-2, 1 Chome, Ishiyama 1 Jo, Minami-Ku,
Sapporo 005, Japan
0.25-m reflector

1987 WE1	1987	11	14.46498	01	58	32.5	+16	30	40	15 392
1987 WE1	1987	11	14.47326	01	58	32.02	+16	30	41.3	392
1987 WE1	1987	11	15.43249	01	57	35.26	+16	30	13.9	15.5 392
1987 WE1	1987	11	15.44086	01	57	34.9	+16	30	12	392

399 Kushiro
H. Kaneda, 12-7-2, 1 Chome, Ishiyama 1 Jo, Minami-Ku,
Sapporo 005, Japan
Observer S. Ueda
Measurer H. Kaneda
0.16-m reflector

1987 UA1	1987	11	17.59387	01	40	31.9	+16	05	32	16 399
1987 UA1	1987	11	17.60914	01	40	31.5	+16	05	22	399
1987 UA1	1987	11	17.62500	01	40	31.0	+16	05	10	399
1987 UA1	1987	11	22.52628	01	38	43.05	+15	10	26.0	16.5 399
1987 UA1	1987	11	22.54323	01	38	42.77	+15	10	14.1	399
1987 UB1	1987	11	22.57546	01	47	55.29	+17	02	21.2	15 399
1987 UB1	1987	11	22.59144	01	47	54.89	+17	02	21.2	399
1987 UW1	1987	11	13.52789	02	03	54.6	+15	07	12	399
1987 UW1	1987	11	13.55116	02	03	53.50	+15	06	59.2	15.5 399
1987 UW1	1987	11	14.49375	02	03	15.7	+14	58	26	16 399
1987 UW1	1987	11	14.51001	02	03	15.0	+14	58	17	399
1987 UW1	1987	11	14.52708	02	03	14.2	+14	58	06	399
1987 UX1	1987	11	14.56465	02	04	29.27	+17	53	50.8	15.5 399
1987 UX1	1987	11	14.58073	02	04	28.44	+17	53	41.9	399
1987 UX1	1987	11	14.59821	02	04	27.69	+17	53	32.4	399
1987 UX1	1987	11	17.65069	02	02	27.84	+17	28	38.3	16 399
1987 UX1	1987	11	17.66551	02	02	27.29	+17	28	31.6	399
1987 UX1	1987	11	22.57546	01	59	48.60	+16	50	40.9	16 399
1987 UX1	1987	11	22.59144	01	59	48.16	+16	50	35.2	399
1987 VA	1987	11	13.51995	01	52	29.2	+13	32	57	16.5 399
1987 VA	1987	11	13.53576	01	52	28.3	+13	32	59	399
1987 VA	1987	11	13.55116	01	52	27.5	+13	32	59	399
1987 VB	1987	11	14.45208	01	01	40.40	+12	07	18.9	399
1987 VB	1987	11	14.46806	01	01	39.99	+12	07	13.8	399
1987 VB	1987	11	15.60428	01	01	15.87	+12	01	40.7	16 399
1987 VB	1987	11	15.61930	01	01	15.49	+12	01	37.1	399
1987 VB	1987	11	20.58710	01	00	04.70	+11	40	08.5	16 399
1987 VB	1987	11	20.60237	01	00	04.45	+11	40	07.0	399
1987 VC	1987	11	15.55417	02	48	08.2	+23	43	05	399

1987	VC		1987	11	15.57049	02	48	07.3	+23	43	02		399
1987	VC		1987	11	22.65417	02	41	22.34	+23	28	35.7	16.5	399
1987	VC		1987	11	22.66944	02	41	21.39	+23	28	33.9		399
1987	VC		1987	11	22.68490	02	41	20.48	+23	28	31.1		399
1987	VC		1987	11	28.71262	02	36	14.9	+23	14	57	16.5	399
1987	VC		1987	11	28.72882	02	36	14.1	+23	14	53		399
1987	VD		1987	11	15.55417	02	50	12.93	+24	34	42.8		399
1987	VD		1987	11	15.57049	02	50	12.06	+24	34	34.5		399
1987	VD		1987	11	22.65417	02	43	45.0	+23	33	17	16.5	399
1987	VD		1987	11	22.66944	02	43	44.20	+23	33	09.3		399
1987	VD		1987	11	22.68490	02	43	43.46	+23	33	02.1		399
1987	VD		1987	11	28.71262	02	39	21.68	+22	42	08.2	16.5	399
1987	VD		1987	11	28.72882	02	39	21.08	+22	42	01.7		399
1987	VF	*	1987	11	13.51995	01	50	09.17	+13	51	08.8	16.5	399
1987	VF		1987	11	13.53576	01	50	08.4	+13	51	07		399
1987	VF		1987	11	14.49375	01	49	22.0	+13	52	35	16.5	399
1987	VF		1987	11	14.51001	01	49	21.0	+13	52	34		399
1987	VF		1987	11	15.62153	01	48	28.6	+13	54	21	16.5	399
1987	VF		1987	11	15.63681	01	48	27.8	+13	54	22		399
1987	VG	*	1987	11	15.53889	02	35	59.73	+24	04	46.7	16.5	399
1987	VG		1987	11	15.55412	02	35	58.87	+24	04	43.1		399
1987	VG		1987	11	15.57049	02	35	57.92	+24	04	40.0		399
1987	VG		1987	11	22.65417	02	29	45.0	+23	39	16	16.5	399
1987	VG		1987	11	22.66944	02	29	44.1	+23	39	12		399
1987	VG		1987	11	22.68490	02	29	43.3	+23	39	09		399
1987	VG		1987	11	28.71262	02	25	29.1	+23	16	39	16.5	399
1987	VG		1987	11	28.72882	02	25	28.5	+23	16	33		399
1987	WD		1987	11	17.51794	02	17	35.9	+22	36	59		399
1987	WQ	*	1987	11	20.63160	02	27	21.3	+22	47	17	16	399
1987	WQ		1987	11	20.64688	02	27	20.5	+22	47	22		399
1987	WQ		1987	11	20.66354	02	27	19.7	+22	47	24		399
1987	WQ		1987	11	28.67517	02	20	58.1	+23	16	49	16	399
1987	WQ		1987	11	28.69190	02	20	57.7	+23	16	50		399
1987	WS		1987	11	28.67517	02	21	32.0	+23	16	06	16.5	399
1987	WS		1987	11	28.69190	02	21	31.3	+23	16	05		399
1987	WE1		1987	11	14.56465	01	58	26.2	+16	30	36	15.5	399
1987	WE1		1987	11	14.58073	01	58	25.3	+16	30	36		399
1987	WE1		1987	11	17.65069	01	55	29.50	+16	29	12.1	16	399
1987	WE1		1987	11	17.66511	01	55	28.70	+16	29	11.6		399
1987	WE1	*	1987	11	22.57546	01	51	22.8	+16	28	00	15.5	399
1987	WE1		1987	11	22.59144	01	51	22.1	+16	27	59		399
1987	WE1		1987	11	28.63970	01	47	27.3	+16	28	53	15.5	399
1987	WE1		1987	11	28.65486	01	47	26.7	+16	28	56		399
645			1987	11	14.43692	01	01	21.19	+11	59	05.8	14.5	399
645			1987	11	14.45208	01	01	20.67	+11	59	04.4		399
645			1987	11	14.46806	01	01	20.14	+11	59	02.1		399
1325			1987	11	15.55417	02	47	43.21	+24	45	07.8	15	399
1325			1987	11	15.57049	02	47	42.22	+24	45	05.7		399
1325			1987	11	22.65417	02	40	36.07	+24	33	12.4	15	399
1325			1987	11	22.66944	02	40	35.31	+24	33	11.2		399
1325			1987	11	22.68490	02	40	34.42	+24	33	08.4		399
1396			1987	11	14.43692	01	06	15.72	+11	13	32.5	15.5	399
1396			1987	11	14.45208	01	06	15.16	+11	13	31.9		399
1396			1987	11	14.46806	01	06	14.54	+11	13	27.6		399
1706			1987	11	14.49375	02	03	37.78	+15	27	35.2	16	399
1706			1987	11	14.51001	02	03	36.93	+15	27	27.6		399
1706			1987	11	14.52708	02	03	35.94	+15	27	22.0		399
3294			1987	11	14.58073	02	03	51.79	+18	58	02.0	16.5	399
3294			1987	11	14.59821	02	03	50.88	+18	57	57.5		399

400 Kitami
H. Kaneda, 12-7-2, 1 Chome, Ishiyama 1 Jo, Minami-Ku,
Sapporo 005, Japan
Observers K. Endate, T. Fujii, M. Yanai
Measurers H. Kaneda, K. Watanabe
0.2-m reflector

1986 QB1		1987 11 25.62955	04 38 28.58	+23 03 35.6		16.5	400
1986 QB1		1987 11 25.64479	04 38 27.83	+23 03 33.7			400
1987 UB1		1987 11 14.49653	01 52 46.46	+17 03 26.9		16	400
1987 UB1		1987 11 14.52431	01 52 45.27	+17 03 26.7			400
1987 UB1		1987 11 14.54861	01 52 44.19	+17 03 26.2			400
1987 UB1		1987 11 15.49514	01 52 03.76	+17 03 10.5		16.0	400
1987 UB1		1987 11 15.53681	01 52 02.01	+17 03 09.6			400
1987 UB1		1987 11 15.56458	01 52 00.86	+17 03 11.1			400
1987 UN1		1987 11 13.54306	01 53 49.40	+15 02 56.5		16.5	400
1987 UN1		1987 11 13.56053	01 53 48.67	+15 02 44.6			400
1987 UN1		1987 11 13.57569	01 53 48.17	+15 02 33.7			400
1987 UN1		1987 11 14.58958	01 53 13.6	+14 50 58		16.5	400
1987 UN1		1987 11 14.61111	01 53 12.9	+14 50 41			400
1987 WQ		1987 11 29.61634	02 20 22.19	+23 20 04.8		15.5	400
1987 WQ		1987 11 29.63023	02 20 21.58	+23 20 09.8			400
1987 WR	*	1987 11 25.62955	04 39 21.40	+22 20 44.8		16	400
1987 WR		1987 11 25.64479	04 39 20.37	+22 20 41.7			400
1987 WR		1987 12 09.55139	04 23 45.18	+21 30 12.7		16.5	400
1987 WR		1987 12 09.56111	04 23 44.57	+21 30 10.5			400
1987 WR		1987 12 09.57222	04 23 43.80	+21 30 08.9			400
1987 WS	*	1987 11 29.61634	02 20 52.59	+23 14 21.2		16.5	400
1987 WS		1987 11 29.63023	02 20 52.17	+23 14 21.6			400
1987 WZ	*	1987 11 29.46009	01 50 02.65	+13 58 37.2		16.5	400
1987 WZ		1987 11 29.47954	01 50 01.46	+13 58 27.9			400
1987 XD	*	1987 12 14.54375	04 56 25.32	+12 38 23.3		16.5	400
1987 XD		1987 12 14.56597	04 56 24.04	+12 38 24.3			400
1987 XD		1987 12 14.58056	04 56 23.36	+12 38 27.3			400
1987 XD		1987 12 17.57778	04 53 45.00	+12 44 05.2		16	400
1987 XD		1987 12 17.59722	04 53 43.97	+12 44 08.2			400
1987 XD		1987 12 17.61250	04 53 43.29	+12 44 10.7			400
1987 XE	*	1987 12 14.65625	04 59 08.68	+21 54 53.2		16	400
1987 XE		1987 12 14.67153	04 59 07.47	+21 54 57.3			400
1169		1987 12 14.65625	05 01 20.95	+22 08 43.3		15	400
1169		1987 12 14.67153	05 01 20.02	+22 08 37.7			400
1169		1987 12 14.68299	05 01 19.15	+22 08 35.4			400
3719		1987 11 14.49653	01 52 28.23	+17 11 38.7		16.5	400
3719		1987 11 14.52431	01 52 27.10	+17 11 32.1			400
3719		1987 11 14.54861	01 52 26.17	+17 11 23.6			400
3719		1987 11 15.49514	01 51 50.57	+17 06 09.9		16.0	400
3719		1987 11 15.53681	01 51 49.10	+17 05 55.6			400
3719		1987 11 15.56458	01 51 47.99	+17 05 47.8			400

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
AGK3, SAOC

1986 OA		1987 11 15.92361	03 37 47.55	+28 59 45.1		17.5	552
1986 OA		1987 11 15.94167	03 37 46.48	+28 59 36.9			552
1986 OA		1987 11 17.93264	03 35 44.06	+28 44 52.6		17.5	552
1986 OA		1987 11 17.96111	03 35 42.35	+28 44 38.2			552
1986 OA		1987 11 21.90764	03 31 40.56	+28 14 02.3		17.5	552
1986 OA		1987 11 21.93750	03 31 38.71	+28 13 48.0			552

3344		1987 11 15.96528	03	49	10.24	+14	16	52.0	17.8	552
3344		1987 11 15.98681	03	49	08.67	+14	16	52.1		552

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Measurer J. M. Baur
0.6-m f/3 Wright reflector
AGK3, SAOC

1987 WA		1987 11 26.86042	03	22	57.24	+17	37	10.4	17.8	567
1987 WA		1987 11 26.87847	03	22	56.17	+17	37	09.5		567
1987 WA		1987 11 26.90069	03	22	54.91	+17	37	08.5		567
1987 WA		1987 12 11.84653	03	10	44.38	+17	34	04.9	17.3	567
1987 WA		1987 12 11.86181	03	10	43.74	+17	34	04.2		567
1987 WA		1987 12 11.87431	03	10	43.17	+17	34	03.5		567
1987 WA		1987 12 12.82847	03	10	07.30	+17	34	20.5		567
1987 WA		1987 12 12.84514	03	10	06.67	+17	34	19.8		567
1987 WA		1987 12 15.84792	03	08	23.02	+17	35	36.5		567
1987 WA		1987 12 15.86875	03	08	22.42	+17	35	37.8		567
1987 WA		1987 12 17.83333	03	07	22.88	+17	36	51.9		567
1987 WA		1987 12 17.84722	03	07	22.20	+17	36	52.6		567
1987 WB		1987 11 26.86042	03	25	55.28	+17	39	49.9		567
1987 WB		1987 11 26.87847	03	25	54.30	+17	39	42.9		567
1987 WB		1987 11 26.90069	03	25	53.35	+17	39	35.9		567
1987 WB		1987 12 11.77569	03	15	19.41	+16	22	42.3	17.2	567
1987 WB		1987 12 12.78542	03	14	44.11	+16	18	04.5		567
1987 WB		1987 12 12.80486	03	14	43.12	+16	17	58.2		567
1987 WB		1987 12 15.81042	03	13	04.20	+16	04	43.6		567
1987 WB		1987 12 15.82431	03	13	03.79	+16	04	39.9		567
1987 WB		1987 12 17.79167	03	12	04.92	+15	56	28.7		567
1987 WB		1987 12 17.81250	03	12	04.38	+15	56	24.5		567
1987 XA	*	1987 12 12.78542	03	12	32.97	+17	38	01.2	18.0	567
1987 XA		1987 12 12.80486	03	12	32.12	+17	38	01.7		567
1987 XB	*	1987 12 15.84792	03	12	32.37	+18	08	52.9	17	567
1987 XB		1987 12 15.86875	03	12	31.60	+18	08	56.5		567
1289		1987 11 26.86042	03	22	12.86	+16	47	32.3		567
1289		1987 11 26.87847	03	22	11.98	+16	47	29.7		567
1289		1987 11 26.90069	03	22	10.82	+16	47	24.9		567
1576		1987 11 26.86042	03	24	11.86	+17	09	27.6	15.2	567
1576		1987 11 26.87847	03	24	10.96	+17	09	24.6		567
1576		1987 11 26.90069	03	24	09.94	+17	09	20.3		567
1576		1987 12 11.77569	03	14	02.92	+16	32	28.1	15.5	567
1576		1987 12 11.80069	03	14	01.94	+16	32	26.3		567
1576		1987 12 12.78542	03	13	31.28	+16	30	38.3		567
1576		1987 12 12.80486	03	13	30.16	+16	30	36.2		567
3409		1987 12 12.82847	03	09	34.20	+16	38	23.1	16.0	567
3409		1987 12 12.84514	03	09	33.39	+16	38	19.3		567

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1983 PA		1987 10 21.42368	07	16	15.67	+42	26	01.0		657
1983 PA		1987 10 21.48271	07	16	19.97	+42	25	42.8		657
1983 PA		1987 10 22.46431	07	17	32.02	+42	20	01.5		657
1983 QF		1987 09 27.30799	00	30	07.35	-08	47	06.6		657
1983 QF		1987 09 30.33028	00	27	55.64	-09	33	11.8		657
1984 YY		1987 09 22.31986	02	59	06.29	+15	19	05.8		657
1984 YY		1987 10 16.34069	02	49	45.55	+14	50	21.9		657

1984 YY 1987 10 19.29514 02 47 11.98 +14 41 25.9 657
1987 SL 1987 10 20.38861 00 27 10.34 +32 25 30.3 657
1987 SL 1987 10 22.33861 00 24 52.22 +32 26 52.6 657

675 Palomar
J. Gibson, ITT/Federal Electric Corporation and Jet Propulsion Laboratory, MS 238-332, Pasadena, CA 91109, U.S.A. (1)
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Measurers J. Alu (2), S. J. Bus (6), J. Gibson (1), J. Mueller (7), C. Shoemaker (3), C. J. van Houten (4), I. van Houten-Groeneveld (4)
1.5-m reflector + CCD (C), 1.2-m (L) and 0.46-m (S) Schmidt telescopes

1971 SP3 1983 12 30.38646 07 05 19.60 +25 20 45.0 18.2 6 675
1971 SP3 1984 01 08.31979 06 56 58.39 +25 30 44.2 6 675
1978 TO8 1978 10 28.39722 02 59 55.04 +16 51 37.0 17.2 6 675
1978 TO8 1978 10 29.41146 02 59 06.96 +16 47 49.1 6 675
1978 TQ8 1978 10 28.39722 03 02 32.26 +13 52 44.1 16.2 6 675
1978 TQ8 1978 10 29.41146 03 01 36.03 +13 47 11.9 6 675
1978 TT8 1978 10 28.39722 03 09 49.02 +15 31 20.3 16.8 6 675
1978 TT8 1978 10 29.41146 03 08 46.74 +15 30 01.2 6 675
1978 TU8 1978 10 28.39722 03 13 58.44 +17 32 28.2 17.2 6 675
1978 TU8 1978 10 29.41146 03 13 10.46 +17 28 40.2 6 675
1978 TV8 1978 10 28.39722 03 15 44.42 +18 33 35.0 16.8 6 675
1978 TV8 1978 10 29.41146 03 14 58.89 +18 31 21.9 6 675
1978 UL2 1978 10 28.39722 03 14 19.09 +13 47 31.9 16.5 6 675
1978 UL2 1978 10 29.41146 03 13 34.16 +13 44 09.5 6 675
1978 UP2 1978 10 28.34045 02 30 54.05 +16 05 26.3 17.2 6 675
1978 UP2 1978 10 29.35451 02 29 37.96 +16 05 14.1 6 675
1978 UM3 * 1978 10 28.31441 02 30 37.52 +17 02 18.1 19.2 6 675
1978 UM3 1978 10 29.35451 02 28 44.85 +17 23 23.0 6 675
1978 UN3 * 1978 10 28.34045 02 29 32.51 +14 49 34.2 16.8 6 675
1978 UN3 1978 10 29.35451 02 28 42.72 +14 46 10.0 6 675
1978 UO3 * 1978 10 28.34045 02 39 02.91 +13 02 34.5 17.0 6 675
1978 UO3 1978 10 29.35451 02 37 58.84 +12 57 56.8 6 675
1978 UP3 * 1978 10 28.34045 02 40 23.71 +14 43 33.8 16.8 6 675
1978 UP3 1978 10 29.35451 02 39 37.37 +14 37 44.5 6 675
1978 UQ3 * 1978 10 28.34045 02 41 53.01 +18 19 22.8 17.2 6 675
1978 UQ3 1978 10 29.35451 02 40 57.30 +18 16 21.9 6 675
1978 UR3 * 1978 10 28.34045 02 42 14.14 +14 51 58.8 16.8 6 675
1978 UR3 1978 10 29.35451 02 41 11.20 +14 49 41.0 6 675
1978 US3 * 1978 10 28.34045 02 43 26.06 +14 52 44.7 16.5 6 675
1978 US3 1978 10 29.35451 02 42 28.07 +14 51 45.0 6 675
1978 UT3 * 1978 10 28.34045 02 43 41.25 +13 17 54.3 16.8 6 675
1978 UT3 1978 10 29.35451 02 42 47.83 +13 12 11.1 6 675
1978 UU3 * 1978 10 28.34045 02 46 45.31 +14 56 52.4 17.0 6 675
1978 UU3 1978 10 29.35451 02 45 49.43 +14 56 44.2 6 675
1978 UV3 * 1978 10 28.34045 02 48 08.43 +15 38 00.8 16.8 6 675
1978 UV3 1978 10 29.35451 02 47 13.05 +15 31 00.6 6 675
1978 UW3 * 1978 10 28.34045 02 48 53.10 +16 57 33.1 17.5 6 675
1978 UW3 1978 10 29.35451 02 48 13.42 +16 50 21.4 6 675

1978	UX3	*	1978	10	28.36649	02	33	26.37	+15	45	26.0	17.0	6 675
1978	UX3		1978	10	29.35451	02	32	30.69	+15	39	14.7		6 675
1978	UY3	*	1978	10	28.37118	03	13	13.60	+16	21	35.7	15.0	6 675
1978	UY3		1978	10	28.42326	03	16	46.03	+15	49	43.6		6 675
1978	UZ3	*	1978	10	28.39722	02	53	17.64	+14	32	31.2	17.8	6 675
1978	UZ3		1978	10	29.41146	02	52	24.02	+14	22	46.7		6 675
1978	UA4	*	1978	10	28.39722	02	55	11.98	+17	12	33.7	18.8	6 675
1978	UA4		1978	10	29.41146	02	53	33.02	+17	21	22.4		6 675
1978	UB4	*	1978	10	28.39722	02	59	01.67	+14	30	25.7	17.5	6 675
1978	UB4		1978	10	29.41146	02	58	05.96	+14	27	53.3		6 675
1978	UC4	*	1978	10	28.39722	03	03	06.03	+19	37	00.1	19.5	6 675
1978	UC4		1978	10	29.41146	03	02	36.11	+19	33	27.3		6 675
1978	UD4	*	1978	10	28.39722	03	03	34.81	+18	24	30.4	17.5	6 675
1978	UD4		1978	10	29.41146	03	02	40.92	+17	59	12.2		6 675
1978	UE4	*	1978	10	28.39722	03	06	20.64	+14	18	36.3	17.5	6 675
1978	UE4		1978	10	29.41146	03	05	33.22	+14	15	45.8		6 675
1978	UF4	*	1978	10	28.39722	03	08	17.49	+14	34	15.2	20.0	6 675
1978	UF4		1978	10	29.41146	03	07	46.51	+14	30	34.4		6 675
1978	UG4	*	1978	10	28.39722	03	09	03.79	+19	53	37.9	18.5	6 675
1978	UG4		1978	10	29.41146	03	08	06.21	+19	50	38.7		6 675
1978	UH4	*	1978	10	28.39722	03	14	51.38	+16	10	36.6	17.8	6 675
1978	UH4		1978	10	29.41146	03	14	02.00	+16	03	08.1		6 675
1978	VY14		1978	10	28.39722	03	03	57.22	+15	00	43.0	17.8	6 675
1978	VY14		1978	10	29.41146	03	03	02.91	+14	57	57.4		6 675
1978	VE15		1978	10	28.39722	03	09	18.65	+14	00	14.7	16.2	6 675
1978	VE15		1978	10	29.41146	03	08	26.33	+13	58	45.0		6 675
1980	GF		1978	10	28.34045	02	50	49.36	+13	20	58.2	17.8	6 675
1980	GF		1978	10	29.35451	02	49	51.37	+13	16	13.4		6 675
1981	EM8		1978	10	28.34045	02	36	53.90	+19	01	46.0	18.2	6 675
1981	EM8		1978	10	29.35451	02	36	04.13	+18	56	53.7		6 675
1981	EC10		1978	10	28.34045	02	42	24.76	+14	05	52.8	20.5	6 675
1981	EC10		1978	10	29.35451	02	41	38.75	+14	00	46.5		6 675
1981	EE12		1983	12	30.38646	07	11	55.97	+22	12	48.9	18.0	6 675
1981	EE12		1984	01	08.31979	07	01	32.22	+21	58	11.1		6 675
1981	EN12		1983	12	30.38646	07	07	59.56	+19	57	24.1	18.8	6 675
1981	EN12		1984	01	08.31979	06	57	45.42	+20	03	10.6		6 675
1981	ET13		1984	01	08.29375	07	12	02.35	+23	02	28.6	18.5	6 675
1981	ET13		1984	01	08.34583	07	11	58.84	+23	02	28.4		6 675
1981	EK14		1979	10	18.24931	00	58	40.22	+10	49	38.0		6 675
1981	EK14		1979	10	18.30139	00	58	37.60	+10	49	19.4		6 675
1981	EK14		1983	12	30.36042	06	57	31.90	+21	19	36.3	18.5	6 675
1981	EK14		1983	12	30.41250	06	57	28.53	+21	19	36.1		6 675
1981	EZ27		1983	12	30.36042	06	53	24.63	+24	06	36.2	19.5	6 675
1981	EZ27		1983	12	30.41250	06	53	20.97	+24	06	41.5		6 675
1981	EM31		1983	12	30.38646	07	16	44.27	+20	30	22.5	20.0	6 675
1981	EM31		1984	01	08.31979	07	07	06.25	+20	48	52.6		6 675
1981	EW45		1978	10	28.39722	03	03	09.02	+14	49	19.2	18.5	6 675
1981	EW45		1978	10	29.41146	03	02	24.40	+14	44	33.9		6 675
1981	FQ		1978	10	28.34045	02	31	21.41	+14	58	13.5		6 675
1981	FQ		1978	10	29.35451	02	30	34.06	+14	54	30.4		6 675
1983	RO3		1978	10	28.34045	02	41	27.36	+14	38	09.3	16.8	6 675
1983	RO3		1978	10	29.35451	02	40	38.56	+14	35	02.7		6 675
1983	YL		1983	12	30.38646	06	59	10.43	+21	04	21.9	17.8	6 675
1983	YL		1984	01	08.31979	06	51	15.30	+21	20	30.6		6 675
1983	YO		1983	12	30.38646	07	05	33.40	+20	39	19.9	17.5	6 675
1983	YO		1984	01	08.31979	06	56	35.05	+21	26	39.6		6 675
1983	YX	*	1983	12	30.38646	06	59	16.19	+21	03	23.4	18.0	6 675
1983	YX		1984	01	08.31979	06	50	15.95	+21	10	13.7		6 675
1983	YY	*	1983	12	30.38646	07	06	23.07	+23	49	40.7	17.8	6 675

1983	YY		1984	01	08.31979	06	57	42.19	+24	12	25.1	6 675
1983	YZ	*	1983	12	30.38646	07	08	49.70	+20	16	30.5	16.8 6 675
1983	YZ		1984	01	08.31979	06	58	27.21	+20	46	06.5	6 675
1983	YA1	*	1983	12	30.38646	07	12	59.28	+23	58	04.8	18.2 6 675
1983	YA1		1984	01	08.31979	07	05	17.49	+24	11	47.9	6 675
1983	YB1	*	1983	12	30.38646	07	13	12.26	+20	49	33.8	17.5 6 675
1983	YB1		1984	01	08.31979	07	05	24.26	+21	10	14.7	6 675
1983	YC1	*	1983	12	30.38646	07	13	12.36	+23	52	35.1	17.5 6 675
1983	YC1		1984	01	08.31979	07	04	33.50	+24	04	41.3	6 675
1984	AP		1984	01	08.29375	07	00	51.73	+25	46	15.9	15.8 6 675
1984	AP		1984	01	08.34583	07	00	48.22	+25	45	59.5	6 675
1984	AQ		1984	01	08.29375	07	13	02.76	+20	17	53.2	16.2 6 675
1984	AQ		1984	01	08.34583	07	12	59.57	+20	18	11.7	6 675
1984	AR		1983	12	30.38646	07	15	45.35	+24	01	32.2	16.8 6 675
1984	AR		1984	01	08.31979	07	07	39.19	+24	16	29.7	6 675
1984	FC		1978	10	28.34045	02	44	36.30	+18	27	19.3	17.0 6 675
1984	FC		1978	10	29.35451	02	43	34.07	+18	25	41.1	6 675
1985	RR		1978	10	28.39722	03	04	54.87	+15	04	47.2	16.2 6 675
1985	RR		1978	10	29.41146	03	03	55.75	+15	01	29.8	6 675
1986	GV1		1987	11	16.32396	01	16	16.16	-01	15	08.1	17.0 2 675
1986	GV1		1987	11	20.30608	01	14	03.51	-01	05	40.0	2 675
1986	LC		1987	11	17.13576	23	17	17.05	-19	46	02.3	16.8 2 675
1986	LC		1987	11	19.14740	23	17	45.97	-19	36	31.5	2 675
1986	RW2		1984	01	08.29375	07	09	28.20	+25	06	20.3	17.0 6 675
1986	RW2		1984	01	08.34583	07	09	24.62	+25	06	25.4	6 675
1986	WA		1987	11	19.47194	08	52	27.55	-13	07	04.8	1 675
1986	WA		1987	11	19.47708	08	52	27.65	-13	07	09.0	1 675
1986	WA		1987	11	19.48715	08	52	27.68	-13	07	19.9	1 675
1986	WA		1987	11	19.49144	08	52	27.73	-13	07	23.3	1 675
1987	UZ1		1987	11	19.23906	02	08	12.80	+10	02	21.1	16.0 2 675
1987	UZ1		1987	11	20.35625	02	07	33.85	+09	27	43.6	2 675
1987	WC		1987	11	27.33681	04	08	03.7	+43	54	29	7 675
1987	WC		1987	11	30.39722	03	57	38.5	+46	05	47	7 675
1987	WC		1987	11	30.41806	03	57	34.7	+46	06	24	7 675
1987	WC		1987	12	15.22500	03	22	05.3	+51	28	28	7 675
1987	WC		1987	12	15.25625	03	22	02.5	+51	28	43	7 675
1987	WM	*	1987	11	19.22778	02	18	08.06	+31	08	30.2	16.5 2 675
1987	WM		1987	11	20.34653	02	17	23.45	+30	54	29.3	2 675
1987	WN	*	1987	11	19.32344	03	12	57.91	+08	42	01.8	16.0 2 675
1987	WN		1987	11	20.43194	03	12	03.51	+08	18	09.5	2 675
1987	WO	*	1987	11	19.46875	04	21	51.87	+30	01	56.1	16.5 2 675
1987	WO		1987	11	20.48576	04	20	35.86	+30	10	16.0	2 675
1987	WP	*	1987	11	20.42743	04	03	16.81	+16	35	27.7	16.8 2 675
1987	WP		1987	11	20.45347	04	03	15.12	+16	35	08.2	2 675
1987	WT	*	1987	11	20.29028	01	18	49.43	+24	02	44.6	16.0 2 675
1987	WT		1987	11	20.31163	01	18	48.80	+24	02	18.9	2 675
1987	WU	*	1987	11	20.29549	01	36	46.19	+00	50	25.1	16.0 2 675
1987	WU		1987	11	20.31736	01	36	45.66	+00	50	00.1	2 675
1987	WV	*	1987	11	16.33090	02	07	25.17	+12	11	58.8	16.8 2 675
1987	WV		1987	11	16.37691	02	07	23.65	+12	11	28.2	2 675
1987	WY		1987	11	21.27049	04	55	05.24	+16	24	21.9	16.0 2 675
1987	WY		1987	11	21.30191	04	55	03.46	+16	24	04.6	2 675
1987	WA1	*	1987	11	20.29549	02	27	38.10	+09	44	10.6	15.8 2 675
1987	WA1		1987	11	20.31736	02	27	36.02	+09	44	29.2	2 675
1987	WC1	*	1987	11	16.26510	00	51	00.18	+31	44	31.8	16.0 2 675
1987	WC1		1987	11	20.24097	00	50	13.65	+31	06	31.0	2 675
1987	WF1	*	1987	11	26.40052	03	57	40.54	+12	43	42.4	16 3 675
1987	WF1		1987	11	27.37899	03	56	42.66	+12	22	11.9	3 675
1987	WG1	*	1987	11	19.23351	02	18	16.80	+26	40	44.6	16.0 2 675

1987	WG1		1987	11	20.35191	02	17	29.12	+26	29	15.6	2 675
1987	WH1	*	1987	11	17.16146	00	20	30.24	+16	58	01.6	16.0 2 675
1987	WH1		1987	11	19.15417	00	21	25.49	+16	29	19.4	2 675
1987	WK1	*	1987	11	20.41024	03	25	42.93	+06	05	28.1	16.5 2 675
1987	WK1		1987	11	21.29080	03	24	00.70	+06	24	03.0	2 675
2110	P-L	*	1960	09	24.45000	00	44	59.64	+08	12	31.8	19.0 4 675
2110	P-L		1960	09	26.37010	00	43	22.43	+08	03	29.9	4 675
2110	P-L		1960	09	28.45140	00	41	35.06	+07	53	21.6	4 675
2110	P-L		1960	09	29.44510	00	40	43.53	+07	48	22.4	4 675
2110	P-L		1960	10	17.30420	00	25	54.32	+06	14	46.5	4 675
2110	P-L		1960	10	25.37570	00	20	38.40	+05	36	57.5	4 675
2527	P-L	*	1960	09	24.46184	00	40	58.92	+03	45	44.3	16.9 4 675
2527	P-L		1960	09	26.37988	00	39	54.91	+03	22	35.1	4 675
2527	P-L		1960	09	28.43822	00	38	44.23	+02	57	27.6	4 675
2527	P-L		1960	09	29.39514	00	38	11.07	+02	45	43.3	4 675
2527	P-L		1960	10	17.31529	00	28	02.13	-00	49	43.5	4 675
2527	P-L		1960	10	22.26809	00	25	45.09	-01	42	40.7	4 675
2527	P-L		1960	10	25.30351	00	24	33.35	-02	12	41.8	4 675
2527	P-L		1960	10	26.35766	00	24	10.87	-02	22	39.7	4 675
2534	P-L	*	1960	09	24.46184	00	49	57.19	+04	34	07.0	17.3 4 675
2534	P-L		1960	09	26.37988	00	48	35.88	+04	25	45.7	4 675
2534	P-L		1960	09	28.43822	00	47	06.60	+04	16	37.8	4 675
2534	P-L		1960	10	17.31529	00	33	25.87	+02	53	18.7	4 675
2534	P-L		1960	10	22.26809	00	30	17.46	+02	34	33.4	4 675
2534	P-L		1960	10	25.30351	00	28	32.93	+02	24	16.1	4 675
2534	P-L		1960	10	26.35766	00	27	58.80	+02	20	57.3	4 675
2546	P-L	*	1960	09	24.46184	00	40	40.23	+03	49	48.4	17.8 4 675
2546	P-L		1960	09	26.37988	00	39	17.69	+03	27	26.4	4 675
2546	P-L		1960	09	28.43822	00	37	47.31	+03	03	10.8	4 675
2546	P-L		1960	09	29.39514	00	37	05.03	+02	51	50.8	4 675
2546	P-L		1960	10	17.31529	00	24	12.20	-00	35	05.4	4 675
2546	P-L		1960	10	22.26809	00	21	12.93	-01	25	48.1	4 675
2546	P-L		1960	10	25.30351	00	19	35.99	-01	54	34.8	4 675
2546	P-L		1960	10	26.35766	00	19	04.91	-02	04	06.7	4 675
2548	P-L	*	1960	09	24.46184	00	42	17.62	+01	10	48.1	18.1 4 675
2548	P-L		1960	09	26.37988	00	40	53.90	+01	01	31.5	4 675
2548	P-L		1960	09	28.43822	00	39	23.01	+00	51	33.6	4 675
2548	P-L		1960	09	29.39514	00	38	40.66	+00	46	56.0	4 675
2548	P-L		1960	10	17.31529	00	25	52.53	-00	32	29.2	4 675
2548	P-L		1960	10	22.26809	00	22	47.40	-00	50	11.8	4 675
2548	P-L		1960	10	25.30351	00	21	03.56	-00	59	46.2	4 675
2548	P-L		1960	10	26.35766	00	20	29.38	-01	02	51.0	4 675
2558	P-L	*	1960	09	24.46184	00	52	58.74	+04	15	06.7	18.1 4 675
2558	P-L		1960	09	26.37988	00	51	31.67	+04	09	22.3	4 675
2558	P-L		1960	09	28.43822	00	49	55.88	+04	03	02.6	4 675
2558	P-L		1960	09	29.39514	00	49	10.88	+04	00	01.9	4 675
2558	P-L		1960	10	17.31529	00	34	55.31	+03	04	23.9	4 675
2558	P-L		1960	10	22.26809	00	31	19.55	+02	51	22.1	4 675
2558	P-L		1960	10	25.30351	00	29	17.18	+02	44	21.9	4 675
2558	P-L		1960	10	26.35766	00	28	36.62	+02	42	09.2	4 675
2570	P-L	*	1960	09	24.46184	00	45	20.42	+03	02	57.2	18.5 4 675
2570	P-L		1960	09	28.43822	00	42	36.71	+02	39	58.2	4 675
2570	P-L		1960	09	29.39514	00	41	56.88	+02	34	24.7	4 675
2570	P-L		1960	10	17.31529	00	29	46.85	+00	54	38.8	4 675
2570	P-L		1960	10	22.26809	00	26	47.90	+00	30	34.2	4 675
2570	P-L		1960	10	25.30351	00	25	06.89	+00	16	58.3	4 675
2570	P-L		1960	10	26.35766	00	24	33.42	+00	12	29.7	4 675
3120	P-L	*	1960	09	24.36250	00	00	03.65	+19	05	21.5	19.3 4 675
3120	P-L		1960	09	25.36042	23	59	14.80	+18	57	40.4	4 675

3120	P-L		1960	09	27.44444	23	57	32.37	+18	40	58.9		4 675
3538	P-L		1960	09	26.24514	00	32	04.00	+14	04	13.8		4 675
3538	P-L		1960	09	28.46181	00	30	18.96	+13	57	44.1		4 675
3538	P-L	*	1960	10	17.33750	00	16	48.64	+12	26	32.9	17.0	4 675
3538	P-L		1960	10	22.12083	00	14	34.59	+11	59	29.9		4 675
3538	P-L		1960	10	24.21256	00	13	49.36	+11	47	59.7		4 675
3538	P-L		1960	10	24.30972	00	13	47.06	+11	47	29.3		4 675
3538	P-L		1960	10	26.37951	00	13	11.86	+11	36	28.9		4 675
4009	P-L	*	1960	09	24.37573	00	30	55.69	+05	34	08.4	17.2	4 675
4009	P-L		1960	09	25.42780	00	29	58.41	+05	29	26.3		4 675
4009	P-L		1960	09	26.30558	00	29	10.88	+05	25	27.0		4 675
4009	P-L		1960	09	28.36808	00	27	17.72	+05	15	56.1		4 675
4009	P-L		1960	10	17.27085	00	11	41.82	+03	50	22.1		4 675
4009	P-L		1960	10	22.22293	00	08	44.00	+03	32	38.4		4 675
4009	P-L		1960	10	24.35836	00	07	39.38	+03	26	04.6		4 675
4009	P-L		1960	10	26.32573	00	06	47.31	+03	20	38.7		4 675
4075	P-L	*	1960	09	24.37573	00	34	16.95	+04	33	50.0	19.0	4 675
4075	P-L		1960	09	25.42780	00	33	20.73	+04	28	14.4		4 675
4075	P-L		1960	09	26.30558	00	32	33.76	+04	23	32.6		4 675
4075	P-L		1960	09	28.36808	00	30	41.60	+04	12	17.1		4 675
4075	P-L		1960	10	17.27085	00	14	08.92	+02	29	55.8		4 675
4075	P-L		1960	10	22.22293	00	10	35.60	+02	07	16.5		4 675
4075	P-L		1960	10	26.32573	00	08	04.09	+01	51	00.9		4 675
4127	P-L	*	1960	09	24.37573	00	33	14.12	+03	58	00.6	18.6	4 675
4127	P-L		1960	09	24.41183	00	33	12.52	+03	57	48.7		4 675
4127	P-L		1960	09	25.42780	00	32	28.12	+03	53	01.6		4 675
4127	P-L		1960	09	26.30558	00	31	49.77	+03	48	49.7		4 675
4127	P-L		1960	09	26.31530	00	31	49.28	+03	48	45.8		4 675
4127	P-L		1960	09	27.40836	00	31	00.89	+03	43	32.9		4 675
4127	P-L		1960	09	28.36808	00	30	18.49	+03	38	54.7		4 675
4127	P-L		1960	09	28.39725	00	30	17.13	+03	38	46.7		4 675
4127	P-L		1960	10	17.31529	00	17	03.45	+02	11	16.6		4 675
4127	P-L		1960	10	22.22293	00	14	16.91	+01	52	32.7		4 675
4127	P-L		1960	10	22.26809	00	14	15.39	+01	52	23.1		4 675
4127	P-L		1960	10	24.35836	00	13	12.41	+01	45	16.2		4 675
4127	P-L		1960	10	25.30351	00	12	45.57	+01	42	13.2		4 675
4127	P-L		1960	10	26.32573	00	12	17.77	+01	39	02.8		4 675
4127	P-L		1960	10	26.35766	00	12	16.86	+01	38	56.1		4 675
4636	P-L	*	1960	09	24.41183	00	28	15.62	-00	07	43.3	19.2	4 675
4636	P-L		1960	09	26.31530	00	26	41.25	-00	11	23.4		4 675
4636	P-L		1960	09	27.40836	00	25	46.65	-00	13	28.5		4 675
4636	P-L		1960	09	28.39725	00	24	57.24	-00	15	21.6		4 675
4636	P-L		1960	10	17.28198	00	09	53.29	-00	44	16.1		4 675
4636	P-L		1960	10	22.23406	00	06	28.70	-00	48	08.2		4 675
4636	P-L		1960	10	25.25350	00	04	34.60	-00	49	27.9		4 675
4636	P-L		1960	10	26.31531	00	03	56.45	-00	49	42.5		4 675
4806	P-L	*	1960	09	24.38750	00	28	15.42	+01	11	39.4	19.6	4 675
4806	P-L		1960	09	24.41183	00	28	14.32	+01	11	29.1		4 675
4806	P-L		1960	09	26.31530	00	26	39.96	+00	59	33.8		4 675
4806	P-L		1960	09	26.33542	00	26	38.95	+00	59	25.3		4 675
4806	P-L		1960	09	27.37500	00	25	46.91	+00	52	56.2		4 675
4806	P-L		1960	09	28.37778	00	24	56.67	+00	46	37.5		4 675
4806	P-L		1960	09	28.39725	00	24	55.68	+00	46	29.9		4 675
5012	P-L	*	1960	10	22.27920	00	31	41.62	+09	23	25.9	19.3	4 675
5012	P-L		1960	10	25.37570	00	29	55.39	+09	00	53.4		4 675
5012	P-L		1960	10	26.36840	00	29	22.91	+08	53	47.7		4 675
6048	P-L	*	1960	09	24.33613	00	06	09.79	+03	55	26.6	17.3	4 675
6048	P-L		1960	09	25.32502	00	05	12.79	+03	51	43.4		4 675
6048	P-L		1960	09	26.27573	00	04	18.04	+03	48	06.5		4 675

6048	P-L		1960	09	28.32780	00	02	19.83	+03	40	12.2		4 675
6048	P-L		1960	10	17.21390	23	46	15.72	+02	30	36.7		4 675
6048	P-L		1960	10	22.15559	23	43	11.90	+02	16	40.3		4 675
6048	P-L		1960	10	24.18787	23	42	07.59	+02	11	48.0		4 675
6048	P-L		1960	10	26.26113	23	41	08.97	+02	07	24.3		4 675
6053	P-L	*	1960	09	24.33613	23	54	59.30	+02	45	34.5	17.9	4 675
6053	P-L		1960	09	25.32502	23	54	10.91	+02	38	28.5		4 675
6053	P-L		1960	09	26.27573	23	53	24.68	+02	31	39.7		4 675
6053	P-L		1960	09	28.30764	23	51	47.19	+02	17	08.2		4 675
6053	P-L		1960	09	28.32780	23	51	46.21	+02	16	59.4		4 675
6053	P-L		1960	10	17.21390	23	39	41.09	+00	17	29.5		4 675
6053	P-L		1960	10	22.15559	23	37	47.72	-00	05	55.3		4 675
6053	P-L		1960	10	24.18787	23	37	12.08	-00	14	20.5		4 675
6053	P-L		1960	10	26.26113	23	36	42.43	-00	22	07.2		4 675
6183	P-L	*	1960	09	24.33613	23	52	36.45	+01	27	06.6	19.1	4 675
6183	P-L		1960	09	25.32502	23	51	51.03	+01	17	50.9		4 675
6183	P-L		1960	09	26.27573	23	51	07.63	+01	08	53.7		4 675
6245	P-L	*	1960	09	24.33613	00	01	00.81	+04	38	53.4	19.1	4 675
6245	P-L		1960	09	25.32502	00	00	15.17	+04	29	25.0		4 675
6245	P-L		1960	09	26.27573	23	59	31.42	+04	20	14.7		4 675
6245	P-L		1960	09	28.32780	23	57	57.44	+04	00	28.1		4 675
6573	P-L	*	1960	09	24.35002	23	58	17.55	-05	06	46.3	17.9	4 675
6573	P-L		1960	09	26.28543	23	56	41.05	-05	18	22.8		4 675
6573	P-L		1960	09	27.34237	23	55	48.43	-05	24	36.5		4 675
6573	P-L		1960	09	28.33822	23	54	59.35	-05	30	23.8		4 675
6573	P-L		1960	10	17.22501	23	41	24.12	-06	58	01.5		4 675
6573	P-L		1960	10	22.16324	23	38	48.87	-07	12	07.3		4 675
6573	P-L		1960	10	24.23753	23	37	53.00	-07	16	47.7		4 675
6573	P-L		1960	10	26.27157	23	37	03.80	-07	20	37.9		4 675
6766	P-L	*	1960	09	24.35002	00	04	18.95	-03	01	55.3	17.4	4 675
6766	P-L		1960	09	26.28543	00	03	01.86	-03	17	49.9		4 675
6766	P-L		1960	09	27.34237	00	02	19.92	-03	26	26.4		4 675
6766	P-L		1960	09	28.33822	00	01	40.62	-03	34	28.7		4 675
6766	P-L		1960	10	17.28198	23	50	40.54	-05	49	01.1		4 675
6766	P-L		1960	10	22.23406	23	48	32.88	-06	16	07.7		4 675
6766	P-L		1960	10	26.27157	23	47	07.41	-06	35	18.0		4 675
1017	T-3		1977	10	07.24652	00	51	08.30	+19	08	19.7		4 675
1017	T-3		1977	10	11.26632	00	47	40.28	+18	46	07.9		4 675
1017	T-3		1977	10	11.33351	00	47	36.70	+18	45	44.1		4 675
1017	T-3		1977	10	12.26510	00	46	49.07	+18	40	17.1		4 675
1017	T-3		1977	10	12.33125	00	46	45.54	+18	39	54.5		4 675
1017	T-3		1977	10	16.25156	00	43	29.84	+18	15	44.5		4 675
1017	T-3		1977	10	16.31684	00	43	26.56	+18	15	21.1		4 675
1017	T-3	*	1977	10	17.25365	00	42	41.40	+18	09	23.3	17.8	4 675
1017	T-3		1977	10	17.32083	00	42	38.04	+18	08	57.1		4 675
1017	T-3		1977	10	22.42812	00	38	42.98	+17	35	14.0		4 675
1017	T-3		1977	10	22.48003	00	38	40.65	+17	34	54.1		4 675
1078	T-3		1977	10	12.26510	00	52	52.67	+20	35	11.7		4 675
1078	T-3		1977	10	12.33125	00	52	49.23	+20	34	36.8		4 675
1078	T-3		1977	10	16.25156	00	49	36.62	+19	57	34.8		4 675
1078	T-3		1977	10	16.31684	00	49	33.30	+19	56	59.0		4 675
1078	T-3	*	1977	10	17.25365	00	48	48.39	+19	47	53.7	18.6	4 675
1078	T-3		1977	10	17.32083	00	48	45.07	+19	47	15.8		4 675
1078	T-3		1977	10	22.42812	00	44	48.53	+18	55	56.1		4 675
1078	T-3		1977	10	22.48003	00	44	46.13	+18	55	24.3		4 675
1175	T-3		1977	10	07.24652	01	08	16.83	+17	31	13.2		4 675
1175	T-3		1977	10	11.26632	01	05	03.93	+17	15	18.8		4 675
1175	T-3		1977	10	11.33351	01	05	00.53	+17	15	02.2		4 675
1175	T-3		1977	10	12.26510	01	04	15.96	+17	11	04.6		4 675

1175	T-3		1977	10	12.33125	01	04	12.61	+17	10	48.5		4 675
1175	T-3		1977	10	16.25156	01	01	05.51	+16	53	19.1		4 675
1175	T-3		1977	10	16.31684	01	01	02.36	+16	53	01.4		4 675
1175	T-3	*	1977	10	17.25365	01	00	18.34	+16	48	39.3	17.6	4 675
1175	T-3		1977	10	17.32083	01	00	14.96	+16	48	21.0		4 675
1175	T-3		1977	10	22.42812	00	56	21.42	+16	23	36.5		4 675
1175	T-3		1977	10	22.48003	00	56	19.16	+16	23	20.7		4 675
2203	T-3		1977	10	07.25868	01	05	58.09	+12	28	50.4		4 675
2203	T-3		1977	10	11.27743	01	03	09.71	+12	00	15.7		4 675
2203	T-3		1977	10	11.34375	01	03	06.87	+11	59	47.5		4 675
2203	T-3		1977	10	12.27587	01	02	27.77	+11	53	00.6		4 675
2203	T-3		1977	10	12.34271	01	02	24.84	+11	52	32.4		4 675
2203	T-3	*	1977	10	16.26233	00	59	41.53	+11	23	35.6	19.0	4 675
2203	T-3		1977	10	16.32795	00	59	38.75	+11	23	06.6		4 675
2203	T-3		1977	10	17.26458	00	59	00.17	+11	16	10.2		4 675
2203	T-3		1977	10	17.33177	00	58	57.34	+11	15	39.8		4 675
2203	T-3		1977	10	21.40868	00	56	12.62	+10	45	12.0		4 675
2203	T-3		1977	10	21.46910	00	56	10.21	+10	44	42.9		4 675
2203	T-3		1977	10	22.41528	00	55	32.91	+10	37	43.8		4 675
2203	T-3		1977	10	22.46962	00	55	30.63	+10	37	19.5		4 675
2283	T-3		1977	10	11.27743	01	12	06.25	+10	12	56.6		4 675
2283	T-3		1977	10	11.34375	01	12	02.74	+10	12	51.6		4 675
2283	T-3	*	1977	10	16.26233	01	07	48.25	+10	04	51.7	19.0	4 675
2283	T-3		1977	10	16.32795	01	07	44.79	+10	04	45.3		4 675
2283	T-3		1977	10	17.26458	01	06	56.57	+10	03	13.7		4 675
2283	T-3		1977	10	17.33177	01	06	53.02	+10	03	05.8		4 675
2283	T-3		1977	10	21.40868	01	03	25.76	+09	56	08.5		4 675
2283	T-3		1977	10	21.46910	01	03	22.67	+09	56	01.9		4 675
2283	T-3		1977	10	22.41528	01	02	35.55	+09	54	23.2		4 675
2283	T-3		1977	10	22.46962	01	02	32.59	+09	54	18.6		4 675
2390	T-3		1977	10	07.25868	01	21	57.48	+09	46	51.6		4 675
2390	T-3		1977	10	07.27031	01	21	56.65	+09	46	53.9		4 675
2390	T-3		1977	10	11.28819	01	17	47.10	+09	35	55.4		4 675
2390	T-3		1977	10	11.35642	01	17	42.70	+09	35	44.2		4 675
2390	T-3		1977	10	12.27587	01	16	45.28	+09	33	06.0		4 675
2390	T-3		1977	10	12.28681	01	16	44.63	+09	33	04.7		4 675
2390	T-3		1977	10	12.34271	01	16	41.00	+09	32	55.5		4 675
2390	T-3		1977	10	12.35347	01	16	40.36	+09	32	52.8		4 675
2390	T-3	*	1977	10	16.26233	01	12	35.80	+09	21	24.8	17.5	4 675
2390	T-3		1977	10	16.27309	01	12	34.91	+09	21	24.8		4 675
2390	T-3		1977	10	16.32795	01	12	31.53	+09	21	12.6		4 675
2390	T-3		1977	10	16.33872	01	12	30.78	+09	21	12.5		4 675
2390	T-3		1977	10	17.26458	01	11	33.29	+09	18	26.5		4 675
2390	T-3		1977	10	17.27552	01	11	32.63	+09	18	25.7		4 675
2390	T-3		1977	10	17.33177	01	11	28.97	+09	18	15.5		4 675
2390	T-3		1977	10	17.34236	01	11	28.32	+09	18	13.6		4 675
2390	T-3		1977	10	21.39792	01	07	20.17	+09	06	11.5		4 675
2390	T-3		1977	10	21.40868	01	07	19.65	+09	06	05.8		4 675
2390	T-3		1977	10	21.45799	01	07	16.45	+09	05	58.7		4 675
2390	T-3		1977	10	21.46910	01	07	16.02	+09	05	55.9		4 675
2390	T-3		1977	10	22.39844	01	06	20.42	+09	03	13.4		4 675
2390	T-3		1977	10	22.41528	01	06	19.45	+09	03	07.8		4 675
2390	T-3		1977	10	22.45920	01	06	16.71	+09	03	01.9		4 675
2390	T-3		1977	10	22.46962	01	06	16.05	+09	02	58.6		4 675
2432	T-3	*	1977	10	16.26233	01	15	09.24	+11	29	10.4	19.1	4 675
2432	T-3		1977	10	16.32795	01	15	05.56	+11	28	48.9		4 675
2432	T-3		1977	10	17.26458	01	14	15.78	+11	23	49.4		4 675
2432	T-3		1977	10	17.33177	01	14	12.07	+11	23	29.1		4 675
2432	T-3		1977	10	21.40868	01	10	39.56	+11	01	27.7		4 675

2432	T-3		1977	10	21.46910	01	10	36.45	+11	01	08.6		4 675
2432	T-3		1977	10	22.41528	01	09	48.44	+10	56	04.2		4 675
2432	T-3		1977	10	22.46962	01	09	45.70	+10	55	49.1		4 675
3086	T-3		1977	10	07.27031	01	30	24.83	+09	43	55.9		4 675
3086	T-3		1977	10	11.28819	01	27	23.81	+09	25	52.1		4 675
3086	T-3		1977	10	11.35642	01	27	20.53	+09	25	36.4		4 675
3086	T-3		1977	10	12.28681	01	26	38.04	+09	21	19.8		4 675
3086	T-3		1977	10	12.35347	01	26	34.81	+09	21	00.7		4 675
3086	T-3	*	1977	10	16.27309	01	23	34.78	+09	02	47.6	18.6	4 675
3086	T-3		1977	10	16.33872	01	23	31.60	+09	02	29.5		4 675
3086	T-3		1977	10	17.27552	01	22	48.54	+08	58	09.3		4 675
3086	T-3		1977	10	17.34236	01	22	45.32	+08	57	50.1		4 675
3086	T-3		1977	10	21.39792	01	19	40.96	+08	39	02.0		4 675
3086	T-3		1977	10	21.45799	01	19	38.24	+08	38	44.8		4 675
3086	T-3		1977	10	22.39844	01	18	56.23	+08	34	22.5		4 675
3086	T-3		1977	10	22.45920	01	18	53.56	+08	34	07.2		4 675
3111	T-3	*	1977	10	16.27309	01	21	34.93	+09	31	13.1	18.0	4 675
3111	T-3		1977	10	16.33872	01	21	31.38	+09	30	47.0		4 675
3111	T-3		1977	10	17.27552	01	20	42.11	+09	24	26.0		4 675
3111	T-3		1977	10	17.34236	01	20	38.47	+09	23	58.0		4 675
3111	T-3		1977	10	21.39792	01	17	08.97	+08	56	35.4		4 675
3111	T-3		1977	10	21.45799	01	17	05.70	+08	56	10.8		4 675
3111	T-3		1977	10	22.39844	01	16	18.37	+08	49	53.8		4 675
3111	T-3		1977	10	22.45920	01	16	15.33	+08	49	29.1		4 675
3128	T-3		1977	10	07.27031	01	28	22.81	+06	09	06.9		4 675
3128	T-3		1977	10	11.28819	01	25	18.69	+05	52	19.7		4 675
3128	T-3		1977	10	11.35642	01	25	15.40	+05	52	02.5		4 675
3128	T-3		1977	10	12.28681	01	24	32.08	+05	48	05.0		4 675
3128	T-3		1977	10	12.35347	01	24	28.83	+05	47	47.8		4 675
3128	T-3	*	1977	10	16.27309	01	21	24.27	+05	31	21.9	17.4	4 675
3128	T-3		1977	10	16.33872	01	21	20.98	+05	31	04.4		4 675
3128	T-3		1977	10	17.27552	01	20	36.74	+05	27	12.4		4 675
3128	T-3		1977	10	17.34236	01	20	33.46	+05	26	56.5		4 675
3128	T-3		1977	10	21.39792	01	17	22.91	+05	10	28.1		4 675
3128	T-3		1977	10	21.45799	01	17	19.99	+05	10	14.1		4 675
3128	T-3		1977	10	22.39844	01	16	36.52	+05	06	29.9		4 675
3128	T-3		1977	10	22.45920	01	16	33.73	+05	06	15.9		4 675
3257	T-3		1977	10	07.27031	01	21	37.60	+05	50	04.9		4 675
3257	T-3		1977	10	11.28819	01	18	13.25	+05	25	54.8		4 675
3257	T-3		1977	10	11.35642	01	18	09.69	+05	25	30.2		4 675
3257	T-3		1977	10	12.28681	01	17	22.14	+05	19	54.1		4 675
3257	T-3		1977	10	12.35347	01	17	18.58	+05	19	29.4		4 675
3257	T-3	*	1977	10	16.27309	01	13	56.24	+04	56	00.3	19.6	4 675
3257	T-3		1977	10	16.33872	01	13	52.61	+04	55	36.7		4 675
3257	T-3		1977	10	17.27552	01	13	04.41	+04	50	03.7		4 675
3257	T-3		1977	10	17.34236	01	13	00.91	+04	49	38.3		4 675
3257	T-3		1977	10	21.39792	01	09	34.27	+04	26	08.3		4 675
3257	T-3		1977	10	21.45799	01	09	31.17	+04	25	46.8		4 675
3257	T-3		1977	10	22.39844	01	08	44.50	+04	20	30.2		4 675
3257	T-3		1977	10	22.45920	01	08	41.32	+04	20	08.0		4 675
3319	T-3		1977	10	07.27031	01	17	34.43	+05	00	11.2		4 675
3319	T-3		1977	10	11.28819	01	14	44.69	+04	37	56.2		4 675
3319	T-3		1977	10	11.35642	01	14	41.64	+04	37	34.8		4 675
3319	T-3		1977	10	12.28681	01	14	02.36	+04	32	24.4		4 675
3319	T-3		1977	10	12.35347	01	13	59.49	+04	32	01.7		4 675
3319	T-3	*	1977	10	16.27309	01	11	13.43	+04	10	40.8	18.8	4 675
3319	T-3		1977	10	16.28368	01	11	13.04	+04	10	38.3		4 675
3319	T-3		1977	10	16.33872	01	11	10.66	+04	10	19.8		4 675
3319	T-3		1977	10	16.34931	01	11	10.17	+04	10	16.8		4 675

3319	T-3		1977	10	17.27552	01	10	31.30	+04	05	18.9		4 675
3319	T-3		1977	10	17.34236	01	10	28.47	+04	04	55.4		4 675
3319	T-3		1977	10	21.39792	01	07	40.62	+03	43	43.0		4 675
3319	T-3		1977	10	21.45799	01	07	38.01	+03	43	24.2		4 675
3319	T-3		1977	10	22.39844	01	07	00.16	+03	38	35.1		4 675
3319	T-3		1977	10	22.45920	01	06	57.60	+03	38	16.3		4 675
3414	T-3		1977	10	07.27031	01	14	58.57	+06	15	58.6		4 675
3414	T-3		1977	10	11.28819	01	11	47.98	+05	38	38.2		4 675
3414	T-3		1977	10	11.35642	01	11	44.70	+05	37	59.2		4 675
3414	T-3		1977	10	12.28681	01	11	00.64	+05	29	18.4		4 675
3414	T-3		1977	10	12.35347	01	10	57.36	+05	28	41.5		4 675
3414	T-3	*	1977	10	16.27309	01	07	51.52	+04	52	26.9	19.1	4 675
3414	T-3		1977	10	16.33872	01	07	48.30	+04	51	51.1		4 675
3414	T-3		1977	10	17.27552	01	07	04.31	+04	43	20.5		4 675
3414	T-3		1977	10	17.34236	01	07	01.12	+04	42	42.1		4 675
3414	T-3		1977	10	21.39792	01	03	54.57	+04	06	21.0		4 675
3414	T-3		1977	10	21.45799	01	03	51.70	+04	05	50.0		4 675
3414	T-3		1977	10	22.45920	01	03	07.09	+03	57	01.8		4 675
4002	T-3		1977	10	07.28125	01	18	56.05	+02	01	35.5		4 675
4002	T-3		1977	10	11.30000	01	15	18.45	+01	27	07.1		4 675
4002	T-3		1977	10	11.36771	01	15	14.58	+01	26	32.6		4 675
4002	T-3		1977	10	12.29826	01	14	24.08	+01	18	44.1		4 675
4002	T-3		1977	10	12.36441	01	14	20.36	+01	18	10.7		4 675
4002	T-3	*	1977	10	16.28368	01	10	48.53	+00	46	13.2	18.1	4 675
4002	T-3		1977	10	16.34931	01	10	44.85	+00	45	42.4		4 675
4017	T-3		1977	10	07.27031	01	21	45.11	+03	37	29.0		4 675
4017	T-3		1977	10	07.28125	01	21	44.51	+03	37	24.9		4 675
4017	T-3		1977	10	11.30000	01	17	25.98	+03	22	07.0		4 675
4017	T-3		1977	10	11.36771	01	17	21.35	+03	21	52.0		4 675
4017	T-3		1977	10	12.29826	01	16	21.05	+03	18	20.9		4 675
4017	T-3		1977	10	12.36441	01	16	16.61	+03	18	06.5		4 675
4017	T-3	*	1977	10	16.28368	01	12	03.02	+03	04	06.1	17.8	4 675
4017	T-3		1977	10	16.34931	01	11	58.68	+03	03	52.8		4 675
4017	T-3		1977	10	17.28628	01	10	58.87	+03	00	41.4		4 675
4017	T-3		1977	10	17.35313	01	10	54.48	+03	00	29.2		4 675
4059	T-3		1977	10	07.27031	01	22	33.40	+03	43	42.7		4 675
4059	T-3		1977	10	07.28125	01	22	32.85	+03	43	35.6		4 675
4059	T-3		1977	10	11.30000	01	18	51.99	+03	26	17.5		4 675
4059	T-3		1977	10	11.36771	01	18	48.12	+03	25	59.8		4 675
4059	T-3		1977	10	12.29826	01	17	56.54	+03	22	01.3		4 675
4059	T-3		1977	10	12.36441	01	17	52.72	+03	21	44.8		4 675
4059	T-3	*	1977	10	16.28368	01	14	15.88	+03	05	33.0	17.3	4 675
4059	T-3		1977	10	16.34931	01	14	12.06	+03	05	19.0		4 675
4059	T-3		1977	10	17.28628	01	13	20.80	+03	01	32.7		4 675
4059	T-3		1977	10	17.35313	01	13	16.99	+03	01	17.2		4 675
4059	T-3		1977	10	21.38698	01	09	38.87	+02	45	58.7		4 675
4059	T-3		1977	10	21.44705	01	09	35.63	+02	45	45.1		4 675
4059	T-3		1977	10	22.38542	01	08	46.12	+02	42	23.7		4 675
4059	T-3		1977	10	22.44878	01	08	42.89	+02	42	09.9		4 675
4071	T-3		1977	10	07.28125	01	23	45.98	+01	33	26.1		4 675
4071	T-3		1977	10	11.30000	01	19	46.12	+01	17	28.2		4 675
4071	T-3		1977	10	11.36771	01	19	41.81	+01	17	13.2		4 675
4071	T-3		1977	10	12.29826	01	18	45.33	+01	13	41.3		4 675
4071	T-3		1977	10	12.36441	01	18	41.03	+01	13	24.8		4 675
4071	T-3	*	1977	10	16.28368	01	14	40.73	+00	59	20.5	17.4	4 675
4071	T-3		1977	10	16.34931	01	14	36.52	+00	59	06.5		4 675
4071	T-3		1977	10	17.28628	01	13	39.23	+00	55	56.2		4 675
4071	T-3		1977	10	17.35313	01	13	34.98	+00	55	44.7		4 675
4071	T-3		1977	10	21.38698	01	09	30.60	+00	43	34.6		4 675

4071	T-3		1977	10	21.44705	01	09	26.88	+00	43	25.1		4 675
4071	T-3		1977	10	22.38542	01	08	31.36	+00	40	53.1		4 675
4071	T-3		1977	10	22.44878	01	08	27.68	+00	40	42.3		4 675
4156	T-3		1977	10	07.28125	01	27	47.94	+03	19	22.1		4 675
4156	T-3		1977	10	11.30000	01	24	23.81	+02	56	19.5		4 675
4156	T-3		1977	10	11.36771	01	24	20.21	+02	55	55.7		4 675
4156	T-3		1977	10	12.29826	01	23	32.29	+02	50	37.5		4 675
4156	T-3		1977	10	12.36441	01	23	28.74	+02	50	15.6		4 675
4156	T-3	*	1977	10	16.28368	01	20	05.62	+02	28	26.9	17.8	4 675
4156	T-3		1977	10	16.34931	01	20	02.03	+02	28	05.5		4 675
4156	T-3		1977	10	17.28628	01	19	13.57	+02	22	57.4		4 675
4156	T-3		1977	10	17.35313	01	19	09.98	+02	22	36.6		4 675
4156	T-3		1977	10	21.38698	01	15	42.82	+02	01	29.8		4 675
4156	T-3		1977	10	21.44705	01	15	39.72	+02	01	10.2		4 675
4156	T-3		1977	10	22.38542	01	14	52.36	+01	56	28.2		4 675
4156	T-3		1977	10	22.44878	01	14	49.11	+01	56	09.1		4 675
4171	T-3		1977	10	07.28125	01	30	23.50	+01	57	26.7		4 675
4171	T-3		1977	10	11.30000	01	26	14.24	+01	41	49.9		4 675
4171	T-3		1977	10	11.36771	01	26	09.85	+01	41	35.0		4 675
4171	T-3		1977	10	12.29826	01	25	11.03	+01	38	04.7		4 675
4171	T-3		1977	10	12.36441	01	25	06.64	+01	37	50.3		4 675
4171	T-3	*	1977	10	16.28368	01	20	56.70	+01	23	54.9	17.2	4 675
4171	T-3		1977	10	16.34931	01	20	52.27	+01	23	42.3		4 675
4171	T-3		1977	10	17.28628	01	19	52.62	+01	20	32.4		4 675
4171	T-3		1977	10	17.35313	01	19	48.19	+01	20	18.9		4 675
4171	T-3		1977	10	21.38698	01	15	33.09	+01	08	03.8		4 675
4171	T-3		1977	10	21.44705	01	15	29.27	+01	07	54.4		4 675
4171	T-3		1977	10	22.38542	01	14	30.92	+01	05	17.6		4 675
4171	T-3		1977	10	22.44878	01	14	27.08	+01	05	08.0		4 675
4203	T-3		1977	10	07.27031	01	30	06.25	+04	10	23.9		4 675
4203	T-3		1977	10	11.30000	01	26	57.13	+03	33	56.4		4 675
4203	T-3		1977	10	11.36771	01	26	53.70	+03	33	19.9		4 675
4203	T-3		1977	10	12.29826	01	26	09.43	+03	24	53.6		4 675
4203	T-3		1977	10	12.36441	01	26	06.14	+03	24	19.0		4 675
4203	T-3	*	1977	10	16.28368	01	22	58.17	+02	49	21.3	18.9	4 675
4203	T-3		1977	10	16.34931	01	22	54.94	+02	48	45.2		4 675
4203	T-3		1977	10	17.28628	01	22	10.12	+02	40	29.4		4 675
4203	T-3		1977	10	17.35313	01	22	06.81	+02	39	53.8		4 675
4203	T-3		1977	10	21.38698	01	18	54.82	+02	05	09.2		4 675
4203	T-3		1977	10	21.44705	01	18	52.02	+02	04	40.1		4 675
4203	T-3		1977	10	22.44878	01	18	05.25	+01	56	13.7		4 675
4243	T-3		1977	10	07.28125	01	31	27.86	-00	26	02.3		4 675
4243	T-3		1977	10	11.30000	01	28	44.50	-00	56	39.6		4 675
4243	T-3		1977	10	11.36771	01	28	41.66	-00	57	10.8		4 675
4243	T-3		1977	10	12.29826	01	28	03.34	-01	04	07.8		4 675
4243	T-3		1977	10	12.36441	01	28	00.55	-01	04	37.8		4 675
4243	T-3	*	1977	10	16.28368	01	25	18.25	-01	33	12.3	17.5	4 675
4243	T-3		1977	10	16.34931	01	25	15.52	-01	33	40.4		4 675
4243	T-3		1977	10	17.28628	01	24	36.84	-01	40	19.6		4 675
4243	T-3		1977	10	17.29688	01	24	36.36	-01	40	21.8		4 675
4243	T-3		1977	10	17.35313	01	24	34.02	-01	40	47.8		4 675
4243	T-3		1977	10	17.36372	01	24	33.49	-01	40	49.7		4 675
4243	T-3		1977	10	21.37622	01	21	48.95	-02	08	09.1		4 675
4243	T-3		1977	10	21.38698	01	21	48.43	-02	08	15.6		4 675
4243	T-3		1977	10	21.43611	01	21	46.39	-02	08	33.1		4 675
4243	T-3		1977	10	21.44705	01	21	45.91	-02	08	38.0		4 675
4243	T-3		1977	10	22.37274	01	21	08.48	-02	14	37.1		4 675
4243	T-3		1977	10	22.38542	01	21	08.12	-02	14	46.6		4 675
4243	T-3		1977	10	22.43872	01	21	05.86	-02	15	05.8		4 675

4243	T-3		1977	10	22.44878	01	21	05.36	-02	15	08.8		4 675
4343	T-3		1977	10	07.28125	01	39	46.08	+03	55	59.7		4 675
4343	T-3		1977	10	12.29826	01	36	03.71	+03	22	37.4		4 675
4343	T-3		1977	10	12.36441	01	36	00.69	+03	22	10.8		4 675
4343	T-3	*	1977	10	16.28368	01	33	02.63	+02	56	24.2	18.2	4 675
4343	T-3		1977	10	16.34931	01	32	59.67	+02	55	59.5		4 675
4343	T-3		1977	10	17.28628	01	32	16.90	+02	49	54.5		4 675
4343	T-3		1977	10	17.35313	01	32	13.76	+02	49	27.7		4 675
4343	T-3		1977	10	21.38698	01	29	09.55	+02	23	48.2		4 675
4343	T-3		1977	10	21.44705	01	29	06.80	+02	23	25.2		4 675
4343	T-3		1977	10	22.38542	01	28	24.13	+02	17	36.3		4 675
4343	T-3		1977	10	22.44878	01	28	21.38	+02	17	14.9		4 675
90			1978	10	28.34045	02	28	51.55	+12	47	25.8		6 675
90			1978	10	29.35451	02	28	01.69	+12	43	54.3		6 675
167			1978	10	28.34045	02	51	06.95	+13	33	18.4		6 675
167			1978	10	29.35451	02	50	16.47	+13	28	57.3		6 675
435			1983	12	30.38646	06	51	15.48	+25	51	29.6		6 675
632			1978	10	28.39722	03	02	15.19	+19	41	21.1		6 675
632			1978	10	29.41146	03	01	20.89	+19	38	11.3		6 675
813			1978	10	28.34045	02	42	36.90	+13	02	14.6		6 675
813			1978	10	29.35451	02	41	29.02	+13	00	43.1		6 675
821			1978	10	28.39722	03	03	23.64	+15	21	18.9		6 675
821			1978	10	29.41146	03	02	34.15	+15	16	31.8		6 675
919			1978	10	28.34045	02	38	53.96	+18	00	18.1		6 675
919			1978	10	29.35451	02	38	03.52	+17	52	56.2		6 675
988			1978	10	28.34045	02	28	21.85	+14	26	24.8		6 675
1269			1978	10	28.39722	03	16	07.48	+14	22	57.0		6 675
1269			1978	10	29.41146	03	15	30.12	+14	20	12.9		6 675
1292			1978	10	29.41146	03	02	59.89	+19	56	53.6		6 675
1350			1983	12	30.38646	07	07	01.07	+19	51	49.2		6 675
1350			1984	01	08.31979	06	58	34.67	+20	11	42.6		6 675
1449			1983	12	30.38646	06	57	06.38	+20	59	03.4		6 675
1457			1984	01	08.31979	07	15	35.00	+23	48	49.9		6 675
1522			1978	10	28.39722	03	17	23.76	+15	25	00.3		6 675
1522			1978	10	29.41146	03	16	26.15	+15	23	48.1		6 675
1624			1984	01	08.31979	07	11	53.05	+21	02	58.2		6 675
1643			1983	12	30.38646	06	54	44.43	+23	40	21.6		6 675
1741			1984	01	08.31979	07	13	41.42	+25	52	28.5		6 675
1976			1983	12	30.38646	07	09	25.77	+23	19	30.2		6 675
1976			1984	01	08.31979	06	59	27.44	+23	44	31.8		6 675
2007			1978	10	28.39722	03	03	25.04	+19	32	37.7		6 675
2007			1978	10	29.41146	03	02	25.09	+19	29	48.7		6 675
2210			1983	12	30.38646	07	03	33.24	+20	57	17.4		6 675
2210			1984	01	08.31979	06	53	30.48	+21	20	41.1		6 675
2228			1978	10	28.34045	02	53	45.53	+13	20	33.8		6 675
2228			1978	10	29.35451	02	52	58.97	+13	16	43.1		6 675
2230			1978	10	28.39722	03	17	38.50	+14	18	34.7		6 675
2230			1978	10	29.41146	03	16	51.07	+14	14	41.3		6 675
2410			1984	01	08.31979	07	08	40.23	+21	01	36.1		6 675
2492			1978	10	28.34045	02	51	27.43	+16	53	14.9		6 675
2492			1978	10	29.35451	02	50	39.33	+16	49	57.8		6 675
2556			1983	12	30.38646	06	51	21.69	+20	35	33.6		6 675
2658			1978	10	28.34045	02	54	08.53	+15	00	04.0		6 675
2658			1978	10	28.39722	02	54	05.94	+14	59	45.9		6 675
2658			1978	10	29.35451	02	53	22.06	+14	54	34.0		6 675
2658			1978	10	29.41146	02	53	19.36	+14	54	15.6		6 675
2659			1978	10	28.39722	03	11	18.84	+15	58	09.0		6 675
2659			1978	10	29.41146	03	10	33.15	+15	54	45.0		6 675
2674			1978	10	28.34045	02	50	49.58	+14	45	39.5		6 675

2674		1978	10	29.35451	02	50	19.33	+14	43	14.6	6 675
2779		1983	12	30.38646	07	08	16.55	+25	09	13.3	6 675
2779		1984	01	08.31979	06	57	33.15	+25	43	39.8	6 675
2781		1983	12	30.38646	06	50	48.38	+20	19	40.4	6 675
2982		1978	10	28.34045	02	51	23.36	+15	58	43.8	6 675
2982		1978	10	29.35451	02	50	28.50	+15	58	18.9	6 675
3003		1983	12	30.38646	06	50	26.69	+21	52	01.8	6 675
3251		1984	01	08.31979	07	09	01.95	+21	52	10.0	6 675
3264		1983	12	30.38646	07	04	00.66	+21	44	54.0	6 675
3264		1984	01	08.31979	06	55	58.93	+21	58	51.6	6 675
3274		1984	01	08.31979	07	15	29.42	+24	04	17.1	6 675
3286		1983	12	30.38646	07	01	55.61	+20	34	25.6	6 675
3286		1984	01	08.31979	06	52	42.79	+21	35	41.4	6 675
3320		1978	10	28.34045	02	30	09.38	+14	51	16.5	6 675
3320		1978	10	29.35451	02	29	12.36	+14	44	58.6	6 675
3338		1983	12	30.38646	07	03	52.44	+22	08	37.5	6 675
3338		1984	01	08.31979	06	52	55.91	+22	26	22.8	6 675

688 Lowell Observatory, Anderson Mesa Station
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Observers R. P. Binzel, S. J. Bus, B. A. Skiff
Measurers E. Bowell, S. J. Bus, B. A. Skiff
1.8-m reflector + CCD (1) and 0.33-m photographic telescope
PDS scanning microdensitometer
AGK3 and Perth 70 secondary nets, global solutions
See also MPC 9533

1936	OH	1987	11	22.19302	03	31	46.31	+08	01	12.0	17.0 688
1936	OH	1987	11	22.26684	03	31	42.67	+08	00	46.8	688
1964	TC1	1987	11	24.16970	02	18	30.29	+14	25	50.3	17.0 688
1964	TC1	1987	11	24.23662	02	18	27.73	+14	25	37.3	688
1975	VY5	1987	11	19.23024	03	31	29.00	+31	53	46.2	16.8 688
1975	VY5	1987	11	19.29634	03	31	24.27	+31	53	58.3	688
1980	TN4	1987	11	19.18609	02	19	35.48	+14	16	47.5	17.5 688
1980	TN4	1987	11	19.25229	02	19	31.28	+14	16	32.7	688
1980	TN4	1987	11	24.23662	02	15	04.03	+14	02	26.6	17.2 688
1981	ED35	1987	11	17.15038	02	22	53.96	+16	32	31.5	1 688
1981	ED35	1987	11	17.41141	02	22	39.49	+16	31	32.8	1 688
1981	ED35	1987	11	21.07955	02	19	35.88	+16	18	13.9	1 688
1981	ED35	1987	11	21.11600	02	19	34.06	+16	18	06.4	1 688
1981	JQ	1987	11	22.16958	03	27	58.87	+22	59	21.3	16.8 688
1981	JQ	1987	11	22.24458	03	27	53.69	+22	59	15.1	688
1981	TO3	1987	11	19.18609	02	30	12.99	+12	57	14.4	17.2 688
1981	TO3	1987	11	19.25229	02	30	09.84	+12	57	02.6	688
1982	SU1	1987	11	24.16970	02	29	25.89	+15	21	27.1	17.2 688
1982	SU1	1987	11	24.23662	02	29	23.23	+15	21	11.2	688
1982	UR7	1987	11	19.20818	02	40	04.54	+01	23	25.5	16.5 688
1982	UR7	1987	11	19.27441	02	40	01.36	+01	23	26.0	688
1983	TE1	1987	11	19.18609	02	36	38.74	+11	48	52.7	16.8 688
1983	TE1	1987	11	19.25229	02	36	35.64	+11	48	23.4	688
1983	TE1	1987	11	24.16970	02	33	09.76	+11	17	13.7	17.2 688
1983	TE1	1987	11	24.23662	02	33	07.08	+11	16	47.4	688
1984	YY	1987	11	19.18609	02	16	53.59	+12	53	24.1	16.0 688
1984	YY	1987	11	19.25229	02	16	50.31	+12	53	13.2	688
1984	YY	1987	11	24.16970	02	13	26.58	+12	42	27.7	16.0 688
1984	YY	1987	11	24.23662	02	13	24.04	+12	42	20.4	688
1985	JV1	1987	11	22.16958	03	24	36.38	+17	14	26.1	15.5 688
1985	JV1	1987	11	22.24458	03	24	31.39	+17	14	34.0	688
1986	OA	1987	11	19.23024	03	34	24.55	+28	35	05.1	16.8 688

1986	OA		1987	11	19.29634	03	34	20.37	+28	34	35.2		688
1987	SY3		1987	11	22.14392	00	58	14.14	-07	53	21.2	16.5	688
1987	SY3		1987	11	22.21884	00	58	13.10	-07	53	15.4		688
1987	SZ3		1987	11	22.14392	01	07	04.01	-05	15	59.0	16.8	688
1987	SZ3		1987	11	22.21884	01	07	04.71	-05	15	26.2		688
1987	UE		1987	11	19.18609	02	26	40.68	+13	48	13.4	16.8	688
1987	UE		1987	11	19.25229	02	26	37.78	+13	48	02.4		688
1987	UE		1987	11	24.16970	02	23	25.06	+13	31	40.0	16.8	688
1987	UE		1987	11	24.23662	02	23	22.66	+13	31	29.3		688
1987	UF		1987	11	19.18609	02	25	41.70	+14	39	28.8	16.8	688
1987	UF		1987	11	19.25229	02	25	38.44	+14	39	15.9		688
1987	UF		1987	11	24.16970	02	22	08.45	+14	27	17.1	16.8	688
1987	UF		1987	11	24.23662	02	22	05.74	+14	27	10.5		688
1987	UG		1987	11	19.18609	02	35	20.98	+13	57	41.7	16.2	688
1987	UG		1987	11	19.25229	02	35	17.85	+13	57	22.3		688
1987	UG		1987	11	24.16970	02	32	01.49	+13	35	36.9	16.8	688
1987	UG		1987	11	24.23662	02	31	58.87	+13	35	19.9		688
1987	UU		1987	11	19.20818	02	33	37.31	-02	28	31.6	16.8	688
1987	UU		1987	11	19.27441	02	33	34.32	-02	28	31.8		688
1987	UV		1987	11	19.20818	02	51	37.69	-03	03	02.7	16.5	688
1987	UV		1987	11	19.27441	02	51	34.92	-03	03	19.3		688
1987	WB		1987	11	22.16958	03	29	44.99	+18	06	12.1	16.5	688
1987	WB		1987	11	22.24458	03	29	41.41	+18	05	46.9		688
1987	WF		1987	10	20.28237	03	01	12.95	+16	19	11.6	16.8	688
1987	WF		1987	10	20.34940	03	01	09.47	+16	19	13.7		688
1987	WF	*	1987	11	19.18609	02	28	23.08	+16	07	23.1	16.8	688
1987	WF		1987	11	19.25229	02	28	18.73	+16	07	20.6		688
1987	WF		1987	11	24.16970	02	23	25.17	+16	04	47.1	16.8	688
1987	WF		1987	11	24.23662	02	23	21.50	+16	04	45.8		688
1987	WG	*	1987	11	19.23024	03	16	12.47	+29	25	56.7	16.2	688
1987	WG		1987	11	19.29634	03	16	08.04	+29	25	57.7		688
1987	WH	*	1987	11	19.23024	03	25	21.14	+31	05	54.7	16.2	688
1987	WH		1987	11	19.29634	03	25	16.10	+31	05	49.3		688
1987	WJ	*	1987	11	19.23024	03	27	20.15	+28	18	22.5	16.5	688
1987	WJ		1987	11	19.29634	03	27	15.61	+28	18	01.2		688
1987	WL		1987	09	26.35216	01	31	23.65	-08	32	53.3	16.8	688
1987	WL		1987	09	26.39608	01	31	22.04	-08	33	06.9		688
1987	WL		1987	10	20.19271	01	12	02.80	-09	43	02.5	16.8	688
1987	WL		1987	10	20.23741	01	12	00.25	-09	43	02.8		688
1987	WL	*	1987	11	22.14392	00	55	18.87	-06	58	36.0	17.0	688
1987	WL		1987	11	22.21884	00	55	18.48	-06	57	55.1		688
1987	WJ1	*	1987	11	17.15038	02	22	45.37	+16	33	10.5	18.5	1 688
1987	WJ1		1987	11	17.41141	02	22	32.55	+16	32	48.6		1 688
1987	WJ1		1987	11	20.08990	02	20	28.83	+16	29	15.2		1 688
1987	WJ1		1987	11	20.17413	02	20	24.94	+16	29	08.7		1 688
1987	WJ1		1987	11	21.10189	02	19	43.67	+16	27	57.5		1 688
1987	WJ1		1987	11	21.10807	02	19	43.37	+16	27	57.0		1 688
1987	WJ1		1987	11	22.16296	02	18	57.48	+16	26	39.6		1 688
1987	WJ1		1987	11	22.16880	02	18	57.22	+16	26	39.2		1 688
1987	WL1	*	1987	11	22.16958	03	07	51.56	+18	25	36.6	16.8	688
1987	WL1		1987	11	22.24458	03	07	47.28	+18	25	17.1		688
1987	WM1	*	1987	11	22.16958	03	13	59.44	+18	25	55.0	17.0	688
1987	WM1		1987	11	22.24458	03	13	54.69	+18	25	45.9		688
1987	WN1	*	1987	11	22.16958	03	18	08.36	+19	50	44.9	16.8	688
1987	WN1		1987	11	22.24458	03	18	03.48	+19	50	19.6		688
1987	WO1	*	1987	11	22.16958	03	24	21.95	+18	19	52.0	17.2	D 688
1987	WO1		1987	11	22.24458	03	24	17.47	+18	19	21.4		P 688
1987	WP1	*	1987	11	22.19302	03	29	48.10	+12	10	24.3	16.5	688
1987	WP1		1987	11	22.26684	03	29	42.86	+12	10	24.6		P 688

99	1987	11	19.18609	02	20	29.70	+14	46	07.8		688
99	1987	11	19.25229	02	20	26.13	+14	46	02.9		688
266	1987	11	19.18609	02	15	26.76	+17	59	35.0		688
266	1987	11	19.25229	02	15	24.23	+17	58	52.7		688
329	1987	11	22.14392	00	52	42.25	-06	30	09.3		688
329	1987	11	22.21884	00	52	41.49	-06	30	18.3		688
423	1987	11	22.14392	01	14	41.81	-02	46	53.3		688
423	1987	11	22.21884	01	14	39.85	-02	46	40.9		688
447	1987	11	22.19302	03	17	57.22	+15	56	29.7		688
447	1987	11	22.26684	03	17	53.17	+15	56	22.6		688
578	1987	11	19.18609	02	31	28.28	+17	43	41.8		688
578	1987	11	19.25229	02	31	24.71	+17	43	31.3		688
633	1987	11	22.14392	00	59	55.20	-07	28	13.7		688
633	1987	11	22.21884	00	59	54.30	-07	28	08.0		688
763	1987	11	19.23024	03	41	32.20	+26	24	12.1		688
763	1987	11	19.29634	03	41	27.64	+26	23	50.7		688
829	1987	11	19.23024	03	38	21.21	+32	53	37.1		688
829	1987	11	19.29634	03	38	16.65	+32	53	32.2		688
861	1987	11	22.14392	01	07	06.48	-04	33	41.5		688
861	1987	11	22.21884	01	07	05.14	-04	33	34.8		688
906	1987	11	19.18609	02	32	10.32	+17	04	21.1		688
906	1987	11	19.25229	02	32	06.65	+17	04	19.4		688
1030	1987	11	19.20818	02	53	50.85	+03	08	21.9		688
1030	1987	11	19.27441	02	53	47.99	+03	08	01.2		688
1048	1987	11	22.16958	03	27	27.68	+20	17	24.9		688
1048	1987	11	22.24458	03	27	22.98	+20	17	25.5		688
1102	1987	11	22.19302	03	37	13.67	+11	00	53.4		688
1102	1987	11	22.26684	03	37	09.95	+11	00	22.2		688
1220	1987	11	22.14392	01	05	55.01	-09	40	15.4	17.0	688
1220	1987	11	22.21884	01	05	53.60	-09	40	02.1		688
1289	1987	11	22.16958	03	26	16.36	+17	03	49.4		688
1289	1987	11	22.24458	03	26	12.30	+17	03	32.0		688
1305	1987	11	19.18609	02	38	40.62	+14	28	41.4		688
1305	1987	11	19.25229	02	38	37.48	+14	28	28.7		688
1320	1987	11	22.19302	03	19	14.42	+08	26	15.8		688
1320	1987	11	22.26684	03	19	10.27	+08	26	19.2		688
1344	1987	11	22.16958	03	07	34.91	+16	25	27.5		688
1344	1987	11	22.24458	03	07	29.82	+16	25	20.3		688
1354	1987	11	22.16958	03	08	50.85	+21	14	27.0	16.5	688
1354	1987	11	22.24458	03	08	46.89	+21	14	17.8		688
1513	1987	11	22.19302	03	20	06.30	+11	09	06.1	R	688
1513	1987	11	22.26684	03	20	01.09	+11	08	51.0		688
1528	1987	11	19.20818	02	34	49.76	+01	26	53.6	17.2	688
1528	1987	11	19.27441	02	34	46.16	+01	26	44.1	16.5	688
1576	1987	11	22.16958	03	28	02.10	+17	23	43.4		688
1576	1987	11	22.24458	03	27	58.27	+17	23	29.4		688
1590	1987	11	22.24458	03	22	26.63	+17	21	11.0		688
1595	1987	11	22.19302	03	40	04.95	+14	07	06.9		688
1595	1987	11	22.26684	03	40	00.51	+14	06	57.4		688
1610	1987	11	22.16958	03	06	34.37	+21	32	49.3	16.2	688
1610	1987	11	22.24458	03	06	29.67	+21	32	35.0		688
1629	1987	11	19.20818	02	54	09.54	+00	31	31.9		688
1629	1987	11	19.27441	02	54	05.56	+00	31	25.4		688
1630	1987	11	19.18609	02	24	45.36	+13	05	04.1		688
1813	1987	11	22.16958	03	29	02.52	+23	44	39.0	16.8	688
1999	1987	11	22.14392	01	12	02.10	-07	33	14.0		688
1999	1987	11	22.21884	01	12	00.30	-07	33	13.7		688
2382	1987	11	19.23024	03	30	22.29	+27	53	43.9		688
2382	1987	11	19.29634	03	30	17.74	+27	52	44.7		688

2392	1987 11 22.19302	03 27 15.94	+12 03 37.6				688
2392	1987 11 22.26684	03 27 11.29	+12 03 23.6				688
2441	1987 11 22.19302	03 22 16.98	+11 18 49.6				688
2441	1987 11 22.26684	03 22 12.22	+11 18 39.0				688
2459	1987 11 19.18609	02 24 07.27	+12 11 34.8		16.2		688
2459	1987 11 19.25229	02 24 04.52	+12 11 09.2				688
2489	1987 11 19.18609	02 19 18.62	+13 17 11.6		17.0		688
2489	1987 11 19.25229	02 19 15.75	+13 16 58.5				688
2493	1987 11 22.19302	03 18 55.45	+11 17 06.5				688
2493	1987 11 22.26684	03 18 51.66	+11 16 39.1				688
2580	1987 11 22.19302	03 20 20.07	+15 27 08.8				688
2580	1987 11 22.26684	03 20 15.00	+15 26 55.4				688
2584	1987 11 22.16958	03 14 15.01	+18 13 30.3				688
2584	1987 11 22.24458	03 14 09.94	+18 13 14.2				688
2653	1987 11 22.19302	03 21 05.80	+13 09 28.7				688
2653	1987 11 22.26684	03 21 01.43	+13 09 05.9				688
2974	1987 11 19.18609	02 18 41.01	+11 33 43.8				688
2974	1987 11 19.25229	02 18 38.16	+11 33 16.6				688
3095	1987 11 19.18609	02 15 59.33	+17 48 16.5				688
3095	1987 11 19.25229	02 15 56.71	+17 48 00.5				688
3285	1987 11 19.23024	03 13 07.37	+26 33 58.6				688
3285	1987 11 19.29634	03 13 03.75	+26 32 38.4				688
3344	1987 11 22.26684	03 42 14.59	+14 15 57.2				688
3409	1987 11 22.16958	03 25 02.41	+17 44 51.5				688
3409	1987 11 22.24458	03 24 58.32	+17 44 35.1				688
3469	1987 11 19.18609	02 23 58.01	+13 11 45.8				688
3469	1987 11 19.25229	02 23 55.29	+13 11 22.4				688
3494	1987 11 19.18609	02 27 23.67	+15 59 29.8				688
3494	1987 11 19.25229	02 27 20.16	+15 59 01.3				688
3713	1987 11 22.14392	01 03 39.58	-09 50 24.4				688
3713	1987 11 22.21884	01 03 38.29	-09 50 08.4				688

690 Lowell Observatory
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road,
Flagstaff, AZ 86001, U.S.A.
Observer O. G. Franz
Measurer L. H. Wasserman
0.46-m astrograph

324	1987 12 02.34178	06 44 05.23	+40 05 02.0				690
324	1987 12 02.34334	06 44 05.13	+40 05 02.0				690
324	1987 12 02.34514	06 44 05.01	+40 05 02.3				690
324	1987 12 06.34444	06 39 50.63	+40 08 46.3				690
324	1987 12 06.34618	06 39 50.51	+40 08 46.5				690
324	1987 12 06.34861	06 39 50.37	+40 08 46.5				690

691 Kitt Peak, Steward Observatory
T. Gehrels, Space Sciences Building, University of Arizona,
Tucson, AZ 85721, U.S.A.
Observer J. V. Scotti
0.91-m SPACEWATCH telescope, CCD in scanning mode
SAOC 1984
See also MPC 9198, MPC 10373 and Astron. J. 91, 1242, 1986

1985 VS	1987 11 24.39177	07 47 51.12	-11 04 42.2		18.7V		691
1985 VS	1987 11 24.39312	07 47 51.08	-11 04 42.5				691
1985 VS	1987 11 24.40424	07 47 51.00	-11 04 46.0				691
1987 SY	1987 11 16.15461	23 18 58.99	+05 22 55.6		19.4V		691
1987 SY	1987 11 16.16221	23 18 59.35	+05 22 55.1				691
1987 SY	1987 11 16.17720	23 19 00.00	+05 22 54.2				691
1987 SF3	1987 11 16.29194	01 14 28.27	+02 33 23.0		19.2V		691

1987	SF3	1987	11	16.30998	01	14	29.13	+02	33	28.2	691
1987	SF3	1987	11	16.31661	01	14	29.42	+02	33	30.5	691
1987	UA	1987	11	16.22683	01	23	22.86	-19	08	21.5	17.6V 691
1987	UA	1987	11	16.24056	01	23	24.31	-19	08	30.5	691
1987	UA	1987	11	16.24785	01	23	25.04	-19	08	35.1	691

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

1936	OH	1987	10	19.34406	03	56	09.81	+11	33	23.5	801
1940	WA	1987	11	16.95975	21	24	02.79	+00	57	55.7	801
1971	OU	1987	10	22.32341	03	13	32.23	+19	16	54.5	801
1971	OU	1987	11	25.22057	02	41	15.49	+16	28	23.0	801
1981	EQ27	1987	09	25.35134	02	16	53.07	+10	57	52.0	801
1981	EQ27	1987	11	17.18619	01	35	43.47	+06	35	16.5	801
1981	JQ	1987	11	19.24037	03	31	12.79	+23	03	00.0	801
1981	SM1	1986	11	01.00059	20	45	40.63	-18	50	50.4	801
1981	SM1	1987	11	21.32797	04	49	44.27	+19	55	29.0	801
1981	TO3	1987	11	17.22682	02	31	37.62	+13	02	34.8	W 801
1982	SU1	1987	10	22.28100	02	56	39.54	+17	36	35.4	801
1982	SU1	1987	11	25.20101	02	28	41.95	+15	17	27.8	801
1982	XB	1987	11	28.25515	07	26	43.40	+16	03	06.2	801
1982	XB	1987	11	28.26547	07	26	51.27	+16	03	25.0	801
1983	BF	1987	10	24.29832	02	24	54.72	+12	06	49.5	801
1983	BF	1987	11	17.20733	02	06	56.95	+10	36	26.0	801
1983	EW	1986	02	09.15733	08	43	44.35	+14	45	41.3	801
1983	PA	1987	11	19.35864	07	27	38.18	+39	16	35.0	801
1986	GV1	1987	09	24.35723	02	04	28.23	+00	19	12.3	801
1986	LC	1987	08	25.33104	23	59	10.01	-15	26	49.6	801
1986	QB1	1987	11	23.29448	04	40	38.94	+23	05	11.1	801
1987	MO	1987	11	19.98478	21	36	36.65	+13	30	47.5	801
1987	OC	1987	11	19.96230	21	03	05.87	+11	08	49.8	801
1987	SL	1987	11	20.09472	00	16	44.34	+31	05	56.4	801
1987	SS1	1987	11	17.01584	23	50	31.63	+04	15	08.5	801
1987	SS1	1987	11	25.03181	23	54	46.59	+03	25	04.3	801
1987	SH2	1987	09	26.30405	00	26	10.69	-01	01	17.4	801
1774		1987	11	23.00195	23	31	25.63	-03	47	26.7	801
2525		1987	11	17.36415	06	26	56.20	+23	01	48.6	801
2525		1987	11	19.33100	06	26	06.78	+23	03	56.1	801

809 European Southern Observatory
E. W. Elst, Royal Observatory, B-1180 Brussels, Belgium
0.4-m GPO astrograph

1987	QN	1987	08	26.17014	21	38	21.82	-12	56	34.6	17 809
1987	QN	1987	08	26.18056	21	38	21.59	-12	56	36.8	809
1987	QN	1987	08	26.19306	21	38	21.18	-12	56	40.6	809
1987	QN	1987	08	28.11736	21	37	27.74	-13	05	57.2	16.8 809
1987	QN	1987	08	28.12847	21	37	27.47	-13	06	00.7	809
1987	QN	1987	08	28.13819	21	37	27.19	-13	06	03.3	809
1987	QN	1987	08	31.08125	21	36	06.93	-13	20	03.0	17.5 809
1987	QN	1987	08	31.09167	21	36	06.74	-13	20	05.7	809
1987	QN	1987	08	31.10208	21	36	06.53	-13	20	07.9	809
1987	QN	1987	08	31.12153	21	36	05.73	-13	20	15.7	17.2 809
1987	QN	1987	08	31.13194	21	36	05.51	-13	20	18.3	809
1987	QN	1987	08	31.14236	21	36	05.27	-13	20	20.3	809
1987	QU1	1987	08	26.17014	21	36	51.67	-13	14	24.1	17.5 809

1987	QU1	1987	08	26.18056	21	36	51.10	-13	14	27.0	809
1987	QU1	1987	08	26.19306	21	36	50.37	-13	14	30.5	809
1987	QU1	1987	08	28.11736	21	35	07.23	-13	24	27.6	17.3 809
1987	QU1	1987	08	28.12847	21	35	06.70	-13	24	30.4	809
1987	QU1	1987	08	28.13819	21	35	06.14	-13	24	33.5	809
1987	QU1	1987	08	31.08125	21	32	34.63	-13	39	14.1	17.4 809
1987	QU1	1987	08	31.09167	21	32	34.12	-13	39	17.2	809
1987	QU1	1987	08	31.10208	21	32	33.60	-13	39	20.5	809
1987	QV1	1987	08	26.17014	21	37	24.18	-11	17	17.2	16.8 809
1987	QV1	1987	08	26.18056	21	37	23.63	-11	17	16.4	809
1987	QV1	1987	08	26.19306	21	37	22.90	-11	17	14.2	809
1987	QW1	1987	08	26.17014	21	39	16.86	-13	11	40.8	17.5 809
1987	QW1	1987	08	26.18056	21	39	16.34	-13	11	44.5	809
1987	QW1	1987	08	26.19306	21	39	15.78	-13	11	47.1	809
1987	QW1	1987	08	28.11736	21	37	49.53	-13	20	39.8	17.5 809
1987	QW1	1987	08	28.12847	21	37	49.07	-13	20	42.0	809
1987	QW1	1987	08	28.13819	21	37	48.61	-13	20	45.6	809
1987	QW1	1987	08	31.08125	21	35	40.58	-13	33	55.9	17.4 809
1987	QW1	1987	08	31.09167	21	35	40.28	-13	33	58.6	809
1987	QW1	1987	08	31.10208	21	35	39.76	-13	34	01.5	809
1987	QW1	1987	08	31.12153	21	35	38.82	-13	34	07.9	17.5 809
1987	QW1	1987	08	31.13194	21	35	38.40	-13	34	10.6	809
1987	QW1	1987	08	31.14236	21	35	37.90	-13	34	13.0	809
1987	QX1	1987	08	26.17014	21	39	29.96	-11	22	52.8	17.5 809
1987	QX1	1987	08	26.18056	21	39	29.40	-11	22	53.3	809
1987	QX1	1987	08	26.19306	21	39	28.93	-11	22	54.2	809
1987	QZ1	1987	08	26.17014	21	39	21.46	-12	30	37.6	16.5 809
1987	QZ1	1987	08	26.18056	21	39	20.83	-12	30	38.7	809
1987	QZ1	1987	08	26.19306	21	39	20.00	-12	30	39.6	809
1987	QZ1	1987	08	28.11736	21	37	26.54	-12	34	14.4	16.5 809
1987	QZ1	1987	08	28.12847	21	37	25.95	-12	34	15.5	809
1987	QZ1	1987	08	28.13819	21	37	25.26	-12	34	16.4	809
1987	QZ1	1987	08	31.08125	21	34	36.72	-12	39	23.3	17.5 809
1987	QZ1	1987	08	31.09167	21	34	35.98	-12	39	25.3	809
1987	QZ1	1987	08	31.10208	21	34	35.34	-12	39	26.1	809
1987	QZ1	1987	08	31.12153	21	34	34.12	-12	39	28.5	17 809
1987	QZ1	1987	08	31.13194	21	34	33.52	-12	39	28.8	809
1987	QZ1	1987	08	31.14236	21	34	32.92	-12	39	31.0	809
1987	QA2	1987	08	26.17014	21	41	23.59	-11	57	44.5	17.5 809
1987	QA2	1987	08	26.18056	21	41	23.18	-11	57	48.7	809
1987	QA2	1987	08	26.19306	21	41	22.63	-11	57	53.9	809
1987	QA2	1987	08	28.11736	21	40	03.66	-12	12	39.3	17 809
1987	QA2	1987	08	28.12847	21	40	03.27	-12	12	44.2	809
1987	QA2	1987	08	28.13819	21	40	02.74	-12	12	49.9	809
1987	QA2	1987	08	31.12153	21	38	03.65	-12	35	18.2	17 809
1987	QA2	1987	08	31.13194	21	38	03.25	-12	35	21.7	809
1987	QA2	1987	08	31.14236	21	38	02.93	-12	35	25.8	809
1987	QR5	1987	08	31.12153	21	39	54.42	-12	27	08.9	16.7 809
1987	QR5	1987	08	31.13194	21	39	53.81	-12	27	11.3	809
1987	QR5	1987	08	31.14236	21	39	53.24	-12	27	12.7	809
1987	QT7	1987	08	28.11736	21	32	32.87	-12	17	14.1	17.3 809
1987	QT7	1987	08	28.12847	21	32	32.40	-12	17	17.3	809
1987	QT7	1987	08	28.13819	21	32	31.87	-12	17	20.9	809
1987	QT7	1987	08	31.08125	21	30	17.60	-12	35	18.5	17.5 809
1987	QT7	1987	08	31.09167	21	30	17.14	-12	35	21.4	809
1987	QT7	1987	08	31.10208	21	30	16.61	-12	35	25.4	809
1987	QU7	1987	08	31.08125	21	31	17.38	-12	22	40.6	17.2 809
1987	QU7	1987	08	31.09167	21	31	17.04	-12	22	45.6	809
1987	QU7	1987	08	31.10208	21	31	16.66	-12	22	51.5	809

1987 QY8	*	1987	08	26.17014	21	35	17.87	-12 12 18.5	17.7	809
1987 QY8		1987	08	26.18056	21	35	17.27	-12 12 19.6		809
1987 QY8		1987	08	26.19306	21	35	16.54	-12 12 19.4		809
1987 QY8		1987	08	28.11736	21	33	26.52	-12 12 36.2	17.5	809
1987 QY8		1987	08	28.12847	21	33	25.93	-12 12 35.6		809
1987 QY8		1987	08	28.13819	21	33	25.34	-12 12 35.4		809
1987 QY8		1987	08	31.08125	21	30	44.50	-12 12 42.4	17.5	809
1987 QY8		1987	08	31.09167	21	30	43.95	-12 12 42.5		809
1987 QY8		1987	08	31.10208	21	30	43.33	-12 12 42.6		809
2357		1987	08	26.17014	21	40	22.43	-11 59 07.9	16	809
2357		1987	08	26.18056	21	40	22.15	-11 59 09.9		809
2357		1987	08	26.19306	21	40	21.75	-11 59 11.6		809
2357		1987	08	28.11736	21	39	26.15	-12 04 32.6	16	809
2357		1987	08	28.12847	21	39	25.83	-12 04 34.3		809
2357		1987	08	28.13819	21	39	25.51	-12 04 36.0		809
2357		1987	08	31.12153	21	38	00.71	-12 12 47.0	16.5	809
2357		1987	08	31.13194	21	38	00.47	-12 12 48.9		809
2357		1987	08	31.14236	21	38	00.12	-12 12 50.3		809
3240		1987	08	31.08125	21	30	17.52	-13 16 48.1	17.2	809
3240		1987	08	31.09167	21	30	17.21	-13 16 48.5		809
3240		1987	08	31.10208	21	30	16.96	-13 16 49.9		809

892 YGCO Hoshikawa and Nagano Stations
T. Kobayashi, 1717-2, Shimo-Koizumi, Oizumi-Cho, Ora-Gun, Gunma-Ken, 370-05 Japan
Observers S. Hayakawa, T. Kojima
0.25-m f/3.4 Wright-Schmidt camera

1987 WD1	*	1987	11	22.47222	00	47	48.10	+07 53 58.8	16	892
1987 WD1		1987	11	22.50590	00	47	46.98	+07 54 01.1		892
1987 YB	*	1987	12	17.59166	03	16	24.41	+14 18 31.0	16	892
1987 YB		1987	12	17.62986	03	16	23.32	+14 18 42.6		892
1987 YB		1987	12	20.50069	03	15	20.66	+14 34 21.3		892
1987 YB		1987	12	20.53888	03	15	19.84	+14 34 33.6		892
1987 YC	*	1987	12	20.66805	07	32	03.82	+23 40 12.7	17	892
1987 YC		1987	12	20.69861	07	32	02.49	+23 40 12.3		892
1987 YD	*	1987	12	20.69097	07	28	42.11	+31 56 59.4	16	892
1987 YD		1987	12	20.72153	07	28	40.48	+31 57 15.3		892

975 Valencia
A. Lopez, Observatorio Astronomico de Valencia, Avda. Blasco Ibanez 13, E-46010 Valencia, Spain
Observers A. Lopez G., J. A. Lopez O., R. Lopez M., J. Artes P.
0.25-m f/15 refractor
SAOC

2		1986	02	12.81378	05	39	12.75	-21 32 07.0		975
2		1986	02	12.81929	05	39	12.87	-21 32 00.1		975
2		1986	02	15.84245	05	40	27.36	-20 27 21.7		975
2		1986	02	19.80572	05	42	31.01	-19 01 41.6		975
2		1986	02	19.80999	05	42	31.16	-19 01 35.7		975
11		1985	09	23.87396	21	19	15.03	-19 28 35.9		975
11		1985	10	07.89792	21	21	11.61	-19 27 30.1		975
11		1985	10	07.90972	21	21	11.82	-19 27 29.3		975
11		1985	10	09.90833	21	21	57.53	-19 24 35.6		975
11		1985	10	09.91944	21	21	57.45	-19 24 37.6		975
11		1985	10	10.79688	21	22	20.13	-19 23 08.9		975
11		1985	10	10.80868	21	22	20.35	-19 23 07.7		975
11		1985	10	12.76667	21	23	14.60	-19 19 24.3		975
11		1985	10	12.77569	21	23	14.82	-19 19 23.0		975

11	1985	10	13.76667	21	23	44.80	-19	17	15.6	975
11	1985	10	13.77847	21	23	45.21	-19	17	15.3	975
11	1985	10	15.79410	21	24	51.01	-19	12	27.7	975
11	1985	10	15.80417	21	24	51.34	-19	12	25.9	975
11	1985	10	30.77361	21	36	10.79	-18	18	47.2	975
11	1985	10	30.78611	21	36	11.46	-18	18	43.4	975
11	1985	11	07.77569	21	44	11.84	-17	38	03.6	975
11	1985	11	07.78507	21	44	12.50	-17	38	00.5	975
11	1985	11	08.83542	21	45	20.86	-17	32	05.9	975
11	1985	11	08.84514	21	45	21.55	-17	32	01.7	975
11	1985	11	12.84653	21	49	52.51	-17	08	18.5	975
11	1985	11	12.85764	21	49	53.14	-17	08	14.5	975
11	1985	11	19.73611	21	58	14.13	-16	23	18.7	975
11	1985	11	19.74306	21	58	14.54	-16	23	14.8	975
11	1985	11	20.76632	21	59	32.44	-16	16	08.4	975
11	1985	11	20.77292	21	59	32.88	-16	16	06.7	975
11	1985	11	21.74549	22	00	47.80	-16	09	13.9	975
11	1985	11	21.75313	22	00	48.36	-16	09	09.9	975
11	1985	11	28.78194	22	10	09.57	-15	16	50.7	975
11	1985	11	28.78750	22	10	10.03	-15	16	48.1	975
18	1986	02	12.83505	06	22	19.64	+14	14	41.6	975
18	1986	02	12.83938	06	22	19.61	+14	14	43.5	975
18	1986	02	19.82251	06	22	52.76	+15	05	17.2	975
18	1986	02	19.82799	06	22	52.86	+15	05	19.2	975
532	1985	12	16.81064	04	04	48.00	+05	11	17.8	975
532	1985	12	16.81653	04	04	47.73	+05	11	18.5	975
532	1985	12	31.82459	03	54	18.30	+06	20	57.2	975
532	1985	12	31.83038	03	54	18.13	+06	20	58.4	975
532	1985	12	31.83604	03	54	17.94	+06	21	00.9	975
532	1986	01	06.82709	03	51	29.71	+06	56	10.0	975
532	1986	01	06.83337	03	51	29.52	+06	56	11.8	975
532	1986	01	06.83988	03	51	29.41	+06	56	15.3	975
532	1986	01	08.83617	03	50	45.16	+07	08	45.1	975
532	1986	01	08.84193	03	50	45.05	+07	08	46.9	975
532	1986	01	08.84896	03	50	44.90	+07	08	49.2	975
532	1986	01	14.82506	03	49	09.51	+07	48	18.8	975
532	1986	01	14.83060	03	49	09.47	+07	48	21.4	975
532	1986	01	29.82036	03	49	13.77	+09	37	44.3	975
532	1986	01	29.83249	03	49	13.82	+09	37	49.5	975
532	1986	01	30.79329	03	49	25.77	+09	45	12.4	975
532	1986	01	30.79942	03	49	25.81	+09	45	15.1	975
532	1986	01	30.80459	03	49	25.86	+09	45	17.7	975
532	1986	02	05.81426	03	51	09.88	+10	32	03.1	975
532	1986	02	05.81971	03	51	09.92	+10	32	06.1	975
532	1986	02	10.80510	03	53	14.69	+11	11	33.1	975
532	1986	02	10.80996	03	53	14.81	+11	11	35.4	975
532	1986	02	10.81516	03	53	14.97	+11	11	35.3	975
532	1986	02	15.82175	03	55	53.24	+11	51	33.5	975
532	1986	02	19.78679	03	58	21.34	+12	23	16.8	975
532	1986	02	19.79178	03	58	21.55	+12	23	20.1	975
532	1986	02	20.78411	03	59	01.55	+12	31	15.3	975
532	1986	02	20.78928	03	59	01.77	+12	31	17.0	975
704	1985	10	07.94167	01	24	09.54	+36	58	19.9	975
704	1985	10	10.85417	01	21	41.83	+36	48	56.6	975
704	1985	10	10.86319	01	21	41.15	+36	48	53.2	975
704	1985	10	12.80278	01	20	00.99	+36	41	05.6	975
704	1985	10	12.81319	01	20	00.41	+36	41	03.4	975
704	1985	10	13.79653	01	19	09.03	+36	36	41.3	975

704	1985	10	13.80694	01	19	08.54	+36	36	37.9	975
704	1985	10	15.82951	01	17	22.92	+36	26	38.9	975
704	1985	10	15.83889	01	17	22.61	+36	26	33.9	975
704	1985	10	30.81181	01	05	11.46	+34	37	54.7	975
704	1985	10	30.82257	01	05	10.52	+34	37	54.1	975
704	1985	10	31.80556	01	04	29.33	+34	28	55.6	975
704	1985	10	31.81458	01	04	28.94	+34	28	50.8	975
704	1985	11	07.80972	01	00	07.59	+33	21	21.6	975
704	1985	11	07.82083	01	00	07.21	+33	21	15.2	975
704	1985	11	08.86528	00	59	33.90	+33	10	39.9	975
704	1985	11	08.87500	00	59	33.60	+33	10	33.7	975
704	1985	11	19.76875	00	55	32.47	+31	17	05.2	975
704	1985	11	19.77431	00	55	32.45	+31	17	02.7	975
704	1985	11	20.82847	00	55	19.66	+31	06	02.7	975
704	1985	11	20.83403	00	55	19.48	+31	06	00.1	975
704	1985	11	20.83889	00	55	19.40	+31	05	57.2	975
704	1985	11	21.77083	00	55	10.02	+30	56	15.3	975
704	1985	11	21.77639	00	55	09.96	+30	56	12.0	975
704	1985	11	22.77708	00	55	01.42	+30	45	52.1	975
704	1985	11	22.78264	00	55	01.32	+30	45	48.8	975
704	1985	11	28.80625	00	54	46.92	+29	45	01.1	975
704	1985	11	28.81319	00	54	46.88	+29	45	05.7	975
704	1985	12	12.84048	00	58	10.42	+27	39	43.6	975
704	1985	12	12.84583	00	58	10.64	+27	39	40.2	975
704	1985	12	13.85991	00	58	37.59	+27	31	44.3	975
704	1985	12	13.86568	00	58	37.77	+27	31	41.6	975
704	1985	12	16.75822	01	00	03.41	+27	10	03.9	975
704	1985	12	16.76382	01	00	03.66	+27	10	01.6	975
704	1985	12	16.76945	01	00	03.75	+27	09	59.8	975
704	1985	12	17.76990	01	00	36.17	+27	02	50.0	975
704	1985	12	17.77876	01	00	36.61	+27	02	45.4	975
704	1985	12	19.83481	01	01	47.74	+26	48	37.2	975
704	1985	12	19.84291	01	01	48.05	+26	48	33.6	975
704	1985	12	20.76013	01	02	22.00	+26	42	30.1	975
704	1985	12	20.76646	01	02	22.33	+26	42	26.8	975
704	1985	12	31.79712	01	10	34.15	+25	40	59.4	975
704	1985	12	31.80337	01	10	34.44	+25	40	56.4	975
704	1986	01	03.78962	01	13	12.60	+25	27	53.3	975
704	1986	01	03.79572	01	13	13.12	+25	27	53.5	975
704	1986	01	03.80194	01	13	13.45	+25	27	51.2	975
704	1986	01	06.78462	01	16	01.70	+25	16	18.4	975
704	1986	01	06.79177	01	16	01.65	+25	16	19.1	975
704	1986	01	06.80163	01	16	02.53	+25	16	17.2	975
704	1986	01	08.79902	01	18	00.43	+25	09	21.7	975
704	1986	01	08.80584	01	18	00.81	+25	09	20.7	975
704	1986	01	10.82921	01	20	04.25	+25	02	59.4	975
704	1986	01	14.79541	01	24	18.11	+24	52	23.1	975
704	1986	01	14.80773	01	24	18.96	+24	52	21.8	975
704	1986	01	29.79203	01	42	19.47	+24	32	02.1	975
704	1986	01	29.79761	01	42	19.93	+24	32	01.6	975
704	1986	01	30.77226	01	43	36.12	+24	31	39.3	975
704	1986	01	30.77949	01	43	36.65	+24	31	39.2	975
704	1986	02	05.79248	01	51	40.56	+24	31	33.6	975
704	1986	02	05.79852	01	51	41.03	+24	31	33.6	975
704	1986	02	09.77725	01	57	13.87	+24	33	24.2	975
704	1986	02	09.78343	01	57	14.42	+24	33	23.3	975
704	1986	02	10.78533	01	58	39.65	+24	34	06.8	975
704	1986	02	10.79168	01	58	40.20	+24	34	05.1	975

ORBITAL ELEMENTS OF ONE-OPPOSITION MINOR PLANETS.

The columns headed Arc and O give 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 other multiple) designations, E means that the value of the eccentricity was assumed, F means both; the designations are listed at the end.

The orbit computers (column C) are B = C. M. Bardwell, d = P. K. Dzus, E = E. Bowell, G = D. W. E. Green, M = B. G. Marsden, N = S. Nakano.

Planet	H	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1961 BC	12.5	610121	150.93	198.10	94.44	8.54	0.2132	2.1965	30	0	D	G
1978 TO8	13.0	781019	20.92	150.16	214.36	0.79	0.2479	3.1370	24	4		B
1978 TT8	13.0	781019	41.42	274.68	56.11	5.03	0.2784	2.5951	47	6	D	B
1978 TU8	12.0	781019	278.85	283.93	215.98	1.82	0.1354	2.8779	24	4		B
1978 UL2	12.5	781019	6.52	261.68	130.46	2.56	0.1763	3.1490	26	6		B
1978 UP2	13.5	781019	140.54	211.12	34.96	13.10	0.1441	2.1873	2	3		B
1978 VE15	14.0	781108	7.54	320.21	73.63	3.20	0.2072	2.3864	27	5	D	B
1987 CJ	12.0	870306	18.42	347.28	155.73	10.49	0.0474	3.0137	87	0		G
1987 QN	9.5	870813	101.27	49.69	145.92	28.51	0.2573	5.1070	10	0		M
1987 QU1	15.0	870813	321.70	196.13	179.06	0.86	0.1738	2.2440	10	0		M
1987 QW1	12.5	870813	50.60	109.18	158.73	2.32	0.0512	2.9492	10	0		M
1987 QZ1	14.0	870813	317.69	70.14	317.12	3.99	0.2328	2.3755	10	0		M
1987 QA2	12.0	870813	69.33	87.18	151.59	12.92	0.1388	3.0771	10	0		M
1987 QT7	15.0	870813	355.18	153.75	174.51	2.29	0.1352	2.1730	3	9	E	M
1987 QY8	15.0	870813	358.58	6.49	317.65	6.42	0.1261	2.3416	5	9		M
1987 SH2	13.5	870922	17.35	170.17	171.89	8.86	0.0863	2.3114	6	5		B
1987 SZ3	14.1	871101	20.48	223.83	125.81	6.24	0.2830	2.3734	57	6		E
1987 SU4	13.5	870922	32.71	104.82	194.34	12.77	0.2047	2.6622	2	5		G
1987 SA5	14.0	870922	148.94	241.08	330.44	2.63	0.2132	2.1605	3	4	E	M
1987 SB5	11.5	870922	97.36	4.11	231.49	10.73	0.2520	3.0582	2	5		G
1987 SF5	15.0	871012	342.62	74.71	325.02	3.25	0.1485	2.2205	26	6		M
1987 SJ5	12.0	870922	181.54	350.10	199.33	10.75	0.0271	2.7162	3	4	E	M
1987 SK5	13.5	870922	72.23	289.95	1.46	10.75	0.0616	2.4193	3	4		M
1987 SL5	14.5	871012	319.04	210.48	225.05	4.47	0.2028	2.3752	26	6		M
1987 SM5	13.5	871012	353.13	17.90	8.60	14.79	0.2102	3.0100	26	6		M
1987 SO5	11.5	870922	148.89	215.13	0.82	12.47	0.1771	3.0021	3	4	E	M
1987 SP5	16.0	871012	335.20	51.70	3.47	6.11	0.2244	2.2473	26	5		G
1987 SS9	13.5	870922	332.33	291.20	113.88	2.67	0.1808	3.1784	11	5		G
1987 SY9	14.5	870922	356.64	199.74	169.85	11.63	0.1921	3.0174	2	5		G
1987 SA10	16.5	870922	322.45	6.11	63.07	3.56	0.2968	2.5983	2	5		G
1987 SB10	16.0	870922	347.70	261.06	120.60	2.32	0.1906	2.2850	2	5		G
1987 SD10	14.5	870922	169.84	31.28	163.18	7.82	0.0204	2.2680	2	5		G
1987 SK10	15.5	870922	351.13	314.03	61.70	3.67	0.1528	2.2521	2	5	E	G
1987 SL10	17.5	870922	357.89	233.28	132.66	2.95	0.2646	2.1608	2	5	E	M
1987 SM10	18.0	870922	351.85	2.06	15.85	12.29	0.3076	2.2041	2	4		G
1987 SN10	13.5	870922	117.25	59.11	176.10	14.05	0.1556	2.6497	2	5		G
1987 SO10	16.0	870922	359.91	276.31	88.74	3.97	0.2544	3.2285	2	5	E	M
1987 SP10	14.5	870922	359.22	200.98	166.04	8.58	0.2105	3.1640	2	5	E	M
1987 SQ10	14.0	870922	119.90	100.98	131.80	5.79	0.1509	2.7644	2	5		G
1987 SR10	15.5	870922	357.82	195.22	173.31	12.63	0.1961	2.7296	2	5	E	G
1987 ST10	14.5	870922	263.09	32.54	85.53	3.18	0.1334	2.5846	2	5		G
1987 SU10	14.0	870922	250.28	51.99	79.42	3.43	0.1451	2.8739	2	5		G
1987 SV10	16.0	870922	339.34	318.54	72.46	3.13	0.1273	2.1519	2	5		G
1987 SW10	13.5	870922	42.64	269.66	41.37	6.07	0.1404	2.7467	2	5		G
1987 SX10	15.5	870922	11.77	300.85	47.83	6.35	0.1554	2.6216	2	5		G
1987 SZ10	12.5	870922	197.40	140.01	32.49	9.75	0.0891	3.0276	2	5	E	G
1987 UG	14.0	871101	3.51	186.03	209.44	1.78	0.2134	2.4019	35	8		G

1987 UN	12.5	871101	18.15	315.43	51.66	14.49	0.1886	2.6060	19	5		G
1987 UA1	13.0	871101	27.22	123.34	235.41	11.31	0.1409	2.3589	27	0		N
1987 UB1	12.0	871121	20.08	354.52	17.13	6.00	0.2407	2.4323	27	0		N
1987 UN1	13.0	871101	357.09	171.95	227.74	12.76	0.1658	2.6856	17	0		B
1987 UW1	12.5	871101	353.99	174.71	230.52	8.18	0.1477	2.5914	17	8		B
1987 VB	13.0	871121	348.96	128.30	283.73	2.88	0.1383	2.2174	6	7		N
1987 VC	11.5	871121	73.59	298.03	19.26	9.35	0.1682	2.8236	13	8		N
1987 VD	13.5	871121	43.11	66.40	277.38	5.17	0.2540	2.2594	13	8		N
1987 VF	13.5	871121	32.78	320.03	31.81	8.45	0.2290	2.4287	2	6	E	N
1987 VG	13.5	871121	20.87	29.58	349.38	5.08	0.1960	2.4837	13	8		N
1987 WA	14.0	871121	39.28	303.12	62.45	5.94	0.1301	2.6718	29	0		d
1987 WB	11.5	871121	199.78	344.88	232.59	9.85	0.0403	2.9980	29	0		G
1987 WF	13.5	871101	306.16	63.31	41.18	7.14	0.0935	2.2561	35	6		E
1987 WQ	13.0	871121	348.03	50.66	26.61	8.74	0.3567	2.6899	9	7		N
1987 WW	14.0	871121	59.54	322.23	19.51	3.95	0.1428	2.2376	33	8		N
1987 WY	13.5	871211	38.78	141.05	231.20	12.43	0.2470	2.6216	38	0		N
1987 WJ1	14.0	871101	358.74	9.76	32.43	6.84	0.1552	3.1449	5	8		M
1987 YA	15.0	871231	22.26	187.20	220.43	2.23	0.2598	2.2741	3	0	E	N

1961 BC = 1961 CE (O. Kippes, MPC 2808)
1978 TT8 = 1978 WA15 (T. Furuta, JAM 1909)
1978 VE15 = 1978 WB15 (C. M. Bardwell)

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ORBITAL ELEMENTS BY L. L. FILENKO, INSTITUTE FOR THEORETICAL ASTRONOMY.

The elements are for Epoch 1988 Aug. 27.0 ET, equinox 1950.0.

(131) Vala	Obs. 76	M 162.41384	Peri.	157.01540
H 9.99 G 0.25	Opp. 27	n 0.25979075	Node	65.24707
rms res. 1".23 (M-P)	1927-1986	e 0.0672284	Incl.	4.95581
(149) Medusa	Obs. 79	M 26.21692	Peri.	250.30120
H 10.90 G 0.25	Opp. 24	n 0.30728335	Node	159.09922
rms res. 1".72 (M-P)	1905-1986	e 0.0655829	Incl.	0.94031
(261) Prymno	Obs. 96	M 91.83702	Peri.	65.92624
H 9.50 G 0.25	Opp. 29	n 0.27683286	Node	96.23875
rms res. 1".52 (M-P)	1909-1985	e 0.0901825	Incl.	3.63618
(274) Philagoria	Obs. 125	M 306.42215	Peri.	122.78520
H 10.12 G 0.25	Opp. 27	n 0.18592548	Node	92.41635
rms res. 1".52 (M-P)	1914-1986	e 0.1239375	Incl.	3.68261
(475) Ocllo	Obs. 43	M 286.22748	Peri.	303.92559
H 11.86 G 0.15	Opp. 11	n 0.23586890	Node	34.72648
rms res. 1".39 (M-P)	1918-1984	e 0.3807412	Incl.	18.79527
(486) Cremona	Obs. 55	M 344.65463	Peri.	124.27526
H 11.03 G 0.25	Opp. 15	n 0.27333978	Node	93.79301
rms res. 1".43 (M-P)	1902-1985	e 0.1643448	Incl.	11.08613
(771) Libera	Obs. 57	M 100.98023	Peri.	227.41972
H 10.33 G 0.25	Opp. 22	n 0.22795804	Node	217.69462
rms res. 1".64 (M-P)	1913-1986	e 0.2444424	Incl.	14.93012

(810) Atossa	Obs. 59	M 244.01769	Peri.	195.19192
H 13.0 G 0.25	Opp. 17	n 0.30640464	Node	152.25112
rms res. 1".62 (M-P)	1915-1985	e 0.1801209	Incl.	2.61204
(841) Arabella	Obs. 36	M 343.72606	Peri.	119.31758
H 13.02 G 0.25	Opp. 12	n 0.29103856	Node	354.30709
rms res. 1".00 (M-P)	1930-1984	e 0.0694847	Incl.	3.78906
(849) Ara	Obs. 65	M 87.12754	Peri.	61.52885
H 8.19 G 0.25	Opp. 24	n 0.17459997	Node	228.48532
rms res. 1".65 (M-P)	1926-1982	e 0.1800608	Incl.	19.56457
(851) Zeissia	Obs. 84	M 319.86884	Peri.	6.64526
H 11.75 G 0.25	Opp. 21	n 0.29630684	Node	140.71955
rms res. 1".43 (M-P)	1926-1986	e 0.0895012	Incl.	2.39322
(870) Manto	Obs. 51	M 352.45911	Peri.	196.25099
H 11.8 G 0.25	Opp. 15	n 0.27851857	Node	120.41981
rms res. 1".28 (M-P)	1917-1983	e 0.2640012	Incl.	6.19446
(885) Ulrike	Obs. 43	M 12.83707	Peri.	207.15908
H 10.83 G 0.15	Opp. 13	n 0.18069032	Node	148.73209
rms res. 1".46 (M-P)	1906-1986	e 0.1817229	Incl.	3.29710
(889) Erynia	Obs. 38	M 236.82724	Peri.	277.03809
H 11.58 G 0.25	Opp. 16	n 0.25750224	Node	132.37936
rms res. 1".53 (M-P)	1918-1985	e 0.2055318	Incl.	8.07838
(1052) Belgica	Obs. 44	M 295.36086	Peri.	297.26091
H 12.02 G 0.25	Opp. 16	n 0.29480111	Node	99.19588
rms res. 1".48 (M-P)	1925-1984	e 0.1432900	Incl.	4.69585
(1114) Lorraine	Obs. 58	M 14.75397	Peri.	205.59934
H 9.72 G 0.15	Opp. 16	n 0.18109848	Node	195.45729
rms res. 1".42 (M-P)	1906-1986	e 0.0848008	Incl.	10.73633
(1122) Neith	Obs. 42	M 68.20245	Peri.	327.79527
H 11.6 G 0.25	Opp. 11	n 0.23455425	Node	62.97131
rms res. 1".34 (M-P)	1953-1984	e 0.2601945	Incl.	4.74126
(1124) Stroobantia	Obs. 42	M 62.58465	Peri.	264.86246
H 10.79 G 0.15	Opp. 13	n 0.19693714	Node	22.19528
rms res. 1".67 (M-P)	1941-1986	e 0.0301041	Incl.	7.79381
(1136) Mercedes	Obs. 77	M 149.84524	Peri.	147.60538
H 11.00 G 0.15	Opp. 13	n 0.24014166	Node	209.06477
rms res. 1".13 (M-P)	1929-1986	e 0.2591268	Incl.	8.95897
(1138) Attica	Obs. 25	M 223.62752	Peri.	98.34523
H 11.1 G 0.25	Opp. 5	n 0.17625825	Node	283.57450
rms res. 1".65 (M-P)	1929-1975	e 0.0638059	Incl.	14.00413
(1157) Arabia	Obs. 68	M 153.69660	Peri.	317.59631
H 10.09 G 0.15	Opp. 17	n 0.17300574	Node	335.74764
rms res. 1".32 (M-P)	1930-1986	e 0.1371003	Incl.	9.52849
(1163) Saga	Obs. 35	M 222.99512	Peri.	199.93495
H 10.62 G 0.15	Opp. 12	n 0.17110578	Node	127.70026
rms res. 1".53 (M-P)	1930-1983	e 0.0611380	Incl.	9.01089

(1171) Rusthawelia	Obs. 77	M 101.32555	Peri.	283.40768
H 9.84 G 0.15	Opp. 21	n 0.17524762	Node	122.55266
rms res. 1".58 (M-P)	1926-1986	e 0.2079685	Incl.	3.05138
(1176) Lucidor	Obs. 66	M 21.70374	Peri.	154.33979
H 11.1 G 0.25	Opp. 12	n 0.22314362	Node	271.96291
rms res. 1".36 (M-P)	1930-1985	e 0.1435883	Incl.	6.64342
(1195) Orangia	Obs. 15	M 311.11119	Peri.	327.79512
H 13.4 G 0.25	Opp. 5	n 0.29065119	Node	280.85281
rms res. 1".70 (M-P)	1931-1982	e 0.2016982	Incl.	7.18750
(1205) Ebella	Obs. 16	M 35.72327	Peri.	349.07003
H 14.1 G 0.25	Opp. 4	n 0.24429428	Node	22.70658
rms res. 1".43 (M-P)	1931-1976	e 0.2776065	Incl.	8.89909
(1209) Pumma	Obs. 44	M 243.76116	Peri.	181.69522
H 10.4 G 0.25	Opp. 21	n 0.17508653	Node	89.37364
rms res. 1".48 (M-P)	1927-1986	e 0.1323320	Incl.	6.93513
(1223) Neckar	Obs. 79	M 207.34354	Peri.	13.43159
H 10.66 G 0.25	Opp. 22	n 0.20267600	Node	40.64202
rms res. 1".82 (M-P)	1907-1983	e 0.0581262	Incl.	2.54995
(1232) Cortusa	Obs. 40	M 158.47012	Peri.	326.15026
H 10.21 G 0.15	Opp. 17	n 0.17287660	Node	262.23376
rms res. 1".64 (M-P)	1930-1985	e 0.1297394	Incl.	10.17779
(1246) Chaka	Obs. 56	M 48.18009	Peri.	54.39511
H 10.77 G 0.15	Opp. 10	n 0.23195356	Node	290.23981
rms res. 1".27 (M-P)	1932-1985	e 0.3059937	Incl.	16.03431
(1249) Rutherfordia	Obs. 53	M 241.04436	Peri.	223.21406
H 11.77 G 0.25	Opp. 17	n 0.29718305	Node	258.58313
rms res. 1".53 (M-P)	1932-1985	e 0.0770873	Incl.	4.87138
(1251) Hedera	Obs. 53	M 245.33668	Peri.	216.20188
H 10.71 G 0.40	Opp. 16	n 0.21988828	Node	140.38479
rms res. 1".18 (M-P)	1915-1984	e 0.1554462	Incl.	6.04994
(1267) Geertruida	Obs. 79	M 324.61625	Peri.	265.52957
H 12.27 G 0.25	Opp. 16	n 0.25436432	Node	24.45788
rms res. 1".35 (M-P)	1930-1985	e 0.1821056	Incl.	4.78059
(1272) Gefion	Obs. 16	M 126.17660	Peri.	3.44118
H 12.4 G 0.25	Opp. 5	n 0.21233978	Node	321.17569
rms res. 1".50 (M-P)	1931-1982	e 0.1528566	Incl.	8.42022
(1274) Delportia	Obs. 50	M 135.20996	Peri.	243.68080
H 11.89 G 0.25	Opp. 17	n 0.29621462	Node	326.78785
rms res. 1".46 (M-P)	1926-1981	e 0.1136654	Incl.	4.39720
(1279) Uganda	Obs. 56	M 41.17675	Peri.	296.36472
H 12.57 G 0.25	Opp. 14	n 0.27012036	Node	335.34924
rms res. 1".44 (M-P)	1933-1983	e 0.2090486	Incl.	5.72024
(1285) Julietta	Obs. 51	M 182.67419	Peri.	70.03634
H 10.2 G 0.25	Opp. 15	n 0.19024798	Node	317.88175
rms res. 1".57 (M-P)	1933-1986	e 0.0469141	Incl.	5.69878

(1289) Kutaissi	Obs. 92	M	155.27011	Peri.	117.07562
H 10.64 G 0.25	Opp. 25	n	0.20388578	Node	192.82986
rms res. 1".52 (M-P)	1928-1986	e	0.0627422	Incl.	1.61195
(1290) Albertine	Obs. 58	M	6.24932	Peri.	78.39357
H 12.6 G 0.25	Opp. 11	n	0.27069142	Node	307.09108
rms res. 1".49 (M-P)	1933-1984	e	0.1537171	Incl.	5.59297
(2001) Einstein	Obs. 52	M	224.66528	Peri.	217.52222
H 12.96 G 0.25	Opp. 7	n	0.36653698	Node	356.55678
rms res. 1".21 (M-P)	1973-1985	e	0.0982154	Incl.	22.67745
(2009) Voloshina	Obs. 79	M	155.85264	Peri.	10.08011
H 11.0 G 0.25	Opp. 14	n	0.17914095	Node	107.13635
rms res. 1".54 (M-P)	1926-1984	e	0.1414787	Incl.	2.86286
(2014) Vasilevskis	Obs. 39	M	11.34804	Peri.	81.96243
H 12.54 G 0.25	Opp. 6	n	0.26465529	Node	203.92149
rms res. 0".94 (M-P)	1973-1984	e	0.2832725	Incl.	21.42608
(2024) McLaughlin	Obs. 32	M	60.81090	Peri.	290.97694
H 13.3 G 0.25	Opp. 7	n	0.27788235	Node	68.87254
rms res. 1".34 (M-P)	1938-1984	e	0.1387136	Incl.	7.31388
(2028) Janequeo	Obs. 11	M	309.11382	Peri.	26.79832
H 14.1 G 0.25	Opp. 4	n	0.28321518	Node	242.40051
rms res. 0".87 (M-P)	1968-1978	e	0.1131776	Incl.	7.95574
(2032) Ethel	Obs. 118	M	120.46781	Peri.	297.65664
H 11.6 G 0.25	Opp. 11	n	0.18391615	Node	29.81029
rms res. 0".97 (M-P)	1952-1985	e	0.1364718	Incl.	1.51713
(2038) Bistro	Obs. 29	M	137.99222	Peri.	182.30958
H 12.2 G 0.25	Opp. 5	n	0.25900019	Node	73.09312
rms res. 1".18 (M-P)	1973-1979	e	0.0876290	Incl.	14.76969
(2039) Payne-Gaposchkin	Obs. 32	M	202.97226	Peri.	45.29217
H 12.7 G 0.25	Opp. 7	n	0.17523688	Node	95.54933
rms res. 1".00 (M-P)	1974-1986	e	0.1467882	Incl.	2.52782
(2041) Lancelot	Obs. 39	M	318.41970	Peri.	277.29721
H 12.5 G 0.25	Opp. 5	n	0.17614737	Node	133.67825
rms res. 0".67 (M-P)	1960-1985	e	0.2009836	Incl.	2.98248
(2049) Grietje	Obs. 17	M	203.10615	Peri.	141.40492
H 15.1 G 0.25	Opp. 4	n	0.36222427	Node	199.56275
rms res. 1".32 (M-P)	1973-1978	e	0.0844397	Incl.	24.42236
(2050) Francis	Obs. 45	M	2.43522	Peri.	170.22309
H 12.79 G 0.25	Opp. 4	n	0.27806922	Node	72.04271
rms res. 1".34 (M-P)	1974-1978	e	0.2388108	Incl.	26.59926
(2059) Baboquivari	Obs. 50	M	273.50212	Peri.	191.25000
H 14.7 G 0.25	Opp. 3	n	0.22829671	Node	200.47220
rms res. 1".35 (M-P)	1963-1986	e	0.5261080	Incl.	10.99591
(2061) Anza	Obs. 38	M	67.80686	Peri.	155.83562
H 16.7 G 0.25	Opp. 3	n	0.28938774	Node	207.33664
rms res. 0".95 (M-P)	1960-1985	e	0.5375306	Incl.	3.74119

(2063) Bacchus		Obs. 28	M 138.13256	Peri.	54.99980
H 17.6	G 0.25	Opp. 4	n 0.88095793	Node	32.68740
rms res. 1".50	(M-P)	1977-1986	e 0.3494547	Incl.	9.41993
(2064) Thomsen		Obs. 24	M 133.25123	Peri.	2.16056
H 13.7	G 0.25	Opp. 5	n 0.30664037	Node	301.70246
rms res. 1".29	(M-P)	1942-1986	e 0.3297217	Incl.	5.69640
(2069) Hubble		Obs. 24	M 34.65200	Peri.	63.38070
H 11.2	G 0.25	Opp. 7	n 0.17454065	Node	47.03346
rms res. 1".50	(M-P)	1955-1986	e 0.1720943	Incl.	9.18923
(2074) Shoemaker		Obs. 37	M 236.71168	Peri.	205.27877
H 13.8	G 0.25	Opp. 6	n 0.40819770	Node	206.72716
rms res. 1".62	(M-P)	1974-1986	e 0.0817573	Incl.	30.08076
(2075) Martinez		Obs. 28	M 213.97716	Peri.	354.89638
H 13.7	G 0.25	Opp. 4	n 0.26453893	Node	111.74055
rms res. 0".66	(M-P)	1974-1979	e 0.2482582	Incl.	27.03507
(2076) Levin		Obs. 15	M 13.91051	Peri.	74.57362
H 14.2	G 0.25	Opp. 3	n 0.28745475	Node	328.54807
rms res. 0".94	(M-P)	1974-1977	e 0.1525060	Incl.	4.99057
(2077) Kiangsu		Obs. 25	M 317.02312	Peri.	343.66265
H 13.2	G 0.25	Opp. 5	n 0.27767116	Node	69.02800
rms res. 1".44	(M-P)	1974-1981	e 0.2962017	Incl.	28.08143
(2079) Jacchia		Obs. 17	M 11.57496	Peri.	146.02833
H 12.2	G 0.25	Opp. 5	n 0.23543099	Node	352.71708
rms res. 1".35	(M-P)	1976-1986	e 0.0795733	Incl.	13.29812
(2081) Sazava		Obs. 62	M 340.32802	Peri.	221.34975
H 12.13	G 0.15	Opp. 10	n 0.25693775	Node	66.09214
rms res. 1".11	(M-P)	1950-1985	e 0.1632975	Incl.	3.92222
(2084) Okayama		Obs. 57	M 253.33607	Peri.	247.47687
H 12.5	G 0.25	Opp. 18	n 0.26579685	Node	148.68532
rms res. 1".33	(M-P)	1931-1985	e 0.1021043	Incl.	4.83991
(2087) Kochera		Obs. 63	M 341.51687	Peri.	319.80709
H 13.2	G 0.25	Opp. 11	n 0.30074251	Node	95.21164
rms res. 1".32	(M-P)	1942-1986	e 0.0583438	Incl.	1.83054
(2088) Sahlia		Obs. 57	M 350.53702	Peri.	90.38767
H 12.48	G 0.25	Opp. 8	n 0.30054161	Node	359.31072
rms res. 0".94	(M-P)	1948-1984	e 0.0796333	Incl.	5.53737
(2089) Cetacea		Obs. 51	M 246.63813	Peri.	287.23837
H 11.25	G 0.25	Opp. 7	n 0.24430753	Node	102.26215
rms res. 1".07	(M-P)	1939-1980	e 0.1549191	Incl.	15.41535
(2091) Sampo		Obs. 24	M 156.93222	Peri.	324.49138
H 10.4	G 0.25	Opp. 9	n 0.18820214	Node	114.34427
rms res. 1".59	(M-P)	1924-1982	e 0.0574196	Incl.	11.37928
(2092) Sumiana		Obs. 17	M 95.28763	Peri.	204.56071
H 11.6	G 0.25	Opp. 8	n 0.20503249	Node	72.08973
rms res. 1".78	(M-P)	1966-1981	e 0.0271285	Incl.	3.08559

(2093) Genichesk	Obs. 26	M 0.27448	Peri.	117.24169
H 13.2 G 0.25	Opp. 8	n 0.28835189	Node	154.50070
rms res. 1".21 (M-P)	1971-1985	e 0.1687004	Incl.	6.08579
(2094) Magnitka	Obs. 24	M 257.37886	Peri.	250.69660
H 12.79 G 0.25	Opp. 9	n 0.29532127	Node	281.53926
rms res. 1".40 (M-P)	1941-1984	e 0.0962226	Incl.	5.02742
(2096) Vaino	Obs. 14	M 307.22177	Peri.	38.55523
H 13.2 G 0.25	Opp. 5	n 0.25763394	Node	304.47046
rms res. 1".52 (M-P)	1939-1981	e 0.2310517	Incl.	0.98676
(2097) 1953 PV	Obs. 26	M 104.82302	Peri.	29.90083
H 11.7 G 0.25	Opp. 9	n 0.17893632	Node	318.98066
rms res. 1".77 (M-P)	1942-1986	e 0.2643677	Incl.	4.38384
(2098) Zyskin	Obs. 17	M 89.36607	Peri.	354.24595
H 12.1 G 0.25	Opp. 6	n 0.26111037	Node	337.33326
rms res. 1".08 (M-P)	1957-1986	e 0.1285313	Incl.	6.51315
(2108) Otto Schmidt	Obs. 24	M 191.54909	Peri.	47.66067
H 11.5 G 0.25	Opp. 6	n 0.25914333	Node	327.46100
rms res. 1".47 (M-P)	1948-1986	e 0.0050131	Incl.	10.77604
(2109) Dhotel	Obs. 32	M 224.30562	Peri.	191.25304
H 11.91 G 0.15	Opp. 9	n 0.22316933	Node	161.88158
rms res. 1".39 (M-P)	1932-1985	e 0.2608601	Incl.	8.07784
(2110) Moore-Sitterly	Obs. 24	M 6.94514	Peri.	192.26752
H 13.6 G 0.25	Opp. 8	n 0.30246304	Node	139.95938
rms res. 1".71 (M-P)	1955-1984	e 0.1769602	Incl.	1.13130
(2111) Tselina	Obs. 61	M 131.14540	Peri.	227.95861
H 10.53 G 0.25	Opp. 12	n 0.18794549	Node	167.07778
rms res. 1".32 (M-P)	1951-1984	e 0.0900406	Incl.	10.50470
(2112) Ulyanov	Obs. 26	M 193.46504	Peri.	155.79134
H 12.6 G 0.25	Opp. 8	n 0.29122102	Node	243.25901
rms res. 1".63 (M-P)	1908-1986	e 0.1371867	Incl.	3.37147
(2113) Ehrdni	Obs. 19	M 32.60340	Peri.	348.15227
H 13.23 G 0.25	Opp. 5	n 0.25318074	Node	22.92274
rms res. 1".47 (M-P)	1958-1980	e 0.0975611	Incl.	6.45146
(2115) Irakli	Obs. 38	M 351.21801	Peri.	336.08823
H 11.1 G 0.25	Opp. 9	n 0.18874865	Node	241.19601
rms res. 1".33 (M-P)	1936-1985	e 0.0580567	Incl.	8.96896
(2120) Tyumenia	Obs. 31	M 17.14582	Peri.	72.17616
H 10.6 G 0.25	Opp. 6	n 0.18390443	Node	222.52343
rms res. 1".52 (M-P)	1941-1983	e 0.1190212	Incl.	17.58049
(2121) Sevastopol	Obs. 43	M 97.47428	Peri.	159.89492
H 12.5 G 0.25	Opp. 10	n 0.30526926	Node	145.26858
rms res. 1".41 (M-P)	1938-1986	e 0.1782553	Incl.	4.37608
(2122) Pyatiletka	Obs. 32	M 273.37688	Peri.	234.17467
H 12.1 G 0.25	Opp. 11	n 0.26474175	Node	105.01957
rms res. 1".33 (M-P)	1951-1985	e 0.0286721	Incl.	7.89335

(2123) Vltava	Obs. 84	M 11.84884	Peri. 58.70757
H 11.05 G 0.25	Opp. 15	n 0.20368991	Node 311.78023
rms res. 1".66 (M-P)	1934-1985	e 0.0772884	Incl. 1.00903
(2124) Nissen	Obs. 24	M 239.93770	Peri. 253.30552
H 12.05 G 0.25	Opp. 8	n 0.18768217	Node 46.85169
rms res. 0".72 (M-P)	1952-1986	e 0.0959041	Incl. 10.72779
(2127) Tanya	Obs. 13	M 333.88885	Peri. 177.37180
H 11.56 G 0.15	Opp. 6	n 0.17151673	Node 106.44271
rms res. 1".13 (M-P)	1953-1983	e 0.0480542	Incl. 13.14787
(2129) Cosicosi	Obs. 19	M 219.87830	Peri. 317.88320
H 14.0 G 0.25	Opp. 5	n 0.30594210	Node 58.08315
rms res. 1".39 (M-P)	1973-1986	e 0.1731301	Incl. 5.51833
(2132) Zhukov	Obs. 48	M 247.15909	Peri. 338.43021
H 11.2 G 0.25	Opp. 15	n 0.21259994	Node 82.18949
rms res. 1".41 (M-P)	1931-1986	e 0.0815457	Incl. 5.87291
(2133) Franceswright	Obs. 30	M 95.78629	Peri. 279.04598
H 13.5 G 0.25	Opp. 7	n 0.26350809	Node 78.18714
rms res. 1".15 (M-P)	1957-1985	e 0.1847694	Incl. 6.90304
(2135) Aristaeus	Obs. 17	M 252.12353	Peri. 290.60031
H 18.0 G 0.25	Opp. 3	n 0.48711459	Node 190.78110
rms res. 1".35 (M-P)	1977-1984	e 0.5032541	Incl. 23.04078
(2136) Jugta	Obs. 29	M 275.00077	Peri. 65.50262
H 11.6 G 0.25	Opp. 7	n 0.18791291	Node 148.64874
rms res. 1".68 (M-P)	1933-1986	e 0.0451205	Incl. 10.58596
(2137) Priscilla	Obs. 25	M 304.32492	Peri. 139.48799
H 11.1 G 0.25	Opp. 8	n 0.17362865	Node 319.97825
rms res. 1".26 (M-P)	1936-1984	e 0.0715267	Incl. 11.72212
(2139) Makharadze	Obs. 38	M 231.12522	Peri. 65.08639
H 12.81 G 0.15	Opp. 8	n 0.25544804	Node 256.31512
rms res. 1".80 (M-P)	1924-1986	e 0.1895886	Incl. 2.19119
(2140) Kemerovo	Obs. 28	M 118.35535	Peri. 113.73030
H 11.0 G 0.25	Opp. 10	n 0.19092738	Node 274.58658
rms res. 1".62 (M-P)	1952-1983	e 0.0548852	Incl. 6.97461
(2141) Simferopol	Obs. 15	M 331.03775	Peri. 54.50465
H 11.4 G 0.25	Opp. 10	n 0.20988839	Node 271.61542
rms res. 2".46 (M-P)	1951-1985	e 0.1270906	Incl. 5.95891
(2144) Marietta	Obs. 97	M 2.05888	Peri. 277.05882
H 11.54 G 0.25	Opp. 14	n 0.20186448	Node 138.23842
rms res. 1".30 (M-P)	1947-1985	e 0.0630048	Incl. 2.82426
(2146) Stentor	Obs. 29	M 59.00675	Peri. 273.30734
H 10.4 G 0.25	Opp. 4	n 0.08289129	Node 130.62059
rms res. 0".74 (M-P)	1976-1985	e 0.1030358	Incl. 39.24002
(2151) Hadwiger	Obs. 52	M 151.56009	Peri. 84.61194
H 10.7 G 0.25	Opp. 7	n 0.24029739	Node 27.68428
rms res. 1".42 (M-P)	1963-1985	e 0.0568479	Incl. 15.44522

(2152) Hannibal	Obs. 37	M 267.08914	Peri.	143.19311
H 10.4 G 0.25	Opp. 7	n 0.17728627	Node	250.75543
rms res. 0".71 (M-P)	1939-1984	e 0.2099566	Incl.	13.94604
(2154) Underhill	Obs. 48	M 92.33484	Peri.	120.53769
H 12.6 G 0.25	Opp. 7	n 0.23039795	Node	0.43835
rms res. 1".04 (M-P)	1958-1986	e 0.1258760	Incl.	7.75905
(2155) Wodan	Obs. 55	M 259.10251	Peri.	347.16830
H 12.4 G 0.25	Opp. 8	n 0.20411692	Node	38.47420
rms res. 0".87 (M-P)	1960-1985	e 0.0754897	Incl.	2.53914
(2156) Kate	Obs. 28	M 33.70441	Peri.	4.01114
H 12.67 G 0.25	Opp. 11	n 0.29347000	Node	16.74768
rms res. 1".45 (M-P)	1917-1986	e 0.2017320	Incl.	5.35005
(2157) Ashbrook	Obs. 16	M 245.16747	Peri.	265.58195
H 11.5 G 0.25	Opp. 5	n 0.21251120	Node	349.23262
rms res. 1".43 (M-P)	1924-1986	e 0.1139813	Incl.	8.62153
(2158) 1933 OS	Obs. 45	M 98.91731	Peri.	102.39361
H 11.4 G 0.25	Opp. 8	n 0.18176325	Node	187.32700
rms res. 1".37 (M-P)	1933-1986	e 0.1699991	Incl.	1.58052
(2159) Kukkamaki	Obs. 24	M 282.55165	Peri.	123.78488
H 12.16 G 0.25	Opp. 9	n 0.25196682	Node	350.99130
rms res. 1".84 (M-P)	1929-1986	e 0.0410984	Incl.	3.27704
(2165) Young	Obs. 68	M 218.61183	Peri.	23.30247
H 11.5 G 0.25	Opp. 9	n 0.17697213	Node	19.02964
rms res. 1".30 (M-P)	1956-1985	e 0.1601866	Incl.	0.95176
(2168) Swope	Obs. 37	M 240.07327	Peri.	9.44199
H 12.9 G 0.25	Opp. 7	n 0.25671144	Node	313.61710
rms res. 1".33 (M-P)	1955-1982	e 0.1549795	Incl.	4.75057
(2172) Plavsk	Obs. 37	M 320.05646	Peri.	333.76347
H 11.5 G 0.25	Opp. 6	n 0.20016189	Node	84.16955
rms res. 1".48 (M-P)	1949-1985	e 0.1416344	Incl.	3.32927
(2174) Asmodeus	Obs. 29	M 78.42790	Peri.	4.88522
H 13.3 G 0.25	Opp. 4	n 0.24412429	Node	359.65950
rms res. 1".35 (M-P)	1975-1979	e 0.2738030	Incl.	8.11656
(2176) Donar	Obs. 26	M 299.39220	Peri.	176.14033
H 12.2 G 0.25	Opp. 7	n 0.19641911	Node	89.75448
rms res. 1".25 (M-P)	1953-1987	e 0.0538897	Incl.	3.04834
(2180) Marjaleena	Obs. 27	M 85.50566	Peri.	91.34990
H 11.1 G 0.25	Opp. 9	n 0.18813512	Node	233.14086
rms res. 1".67 (M-P)	1940-1986	e 0.0833985	Incl.	9.24055
(2182) Semirot	Obs. 27	M 104.25514	Peri.	191.17185
H 10.3 G 0.25	Opp. 8	n 0.17809019	Node	51.31584
rms res. 1".12 (M-P)	1953-1986	e 0.1294310	Incl.	2.29761
(2183) 1959 OB	Obs. 40	M 207.43532	Peri.	238.03625
H 11.4 G 0.25	Opp. 6	n 0.19062385	Node	87.91756
rms res. 1".24 (M-P)	1959-1985	e 0.3768208	Incl.	18.25758

(2184) Fujian	Obs. 22	M 85.09978	Peri.	122.95314
H 11.6 G 0.25	Opp. 6	n 0.17483595	Node	256.38314
rms res. 1".24 (M-P)	1930-1983	e 0.1137002	Incl.	5.22022
(2186) Keldysh	Obs. 23	M 115.88464	Peri.	131.45085
H 12.4 G 0.25	Opp. 11	n 0.22451014	Node	285.22680
rms res. 1".34 (M-P)	1929-1986	e 0.1006927	Incl.	2.36224
(2187) La Silla	Obs. 25	M 72.44165	Peri.	214.55854
H 13.48 G 0.15	Opp. 5	n 0.24388156	Node	137.01343
rms res. 1".12 (M-P)	1976-1983	e 0.1182456	Incl.	13.24876
(2188) Orlenok	Obs. 38	M 215.14015	Peri.	193.61461
H 12.0 G 0.25	Opp. 12	n 0.19938181	Node	140.07943
rms res. 1".26 (M-P)	1931-1986	e 0.0886558	Incl.	2.65813
(2194) Arpola	Obs. 21	M 269.73915	Peri.	100.59927
H 12.6 G 0.25	Opp. 6	n 0.27731784	Node	46.76947
rms res. 1".23 (M-P)	1940-1984	e 0.0417855	Incl.	8.52564
(2196) Ellicott	Obs. 28	M 199.61295	Peri.	322.23755
H 10.24 G 0.15	Opp. 11	n 0.15497137	Node	212.31608
rms res. 1".58 (M-P)	1906-1982	e 0.0604629	Incl.	10.31567
(2301) Whitford	Obs. 20	M 19.52725	Peri.	2.73712
H 11.5 G 0.25	Opp. 7	n 0.17601847	Node	79.44531
rms res. 1".43 (M-P)	1931-1983	e 0.2307198	Incl.	11.84062
(2303) Retsina	Obs. 20	M 296.92886	Peri.	330.81436
H 11.5 G 0.25	Opp. 5	n 0.18995106	Node	195.05858
rms res. 1".14 (M-P)	1974-1986	e 0.1109322	Incl.	18.93573
(2319) 7631 P-L	Obs. 25	M 214.73934	Peri.	266.91131
H 12.15 G 0.25	Opp. 7	n 0.19880789	Node	112.36342
rms res. 1".45 (M-P)	1906-1983	e 0.0892912	Incl.	2.97264
(2322) Kitt Peak	Obs. 34	M 280.19617	Peri.	191.45381
H 12.6 G 0.25	Opp. 8	n 0.28400067	Node	194.35950
rms res. 1".36 (M-P)	1954-1985	e 0.0411653	Incl.	2.40419
(2326) Tololo	Obs. 45	M 215.69594	Peri.	258.90270
H 10.61 G 0.15	Opp. 7	n 0.20351178	Node	155.61843
rms res. 1".21 (M-P)	1965-1983	e 0.1563071	Incl.	15.13204
(2339) 2509 P-L	Obs. 27	M 351.65001	Peri.	340.99362
H 13.55 G 0.15	Opp. 8	n 0.24534246	Node	11.73132
rms res. 1".48 (M-P)	1948-1986	e 0.1949105	Incl.	4.85240
(2340) Hathor	Obs. 53	M 192.37696	Peri.	39.76859
H 20.2 G 0.25	Opp. 3	n 1.27120920	Node	211.00344
rms res. 1".58 (M-P)	1976-1983	e 0.4499159	Incl.	5.85571
(2350) von Lude	Obs. 14	M 75.21574	Peri.	287.15704
H 13.5 G 0.25	Opp. 4	n 0.29364810	Node	140.63119
rms res. 1".61 (M-P)	1938-1982	e 0.1267926	Incl.	5.07555
(2359) Debehogne	Obs. 116	M 96.44504	Peri.	76.02989
H 12.93 G 0.25	Opp. 6	n 0.26070533	Node	205.64529
rms res. 0".76 (M-P)	1931-1986	e 0.1129970	Incl.	4.34134

(2360) Volgo-Don	Obs. 26	M	332.21275	Peri.	2.29703
H 12.43 G 0.15	Opp. 5	n	0.22575468	Node	38.08074
rms res. 1".54 (M-P)	1949-1984	e	0.1960388	Incl.	3.39959
(2363) Cebriones	Obs. 50	M	90.36737	Peri.	54.02907
H 8.8 G 0.25	Opp. 5	n	0.08477250	Node	211.19989
rms res. 0".90 (M-P)	1977-1984	e	0.0355452	Incl.	32.25697
(2364) Seillier	Obs. 56	M	294.49650	Peri.	171.66353
H 10.77 G 0.15	Opp. 5	n	0.17398743	Node	42.45533
rms res. 1".11 (M-P)	1971-1984	e	0.1321939	Incl.	10.71992
(2391) Tomita	Obs. 53	M	126.51247	Peri.	281.51090
H 12.5 G 0.25	Opp. 8	n	0.25842255	Node	162.99730
rms res. 1".30 (M-P)	1929-1986	e	0.1349701	Incl.	3.00234
(2417) McVittie	Obs. 21	M	125.73895	Peri.	20.18241
H 12.25 G 0.15	Opp. 6	n	0.17233835	Node	84.31563
rms res. 1".74 (M-P)	1958-1985	e	0.2104837	Incl.	3.10109
(2435) Horemheb	Obs. 15	M	204.87526	Peri.	183.10187
H 14.9 G 0.25	Opp. 4	n	0.30137356	Node	162.12525
rms res. 1".25 (M-P)	1960-1983	e	0.2047791	Incl.	3.96488
(2440) Educatio	Obs. 17	M	89.92952	Peri.	77.49090
H 13.6 G 0.25	Opp. 5	n	0.29864250	Node	226.81052
rms res. 1".36 (M-P)	1954-1984	e	0.1625396	Incl.	4.10376
(2444) Lederle	Obs. 35	M	83.04125	Peri.	140.71099
H 11.86 G 0.15	Opp. 4	n	0.21871141	Node	285.83175
rms res. 1".09 (M-P)	1934-1986	e	0.1307710	Incl.	15.10484

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ORBITAL ELEMENTS BY N. K. SUMZINA, INSTITUTE FOR THEORETICAL ASTRONOMY.

The elements are for Epoch 1988 Aug. 27.0 ET, equinox 1950.0.

(30) Urania	Obs. 302	M	236.17478	Peri.	86.25854
H 7.74 G 0.41	Opp. 37	n	0.27080538	Node	307.29834
rms res. 1".34 (M-P)	1901-1985	e	0.1268177	Incl.	2.09143
(354) Eleonora	Obs. 389	M	135.71750	Peri.	5.67265
H 6.32 G 0.32	Opp. 40	n	0.21071876	Node	140.04424
rms res. 1".17 (M-P)	1913-1985	e	0.1162789	Incl.	18.42979
(471) Papagena	Obs. 215	M	159.12346	Peri.	313.31543
H 6.61 G 0.29	Opp. 36	n	0.20047611	Node	83.85694
rms res. 1".34 (M-P)	1901-1985	e	0.2294921	Incl.	14.93774
(923) Herluga	Obs. 27	M	85.67621	Peri.	199.77545
H 11.6 G 0.25	Opp. 10	n	0.23323842	Node	197.23640
rms res. 1".12 (M-P)	1919-1985	e	0.1967313	Incl.	14.51697
(952) Caia	Obs. 50	M	333.10444	Peri.	355.55769
H 9.12 G 0.15	Opp. 18	n	0.19099928	Node	18.31736
rms res. 1".50 (M-P)	1929-1985	e	0.2476346	Incl.	10.03870

(953) Painleva	Obs. 62	M 107.03873	Peri.	259.96623
H 10.40 G 0.15	Opp. 18	n 0.21115262	Node	36.23336
rms res. 1".46 (M-P)	1927-1986	e 0.1868878	Incl.	8.66976
(959) Arne	Obs. 48	M 243.41867	Peri.	330.10369
H 10.7 G 0.25	Opp. 16	n 0.17197079	Node	59.16173
rms res. 1".41 (M-P)	1916-1986	e 0.1991399	Incl.	4.46796
(965) Angelica	Obs. 23	M 273.06464	Peri.	47.99024
H 10.23 G 0.15	Opp. 10	n 0.17699640	Node	40.98757
rms res. 1".55 (M-P)	1927-1983	e 0.2885856	Incl.	21.49678
(971) Alsatia	Obs. 30	M 171.49091	Peri.	6.30198
H 9.91 G 0.15	Opp. 12	n 0.22974372	Node	83.28255
rms res. 1".43 (M-P)	1908-1983	e 0.1629447	Incl.	13.78846
(972) Cohnia	Obs. 93	M 223.02186	Peri.	90.57778
H 9.50 G 0.15	Opp. 18	n 0.18335038	Node	282.28316
rms res. 1".42 (M-P)	1906-1984	e 0.2258072	Incl.	8.36755
(973) Aralia	Obs. 114	M 233.99584	Peri.	93.56831
H 9.86 G 0.15	Opp. 23	n 0.17073278	Node	348.13673
rms res. 1".61 (M-P)	1922-1986	e 0.1027355	Incl.	15.76515
(974) Lioba	Obs. 54	M 292.72915	Peri.	302.33718
H 10.40 G 0.25	Opp. 21	n 0.24446141	Node	86.23286
rms res. 1".50 (M-P)	1922-1983	e 0.1109326	Incl.	5.46936
(981) Martina	Obs. 50	M 8.88288	Peri.	299.95948
H 10.84 G 0.15	Opp. 17	n 0.18015005	Node	46.05048
rms res. 1".46 (M-P)	1906-1984	e 0.1929390	Incl.	2.07153
(986) Amelia	Obs. 34	M 317.20045	Peri.	265.07964
H 9.43 G 0.15	Opp. 16	n 0.17639587	Node	92.57434
rms res. 1".80 (M-P)	1928-1982	e 0.1855426	Incl.	14.84010
(988) Appella	Obs. 30	M 277.86053	Peri.	336.38264
H 11.3 G 0.25	Opp. 8	n 0.17507513	Node	41.87426
rms res. 1".57 (M-P)	1939-1985	e 0.2175334	Incl.	1.57575
(991) McDonalda	Obs. 58	M 2.66068	Peri.	246.41284
H 11.35 G 0.15	Opp. 14	n 0.17641669	Node	63.77132
rms res. 1".31 (M-P)	1936-1986	e 0.1449830	Incl.	2.09519
(995) Sternberga	Obs. 54	M 89.68628	Peri.	122.07393
H 10.37 G 0.15	Opp. 15	n 0.23303023	Node	221.44999
rms res. 1".34 (M-P)	1923-1986	e 0.1676162	Incl.	13.07775
(1006) Lagrangea	Obs. 54	M 230.19715	Peri.	80.01310
H 11.64 G 0.15	Opp. 12	n 0.17452320	Node	297.68899
rms res. 1".25 (M-P)	1923-1986	e 0.3404541	Incl.	11.02163
(1042) Amazone	Obs. 26	M 227.37074	Peri.	292.45283
H 10.21 G 0.15	Opp. 13	n 0.16990783	Node	52.15191
rms res. 1".30 (M-P)	1925-1983	e 0.1064472	Incl.	20.69234
(1049) Gotho	Obs. 39	M 185.16229	Peri.	35.55170
H 10.6 G 0.25	Opp. 14	n 0.18079056	Node	342.86517
rms res. 1".11 (M-P)	1925-1985	e 0.1296315	Incl.	15.14728

(1067) Lunaria	Obs. 37	M 235.93973	Peri. 114.19650
H 10.83 G 0.15	Opp. 14	n 0.20248829	Node 289.50763
rms res. 1".56 (M-P)	1926-1986	e 0.1907606	Incl. 10.55084
(1074) Beljawskya	Obs. 64	M 174.37805	Peri. 20.40640
H 10.16 G 0.15	Opp. 22	n 0.17479812	Node 37.79003
rms res. 1".58 (M-P)	1925-1983	e 0.1618336	Incl. 0.81791
(1098) Hakone	Obs. 62	M 164.47208	Peri. 80.42080
H 10.60 G 0.15	Opp. 17	n 0.22345162	Node 328.75001
rms res. 1".26 (M-P)	1928-1984	e 0.1162709	Incl. 13.39162
(1106) Cydonia	Obs. 48	M 49.81819	Peri. 228.79123
H 11.8 G 0.25	Opp. 12	n 0.23535099	Node 327.90078
rms res. 1".31 (M-P)	1929-1983	e 0.1228313	Incl. 13.10115
(1108) Demeter	Obs. 34	M 204.41568	Peri. 77.27116
H 11.88 G 0.15	Opp. 9	n 0.26095824	Node 234.05251
rms res. 1".57 (M-P)	1929-1980	e 0.2589995	Incl. 24.93320
(1112) Polonia	Obs. 77	M 104.90768	Peri. 82.26175
H 10.15 G 0.25	Opp. 23	n 0.18797416	Node 302.90784
rms res. 1".30 (M-P)	1928-1986	e 0.1071125	Incl. 8.99021
(1118) Hanskya	Obs. 38	M 287.17731	Peri. 336.59288
H 9.79 G 0.15	Opp. 20	n 0.17157334	Node 318.73854
rms res. 1".68 (M-P)	1927-1984	e 0.0593694	Incl. 14.01907
(1304) Arosa	Obs. 77	M 195.73468	Peri. 139.77291
H 9.19 G 0.15	Opp. 19	n 0.17033680	Node 86.97000
rms res. 1".21 (M-P)	1908-1982	e 0.1007278	Incl. 18.87034
(1329) Eliane	Obs. 37	M 291.07117	Peri. 164.99955
H 10.80 G 0.25	Opp. 13	n 0.23279790	Node 131.71423
rms res. 1".65 (M-P)	1933-1985	e 0.1740821	Incl. 14.49882
(1330) Spiridonia	Obs. 45	M 46.19337	Peri. 12.91145
H 10.18 G 0.15	Opp. 13	n 0.17430922	Node 158.45704
rms res. 1".49 (M-P)	1933-1984	e 0.0696906	Incl. 15.97596
(1645) Waterfield	Obs. 90	M 64.61774	Peri. 103.47345
H 11.5 G 0.25	Opp. 15	n 0.18445387	Node 266.06528
rms res. 1".37 (M-P)	1933-1985	e 0.1205418	Incl. 1.01948
(1748) Mauderli	Obs. 68	M 320.02486	Peri. 201.26537
H 10.52 G 0.15	Opp. 13	n 0.12703093	Node 125.59853
rms res. 1".13 (M-P)	1934-1984	e 0.2334082	Incl. 3.29713
(1784) Benguella	Obs. 39	M 95.05027	Peri. 184.48327
H 11.81 G 0.25	Opp. 14	n 0.26401431	Node 94.85861
rms res. 1".40 (M-P)	1935-1986	e 0.1298813	Incl. 1.47428
(1786) Raahe	Obs. 25	M 224.89819	Peri. 345.52115
H 11.0 G 0.25	Opp. 7	n 0.18752658	Node 16.17685
rms res. 1".50 (M-P)	1948-1982	e 0.1052888	Incl. 10.43293
(1798) Watts	Obs. 36	M 173.15835	Peri. 3.48908
H 12.6 G 0.25	Opp. 9	n 0.30217348	Node 43.85628
rms res. 1".17 (M-P)	1934-1985	e 0.1219907	Incl. 6.19710

(1800) Aguilar	Obs. 50	M 183.43979	Peri.	213.74688
H 12.7 G 0.25	Opp. 11	n 0.27242748	Node	123.78054
rms res. 1".39 (M-P)	1950-1986	e 0.1355603	Incl.	5.78957
(1808) Bellerophon	Obs. 39	M 9.58151	Peri.	45.92365
H 12.2 G 0.25	Opp. 10	n 0.21633762	Node	13.09381
rms res. 1".24 (M-P)	1953-1983	e 0.1807194	Incl.	2.03959
(1813) Imhotep	Obs. 17	M 283.24890	Peri.	167.15738
H 12.5 G 0.25	Opp. 6	n 0.22439131	Node	34.81891
rms res. 1".10 (M-P)	1960-1985	e 0.0811022	Incl.	8.10526
(1814) Bach	Obs. 38	M 351.74331	Peri.	65.07320
H 13.1 G 0.25	Opp. 8	n 0.29672971	Node	19.89932
rms res. 1".40 (M-P)	1931-1986	e 0.1310959	Incl.	4.34595
(1818) Brahms	Obs. 13	M 153.06242	Peri.	73.97318
H 14.1 G 0.25	Opp. 5	n 0.30973032	Node	249.07077
rms res. 1".87 (M-P)	1939-1986	e 0.1786394	Incl.	2.97948
(1847) Stobbe	Obs. 34	M 328.16758	Peri.	135.89510
H 10.7 G 0.25	Opp. 10	n 0.23363698	Node	106.70669
rms res. 1".44 (M-P)	1930-1985	e 0.0195197	Incl.	11.14506
(1849) Kresak	Obs. 20	M 233.93470	Peri.	104.67290
H 11.1 G 0.25	Opp. 6	n 0.18456363	Node	50.35532
rms res. 1".23 (M-P)	1942-1985	e 0.0149385	Incl.	10.78007
(1874) Kacivelia	Obs. 44	M 174.57754	Peri.	192.68184
H 11.0 G 0.25	Opp. 11	n 0.17785421	Node	159.41782
rms res. 1".25 (M-P)	1924-1984	e 0.3020824	Incl.	4.87430
(1880) McCrosky	Obs. 50	M 227.81445	Peri.	186.61291
H 12.13 G 0.15	Opp. 9	n 0.22539396	Node	116.58400
rms res. 1".42 (M-P)	1940-1986	e 0.0759088	Incl.	4.84769
(1905) Ambartsumian	Obs. 43	M 314.48328	Peri.	60.77534
H 13.54 G 0.25	Opp. 12	n 0.29731353	Node	200.99179
rms res. 1".88 (M-P)	1932-1985	e 0.1631333	Incl.	2.61739
(1927) Suvanto	Obs. 24	M 90.87089	Peri.	96.46215
H 11.8 G 0.25	Opp. 6	n 0.22843306	Node	26.70008
rms res. 1".30 (M-P)	1930-1986	e 0.1492924	Incl.	13.36887
(1940) Whipple	Obs. 86	M 218.48638	Peri.	186.99713
H 11.2 G 0.25	Opp. 10	n 0.18431170	Node	263.78691
rms res. 0".91 (M-P)	1962-1984	e 0.0691250	Incl.	6.56058
(1941) Wild	Obs. 22	M 47.69571	Peri.	304.25287
H 11.2 G 0.25	Opp. 6	n 0.12333944	Node	60.28712
rms res. 1".45 (M-P)	1931-1980	e 0.2790641	Incl.	3.94720
(1942) Jablunka	Obs. 46	M 188.30929	Peri.	11.23881
H 13.1 G 0.25	Opp. 7	n 0.27917574	Node	345.91893
rms res. 1".16 (M-P)	1972-1986	e 0.1840285	Incl.	24.34819
(1944) Gunter	Obs. 39	M 290.45551	Peri.	124.17375
H 13.7 G 0.25	Opp. 6	n 0.29389155	Node	212.13895
rms res. 1".37 (M-P)	1925-1982	e 0.2358483	Incl.	5.48455

(1984) Fedynskij	Obs. 63	M 1.62425	Peri.	126.60259
H 11.2 G 0.25	Opp. 11	n 0.18852304	Node	185.72208
rms res. 1".38 (M-P)	1926-1986	e 0.0825174	Incl.	4.77573
(1988) Delores	Obs. 40	M 162.17493	Peri.	234.49237
H 13.6 G 0.25	Opp. 8	n 0.31191607	Node	105.93635
rms res. 1".50 (M-P)	1952-1986	e 0.1027820	Incl.	4.25469
(1990) Pilcher	Obs. 36	M 12.12418	Peri.	12.07662
H 13.15 G 0.25	Opp. 9	n 0.30745346	Node	193.15761
rms res. 1".73 (M-P)	1932-1985	e 0.0518516	Incl.	3.13371
(2202) Pele	Obs. 59	M 204.17079	Peri.	217.22822
H 16.3 G 0.25	Opp. 3	n 0.28424668	Node	169.74789
rms res. 0".83 (M-P)	1972-1986	e 0.5124040	Incl.	8.78394
(2205) Glinka	Obs. 15	M 352.33363	Peri.	104.44005
H 11.7 G 0.25	Opp. 6	n 0.18913069	Node	227.67392
rms res. 1".49 (M-P)	1968-1982	e 0.1160070	Incl.	10.49038
(2209) Tianjin	Obs. 83	M 2.51581	Peri.	261.86229
H 10.9 G 0.25	Opp. 15	n 0.20498294	Node	150.65044
rms res. 1".27 (M-P)	1942-1986	e 0.0685807	Incl.	2.60862
(2215) Sichuan	Obs. 18	M 48.06067	Peri.	331.32064
H 11.6 G 0.25	Opp. 6	n 0.21154060	Node	70.80781
rms res. 1".56 (M-P)	1942-1980	e 0.2664523	Incl.	10.75851
(2216) Kerch	Obs. 23	M 22.48560	Peri.	185.44826
H 10.9 G 0.25	Opp. 8	n 0.18782640	Node	155.58383
rms res. 1".76 (M-P)	1938-1986	e 0.0962629	Incl.	10.42680
(2219) Mannucci	Obs. 50	M 43.17225	Peri.	300.28308
H 10.8 G 0.25	Opp. 12	n 0.17608869	Node	72.31129
rms res. 1".25 (M-P)	1931-1985	e 0.1239687	Incl.	7.59213
(2221) Chilton	Obs. 12	M 336.26276	Peri.	80.05345
H 13.1 G 0.25	Opp. 4	n 0.23639814	Node	245.74795
rms res. 1".01 (M-P)	1976-1980	e 0.1375112	Incl.	13.82125
(2227) Otto Struve	Obs. 49	M 256.73718	Peri.	253.54122
H 13.8 G 0.25	Opp. 7	n 0.29482075	Node	178.48876
rms res. 1".23 (M-P)	1935-1985	e 0.1743057	Incl.	4.95262
(2231) Durrell	Obs. 28	M 151.29410	Peri.	23.05072
H 12.5 G 0.25	Opp. 5	n 0.21885752	Node	342.19812
rms res. 1".45 (M-P)	1941-1986	e 0.2518675	Incl.	8.26779
(2233) Kuznetsov	Obs. 39	M 247.22751	Peri.	159.18036
H 12.69 G 0.25	Opp. 11	n 0.28660095	Node	246.82265
rms res. 1".35 (M-P)	1957-1985	e 0.0808977	Incl.	3.41348
(2247) 6512 P-L	Obs. 21	M 74.13114	Peri.	28.87306
H 13.6 G 0.25	Opp. 5	n 0.25729512	Node	6.87242
rms res. 1".05 (M-P)	1960-1983	e 0.1098073	Incl.	5.94136
(2251) Tikhov	Obs. 24	M 166.25226	Peri.	182.04686
H 11.6 G 0.25	Opp. 9	n 0.22083477	Node	192.73282
rms res. 1".23 (M-P)	1950-1981	e 0.1480398	Incl.	7.43614

(2256) 4519 P-L	Obs. 33	M 77.16969	Peri.	195.98094
H 11.9 G 0.25	Opp. 9	n 0.17987118	Node	115.37901
rms res. 1".36 (M-P)	1960-1986	e 0.1632232	Incl.	0.46816
(2261) 1977 HC	Obs. 15	M 33.12856	Peri.	99.54392
H 13.43 G 0.25	Opp. 4	n 0.26893592	Node	102.30594
rms res. 1".60 (M-P)	1977-1984	e 0.2393305	Incl.	22.71920
(2281) 1971 UQ1	Obs. 20	M 141.38718	Peri.	108.87376
H 13.5 G 0.25	Opp. 4	n 0.30456472	Node	206.14769
rms res. 1".20 (M-P)	1971-1981	e 0.1452332	Incl.	1.48555
(2285) Ron Helin	Obs. 24	M 221.81947	Peri.	182.17234
H 13.7 G 0.25	Opp. 4	n 0.29790962	Node	157.40378
rms res. 1".67 (M-P)	1976-1986	e 0.2070767	Incl.	5.32850
(2472) 1973 DG	Obs. 16	M 203.46407	Peri.	159.62829
H 13.5 G 0.25	Opp. 4	n 0.28924737	Node	344.29802
rms res. 1".30 (M-P)	1973-1983	e 0.0949672	Incl.	5.11079
(2475) Semenov	Obs. 15	M 4.96238	Peri.	180.19557
H 11.1 G 0.25	Opp. 6	n 0.18606468	Node	209.91245
rms res. 1".55 (M-P)	1908-1986	e 0.1098997	Incl.	9.09535
(2489) Suvorov	Obs. 33	M 142.37043	Peri.	237.57881
H 12.00 G 0.15	Opp. 4	n 0.17973573	Node	56.13795
rms res. 1".53 (M-P)	1954-1984	e 0.1539464	Incl.	1.78582
(2491) 1977 CB	Obs. 29	M 213.61853	Peri.	357.75992
H 13.74 G 0.25	Opp. 4	n 0.38310957	Node	124.78233
rms res. 1".44 (M-P)	1977-1982	e 0.0544713	Incl.	22.86807
(2501) Lohja	Obs. 26	M 88.13431	Peri.	227.00015
H 12.15 G 0.25	Opp. 10	n 0.26184778	Node	10.98607
rms res. 1".28 (M-P)	1942-1985	e 0.1978774	Incl.	3.32565
(2503) Liaoning	Obs. 24	M 11.20017	Peri.	15.70204
H 14.1 G 0.25	Opp. 4	n 0.30355341	Node	11.45021
rms res. 1".27 (M-P)	1965-1986	e 0.2131778	Incl.	7.10990
(2506) Pirogov	Obs. 43	M 53.51666	Peri.	288.21973
H 11.86 G 0.25	Opp. 6	n 0.19973029	Node	164.51771
rms res. 1".62 (M-P)	1959-1981	e 0.0186132	Incl.	2.16545
(2514) Taiyuan	Obs. 20	M 198.09267	Peri.	11.78846
H 12.95 G 0.15	Opp. 4	n 0.22830341	Node	358.35355
rms res. 1".33 (M-P)	1964-1983	e 0.0996901	Incl.	2.34926
(2520) Novorossijsk	Obs. 26	M 82.18104	Peri.	322.82344
H 11.73 G 0.15	Opp. 6	n 0.17944918	Node	6.58284
rms res. 1".44 (M-P)	1971-1985	e 0.0937423	Incl.	6.23159
(2531) Cambridge	Obs. 51	M 354.48270	Peri.	35.71151
H 11.01 G 0.25	Opp. 9	n 0.18882841	Node	104.02127
rms res. 1".58 (M-P)	1931-1984	e 0.0496572	Incl.	11.02551
(2537) Gilmore	Obs. 12	M 189.88074	Peri.	17.79270
H 12.8 G 0.25	Opp. 4	n 0.22767165	Node	334.76315
rms res. 1".70 (M-P)	1951-1982	e 0.1721129	Incl.	12.96329

(2539) Ningxia	Obs. 22	M	344.35260	Peri.	214.91473
H 14.39 G 0.25	Opp. 4	n	0.28963473	Node	192.85817
rms res. 1".73 (M-P)	1964-1986	e	0.1690333	Incl.	3.98049
(2542) Calpurnia	Obs. 26	M	174.62354	Peri.	35.68051
H 11.47 G 0.14	Opp. 6	n	0.17868169	Node	146.10198
rms res. 1".35 (M-P)	1972-1986	e	0.0858720	Incl.	4.62924
(2546) 1950 FC	Obs. 29	M	58.57462	Peri.	232.78319
H 11.7 G 0.25	Opp. 5	n	0.23471781	Node	315.03906
rms res. 1".37 (M-P)	1937-1983	e	0.1883610	Incl.	10.37836
(2549) Baker	Obs. 18	M	25.43086	Peri.	204.63400
H 12.8 G 0.25	Opp. 4	n	0.17336706	Node	195.22313
rms res. 1".22 (M-P)	1976-1982	e	0.1858845	Incl.	0.06331
(2551) Decabrina	Obs. 27	M	69.74052	Peri.	29.41680
H 12.40 G 0.43	Opp. 4	n	0.17748257	Node	10.67644
rms res. 1".52 (M-P)	1955-1986	e	0.1887815	Incl.	0.63689
(2567) Elba	Obs. 45	M	318.77730	Peri.	190.37155
H 11.75 G 0.15	Opp. 5	n	0.21757517	Node	142.35271
rms res. 1".64 (M-P)	1979-1984	e	0.1388544	Incl.	8.90381
(2571) Geisei	Obs. 43	M	57.22478	Peri.	284.07775
H 13.21 G 0.25	Opp. 4	n	0.29625163	Node	66.56057
rms res. 1".46 (M-P)	1931-1984	e	0.1947819	Incl.	2.87246

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ORBITAL ELEMENTS BY E. N. MAKAROVA, INSTITUTE FOR THEORETICAL ASTRONOMY.

The elements are for Epoch 1988 Aug. 27.0 ET, equinox 1950.0.

(3) Juno	Obs. 2942	M	24.94434	Peri.	246.72499
H 5.31 G 0.30	Opp. 26	n	0.22611824	Node	169.86256
rms res. 0".49 (M-P)	1950-1984	e	0.2582127	Incl.	13.00043
(4) Vesta	Obs. 2948	M	294.51394	Peri.	150.28561
H 3.16 G 0.34	Opp. 27	n	0.27167892	Node	103.36971
rms res. 0".47 (M-P)	1949-1984	e	0.0905672	Incl.	7.14066
(6) Hebe	Obs. 2115	M	44.74997	Peri.	238.60840
H 5.70 G 0.24	Opp. 26	n	0.26097031	Node	138.36183
rms res. 0".43 (M-P)	1949-1985	e	0.2024941	Incl.	14.78483
(11) Parthenope	Obs. 2062	M	287.19021	Peri.	193.64154
H 6.62 G 0.27	Opp. 24	n	0.25658707	Node	125.06912
rms res. 0".43 (M-P)	1951-1984	e	0.0996882	Incl.	4.62452
(18) Melpomene	Obs. 2169	M	333.89983	Peri.	227.52667
H 6.41 G 0.17	Opp. 22	n	0.28341921	Node	150.05258
rms res. 0".44 (M-P)	1955-1984	e	0.2181260	Incl.	10.13931
(39) Laetitia	Obs. 2364	M	65.82398	Peri.	208.62687
H 6.16 G 0.25	Opp. 28	n	0.21392977	Node	156.75157
rms res. 0".49 (M-P)	1949-1985	e	0.1147403	Incl.	10.37241

(40) Harmonia	Obs. 1869	M 115.34118	Peri.	268.42423
H 7.14 G 0.31	Opp. 19	n 0.28880220	Node	93.78821
rms res. 0".44 (M-P)	1955-1985	e 0.0471650	Incl.	4.25941

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ORBITAL ELEMENTS BY D. K. YEOMANS, JET PROPULSION LABORATORY.

The elements are for Epoch 1988 Aug. 27.0 ET, equinox 1950.0.

(243) Ida	Obs. 102	M 122.57393	Peri.	110.17331
H 10.02 G 0.20	Opp. 27	n 0.20355967	Node	323.89261
rms res. 1".1 (M-P)	1905-1985	e 0.0421844	Incl.	1.13534
(951) Gaspra	Obs. 48	M 292.93291	Peri.	129.32797
H 11.67 G 0.25	Opp. 15	n 0.30005304	Node	252.66858
rms res. 1".0 (M-P)	1939-1985	e 0.1733852	Incl.	4.10001
(2825) 1938 SD1	Obs. 48	M 263.91194	Peri.	81.13790
H 13.4 G 0.25	Opp. 5	n 0.29284166	Node	329.13412
rms res. 0".9 (M-P)	1938-1985	e 0.1737164	Incl.	3.51845

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ORBITAL ELEMENTS BY H. OISHI, NIIZA, JAPAN.

The identifications are by H. Oishi unless otherwise stated.

(3721)* 1982 TU = 1982 UK9 = 1982 VZ9 = 1951 YG2 = 1971 SD1 = 1981 ON = 1984 DV1

Discovered 1982 Oct. 13 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory. The double designation 1982 UK9 = 1982 VZ9 and key identifications 1982 TU = 1982 UK9 = 1951 YG2 = 1981 ON are by L. V. Zhuravleva and T. Furuta, respectively (MPC 11515).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 350.82097	(1950.0)	P	Q	
n 0.18763953	Peri. 145.19888	-0.16191019	-0.98068263	
a 3.0217126	Node 313.84067	+0.86726298	-0.08835001	
e 0.0811940	Incl. 8.75285	+0.47078659	-0.17451606	
P 5.25	H 11.9	G 0.25		

Residuals in seconds of arc

511227 711	1.0-	1.3+ Y	821013 688	1.2+	4.1-	871020 688	0.9+	0.2-
511228 711	0.9+	2.2+ Y	821013 688	1.3+	3.4-	871020 688	1.0-	2.0-
710916 095	2.8-	6.5+	821021 095	2.0+	1.4+	871026 688	1.7-	0.4-
810730 033	0.5+	1.2-	821111 095	0.4-	0.9+			
810730 033	0.6+	0.6-	840226 095	0.3-	0.8-			

2126 P-L = 1972 XT

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M 359.58330	(1950.0)	P	Q	
n 0.25461658	Peri. 111.16233	-0.04220503	-0.99828143	
a 2.4653531	Node 341.11943	+0.86367680	-0.01599671	
e 0.0433803	Incl. 7.21764	+0.50227594	-0.05637641	
P 3.87	H 13.2	G 0.25		

Residuals in seconds of arc

600924 675	1.0-	1.1-	601025 675	0.2+	1.9+	870929 688	0.6+	0.1+
600926 675	0.8-	0.8+	601026 675	1.1+	1.7-	870929 688	0.9-	0.4+
600928 675	0.1-	0.1-	721202 095	2.9-	2.5-			
600929 675	1.0+	0.4-	721206 095	2.9+	2.7+			

4009 P-L = 1979 SN9 = 1983 VH2
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	163.63629	(1950.0)		P	Q
n	0.26043992	Peri.	350.44524	+0.78831712	+0.61506300
a	2.4284652	Node	331.57916	-0.56223777	+0.70961654
e	0.1936677	Incl.	1.91750	-0.24988958	+0.34s71772
P	3.78	H	14.1	G 0.25	

Residuals in seconds of arc

600924 675	0.4-	0.4-	601017 675	0.1+	0.5+	790922 095	0.7-	1.8+
600925 675	0.1-	0.1-	601022 675	0.7+	1.0-	831108 381	0.8+	0.7+
600926 675	0.3+	0.5-	601024 675	0.5+	0.3-	831108 381	0.8-	0.6-
600928 675	0.3-	0.4+	601026 675	0.1+	0.5-			

4075 P-L = 1981 EC41
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	81.47123	(1950.0)		P	Q
n	0.26086086	Peri.	108.97087	+0.25962483	-0.96568437
a	2.4258520	Node	325.97889	+0.88122117	+0.23985873
e	0.0969830	Incl.	0.71425	+0.39502431	+0.09960668
P	3.78	H	15.8	G 0.25	

Residualw in seconds of arc

600924 675	0.8-	0.1+	601017 675	0.5+	0.6+	810311 413	1.7-	0.0
600925 675	0.2-	0.6-	601022 675	0.1-	0.4+	810315 413	0.2+	0.1-
600926 675	0.3-	0.3+	601026 675	0.3-	0.3-	810315 413	0.8+	0.5-
600928 675	1.3+	0.8-	810302 413	0.5+	0.2+			

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ORBITAL ELEMENTS BY T. KOBAYASHI, GUNMA, JAPAN.

The identifications are by T. Kobayashi.

1987 UX1 = 1980 TZ14
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	98.45819	(1950.0)		P	Q
n	0.28025497	Peri.	123.06047	+0.95155320	-0.29674974
a	2.3125999	Node	254.31250	+0.24677184	+0.89326739
e	0.1694872	Incl.	4.79853	+0.18343980	+0.33765805
P	3.52	H	13.5	G 0.25	

Residuals in seconds of arc

801015 095	0.1-	2.0+	871028 399	0.2-	0.2- Y	871117 399	0.6+	0.8-
801017 095	0.3-	0.9+	871114 399	0.9+	0.8+	871117 399	0.9+	0.3-
871028 399	0.7+	0.8- Y	871114 399	0.7-	0.1-	871122 399	1.2-	0.5-
871028 399	0.5+	0.8- Y	871114 399	0.4-	0.8-	871122 399	0.5-	0.9+

1987 WE1 = A899 NA = 1957 WG = 1977 TO7 = 1977 VJ2
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	58.19551	(1950.0)		P	Q
n	0.29520094	Peri.	50.46224	+0.24753682	-0.96729989
a	2.2338683	Node	25.36926	+0.84458981	+0.18747074
e	0.1238730	Incl.	7.41384	+0.47475634	+0.17083808
P	3.34	H	13.0	G 0.25	

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

990702 800(0.03-	0.02-)X	871114 399	0.8-	1.2- Y	871122 399	1.2+	2.2+ Y
571117 760	0.4+	1.7-	871114 399	0.7+	0.7- Y	871122 399	2.1+	1.3+ Y
771010 095	0.8+	0.2-	871115 392	2.6-	1.8+	871128 399	0.7-	0.8- Y
771106 095	0.1+	0.7+	871115 392	0.5-	0.1+ Y	871128 399	2.1-	2.0+ Y
871114 392	0.2+	0.1+ Y	871117 399	0.2+	2.5-			
871114 392	0.7+	1.6+	871117 399	0.4+	2.5-			

2527 P-L = 1977 SY = 1977 TD7
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	324.61844	(1950.0)		P	Q
n	0.17589637	Peri.	214.47615	+0.77098915	-0.63640065
a	3.1547489	Node	185.24243	+0.62714098	+0.76522379
e	0.2821764	Incl.	15.14628	+0.11076970	+0.09709153
P	5.60	H	13.0	G 0.25	

Residuals in seconds of arc

600924	675	0.5+	0.6-	601017	675	0.4-	0.2+	770918	095	0.6+	0.4+
600926	675	0.4-	0.7-	601022	675	0.4+	0.2+	771009	095	0.9-	0.0
600928	675	0.6-	0.1-	601025	675	0.0	0.3+				
600929	675	0.1-	1.1+	601026	675	0.1-	0.9-				

2534 P-L = 1977 QE2 = 1977 RZ2 = 1987 KA5
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	318.26276	(1950.0)		P	Q
n	0.17366698	Peri.	312.41599	+0.97308355	-0.23028131
a	3.1816902	Node	60.89944	+0.21430018	+0.89002915
e	0.1664008	Incl.	0.58256	+0.08475752	+0.39346999
P	5.68	H	12.5	G 0.25	

Residuals in seconds of arc

600924	675	0.2-	0.6-	601022	675	0.2+	0.1+	770909	095	0.3-	0.6+
600926	675	0.0	0.3-	601025	675	0.4+	1.0-	870530	413	0.2+	0.4-
600928	675	0.2+	0.6+	601026	675	0.3+	0.5-	870530	413	0.4-	0.4-
601017	675	0.4-	0.2+	770820	095	0.2-	0.5+				

2546 P-L = 1979 GD
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	192.66099	(1950.0)		P	Q
n	0.23697059	Peri.	255.52885	+0.16096154	-0.98666935
a	2.5862653	Node	185.38354	+0.97501131	+0.16273494
e	0.0947551	Incl.	14.80756	+0.15311539	+0.00096278
P	4.16	H	14.5	G 0.25	

Residuals in seconds of arc

600924	675	0.3+	1.1-	601017	675	0.5-	0.2+	790401	809	0.5-	0.9+
600926	675	0.9-	0.1-	601022	675	0.3+	0.6+	790402	809	0.5+	0.7-
600928	675	0.3-	0.4+	601025	675	0.1-	0.4-				
600929	675	0.7+	1.0+	601026	675	0.3+	0.4-				

2548 P-L = 1986 EU5
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	116.39382	(1950.0)		P	Q
n	0.17764946	Peri.	146.90356	-0.30837648	+0.95056001
a	3.1339600	Node	105.11219	-0.88075526	-0.27077073
e	0.1305971	Incl.	2.17271	-0.35940802	-0.15204892
P	5.55	H	12.5	G 0.25	

Residuals in seconds of arc

600924	675	0.1-	0.5-	601022	675	0.4-	0.5+	860317	809	0.2+	0.5-
600926	675	0.0	0.2+	601025	675	0.1+	0.3+	860317	809	0.2-	1.8+
600928	675	0.2+	0.0	601026	675	0.4+	0.1+	860317	809	0.2-	0.2+
600929	675	0.6+	0.5-	860310	809	0.0	0.4+				
601017	675	0.9-	0.2+	860310	809	0.3+	1.7-				

2558 P-L = 1973 AY3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	325.38296	(1950.0)		P	Q
n	0.17761542	Peri.	49.33877	+0.37586830	-0.92622754
a	3.1343605	Node	18.64392	+0.82073285	+0.31834152
e	0.1691797	Incl.	5.15657	+0.43025644	+0.20189408
P	5.55	H	13.0	G 0.25	

Residuals in seconds of arc

600924	675	0.4+	0.5-	601017	675	0.3-	0.1-	730102	095	0.4-	0.6+
600926	675	0.0	0.3+	601022	675	0.2-	0.3+	730104	095	0.4+	0.6-
600928	675	0.5-	0.8+	601025	675	0.5+	0.5-				
600929	675	0.1+	0.5-	601026	675	0.2-	0.1+				

3538 P-L = 1987 RA
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	89.41928	(1950.0)		P	Q
n	0.29098680	Peri.	69.49263	+0.99761436	-0.01044767
a	2.2553841	Node	291.05584	-0.01929369	+0.90689367
e	0.2465209	Incl.	4.19322	+0.06628225	+0.42123001
P	3.39	H	15.0	G 0.25	

Residuals in seconds of arc

600926	675	0.3+	0.3-	601024	675	0.0	0.5+	870826	809	0.8+	0.1-
600928	675	0.0	0.3+	601026	675	0.1-	0.1+	870826	809	2.1+	0.2+
601017	675	0.6-	0.3-	870822	809	1.2-	0.4+	870826	809	0.8+	0.2-
601022	675	0.2-	0.5+	870822	809	0.9-	0.2+	870901	046	1.5-	0.6+
601024	675	0.6+	0.7-	870822	809	0.7-	0.2-	870901	046	0.5+	1.0-

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ORBITAL ELEMENTS BY S. NAKANO, SMITHSONIAN ASTROPHYSICAL OBSERVATORY.

The identifications are by S. Nakano unless otherwise stated.

(3722)* 1927 UE = 1937 UL = 1937 VP = 1967 TA = 1984 YV2
Discovered 1927 Oct. 29 by K. Reinmuth at Heidelberg.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	90.37293	(1950.0)		P	Q
n	0.29489426	Peri.	135.86869	+0.98715993	-0.13294686
a	2.2354167	Node	231.97841	+0.09661112	+0.93837458
e	0.1997223	Incl.	6.45366	+0.12720674	+0.31902708
P	3.34	H	13.0	G 0.25	

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

271029	024	3.3-	0.3-	841227	095	(16.1-	2.7-)	870901	657	0.6+	0.1-
271030	024	0.2+	4.1-	841230	095	2.6-	1.0-	870917	657	0.0	1.0-
271101	024	3.5+	2.7+	870819	657	0.8+	0.1-	870922	657	0.2-	0.3+
371026	094	(73.1+	43.5-)X	870821	657	0.2+	0.4-	870926	293	1.6-	2.2+
371103	094	(0.23-	0.01-)X	870821	657	0.8-	1.2-	870927	657	1.6+	0.1+
371107	094	(11.9-	46.1-)X	870825	657	2.0+	0.5+	871012	657	0.5-	0.8-
371111	020	(25.7+	25.1+)	870825	657	0.1+	0.7-	871013	657	0.5-	1.5+
671002	095	0.3-	0.4+	870826	801	2.6-	1.9+	871019	657	0.5-	1.4-
841223	095	2.5+	1.6+	870901	657	0.4+	1.4-	871022	801	0.9+	1.1+

(3723)* 1976 GK2 = 1986 EE1 = 1986 ES3

Discovered 1976 Apr. 1 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	182.49098	(1950.0)	P	Q
n	0.29093679	Peri. 168.04216	-0.12784940	+0.99150313
a	2.2556426	Node 94.60904	-0.91188165	-0.10799670
e	0.1106811	Incl. 1.37979	-0.39003384	-0.07251389
P	3.39	H 13.6	G 0.25	

Residuals in seconds of arc

760401	095	0.1+	0.4-	771017	675	0.2+	0.9+	860305	688	2.4+	1.7-
760404	095	0.5+	1.2-	771021	675	0.4+	1.2+	860312	809	1.2-	0.9+
760502	095	1.2-	0.4+	771021	675	0.7-	0.2-	870929	688	1.8-	2.6+
771016	675	0.2+	0.2-	771022	675	0.6+	1.4-	870929	688	0.3-	2.8-
771016	675	0.2-	0.4-	771022	675	0.4-	1.6-	871019	801	2.5+	0.2+
771017	675	0.4+	0.6+	860305	688	1.0-	1.2+				

(3724)* 1979 YN8 = 1980 AE = 1933 XB = 1955 QQ = 1965 YM = 1969 RF2 = 1974 VM2 = 1985 DF1

Discovered 1979 Dec. 23 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	19.23443	(1950.0)	P	Q
n	0.21442287	Peri. 117.88004	+0.88426243	-0.44716880
a	2.7645342	Node 268.95514	+0.36693888	+0.84361538
e	0.1668482	Incl. 7.73740	+0.28885258	+0.29724259
P	4.60	H 11.5	G 0.25	

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

331215	024	0.2+	2.2-	741115	095	0.9+	0.1+	850318	688	1.3+	0.3+
340107	012	0.3-	0.2-	791223	095	0.9+	1.2-	850318	688	1.7-	0.6+
550823	760(0.04+	0.01+)X		800114	330	0.2-	0.3-	860609	801	1.0+	0.4+
651230	330	0.6-	0.7+	800117	330	0.1+	0.7+	870624	801	1.5+	1.1-
660116	330	0.7+	0.2+	850225	688	0.3+	1.2+	870723	801	0.5+	0.6-
690910	095	2.5-	1.2+	850225	688	1.4-	0.6+				

(3725)* 1981 EA11 = 1974 SZ2

Discovered 1981 Mar. 1 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey. The identification is by K. Hurukawa (JAM 1326) and L. D. Schmadel, who found it independently.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	64.25059	(1950.0)	P	Q
n	0.22442057	Peri. 16.91718	+0.99775239	-0.04465610
a	2.6818076	Node 345.36850	+0.00858772	+0.82464206
e	0.2044620	Incl. 11.40730	+0.06645618	+0.56388944
P	4.39	H 13.9	G 0.25	

Residuals in seconds of arc

740920	095	1.3+	1.6-	810311	413	1.3-	0.9+	810502	413	2.4+	1.0-
740922	095	(4.5+	5.5-)	810315	413	0.3+	0.1+	831110	801	0.0	0.2+
810212	413	2.8-	0.0	810315	413	0.1+	0.3+	831209	801	0.5-	0.4-
810213	413	1.9+	0.1-	810405	413	1.9+	1.3-	850220	675	1.0-	0.9-
810301	413	2.8-	0.4-	810406	413	1.7-	0.1+	850222	675	2.3+	0.6+
810301	413	0.7+	0.7-	810406	413	0.9-	0.0	870826	801	0.2-	0.5-
810307	413	0.5-	0.6+	810412	413	0.8-	1.1-	870924	071	1.5+	0.4+
810307	413	0.3+	0.8+	810412	413	0.3+	0.8-	870924	071	0.9-	0.3-

(3726)* 1981 LJ = 1968 UJ = 1971 KF = 1982 RC = 1985 FU

Discovered 1981 June 4 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	87.76670	(1950.0)	P	Q	
n	0.20295656	Peri.	233.75042	+0.93108010	+0.36123634
a	2.8677018	Node	105.02452	-0.31547468	+0.86742376
e	0.0761265	Incl.	3.02526	-0.18320912	+0.34217586
P	4.86	H	12.0	G 0.25	

Residuals in seconds of arc

681022	095	2.2+	3.2-	810609	688	0.8+	0.9-	850321	688	0.3-	1.6-
681026	095	(0.1-	6.2-)	810625	688	2.5-	1.5-	870921	688	(1.9-	4.5+)
710524	095	0.4-	4.0+	810625	688	2.0+	1.4-	870921	688	1.8-	2.3+
810604	688	0.6+	1.1-	820915	688	1.4-	1.5+	870929	688	1.7+	1.5-
810604	688	1.0-	1.9-	820915	688	1.1-	1.0-	870929	688	1.6+	2.5-
810609	688	1.2+	0.2-	850321	688	1.8-	1.4-				

(3727)* 1981 PQ = 1981 RZ2 = 1969 RN = 1975 RS1 = 1976 YY3

Discovered 1981 Aug. 7 by A. Mrkos at Klet.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	69.17994	(1950.0)	P	Q	
n	0.16168808	Peri.	146.24450	+0.64324167	+0.76524028
a	3.3369578	Node	163.74131	-0.72101118	+0.61657753
e	0.1261410	Incl.	5.21450	-0.25764905	+0.18503906
P	6.10	H	11.4	G 0.25	

Residuals in seconds of arc

690908	095	(0.8+	6.2+)	810808	046	0.3-	0.1+	870821	046	1.4+	0.5-
690913	095	0.4+	2.7+	810811	046	0.4-	2.5-	870821	046	3.3+	1.0+
750905	095	1.8-	4.3+	810811	046	1.0-	3.9-	870822	046	0.9+	2.3-
761218	095	0.4+	2.2-	810902	095	0.5-	0.6+	870822	046	1.1+	2.6-
810807	046	3.7+	1.7+	850220	675	0.3-	0.2-	870830	046	2.3-	0.3-
810807	046	0.3-	0.6-	850222	675	0.3+	0.5+	870830	046	3.6-	1.4+
810808	046	2.0-	0.9-	870724	801	1.1+	2.4+				

(3728)* 1983 QF = 1948 RN = 1963 FA = 1972 FH = 1976 GL = 1985 GT

Discovered 1983 Aug. 23 by the Infrared Astrononomical Satellite.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	17.04115	(1950.0)	P	Q	
n	0.22829045	Peri.	280.01966	+0.03249518	-0.99581925
a	2.6514141	Node	167.15561	+0.99924785	+0.03056071
e	0.2103769	Incl.	22.58322	+0.02116128	+0.08608172
P	4.32	H	11.7	G 0.25	

Residuals in seconds of arc

480907	690	0.4+	2.1-	830916	675	0.3-	2.0-	870919	688	0.5-	0.6+
480908	690	0.7+	3.0-	830917	413	0.3+	0.2-	870921	071	0.1-	1.1+
480909	690	0.3-	2.1-	830918	675	1.1+	0.7-	870921	071	1.5+	1.4+
630322	760	(17.4-	33.7+)	850415	688	1.6+	0.0	870922	071	1.9+	1.0-
720316	095	2.9-	3.2-	850415	688	1.9+	0.3-	870923	071	(5.1+	7.2+)
720321	095	0.4-	4.3+	850424	688	0.6-	0.7+	870923	071	0.4-	1.1+
760401	095	1.2+	1.9+	870824	801	1.0+	2.2+	870923	071	1.8+	0.9+
760404	095	1.0-	0.1-	870831	657	0.2+	1.3+	870926	293	(0.6-	4.6+)
830823	500	(37.1-	3.1-)Y	870916	372	2.3-	3.3+ Y	870926	293	(2.1-	4.3+)
830823	500	(36.7+	8.1+)Y	870917	372	(1.7+	4.1+)Y	870927	657	1.1-	0.6+
830912	500	(7.4-	2.0-)Y	870918	372	0.2-	2.6+ Y	870930	657	2.3-	1.9-
830913	500	(7.7-	8.1-)Y	870919	688	0.1+	1.0+	870930	657	1.1-	1.1-

(3729)* 1983 VP7 = 1983 WN1 = 1953 RD1 = 1966 TO = 1970 QL1

Discovered 1983 Nov. 1 at the Purple Mountain Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 108.79684		(1950.0)	P	Q
n 0.23158287	Peri.	311.93309	+0.72397875	+0.68957214
a 2.6262240	Node	4.58620	-0.54392393	+0.58721057
e 0.1905597	Incl.	13.43301	-0.42426587	+0.42387971
P 4.26	H 12.0	G 0.25		

Residuals in seconds of arc

530907	024	1.9-	0.6-	870821	657	2.7-	0.6+	870921	046	2.0-	0.8+
661013	095	1.4+	3.6+	870821	657	0.6-	1.2-	870921	046	1.8-	0.3-
661017	095	(5.0+	6.2+)	870824	801	1.1-	0.6+	870926	293	0.2-	1.4+
700831	095	0.6+	1.9+	870825	657	0.3-	0.2-	870927	657	2.1+	1.4-
831101	330	3.4-	0.5+	870825	657	0.3-	2.9-	870929	688	2.5+	0.4-
831105	330	3.0-	0.1-	870831	657	0.3-	1.5-	870929	688	2.5+	0.5-
831123	330	1.8+	2.4-	870921	688	1.8+	0.5+	870929	657	2.3+	1.1-
831128	330	2.4+	2.3-	870921	688	1.8+	0.5-	871026	688	0.9-	2.7+
831201	330	1.5+	0.2+	870921	657	0.5-	0.8-	871026	688	1.4-	3.3+

(3730)* 1983 XM1 = A919 QA = 1955 QB = 1962 BE = 1973 QV = 1975 BL1 = 1982 OC

Discovered 1983 Dec. 4 by M. Antal at Piszkesteto.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 100.29943		(1950.0)	P	Q
n 0.21918148	Peri.	41.38039	+0.96841351	+0.22886250
a 2.7243745	Node	305.12388	-0.24849953	+0.85306417
e 0.1635055	Incl.	6.95079	-0.02057305	+0.46893867
P 4.50	H 12.1	G 0.25		

Residuals in seconds of arc

190819	024	2.1+	3.3-	750118	330	(11.7+	0.8+)	831205	561	1.0+	1.1+
190820	024	3.0+	0.3-	820717	688	1.6+	1.6-	870922	657	0.8-	2.2-
190822	024	0.6-	0.1+	820717	688	1.2+	1.2-	870922	657	0.9+	0.2+
190825	024	1.5-	2.3-	820724	688	0.8+	1.1-	870923	657	1.0+	1.3-
550819	760	2.5-	0.6+	820724	688	0.8-	2.1-	870923	657	1.5+	2.3-
620128	760	(2.0-	9.2+)	831204	561	0.6-	2.0+	870928	657	0.0	0.4+
620128	760	0.2-	4.8-	831204	561	1.8-	2.3+	870929	657	0.7+	0.1+
730828	095	3.4-	6.7+	831204	561	0.4+	1.0+	871016	657	0.4+	1.5-
730901	095	1.4-	7.2+	831204	561	1.0-	0.6+	871021	017	(7.5-	12.3+)
750116	330	0.4-	0.1-	831205	561	1.3+	0.6+	871021	017	(6.2-	14.5+)

(3731)* 1984 DH1 = 1969 OA = 1969 PR

Discovered 1984 Feb. 20 at Perth.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 248.12670		(1950.0)	P	Q
n 0.17061658	Peri.	250.93404	-0.84367157	-0.39436416
a 3.2195010	Node	264.42550	+0.51429340	-0.78834716
e 0.1347273	Incl.	21.46941	-0.15401487	-0.47221359
P 5.78	H 10.4	G 0.25		

Residuals in seconds of arc

690716	095	2.1+	0.9-	840329	323	0.6-	0.7+	870923	801	3.4+	0.9+
690813	095	0.5-	2.2-	840405	323	1.7+	0.7-	871018	801	1.7-	0.2+
840220	323	0.7+	1.2-	861029	801	1.1-	0.3+	871019	801	1.9-	0.3-
840306	323	3.1-	1.5-	870825	801	0.3+	0.1-				

(3732)* 1984 SR1 = 1977 KM1 = 1978 WS2

Discovered 1984 Sept. 27 by Z. Vavrova at Klet. The identification 1984 SR1 = 1978 WS2 was suggested by W. Landgraf (MPC 12001).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	159.21888		(1950.0)	P	Q
n	0.31084850	Peri.	8.90381	+0.28873149	+0.95703199
a	2.1582588	Node	277.88160	-0.88002765	+0.25422199
e	0.0715110	Incl.	1.55646	-0.37707488	+0.13950253
P	3.17	H	14.8	G 0.25	

Residuals in seconds of arc

770518	675	0.3-	0.1-	840929	046	0.6-	2.4-	870901	046	2.6+ 0.4+
770519	675	0.3+	0.1-	840929	046	1.8+	1.0-	870919	071	2.1- 0.4+
781129	675	0.7-	0.6+	840930	046	2.4-	1.4-	870919	071	1.4- 0.5-
781130	675	0.6+	0.6+	840930	046	0.8+	0.8+	870919	071	1.6- 2.4+
840927	046	2.7+	0.2-	870825	801	1.9+	1.5+	870921	046	1.0- 1.7-
840927	046	1.0-	1.1+	870901	046	(4.4+	1.1+)	870921	046	0.4+ 0.1-

(3733)* 1985 AF = 1952 HE2 = 1980 VQ2

Discovered 1985 Jan. 15 by K. Suzuki and T. Urata at Toyota. The identification 1985 AF = 1952 HE2 was found and the identification 1985 AF = 1980 VQ2 was independently found by T. Urata (NOC 1512).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	337.16984		(1950.0)	P	Q
n	0.26535359	Peri.	209.49128	-0.71185062	-0.69538362
a	2.3983878	Node	286.09826	+0.66276642	-0.61867836
e	0.1935278	Incl.	5.88676	+0.23239917	-0.36562098
P	3.71	H	12.8	G 0.25	

Residuals in seconds of arc

520423	711	(0.1+	7.3-)Y	850123	881	1.0+	1.6-	850215	889	1.3+ 0.8-
520423	711	3.8-	2.0- Y	850123	881	1.9+	1.7-	870831	010	0.8+ 1.8-
801111	330	1.6+	2.1-	850126	881	0.5+	0.6-	870831	010	2.6+ 2.0-
850115	881	(1.6-	5.7+)	850126	881	1.7-	0.3+	870831	010	1.9+ 2.1-
850115	881	2.2-	3.6+	850211	881	1.6-	0.4-	870929	688	2.1- 1.8-
850121	881	0.1-	1.0+	850211	881	0.4-	1.6-	870929	688	1.4+ 0.9-
850121	881	(1.5-	5.4+)	850215	889	0.4+	1.3-	871024	801	0.6- 2.7-

(3734)* 9527 P-L = 1974 TK1 = 1978 PK2 = 1978 RQ10 = 1979 WZ3 = 1981 GR = 1983 VR7

Discovered 1960 Oct. 17 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels. The identifications were found independently by T. Kobayashi (MPC 11440).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	298.12934		(1950.0)	P	Q
n	0.21620417	Peri.	292.73714	-0.39027749	-0.92069724
a	2.7493287	Node	180.23506	+0.86540175	-0.36674571
e	0.0542740	Incl.	3.48153	+0.31426627	-0.13346974
P	4.56	H	12.7	G 0.25	

Residuals in seconds of arc

601017	675	1.0+	0.6-	780910	809	0.5-	2.0-	810405	688	0.8- 2.2-
601022	675	0.2-	1.7-	791117	095	2.1-	0.2+	810407	688	0.7- 0.1+
601024	675	1.1+	0.9-	810327	046	1.4+	1.3+	810407	688	2.0+ 1.4-
601026	675	1.0+	1.4-	810327	046	1.3-	0.7+	810409	688	0.2- 1.6-
741012	808	0.4-	0.3-	810329	046	0.0	1.0+	810409	688	1.1+ 3.1-
741012	808	0.6+	0.5+	810329	046	1.2-	0.9-	831104	688	3.0+ 0.5-
780808	095	3.1-	1.3+	810402	046	1.7-	0.2+	831104	688	1.1+ 2.9-
780906	809	1.2+	2.5-	810403	046	0.6-	0.8-	870824	801	0.4- 0.1+
780910	809	0.1+	1.6-	810405	688	0.4-	2.4-	870926	801	0.2+ 3.8+

1974 SW = 1978 NY1 = 1987 RC = 1987 SZ5 = 1987 SV6
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	76.59611	(1950.0)	P	Q
n	0.22609611	Peri. 123.33310	+0.97675330	+0.21153194
a	2.6685470	Node 224.48253	-0.20944395	+0.90716945
e	0.2136094	Incl. 2.84230	-0.04567527	+0.36372768
P	4.36	H 13.5	G 0.25	

Residuals in seconds of arc

740919 095	2.1-	2.9+	780706 095	0.6-	3.4+	870918 071	1.9-	2.6-
740921 095	1.5-	2.9+	870901 046	1.8+	1.3-	870921 046	0.9-	3.4-
740923 095	2.2-	2.6+	870901 046	2.5+	2.4-	870921 046	2.8+	1.6-
741009 095	2.0+	1.4+	870918 071	(1.1-	9.6-)			

1976 GP3 = 1976 HD1 = 1976 JO = 1952 QP = 4002 T-3

The triple designation 1976 GP3 = 1976 HD1 = 1976 JO is by H. Oishi (JAM 2005).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	132.30343	(1950.0)	P	Q
n	0.27920155	Peri. 97.34646	-0.08721247	+0.99584346
a	2.3184178	Node 167.55861	-0.95529146	-0.07612623
e	0.0978938	Incl. 7.00221	-0.28251055	-0.05000604
P	3.53	H 13.5	G 0.25	

Residuals in seconds of arc

520828 024	0.6+	0.6-	760503 095	1.5+	0.3-	771012 675	0.1+	0.6-
520828 024	0.6-	0.7+	771007 675	1.2+	0.3-	771016 675	0.9-	1.0+
760401 095	1.9+	1.4+	771011 675	0.9+	0.8-	771016 675	1.2-	1.4+
760402 095	2.3-	2.0-	771011 675	0.3+	1.0-			
760423 095	1.1-	0.5+	771012 675	0.2-	0.4-			

1978 TQ8 = 1978 VX14 = 1968 UU2 = 1981 RJ3 = 1986 AH2

The double designation 1978 TQ8 = 1978 VX14 is by C. M. Bardwell.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	2.29940	(1950.0)	P	Q
n	0.29785972	Peri. 211.79795	+0.91345929	-0.40689847
a	2.2205594	Node 172.20713	+0.38074101	+0.85020285
e	0.1258227	Incl. 2.14499	+0.14362592	+0.33404903
P	3.31	H 14.0	G 0.25	

Residuals in seconds of arc

681023 095	0.4+	1.1-	781029 675	0.4+	0.5+	860112 688	0.1-	0.9-
781009 095	0.6-	1.9+	781101 095	1.0-	0.6-	860112 688	0.7-	0.2+
781028 675	0.8+	0.1-	810902 095	0.2+	0.5-	860117 688	0.7+	0.2+

1978 TV8 = 1984 YG4

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	245.51171	(1950.0)	P	Q
n	0.17554981	Peri. 44.00596	+0.19208037	-0.98125225
a	3.1589058	Node 34.92865	+0.89256151	+0.16798762
e	0.1762886	Incl. 1.57977	+0.40796947	+0.09446789
P	5.61	H 12.5	G 0.25	

Residuals in seconds of arc

781009 095	0.0	0.1+	781101 095	0.9+	0.1+	841231 095	0.2-	0.1+
781028 675	0.3-	0.2-	841227 095	0.1-	0.9+			
781029 675	0.7-	0.0	841229 095	0.3+	1.0-			

1978 VD7 = 1987 SZ9
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	34.31849		(1950.0)		P		Q				
n	0.20626058	Peri.	332.14877		+0.69159509		-0.72037698				
a	2.8370006	Node	74.04160		+0.67238273		+0.61557779				
e	0.0756576	Incl.	3.12844		+0.26381374		+0.31956375				
P	4.78	H	14.5	G	0.25						

Residuals in seconds of arc

781105	675	0.2+	0.1+	781129	675	0.1-	0.2+	870930	033	0.1+	0.5-
781106	675	0.3+	1.0-	781130	675	0.2+	0.1-	870930	033	0.6+	0.4-
781107	675	0.2+	1.0+	870929	033	0.1+	0.6+				
781108	675	0.7-	0.3-	870929	033	0.8-	0.2+				

1978 VG8 = 1982 XR1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	186.58822		(1950.0)		P		Q				
n	0.23998724	Peri.	283.94674		+0.96815718		+0.24163237				
a	2.5645518	Node	62.10490		-0.19139909		+0.88299756				
e	0.2746681	Incl.	4.24779		-0.16136312		+0.40240416				
P	4.11	H	15.0	G	0.25						

Residuals in seconds of arc

781105	675	0.5-	0.3-	781129	675	0.1+	0.2+	821214	381	0.2-	0.7-
781106	675	2.5+	0.0	781130	675	0.1+	0.2-	821214	381	0.5+	0.6+
781107	675	0.3-	0.0	821213	381	0.4-	1.3+				
781108	675	1.7-	0.3+	821213	381	0.2+	1.2-				

1978 VY14 = 1986 QJ3
The identification is by E. Bowell.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	18.47837		(1950.0)		P		Q				
n	0.22879777	Peri.	61.87041		-0.62050285		-0.78227651				
a	2.6474985	Node	66.58863		+0.69681336		-0.58214601				
e	0.0263431	Incl.	3.43300		+0.35976014		-0.22169684				
P	4.31	H	13.5	G	0.25						

Residuals in seconds of arc

781028	675	1.4+	1.1+	860831	809	0.6-	0.2-	860904	809	1.2+	0.4-
781029	675	1.1+	0.6+	860831	809	0.4-	0.1-	860906	809	1.1+	0.7+
781101	095	2.5-	1.7-	860901	809	0.2+	0.7-	860906	809	1.1+	0.6+
860829	809	1.2-	0.1+	860901	809	0.6+	0.6-	860906	809	1.2+	0.5+
860829	809	1.1-	0.1+	860901	809	0.8+	0.5-	860909	809	1.0-	0.0
860829	809	0.9-	0.1+	860904	809	0.7+	0.3+	860909	809	1.0-	0.1-
860831	809	0.4-	0.1-	860904	809	0.9+	0.0	860909	809	1.0-	0.2-

1979 MR6 = 1985 DM3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	305.03003		(1950.0)		P		Q				
n	0.29337046	Peri.	72.36954		-0.54690003		+0.83698108				
a	2.2431552	Node	164.43168		-0.79248377		-0.51021819				
e	0.1317484	Incl.	4.07098		-0.26994414		-0.19783850				
P	3.36	H	16.0	G	0.25						

Residuals in seconds of arc

790623	413	0.7+	0.3-	790726	675	1.5-	0.7+	850220	675	0.7+	0.2-
790624	413	0.3-	0.9-	790727	675	1.9-	0.7+	850222	675	0.4-	1.3+
790625	413	0.5+	0.3-	790728	413	0.4+	0.6+				
790629	413	0.9+	0.7-	790823	675	1.4+	1.1+				

1979 SL7 = 1987 SC5
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	6.29514		(1950.0)	P	Q
n	0.23964535	Peri.	233.31127	+0.04984908	-0.99725635
a	2.5669904	Node	213.95502	+0.94471768	+0.06486026
e	0.2094693	Incl.	5.62279	+0.32407341	-0.03567811
P	4.11	H	13.0	G 0.25	

Residuals in seconds of arc

790923 095	0.7+	0.5+	791111 095	0.1-	0.3+	870930 054	0.3-	0.3+
791014 095	0.8-	0.6-	870929 054	0.8-	0.6+	870930 054	1.1-	1.3-
791110 095	0.3+	0.2-	870929 054	0.3+	0.7-	871001 054	1.8+	1.0+

1981 ED43 = 1987 SW2
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	114.54905		(1950.0)	P	Q
n	0.21129082	Peri.	293.80647	+0.55270198	+0.83307103
a	2.7917927	Node	9.84101	-0.70818580	+0.48382878
e	0.2173425	Incl.	7.61657	-0.43931013	+0.26814618
P	4.66	H	13.5	G 0.25	

Residuals in seconds of arc

810302 413	2.4+	0.7-	810405 413	(4.7+	0.4-)	810503 413	0.2-	0.9-
810306 413	1.6-	0.0	810406 413	0.7-	0.6+	870920 071	1.0+	0.2+
810311 413	0.2-	0.5-	810406 413	1.5+	0.0	870920 071	(5.0+	1.0-)
810315 413	0.0	1.1+	810501 413	1.8+	2.1+	870921 071	1.3-	0.7+
810405 413	0.5-	0.0	810501 413	1.4-	0.0	870921 071	0.5-	0.4+

1983 XU = 1972 XF2 = 1972 YF1 = 3128 T-3
The identification 1983 XU = 1982 QT (MPC 10759) is invalid.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	311.65611		(1950.0)	P	Q
n	0.17880758	Peri.	358.87802	+0.29768589	-0.95389678
a	3.1204194	Node	73.80242	+0.87615405	+0.25706823
e	0.1671576	Incl.	2.28352	+0.37912689	+0.15490919
P	5.51	H	12.5	G 0.25	

Residuals in seconds of arc

721201 095	1.8-	1.3+	771016 675	1.0+	0.5+	771022 675	1.2+	1.3-
721230 095	1.9+	1.5-	771016 675	0.0	0.6-	831204 046	1.6-	0.6+
771007 675	1.7+	1.5-	771017 675	0.8-	0.7+	831204 046	1.1-	0.5+
771011 675	0.3-	1.5+	771017 675	0.8-	1.3+	831205 046	1.9+	0.2+
771011 675	0.2-	1.6+	771021 675	0.1-	0.2+	831205 046	0.8+	0.9-
771012 675	0.1-	0.6-	771021 675	1.0-	0.6+			
771012 675	0.3-	0.9-	771022 675	0.1-	1.7-			

1985 CE2 = 1987 SC7
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	337.30162		(1950.0)	P	Q
n	0.24232250	Peri.	326.30409	-0.59580111	-0.80248763
a	2.5480488	Node	160.20510	+0.75620151	-0.57402601
e	0.1010212	Incl.	5.45028	+0.27051861	-0.16281200
P	4.07	H	13.5	G 0.25	

Residuals in seconds of arc

850213 809	1.2-	0.0	850216 809	0.3-	0.5+	850218 809	0.7+	0.4+
850213 809	1.2-	0.1-	850216 809	0.2+	0.0	850219 809	0.0	0.8+
850213 809	1.1-	0.0	850217 809	0.3-	0.2-	850219 809	0.2-	0.7+
850215 809	0.2+	0.5-	850217 809	0.2-	0.5-	850219 809	0.4-	0.7+
850215 809	0.5+	0.5-	850217 809	0.2-	0.5-	850220 675	0.2-	0.8+
850215 809	0.6+	0.5-	850218 809	0.6+	0.2+	850220 809	0.1-	0.0
850216 809	0.0	0.3+	850218 809	0.3+	0.0	850220 809	0.2-	0.2+

850220	809	0.2-	0.1+	850224	809	0.0	0.4-	850228	809	1.1+	0.8+
850221	809	1.6+	0.1-	850224	809	0.4-	0.6-	870929	033	0.3+	0.3+
850221	809	1.4+	0.1-	850226	809	1.6-	0.5-	870930	033	0.3-	0.0
850221	809	1.1+	0.1-	850226	809	1.1-	0.4-	870930	033	0.2+	0.1-
850222	809	1.3+	0.4+	850226	809	1.1-	0.8-	871001	033	1.3+	0.3+
850222	675	1.0+	0.6-	850227	809	1.0-	0.1-	871001	033	1.2-	0.7-
850222	809	1.2+	0.4+	850227	809	1.3-	0.3-	871001	033	0.3-	0.2+
850222	809	1.3+	0.6+	850227	809	1.1-	0.0				
850224	809	0.5-	0.6-	850228	809	1.0+	0.5+				

2110 P-L = 1976 JJ6 = 2432 T-3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	249.59667		(1950.0)	P	Q
n	0.23289370	Peri.	23.47445	+0.79559307	+0.60512827
a	2.6163655	Node	299.25525	-0.56097855	+0.71764877
e	0.1475204	Incl.	1.91665	-0.22876787	+0.34467380
P	4.23	H	15.0	G 0.25	

Residuals in seconds of arc

600924	675	2.2+	0.6+	601025	675	1.2-	0.1+	771017	675	0.8-	2.0+
600926	675	1.2+	0.8-	760503	809	0.4+	1.7+	771021	675	0.6+	1.0-
600928	675	0.5+	0.1-	771016	675	0.5+	0.6-	771021	675	1.3+	0.2-
600929	675	1.1+	1.3-	771016	675	0.1+	1.1-	771022	675	1.5-	0.3+
601017	675	3.2-	0.3-	771017	675	0.9-	0.6+	771022	675	0.6-	3.0+

2570 P-L = 3319 T-3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	112.35288		(1950.0)	P	Q
n	0.17528489	Peri.	56.81013	-0.59837488	+0.80119163
a	3.1620878	Node	176.41733	-0.76447856	-0.56857315
e	0.1214452	Incl.	5.77038	-0.23983333	-0.18659193
P	5.62	H	13.0	G 0.25	

Residuals in seconds of arc

600924	675	0.3+	0.2+	771011	675	0.6-	0.8+	771017	675	0.7-	0.7+
600928	675	0.3+	0.1-	771011	675	1.6-	2.0+	771017	675	0.2+	1.4-
600929	675	0.3+	0.2-	771012	675	0.5+	0.5-	771021	675	0.6+	1.0+
601017	675	0.7-	1.1-	771012	675	1.1+	1.2-	771021	675	1.1-	0.7+
601022	675	0.9-	0.1+	771016	675	0.9-	0.1-	771022	675	2.1+	1.2-
601025	675	0.7+	0.0	771016	675	0.1+	0.8+	771022	675	1.2+	1.5-
601026	675	0.1+	0.9+	771016	675	0.2+	0.1+				
771007	675	1.0-	0.2-	771016	675	0.2-	0.5+				

4127 P-L = 3086 T-3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	354.32263		(1950.0)	P	Q
n	0.17618960	Peri.	127.93062	+0.99885669	+0.04763833
a	3.1512539	Node	229.33924	-0.04534208	+0.91767594
e	0.1734594	Incl.	0.30112	-0.01514597	+0.39446352
P	5.59	H	14.5	G 0.25	

Residuals in seconds of arc

600924	675	1.0-	0.9+	601022	675	0.8-	0.2-	771016	675	1.1+	1.2-
600924	675	0.5-	0.7-	601024	675	1.5+	1.0+	771016	675	0.5+	1.0-
600925	675	0.2-	0.5+	601025	675	0.4-	0.9+	771017	675	0.8-	1.0+
600926	675	0.0	0.4-	601026	675	0.4-	0.5+	771017	675	1.2-	0.5+
600926	675	0.6-	1.5-	601026	675	0.7-	0.4-	771021	675	0.7+	1.2+
600927	675	0.3+	0.1+	771007	675	3.0+	1.5+	771021	675	1.5+	0.7+
600928	675	1.4+	0.6-	771011	675	0.5-	1.3-	771022	675	0.1-	3.3-
600928	675	1.2+	0.1-	771011	675	1.1-	1.7+	771022	675	1.4+	1.7-
601017	675	0.8+	0.3+	771012	675	1.8-	1.2+				
601022	675	0.5-	0.2-	771012	675	2.6-	0.5+				

4636 P-L = 2283 T-3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	221.70095	(1950.0)	P	Q
n	0.17645254	Peri. 133.11021	-0.82337282	-0.56492327
a	3.1481226	Node 12.80938	+0.42362045	-0.67517784
e	0.0764021	Incl. 14.10408	+0.37762800	-0.47433805
P	5.59	H 13.5	G 0.25	

Residuals in seconds of arc

600924	675	0.4+ 0.1+	601025	675	0.2+ 0.4-	771017	675	1.0- 1.5+
600926	675	0.1+ 0.1+	601026	675	0.5- 1.0+	771017	675	1.1- 0.4+
600927	675	0.5+ 0.5+	771011	675	0.0 0.3+	771021	675	0.8+ 0.7+
600928	675	0.2+ 0.1+	771011	675	0.2+ 1.4+	771021	675	0.6+ 0.4+
601017	675	0.2- 1.0-	771016	675	0.2- 1.7-	771022	675	2.0+ 1.3-
601022	675	0.8- 0.3-	771016	675	0.0 1.5-	771022	675	1.2- 0.1-

4806 P-L = 3257 T-3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	103.23885	(1950.0)	P	Q
n	0.23401120	Peri. 336.89285	-0.72831617	-0.68505829
a	2.6080294	Node 159.84062	+0.63562197	-0.68403007
e	0.1094554	Incl. 2.63328	+0.25600835	-0.25059530
P	4.21	H 15.0	G 0.25	

Residuals in seconds of arc

600924	675	0.6- 0.6-	771007	675	0.2+ 0.7+	771017	675	0.3- 0.5+
600924	675	1.4+ 1.8-	771011	675	3.0- 0.1-	771017	675	0.5+ 1.2-
600926	675	0.0 0.5-	771011	675	1.9- 0.0	771021	675	1.4- 0.1+
600926	675	0.4+ 1.4-	771012	675	1.4+ 0.5+	771021	675	1.6- 0.9-
600927	675	0.4- 1.7+	771012	675	1.4+ 0.1-	771022	675	1.9+ 0.7+
600928	675	0.5- 1.4+	771016	675	2.1+ 0.6+	771022	675	0.5+ 1.0-
600928	675	0.2- 1.1+	771016	675	0.2+ 0.4+			

6048 P-L = 1987 SE5
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	38.12787	(1950.0)	P	Q
n	0.25640554	Peri. 86.99126	+0.38308212	-0.92330848
a	2.4538724	Node 340.41462	+0.81168802	+0.35062246
e	0.0923620	Incl. 4.68478	+0.44092023	+0.15673337
P	3.84	H 13.5	G 0.25	

Residuals in seconds of arc

600924	675	0.3- 0.3-	601017	675	0.1- 0.2-	870929	054	0.1+ 0.2+
600925	675	0.1+ 0.2-	601022	675	0.5- 0.3-	870930	054	0.0 0.2-
600926	675	0.0 0.0	601024	675	0.7+ 0.1-	870930	054	0.1- 0.1+
600928	675	0.3+ 0.7+	601026	675	0.2- 0.4+			

6053 P-L = 3111 T-3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	273.78621	(1950.0)	P	Q
n	0.23405184	Peri. 83.72823	+0.41576369	+0.90898822
a	2.6077275	Node 210.89297	-0.85558015	+0.37985109
e	0.1973042	Incl. 3.31406	-0.30842043	+0.17162042
P	4.21	H 14.5	G 0.25	

Residuals in seconds of arc

600924	675	0.2- 0.0	601022	675	0.1- 1.2+	771017	675	0.3- 0.2+
600925	675	1.0+ 0.2-	601024	675	0.4+ 0.3+	771021	675	1.7+ 1.3+
600926	675	0.2- 0.0	601026	675	0.1+ 1.6+	771021	675	0.4- 1.0+
600928	675	0.5- 0.8-	771016	675	0.2+ 1.8-	771022	675	1.4- 0.7-
600928	675	0.2- 1.0-	771016	675	1.0+ 1.0-	771022	675	0.1- 1.0-
601017	675	0.8- 0.2+	771017	675	0.4- 0.9+			

6245 P-L = 3414 T-3

The identification was found independently by K. Hurukawa.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	20.67429	(1950.0)		P	Q
n	0.23451431	Peri.	14.55412	-0.88852206	+0.45605856
a	2.6042980	Node	192.93748	-0.44024438	-0.87831040
e	0.0859539	Incl.	13.00687	-0.12928048	-0.14346230
P	4.20	H	14.5	G 0.25	

Residuals in seconds of arc

600924	675	0.3-	0.3-	771011	675	1.2-	0.9+	771017	675	0.5-	0.3-
600925	675	0.3+	0.6+	771012	675	1.0+	0.5-	771021	675	0.7+	0.5+
600926	675	0.1-	0.8-	771012	675	1.2+	0.2-	771021	675	0.8-	1.3+
600928	675	0.1+	0.6+	771016	675	0.8+	1.7-	771022	675	2.2+	0.9-
771007	675	0.3-	1.0-	771016	675	0.5+	1.4-				
771011	675	2.4-	1.8+	771017	675	1.2-	1.5+				

6573 P-L = 4156 T-3 = 1986 TK6

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	83.11424	(1950.0)		P	Q
n	0.23514799	Peri.	30.27118	-0.91735133	-0.39473269
a	2.5996172	Node	126.39066	+0.35117880	-0.86339728
e	0.0788417	Incl.	3.66833	+0.18745664	-0.31421527
P	4.19	H	13.5	G 0.25	

Residuals in seconds of arc

600924	675	0.3-	0.4+	771007	675	0.5+	0.1-	771017	675	0.4-	1.1-
600926	675	0.2+	1.1+	771011	675	0.5+	0.2+	771021	675	0.3+	0.4+
600927	675	0.6-	1.2+	771011	675	0.6+	0.5-	771021	675	0.7+	0.9-
600928	675	0.6+	1.0+	771012	675	0.1-	1.7-	771022	675	0.5+	0.4-
601017	675	0.8-	0.7+	771012	675	0.4-	1.1-	771022	675	0.8+	0.6-
601022	675	1.5-	0.4+	771016	675	0.5+	0.6+	861013	033	0.4-	1.0+
601024	675	0.3+	0.1+	771016	675	0.5-	0.7+	861013	033	0.2+	2.1+
601026	675	0.1-	0.5+	771017	675	0.3-	2.0-				

6766 P-L = 4243 T-3

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	79.29880	(1950.0)		P	Q
n	0.17675969	Peri.	104.31573	+0.09544737	+0.99473272
a	3.1444747	Node	170.91130	-0.97991124	+0.10049695
e	0.0580985	Incl.	13.68487	-0.17511069	-0.02017850
P	5.58	H	12.5	G 0.25	

Residuals in seconds of arc

600924	675	0.1-	0.6-	771011	675	0.1+	0.0	771021	675	1.5+	0.6+
600926	675	1.1-	0.4-	771012	675	1.1-	0.7+	771021	675	0.5+	1.6-
600927	675	0.2-	0.3-	771012	675	0.6-	0.2+	771021	675	0.5+	0.2+
600928	675	0.1-	0.4+	771016	675	1.6-	0.4+	771021	675	0.1+	0.4-
601017	675	0.3-	0.5-	771016	675	0.4-	0.4+	771022	675	1.0-	2.5+
601022	675	0.3+	1.8+	771017	675	0.1+	1.2-	771022	675	1.5+	2.1-
601026	675	1.6+	0.2-	771017	675	0.3-	1.1+	771022	675	0.7+	0.7-
771007	675	1.2+	1.0-	771017	675	0.6+	1.2-	771022	675	0.6-	0.2+
771011	675	0.5-	0.7+	771017	675	0.5-	1.3+				

1017 T-3 = 1986 RZ2

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	177.03076	(1950.0)		P	Q
n	0.21284038	Peri.	26.85986	+0.65075303	+0.74795460
a	2.7782259	Node	284.04081	-0.71857834	+0.55105678
e	0.1413547	Incl.	7.74316	-0.24528688	+0.37000046
P	4.63	H	13.0	G 0.25	

Residuals in seconds of arc

771007 675	0.8-	0.0	771016 675	0.9-	1.7-	771022 675	1.1-	0.6-
771011 675	1.5+	0.2+	771016 675	0.4-	0.2-	860911 688	0.6+	0.3-
771011 675	1.5+	0.2-	771017 675	1.1+	1.0+	860911 688	0.2-	0.0
771012 675	0.5-	0.9+	771017 675	1.2+	0.7+	861004 688	0.0	0.5-
771012 675	0.9-	1.9+	771022 675	0.7-	2.1-	861004 688	0.5-	0.7+

1078 T-3 = 3120 P-L

The identification was found independently by K. Hurukawa.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	89.89274	(1950.0)		P	Q
n	0.23377462	Peri.	267.17556	-0.78599348	-0.58371989
a	2.6097887	Node	237.02450	+0.61822313	-0.74007658
e	0.0715982	Incl.	14.05142	+0.00379508	-0.33400262
P	4.22	H	14.5	G 0.25	

Residuals in seconds of arc

600924 675	0.6-	0.2+	771012 675	0.0	1.5+	771017 675	0.7+	2.4+
600925 675	2.0+	0.3+	771016 675	0.4-	3.7-	771022 675	0.3+	0.0
600927 675	1.4-	0.5-	771016 675	0.9-	1.6-	771022 675	0.4-	0.5+
771012 675	0.3+	0.1+	771017 675	0.4+	0.8+			

1175 T-3 = 1981 JT1 = 1982 QB

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	44.04462	(1950.0)		P	Q
n	0.17886762	Peri.	14.03146	+0.73481588	+0.67156215
a	3.1197211	Node	303.37166	-0.63273973	+0.62819806
e	0.0821639	Incl.	6.54093	-0.24430729	+0.39290136
P	5.51	H	12.5	G 0.25	

Residuals in seconds of arc

771007 675	0.1+	1.5-	771017 675	1.0-	0.2+	820818 046	0.3+	1.6-
771011 675	1.4+	0.8+	771017 675	2.8-	0.8+	820819 046	1.2+	0.3+
771011 675	0.5+	1.0+	771022 675	0.0	1.7-	820819 046	2.1-	0.2+
771012 675	2.0+	0.1+	771022 675	1.2+	1.8-	820821 046	1.8+	0.1-
771012 675	1.0+	1.0+	810509 808	0.1+	0.4-	820821 046	1.3-	1.1-
771016 675	1.4-	0.3+	810509 808	0.1-	0.2+			
771016 675	0.8-	0.7+	820818 046	0.1+	2.5+			

2203 T-3 = 5012 P-L

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	234.72955	(1950.0)		P	Q
n	0.17501363	Peri.	274.81181	-0.62402914	-0.77246031
a	3.1653544	Node	214.70610	+0.77353118	-0.58932169
e	0.1032223	Incl.	11.94746	+0.11062166	-0.23665381
P	5.63	H	13.5	G 0.25	

Residuals in seconds of arc

601022 675	0.3-	1.0+	771012 675	1.0-	0.6+	771021 675	1.2+	0.7-
601025 675	0.3+	1.0-	771012 675	1.6-	1.6+	771021 675	1.6+	2.5-
601026 675	0.1-	0.1+	771016 675	0.1+	1.8-	771022 675	0.3-	1.9+
771007 675	1.9+	1.2-	771016 675	0.4+	1.6-	771022 675	2.0-	2.1+
771011 675	0.4-	0.4+	771017 675	0.1-	0.3+			
771011 675	0.1+	1.0+	771017 675	0.2+	0.1-			

2390 T-3 = 1972 GC2 = 1981 UF9

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	119.91728	(1950.0)		P	Q
n	0.26732760	Peri.	222.73045	-0.55010661	+0.83447887
a	2.3865711	Node	13.99453	-0.72589828	-0.45884364
e	0.0701055	Incl.	7.61792	-0.41286124	-0.30513528
P	3.69	H	14.0	G 0.25	

Residuals in seconds of arc

720409	805	0.1-	0.3-	771012	675	0.1+	1.0+	771021	675	0.8- 2.2+
720409	805	0.3+	1.7-	771012	675	1.0+	0.1+	771021	675	1.3+ 1.5-
720410	805	0.3+	1.3+	771016	675	1.3+	1.0-	771021	675	1.3- 0.3+
720410	805	0.7-	0.3+	771016	675	1.7-	0.9+	771021	675	2.4+ 0.5-
771007	675	2.4+	2.9-	771016	675	0.6+	1.6-	771022	675	0.1+ 0.8+
771007	675	1.0+	1.2+	771016	675	0.3-	0.3+	771022	675	0.9+ 1.8-
771011	675	0.9-	0.5+	771017	675	1.1-	0.5-	771022	675	0.2- 0.2+
771011	675	0.8-	0.9+	771017	675	0.5-	0.6+	771022	675	0.7- 1.2-
771012	675	0.6-	0.0	771017	675	1.3-	0.5+	811030	381	0.3+ 0.6+
771012	675	0.3+	0.6+	771017	675	0.9-	0.5+	811030	381	0.3- 0.4-

4017 T-3 = 1982 BN4

The identification was found independently by K. Hurukawa.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	239.77764		(1950.0)	P	Q
n	0.30384311	Peri.	213.92542	-0.17909065	+0.98156162
a	2.1913108	Node	45.85906	-0.88067168	-0.12967087
e	0.0522350	Incl.	5.34172	-0.43857033	-0.14043594
P	3.24	H	14.5	G 0.25	

Residuals in seconds of arc

771007	675	1.5-	0.6+	771012	675	0.1-	1.3-	820126	381	0.5+ 0.4+
771007	675	0.3+	1.0-	771016	675	1.6-	0.1-	820126	381	1.1+ 2.0-
771011	675	2.0+	1.3+	771016	675	1.0-	0.1+	820126	381	1.6- 0.2-
771011	675	0.9+	1.5+	771017	675	0.4+	0.4-	820128	381	0.0 1.8+
771012	675	0.4-	1.6-	771017	675	1.0+	0.9+			

4059 T-3 = 1985 RO4

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	6.12895		(1950.0)	P	Q
n	0.24257639	Peri.	190.34576	-0.34744265	+0.93546513
a	2.5462707	Node	59.35001	-0.85481700	-0.28760570
e	0.0693127	Incl.	4.31438	-0.38544973	-0.20539706
P	4.06	H	13.0	G 0.25	

Residuals in seconds of arc

771007	675	0.3-	1.5+	771022	675	0.4-	0.1-	850918	809	0.4- 0.2-
771007	675	0.7+	2.8-	771022	675	2.3+	0.4-	850918	809	0.3- 0.2-
771011	675	1.2+	0.6+	850911	809	0.5+	0.3+	850919	809	1.3+ 0.3+
771011	675	1.3+	0.3+	850911	809	0.4+	0.3+	850919	809	1.3+ 0.3+
771012	675	0.7-	0.9-	850911	809	0.5+	0.3+	850919	809	1.8+ 0.3+
771012	675	1.1-	0.6-	850914	809	1.1-	0.5+	850920	809	1.7+ 0.3-
771016	675	0.7-	0.0	850914	809	0.8-	0.7+	850920	809	2.0+ 0.7-
771016	675	1.9-	1.9+	850914	809	0.6-	0.6+	850921	809	1.0- 1.0-
771017	675	0.1+	0.1-	850916	809	0.8-	0.1-	850921	809	0.9- 0.9-
771017	675	0.2-	0.2+	850916	809	0.8-	0.2+	850921	809	1.5- 0.9-
771021	675	0.4-	0.5+	850916	809	0.7-	0.5+			
771021	675	0.0	0.0	850918	809	0.5-	0.3-			

4071 T-3 = 1982 BA7 = 1984 UU1

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	3.71379		(1950.0)	P	Q
n	0.28489143	Peri.	17.81675	+0.17485651	-0.98159762
a	2.2874450	Node	62.17235	+0.89240808	+0.12506779
e	0.1457290	Incl.	4.97907	+0.41597237	+0.14430580
P	3.46	H	15.0	G 0.25	

Residuals in seconds of arc

771007	675	1.2+	0.1+	771016	675	0.6-	0.9+	771022	675	1.5+	0.9-
771011	675	0.7+	1.5-	771017	675	0.4-	1.4-	820126	381	0.4-	0.2-
771011	675	0.5+	0.8-	771017	675	0.0	0.3+	820126	381	0.4+	0.3+
771012	675	0.4+	0.3+	771021	675	0.5-	1.7+	841029	688	0.8+	1.2-
771012	675	0.7-	1.2-	771021	675	0.9-	2.1+	841029	688	0.3-	0.2+
771016	675	0.6-	1.5+	771022	675	1.1-	0.0				

4171 T-3 = 1964 VL2

The identification was found independently by K. Hurukawa.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	18.25342		(1950.0)	P	Q
n	0.29763741	Peri.	51.00003	-0.32963880	-0.94000331
a	2.2216650	Node	58.46148	+0.83112765	-0.33311082
e	0.0571288	Incl.	5.92184	+0.44784494	-0.07369504
P	3.31	H	14.0	G 0.25	

Residuals in seconds of arc

641111	330	0.4+	0.2+	771012	675	0.7+	1.2-	771017	675	0.3-	1.1-
641127	330	0.3-	0.4-	771012	675	0.3+	0.9-	771021	675	0.3-	1.3+
771007	675	0.7-	0.7+	771016	675	0.1+	1.0+	771021	675	0.2+	2.0+
771011	675	1.3+	0.6-	771016	675	0.9-	1.7+	771022	675	2.5-	1.3-
771011	675	2.1+	0.2-	771017	675	0.3-	0.7-	771022	675	0.3+	0.7-

4203 T-3 = 6183 P-L

The identification was found independently by K. Hurukawa.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	48.87227		(1950.0)	P	Q
n	0.23547384	Peri.	4.10983	-0.98738930	+0.15706572
a	2.5972184	Node	185.05739	-0.15089663	-0.97160314
e	0.1039078	Incl.	12.99133	-0.04788078	-0.17696808
P	4.19	H	14.5	G 0.25	

Residuals in seconds of arc

600924	675	0.7-	0.9-	771011	675	0.2-	0.8+	771017	675	0.3+	0.0
600925	675	0.0	1.2+	771012	675	0.2-	1.8-	771017	675	0.3+	0.4-
600926	675	0.7+	0.3-	771012	675	0.5-	0.7-	771021	675	1.4-	0.4-
771007	675	0.5-	0.5-	771016	675	0.8-	2.2+	771021	675	0.1+	1.0+
771011	675	1.3+	0.6+	771016	675	0.4-	0.9+	771022	675	2.1+	1.6-

4343 T-3 = 1980 LH

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	311.03887		(1950.0)	P	Q
n	0.21133491	Peri.	15.97978	-0.97437460	+0.22472723
a	2.7914043	Node	176.95776	-0.22103540	-0.94873399
e	0.2351249	Incl.	10.40158	-0.04168327	-0.22226448
P	4.66	H	13.0	G 0.25	

Residuals in seconds of arc

771007	675	0.7+	0.9+	771017	675	0.7+	0.0	771022	675	0.8+	2.1+
771012	675	1.3-	0.1-	771017	675	0.7+	0.9-	800613	046	(4.1+	1.4-)
771012	675	0.6-	0.4-	771021	675	0.2+	0.3-	800613	046	1.5-	1.3-
771016	675	0.9-	0.8-	771021	675	0.7+	0.7-	800614	046	2.0+	0.6+
771016	675	0.9+	0.1+	771022	675	1.9-	0.0	800614	046	0.5-	0.8+

ORBITAL ELEMENTS BY D. W. E. GREEN, SMITHSONIAN ASTROPHYSICAL OBSERVATORY.

The identifications are by D. W. E. Green unless otherwise stated.

Comet Cernis (1983 XII)
Epoch 1983 July 5.0 ET = JDE 2445520.5
T 1983 July 21.21618 ET

q	3.3178812	(1950.0)	P	Q
z	-0.0005872	Peri. 186.21808	+0.90725403	+0.24294821
	+/-0.0000029	Node 208.88369	+0.40996989	-0.32862643
e	1.0019483	Incl. 134.70390	+0.09388724	-0.91267784

From 98 observations, 1983 July 21-1987 May 1, mean residual 0".8.

Comet Shoemaker (1985 XII)
Epoch 1985 Sept. 12.0 ET = JDE 2446320.5
T 1985 Sept. 4.59239 ET

q	2.6965100	(1950.0)	P	Q
z	-0.0002659	Peri. 235.46185	-0.65096470	+0.34863396
	+/-0.0000012	Node 48.98516	+0.12297768	+0.92499718
e	1.0007171	Incl. 116.66114	-0.74908040	-0.15111115

From 100 observations, 1984 May 27-1987 Nov. 16, mean residual 0".8.

Comet Hartley (1985 XIV)
Epoch 1985 Sept. 12.0 ET = JDE 2446320.5
T 1985 Sept. 28.36718 ET

q	4.0002306	(1950.0)	P	Q
z	+0.0001085	Peri. 255.27274	+0.07837896	-0.34133596
	+/-0.0000063	Node 249.50979	+0.60689366	-0.72906108
e	0.9995661	Incl. 89.32901	-0.79090886	-0.59326192

From 35 observations, 1984 Nov. 17-1987 Sept. 27, mean residual 1".1.

Comet Churyumov-Solodovnikov ((1986 IX)
Epoch 1986 May 10.0 ET = JDE 2446560.5
T 1986 May 6.50830 ET

q	2.6421170	(1950.0)	P	Q
z	+0.0001427	Peri. 157.75094	+0.75695699	-0.01843957
	+/-0.0000080	Node 133.91713	-0.64670111	-0.16458636
e	0.9996229	Incl. 114.93380	+0.09377523	-0.98619030

From 39 observations, 1986 July 15-1987 Sept. 27, mean residual 0".8.

Comet Shoemaker (1986 XIV)
Epoch 1986 Nov. 26.0 ET = JDE 2446760.5
T 1986 Nov. 17.08512 ET

q	5.4573442	(1950.0)	P	Q
z	-0.0004139	Peri. 17.00311	-0.23680433	-0.63308886
	+/-0.0000927	Node 267.63168	-0.95491897	+0.01188308
e	1.0022590	Incl. 132.47277	-0.17903484	+0.77398791

From 57 observations, 1987 Apr. 25-Aug. 26, mean residual 0".8.

Comet Torres (1987j)
Epoch 1987 Mar. 26.0 ET = JDE 2446880.5
T 1987 Apr. 10.26359 ET

q	3.6246083	(1950.0)	P	Q
z	-0.0003317	Peri. 329.08957	-0.76460985	-0.61350941
	+/-0.0001110	Node 193.79103	-0.27486779	+0.03334410
e	1.0012021	Incl. 124.08532	-0.58294037	+0.78898313

From 24 observations 1987 Mar. 28-July 17, mean residual 1".2.

(3735)* 1983 XS = 1973 YX3 = 1974 CK

Discovered 1983 Dec. 4 by Z. Vavrova at Klet. The identification 1983 XS = 1974 CK is by W. Landgraf (MPC 8540).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	194.16209		(1950.0)		P		Q	
n	0.18048257	Peri.	250.31335		-0.98104578		+0.17688825	
a	3.1010770	Node	299.80434		-0.12522045		-0.89030872	
e	0.1492557	Incl.	5.23143		-0.14788174		-0.41959615	
P	5.46	H	11.6	G	0.25			

Residuals in seconds of arc

731226	095	1.5-	1.7+		831208	046	0.8+	2.0-		870821	046	(3.4+ 0.0)
740214	095	(3.5+	0.2+)		831208	046	2.2-	0.2+		870821	046	1.4+ 0.5-
740215	095	(2.7-	2.7-)		850212	046	0.1+	0.2-		870824	801	0.6+ 0.3+
740218	095	1.7+	1.1-		850212	046	1.0-	0.4-		870827	809	0.3- 0.8-
831108	381	0.1+	0.1-		850213	046	0.2-	1.2-		870827	809	0.4- 0.7-
831108	381	0.4-	0.1-		850213	046	0.9-	1.9-		870827	809	0.3- 0.4-
831204	046	0.7+	0.3+		850213	054	0.3+	1.2+		870830	809	0.9- 0.1+
831204	046	0.7-	0.1-		850218	054	0.8-	0.0		870830	809	0.3+ 0.5+
831205	046	1.1+	0.2+		850219	054	1.9+	0.5-		870830	809	0.1- 0.8+
831205	046	0.4+	1.8+		850323	801	0.2+	2.3+				

(3736)* 1987 SY3 = 1951 YA1 = 1964 EA = 1969 EH1 = 1974 CT = 1976 ST = 1979 BM = 1981 RA = 1982 UK1

Discovered 1987 Sept. 26 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	132.00142		(1950.0)		P		Q	
n	0.18763902	Peri.	151.00970		+0.44394653		+0.88897427	
a	3.0217181	Node	145.00204		-0.85523488		+0.45780810	
e	0.0836829	Incl.	11.30271		-0.26736638		+0.01168278	
P	5.25	H	11.2	G	0.25			

Residuals in seconds of arc

511223	711	0.9+	0.1+ Y		760927	675	0.8-	0.1-		870926	688	0.1+ 0.2+
640313	760	1.2-	0.4-		790125	330	0.7+	1.7-		870926	688	0.2- 0.1+
640316	760	0.5+	0.7-		810828	688	0.3+	0.3+		871020	688	0.0 0.2+
640316	760	0.5-	1.0+		810828	688	0.6+	0.8-		871020	688	0.9+ 0.2-
690313	095	0.1-	3.2-		810903	688	(0.0	4.4-)		871122	688	0.1+ 0.4-
740214	095	0.3-	0.7+		810903	688	0.3+	2.0-		871122	688	0.4+ 0.7+
760924	095	(2.9-	2.5-)		821021	688	1.3-	1.2-				
760927	675	0.5+	1.1-		821021	688	0.5-	0.7-				

1979 YQ = 1954 XE = 1987 WL

The key identification 1979 YQ = 1987 WL is by E. Bowell.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	61.02247		(1950.0)		P		Q	
n	0.23742126	Peri.	317.16191		+0.74757859		-0.64560311	
a	2.5829966	Node	83.72972		+0.64387126		+0.64684991	
e	0.2438289	Incl.	9.02681		+0.16296026		+0.40593328	
P	4.15	H	14.0	G	0.25			

Residuals in seconds of arc

541201	024	1.2+	4.3-		791220	809	0.1-	0.8+		791223	809	0.1+ 0.7+
791217	809	0.3+	0.7+		791221	809	0.5-	0.6+		791224	095	0.6- 1.5-
791217	809	0.2-	0.1+		791221	809	0.2-	0.2+		791224	809	0.3+ 0.3-
791217	809	1.1+	0.4+		791221	809	0.8-	0.9+		791224	809	0.1- 0.4-
791219	809	0.3+	0.4+		791222	809	0.0	0.5+		791224	809	0.2+ 0.2-
791219	809	0.0	0.5+		791222	809	0.3+	0.5+		791225	809	0.2+ 0.1-
791219	809	0.3-	0.4+		791222	809	0.5+	0.4+		791225	809	0.3- 0.3+
791220	809	0.2+	0.7+		791223	809	0.1+	0.2+		791225	809	0.2+ 0.1-
791220	809	0.1+	0.6+		791223	809	0.0	0.5+		791226	809	0.4- 0.0

791226 809 0.3- 0.2+ 791230 809 2.3+ 1.1- 871020 688 1.7- 0.8+
791228 809 0.3- 0.5- 791230 809 2.2- 0.8- 871122 688 1.6- 0.1+
791228 809 0.7- 0.1- 870926 688 0.2- 0.8- 871122 688 0.2+ 1.3+
791229 809 0.2+ 0.4- 870926 688 2.4+ 1.0-
791229 809 0.0 0.5- 871020 688 0.1+ 1.0+

1981 EE12
The 1983-84 observations were identified by S. J. Bus.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M 149.14026		(1950.0)	P	Q
n 0.28240471	Peri.	146.65583	+0.37513843	-0.92253630
a 2.3008535	Node	281.16898	+0.82897688	+0.37758673
e 0.0985909	Incl.	5.29539	+0.41481139	+0.07971851
P 3.49	H	15.5	G 0.25	

Residuals in seconds of arc
810209 413 0.2- 1.0+ 810310 413 1.6- 0.9+ 810409 413 1.0- 0.2-
810214 413 1.7+ 0.1+ 810310 413 2.4+ 0.4- 810503 413 0.9- 0.8-
810301 413 0.5+ 0.1- 810312 413 1.8- 0.6+ 831230 675 0.0 0.4-
810301 413 0.3+ 0.8- 810312 413 2.8+ 0.2+ 840108 675 0.0 0.8+
810308 413 0.9- 0.4- 810312 413 2.0- 0.4+
810308 413 2.2+ 1.3- 810312 413 0.2+ 1.0-

1981 EK14
The 1979 and 1983 observations were identified by S. J. Bus.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M 151.57226		(1950.0)	P	Q
n 0.27568945	Peri.	145.14714	+0.67779939	-0.73399506
a 2.3380663	Node	262.13957	+0.66431681	+0.63636423
e 0.1277440	Incl.	2.48128	+0.31507326	+0.23725894
P 3.58	H	15.0	G 0.25	

Residuals in seconds of arc
791018 675 2.3- 0.8- 810308 413 1.1- 1.2+ 810409 413 0.4+ 0.3-
791018 675 2.1+ 1.3+ 810308 413 2.1+ 0.1- 810501 413 1.4+ 2.1-
810212 413 0.5+ 0.1- 810312 413 1.7- 1.2+ 810503 413 0.5- 0.9+
810212 413 0.5- 0.1+ 810406 413 0.9- 0.3- 831230 675 2.1- 0.2-
810301 413 0.9- 0.1+ 810408 413 1.6+ 0.5- 831230 675 2.1+ 0.2-
810301 413 0.2+ 0.0 810408 413 1.6+ 1.0-
810306 413 1.0- 1.0+ 810409 413 0.7- 0.4+

1981 EZ27 = 1978 NV6
The 1983 observations were identified by S. J. Bus.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M 237.99244		(1950.0)	P	Q
n 0.25855740	Peri.	238.67397	+0.46707548	+0.88403947
a 2.4402384	Node	59.18080	-0.80403130	+0.43298122
e 0.1198261	Incl.	1.18365	-0.36793228	+0.17607237
P 3.81	H	14.5	G 0.25	

Residuals in seconds of arc
780710 675 1.3+ 4.3- Y 810306 413 3.4- 0.1- 810407 413 1.3- 1.1+
780711 675 5.2+ 2.5+ Y 810311 413 1.3- 0.6- 810407 413 0.2+ 0.2-
780713 675 5.6- 0.4- Y 810315 413 1.8- 0.5+ 810410 413 2.1- 0.9+
810209 413 0.2- 0.2- 810315 413 0.1- 0.1+ 810410 413 0.7+ 0.5-
810212 413 0.8- 0.0 810405 413 3.2+ 0.4- 810426 413 4.2+ 1.4-
810213 413 1.6- 1.1+ 810405 413 1.5+ 0.0 810501 413 0.8+ 0.3+
810302 413 3.5+ 2.8- 810406 413 2.2- 1.6+ 831230 675 0.9+ 0.7-
810302 413 0.1+ 0.8- 810406 413 0.1+ 0.6+ 831230 675 0.9- 0.6-

1981 ST = 1957 JA = 1968 HL1 = 1987 UV
The key identification 1981 ST = 1987 UV is by E. Bowell.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	95.48738	(1950.0)	P	Q	
n	0.17927210	Peri.	181.37694	+0.99839599	+0.05190033
a	3.1150267	Node	175.45871	-0.04882703	+0.99157475
e	0.0510058	Incl.	16.60227	-0.02865954	+0.11868393
P	5.50	H	11.5	G	0.25

Residuals in seconds of arc

570502 760	0.2-	2.2-	810926 688	0.2+	1.5-	811007 046	0.7-	0.0
570502 760	0.3-	1.5-	810926 688	0.2+	0.6-	811007 046	0.9+	1.2+
680422 095	0.3+	3.0+	811005 688	(9.0-	3.8-)	811022 095	0.7-	2.5+
810925 688	0.4+	1.9-	811005 688	0.2-	1.0-	811026 095	(8.8-	5.4+)
810925 688	0.8+	1.4-	811005 688	4.1-	0.2-	871020 688	0.9+	0.1+
810925 046	0.4+	0.2+	811005 688	0.3+	1.7-	871020 688	0.4+	0.4+
810925 095	1.3+	2.2+	811006 046	1.0+	1.9+	871119 688	1.3-	0.8-
810925 046	0.7+	0.4-	811006 046	0.7-	0.6+	871119 688	0.0	0.6-

1981 SF9 = 1954 UW = 1976 SE6 = 1976 UJ2 = 1987 UE

The key identification 1981 SF9 = 1987 UE is by E. Bowell.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	57.66382	(1950.0)	P	Q	
n	0.18045458	Peri.	211.54356	+0.81413431	-0.58067610
a	3.1014038	Node	183.95482	+0.53505257	+0.75068681
e	0.1721403	Incl.	0.64573	+0.22561932	+0.31509457
P	5.46	H	12.5	G	0.25

Residuals in seconds of arc

541022 760	0.0	1.9+	810928 323	0.4+	0.0	871119 688	0.3+	1.0-
541022 760	0.5-	0.1+	810928 323	0.4-	0.7-	871119 688	0.1+	1.9+
760924 095	2.5-	1.1-	811002 323	(15.3-	0.0)	871124 688	0.6+	1.2-
761026 095	1.6+	0.1+	871020 688	2.0-	1.2-	871124 688	3.0+	0.4+
810926 323	1.1-	1.8-	871020 688	1.5-	0.0			
810926 323	1.5+	1.6+	871024 801	0.1+	1.0+			

1981 VP2 = 1953 VJ1 = 1987 WU1

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	84.65995	(1950.0)	P	Q	
n	0.17583673	Peri.	282.62750	+0.94777915	-0.31507573
a	3.1554685	Node	95.75409	+0.30848101	+0.86633166
e	0.3113677	Incl.	2.84685	+0.08095772	+0.38755223
P	5.61	H	13.0	G	0.25

Residuals in seconds of arc

531106 760	1.1+	1.2-	811023 330	0.9-	2.3+	871126 033	0.6+	0.4+
531106 760	2.3-	0.8-	811028 330	3.2-	4.1+	871126 033	0.5+	0.5+
810925 095	1.1+	1.5-	811103 033	0.5-	0.9-			
811007 095	2.9+	0.8-	811103 033	0.6-	0.7-			

1982 UD2 = 1987 UF

The identification is by E. Bowell.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	82.45774	(1950.0)	P	Q	
n	0.19719035	Peri.	327.71081	+0.98399896	-0.17553177
a	2.9233433	Node	42.43289	+0.17157877	+0.88726844
e	0.1357314	Incl.	2.59698	+0.04802895	+0.42654813
P	5.00	H	12.5	G	0.25

Residuals in seconds of arc

821016 046	0.5+	1.3+	821021 046	1.1+	0.2+	871020 688	0.1-	2.3+
821016 046	0.1-	0.3+	821022 095	(1.8-	2.9+)	871119 688	2.1-	1.2+
821020 046	1.1+	1.0+	821109 095	(3.2+	1.9+)	871119 688	(3.9-	1.4-)
821021 046	0.3+	0.4-	821114 095	0.2-	2.4+	871124 688	0.8-	1.9-
821021 046	2.0-	0.6-	871020 688	0.7+	1.5+	871124 688	0.4+	0.4+

1982 UV10 = 1970 QG = 1983 YA1

The identification 1982 UV10 = 1983 YA1 is by S. J. Bus.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	117.71917	(1950.0)		P	Q
n	0.17641559	Peri.	249.10775	+0.29059565	+0.95675431
a	3.1485621	Node	37.79387	-0.86961782	+0.26985231
e	0.1456975	Incl.	1.23821	-0.39914786	+0.10863206
P	5.59	H	12.0	G 0.25	

Residuals in seconds of arc

700828 095	0.1-	0.1-	821109 095	0.3-	0.1+	831230 675	1.4-	1.3-
821025 095	1.6-	0.4+	821114 095	1.8+	1.4-	840108 675	1.1+	0.4-

1985 CR2 = 1973 WK = 1987 WW1

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	54.81107	(1950.0)		P	Q
n	0.28945622	Peri.	189.54843	-0.33643713	-0.94165575
a	2.2633323	Node	280.11201	+0.86460625	-0.30478492
e	0.0569097	Incl.	0.56578	+0.37318372	-0.14279566
P	3.41	H	14.0	G 0.25	

Residuals in seconds of arc

731122 033	0.9-	0.2+	850218 809	0.3+	0.5+	850222 675	1.7+	0.0
731122 033	1.0+	1.6+	850218 809	0.5+	0.5+	850224 809	0.5-	0.3-
850215 809	0.5+	0.9-	850219 809	0.3-	0.2+	850224 809	0.3-	0.4-
850215 809	0.3+	0.5-	850219 809	0.0	0.2+	850224 809	0.2-	0.6-
850215 809	0.1+	0.2+	850219 809	0.0	0.3+	850226 809	0.8-	0.1-
850216 809	1.1-	0.5-	850220 809	0.9-	0.1-	850226 809	0.3-	0.3-
850216 809	0.7-	0.5-	850220 809	0.6-	0.1-	850226 809	0.3+	0.4-
850216 809	0.9-	0.8-	850220 809	0.2-	0.1-	850228 809	0.5+	0.6+
850217 809	1.3-	0.0	850220 675	1.6+	0.2+	850228 809	0.5+	0.6+
850217 809	0.8-	0.0	850222 809	1.1-	0.4+	871126 033	0.5-	1.1-
850217 809	0.5-	0.0	850222 809	0.8-	0.4+	871126 033	0.5-	1.5-
850218 809	0.4+	0.5+	850222 809	0.6-	0.4+			

1986 OA = 1954 UN1

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	276.52849	(1950.0)		P	Q
n	0.24102145	Peri.	308.53140	-0.83859979	+0.49389161
a	2.5572103	Node	262.18094	-0.39901893	-0.84413773
e	0.0509016	Incl.	13.41403	-0.37085617	-0.20857269
P	4.09	H	12.5	G 0.25	

Residuals in seconds of arc

541024 760	1.1-	1.7+	860806 552	1.1-	0.3+	860905 552	1.3+	0.9-
541024 760	0.5+	0.7+	860810 552	0.7+	0.1+	860905 552	0.2+	1.8-
860728 552	0.9+	0.5-	860810 552	1.2+	2.3+	860906 552	0.2-	0.6-
860728 552	0.0	0.4+	860811 552	1.4+	1.4-	860906 552	0.1-	1.3-
860730 552	0.8+	0.1+	860811 552	1.2+	0.1-	860911 552	1.1+	0.4+
860730 552	0.1-	0.4-	860812 552	1.4-	0.4-	860911 552	0.8+	0.3-
860730 552	1.8-	0.8+	860812 552	0.2+	0.2+	871115 552	0.1+	1.2+
860801 552	0.8-	1.5-	860824 552	0.2-	1.0+	871115 552	1.0+	0.8+
860801 552	0.3-	0.2-	860824 552	0.9-	0.1+	871117 552	1.6-	2.9-
860801 552	1.7-	1.4-	860825 552	0.2+	1.3+	871117 552	0.4-	4.5-
860803 552	0.3-	0.2+	860825 552	0.2-	0.4-	871119 688	0.4+	0.9+
860803 552	0.1+	0.4+	860829 552	1.4-	0.9+	871119 688	0.6+	1.3+
860803 552	0.0	0.0	860829 552	1.5+	1.5+	871121 552	0.2-	1.0+
860806 552	0.4-	1.5+	860905 552	0.1-	2.2-	871121 552	0.1+	1.0+

1986 UG = 1986 WF = 1976 SF3 = 1983 YZ

The double designation 1986 UG = 1986 WF is by T. Kobayashi (MPC 11826). The key identification 1986 UG = 1983 YZ is by S. J. Bus. The identification 1986 UG = 1976 SF3 was suggested by L. D. Schmadel.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	200.78057	(1950.0)	P	Q
n	0.29977579	Peri. 266.06294	+0.79924474	-0.60017661
a	2.2110873	Node 130.81637	+0.56661423	+0.73496247
e	0.1469178	Incl. 2.38983	+0.20039002	+0.31562354
P	3.29	H 14.0	G 0.25	

Residuals in seconds of arc

760924 095 0.6- 0.6+	861030 881 (6.6- 1.3-)	861126 881 (4.8+ 0.6-)
831230 675 0.1+ 2.3-	861104 675(11.1- 1.3-)	861126 881 2.0+ 0.4+
840108 675 0.2- 0.3+	861104 675(10.1- 0.8-)	861205 881 0.3- 0.0
861030 881 0.0 3.1-	861105 881 0.1- 0.1+	861205 881 1.1+ 0.9+

1987 HU = 1984 FE

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	111.65665	(1950.0)	P	Q
n	0.31392366	Peri. 70.82781	-0.61514015	+0.78821378
a	2.1441453	Node 161.17584	-0.74260639	-0.57160633
e	0.0913330	Incl. 3.18621	-0.26483645	-0.22800270
P	3.14	H 15.5	G 0.25	

Residuals in seconds of arc

840331 688 (4.0- 0.6-)	840403 688 0.7- 0.5+	870427 033 0.2+ 0.1+
840331 688 0.6+ 0.7-	870424 033 0.2+ 0.5-	870427 033 0.3- 0.7+
840403 688 (8.7- 4.5+)	870424 033 0.1+ 1.1-	870429 033 0.5+ 0.7+

1987 SY

Epoch 1987 Oct. 12.0 ET = JDE 2447080.5

M	57.23991	(1950.0)	P	Q
n	0.56928597	Peri. 291.15250	-0.45277747	+0.88873202
a	1.4418355	Node 311.71814	-0.77819438	-0.43317336
e	0.5863402	Incl. 5.51599	-0.43520808	-0.15005411
P	1.73	H 17.0	G 0.25	

From 17 observations 1987 Sept. 25-Nov. 16.

1987 SF3

Epoch 1987 Oct. 12.0 ET = JDE 2447080.5

M	15.94658	(1950.0)	P	Q
n	0.29157517	Peri. 133.61444	+0.77406413	+0.63306658
a	2.2523490	Node 187.11943	-0.59623110	+0.72512168
e	0.5349562	Incl. 3.31712	-0.21291595	+0.27097094
P	3.38	H 19.0	G 0.25	

From 11 observations 1987 Sept. 26-Nov. 16.

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ORBITAL ELEMENTS BY B. G. MARSDEN, SMITHSONIAN ASTROPHYSICAL OBSERVATORY.

Periodic Comet Mueller (1987a1)

T 1987 Dec. 6.18399 ET

q	2.7439099	(1950.0)	P	Q
n	0.11654865	Peri. 30.84612	+0.82184494	-0.56961543
a	4.1507943	Node 3.92531	+0.48658501	+0.69227373
e	0.3389434	Incl. 8.77868	+0.29632064	+0.44305230
P	8.46			

From 20 observations 1987 Oct. 18-Nov. 24.

Comet Ichimura (1987d1)
T 1988 Jan. 10.10389 ET

		(1950.0)	P	Q
q 0.1995104	Peri.	329.30156	-0.87291865	+0.10522469
	Node	225.82326	-0.18686330	-0.97411065
e 1.0	Incl.	41.62344	-0.45066077	+0.20009050

From 29 observations 1987 Nov. 23-Dec. 14.

Comet Jensen-Shoemaker (1987g1)
Epoch 1987 Dec. 31.0 ET = JDE 2447160.5
T 1988 Jan. 18.82201 ET

		(1950.0)	P	Q
q 3.3324870	Peri.	194.74236	+0.90384132	-0.30986993
z -0.0012811	Node	197.64738	+0.41863780	+0.49800091
+/-0.0001331	Incl.	76.71470	-0.08839262	-0.80992328
e 1.0042694				

From 12 observations 1987 Sept. 24-Dec. 12, mean residual 0".9.

Comet Furuyama (1987f1)
T 1988 Mar. 3.06511 ET

		(1950.0)	P	Q
q 1.6796783	Peri.	233.62548	+0.55510878	-0.01474200
	Node	250.05713	+0.67743799	-0.57213546
e 1.0	Incl.	117.78541	-0.48263031	-0.82002664

From 29 observations 1987 Nov. 22-Dec. 14.

(3737)* 1983 PA
Discovered 1983 Aug. 8 by E. Helin at Palomar.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

		(1950.0)	P	Q
M 104.77848	Peri.	84.77209	+0.91668214	-0.22848343
n 0.26390893	Node	288.12306	+0.05061116	+0.88019656
a 2.4071325	Incl.	20.17991	+0.39639925	+0.41599199
e 0.3936044				
P 3.73	H 12.7	G 0.25		

Residuals in seconds of arc

830808	675	0.3+	1.2+	830904	071	(1.0+	3.4+)	850320	474	0.1-	0.2+
830808	675	0.2+	0.3+	830904	071	2.0+	2.7-	850523	691	0.3+	0.1+
830810	675	0.9+	0.1-	830905	071	2.2-	2.5+	850523	691	0.3+	0.2+
830810	675	(2.3-	4.3+)	830905	071	(4.1+	2.4-)	850523	691	0.1-	1.0-
830811	675	1.4+	0.4+	830907	071	0.0	2.0+	860514	474	0.3-	0.1-
830811	675	0.4+	1.2-	830907	071	(3.0-	3.2+)	860514	474	1.6-	0.8-
830830	675	(3.4+	1.0-)	830908	801	0.7-	0.6+	871002	033	0.9+	0.1-
830831	675	0.4+	1.5+	830909	801	0.5-	0.8+	871002	033	1.8-	0.2+
830831	675	1.7+	1.6+	830912	801	0.5-	1.2+	871002	033	3.2-	0.1-
830903	071	1.0-	1.6-	831008	801	1.0-	0.9+	871019	801	0.0	0.5+
830903	071	0.6+	2.0-	831105	801	2.8-	0.9+	871021	657	0.1-	2.2-
830903	071	0.9-	2.0-	831130	675	0.4-	0.3-	871021	657	0.1-	0.9-
830903	071	0.0	2.4-	831130	675	(3.8-	1.2+)	871022	657	0.1-	2.6-
830904	801	0.6+	0.3-	831203	801	2.2-	0.7+	871028	675	(7.0-	1.7+)
830904	071	0.1-	1.0-	840110	801	1.9+	0.2+	871028	675	(7.3-	2.1-)
830904	071	0.4+	0.7-	840129	675	1.2+	0.2-	871119	801	0.2-	0.4+
830904	071	0.2-	0.2+	840129	675	1.6-	0.2+				
830904	071	0.3+	0.2-	850320	474	0.1+	0.7-				

1969 TB6 = 1936 LD = 1972 GF = 1974 VB1 = 1978 RW4 = 1978 TK3
= 1979 YM7 = 1981 GV = 1986 LP1 = 1987 SP

The identifications 1981 GV = 1978 TK3 = 1987 SP were found by A. Lowe. The other identifications are by B. G. Marsden.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	127.50184		(1950.0)		P		Q				
n	0.21543539	Peri.	57.14985		+0.40562301		+0.91353176				
a	2.7558710	Node	236.80959		-0.85028286		+0.36487897				
e	0.0671005	Incl.	2.08804		-0.33539385		+0.17978615				
P	4.57	H	12.5	G	0.25						

Residuals in seconds of arc

360614	078	0.9-	0.0	781004	095	0.9+	0.8+	860601	805	0.7-	1.2+
691015	095	0.6+	1.8+	791223	095	0.1+	1.4-	860601	805	0.2-	0.8-
691017	095	3.1+	1.6+	810407	688	1.3+	1.7-	860601	805	0.4+	1.9-
720414	095	(8.5-	3.7-)	810407	688	0.2+	0.1+	870919	688	0.3-	1.3-
741112	095	0.8-	0.8+	810409	688	0.3-	0.8-	870919	688	0.4-	1.9-
741117	095	4.4-	2.1-	810409	688	1.0+	1.3-	870926	688	0.1+	0.8-
780906	095	0.0	0.2-	860601	805	1.7-	1.9+	870926	688	1.4+	0.6-

1976 SN3 = 1976 UW20 = 1984 UC = 1985 YK

The double designation 1976 SN3 = 1976 UW20 is by H. Oishi (JAM 1336). The key identification 1976 SN3 = 1985 YK and the identification 1976 SN3 = 1984 UC are by E. Bowell and B. G. Marsden, respectively (MPC 10527). The identification with 1944 QA (MPC 10527) is invalid.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	137.94922		(1950.0)		P		Q				
n	0.12527397	Peri.	284.68764		+0.23161271		-0.97238476				
a	3.9557577	Node	151.87052		+0.91427943		+0.20750595				
e	0.2230697	Incl.	3.48941		+0.33233818		+0.10681362				
P	7.87	H	11.5	G	0.25						

Residuals in seconds of arc

760924	095	1.1-	0.4-	841017	046	0.5-	1.5+	870224	801	0.3+	2.0-
760929	095	0.7+	1.5-	851217	688	0.3-	0.1+	870329	801	1.2-	0.4-
761026	095	1.2+	0.1-	851218	688	0.3+	0.6+				
841017	046	0.6+	1.8-	851218	688	0.0	0.1-				

1987 WC

Epoch 1987 Nov. 21.0 ET = JDE 2447120.5

M	39.16280		(1950.0)		P		Q				
n	0.61816525	Peri.	308.08122		+0.97641651		+0.02879458				
a	1.3647916	Node	51.32534		+0.09361120		+0.83659112				
e	0.2353132	Incl.	15.90646		-0.19454495		+0.54707054				
P	1.59	H	20.5	G	0.25						

From 9 observations 1987 Nov. 21-Dec. 15.

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ORBITAL ELEMENTS BY C. M. BARDWELL, SMITHSONIAN ASTROPHYSICAL OBSERVATORY.

The identifications are by C. M. Bardwell unless otherwise stated.

(3738)* 1977 QA1 = 1977 TK8 = 1953 FL = 1966 BX = 1981 WV6

Discovered 1977 Aug. 19 by N. S. Chernykh at the Crimean Astrophysical Observatory. The double designation 1977 QA1 = 1977 TK8 is by T. Furuta (JAM 2000).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	177.45731		(1950.0)		P		Q				
n	0.29704438	Peri.	269.23683		-0.07337764		+0.99730337				
a	2.2246165	Node	356.55434		-0.90608219		-0.06721414				
e	0.1684882	Incl.	1.24777		-0.41669027		-0.02946609				
P	3.32	H	13.0	G	0.25						

Residuals in seconds of arc

530316	024	1.7+	1.5+		770823	095	1.3+	2.9+		870921	046	0.3+	2.0-
530320	024	1.1-	4.5+		770824	095	1.3-	0.7+		870921	046	0.3-	1.1-
660130	330	2.7+	2.9-		771007	095	0.3+	0.2+		870926	293	(3.5-	8.9+)
770819	095	0.5+	0.2+		811124	095	2.2-	2.3+		870926	293	(2.2-	5.7+)
770820	095	0.1+	0.4+		870921	688	3.2-	0.6+		870929	688	1.7+	0.1+
770822	095	0.9-	1.3+		870921	688	1.1+	0.6+		870929	688	0.8-	0.3+

(3739)* 1977 RE2 = 1950 HB = 1950 HA1 = 1979 BY1 = 1983 HZ = 1986 EB1

Discovered 1977 Sept. 8 by N. S. Chernykh at the Crimean Astrophysical Observatory. The double designation 1950 HB = 1950 HA1 is by O. Kippes (MPC 1331).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	170.45214		(1950.0)	P	Q
n	0.29893579	Peri.	171.31604	+0.24680076	+0.96621630
a	2.2152230	Node	112.94546	-0.89383178	+0.25657713
e	0.1554260	Incl.	4.62577	-0.37437165	+0.02437717
P	3.30	H	13.5	G 0.25	

Residuals in seconds of arc

500418	078	(29.5-	17.2+)X		770910	095	0.3-	0.9-		830419	688	0.2+	0.8-
500420	760	0.2-	1.4-		770918	095	0.9-	1.9-		860305	688	0.3-	0.3-
500420	760	0.5-	0.7+		770922	095	1.3+	0.0		860305	688	0.6-	1.1+
500420	078	(32.9-	44.4+)X		790124	095	0.8+	2.0-		870925	801	2.1-	0.2-
770908	095	1.8+	0.8+		830419	688	0.2+	0.4-		871023	801	0.6+	0.2+

(3740)* 1981 EM = 1969 AG = 1983 RK2

Discovered 1981 Mar. 1 by H. Debehogne and G. De Sanctis at the European Southern Observatory. The key identification 1981 EM = 1983 RK2 is by E. Bowell (MPC 8284).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	57.91662		(1950.0)	P	Q
n	0.25480746	Peri.	53.30139	+0.67373302	-0.73890764
a	2.4641168	Node	354.31154	+0.64184167	+0.59180572
e	0.2634436	Incl.	5.77045	+0.36622819	+0.32215134
P	3.87	H	14.0	G 0.25	

Residuals in seconds of arc

690115	095	0.2-	2.1-		810309	809	0.2+	0.1-		830904	688	3.0+	1.2-
810301	809	1.9-	0.1-		810309	809	0.6+	0.2+		830904	809	0.3-	1.0-
810301	809	1.6-	0.1-		810309	809	0.1-	0.5-		830904	809	0.5-	0.9-
810301	809	1.4-	0.1+		810309	809	1.0+	0.9-		830904	809	0.8-	1.0-
810302	809	0.2-	0.4+		810309	809	0.1+	0.4+		830904	688	3.2+	2.0-
810302	809	0.3-	0.8+		810309	809	0.7+	0.9-		830906	809	0.8+	0.3+
810302	809	0.1-	0.5+		810309	809	0.6+	0.9-		830906	809	0.9+	0.6+
810303	809	0.4-	0.7+		810309	809	0.2+	0.2+		830906	809	0.6+	0.3+
810303	809	0.5-	1.1+		810310	809	0.4+	0.6-		830906	688	2.1+	1.8-
810303	809	0.0	0.4+		810310	809	0.9+	0.2-		830906	688	1.4+	2.0-
810304	809	0.1+	1.5+		810310	809	1.6+	0.4-		830908	809	(7.2-	0.6-)
810304	809	0.5+	0.5+		810310	809	0.2+	0.1-		830908	809	1.1+	1.3+
810304	809	0.3+	1.1+		810310	809	0.1-	0.5-		830908	809	1.5-	0.3-
810306	809	1.1-	0.3+		810310	809	0.2-	0.7-		830909	809	0.5-	1.0+
810306	809	0.1-	0.3+		830813	688	2.2+	0.4+		830909	809	0.8-	0.7+
810306	809	0.5-	0.3+		830902	809	0.2+	0.1-		830909	809	0.6-	0.8+
810307	809	0.0	0.3-		830902	688	(4.0+	1.7-)		830910	688	2.2-	1.7-
810307	809	0.3+	0.1-		830902	688	1.8+	1.6-		830910	688	0.6-	1.5-
810307	809	0.3+	0.1-		830902	809	0.3+	0.4+		830912	809	0.1+	1.1+
810308	809	0.4-	0.6-		830902	809	0.2+	0.8+		830912	809	0.5+	0.9+
810308	809	0.3+	0.8-		830903	809	1.2+	0.2+		830912	809	0.4-	1.4+
810308	809	0.8+	1.1-		830903	809	0.4-	0.5+		830912	688	1.9-	1.4-
810309	809	0.9+	0.0		830903	809	0.1+	0.2-		830912	688	1.1-	0.9-

830912	809	0.1-	1.7+	830916	809	1.6-	0.4+	870926	293	1.2-	0.1+
830912	809	0.5-	1.9+	830916	809	1.9-	0.3+	870929	688	1.1+	0.0
830912	809	0.3-	1.7+	870921	688	1.0-	1.1-	870929	688	0.7+	0.9-
830915	809	0.7-	0.7+	870921	688	0.3+	1.3-	871026	688	0.2-	2.0+
830915	809	1.3-	0.5+	870926	293	1.5-	2.0+	871026	688	1.3+	0.3+

(3741)* 1981 EL19 = 1978 RO2

Discovered 1981 Mar. 2 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey. The identification was also found independently by K. Hurukawa (JAM 1901) and W. Landgraf (MPC 9961).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	80.22981		(1950.0)	P	Q
n	0.21227782	Peri.	140.88272	+0.79869516	+0.60171965
a	2.7831266	Node	182.13872	-0.57749548	+0.76443764
e	0.1519781	Incl.	6.79637	-0.16907104	+0.23144880
P	4.64	H	13.2	G 0.25	

Residuals in seconds of arc

780912	095	0.5+	1.5+	810316	413	(4.4+	3.4-)	860313	809	0.0	0.9+
781003	675	0.4-	0.5-	810329	413	0.6-	0.2+	860413	801	0.2-	0.9+
781004	675	0.2-	0.8-	810329	413	0.4+	0.9-	860511	801	1.4+	0.1-
810209	413	0.6-	0.2-	810407	413	1.8-	1.3+	870727	801	0.3+	1.1-
810213	413	0.7-	0.9+	810407	413	1.5+	0.7-	870824	801	1.4-	0.2+
810302	413	0.0	0.1+	810408	413	0.7-	1.0+	870827	552	1.5+	1.1-
810302	413	0.2-	1.1-	810408	413	0.3+	0.8-	870827	552	2.3+	0.3-
810303	413	0.6-	1.0+	810411	413	0.7-	0.3-	870829	809	0.8-	1.0+
810307	413	0.5-	0.7+	810411	413	1.8+	1.7-	870829	809	0.7-	0.5+
810307	413	0.6+	0.4-	810502	413	1.5+	1.7-	870829	809	0.4-	1.5+
810311	413	0.8+	0.7-	810503	413	0.9+	0.4-	870831	809	0.4-	1.0-
810316	413	1.5-	0.9+	860313	809	1.0-	0.4+	870831	809	0.1-	0.8-

(3742)* 1981 EQ27

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

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	302.12077		(1950.0)	P	Q
n	0.24132652	Peri.	8.23182	-0.98983048	-0.14161050
a	2.5550497	Node	163.60864	+0.12763190	-0.92598260
e	0.1296453	Incl.	2.74077	+0.06281493	-0.35000384
P	4.08	H	12.8	G 0.25	

Residuals in seconds of arc

810209	413	0.2+	0.9-	810315	413	0.7-	0.7-	810410	413	0.6-	0.2-
810212	413	0.7+	0.3-	810315	413	0.1+	0.2+	810501	413	0.6+	0.3+
810213	413	0.1-	0.8+	810405	413	0.6-	0.2+	850321	688	0.0	1.7+
810302	413	1.4-	0.5+	810405	413	2.9+	1.6-	850321	688	0.5+	1.0+
810302	413	0.4-	0.2-	810406	413	0.5-	0.3+	850521	801	1.1+	0.6+
810306	413	0.0	0.4-	810406	413	0.4+	0.8-	860710	801	0.5-	0.0
810306	413	0.3+	0.3-	810407	413	1.5-	0.4+	860805	801	0.4+	0.0
810311	413	0.3-	0.5-	810407	413	0.3+	0.7-	870925	801	0.4-	0.4-
810311	413	0.1-	0.4-	810410	413	0.4-	0.8+	871117	801	0.6+	0.1-

(3743)* 1983 EW = 1980 ML = 1981 WR2

Discovered 1983 Mar. 10 by E. Barr at the Anderson Mesa Station of the Lowell observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	191.66477		(1950.0)	P	Q
n	0.30139954	Peri.	71.97888	-0.50980416	+0.86019656
a	2.2031344	Node	167.34695	-0.80959482	-0.47471212
e	0.1483954	Incl.	3.32702	-0.29095696	-0.18630697
P	3.27	H	13.9	G 0.25	

Residuals in seconds of arc

800616	095	0.0	3.2+	830410	688	2.4-	0.6+	870821 809	0.1- 0.8+
811124	033	0.8+	0.9-	830506	688	0.0	2.0-	870821 801	0.9+ 1.1-
811124	033	0.3-	0.7-	830506	688	1.7+	2.6-	870826 809	0.8+ 1.4-
830310	688	1.5-	0.9-	841021	801	0.7+	1.3-	870826 809	1.0+ 0.9-
830310	688	0.4-	3.9-	841124	801	0.7-	1.8+	870826 809	1.3+ 0.7-
830317	688	0.9+	1.1-	860209	801	0.6-	1.7+	870828 809	0.4+ 1.3-
830317	688	0.9-	1.5-	870821	809	1.7-	0.0	870828 809	1.1+ 2.0-
830410	688	0.5+	1.0+	870821	809	1.8-	0.2+	870828 809	0.8+ 1.2-

(3744)* 1983 VE = 1966 VQ = 1979 YF8

Discovered 1983 Nov. 5 at the Osservatorio San Vittore.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	41.15918	(1950.0)		P	Q
n	0.23136717	Peri.	184.23113	+0.61623698	-0.78606822
a	2.6278560	Node	227.73554	+0.72444619	+0.58991531
e	0.2790713	Incl.	3.75483	+0.30891697	+0.18465287
P	4.26	H	12.7	G 0.25	

Residuals in seconds of arc

661111	095	0.8+	5.8-	831128	330	1.0-	0.0	870920 552	2.0- 2.4-
791223	095	1.7+	1.6-	831128	552	1.3+	0.2+	870920 552	2.7- 2.6-
831029	330	0.6+	0.9+	831128	552	1.1+	0.6-	870921 552	2.7- 0.6+
831105	552	0.8-	1.3+	831202	330	0.1+	0.0	870921 552	1.3- 0.9+
831105	552	2.6-	0.6+	831204	801	1.1+	2.3+	870922 552	0.6- 0.6+
831108	552	0.6+	0.5-	831206	552	0.5-	0.3-	870922 552	0.0 0.4+
831108	552	3.0-	2.7-	831206	552	0.5-	0.6+	870925 054	0.8- 0.5+
831109	552	0.3-	0.5+	831208	330	0.1+	1.6+	870925 054	0.2- 0.1+
831109	552	0.5+	2.3-	831227	552	0.9-	0.3+	870929 054	0.8+ 1.3+
831109	033	0.6+	0.6+	831227	552	1.6-	0.2-	870929 054	1.0+ 1.3-
831110	033	0.3+	0.4+	831228	552	1.6+	0.1-	870930 054	1.6+ 0.9+
831110	552	0.2-	0.4+	840307	801	0.5+	1.7+	870930 054	1.1+ 0.2-
831110	552	0.4+	0.1+	850425	801	1.2-	0.9+	870930 552	2.7+ 0.1+
831112	330	0.2+	0.5-	870825	801	0.3+	0.4+	870930 552	2.9+ 0.4+
831115	552	0.1-	1.9+	870830	552	0.5+	0.1+	871001 054	0.8+ 0.2+
831115	552	1.0-	1.6+	870830	552	0.9+	0.1-		

1980 EB = 1978 UG4 = 1984 GP

The key identification 1980 EB = 1978 UG4 is by S. J. Bus.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	35.89014	(1950.0)		P	Q
n	0.25706348	Peri.	211.30018	-0.83430154	+0.55130677
a	2.4496836	Node	2.15792	-0.49817660	-0.75285679
e	0.0939793	Incl.	2.03259	-0.23613769	-0.35953790
P	3.83	H	14.0	G 0.25	

Residuals in seconds of arc

781028	675	1.8-	1.1+	800313	801	2.2-	3.0-	840404 071	1.8- 0.6+
781029	675	0.2-	0.6+	800420	801	1.3+	2.1-	840404 071	2.0- 0.8+
800310	801	0.6-	1.6-	800516	801	4.0+	3.5+	840405 071	0.9+ 0.8+
800312	801	1.0+	3.2-	800517	801	5.6+	5.7+		

1981 EM8

The 1978 observations were identified by S. J. Bus.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	325.96443	(1950.0)		P	Q
n	0.17989451	Peri.	88.98841	+0.95776169	+0.28005777
a	3.1078375	Node	254.74561	-0.28333218	+0.88024810
e	0.1602916	Incl.	3.87924	-0.04914699	+0.38305472
P	5.48	H	14.0	G 0.25	

Residuals in seconds of arc

781028	675	0.0	0.4-	810301	413	1.9-	0.8-	810406	413	2.8-	1.2+
781029	675	0.1+	0.1+	810307	413	0.8-	1.2+	810406	413	0.8+	0.0
810209	413	0.7+	0.4+	810311	413	0.6+	0.7-	810412	413	1.8+	0.6-
810213	413	2.4+	0.0	810315	413	1.2-	0.6+	810430	413	0.7-	1.1-
810301	413	0.5-	0.5+	810315	413	1.3+	0.5-	810502	413	0.6+	0.4-

1981 EC10

The 1978 observations were identified by S. J. Bus.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	84.17363		(1950.0)	P	Q
n	0.18207232	Peri.	31.76118	-0.46451824	+0.88339930
a	3.0830055	Node	210.68791	-0.83572788	-0.46041427
e	0.1385426	Incl.	6.96350	-0.29288517	-0.08731767
P	5.41	H	15.0	G 0.25	

Residuals in seconds of arc

781028	675	0.8+	0.3+	810311	413	1.4+	0.9-	810410	413	1.1+	1.7-
781029	675	0.1+	0.7+	810315	413	0.2-	0.5-	810412	413	0.1+	0.4-
810202	413	0.5-	0.1+	810315	413	0.8+	0.1+	810412	413	1.2-	0.0
810214	413	2.3+	0.4-	810405	413	1.8-	0.4+	810502	413	0.4-	0.8+
810301	413	1.3+	0.3-	810406	413	0.6-	0.5-	810503	413	0.6-	0.4-
810307	413	0.1+	0.2+	810406	413	0.4+	0.5-				
810311	413	0.4+	0.1+	810410	413	0.6-	1.2+				

1981 EW45

The 1978 observations were identified by S. J. Bus.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	273.14605		(1950.0)	P	Q
n	0.16899806	Peri.	165.66370	+0.98811895	-0.15033493
a	3.2400305	Node	203.05592	+0.13174337	+0.93555055
e	0.1072786	Incl.	4.67850	+0.07914945	+0.31960064
P	5.83	H	13.5	G 0.25	

Residuals in seconds of arc

781028	675	0.6-	0.5-	810301	413	1.9-	0.3-	810312	413	0.5+	1.2+
781029	675	0.7+	0.6+	810308	413	1.7+	0.8-	810501	413	0.4-	0.2-

1986 WA

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	18.02716		(1950.0)	P	Q
n	0.53393912	Peri.	49.34756	+0.17068182	+0.89968102
a	1.5047865	Node	235.15405	-0.98507266	+0.14655586
e	0.7014043	Incl.	29.31332	-0.02235105	+0.41121217
P	1.85	H	16.0	G 0.25	

Residuals in seconds of arc

861127	675	(4.8-	0.4+)	861204	691	1.1+	0.5+	870129	691	0.1+	0.9-
861127	675	(5.3-	4.7+)	861204	801	1.7+	0.8-	870201	688	1.2+	0.3+
861130	675	(5.2+	0.2+)	861221	675	0.6+	0.0	870201	688	0.6+	0.3+
861130	675	(6.5+	2.5-)	861221	675	0.6+	0.4-	870228	691	1.7+	0.1-
861201	494	1.3-	0.1-	861231	688	0.3+	0.5-	870228	691	1.5+	0.1-
861202	801	0.4+	0.6-	861231	688	0.1+	0.5-	871119	675	0.0	0.0
861202	688	1.6-	0.8-	870125	691	2.5-	1.2+	871119	675	0.7+	0.7+
861203	675	1.3-	2.8+	870125	691	2.7-	1.0+	871119	675	0.4-	0.6-
861203	675	0.3+	0.8-	870125	691	2.8-	1.0+	871119	675	0.3-	0.1+
861204	691	1.3+	0.4-	870129	691	0.5+	1.0-				
861204	691	1.1+	0.1-	870129	691	0.4+	1.2-				

1987 MO
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	151.26100	(1950.0)	P	Q
n	0.37024555	Peri. 33.69818	+0.59746172	+0.72260286
a	1.9207735	Node 275.51798	-0.79099146	+0.45979596
e	0.1179462	Incl. 20.44471	-0.13180290	+0.51617127
P	2.66	H 14.0	G 0.25	

From 8 observations 1987 June 28-Nov. 19, mean residual 2".0.

1987 OC
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	101.80111	(1950.0)	P	Q
n	0.27490797	Peri. 47.74465	+0.69145148	+0.59871465
a	2.3424904	Node 271.25001	-0.72230639	+0.58300445
e	0.2086274	Incl. 23.85153	+0.01297416	+0.54922362
P	3.59	H 13.5	G 0.25	

From 7 observations 1987 July 27-Nov. 19, mean residual 1".3.

1987 SL
Epoch 1987 Oct. 12.0 ET = JDE 2447080.5

M	15.73547	(1950.0)	P	Q
n	0.19262163	Peri. 319.92932	+0.68180021	+0.73032261
a	2.9693816	Node 352.69365	-0.55704232	+0.48094933
e	0.6111793	Incl. 19.36002	-0.47418596	+0.48509445
P	5.12	H 15.5	G 0.25	

From 21 observations 1987 Sept. 19-Nov. 20.

1987 SS1
This object appears to be a Griqua-type minor planet librating about the 2:1 mean-motion resonance with Jupiter.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	51.24971	(1950.0)	P	Q
n	0.16345959	Peri. 159.51692	+0.97792864	-0.14723713
a	3.3128043	Node 210.16557	+0.12558049	+0.98125669
e	0.2804017	Incl. 17.15850	+0.16698835	+0.12432433
P	6.03	H 13.0	G 0.25	

From 8 observations 1987 Sept. 21-Nov. 25, mean residual 1".1.

1987 UA
Epoch 1987 Oct. 12.0 ET = JDE 2447080.5

M	2.04582	(1950.0)	P	Q
n	0.43328205	Peri. 173.62711	+0.97952354	-0.18235752
a	1.7296395	Node 197.59270	+0.16998992	+0.97617747
e	0.2965354	Incl. 16.39643	+0.10787518	+0.11757246
P	2.27	H 18.0	G 0.25	

From 9 observations 1987 Sept. 24-Nov. 16.

* * * * *

EPHEMERIDES.

Comet Jensen-Shoemaker (1987g1) Elements MPC 12710

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1987 12 31		00 26.53	-08 22.1	3.283	3.337	84.6	17.1	16.8
1988 01 10		00 32.53	-09 32.4					
1988 01 20		00 39.80	-10 26.4	3.591	3.333	67.0	15.8	17.0
1988 01 30		00 48.17	-11 07.8					
1988 02 09		00 57.47	-11 39.7	3.861	3.338	51.6	13.4	17.2

1988 02 19	01 07.58	-12 04.9					
1988 02 29	01 18.39	-12 25.9	4.073	3.355	38.5	10.6	17.3

Periodic Comet Mueller (1987a1) Elements MPC 12709

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1987 12 31	01 04.66	+13 30.3	2.373	2.748	101.8	20.5	18.3
1988 01 10	01 12.55	+14 18.5					
1988 01 20	01 22.11	+15 14.7	2.644	2.757	86.1	20.9	18.5
1988 01 30	01 33.12	+16 17.5					
1988 02 09	01 45.39	+17 25.1	2.915	2.772	71.9	19.8	18.8
1988 02 19	01 58.74	+18 36.0					
1988 02 29	02 13.03	+19 48.7	3.172	2.791	58.8	17.7	19.0
1988 03 10	02 28.15	+21 01.7					
1988 03 20	02 43.98	+22 13.7	3.405	2.815	46.6	14.9	19.2
1988 03 30	03 00.44	+23 23.5					
1988 04 09	03 17.43	+24 29.9	3.605	2.844	35.0	11.7	19.3

Comet Furuyama (1987f1) Elements MPC 12710

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1987 12 31	02 31.80	-07 44.7	1.258	1.873	112.9	28.9	9.7
1988 01 10	02 08.63	-12 54.6					
1988 01 20	01 53.45	-16 28.5	1.615	1.773	82.2	33.3	10.0
1988 01 30	01 44.22	-19 00.4					
1988 02 09	01 39.27	-20 55.0	1.966	1.707	60.3	30.1	10.3
1988 02 19	01 37.44	-22 28.6					
1988 02 29	01 37.93	-23 52.3	2.233	1.680	44.7	24.5	10.5
1988 03 10	01 40.16	-25 14.0					
1988 03 20	01 43.77	-26 39.9	2.383	1.695	36.8	20.6	10.7
1988 03 30	01 48.50	-28 15.6					
1988 04 09	01 54.16	-30 06.5	2.410	1.749	39.0	21.1	10.8
1988 04 19	02 00.67	-32 18.4					
1988 04 29	02 07.96	-34 58.0	2.328	1.839	49.4	24.6	11.0
1988 05 09	02 16.01	-38 12.6					
1988 05 19	02 24.91	-42 10.6	2.171	1.958	64.3	27.8	11.1
1988 05 29	02 34.75	-47 00.5					
1988 06 08	02 45.87	-52 49.1	1.998	2.099	81.3	28.5	11.2
1988 06 18	02 58.98	-59 39.0					
1988 06 28	03 15.82	-67 23.8	1.890	2.257	97.3	26.5	11.4
1988 07 08	03 42.5	-75 43.6					
1988 07 18	04 57.5	-83 56.4	1.931	2.426	106.6	23.7	11.8

1986 WA a,e,i = 1.50, 0.70, 29 Elements MPC 12715

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	08 31.84	-23 58.3	1.569	2.281	125.1	20.7	19.7
1988 01 10	08 16.63	-25 52.9					
1988 01 20	07 57.91	-27 03.5	1.397	2.185	132.5	19.4	19.3
1988 01 30	07 37.27	-27 17.7					
1988 02 09	07 16.94	-26 31.7	1.316	2.074	127.9	22.0	19.1
1988 02 19	06 59.12	-24 52.0					
1988 02 29	06 45.42	-22 33.0	1.314	1.944	114.3	27.7	19.1
1988 03 10	06 36.52	-19 51.9					
1988 03 20	06 32.41	-17 02.8	1.356	1.796	98.4	33.3	19.2
1988 03 30	06 32.76	-14 16.2					
1988 04 09	06 37.03	-11 38.2	1.398	1.627	83.6	37.7	19.1
1988 04 19	06 44.78	-09 11.2					
1988 04 29	06 55.64	-06 56.2	1.408	1.434	70.6	41.5	19.0
1988 05 09	07 09.33	-04 51.9					
1988 05 19	07 25.71	-02 55.5	1.360	1.214	59.4	45.8	18.6
1988 05 29	07 44.72	-01 02.0					

1988 06 08	08 06.34	+00 57.6	1.236	0.965	49.5	53.2	18.1
1988 06 18	08 30.50	+03 20.4					
1988 06 28	08 56.55	+06 40.6	1.018	0.692	39.8	70.0	17.5

1985 PA a,e,i = 1.41, 0.30, 56 Elements MPC 10531

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987 12 31	14 51.28	+08 36.7	1.276	1.213	-2.21	-17.5	18.0
1988 01 05	15 09.35	+10 47.6					
1988 01 10	15 27.37	+13 01.1	1.260	1.259	-2.17	-12.4	18.1
1988 01 15	15 45.27	+15 16.2					
1988 01 20	16 02.98	+17 32.0	1.257	1.305	-1.96	-6.9	18.1
1988 01 25	16 20.40	+19 47.4					
1988 01 30	16 37.47	+22 01.5	1.265	1.350	-1.63	-1.4	18.2
1988 02 04	16 54.13	+24 13.3					
1988 02 09	17 10.30	+26 22.4	1.283	1.395	-1.22	+3.8	18.2
1988 02 14	17 25.94	+28 28.1					
1988 02 19	17 40.97	+30 30.4	1.310	1.439	-0.78	+8.3	18.3
1988 02 24	17 55.35	+32 29.0					
1988 02 29	18 09.04	+34 23.6	1.340	1.481	-0.37	+12.1	18.4
1988 03 05	18 22.00	+36 14.5					
1988 03 10	18 34.21	+38 01.8	1.372	1.521	-0.01	+15.1	18.5
1988 03 15	18 45.64	+39 45.8					
1988 03 20	18 56.24	+41 26.6	1.403	1.560	0.29	+17.5	18.6
1988 03 25	19 05.99	+43 04.3					
1988 03 30	19 14.84	+44 39.1	1.429	1.596	0.52	+19.3	18.6
1988 04 04	19 22.78	+46 11.2					
1988 04 09	19 29.75	+47 40.6	1.449	1.630	0.69	+20.6	18.7
1988 04 14	19 35.70	+49 07.4					
1988 04 19	19 40.56	+50 31.5	1.462	1.661	0.79	+21.5	18.8
1988 04 24	19 44.25	+51 52.6					
1988 04 29	19 46.70	+53 10.3	1.466	1.690	0.84	+22.0	18.8
1988 05 04	19 47.83	+54 24.1					
1988 05 09	19 47.55	+55 33.5	1.462	1.717	0.81	+22.1	18.8
1988 05 14	19 45.75	+56 37.6					
1988 05 19	19 42.34	+57 35.1	1.450	1.741	0.68	+21.6	18.8
1988 05 24	19 37.29	+58 24.6					
1988 05 29	19 30.58	+59 04.6	1.432	1.763	0.43	+20.4	18.8
1988 06 03	19 22.29	+59 33.2					
1988 06 08	19 12.55	+59 48.6	1.408	1.782	0.03	+18.4	18.8

1983 VA a,e,i = 2.61, 0.69, 16 Elements MPC 9430

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1988 02 09	00 10.31	-04 42.2	1.345	0.898	-1.31	-21.0	18.5
1988 02 14	00 26.95	-01 32.5					
1988 02 19	00 44.32	+01 49.4	1.255	0.841	-1.43	-26.4	18.3
1988 02 24	01 02.52	+05 22.7					
1988 02 29	01 21.65	+09 06.2	1.165	0.809	-1.49	-32.1	18.2
1988 03 05	01 41.90	+12 58.0					
1988 03 10	02 03.47	+16 55.3	1.082	0.809	-1.50	-37.4	18.2
1988 03 15	02 26.63	+20 54.5					
1988 03 20	02 51.71	+24 50.4	1.015	0.838	-1.48	-41.2	18.2
1988 03 25	03 19.00	+28 36.7					
1988 03 30	03 48.73	+32 05.9	0.972	0.894	-1.54	-41.5	18.3
1988 04 04	04 20.97	+35 09.6					
1988 04 09	04 55.51	+37 39.3	0.959	0.970	-1.94	-35.9	18.4
1988 04 14	05 31.77	+39 28.2					
1988 04 19	06 08.80	+40 32.1	0.980	1.058	-2.87	-24.5	18.5
1988 04 24	06 45.47	+40 50.9					
1988 04 29	07 20.66	+40 28.2	1.034	1.154	-4.02	-11.0	18.7

1988 05 04	07 53.54	+39 30.6					
1988 05 09	08 23.64	+38 06.0	1.118	1.254	-4.71	+0.0	18.9
1988 05 14	08 50.86	+36 22.0					
1988 05 19	09 15.33	+34 25.6	1.228	1.355	-4.71	+6.8	19.2
1988 05 24	09 37.31	+32 21.9					
1988 05 29	09 57.08	+30 15.2	1.359	1.457	-4.26	+10.2	19.4
1988 06 03	10 14.97	+28 08.3					
1988 06 08	10 31.27	+26 03.0	1.506	1.558	-3.65	+11.4	19.7

1986 PA a,e,i = 1.06, 0.44, 11 Elements MPC 11997

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988 02 09	17 46.10	-19 15.2	0.546	0.783	52.3	94.2	19.3
1988 02 14	17 50.38	-17 24.1					
1988 02 19	17 56.03	-15 44.5	0.598	0.865	60.3	82.9	19.2
1988 02 24	18 02.42	-14 12.7					
1988 02 29	18 09.12	-12 46.3	0.633	0.947	67.3	74.7	19.3
1988 03 05	18 15.85	-11 23.3					
1988 03 10	18 22.37	-10 02.2	0.652	1.026	73.9	68.5	19.3
1988 03 15	18 28.51	-08 41.8					
1988 03 20	18 34.10	-07 21.4	0.655	1.100	80.7	63.3	19.3
1988 03 25	18 39.00	-06 00.6					
1988 03 30	18 43.11	-04 39.0	0.646	1.168	87.8	58.7	19.3
1988 04 04	18 46.31	-03 16.4					
1988 04 09	18 48.48	-01 52.8	0.626	1.231	95.4	54.1	19.2
1988 04 14	18 49.48	-00 28.2					
1988 04 19	18 49.16	+00 56.8	0.599	1.287	103.9	49.3	19.1
1988 04 24	18 47.38	+02 21.5					
1988 04 29	18 44.02	+03 44.9	0.570	1.338	113.1	43.8	18.9
1988 05 04	18 38.96	+05 05.5					
1988 05 09	18 32.12	+06 21.6	0.542	1.382	123.1	37.7	18.7
1988 05 14	18 23.44	+07 30.7					
1988 05 19	18 12.99	+08 29.8	0.521	1.420	133.3	31.2	18.5
1988 05 24	18 00.98	+09 15.6					
1988 05 29	17 47.75	+09 45.4	0.512	1.453	142.3	25.3	18.4
1988 06 03	17 33.77	+09 57.0					
1988 06 08	17 19.57	+09 49.7	0.521	1.480	147.1	21.9	18.4
1988 06 13	17 05.72	+09 23.6					
1988 06 18	16 52.76	+08 40.3	0.549	1.501	145.5	22.5	18.5
1988 06 23	16 41.12	+07 42.6					
1988 06 28	16 31.08	+06 33.8	0.594	1.516	139.0	26.1	18.8
1988 07 03	16 22.76	+05 17.0					
1988 07 08	16 16.19	+03 55.0	0.655	1.526	130.5	30.4	19.2
1988 07 13	16 11.31	+02 29.9					
1988 07 18	16 08.04	+01 03.6	0.726	1.530	121.9	34.3	19.5
1988 07 23	16 06.27	-00 22.7					
1988 07 28	16 05.85	-01 48.0	0.805	1.528	113.7	37.5	19.8
1988 08 02	16 06.65	-03 11.5					
1988 08 07	16 08.54	-04 33.0	0.887	1.521	106.1	39.8	20.1
1988 08 12	16 11.43	-05 52.3					
1988 08 17	16 15.23	-07 09.0	0.969	1.508	99.1	41.5	20.3
1988 08 22	16 19.87	-08 23.1					
1988 08 27	16 25.25	-09 34.5	1.049	1.490	92.7	42.6	20.4

4009 P-L a,e,i = 2.43, 0.19, 2 Elements MPC 12688

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	04 53.17	+25 21.0	1.669	2.600	156.5	8.7	17.8
1988 01 10	04 45.91	+24 59.4					
1988 01 20	04 41.67	+24 41.1	1.860	2.637	133.6	15.7	18.3
1988 01 30	04 40.60	+24 28.2					

1988 02 09	04 42.51	+24 21.0	2.120	2.671	113.5	19.8	18.7
1988 02 19	04 47.09	+24 19.1					
1988 02 29	04 53.99	+24 21.2	2.415	2.703	95.9	21.4	19.1
1988 03 10	05 02.85	+24 25.7					
1988 03 20	05 13.36	+24 31.1	2.718	2.733	80.3	21.1	19.4

1017 T-3 a,e,i = 2.78, 0.14, 8 Elements MPC 12700

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	05 34.64	+26 19.4	2.078	3.041	165.8	4.6	17.4
1988 01 10	05 26.12	+25 49.5					
1988 01 20	05 19.69	+25 19.4	2.222	3.060	142.2	11.4	17.8
1988 01 30	05 15.81	+24 51.6					
1988 02 09	05 14.59	+24 27.8	2.454	3.078	120.7	16.0	18.2
1988 02 19	05 15.92	+24 08.5					
1988 02 29	05 19.62	+23 53.4	2.737	3.094	101.7	18.3	18.5
1988 03 10	05 25.38	+23 41.5					
1988 03 20	05 32.93	+23 31.7	3.038	3.109	84.7	18.6	18.7

1978 VY14 a,e,i = 2.65, 0.03, 3 Elements MPC 12696

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	05 38.99	+25 33.2	1.625	2.592	166.8	5.0	17.0
1988 01 10	05 29.97	+25 36.5					
1988 01 20	05 23.30	+25 37.2	1.734	2.589	143.1	13.2	17.4
1988 01 30	05 19.63	+25 37.4					
1988 02 09	05 19.13	+25 38.5	1.926	2.586	121.8	18.9	17.8
1988 02 19	05 21.71	+25 41.2					
1988 02 29	05 27.11	+25 45.2	2.166	2.583	103.5	21.9	18.2
1988 03 10	05 34.97	+25 49.5					
1988 03 20	05 44.96	+25 53.0	2.425	2.581	87.5	22.7	18.4

1981 VP2 a,e,i = 3.16, 0.31, 3 Elements MPC 12707

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	05 57.07	+23 12.1	1.652	2.628	171.1	3.3	16.5
1988 01 10	05 48.68	+23 22.0					
1988 01 20	05 42.42	+23 30.3	1.808	2.689	147.4	11.4	17.0
1988 01 30	05 38.86	+23 37.9					
1988 02 09	05 38.15	+23 45.4	2.053	2.752	126.1	16.8	17.5
1988 02 19	05 40.19	+23 53.2					
1988 02 29	05 44.72	+24 00.8	2.355	2.815	107.4	19.6	18.0
1988 03 10	05 51.43	+24 07.5					
1988 03 20	05 59.96	+24 12.6	2.685	2.879	90.9	20.2	18.3
1988 03 30	06 10.03	+24 14.9					
1988 04 09	06 21.32	+24 13.9	3.019	2.942	76.0	19.3	18.6

1985 CR2 a,e,i = 2.26, 0.06, 1 Elements MPC 12708

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	05 55.64	+23 34.3	1.163	2.139	170.8	4.2	16.3
1988 01 10	05 45.33	+23 28.3					
1988 01 20	05 37.76	+23 21.4	1.247	2.136	146.3	14.8	16.9
1988 01 30	05 33.82	+23 16.0					
1988 02 09	05 33.76	+23 13.2	1.409	2.135	125.1	22.2	17.3
1988 02 19	05 37.38	+23 12.9					
1988 02 29	05 44.32	+23 14.1	1.619	2.135	107.3	26.3	17.7
1988 03 10	05 54.08	+23 14.9					
1988 03 20	06 06.20	+23 13.5	1.849	2.136	92.4	27.8	18.1
1988 03 30	06 20.28	+23 07.8					
1988 04 09	06 35.91	+22 56.2	2.083	2.139	79.4	27.4	18.3
1988 04 19	06 52.78	+22 37.4					
1988 04 29	07 10.62	+22 10.3	2.308	2.143	67.9	25.8	18.5

1981 EZ27 a,e,i = 2.44, 0.12, 1 Elements MPC 12706

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	08 24.52	+20 49.2	1.810	2.732	154.7	8.8	18.5
1988 01 10	08 15.47	+21 23.5					
1988 01 20	08 05.11	+21 58.2	1.749	2.733	178.4	0.6	18.0
1988 01 30	07 54.61	+22 29.0					
1988 02 09	07 45.20	+22 52.7	1.805	2.731	155.1	8.7	18.5
1988 02 19	07 37.86	+23 08.2					
1988 02 29	07 33.24	+23 15.6	1.962	2.728	132.2	15.6	18.9
1988 03 10	07 31.57	+23 15.6					
1988 03 20	07 32.77	+23 09.1	2.186	2.723	112.2	19.8	19.2
1988 03 30	07 36.65	+22 56.6					
1988 04 09	07 42.84	+22 38.3	2.442	2.716	94.8	21.6	19.5
1988 04 19	07 51.01	+22 14.3					
1988 04 29	08 00.84	+21 44.2	2.703	2.707	79.5	21.5	19.7
1988 05 09	08 12.02	+21 07.9					
1988 05 19	08 24.32	+20 25.4	2.948	2.696	65.8	20.0	19.9
1988 05 29	08 37.49	+19 36.3					
1988 06 08	08 51.37	+18 40.8	3.166	2.684	53.2	17.6	20.0

1981 EK14 a,e,i = 2.34, 0.13, 2 Elements MPC 12706

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	11 21.78	+01 01.7	1.863	2.352	107.4	23.5	19.2
1988 01 10	11 25.01	+00 24.5					
1988 01 20	11 25.46	+00 04.7	1.660	2.380	126.5	19.4	18.8
1988 01 30	11 22.97	+00 04.2					
1988 02 09	11 17.64	+00 23.5	1.511	2.408	148.6	12.3	18.5
1988 02 19	11 09.90	+01 01.2					
1988 02 29	11 00.61	+01 52.9	1.449	2.435	172.3	3.1	18.0
1988 03 10	10 50.92	+02 51.9					
1988 03 20	10 42.05	+03 50.5	1.497	2.460	161.1	7.6	18.3
1988 03 30	10 35.05	+04 41.5					
1988 04 09	10 30.57	+05 20.0	1.645	2.484	138.4	15.5	18.8
1988 04 19	10 28.85	+05 43.7					
1988 04 29	10 29.86	+05 51.7	1.865	2.507	118.6	20.7	19.2
1988 05 09	10 33.35	+05 44.8					
1988 05 19	10 38.99	+05 24.1	2.124	2.529	101.5	23.1	19.6
1988 05 29	10 46.47	+04 50.8					
1988 06 08	10 55.46	+04 06.7	2.397	2.548	86.7	23.4	19.9

6245 P-L a,e,i = 2.60, 0.09, 13 Elements MPC 12700

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988 01 20	12 45.61	-11 16.3	1.989	2.418	103.6	23.3	18.9
1988 01 30	12 51.92	-11 32.5					
1988 02 09	12 55.96	-11 28.7	1.741	2.408	121.5	20.5	18.5
1988 02 19	12 57.46	-11 02.1					
1988 02 29	12 56.28	-10 10.7	1.539	2.399	142.0	14.7	18.1
1988 03 10	12 52.58	-08 54.7					
1988 03 20	12 46.80	-07 17.1	1.415	2.392	165.3	6.1	17.6
1988 03 30	12 39.75	-05 25.0					
1988 04 09	12 32.52	-03 28.7	1.394	2.386	170.0	4.2	17.4
1988 04 19	12 26.17	-01 39.3					
1988 04 29	12 21.61	-00 06.5	1.477	2.383	146.6	13.5	17.9
1988 05 09	12 19.38	+01 04.2					
1988 05 19	12 19.70	+01 50.4	1.641	2.381	126.0	20.1	18.3
1988 05 29	12 22.54	+02 12.8					
1988 06 08	12 27.68	+02 13.8	1.855	2.381	108.5	23.8	18.7
1988 06 18	12 34.86	+01 56.1					
1988 06 28	12 43.83	+01 22.7	2.093	2.382	93.5	25.2	19.0

1986 UG a,e,i = 2.21, 0.15, 2 Elements MPC 12708

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	01 20	13 38.52	-08 00.5	2.207	2.461	92.9	23.5	18.7
1988	01 30	13 45.89	-08 29.5					
1988	02 09	13 51.10	-08 44.7	1.962	2.479	110.0	22.0	18.4
1988	02 19	13 53.83	-08 44.8					
1988	02 29	13 53.79	-08 29.1	1.744	2.495	129.6	17.8	18.0
1988	03 10	13 50.88	-07 57.6					
1988	03 20	13 45.17	-07 11.5	1.586	2.508	151.9	10.8	17.6
1988	03 30	13 37.15	-06 14.2					
1988	04 09	13 27.67	-05 11.3	1.520	2.519	175.0	2.0	17.1
1988	04 19	13 17.81	-04 09.6					
1988	04 29	13 08.74	-03 16.5	1.563	2.527	158.4	8.4	17.5
1988	05 09	13 01.43	-02 37.5					
1988	05 19	12 56.47	-02 15.6	1.705	2.533	136.1	16.1	17.9
1988	05 29	12 54.16	-02 11.8					
1988	06 08	12 54.45	-02 25.1	1.914	2.536	116.5	21.0	18.3
1988	06 18	12 57.17	-02 53.5					
1988	06 28	13 02.08	-03 35.0	2.158	2.536	99.7	23.3	18.7

1078 T-3 a,e,i = 2.61, 0.07, 14 Elements MPC 12701

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	02 09	14 04.18	-24 49.1	2.092	2.480	101.2	23.0	19.0
1988	02 19	14 10.09	-25 27.2					
1988	02 29	14 13.46	-25 49.2	1.862	2.492	118.6	20.4	18.7
1988	03 10	14 14.05	-25 52.3					
1988	03 20	14 11.78	-25 33.6	1.672	2.505	138.3	15.3	18.4
1988	03 30	14 06.85	-24 50.8					
1988	04 09	13 59.86	-23 43.8	1.555	2.518	159.7	7.9	18.0
1988	04 19	13 51.72	-22 15.4					
1988	04 29	13 43.58	-20 32.6	1.538	2.533	168.5	4.5	17.8
1988	05 09	13 36.53	-18 44.7					
1988	05 19	13 31.38	-17 01.6	1.626	2.547	149.0	11.8	18.2
1988	05 29	13 28.65	-15 31.3					
1988	06 08	13 28.47	-14 18.6	1.802	2.562	128.7	18.0	18.6
1988	06 18	13 30.76	-13 25.4					
1988	06 28	13 35.33	-12 51.3	2.035	2.577	110.8	21.6	19.0
1988	07 08	13 41.91	-12 34.5					
1988	07 18	13 50.22	-12 32.7	2.298	2.592	95.0	23.0	19.3

4203 T-3 a,e,i = 2.60, 0.10, 13 Elements MPC 12703

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	02 09	14 15.43	-11 44.3	1.893	2.328	103.3	24.4	18.7
1988	02 19	14 23.37	-11 23.0					
1988	02 29	14 28.90	-10 41.8	1.663	2.329	120.7	21.5	18.4
1988	03 10	14 31.74	-09 40.2					
1988	03 20	14 31.71	-08 18.7	1.478	2.334	140.4	15.8	17.9
1988	03 30	14 28.85	-06 40.6					
1988	04 09	14 23.59	-04 51.8	1.369	2.340	161.4	7.8	17.5
1988	04 19	14 16.65	-03 01.0					
1988	04 29	14 09.08	-01 18.7	1.358	2.349	166.5	5.7	17.4
1988	05 09	14 02.03	+00 05.9					
1988	05 19	13 56.45	+01 06.5	1.446	2.359	146.9	13.6	17.9
1988	05 29	13 53.03	+01 40.5					
1988	06 08	13 52.09	+01 49.2	1.614	2.372	127.4	19.9	18.3
1988	06 18	13 53.64	+01 35.4					
1988	06 28	13 57.58	+01 02.9	1.832	2.386	110.5	23.5	18.7
1988	07 08	14 03.66	+00 15.6					
1988	07 18	14 11.63	-00 42.9	2.076	2.402	95.8	24.9	19.0

1976 SN3 a,e,i = 3.96, 0.22, 3 Elements MPC 12711

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988 02 09	14 45.89	-12 45.4	4.231	4.443	96.0	12.8	18.5
1988 02 19	14 48.20	-12 46.4					
1988 02 29	14 49.03	-12 40.5	3.956	4.472	115.4	11.5	18.4
1988 03 10	14 48.34	-12 27.7					
1988 03 20	14 46.13	-12 08.4	3.728	4.499	136.1	8.8	18.1
1988 03 30	14 42.54	-11 43.6					
1988 04 09	14 37.80	-11 14.4	3.581	4.525	157.9	4.8	17.9
1988 04 19	14 32.23	-10 42.5					
1988 04 29	14 26.25	-10 10.2	3.545	4.550	175.8	0.9	17.7
1988 05 09	14 20.32	-09 39.7					
1988 05 19	14 14.85	-09 13.2	3.629	4.575	156.6	5.0	18.0
1988 05 29	14 10.23	-08 52.5					
1988 06 08	14 06.72	-08 38.8	3.819	4.598	135.5	8.9	18.2
1988 06 18	14 04.48	-08 32.8					
1988 06 28	14 03.60	-08 34.8	4.087	4.620	115.7	11.4	18.5
1988 07 08	14 04.07	-08 44.2					
1988 07 18	14 05.84	-09 00.6	4.400	4.641	97.4	12.5	18.7

1980 EB a,e,i = 2.45, 0.09, 2 Elements MPC 12714

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988 02 09	14 32.21	-15 31.2	1.863	2.230	98.3	26.0	18.1
1988 02 19	14 41.44	-16 25.2					
1988 02 29	14 48.37	-17 08.6	1.625	2.224	114.3	24.0	17.8
1988 03 10	14 52.61	-17 40.6					
1988 03 20	14 53.79	-18 00.4	1.421	2.221	132.7	19.2	17.4
1988 03 30	14 51.71	-18 06.8					
1988 04 09	14 46.53	-17 59.6	1.275	2.219	154.1	11.4	16.9
1988 04 19	14 38.77	-17 39.1					
1988 04 29	14 29.50	-17 08.0	1.214	2.221	176.9	1.4	16.3
1988 05 09	14 20.09	-16 31.4					
1988 05 19	14 11.88	-15 55.6	1.252	2.224	158.3	9.7	16.8
1988 05 29	14 05.96	-15 27.1					
1988 06 08	14 02.93	-15 10.6	1.377	2.229	136.9	18.1	17.3
1988 06 18	14 02.97	-15 08.0					
1988 06 28	14 05.99	-15 19.9	1.565	2.237	118.6	23.5	17.7
1988 07 08	14 11.70	-15 44.7					
1988 07 18	14 19.79	-16 20.6	1.788	2.247	103.0	26.2	18.1

1985 RS1 a,e,i = 2.40, 0.22, 3 Elements MPC 11151

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988 02 09	14 48.43	-16 03.1	2.443	2.704	94.4	21.3	19.5
1988 02 19	14 55.29	-16 39.6					
1988 02 29	15 00.15	-17 07.7	2.140	2.668	111.6	20.2	19.2
1988 03 10	15 02.69	-17 26.8					
1988 03 20	15 02.60	-17 36.0	1.868	2.630	130.9	16.6	18.7
1988 03 30	14 59.69	-17 34.6					
1988 04 09	14 54.01	-17 22.1	1.659	2.589	152.6	10.2	18.2
1988 04 19	14 45.92	-16 58.6					
1988 04 29	14 36.18	-16 26.1	1.541	2.547	176.4	1.4	17.6
1988 05 09	14 25.88	-15 48.2					
1988 05 19	14 16.20	-15 09.8	1.531	2.503	159.1	8.3	17.9
1988 05 29	14 08.24	-14 36.9					
1988 06 08	14 02.74	-14 14.2	1.618	2.457	136.6	16.5	18.3
1988 06 18	14 00.09	-14 04.4					
1988 06 28	14 00.37	-14 08.9	1.772	2.409	116.9	22.1	18.6
1988 07 08	14 03.45	-14 27.2					
1988 07 18	14 09.09	-14 58.0	1.960	2.361	100.1	25.1	18.8

6573 P-L a,e,i = 2.60, 0.08, 4 Elements MPC 12700

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988 02 09	14 44.03	-11 40.1	2.120	2.440	96.7	23.7	18.0
1988 02 19	14 52.12	-11 57.4					
1988 02 29	14 57.96	-12 02.4	1.883	2.452	113.4	21.8	17.7
1988 03 10	15 01.24	-11 55.3					
1988 03 20	15 01.73	-11 36.4	1.680	2.465	132.5	17.3	17.4
1988 03 30	14 59.33	-11 06.6					
1988 04 09	14 54.24	-10 28.1	1.539	2.479	154.0	10.2	17.0
1988 04 19	14 46.96	-09 44.4					
1988 04 29	14 38.39	-09 00.3	1.490	2.493	173.6	2.6	16.6
1988 05 09	14 29.62	-08 21.3					
1988 05 19	14 21.72	-07 52.2	1.545	2.509	157.3	8.9	17.0
1988 05 29	14 15.60	-07 37.0					
1988 06 08	14 11.80	-07 36.9	1.692	2.525	136.2	16.2	17.4
1988 06 18	14 10.55	-07 51.8					
1988 06 28	14 11.85	-08 20.6	1.906	2.541	117.5	20.8	17.8
1988 07 08	14 15.51	-09 00.8					
1988 07 18	14 21.31	-09 50.6	2.157	2.557	101.2	22.9	18.2

1979 SU9 a,e,i = 3.12, 0.17, 0 Elements MPC 12010

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988 02 09	14 55.92	-16 55.8	3.454	3.632	92.4	15.7	18.2
1988 02 19	14 59.98	-17 13.9					
1988 02 29	15 02.31	-17 24.5	3.159	3.634	111.0	14.7	18.0
1988 03 10	15 02.76	-17 27.4					
1988 03 20	15 01.26	-17 22.1	2.900	3.634	131.2	11.9	17.7
1988 03 30	14 57.82	-17 08.7					
1988 04 09	14 52.66	-16 47.4	2.711	3.633	153.1	7.2	17.4
1988 04 19	14 46.12	-16 19.3					
1988 04 29	14 38.74	-15 46.2	2.625	3.630	176.1	1.1	17.0
1988 05 09	14 31.17	-15 10.9					
1988 05 19	14 24.04	-14 36.5	2.655	3.626	160.8	5.3	17.3
1988 05 29	14 17.96	-14 06.1					
1988 06 08	14 13.33	-13 42.4	2.793	3.620	138.8	10.6	17.6
1988 06 18	14 10.43	-13 27.1					
1988 06 28	14 09.35	-13 21.1	3.012	3.613	118.7	14.3	17.9
1988 07 08	14 10.09	-13 24.6					
1988 07 18	14 12.56	-13 36.9	3.278	3.604	100.5	16.1	18.1

1986 WL1 a,e,i = 2.29, 0.06, 6 Elements MPC 11640

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988 02 09	14 54.02	-14 02.5	2.069	2.348	93.7	24.8	17.9
1988 02 19	15 02.42	-14 50.4					
1988 02 29	15 08.55	-15 29.7	1.828	2.359	110.1	23.2	17.6
1988 03 10	15 12.04	-16 00.3					
1988 03 20	15 12.54	-16 22.0	1.613	2.369	128.9	19.1	17.3
1988 03 30	15 09.84	-16 34.5					
1988 04 09	15 04.01	-16 37.5	1.454	2.378	150.6	12.0	16.8
1988 04 19	14 55.48	-16 31.4					
1988 04 29	14 45.14	-16 17.7	1.382	2.386	174.5	2.3	16.3
1988 05 09	14 34.28	-15 59.5					
1988 05 19	14 24.20	-15 41.3	1.414	2.394	161.1	7.9	16.6
1988 05 29	14 16.08	-15 28.1					
1988 06 08	14 10.63	-15 23.6	1.542	2.400	138.8	16.2	17.1
1988 06 18	14 08.16	-15 30.0					
1988 06 28	14 08.66	-15 48.3	1.738	2.406	119.4	21.6	17.5
1988 07 08	14 11.92	-16 17.6					
1988 07 18	14 17.65	-16 56.6	1.973	2.410	102.7	24.3	17.9

(3697) 1984 EV a,e,i = 2.37, 0.04, 7 Elements MPC 12314

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	02 09	14 47.52	-20 01.1	1.986	2.270	93.4	25.7	18.0
1988	02 19	14 56.98	-21 19.6					
1988	02 29	15 04.22	-22 31.1	1.749	2.274	109.1	24.3	17.7
1988	03 10	15 08.83	-23 34.8					
1988	03 20	15 10.37	-24 29.5	1.537	2.279	126.9	20.4	17.3
1988	03 30	15 08.56	-25 13.0					
1988	04 09	15 03.40	-25 42.7	1.377	2.285	147.3	13.7	16.9
1988	04 19	14 55.26	-25 55.5					
1988	04 29	14 45.09	-25 49.9	1.298	2.292	167.4	5.5	16.5
1988	05 09	14 34.27	-25 27.4					
1988	05 19	14 24.26	-24 52.7	1.317	2.299	161.3	8.1	16.6
1988	05 29	14 16.38	-24 13.2					
1988	06 08	14 11.42	-23 36.5	1.430	2.307	140.7	16.2	17.1
1988	06 18	14 09.68	-23 08.0					
1988	06 28	14 11.15	-22 51.2	1.612	2.315	121.9	21.9	17.5
1988	07 08	14 15.55	-22 47.0					
1988	07 18	14 22.55	-22 54.6	1.835	2.324	105.6	24.9	17.9

(3660) 1978 QX2 a,e,i = 3.22, 0.09, 8 Elements MPC 12129

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	02 09	14 52.68	-21 18.3	2.743	2.946	91.9	19.6	16.9
1988	02 19	14 59.33	-22 17.5					
1988	02 29	15 04.05	-23 10.6	2.469	2.943	108.9	18.6	16.6
1988	03 10	15 06.59	-23 56.8					
1988	03 20	15 06.71	-24 35.1	2.225	2.941	127.7	15.5	16.3
1988	03 30	15 04.33	-25 03.9					
1988	04 09	14 59.57	-25 21.6	2.042	2.941	148.2	10.3	16.0
1988	04 19	14 52.79	-25 26.9					
1988	04 29	14 44.66	-25 19.6	1.949	2.942	167.9	4.1	15.6
1988	05 09	14 36.08	-25 00.9					
1988	05 19	14 28.00	-24 34.1	1.964	2.944	162.2	6.0	15.7
1988	05 29	14 21.28	-24 03.8					
1988	06 08	14 16.54	-23 34.8	2.081	2.947	141.9	12.3	16.1
1988	06 18	14 14.11	-23 10.9					
1988	06 28	14 14.08	-22 55.2	2.277	2.951	122.6	16.9	16.4
1988	07 08	14 16.39	-22 48.8					
1988	07 18	14 20.85	-22 51.9	2.522	2.957	105.2	19.4	16.7

1984 CD1 a,e,i = 2.39, 0.16, 3 Elements MPC 8684

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	02 09	14 37.37	-13 00.8	1.666	2.049	97.9	28.5	17.3
1988	02 19	14 49.21	-13 58.6					
1988	02 29	14 58.95	-14 46.0	1.433	2.030	112.5	26.8	16.9
1988	03 10	15 06.16	-15 23.1					
1988	03 20	15 10.34	-15 49.4	1.230	2.016	129.5	22.4	16.4
1988	03 30	15 11.11	-16 05.0					
1988	04 09	15 08.37	-16 10.2	1.077	2.007	149.6	14.6	15.9
1988	04 19	15 02.34	-16 05.3					
1988	04 29	14 53.90	-15 52.7	0.999	2.002	172.6	3.7	15.3
1988	05 09	14 44.43	-15 36.0					
1988	05 19	14 35.52	-15 20.4	1.010	2.001	163.6	8.2	15.5
1988	05 29	14 28.64	-15 11.8					
1988	06 08	14 24.73	-15 14.2	1.107	2.006	141.9	18.2	16.1
1988	06 18	14 24.19	-15 29.8					
1988	06 28	14 27.04	-15 58.7	1.266	2.015	123.6	24.8	16.5
1988	07 08	14 32.97	-16 39.2					
1988	07 18	14 41.66	-17 29.0	1.466	2.029	108.3	28.4	17.0

(3604) 5550 P-L a,e,i = 2.60, 0.12, 12 Elements MPC 11847

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	02 09	14 59.19	-17 41.1	2.083	2.327	91.5	25.1	17.3
1988	02 19	15 08.46	-19 06.4					
1988	02 29	15 15.57	-20 27.0	1.848	2.340	107.1	23.9	17.1
1988	03 10	15 20.12	-21 42.9					
1988	03 20	15 21.71	-22 53.5	1.637	2.354	125.0	20.3	16.7
1988	03 30	15 20.04	-23 57.4					
1988	04 09	15 15.07	-24 52.2	1.478	2.371	145.3	13.9	16.3
1988	04 19	15 07.09	-25 34.8					
1988	04 29	14 56.91	-26 02.7	1.400	2.390	165.9	5.9	15.9
1988	05 09	14 45.79	-26 15.0					
1988	05 19	14 35.14	-26 13.8	1.423	2.410	163.3	6.9	16.0
1988	05 29	14 26.30	-26 04.3					
1988	06 08	14 20.15	-25 52.5	1.543	2.431	142.9	14.6	16.5
1988	06 18	14 17.10	-25 43.6					
1988	06 28	14 17.21	-25 41.6	1.737	2.453	123.9	20.1	16.9
1988	07 08	14 20.27	-25 48.0					
1988	07 18	14 25.96	-26 03.3	1.977	2.477	107.2	23.1	17.3

4059 T-3 a,e,i = 2.55, 0.07, 4 Elements MPC 12702

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	02 09	14 56.46	-13 42.2	2.157	2.422	93.2	24.0	17.6
1988	02 19	15 05.76	-14 22.3					
1988	02 29	15 13.05	-14 53.2	1.897	2.411	109.2	22.8	17.3
1988	03 10	15 17.98	-15 15.3					
1988	03 20	15 20.20	-15 28.3	1.664	2.402	127.3	19.3	16.9
1988	03 30	15 19.45	-15 32.4					
1988	04 09	15 15.71	-15 28.0	1.484	2.393	148.1	12.8	16.4
1988	04 19	15 09.23	-15 15.9					
1988	04 29	15 00.69	-14 58.1	1.386	2.386	171.1	3.7	15.9
1988	05 09	14 51.17	-14 37.8					
1988	05 19	14 41.89	-14 19.0	1.389	2.380	164.7	6.4	16.0
1988	05 29	14 34.07	-14 06.3					
1988	06 08	14 28.55	-14 03.2	1.488	2.375	142.5	15.1	16.5
1988	06 18	14 25.81	-14 11.7					
1988	06 28	14 25.98	-14 32.4	1.661	2.372	122.9	21.1	16.9
1988	07 08	14 28.95	-15 04.4					
1988	07 18	14 34.47	-15 46.2	1.877	2.370	106.2	24.3	17.2

1973 SZ3 a,e,i = 2.17, 0.13, 2 Elements MPC 11517

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	02 09	15 07.72	-17 15.5	2.231	2.433	89.6	23.9	19.2
1988	02 19	15 16.52	-17 56.4					
1988	02 29	15 23.19	-18 28.5	1.978	2.443	105.9	22.9	18.9
1988	03 10	15 27.40	-18 51.8					
1988	03 20	15 28.76	-19 05.6	1.745	2.451	124.5	19.6	18.5
1988	03 30	15 27.03	-19 09.4					
1988	04 09	15 22.17	-19 02.6	1.562	2.456	145.7	13.3	18.1
1988	04 19	15 14.43	-18 44.7					
1988	04 29	15 04.53	-18 16.9	1.461	2.458	169.5	4.3	17.6
1988	05 09	14 53.59	-17 41.7					
1988	05 19	14 42.90	-17 03.9	1.465	2.458	165.8	5.8	17.7
1988	05 29	14 33.71	-16 29.1					
1988	06 08	14 26.89	-16 02.3	1.570	2.455	142.7	14.5	18.1
1988	06 18	14 22.92	-15 47.0					
1988	06 28	14 21.94	-15 44.8	1.751	2.450	122.4	20.5	18.6
1988	07 08	14 23.79	-15 55.6					
1988	07 18	14 28.23	-16 18.1	1.975	2.443	104.9	23.7	18.9

1962 RN a,e,i = 2.45, 0.14, 5 Elements MPC 12204

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	02 09	14 48.06	-15 47.6	1.994	2.294	94.6	25.4	17.3
1988	02 19	14 58.90	-16 13.7					
1988	02 29	15 07.84	-16 26.8	1.727	2.265	110.0	24.3	17.0
1988	03 10	15 14.51	-16 26.2					
1988	03 20	15 18.49	-16 10.9	1.487	2.238	127.5	20.7	16.5
1988	03 30	15 19.48	-15 40.7					
1988	04 09	15 17.36	-14 56.1	1.300	2.213	147.8	14.0	16.0
1988	04 19	15 12.31	-13 58.8					
1988	04 29	15 04.96	-12 52.9	1.191	2.190	169.9	4.6	15.4
1988	05 09	14 56.39	-11 44.7					
1988	05 19	14 47.91	-10 42.0	1.178	2.169	164.2	7.3	15.5
1988	05 29	14 40.82	-09 52.3					
1988	06 08	14 36.10	-09 20.6	1.256	2.151	142.4	16.7	15.9
1988	06 18	14 34.27	-09 09.0					
1988	06 28	14 35.51	-09 17.1	1.402	2.136	123.3	23.4	16.4
1988	07 08	14 39.69	-09 42.3					
1988	07 18	14 46.56	-10 21.7	1.588	2.124	107.3	27.2	16.7

1978 SN4 a,e,i = 3.20, 0.18, 2 Elements MPC 11051

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	02 09	15 11.78	-17 02.7	3.326	3.448	88.7	16.6	18.1
1988	02 19	15 17.56	-17 25.5					
1988	02 29	15 21.71	-17 41.7	3.004	3.419	106.5	16.1	17.8
1988	03 10	15 24.03	-17 50.9					
1988	03 20	15 24.35	-17 52.9	2.709	3.389	125.8	13.8	17.5
1988	03 30	15 22.56	-17 47.5					
1988	04 09	15 18.73	-17 34.9	2.474	3.358	146.9	9.4	17.1
1988	04 19	15 13.07	-17 15.3					
1988	04 29	15 06.02	-16 50.0	2.331	3.326	169.6	3.1	16.7
1988	05 09	14 58.23	-16 21.1					
1988	05 19	14 50.41	-15 51.3	2.300	3.294	167.2	3.9	16.7
1988	05 29	14 43.32	-15 24.0					
1988	06 08	14 37.57	-15 02.0	2.378	3.261	144.8	10.3	17.0
1988	06 18	14 33.59	-14 47.8					
1988	06 28	14 31.63	-14 42.9	2.544	3.227	124.3	15.1	17.3
1988	07 08	14 31.76	-14 47.7					
1988	07 18	14 33.93	-15 02.0	2.763	3.193	105.8	17.8	17.5

(3605) 1932 WB a,e,i = 2.25, 0.08, 4 Elements MPC 11848

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 23.05	-23 30.5	1.747	2.229	105.6	25.3	17.0
1988	03 11	15 29.10	-24 07.1					
1988	03 21	15 32.11	-24 32.3	1.541	2.247	123.2	21.8	16.6
1988	03 31	15 31.75	-24 44.6					
1988	04 10	15 27.95	-24 42.1	1.380	2.266	143.6	15.2	16.2
1988	04 20	15 20.98	-24 23.0					
1988	04 30	15 11.64	-23 47.1	1.293	2.284	166.2	6.1	15.8
1988	05 10	15 01.17	-22 56.9					
1988	05 20	14 51.01	-21 57.8	1.304	2.301	167.1	5.7	15.8
1988	05 30	14 42.54	-20 57.8					
1988	06 09	14 36.65	-20 04.3	1.412	2.318	145.0	14.6	16.3
1988	06 19	14 33.80	-19 22.6					
1988	06 29	14 34.05	-18 55.5	1.596	2.334	125.1	20.9	16.8
1988	07 09	14 37.19	-18 43.2					
1988	07 19	14 42.91	-18 44.5	1.827	2.349	108.0	24.3	17.2
1988	07 29	14 50.91	-18 57.4					
1988	08 08	15 00.85	-19 19.3	2.080	2.363	93.2	25.4	17.5

1982 SF a,e,i = 2.27, 0.18, 5 Elements MPC 12011

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 28.86	-12 39.7	2.193	2.657	107.0	20.9	18.2
1988	03 11	15 32.56	-12 23.7					
1988	03 21	15 33.71	-11 57.1	1.939	2.648	125.7	17.8	17.9
1988	03 31	15 32.11	-11 20.7					
1988	04 10	15 27.76	-10 35.8	1.740	2.635	146.7	12.1	17.4
1988	04 20	15 20.87	-09 45.0					
1988	04 30	15 12.06	-08 52.5	1.627	2.620	167.7	4.7	17.0
1988	05 10	15 02.22	-08 03.1					
1988	05 20	14 52.44	-07 22.0	1.620	2.602	162.0	6.9	17.1
1988	05 30	14 43.79	-06 53.8					
1988	06 09	14 37.09	-06 41.1	1.716	2.581	140.4	14.5	17.4
1988	06 19	14 32.84	-06 44.7					
1988	06 29	14 31.25	-07 03.7	1.886	2.557	120.5	20.0	17.8
1988	07 09	14 32.28	-07 36.3					
1988	07 19	14 35.76	-08 20.3	2.099	2.531	103.1	23.0	18.1
1988	07 29	14 41.49	-09 13.3					
1988	08 08	14 49.21	-10 13.0	2.326	2.503	87.9	23.9	18.3

1981 EF14 a,e,i = 2.25, 0.11, 3 Elements MPC 10539

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 13.74	-21 07.0	1.512	2.052	108.4	27.3	19.5
1988	03 11	15 22.10	-21 45.7					
1988	03 21	15 27.57	-22 11.9	1.296	2.037	124.9	23.6	19.1
1988	03 31	15 29.71	-22 24.5					
1988	04 10	15 28.26	-22 22.0	1.124	2.024	144.4	16.8	18.6
1988	04 20	15 23.29	-22 03.0					
1988	04 30	15 15.46	-21 27.6	1.020	2.014	166.8	6.6	18.0
1988	05 10	15 05.99	-20 38.7					
1988	05 20	14 56.48	-19 42.1	1.006	2.007	168.4	5.8	17.9
1988	05 30	14 48.57	-18 46.7					
1988	06 09	14 43.41	-18 00.3	1.080	2.004	146.1	16.4	18.5
1988	06 19	14 41.60	-17 28.6					
1988	06 29	14 43.29	-17 13.9	1.222	2.003	126.8	24.0	18.9
1988	07 09	14 48.25	-17 15.6					
1988	07 19	14 56.13	-17 31.5	1.407	2.006	110.7	28.3	19.4
1988	07 29	15 06.58	-17 58.8					
1988	08 08	15 19.22	-18 34.1	1.616	2.012	97.1	30.0	19.7

1981 JS1 a,e,i = 2.31, 0.12, 5 Elements MPC 11747

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 23.23	-25 15.9	1.585	2.077	105.1	27.4	17.5
1988	03 11	15 31.05	-26 23.2					
1988	03 21	15 35.75	-27 20.9	1.393	2.095	121.6	23.9	17.1
1988	03 31	15 36.91	-28 07.0					
1988	04 10	15 34.31	-28 38.9	1.241	2.114	140.8	17.4	16.7
1988	04 20	15 28.10	-28 52.9					
1988	04 30	15 19.03	-28 46.0	1.157	2.136	161.5	8.6	16.3
1988	05 10	15 08.43	-28 18.1					
1988	05 20	14 57.93	-27 32.8	1.163	2.160	166.6	6.2	16.2
1988	05 30	14 49.14	-26 37.9					
1988	06 09	14 43.14	-25 42.5	1.262	2.185	147.2	14.6	16.7
1988	06 19	14 40.47	-24 54.0					
1988	06 29	14 41.20	-24 17.4	1.435	2.211	128.0	21.2	17.2
1988	07 09	14 45.05	-23 54.2					
1988	07 19	14 51.69	-23 44.2	1.658	2.238	111.3	25.0	17.7
1988	07 29	15 00.72	-23 45.7					
1988	08 08	15 11.78	-23 56.2	1.908	2.265	96.8	26.4	18.0

(3541) 1984 ML a,e,i = 2.46, 0.15, 4 Elements MPC 11510

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 18.40	-13 05.9	1.566	2.112	109.3	26.3	16.1
1988	03 11	15 26.07	-13 21.6					
1988	03 21	15 30.88	-13 26.8	1.356	2.104	126.2	22.5	15.7
1988	03 31	15 32.47	-13 22.5					
1988	04 10	15 30.69	-13 10.0	1.194	2.100	145.8	15.6	15.2
1988	04 20	15 25.67	-12 51.4					
1988	04 30	15 18.05	-12 30.2	1.104	2.099	167.6	5.9	14.7
1988	05 10	15 08.98	-12 10.4					
1988	05 20	14 59.85	-11 56.9	1.105	2.102	166.4	6.5	14.8
1988	05 30	14 52.11	-11 54.0					
1988	06 09	14 46.81	-12 04.4	1.196	2.109	144.9	16.0	15.3
1988	06 19	14 44.52	-12 28.8					
1988	06 29	14 45.42	-13 06.5	1.357	2.120	126.0	22.8	15.8
1988	07 09	14 49.34	-13 55.3					
1988	07 19	14 56.03	-14 52.9	1.563	2.135	109.9	26.6	16.2
1988	07 29	15 05.15	-15 56.5					
1988	08 08	15 16.38	-17 03.5	1.794	2.152	96.1	27.9	16.5

1977 KL1 a,e,i = 3.15, 0.05, 12 Elements MPC 12324

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 34.58	-13 19.7	2.587	3.007	105.4	18.5	16.9
1988	03 11	15 37.71	-13 39.2					
1988	03 21	15 38.58	-13 53.3	2.338	3.014	124.2	15.9	16.6
1988	03 31	15 37.06	-14 02.8					
1988	04 10	15 33.19	-14 08.3	2.144	3.021	145.1	10.9	16.3
1988	04 20	15 27.19	-14 10.5					
1988	04 30	15 19.55	-14 10.8	2.037	3.028	167.5	4.1	15.9
1988	05 10	15 11.00	-14 10.7					
1988	05 20	15 02.39	-14 12.1	2.039	3.036	168.2	3.9	15.9
1988	05 30	14 54.57	-14 17.2					
1988	06 09	14 48.25	-14 27.8	2.149	3.045	146.1	10.7	16.3
1988	06 19	14 43.89	-14 45.0					
1988	06 29	14 41.73	-15 09.7	2.346	3.054	125.8	15.7	16.6
1988	07 09	14 41.81	-15 41.6					
1988	07 19	14 44.03	-16 20.3	2.599	3.063	107.6	18.4	16.9
1988	07 29	14 48.26	-17 04.8					
1988	08 08	14 54.28	-17 54.0	2.878	3.073	91.3	19.3	17.2

(3611) 1981 YY1 a,e,i = 2.79, 0.21, 8 Elements MPC 11850

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 37.66	-09 34.5	2.872	3.279	105.5	16.9	18.4
1988	03 11	15 39.82	-09 10.6					
1988	03 21	15 39.88	-08 39.1	2.629	3.299	124.6	14.4	18.1
1988	03 31	15 37.78	-08 01.6					
1988	04 10	15 33.60	-07 19.9	2.444	3.317	145.2	9.9	17.8
1988	04 20	15 27.60	-06 36.8					
1988	04 30	15 20.25	-05 55.4	2.351	3.333	164.5	4.6	17.5
1988	05 10	15 12.20	-05 19.3					
1988	05 20	15 04.15	-04 51.7	2.370	3.347	161.9	5.4	17.6
1988	05 30	14 56.81	-04 35.0					
1988	06 09	14 50.76	-04 30.4	2.497	3.358	142.3	10.7	17.9
1988	06 19	14 46.38	-04 38.1					
1988	06 29	14 43.89	-04 57.3	2.710	3.368	122.6	14.7	18.2
1988	07 09	14 43.34	-05 26.5					
1988	07 19	14 44.67	-06 04.3	2.975	3.375	104.4	17.0	18.5
1988	07 29	14 47.76	-06 48.8					
1988	08 08	14 52.45	-07 38.5	3.262	3.380	87.9	17.4	18.7

1978 TU7 a,e,i = 2.38, 0.23, 9 Elements MPC 7608

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 42.14	-11 59.0	2.469	2.873	103.9	19.6	19.1
1988	03 11	15 45.58	-11 58.1					
1988	03 21	15 46.68	-11 50.0	2.192	2.855	122.6	17.1	18.8
1988	03 31	15 45.21	-11 35.6					
1988	04 10	15 41.13	-11 16.1	1.966	2.834	143.4	12.2	18.4
1988	04 20	15 34.57	-10 53.0					
1988	04 30	15 25.97	-10 28.8	1.823	2.809	165.2	5.3	17.9
1988	05 10	15 16.09	-10 06.5					
1988	05 20	15 05.88	-09 49.3	1.789	2.782	166.1	5.0	17.9
1988	05 30	14 56.38	-09 40.6					
1988	06 09	14 48.47	-09 42.4	1.862	2.751	144.3	12.4	18.2
1988	06 19	14 42.75	-09 56.0					
1988	06 29	14 39.57	-10 21.4	2.020	2.718	123.7	18.1	18.5
1988	07 09	14 38.96	-10 57.6					
1988	07 19	14 40.84	-11 43.4	2.227	2.683	105.4	21.4	18.8
1988	07 29	14 45.04	-12 37.0					
1988	08 08	14 51.32	-13 36.8	2.453	2.644	89.3	22.5	19.0

1982 FV2 a,e,i = 3.06, 0.21, 3 Elements MPC 11736

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 41.34	-17 08.1	2.826	3.198	103.0	17.6	18.6
1988	03 11	15 44.10	-17 12.9					
1988	03 21	15 44.68	-17 10.7	2.593	3.235	122.2	15.1	18.4
1988	03 31	15 43.00	-17 01.8					
1988	04 10	15 39.14	-16 46.6	2.413	3.272	143.3	10.6	18.1
1988	04 20	15 33.34	-16 25.8					
1988	04 30	15 26.09	-16 00.8	2.320	3.307	165.9	4.3	17.8
1988	05 10	15 18.05	-15 33.6					
1988	05 20	15 09.96	-15 07.0	2.338	3.340	170.2	2.9	17.7
1988	05 30	15 02.56	-14 43.7					
1988	06 09	14 56.46	-14 26.2	2.468	3.373	148.0	9.2	18.1
1988	06 19	14 52.07	-14 16.4					
1988	06 29	14 49.62	-14 15.1	2.690	3.404	127.3	13.7	18.5
1988	07 09	14 49.14	-14 22.4					
1988	07 19	14 50.56	-14 37.9	2.971	3.433	108.6	16.3	18.8
1988	07 29	14 53.77	-15 00.6					
1988	08 08	14 58.59	-15 29.3	3.282	3.461	91.6	17.0	19.1

1978 SJ3 a,e,i = 2.33, 0.15, 10 Elements MPC 11638

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 29.34	-12 00.0	1.920	2.404	107.0	23.2	17.3
1988	03 11	15 35.76	-11 25.1					
1988	03 21	15 39.67	-10 35.3	1.661	2.372	124.5	20.3	16.9
1988	03 31	15 40.76	-09 31.4					
1988	04 10	15 38.90	-08 15.3	1.453	2.339	143.9	14.6	16.4
1988	04 20	15 34.13	-06 50.8					
1988	04 30	15 26.91	-05 24.0	1.324	2.305	162.8	7.4	15.9
1988	05 10	15 18.11	-04 02.9					
1988	05 20	15 08.87	-02 55.6	1.291	2.271	160.8	8.4	15.8
1988	05 30	15 00.46	-02 09.1					
1988	06 09	14 53.94	-01 46.9	1.353	2.238	141.4	16.4	16.2
1988	06 19	14 50.01	-01 49.3					
1988	06 29	14 49.02	-02 14.0	1.484	2.204	122.5	22.9	16.5
1988	07 09	14 50.97	-02 57.4					
1988	07 19	14 55.70	-03 55.5	1.656	2.172	106.3	26.7	16.8
1988	07 29	15 03.00	-05 04.5					
1988	08 08	15 12.56	-06 20.9	1.844	2.140	92.3	28.3	17.1

(3629) 1982 WK a,e,i = 2.40, 0.10, 6 Elements MPC 11862

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 38.46	-21 40.8	2.245	2.645	102.7	21.4	17.5
1988	03 11	15 43.42	-21 49.5					
1988	03 21	15 45.84	-21 48.0	1.995	2.649	120.9	18.8	17.2
1988	03 31	15 45.48	-21 35.7					
1988	04 10	15 42.28	-21 12.0	1.791	2.650	141.6	13.6	16.8
1988	04 20	15 36.39	-20 36.6					
1988	04 30	15 28.34	-19 50.2	1.666	2.650	164.6	5.8	16.3
1988	05 10	15 18.99	-18 55.6					
1988	05 20	15 09.40	-17 56.9	1.644	2.649	171.2	3.4	16.2
1988	05 30	15 00.69	-16 59.9					
1988	06 09	14 53.75	-16 10.1	1.729	2.645	147.9	11.8	16.6
1988	06 19	14 49.16	-15 31.4					
1988	06 29	14 47.20	-15 06.3	1.900	2.640	127.0	17.9	17.0
1988	07 09	14 47.85	-14 55.0					
1988	07 19	14 50.97	-14 56.6	2.124	2.633	108.8	21.4	17.4
1988	07 29	14 56.34	-15 09.5					
1988	08 08	15 03.69	-15 31.5	2.373	2.625	92.8	22.7	17.6

(3599) 1978 PB3 a,e,i = 3.16, 0.12, 2 Elements MPC 11846

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 34.94	-17 42.4	2.350	2.768	104.4	20.3	16.9
1988	03 11	15 40.18	-17 51.8					
1988	03 21	15 43.10	-17 52.7	2.104	2.769	122.4	17.7	16.5
1988	03 31	15 43.52	-17 45.2					
1988	04 10	15 41.42	-17 29.7	1.907	2.771	142.6	12.7	16.2
1988	04 20	15 36.94	-17 06.7					
1988	04 30	15 30.56	-16 38.0	1.791	2.775	164.8	5.5	15.8
1988	05 10	15 22.99	-16 06.0					
1988	05 20	15 15.14	-15 33.9	1.776	2.781	171.5	3.1	15.6
1988	05 30	15 07.95	-15 05.7					
1988	06 09	15 02.22	-14 44.6	1.867	2.789	149.4	10.7	16.1
1988	06 19	14 58.48	-14 33.1					
1988	06 29	14 57.04	-14 32.4	2.044	2.799	129.1	16.4	16.5
1988	07 09	14 57.93	-14 42.2					
1988	07 19	15 01.06	-15 01.8	2.279	2.810	111.1	19.7	16.8
1988	07 29	15 06.29	-15 29.7					
1988	08 08	15 13.38	-16 04.1	2.545	2.823	95.1	21.0	17.1

1987 DS a,e,i = 3.11, 0.14, 3 Elements MPC 11830

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 43.80	-16 51.8	2.807	3.172	102.5	17.8	17.3
1988	03 11	15 47.13	-16 55.4					
1988	03 21	15 48.30	-16 52.0	2.564	3.198	121.4	15.4	17.0
1988	03 31	15 47.22	-16 41.8					
1988	04 10	15 43.93	-16 25.5	2.372	3.223	142.2	11.0	16.7
1988	04 20	15 38.63	-16 03.8					
1988	04 30	15 31.78	-15 38.2	2.265	3.247	164.5	4.7	16.4
1988	05 10	15 24.00	-15 10.7					
1988	05 20	15 16.04	-14 43.9	2.267	3.271	171.3	2.7	16.3
1988	05 30	15 08.66	-14 20.7					
1988	06 09	15 02.51	-14 03.5	2.380	3.294	149.2	9.1	16.7
1988	06 19	14 58.03	-13 54.2					
1988	06 29	14 55.50	-13 53.7	2.586	3.316	128.5	13.9	17.1
1988	07 09	14 54.97	-14 02.1					
1988	07 19	14 56.40	-14 18.8	2.853	3.337	109.8	16.6	17.4
1988	07 29	14 59.68	-14 42.8					
1988	08 08	15 04.62	-15 12.9	3.150	3.358	92.9	17.6	17.6

1985 SA a,e,i = 2.32, 0.13, 7 Elements MPC 11832

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 35.82	-09 42.2	1.817	2.295	105.9	24.5	17.3
1988	03 11	15 43.20	-09 27.8					
1988	03 21	15 48.07	-09 02.4	1.566	2.264	122.6	21.8	16.9
1988	03 31	15 50.06	-08 27.2					
1988	04 10	15 48.94	-07 44.8	1.361	2.234	141.4	16.2	16.4
1988	04 20	15 44.66	-06 58.7					
1988	04 30	15 37.58	-06 14.0	1.227	2.204	160.9	8.6	15.9
1988	05 10	15 28.53	-05 36.8					
1988	05 20	15 18.67	-05 13.2	1.184	2.174	163.9	7.4	15.7
1988	05 30	15 09.42	-05 08.1					
1988	06 09	15 02.01	-05 23.5	1.234	2.146	145.1	15.7	16.1
1988	06 19	14 57.29	-05 59.0					
1988	06 29	14 55.70	-06 52.4	1.356	2.120	126.0	22.8	16.5
1988	07 09	14 57.30	-07 59.9					
1988	07 19	15 01.92	-09 18.3	1.524	2.096	109.5	27.2	16.8
1988	07 29	15 09.32	-10 44.1					
1988	08 08	15 19.18	-12 14.1	1.715	2.074	95.5	29.1	17.1

1981 SC7 a,e,i = 2.53, 0.24, 9 Elements MPC 10836

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 52.81	-20 35.5	2.775	3.099	99.7	18.4	19.0
1988	03 11	15 56.40	-21 04.6					
1988	03 21	15 57.77	-21 29.0	2.481	3.081	118.3	16.5	18.7
1988	03 31	15 56.71	-21 48.4					
1988	04 10	15 53.12	-22 02.1	2.233	3.061	139.0	12.4	18.3
1988	04 20	15 47.06	-22 09.3					
1988	04 30	15 38.89	-22 09.3	2.065	3.038	161.5	6.0	17.9
1988	05 10	15 29.24	-22 02.0					
1988	05 20	15 18.98	-21 48.4	2.004	3.012	173.5	2.2	17.6
1988	05 30	15 09.11	-21 31.1					
1988	06 09	15 00.55	-21 13.3	2.056	2.983	150.7	9.6	18.0
1988	06 19	14 53.96	-20 58.7					
1988	06 29	14 49.78	-20 50.1	2.202	2.952	129.2	15.5	18.3
1988	07 09	14 48.12	-20 49.4					
1988	07 19	14 48.96	-20 57.4	2.409	2.918	110.0	19.1	18.6
1988	07 29	14 52.14	-21 14.0					
1988	08 08	14 57.46	-21 38.3	2.644	2.881	93.1	20.6	18.8

6787 P-L a,e,i = 2.17, 0.09, 1 Elements MPC 9303

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 33.12	-18 00.0	1.485	1.984	104.8	28.9	18.3
1988	03 11	15 43.23	-18 28.3					
1988	03 21	15 50.56	-18 45.5	1.276	1.978	120.5	25.7	17.8
1988	03 31	15 54.61	-18 51.7					
1988	04 10	15 55.03	-18 47.2	1.104	1.974	139.2	19.4	17.4
1988	04 20	15 51.67	-18 32.2					
1988	04 30	15 44.89	-18 07.6	0.993	1.974	161.2	9.5	16.8
1988	05 10	15 35.67	-17 36.0					
1988	05 20	15 25.45	-17 01.6	0.966	1.976	174.4	2.9	16.5
1988	05 30	15 16.00	-16 30.6					
1988	06 09	15 08.78	-16 08.7	1.028	1.980	151.4	14.2	17.1
1988	06 19	15 04.71	-16 00.1					
1988	06 29	15 04.18	-16 06.4	1.164	1.987	131.2	22.6	17.6
1988	07 09	15 07.11	-16 26.7					
1988	07 19	15 13.20	-16 59.0	1.349	1.997	114.5	27.6	18.0
1988	07 29	15 22.11	-17 40.4					
1988	08 08	15 33.41	-18 27.7	1.561	2.009	100.4	29.8	18.4

1982 FP3 a,e,i = 3.17, 0.13, 2 Elements MPC 11052

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 44.77	-18 27.6	2.371	2.753	102.0	20.6	18.0
1988	03 11	15 50.56	-18 47.4					
1988	03 21	15 54.06	-19 00.2	2.124	2.757	119.7	18.3	17.7
1988	03 31	15 55.06	-19 06.0					
1988	04 10	15 53.47	-19 05.1	1.923	2.763	139.5	13.6	17.3
1988	04 20	15 49.38	-18 57.5					
1988	04 30	15 43.19	-18 44.1	1.797	2.771	161.5	6.6	16.9
1988	05 10	15 35.57	-18 26.1					
1988	05 20	15 27.40	-18 05.8	1.771	2.781	175.3	1.7	16.7
1988	05 30	15 19.67	-17 46.4					
1988	06 09	15 13.24	-17 30.9	1.851	2.793	152.8	9.6	17.1
1988	06 19	15 08.73	-17 22.0					
1988	06 29	15 06.53	-17 21.5	2.022	2.807	132.1	15.6	17.5
1988	07 09	15 06.72	-17 30.0					
1988	07 19	15 09.24	-17 47.1	2.255	2.822	113.8	19.2	17.9
1988	07 29	15 13.94	-18 11.7					
1988	08 08	15 20.59	-18 42.6	2.523	2.839	97.5	20.7	18.2

(3572) 1954 UJ2 a,e,i = 2.70, 0.13, 3 Elements MPC 11730

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 54.44	-21 00.1	2.742	3.061	99.2	18.6	18.3
1988	03 11	15 58.90	-21 08.1					
1988	03 21	16 01.19	-21 08.9	2.466	3.057	117.6	16.8	18.0
1988	03 31	16 01.11	-21 02.2					
1988	04 10	15 58.60	-20 47.7	2.233	3.052	138.0	12.7	17.6
1988	04 20	15 53.74	-20 25.2					
1988	04 30	15 46.88	-19 55.2	2.078	3.046	160.4	6.4	17.2
1988	05 10	15 38.63	-19 18.9					
1988	05 20	15 29.78	-18 38.8	2.027	3.038	176.0	1.3	16.9
1988	05 30	15 21.25	-17 58.4					
1988	06 09	15 13.85	-17 21.4	2.089	3.028	152.9	8.8	17.3
1988	06 19	15 08.21	-16 51.2					
1988	06 29	15 04.73	-16 30.3	2.246	3.016	131.5	14.6	17.7
1988	07 09	15 03.54	-16 19.6					
1988	07 19	15 04.63	-16 19.1	2.467	3.004	112.3	18.2	18.0
1988	07 29	15 07.87	-16 28.2					
1988	08 08	15 13.07	-16 45.4	2.720	2.989	95.3	19.7	18.2

(3624) 1982 TH2 a,e,i = 2.36, 0.12, 4 Elements MPC 11860

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 56.20	-23 09.0	2.294	2.628	98.3	21.9	18.5
1988	03 11	16 02.08	-23 45.4					
1988	03 21	16 05.49	-24 15.9	2.040	2.634	116.0	19.9	18.2
1988	03 31	16 06.11	-24 40.2					
1988	04 10	16 03.76	-24 57.2	1.825	2.638	135.9	15.3	17.9
1988	04 20	15 58.43	-25 05.4					
1988	04 30	15 50.46	-25 03.3	1.679	2.640	158.0	8.2	17.4
1988	05 10	15 40.58	-24 50.0					
1988	05 20	15 29.85	-24 26.5	1.631	2.640	174.1	2.2	17.1
1988	05 30	15 19.52	-23 55.9					
1988	06 09	15 10.71	-23 23.0	1.691	2.637	153.3	10.0	17.5
1988	06 19	15 04.21	-22 52.6					
1988	06 29	15 00.49	-22 29.1	1.843	2.633	132.0	16.7	17.9
1988	07 09	14 59.63	-22 14.9					
1988	07 19	15 01.52	-22 10.7	2.056	2.627	113.2	20.8	18.3
1988	07 29	15 05.96	-22 16.5					
1988	08 08	15 12.65	-22 30.7	2.300	2.619	96.7	22.6	18.6

1985 RR a,e,i = 2.34, 0.24, 1 Elements MPC 10944

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 52.20	-18 52.3	2.281	2.642	100.2	21.7	19.3
1988	03 11	15 58.40	-19 08.6					
1988	03 21	16 02.33	-19 17.7	1.982	2.599	117.7	19.8	18.9
1988	03 31	16 03.64	-19 19.6					
1988	04 10	16 02.09	-19 13.9	1.724	2.554	137.5	15.4	18.5
1988	04 20	15 57.55	-19 00.5					
1988	04 30	15 50.25	-18 39.4	1.536	2.506	159.8	8.0	17.9
1988	05 10	15 40.78	-18 11.7					
1988	05 20	15 30.12	-17 39.5	1.446	2.456	175.7	1.8	17.4
1988	05 30	15 19.54	-17 06.9					
1988	06 09	15 10.29	-16 38.5	1.461	2.404	151.9	11.5	17.8
1988	06 19	15 03.34	-16 18.7					
1988	06 29	14 59.31	-16 10.6	1.563	2.350	130.1	19.3	18.2
1988	07 09	14 58.40	-16 15.4					
1988	07 19	15 00.58	-16 32.7	1.720	2.295	111.4	24.3	18.5
1988	07 29	15 05.65	-17 01.3					
1988	08 08	15 13.35	-17 39.0	1.900	2.239	95.6	26.8	18.7

1979 VN a,e,i = 2.87, 0.33, 7 Elements MPC 10516

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 48.56	-19 17.6	2.553	2.908	100.9	19.6	18.3
1988	03 11	15 54.34	-19 16.9					
1988	03 21	15 58.06	-19 07.2	2.225	2.841	118.7	17.9	17.9
1988	03 31	15 59.47	-18 48.0					
1988	04 10	15 58.37	-18 19.1	1.942	2.774	138.5	13.8	17.5
1988	04 20	15 54.71	-17 40.5					
1988	04 30	15 48.69	-16 53.1	1.734	2.705	160.4	7.2	16.9
1988	05 10	15 40.84	-15 58.9					
1988	05 20	15 31.96	-15 01.5	1.626	2.635	174.2	2.2	16.5
1988	05 30	15 23.10	-14 05.8					
1988	06 09	15 15.28	-13 17.0	1.625	2.565	151.8	10.8	16.8
1988	06 19	15 09.36	-12 39.5					
1988	06 29	15 05.93	-12 16.2	1.713	2.495	130.4	18.1	17.1
1988	07 09	15 05.24	-12 07.9					
1988	07 19	15 07.33	-12 14.0	1.858	2.425	111.7	22.9	17.3
1988	07 29	15 12.08	-12 32.8					
1988	08 08	15 19.30	-13 02.0	2.029	2.357	95.7	25.3	17.5

1983 EV a,e,i = 2.73, 0.11, 4 Elements MPC 8213

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 53.24	-22 13.0	2.199	2.552	99.2	22.5	17.7
1988	03 11	15 59.86	-22 49.7					
1988	03 21	16 03.99	-23 20.0	1.969	2.573	116.5	20.3	17.4
1988	03 31	16 05.33	-23 43.6					
1988	04 10	16 03.73	-23 59.9	1.778	2.595	136.1	15.5	17.1
1988	04 20	15 59.24	-24 07.7					
1988	04 30	15 52.21	-24 06.1	1.656	2.618	158.0	8.3	16.7
1988	05 10	15 43.42	-23 54.8					
1988	05 20	15 33.85	-23 35.1	1.631	2.641	175.4	1.8	16.4
1988	05 30	15 24.71	-23 10.1					
1988	06 09	15 17.02	-22 43.9	1.711	2.664	154.7	9.4	16.8
1988	06 19	15 11.51	-22 20.7					
1988	06 29	15 08.61	-22 04.2	1.883	2.687	133.7	15.9	17.3
1988	07 09	15 08.38	-21 56.0					
1988	07 19	15 10.72	-21 56.8	2.118	2.711	115.2	19.8	17.7
1988	07 29	15 15.42	-22 06.1					
1988	08 08	15 22.20	-22 22.6	2.389	2.734	98.8	21.5	18.0

1976 GM7 a,e,i = 3.24, 0.06, 11 Elements MPC 10613

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 53.54	-11 09.6	2.823	3.170	101.3	17.8	17.6
1988	03 11	15 57.93	-10 39.6					
1988	03 21	16 00.30	-10 01.3	2.570	3.181	119.5	15.8	17.3
1988	03 31	16 00.51	-09 15.8					
1988	04 10	15 58.58	-08 25.1	2.367	3.192	139.1	11.9	17.0
1988	04 20	15 54.63	-07 31.5					
1988	04 30	15 49.00	-06 38.6	2.245	3.204	158.5	6.6	16.7
1988	05 10	15 42.24	-05 50.0					
1988	05 20	15 34.99	-05 09.5	2.227	3.215	165.1	4.7	16.6
1988	05 30	15 28.01	-04 40.1					
1988	06 09	15 21.95	-04 23.8	2.317	3.227	148.6	9.4	16.9
1988	06 19	15 17.33	-04 21.2					
1988	06 29	15 14.48	-04 31.8	2.498	3.238	129.3	14.1	17.2
1988	07 09	15 13.54	-04 54.1					
1988	07 19	15 14.54	-05 26.2	2.741	3.250	111.2	17.0	17.5
1988	07 29	15 17.40	-06 06.0					
1988	08 08	15 21.96	-06 51.7	3.018	3.261	94.7	18.1	17.8

1985 QH4 a,e,i = 2.37, 0.14, 4 Elements MPC 11351

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 57.94	-24 19.2	2.343	2.663	97.7	21.6	18.7
1988	03 11	16 04.23	-24 58.3					
1988	03 21	16 08.16	-25 32.1	2.070	2.650	115.1	19.9	18.4
1988	03 31	16 09.37	-26 00.0					
1988	04 10	16 07.66	-26 21.1	1.833	2.635	134.6	15.7	18.0
1988	04 20	16 02.91	-26 33.4					
1988	04 30	15 55.39	-26 35.0	1.664	2.618	156.3	8.9	17.5
1988	05 10	15 45.74	-26 24.5					
1988	05 20	15 34.96	-26 01.9	1.591	2.599	173.4	2.6	17.1
1988	05 30	15 24.34	-25 29.7					
1988	06 09	15 15.08	-24 52.8	1.625	2.578	154.3	9.8	17.5
1988	06 19	15 08.10	-24 16.7					
1988	06 29	15 03.96	-23 46.3	1.751	2.555	133.0	16.9	17.8
1988	07 09	15 02.82	-23 24.9					
1988	07 19	15 04.60	-23 14.0	1.939	2.531	114.1	21.5	18.2
1988	07 29	15 09.09	-23 13.6					
1988	08 08	15 16.02	-23 22.4	2.159	2.505	97.6	23.7	18.4

1983 AD a,e,i = 2.56, 0.12, 10 Elements MPC 11619

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	16 01.02	-13 45.0	2.115	2.473	99.1	23.3	18.6
1988	03 11	16 07.44	-14 05.7					
1988	03 21	16 11.34	-14 20.8	1.893	2.499	116.3	20.9	18.3
1988	03 31	16 12.41	-14 31.6					
1988	04 10	16 10.51	-14 39.1	1.707	2.526	136.0	16.0	17.9
1988	04 20	16 05.66	-14 44.1					
1988	04 30	15 58.21	-14 47.9	1.590	2.552	158.1	8.5	17.6
1988	05 10	15 48.88	-14 51.7					
1988	05 20	15 38.68	-14 56.8	1.569	2.579	174.8	2.0	17.2
1988	05 30	15 28.81	-15 05.3					
1988	06 09	15 20.33	-15 18.8	1.655	2.605	153.7	9.9	17.7
1988	06 19	15 14.01	-15 38.7					
1988	06 29	15 10.30	-16 06.0	1.833	2.630	132.6	16.5	18.2
1988	07 09	15 09.30	-16 40.3					
1988	07 19	15 10.92	-17 21.2	2.073	2.655	114.0	20.5	18.6
1988	07 29	15 14.96	-18 07.4					
1988	08 08	15 21.15	-18 57.7	2.347	2.678	97.7	22.0	18.9

1981 EW9 a,e,i = 2.22, 0.17, 5 Elements MPC 10538

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 40.99	-25 18.1	1.699	2.127	101.2	27.2	19.9
1988	03 11	15 51.60	-26 22.0					
1988	03 21	15 59.91	-27 19.6	1.444	2.088	116.5	25.3	19.4
1988	03 31	16 05.39	-28 10.3					
1988	04 10	16 07.54	-28 52.9	1.223	2.049	133.9	20.6	18.9
1988	04 20	16 05.95	-29 24.7					
1988	04 30	16 00.59	-29 41.9	1.058	2.012	153.8	12.8	18.3
1988	05 10	15 51.99	-29 40.6					
1988	05 20	15 41.36	-29 18.4	0.972	1.977	170.5	4.8	17.8
1988	05 30	15 30.51	-28 37.3					
1988	06 09	15 21.32	-27 44.2	0.975	1.945	155.6	12.4	18.0
1988	06 19	15 15.23	-26 48.4					
1988	06 29	15 13.07	-25 58.8	1.055	1.916	135.4	21.9	18.5
1988	07 09	15 14.98	-25 20.9					
1988	07 19	15 20.75	-24 56.6	1.188	1.892	118.1	28.3	18.9
1988	07 29	15 29.99	-24 45.4					
1988	08 08	15 42.22	-24 44.5	1.350	1.872	103.8	31.7	19.2

1983 AV a,e,i = 2.66, 0.21, 13 Elements MPC 7938

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 59.91	-06 12.5	1.858	2.261	100.6	25.5	17.1
1988	03 11	16 07.43	-06 06.9					
1988	03 21	16 12.22	-05 54.4	1.669	2.298	116.9	22.8	16.9
1988	03 31	16 13.99	-05 37.8					
1988	04 10	16 12.61	-05 20.3	1.516	2.338	135.4	17.5	16.6
1988	04 20	16 08.11	-05 05.4					
1988	04 30	16 00.92	-04 57.6	1.427	2.379	155.1	10.3	16.2
1988	05 10	15 51.84	-05 00.4					
1988	05 20	15 41.94	-05 16.8	1.429	2.422	165.4	6.1	16.1
1988	05 30	15 32.45	-05 47.8					
1988	06 09	15 24.45	-06 32.7	1.532	2.466	150.4	11.7	16.5
1988	06 19	15 18.67	-07 29.7					
1988	06 29	15 15.52	-08 36.2	1.722	2.511	131.2	17.7	17.0
1988	07 09	15 15.05	-09 49.4					
1988	07 19	15 17.15	-11 07.1	1.972	2.556	113.7	21.4	17.4
1988	07 29	15 21.59	-12 27.2					
1988	08 08	15 28.10	-13 47.7	2.258	2.600	98.0	22.7	17.8

1972 RQ a,e,i = 2.61, 0.12, 13 Elements MPC 12324

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 59.64	-08 58.0	2.441	2.793	100.2	20.4	17.1
1988	03 11	16 05.67	-08 14.9					
1988	03 21	16 09.58	-07 20.8	2.168	2.772	117.4	18.6	16.7
1988	03 31	16 11.11	-06 17.1					
1988	04 10	16 10.14	-05 06.1	1.940	2.750	136.0	14.7	16.4
1988	04 20	16 06.67	-03 51.3					
1988	04 30	16 00.93	-02 37.4	1.785	2.727	154.1	9.3	16.0
1988	05 10	15 53.48	-01 30.4					
1988	05 20	15 45.05	-00 36.0	1.727	2.703	160.7	7.1	15.8
1988	05 30	15 36.62	+00 00.8					
1988	06 09	15 29.09	+00 17.1	1.771	2.679	146.7	12.0	16.0
1988	06 19	15 23.23	+00 12.7					
1988	06 29	15 19.55	-00 11.1	1.901	2.654	128.3	17.5	16.3
1988	07 09	15 18.27	-00 51.2					
1988	07 19	15 19.42	-01 44.4	2.087	2.628	111.0	21.2	16.6
1988	07 29	15 22.93	-02 47.3					
1988	08 08	15 28.59	-03 56.8	2.301	2.602	95.5	22.8	16.8

(3650) 1978 UO2 a,e,i = 3.13, 0.24, 15 Elements MPC 12006

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	16 03.83	-22 33.5	2.713	2.996	96.7	19.2	17.3
1988	03 11	16 09.62	-23 28.6					
1988	03 21	16 13.41	-24 22.6	2.397	2.948	114.2	18.0	17.0
1988	03 31	16 14.88	-25 15.4					
1988	04 10	16 13.80	-26 06.6	2.121	2.901	133.4	14.5	16.6
1988	04 20	16 10.02	-26 54.9					
1988	04 30	16 03.64	-27 38.1	1.914	2.855	154.2	8.8	16.1
1988	05 10	15 55.10	-28 13.9					
1988	05 20	15 45.12	-28 40.0	1.804	2.808	171.2	3.2	15.7
1988	05 30	15 34.79	-28 56.1					
1988	06 09	15 25.23	-29 03.4	1.803	2.763	156.3	8.5	15.9
1988	06 19	15 17.44	-29 05.2					
1988	06 29	15 12.17	-29 05.5	1.898	2.719	135.5	15.2	16.2
1988	07 09	15 09.75	-29 07.9					
1988	07 19	15 10.29	-29 15.0	2.062	2.676	116.6	19.9	16.5
1988	07 29	15 13.70	-29 28.2					
1988	08 08	15 19.75	-29 47.6	2.262	2.634	100.0	22.3	16.7

1975 BF a,e,i = 3.16, 0.16, 1 Elements MPC 10756

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	16 07.83	-19 54.8	3.366	3.612	96.3	15.8	18.7
1988	03 11	16 11.40	-20 00.3					
1988	03 21	16 13.09	-20 00.6	3.089	3.625	115.1	14.4	18.5
1988	03 31	16 12.79	-19 55.7					
1988	04 10	16 10.47	-19 45.6	2.854	3.637	135.5	11.1	18.2
1988	04 20	16 06.23	-19 30.4					
1988	04 30	16 00.35	-19 10.7	2.696	3.647	157.4	6.1	17.9
1988	05 10	15 53.27	-18 47.3					
1988	05 20	15 45.58	-18 21.8	2.644	3.656	178.5	0.4	17.5
1988	05 30	15 37.94	-17 56.1					
1988	06 09	15 31.01	-17 32.5	2.708	3.663	156.8	6.3	17.9
1988	06 19	15 25.30	-17 13.3					
1988	06 29	15 21.19	-17 00.1	2.875	3.669	135.4	11.2	18.2
1988	07 09	15 18.89	-16 53.9					
1988	07 19	15 18.46	-16 55.1	3.117	3.674	115.7	14.4	18.5
1988	07 29	15 19.85	-17 03.2					
1988	08 08	15 22.96	-17 17.7	3.401	3.677	97.7	15.9	18.7

1981 EZ22 a,e,i = 2.21, 0.19, 2 Elements MPC 10540

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 51.27	-22 05.1	1.852	2.242	99.7	25.8	19.6
1988	03 11	16 00.95	-22 48.9					
1988	03 21	16 08.39	-23 26.5	1.578	2.199	115.5	24.1	19.2
1988	03 31	16 13.11	-23 57.8					
1988	04 10	16 14.67	-24 22.5	1.339	2.155	133.6	19.7	18.7
1988	04 20	16 12.69	-24 39.2					
1988	04 30	16 07.14	-24 46.1	1.157	2.111	154.6	11.8	18.1
1988	05 10	15 58.44	-24 41.3					
1988	05 20	15 47.60	-24 23.9	1.057	2.067	175.4	2.2	17.4
1988	05 30	15 36.24	-23 55.9					
1988	06 09	15 26.12	-23 22.4	1.051	2.024	156.8	11.4	17.8
1988	06 19	15 18.69	-22 50.3					
1988	06 29	15 14.87	-22 26.0	1.127	1.982	135.2	21.2	18.2
1988	07 09	15 14.97	-22 13.3					
1988	07 19	15 18.89	-22 13.4	1.257	1.943	117.1	27.8	18.5
1988	07 29	15 26.36	-22 25.4					
1988	08 08	15 36.95	-22 46.8	1.415	1.907	102.2	31.3	18.8

(3630) 1984 QN a,e,i = 2.77, 0.21, 7 Elements MPC 11862

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 54.50	-28 03.2	2.217	2.546	97.6	22.7	17.3
1988	03 11	16 03.17	-29 06.1					
1988	03 21	16 09.71	-30 05.1	1.931	2.503	113.7	21.4	16.9
1988	03 31	16 13.71	-30 59.7					
1988	04 10	16 14.81	-31 48.5	1.681	2.462	131.5	17.8	16.5
1988	04 20	16 12.73	-32 29.0					
1988	04 30	16 07.52	-32 57.7	1.493	2.423	150.9	11.7	16.0
1988	05 10	15 59.61	-33 10.9					
1988	05 20	15 49.92	-33 05.5	1.388	2.385	166.7	5.6	15.6
1988	05 30	15 39.81	-32 41.7					
1988	06 09	15 30.74	-32 03.1	1.382	2.349	156.8	9.8	15.7
1988	06 19	15 23.93	-31 16.3					
1988	06 29	15 20.20	-30 28.5	1.464	2.317	137.3	17.3	16.1
1988	07 09	15 19.86	-29 45.8					
1988	07 19	15 22.88	-29 11.6	1.611	2.287	119.3	22.8	16.4
1988	07 29	15 29.05	-28 47.4					
1988	08 08	15 38.00	-28 32.6	1.797	2.261	103.6	25.8	16.7

1979 QC2 a,e,i = 2.95, 0.10, 2 Elements MPC 10307

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	16 11.90	-18 43.7	2.987	3.238	95.6	17.7	19.2
1988	03 11	16 16.78	-18 47.2					
1988	03 21	16 19.70	-18 44.8	2.709	3.241	113.7	16.3	19.0
1988	03 31	16 20.44	-18 36.9					
1988	04 10	16 18.95	-18 23.7	2.468	3.242	133.7	12.9	18.7
1988	04 20	16 15.24	-18 05.5					
1988	04 30	16 09.56	-17 43.1	2.299	3.242	155.4	7.4	18.3
1988	05 10	16 02.34	-17 17.5					
1988	05 20	15 54.23	-16 50.5	2.231	3.242	176.4	1.1	17.9
1988	05 30	15 46.02	-16 24.5					
1988	06 09	15 38.48	-16 01.9	2.276	3.240	158.0	6.7	18.3
1988	06 19	15 32.26	-15 45.1					
1988	06 29	15 27.83	-15 35.8	2.423	3.237	136.5	12.5	18.6
1988	07 09	15 25.45	-15 34.7					
1988	07 19	15 25.18	-15 42.0	2.644	3.233	116.9	16.3	18.9
1988	07 29	15 26.98	-15 57.0					
1988	08 08	15 30.72	-16 18.7	2.906	3.228	99.2	18.1	19.2

1981 EE11 a,e,i = 2.23, 0.16, 3 Elements MPC 10382

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 46.05	-23 27.3	1.607	2.036	100.5	28.6	19.7
1988	03 11	15 58.16	-24 23.5					
1988	03 21	16 08.04	-25 12.1	1.366	2.004	115.2	26.7	19.2
1988	03 31	16 15.18	-25 53.2					
1988	04 10	16 19.06	-26 26.1	1.157	1.975	132.1	22.1	18.7
1988	04 20	16 19.22	-26 49.4					
1988	04 30	16 15.55	-27 00.9	1.001	1.948	152.0	14.0	18.2
1988	05 10	16 08.44	-26 57.8					
1988	05 20	15 58.91	-26 38.6	0.918	1.926	172.6	3.9	17.6
1988	05 30	15 48.67	-26 05.0					
1988	06 09	15 39.61	-25 22.6	0.921	1.907	159.9	10.5	17.8
1988	06 19	15 33.26	-24 39.4					
1988	06 29	15 30.62	-24 02.8	1.004	1.893	139.0	20.6	18.3
1988	07 09	15 31.93	-23 37.4					
1988	07 19	15 37.05	-23 24.7	1.143	1.884	121.4	27.4	18.7
1988	07 29	15 45.64	-23 23.5					
1988	08 08	15 57.20	-23 31.3	1.316	1.880	106.9	31.1	19.1

1977 EO1 a,e,i = 3.04, 0.16, 3 Elements MPC 9476

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	16 03.56	-20 05.7	2.248	2.569	97.3	22.5	17.7
1988	03 11	16 11.89	-20 35.2					
1988	03 21	16 18.03	-20 58.8	1.994	2.563	113.8	20.8	17.3
1988	03 31	16 21.68	-21 16.8					
1988	04 10	16 22.60	-21 29.6	1.775	2.560	132.4	16.8	17.0
1988	04 20	16 20.67	-21 37.0					
1988	04 30	16 16.05	-21 38.7	1.618	2.559	153.4	10.2	16.6
1988	05 10	16 09.22	-21 34.9					
1988	05 20	16 00.96	-21 26.0	1.551	2.561	176.1	1.5	16.1
1988	05 30	15 52.37	-21 13.8					
1988	06 09	15 44.57	-21 01.2	1.586	2.566	160.8	7.5	16.4
1988	06 19	15 38.49	-20 51.1					
1988	06 29	15 34.78	-20 46.5	1.716	2.574	139.4	14.9	16.9
1988	07 09	15 33.72	-20 49.0					
1988	07 19	15 35.35	-20 59.1	1.915	2.584	120.5	19.8	17.2
1988	07 29	15 39.55	-21 16.5					
1988	08 08	15 46.06	-21 39.9	2.159	2.597	104.0	22.3	17.6

(3566) 1979 YA9 a,e,i = 2.36, 0.13, 2 Elements MPC 11631

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	16 13.36	-23 37.1	2.072	2.364	94.4	24.7	17.3
1988	03 11	16 22.13	-24 04.4					
1988	03 21	16 28.38	-24 24.6	1.849	2.392	110.8	22.9	17.0
1988	03 31	16 31.75	-24 37.8					
1988	04 10	16 31.97	-24 43.8	1.653	2.419	129.7	18.6	16.6
1988	04 20	16 28.89	-24 41.6					
1988	04 30	16 22.70	-24 30.1	1.514	2.446	151.2	11.4	16.3
1988	05 10	16 14.00	-24 08.7					
1988	05 20	16 03.74	-23 38.0	1.462	2.471	174.4	2.3	15.8
1988	05 30	15 53.25	-23 00.7					
1988	06 09	15 43.80	-22 21.2	1.515	2.496	160.8	7.7	16.2
1988	06 19	15 36.40	-21 44.5					
1988	06 29	15 31.71	-21 15.0	1.663	2.519	138.8	15.4	16.7
1988	07 09	15 29.92	-20 55.1					
1988	07 19	15 30.99	-20 45.8	1.881	2.540	119.5	20.4	17.1
1988	07 29	15 34.71	-20 46.4					
1988	08 08	15 40.78	-20 55.4	2.140	2.560	102.6	22.7	17.4

1978 QA2 a,e,i = 2.30, 0.22, 4 Elements MPC 10291

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	16 07.21	-18 36.8	2.161	2.480	96.7	23.4	19.6
1988	03 11	16 15.85	-18 41.0					
1988	03 21	16 22.39	-18 36.4	1.865	2.436	113.1	22.1	19.2
1988	03 31	16 26.45	-18 23.1					
1988	04 10	16 27.71	-18 01.3	1.603	2.389	131.6	18.3	18.7
1988	04 20	16 25.87	-17 31.3					
1988	04 30	16 20.94	-16 53.9	1.400	2.341	152.7	11.4	18.2
1988	05 10	16 13.25	-16 10.7					
1988	05 20	16 03.54	-15 24.5	1.282	2.291	173.8	2.7	17.6
1988	05 30	15 53.04	-14 39.8					
1988	06 09	15 43.12	-14 01.6	1.266	2.241	158.2	9.7	17.8
1988	06 19	15 35.04	-13 34.8					
1988	06 29	15 29.74	-13 22.5	1.339	2.189	136.2	18.7	18.2
1988	07 09	15 27.65	-13 25.6					
1988	07 19	15 28.89	-13 43.5	1.473	2.138	117.2	25.0	18.5
1988	07 29	15 33.32	-14 13.9					
1988	08 08	15 40.68	-14 54.1	1.638	2.088	101.2	28.5	18.8

(3632) 1976 SJ4 a,e,i = 2.77, 0.31, 6 Elements MPC 11992

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	16 29.15	-18 16.8	3.285	3.458	91.6	16.6	18.5
1988	03 11	16 33.41	-18 07.7					
1988	03 21	16 35.77	-17 53.0	3.018	3.487	110.1	15.6	18.3
1988	03 31	16 36.07	-17 33.3					
1988	04 10	16 34.26	-17 08.8	2.783	3.513	130.2	12.6	18.0
1988	04 20	16 30.36	-16 40.0					
1988	04 30	16 24.59	-16 08.1	2.617	3.537	151.8	7.7	17.7
1988	05 10	16 17.35	-15 34.2					
1988	05 20	16 09.19	-15 00.0	2.552	3.557	172.6	2.1	17.4
1988	05 30	16 00.81	-14 28.0					
1988	06 09	15 52.89	-14 00.3	2.603	3.575	160.3	5.5	17.6
1988	06 19	15 46.03	-13 38.8					
1988	06 29	15 40.71	-13 25.0	2.763	3.590	138.7	10.8	18.0
1988	07 09	15 37.19	-13 19.4					
1988	07 19	15 35.58	-13 22.0	3.003	3.603	118.6	14.3	18.3
1988	07 29	15 35.87	-13 32.1					
1988	08 08	15 37.96	-13 48.7	3.290	3.612	100.3	16.0	18.5

(3573) 1982 QO1 a,e,i = 2.24, 0.07, 3 Elements MPC 11730

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	16 14.64	-23 39.2	1.961	2.259	94.1	25.9	16.9
1988	03 11	16 24.68	-24 05.4					
1988	03 21	16 32.27	-24 23.8	1.732	2.274	110.0	24.3	16.6
1988	03 31	16 36.99	-24 34.8					
1988	04 10	16 38.50	-24 38.1	1.529	2.288	128.2	20.1	16.2
1988	04 20	16 36.56	-24 33.1					
1988	04 30	16 31.22	-24 18.7	1.377	2.302	149.4	12.9	15.8
1988	05 10	16 22.97	-23 54.1					
1988	05 20	16 12.73	-23 19.7	1.308	2.315	172.8	3.1	15.3
1988	05 30	16 01.90	-22 38.2					
1988	06 09	15 51.91	-21 54.2	1.339	2.327	162.6	7.5	15.5
1988	06 19	15 43.95	-21 13.1					
1988	06 29	15 38.84	-20 40.1	1.464	2.339	140.3	16.1	16.0
1988	07 09	15 36.86	-20 17.8					
1988	07 19	15 37.99	-20 07.2	1.659	2.349	120.9	21.8	16.5
1988	07 29	15 42.02	-20 07.6					
1988	08 08	15 48.60	-20 17.1	1.893	2.358	104.3	24.6	16.9

A910 FA a,e,i = 2.56, 0.19, 6 Elements MPC 11519

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	16 06.86	-18 45.4	1.795	2.150	96.8	27.2	16.0
1988	03 11	16 17.75	-18 41.2					
1988	03 21	16 26.08	-18 25.4	1.593	2.176	112.3	25.1	15.7
1988	03 31	16 31.45	-17 58.8					
1988	04 10	16 33.60	-17 22.5	1.421	2.205	130.3	20.3	15.4
1988	04 20	16 32.38	-16 37.9					
1988	04 30	16 27.96	-15 47.4	1.303	2.238	151.0	12.6	15.0
1988	05 10	16 20.93	-14 54.2					
1988	05 20	16 12.24	-14 02.5	1.267	2.272	171.4	3.8	14.6
1988	05 30	16 03.18	-13 17.4					
1988	06 09	15 55.03	-12 43.3	1.329	2.309	160.1	8.6	15.0
1988	06 19	15 48.78	-12 23.2					
1988	06 29	15 45.10	-12 18.2	1.481	2.347	139.4	16.4	15.5
1988	07 09	15 44.21	-12 27.1					
1988	07 19	15 46.08	-12 48.2	1.700	2.387	120.9	21.4	16.0
1988	07 29	15 50.50	-13 18.8					
1988	08 08	15 57.19	-13 56.0	1.960	2.427	104.9	23.8	16.4

1978 OK a,e,i = 2.30, 0.22, 4 Elements MPC 11995

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	16 25.37	-17 58.1	2.501	2.731	92.6	21.2	18.6
1988	03 11	16 32.60	-18 08.6					
1988	03 21	16 37.79	-18 13.6	2.207	2.708	109.5	20.3	18.3
1988	03 31	16 40.60	-18 13.9					
1988	04 10	16 40.76	-18 09.8	1.941	2.682	128.5	17.0	17.9
1988	04 20	16 38.06	-18 01.8					
1988	04 30	16 32.52	-17 50.4	1.733	2.653	149.9	11.0	17.4
1988	05 10	16 24.45	-17 36.1					
1988	05 20	16 14.50	-17 19.9	1.613	2.620	172.7	2.8	16.9
1988	05 30	16 03.69	-17 03.8					
1988	06 09	15 53.20	-16 50.2	1.602	2.585	161.6	7.1	17.0
1988	06 19	15 44.14	-16 42.0					
1988	06 29	15 37.37	-16 41.5	1.691	2.548	139.0	15.2	17.4
1988	07 09	15 33.38	-16 50.3					
1988	07 19	15 32.32	-17 08.5	1.853	2.507	118.9	20.8	17.7
1988	07 29	15 34.15	-17 35.5					
1988	08 08	15 38.66	-18 10.0	2.053	2.465	101.5	23.8	18.0

1984 UG a,e,i = 3.16, 0.12, 3 Elements MPC 11857

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	16 20.46	-20 54.7	2.866	3.085	93.2	18.7	17.1
1988	03 11	16 27.12	-21 13.8					
1988	03 21	16 31.90	-21 28.4	2.568	3.062	110.5	17.7	16.8
1988	03 31	16 34.54	-21 38.8					
1988	04 10	16 34.88	-21 45.1	2.302	3.039	129.5	14.7	16.4
1988	04 20	16 32.81	-21 47.1					
1988	04 30	16 28.43	-21 44.8	2.099	3.017	150.5	9.5	16.1
1988	05 10	16 22.05	-21 38.0					
1988	05 20	16 14.25	-21 27.0	1.987	2.995	173.1	2.3	15.6
1988	05 30	16 05.84	-21 13.1					
1988	06 09	15 57.73	-20 58.1	1.985	2.973	163.8	5.5	15.7
1988	06 19	15 50.76	-20 44.5					
1988	06 29	15 45.60	-20 34.8	2.085	2.952	141.9	12.3	16.1
1988	07 09	15 42.66	-20 30.8					
1988	07 19	15 42.12	-20 33.7	2.264	2.932	122.0	17.1	16.4
1988	07 29	15 43.97	-20 43.6					
1988	08 08	15 48.08	-20 59.8	2.491	2.912	104.3	19.7	16.7

1979 QM1 a,e,i = 2.87, 0.12, 1 Elements MPC 11996

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	16 20.21	-20 50.3	2.697	2.927	93.3	19.8	18.4
1988	03 11	16 27.39	-21 02.8					
1988	03 21	16 32.63	-21 09.8	2.402	2.903	110.4	18.8	18.1
1988	03 31	16 35.64	-21 11.3					
1988	04 10	16 36.23	-21 07.6	2.138	2.879	129.3	15.6	17.7
1988	04 20	16 34.26	-20 58.6					
1988	04 30	16 29.81	-20 44.4	1.935	2.855	150.3	10.1	17.3
1988	05 10	16 23.21	-20 25.2					
1988	05 20	16 15.06	-20 01.9	1.823	2.830	173.1	2.5	16.8
1988	05 30	16 06.24	-19 36.3					
1988	06 09	15 57.75	-19 11.0	1.818	2.806	163.4	5.9	16.9
1988	06 19	15 50.48	-18 49.0					
1988	06 29	15 45.17	-18 33.2	1.914	2.781	141.3	13.2	17.3
1988	07 09	15 42.23	-18 25.3					
1988	07 19	15 41.83	-18 26.3	2.087	2.757	121.4	18.3	17.6
1988	07 29	15 43.95	-18 35.7					
1988	08 08	15 48.44	-18 52.7	2.306	2.734	103.9	21.1	17.9

1985 PB1 a,e,i = 2.25, 0.18, 6 Elements MPC 10292

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	15 53.11	-18 29.3	1.621	2.041	100.0	28.6	17.7
1988	03 11	16 05.88	-18 29.8					
1988	03 21	16 16.56	-18 16.2	1.374	2.004	114.5	26.9	17.3
1988	03 31	16 24.67	-17 48.3					
1988	04 10	16 29.77	-17 06.6	1.159	1.969	131.2	22.5	16.7
1988	04 20	16 31.45	-16 12.0					
1988	04 30	16 29.57	-15 06.6	0.995	1.937	150.6	14.8	16.2
1988	05 10	16 24.38	-13 54.4					
1988	05 20	16 16.65	-12 41.4	0.905	1.909	169.7	5.4	15.6
1988	05 30	16 07.79	-11 35.5					
1988	06 09	15 59.41	-10 44.5	0.900	1.886	159.8	10.7	15.7
1988	06 19	15 53.01	-10 14.5					
1988	06 29	15 49.68	-10 07.5	0.974	1.868	139.5	20.7	16.2
1988	07 09	15 49.86	-10 22.3					
1988	07 19	15 53.63	-10 55.3	1.103	1.855	122.1	27.6	16.6
1988	07 29	16 00.76	-11 42.0					
1988	08 08	16 10.87	-12 37.5	1.267	1.849	107.8	31.5	17.0

(3667) 1981 EF a,e,i = 3.09, 0.23, 16 Elements MPC 12137

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	16 39.18	-36 25.7	3.666	3.744	86.8	15.3	18.3
1988	03 11	16 44.41	-37 22.3					
1988	03 21	16 47.71	-38 18.2	3.386	3.756	104.2	14.9	18.2
1988	03 31	16 48.86	-39 12.6					
1988	04 10	16 47.67	-40 04.0	3.133	3.766	122.4	13.0	17.9
1988	04 20	16 44.05	-40 50.1					
1988	04 30	16 38.10	-41 27.7	2.937	3.774	141.1	9.7	17.7
1988	05 10	16 30.12	-41 53.8					
1988	05 20	16 20.70	-42 05.5	2.831	3.781	156.6	6.1	17.5
1988	05 30	16 10.64	-42 01.5					
1988	06 09	16 00.84	-41 42.5	2.832	3.785	156.6	6.1	17.5
1988	06 19	15 52.13	-41 11.1					
1988	06 29	15 45.18	-40 31.4	2.940	3.788	141.4	9.6	17.7
1988	07 09	15 40.39	-39 47.8					
1988	07 19	15 37.93	-39 04.6	3.134	3.788	123.3	13.0	17.9
1988	07 29	15 37.80	-38 24.7					
1988	08 08	15 39.86	-37 50.1	3.386	3.787	105.6	14.9	18.2

1981 ER24 a,e,i = 2.22, 0.09, 2 Elements MPC 10771

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	16 08.16	-20 32.7	1.783	2.131	96.1	27.5	20.0
1988	03 11	16 20.11	-20 53.6					
1988	03 21	16 29.90	-21 05.3	1.538	2.111	111.0	26.1	19.6
1988	03 31	16 37.07	-21 08.3					
1988	04 10	16 41.19	-21 03.0	1.319	2.092	128.1	22.1	19.1
1988	04 20	16 41.87	-20 49.8					
1988	04 30	16 38.95	-20 29.0	1.149	2.075	148.2	14.8	18.6
1988	05 10	16 32.67	-20 01.2					
1988	05 20	16 23.77	-19 27.7	1.053	2.059	171.0	4.4	18.0
1988	05 30	16 13.59	-18 51.6					
1988	06 09	16 03.74	-18 17.5	1.049	2.045	164.5	7.6	18.1
1988	06 19	15 55.70	-17 50.3					
1988	06 29	15 50.62	-17 34.4	1.131	2.033	142.3	17.8	18.6
1988	07 09	15 48.99	-17 31.4					
1988	07 19	15 50.90	-17 41.3	1.278	2.024	123.3	24.8	19.1
1988	07 29	15 56.16	-18 02.3					
1988	08 08	16 04.40	-18 31.5	1.464	2.017	107.6	28.6	19.5

1981 ER21 a,e,i = 3.23, 0.12, 6 Elements MPC 10296

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 01	16 33.12	-16 02.2	3.352	3.513	91.0	16.4	19.2
1988	03 11	16 38.52	-15 55.1					
1988	03 21	16 42.21	-15 43.0	3.047	3.497	108.8	15.6	19.0
1988	03 31	16 44.02	-15 26.4					
1988	04 10	16 43.83	-15 06.1	2.773	3.480	128.0	13.1	18.7
1988	04 20	16 41.61	-14 42.8					
1988	04 30	16 37.45	-14 17.7	2.562	3.462	148.6	8.7	18.4
1988	05 10	16 31.65	-13 52.2					
1988	05 20	16 24.63	-13 28.0	2.446	3.444	168.7	3.3	18.0
1988	05 30	16 17.03	-13 06.9					
1988	06 09	16 09.54	-12 50.8	2.441	3.425	163.0	5.0	18.1
1988	06 19	16 02.81	-12 41.3					
1988	06 29	15 57.41	-12 39.5	2.543	3.405	142.3	10.5	18.4
1988	07 09	15 53.73	-12 45.8					
1988	07 19	15 51.97	-12 59.9	2.729	3.384	122.4	14.7	18.6
1988	07 29	15 52.21	-13 21.1					
1988	08 08	15 54.40	-13 48.3	2.968	3.363	104.2	17.0	18.9

1981 SN a,e,i = 2.48, 0.16, 5 Elements MPC 10309

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 20	16 44.01	-20 31.8	2.291	2.750	106.8	20.3	18.9
1988	03 30	16 48.06	-20 19.1					
1988	04 09	16 49.59	-20 00.0	2.022	2.727	125.3	17.4	18.5
1988	04 19	16 48.41	-19 34.7					
1988	04 29	16 44.49	-19 03.4	1.807	2.701	146.1	12.0	18.1
1988	05 09	16 38.05	-18 27.0					
1988	05 19	16 29.61	-17 46.8	1.675	2.675	168.5	4.3	17.6
1988	05 29	16 20.07	-17 05.4					
1988	06 08	16 10.48	-16 25.9	1.650	2.646	166.1	5.3	17.6
1988	06 18	16 01.89	-15 52.2					
1988	06 28	15 55.22	-15 27.3	1.727	2.616	143.7	13.3	18.0
1988	07 08	15 51.02	-15 13.3					
1988	07 18	15 49.52	-15 10.6	1.883	2.585	123.3	19.2	18.3
1988	07 28	15 50.76	-15 18.6					
1988	08 07	15 54.59	-15 35.7	2.086	2.553	105.6	22.5	18.6
1988	08 17	16 00.79	-16 00.1					
1988	08 27	16 09.13	-16 29.5	2.308	2.520	90.0	23.6	18.8

1983 AH1 a,e,i = 2.55, 0.21, 17 Elements MPC 11732

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 20	16 56.47	-05 59.3	2.354	2.782	104.9	20.2	19.0
1988	03 30	16 59.18	-05 31.8					
1988	04 09	16 59.39	-05 02.7	2.146	2.818	122.8	17.4	18.7
1988	04 19	16 56.99	-04 34.7					
1988	04 29	16 52.05	-04 11.1	1.989	2.852	142.2	12.5	18.4
1988	05 09	16 44.91	-03 55.2					
1988	05 19	16 36.10	-03 50.1	1.916	2.885	159.4	7.1	18.2
1988	05 29	16 26.47	-03 58.3					
1988	06 08	16 16.92	-04 20.4	1.947	2.915	158.4	7.4	18.2
1988	06 18	16 08.34	-04 56.2					
1988	06 28	16 01.44	-05 44.1	2.082	2.942	141.0	12.6	18.6
1988	07 08	15 56.66	-06 41.5					
1988	07 18	15 54.19	-07 46.0	2.300	2.968	122.2	16.9	19.0
1988	07 28	15 54.05	-08 55.3					
1988	08 07	15 56.11	-10 07.1	2.569	2.991	104.6	19.2	19.3
1988	08 17	16 00.19	-11 19.9					
1988	08 27	16 06.09	-12 32.1	2.863	3.012	88.6	19.6	19.5

1978 SQ4 a,e,i = 2.35, 0.22, 5 Elements MPC 11995

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 20	16 56.66	-27 17.5	2.406	2.805	103.1	20.2	19.5
1988	03 30	17 00.96	-27 45.2					
1988	04 09	17 02.70	-28 10.5	2.127	2.783	121.3	17.9	19.2
1988	04 19	17 01.59	-28 32.6					
1988	04 29	16 57.49	-28 49.9	1.896	2.758	141.7	13.1	18.8
1988	05 09	16 50.52	-29 00.4					
1988	05 19	16 41.13	-29 01.4	1.744	2.730	163.6	6.0	18.3
1988	05 29	16 30.18	-28 51.3					
1988	06 08	16 18.84	-28 30.5	1.697	2.699	168.5	4.3	18.1
1988	06 18	16 08.36	-28 01.5					
1988	06 28	15 59.82	-27 28.8	1.756	2.665	146.8	12.0	18.5
1988	07 08	15 53.93	-26 57.2					
1988	07 18	15 51.04	-26 30.4	1.900	2.629	126.0	18.2	18.8
1988	07 28	15 51.20	-26 11.1					
1988	08 07	15 54.23	-25 59.8	2.096	2.590	107.6	21.9	19.1
1988	08 17	15 59.89	-25 56.2					
1988	08 27	16 07.92	-25 59.1	2.313	2.548	91.5	23.3	19.3

1987 EC a,e,i = 2.77, 0.16, 8 Elements MPC 11744

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 20	16 58.85	-29 34.6	2.770	3.138	102.3	18.1	17.5
1988	03 30	17 02.04	-30 12.4					
1988	04 09	17 02.81	-30 48.3	2.520	3.153	120.9	15.8	17.3
1988	04 19	17 00.98	-31 21.3					
1988	04 29	16 56.54	-31 49.4	2.319	3.166	141.1	11.5	16.9
1988	05 09	16 49.72	-32 10.3					
1988	05 19	16 40.99	-32 21.5	2.202	3.178	161.6	5.8	16.6
1988	05 29	16 31.14	-32 21.6					
1988	06 08	16 21.14	-32 10.5	2.192	3.188	166.8	4.2	16.6
1988	06 18	16 11.96	-31 50.4					
1988	06 28	16 04.43	-31 24.6	2.291	3.197	147.7	9.8	16.9
1988	07 08	15 59.09	-30 57.2					
1988	07 18	15 56.20	-30 31.5	2.481	3.203	127.5	14.6	17.2
1988	07 28	15 55.82	-30 10.2					
1988	08 07	15 57.82	-29 54.3	2.730	3.208	109.1	17.4	17.5
1988	08 17	16 02.02	-29 44.4					
1988	08 27	16 08.20	-29 39.9	3.008	3.211	92.2	18.3	17.8

1983 CN3 a,e,i = 2.58, 0.28, 23 Elements MPC 11736

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 20	16 59.56	+03 40.3	2.832	3.225	104.3	17.4	18.6
1988	03 30	17 01.58	+04 59.6					
1988	04 09	17 01.45	+06 21.8	2.621	3.247	120.5	15.4	18.4
1988	04 19	16 59.12	+07 42.8					
1988	04 29	16 54.67	+08 57.9	2.465	3.265	136.0	12.4	18.2
1988	05 09	16 48.36	+10 01.7					
1988	05 19	16 40.65	+10 49.2	2.391	3.280	146.3	9.9	18.0
1988	05 29	16 32.16	+11 16.2					
1988	06 08	16 23.63	+11 20.5	2.413	3.293	144.5	10.3	18.1
1988	06 18	16 15.75	+11 02.2					
1988	06 28	16 09.16	+10 23.2	2.529	3.302	132.5	13.1	18.3
1988	07 08	16 04.26	+09 27.1					
1988	07 18	16 01.29	+08 17.7	2.719	3.308	117.1	15.9	18.5
1988	07 28	16 00.34	+06 59.0					
1988	08 07	16 01.34	+05 34.8	2.957	3.311	101.4	17.5	18.8
1988	08 17	16 04.19	+04 07.9					
1988	08 27	16 08.74	+02 40.7	3.216	3.311	86.4	17.7	18.9