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EDITORIAL NOTICE.

Contributors of perturbed orbital elements are advised that use of the Epoch 1988 Aug. 27.0 ET (rather than 1987 July 24.0 ET) will become effective FOLLOWING the 1987 Oct. 7 batch of MPCs.

* * * * *

ERRATA.

MPC	Line		
10885	4	For	Malaren read Malaren
11990	-16	For	Malaren read Malaren
12012	17	For	Saint-Exupery read Saint-Exupery
12140	-27	Add	The key identification 1963 RH = 1986 AA was found independently by E. Bowell (MPC 10535).

* * * * *

CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Mag.	Obs.
1939 FT	1939 03	22.91690	11 11 01.42	+09 52 10.4	TI 32		062
1987 BJ2 *	1987 01	30.96597	08 31 24.62	+17 02 46.8	MPC11693	17.2	046
1987 BJ2	1987 01	30.98056	08 31 23.64	+17 02 50.5	MPC11693		046
1987 HZ *	1987 04	23.90451	13 46 45.79	-10 50 48.0	MPC11904	16.8	046
1987 HZ	1987 04	23.92083	13 46 44.76	-10 50 44.5	MPC11904		046
1987 HZ	1987 04	24.92552	13 45 36.77	-10 46 55.6	MPC11904		046
1987 HZ	1987 04	24.93976	13 45 35.74	-10 46 52.8	MPC11904		046

* * * * *

IDENTIFICATION CHANGE.

Continuation to MPC 12025.

Object	Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
1971 SE4 *	1971 09	26.88487	23 15 13.43	+08 23 25.6	1971 QU1	16.0	095

* * * * *

IDENTIFICATIONS.

The following list of identifications with numbered minor planets continues that on MPC 11778. All the identifications are by S. Nakano.

1939 FT = (2396) 1949 WP = (2590) 1962 PR = (2586)
1975 BX1 = (2616) 1979 XR = (2478)

* * * * *

OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

010 Caussols. Observer J.-L. Heudier. Measured by R. Chemin.
046 Klet. Observers A. Mrkos and Z. Vavrova.
051 Cape. Observer J. Churms.
069 Baldone, near Riga. Observer A. K. Alksnis.
083 Golosseevo-Kiev. Observers S. P. Major and I. V. Ledovskaya.
085 Kiev. Observer K. I. Churyumov.
095 Crimean Astrophysical Observatory. Observers E. Pavlenko and V. Tarashchuk.
114 Engelhardt Observatory, Zelenchukskaya Station. Observer V. Kitkin.
168 Kourovskaya. Observers S. Timofeev and O. Yuminova.
210 Alma-Ata. Observer D. I. Gorodetskij.
293 Burlington remote site. Observer T. Handley.
372 Geisei. 0.6-m reflector. Observer T. Seki.
378 Muro. Observer S. Washi. From Yamamoto Circ. (with correction).
391 Sendai Observatory, Ayashi station. 0.20-m f/5.5 reflector. Observer M. Koishikawa. Communicated by T. Izumi.
400 Kitami. Observers K. Endate, T. Fujii and M. Yanai. Measured by K. Watanabe.
413 Siding Spring. Uppsala Schmidt and 1.2-m U.K. Schmidt. Measured by R. H. McNaught.
414 Uppsala Southern Station. Measured by C.-I. Lagerkvist.
415 Kambah, near Canberra. Observer D. Herald.
474 Mt. John University Observatory. 0.6-m reflector. Observer A. C. Gilmore. Measured by P. M. Kilmartin.
494 Stakenbridge. Observer B. Manning. 0.26-m reflector. Communicated by G. M. Hurst.
576 Burwash. 0.57-m f/4.7 reflector. Observer A. Young.
583 Odessa-Mayaki. Observer E. Kramer.
657 Victoria. Observers D. D. Balam and J. Tatum.
675 Palomar. 0.46-m Schmidt and 1.5-m reflector+CCD. Observer J. Gibson.
691 University of Arizona, Kitt Peak. 0.91-m SPACEWATCH telescope, CCD in scanning mode. Observers T. Gehrels and J. Scotti.
801 Oak Ridge Observatory. Observers R. E. McCrosky, G. Schwartz and C.-Y. Shao.
877 Okutama. 0.26-m reflector. Observers T. Hioki and S. Hayakawa. Communicated by T. Kobayashi.
883 Shizuoka. Observers M. Kizawa and W. Kakkei. From Nihondaira Obs. Circ.
892 YGCO Hoshikawa and Nagano Stations. 0.25-m f/3.4 Wright-Schmidt. Observers T. Kojima, S. Hayakawa and K. Hirota. From Nihondaira Obs. Circ.
894 Kiyosato. 0.16-m f/6.2 reflector. Observer N. Sasanuma. Measured by S. Miyasaka. From Nihondaira Obs. Circ.
984 Eastfield. Observer H. B. Ridley.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N Obs.
		Periodic Comet Haneda-Campos				
/1978 XX	1978	07 30.60763	20 42 07.44	-16 37 04.8	16 T	1 414
/1978 XX	1978	07 30.62009	20 42 07.28	-16 37 15.4		1 414

Periodic Comet Halley

/1982i	1985	08	18.01362	06	02	03.17	+19	08	43.9		114
/1982i	1985	09	19.05238	06	12	58.71	+19	40	45.9	2	583
/1982i	1985	10	22.03795	05	50	10.10	+21	03	40.3		095
/1982i	1985	11	02.82744	05	14	55.55	+21	55	50.0		114
/1982i	1985	11	03.92241	05	10	04.72	+22	00	11.4		085
/1982i	1985	12	17.66429	23	02	40.23	+02	16	58.7		069
/1982i	1985	12	25.65853	22	32	22.46	-00	48	03.4		168
/1982i	1986	01	19.54253	21	38	38.80	-06	11	57.0		210
/1982i	1986	04	30.83323	10	55	13.15	-18	27	44.1		083
/1982i	1987	04	25.89132	09	49	30.82	-07	09	34.2		576

Periodic Comet Grigg-Skjellerup

/1986m	1987	07	16.50682	12	26	21.92	+12	51	09.9		892
/1986m	1987	07	28.06696	13	26	42.66	+11	36	04.1		801
/1986m	1987	08	18.16198	15	05	39.37	+07	37	56.4	16.4T 3	691
/1986m	1987	08	18.17253	15	05	42.04	+07	37	48.6	3	691
/1986m	1987	08	18.19684	15	05	48.25	+07	37	30.0	19.3N 3	691

Comet Sorrells (1986n)

/1986n	1987	06	29.31910	21	20	52.40	+09	18	35.7		657
/1986n	1987	06	29.33333	21	20	48.92	+09	18	29.2		293
/1986n	1987	06	29.33681	21	20	48.07	+09	18	23.1		293
/1986n	1987	07	13.49931	20	16	14.90	+04	59	10.0	11 T	372
/1986n	1987	07	14.88021	20	09	42.60	+04	28	22.7		046
/1986n	1987	07	14.88472	20	09	41.24	+04	28	17.5		046
/1986n	1987	07	16.51979	20	01	59.01	+03	51	05.5		892
/1986n	1987	07	16.57361	20	01	43.78	+03	49	51.2		892
/1986n	1987	07	16.88409	20	00	16.33	+03	42	40.4		046
/1986n	1987	07	16.88854	20	00	15.30	+03	42	35.4		046
/1986n	1987	07	17.34035	19	58	08.21	+03	32	07.4		657
/1986n	1987	07	17.88478	19	55	36.08	+03	19	29.2		046
/1986n	1987	07	17.88912	19	55	34.66	+03	19	23.4		046
/1986n	1987	07	21.27507	19	40	03.26	+01	59	48.3		657
/1986n	1987	07	21.87225	19	37	22.55	+01	45	40.5		046
/1986n	1987	07	21.87664	19	37	21.41	+01	45	34.3		046
/1986n	1987	07	23.14625	19	31	43.57	+01	15	33.9		801
/1986n	1987	07	25.95719	19	19	38.46	+00	09	25.5		494
/1986n	1987	07	25.97547	19	19	33.91	+00	09	01.0		494
/1986n	1987	07	25.99375	19	19	29.36	+00	08	35.3		984
/1986n	1987	07	26.55035	19	17	10.69	-00	04	17.4		894
/1986n	1987	07	26.65868	19	16	43.78	-00	06	50.1		894
/1986n	1987	07	27.15803	19	14	39.30	-00	18	28.4		801
/1986n	1987	07	31.57089	18	57	21.58	-01	58	16.1		894
/1986n	1987	07	31.58125	18	57	18.93	-01	58	28.1		894
/1986n	1987	08	02.29757	18	51	02.92	-02	35	53.7		657

Periodic Comet Wiseman-Skiff

/1987b	1987	01	09.59402	07	52	59.42	+02	56	16.7	4	413
/1987b	1987	01	09.65652	07	52	55.60	+02	54	49.1	4	413
/1987b	1987	01	31.51804	07	35	38.05	-02	51	23.7		413
/1987b	1987	01	31.58749	07	35	35.59	-02	51	59.2		413

Periodic Comet Wild 3

/1987e	1987	07	21.16185	14	05	57.18	-08	07	05.9		691
/1987e	1987	07	22.16436	14	06	52.05	-08	19	47.6	5	691
/1987e	1987	07	22.17178	14	06	52.48	-08	19	53.8	18.1T 5	691
/1987e	1987	07	22.18300	14	06	53.08	-08	20	02.3	5	691

Periodic Comet Howell

/1987h	1987	07	27.33446	01	12	29.71	-00	55	04.0		801
/1987h	1987	07	28.41326	01	13	23.33	-00	53	01.0		657
/1987h	1987	08	02.44479	01	17	01.98	-00	46	07.2		657
/1987h	1987	08	03.43646	01	17	39.04	-00	45	19.8		657
/1987h	1987	08	07.41986	01	19	48.20	-00	44	02.0		657

Periodic Comet Klemola

/1987i	1987	06	29.31458	23	15	39.93	+05	43	55.7		293
/1987i	1987	07	21.99283	23	51	56.32	+07	44	09.8		046
/1987i	1987	07	22.00002	23	51	56.94	+07	44	10.2		046
/1987i	1987	07	24.68680	23	55	36.30	+07	49	23.4		892
/1987i	1987	07	24.72500	23	55	39.06	+07	49	27.5		892
/1987i	1987	07	27.26930	23	58	57.29	+07	52	14.0		801
/1987i	1987	07	28.40146	00	00	22.53	+07	52	48.3		657
/1987i	1987	07	30.31899	00	02	42.30	+07	52	52.3		801
/1987i	1987	08	02.41181	00	06	15.90	+07	50	17.3		657
/1987i	1987	08	17.36947	00	19	42.58	+06	51	23.7	14.9T 6	691
/1987i	1987	08	17.37182	00	19	42.69	+06	51	22.5	17.1N	691
/1987i	1987	08	17.38269	00	19	43.08	+06	51	18.5		691
/1987i	1987	08	18.55556	00	20	29.38	+06	43	20.9		400
/1987i	1987	08	18.57014	00	20	30.06	+06	43	14.1		400

Periodic Comet Reinmuth 2

/1987l	1987	07	21.29113	20	25	49.91	-18	00	17.3		691
/1987l	1987	07	21.37826	20	25	45.85	-18	00	00.9		691
/1987l	1987	07	21.39044	20	25	45.32	-17	59	58.6		691
/1987l	1987	07	22.35889	20	25	02.43	-17	56	57.4		691
/1987l	1987	07	22.36766	20	25	02.01	-17	56	56.0	15 T	691
/1987l	1987	07	22.37682	20	25	01.55	-17	56	53.9		691
/1987l	1987	07	23.20870	20	24	24.43	-17	54	21.0		801
/1987l	1987	07	28.34556	20	20	27.17	-17	38	23.6		657
/1987l	1987	07	28.36361	20	20	26.25	-17	38	24.1		657
/1987l	1987	07	30.13796	20	19	03.30	-17	32	50.8		801
/1987l	1987	08	02.32882	20	16	34.26	-17	22	51.5		657
/1987l	1987	08	03.33611	20	15	47.91	-17	19	42.5		657
/1987l	1987	08	20.90070	20	04	39.74	-16	22	24.0		010

Periodic Comet Brooks 2

/1987m	1987	07	21.33635	00	03	13.34	+03	39	24.6		691
/1987m	1987	07	21.34259	00	03	13.98	+03	39	26.7		691
/1987m	1987	07	21.36295	00	03	15.26	+03	39	34.1		691
/1987m	1987	07	22.39044	00	04	23.88	+03	44	41.2	7	691
/1987m	1987	07	22.39432	00	04	24.15	+03	44	42.9		691
/1987m	1987	07	22.40660	00	04	24.93	+03	44	46.5	16.8T	691
/1987m	1987	07	22.42916	00	04	26.40	+03	44	53.0		691
/1987m	1987	07	27.29354	00	09	37.70	+04	06	50.3		801
/1987m	1987	07	30.33636	00	12	39.81	+04	18	22.5		801
/1987m	1987	08	25.37611	00	30	39.07	+04	35	17.9		657

Periodic Comet Harrington

/1987n	1987	07	21.30068	19	47	50.28	-20	17	38.3		691
/1987n	1987	07	21.30932	19	47	49.91	-20	17	43.1		691
/1987n	1987	07	21.31858	19	47	49.51	-20	17	49.4		691
/1987n	1987	07	22.30699	19	47	09.55	-20	27	59.6		691
/1987n	1987	07	22.32456	19	47	08.70	-20	28	10.5		691
/1987n	1987	07	22.33031	19	47	08.51	-20	28	13.7	15.6T 8	691
/1987n	1987	08	17.20830	19	33	03.37	-24	58	21.1		691

/1987n	1987	08	17.21417	19	33	03.24	-24	58	24.1		691
/1987n	1987	08	17.22653	19	33	03.00	-24	58	31.5		691
/1987n	1987	08	18.20407	19	32	50.64	-25	07	43.1		691
/1987n	1987	08	18.23502	19	32	50.12	-25	08	01.1	15.5T	691
/1987n	1987	08	18.24176	19	32	50.01	-25	08	04.2	18.1N	691
/1987n	1987	08	18.24741	19	32	49.95	-25	08	07.7		691

Comet Shoemaker (1987o)

/1987o	1987	06	06.27361	16	03	26.88	+12	36	13.0		293
/1987o	1987	07	16.54798	15	27	18.33	+14	45	44.6		892
/1987o	1987	07	16.57951	15	27	17.33	+14	45	47.9		892
/1987o	1987	07	16.61111	15	27	15.97	+14	45	48.3		892
/1987o	1987	07	16.90613	15	27	04.69	+14	46	03.4		046
/1987o	1987	07	16.91672	15	27	04.41	+14	46	05.6		046
/1987o	1987	07	17.90448	15	26	27.35	+14	46	42.7		046
/1987o	1987	07	21.89251	15	24	05.99	+14	48	22.5		046
/1987o	1987	07	21.90529	15	24	05.70	+14	48	22.7		046
/1987o	1987	07	23.07763	15	23	26.79	+14	48	37.9		801
/1987o	1987	07	29.06883	15	20	26.80	+14	48	07.9		801

Periodic Comet Reinmuth 1

/1987r	1987	08	17.40030	04	03	36.35	+12	29	18.7	9	691
/1987r	1987	08	17.42252	04	03	37.88	+12	29	22.2	9	691
/1987r	1987	08	17.43734	04	03	38.92	+12	29	23.4	19.6T 9	691

Comet Bradfield (1987s)

/1987s	1987	08	12.34219	14	11	22.46	-23	07	14.9	9.3T	474
/1987s	1987	08	12.35052	14	11	23.04	-23	07	08.2		474
/1987s	1987	08	12.38749	14	11	25.80	-23	06	37.9	8.5T	413
/1987s	1987	08	12.39682	14	11	26.52	-23	06	30.0		413
/1987s	1987	08	13.31321	14	12	36.69	-22	52	52.1	9 T	474
/1987s	1987	08	13.32009	14	12	37.23	-22	52	46.3		474
/1987s	1987	08	13.71846	14	13	08.25	-22	46	55.4		051
/1987s	1987	08	13.72847	14	13	09.05	-22	46	45.7		051
/1987s	1987	08	14.35537	14	13	58.32	-22	37	32.2		415
/1987s	1987	08	14.35740	14	13	58.48	-22	37	30.5		415
/1987s	1987	08	14.45555	14	14	06.03	-22	36	10.4		877
/1987s	1987	08	14.46180	14	14	06.90	-22	36	05.4		877
/1987s	1987	08	15.46874	14	15	27.56	-22	21	16.6		413
/1987s	1987	08	15.48645	14	15	28.98	-22	21	01.3		413
/1987s	1987	08	16.40354	14	16	44.28	-22	07	46.1		415
/1987s	1987	08	16.45394	14	16	48.3	-22	07	08		378
/1987s	1987	08	19.49375	14	21	08.73	-21	23	37.2		413
/1987s	1987	08	19.49873	14	21	09.18	-21	23	33.3		413
/1987s	1987	08	20.47406	14	22	36.18	-21	09	50.9		413
/1987s	1987	08	20.47604	14	22	36.32	-21	09	49.0		413
/1987s	1987	08	21.43237	14	24	03.16	-20	56	25.3		415
/1987s	1987	08	21.44035	14	24	03.92	-20	56	20.5		415
/1987s	1987	08	22.41458	14	25	34.18	-20	42	46.9		413
/1987s	1987	08	22.41841	14	25	34.51	-20	42	45.8		413
/1987s	1987	08	22.43284	14	25	35.75	-20	42	32.0		415
/1987s	1987	08	26.42719	14	32	02.67	-19	47	50.0		892
/1987s	1987	08	26.43020	14	32	02.68	-19	47	47.5		892
/1987s	1987	08	26.43159	14	32	03.11	-19	47	47.4		892
/1987s	1987	08	26.43321	14	32	03.14	-19	47	44.4		892
/1987s	1987	08	26.44270	14	32	04.38	-19	47	34.5		892
/1987s	1987	08	28.44184	14	35	28.17	-19	20	28.1		372
/1987s	1987	08	28.45330	14	35	29.29	-19	20	19.4		372

Periodic Comet Jackson-Neujmin (1987t)

/1987t	1987	07	25.47951	04 43 43.30	+12 46 21.4			675
/1987t	1987	07	25.48361	04 43 43.92	+12 46 21.5			675
/1987t	1987	08	17.48258	05 40 01.76	+11 56 16.5			691
/1987t	1987	08	17.48425	05 40 01.95	+11 56 17.6			691
/1987t	1987	08	17.48596	05 40 02.18	+11 56 16.0			691
/1987t	1987	08	18.47476	05 42 13.60	+11 52 27.1	18.3T	A	691

Comet Rudenko (1987u)

/1987u	1987	08	22.10767	14 05 12.11	+33 40 20.1		B	801
/1987u	1987	08	22.14815	14 05 04.30	+33 39 29.0			801
/1987u	1987	08	22.21875	14 04 50.47	+33 38 11.5			675
/1987u	1987	08	22.24583	14 04 45.33	+33 37 37.9			657
/1987u	1987	08	22.25104	14 04 44.29	+33 37 32.5			675
/1987u	1987	08	22.40196	14 04 14.94	+33 34 49.3		C	413
/1987u	1987	08	23.22431	14 01 38.51	+33 18 40.9			657
/1987u	1987	08	24.03444	13 59 07.63	+33 03 04.8			801
/1987u	1987	08	24.21597	13 58 34.15	+32 59 34.4			657
/1987u	1987	08	24.89097	13 56 31.44	+32 46 29.1			494
/1987u	1987	08	24.90842	13 56 28.22	+32 46 08.9			494
/1987u	1987	08	25.04738	13 56 03.21	+32 43 30.3			801
/1987u	1987	08	25.24278	13 55 28.48	+32 39 39.9			657
/1987u	1987	08	26.07192	13 53 01.41	+32 23 44.7			801
/1987u	1987	08	26.21049	13 52 37.05	+32 20 59.3			657
/1987u	1987	08	26.43912	13 51 57.42	+32 16 38.4			892
/1987u	1987	08	26.44948	13 51 55.74	+32 16 27.6	9.5T		391
/1987u	1987	08	26.45156	13 51 55.49	+32 16 25.9			892
/1987u	1987	08	26.45312	13 51 55.15	+32 16 24.2			892
/1987u	1987	08	26.46250	13 51 53.18	+32 16 10.3	9 T		883
/1987u	1987	08	26.46423	13 51 52.76	+32 16 10.2			892
/1987u	1987	08	26.47153	13 51 51.59	+32 16 00.5			883
/1987u	1987	08	26.47605	13 51 50.75	+32 15 55.3			391
/1987u	1987	08	26.47864	13 51 50.63	+32 15 54.2			892
/1987u	1987	08	26.47917	13 51 50.26	+32 15 50.8			883
/1987u	1987	08	26.48263	13 51 49.73	+32 15 52.3			892
/1987u	1987	08	27.87924	13 47 51.31	+31 48 53.2			494
/1987u	1987	08	27.89822	13 47 48.25	+31 48 31.6			494
/1987u	1987	08	31.16356	13 38 58.27	+30 46 00.5	17.3N		691
/1987u	1987	08	31.17413	13 38 56.57	+30 45 48.2			691

Periodic Comet Gehrels 1

/1987v	1987	08	29.42566	04 09 01.82	+26 37 37.7			691
/1987v	1987	08	29.48542	04 09 05.11	+26 38 00.5			691
/1987v	1987	08	31.42880	04 10 53.74	+26 49 43.2			691
/1987v	1987	08	31.47502	04 10 56.27	+26 50 00.1	17.1T	D	691

Note 1: prediscovery image. 2: correction to MPC 10070. 3: 42" tail in p.a. 102 . 4: very weak image. 5: 30" tail in p.a. 110 . 6: slightly curved tail > 7′.2 long from p.a. 236 to 248 . 7: 111" tail in p.a. 246 . 8: 85" tail in p.a. 265 . 9: weak coma, measurement uncertain. A: image diffuse with 19" coma. B: trailed image. C: dark plate, comet near edge; low altitude. D: 82" tail in p.a. 262 .

* * * * *

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.
033 Tautenburg								
S. Marx, Karl Schwarzschild Observatorium, DDR-6901 Tautenburg, Democratic Republic of Germany								
Observers F. Borngen, W. Hogner, N. Richter								
Measurer F. Borngen								
1.3-m Schmidt telescope								
SAOC								
1961 CO	*	1961 02 14.92708		08 31 19.73	+20 54 03.3		u	033
1961 CO		1961 02 15.94618		08 30 31.67	+20 57 04.6	18.0		033
1961 CO		1961 02 15.97292		08 30 30.36	+20 57 14.7			033
1961 CP	*	1961 02 15.94618		08 30 11.26	+18 36 56.4	17.9		033
1961 CP		1961 02 15.97292		08 30 10.01	+18 37 01.2			033
1961 CP		1961 02 17.92431		08 28 50.44	+18 41 58.5			033
1961 CP		1961 02 17.96597		08 28 49.09	+18 42 03.5			033
1961 CQ	*	1961 02 15.94618		08 30 35.09	+18 48 50.1	17.3		033
1961 CQ		1961 02 15.97292		08 30 33.77	+18 49 00.4			033
1961 CQ		1961 02 17.92431		08 29 05.10	+19 01 02.5			033
1961 CQ		1961 02 17.96597		08 29 03.65	+19 01 14.4			033
1961 CR	*	1961 02 15.94618		08 31 36.53	+18 52 27.5	18.6		033
1961 CR		1961 02 15.97292		08 31 34.99	+18 52 37.1			033
1961 CR		1961 02 17.92431		08 29 54.76	+19 03 08.0			033
1961 CR		1961 02 17.96597		08 29 53.01	+19 03 18.1			033

1961	CS	*	1961	02	15.94618	08	33	13.82	+19	15	37.4	19.3	033
1961	CS		1961	02	15.97292	08	33	13.03	+19	15	42.2		033
1961	CT	*	1961	02	15.94618	08	33	22.54	+18	47	44.2	18.1	033
1961	CT		1961	02	15.97292	08	33	21.01	+18	47	42.7		033
1961	CT		1961	02	17.92431	08	31	30.51	+18	45	25.4		033
1961	CT		1961	02	17.96597	08	31	28.45	+18	45	20.9		033
1961	CU	*	1961	02	15.94618	08	34	14.83	+19	18	20.7	18.8	033
1961	CU		1961	02	15.97292	08	34	13.27	+19	18	27.9		033
1961	CU		1961	02	17.92431	08	32	34.33	+19	26	18.1		033
1961	CU		1961	02	17.96597	08	32	32.63	+19	26	26.4		033
1961	CV	*	1961	02	15.94618	08	34	24.00	+20	37	31.3	18.4	033
1961	CV		1961	02	15.97292	08	34	22.96	+20	37	35.3		033
1961	CV		1961	02	17.92431	08	32	55.28	+20	41	55.3		033
1961	CV		1961	02	17.96597	08	32	53.41	+20	42	00.3		033
1961	CW	*	1961	02	15.94618	08	34	32.38	+19	34	24.3	18.7	033
1961	CW		1961	02	15.97292	08	34	30.94	+19	34	31.7		033
1961	CW		1961	02	17.92431	08	33	07.06	+19	43	01.9	I	033
1961	CW		1961	02	17.96597	08	33	05.36	+19	43	11.8		033
1961	CX	*	1961	02	15.94618	08	34	38.26	+18	33	58.2	17.7	033
1961	CX		1961	02	15.97292	08	34	36.78	+18	34	05.5		033
1961	CX		1961	02	17.92431	08	32	59.64	+18	42	25.0		033
1961	CX		1961	02	17.96597	08	32	57.83	+18	42	33.8		033
1961	CY	*	1961	02	15.94618	08	36	03.89	+20	58	39.8	18.3	033
1961	CY		1961	02	15.97292	08	36	02.59	+20	58	43.7		033
1961	CY		1961	02	17.92431	08	34	42.70	+21	02	51.2		033
1961	CY		1961	02	17.96597	08	34	41.49	+21	02	55.2		033
1961	CZ	*	1961	02	15.94618	08	40	54.85	+20	06	10.9	18.7	033
1961	CZ		1961	02	15.97292	08	40	53.64	+20	06	20.4		033
1961	CZ		1961	02	17.92431	08	39	32.23	+20	16	56.3		033
1961	CZ		1961	02	17.96597	08	39	30.89	+20	17	07.2		033
1961	CA1	*	1961	02	15.94618	08	41	05.28	+19	40	16.6	18.9	033
1961	CA1		1961	02	15.97292	08	41	04.10	+19	40	20.1		033
1961	CA1		1961	02	17.92431	08	39	38.31	+19	44	48.8		033
1961	CA1		1961	02	17.96597	08	39	36.58	+19	44	54.2		033
1961	CB1	*	1961	02	15.94618	08	41	30.89	+19	54	26.6	17.2	033
1961	CB1		1961	02	15.97292	08	41	29.46	+19	54	31.2		033
1961	CB1		1961	02	17.92431	08	39	55.43	+19	59	24.0		033
1961	CB1		1961	02	17.96597	08	39	53.66	+19	59	29.6		033
1961	DL	*	1961	02	17.92431	08	33	51.16	+19	55	37.1	18.3	033
1961	DL		1961	02	17.96597	08	33	49.66	+19	55	38.4		033
1961	DM	*	1961	02	17.92431	08	41	07.90	+19	40	24.9	19.4	033
1961	DM		1961	02	17.96597	08	41	06.25	+19	40	30.6		033
1961	DN	*	1961	02	17.92431	08	41	15.34	+20	02	13.6	16.5	033
1961	DN		1961	02	17.96597	08	41	13.76	+20	02	21.1		033
1961	EC	*	1961	03	09.88056	08	10	52.33	+21	05	19.0	19.4	033
1961	ED	*	1961	03	09.88056	08	11	30.18	+20	03	08.7	17.2	033
1961	EE	*	1961	03	09.88056	08	18	45.81	+21	13	47.8	18.1	033
1961	EF	*	1961	03	09.88056	08	18	55.19	+22	39	35.6	19.0	033
1961	EG	*	1961	03	09.88056	08	19	15.80	+20	21	45.0	18.9	033
1961	EH	*	1961	03	09.88056	08	21	04.80	+20	29	00.3	17.8	033
1962	CS	*	1962	02	10.02222	08	30	30.40	+19	36	05.3	17.9	033
1962	CS		1962	02	10.04306	08	30	29.78	+19	36	07.9		033
1962	CT	*	1962	02	10.02222	08	30	58.04	+20	34	33.1	17.2	033
1962	CT		1962	02	10.04306	08	30	56.84	+20	34	33.2		033
1962	CU	*	1962	02	10.02222	08	31	07.73	+20	51	29.7	18.6	033
1962	CU		1962	02	10.04306	08	31	07.01	+20	51	31.4		033
1962	CV	*	1962	02	10.02222	08	33	09.92	+21	28	46.8	18.6	033
1962	CV		1962	02	10.04306	08	33	08.90	+21	28	47.0		033
1962	CW	*	1962	02	10.02222	08	33	41.61	+20	32	25.5	18.7	033

1962	CW		1962	02	10.04306	08	33	40.70	+20	32	31.2			033
1962	CX	*	1962	02	10.02222	08	34	48.70	+20	30	40.1	18.2		033
1962	CX		1962	02	10.04306	08	34	47.84	+20	30	42.6			033
1962	CY	*	1962	02	10.02222	08	36	16.04	+20	12	30.0	18.5		033
1962	CY		1962	02	10.04306	08	36	15.23	+20	12	34.2			033
1962	CZ	*	1962	02	10.02222	08	39	00.67	+18	56	44.6	17.6		033
1962	CZ		1962	02	10.04306	08	38	59.93	+18	56	48.3			033
1962	CA1	*	1962	02	10.02222	08	39	08.73	+18	37	44.5	18.4		033
1962	CA1		1962	02	10.04306	08	39	07.78	+18	37	48.4			033
1962	CB1	*	1962	02	10.02222	08	39	14.91	+18	38	07.7	18.5		033
1962	CB1		1962	02	10.04306	08	39	13.90	+18	38	09.6			033
1962	CC1	*	1962	02	10.02222	08	39	33.66	+21	36	03.1	18.2		033
1962	CC1		1962	02	10.04306	08	39	32.31	+21	36	03.0			033
1962	CD1	*	1962	02	10.02222	08	40	03.95	+20	16	58.1	19.1		033
1962	CD1		1962	02	10.04306	08	40	02.76	+20	17	05.8			033
1962	CE1	*	1962	02	10.02222	08	42	38.10	+21	08	04.7	18.8		033
1962	CE1		1962	02	10.04306	08	42	37.21	+21	08	07.6			033
1962	CF1	*	1962	02	10.02222	08	43	03.84	+19	47	31.3	18.1		033
1962	CF1		1962	02	10.04306	08	43	02.84	+19	47	35.1			033
1962	CG1	*	1962	02	10.02222	08	43	46.40	+20	06	37.1	17.8		033
1962	CG1		1962	02	10.04306	08	43	45.51	+20	06	47.3			033
1962	EE	*	1962	03	08.80694	08	31	32.24	+18	10	04.4	19.0	N	033
1962	EE		1962	03	09.85833	08	31	16.78	+18	14	37.3			033
1962	EE		1962	03	09.87222	08	31	16.60	+18	14	41.8			033
1962	EE		1962	03	09.88542	08	31	16.38	+18	14	44.2			033
1962	EF	*	1962	03	08.80694	08	38	13.88	+20	56	06.9	16.7		033
1962	EF		1962	03	09.85833	08	37	51.75	+20	54	43.6			033
1962	EF		1962	03	09.87222	08	37	51.44	+20	54	42.7			033
1962	EF		1962	03	09.88542	08	37	51.18	+20	54	41.3			033
1962	EG	*	1962	03	08.80694	08	38	15.69	+19	21	50.8	18.7		033
1962	EG		1962	03	09.85833	08	37	49.85	+19	24	53.2			033
1962	EG		1962	03	09.87222	08	37	49.53	+19	24	56.1			033
1962	EG		1962	03	09.88542	08	37	49.23	+19	24	58.3			033
1962	EH	*	1962	03	08.80694	08	38	30.76	+19	49	26.4	16.1		033
1962	EH		1962	03	09.85833	08	38	05.04	+19	50	18.8			033
1962	EH		1962	03	09.87222	08	38	04.69	+19	50	19.7			033
1962	EH		1962	03	09.88542	08	38	04.39	+19	50	20.1			033
283			1962	12	05.20625	08	22	32.05	+22	24	27.9	14.3		033
324			1962	03	08.80694	08	39	09.11	+20	56	20.0	12.5		033
324			1962	03	09.85833	08	38	37.64	+20	54	40.2			033
324			1962	03	09.87222	08	38	37.23	+20	54	39.3			033
324			1962	03	09.88542	08	38	36.82	+20	54	37.5			033
870			1962	02	10.02222	08	38	27.33	+20	15	43.3	16.7		033
870			1962	02	10.04306	08	38	26.34	+20	15	48.5			033
938			1962	02	10.02222	08	32	47.36	+19	30	30.5	17.1		033
938			1962	02	10.04306	08	32	46.65	+19	30	32.9			033
1240			1961	03	09.88056	08	19	50.62	+21	45	14.9	15.8		033
1576			1961	02	15.94618	08	29	18.47	+18	13	09.6	15.7		033
1576			1961	02	15.97292	08	29	17.34	+18	13	14.3			033
1682			1961	02	15.94618	08	35	39.16	+19	58	55.6	18.2	I	033
1682			1961	02	15.97292	08	35	37.44	+19	58	59.0			033
1682			1961	02	17.92431	08	33	45.59	+20	02	32.3			033
1682			1961	02	17.96597	08	33	43.20	+20	02	35.4			033
1682			1961	03	09.88056	08	20	19.39	+20	17	04.9	19.2		033
1725			1962	02	10.02222	08	30	36.56	+19	50	23.7	16.6		033
1725			1962	02	10.04306	08	30	35.71	+19	50	26.7			033

046 Klet
A. Mrkos, Dept. of Astronomy and Astrophysics, Charles University,

Svedska 8, C-15000 Prague 5, Czechoslovakia
Observers A. Mrkos, Z. Vavrova
0.6-m Maksutov reflector

1987 HZ		1987 04 27.86273	13 42 19.57	-10 35 57.6					046
1987 HZ		1987 04 27.87685	13 42 18.43	-10 35 53.9					046
1987 HS2	*	1987 04 24.96285	13 58 32.13	-11 01 43.4					046
1987 HS2		1987 04 24.97708	13 58 31.37	-11 01 34.1					046
1987 OG	*	1987 07 21.96102	19 59 11.52	-21 51 27.0					046
1987 OG		1987 07 21.97514	19 59 10.72	-21 51 28.4					046
1987 OH	*	1987 07 21.96102	20 00 47.49	-23 31 17.9				16.9	046
1987 OH		1987 07 21.97514	20 00 46.51	-23 31 17.1					046
1987 OJ	*	1987 07 21.96102	20 00 59.93	-24 06 22.5				17.0	046
1987 OJ		1987 07 21.97514	20 00 58.61	-24 06 15.0					046
1987 OK	*	1987 07 21.96102	20 01 00.74	-22 14 16.1				16.7	046
1987 OK		1987 07 21.97514	20 00 59.97	-22 14 25.2					046
1987 OL	*	1987 07 21.96102	20 03 03.40	-24 28 36.5				16.7	046
1987 OL		1987 07 21.97514	20 03 02.86	-24 28 32.3					046
203		1987 07 21.96102	20 04 28.75	-24 16 20.4					046
203		1987 07 21.97514	20 04 27.88	-24 16 22.2					046
345		1987 07 22.91773	19 57 41.28	-03 47 55.0					046
345		1987 07 22.93405	19 57 40.21	-03 47 56.4					046
1882		1987 07 22.91773	19 56 08.77	-05 41 50.9					046
1882		1987 07 22.93405	19 56 08.03	-05 41 52.6					046
3451		1987 07 21.92554	20 28 29.42	+06 21 59.4					046
3451		1987 07 21.94111	20 28 29.01	+06 21 56.4					046
3451		1987 07 22.88596	20 28 00.86	+06 19 18.8					046
3451		1987 07 22.89730	20 28 00.57	+06 19 18.8					046

057 Belgrade
D. Olevic, Astronomical Observatory, Volgina 7, YG-11050 Belgrade, Yugoslavia
Observer D. Olevic
Reductions D. Olevic and S. Shegan
Zeiss 0.16-m f/5 astrograph

5		1983 03 13.88515	10 36 00.22	+12 50 40.9					057
5		1983 03 13.90622	10 35 59.34	+12 50 49.6					057
5		1983 03 18.91146	10 32 48.91	+13 22 30.6					057
5		1983 03 18.92430	10 32 48.47	+13 22 34.7					057
8		1983 05 13.91168	14 41 17.86	-06 25 05.6					057
8		1983 05 13.93064	14 41 16.96	-06 25 05.1					057
8		1983 05 13.94210	14 41 16.33	-06 25 01.1					057
8		1983 05 15.93388	14 39 17.32	-06 19 20.4					057
8		1983 05 15.94533	14 39 16.86	-06 19 17.3					057
10		1982 02 16.81920	07 52 11.46	+18 54 28.6					057
10		1982 02 16.82848	07 52 11.25	+18 54 31.7					057
10		1982 02 16.83682	07 52 10.88	+18 54 31.8					057
12		1982 11 21.79114	00 00 31.23	+06 55 12.1					057
12		1982 11 21.80016	00 00 31.48	+06 55 10.1					057
14		1982 11 08.96386	04 10 50.88	+14 07 16.6					057
14		1982 11 21.92516	03 58 15.29	+13 58 32.5					057
14		1982 11 21.93419	03 58 14.72	+13 58 32.0					057
19		1982 11 08.85510	00 55 12.71	+06 00 21.0					057
19		1982 11 08.86405	00 55 12.53	+06 00 19.4					057
19		1982 11 08.87337	00 55 12.32	+06 00 16.2					057
20		1979 09 13.94550	23 19 10.52	-03 37 54.2					057
20		1979 09 21.93034	23 11 55.24	-04 26 16.1					057
20		1979 09 21.93902	23 11 54.79	-04 26 19.7					057
43		1979 09 20.12196	03 51 53.45	+23 41 48.4					057
44		1979 09 21.96926	00 23 55.64	-02 37 10.6					057

51	1979	07	18.95262	20	49	08.97	-04	36	26.6	057
51	1979	07	18.97798	20	49	07.78	-04	36	33.1	057
55	1982	11	08.90843	02	05	01.74	+19	07	23.6	057
55	1982	11	08.92039	02	05	01.05	+19	07	23.7	057
55	1982	11	08.93201	02	05	00.31	+19	07	25.7	057
55	1982	11	21.85068	01	54	46.06	+18	39	36.7	057
55	1982	11	21.86197	01	54	45.66	+18	39	35.2	057
80	1979	06	07.02465	18	07	04.20	-12	13	19.7	057
129	1981	06	03.01842	18	48	40.63	-07	54	39.9	057
129	1981	07	01.93647	18	27	50.69	-09	49	50.0	057
129	1981	07	01.94654	18	27	50.24	-09	49	55.5	057
129	1981	07	08.88819	18	22	15.86	-10	37	04.6	057
129	1981	07	08.89977	18	22	15.41	-10	37	08.8	057
185	1979	06	07.00104	17	45	27.75	+09	56	57.0	057
230	1982	11	22.03523	06	35	16.86	+17	15	56.2	057
230	1982	11	22.04785	06	35	16.45	+17	15	52.7	057
230	1982	11	22.05919	06	35	16.03	+17	15	49.7	057
349	1982	11	21.95664	04	42	51.02	+29	49	26.0	057
349	1982	11	21.96405	04	42	50.52	+29	49	25.1	057
349	1982	11	21.97481	04	42	50.08	+29	49	28.3	057
354	1983	05	13.99002	17	15	30.71	+03	01	33.5	057
354	1983	05	14.00090	17	15	30.37	+03	01	36.0	057
354	1983	05	14.01120	17	15	29.89	+03	01	39.2	057
387	1981	06	02.92988	15	53	06.73	+09	37	26.7	057
387	1981	06	02.94192	15	53	06.29	+09	37	30.3	057

128 Saratov
L. N. Berdnikov, Astronomical Observatory, Saratov, U.S.S.R.
Observers K. N. Grankin, I. A. Rakitin
From Byull. Inst. Teor. Astron.

2	1980	08	07.95291	02	25	31.58	-01	35	44.2	128
2	1980	08	12.94548	02	29	10.06	-02	24	51.9	128
2	1980	08	13.94652	02	29	51.03	-02	35	23.3	128
2	1980	08	19.95645	02	33	35.14	-03	43	27.9	128
2	1980	08	20.95333	02	34	08.49	-03	55	35.7	128
2	1980	08	24.95382	02	36	11.65	-04	46	23.0	128
6	1980	08	09.98090	03	08	42.35	+02	31	58.2	128
6	1980	08	12.98507	03	13	39.05	+02	23	28.6	128
7	1980	07	26.89768	23	57	42.43	+08	42	03.8	128
7	1980	08	02.90903	00	00	16.08	+09	30	57.1	128
7	1980	08	06.92715	00	01	08.23	+09	55	15.9	128
7	1980	08	07.88469	00	01	16.53	+10	00	37.7	128
7	1980	08	09.91909	00	01	28.78	+10	11	27.9	128
7	1980	08	12.91326	00	01	33.46	+10	25	47.2	128
7	1980	08	13.90389	00	01	31.42	+10	30	07.7	128
7	1980	08	15.97083	00	01	21.38	+10	38	24.0	128
27	1980	01	06.78091	05	10	48.75	+22	49	33.4	128
27	1980	01	14.72361	05	06	47.68	+22	54	34.1	128
27	1980	02	06.76111	05	09	35.17	+23	21	19.0	128
216	1980	08	04.95569	23	41	34.78	+15	45	11.3	128
216	1980	08	06.94625	23	41	41.69	+15	50	34.3	128
216	1980	08	07.90132	23	41	42.95	+15	52	45.6	128
216	1980	08	13.88333	23	41	19.46	+16	00	59.3	128
216	1980	08	14.88577	23	41	10.51	+16	01	21.9	128
216	1980	08	19.93770	23	40	01.73	+15	58	33.0	128
216	1980	08	20.88736	23	39	44.94	+15	57	11.9	128

293 Burlington remote site
T. Handley, 13 Linden Avenue, Burlington, NJ 08016, U.S.A.

0.20-m f/4.0 astrograph
SAOC

A923	NB		1987	06	29.22639	19 23 47.76	-10 20 14.2		293
A923	NB		1987	06	29.23958	19 23 47.02	-10 20 12.3		293
1970	NB		1987	06	29.27014	20 39 15.29	-16 14 13.1		293
1970	NB		1987	06	29.28958	20 39 14.66	-16 14 29.3		293

372 Geisei
T. Seki, Kamimachi 2-9-35, Kochi, Japan
0.60-m reflector
Copied in part from Nihondaira Obs. Circ.

1987	OB	*	1987	07	25.69479	21 52 54.6	-20 13 21	16	372
1987	OB		1987	07	25.71285	21 52 53.8	-20 13 21		372
1987	OB		1987	07	28.66944	21 50 51.9	-20 16 46	17	372
1987	OB		1987	07	28.69236	21 50 51.1	-20 16 49		372
1987	OB		1987	07	30.65174	21 49 21.75	-20 19 04.5	17	372
1987	OB		1987	07	30.66701	21 49 20.72	-20 19 05.2		372
1987	OB		1987	08	05.70903	21 44 10.47	-20 25 17.0	16.5	372
1987	OB		1987	08	05.72014	21 44 09.70	-20 25 17.1		372
1987	OB		1987	08	14.55590	21 35 40.30	-20 29 30.5	16	372
1987	OB		1987	08	14.56597	21 35 39.76	-20 29 30.5		372
1987	OM	*	1987	07	28.66007	21 50 54.9	-19 57 49	17	372
1987	OM		1987	07	28.69236	21 50 54.2	-19 58 11		372
1987	OM		1987	07	30.65174	21 50 02.31	-20 20 02.3	17	372
1987	OM		1987	07	30.66701	21 50 01.68	-20 20 13.7		372
1987	OM		1987	08	05.66597	21 46 45.35	-21 28 45.6	17	372
1987	OM		1987	08	05.69132	21 46 44.31	-21 29 02.7		372
1987	OM		1987	08	14.53403	21 40 41.37	-23 09 16.5	16.5	372
1987	OM		1987	08	14.54236	21 40 41.05	-23 09 21.3		372
1987	OM		1987	08	26.67014	21 31 46.55	-25 07 37.8	15.5	372
1987	OM		1987	08	26.68229	21 31 46.10	-25 07 42.9		372
1987	PB	*	1987	08	14.52604	21 16 19.16	-10 39 32.8	16	372
1987	PB		1987	08	14.54896	21 16 17.69	-10 39 32.2		372
1987	PB		1987	08	24.52188	21 06 05.35	-10 44 27.0		372
1987	PB		1987	08	25.73194	21 04 54.55	-10 45 05.6		372
1987	PB		1987	08	29.53958	21 01 22.88	-10 47 11.3	16	372
1987	PB		1987	08	29.54791	21 01 22.29	-10 47 10.5		372
1987	PB		1987	08	31.52153	20 59 38.79	-10 48 09.5		372
1987	PB		1987	08	31.54375	20 59 37.70	-10 48 09.2		372

373 Oishi
T. Urata, Planetarium Section, Tsukuba Expo Center, 9, 2 Chome, Azuma, Sakura-mura, Niihari-gun, Ibaragi-ken, 305 Japan
Observer Y. Saika
Measurer M. Kizawa
0.3-m f/5.3 reflector
Copied from Nihondaira Obs. Circ.

49			1987	07	24.67493	20 24 10.41	-17 50 46.3	12.5	373
49			1987	07	24.68639	20 24 09.99	-17 50 45.5		373
49			1987	07	24.69681	20 24 09.30	-17 50 48.1		373
49			1987	07	24.70671	20 24 09.01	-17 50 48.1		373
1562			1987	07	25.70764	21 38 23.90	-14 43 48.2	16	373
1562			1987	07	25.72639	21 38 22.77	-14 43 56.1		373

413 Siding Spring
R. H. McNaught, Siding Spring Observatory, Coonabarabran, N.S.W. 2857, Australia
Uppsala Schmidt telescope

203	1987 07 31.57241	19 55 27.52	-24 32 42.1	413
203	1987 07 31.57759	19 55 27.23	-24 32 41.4	413
203	1987 08 03.70851	19 52 38.61	-24 36 34.9	413
203	1987 08 03.71233	19 52 38.40	-24 36 35.2	413
203	1987 08 04.61328	19 51 51.24	-24 37 34.1	413
203	1987 08 04.61511	19 51 51.14	-24 37 34.8	413
203	1987 08 04.61675	19 51 51.06	-24 37 34.9	413

491 Yebes
M. de Pascual M., Observatorio Astronomico de Madrid, Alfonso XII 3 E-28014 Madrid, Spain
Observers M. de Pascual, J. Martin-Pintado, J. Garcia, C. Cabanas, F. Sanchez

1	1986 05 07.98742	10 41 28.90	+22 18 21.0	491
1	1986 05 07.99342	10 41 29.05	+22 18 17.9	491
1	1986 05 07.99897	10 41 29.19	+22 18 15.0	491
1	1986 05 08.95820	10 41 55.25	+22 10 48.4	491
1	1986 05 08.96374	10 41 55.39	+22 10 45.1	491
1	1986 05 08.96928	10 41 55.56	+22 10 42.4	491
3	1986 07 08.94827	16 10 23.42	-03 43 58.4	491
3	1986 07 08.95519	16 10 23.23	-03 43 59.3	491
3	1986 07 08.96211	16 10 23.06	-03 44 00.1	491
3	1986 07 09.95552	16 09 58.43	-03 46 34.4	491
3	1986 07 09.96245	16 09 58.30	-03 46 35.3	491
3	1986 07 09.96937	16 09 58.11	-03 46 36.0	491
6	1986 05 08.04103	12 52 14.76	+14 13 40.5	491
6	1986 05 08.04934	12 52 14.47	+14 13 40.8	491
6	1986 05 08.05488	12 52 14.28	+14 13 40.9	491
6	1986 05 09.09165	12 51 41.28	+14 14 08.7	491
6	1986 05 09.09719	12 51 41.10	+14 14 08.6	491
6	1986 05 09.10273	12 51 40.95	+14 14 09.0	491
7	1986 04 16.92453	13 36 20.58	-17 08 12.5	491
7	1986 04 16.93354	13 36 20.05	-17 08 09.8	491
7	1986 04 16.94115	13 36 19.59	-17 08 06.6	491
7	1986 06 12.01195	13 06 18.29	-12 09 11.8	491
7	1986 06 12.01679	13 06 18.32	-12 09 09.2	491
7	1986 06 12.02164	13 06 18.37	-12 09 08.8	491
7	1986 06 13.92684	13 06 28.53	-12 05 09.8	491
7	1986 06 13.93376	13 06 28.57	-12 05 09.6	491
7	1986 06 13.94069	13 06 28.63	-12 05 08.4	491
23	1986 05 08.11444	14 43 19.11	-08 49 46.6	491
31	1986 05 08.06977	15 10 30.05	-32 23 12.6	491
31	1986 05 09.04038	15 09 29.40	-32 24 29.7	491
39	1986 06 12.05142	16 02 22.62	-04 50 18.0	491
39	1986 06 12.05696	16 02 22.37	-04 50 17.8	491
39	1986 06 12.06250	16 02 22.13	-04 50 17.4	491
39	1986 06 13.97220	16 00 57.52	-04 50 08.2	491
39	1986 06 13.97912	16 00 57.16	-04 50 08.6	491
39	1986 06 13.98605	16 00 56.88	-04 50 08.4	491
39	1986 07 08.89945	15 48 26.71	-05 36 22.8	491
39	1986 07 08.90637	15 48 26.63	-05 36 24.4	491
39	1986 07 08.91330	15 48 26.52	-05 36 25.3	491
39	1986 07 09.90808	15 48 12.98	-05 39 56.7	491
39	1986 07 09.91501	15 48 12.87	-05 39 58.4	491
39	1986 07 09.92193	15 48 12.76	-05 40 00.1	491
40	1986 05 08.08604	15 29 49.60	-13 42 04.1	491
40	1986 05 08.09089	15 29 49.28	-13 42 03.8	491
40	1986 05 08.09574	15 29 48.96	-13 42 02.5	491
40	1986 05 09.14807	15 28 44.11	-13 39 19.6	491

40		1986 05 09.15292	15	28	43.81	-13	39	19.1		491
40		1986 05 09.15777	15	28	43.48	-13	39	18.3		491
40		1986 06 12.03013	14	57	47.25	-12	50	36.2		491
40		1986 06 12.03653	14	57	47.02	-12	50	36.7		491
40		1986 06 12.04346	14	57	46.73	-12	50	36.1		491
40		1986 06 13.94865	14	56	42.98	-12	51	28.8		491
40		1986 06 13.95558	14	56	42.73	-12	51	28.7		491
40		1986 06 13.96250	14	56	42.49	-12	51	29.0		491
433		1986 06 12.11928	21	52	34.65	-16	13	28.3		491
433		1986 06 14.12179	21	53	07.22	-15	59	43.2		491
455		1986 05 08.02025	12	42	10.90	+10	28	04.7		491
455		1986 05 08.99571	12	41	37.77	+10	27	08.1		491
499		1986 07 08.98359	19	57	12.83	-19	00	34.5		491
499		1986 07 09.99742	19	56	35.40	-19	01	58.2		491
662		1986 07 08.98359	19	47	06.12	-17	54	47.4	E	491
662		1986 07 09.99742	19	46	18.76	-17	59	33.9	E	491
669		1986 07 08.93165	19	42	31.13	-06	48	03.5		491
669		1986 07 09.93890	19	41	45.52	-06	51	05.0		491
730		1986 05 08.11444	14	43	22.93	-08	18	57.0		491
747		1986 05 07.97004	12	26	45.98	+18	56	50.6		491
747		1986 05 09.07363	12	26	21.44	+18	55	36.2		491
1220		1986 07 08.98359	19	55	50.01	-20	48	53.1	M	491
1350		1986 06 14.01479	17	52	31.14	-19	50	43.3		491
1844		1986 06 14.01479	17	40	04.79	-18	39	46.3	M	491
1959		1986 07 08.98359	19	45	29.51	-20	00	13.6		491
3005		1986 06 14.01479	17	48	36.36	-18	29	22.0	M	491
3014		1986 07 08.98359	19	52	40.70	-19	51	14.7	M	491
3014		1986 07 09.99742	19	51	53.13	-19	54	02.6		491
3317		1986 07 08.93165	19	42	04.99	-07	06	25.2		491
3317		1986 07 09.93890	19	41	32.30	-07	10	58.2	M	491
3318		1986 07 08.98359	19	42	07.65	-21	58	30.1	E	491

511 Haute Provence
E. W. Elst, Royal Observatory, B-1180 Brussels, Belgium
Observers E. W. Elst, G. Sause
Measurer E. W. Elst

1987 OO	*	1987 07 27.03819	21	39	42.52	+06	58	59.2	17.0	511
1987 OO		1987 07 27.06042	21	39	41.87	+06	59	02.1		511
1987 OP	*	1987 07 27.03819	21	42	11.29	+07	04	19.4	16.5	511
1987 OP		1987 07 27.06042	21	42	10.43	+07	04	18.7		511
1987 OQ	*	1987 07 27.03819	21	51	52.78	+07	45	43.1	17.5	511
1987 OQ		1987 07 27.06042	21	51	52.02	+07	45	51.9		511
1987 OR	*	1987 07 27.95417	21	02	35.30	+14	26	48.9	17	511
1987 OR		1987 07 27.97431	21	02	34.27	+14	26	29.8		511
1987 OR		1987 07 28.00347	21	02	32.98	+14	26	06.2		511
1987 OR		1987 07 28.02431	21	02	32.12	+14	25	49.4		511
1987 OV		1987 08 01.05694	21	56	06.93	+00	05	23.6		511
1987 OW	*	1987 07 27.08194	21	59	05.94	-00	24	48.1	17	511
1987 OW		1987 08 01.05694	21	56	12.08	-00	14	30.5		511
1987 OX	*	1987 07 27.08194	21	59	07.20	-00	00	16.9	17	511
849		1987 07 27.95417	21	05	27.43	+15	09	34.5		511
849		1987 07 27.97431	21	05	26.43	+15	09	36.7		511
849		1987 07 28.00347	21	05	25.29	+15	09	38.5		511
849		1987 07 28.02431	21	05	24.34	+15	09	39.3		511
897		1987 07 27.03819	21	38	45.86	+07	58	11.8		511
897		1987 07 27.06042	21	38	44.87	+07	58	11.2		511
1172		1987 07 27.03819	21	45	47.38	+08	05	38.4		511
1172		1987 07 27.06042	21	45	46.75	+08	05	38.4		511
1498		1987 07 27.03819	21	49	08.81	+04	35	37.9		511

1498	1987 07 27.06042	21 49 07.94	+04 35 45.0			511
2223	1987 07 27.03819	21 44 52.72	+06 29 19.8			511
2223	1987 07 27.06042	21 44 52.15	+06 29 17.4			511

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

1987 MC	1987 06 28.90833	17 28 49.09	-06 27 05.8		15.7	552
1987 MC	1987 06 28.92569	17 28 48.29	-06 27 08.6			552
1987 MC	1987 06 29.87708	17 28 06.74	-06 29 37.2			552
1987 MC	1987 06 29.90000	17 28 05.70	-06 29 41.0			552
1987 MC	1987 06 30.89514	17 27 22.96	-06 32 35.8			552
1987 MC	1987 06 30.91389	17 27 22.25	-06 32 39.1			552
1987 MC	1987 07 01.87361	17 26 42.48	-06 35 44.3			552
1987 MC	1987 07 01.90000	17 26 41.22	-06 35 48.9			552
1987 MC	1987 07 04.88611	17 24 45.32	-06 47 00.5		15.8	552
1987 MC	1987 07 04.90556	17 24 44.61	-06 47 02.7			552
1987 MC	1987 07 16.90625	17 19 31.50	-07 53 31.0		16.4	552
1987 MC	1987 07 16.92639	17 19 31.19	-07 53 39.9			552
1987 MC	1987 07 27.85000	17 19 09.35	-09 16 57.7		16.7	552
1987 MC	1987 07 27.87222	17 19 09.46	-09 17 09.0			552
1987 MC	1987 08 01.85833	17 20 31.74	-09 59 39.7		16.8	552
1987 MC	1987 08 01.87847	17 20 32.06	-09 59 52.1			552

657 Victoria, Climenhaga Observatory
J. B. Tatum, Dept. of Physics, University of Victoria, P.O. Box 1700, Victoria, BC, V8W 2Y2, Canada
Observers J. B. Tatum, D. D. Balam

1970 NB	1987 06 19.38167	20 41 42.53	-15 01 49.7			657
1970 NB	1987 06 26.33653	20 40 15.76	-15 50 36.1			657
1970 NB	1987 06 26.39347	20 40 14.96	-15 51 02.9			657
1970 NB	1987 07 17.29799	20 28 20.07	-19 14 09.3			657
1970 NB	1987 07 28.33653	20 18 44.95	-21 22 25.6			657
49	1987 07 15.37292	20 31 48.09	-17 33 48.9			657
49	1987 07 28.36361	20 20 59.68	-17 57 53.7			657
49	1987 08 02.32882	20 16 41.78	-18 07 28.0			657
49	1987 08 03.33611	20 15 49.92	-18 09 22.0			657
846	1987 07 15.37292	20 27 32.59	-18 52 51.3			657
1176	1987 07 28.40146	23 58 48.20	+09 08 35.2			657
2064	1987 08 02.41181	00 12 27.96	+08 06 01.9			657

675 Palomar
J. Gibson, ITT/Federal Electric Corporation and Jet Propulsion Laboratory, MS 238-332, Pasadena, CA 91109, U.S.A. (1)
E. Helin, MS 183-501, Jet Propulsion Laboratory, Pasadena, CA 91109, U.S.A. (2)
Observers J. Gibson, E. Helin, A. Maury, W. McKinley, J. Mueller, J. Phinney, S. Singer-Brewster, D. Schneeberger, C. P. White
Measurers J. Alu, L. Fischer, J. Gibson, A. Maury, S. Singer-Brewster
1.5-m reflector, 1.2-m and 0.46-m Schmidt telescopes

1949 WR *	1949 11 19.25835	03 26 18.98	+14 45 01.7		16	1 675
1949 WR	1949 11 19.27101	03 26 18.00	+14 44 58.1			1 675
1949 WR	1949 11 19.28856	03 26 17.10	+14 44 54.5			1 675
1949 WR	1949 11 19.30210	03 26 16.16	+14 44 51.7			1 675
1981 FD	1987 06 16.29167	15 08 04.14	-20 34 45.3			1 675
1981 FD	1987 06 16.30417	15 08 03.88	-20 34 44.2			1 675
1981 FD	1987 06 17.26719	15 07 46.93	-20 33 26.6			1 675

1981	FD		1987	06	17.27986	15	07	46.71	-20	33	25.6	1 675
1986	GU		1986	06	09.31597	14	40	19.10	+11	03	24.4	1 675
1986	GU		1986	06	09.32795	14	40	18.61	+11	03	12.6	1 675
1986	GU		1986	06	10.32639	14	39	40.86	+10	46	25.2	1 675
1986	GU		1986	06	10.33333	14	39	40.60	+10	46	18.1	1 675
1986	GU		1986	07	18.23069	14	36	32.81	-00	00	34.3	1 675
1986	GU		1986	07	18.23375	14	36	32.88	-00	00	38.1	1 675
1986	GU		1986	07	19.26840	14	36	57.58	-00	17	28.4	1 675
1986	GU		1986	07	19.27222	14	36	57.66	-00	17	32.2	1 675
1986	GU		1986	08	15.16736	14	54	28.03	-07	06	02.8	1 675
1986	GU		1986	08	15.17222	14	54	28.27	-07	06	06.9	1 675
1986	GU		1986	08	16.16753	14	55	20.24	-07	20	07.3	1 675
1986	GU		1986	08	16.17243	14	55	20.48	-07	20	11.5	1 675
1987	MO		1987	07	26.42604	21	21	24.24	+14	48	59.8	16.0 2 675
1987	MO		1987	07	30.38281	21	16	25.91	+16	01	22.5	2 675
1987	MP		1987	07	26.19688	17	33	38.87	-12	35	05.4	16.0 2 675
1987	MP		1987	07	28.22153	17	33	39.25	-12	53	03.3	2 675
1987	MX		1987	07	26.31145	20	05	09.42	-32	22	07.0	16.5 2 675
1987	MX		1987	07	28.34306	20	03	10.23	-32	27	28.3	2 675
1987	MY		1987	07	27.25573	20	11	17.17	-29	49	32.2	16.5 2 675
1987	MY		1987	07	29.33854	20	08	53.72	-29	54	46.5	2 675
1987	MA1		1987	07	26.20278	17	35	11.59	-06	16	26.2	16.0 2 675
1987	MA1		1987	07	28.23125	17	35	06.97	-06	39	57.2	2 675
1987	ME1		1987	07	26.19688	17	47	05.46	-11	22	42.1	16.8 2 675
1987	ME1		1987	07	28.22153	17	46	15.00	-11	32	07.1	2 675
1987	OA	*	1987	07	29.24375	19	10	18.55	+12	57	51.5	2 675
1987	OA		1987	07	29.28889	19	10	06.00	+12	58	46.1	2 675
1987	OA		1987	07	31.19792	19	01	18.53	+13	35	37.0	18.2 2 675
1987	OA		1987	07	31.22569	19	01	10.30	+13	36	08.7	2 675
1987	OA		1987	08	05.35139	18	33	11.49	+15	11	18.2	2 675
1987	OA		1987	08	05.36875	18	33	04.97	+15	11	36.8	2 675
1987	OA		1987	08	14.20417	17	26	58.6	+17	20	34	2 675
1987	OA		1987	08	14.22014	17	26	50.3	+17	20	42	2 675
1987	OC	*	1987	07	27.26545	20	12	16.90	+10	14	21.3	16.2 2 675
1987	OC		1987	07	29.34931	20	09	39.59	+10	43	32.9	2 675
1987	OD	*	1987	07	26.37222	21	05	42.38	+01	53	34.2	16.0 2 675
1987	OD		1987	07	26.39931	21	05	40.73	+01	53	40.7	2 675
1987	OE	*	1987	07	26.38195	21	34	44.17	-14	37	42.4	16.8 2 675
1987	OE		1987	07	27.34740	21	34	10.08	-14	45	22.3	2 675
1987	OF	*	1987	07	26.38958	21	08	46.47	-09	22	19.7	16.0 2 675
1987	OF		1987	07	28.38993	21	07	59.08	-09	43	09.7	2 675
1987	ON	*	1987	07	19.40417	22	03	43.94	-01	41	10.4	17.0 2 675
1987	ON		1987	07	19.45278	22	03	43.42	-01	41	28.6	2 675
1987	ON		1987	07	23.38194	22	02	51.86	-02	09	33.2	2 675
1987	ON		1987	07	23.42361	22	02	51.15	-02	09	51.5	2 675
1987	ON		1987	07	26.37431	22	01	56.60	-02	34	09.0	2 675
1987	ON		1987	07	26.42292	22	01	55.60	-02	34	32.5	2 675
1987	OS	*	1987	07	19.40417	22	09	59.61	-00	03	03.8	18.5 2 675
1987	OS		1987	07	19.45278	22	09	58.79	-00	02	54.2	2 675
1987	OS		1987	07	23.38194	22	08	25.07	+00	13	32.4	18.5 2 675
1987	OS		1987	07	23.42361	22	08	23.84	+00	13	41.2	2 675
1987	OS		1987	07	26.37431	22	06	55.58	+00	23	39.1	18.5 2 675
1987	OS		1987	07	26.42292	22	06	53.91	+00	23	47.3	2 675
1987	OT	*	1987	07	19.40417	21	52	04.30	-02	09	13.9	18.0 2 675
1987	OT		1987	07	19.45278	21	52	03.54	-02	09	24.2	2 675
1987	OT		1987	07	23.38194	21	50	50.42	-02	25	23.3	2 675
1987	OT		1987	07	23.42361	21	50	49.49	-02	25	33.8	2 675
1987	OU	*	1987	07	26.20278	17	58	03.47	-03	07	14.8	17.5 2 675
1987	OU		1987	07	28.23125	17	57	37.60	-03	09	32.8	2 675

1987	OV	*	1987	07	19.40417	22	01	15.08	+00	32	35.6	17.0 2 675
1987	OV		1987	07	19.45278	22	01	14.28	+00	32	33.2	2 675
1987	OV		1987	07	23.38194	22	00	03.60	+00	28	42.6	2 675
1987	OV		1987	07	23.42361	22	00	02.57	+00	28	39.3	2 675
1987	OV		1987	07	26.37431	21	58	53.88	+00	22	59.2	2 675
1987	OV		1987	07	26.42292	21	58	52.57	+00	22	53.0	2 675
1987	PA	*	1987	08	01.37153	22	20	37.61	-02	44	11.2	18.2 2 675
1987	PA		1987	08	01.42014	22	20	33.82	-02	41	28.3	2 675
1987	PA		1987	08	02.37708	22	19	24.89	-01	46	52.6	2 675
1987	PA		1987	08	02.39097	22	19	23.72	-01	46	06.9	2 675
1987	PA		1987	08	05.37639	22	15	41.70	+00	55	08.9	2 675
1987	PA		1987	08	05.39028	22	15	40.63	+00	55	46.4	2 675
1987	PA		1987	08	22.28819	21	55	14.0	+11	32	52	2 675
1987	PA		1987	08	22.34028	21	55	17.6	+11	31	37	2 675
1987	PA		1987	08	28.27361	21	49	40.2	+13	33	35	2 675
1987	PA		1987	08	28.32222	21	49	37.6	+13	34	20	2 675
1987	QA	*	1987	08	23.43958	01	22	12.6	+11	20	24	17 2 675
1987	QA		1987	08	23.49167	01	22	19.5	+11	18	06	2 675
1987	QA		1987	08	26.47917	01	29	27.7	+08	51	36	2 675
1987	QA		1987	08	26.49653	01	29	30.0	+08	50	44	2 675
1987	QB	*	1987	08	25.38108	22	45	31.75	-07	35	46.5	16.8 2 675
1987	QB		1987	08	25.40434	22	45	36.32	-07	35	54.7	2 675
1987	QB		1987	08	27.28924	22	52	00.45	-07	45	41.4	2 675
1987	QB		1987	08	27.33472	22	52	08.67	-07	45	55.4	2 675
1987	QD	*	1987	08	24.28229	22	17	59.13	+17	10	46.2	16.5 2 675
1987	QD		1987	08	25.31910	22	17	43.28	+16	30	57.8	2 675
1264			1987	07	28.40399	20	42	12.16	+22	11	11.4	16.0 2 675
1264			1987	07	29.35972	20	41	25.95	+22	12	33.4	2 675
2204			1987	07	26.37222	21	15	47.05	-01	13	31.1	16.0 2 675
2204			1987	07	28.39444	21	14	09.42	-01	26	50.7	2 675
3169			1953	12	31.19931	03	33	49.22	+02	01	52.2	15 1 675
3169			1953	12	31.23056	03	33	48.05	+02	02	33.3	1 675
3169			1953	12	31.23542	03	33	47.91	+02	02	41.1	1 675
3169			1953	12	31.24375	03	33	47.57	+02	02	52.3	1 675
3546			1987	07	27.31146	21	10	24.71	-21	20	11.5	16.5 2 675
3546			1987	07	29.35486	21	08	31.68	-21	23	54.5	2 675

690 Lowell Observatory
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Observers C. W. Tombaugh, K. Newman
Measurers E. Bowell, B. A. Skiff
0.33-m photographic telescope

1930	UV		1930	10	15.21875	00	19	20.72	+10	14	20.8	690
1930	UV		1930	10	17.29722	00	17	33.67	+10	09	45.4	690
1930	UV		1930	10	19.29861	00	15	56.47	+10	05	19.6	690
1930	UX		1930	10	15.21875	00	27	58.93	+10	29	32.0	690
1930	UX		1930	10	17.29722	00	26	13.53	+10	23	47.5	690
1930	UX		1930	10	19.29861	00	24	37.29	+10	18	11.2	690
1930	UB1		1930	10	15.21875	00	39	50.24	+08	27	57.9	R 690
1930	UB1		1930	10	17.29722	00	37	51.02	+08	21	04.1	R 690
1930	UB1		1930	10	19.29861	00	36	01.02	+08	14	30.9	R 690
1931	KF		1931	05	21.39306	16	40	37.49	-06	56	26.9	690
1931	KF		1931	05	22.38472	16	39	48.88	-06	58	08.1	690
1931	KF		1931	05	23.38542	16	38	59.53	-07	00	00.8	690
1931	RD1		1931	09	12.30694	23	32	06.87	-14	34	07.1	690
1931	RD1		1931	09	16.33194	23	27	54.92	-14	27	06.8	690
1931	RD1		1931	09	21.35417	23	22	47.82	-14	14	30.9	690
1931	RE1		1931	09	12.30694	23	32	45.97	-09	39	43.0	690

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1931 RE1    1931 09 16.33194  23 29 35.08  -09 46 03.0                    690
1931 RE1    1931 09 21.35417  23 25 44.98  -09 50 52.5                    690
1936 SO   * 1936 09 16.31597  00 03 52.70  +26 37 55.8          14.0      690
1936 SO     1936 09 23.30556  23 50 49.29  +27 52 16.5          14.5      690
1936 SO     1936 09 25.35694  23 46 52.53  +28 09 31.6          15.0      690
 127        1931 09 12.30694  23 38 09.57  -11 39 36.6                    690
 127        1931 09 16.33194  23 34 36.26  -11 53 28.5                    690
 127        1931 09 21.35417  23 30 10.55  -12 08 36.4                    690
 653        1931 05 21.39306  16 54 46.64  -07 06 54.6                    690
 653        1931 05 22.38472  16 54 02.08  -07 05 47.6                    690
 653        1931 05 23.38542  16 53 15.88  -07 04 28.0                    690
 905        1931 09 12.30694  23 38 59.93  -11 19 25.9                    690
 905        1931 09 16.33194  23 34 58.78  -11 31 24.2                    690
 905        1931 09 21.35417  23 29 57.86  -11 42 41.3                    690
1735        1931 09 12.30694  23 37 12.21  -11 57 38.0                    690
1735        1931 09 16.33194  23 33 29.85  -12 00 09.4                    690
1735        1931 09 21.35417  23 28 55.83  -12 01 09.2                    690
2416        1931 05 21.39306  16 41 22.60  -06 10 58.1                    690
2416        1931 05 22.38472  16 40 37.12  -06 08 35.7                    690
2416        1931 05 23.38542  16 39 51.16  -06 06 18.2                    690
2763        1930 10 15.21875  00 34 38.09  +10 59 17.1                    690
2763        1930 10 17.29722  00 33 00.89  +10 48 47.6                  R 690
2763        1930 10 19.29861  00 31 32.51  +10 38 43.8                    690
```

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Measurer R. McCarty
0.91-m SPACEWATCH telescope, CCD in scanning mode
SAOC 1984
See also MPC 9198, MPC 10373 and Astron. J. 91, 1242, 1986

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1959 LM     1987 07 21.26155  20 01 48.46  -19 49 13.6          16.0V     691
1959 LM     1987 07 21.27299  20 01 47.03  -19 49 14.5                    691
1959 LM     1987 07 21.28661  20 01 45.35  -19 49 16.2                    691
1959 LM     1987 07 22.33456  19 59 40.61  -19 50 49.8          16.2V     691
1959 LM     1987 07 22.34450  19 59 39.40  -19 50 50.9                    691
1959 LM     1987 07 22.35435  19 59 38.23  -19 50 51.2                    691
1959 LM     1987 08 14.21885  19 26 17.82  -20 02 32.3                    691
1959 LM     1987 08 14.23399  19 26 16.95  -20 02 33.1          17.2V     691
1959 LM     1987 08 17.25928  19 23 44.87  -20 01 38.7                    691
1959 LM     1987 08 17.26817  19 23 44.45  -20 01 37.9          17.5V     691
1959 LM     1987 08 17.28549  19 23 43.60  -20 01 37.6                    691
1981 FD     1987 07 21.16841  15 13 28.68  -20 41 29.4                    691
1981 FD     1987 07 21.18353  15 13 29.12  -20 41 31.3                  I 691
1981 FD     1987 07 22.17718  15 14 03.41  -20 43 11.6                    691
1981 FD     1987 07 22.20045  15 14 04.20  -20 43 13.1                    691
1986 PA     1987 07 22.26503  17 49 02.48  -00 04 12.0                    691
1986 PA     1987 07 22.28514  17 48 59.78  -00 04 32.5                    691
1986 PA     1987 08 17.17735  17 16 19.29  -07 54 58.9                    691
1986 PA     1987 08 17.19873  17 16 18.70  -07 55 21.9          19.3V     691
1986 TO     1987 08 17.44424  03 00 18.77  -10 36 40.1                  S 691
1986 TO     1987 08 17.45567  03 00 19.79  -10 36 53.4                  S 691
1986 TO     1987 08 17.47102  03 00 21.15  -10 37 10.6                  S 691
1987 KF     1987 07 21.19997  15 03 14.62  -08 01 17.2          18.4V     691
1987 KF     1987 07 21.20420  15 03 14.85  -08 01 21.5                    691
1987 KF     1987 07 21.21863  15 03 15.70  -08 01 34.2                    691
1987 KF     1987 07 22.21257  15 04 17.66  -08 16 00.9          19.2V     691
1987 KF     1987 07 22.21887  15 04 17.99  -08 16 05.1                    691
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1987	KF	1987	07	22.23751	15	04	19.12	-08	16	21.8	691
1987	KF	1987	08	18.14722	15	35	40.90	-13	38	25.3	691
1987	KF	1987	08	18.15178	15	35	41.19	-13	38	26.7	691
1987	KF	1987	08	18.15628	15	35	41.60	-13	38	30.7	19.8V 691
1987	OA	1987	08	17.23215	16	58	08.07	+17	42	52.9	17.0V 691
1987	OA	1987	08	17.24161	16	58	02.24	+17	42	55.0	691
1987	OA	1987	08	17.25435	16	57	54.39	+17	42	57.9	691
1987	PA	1987	08	17.34905	22	00	47.09	+09	13	26.1	17.9V 691
1987	PA	1987	08	17.35765	22	00	46.40	+09	13	42.2	691
1987	PA	1987	08	17.36515	22	00	45.78	+09	13	57.1	691

760 Goethe Link
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Measurer D. Owings et al.

1960	BA	1960	01	24.08056	02	24	38.72	-09	51	00.6	760
1960	BB	1960	01	24.39781	09	37	01.39	+07	00	29.9	760
1960	BB	1960	01	24.44296	09	36	58.32	+07	00	09.3	760
1960	CC	1960	02	01.24888	08	41	58.00	+12	01	29.1	760
1960	FC	1960	03	23.21724	11	44	45.27	+09	51	11.1	760
1960	FC	1960	03	23.26099	11	44	43.38	+09	51	31.1	760
1960	HA	1960	04	19.23535	12	33	09.47	+17	37	13.3	760
1960	HA	1960	04	19.27911	12	33	07.80	+17	37	22.8	760
1960	HB	1960	04	19.23535	12	27	09.16	+13	55	39.6	760
1960	HB	1960	04	19.27911	12	27	07.45	+13	55	43.7	760
1960	SC	1960	09	23.19759	00	36	14.81	-01	03	26.9	760
1960	VD	1960	11	12.22351	03	09	45.36	+12	08	21.3	760
1960	WA	1960	11	17.11171	02	01	23.61	+05	31	17.8	760
1960	WA	1960	11	17.15338	02	01	21.67	+05	31	22.7	760
1960	WC	1960	11	17.11171	01	55	58.36	+04	44	01.4	760
1960	WC	1960	11	17.15338	01	55	56.82	+04	44	03.4	760
1960	WJ	1960	11	19.15130	03	30	55.98	+25	17	08.8	760
1960	WJ	1960	11	19.19470	03	30	53.07	+25	16	52.9	760
1961	AQ	1961	01	13.15306	07	03	05.33	+29	11	19.6	A 760
1961	AQ	1961	01	13.19820	07	03	02.89	+29	11	25.7	A 760
1961	BB	1961	01	22.26896	08	12	46.61	+16	17	43.4	760
1961	DG	1961	02	16.19122	09	16	35.19	+00	41	46.3	760
1961	DG	1961	02	16.25545	09	16	31.40	+00	41	51.5	760
1961	PC	1961	08	07.26249	21	56	37.19	-01	33	33.7	A 760
1961	RB	1961	09	13.24139	00	20	57.54	+03	25	09.9	760
1961	TL	1961	10	07.21183	00	56	55.80	+06	01	24.6	760
1961	TL	1961	10	07.25627	00	56	53.49	+06	00	55.4	760
1961	TM	1961	10	07.21183	00	56	29.76	+04	43	02.0	760
1961	TM	1961	10	07.25627	00	56	26.81	+04	42	53.9	760
1961	TO	1961	10	07.21183	00	50	44.68	+08	51	39.3	760
1961	TO	1961	10	07.25627	00	50	41.79	+08	51	32.8	760
1961	TT	1961	10	07.21183	00	36	40.15	+07	48	57.2	760
1961	TT	1961	10	07.25627	00	36	38.09	+07	48	39.1	760
1961	TV	1961	10	10.14583	23	56	51.52	+03	57	11.0	760
1961	TY	1961	10	10.14583	00	07	32.31	+06	03	14.0	760
1961	TY	1961	10	10.19340	00	07	29.84	+06	03	06.0	760
1961	TA1	1961	10	10.14583	23	53	32.75	+06	49	23.8	760
1961	TA1	1961	10	10.19340	23	53	30.99	+06	48	59.9	760
1961	TB1	1961	10	10.14583	23	53	35.61	+02	27	29.6	760
1961	TB1	1961	10	10.19340	23	53	33.51	+02	27	12.5	760
1961	TF1	1961	10	10.34583	02	10	21.47	-04	54	02.4	760
1961	TF1	1961	10	10.39375	02	10	18.83	-04	54	02.9	760
1961	TK1	1961	10	11.18125	00	28	29.87	-14	24	17.7	760
1961	TK1	1961	10	11.22569	00	28	28.08	-14	24	16.7	760

1961 TO1	1961 11 13.05487	00 42 51.88	+14 44 03.6			A	760
1961 TO1	1961 11 13.09793	00 42 49.51	+14 43 54.9			A	760
1961 TX1	1961 10 15.24235	02 06 09.33	-04 55 02.0				760
1961 TX1	1961 10 15.28575	02 06 06.91	-04 55 02.4				760
1961 TB2	1961 10 06.18402	01 51 21.35	+22 54 24.1				760
1961 TB2	1961 10 06.22707	01 51 18.88	+22 54 34.5				760
1961 UF	1961 10 17.20519	00 22 19.84	+09 58 24.5				760
1961 UF	1961 10 17.25206	00 22 15.70	+09 58 45.7				760
1961 UH	1961 10 17.30520	02 44 04.56	+21 57 25.5				760
1961 UH	1961 10 17.34825	02 44 03.07	+21 57 15.1				760
1961 UM	1961 10 18.25762	01 46 23.64	+06 56 30.8				760
1961 UM	1961 10 18.29998	01 46 21.85	+06 56 20.2				760
1961 UQ	1961 10 18.25762	01 40 33.38	+06 09 21.0				760
1961 UQ	1961 10 18.29998	01 40 31.18	+06 09 05.6				760
1961 UR	1961 10 18.25762	01 34 48.13	+08 39 35.9				760
1961 UR	1961 10 18.29998	01 34 45.44	+08 39 39.7				760
1961 VA	1961 11 04.06423	01 04 50.39	+24 20 12.9				760
1961 VA	1961 11 04.10798	01 04 47.49	+24 20 15.8				760
1961 VE	1961 11 04.16285	02 29 31.42	+21 18 13.1				760
1961 VE	1961 11 04.20591	02 29 28.91	+21 18 11.6				760
1961 VJ	1961 11 07.20617	02 01 32.40	+21 21 06.2				760
1961 VJ	1961 11 07.25409	02 01 29.46	+21 21 03.9				760
1961 VK	1961 11 09.06148	02 06 37.26	-03 06 12.2				760
1961 VK	1961 11 09.11008	02 06 35.10	-03 06 26.4				760
1961 VP	1961 11 10.04793	02 38 29.78	+20 47 57.2				760
1961 VP	1961 11 10.09100	02 38 27.27	+20 47 53.5				760
1961 VR	1961 11 10.04793	02 36 30.94	+16 22 28.4				760
1961 VR	1961 11 10.09100	02 36 28.41	+16 22 20.0				760
1961 VS	1961 11 10.14568	01 20 03.28	+20 04 23.5				760
1961 VS	1961 11 10.19152	01 20 01.66	+20 04 13.3				760
1961 VT	1961 11 10.14568	01 15 30.59	+24 18 37.1				760
1961 VT	1961 11 10.19152	01 15 28.42	+24 18 27.8				760
1961 VU	1961 11 11.23230	04 00 11.91	+21 05 37.5				760
1961 VU	1961 11 11.27501	04 00 09.42	+21 05 06.8				760
1961 WB	1961 11 30.18784	04 20 23.54	+24 02 23.3				760
1961 WB	1961 11 30.22673	04 20 20.99	+24 02 06.4				760
1961 XF	1961 12 03.08543	02 20 53.63	+15 04 13.8				760
1961 XF	1961 12 03.15835	02 20 51.90	+15 04 07.3				760
1961 XP	1961 12 07.29053	04 15 57.75	+22 08 40.2				760
1961 XP	1961 12 07.34097	04 15 55.22	+22 08 26.9				760
1961 XQ	1961 12 08.20694	03 26 05.80	+24 50 03.9				760
1961 XQ	1961 12 08.27014	03 26 02.10	+24 50 33.0				760

801 Oak Ridge
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1.5-m reflector
AC

A923 NB	1985 03 24.19031	09 59 40.59	-07 14 40.3				801
A923 NB	1987 06 25.24204	19 27 11.92	-10 45 07.7				801
A923 NB	1987 07 23.11131	19 00 12.78	-08 25 19.1				801
1934 CC	1987 07 24.29555	21 49 56.73	-00 27 17.9				801
1934 CC	1987 07 30.20946	21 45 28.79	-00 12 47.8				801
1959 LM	1987 07 23.17068	19 58 02.85	-19 52 02.6				801
1959 LM	1987 07 29.19323	19 47 07.58	-19 58 41.9				801
1974 FV1	1987 06 29.28984	20 46 50.99	-14 06 36.9				801
1974 FV1	1987 07 23.22710	20 34 46.39	-13 58 36.5				801
1974 FV1	1987 07 30.15713	20 30 41.87	-13 59 39.0				801

1975	VA9	1987	06	29.22920	19	46	42.85	-19	44	09.5	801
1975	VA9	1987	07	24.14631	19	22	10.25	-18	57	43.8	801
1979	YN8	1986	06	09.13054	13	51	31.67	-19	03	28.8	801
1979	YN8	1987	06	24.29699	20	33	34.75	-13	35	35.8	801
1979	YN8	1987	07	23.18860	20	11	57.05	-13	08	34.4	801
1981	ET38	1987	06	24.27839	19	48	07.88	-06	07	44.7	801
1981	ET38	1987	07	23.13091	19	25	22.85	-06	36	38.5	801
1981	JJ2	1987	07	29.32421	21	47	50.47	+00	12	34.0	801
1981	JJ2	1987	07	29.34007	21	47	49.87	+00	12	31.7	801
1982	HF1	1987	06	25.26313	20	26	14.62	-01	40	36.5	801
1982	HF1	1987	07	24.18934	20	04	35.40	-01	23	17.4	801
1984	UA2	1986	02	09.29967	10	21	50.27	+11	49	23.8	801
1984	UA2	1987	06	29.30987	21	30	08.07	-12	59	41.2	801
1984	UA2	1987	07	24.22804	21	25	43.77	-14	36	47.8	801
1984	UL2	1987	06	29.24877	20	05	28.01	-19	28	58.1	801
1984	UL2	1987	07	24.16733	19	39	47.61	-19	04	32.7	801
1984	YC	1987	07	23.25117	21	05	37.05	+05	50	06.2	801
1984	YC	1987	07	30.18701	20	59	03.19	+06	13	15.7	801
1985	YP	1987	07	23.27190	22	15	09.60	+15	08	03.0	801
1987	GG	1987	06	21.15619	15	10	06.18	+33	16	45.6	801
1987	OA	1987	08	21.09268	16	16	46.65	+17	43	45.5	801
1987	PA	1987	08	21.23736	21	56	23.98	+11	05	10.2	801
49		1987	07	23.20870	20	25	25.36	-17	47	58.4	801
3393		1987	07	30.23014	22	17	33.74	-06	43	13.0	801

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0.4-m GPO astrograph

1978	RY5	1986	08	28.27222	23	24	11.84	-12	02	51.7	17.0 3 809
1978	RY5	1986	08	28.27778	23	24	11.52	-12	02	52.5	3 809
1978	RY5	1986	08	28.28333	23	24	11.22	-12	02	53.5	3 809
1978	RY5	1986	09	01.39479	23	20	22.91	-12	13	31.9	3 809
1978	RY5	1986	09	01.39965	23	20	22.63	-12	13	32.6	3 809
1978	RY5	1986	09	01.40451	23	20	22.34	-12	13	33.5	3 809
1978	RY5	1986	09	03.37743	23	18	28.27	-12	18	27.0	3 809
1978	RY5	1986	09	03.38229	23	18	27.99	-12	18	27.5	3 809
1978	RY5	1986	09	03.38715	23	18	27.73	-12	18	28.1	3 809
1986	EO	1987	06	26.25590	19	52	48.00	-31	52	22.4	2 809
1986	PP	1986	08	27.05555	21	40	19.69	-16	26	45.4	17.2 3 809
1986	PP	1986	08	27.06111	21	40	19.43	-16	26	47.7	3 809
1986	PP	1986	08	27.06667	21	40	19.18	-16	26	49.6	3 809
1986	PP	1986	08	29.12847	21	38	47.73	-16	38	10.3	3 809
1986	PP	1986	08	29.13403	21	38	47.51	-16	38	12.3	3 809
1986	PP	1986	08	29.13958	21	38	47.25	-16	38	13.8	3 809
1986	PP	1986	09	01.03472	21	36	45.32	-16	53	17.9	3 809
1986	PP	1986	09	01.03993	21	36	45.09	-16	53	19.0	3 809
1986	PP	1986	09	01.04479	21	36	44.89	-16	53	20.4	3 809
1986	PP	1986	09	02.06007	21	36	04.03	-16	58	21.8	3 809
1986	PP	1986	09	02.06493	21	36	03.83	-16	58	23.4	3 809
1986	PP	1986	09	02.06979	21	36	03.62	-16	58	25.1	3 809
1986	PP	1986	09	04.01562	21	34	48.73	-17	07	35.5	3 809
1986	PP	1986	09	04.02048	21	34	48.54	-17	07	37.1	3 809
1986	PP	1986	09	04.02535	21	34	48.34	-17	07	38.5	3 809
1986	PP	1986	09	06.02743	21	33	36.25	-17	16	27.4	3 809
1986	PP	1986	09	06.03299	21	33	36.02	-17	16	28.7	3 809

1986	PP		1986	09	06.03785	21	33	35.85	-17	16	30.2		3 809
1986	PP		1986	09	08.03299	21	32	29.70	-17	24	36.8		3 809
1986	PP		1986	09	08.03785	21	32	29.53	-17	24	37.9		3 809
1986	PP		1986	09	08.04271	21	32	29.36	-17	24	39.4		3 809
1986	PP		1986	09	10.13576	21	31	26.37	-17	32	23.8		3 809
1986	PP		1986	09	10.14062	21	31	26.22	-17	32	25.0		3 809
1986	PP		1986	09	10.14549	21	31	26.05	-17	32	25.9		3 809
1986	QD2	*	1986	08	28.13333	21	54	41.03	-17	02	19.2	17.4	3 809
1986	QD2		1986	08	28.13889	21	54	40.77	-17	02	20.2		3 809
1986	QD2		1986	08	28.14444	21	54	40.51	-17	02	21.3		3 809
1986	QD2		1986	08	28.15278	21	54	40.08	-17	02	24.1		3 809
1986	QD2		1986	08	28.15833	21	54	39.82	-17	02	25.1		3 809
1986	QD2		1986	08	28.16389	21	54	39.54	-17	02	26.0		3 809
1986	QD2		1986	08	30.29873	21	52	56.51	-17	10	33.8		3 809
1986	QD2		1986	08	30.30451	21	52	56.25	-17	10	34.8		3 809
1986	QD2		1986	08	30.31030	21	52	55.98	-17	10	35.8		3 809
1987	MA		1987	06	22.32153	20	31	34.91	-23	20	03.2		2 809
1987	MA	*	1987	06	23.35174	20	31	09.60	-23	27	41.7	14.5	2 809
1987	MA		1987	06	24.29688	20	30	45.01	-23	34	44.0		2 809
1987	MA		1987	06	25.06563	20	30	24.29	-23	40	29.8		2 809
1987	MA		1987	06	26.42188	20	29	44.84	-23	50	50.4		2 809
1987	MA		1987	06	27.06979	20	29	25.90	-23	55	48.0		2 809
1987	MA		1987	06	27.43056	20	29	14.32	-23	58	36.2		2 809
1987	MA		1987	06	29.24949	20	28	16.62	-24	12	42.6		2 809
1987	MA		1987	07	01.40289	20	27	02.24	-24	29	38.1		2 809
1987	MA		1987	07	01.42569	20	27	01.45	-24	29	50.8		2 809
1987	MY		1987	07	01.37222	20	38	02.74	-28	01	18.4	16.0	2 809
1987	MY		1987	07	01.37778	20	38	02.42	-28	01	19.8		2 809
1987	MY		1987	07	01.38333	20	38	02.08	-28	01	24.9		2 809
1987	MF1	*	1987	06	27.36319	20	38	18.52	-28	05	42.0	16.4	2 809
1987	MF1		1987	07	01.38333	20	36	39.08	-28	19	49.1		2 809
1987	MG1	*	1987	06	27.38021	20	21	15.36	-20	49	31.6	18.3	2 809
1987	MG1		1987	06	27.38507	20	21	15.07	-20	49	32.6		2 809
1987	MG1		1987	06	27.38993	20	21	14.71	-20	49	31.9		2 809
1987	MH1	*	1987	06	27.38021	20	25	07.11	-20	06	15.0	18.3	2 809
1987	MH1		1987	06	27.38507	20	25	06.86	-20	06	16.2		2 809
1987	MH1		1987	06	27.38993	20	25	06.44	-20	06	21.7		2 809
1987	ND	*	1987	07	01.39728	20	22	53.22	-24	16	26.1	15.5	2 809
1987	ND		1987	07	01.40289	20	22	53.10	-24	16	30.8		2 809
1987	ND		1987	07	01.40845	20	22	52.92	-24	16	34.0		2 809
1987	NE	*	1987	07	01.39728	20	24	14.67	-22	40	20.0	18.1	2 809
1987	NE		1987	07	01.40289	20	24	14.46	-22	40	23.0		2 809
1987	NE		1987	07	01.40845	20	24	14.07	-22	40	24.3		2 809
1987	NE		1987	07	02.31146	20	23	39.32	-22	43	25.7	17.5	2 809

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Copied from Nihondaira Obs. Circ.

1987	QC	*	1987	08	26.50417	21	59	29.29	-07	58	49.9	15.5	F 883
1987	QC		1987	08	26.52674	21	59	27.67	-07	59	07.5		883

* * * * *

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, b = F. N. Bowman, M = B. G. Marsden.

Planet	H	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1930 UV		301011	18.46	4.85	342.86	7.31	0.1631	2.4026	4	3		M
1930 UX		301011	342.97	69.81	332.63	4.55	0.2327	2.3386	4	3		M
1931 RE1		310916	12.73	290.04	36.01	3.91	0.3066	2.6396	9	3		M
1936 SO	12.0	360909	271.88	125.04	334.30	23.99	0.0852	1.8798	9	3		B
1986 PP	14.0	860818	340.73	232.25	122.94	2.91	0.2311	2.5907	40	0		M
1987 BJ2	14.0	870125	358.35	224.24	263.55	1.42	0.0643	2.3313	2	6	E	M
1987 HZ	14.5	870415	305.33	256.73	32.36	2.92	0.2467	2.1619	4	6	E	M
1987 KE1	11.0	870604	270.15	207.47	148.54	26.13	0.0783	2.9410	28	4	D	b
1987 MC	13.5	870704	345.77	125.54	170.33	7.60	0.2397	2.3135	44	0		M
1987 MO	14.0	870704	356.80	32.29	275.83	20.65	0.1240	1.9427	32	4		M
1987 MX	13.5	870704	2.23	246.03	42.44	6.25	0.1615	2.4853	30	4		M
1987 MA1	12.5	870704	354.54	130.43	152.41	12.14	0.2666	2.6815	38	6		B
1987 ME1	11.5	870704	339.16	146.85	149.42	10.74	0.0428	3.0201	32	4		B
1987 ON	13.5	870704	359.70	151.61	158.21	13.86	0.1981	2.6105	7	6		M
1987 OS	15.0	870704	355.02	58.17	259.32	7.09	0.1386	2.3708	7	6		M
1987 OV	13.0	870724	329.73	171.84	188.78	8.74	0.1833	2.5340	13	7		M

1987 KE1 = 1987 MD (F. N. Bowman)

* * * * *

ORBITAL ELEMENTS BY E. GOFFIN, AGFA-GEVAERT N.V., MORTSEL, BELGIUM.

(1) Ceres
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	114.84108	(1950.0)		P	Q
n	0.21424453	Peri.	72.25557	-0.86932231	-0.45979807
a	2.7660682	Node	80.03896	+0.35420853	-0.83539814
e	0.0783542	Incl.	10.60634	+0.34469558	-0.30115724
P	4.60	H	3.32	G 0.11	

From 4476 observations at 68 oppositions 1801-1986, mean residual 0".5.
Perturbations by (2) Pallas and (4) Vesta also considered.

(12) Victoria
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	168.38924	(1950.0)		P	Q
n	0.27649776	Peri.	68.82716	+0.55047968	+0.82624140
a	2.3335027	Node	235.13516	-0.80977489	+0.49360377
e	0.2201418	Incl.	8.37951	-0.20306831	+0.27144147
P	3.56	H	7.23	G 0.24	

From 641 observations at 39 oppositions 1907-1986, mean residual 0".5.

(17) Thetis
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	238.52593	(1950.0)		P	Q
n	0.25411190	Peri.	135.87604	-0.15504218	+0.98468363
a	2.4686113	Node	125.04747	-0.93118940	-0.11870454
e	0.1374944	Incl.	5.59024	-0.32992153	-0.12770034
P	3.88	H	7.77	G 0.13	

From 312 observations at 38 oppositions 1906-1987, mean residual 0".7.

(22) Kalliope
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	54.33477		(1950.0)		P		Q
n	0.19853697	Peri.	355.12131		+0.48359645		-0.84822147
a	2.9101037	Node	65.81362		+0.81082419		+0.34117302
e	0.0979517	Incl.	13.69672		+0.32969471		+0.40511888
P	4.96	H	6.49	G	0.22		

From 260 observations at 37 oppositions 1909-1987, mean residual 0".7.

(25) Phocaea
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	337.68306		(1950.0)		P		Q
n	0.26493467	Peri.	90.46484		+0.52271678		+0.82769459
a	2.4009154	Node	213.70475		-0.85192135		+0.51602664
e	0.2540149	Incl.	21.58903		+0.03157813		+0.22054062
P	3.72	H	7.78	G	0.09		

From 660 observations at 34 oppositions 1905-1985, mean residual 0".5.

(42) Isis
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	87.64167		(1950.0)		P		Q
n	0.25867407	Peri.	235.71934		+0.75501655		+0.63883650
a	2.4394998	Node	84.11095		-0.54209154		+0.73492935
e	0.2259594	Incl.	8.54352		-0.36889940		+0.22752312
P	3.81	H	7.50	G	0.25		

From 187 observations at 32 oppositions 1917-1985, mean residual 0".6.

(48) Doris
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	135.57199		(1950.0)		P		Q
n	0.17946602	Peri.	262.31422		+0.07535674		-0.99713395
a	3.1127762	Node	183.38594		+0.95385694		+0.07404911
e	0.0685353	Incl.	6.53963		+0.29065150		+0.01551172
P	5.49	H	6.92	G	0.15		

From 328 observations at 45 oppositions 1913-1986, mean residual 0".6.

(52) Europa
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	308.67277		(1950.0)		P		Q
n	0.18035086	Peri.	336.40275		-0.26235264		-0.95965509
a	3.1025866	Node	128.65064		+0.90465289		-0.28108034
e	0.1007904	Incl.	7.44246		+0.33581876		+0.00748050
P	5.46	H	6.29	G	0.15		

From 406 observations at 43 oppositions 1902-1986, mean residual 0".6.

(53) Kalypso
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	247.69219		(1950.0)		P		Q
n	0.23253714	Peri.	312.02680		-0.09731562		-0.99381378
a	2.6190341	Node	143.45477		+0.93758835		-0.10958141
e	0.2028116	Incl.	5.15624		+0.33385289		+0.01805780
P	4.24	H	8.75	G	0.15		

From 111 observations at 31 oppositions 1913-1986, mean residual 0".8.

(56) Melete
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	36.31381		(1950.0)		P	Q
n	0.23510834	Peri.	103.18367	+0.44223438		+0.89632366
a	2.5999043	Node	193.20424	-0.86769567		+0.41849173
e	0.2324118	Incl.	8.08727	-0.22700878		+0.14652155
P	4.19	H	8.30	G	0.15	

From 95 observations at 24 oppositions 1902-1986, mean residual 1".0.

(57) Mnemosyne
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	250.95532		(1950.0)		P	Q
n	0.17656803	Peri.	217.11175	+0.56602647		-0.81998998
a	3.1467435	Node	198.88994	+0.80527100		+0.57203580
e	0.1181979	Incl.	15.22716	+0.17650113		+0.01978564
P	5.58	H	6.95	G	0.07	

From 1062 observations at 94 oppositions 1859-1985, mean residual 0".8.

(58) Concordia
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	239.22442		(1950.0)		P	Q
n	0.22228664	Peri.	32.75242	-0.97120245		+0.23648977
a	2.6989436	Node	160.86351	-0.23315599		-0.91835996
e	0.0447716	Incl.	5.06729	-0.04903146		-0.31731305
P	4.43	H	8.79	G	0.15	

From 114 observations at 28 oppositions 1919-1984, mean residual 0".8.

(62) Erato
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	329.15131		(1950.0)		P	Q
n	0.17915649	Peri.	274.62789	+0.76623781		-0.64177413
a	3.1163605	Node	125.30007	+0.60384308		+0.70232344
e	0.1862111	Incl.	2.22677	+0.21966598		+0.30800609
P	5.50	H	8.24	G	0.25	

From 177 observations at 31 oppositions 1906-1985, mean residual 0".8.

(75) Eurydike
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	225.30757		(1950.0)		P	Q
n	0.22541760	Peri.	338.11999	+0.92273312		+0.38543759
a	2.6738939	Node	359.20607	-0.33946018		+0.81117409
e	0.3042972	Incl.	4.99202	-0.18256609		+0.43981184
P	4.37	H	9.02	G	0.25	

From 121 observations at 26 oppositions 1910-1987, mean residual 0".7.

(78) Diana
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	144.94894		(1950.0)		P	Q
n	0.23222756	Peri.	151.02997	-0.56495616		-0.82232183
a	2.6213613	Node	333.19649	+0.72501165		-0.45543623
e	0.2050627	Incl.	8.66124	+0.39393228		-0.34112262
P	4.24	H	8.11	G	0.08	

From 173 observations at 28 oppositions 1912-1984, mean residual 0".8.

(89) Julia
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	211.98284		(1950.0)		P		Q
n	0.24174403	Peri.	44.70543		+0.97646792		+0.05231160
a	2.5521070	Node	311.08733		-0.16167226		+0.81962419
e	0.1805666	Incl.	16.11643		+0.14273219		+0.57050827
P	4.08	H	6.57	G	0.14		

From 196 observations at 27 oppositions 1909-1985, mean residual 0".7.

(90) Antiope
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	275.09117		(1950.0)		P		Q
n	0.17625697	Peri.	235.29215		+0.58501204		+0.81018990
a	3.1504446	Node	70.55339		-0.73072180		+0.54622364
e	0.1620816	Incl.	2.23579		-0.35186157		+0.21267831
P	5.59	H	8.37	G	0.26		

From 236 observations at 35 oppositions 1903-1986, mean residual 0".7.

(95) Arethusa
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	111.01652		(1950.0)		P		Q
n	0.18295801	Peri.	151.20884		+0.81566968		-0.54305169
a	3.0730416	Node	243.04480		+0.47858746		+0.82709204
e	0.1436165	Incl.	12.92950		+0.32501848		+0.14496075
P	5.39	H	7.83	G	0.08		

From 51 observations at 22 oppositions 1917-1987, mean residual 0".8.

(103) Hera
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	301.22199		(1950.0)		P		Q
n	0.22191756	Peri.	188.32764		+0.81026204		+0.58236733
a	2.7019352	Node	135.83796		-0.53209506		+0.77802755
e	0.0789685	Incl.	5.41576		-0.24566292		+0.23562984
P	4.44	H	7.59	G	0.11		

From 124 observations at 36 oppositions 1908-1986, mean residual 0".9.

(104) Klymene
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	45.48723		(1950.0)		P		Q
n	0.17579355	Peri.	24.63510		+0.40103886		-0.91547497
a	3.1559789	Node	41.74279		+0.83205611		+0.34906823
e	0.1482070	Incl.	2.82062		+0.38321073		+0.20014233
P	5.61	H	8.31	G	0.20		

From 165 observations at 34 oppositions 1910-1986, mean residual 0".8.

(105) Artemis
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	280.76619		(1950.0)		P		Q
n	0.26970127	Peri.	55.95376		-0.44809144		+0.89255698
a	2.3725428	Node	187.93326		-0.89222497		-0.45004186
e	0.1779712	Incl.	21.48822		-0.05611306		+0.02836136
P	3.65	H	8.89	G	0.29		

From 73 observations at 23 oppositions 1940-1985, mean residual 0".9.

(112) Iphigenia
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	297.68136		(1950.0)		P	Q
n	0.25957709	Peri.	16.87072	+0.94106054		+0.33715122
a	2.4338388	Node	323.39001	-0.31532250		+0.84550108
e	0.1280295	Incl.	2.60401	-0.12237967		+0.41407364
P	3.80	H	9.80	G	0.15	

From 52 observations at 22 oppositions 1929-1986, mean residual 1".0.

(114) Kassandra
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	331.21735		(1950.0)		P	Q
n	0.22527806	Peri.	352.02963	-0.91285475		-0.40758005
a	2.6749979	Node	163.85312	+0.37917056		-0.86807343
e	0.1391249	Incl.	4.94518	+0.15141299		-0.28342022
P	4.38	H	8.24	G	0.10	

From 92 observations at 29 oppositions 1902-1985, mean residual 0".9.

(121) Hermione
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	241.05763		(1950.0)		P	Q
n	0.15434718	Peri.	287.17313	+0.99177948		-0.01957947
a	3.4419423	Node	74.09005	+0.07229542		+0.90112223
e	0.1433069	Incl.	7.55564	-0.10557859		+0.43312282
P	6.39	H	7.39	G	0.15	

From 86 observations at 26 oppositions 1906-1985, mean residual 0".9.

(134) Sophrosyne
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	205.97637		(1950.0)		P	Q
n	0.24010804	Peri.	83.43691	+0.34871971		-0.93594176
a	2.5636865	Node	345.85159	+0.76081051		+0.31326455
e	0.1164717	Incl.	11.58008	+0.54732251		+0.16086746
P	4.10	H	8.67	G	0.06	

From 71 observations at 30 oppositions 1906-1986, mean residual 0".9.

(1685) Toro
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	91.85517		(1950.0)		P	Q
n	0.61653324	Peri.	126.82985	+0.74852255		-0.64288246
a	1.3671990	Node	273.77741	+0.54461256		+0.73584063
e	0.4359363	Incl.	9.37435	+0.37830035		+0.21269865
P	1.60	H	13.96	G	0.03	

From 126 observations at 13 oppositions 1948-1986, mean residual 0".9.

(1864) Daedalus
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	3.67296		(1950.0)		P	Q
n	0.55817416	Peri.	325.37467	+0.87455554		+0.48323669
a	1.4609081	Node	6.15386	-0.31380535		+0.62754154
e	0.6148450	Incl.	22.15951	-0.36970097		+0.61047024
P	1.77	H	15.02	G	0.25	

From 40 observations at 6 oppositions 1971-1985, mean residual 0".7.

(1866) Sisyphus
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	245.00957		(1950.0)		P	Q
n	0.37821507	Peri.	292.95479	+0.79482591		+0.15501319
a	1.8936956	Node	63.08142	+0.27211396		+0.77312957
e	0.5393850	Incl.	41.14741	-0.54240738		+0.61501348
P	2.61	H	13.2	G	0.25	

From 125 observations at 11 oppositions 1964-1987, mean residual 0".8.

(1915) Quetzalcoatl
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	214.49538		(1950.0)		P	Q
n	0.24429790	Peri.	347.87869	-0.87281594		-0.47649180
a	2.5342895	Node	162.44189	+0.47189029		-0.87913986
e	0.5749819	Incl.	20.48693	+0.12454670		-0.00828661
P	4.03	H	19.05	G	0.16	

From 27 observations at 5 oppositions 1953-1985, mean residual 1".0.

(1916) Boreas
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	328.57679		(1950.0)		P	Q
n	0.28760636	Peri.	335.34294	+0.71846312		+0.69151491
a	2.2730225	Node	340.29563	-0.59553970		+0.55588982
e	0.4496831	Incl.	12.84420	-0.35936500		+0.46129561
P	3.43	H	15.03	G	0.25	

From 72 observations at 4 oppositions 1953-1984, mean residual 0".8.

(1917) Cuyo
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	103.46366		(1950.0)		P	Q
n	0.31282917	Peri.	194.14475	+0.93008831		-0.36311219
a	2.1491392	Node	187.85212	+0.36397807		+0.93138818
e	0.5050125	Incl.	23.99002	+0.04955511		-0.02579893
P	3.15	H	15.2	G	0.25	

From 34 observations at 6 oppositions 1968-1987, mean residual 0".7.

(1943) Anteros
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	113.96965		(1950.0)		P	Q
n	0.57615915	Peri.	338.10929	-0.71683742		+0.68345089
a	1.4303459	Node	245.77411	-0.61513135		-0.71308411
e	0.2558729	Incl.	8.70266	-0.32826444		-0.15622399
P	1.71	H	15.83	G	0.25	

From 91 observations at 6 oppositions 1973-1985, mean residual 0".9.

(1980) Tezcatlipoca
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	158.64414		(1950.0)		P	Q
n	0.44091855	Peri.	115.24237	+0.91060024		+0.01860791
a	1.7096103	Node	246.09916	-0.10480877		+0.97672616
e	0.3652086	Incl.	26.84602	+0.39977784		+0.21368142
P	2.24	H	14.07	G	0.25	

From 34 observations at 6 oppositions 1950-1987, mean residual 1".1.

(2059) Baboquivari
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	182.26897	(1950.0)	P	Q
n	0.22823273	Peri. 191.21567	+0.85213038	-0.51905742
a	2.6518611	Node 200.47671	+0.49367628	+0.83959828
e	0.5260791	Incl. 10.99705	+0.17365927	+0.16016904
P	4.32	H 14.7	G 0.25	

From 45 observations at 3 oppositions 1963-1986, mean residual 1".0.

(2061) Anza
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	312.06155	(1950.0)	P	Q
n	0.28931043	Peri. 155.83959	+0.99806038	-0.05456693
a	2.2640881	Node 207.33965	+0.04096623	+0.93812690
e	0.5375445	Incl. 3.74102	+0.04687481	+0.34196536
P	3.41	H 16.7	G 0.25	

From 38 observations at 3 oppositions 1960-1985, mean residual 0".9.

(2063) Bacchus
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	145.73195	(1950.0)	P	Q
n	0.88099568	Peri. 55.00221	+0.04627284	-0.99501038
a	1.0776727	Node 32.68774	+0.85481605	-0.00634289
e	0.3493994	Incl. 9.42003	+0.51686395	+0.09956965
P	1.12	H 17.6	G 0.25	

From 26 observations at 4 oppositions 1977-1986, mean residual 1".0.

(2135) Aristaeus
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	57.26489	(1950.0)	P	Q
n	0.48702662	Peri. 290.61137	-0.50698863	-0.85883551
a	1.5999298	Node 190.78537	+0.86157111	-0.50745966
e	0.5030843	Incl. 23.04069	-0.02564671	-0.06990174
P	2.02	H 18.0	G 0.25	

From 16 observations at 3 oppositions 1977-1984, mean residual 0".6.

(2207) Antenor
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	214.77796	(1950.0)	P	Q
n	0.08455308	Peri. 292.15393	-0.01424334	-0.99895615
a	5.1410254	Node 158.52516	+0.95548433	-0.02639093
e	0.0165138	Incl. 6.80871	+0.29469785	+0.03728445
P	11.66	H 8.87	G 0.15	

From 47 observations at 7 oppositions 1959-1985, mean residual 1".0.

(2212) Hephaistos
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	297.31355	(1950.0)	P	Q
n	0.30967614	Peri. 208.06787	-0.56272558	+0.82096674
a	2.1637025	Node 28.01523	-0.71462023	-0.42431731
e	0.8350134	Incl. 11.88233	-0.41552118	-0.38205816
P	3.18	H 14.0	G 0.25	

From 48 observations at 3 oppositions 1978-1986, mean residual 0".8.

(2340) Hathor
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	43.86678	(1950.0)	P	Q
n	1.27128478	Peri. 39.68810	-0.33100270	+0.94215778
a	0.8439321	Node 211.08673	-0.88958171	-0.33018222
e	0.4498407	Incl. 5.85669	-0.31477231	-0.05760579
P	0.78	H 20.2	G 0.25	

From 45 observations at 3 oppositions 1976-1983, mean residual 1".1.

(2456) Palamedes
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	359.06013	(1950.0)	P	Q
n	0.08331614	Peri. 95.01594	+0.45500172	-0.88082233
a	5.1917839	Node 326.89458	+0.69210913	+0.44226747
e	0.0766615	Incl. 13.86285	+0.56031990	+0.16897190
P	11.83	H 9.6	G 0.25	

From 19 observations at 7 oppositions 1966-1985, mean residual 1".0.

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ORBITAL ELEMENTS BY D. K. YEOMANS AND M. S. KEESEY, JET PROPULSION LABORATORY.

(1981) Midas
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	356.07606	(1950.0)	P	Q
n	0.41639212	Peri. 267.62542	-0.08706157	+0.99547150
a	1.7761012	Node 356.58461	-0.44560681	-0.07318124
e	0.6496308	Incl. 39.84213	-0.89098533	-0.06067131
P	2.37	H 16.9	G 0.25	

From 18 observations at 4 oppositions 1973-1987, mean residual 1".02.

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ORBITAL ELEMENTS BY S. NAKANO, SMITHSONIAN ASTROPHYSICAL OBSERVATORY.

The identifications are by S. Nakano unless otherwise stated.

(2394) Nadeev
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	110.26240	(1950.0)	P	Q
n	0.17254165	Peri. 300.24646	+0.38442066	-0.92288068
a	3.1955093	Node 127.12854	+0.85639553	+0.34736049
e	0.1950988	Incl. 1.62632	+0.34468457	+0.16622858
P	5.71	H 11.49	G 0.15	

From 50 observations at 8 oppositions 1950-1987, mean residual 1".4.

(2396) Kochi
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	95.69421	(1950.0)	P	Q
n	0.21125853	Peri. 47.88192	-0.89011050	+0.44860887
a	2.7920716	Node 158.39186	-0.45525762	-0.86708909
e	0.0735338	Incl. 12.60004	-0.02106640	-0.21657931
P	4.67	H 11.36	G 0.15	

From 24 observations at 7 oppositions 1939-1983, mean residual 1".7.

(2416) Sharonov
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	264.75494	(1950.0)	P	Q
n	0.18852933	Peri. 98.99719	-0.37607869	+0.92163481
a	3.0121974	Node 148.37318	-0.90555575	-0.34370238
e	0.0481810	Incl. 10.51284	-0.19629977	-0.18016088
P	5.23	H 11.0	G 0.25	

From 27 observations at 10 oppositions 1916-1982, mean residual 1".5.

(2475) Semenov
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	290.17682	(1950.0)	P	Q
n	0.18641257	Peri. 180.46660	+0.86273748	-0.49946765
a	3.0349573	Node 209.91384	+0.46441467	+0.84436138
e	0.1088389	Incl. 9.09642	+0.20000763	+0.19387089
P	5.29	H 11.1	G 0.25	

From 15 observations at 6 oppositions 1908-1986, mean residual 1".5.

(2476) Andersen
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	292.86611	(1950.0)	P	Q
n	0.18741785	Peri. 268.08628	+0.96764625	+0.17028259
a	3.0240949	Node 82.07519	-0.07975903	+0.90651738
e	0.1136666	Incl. 10.83489	-0.23937258	+0.38630308
P	5.26	H 10.99	G 0.25	

From 33 observations at 6 oppositions 1939-1983, mean residual 1".6.

(2477) Biryukov
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	183.03401	(1950.0)	P	Q
n	0.24106244	Peri. 86.76146	+0.41458769	+0.90866008
a	2.5569154	Node 207.89731	-0.87128260	+0.38064449
e	0.1536815	Incl. 6.07750	-0.26264744	+0.17160024
P	4.09	H 12.01	G 0.15	

From 28 observations at 8 oppositions 1961-1984, mean residual 1".4.

(2478) Tokai
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	78.16244	(1950.0)	P	Q
n	0.29681075	Peri. 233.57183	-0.20469848	-0.97733908
a	2.2257837	Node 228.33179	+0.91953426	-0.17312804
e	0.0680405	Incl. 4.13892	+0.33549258	-0.12179902
P	3.32	H 12.54	G 0.25	

From 48 observations at 10 oppositions 1932-1987, mean residual 1".7.

(2497) Kulikovskij
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	188.23087	(1950.0)	P	Q
n	0.24357724	Peri. 345.91856	+0.38370820	+0.91980923
a	2.5392858	Node 306.58170	-0.83702309	+0.30892704
e	0.2324375	Incl. 5.85885	-0.39007739	+0.24189887
P	4.05	H 13.28	G 0.15	

From 22 observations at 6 oppositions 1969-1985, mean residual 1".3.

(2499) Brunk
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	45.51874	(1950.0)	P	Q
n	0.18065091	Peri. 45.85507	-0.52755573	+0.84951608
a	3.0991501	Node 192.30532	-0.78297521	-0.48746894
e	0.1243536	Incl. 0.73027	-0.32959790	-0.20173364
P	5.46	H 12.25	G 0.15	

From 25 observations at 6 oppositions 1975-1985, mean residual 1".0.

(2528) Mohler
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	37.64482	(1950.0)	P	Q
n	0.17717614	Peri. 184.97608	+0.97520798	+0.22127365
a	3.1395390	Node 162.23936	-0.20271147	+0.89818661
e	0.1831574	Incl. 0.51001	-0.08875506	+0.37986681
P	5.56	H 11.6	G 0.25	

From 19 observations at 7 oppositions 1933-1986, mean residual 1".2.

(2529) Rockwell Kent
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	184.54868	(1950.0)	P	Q
n	0.24446806	Peri. 114.13272	+0.77718163	+0.62831527
a	2.5331134	Node 206.98150	-0.60156906	+0.72561430
e	0.0966471	Incl. 4.39466	-0.18467101	+0.28054199
P	4.03	H 13.1	G 0.25	

From 29 observations at 6 oppositions 1953-1987, mean residual 1".5.

(2530) Shipka
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	216.84494	(1950.0)	P	Q
n	0.18760944	Peri. 155.07683	+0.99188105	+0.11427201
a	3.0220357	Node 198.61851	-0.12441445	+0.96281827
e	0.1206475	Incl. 10.06606	+0.02632554	+0.24479151
P	5.25	H 11.8	G 0.25	

From 18 observations at 8 oppositions 1963-1987, mean residual 1".5.

(2531) Cambridge
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	279.69713	(1950.0)	P	Q
n	0.18866570	Peri. 34.94640	-0.74421109	-0.64167263
a	3.0107457	Node 104.03206	+0.56092867	-0.75116409
e	0.0497500	Incl. 11.02247	+0.36264153	-0.15494754
P	5.22	H 11.01	G 0.25	

From 52 observations at 9 oppositions 1931-1984, mean residual 1".7.

(2532) Sutton
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	324.09221	(1950.0)	P	Q
n	0.26979127	Peri. 7.68013	+0.99116641	+0.13111697
a	2.3720151	Node 344.74240	-0.12534759	+0.87703141
e	0.1714797	Incl. 4.34490	-0.04332579	+0.46219502
P	3.65	H 12.7	G 0.25	

From 16 observations at 6 oppositions 1951-1984, mean residual 3".0.

(2583) 1975 XA3
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	210.80303	(1950.0)	P	Q
n	0.29151734	Peri. 309.85357	+0.99420676	+0.06279862
a	2.2526469	Node 46.73885	-0.01446827	+0.88237226
e	0.2096059	Incl. 6.87962	-0.10650625	+0.46634271
P	3.38	H 13.12	G 0.25	

From 15 observations at 5 oppositions 1968-1983, mean residual 2".0.

(2584) Turkmenia
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	83.74407	(1950.0)	P	Q
n	0.29621994	Peri. 238.77721	+0.31624085	+0.94848588
a	2.2287423	Node 49.67094	-0.86158851	+0.29559423
e	0.0656888	Incl. 1.43851	-0.39706040	+0.11401133
P	3.33	H 13.65	G 0.25	

From 18 observations at 8 oppositions 1952-1984, mean residual 1".3.

(2585) Irpedina
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	353.32132	(1950.0)	P	Q
n	0.26076834	Peri. 246.45858	+0.91948167	-0.38641947
a	2.4264209	Node 136.17931	+0.38791650	+0.86191066
e	0.2342344	Incl. 5.99724	+0.06382993	+0.32831388
P	3.78	H 12.6	G 0.25	

From 22 observations at 9 oppositions 1930-1985, mean residual 0".9.

(2586) Matson
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	278.46211	(1950.0)	P	Q
n	0.26719585	Peri. 153.41864	+0.76191006	+0.64742772
a	2.3873509	Node 166.18682	-0.60694012	+0.72349731
e	0.0879917	Incl. 4.36626	-0.22609013	+0.23956000
P	3.69	H 13.10	G 0.25	

From 45 observations at 9 oppositions 1962-1987, mean residual 1".4.

(2587) Gardner
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	126.66942	(1950.0)	P	Q
n	0.17462273	Peri. 188.05860	+0.09392517	+0.99452078
a	3.1700701	Node 87.33937	-0.91079935	+0.10445110
e	0.1517670	Incl. 2.63343	-0.40202314	-0.00428698
P	5.64	H 11.19	G 0.15	

From 34 observations at 5 oppositions 1978-1984, mean residual 1".4.

(2589) Daniel
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	200.88084	(1950.0)	P	Q
n	0.20154043	Peri. 205.82584	+0.99504475	+0.09653979
a	2.8811194	Node 148.60604	-0.08145776	+0.92872929
e	0.0805181	Incl. 2.61768	-0.05701384	+0.35796923
P	4.89	H 12.05	G 0.25	

From 25 observations at 7 oppositions 1955-1983, mean residual 0".6.

(2590) Mourao
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 212.12016		(1950.0)	P	Q
n 0.27486001	Peri.	165.42358	+0.87621735	-0.47633048
a 2.3427630	Node	223.26966	+0.43075226	+0.84218625
e 0.1174432	Incl.	6.12719	+0.21609175	+0.25264916
P 3.59	H	12.84	G 0.25	

From 60 observations at 6 oppositions 1949-1983, mean residual 1".1.

(2616) Lesya
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 106.23858		(1950.0)	P	Q
n 0.31005009	Peri.	200.43605	+0.97315251	+0.22973447
a 2.1619624	Node	146.27275	-0.20749849	+0.90204209
e 0.0764251	Incl.	1.44577	-0.09959197	+0.36543417
P 3.18	H	12.4	G 0.25	

From 27 observations at 8 oppositions 1929-1986, mean residual 1".0.

(2617) Jiangxi
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 41.80225		(1950.0)	P	Q
n 0.17550774	Peri.	342.48184	+0.54998529	-0.80729764
a 3.1594043	Node	73.65176	+0.79044816	+0.42043820
e 0.2349755	Incl.	12.88496	+0.26964402	+0.41412829
P 5.62	H	10.66	G 0.15	

From 28 observations at 7 oppositions 1972-1986, mean residual 1".4.

(2618) Coonabarabran
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 141.63779		(1950.0)	P	Q
n 0.18738076	Peri.	73.50084	+0.98391392	+0.08498666
a 3.0244940	Node	281.41685	-0.14468055	+0.89504879
e 0.1133847	Incl.	9.22458	+0.10479000	+0.43779554
P 5.26	H	12.2	G 0.25	

From 19 observations at 5 oppositions 1975-1987, mean residual 1".0.

(3678)* 1966 BO = 1934 GS = 1950 FE
Discovered 1966 Jan. 20 at the Purple Mountain Observatory.
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 44.39959		(1950.0)	P	Q
n 0.24163978	Peri.	52.48694	-0.96485914	+0.24711356
a 2.5528410	Node	141.58747	-0.26255966	-0.92018591
e 0.1892485	Incl.	8.26732	+0.01045318	-0.30363264
P 4.08	H	11.3	G 0.25	

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

340414	008	(0.00-	0.06-)X	660120	330	0.8+	2.4+	860111	801	1.0+	0.1+
340508	008	(51.5-	2.8-)X	660128	330	1.5+	1.2-	870402	801	0.6-	0.3-
340509	008	(27.2-	8.9+)X	660214	330	3.2-	1.0-	870426	801	0.2+	1.0-
500317	690	(98.3+	28.4+)Y	660224	330	0.6+	1.2+				
500321	690	0.1+	0.3-	851216	801	0.3-	2.4-				

(3679)* 1984 DT = 1940 QL = 1953 QM = 1971 DA = 1973 YH2 = 1979 OH15
Discovered 1984 Feb. 24 by H. Debehogne at the European Southern Observatory.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 121.71894	(1950.0)	P	Q	
n 0.30270359	Peri. 63.59358	+0.97493436	-0.21626238	
a 2.1968024	Node 308.85016	+0.17260281	+0.88342756	
e 0.2204480	Incl. 3.84942	+0.14039681	+0.41567575	
P 3.26	H 13.5	G 0.25		

Residuals in seconds of arc

400828 020(23.1-	18.4-)X	840224 809	0.1-	0.0	840305 809	0.6-	0.3-
530816 024	0.4+	1.8-	840301 809	1.3+	1.5-	840305 809	0.7-	0.1-
710218 095	2.0+	1.7+	840301 809	0.9+	1.4-	840308 809	0.8-	0.0
731220 095	0.3+	0.3-	840301 809	0.9+	1.4-	840308 809	1.2-	0.1+
790721 095	0.4+	0.2-	840303 809	0.1+	0.4-	840308 809	1.2-	0.1+
790730 095	0.5+	0.9-	840303 809	0.1+	0.3-	840309 809	0.4+	0.3-
840224 809	1.9-	0.4+	840303 809	0.1-	0.1-	840309 809	0.2+	0.2-
840224 809	0.9-	0.2+	840305 809	0.6-	0.4-	840309 809	0.4+	0.1-

(3680)* 1987 MY = 1931 UA = 1958 XW = 1971 TC3 = 1971 TG3 = 1981 SG5
= 1983 GT

Discovered 1987 June 28 by E. Helin at Palomar. The double designation 1971 TC3 = 1971 TG3 is by O. Kippes (MPC 6880).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 178.51094	(1950.0)	P	Q	
n 0.29697817	Peri. 95.27914	-0.51226140	-0.85782342	
a 2.2249471	Node 25.66828	+0.74501816	-0.46792971	
e 0.0642624	Incl. 5.50579	+0.42724256	-0.21255769	
P 3.32	H 12.8	G 0.25		

Residuals in seconds of arc

311017 024	1.1+	3.6-	810925 095	0.2+	1.7+	870701 809	0.3+	0.3-
581213 690(11.4+	2.8+)Y	830414 323	0.8-	0.2-	870701 809	0.7-	3.8-	
581215 690	3.5+	2.2+ Y	830421 323	1.5-	0.4+	870727 675(13.6-	4.0+)	
711010 095	2.7+	2.4-	870628 675	1.8+	2.9+	870729 675	1.8+	3.1+
711011 095	3.4-	1.8+	870630 675	1.1-	1.4+			
711021 095	4.0-	1.9-	870701 809	1.0+	0.5-			

1975 XH = 1979 YK7 = 1980 BM3

Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M 340.32240	(1950.0)	P	Q	
n 0.26236135	Peri. 40.80963	-0.69125637	-0.69767676	
a 2.4165939	Node 93.85528	+0.60418801	-0.70088194	
e 0.2079926	Incl. 10.87150	+0.39638552	-0.14836322	
P 3.76	H 14.0	G 0.25		

Residuals in seconds of arc

751201 805	1.3-	0.4+	751205 805	0.7+	0.4-	800122 095	0.0	0.1+
751204 805	0.6+	0.0	791218 095	0.0	0.1-			

1976 GJ1 = 1987 FY1

Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M 31.02441	(1950.0)	P	Q	
n 0.17866677	Peri. 357.02404	-0.94194892	-0.33570981	
a 3.1220587	Node 163.35694	+0.30843638	-0.87175390	
e 0.1040813	Incl. 1.11680	+0.13266213	-0.35685299	
P 5.52	H 12.0	G 0.25		

Residuals in seconds of arc

760401 095	1.9+	1.3-	760406 808	0.7+	0.1-	870324 220	0.6+	1.0+
760402 095	1.1-	1.6-	760406 808	0.1-	0.5+	870326 220	2.0+	1.4+
760404 808	0.3+	0.7+	870322 220	1.2-	1.0-	870326 220 (5.7-	7.9+)	
760404 808	1.9-	1.4+	870323 220 (5.8+	7.8-)				
760404 095 (4.8+	3.4-)	870323 220	1.2-	0.8-				

1985 RE4 = 1973 FK1
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M 142.13374		(1950.0)	P	Q
n 0.18871281	Peri.	188.62005	+0.83678319	+0.53207640
a 3.0102507	Node	138.38140	-0.49001643	+0.83300488
e 0.0959446	Incl.	11.21582	-0.24429039	+0.15164949
P 5.22	H 11.5		G 0.25	

Residuals in seconds of arc

730327	095	0.7+	0.3-	850914	809	0.5-	0.4-	850918	809	0.5-	0.5-
730402	095	0.7-	0.3+	850914	809	0.6-	0.6-	850920	809	0.0	0.1-
850910	809	0.6+	0.1-	850914	809	0.5-	0.6-	850920	809	0.0	0.1-
850910	809	0.8+	0.3-	850916	809	0.6-	0.1+	850920	809	0.0	0.1-
850910	809	1.1+	0.3-	850916	809	0.3-	0.1-	850922	809	1.0+	0.6+
850911	809	0.1-	0.9+	850916	809	0.3-	0.2-	850922	809	1.1+	0.5+
850911	809	0.2+	0.8+	850918	809	0.8-	0.2-				
850911	809	0.1+	0.9+	850918	809	0.9-	0.3-				

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

Comet Terasako (1987d)
Epoch 1987 Jan. 5.0 ET = JDE 2446800.5
T 1986 Dec. 24.87159 ET

q 0.3930202		(1950.0)	P	Q
z +0.0124037	Peri.	195.26663	+0.31548347	+0.69204900
+/-0.0019868	Node	97.01482	-0.78758846	+0.57260899
e 0.9951251	Incl.	40.85572	-0.52931521	-0.43953057

From 25 observations 1987 Jan. 27-Mar. 5, mean residual 1".4.

Periodic Comet Wild 3 (1987e)
Epoch 1987 Sept. 2.0 ET = JDE 2447040.5
T 1987 Sept. 1.05177 ET

q 2.2919191		(1950.0)	P	Q
n 0.14290467	Peri.	179.56580	-0.31606159	+0.91426578
a 3.6233068	Node	71.99355	-0.87120943	-0.17392941
e 0.3674510	Incl.	15.45458	-0.37563174	-0.36587791
P 6.90				

From 39 observations 1980-1987, mean residual 1".1.

(1350) Rosselia
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 340.91280		(1950.0)	P	Q
n 0.20389798	Peri.	238.26032	+0.95253537	-0.30258965
a 2.8588680	Node	139.32580	+0.29375863	+0.88480619
e 0.0899986	Incl.	2.93787	+0.07988886	+0.35434095
P 4.83	H 10.62		G 0.25	

From 55 observations at 23 oppositions 1929-1986, mean residual 1".3.

(3005) 1979 QK2
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 116.05581		(1950.0)	P	Q
n 0.27011821	Peri.	77.55311	-0.26402433	+0.96451383
a 2.3701008	Node	177.13545	-0.90010865	-0.24562665
e 0.1847985	Incl.	2.35941	-0.34654808	-0.09685365
P 3.65	H 13.88		G 0.25	

From 23 observations at 5 oppositions 1964-1986, mean residual 1".4.

(3681)* 1974 QO2 = 1937 KA = 1947 LG = 1980 GM1 = 1984 SN2

Discovered 1974 Aug. 27 by L. Chernykh at the Crimean Astrophysical Observatory. The key identification 1974 QO2 = 1984 SN2 is by E. Bowell (MPC 9213). The identifications 1974 QO2 = 1937 KA = 1947 LG = 1980 GM1 are by D. W. E. Green (MPC 9213).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 341.41340		(1950.0)	P	Q
n 0.29602143	Peri.	172.10814	+0.56960176	+0.82026226
a 2.2297386	Node	132.59660	-0.75788071	+0.54873346
e 0.1834626	Incl.	4.06541	-0.31807337	+0.16143548

P 3.33 H 13.8 G 0.25

Residuals in seconds of arc

370516	078(26.2+	51.5-)X	800413	033	0.7-	1.3-	841026	688	1.5+	2.8-
470614	690	0.3-	1.6-	800413	033	0.5-	1.9-	841026	688	0.1-	2.2-
470615	690	0.7-	0.9-	840925	688	1.2+	0.9-	870530	801	0.1-	1.4+
740827	095	(1.6-	6.0+)	840925	688	0.8-	1.1-	870621	801	0.9+	0.8+
740911	095	0.2+	3.1+	840928	688	0.4-	0.6-				
740914	095	0.5+	1.9+	840928	688	1.0-	1.2-				

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

The identifications are by B. G. Marsden unless otherwise stated.

Periodic Comet Gehrels 1 (1987v)

Epoch 1987 July 24.0 ET = JDE 2447000.5

T 1987 Aug. 10.24370 ET

q 2.9885000		(1950.0)	P	Q
n 0.06543154	Peri.	28.48141	+0.75218459	-0.65790205
a 6.0992712	Node	12.86813	+0.56843003	+0.61927012
e 0.5100234	Incl.	9.61335	+0.33332514	+0.42856669

P 15.06

From 23 observation 1972-1987, mean residual 1".2.

Comet Rudenko (1987u)

T 1987 Oct. 9.51078 ET

q 0.6041507		(1950.0)	P	Q
	Peri.	143.67662	-0.59749337	+0.02224385
	Node	297.91858	+0.33226469	+0.91663045
e 1.0	Incl.	114.88634	+0.72979575	-0.39911630

From 22 observations 1987 Aug. 22-31.

Comet Bradfield (1987s)

T 1987 Nov. 7.23292 ET

q 0.8719240		(1950.0)	P	Q
	Peri.	73.67926	+0.78013097	+0.27765640
	Node	267.29234	-0.50626292	+0.80665077
e 1.0	Incl.	34.14253	+0.36755070	+0.52174847

From 27 observations 1987 Aug. 12-28.

(3682)* A923 NB = 1951 YO = 1978 NP3 = 1984 AA

Discovered 1923 July 12 by K. Reinmuth at Heidelberg. The key identification A923 NB = 1984 AA is by E. Bowell (MPC 8466).

Epoch 1987 July 24.0 ET = JDE 2447000.5
M 316.83982 (1950.0) P Q
n 0.21559077 Peri. 113.64097 +0.96285875 -0.14604609
a 2.7545412 Node 255.38509 +0.06431119 +0.94092927
e 0.3212407 Incl. 13.57346 +0.26223481 +0.30548756
P 4.57 H 11.5 G 0.25
Residuals in seconds of arc

230712	024	4.4-	0.1-	230810	045	1.5+	2.5+	840104	688	0.3+	0.5-
230715	024	5.3+	1.1+	511223	711	(5.8+	0.9-)Y	840104	688	0.8+	3.7-
230720	024	6.1-	0.3+	780712	095	0.8-	0.5-	840301	801	0.2-	1.3+
230804	045	4.4+	3.2-	810208	413	1.0-	0.3-	850324	801	0.9-	0.9-
230804	024	1.7+	0.5+	810501	413	0.6+	0.1-	870625	801	0.1+	0.7+
230804	045	1.7-	2.0-	831106	675	0.7+	0.9+	870629	293	0.6-	2.7+
230805	024	2.8+	0.3-	831109	675	0.3-	0.5+	870629	293	0.7-	0.2-
230806	045	4.6-	1.1-	831229	688	0.6-	1.1+	870723	801	0.5+	0.7+
230806	024	2.4+	1.0-	831229	688	0.2-	0.9+				
230808	045	0.6+	0.6-	840102	688	0.1+	0.2+				

1977 RF2 = 1930 UB1 = 1987 OB
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)
M 359.56956 (1950.0) P Q
n 0.29293772 Peri. 318.76378 +0.65970762 +0.75144201
a 2.2453638 Node 352.49054 -0.66554297 +0.57737825
e 0.1928972 Incl. 4.82356 -0.34905358 +0.31932627
P 3.36 H 14.5 G 0.25
Residuals in seconds of arc

301015	690	3.5+	1.1-	870725	372	4.3-	2.7-	870805	372	3.0+	1.4+
301017	690	3.0+	0.1-	870725	372	4.8-	1.5-	870805	372	1.4+	1.8+
301019	690	4.6-	2.0-	870728	372	2.0-	0.7-	870814	372	1.9+	2.0+
770909	095	2.8-	1.9+	870728	372	2.3+	2.1-	870814	372	3.2+	2.0+
770912	095	0.4+	0.9+	870730	372	2.0+	1.4-				
770918	095	0.9-	1.0+	870730	372	1.5-	1.0-				

1979 ML = 1971 OS = 1971 QN2 = 1975 PU = 1987 MP
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)
M 0.67556 (1950.0) P Q
n 0.24383088 Peri. 134.82643 +0.18949181 +0.97853724
a 2.5375296 Node 145.85377 -0.93662270 +0.20489253
e 0.2504391 Incl. 8.29501 -0.29467061 -0.02199810
P 4.04 H 13.5 G 0.25
Residuals in seconds of arc

710726	095	0.1+	1.0+	790628	805	0.1-	1.4-	790702	805	0.5+	1.1-
710727	095	0.7-	1.1-	790629	805	0.4+	0.9-	870626	675	(36.3+	4.0-)
710819	808	0.5+	0.5+	790629	805	0.6-	1.6-	870628	675	(86.1+	5.2-)
750811	808	0.3+	0.2-	790702	805	0.6-	0.3-	870726	675	2.4+	3.2+
750811	808	1.6+	0.2+	790702	805	2.1-	1.1-	870728	675	0.7-	3.5+

1984 UX2 = 1931 RD1
The identification is by E. Bowell.
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)
M 260.77905 (1950.0) P Q
n 0.22411092 Peri. 322.98902 +0.92575997 +0.37411388
a 2.6842826 Node 15.32490 -0.27772333 +0.77120245
e 0.1990042 Incl. 11.97545 -0.25658962 +0.51505881
P 4.40 H 12.7 G 0.25
Residuals in seconds of arc

310912	690	1.4-	0.3+	841026	688	0.0	0.7+	841120	688	0.2-	0.5+
310916	690	0.3-	0.4+	841026	688	1.1-	0.1-	841127	688	0.1+	0.8-
310921	690	1.9+	0.9-	841120	688	0.6+	0.7-	841127	688	0.7+	0.6+

1987 PB = 1939 XK = 1951 WM = 1967 TO = 1971 QU1 = 1979 SC3 = 1983 OJ

The identifications are by T. Kobayashi.

Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	296.75883	(1950.0)	P	Q
n	0.24340440	Peri. 102.74628	+0.71840717	-0.68326119
a	2.5404928	Node 300.52527	+0.56479464	+0.68249095
e	0.2328084	Incl. 8.71754	+0.40607654	+0.25953853
P	4.05	H 12.5	G 0.25	

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

391215	029(0.02+	0.03-)X	830717	688	3.1-	1.9-	870824 372	0.7+ 1.2+
511125	094(24.5-	43.8+)X	830717	688	2.8-	2.4-	870825 372	0.9+ 2.6+
511127	711	0.1+ 0.4- Y	830813	688	2.4-	3.9-	870829 372	1.9+ 0.0
671002	095	5.0- 1.5-	830813	688	2.4-	3.4-	870829 372	0.1+ 1.1+
710830	095	8.8+ 4.9+	870814	372	2.0+	0.5+	870831 372	1.7- 0.4+
790923	095	0.6+ 1.1-	870814	372	2.3+	1.6+	870831 372	0.3- 1.4+

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

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

1978 UU1 = 1952 WB = 1961 CU

The identification 1978 UU1 = 1952 WB is by L. D. Schmadel.

Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	150.61599	(1950.0)	P	Q
n	0.26592082	Peri. 240.85097	+0.98997784	-0.13474329
a	2.3949807	Node 126.86131	+0.14081257	+0.91900632
e	0.2259053	Incl. 3.02960	+0.01075630	+0.37050185
P	3.71	H 14.0	G 0.25	

Residuals in seconds of arc

521116	760	0.4+ 0.3-	610217	033	2.8-	0.5+	781101 095	0.0 0.7+
521116	760	0.2- 0.5+	610217	033	3.1+	0.9-	781103 330	0.0 0.2-
610215	033	1.0+ 0.2-	781009	095	4.1-	0.9-	781107 330	0.7+ 1.1+
610215	033	0.9- 0.5+	781029	330	1.5+	0.5+	781126 330	0.8+ 2.8-

1983 RC4 = 1987 OF

Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	0.50869	(1950.0)	P	Q
n	0.24047305	Peri. 157.11847	+0.59065475	+0.80356519
a	2.5610967	Node 148.93966	-0.76060848	+0.58487176
e	0.3175246	Incl. 8.19600	-0.26944704	+0.11048988
P	4.10	H 14.5	G 0.25	

Residuals in seconds of arc

830902	688	0.6- 0.3+	830906	688	0.4+	0.4+	870726 675	0.8- 1.6-
830902	688	0.3+ 0.4-	830910	688	1.0-	1.1-	870728 675	0.7+ 1.8+
830906	688	0.4+ 0.1-	830910	688	0.3+	1.1+		

1986 GU

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	151.91722	(1950.0)	P	Q
n	0.23005888	Peri. 58.69357	-0.63984681	-0.57072253
a	2.6378093	Node 81.07441	+0.39764866	-0.81894053
e	0.2675509	Incl. 31.39704	+0.65762573	-0.06010164
P	4.28	H 13.0	G 0.25	

From 17 observations 1986 Apr. 4-Aug. 16, mean residual 0".5.

1987 OA
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	315.33715		(1950.0)		P		Q
n	0.54106326	Peri.	235.29775		+0.57314874		-0.81945102
a	1.4915484	Node	179.72881		+0.79365713		+0.55488229
e	0.5932562	Incl.	9.00225		+0.20398255		+0.14354676
P	1.82	H	18.5	G	0.25		

From 10 observations 1987 July 29-Aug. 21.

1987 PA
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	5.18064		(1950.0)		P		Q
n	0.21727112	Peri.	336.97004		+0.27969288		+0.93520254
a	2.7403206	Node	308.55490		-0.83193421		+0.12316422
e	0.5567725	Incl.	16.12433		-0.47922579		+0.33200419
P	4.54	H	18.5	G	0.25		

From 12 observations 1987 Aug. 1-22.

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ORBITAL ELEMENTS BY W. LANDGRAF, UNIVERSITY OF GOTTINGEN.

The identifications are by W. Landgraf unless otherwise stated.

(3683)* 1987 MA = 1931 KF = 1970 KD = 1976 NB = 1986 JM
Discovered 1987 June 23 by W. Landgraf at the European Southern Observatory. The identification 1987 MA = 1931 KF was found by B. G. Marsden.
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	47.38333		(1950.0)		P		Q
n	0.17731304	Peri.	139.43352		-0.44952972		+0.85293347
a	3.1379228	Node	102.31007		-0.87361513		-0.35781829
e	0.1153085	Incl.	15.76111		-0.18633204		-0.38009284
P	5.56	H	11.0	G	0.25		

Residuals in seconds of arc

310521	690	0.7+	(4.1-)	760702	485	0.2+	0.8-	870625	809	0.8+	0.8+
310522	690	1.6-	1.1-	860501	054	0.6+	1.8+	870626	809	0.5-	0.1+
310523	690	0.4-	1.3-	860502	054	0.4-	0.9-	870627	809	0.7-	0.1+
700529	095	1.1+	(5.5+)	860503	054	0.6-	0.5-	870627	809	1.3-	0.6-
700606	095	1.4+	(2.4+)	860506	054	1.1+	1.5+	870629	809	0.8+	1.2+
760702	809	(4.9-)	1.5-	870622	809	1.9-	0.8+	870701	809	0.3-	0.6-
760702	485	0.0	0.2+	870623	809	1.6+	0.9-	870701	809	0.9-	1.5+
760702	809	(7.3-	3.8-)	870624	809	1.5+	0.4+				

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ORBITAL ELEMENTS BY T. KOBAYASHI, GUNMA, JAPAN.

The identifications are by T. Kobayashi.

1962 RN = 1978 YV = 1980 FJ7 = 1981 SU3 = 1984 FT1
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	253.09183		(1950.0)		P		Q
n	0.25693723	Peri.	73.66473		-0.01980905		+0.99953978
a	2.4504811	Node	195.25549		-0.94736837		-0.02610914
e	0.1390640	Incl.	5.00911		-0.31953213		+0.01544457
P	3.84	H	13.0	G	0.25		

Residuals in seconds of arc

620907 760	2.1+	0.8-	620929 760	0.0	1.2-	810925 095	0.8-	0.1-
620907 760	2.6+	1.4-	620929 760	0.1+	2.2-	840329 095	1.2+	3.9-
620924 760	1.2-	0.0	781222 095	0.7+	0.7-	840404 095	0.8-	0.8-
620924 760	1.3-	0.3+	800323 809	2.3-	0.4-			

1979 HG5 = 1978 EU = 1987 BE2

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 225.58098		(1950.0)		P	Q
n 0.21565056	Peri.	150.18758	+0.42222020		+0.90490909
a 2.7540321	Node	144.70907	-0.84891615		+0.41543649
e 0.0720961	Incl.	5.32031	-0.31791739		+0.09247732
P 4.57	H	12.5	G	0.25	

Residuals in seconds of arc

780305 095	0.0	0.0	870128 809	0.2-	0.4+	870202 809	0.3+	0.0
790425 095	0.3-	0.5-	870129 809	0.9+	0.9+	870203 809	2.1+	0.5+
790428 095	1.0-	0.1+	870129 809	0.5+	0.3+	870203 809	2.9+	0.3+
790430 095	1.4+	0.4+	870130 809	1.3-	1.1-	870203 809	1.1+	0.3+
870128 809	1.0-	0.9-	870130 809	0.6-	1.6-	870203 809	0.5+	0.1+
870128 809	0.4-	1.3-	870131 809	0.7-	1.0+	870203 809	0.0	0.1+
870128 809	0.0	0.7+	870131 809	0.1-	0.7-	870203 809	1.2-	0.3+
870128 809	0.8-	0.7+	870202 809	0.5-	1.0+	870205 809	1.1-	0.9-

1981 PK = 1987 BT1

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 133.51911		(1950.0)		P	Q
n 0.23663426	Peri.	82.15147	+0.97766636		+0.04822425
a 2.5887154	Node	274.91815	-0.12948595		+0.90485340
e 0.2733684	Incl.	11.84772	+0.16553513		+0.42298315
P 4.17	H	13.0	G	0.25	

Residuals in seconds of arc

810803 688	0.5+	0.3+	810925 688	0.0	1.1+	870126 809	1.0-	0.1+
810803 688	0.4-	0.8+	810925 688	0.3+	0.8+	870130 809	0.2+	0.2-
810831 688	0.0	0.8-	870124 809	1.5+	0.1+	870130 809	0.1+	0.2-
810831 688	0.0	1.5-	870124 809	0.8+	0.9-	870131 809	0.8-	0.3+
810903 688	0.0	0.4-	870126 809	0.7-	0.5+	870131 809	0.6+	0.2+
810903 688	0.3-	0.2-	870126 809	0.8-	0.0			

1981 RQ = 1985 QU

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 145.54027		(1950.0)		P	Q
n 0.23793172	Peri.	27.79083	+0.99337838		-0.06561245
a 2.5792958	Node	335.42108	-0.00078958		+0.81696500
e 0.1822753	Incl.	13.10501	+0.11488594		+0.57294258
P 4.14	H	13.0	G	0.25	

Residuals in seconds of arc

810907 046	0.9+	0.4+	810921 046	1.0+	2.4+	850821 046	1.3+	0.9-
810907 046	1.0+	0.3+	810921 046	0.2-	0.8-	850821 046	0.4-	0.7-
810907 046	0.6+	0.7-	810922 046	0.2+	1.3-	850821 046	3.2-	0.9+
810907 046	3.2-	0.1+	850821 046	2.5+	0.7+			

1984 WM1 = 1972 GX = 1977 VF1 = 1982 DO

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 251.94027		(1950.0)		P	Q
n 0.28862524	Peri.	121.98025	-0.06764988		-0.99657916
a 2.2676699	Node	331.78240	+0.87811055		-0.03688512
e 0.1111691	Incl.	5.76214	+0.47365109		-0.07395582
P 3.41	H	14.0	G	0.25	

Residuals in seconds of arc

720412	095	0.6+	0.9+	820221	688	0.9-	0.5+	841120	688	2.7+	0.5-
771109	049	1.3+	0.1+	820221	688	0.6+	0.7+	841121	675	2.0-	2.5+
771109	049	0.5+	0.1-	820228	688	1.6-	2.2-	841127	688	1.3-	1.4+
771109	049	0.3-	0.9-	820228	688	1.2+	0.3-	841127	688	1.4+	0.3+
771109	049	0.8-	0.4-	841120	688	1.1-	1.8-				

1986 QV2 = 1957 JB = 1966 CK = 1980 DJ4
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	147.55389		(1950.0)	P	Q
n	0.21111940	Peri.	98.71577	-0.54854437	+0.83116282
a	2.7932981	Node	137.59889	-0.81031099	-0.50164727
e	0.1569283	Incl.	7.74942	-0.20614356	-0.23982991
P	4.67	H	12.5	G 0.25	

Residuals in seconds of arc

570502	760	0.1+	0.2-	860902	809	1.0+	0.1-	860906	809	0.2-	0.4-
570502	760	0.1+	0.2+	860902	809	1.5+	0.1-	860908	809	0.8-	0.6-
660213	330	1.8-	0.9+	860903	809	1.0+	0.2+	860908	809	0.5-	0.6-
660214	330	3.8+	2.0-	860903	809	1.3+	0.2+	860908	809	0.2-	0.7-
660225	330	2.7-	1.2-	860903	809	1.3+	0.0	860908	809	1.0-	0.1-
800220	095	0.4-	2.3-	860904	809	0.0	0.3+	860908	809	1.3-	0.1-
860828	809	0.7+	0.2+	860904	809	0.1-	0.1+	860908	809	1.1-	0.2-
860828	809	0.9+	0.0	860904	809	0.3+	0.2-	860910	809	1.5-	0.2-
860828	809	1.1+	0.0	860905	809	0.4-	0.4-	860910	809	1.5-	0.3-
860901	809	1.4+	0.3+	860905	809	0.3-	0.4-	860910	809	1.5-	0.2-
860901	809	1.5+	0.0	860905	809	0.3-	0.4-	860912	809	0.9-	0.2+
860901	809	1.6+	0.0	860906	809	0.3-	0.4-	860912	809	0.9-	0.0
860902	809	1.0+	0.2-	860906	809	0.2-	0.4-	860912	809	0.8-	0.1-

1986 QB3 = 1975 VU9 = 1981 WG2
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	40.38593		(1950.0)	P	Q
n	0.17278714	Peri.	275.71027	+0.99819427	-0.03301383
a	3.1924819	Node	86.18883	+0.05039177	+0.91493432
e	0.1853421	Incl.	2.88283	-0.03269344	+0.40225027
P	5.70	H	13.5	G 0.25	

Residuals in seconds of arc

751109	381	0.7+	1.8-	860902	809	0.4-	0.9+	860909	809	0.2-	0.5+
751109	381	0.7+	1.5-	860902	809	0.2-	0.5+	860909	809	0.2-	0.6+
811123	046	0.3-	1.5+	860903	809	0.6-	0.2+	860909	809	0.2-	0.5+
811123	046	0.5-	1.9+	860903	809	0.3-	0.1+	860909	809	0.2+	0.2-
860829	809	0.2-	0.5+	860903	809	0.1-	0.3+	860909	809	0.2+	0.3-
860829	809	0.1-	0.5+	860904	809	1.1-	0.4-	860909	809	0.3+	0.2-
860829	809	0.2+	0.6+	860904	809	0.9-	0.4-	860911	809	0.1-	0.1+
860829	809	0.5+	0.6+	860904	809	0.4-	0.5-	860911	809	0.4+	0.1+
860829	809	0.5+	0.5+	860905	809	0.3-	0.7-	860911	809	0.4+	0.2+
860829	809	0.5+	0.8+	860905	809	0.1-	0.6-	860911	809	0.1-	0.1-
860831	809	0.2-	1.1+	860905	809	0.1-	0.6-	860911	809	0.2+	0.5-
860831	809	0.4-	0.9+	860906	809	0.4-	0.3+	860911	809	0.1-	0.8-
860831	809	0.2-	0.9+	860906	809	0.1-	0.2+	860913	809	1.1+	0.1+
860901	809	0.5-	0.3+	860906	809	0.3-	0.0	860913	809	1.2+	0.0
860901	809	0.3-	0.3+	860907	809	0.1-	0.1-	860913	809	1.1+	0.1+
860901	809	0.6-	0.3+	860907	809	0.2+	0.2-	860914	809	0.7+	1.3-
860901	809	0.4-	0.3+	860907	809	0.3+	0.5-	860914	809	0.8+	1.4-
860901	809	0.7-	0.3+	860907	809	0.3+	0.9-	860914	809	0.6+	1.4-
860901	809	0.5-	0.3+	860907	809	0.3+	0.9-				
860902	809	0.7-	1.1+	860907	809	0.3+	0.7-				

1986 QX3 = 1977 DE2
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 126.83676	(1950.0)	P	Q	
n 0.25304647	Peri. 164.17095	+0.16337667	+0.98495463	
a 2.4755357	Node 115.20420	-0.91173205	+0.17254895	
e 0.1552575	Incl. 3.56903	-0.37689885	+0.00955217	
P 3.89	H 14.0	G 0.25		

Residuals in seconds of arc

770218 381	0.9+	0.6-	860902 809	0.1-	0.3-	860905 809	0.3-	0.1+
770218 381	0.2-	0.4+	860903 809	0.9-	0.3-	860906 809	0.3-	0.2+
770219 381	0.1+	0.3+	860903 809	0.9-	0.3-	860906 809	0.3-	0.1+
770219 381	0.7-	0.4+	860903 809	0.7-	0.4-	860906 809	0.3-	0.0
860831 809	0.9+	0.2+	860904 809	0.1-	0.0	860907 809	0.4+	0.6+
860831 809	0.8+	0.2+	860904 809	0.1+	0.1-	860907 809	0.6+	0.8+
860831 809	0.9+	0.1+	860904 809	0.1+	0.1-	860907 809	0.7+	0.7+
860901 809	0.3-	0.4+	860904 809	1.2-	0.1+	860909 809	0.3+	0.1-
860901 809	0.4-	0.0	860904 809	1.1-	0.1+	860909 809	0.5+	0.1-
860901 809	0.2-	0.2+	860904 809	0.9-	0.1+	860909 809	0.6+	0.0
860901 809	0.1+	0.3+	860905 809	0.5-	0.0	860911 809	1.2+	0.6-
860901 809	0.2+	0.2+	860905 809	0.6-	0.2-	860911 809	1.0+	0.6-
860901 809	0.2+	0.1+	860905 809	0.6-	0.3-	860911 809	1.2+	0.5-
860902 809	0.0	0.3-	860905 809	0.3-	0.1+			
860902 809	0.1-	0.3-	860905 809	0.3-	0.2+			

1987 BB2 = 1977 HM
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 66.03452	(1950.0)	P	Q	
n 0.28198532	Peri. 225.64487	-0.15631017	-0.98731492	
a 2.3031297	Node 233.36799	+0.91575156	-0.13429477	
e 0.1826725	Incl. 1.98979	+0.37008947	-0.08470038	
P 3.50	H 14.5	G 0.25		

Residuals in seconds of arc

770424 675	1.4-	0.4+	870130 809	0.7-	0.1-	870203 809	1.2-	0.0
770425 675	1.4+	0.4-	870130 809	0.1-	0.4-	870203 809	1.0+	0.1+
870128 809	0.6+	0.1+	870131 809	0.1-	1.2+	870203 809	1.3+	0.1+
870128 809	1.0+	0.3+	870131 809	0.3-	0.2+	870203 809	1.2+	0.7+
870129 809	1.0-	0.7+	870202 809	1.5-	0.7-			
870129 809	0.5+	1.2-	870202 809	0.7-	1.0-			

1987 OM = 1950 TR3 = 1970 NG

The identifications are by B. G. Marsden.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 333.63640	(1950.0)	P	Q	
n 0.29133848	Peri. 244.31474	+0.98578594	+0.11912808	
a 2.2535688	Node 108.65746	-0.06949043	+0.93110905	
e 0.2320198	Incl. 7.18299	-0.15296133	+0.34473821	
P 3.38	H 14.5	G 0.25		

Residuals in seconds of arc

501013 760(39.8-	5.9-)X		870730 372	2.1+	1.1-	870814 372	2.6-	0.5+
700714 095	0.0	0.4-	870730 372	0.1+	2.2-	870814 372	1.5-	1.3+
870728 372	1.5-	1.5+ Y	870805 372	0.4-	0.2+	870826 372	0.6+	1.2-
870728 372	1.8+	0.9+ Y	870805 372	0.4-	0.6+	870826 372	1.9+	0.4-

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ORBITAL ELEMENTS BY H. OISHI, NIIZA, JAPAN.

The following orbital elements are from JAM 2082-2083. The identifications are by H. Oishi unless otherwise stated.

(3684)* 1983 AK = 1952 DL1 = 1971 UE4 = 1973 FO1

Discovered 1983 Jan. 9 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory. The identifications are by T. Furuta (MPC 9755).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	73.49109	(1950.0)	P	Q	
n	0.28486729	Peri. 67.27689	-0.94393403	-0.30821823	
a	2.2875697	Node 94.60731	+0.24219768	-0.88999613	
e	0.1541785	Incl. 6.81495	+0.22434088	-0.33601847	
P	3.46	H 13.6	G 0.25		

Residuals in seconds of arc

520219	711	1.9-	3.7-	Y	730402	095	1.3+	0.1-	830215	688	1.0- 0.5+
711022	805	0.5-	1.0+		830109	688	2.2-	1.8+	830215	688	0.9- 1.1+
711022	805	0.1+	0.5+		830109	688	1.9+	1.6+	870427	801	0.0 1.2+
711022	805(	1.6+	8.7-)		830116	688	1.6-	1.4+	870531	801	1.3- 0.2+
730327	095	1.8+	1.6+		830116	688	3.8+	2.9-			

1981 QF = 1981 SS = 1976 JQ8

The double designation 1981 QF = 1981 SS is by F. N. Bowman (MPC 6630).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	152.46736	(1950.0)	P	Q	
n	0.24103843	Peri. 19.39792	+0.99969641	-0.01399614	
a	2.5570851	Node 341.36921	+0.00331285	+0.89187937	
e	0.2449811	Incl. 3.63928	+0.02441559	+0.45205674	
P	4.09	H 14.6	G 0.25		

Residuals in seconds of arc

760502	809	0.1-	0.4-		810925	688	1.2-	1.1-	811005	688	0.0 0.9-
810830	688	0.4-	1.7+		810925	688	1.8+	1.3-	850820	688	0.2+ 0.2+
810830	688	1.5-	0.1-		810925	046	0.5-	2.4+	850820	688	0.3- 0.0
810903	688	1.3+	1.2-		810925	046	1.3-	0.9-			
810903	688	0.1+	0.6-		810925	095	1.8+	1.6+			

6047 P-L = 1978 YB2

Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	100.91435	(1950.0)	P	Q	
n	0.28152511	Peri. 304.65180	-0.81319704	-0.58118617	
a	2.3056435	Node 199.86923	+0.55902995	-0.76544345	
e	0.0787398	Incl. 5.15678	+0.16185204	-0.27625887	
P	3.50	H 13.8	G 0.25		

Residuals in seconds of arc

600924	675	1.1-	0.7-		601024	675	0.6+	0.5-	781231	808	1.1- 0.5+
600925	675	0.7+	0.8+		601026	675	0.3-	0.4+	870430	801	1.2+ 1.2+
600926	675	0.8-	0.6-		781229	808	0.9+	0.7+	870629	801	1.1- 0.0
600928	675	0.3+	1.0+		781229	808	0.1-	0.2+			
601017	675	0.4+	0.1+		781231	808	0.2+	0.5-			

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NEW NAMES OF MINOR PLANETS.

(2302) Florya = 1972 TL2

Discovered 1972 Oct. 2 by N. E. Kurochkin at the Crimean Station of the Sternberg State Astronomical Institute.

Named in memory of Nikolaj Fyodorovich Florya (1912-1941), astronomer at the Sternberg State Astronomical Institute, skilled observer and prominent researcher on variable stars.

(2642) Vesale = 1961 RA
Discovered 1961 Sept. 14 by S. Arend at Uccle.
Named in memory of Andre Vesale (1514-1564), physician to Charles V, promoter of the value of the dissection of cadavers to medicine and author of "De humani corporis fabrica", which brought about a revolution in the study of human anatomy.

(2666) Gramme = 1951 TA
Discovered 1951 Oct. 8 by S. Arend at Uccle.
Named in memory of Zenobe Gramme (1826-1901), a joiner by profession, who constructed the first direct-current dynamo and invented the collector that derives direct current from a revolving armature.

(2689) Bruxelles = 1935 CF
Discovered 1935 Feb. 3 by S. Arend at Uccle.
Named for the capital of Belgium.

(2713) Luxembourg = 1938 EA
Discovered 1938 Feb. 19 by E. Delporte at Uccle.
Named for the country in western Europe.

(2819) Ensor = 1933 UR
Discovered 1933 Oct. 20 by E. Delporte at Uccle.
Named in memory of Baron James Ensor (1860-1949), renowned painter and sculptor from Ostende, whose works were principally about death or the sea.

(2913) Horta = 1931 TK
Discovered 1931 Oct. 12 by E. Delporte at Uccle.
Named in memory of Baron Victor Horta (1861-1947), Belgian architect, who broke with tradition and was one of the first to glimpse the ornamental and calligraphic value of iron.

(2973) Paola = 1951 AJ
Discovered 1951 Jan. 10 by S. Arend at Uccle.
Named in honor of Princess Paola, sister-in-law of King Baudouin of Belgium.

(3149) Okudjeva = 1981 SH
Discovered 1981 Sept. 22 by Z. Vavrova at Klet.
Named in honor of the contemporary Soviet writer, poet and singer Bulat Okudjeva.

(3176) Paolicchi = 1980 VR1
Discovered 1980 Nov. 13 by Z. Knezevic at Piszkesteto.
Named in honor of Paolo Paolicchi, planetary scientist, associate professor of astrophysics at the University of Pisa. His research activity has included studies on the origin of stellar and planetary systems and the dynamical and collisional history of small solar-system bodies. His work on minor planets has focused on the evolution of rotational properties and on the modeling of catastrophic breakup events. Name proposed by the discoverer following a suggestion by V. Zappala and P. Farinella, the latter of whom prepared the citation.

(3228) Pire = 1935 CL
Discovered 1935 Feb. 8 by S. Arend at Uccle.
Named in memory of Dominique Pire (1910-1969), who worked for the underprivileged and won the Nobel peace prize in 1958.

(3240) Laocoon = 1978 VG6
Discovered 1978 Nov. 7 by S. J. Bus on Palomar Schmidt plates taken by E. F. Helin and E. M. Shoemaker.
Named for the priest of Apollo at Troy who warned the Trojans against the Trojan Horse. He and his two sons were killed by serpents sent by Athena or Apollo.

(3280) Gretry = 1933 SJ
Discovered 1933 Sept. 17 by F. Rigaux at Uccle.
Named in memory of Andre Gretry (1741-1813), composer from Liege particularly known for his comic operas, although his compositions included symphonies and a requiem.

(3309) Brorfelde = 1982 BH
Discovered 1982 Jan. 28 by K. S. Jensen and K. Augustesen at Brorfelde.
On the observatory's fortieth anniversary, this first minor planet discovered at the Copenhagen University Observatory in Brorfelde is named for the village in the middle of Zealand where the observatory is situated.

(3314) Beals = 1981 FH
Discovered 1981 Mar. 30 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Named in memory of Canadian astronomer Carlyle Smith Beals (1899-1979), fourth Dominion Astronomer and the only man who has been both President of the American Astronomical Society and the National President of the Royal Astronomical Society of Canada. Beals made important contributions to the observation and interpretation of emission lines in the spectra of hot stars, to the understanding of the nature of interstellar gas clouds, and to the development of instrumentation for astronomy. He also initiated a program to identify and study meteorite craters in Canada. Name proposed by the discoverer following a suggestion by P. M. Millman.

(3315) Chant = 1984 CZ
Discovered 1984 Feb. 8 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Named in memory of Clarence Augustus Chant (1865-1956), generally referred to as the "father of Canadian astronomy". A renowned teacher, Chant organized the Astronomy Department of the University of Toronto and built up the Royal Astronomical Society of Canada. He participated in five solar eclipse expeditions, the most important being the one he led to Australia in 1922 to test Einstein's prediction of the deflection of starlight by a massive body. Name proposed by the discoverer following a suggestion by P. M. Millman.

(3316) Herzberg = 1984 CN1
Discovered 1984 Feb. 6 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Named in honor of Gerhard Herzberg, Canadian Nobel Laureate in Chemistry in 1971 and acknowledged world leader in the study of molecular spectra. Herzberg's specialty has been free radicals, both in the laboratory and in interstellar space. He has identified numerous features in the spectra of comets, planets and interstellar material. In 1975 the National Research Council of Canada's astronomy and spectroscopy units were reorganized as the Herzberg Institute of Astrophysics. Name proposed by the discoverer following a suggestion by P. M. Millman.

(3417) Tamblyn = 1937 GG
Discovered 1937 Apr. 1 by K. Reinmuth at Heidelberg.

Named in honor of Peter Tamblyn, enthusiastic volunteer at the Minor Planet Center during the summer of 1987. Name proposed by B. G. Marsden, who found the identifications involving this planet.

(3459) Bodil = 1986 GB
Discovered 1986 Apr. 2 by P. Jensen at Brorfelde.
Named in honor of Bodil Jensen, wife of the discoverer.

(3533) Toyota = 1986 UE
Discovered 1986 Oct. 30 by K. Suzuki and T. Urata at Toyota.
Named for the city in central Japan, home of the first discoverer and known throughout the world for its car industry.

(3534) Sax = 1936 XA
Discovered 1936 Dec. 15 by E. Delporte at Uccle.
Named in memory of Adolphe Sax (1814-1894), inventor of the saxophone.

(3565) Ojima = 1986 YD
Discovered 1986 Dec. 22 by T. Niijima and T. Urata at Ojima.
Named for the small town in the central Japan where the observing station is located. Known for the manufacture of Japanese dolls, Ojima is the home town of the first discoverer. It is close to the 1828-m volcano Akagi and the river Tone.

(3594) Scotti = 1983 CN
Discovered 1983 Feb. 11 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Named in honor of James V. Scotti of the University of Arizona, Tucson. Scotti works with the SPACEWATCH Telescope, which is the 0.9-m reflector of the Steward Observatory on Kitt Peak. He has developed most of the system's software and has carried out final checks and data reduction for the CCD scanning observations of comets and minor planets.

(3596) Meriones = 1985 VO
Discovered 1985 Nov. 14 by P. Jensen and K. Augustesen at Brorfelde.
Named for the Greek warrior, who with Idomeneus was leader of the Cretans, and who achieved distinction in the Trojan War, especially in the Battle of the Ships.

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EPHEMERIDES.

Comet Bradfield (1987s) Elements MPC 12201

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1987	09 02	14 43.64	-18 19.2	1.533	1.446	65.6	39.5	8.5
1987	09 12	15 03.59	-16 04.5					
1987	09 22	15 26.35	-13 43.0	1.452	1.200	54.9	43.2	7.6
1987	10 02	15 52.00	-11 06.3					
1987	10 12	16 20.62	-08 05.3	1.317	0.994	48.5	48.7	6.6
1987	12 01	19 50.92	+15 19.1					
1987	12 11	20 56.76	+20 25.9	0.843	1.064	70.8	60.9	5.9
1987	12 21	22 08.98	+24 08.4					
1987	12 31	23 19.44	+25 54.9	0.938	1.290	84.3	49.3	7.0

1987 PA a,e,i = 2.74, 0.56, 16 Elements MPC 12204

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	09 02	21 46.23	+14 40.8	0.438	1.414	153.3	18.7	18.3
1987	09 12	21 42.11	+15 58.0					

1987 09 22	21 42.20	+16 16.8	0.605	1.534	143.6	22.9	19.3
1987 10 02	21 46.11	+16 04.7					
1987 10 12	21 53.19	+15 40.8	0.821	1.665	132.3	26.3	20.2

Periodic Comet Gehrels 1 (1987v) Elements MPC 12201

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1987 09 02	04 12.32	+26 59.2	2.776	2.993	92.4	19.7	19.5
1987 09 12	04 20.40	+27 57.3					
1987 09 22	04 26.62	+28 52.5	2.534	3.004	108.3	18.5	19.3
1987 10 02	04 30.68	+29 44.5					
1987 10 12	04 32.36	+30 32.7	2.324	3.021	126.1	15.5	19.1
1987 10 22	04 31.54	+31 15.6					
1987 11 01	04 28.27	+31 51.4	2.173	3.045	145.8	10.6	19.0
1987 11 11	04 22.93	+32 17.7					
1987 11 21	04 16.11	+32 32.8	2.111	3.076	164.9	4.8	19.0
1987 12 01	04 08.71	+32 36.2					
1987 12 11	04 01.71	+32 29.0	2.158	3.112	162.6	5.4	19.1
1987 12 21	03 55.98	+32 14.4					
1987 12 31	03 52.20	+31 55.9	2.312	3.153	142.9	10.8	19.3
1988 01 10	03 50.74	+31 37.4					
1988 01 20	03 51.70	+31 21.6	2.553	3.200	123.2	14.9	19.6
1988 01 30	03 55.01	+31 10.0					
1988 02 09	04 00.48	+31 03.3	2.851	3.251	105.1	17.0	19.9

Comet Rudenko (1987u) Elements MPC 12201

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1987 10 12	12 01.05	+12 24.5	1.340	0.607	25.0	44.1	7.0
1987 10 22	11 39.85	+03 01.6					
1987 11 01	11 20.67	-09 48.2	1.063	0.775	44.2	63.1	7.5
1987 11 11	10 59.58	-26 22.2					
1987 11 21	10 27.53	-45 29.0	0.914	1.068	68.2	59.2	8.6
1987 12 01	09 21.38	-63 05.5					
1987 12 11	06 52.8	-72 57.3	1.103	1.380	82.5	45.0	10.1
1987 12 21	04 07.5	-71 25.3					
1987 12 31	02 51.90	-65 25.5	1.518	1.686	81.7	35.3	11.7

1983 RC4 a,e,i = 2.56, 0.32, 8 Elements MPC 12203

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 09 02	20 55.27	-16 34.8	0.815	1.775	153.1	14.9	16.0
1987 09 12	20 56.66	-17 57.5					
1987 09 22	21 01.32	-18 53.0	0.955	1.805	134.3	23.4	16.7
1987 10 02	21 09.10	-19 20.8					
1987 10 12	21 19.58	-19 22.9	1.146	1.846	118.6	28.3	17.2
1987 10 22	21 32.25	-19 02.0					
1987 11 01	21 46.63	-18 20.6	1.375	1.895	105.2	30.4	17.7
1987 11 11	22 02.27	-17 21.8					
1987 11 21	22 18.81	-16 08.2	1.630	1.951	93.1	30.4	18.2

1987 PB a,e,i = 2.54, 0.23, 9 Elements MPC 12203

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 09 02	20 58.41	-10 48.8	1.343	2.297	154.7	10.8	15.5
1987 09 12	20 51.51	-10 51.3					
1987 09 22	20 47.60	-10 48.8	1.438	2.247	133.0	19.1	15.9
1987 10 02	20 47.00	-10 39.5					
1987 10 12	20 49.68	-10 21.8	1.592	2.198	114.2	24.5	16.2
1987 10 22	20 55.38	-09 55.0					
1987 11 01	21 03.78	-09 18.1	1.776	2.152	98.1	27.2	16.5
1987 11 11	21 14.48	-08 30.7					
1987 11 21	21 27.13	-07 32.5	1.967	2.109	84.2	27.8	16.7

1977 RF2 a,e,i = 2.25, 0.19, 5 Elements MPC 12202

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 09 02	21 19.51	-20 04.8	0.852	1.825	157.2	12.4	16.1
1987 09 12	21 14.54	-19 29.2					
1987 09 22	21 13.25	-18 40.1	0.975	1.841	137.1	21.8	16.7
1987 10 02	21 15.74	-17 39.3					
1987 10 12	21 21.67	-16 28.7	1.152	1.864	120.0	27.6	17.2
1987 10 22	21 30.48	-15 09.5					
1987 11 01	21 41.66	-13 42.3	1.365	1.892	105.6	30.4	17.7
1987 11 11	21 54.71	-12 07.6					
1987 11 21	22 09.20	-10 26.0	1.601	1.924	93.0	30.8	18.1

1987 OM a,e,i = 2.25, 0.23, 7 Elements MPC 12207

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 09 02	21 27.85	-25 53.3	0.791	1.759	155.4	13.8	15.9
1987 09 12	21 23.90	-26 38.3					
1987 09 22	21 23.53	-26 49.2	0.875	1.741	135.8	23.7	16.4
1987 10 02	21 27.13	-26 28.3					
1987 10 12	21 34.50	-25 40.1	1.008	1.732	119.4	30.1	16.9
1987 10 22	21 45.11	-24 28.6					
1987 11 01	21 58.38	-22 57.1	1.172	1.732	106.0	33.4	17.3
1987 11 11	22 13.72	-21 08.6					
1987 11 21	22 30.61	-19 05.8	1.356	1.741	94.6	34.5	17.6
1987 12 01	22 48.65	-16 50.8					
1987 12 11	23 07.52	-14 26.4	1.554	1.758	84.5	33.9	17.9

1984 WM1 a,e,i = 2.27, 0.11, 6 Elements MPC 12205

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 09 02	23 18.32	-02 00.1	1.325	2.323	168.6	4.9	16.8
1987 09 12	23 08.07	-02 32.8					
1987 09 22	22 57.86	-03 08.2	1.311	2.299	166.2	6.0	16.8
1987 10 02	22 49.01	-03 39.6					
1987 10 12	22 42.57	-04 01.4	1.397	2.274	142.8	15.4	17.3
1987 10 22	22 39.12	-04 10.1					
1987 11 01	22 38.86	-04 03.7	1.557	2.248	122.1	22.0	17.7
1987 11 11	22 41.67	-03 42.1					
1987 11 21	22 47.24	-03 05.9	1.760	2.223	104.4	25.5	18.0
1987 12 01	22 55.23	-02 15.8					
1987 12 11	23 05.27	-01 13.2	1.980	2.197	89.1	26.6	18.3

1986 QV2 a,e,i = 2.79, 0.16, 8 Elements MPC 12206

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 09 02	03 45.06	+10 58.5	2.840	3.203	101.8	18.0	18.1
1987 09 12	03 48.13	+10 40.1					
1987 09 22	03 49.14	+10 14.2	2.589	3.212	120.1	15.7	17.9
1987 10 02	03 47.96	+09 41.7					
1987 10 12	03 44.56	+09 04.1	2.387	3.220	140.4	11.4	17.5
1987 10 22	03 39.11	+08 23.6					
1987 11 01	03 31.97	+07 43.1	2.269	3.225	161.4	5.6	17.2
1987 11 11	03 23.77	+07 06.0					
1987 11 21	03 15.27	+06 36.0	2.263	3.229	165.5	4.4	17.2
1987 12 01	03 07.30	+06 16.1					
1987 12 11	03 00.59	+06 08.3	2.373	3.231	145.2	10.0	17.5
1987 12 21	02 55.64	+06 13.3					
1987 12 31	02 52.78	+06 30.5	2.578	3.232	123.9	14.6	17.8
1988 01 10	02 52.09	+06 58.8					
1988 01 20	02 53.52	+07 36.2	2.841	3.230	104.5	17.2	18.1
1988 01 30	02 56.92	+08 21.0					
1988 02 09	03 02.11	+09 11.3	3.127	3.227	86.9	17.8	18.3

1980 OE a,e,i = 2.17, 0.19, 1 Elements MPC 5651

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	09 22	05 59.48	+24 32.6	2.032	2.236	88.1	26.7	18.3
1987	10 02	06 09.91	+24 32.8					
1987	10 12	06 17.82	+24 31.5	1.826	2.277	103.6	25.2	18.1
1987	10 22	06 22.82	+24 30.2					
1987	11 01	06 24.49	+24 30.1	1.632	2.316	121.9	21.3	17.8
1987	11 11	06 22.57	+24 31.4					
1987	11 21	06 16.95	+24 33.4	1.483	2.353	143.7	14.4	17.4
1987	12 01	06 07.98	+24 34.1					
1987	12 11	05 56.54	+24 31.4	1.415	2.388	168.6	4.7	17.0
1987	12 21	05 43.99	+24 23.7					
1987	12 31	05 31.98	+24 11.5	1.456	2.420	165.4	5.9	17.1
1988	01 10	05 21.99	+23 57.0					
1988	01 20	05 14.96	+23 43.2	1.605	2.450	141.1	14.6	17.7
1988	01 30	05 11.37	+23 32.5					
1988	02 09	05 11.18	+23 26.1	1.832	2.476	119.9	20.2	18.2
1988	02 19	05 14.14	+23 23.9					
1988	02 29	05 19.86	+23 24.8	2.103	2.500	101.7	22.8	18.6

(3561) Devine a,e,i = 3.96, 0.13, 10 Elements MPC 11627

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	09 22	06 06.96	+17 11.9	4.264	4.317	86.3	13.4	17.8
1987	10 02	06 10.89	+17 05.7					
1987	10 12	06 13.35	+16 59.6	3.976	4.332	104.3	12.9	17.6
1987	10 22	06 14.23	+16 54.2					
1987	11 01	06 13.44	+16 50.4	3.713	4.346	124.0	10.9	17.4
1987	11 11	06 10.98	+16 48.6					
1987	11 21	06 06.94	+16 49.3	3.511	4.360	145.4	7.4	17.2
1987	12 01	06 01.55	+16 52.6					
1987	12 11	05 55.19	+16 58.6	3.407	4.373	167.3	2.8	16.9
1987	12 21	05 48.32	+17 07.2					
1987	12 31	05 41.50	+17 18.2	3.424	4.385	166.0	3.1	17.0
1988	01 10	05 35.28	+17 31.4					
1988	01 20	05 30.11	+17 46.8	3.563	4.396	143.9	7.6	17.3
1988	01 30	05 26.35	+18 04.0					
1988	02 09	05 24.19	+18 22.7	3.799	4.407	122.4	10.9	17.5
1988	02 19	05 23.71	+18 42.7					
1988	02 29	05 24.90	+19 03.5	4.095	4.417	102.6	12.6	17.7

1985 FU1 a,e,i = 2.34, 0.11, 4 Elements MPC 9767

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	09 22	05 54.99	+19 10.8	2.302	2.498	89.1	23.7	18.3
1987	10 02	06 04.55	+19 00.3					
1987	10 12	06 12.11	+18 47.7	2.031	2.479	104.7	22.9	18.0
1987	10 22	06 17.29	+18 34.4					
1987	11 01	06 19.73	+18 22.1	1.778	2.460	122.7	19.9	17.6
1987	11 11	06 19.11	+18 12.5					
1987	11 21	06 15.27	+18 06.7	1.573	2.440	143.6	13.9	17.1
1987	12 01	06 08.32	+18 05.4					
1987	12 11	05 58.87	+18 08.8	1.448	2.418	167.0	5.2	16.6
1987	12 21	05 47.91	+18 16.4					
1987	12 31	05 36.88	+18 27.8	1.431	2.396	165.4	5.9	16.6
1988	01 10	05 27.21	+18 43.1					
1988	01 20	05 20.04	+19 02.1	1.520	2.373	141.7	14.9	17.0
1988	01 30	05 16.09	+19 24.9					
1988	02 09	05 15.56	+19 51.0	1.688	2.349	120.6	21.2	17.4
1988	02 19	05 18.36	+20 19.3					
1988	02 29	05 24.23	+20 48.2	1.899	2.325	102.5	24.6	17.7

1976 GJ2 a,e,i = 2.68, 0.17, 11 Elements MPC 9765

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 18.34	+13 14.9	2.776	3.152	102.9	18.0	19.0
1987	10 22	06 20.71	+12 28.8					
1987	11 01	06 20.83	+11 42.0	2.517	3.152	121.6	15.6	18.7
1987	11 11	06 18.61	+10 56.4					
1987	11 21	06 14.06	+10 14.0	2.312	3.150	142.0	11.1	18.4
1987	12 01	06 07.41	+09 37.0					
1987	12 11	05 59.19	+09 07.8	2.196	3.145	161.4	5.7	18.1
1987	12 21	05 50.10	+08 48.1					
1987	12 31	05 41.04	+08 39.4	2.195	3.139	160.4	6.0	18.1
1988	01 10	05 32.89	+08 41.7					
1988	01 20	05 26.36	+08 54.4	2.307	3.130	140.5	11.5	18.4
1988	01 30	05 21.95	+09 15.7					
1988	02 09	05 19.90	+09 43.7	2.507	3.120	120.0	15.9	18.7
1988	02 19	05 20.22	+10 16.1					
1988	02 29	05 22.81	+10 50.8	2.757	3.107	101.3	18.2	19.0
1988	03 10	05 27.47	+11 25.9					
1988	03 20	05 33.96	+11 59.8	3.024	3.092	84.5	18.7	19.2

1986 QX3 a,e,i = 2.48, 0.16, 4 Elements MPC 12206

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 21.67	+20 39.7	2.422	2.813	102.5	20.3	19.1
1987	10 22	06 25.14	+20 35.4					
1987	11 01	06 26.02	+20 33.0	2.179	2.826	121.4	17.5	18.8
1987	11 11	06 24.13	+20 33.3					
1987	11 21	06 19.41	+20 36.6	1.985	2.837	143.0	12.1	18.4
1987	12 01	06 12.08	+20 42.3					
1987	12 11	06 02.73	+20 49.5	1.878	2.846	167.0	4.5	18.0
1987	12 21	05 52.24	+20 57.2					
1987	12 31	05 41.76	+21 04.8	1.885	2.853	167.3	4.3	18.0
1988	01 10	05 32.44	+21 12.4					
1988	01 20	05 25.15	+21 20.7	2.008	2.857	143.2	11.9	18.4
1988	01 30	05 20.49	+21 30.5					
1988	02 09	05 18.66	+21 42.2	2.218	2.860	121.5	17.1	18.8
1988	02 19	05 19.61	+21 55.8					
1988	02 29	05 23.16	+22 10.8	2.479	2.860	102.4	19.8	19.1
1988	03 10	05 29.00	+22 26.2					
1988	03 20	05 36.84	+22 40.9	2.756	2.857	85.6	20.3	19.4

(3487) 1978 UF a,e,i = 2.61, 0.17, 12 Elements MPC 11047

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 20.40	+10 45.7	2.423	2.808	102.2	20.3	18.0
1987	10 22	06 23.52	+09 46.7					
1987	11 01	06 24.14	+08 47.5	2.205	2.838	120.2	17.6	17.7
1987	11 11	06 22.16	+07 50.5					
1987	11 21	06 17.63	+06 58.8	2.037	2.866	140.1	12.8	17.4
1987	12 01	06 10.80	+06 15.8					
1987	12 11	06 02.27	+05 44.6	1.954	2.892	158.3	7.2	17.1
1987	12 21	05 52.86	+05 27.7					
1987	12 31	05 43.56	+05 26.2	1.981	2.917	158.2	7.2	17.2
1988	01 10	05 35.34	+05 39.4					
1988	01 20	05 28.93	+06 05.5	2.117	2.940	140.0	12.4	17.5
1988	01 30	05 24.83	+06 41.6					
1988	02 09	05 23.21	+07 24.3	2.338	2.961	120.3	16.7	17.9
1988	02 19	05 24.04	+08 10.7					
1988	02 29	05 27.18	+08 58.2	2.610	2.980	102.2	19.0	18.2
1988	03 10	05 32.38	+09 44.6					
1988	03 20	05 39.38	+10 28.3	2.900	2.997	85.8	19.4	18.5

1979 MA4 a,e,i = 3.43, 0.19, 4 Elements MPC 11629

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 19.45	+19 01.7	3.095	3.458	103.0	16.3	18.9
1987	10 22	06 21.57	+18 46.2					
1987	11 01	06 21.57	+18 31.5	2.861	3.493	122.2	13.9	18.7
1987	11 11	06 19.43	+18 18.6					
1987	11 21	06 15.23	+18 07.7	2.683	3.527	143.6	9.6	18.4
1987	12 01	06 09.21	+17 59.2					
1987	12 11	06 01.88	+17 53.2	2.597	3.561	166.3	3.8	18.1
1987	12 21	05 53.86	+17 49.7					
1987	12 31	05 45.92	+17 48.9	2.629	3.594	167.1	3.5	18.2
1988	01 10	05 38.79	+17 50.9					
1988	01 20	05 33.05	+17 55.8	2.779	3.626	144.6	9.0	18.5
1988	01 30	05 29.14	+18 03.6					
1988	02 09	05 27.24	+18 14.0	3.024	3.657	123.1	13.1	18.9
1988	02 19	05 27.38	+18 26.5					
1988	02 29	05 29.49	+18 40.5	3.327	3.688	103.6	15.1	19.2
1988	03 10	05 33.40	+18 55.0					
1988	03 20	05 38.90	+19 09.2	3.653	3.718	85.9	15.5	19.4

2103 P-L a,e,i = 2.66, 0.14, 3 Elements MPC 9298

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 18.81	+21 15.6	2.503	2.899	103.2	19.6	19.2
1987	10 22	06 22.71	+21 00.7					
1987	11 01	06 24.16	+20 46.0	2.228	2.878	121.8	17.0	18.8
1987	11 11	06 22.95	+20 32.4					
1987	11 21	06 19.01	+20 20.0	2.004	2.855	143.0	12.0	18.4
1987	12 01	06 12.49	+20 09.1					
1987	12 11	06 03.90	+19 59.4	1.865	2.832	166.5	4.7	18.0
1987	12 21	05 54.05	+19 50.6					
1987	12 31	05 44.04	+19 43.1	1.839	2.807	167.5	4.4	17.9
1988	01 10	05 35.00	+19 37.5					
1988	01 20	05 27.88	+19 34.8	1.927	2.781	143.7	12.1	18.3
1988	01 30	05 23.33	+19 35.8					
1988	02 09	05 21.61	+19 40.7	2.102	2.754	122.0	17.7	18.6
1988	02 19	05 22.74	+19 49.1					
1988	02 29	05 26.55	+19 59.9	2.327	2.726	103.0	20.7	18.9
1988	03 10	05 32.77	+20 12.0					
1988	03 20	05 41.12	+20 23.8	2.569	2.698	86.5	21.6	19.1

1979 QL8 a,e,i = 2.37, 0.18, 2 Elements MPC 10631

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 25.15	+22 55.3	2.166	2.564	101.8	22.4	19.2
1987	10 22	06 29.48	+22 45.0					
1987	11 01	06 30.94	+22 35.9	1.949	2.596	120.4	19.3	18.9
1987	11 11	06 29.30	+22 28.5					
1987	11 21	06 24.50	+22 22.6	1.776	2.625	141.9	13.4	18.5
1987	12 01	06 16.78	+22 17.5					
1987	12 11	06 06.82	+22 12.1	1.686	2.653	166.2	5.1	18.1
1987	12 21	05 55.63	+22 05.4					
1987	12 31	05 44.55	+21 57.3	1.708	2.678	168.1	4.3	18.1
1988	01 10	05 34.83	+21 48.8					
1988	01 20	05 27.42	+21 41.7	1.844	2.701	143.8	12.4	18.6
1988	01 30	05 22.88	+21 37.2					
1988	02 09	05 21.37	+21 36.1	2.066	2.721	122.1	17.9	19.1
1988	02 19	05 22.76	+21 38.3					
1988	02 29	05 26.80	+21 43.0	2.338	2.739	103.2	20.6	19.4
1988	03 10	05 33.15	+21 49.0					
1988	03 20	05 41.47	+21 55.0	2.627	2.755	86.6	21.2	19.7

1981 EH23 a,e,i = 2.43, 0.12, 1 Elements MPC 10385

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 07.93	+24 06.0	1.637	2.137	105.8	26.7	18.3
1987	10 22	06 16.17	+24 01.9					
1987	11 01	06 21.30	+23 57.2	1.426	2.132	122.6	23.1	17.9
1987	11 11	06 22.92	+23 53.2					
1987	11 21	06 20.77	+23 50.2	1.258	2.131	142.9	16.3	17.4
1987	12 01	06 14.93	+23 47.7					
1987	12 11	06 06.09	+23 43.9	1.163	2.133	166.5	6.2	16.9
1987	12 21	05 55.49	+23 37.4					
1987	12 31	05 44.83	+23 28.0	1.166	2.138	168.3	5.4	16.9
1988	01 10	05 35.85	+23 17.0					
1988	01 20	05 29.79	+23 07.0	1.268	2.146	144.5	15.5	17.4
1988	01 30	05 27.36	+22 59.8					
1988	02 09	05 28.64	+22 56.3	1.446	2.157	123.9	22.3	17.9
1988	02 19	05 33.38	+22 55.8					
1988	02 29	05 41.19	+22 57.0	1.670	2.171	106.6	25.9	18.3
1988	03 10	05 51.59	+22 57.9					
1988	03 20	06 04.12	+22 56.5	1.915	2.187	91.9	27.1	18.7

1986 PM4 a,e,i = 2.81, 0.16, 8 Elements MPC 11830

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 24.68	+28 38.1	2.443	2.827	102.1	20.2	17.3
1987	10 22	06 28.62	+28 35.8					
1987	11 01	06 29.82	+28 33.6	2.220	2.858	120.8	17.4	17.0
1987	11 11	06 28.12	+28 30.9					
1987	11 21	06 23.51	+28 26.6	2.045	2.889	142.1	12.1	16.7
1987	12 01	06 16.24	+28 18.6					
1987	12 11	06 06.99	+28 05.1	1.955	2.919	165.6	4.8	16.3
1987	12 21	05 56.68	+27 44.7					
1987	12 31	05 46.50	+27 18.0	1.979	2.948	168.1	3.9	16.3
1988	01 10	05 37.55	+26 46.8					
1988	01 20	05 30.68	+26 14.3	2.119	2.977	144.7	11.0	16.8
1988	01 30	05 26.40	+25 43.1					
1988	02 09	05 24.86	+25 15.3	2.349	3.004	123.1	16.0	17.2
1988	02 19	05 25.97	+24 51.6					
1988	02 29	05 29.52	+24 31.9	2.634	3.030	104.0	18.5	17.5
1988	03 10	05 35.21	+24 15.5					
1988	03 20	05 42.73	+24 01.1	2.941	3.055	87.0	19.0	17.8

(3528) 1981 EW3 a,e,i = 2.54, 0.16, 7 Elements MPC 11436

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 27.21	+26 29.5	2.343	2.723	101.5	21.0	17.9
1987	10 22	06 31.30	+26 19.2					
1987	11 01	06 32.59	+26 09.0	2.115	2.751	120.1	18.2	17.7
1987	11 11	06 30.91	+25 58.9					
1987	11 21	06 26.20	+25 47.9	1.934	2.777	141.6	12.8	17.3
1987	12 01	06 18.70	+25 34.8					
1987	12 11	06 09.07	+25 18.0	1.837	2.802	165.7	5.0	16.9
1987	12 21	05 58.26	+24 56.6					
1987	12 31	05 47.51	+24 31.0	1.853	2.824	168.9	3.9	16.9
1988	01 10	05 38.00	+24 03.2					
1988	01 20	05 30.65	+23 35.7	1.985	2.845	144.7	11.5	17.4
1988	01 30	05 26.00	+23 11.0					
1988	02 09	05 24.22	+22 50.4	2.206	2.864	122.8	16.8	17.8
1988	02 19	05 25.24	+22 34.4					
1988	02 29	05 28.80	+22 22.4	2.480	2.880	103.7	19.5	18.1
1988	03 10	05 34.59	+22 13.3					
1988	03 20	05 42.31	+22 05.7	2.774	2.895	86.8	20.1	18.4

1986 QB3 a,e,i = 3.19, 0.19, 3 Elements MPC 12206

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 21.93	+22 44.5	2.547	2.931	102.6	19.4	18.7
1987	10 22	06 25.75	+22 47.7					
1987	11 01	06 27.09	+22 52.8	2.327	2.966	121.3	16.6	18.5
1987	11 11	06 25.82	+23 00.2					
1987	11 21	06 21.93	+23 09.8	2.156	3.001	142.6	11.5	18.2
1987	12 01	06 15.68	+23 20.5					
1987	12 11	06 07.63	+23 31.1	2.072	3.038	166.1	4.5	17.8
1987	12 21	05 58.59	+23 40.1					
1987	12 31	05 49.56	+23 46.8	2.102	3.074	169.4	3.4	17.8
1988	01 10	05 41.52	+23 51.4					
1988	01 20	05 35.26	+23 54.6	2.247	3.110	145.7	10.3	18.3
1988	01 30	05 31.28	+23 57.7					
1988	02 09	05 29.80	+24 01.4	2.484	3.146	124.2	15.0	18.7
1988	02 19	05 30.78	+24 06.0					
1988	02 29	05 34.08	+24 11.5	2.779	3.182	105.0	17.5	19.0
1988	03 10	05 39.44	+24 17.2					
1988	03 20	05 46.60	+24 22.5	3.097	3.218	87.9	18.0	19.3

(3526) 1984 CN a,e,i = 2.79, 0.09, 9 Elements MPC 11433

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 25.78	+28 49.7	2.645	3.013	101.9	18.9	17.5
1987	10 22	06 29.61	+29 20.6					
1987	11 01	06 30.92	+29 54.9	2.395	3.022	120.5	16.4	17.2
1987	11 11	06 29.49	+30 32.0					
1987	11 21	06 25.22	+31 10.2	2.194	3.030	141.5	11.7	16.8
1987	12 01	06 18.27	+31 46.5					
1987	12 11	06 09.16	+32 17.1	2.081	3.037	163.4	5.3	16.5
1987	12 21	05 58.75	+32 38.7					
1987	12 31	05 48.15	+32 49.2	2.081	3.043	165.8	4.6	16.5
1988	01 10	05 38.56	+32 48.9					
1988	01 20	05 30.93	+32 40.2	2.196	3.048	144.1	10.9	16.8
1988	01 30	05 25.90	+32 26.3					
1988	02 09	05 23.72	+32 10.3	2.402	3.051	122.9	15.8	17.2
1988	02 19	05 24.39	+31 54.5					
1988	02 29	05 27.71	+31 39.9	2.662	3.054	103.8	18.4	17.5
1988	03 10	05 33.39	+31 26.8					
1988	03 20	05 41.12	+31 14.9	2.943	3.055	86.9	19.0	17.7

1928 UF a,e,i = 3.27, 0.20, 3 Elements MPC 12142

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 20.38	+22 37.3	2.282	2.687	102.9	21.2	17.4
1987	10 22	06 25.81	+22 40.3					
1987	11 01	06 28.65	+22 45.2	2.061	2.708	120.9	18.3	17.1
1987	11 11	06 28.70	+22 52.9					
1987	11 21	06 25.91	+23 03.4	1.887	2.732	141.6	13.0	16.7
1987	12 01	06 20.46	+23 16.0					
1987	12 11	06 12.89	+23 29.1	1.795	2.758	164.9	5.3	16.4
1987	12 21	06 04.07	+23 41.1					
1987	12 31	05 55.09	+23 50.9	1.811	2.786	170.6	3.3	16.3
1988	01 10	05 47.10	+23 58.3					
1988	01 20	05 40.98	+24 04.0	1.939	2.816	147.0	11.0	16.8
1988	01 30	05 37.36	+24 09.0					
1988	02 09	05 36.45	+24 14.1	2.157	2.848	125.7	16.3	17.2
1988	02 19	05 38.23	+24 19.7					
1988	02 29	05 42.49	+24 25.5	2.433	2.881	106.9	19.2	17.6
1988	03 10	05 48.98	+24 30.7					
1988	03 20	05 57.37	+24 34.7	2.735	2.916	90.3	20.0	17.9

1983 RO2 a,e,i = 2.24, 0.15, 4 Elements MPC 8382

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 30.25	+18 29.9	1.909	2.308	100.4	25.2	18.2
1987	10 22	06 36.27	+18 11.4					
1987	11 01	06 39.32	+17 55.0	1.703	2.340	118.0	22.0	17.9
1987	11 11	06 39.13	+17 42.7					
1987	11 21	06 35.50	+17 35.9	1.536	2.370	138.8	15.9	17.6
1987	12 01	06 28.57	+17 35.3					
1987	12 11	06 18.94	+17 40.7	1.442	2.399	162.4	7.1	17.2
1987	12 21	06 07.63	+17 51.2					
1987	12 31	05 56.07	+18 05.8	1.453	2.426	169.4	4.3	17.1
1988	01 10	05 45.74	+18 23.6					
1988	01 20	05 37.78	+18 43.9	1.574	2.451	145.8	13.0	17.6
1988	01 30	05 32.89	+19 06.7					
1988	02 09	05 31.30	+19 31.1	1.781	2.474	124.2	19.3	18.1
1988	02 19	05 32.89	+19 56.5					
1988	02 29	05 37.36	+20 21.7	2.039	2.494	105.6	22.5	18.5
1988	03 10	05 44.35	+20 45.3					
1988	03 20	05 53.48	+21 06.0	2.317	2.513	89.4	23.3	18.8

1984 HE1 a,e,i = 3.14, 0.09, 11 Elements MPC 11516

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 28.98	+15 46.3	3.037	3.365	100.5	17.0	17.8
1987	10 22	06 31.76	+15 06.4					
1987	11 01	06 32.45	+14 26.3	2.778	3.375	119.2	14.9	17.6
1987	11 11	06 30.98	+13 47.3					
1987	11 21	06 27.36	+13 10.7	2.570	3.385	139.8	10.9	17.3
1987	12 01	06 21.77	+12 38.2					
1987	12 11	06 14.63	+12 11.0	2.449	3.394	160.7	5.5	17.0
1987	12 21	06 06.56	+11 50.4					
1987	12 31	05 58.30	+11 37.3	2.442	3.402	165.4	4.2	16.9
1988	01 10	05 50.66	+11 32.0					
1988	01 20	05 44.29	+11 34.3	2.552	3.410	145.6	9.4	17.2
1988	01 30	05 39.72	+11 43.4					
1988	02 09	05 37.22	+11 57.9	2.758	3.416	124.6	13.8	17.6
1988	02 19	05 36.87	+12 16.3					
1988	02 29	05 38.61	+12 37.1	3.024	3.421	105.3	16.2	17.8
1988	03 10	05 42.30	+12 58.6					
1988	03 20	05 47.72	+13 19.5	3.314	3.426	87.9	16.9	18.1

(3588) 1981 TH4 a,e,i = 3.20, 0.22, 6 Elements MPC 11746

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 18.26	+30 54.5	2.073	2.503	103.5	22.8	16.4
1987	10 22	06 25.63	+31 13.1					
1987	11 01	06 30.18	+31 32.2	1.849	2.505	120.7	19.9	16.1
1987	11 11	06 31.58	+31 51.5					
1987	11 21	06 29.65	+32 09.6	1.671	2.512	140.4	14.5	15.7
1987	12 01	06 24.50	+32 23.6					
1987	12 11	06 16.71	+32 29.7	1.568	2.523	161.9	7.0	15.3
1987	12 21	06 07.25	+32 24.6					
1987	12 31	05 57.53	+32 07.0	1.568	2.538	167.7	4.7	15.3
1988	01 10	05 48.95	+31 38.4					
1988	01 20	05 42.65	+31 02.6	1.675	2.556	146.8	12.2	15.7
1988	01 30	05 39.31	+30 23.9					
1988	02 09	05 39.14	+29 45.6	1.869	2.578	126.3	18.0	16.1
1988	02 19	05 42.03	+29 09.7					
1988	02 29	05 47.70	+28 36.7	2.119	2.603	108.1	21.2	16.5
1988	03 10	05 55.75	+28 06.0					
1988	03 20	06 05.80	+27 36.4	2.397	2.631	92.2	22.2	16.8

1985 TE3 a,e,i = 5.13, 0.09, 22 Elements MPC 11417

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987	10 12	06 23.85	+02 25.8	4.425	4.710	-0.42	+0.8	16.7
1987	10 22	06 25.32	+01 32.0					
1987	11 01	06 25.36	+00 39.1	4.155	4.704	-0.45	+0.8	16.5
1987	11 11	06 23.98	-00 11.1					
1987	11 21	06 21.24	-00 56.3	3.940	4.699	-0.47	+0.9	16.3
1987	12 01	06 17.30	-01 34.3					
1987	12 11	06 12.42	-02 03.0	3.812	4.693	-0.49	+0.9	16.2
1987	12 21	06 06.97	-02 20.7					
1987	12 31	06 01.37	-02 26.4	3.791	4.689	-0.49	+1.0	16.1
1988	01 10	05 56.08	-02 20.3					
1988	01 20	05 51.50	-02 03.2	3.881	4.685	-0.48	+1.0	16.3
1988	01 30	05 47.98	-01 36.8					
1988	02 09	05 45.74	-01 03.2	4.065	4.681	-0.45	+0.9	16.5
1988	02 19	05 44.92	-00 24.7					
1988	02 29	05 45.56	+00 16.6	4.313	4.678	-0.43	+0.9	16.7
1988	03 10	05 47.62	+00 58.6					
1988	03 20	05 51.02	+01 39.8	4.592	4.675	-0.40	+0.8	16.8

1981 ET22 a,e,i = 2.40, 0.16, 3 Elements MPC 10289

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987	10 12	06 12.56	+25 32.8	1.628	2.115	-1.83	+0.1	17.8
1987	10 22	06 22.28	+25 47.7					
1987	11 01	06 29.15	+26 04.3	1.398	2.089	-2.25	+1.1	17.3
1987	11 11	06 32.67	+26 24.0					
1987	11 21	06 32.41	+26 47.2	1.208	2.066	-2.73	+1.6	16.8
1987	12 01	06 28.20	+27 12.5					
1987	12 11	06 20.41	+27 36.4	1.086	2.047	-3.11	+0.8	16.2
1987	12 21	06 10.05	+27 54.4					
1987	12 31	05 58.86	+28 03.1	1.056	2.032	-3.10	-1.1	16.0
1988	01 10	05 48.84	+28 01.6					
1988	01 20	05 41.65	+27 52.7	1.123	2.021	-2.73	-2.6	16.5
1988	01 30	05 38.34	+27 40.0					
1988	02 09	05 39.21	+27 26.5	1.267	2.015	-2.30	-2.4	17.0
1988	02 19	05 44.04	+27 13.4					
1988	02 29	05 52.41	+27 00.5	1.457	2.013	-1.98	-1.3	17.4
1988	03 10	06 03.77	+26 46.3					
1988	03 20	06 17.58	+26 28.9	1.670	2.015	-1.77	+0.2	17.8

1976 YP1 a,e,i = 3.10, 0.18, 2 Elements MPC 9962

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 28.00	+25 02.3	2.193	2.581	101.3	22.3	17.2
1987	10 22	06 34.63	+25 06.0					
1987	11 01	06 38.61	+25 11.6	1.969	2.596	118.8	19.6	16.9
1987	11 11	06 39.70	+25 19.6					
1987	11 21	06 37.74	+25 30.1	1.787	2.615	139.0	14.3	16.6
1987	12 01	06 32.82	+25 41.8					
1987	12 11	06 25.44	+25 52.7	1.682	2.636	162.0	6.6	16.2
1987	12 21	06 16.41	+26 00.4					
1987	12 31	06 06.93	+26 03.5	1.680	2.659	172.8	2.6	16.0
1988	01 10	05 58.26	+26 01.6					
1988	01 20	05 51.45	+25 55.9	1.790	2.684	149.4	10.8	16.5
1988	01 30	05 47.22	+25 48.4					
1988	02 09	05 45.90	+25 40.6	1.992	2.712	127.9	16.7	16.9
1988	02 19	05 47.44	+25 33.4					
1988	02 29	05 51.68	+25 26.9	2.253	2.741	109.0	20.0	17.3
1988	03 10	05 58.27	+25 20.4					
1988	03 20	06 06.90	+25 13.1	2.543	2.771	92.5	21.0	17.6

(3513) 1965 UZ a,e,i = 2.63, 0.01, 3 Elements MPC 11342

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 34.41	+26 02.9	2.283	2.644	99.9	21.8	17.6
1987	10 22	06 40.52	+26 04.6					
1987	11 01	06 44.01	+26 08.2	2.036	2.646	117.6	19.4	17.3
1987	11 11	06 44.61	+26 14.1					
1987	11 21	06 42.11	+26 22.2	1.829	2.648	138.1	14.4	16.9
1987	12 01	06 36.54	+26 30.9					
1987	12 11	06 28.34	+26 37.8	1.698	2.650	161.2	6.9	16.5
1987	12 21	06 18.30	+26 40.5					
1987	12 31	06 07.63	+26 37.3	1.673	2.651	172.7	2.7	16.3
1988	01 10	05 57.68	+26 28.0					
1988	01 20	05 49.62	+26 14.3	1.761	2.653	148.9	11.0	16.7
1988	01 30	05 44.26	+25 58.7					
1988	02 09	05 41.97	+25 43.4	1.941	2.654	127.0	17.3	17.2
1988	02 19	05 42.75	+25 29.7					
1988	02 29	05 46.43	+25 17.7	2.179	2.655	107.8	20.8	17.5
1988	03 10	05 52.66	+25 06.9					
1988	03 20	06 01.09	+24 56.3	2.442	2.656	91.2	22.0	17.8

(3596) Meriones a,e,i = 5.12, 0.08, 24 Elements MPC 11835

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 41.40	+48 12.2	4.504	4.764	99.1	11.9	16.8
1987	10 22	06 44.34	+48 59.6					
1987	11 01	06 45.21	+49 48.1	4.250	4.769	116.0	10.8	16.6
1987	11 11	06 43.86	+50 35.7					
1987	11 21	06 40.26	+51 19.8	4.046	4.774	132.9	8.7	16.5
1987	12 01	06 34.53	+51 56.8					
1987	12 11	06 27.05	+52 23.3	3.925	4.779	146.8	6.5	16.3
1987	12 21	06 18.39	+52 36.3					
1987	12 31	06 09.34	+52 34.0	3.907	4.785	150.2	5.9	16.3
1988	01 10	06 00.75	+52 16.4					
1988	01 20	05 53.38	+51 45.3	3.997	4.791	139.8	7.6	16.4
1988	01 30	05 47.81	+51 03.6					
1988	02 09	05 44.37	+50 14.8	4.181	4.797	123.6	9.9	16.6
1988	02 19	05 43.17	+49 22.2					
1988	02 29	05 44.16	+48 28.4	4.431	4.804	106.3	11.4	16.8
1988	03 10	05 47.17	+47 35.3					
1988	03 20	05 51.99	+46 44.1	4.715	4.810	89.5	11.9	16.9

1969 OW a,e,i = 2.26, 0.16, 2 Elements MPC 11145

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 41.25	+21 22.7	2.193	2.533	98.0	23.0	18.2
1987	10 22	06 46.90	+21 09.6					
1987	11 01	06 49.85	+20 58.7	1.959	2.553	115.9	20.5	17.9
1987	11 11	06 49.82	+20 51.2					
1987	11 21	06 46.60	+20 47.8	1.762	2.572	136.7	15.3	17.5
1987	12 01	06 40.24	+20 48.4					
1987	12 11	06 31.17	+20 51.8	1.638	2.587	160.4	7.3	17.1
1987	12 21	06 20.23	+20 56.7					
1987	12 31	06 08.65	+21 01.6	1.621	2.600	173.3	2.5	16.9
1988	01 10	05 57.84	+21 06.1					
1988	01 20	05 48.95	+21 10.6	1.719	2.611	148.7	11.3	17.4
1988	01 30	05 42.83	+21 15.8					
1988	02 09	05 39.83	+21 22.5	1.910	2.619	126.4	17.7	17.8
1988	02 19	05 39.95	+21 30.8					
1988	02 29	05 42.99	+21 40.1	2.158	2.624	106.9	21.2	18.2
1988	03 10	05 48.61	+21 49.4					
1988	03 20	05 56.47	+21 57.6	2.428	2.626	90.1	22.3	18.5

1985 TL3 a,e,i = 5.26, 0.06, 20 Elements MPC 11630

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 33.27	+02 48.5	4.696	4.938	98.2	11.5	16.9
1987	10 22	06 34.83	+02 04.1					
1987	11 01	06 35.03	+01 21.1	4.426	4.941	115.9	10.4	16.8
1987	11 11	06 33.88	+00 41.0					
1987	11 21	06 31.42	+00 05.8	4.206	4.943	134.0	8.3	16.6
1987	12 01	06 27.79	-00 22.5					
1987	12 11	06 23.23	-00 42.3	4.069	4.947	150.0	5.7	16.4
1987	12 21	06 18.05	-00 52.2					
1987	12 31	06 12.66	-00 51.6	4.039	4.950	155.3	4.8	16.4
1988	01 10	06 07.46	-00 40.5					
1988	01 20	06 02.85	-00 19.9	4.123	4.954	144.0	6.7	16.5
1988	01 30	05 59.16	+00 08.9					
1988	02 09	05 56.64	+00 43.8	4.307	4.958	126.5	9.2	16.7
1988	02 19	05 55.43	+01 22.9					
1988	02 29	05 55.60	+02 04.2	4.560	4.962	108.3	10.9	16.9
1988	03 10	05 57.13	+02 45.9					
1988	03 20	05 59.94	+03 26.6	4.850	4.966	90.9	11.6	17.0

(3505) 1983 AM a,e,i = 3.01, 0.12, 9 Elements MPC 11240

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 39.37	+30 30.1	2.418	2.756	99.0	21.0	16.9
1987	10 22	06 45.44	+30 30.6					
1987	11 01	06 48.86	+30 32.0	2.183	2.774	116.7	18.6	16.7
1987	11 11	06 49.39	+30 34.2					
1987	11 21	06 46.87	+30 35.9	1.989	2.793	136.9	14.0	16.3
1987	12 01	06 41.39	+30 35.2					
1987	12 11	06 33.42	+30 29.1	1.870	2.813	159.4	7.1	16.0
1987	12 21	06 23.76	+30 15.1					
1987	12 31	06 13.55	+29 52.0	1.858	2.834	171.7	2.9	15.8
1988	01 10	06 04.05	+29 20.7					
1988	01 20	05 56.31	+28 43.9	1.960	2.856	150.2	9.9	16.2
1988	01 30	05 51.07	+28 04.9					
1988	02 09	05 48.65	+27 26.7	2.159	2.878	128.4	15.6	16.6
1988	02 19	05 49.05	+26 51.1					
1988	02 29	05 52.11	+26 18.7	2.421	2.901	109.1	18.8	17.0
1988	03 10	05 57.52	+25 49.3					
1988	03 20	06 04.94	+25 21.9	2.713	2.923	92.0	19.9	17.3

1980 RO2 a,e,i = 2.22, 0.17, 2 Elements MPC 10158

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 31.34	+23 30.3	1.476	1.926	100.4	30.6	17.4
1987	10 22	06 41.77	+23 09.4					
1987	11 01	06 48.84	+22 48.4	1.305	1.958	116.3	27.0	17.1
1987	11 11	06 52.11	+22 29.4					
1987	11 21	06 51.22	+22 13.9	1.162	1.993	135.8	20.2	16.7
1987	12 01	06 46.13	+22 02.3					
1987	12 11	06 37.37	+21 53.5	1.080	2.031	159.2	9.9	16.3
1987	12 21	06 26.10	+21 45.8					
1987	12 31	06 14.09	+21 37.9	1.089	2.070	174.7	2.5	16.0
1988	01 10	06 03.27	+21 29.9					
1988	01 20	05 55.15	+21 23.2	1.199	2.110	150.2	13.4	16.7
1988	01 30	05 50.62	+21 19.0					
1988	02 09	05 49.90	+21 17.7	1.392	2.151	128.7	21.0	17.3
1988	02 19	05 52.75	+21 18.9					
1988	02 29	05 58.77	+21 21.0	1.638	2.192	110.6	25.0	17.8
1988	03 10	06 07.45	+21 22.5					
1988	03 20	06 18.31	+21 21.5	1.910	2.233	95.2	26.4	18.2

1979 MK1 a,e,i = 2.27, 0.11, 3 Elements MPC 12131

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 47.23	+19 24.4	2.202	2.517	96.4	23.2	19.2
1987	10 22	06 53.87	+19 05.7					
1987	11 01	06 57.99	+18 49.2	1.950	2.519	113.7	21.2	18.9
1987	11 11	06 59.28	+18 36.6					
1987	11 21	06 57.48	+18 29.4	1.732	2.519	133.8	16.4	18.5
1987	12 01	06 52.49	+18 28.3					
1987	12 11	06 44.58	+18 33.3	1.581	2.516	156.9	8.8	18.0
1987	12 21	06 34.41	+18 43.5					
1987	12 31	06 23.11	+18 57.3	1.531	2.512	174.8	2.0	17.6
1988	01 10	06 12.07	+19 13.2					
1988	01 20	06 02.60	+19 30.4	1.595	2.505	151.8	10.7	18.1
1988	01 30	05 55.74	+19 48.5					
1988	02 09	05 52.01	+20 07.4	1.754	2.497	129.1	17.8	18.5
1988	02 19	05 51.55	+20 26.6					
1988	02 29	05 54.23	+20 45.6	1.973	2.486	109.5	22.1	18.9
1988	03 10	05 59.72	+21 03.1					
1988	03 20	06 07.67	+21 18.1	2.218	2.474	92.7	23.7	19.2

1981 EJ15 a,e,i = 2.45, 0.17, 2 Elements MPC 10616

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 32.91	+24 19.8	1.621	2.048	100.1	28.7	18.7
1987	10 22	06 43.52	+24 04.2					
1987	11 01	06 51.10	+23 48.6	1.427	2.063	115.8	25.7	18.4
1987	11 11	06 55.24	+23 34.8					
1987	11 21	06 55.57	+23 24.1	1.264	2.082	134.9	19.7	18.0
1987	12 01	06 51.96	+23 16.7					
1987	12 11	06 44.80	+23 11.5	1.161	2.105	157.6	10.3	17.5
1987	12 21	06 34.98	+23 06.4					
1987	12 31	06 24.05	+22 59.8	1.149	2.132	177.3	1.3	17.1
1988	01 10	06 13.79	+22 51.0					
1988	01 20	06 05.74	+22 41.2	1.240	2.162	152.7	12.0	17.8
1988	01 30	06 00.93	+22 32.1					
1988	02 09	05 59.75	+22 24.5	1.416	2.194	131.0	19.8	18.3
1988	02 19	06 02.08	+22 18.7					
1988	02 29	06 07.62	+22 13.7	1.650	2.228	112.7	24.2	18.8
1988	03 10	06 15.87	+22 08.1					
1988	03 20	06 26.39	+22 00.3	1.915	2.264	97.0	25.9	19.2

(3571) 1982 EJ a,e,i = 3.93, 0.12, 8 Elements MPC 11729

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 49.32	+20 08.5	4.171	4.390	96.0	13.1	18.0
1987	10 22	06 51.59	+19 50.8					
1987	11 01	06 52.24	+19 34.4	3.877	4.391	115.1	11.8	17.8
1987	11 11	06 51.22	+19 19.7					
1987	11 21	06 48.52	+19 06.8	3.628	4.392	136.0	9.0	17.5
1987	12 01	06 44.25	+18 56.1					
1987	12 11	06 38.68	+18 47.3	3.462	4.392	158.3	4.8	17.3
1987	12 21	06 32.16	+18 40.4					
1987	12 31	06 25.21	+18 35.1	3.412	4.392	174.8	1.2	17.0
1988	01 10	06 18.38	+18 31.3					
1988	01 20	06 12.21	+18 29.0	3.486	4.390	153.9	5.7	17.3
1988	01 30	06 07.17	+18 28.2					
1988	02 09	06 03.57	+18 28.7	3.669	4.388	131.7	9.7	17.6
1988	02 19	06 01.60	+18 30.6					
1988	02 29	06 01.34	+18 33.3	3.930	4.386	111.1	12.2	17.8
1988	03 10	06 02.74	+18 36.6					
1988	03 20	06 05.70	+18 39.8	4.228	4.382	92.3	13.1	18.0

1983 PA a,e,i = 2.41, 0.39, 20 Elements MPC 10160

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 01.91	+43 19.0	1.171	1.607	95.3	38.2	15.7
1987	10 22	07 16.82	+42 24.8					
1987	11 01	07 26.16	+41 24.6	1.069	1.682	109.4	33.8	15.5
1987	11 11	07 29.50	+40 19.2					
1987	11 21	07 26.54	+39 06.0	0.976	1.767	128.1	26.1	15.2
1987	12 01	07 17.45	+37 39.2					
1987	12 11	07 03.39	+35 52.1	0.930	1.857	151.7	14.6	14.9
1987	12 21	06 46.49	+33 41.8					
1987	12 31	06 29.58	+31 13.4	0.972	1.950	171.8	4.1	14.7
1988	01 10	06 15.23	+28 39.6					
1988	01 20	06 04.93	+26 14.7	1.122	2.045	152.4	12.9	15.5
1988	01 30	05 59.19	+24 08.0					
1988	02 09	05 57.73	+22 22.8	1.363	2.140	130.5	20.5	16.2
1988	02 19	05 59.92	+20 57.7					
1988	02 29	06 05.15	+19 48.8	1.663	2.233	112.1	24.3	16.8
1988	03 10	06 12.77	+18 52.0					
1988	03 20	06 22.27	+18 03.1	1.995	2.325	96.2	25.2	17.4

1981 SW7 a,e,i = 3.09, 0.19, 5 Elements MPC 10027

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 54.96	+26 09.8	2.673	2.938	95.3	19.8	17.5
1987	10 22	07 00.46	+26 02.7					
1987	11 01	07 03.56	+25 57.9	2.442	2.977	113.2	17.9	17.3
1987	11 11	07 04.09	+25 55.8					
1987	11 21	07 01.91	+25 56.2	2.248	3.015	133.6	13.7	17.0
1987	12 01	06 57.08	+25 58.0					
1987	12 11	06 49.96	+25 59.4	2.125	3.054	156.5	7.4	16.7
1987	12 21	06 41.16	+25 58.6					
1987	12 31	06 31.59	+25 53.8	2.109	3.092	177.1	0.9	16.4
1988	01 10	06 22.31	+25 44.7					
1988	01 20	06 14.25	+25 31.8	2.212	3.129	154.5	7.8	16.9
1988	01 30	06 08.18	+25 16.7					
1988	02 09	06 04.50	+25 00.8	2.419	3.166	132.1	13.4	17.3
1988	02 19	06 03.34	+24 45.3					
1988	02 29	06 04.64	+24 30.7	2.698	3.203	112.0	16.7	17.7
1988	03 10	06 08.18	+24 17.0					
1988	03 20	06 13.70	+24 03.6	3.012	3.238	94.1	17.9	18.0

1986 UT a,e,i = 3.18, 0.12, 9 Elements MPC 11743

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 56.50	+20 46.7	3.342	3.560	94.4	16.2	17.6
1987	10 22	07 00.23	+20 21.3					
1987	11 01	07 02.04	+19 57.0	3.054	3.559	112.9	14.9	17.4
1987	11 11	07 01.79	+19 34.3					
1987	11 21	06 59.40	+19 13.9	2.805	3.557	133.5	11.6	17.1
1987	12 01	06 54.93	+18 55.9					
1987	12 11	06 48.63	+18 40.4	2.632	3.554	156.0	6.5	16.8
1987	12 21	06 40.95	+18 27.2					
1987	12 31	06 32.55	+18 16.1	2.569	3.550	175.0	1.4	16.5
1988	01 10	06 24.20	+18 07.1					
1988	01 20	06 16.66	+18 00.1	2.629	3.545	154.8	6.8	16.8
1988	01 30	06 10.57	+17 55.4					
1988	02 09	06 06.38	+17 52.8	2.798	3.538	132.4	11.9	17.1
1988	02 19	06 04.28	+17 52.3					
1988	02 29	06 04.35	+17 53.3	3.040	3.531	111.8	15.1	17.4
1988	03 10	06 06.48	+17 55.0					
1988	03 20	06 10.50	+17 56.7	3.320	3.522	93.4	16.4	17.6

1984 JA1 a,e,i = 3.15, 0.23, 9 Elements MPC 12001

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 59.34	+17 48.8	3.640	3.832	93.4	15.1	17.5
1987	10 22	07 02.49	+17 21.1					
1987	11 01	07 03.88	+16 54.7	3.333	3.819	112.0	13.9	17.2
1987	11 11	07 03.38	+16 30.1					
1987	11 21	07 00.92	+16 08.3	3.065	3.803	132.5	11.0	16.9
1987	12 01	06 56.53	+15 49.9					
1987	12 11	06 50.46	+15 35.3	2.873	3.786	154.6	6.4	16.6
1987	12 21	06 43.08	+15 24.6					
1987	12 31	06 34.97	+15 18.1	2.791	3.768	172.1	2.1	16.3
1988	01 10	06 26.82	+15 15.4					
1988	01 20	06 19.32	+15 16.3	2.833	3.747	154.8	6.4	16.6
1988	01 30	06 13.09	+15 20.6					
1988	02 09	06 08.56	+15 27.6	2.986	3.725	132.7	11.2	16.8
1988	02 19	06 05.98	+15 36.7					
1988	02 29	06 05.44	+15 47.2	3.214	3.701	112.0	14.4	17.1
1988	03 10	06 06.89	+15 58.1					
1988	03 20	06 10.18	+16 08.5	3.481	3.676	93.4	15.7	17.3

6547 P-L a,e,i = 2.43, 0.21, 3 Elements MPC 7602

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 53.70	+25 04.5	1.897	2.226	95.5	26.5	18.7
1987	10 22	07 02.58	+25 10.5					
1987	11 01	07 08.54	+25 20.8	1.705	2.272	112.0	23.9	18.4
1987	11 11	07 11.23	+25 36.9					
1987	11 21	07 10.32	+25 59.3	1.541	2.319	131.7	18.5	18.1
1987	12 01	07 05.72	+26 26.7					
1987	12 11	06 57.74	+26 55.9	1.438	2.366	154.7	10.3	17.7
1987	12 21	06 47.16	+27 22.4					
1987	12 31	06 35.31	+27 41.8	1.431	2.413	175.5	1.8	17.4
1988	01 10	06 23.83	+27 51.8					
1988	01 20	06 14.18	+27 52.6	1.535	2.459	154.2	10.0	18.0
1988	01 30	06 07.41	+27 46.7					
1988	02 09	06 03.99	+27 36.9	1.735	2.503	131.8	17.1	18.5
1988	02 19	06 03.95	+27 25.4					
1988	02 29	06 07.03	+27 13.2	1.998	2.547	112.4	21.1	18.9
1988	03 10	06 12.83	+27 00.4					
1988	03 20	06 20.91	+26 46.4	2.294	2.588	95.6	22.5	19.3

2808 P-L a,e,i = 2.43, 0.15, 2 Elements MPC 9033

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 37.59	+20 48.2	1.807	2.194	98.8	26.7	19.1
1987	10 22	06 47.96	+20 25.3					
1987	11 01	06 55.87	+20 02.2	1.560	2.167	114.4	24.7	18.7
1987	11 11	07 00.91	+19 41.3					
1987	11 21	07 02.66	+19 24.7	1.345	2.142	132.7	19.8	18.2
1987	12 01	07 00.84	+19 14.4					
1987	12 11	06 55.52	+19 11.0	1.188	2.120	154.5	11.5	17.6
1987	12 21	06 47.20	+19 14.3					
1987	12 31	06 37.03	+19 23.0	1.118	2.101	176.2	1.8	17.0
1988	01 10	06 26.65	+19 35.2					
1988	01 20	06 17.74	+19 49.5	1.150	2.085	155.3	11.4	17.5
1988	01 30	06 11.70	+20 05.1					
1988	02 09	06 09.29	+20 21.4	1.269	2.073	133.2	20.3	18.0
1988	02 19	06 10.70	+20 37.6					
1988	02 29	06 15.77	+20 52.2	1.446	2.065	114.6	25.9	18.4
1988	03 10	06 24.07	+21 03.5					
1988	03 20	06 35.12	+21 09.9	1.653	2.061	99.1	28.5	18.8

1981 TP1 a,e,i = 3.05, 0.05, 13 Elements MPC 10041

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 10 12	06 56.40	+19 16.9	2.798	3.040	94.3	19.1	17.0
1987 10 22	07 01.84	+18 30.0					
1987 11 01	07 05.16	+17 42.1	2.518	3.031	111.9	17.7	16.7
1987 11 11	07 06.16	+16 54.4					
1987 11 21	07 04.70	+16 08.0	2.274	3.022	131.7	14.1	16.4
1987 12 01	07 00.78	+15 24.2					
1987 12 11	06 54.62	+14 44.2	2.100	3.013	153.4	8.4	16.0
1987 12 21	06 46.71	+14 09.0					
1987 12 31	06 37.82	+13 40.0	2.030	3.004	170.5	3.1	15.7
1988 01 10	06 28.89	+13 17.8					
1988 01 20	06 20.86	+13 02.8	2.078	2.996	154.5	8.1	16.0
1988 01 30	06 14.53	+12 54.8					
1988 02 09	06 10.43	+12 53.1	2.229	2.987	132.8	14.0	16.3
1988 02 19	06 08.80	+12 56.2					
1988 02 29	06 09.66	+13 02.6	2.451	2.979	112.9	17.8	16.6
1988 03 10	06 12.87	+13 10.4					
1988 03 20	06 18.21	+13 18.0	2.708	2.971	95.3	19.5	16.9

1933 FE1 a,e,i = 2.29, 0.22, 2 Elements MPC 9765

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 10 12	06 54.48	+22 56.1	2.273	2.562	95.1	22.8	18.8
1987 10 22	07 02.20	+22 39.4					
1987 11 01	07 07.61	+22 24.3	1.979	2.524	111.9	21.4	18.4
1987 11 11	07 10.37	+22 12.0					
1987 11 21	07 10.08	+22 03.7	1.716	2.482	131.4	17.4	17.9
1987 12 01	07 06.50	+21 59.7					
1987 12 11	06 59.65	+21 59.5	1.515	2.439	154.0	10.2	17.4
1987 12 21	06 49.95	+22 01.4					
1987 12 31	06 38.35	+22 03.2	1.410	2.393	178.7	0.5	16.7
1988 01 10	06 26.31	+22 03.2					
1988 01 20	06 15.37	+22 01.0	1.417	2.345	154.9	10.2	17.2
1988 01 30	06 06.92	+21 57.5					
1988 02 09	06 01.82	+21 54.0	1.520	2.296	131.5	18.8	17.6
1988 02 19	06 00.38	+21 51.5					
1988 02 29	06 02.57	+21 49.9	1.685	2.246	111.5	24.2	17.9
1988 03 10	06 08.08	+21 48.4					
1988 03 20	06 16.53	+21 45.5	1.875	2.195	94.8	26.9	18.1

(3348) 1978 EA3 a,e,i = 3.17, 0.16, 10 Elements MPC 10304

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 10 12	06 59.76	+11 47.1	3.463	3.649	92.7	15.9	18.2
1987 10 22	07 03.43	+11 10.5					
1987 11 01	07 05.35	+10 35.0	3.168	3.638	110.6	14.8	17.9
1987 11 11	07 05.37	+10 02.3					
1987 11 21	07 03.41	+09 33.9	2.909	3.627	130.3	12.0	17.7
1987 12 01	06 59.52	+09 11.5					
1987 12 11	06 53.89	+08 56.6	2.721	3.614	150.9	7.6	17.3
1987 12 21	06 46.89	+08 50.3					
1987 12 31	06 39.10	+08 53.3	2.638	3.599	165.7	3.9	17.1
1988 01 10	06 31.20	+09 05.3					
1988 01 20	06 23.90	+09 25.4	2.675	3.584	153.7	7.0	17.3
1988 01 30	06 17.83	+09 52.0					
1988 02 09	06 13.46	+10 23.3	2.820	3.567	133.1	11.7	17.5
1988 02 19	06 11.05	+10 57.4					
1988 02 29	06 10.71	+11 32.4	3.042	3.549	113.1	14.9	17.8
1988 03 10	06 12.38	+12 06.7					
1988 03 20	06 15.95	+12 39.0	3.304	3.529	94.8	16.3	18.0

(3557) 1977 QE1 a,e,i = 4.00, 0.17, 6 Elements MPC 11626

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 02.05	+16 23.9	4.330	4.488	92.6	12.8	17.9
1987	10 22	07 04.56	+16 05.7					
1987	11 01	07 05.54	+15 49.5	4.048	4.507	111.5	11.8	17.7
1987	11 11	07 04.95	+15 36.1					
1987	11 21	07 02.75	+15 26.0	3.805	4.525	132.0	9.3	17.5
1987	12 01	06 59.04	+15 19.7					
1987	12 11	06 54.03	+15 17.5	3.639	4.542	153.7	5.5	17.3
1987	12 21	06 48.02	+15 19.2					
1987	12 31	06 41.48	+15 24.6	3.583	4.559	172.1	1.7	17.1
1988	01 10	06 34.89	+15 33.2					
1988	01 20	06 28.77	+15 44.3	3.652	4.574	157.2	4.8	17.3
1988	01 30	06 23.58	+15 57.4					
1988	02 09	06 19.65	+16 11.8	3.834	4.589	135.4	8.7	17.5
1988	02 19	06 17.20	+16 26.9					
1988	02 29	06 16.34	+16 42.0	4.101	4.603	114.7	11.3	17.8
1988	03 10	06 17.06	+16 56.7					
1988	03 20	06 19.28	+17 10.3	4.412	4.616	95.5	12.4	18.0

1986 PJ4 a,e,i = 2.28, 0.16, 4 Elements MPC 12132

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 03.03	+18 33.9	2.379	2.622	92.6	22.4	18.4
1987	10 22	07 09.66	+18 15.2					
1987	11 01	07 13.92	+17 59.6	2.127	2.635	109.8	20.8	18.1
1987	11 11	07 15.54	+17 48.8					
1987	11 21	07 14.25	+17 44.5	1.903	2.646	129.7	16.7	17.8
1987	12 01	07 09.94	+17 47.6					
1987	12 11	07 02.78	+17 58.2	1.741	2.653	152.5	9.9	17.4
1987	12 21	06 53.27	+18 15.1					
1987	12 31	06 42.34	+18 36.6	1.677	2.658	175.2	1.8	16.9
1988	01 10	06 31.23	+19 00.5					
1988	01 20	06 21.19	+19 24.9	1.731	2.661	156.1	8.6	17.3
1988	01 30	06 13.30	+19 49.0					
1988	02 09	06 08.21	+20 12.1	1.888	2.660	132.9	15.8	17.8
1988	02 19	06 06.18	+20 34.0					
1988	02 29	06 07.17	+20 54.4	2.114	2.657	112.6	20.1	18.1
1988	03 10	06 10.94	+21 12.6					
1988	03 20	06 17.17	+21 27.9	2.373	2.651	94.9	22.0	18.4

1980 PT a,e,i = 3.02, 0.09, 10 Elements MPC 11431

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 02.06	+11 40.2	3.081	3.273	92.1	17.7	17.3
1987	10 22	07 06.71	+11 02.8					
1987	11 01	07 09.44	+10 27.0	2.810	3.279	109.6	16.6	17.1
1987	11 11	07 10.10	+09 54.5					
1987	11 21	07 08.58	+09 27.4	2.572	3.285	129.0	13.5	16.8
1987	12 01	07 04.89	+09 07.5					
1987	12 11	06 59.23	+08 56.5	2.401	3.289	149.8	8.7	16.5
1987	12 21	06 52.01	+08 55.7					
1987	12 31	06 43.85	+09 05.5	2.330	3.292	165.8	4.2	16.3
1988	01 10	06 35.55	+09 25.2					
1988	01 20	06 27.91	+09 53.5	2.378	3.295	154.8	7.3	16.4
1988	01 30	06 21.64	+10 28.3					
1988	02 09	06 17.26	+11 07.2	2.532	3.296	134.1	12.4	16.8
1988	02 19	06 15.02	+11 48.0					
1988	02 29	06 15.03	+12 28.8	2.764	3.296	114.2	15.9	17.1
1988	03 10	06 17.19	+13 07.9					
1988	03 20	06 21.35	+13 43.8	3.038	3.296	96.1	17.5	17.3

1976 GO3 a,e,i = 2.64, 0.09, 2 Elements MPC 12122

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 57.73	+21 33.7	2.484	2.744	94.2	21.3	18.5
1987	10 22	07 04.84	+21 24.0					
1987	11 01	07 09.77	+21 17.1	2.204	2.726	111.3	19.8	18.2
1987	11 11	07 12.20	+21 14.6					
1987	11 21	07 11.88	+21 17.5	1.956	2.708	130.9	16.0	17.8
1987	12 01	07 08.65	+21 26.3					
1987	12 11	07 02.63	+21 40.4	1.773	2.690	153.3	9.5	17.3
1987	12 21	06 54.24	+21 58.0					
1987	12 31	06 44.33	+22 16.8	1.688	2.671	177.8	0.8	16.8
1988	01 10	06 34.07	+22 34.5					
1988	01 20	06 24.71	+22 49.7	1.717	2.651	157.1	8.3	17.2
1988	01 30	06 17.35	+23 02.1					
1988	02 09	06 12.72	+23 12.1	1.849	2.631	134.0	15.6	17.6
1988	02 19	06 11.12	+23 20.3					
1988	02 29	06 12.60	+23 26.9	2.049	2.612	113.8	20.3	17.9
1988	03 10	06 16.92	+23 31.7					
1988	03 20	06 23.79	+23 33.9	2.285	2.592	96.4	22.5	18.2

1978 TQ7 a,e,i = 2.58, 0.09, 15 Elements MPC 11344

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 00.81	+06 46.2	2.595	2.810	91.8	20.8	17.2
1987	10 22	07 06.72	+05 53.3					
1987	11 01	07 10.54	+05 01.5	2.340	2.813	108.2	19.6	17.0
1987	11 11	07 12.03	+04 13.5					
1987	11 21	07 11.01	+03 32.5	2.113	2.814	126.4	16.4	16.6
1987	12 01	07 07.43	+03 02.2					
1987	12 11	07 01.47	+02 46.1	1.945	2.815	145.8	11.3	16.3
1987	12 21	06 53.56	+02 47.2					
1987	12 31	06 44.45	+03 07.3	1.870	2.814	159.8	6.9	16.1
1988	01 10	06 35.11	+03 45.5					
1988	01 20	06 26.55	+04 39.4	1.906	2.811	151.8	9.5	16.2
1988	01 30	06 19.67	+05 44.9					
1988	02 09	06 15.08	+06 57.0	2.043	2.808	132.7	15.0	16.5
1988	02 19	06 13.08	+08 11.4					
1988	02 29	06 13.73	+09 24.6	2.254	2.803	113.6	18.9	16.8
1988	03 10	06 16.89	+10 33.6					
1988	03 20	06 22.34	+11 36.7	2.505	2.796	96.4	20.7	17.1

1971 SX1 a,e,i = 2.94, 0.03, 2 Elements MPC 11637

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 00.02	+20 26.0	2.681	2.918	93.6	20.0	17.3
1987	10 22	07 06.28	+20 09.4					
1987	11 01	07 10.38	+19 55.3	2.419	2.924	111.0	18.5	17.1
1987	11 11	07 12.11	+19 45.0					
1987	11 21	07 11.27	+19 39.4	2.188	2.931	130.8	14.8	16.8
1987	12 01	07 07.83	+19 39.0					
1987	12 11	07 01.97	+19 43.6	2.025	2.937	153.1	8.7	16.4
1987	12 21	06 54.16	+19 52.2					
1987	12 31	06 45.17	+20 03.4	1.962	2.944	176.2	1.3	16.0
1988	01 10	06 36.01	+20 15.6					
1988	01 20	06 27.69	+20 27.9	2.016	2.950	157.7	7.3	16.3
1988	01 30	06 21.10	+20 39.7					
1988	02 09	06 16.82	+20 50.8	2.176	2.957	135.0	13.7	16.7
1988	02 19	06 15.12	+21 01.3					
1988	02 29	06 16.04	+21 10.7	2.410	2.963	114.6	17.7	17.1
1988	03 10	06 19.40	+21 18.7					
1988	03 20	06 24.97	+21 24.6	2.683	2.969	96.7	19.5	17.4

1977 UP a,e,i = 2.18, 0.15, 3 Elements MPC 5520

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 57.14	+26 44.6	1.700	2.043	94.8	29.1	18.8
1987	10 22	07 08.19	+26 48.3					
1987	11 01	07 16.26	+26 55.7	1.511	2.077	110.4	26.6	18.5
1987	11 11	07 20.89	+27 08.8					
1987	11 21	07 21.64	+27 28.6	1.344	2.113	129.3	21.2	18.2
1987	12 01	07 18.21	+27 54.1					
1987	12 11	07 10.74	+28 21.8	1.230	2.149	151.7	12.5	17.8
1987	12 21	06 59.92	+28 46.1					
1987	12 31	06 47.15	+29 01.3	1.204	2.184	173.6	2.9	17.4
1988	01 10	06 34.38	+29 03.8					
1988	01 20	06 23.43	+28 54.2	1.284	2.219	155.9	10.4	17.9
1988	01 30	06 15.68	+28 35.7					
1988	02 09	06 11.76	+28 12.6	1.457	2.253	133.5	18.5	18.4
1988	02 19	06 11.68	+27 47.9					
1988	02 29	06 15.15	+27 23.2	1.692	2.285	114.2	23.3	18.9
1988	03 10	06 21.65	+26 58.5					
1988	03 20	06 30.67	+26 33.1	1.960	2.316	97.8	25.2	19.3

1984 WK a,e,i = 1.95, 0.08, 18 Elements MPC 9418

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 05.86	+31 01.9	1.623	1.954	93.4	30.7	17.9
1987	10 22	07 17.22	+30 02.3					
1987	11 01	07 25.26	+28 57.6	1.418	1.974	108.7	28.4	17.5
1987	11 11	07 29.49	+27 48.7					
1987	11 21	07 29.42	+26 35.6	1.232	1.994	127.5	23.2	17.1
1987	12 01	07 24.72	+25 17.3					
1987	12 11	07 15.54	+23 52.2	1.095	2.012	150.6	13.9	16.6
1987	12 21	07 02.66	+22 19.8					
1987	12 31	06 47.71	+20 41.7	1.047	2.030	176.3	1.8	16.0
1988	01 10	06 32.89	+19 03.2					
1988	01 20	06 20.25	+17 31.6	1.109	2.046	155.6	11.5	16.6
1988	01 30	06 11.24	+16 13.0					
1988	02 09	06 06.43	+15 09.7	1.264	2.060	132.1	20.8	17.2
1988	02 19	06 05.75	+14 21.1					
1988	02 29	06 08.82	+13 44.2	1.478	2.073	112.7	26.2	17.7
1988	03 10	06 15.07	+13 15.2					
1988	03 20	06 23.96	+12 50.4	1.717	2.084	96.8	28.3	18.1

1983 PW a,e,i = 2.19, 0.21, 4 Elements MPC 11154

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 08.02	+19 49.0	2.126	2.374	91.6	24.8	18.5
1987	10 22	07 15.63	+19 16.3					
1987	11 01	07 20.61	+18 45.9	1.910	2.415	108.4	23.0	18.3
1987	11 11	07 22.66	+18 19.5					
1987	11 21	07 21.49	+17 58.7	1.716	2.452	128.1	18.5	18.0
1987	12 01	07 17.00	+17 44.6					
1987	12 11	07 09.39	+17 37.5	1.580	2.487	150.9	11.1	17.6
1987	12 21	06 59.23	+17 36.6					
1987	12 31	06 47.61	+17 40.8	1.539	2.519	173.8	2.4	17.2
1988	01 10	06 35.89	+17 48.4					
1988	01 20	06 25.43	+17 58.3	1.613	2.548	156.9	8.7	17.6
1988	01 30	06 17.35	+18 10.0					
1988	02 09	06 12.26	+18 22.8	1.790	2.573	133.8	16.1	18.1
1988	02 19	06 10.34	+18 36.2					
1988	02 29	06 11.48	+18 49.5	2.035	2.595	113.6	20.5	18.5
1988	03 10	06 15.40	+19 01.6					
1988	03 20	06 21.71	+19 11.5	2.314	2.614	96.1	22.3	18.8

1979 ME8 a,e,i = 2.28, 0.14, 4 Elements MPC 5847

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 10 12	06 42.21	+18 57.8	1.647	2.036	97.6	29.1	19.3
1987 10 22	06 54.20	+18 16.3					
1987 11 01	07 03.70	+17 32.7	1.420	2.016	112.2	27.1	18.9
1987 11 11	07 10.29	+16 49.7					
1987 11 21	07 13.51	+16 10.6	1.219	2.000	129.6	22.4	18.4
1987 12 01	07 13.01	+15 38.5					
1987 12 11	07 08.76	+15 16.2	1.070	1.987	150.4	14.2	17.8
1987 12 21	07 01.16	+15 05.7					
1987 12 31	06 51.27	+15 07.5	1.000	1.977	171.2	4.4	17.3
1988 01 10	06 40.78	+15 20.6					
1988 01 20	06 31.47	+15 42.6	1.026	1.972	157.8	10.9	17.6
1988 01 30	06 24.92	+16 10.9					
1988 02 09	06 22.05	+16 42.5	1.139	1.971	136.0	20.3	18.1
1988 02 19	06 23.10	+17 14.5					
1988 02 29	06 27.94	+17 44.2	1.311	1.974	117.4	26.4	18.6
1988 03 10	06 36.12	+18 09.1					
1988 03 20	06 47.13	+18 27.1	1.517	1.981	102.1	29.4	19.0

1984 AQ a,e,i = 2.54, 0.18, 11 Elements MPC 9030

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 10 12	07 01.40	+16 39.7	2.424	2.666	92.8	22.0	17.5
1987 10 22	07 09.08	+16 30.4					
1987 11 01	07 14.71	+16 25.0	2.129	2.631	109.4	20.8	17.1
1987 11 11	07 17.99	+16 26.1					
1987 11 21	07 18.60	+16 35.9	1.861	2.594	128.5	17.3	16.7
1987 12 01	07 16.28	+16 56.3					
1987 12 11	07 11.03	+17 28.1	1.653	2.556	150.5	10.9	16.2
1987 12 21	07 03.10	+18 10.6					
1987 12 31	06 53.22	+19 01.6	1.538	2.518	174.2	2.3	15.7
1988 01 10	06 42.54	+19 57.1					
1988 01 20	06 32.40	+20 53.2	1.536	2.479	158.8	8.2	15.9
1988 01 30	06 24.10	+21 46.6					
1988 02 09	06 18.58	+22 35.6	1.638	2.440	135.4	16.5	16.3
1988 02 19	06 16.35	+23 19.5					
1988 02 29	06 17.52	+23 57.9	1.810	2.402	114.9	22.0	16.6
1988 03 10	06 21.92	+24 30.6					
1988 03 20	06 29.23	+24 57.1	2.016	2.363	97.6	24.7	16.9

(3518) 1977 QC4 a,e,i = 2.67, 0.18, 14 Elements MPC 11421

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 10 12	07 12.95	+09 35.4	2.806	2.965	89.2	19.7	17.8
1987 10 22	07 18.50	+08 59.7					
1987 11 01	07 22.01	+08 26.6	2.559	2.991	106.2	18.6	17.6
1987 11 11	07 23.30	+07 58.6					
1987 11 21	07 22.20	+07 37.9	2.335	3.015	125.3	15.5	17.3
1987 12 01	07 18.68	+07 27.1					
1987 12 11	07 12.89	+07 28.1	2.170	3.037	146.1	10.4	17.0
1987 12 21	07 05.22	+07 42.3					
1987 12 31	06 56.34	+08 09.7	2.100	3.057	164.2	5.0	16.7
1988 01 10	06 47.11	+08 49.0					
1988 01 20	06 38.47	+09 37.7	2.146	3.076	157.0	7.2	16.9
1988 01 30	06 31.24	+10 32.5					
1988 02 09	06 26.03	+11 30.1	2.303	3.092	136.3	12.7	17.2
1988 02 19	06 23.16	+12 27.7					
1988 02 29	06 22.73	+13 23.0	2.541	3.107	116.1	16.6	17.6
1988 03 10	06 24.64	+14 14.4					
1988 03 20	06 28.69	+15 00.7	2.823	3.119	97.8	18.4	17.9

(3540) Protesilaos a,e,i = 5.20, 0.12, 23 Elements MPC 11507

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 16.64	+44 44.9	4.590	4.745	92.8	12.1	16.3
1987	10 22	07 21.38	+45 32.9					
1987	11 01	07 24.35	+46 25.1	4.303	4.732	109.8	11.4	16.2
1987	11 11	07 25.36	+47 20.3					
1987	11 21	07 24.25	+48 16.8	4.057	4.719	127.1	9.6	16.0
1987	12 01	07 20.97	+49 11.7					
1987	12 11	07 15.64	+50 01.4	3.883	4.707	143.1	7.2	15.8
1987	12 21	07 08.55	+50 42.0					
1987	12 31	07 00.26	+51 10.1	3.807	4.696	151.6	5.7	15.7
1988	01 10	06 51.53	+51 23.3					
1988	01 20	06 43.15	+51 21.0	3.842	4.685	145.4	6.9	15.7
1988	01 30	06 35.93	+51 04.3					
1988	02 09	06 30.46	+50 35.7	3.977	4.674	130.1	9.3	15.9
1988	02 19	06 27.09	+49 58.2					
1988	02 29	06 25.99	+49 15.0	4.189	4.664	112.9	11.3	16.1
1988	03 10	06 27.10	+48 28.6					
1988	03 20	06 30.27	+47 40.8	4.445	4.655	95.9	12.3	16.2

(3548) 1973 SO a,e,i = 5.12, 0.09, 8 Elements MPC 11615

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 14.10	+28 53.5	4.559	4.690	91.3	12.3	17.0
1987	10 22	07 17.73	+29 06.5					
1987	11 01	07 19.85	+29 22.9	4.265	4.696	109.9	11.5	16.8
1987	11 11	07 20.36	+29 42.4					
1987	11 21	07 19.19	+30 04.5	4.007	4.703	129.9	9.3	16.6
1987	12 01	07 16.38	+30 28.2					
1987	12 11	07 12.08	+30 52.0	3.823	4.710	151.1	5.8	16.4
1987	12 21	07 06.57	+31 13.9					
1987	12 31	07 00.25	+31 32.2	3.746	4.717	170.0	2.1	16.1
1988	01 10	06 53.67	+31 45.4					
1988	01 20	06 47.36	+31 52.8	3.790	4.725	159.6	4.2	16.3
1988	01 30	06 41.85	+31 54.4					
1988	02 09	06 37.58	+31 50.7	3.950	4.733	138.4	8.0	16.6
1988	02 19	06 34.81	+31 42.9					
1988	02 29	06 33.70	+31 32.0	4.197	4.742	117.8	10.6	16.8
1988	03 10	06 34.28	+31 19.0					
1988	03 20	06 36.49	+31 04.5	4.496	4.751	98.7	12.0	17.0

1985 TQ a,e,i = 5.25, 0.12, 3 Elements MPC 11435

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 13.27	+25 10.8	4.502	4.630	91.1	12.4	17.2
1987	10 22	07 16.88	+25 11.5					
1987	11 01	07 19.00	+25 14.9	4.205	4.634	109.7	11.6	17.1
1987	11 11	07 19.55	+25 21.2					
1987	11 21	07 18.48	+25 30.3	3.944	4.639	129.9	9.4	16.9
1987	12 01	07 15.82	+25 41.7					
1987	12 11	07 11.73	+25 54.2	3.756	4.645	151.6	5.8	16.6
1987	12 21	07 06.48	+26 06.9					
1987	12 31	07 00.47	+26 18.3	3.673	4.652	173.6	1.4	16.3
1988	01 10	06 54.20	+26 27.2					
1988	01 20	06 48.20	+26 33.1	3.714	4.659	161.8	3.8	16.5
1988	01 30	06 42.97	+26 35.7					
1988	02 09	06 38.91	+26 35.3	3.871	4.667	139.7	7.9	16.8
1988	02 19	06 36.30	+26 32.2					
1988	02 29	06 35.28	+26 27.1	4.117	4.675	118.8	10.7	17.0
1988	03 10	06 35.90	+26 20.4					
1988	03 20	06 38.08	+26 12.3	4.416	4.684	99.5	12.1	17.2

1983 RP2 a,e,i = 2.27, 0.17, 4 Elements MPC 11843

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 05.68	+17 53.8	1.756	2.049	91.9	29.1	18.9
1987	10 22	07 16.81	+17 21.3					
1987	11 01	07 25.24	+16 51.2	1.567	2.086	107.0	27.1	18.6
1987	11 11	07 30.62	+16 26.6					
1987	11 21	07 32.56	+16 10.5	1.396	2.124	125.1	22.4	18.3
1987	12 01	07 30.81	+16 05.5					
1987	12 11	07 25.43	+16 12.7	1.271	2.163	146.8	14.4	17.9
1987	12 21	07 16.84	+16 31.9					
1987	12 31	07 06.10	+17 00.8	1.227	2.203	170.6	4.2	17.5
1988	01 10	06 54.73	+17 35.7					
1988	01 20	06 44.33	+18 12.9	1.288	2.242	161.3	8.1	17.8
1988	01 30	06 36.32	+18 49.3					
1988	02 09	06 31.51	+19 23.2	1.448	2.281	138.4	16.7	18.4
1988	02 19	06 30.17	+19 53.3					
1988	02 29	06 32.22	+20 19.0	1.678	2.320	118.4	22.1	18.9
1988	03 10	06 37.28	+20 39.4					
1988	03 20	06 44.92	+20 53.9	1.948	2.357	101.4	24.5	19.3

1983 EA a,e,i = 1.89, 0.13, 24 Elements MPC 9469

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 22.67	+50 57.2	1.156	1.677	102.0	35.6	17.7
1987	10 22	06 47.70	+54 35.1					
1987	11 01	07 11.97	+58 14.8	1.022	1.659	110.9	34.0	17.4
1987	11 11	07 34.46	+61 53.7					
1987	11 21	07 53.41	+65 28.2	0.924	1.647	118.9	31.7	17.1
1987	12 01	08 06.07	+68 51.6					
1987	12 11	08 08.7	+71 52.7	0.865	1.640	124.8	29.5	16.9
1987	12 21	07 56.7	+74 13.7					
1987	12 31	07 29.2	+75 27.5	0.845	1.639	127.3	28.5	16.8
1988	01 10	06 54.6	+75 11.0					
1988	01 20	06 27.2	+73 23.4	0.865	1.644	125.4	29.2	16.9
1988	01 30	06 14.2	+70 26.3					
1988	02 09	06 14.20	+66 45.9	0.926	1.655	119.7	31.2	17.1
1988	02 19	06 22.91	+62 41.3					
1988	02 29	06 37.05	+58 25.1	1.028	1.671	111.6	33.4	17.4
1988	03 10	06 54.27	+54 05.8					
1988	03 20	07 13.16	+49 48.1	1.168	1.691	102.5	35.1	17.8

1984 DE a,e,i = 2.66, 0.10, 7 Elements MPC 11346

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 10.77	+28 49.1	2.142	2.395	92.1	24.6	17.1
1987	10 22	07 21.43	+28 39.7					
1987	11 01	07 29.67	+28 32.3	1.901	2.397	107.7	23.2	16.8
1987	11 11	07 35.14	+28 28.4					
1987	11 21	07 37.45	+28 28.8	1.684	2.401	125.9	19.5	16.4
1987	12 01	07 36.31	+28 33.0					
1987	12 11	07 31.70	+28 39.0	1.520	2.407	147.1	12.8	16.0
1987	12 21	07 23.94	+28 43.4					
1987	12 31	07 13.88	+28 41.9	1.440	2.414	169.8	4.1	15.5
1988	01 10	07 02.89	+28 31.2					
1988	01 20	06 52.49	+28 10.3	1.468	2.424	162.2	7.1	15.7
1988	01 30	06 44.10	+27 40.8					
1988	02 09	06 38.66	+27 06.0	1.599	2.435	139.5	15.2	16.2
1988	02 19	06 36.56	+26 28.8					
1988	02 29	06 37.80	+25 51.2	1.805	2.448	119.4	20.6	16.6
1988	03 10	06 42.08	+25 13.8					
1988	03 20	06 49.00	+24 36.4	2.054	2.463	102.1	23.3	17.0

1976 QX a,e,i = 2.88, 0.06, 1 Elements MPC 11241

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 17.87	+23 47.9	2.561	2.746	89.8	21.3	17.2
1987	10 22	07 26.17	+23 36.4					
1987	11 01	07 32.35	+23 28.2	2.304	2.754	106.4	20.2	16.9
1987	11 11	07 36.12	+23 24.7					
1987	11 21	07 37.23	+23 27.0	2.071	2.763	125.4	17.0	16.6
1987	12 01	07 35.49	+23 35.3					
1987	12 11	07 30.95	+23 48.7	1.893	2.772	147.1	11.1	16.2
1987	12 21	07 23.91	+24 05.2					
1987	12 31	07 15.03	+24 21.9	1.807	2.782	171.0	3.2	15.8
1988	01 10	07 05.33	+24 35.9					
1988	01 20	06 55.97	+24 45.2	1.834	2.793	164.0	5.6	15.9
1988	01 30	06 48.06	+24 49.2					
1988	02 09	06 42.44	+24 48.4	1.970	2.804	140.7	12.9	16.4
1988	02 19	06 39.52	+24 43.8					
1988	02 29	06 39.45	+24 36.4	2.187	2.815	119.9	17.8	16.8
1988	03 10	06 42.08	+24 26.7					
1988	03 20	06 47.16	+24 14.5	2.451	2.826	101.7	20.2	17.1

1985 TT a,e,i = 3.97, 0.28, 7 Elements MPC 10634

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 28.73	+14 30.0	4.863	4.896	86.0	11.7	18.6
1987	10 22	07 31.45	+14 09.1					
1987	11 01	07 32.82	+13 50.6	4.573	4.918	104.6	11.3	18.5
1987	11 11	07 32.79	+13 35.2					
1987	11 21	07 31.31	+13 23.6	4.309	4.939	124.8	9.5	18.3
1987	12 01	07 28.40	+13 16.5					
1987	12 11	07 24.21	+13 14.1	4.111	4.959	146.1	6.4	18.1
1987	12 21	07 18.95	+13 16.5					
1987	12 31	07 12.95	+13 23.5	4.015	4.978	166.8	2.6	17.8
1988	01 10	07 06.63	+13 34.4					
1988	01 20	07 00.43	+13 48.6	4.043	4.995	163.7	3.2	17.9
1988	01 30	06 54.80	+14 05.0					
1988	02 09	06 50.10	+14 22.8	4.192	5.011	142.5	6.9	18.2
1988	02 19	06 46.61	+14 41.2					
1988	02 29	06 44.50	+14 59.2	4.438	5.026	121.4	9.7	18.4
1988	03 10	06 43.84	+15 16.3					
1988	03 20	06 44.59	+15 31.8	4.743	5.039	101.7	11.2	18.6

(3620) 1981 RU2 a,e,i = 2.99, 0.11, 9 Elements MPC 11858

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 21.47	+22 54.8	2.606	2.773	88.9	21.1	17.3
1987	10 22	07 29.31	+22 18.3					
1987	11 01	07 34.98	+21 43.0	2.356	2.791	105.5	20.0	17.1
1987	11 11	07 38.23	+21 10.1					
1987	11 21	07 38.84	+20 40.6	2.129	2.810	124.6	16.8	16.8
1987	12 01	07 36.68	+20 15.3					
1987	12 11	07 31.85	+19 54.0	1.957	2.830	146.3	11.1	16.4
1987	12 21	07 24.67	+19 36.5					
1987	12 31	07 15.84	+19 21.7	1.877	2.850	169.9	3.5	16.0
1988	01 10	07 06.33	+19 08.8					
1988	01 20	06 57.20	+18 57.2	1.911	2.872	164.5	5.3	16.2
1988	01 30	06 49.47	+18 46.8					
1988	02 09	06 43.88	+18 37.4	2.057	2.893	141.3	12.3	16.6
1988	02 19	06 40.82	+18 29.1					
1988	02 29	06 40.41	+18 21.5	2.285	2.915	120.4	17.0	17.0
1988	03 10	06 42.52	+18 13.9					
1988	03 20	06 46.93	+18 05.4	2.562	2.937	102.1	19.4	17.3

1986 WD a,e,i = 5.25, 0.06, 12 Elements MPC 11740

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	07 26.02	+12 55.7	4.938	4.977	86.4	11.5	17.1
1987	10 22	07 29.14	+12 22.9					
1987	11 01	07 30.98	+11 51.4	4.636	4.981	104.7	11.1	16.9
1987	11 11	07 31.48	+11 22.4					
1987	11 21	07 30.59	+10 56.5	4.362	4.986	124.3	9.4	16.7
1987	12 01	07 28.34	+10 34.8					
1987	12 11	07 24.85	+10 18.0	4.154	4.991	144.8	6.5	16.5
1987	12 21	07 20.34	+10 06.6					
1987	12 31	07 15.10	+10 00.9	4.044	4.996	163.8	3.1	16.3
1988	01 10	07 09.53	+10 00.7					
1988	01 20	07 04.03	+10 05.5	4.055	5.002	162.4	3.4	16.3
1988	01 30	06 59.04	+10 14.7					
1988	02 09	06 54.91	+10 27.1	4.184	5.007	143.1	6.8	16.6
1988	02 19	06 51.91	+10 41.8					
1988	02 29	06 50.22	+10 57.5	4.408	5.013	122.7	9.6	16.8
1988	03 10	06 49.91	+11 13.1					
1988	03 20	06 50.98	+11 27.9	4.694	5.019	103.4	11.1	17.0

1984 AB a,e,i = 1.58, 0.08, 15 Elements MPC 8679

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	10 12	06 54.67	+13 22.2	1.272	1.672	94.1	36.5	18.5
1987	10 22	07 09.97	+13 38.4					
1987	11 01	07 23.15	+14 05.5	1.070	1.659	107.0	34.9	18.0
1987	11 11	07 33.73	+14 50.2					
1987	11 21	07 41.03	+16 00.9	0.880	1.643	123.1	30.2	17.5
1987	12 01	07 44.23	+17 46.4					
1987	12 11	07 42.54	+20 13.6	0.723	1.625	143.9	20.9	16.8
1987	12 21	07 35.31	+23 23.0					
1987	12 31	07 22.70	+27 02.5	0.630	1.606	168.7	6.9	16.0
1988	01 10	07 06.30	+30 45.7					
1988	01 20	06 49.13	+34 02.5	0.628	1.586	158.8	13.0	16.2
1988	01 30	06 34.93	+36 34.2					
1988	02 09	06 26.47	+38 19.5	0.707	1.565	134.4	26.7	16.8
1988	02 19	06 24.83	+39 26.6					
1988	02 29	06 29.91	+40 04.7	0.832	1.545	115.6	35.3	17.3
1988	03 10	06 40.79	+40 19.9					
1988	03 20	06 56.43	+40 14.4	0.972	1.525	101.6	39.8	17.8

1986 TE a,e,i = 2.41, 0.10, 5 Elements MPC 11349

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	07 44.30	+21 06.3	2.202	2.615	103.3	21.7	17.7
1987	11 11	07 48.75	+20 38.6					
1987	11 21	07 50.51	+20 15.6	1.946	2.605	121.8	18.8	17.4
1987	12 01	07 49.31	+19 58.4					
1987	12 11	07 45.05	+19 47.2	1.737	2.594	143.2	13.1	16.9
1987	12 21	07 37.90	+19 41.6					
1987	12 31	07 28.40	+19 40.1	1.612	2.581	167.3	4.8	16.5
1988	01 10	07 17.58	+19 40.6					
1988	01 20	07 06.68	+19 41.4	1.599	2.566	166.8	5.0	16.4
1988	01 30	06 57.05	+19 41.4					
1988	02 09	06 49.75	+19 40.3	1.695	2.551	142.7	13.6	16.9
1988	02 19	06 45.40	+19 38.2					
1988	02 29	06 44.24	+19 35.1	1.874	2.534	121.3	19.5	17.2
1988	03 10	06 46.15	+19 30.6					
1988	03 20	06 50.87	+19 24.0	2.099	2.517	102.9	22.7	17.6
1988	03 30	06 58.06	+19 14.2					
1988	04 09	07 07.33	+19 00.2	2.340	2.498	87.1	23.6	17.8

1975 TS3 a,e,i = 3.13, 0.24, 10 Elements MPC 11430

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	07 53.76	+30 16.6	2.904	3.269	102.7	17.2	17.7
1987	11 11	07 56.62	+30 47.5					
1987	11 21	07 57.05	+31 25.1	2.683	3.313	121.9	14.7	17.5
1987	12 01	07 54.92	+32 08.4					
1987	12 11	07 50.24	+32 54.6	2.517	3.355	142.9	10.2	17.2
1987	12 21	07 43.25	+33 39.9					
1987	12 31	07 34.47	+34 19.6	2.444	3.397	163.0	4.8	17.0
1988	01 10	07 24.73	+34 49.6					
1988	01 20	07 14.99	+35 07.2	2.488	3.437	161.9	5.1	17.0
1988	01 30	07 06.24	+35 11.8					
1988	02 09	06 59.28	+35 04.9	2.647	3.475	141.7	10.1	17.4
1988	02 19	06 54.58	+34 48.9					
1988	02 29	06 52.37	+34 26.5	2.896	3.512	121.2	14.0	17.7
1988	03 10	06 52.61	+34 00.1					
1988	03 20	06 55.13	+33 31.1	3.199	3.548	102.4	15.9	18.0
1988	03 30	06 59.68	+33 00.4					
1988	04 09	07 05.98	+32 28.5	3.522	3.582	85.3	16.2	18.3

1985 TF3 a,e,i = 5.19, 0.15, 6 Elements MPC 11435

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	07 46.03	+26 56.7	4.691	5.022	103.9	11.1	17.5
1987	11 11	07 46.97	+27 02.5					
1987	11 21	07 46.39	+27 11.5	4.428	5.044	123.8	9.4	17.3
1987	12 01	07 44.29	+27 23.1					
1987	12 11	07 40.77	+27 36.3	4.227	5.067	145.1	6.4	17.1
1987	12 21	07 36.03	+27 49.7					
1987	12 31	07 30.38	+28 02.0	4.126	5.089	166.8	2.5	16.9
1988	01 10	07 24.24	+28 11.5					
1988	01 20	07 18.08	+28 17.4	4.147	5.111	167.1	2.5	16.9
1988	01 30	07 12.38	+28 19.1					
1988	02 09	07 07.55	+28 16.5	4.289	5.133	145.6	6.2	17.1
1988	02 19	07 03.91	+28 10.0					
1988	02 29	07 01.67	+28 00.4	4.531	5.155	124.4	9.1	17.4
1988	03 10	07 00.92	+27 48.2					
1988	03 20	07 01.64	+27 34.0	4.836	5.177	104.6	10.7	17.6
1988	03 30	07 03.79	+27 18.1					
1988	04 09	07 07.22	+27 00.8	5.169	5.199	86.2	11.1	17.8

1974 ST a,e,i = 3.16, 0.23, 2 Elements MPC 7838

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	07 53.14	+20 46.2	3.532	3.850	101.2	14.6	18.9
1987	11 11	07 54.80	+20 44.7					
1987	11 21	07 54.55	+20 48.6	3.259	3.861	121.0	12.7	18.7
1987	12 01	07 52.32	+20 58.1					
1987	12 11	07 48.17	+21 12.7	3.041	3.871	142.8	8.8	18.4
1987	12 21	07 42.26	+21 31.3					
1987	12 31	07 34.99	+21 52.3	2.916	3.878	166.3	3.4	18.1
1988	01 10	07 26.92	+22 13.7					
1988	01 20	07 18.72	+22 33.5	2.913	3.884	169.5	2.6	18.0
1988	01 30	07 11.10	+22 50.4					
1988	02 09	07 04.69	+23 03.8	3.032	3.888	145.9	8.2	18.4
1988	02 19	06 59.93	+23 13.4					
1988	02 29	06 57.10	+23 19.6	3.249	3.890	124.0	12.2	18.7
1988	03 10	06 56.27	+23 22.6					
1988	03 20	06 57.40	+23 22.7	3.527	3.891	104.1	14.4	18.9
1988	03 30	07 00.36	+23 20.0					
1988	04 09	07 04.97	+23 14.4	3.828	3.889	86.1	14.9	19.1

(3582) 1986 TT5 a,e,i = 3.00, 0.08, 11 Elements MPC 11735

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	07 49.58	+28 26.6	2.439	2.837	103.3	19.9	16.5
1987	11 11	07 54.63	+29 02.7					
1987	11 21	07 57.13	+29 47.9	2.202	2.848	121.7	17.2	16.2
1987	12 01	07 56.82	+30 41.7					
1987	12 11	07 53.59	+31 41.8	2.018	2.861	142.2	12.2	15.8
1987	12 21	07 47.55	+32 44.1					
1987	12 31	07 39.18	+33 42.8	1.920	2.874	162.6	5.9	15.5
1988	01 10	07 29.39	+34 31.6					
1988	01 20	07 19.32	+35 06.1	1.934	2.887	162.5	5.9	15.5
1988	01 30	07 10.25	+35 24.1					
1988	02 09	07 03.21	+35 26.8	2.057	2.901	142.3	12.0	15.9
1988	02 19	06 58.86	+35 17.1					
1988	02 29	06 57.48	+34 58.1	2.266	2.916	122.1	16.7	16.3
1988	03 10	06 59.02	+34 32.7					
1988	03 20	07 03.23	+34 02.8	2.526	2.930	104.0	19.3	16.6
1988	03 30	07 09.79	+33 29.3					
1988	04 09	07 18.33	+32 52.7	2.808	2.945	87.8	19.9	16.9

1986 UL1 a,e,i = 3.12, 0.17, 14 Elements MPC 11522

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	07 54.62	+22 36.2	3.328	3.653	101.2	15.5	17.2
1987	11 11	07 56.95	+22 55.6					
1987	11 21	07 57.28	+23 22.4	3.051	3.657	120.8	13.4	16.9
1987	12 01	07 55.50	+23 56.5					
1987	12 11	07 51.60	+24 36.9	2.829	3.659	142.5	9.4	16.6
1987	12 21	07 45.72	+25 21.8					
1987	12 31	07 38.24	+26 08.2	2.700	3.660	165.5	3.8	16.3
1988	01 10	07 29.76	+26 52.8					
1988	01 20	07 21.03	+27 32.4	2.691	3.660	168.1	3.2	16.2
1988	01 30	07 12.86	+28 04.9					
1988	02 09	07 05.98	+28 29.6	2.804	3.658	145.2	8.9	16.6
1988	02 19	07 00.92	+28 46.7					
1988	02 29	06 58.01	+28 57.1	3.013	3.654	123.4	13.1	16.9
1988	03 10	06 57.34	+29 02.0					
1988	03 20	06 58.85	+29 02.4	3.281	3.649	103.8	15.4	17.1
1988	03 30	07 02.38	+28 58.9					
1988	04 09	07 07.72	+28 51.8	3.571	3.642	86.1	15.9	17.3

1985 VS a,e,i = 5.27, 0.02, 29 Elements MPC 11619

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	07 47.67	-08 47.0	4.998	5.192	95.8	11.0	18.7
1987	11 11	07 48.60	-09 48.7					
1987	11 21	07 48.25	-10 46.4	4.743	5.195	112.1	10.2	18.5
1987	12 01	07 46.62	-11 37.7					
1987	12 11	07 43.78	-12 20.5	4.535	5.199	127.9	8.6	18.4
1987	12 21	07 39.90	-12 52.3					
1987	12 31	07 35.20	-13 11.3	4.402	5.202	140.8	6.9	18.2
1988	01 10	07 30.02	-13 16.4					
1988	01 20	07 24.73	-13 07.3	4.367	5.205	145.1	6.2	18.2
1988	01 30	07 19.73	-12 44.7					
1988	02 09	07 15.38	-12 10.6	4.435	5.208	137.8	7.3	18.3
1988	02 19	07 11.96	-11 27.4					
1988	02 29	07 09.70	-10 37.8	4.595	5.211	123.8	9.1	18.4
1988	03 10	07 08.72	-09 44.9					
1988	03 20	07 09.06	-08 51.2	4.823	5.215	107.8	10.5	18.6
1988	03 30	07 10.70	-07 59.1					
1988	04 09	07 13.55	-07 10.5	5.088	5.218	91.9	11.1	18.7

1976 QN1 a,e,i = 2.27, 0.08, 1 Elements MPC 8284

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	07 51.01	+19 16.3	1.876	2.289	101.4	25.2	18.2
1987 11 11	07 57.45	+18 53.6					
1987 11 21	08 00.99	+18 38.3	1.660	2.307	119.1	22.0	17.8
1987 12 01	08 01.29	+18 32.7					
1987 12 11	07 58.18	+18 37.8	1.483	2.324	139.9	15.8	17.4
1987 12 21	07 51.75	+18 53.2					
1987 12 31	07 42.53	+19 16.9	1.380	2.341	164.0	6.7	17.0
1988 01 10	07 31.59	+19 45.0					
1988 01 20	07 20.34	+20 13.7	1.382	2.357	170.0	4.1	16.9
1988 01 30	07 10.32	+20 39.4					
1988 02 09	07 02.77	+21 00.5	1.491	2.372	145.7	13.6	17.4
1988 02 19	06 58.39	+21 16.5					
1988 02 29	06 57.42	+21 27.4	1.684	2.386	124.2	20.1	17.9
1988 03 10	06 59.71	+21 33.3					
1988 03 20	07 04.92	+21 33.9	1.925	2.399	106.0	23.5	18.3
1988 03 30	07 12.67	+21 28.7					
1988 04 09	07 22.50	+21 17.3	2.187	2.411	90.3	24.5	18.6

(3654) 1949 QH1 a,e,i = 2.26, 0.20, 2 Elements MPC 12009

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	07 50.06	+18 30.4	1.547	1.998	101.5	29.1	18.0
1987 11 11	07 58.08	+17 53.3					
1987 11 21	08 02.78	+17 23.9	1.377	2.041	118.4	25.2	17.7
1987 12 01	08 03.77	+17 05.3					
1987 12 11	08 00.93	+16 59.0	1.242	2.087	138.9	18.1	17.3
1987 12 21	07 54.36	+17 05.6					
1987 12 31	07 44.76	+17 23.2	1.174	2.133	162.8	7.8	16.9
1988 01 10	07 33.44	+17 48.0					
1988 01 20	07 22.02	+18 16.0	1.204	2.180	170.1	4.4	16.8
1988 01 30	07 12.19	+18 43.1					
1988 02 09	07 05.19	+19 07.2	1.338	2.227	146.3	14.2	17.5
1988 02 19	07 01.60	+19 26.9					
1988 02 29	07 01.56	+19 41.7	1.551	2.273	125.3	20.8	18.0
1988 03 10	07 04.77	+19 51.0					
1988 03 20	07 10.82	+19 54.5	1.815	2.318	107.5	24.2	18.5
1988 03 30	07 19.26	+19 51.4					
1988 04 09	07 29.62	+19 41.4	2.101	2.362	92.2	25.1	18.9

(3575) 1984 DU2 a,e,i = 2.75, 0.13, 8 Elements MPC 11731

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	07 55.01	+24 46.3	2.589	2.952	101.5	19.2	17.2
1987 11 11	07 59.69	+25 03.4					
1987 11 21	08 02.03	+25 29.0	2.309	2.932	120.1	17.0	16.8
1987 12 01	08 01.77	+26 03.7					
1987 12 11	07 58.75	+26 46.7	2.078	2.911	141.1	12.3	16.5
1987 12 21	07 53.01	+27 35.4					
1987 12 31	07 44.90	+28 25.8	1.932	2.888	163.6	5.5	16.0
1988 01 10	07 35.17	+29 12.5					
1988 01 20	07 24.87	+29 50.8	1.897	2.865	167.3	4.3	15.9
1988 01 30	07 15.21	+30 17.6					
1988 02 09	07 07.30	+30 32.3	1.977	2.841	144.9	11.5	16.3
1988 02 19	07 01.92	+30 36.1					
1988 02 29	06 59.49	+30 31.1	2.147	2.817	123.5	17.1	16.6
1988 03 10	07 00.05	+30 19.5					
1988 03 20	07 03.43	+30 02.6	2.369	2.792	104.6	20.2	16.9
1988 03 30	07 09.37	+29 41.3					
1988 04 09	07 17.50	+29 15.7	2.611	2.766	88.1	21.2	17.1

9507 P-L a,e,i = 5.24, 0.08, 5 Elements MPC 9761

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	07 55.17	+25 54.4	4.983	5.275	101.7	10.6	18.2
1987 11 11	07 56.35	+26 02.4					
1987 11 21	07 56.11	+26 14.0	4.703	5.287	121.5	9.2	18.0
1987 12 01	07 54.43	+26 28.9					
1987 12 11	07 51.40	+26 46.2	4.482	5.300	142.7	6.5	17.8
1987 12 21	07 47.15	+27 04.6					
1987 12 31	07 41.96	+27 22.6	4.358	5.312	164.5	2.8	17.6
1988 01 10	07 36.20	+27 38.8					
1988 01 20	07 30.28	+27 51.8	4.354	5.324	169.5	1.9	17.5
1988 01 30	07 24.66	+28 00.8					
1988 02 09	07 19.75	+28 05.5	4.473	5.337	148.2	5.6	17.8
1988 02 19	07 15.88	+28 05.8					
1988 02 29	07 13.29	+28 02.4	4.695	5.349	126.9	8.5	18.0
1988 03 10	07 12.11	+27 55.6					
1988 03 20	07 12.34	+27 46.1	4.986	5.361	106.9	10.2	18.2
1988 03 30	07 13.98	+27 34.2					
1988 04 09	07 16.91	+27 20.3	5.309	5.373	88.3	10.7	18.4

(3568) 1936 UB a,e,i = 3.13, 0.25, 19 Elements MPC 11636

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 05.57	+35 10.6	3.041	3.375	101.0	16.8	18.1
1987 11 11	08 09.13	+36 09.4					
1987 11 21	08 10.28	+37 16.5	2.820	3.417	119.6	14.6	17.9
1987 12 01	08 08.79	+38 30.3					
1987 12 11	08 04.59	+39 47.1	2.653	3.458	139.0	10.8	17.7
1987 12 21	07 57.78	+41 01.7					
1987 12 31	07 48.79	+42 08.0	2.577	3.497	155.7	6.6	17.5
1988 01 10	07 38.41	+43 00.0					
1988 01 20	07 27.65	+43 33.9	2.614	3.534	155.7	6.6	17.6
1988 01 30	07 17.65	+43 48.3					
1988 02 09	07 09.38	+43 44.9	2.763	3.570	139.4	10.4	17.9
1988 02 19	07 03.46	+43 27.2					
1988 02 29	07 00.24	+42 59.1	3.000	3.604	120.4	13.7	18.2
1988 03 10	06 59.72	+42 24.4					
1988 03 20	07 01.73	+41 45.7	3.291	3.637	102.3	15.5	18.4
1988 03 30	07 05.99	+41 04.8					
1988 04 09	07 12.19	+40 22.6	3.603	3.667	85.7	15.8	18.7

(3600) 1978 SL7 a,e,i = 2.56, 0.14, 8 Elements MPC 11846

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	07 48.78	+30 58.7	1.916	2.359	103.9	24.1	17.3
1987 11 11	07 57.16	+31 19.3					
1987 11 21	08 02.71	+31 48.0	1.670	2.334	120.7	21.3	16.9
1987 12 01	08 04.98	+32 25.2					
1987 12 11	08 03.63	+33 09.1	1.468	2.311	140.1	15.9	16.4
1987 12 21	07 58.51	+33 55.4					
1987 12 31	07 49.97	+34 36.9	1.340	2.290	160.2	8.4	15.9
1988 01 10	07 39.04	+35 05.4					
1988 01 20	07 27.30	+35 14.2	1.311	2.271	163.3	7.2	15.8
1988 01 30	07 16.62	+35 01.1					
1988 02 09	07 08.60	+34 28.5	1.382	2.254	143.7	15.0	16.2
1988 02 19	07 04.18	+33 41.7					
1988 02 29	07 03.69	+32 46.0	1.532	2.240	123.9	21.5	16.6
1988 03 10	07 06.94	+31 45.3					
1988 03 20	07 13.48	+30 41.3	1.730	2.229	106.6	25.3	17.0
1988 03 30	07 22.83	+29 34.7					
1988 04 09	07 34.45	+28 24.9	1.949	2.221	91.9	26.8	17.2

1981 EN a,e,i = 2.37, 0.16, 10 Elements MPC 10768

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	07 40.65	+09 37.9	1.726	2.162	101.9	26.7	18.4
1987	11 11	07 49.12	+08 37.5					
1987	11 21	07 55.07	+07 42.1	1.484	2.129	117.5	24.3	18.0
1987	12 01	07 58.12	+06 56.2					
1987	12 11	07 57.98	+06 24.8	1.278	2.099	135.8	19.1	17.5
1987	12 21	07 54.53	+06 12.9					
1987	12 31	07 48.04	+06 25.1	1.135	2.072	155.9	11.2	17.0
1988	01 10	07 39.32	+07 03.0					
1988	01 20	07 29.64	+08 04.7	1.081	2.048	165.3	7.0	16.7
1988	01 30	07 20.65	+09 24.3					
1988	02 09	07 13.85	+10 53.5	1.124	2.027	147.7	15.1	17.0
1988	02 19	07 10.27	+12 24.0					
1988	02 29	07 10.42	+13 49.1	1.246	2.010	127.7	23.0	17.5
1988	03 10	07 14.30	+15 04.1					
1988	03 20	07 21.61	+16 06.2	1.418	1.998	110.5	27.8	17.9
1988	03 30	07 31.92	+16 53.6					
1988	04 09	07 44.74	+17 25.5	1.616	1.990	96.1	30.0	18.2

1986 QA3 a,e,i = 2.23, 0.13, 2 Elements MPC 12134

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	08 02.57	+20 25.9	2.156	2.511	99.0	23.0	18.1
1987	11 11	08 08.35	+20 13.3					
1987	11 21	08 11.51	+20 08.8	1.909	2.516	117.0	20.5	17.8
1987	12 01	08 11.71	+20 14.1					
1987	12 11	08 08.74	+20 29.7	1.700	2.519	137.9	15.2	17.4
1987	12 21	08 02.59	+20 54.8					
1987	12 31	07 53.63	+21 26.8	1.566	2.520	161.9	6.9	16.9
1988	01 10	07 42.71	+22 01.4					
1988	01 20	07 31.07	+22 34.0	1.539	2.518	172.3	3.0	16.7
1988	01 30	07 20.18	+23 00.9					
1988	02 09	07 11.31	+23 20.5	1.626	2.514	147.4	12.2	17.2
1988	02 19	07 05.33	+23 32.7					
1988	02 29	07 02.65	+23 38.3	1.801	2.507	125.2	18.8	17.6
1988	03 10	07 03.25	+23 38.3					
1988	03 20	07 06.88	+23 33.2	2.029	2.498	106.2	22.5	18.0
1988	03 30	07 13.19	+23 22.9					
1988	04 09	07 21.76	+23 07.2	2.277	2.486	89.9	23.8	18.2

1981 ET8 a,e,i = 2.40, 0.06, 4 Elements MPC 10769

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	07 55.79	+16 42.0	2.075	2.447	99.8	23.6	19.0
1987	11 11	08 02.29	+16 01.2					
1987	11 21	08 06.26	+15 25.6	1.820	2.435	117.1	21.2	18.6
1987	12 01	08 07.36	+14 57.6					
1987	12 11	08 05.41	+14 39.1	1.605	2.421	137.2	16.0	18.2
1987	12 21	08 00.36	+14 31.6					
1987	12 31	07 52.56	+14 35.5	1.461	2.408	159.9	8.0	17.7
1988	01 10	07 42.80	+14 49.4					
1988	01 20	07 32.26	+15 11.0	1.418	2.394	171.0	3.7	17.5
1988	01 30	07 22.37	+15 37.0					
1988	02 09	07 14.40	+16 04.4	1.483	2.381	148.5	12.5	17.9
1988	02 19	07 09.23	+16 30.7					
1988	02 29	07 07.32	+16 54.1	1.636	2.367	126.9	19.6	18.3
1988	03 10	07 08.68	+17 13.1					
1988	03 20	07 13.09	+17 26.5	1.843	2.354	108.3	23.7	18.7
1988	03 30	07 20.21	+17 33.3					
1988	04 09	07 29.63	+17 32.6	2.072	2.341	92.5	25.3	19.0

1980 OF a,e,i = 3.11, 0.16, 10 Elements MPC 6645

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	08 07.70	+26 05.2	3.087	3.387	98.9	16.8	18.4
1987	11 11	08 10.74	+25 57.2					
1987	11 21	08 11.58	+25 54.5	2.832	3.410	118.0	14.8	18.1
1987	12 01	08 10.08	+25 57.0					
1987	12 11	08 06.23	+26 03.5	2.625	3.432	139.3	10.8	17.9
1987	12 21	08 00.18	+26 12.3					
1987	12 31	07 52.34	+26 20.8	2.503	3.453	162.4	4.9	17.5
1988	01 10	07 43.35	+26 26.3					
1988	01 20	07 34.03	+26 26.7	2.497	3.473	171.1	2.5	17.4
1988	01 30	07 25.29	+26 20.9					
1988	02 09	07 17.90	+26 09.0	2.613	3.491	148.3	8.5	17.8
1988	02 19	07 12.40	+25 52.0					
1988	02 29	07 09.14	+25 31.3	2.828	3.508	126.4	13.1	18.2
1988	03 10	07 08.16	+25 07.9					
1988	03 20	07 09.38	+24 42.5	3.107	3.524	106.6	15.7	18.4
1988	03 30	07 12.62	+24 15.5					
1988	04 09	07 17.63	+23 46.7	3.413	3.538	88.9	16.4	18.7

1980 TY14 a,e,i = 2.24, 0.15, 6 Elements MPC 10153

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	07 52.97	+28 37.7	1.493	1.965	102.6	29.5	17.2
1987	11 11	08 03.46	+28 47.8					
1987	11 21	08 10.56	+29 06.9	1.314	1.988	118.7	25.8	16.8
1987	12 01	08 13.75	+29 36.2					
1987	12 11	08 12.63	+30 14.6	1.169	2.013	138.2	19.0	16.4
1987	12 21	08 07.10	+30 57.8					
1987	12 31	07 57.66	+31 38.2	1.090	2.042	160.0	9.5	16.0
1988	01 10	07 45.62	+32 06.3					
1988	01 20	07 32.94	+32 15.4	1.103	2.072	166.4	6.4	15.9
1988	01 30	07 21.75	+32 03.4					
1988	02 09	07 13.70	+31 33.8	1.214	2.104	145.8	15.3	16.5
1988	02 19	07 09.61	+30 52.2					
1988	02 29	07 09.60	+30 03.5	1.402	2.137	125.7	22.1	17.0
1988	03 10	07 13.31	+29 10.9					
1988	03 20	07 20.18	+28 15.7	1.639	2.171	108.5	25.8	17.5
1988	03 30	07 29.65	+27 18.0					
1988	04 09	07 41.15	+26 17.4	1.900	2.205	93.8	26.9	17.9

1980 CG a,e,i = 2.53, 0.29, 10 Elements MPC 11423

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	08 02.39	+11 16.1	1.839	2.194	97.1	26.7	17.1
1987	11 11	08 09.10	+10 44.6					
1987	11 21	08 12.91	+10 23.5	1.669	2.261	114.2	23.5	16.9
1987	12 01	08 13.54	+10 16.2					
1987	12 11	08 10.90	+10 25.3	1.529	2.327	134.5	17.6	16.6
1987	12 21	08 05.12	+10 52.3					
1987	12 31	07 56.72	+11 36.4	1.455	2.394	157.5	9.0	16.2
1988	01 10	07 46.68	+12 34.4					
1988	01 20	07 36.24	+13 41.0	1.483	2.459	170.7	3.7	16.1
1988	01 30	07 26.76	+14 50.1					
1988	02 09	07 19.35	+15 56.3	1.623	2.524	149.7	11.4	16.7
1988	02 19	07 14.66	+16 56.1					
1988	02 29	07 12.96	+17 47.5	1.855	2.587	128.2	17.5	17.2
1988	03 10	07 14.18	+18 29.6					
1988	03 20	07 18.02	+19 02.2	2.146	2.648	109.3	20.8	17.7
1988	03 30	07 24.17	+19 25.4					
1988	04 09	07 32.23	+19 39.4	2.466	2.707	92.8	21.7	18.0

1975 UF a,e,i = 3.16, 0.20, 2 Elements MPC 12004

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 02.72	+19 45.2	2.568	2.891	98.8	19.8	18.7
1987 11 11	08 07.40	+19 34.6					
1987 11 21	08 09.74	+19 31.3	2.343	2.930	117.2	17.4	18.5
1987 12 01	08 09.55	+19 36.2					
1987 12 11	08 06.80	+19 49.6	2.161	2.969	138.2	12.8	18.2
1987 12 21	08 01.63	+20 10.5					
1987 12 31	07 54.44	+20 36.8	2.059	3.008	161.6	5.9	17.9
1988 01 10	07 45.96	+21 05.5					
1988 01 20	07 37.07	+21 33.5	2.067	3.048	173.9	2.0	17.7
1988 01 30	07 28.78	+21 58.2					
1988 02 09	07 21.96	+22 17.9	2.193	3.087	150.0	9.2	18.2
1988 02 19	07 17.20	+22 32.2					
1988 02 29	07 14.85	+22 41.0	2.416	3.126	128.1	14.4	18.6
1988 03 10	07 14.93	+22 44.9					
1988 03 20	07 17.33	+22 44.0	2.702	3.165	108.7	17.3	19.0
1988 03 30	07 21.83	+22 38.4					
1988 04 09	07 28.15	+22 28.3	3.017	3.203	91.5	18.2	19.3

4805 P-L a,e,i = 2.39, 0.16, 2 Elements MPC 7943

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 05.90	+22 56.9	2.205	2.552	98.7	22.6	19.7
1987 11 11	08 12.93	+22 47.4					
1987 11 21	08 17.56	+22 45.4	1.924	2.520	116.1	20.6	19.3
1987 12 01	08 19.40	+22 52.6					
1987 12 11	08 18.16	+23 09.7	1.680	2.487	136.3	15.9	18.9
1987 12 21	08 13.67	+23 35.8					
1987 12 31	08 06.08	+24 08.3	1.508	2.453	159.3	8.1	18.3
1988 01 10	07 56.05	+24 42.3					
1988 01 20	07 44.68	+25 12.4	1.437	2.418	173.6	2.6	17.9
1988 01 30	07 33.49	+25 34.0					
1988 02 09	07 23.99	+25 45.1	1.477	2.382	149.7	12.0	18.4
1988 02 19	07 17.28	+25 45.9					
1988 02 29	07 14.02	+25 38.0	1.606	2.345	127.5	19.6	18.7
1988 03 10	07 14.34	+25 23.1					
1988 03 20	07 18.03	+25 02.4	1.790	2.308	108.5	24.1	19.1
1988 03 30	07 24.74	+24 36.0					
1988 04 09	07 34.03	+24 03.8	1.995	2.272	92.5	26.1	19.3

1984 DF1 a,e,i = 2.68, 0.11, 4 Elements MPC 9474

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 02.95	+24 31.5	2.148	2.513	99.7	22.9	18.1
1987 11 11	08 10.59	+24 20.9					
1987 11 21	08 15.77	+24 17.0	1.885	2.492	116.8	20.7	17.8
1987 12 01	08 18.11	+24 21.3					
1987 12 11	08 17.37	+24 34.0	1.662	2.472	136.7	15.9	17.3
1987 12 21	08 13.43	+24 54.0					
1987 12 31	08 06.49	+25 18.2	1.509	2.454	159.3	8.2	16.8
1988 01 10	07 57.27	+25 41.9					
1988 01 20	07 46.89	+26 00.3	1.456	2.436	173.3	2.7	16.5
1988 01 30	07 36.82	+26 09.5					
1988 02 09	07 28.45	+26 08.3	1.512	2.421	150.6	11.5	16.9
1988 02 19	07 22.79	+25 57.6					
1988 02 29	07 20.39	+25 39.0	1.658	2.407	128.9	18.7	17.3
1988 03 10	07 21.35	+25 14.4					
1988 03 20	07 25.42	+24 44.7	1.861	2.396	110.2	23.0	17.7
1988 03 30	07 32.28	+24 10.2					
1988 04 09	07 41.48	+23 30.7	2.092	2.386	94.3	24.7	18.0

(3556) 1964 UO a,e,i = 3.14, 0.23, 9 Elements MPC 11625

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	08 14.48	+12 52.8	2.600	2.856	94.5	20.3	17.7
1987	11 11	08 19.26	+11 56.5					
1987	11 21	08 21.78	+11 05.3	2.380	2.902	112.3	18.4	17.5
1987	12 01	08 21.87	+10 21.2					
1987	12 11	08 19.51	+09 46.0	2.195	2.949	132.3	14.3	17.3
1987	12 21	08 14.78	+09 21.2					
1987	12 31	08 08.05	+09 08.0	2.081	2.995	153.8	8.3	17.0
1988	01 10	07 59.92	+09 06.2					
1988	01 20	07 51.20	+09 14.9	2.071	3.042	168.5	3.7	16.8
1988	01 30	07 42.84	+09 32.0					
1988	02 09	07 35.67	+09 54.7	2.178	3.088	152.7	8.4	17.1
1988	02 19	07 30.33	+10 20.3					
1988	02 29	07 27.18	+10 46.1	2.386	3.134	131.8	13.6	17.6
1988	03 10	07 26.35	+11 10.1					
1988	03 20	07 27.76	+11 30.6	2.664	3.179	112.4	16.8	17.9
1988	03 30	07 31.24	+11 46.2					
1988	04 09	07 36.54	+11 56.3	2.978	3.224	95.0	18.0	18.2

1970 QA1 a,e,i = 2.19, 0.18, 4 Elements MPC 11052

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	08 26.20	+22 14.6	2.240	2.512	94.0	23.2	18.2
1987	11 11	08 32.91	+21 53.3					
1987	11 21	08 37.09	+21 39.7	1.996	2.531	111.5	21.3	17.9
1987	12 01	08 38.40	+21 35.4					
1987	12 11	08 36.59	+21 41.1	1.781	2.546	131.8	16.8	17.6
1987	12 21	08 31.52	+21 55.9					
1987	12 31	08 23.38	+22 17.6	1.632	2.558	155.2	9.3	17.1
1988	01 10	08 12.82	+22 41.7					
1988	01 20	08 00.90	+23 03.7	1.584	2.567	177.3	1.0	16.7
1988	01 30	07 49.04	+23 19.4					
1988	02 09	07 38.65	+23 26.7	1.652	2.573	153.5	9.8	17.2
1988	02 19	07 30.76	+23 25.7					
1988	02 29	07 25.99	+23 17.6	1.819	2.576	130.6	17.0	17.6
1988	03 10	07 24.48	+23 03.7					
1988	03 20	07 26.06	+22 45.0	2.049	2.576	110.7	21.2	18.0
1988	03 30	07 30.41	+22 21.9					
1988	04 09	07 37.13	+21 54.5	2.307	2.572	93.6	22.9	18.3

(3626) 1929 PA a,e,i = 3.14, 0.16, 4 Elements MPC 11861

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	08 24.90	+18 53.3	3.342	3.544	93.5	16.2	17.9
1987	11 11	08 28.52	+18 33.0					
1987	11 21	08 30.26	+18 18.5	3.068	3.561	112.2	14.9	17.7
1987	12 01	08 29.96	+18 10.6					
1987	12 11	08 27.58	+18 09.6	2.832	3.577	133.1	11.6	17.5
1987	12 21	08 23.16	+18 15.2					
1987	12 31	08 16.94	+18 26.4	2.672	3.592	155.9	6.4	17.1
1988	01 10	08 09.38	+18 41.4					
1988	01 20	08 01.09	+18 58.0	2.621	3.605	178.5	0.4	16.8
1988	01 30	07 52.84	+19 14.3					
1988	02 09	07 45.36	+19 28.3	2.695	3.617	155.8	6.4	17.2
1988	02 19	07 39.28	+19 39.1					
1988	02 29	07 35.02	+19 46.1	2.877	3.627	133.2	11.5	17.5
1988	03 10	07 32.82	+19 49.2					
1988	03 20	07 32.69	+19 48.3	3.135	3.637	112.7	14.6	17.8
1988	03 30	07 34.55	+19 43.4					
1988	04 09	07 38.22	+19 34.4	3.431	3.644	94.2	15.9	18.0

1986 RD1 a,e,i = 2.80, 0.20, 8 Elements MPC 11857

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 25.99	+24 43.4	2.433	2.701	94.6	21.5	18.0
1987 11 11	08 32.08	+24 23.2					
1987 11 21	08 35.66	+24 10.0	2.210	2.743	112.4	19.5	17.8
1987 12 01	08 36.48	+24 04.6					
1987 12 11	08 34.40	+24 06.8	2.020	2.784	132.8	15.0	17.5
1987 12 21	08 29.43	+24 15.1					
1987 12 31	08 21.87	+24 26.7	1.900	2.825	155.8	8.2	17.2
1988 01 10	08 12.39	+24 37.8					
1988 01 20	08 01.97	+24 44.8	1.883	2.865	175.7	1.5	16.8
1988 01 30	07 51.79	+24 45.1					
1988 02 09	07 42.95	+24 37.8	1.985	2.905	154.2	8.5	17.3
1988 02 19	07 36.27	+24 23.7					
1988 02 29	07 32.21	+24 03.9	2.188	2.943	131.8	14.5	17.8
1988 03 10	07 30.87	+23 39.9					
1988 03 20	07 32.14	+23 12.5	2.460	2.980	112.0	18.0	18.1
1988 03 30	07 35.75	+22 42.3					
1988 04 09	07 41.38	+22 09.2	2.767	3.016	94.5	19.3	18.5

1983 BE a,e,i = 2.88, 0.13, 13 Elements MPC 11853

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 15.22	+16 20.8	2.566	2.834	95.2	20.4	17.2
1987 11 11	08 21.82	+16 19.8					
1987 11 21	08 26.42	+16 28.4	2.274	2.807	112.7	19.0	16.9
1987 12 01	08 28.73	+16 48.9					
1987 12 11	08 28.55	+17 22.9	2.018	2.781	132.6	15.1	16.5
1987 12 21	08 25.74	+18 11.1					
1987 12 31	08 20.39	+19 12.3	1.831	2.755	155.3	8.6	16.0
1988 01 10	08 12.94	+20 23.0					
1988 01 20	08 04.10	+21 38.1	1.746	2.729	178.8	0.4	15.5
1988 01 30	07 54.96	+22 51.2					
1988 02 09	07 46.68	+23 57.1	1.777	2.705	155.2	8.8	15.9
1988 02 19	07 40.25	+24 52.3					
1988 02 29	07 36.40	+25 35.4	1.910	2.680	132.4	15.8	16.3
1988 03 10	07 35.45	+26 06.5					
1988 03 20	07 37.43	+26 26.4	2.110	2.657	112.6	20.2	16.6
1988 03 30	07 42.17	+26 36.0					
1988 04 09	07 49.35	+26 35.9	2.343	2.635	95.5	22.2	16.9

(3545) 1981 WK2 a,e,i = 2.87, 0.06, 3 Elements MPC 11513

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 22.89	+21 39.6	2.758	3.005	94.6	19.2	17.6
1987 11 11	08 28.52	+21 32.6					
1987 11 21	08 32.03	+21 33.4	2.490	3.012	112.6	17.6	17.4
1987 12 01	08 33.18	+21 43.0					
1987 12 11	08 31.82	+22 01.6	2.259	3.017	133.0	13.8	17.1
1987 12 21	08 27.91	+22 28.4					
1987 12 31	08 21.65	+23 01.3	2.098	3.022	155.7	7.7	16.7
1988 01 10	08 13.54	+23 36.6					
1988 01 20	08 04.34	+24 10.3	2.043	3.026	176.3	1.2	16.3
1988 01 30	07 55.07	+24 38.7					
1988 02 09	07 46.75	+24 59.3	2.107	3.029	154.9	7.9	16.7
1988 02 19	07 40.21	+25 11.3					
1988 02 29	07 36.02	+25 14.9	2.274	3.032	132.4	14.0	17.1
1988 03 10	07 34.41	+25 11.3					
1988 03 20	07 35.36	+25 01.4	2.511	3.034	112.4	17.7	17.4
1988 03 30	07 38.71	+24 45.9					
1988 04 09	07 44.18	+24 25.3	2.783	3.035	94.8	19.2	17.7

1985 NE a,e,i = 2.54, 0.19, 7 Elements MPC 10530

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 27.46	+26 31.9	2.623	2.880	94.7	20.1	18.3
1987 11 11	08 33.95	+26 30.7					
1987 11 21	08 38.26	+26 37.6	2.326	2.851	112.3	18.7	17.9
1987 12 01	08 40.05	+26 53.5					
1987 12 11	08 39.06	+27 18.3	2.064	2.821	132.2	15.0	17.6
1987 12 21	08 35.09	+27 50.6					
1987 12 31	08 28.22	+28 26.8	1.870	2.789	154.2	8.8	17.1
1988 01 10	08 18.89	+29 01.8					
1988 01 20	08 07.95	+29 29.8	1.779	2.755	170.9	3.2	16.7
1988 01 30	07 56.64	+29 45.9					
1988 02 09	07 46.30	+29 47.9	1.803	2.719	152.9	9.5	17.0
1988 02 19	07 38.05	+29 36.3					
1988 02 29	07 32.67	+29 13.3	1.927	2.681	130.8	16.3	17.3
1988 03 10	07 30.47	+28 41.9					
1988 03 20	07 31.41	+28 04.4	2.117	2.642	111.0	20.6	17.6
1988 03 30	07 35.24	+27 22.2					
1988 04 09	07 41.62	+26 35.9	2.336	2.602	93.8	22.6	17.9

1982 UY6 a,e,i = 2.63, 0.25, 7 Elements MPC 11515

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 36.03	+25 38.1	2.791	3.004	92.6	19.3	19.1
1987 11 11	08 41.44	+25 45.1					
1987 11 21	08 44.60	+26 01.4	2.548	3.042	110.8	17.7	18.9
1987 12 01	08 45.28	+26 27.3					
1987 12 11	08 43.31	+27 02.2	2.338	3.078	131.2	13.9	18.6
1987 12 21	08 38.64	+27 44.0					
1987 12 31	08 31.46	+28 29.1	2.199	3.110	153.5	8.1	18.3
1988 01 10	08 22.30	+29 12.3					
1988 01 20	08 11.96	+29 48.6	2.166	3.141	170.4	3.0	18.0
1988 01 30	08 01.52	+30 13.9					
1988 02 09	07 52.05	+30 26.3	2.254	3.168	153.7	7.9	18.4
1988 02 19	07 44.41	+30 26.3					
1988 02 29	07 39.18	+30 15.6	2.446	3.193	131.8	13.4	18.7
1988 03 10	07 36.58	+29 56.7					
1988 03 20	07 36.57	+29 31.7	2.711	3.216	111.8	16.7	19.1
1988 03 30	07 38.97	+29 02.1					
1988 04 09	07 43.48	+28 28.7	3.009	3.235	93.9	18.0	19.4

1976 YU5 a,e,i = 2.33, 0.14, 5 Elements MPC 11430

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 32.00	+16 28.4	2.301	2.526	91.3	23.1	18.3
1987 11 11	08 38.96	+15 40.0					
1987 11 21	08 43.58	+14 57.4	2.060	2.549	108.3	21.6	18.0
1987 12 01	08 45.55	+14 22.9					
1987 12 11	08 44.66	+13 58.1	1.844	2.569	127.9	17.6	17.7
1987 12 21	08 40.78	+13 44.5					
1987 12 31	08 34.05	+13 42.4	1.686	2.588	150.5	10.8	17.3
1988 01 10	08 24.98	+13 50.7					
1988 01 20	08 14.44	+14 07.3	1.625	2.604	173.1	2.6	16.9
1988 01 30	08 03.65	+14 28.9					
1988 02 09	07 53.87	+14 51.9	1.678	2.619	157.9	8.1	17.2
1988 02 19	07 46.12	+15 13.8					
1988 02 29	07 41.07	+15 32.4	1.835	2.631	135.0	15.4	17.7
1988 03 10	07 38.99	+15 46.4					
1988 03 20	07 39.81	+15 54.9	2.063	2.641	114.9	20.0	18.1
1988 03 30	07 43.30	+15 57.3					
1988 04 09	07 49.11	+15 53.2	2.326	2.648	97.4	22.0	18.4

1979 OB9 a,e,i = 2.32, 0.18, 5 Elements MPC 10633

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 26.83	+13 45.6	1.859	2.135	91.8	27.7	18.3
1987 11 11	08 36.24	+12 41.2					
1987 11 21	08 43.03	+11 43.0	1.664	2.175	107.5	25.7	18.0
1987 12 01	08 46.86	+10 54.2					
1987 12 11	08 47.48	+10 18.1	1.488	2.216	126.1	21.1	17.7
1987 12 21	08 44.72	+09 57.3					
1987 12 31	08 38.70	+09 53.8	1.363	2.257	147.8	13.4	17.3
1988 01 10	08 30.01	+10 07.7					
1988 01 20	08 19.64	+10 36.7	1.323	2.298	169.4	4.5	17.0
1988 01 30	08 08.99	+11 16.5					
1988 02 09	07 59.53	+12 01.4	1.391	2.338	158.9	8.7	17.3
1988 02 19	07 52.36	+12 46.3					
1988 02 29	07 48.19	+13 27.1	1.557	2.378	136.9	16.5	17.8
1988 03 10	07 47.22	+14 01.1					
1988 03 20	07 49.29	+14 26.9	1.792	2.417	117.3	21.5	18.3
1988 03 30	07 54.10	+14 43.4					
1988 04 09	08 01.23	+14 50.4	2.065	2.454	100.5	23.7	18.7

(3525) Paul a,e,i = 3.09, 0.09, 3 Elements MPC 11433

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 27.21	+18 58.0	2.572	2.805	93.0	20.7	17.1
1987 11 11	08 34.26	+18 25.4					
1987 11 21	08 39.21	+17 58.8	2.308	2.805	110.1	19.3	16.8
1987 12 01	08 41.82	+17 39.8					
1987 12 11	08 41.90	+17 29.7	2.074	2.807	129.6	15.7	16.5
1987 12 21	08 39.37	+17 28.8					
1987 12 31	08 34.34	+17 36.8	1.904	2.809	151.7	9.5	16.1
1988 01 10	08 27.24	+17 51.8					
1988 01 20	08 18.79	+18 11.0	1.831	2.813	175.6	1.5	15.6
1988 01 30	08 09.99	+18 31.1					
1988 02 09	08 01.90	+18 49.1	1.873	2.819	159.7	7.0	16.0
1988 02 19	07 55.43	+19 03.0					
1988 02 29	07 51.24	+19 11.5	2.019	2.826	137.0	13.8	16.4
1988 03 10	07 49.63	+19 14.2					
1988 03 20	07 50.63	+19 11.0	2.240	2.834	116.9	18.3	16.7
1988 03 30	07 54.10	+19 01.8					
1988 04 09	07 59.75	+18 46.4	2.502	2.843	99.4	20.3	17.0

(3614) 1983 AE1 a,e,i = 2.98, 0.13, 17 Elements MPC 11851

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 38.24	+17 48.7	3.019	3.180	90.2	18.2	16.5
1987 11 11	08 43.30	+16 54.5					
1987 11 21	08 46.45	+16 03.4	2.712	3.159	107.9	17.3	16.3
1987 12 01	08 47.43	+15 16.6					
1987 12 11	08 46.10	+14 34.9	2.434	3.136	127.8	14.4	15.9
1987 12 21	08 42.37	+13 59.3					
1987 12 31	08 36.35	+13 30.1	2.222	3.112	149.9	9.1	15.5
1988 01 10	08 28.41	+13 07.2					
1988 01 20	08 19.17	+12 50.0	2.111	3.088	171.5	2.7	15.1
1988 01 30	08 09.50	+12 37.6					
1988 02 09	08 00.37	+12 28.5	2.121	3.063	159.2	6.6	15.3
1988 02 19	07 52.63	+12 21.7					
1988 02 29	07 46.95	+12 15.7	2.241	3.038	136.6	12.9	15.6
1988 03 10	07 43.67	+12 09.2					
1988 03 20	07 42.90	+12 01.3	2.438	3.012	116.0	17.3	15.9
1988 03 30	07 44.55	+11 50.6					
1988 04 09	07 48.41	+11 36.3	2.677	2.985	98.0	19.4	16.2

1978 JT1 a,e,i = 3.20, 0.17, 2 Elements MPC 11144

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 36.73	+20 15.8	3.561	3.716	91.1	15.5	18.9
1987 11 11	08 40.93	+20 05.7					
1987 11 21	08 43.41	+20 02.0	3.254	3.705	109.7	14.5	18.6
1987 12 01	08 43.99	+20 05.7					
1987 12 11	08 42.59	+20 16.9	2.980	3.693	130.1	11.8	18.3
1987 12 21	08 39.16	+20 35.2					
1987 12 31	08 33.83	+20 59.4	2.778	3.679	152.6	7.1	18.0
1988 01 10	08 26.96	+21 27.0					
1988 01 20	08 19.05	+21 55.5	2.683	3.665	176.0	1.1	17.6
1988 01 30	08 10.81	+22 21.9					
1988 02 09	08 02.99	+22 43.8	2.710	3.649	159.1	5.5	17.9
1988 02 19	07 56.27	+22 59.9					
1988 02 29	07 51.23	+23 09.6	2.850	3.631	136.3	10.9	18.2
1988 03 10	07 48.16	+23 12.9					
1988 03 20	07 47.21	+23 10.4	3.071	3.612	115.4	14.4	18.4
1988 03 30	07 48.34	+23 02.5					
1988 04 09	07 51.42	+22 49.6	3.335	3.592	96.7	16.1	18.7

1986 TJ1 a,e,i = 2.68, 0.05, 8 Elements MPC 11737

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 35.36	+17 20.3	2.557	2.755	90.7	21.1	17.1
1987 11 11	08 42.34	+16 29.8					
1987 11 21	08 47.24	+15 43.6	2.280	2.746	107.6	20.1	16.9
1987 12 01	08 49.79	+15 03.7					
1987 12 11	08 49.77	+14 31.4	2.029	2.736	126.9	16.7	16.5
1987 12 21	08 47.04	+14 08.0					
1987 12 31	08 41.64	+13 54.1	1.837	2.726	148.8	10.8	16.1
1988 01 10	08 33.95	+13 49.2					
1988 01 20	08 24.66	+13 51.9	1.739	2.716	171.6	3.0	15.6
1988 01 30	08 14.79	+14 00.0					
1988 02 09	08 05.48	+14 10.7	1.755	2.705	160.7	6.9	15.8
1988 02 19	07 57.77	+14 21.6					
1988 02 29	07 52.42	+14 30.7	1.877	2.695	137.8	14.3	16.2
1988 03 10	07 49.82	+14 36.5					
1988 03 20	07 50.02	+14 37.9	2.075	2.684	117.5	19.2	16.6
1988 03 30	07 52.89	+14 34.1					
1988 04 09	07 58.16	+14 24.3	2.313	2.673	99.8	21.7	16.9

(3532) Tracie a,e,i = 2.91, 0.06, 10 Elements MPC 11437

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 34.62	+27 20.5	2.606	2.842	93.4	20.4	17.2
1987 11 11	08 42.29	+27 39.3					
1987 11 21	08 47.82	+28 08.4	2.352	2.852	110.5	18.9	17.0
1987 12 01	08 50.89	+28 48.7					
1987 12 11	08 51.27	+29 39.9	2.131	2.863	129.8	15.3	16.7
1987 12 21	08 48.77	+30 39.8					
1987 12 31	08 43.46	+31 44.3	1.977	2.874	150.5	9.7	16.3
1988 01 10	08 35.73	+32 47.1					
1988 01 20	08 26.33	+33 41.3	1.921	2.885	165.8	4.8	16.1
1988 01 30	08 16.35	+34 20.9					
1988 02 09	08 07.04	+34 42.4	1.979	2.897	153.7	8.7	16.3
1988 02 19	07 59.47	+34 45.9					
1988 02 29	07 54.40	+34 33.5	2.138	2.908	133.3	14.4	16.7
1988 03 10	07 52.17	+34 08.5					
1988 03 20	07 52.79	+33 34.1	2.368	2.919	114.1	18.1	17.0
1988 03 30	07 56.09	+32 52.6					
1988 04 09	08 01.71	+32 05.7	2.635	2.930	97.0	19.8	17.3

(3539) Weimar a,e,i = 2.66, 0.16, 14 Elements MPC 11506

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	08 36.92	+10 43.3	2.892	3.037	88.7	19.1	18.7
1987	11 11	08 42.86	+10 19.4					
1987	11 21	08 46.97	+10 03.0	2.598	3.024	106.1	18.3	18.4
1987	12 01	08 49.01	+09 56.6					
1987	12 11	08 48.81	+10 02.2	2.328	3.010	125.7	15.4	18.1
1987	12 21	08 46.24	+10 21.8					
1987	12 31	08 41.34	+10 56.1	2.116	2.994	147.7	10.1	17.7
1988	01 10	08 34.42	+11 44.5					
1988	01 20	08 26.01	+12 44.6	2.001	2.976	170.5	3.1	17.2
1988	01 30	08 16.96	+13 52.2					
1988	02 09	08 08.24	+15 02.2	2.005	2.956	161.4	6.1	17.4
1988	02 19	08 00.77	+16 09.9					
1988	02 29	07 55.30	+17 11.3	2.121	2.935	138.3	13.0	17.7
1988	03 10	07 52.25	+18 04.2					
1988	03 20	07 51.79	+18 47.5	2.318	2.912	117.3	17.7	18.1
1988	03 30	07 53.87	+19 20.7					
1988	04 09	07 58.29	+19 44.0	2.559	2.888	98.9	20.0	18.3

1984 HK1 a,e,i = 2.87, 0.04, 1 Elements MPC 12001

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	08 34.00	+20 00.2	2.556	2.769	91.7	21.0	17.7
1987	11 11	08 41.38	+19 35.0					
1987	11 21	08 46.67	+19 16.8	2.293	2.773	108.7	19.7	17.4
1987	12 01	08 49.59	+19 07.3					
1987	12 11	08 49.94	+19 07.4	2.059	2.778	128.2	16.2	17.1
1987	12 21	08 47.59	+19 17.6					
1987	12 31	08 42.62	+19 36.7	1.886	2.783	150.3	10.1	16.7
1988	01 10	08 35.40	+20 02.3					
1988	01 20	08 26.63	+20 30.7	1.808	2.789	174.4	2.0	16.2
1988	01 30	08 17.32	+20 57.7					
1988	02 09	08 08.60	+21 19.7	1.844	2.795	160.8	6.7	16.5
1988	02 19	08 01.44	+21 34.7					
1988	02 29	07 56.58	+21 41.9	1.987	2.801	137.8	13.7	16.9
1988	03 10	07 54.38	+21 41.5					
1988	03 20	07 54.88	+21 33.9	2.206	2.808	117.5	18.3	17.3
1988	03 30	07 57.95	+21 19.6					
1988	04 09	08 03.29	+20 59.0	2.466	2.815	99.8	20.5	17.6

2630 P-L a,e,i = 2.42, 0.19, 3 Elements MPC 8144

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	08 27.01	+22 29.7	1.761	2.079	93.9	28.5	19.0
1987	11 11	08 38.29	+22 09.9					
1987	11 21	08 46.88	+21 59.2	1.569	2.113	109.3	26.2	18.7
1987	12 01	08 52.35	+22 00.3					
1987	12 11	08 54.36	+22 14.9	1.400	2.150	127.9	21.2	18.4
1987	12 21	08 52.65	+22 43.0					
1987	12 31	08 47.25	+23 22.1	1.283	2.190	149.9	13.0	18.0
1988	01 10	08 38.71	+24 06.4					
1988	01 20	08 28.07	+24 48.8	1.251	2.231	172.7	3.2	17.5
1988	01 30	08 16.93	+25 22.0					
1988	02 09	08 06.96	+25 41.6	1.325	2.273	158.9	9.0	18.0
1988	02 19	07 59.47	+25 46.8					
1988	02 29	07 55.25	+25 39.1	1.494	2.316	136.5	17.1	18.5
1988	03 10	07 54.47	+25 20.8					
1988	03 20	07 56.93	+24 54.0	1.731	2.359	117.2	22.1	19.1
1988	03 30	08 02.26	+24 20.1					
1988	04 09	08 09.97	+23 39.8	2.005	2.401	100.7	24.2	19.5

1986 QL1 a,e,i = 2.53, 0.16, 5 Elements MPC 12133

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 19.29	+26 11.6	1.779	2.132	96.4	27.6	17.0
1987 11 11	08 31.41	+26 00.2					
1987 11 21	08 41.03	+25 56.4	1.557	2.128	111.5	25.6	16.6
1987 12 01	08 47.70	+26 02.7					
1987 12 11	08 51.00	+26 20.4	1.363	2.129	129.4	20.9	16.2
1987 12 21	08 50.58	+26 49.1					
1987 12 31	08 46.34	+27 25.6	1.223	2.133	150.3	13.2	15.8
1988 01 10	08 38.71	+28 03.5					
1988 01 20	08 28.67	+28 35.0	1.166	2.142	170.0	4.6	15.3
1988 01 30	08 17.85	+28 52.4					
1988 02 09	08 08.07	+28 51.8	1.209	2.154	157.5	10.1	15.6
1988 02 19	08 00.80	+28 33.8					
1988 02 29	07 56.99	+28 01.1	1.344	2.170	136.2	18.4	16.2
1988 03 10	07 56.86	+27 17.7					
1988 03 20	08 00.22	+26 26.3	1.543	2.189	117.6	23.8	16.6
1988 03 30	08 06.63	+25 28.5					
1988 04 09	08 15.58	+24 25.3	1.779	2.212	101.8	26.3	17.0

(3625) 1984 HZ1 a,e,i = 3.05, 0.12, 5 Elements MPC 11860

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 44.79	+13 01.2	3.239	3.344	87.4	17.2	17.4
1987 11 11	08 49.87	+12 23.4					
1987 11 21	08 53.20	+11 51.1	2.961	3.357	105.1	16.5	17.2
1987 12 01	08 54.57	+11 26.1					
1987 12 11	08 53.89	+11 09.6	2.708	3.369	124.9	13.9	16.9
1987 12 21	08 51.09	+11 02.7					
1987 12 31	08 46.28	+11 05.9	2.515	3.380	146.7	9.2	16.6
1988 01 10	08 39.79	+11 18.8					
1988 01 20	08 32.10	+11 40.0	2.419	3.389	168.8	3.2	16.3
1988 01 30	08 23.92	+12 07.2					
1988 02 09	08 16.05	+12 37.7	2.442	3.398	163.0	4.9	16.4
1988 02 19	08 09.20	+13 08.6					
1988 02 29	08 03.97	+13 37.5	2.580	3.405	140.7	10.6	16.7
1988 03 10	08 00.72	+14 02.5					
1988 03 20	07 59.58	+14 22.6	2.805	3.411	119.8	14.7	17.0
1988 03 30	08 00.56	+14 36.7					
1988 04 09	08 03.50	+14 44.6	3.080	3.416	101.0	16.7	17.3

1986 TB3 a,e,i = 2.27, 0.18, 5 Elements MPC 11733

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	08 45.96	+13 00.0	2.542	2.683	87.1	21.7	19.1
1987 11 11	08 53.19	+12 19.3					
1987 11 21	08 58.44	+11 45.3	2.271	2.686	103.9	20.9	18.8
1987 12 01	09 01.41	+11 20.5					
1987 12 11	09 01.85	+11 06.9	2.019	2.686	123.0	17.9	18.5
1987 12 21	08 59.55	+11 06.8					
1987 12 31	08 54.49	+11 21.2	1.817	2.682	145.0	12.1	18.1
1988 01 10	08 46.92	+11 50.0					
1988 01 20	08 37.43	+12 30.9	1.705	2.676	168.5	4.2	17.6
1988 01 30	08 27.00	+13 20.1					
1988 02 09	08 16.82	+14 12.5	1.707	2.667	163.4	6.1	17.7
1988 02 19	08 08.01	+15 03.3					
1988 02 29	08 01.47	+15 48.7	1.820	2.655	139.9	13.9	18.1
1988 03 10	07 57.73	+16 26.2					
1988 03 20	07 56.91	+16 55.0	2.012	2.640	118.8	19.3	18.5
1988 03 30	07 58.93	+17 14.3					
1988 04 09	08 03.51	+17 24.3	2.248	2.623	100.5	22.1	18.8

1986 NF1 a,e,i = 2.24, 0.21, 7 Elements MPC 11348

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	08 48.36	+17 51.7	2.275	2.448	87.9	23.9	17.7
1987	11 11	08 56.79	+17 38.0					
1987	11 21	09 02.99	+17 34.6	2.047	2.486	104.5	22.6	17.5
1987	12 01	09 06.62	+17 44.2					
1987	12 11	09 07.41	+18 08.3	1.836	2.521	123.9	18.9	17.2
1987	12 21	09 05.13	+18 47.8					
1987	12 31	08 59.73	+19 41.3	1.676	2.554	146.4	12.3	16.8
1988	01 10	08 51.54	+20 45.0					
1988	01 20	08 41.27	+21 52.6	1.607	2.583	170.9	3.4	16.4
1988	01 30	08 30.06	+22 57.0					
1988	02 09	08 19.28	+23 51.6	1.653	2.610	162.2	6.6	16.6
1988	02 19	08 10.17	+24 32.9					
1988	02 29	08 03.64	+24 59.9	1.808	2.633	138.5	14.4	17.1
1988	03 10	08 00.14	+25 13.7					
1988	03 20	07 59.70	+25 16.0	2.039	2.653	117.7	19.4	17.5
1988	03 30	08 02.15	+25 08.4					
1988	04 09	08 07.13	+24 52.2	2.311	2.670	99.8	21.7	17.9

(3527) 1985 GE1 a,e,i = 2.29, 0.12, 6 Elements MPC 11434

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	08 34.97	+13 03.6	2.144	2.358	89.7	24.9	17.5
1987	11 11	08 44.57	+11 57.2					
1987	11 21	08 52.18	+10 53.9	1.871	2.332	105.1	24.1	17.2
1987	12 01	08 57.44	+09 56.6					
1987	12 11	09 00.02	+09 08.2	1.618	2.305	122.8	21.1	16.8
1987	12 21	08 59.61	+08 31.8					
1987	12 31	08 56.05	+08 10.8	1.412	2.277	143.2	15.0	16.3
1988	01 10	08 49.48	+08 07.0					
1988	01 20	08 40.46	+08 21.3	1.285	2.249	164.9	6.5	15.7
1988	01 30	08 30.08	+08 51.7					
1988	02 09	08 19.77	+09 33.7	1.259	2.222	163.0	7.4	15.7
1988	02 19	08 10.98	+10 21.6					
1988	02 29	08 04.90	+11 09.6	1.334	2.194	141.0	16.5	16.1
1988	03 10	08 02.16	+11 52.7					
1988	03 20	08 02.92	+12 27.8	1.481	2.167	120.8	23.2	16.5
1988	03 30	08 07.04	+12 52.6					
1988	04 09	08 14.13	+13 06.0	1.668	2.142	103.9	27.0	16.8

1931 UE a,e,i = 2.39, 0.19, 10 Elements MPC 10829

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	08 31.75	+27 50.7	1.608	1.949	94.1	30.5	17.1
1987	11 11	08 45.53	+27 00.9					
1987	11 21	08 56.49	+26 14.6	1.411	1.959	108.2	28.6	16.8
1987	12 01	09 04.15	+25 34.3					
1987	12 11	09 08.08	+25 01.6	1.235	1.976	125.4	24.0	16.4
1987	12 21	09 07.89	+24 36.8					
1987	12 31	09 03.42	+24 18.1	1.103	1.997	146.3	15.9	16.0
1988	01 10	08 55.09	+24 01.3					
1988	01 20	08 43.92	+23 41.3	1.047	2.023	170.0	4.9	15.5
1988	01 30	08 31.67	+23 13.4					
1988	02 09	08 20.35	+22 35.7	1.089	2.053	162.9	8.1	15.7
1988	02 19	08 11.59	+21 49.5					
1988	02 29	08 06.41	+20 57.6	1.227	2.086	140.2	17.7	16.4
1988	03 10	08 05.06	+20 02.4					
1988	03 20	08 07.30	+19 05.1	1.433	2.123	120.8	23.8	16.9
1988	03 30	08 12.69	+18 05.9					
1988	04 09	08 20.66	+17 04.2	1.680	2.162	104.6	26.6	17.4

1964 UP a,e,i = 2.16, 0.15, 3 Elements MPC 11241

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	08 51.78	+18 23.1	2.315	2.474	87.2	23.6	18.8
1987	11 11	09 00.47	+17 41.2					
1987	11 21	09 07.05	+17 05.9	2.055	2.479	103.5	22.8	18.5
1987	12 01	09 11.18	+16 39.5					
1987	12 11	09 12.54	+16 23.8	1.811	2.480	122.3	19.6	18.1
1987	12 21	09 10.85	+16 20.4					
1987	12 31	09 05.97	+16 29.4	1.614	2.479	144.2	13.4	17.7
1988	01 10	08 58.12	+16 49.4					
1988	01 20	08 47.86	+17 17.0	1.502	2.475	168.9	4.4	17.2
1988	01 30	08 36.31	+17 47.4					
1988	02 09	08 24.86	+18 15.6	1.502	2.468	165.2	5.9	17.3
1988	02 19	08 14.88	+18 37.9					
1988	02 29	08 07.46	+18 52.2	1.610	2.459	140.9	14.7	17.7
1988	03 10	08 03.19	+18 57.9					
1988	03 20	08 02.19	+18 55.4	1.796	2.447	119.7	20.7	18.1
1988	03 30	08 04.32	+18 44.9					
1988	04 09	08 09.22	+18 26.8	2.023	2.432	101.6	23.8	18.4

1984 FS a,e,i = 2.64, 0.11, 14 Elements MPC 11331

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987	11 01	08 33.46	+08 10.3	2.166	2.365	-1.16	-0.4	17.1
1987	11 11	08 43.57	+07 29.7					
1987	11 21	08 51.77	+06 57.1	1.913	2.356	-1.33	-0.2	16.8
1987	12 01	08 57.75	+06 36.2					
1987	12 11	09 01.24	+06 30.9	1.679	2.348	-1.55	+0.1	16.4
1987	12 21	09 01.96	+06 45.2					
1987	12 31	08 59.79	+07 22.5	1.489	2.343	-1.81	+0.5	15.9
1988	01 10	08 54.90	+08 23.7					
1988	01 20	08 47.79	+09 47.2	1.377	2.341	-2.02	+0.8	15.5
1988	01 30	08 39.40	+11 27.2					
1988	02 09	08 30.98	+13 15.0	1.370	2.341	-2.05	+0.5	15.4
1988	02 19	08 23.78	+15 01.0					
1988	02 29	08 18.87	+16 37.2	1.469	2.343	-1.87	-0.2	15.9
1988	03 10	08 16.85	+17 58.4					
1988	03 20	08 17.93	+19 02.6	1.649	2.348	-1.61	-0.7	16.3
1988	03 30	08 22.00	+19 49.1					
1988	04 09	08 28.76	+20 18.7	1.877	2.355	-1.40	-0.6	16.7

1981 EB23 a,e,i = 2.44, 0.21, 3 Elements MPC 9752

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 21	09 13.24	+19 25.5	2.235	2.636	102.7	21.4	18.6
1987	12 01	09 16.89	+19 21.4					
1987	12 11	09 17.85	+19 29.4	2.020	2.674	121.9	18.2	18.3
1987	12 21	09 15.93	+19 49.7					
1987	12 31	09 11.07	+20 21.2	1.854	2.711	144.0	12.3	18.0
1988	01 10	09 03.57	+21 00.6					
1988	01 20	08 54.01	+21 43.2	1.775	2.746	168.0	4.3	17.6
1988	01 30	08 43.40	+22 23.3					
1988	02 09	08 32.95	+22 55.8	1.812	2.778	165.4	5.1	17.7
1988	02 19	08 23.79	+23 17.9					
1988	02 29	08 16.83	+23 28.6	1.961	2.807	141.9	12.6	18.2
1988	03 10	08 12.57	+23 28.6					
1988	03 20	08 11.12	+23 19.3	2.193	2.834	120.7	17.6	18.6
1988	03 30	08 12.38	+23 02.0					
1988	04 09	08 16.06	+22 37.8	2.473	2.859	102.3	20.0	18.9
1988	04 19	08 21.83	+22 07.3					
1988	04 29	08 29.37	+21 31.0	2.769	2.881	86.0	20.4	19.2

1982 TG1 a,e,i = 2.66, 0.17, 13 Elements MPC 10939

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 21	09 04.53	+01 23.4	2.069	2.430	99.1	23.7	17.5
1987 12 01	09 09.21	-00 03.5					
1987 12 11	09 11.34	-01 20.6	1.869	2.464	115.9	21.1	17.2
1987 12 21	09 10.74	-02 23.8					
1987 12 31	09 07.37	-03 08.5	1.708	2.499	134.7	16.3	16.9
1988 01 10	09 01.50	-03 30.9					
1988 01 20	08 53.67	-03 28.3	1.618	2.534	153.0	10.1	16.6
1988 01 30	08 44.79	-03 00.4					
1988 02 09	08 35.97	-02 10.8	1.626	2.570	158.8	8.0	16.6
1988 02 19	08 28.29	-01 05.2					
1988 02 29	08 22.61	+00 08.8	1.738	2.606	144.2	12.9	16.9
1988 03 10	08 19.45	+01 23.7					
1988 03 20	08 18.97	+02 34.0	1.936	2.642	125.6	17.9	17.4
1988 03 30	08 21.11	+03 35.5					
1988 04 09	08 25.62	+04 25.8	2.190	2.678	108.2	20.8	17.7
1988 04 19	08 32.18	+05 03.8					
1988 04 29	08 40.50	+05 29.1	2.473	2.713	92.6	21.8	18.1

1986 TD7 a,e,i = 2.66, 0.21, 12 Elements MPC 11733

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 21	09 18.60	+29 56.7	2.714	3.110	104.4	17.9	18.5
1987 12 01	09 21.66	+30 30.9					
1987 12 11	09 22.22	+31 16.0	2.478	3.130	123.4	15.2	18.2
1987 12 21	09 20.06	+32 10.3					
1987 12 31	09 15.14	+33 09.9	2.301	3.148	143.7	10.6	17.9
1988 01 10	09 07.66	+34 09.2					
1988 01 20	08 58.15	+35 01.7	2.216	3.163	161.0	5.8	17.6
1988 01 30	08 47.49	+35 40.9					
1988 02 09	08 36.81	+36 02.3	2.247	3.176	156.5	7.1	17.7
1988 02 19	08 27.21	+36 04.7					
1988 02 29	08 19.61	+35 49.5	2.388	3.187	137.2	12.2	18.0
1988 03 10	08 14.55	+35 19.9					
1988 03 20	08 12.21	+34 39.6	2.610	3.195	117.5	16.0	18.4
1988 03 30	08 12.54	+33 51.5					
1988 04 09	08 15.30	+32 58.1	2.879	3.201	99.5	18.0	18.6
1988 04 19	08 20.17	+32 00.6					
1988 04 29	08 26.85	+31 00.0	3.162	3.205	83.3	18.2	18.9

1979 QC1 a,e,i = 2.35, 0.17, 12 Elements MPC 11518

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 21	09 19.57	+24 56.5	1.782	2.222	102.9	25.7	17.5
1987 12 01	09 25.15	+24 28.5					
1987 12 11	09 27.43	+24 10.9	1.591	2.261	120.9	21.9	17.2
1987 12 21	09 26.09	+24 03.6					
1987 12 31	09 20.99	+24 04.6	1.443	2.300	142.3	15.2	16.8
1988 01 10	09 12.42	+24 09.8					
1988 01 20	09 01.14	+24 13.6	1.373	2.340	166.0	5.8	16.4
1988 01 30	08 48.49	+24 10.1					
1988 02 09	08 36.15	+23 55.6	1.411	2.379	165.5	6.0	16.5
1988 02 19	08 25.61	+23 29.5					
1988 02 29	08 17.99	+22 53.6	1.555	2.416	142.3	14.5	17.1
1988 03 10	08 13.74	+22 10.5					
1988 03 20	08 12.85	+21 22.6	1.780	2.453	121.6	20.2	17.6
1988 03 30	08 15.03	+20 30.9					
1988 04 09	08 19.86	+19 36.1	2.051	2.488	103.8	23.0	18.0
1988 04 19	08 26.87	+18 38.1					
1988 04 29	08 35.68	+17 36.6	2.340	2.522	88.4	23.5	18.3

1986 TP6 a,e,i = 3.04, 0.07, 9 Elements MPC 11640

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 21	09 10.78	+16 51.2	2.598	2.974	102.5	18.9	16.8
1987 12 01	09 14.26	+16 13.5					
1987 12 11	09 15.47	+15 43.2	2.325	2.960	121.4	16.5	16.5
1987 12 21	09 14.25	+15 21.1					
1987 12 31	09 10.54	+15 07.7	2.104	2.947	142.7	11.7	16.1
1988 01 10	09 04.53	+15 02.2					
1988 01 20	08 56.67	+15 03.2	1.970	2.935	166.1	4.6	15.7
1988 01 30	08 47.69	+15 08.2					
1988 02 09	08 38.57	+15 14.5	1.949	2.922	168.7	3.8	15.6
1988 02 19	08 30.30	+15 19.8					
1988 02 29	08 23.72	+15 21.9	2.041	2.911	145.3	11.2	16.0
1988 03 10	08 19.41	+15 19.7					
1988 03 20	08 17.61	+15 12.5	2.223	2.900	124.0	16.6	16.3
1988 03 30	08 18.35	+14 59.8					
1988 04 09	08 21.47	+14 41.3	2.458	2.889	105.3	19.5	16.6
1988 04 19	08 26.70	+14 16.8					
1988 04 29	08 33.78	+13 45.9	2.716	2.879	88.9	20.5	16.9

1981 EO11 a,e,i = 2.35, 0.17, 2 Elements MPC 10761

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 21	08 57.93	+17 03.5	1.704	2.187	105.5	25.8	19.9
1987 12 01	09 05.52	+16 22.4					
1987 12 11	09 10.43	+15 50.6	1.455	2.151	122.6	22.7	19.4
1987 12 21	09 12.23	+15 30.7					
1987 12 31	09 10.63	+15 24.8	1.249	2.117	142.8	16.3	18.9
1988 01 10	09 05.60	+15 32.8					
1988 01 20	08 57.54	+15 53.0	1.117	2.086	166.3	6.4	18.3
1988 01 30	08 47.48	+16 20.8					
1988 02 09	08 36.98	+16 50.1	1.081	2.057	168.3	5.6	18.1
1988 02 19	08 27.74	+17 15.5					
1988 02 29	08 21.23	+17 32.7	1.142	2.031	144.3	16.5	18.6
1988 03 10	08 18.31	+17 39.8					
1988 03 20	08 19.21	+17 36.2	1.275	2.008	123.9	24.3	19.0
1988 03 30	08 23.76	+17 21.4					
1988 04 09	08 31.53	+16 55.6	1.449	1.990	107.2	28.7	19.4
1988 04 19	08 42.01	+16 18.7					
1988 04 29	08 54.72	+15 30.4	1.642	1.976	93.4	30.6	19.7

6092 P-L a,e,i = 2.61, 0.19, 11 Elements MPC 12144

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 21	09 04.72	+03 46.3	2.325	2.678	99.9	21.3	17.9
1987 12 01	09 09.47	+02 43.3					
1987 12 11	09 12.04	+01 48.6	2.040	2.639	117.1	19.4	17.5
1987 12 21	09 12.17	+01 05.7					
1987 12 31	09 09.71	+00 38.3	1.797	2.599	136.4	15.1	17.1
1988 01 10	09 04.73	+00 30.0					
1988 01 20	08 57.56	+00 43.4	1.627	2.558	156.2	8.9	16.6
1988 01 30	08 48.92	+01 18.9					
1988 02 09	08 39.82	+02 14.0	1.558	2.517	162.9	6.6	16.4
1988 02 19	08 31.40	+03 23.5					
1988 02 29	08 24.75	+04 40.5	1.596	2.477	145.6	13.1	16.7
1988 03 10	08 20.63	+05 57.6					
1988 03 20	08 19.41	+07 09.3	1.720	2.436	125.4	19.5	17.0
1988 03 30	08 21.20	+08 11.3					
1988 04 09	08 25.81	+09 01.0	1.897	2.397	107.5	23.5	17.3
1988 04 19	08 32.96	+09 37.3					
1988 04 29	08 42.34	+09 59.6	2.099	2.358	91.9	25.3	17.5