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EDITORIAL NOTICE.

The next MPCs will be published on or about April 14. No MPCs will be issued in March.

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ERRATA.

MPC	Line	
11276	12	For 0.31-m f/7 read 0.31-m f/5.7
11416	15	For 0.24-m reflector read 0.26-m reflector
11471	- 9	For 27’ tail read 27" tail
11501	8	For 10.5 861216 read 10.5 870105
11510	-11	For F. L. Bowman read F. N. Bowman
11514	-21	Add The identifications were found independently by E. Goffin.

* * * * *

CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object		Date	UT	R. A. (1950)	Decl.	Reference	Mag.	Obs.
1970 AA1	*	1970 01	05.01944	08 12 52.69	+28 05 22.3	MPC 3169	16.5	095
1971 GA		1971 04	29.01040	12 34 27.76	+12 35 36.3	MPC 3193		026
1985 WK	*	1985 11	16.23785	01 07 29.42	-00 03 49.5	MPC11489		675
1985 WK		1985 11	16.26667	01 07 28.95	-00 03 54.0	MPC11489		675
1986 WO2	*	1986 11	30.90580	04 31 14.12	+22 40 25.5	MPC11478		046

* * * * *

DELETED OBSERVATIONS.

The following observations are to be deleted.

Object		Date	UT	R. A. (1950)	Decl.	Reference	Obs.
1986 TF5	*	1986 10	01.04375	01 45 07.39	+10 02 43.2	MPC11284	010
1986 TF5		1986 10	01.07500	01 45 06.20	+10 02 30.0	MPC11284	010

* * * * *

IDENTIFICATION CHANGES.

Continuation to MPC 11465.

Object		Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
A898 VF	*	1898 11	13.82048	03 00 11.77	+16 23 57.8	A898 VC		024
A898 VF		1898 11	20.04458	02 55 38.29	+15 33 41.0	A898 VC		024

* * * * *

IDENTIFICATIONS.

The following list of identifications with numbered minor planets continues that on MPC 9981.

	Note		Note		Note
A898 VC = (2393)	1	1935 DK = (2345)	1	1939 KH = (2294)	1
1940 SG = (2294)	1	1957 UJ = (2325)	1	1960 QA = (2393)	1
1978 RJ5 = (2249)	1	1978 US2 = (2393)	1	1979 UG3 = (2325)	1
1981 RZ3 = (3469)	2	1981 SL3 = (3469)	2		

Note 1: identification by S. Nakano. 2: identification by T. Kobayashi; the double designation 1981 RZ3 = 1981 SL3 was suggested by N. S. Chernykh.

* * * * *

OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

046 Klet. Observer A. Mrkos.
049 Kvistaberg. Observers T. Oja and C.-I. Lagerkvist.
063 Turku-Tuorla. 0.7-m Schmidt. Observer A. Sillanpaa. Measured by A. Niemi.
091 St. Etienne. 0.41-m reflector. Observer R. Chanal.
095 Crimean Astrophysical Observatory. Observer N. S. Chernykh.
099 Lahti. 0.3-m reflector. Observer J. Salmi. Measured by A. Niemi.
100 Ahtari. 0.3-m reflector. Observer K. Kapanen. Measured by A. Niemi. Long. and Parallax 24.13, -197, -377 (see MPC 11200).
293 Burlington remote site. Observer T. Handley.
323 Perth Observatory, Bickley. 0.3-m astrograph. Observers M. P. Candy, P. Jekabsons, A. McGrath and M. Kempin.
330 Purple Mountain Observatory. Observers Q. Wang, J.-h. Lu, J.-x. Yang, S.-l. Wei, D.-c. Wang, Y.-l. Ge, J.-x. Zhang and S.-c. Wang.
372 Geisei. 0.4-m and 0.6-m reflectors. Observer T. Seki. From Orient. Astron. Comet Bull. and Yamamoto Circ.
376 Uenohara. 0.20-m f/4.0 hyperboloid astrocamera. Observer N. Kawasato.
385 Nihondaira Observatory. Observer W. Kakei. 0.13-m hyperboloid camera. Measured by T. Urata.
387 Tokyo Observatory, Dodaira Station. Observers H. Shibasaki, Noguchi and Kanda. Measured by Shibasaki and H. Kosai.
391 Sendai Observatory, Ayashi Station. 0.20-m f/5.5 reflector. Observer M. Koishikawa. Measured by T. Tsumagari.
399 Kushiro. 0.16-m reflector. Observer S. Ueda. Measured by H. Kaneda and K. Watanabe.
413 Kambah. Observer D. Herald.
415 Siding Spring. University of Aston Hewitt Schmidt Satellite Camera. Observer R. H. McNaught, assisted by R. Persson.
494 Stakenbridge. 0.26-m reflector. Observer B. Manning.
657 Climenhaga Observatory, Victoria. Observers J. B. Tatum and D. D. Balam.
688 Lowell Observatory, Anderson Mesa Station. 0.33-m photographic telescope. Observers S. J. Bus, B. A. Skiff, N. G. Thomas and J. Wiseman. Measured by B. A. Skiff and E. Bowell.

690 Lowell Observatory. 0.46-m astrograph. Observers S. Slivan, D. Federico and O. G. Franz. Measured by E. Bowell.
691 University of Arizona, Kitt Peak. 0.91-m SPACEWATCH telescope, CCD in scanning mode. Observers T. Gehrels and J. Scotti.
707 Chamberlin Observatory field station. Observer J. Briggs. Measured by J. Briggs and E. Everhart.
801 Oak Ridge Observatory. Observers R. E. McCrosky, G. Schwartz and C.-Y. Shao. Measured by Shao and D. W. E. Green.
807 Cerro Tololo Interamerican Observatory. 4-m reflector. Offsets from a single reference star. Observers P. A. Wehinger and M. J. S. Belton.
811 Maria Mitchell Observatory. Observer E. P. Belserene.
864 Kumamoto. 0.31-m reflector. Observer J. Kobayashi. Measured by T. Urata. From Nihondaira Obs. Circ.
876 Honjo. Observer S. Mitsuma. Measured by H. Kosai. Long. and Parallax 139.15, -344, -251 (see MPC 11200).
877 Okutama. Observer T. Hioki. Measured by N. Kawasato. Long. and Parallax 139.08, -346, -248 (see MPC 11200).
883 Shizuoka. Observer W. Kakei. 0.13-m hyperboloid camera. Measured by T. Urata.
887 Ojima. Observers T. Niijima and T. Urata. From Nihondaira Obs. Circ.
890 JCPM Tone Station. Observer T. Furuyama. Measurer N. Ishiyama.
892 YGCO Hoshikawa and Nagano stations. Observers S. Hayakawa, H. Mori, M. Arai and T. Kojima.
894 Kiyosato. Observer S. Miyasaka. From Nihondaira Obs. Circ.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
		Comet Bowell (1982 I)					
/1982 I	1986	12 29.13100	00 14 44.78	-00 08 20.1		1	691
/1982 I	1986	12 30.10924	00 14 49.05	-00 07 43.0		1	691
		Periodic Comet Gunn					
/1982 X	1986	12 29.40922	07 16 11.15	+30 14 50.0			691
/1982 X	1986	12 29.44063	07 16 09.71	+30 14 54.5			691
/1982 X	1986	12 29.44887	07 16 09.35	+30 14 55.7			691
/1982 X	1987	01 04.21637	07 11 44.90	+30 29 03.4			691
/1982 X	1987	01 04.21965	07 11 44.75	+30 29 03.9			691
/1982 X	1987	01 04.22622	07 11 44.47	+30 29 04.7			691
/1982 X	1987	01 04.26410	07 11 42.66	+30 29 09.8	18.0T		691
		Periodic Comet Halley					
/1982i	1985	09 18.07697	06 12 54.54	+19 39 27.1			049
/1982i	1985	10 15.08705	06 01 09.72	+20 37 37.4			049
/1982i	1985	10 20.96228	05 52 13.97	+20 59 14.6			049
/1982i	1985	10 24.09675	05 45 47.45	+21 12 20.4			049
/1982i	1985	11 16.81827	03 41 08.98	+21 36 53.6			049
/1982i	1985	12 07.72993	00 03 18.79	+08 16 05.4			049
/1982i	1985	12 08.73517	23 55 36.02	+07 32 10.4			049
/1982i	1985	12 08.73655	23 55 35.99	+07 32 10.2			049
/1982i	1985	12 09.70715	23 48 31.15	+06 51 17.4			049
/1982i	1985	12 09.71131	23 48 29.34	+06 51 05.9			049
/1982i	1985	12 10.71307	23 41 34.12	+06 10 39.0			049
/1982i	1985	12 10.71758	23 41 32.24	+06 10 28.6			049
/1982i	1985	12 14.69454	23 17 30.45	+03 47 07.9			049
/1982i	1985	12 14.69800	23 17 29.32	+03 47 00.2			049
/1982i	1986	11 28.42423	11 40 05.32	-14 44 18.9			801
/1982i	1986	12 02.19791	11 39 45.72	-14 58 53.1			091
/1982i	1986	12 03.19375	11 39 38.42	-15 02 35.3			091
/1982i	1986	12 04.20312	11 39 30.25	-15 06 20.2			046

/1982i	1986	12	04.20694	11	39	30.15	-15	06	18.2				046
/1982i	1986	12	05.19722	11	39	21.03	-15	09	58.0				046
/1982i	1986	12	05.20174	11	39	21.10	-15	09	55.1				046
/1982i	1986	12	08.10071	11	38	49.88	-15	20	04.3	14	T	2	095
/1982i	1986	12	28.41353	11	31	24.19	-16	13	08.0				801
/1982i	1987	01	04.42222	11	27	13.22	-16	22	12.4				293
/1982i	1987	01	04.44236	11	27	12.62	-16	22	13.7				293
/1982i	1987	01	07.49312	11	25	07.86	-16	24	18.1				657
/1982i	1987	01	08.79817	11	24	11.71	-16	24	52.3	15	T		330
/1982i	1987	01	08.83289	11	24	09.91	-16	24	54.9	15	T		330

Comet Shoemaker (1985 XII)

/1985 XII	1986	11	30.27219	04	49	55.13	-17	44	38.4				801
/1985 XII	1986	12	30.21664	04	16	08.55	-15	03	53.9	16.7N			691
/1985 XII	1986	12	30.22902	04	16	07.85	-15	03	48.8				691
/1985 XII	1986	12	30.23975	04	16	07.26	-15	03	44.2				691

Periodic Comet Giacobini-Zinner

/1985 XIII	1985	08	22.90280	04	12	37.54	+48	28	41.7				049
/1985 XIII	1985	08	22.92288	04	12	46.05	+48	27	26.8				049

Periodic Comet Ashbrook-Jackson

/1985a	1986	12	29.34204	04	26	44.44	+38	57	46.2				691
/1985a	1986	12	29.36495	04	26	43.47	+38	57	42.7				691
/1985a	1986	12	29.37380	04	26	43.13	+38	57	41.0			3	691
/1985a	1987	01	04.14632	04	23	12.19	+38	34	24.3	17.4T			691
/1985a	1987	01	04.16387	04	23	11.55	+38	34	20.0				691
/1985a	1987	01	04.18994	04	23	10.71	+38	34	13.8				691
/1985a	1987	01	04.19956	04	23	10.43	+38	34	11.9				691
/1985a	1987	01	04.20433	04	23	10.24	+38	34	10.7				691

Periodic Comet Shajn-Schaldach

/1985i	1986	12	27.32187	05	18	31.04	+13	49	50.0				691
/1985i	1986	12	27.32542	05	18	30.84	+13	49	49.6				691

Comet Shoemaker (1986b)

/1986b	1986	12	27.48381	08	34	36.58	+21	02	59.4			4	691
/1986b	1986	12	27.49222	08	34	35.81	+21	02	58.7			4	691
/1986b	1986	12	27.50471	08	34	34.40	+21	03	02.4	20	N	5	691

Periodic Comet Singer Brewster

/1986d	1986	07	12.23681	14	59	33.43	-04	31	33.3			6	707

Periodic Comet Holmes

/1986f	1986	12	27.27399	03	53	29.00	+46	53	09.9				691
/1986f	1986	12	27.28231	03	53	28.70	+46	53	06.2				691
/1986f	1986	12	27.29758	03	53	28.17	+46	52	57.4				691
/1986f	1986	12	29.29597	03	52	25.14	+46	35	02.8				691
/1986f	1986	12	29.30682	03	52	24.81	+46	34	57.6	18.2T			691
/1986f	1986	12	29.32741	03	52	24.12	+46	34	45.9				691

Comet Wilson (1986l)

/1986l	1986	08	11.75347	22	10	47.84	+24	31	31.4			7	890
/1986l	1986	08	13.74375	22	07	02.50	+24	16	05.9			7	890
/1986l	1986	08	13.74826	22	07	01.90	+24	16	05.5			7	890
/1986l	1986	08	15.66632	22	03	19.34	+23	59	44.9			7	890
/1986l	1986	08	24.49167	21	45	19.04	+22	24	02.0			7	890
/1986l	1986	08	27.51181	21	38	54.26	+21	43	28.4			7	890
/1986l	1986	08	27.51632	21	38	53.68	+21	43	21.2			7	890

/1986l	1986	08	28.53299	21	36	43.04	+21	28	49.5	7	890
/1986l	1986	08	28.53819	21	36	42.32	+21	28	45.9	7	890
/1986l	1986	09	03.60000	21	23	39.39	+19	52	56.5	7	890
/1986l	1986	09	03.60521	21	23	38.63	+19	52	54.2	7	890
/1986l	1986	09	09.86910	21	10	17.89	+17	59	06.4		099
/1986l	1986	09	09.89479	21	10	14.42	+17	58	38.2		099
/1986l	1986	09	27.93333	20	35	35.85	+11	36	08.5		100
/1986l	1986	10	04.88889	20	24	37.82	+09	00	57.8		046
/1986l	1986	10	04.89201	20	24	37.52	+09	00	53.0		046
/1986l	1986	10	23.72916	20	03	00.78	+02	25	46.2		095
/1986l	1986	11	27.75458	19	50	00.34	-06	47	28.4		046
/1986l	1986	11	27.75759	19	50	00.38	-06	47	31.0		046
/1986l	1986	11	28.65799	19	50	01.56	-06	58	42.9		095
/1986l	1986	11	28.67396	19	50	01.44	-06	58	56.5		095
/1986l	1986	11	28.71665	19	50	01.67	-06	59	27.9		046
/1986l	1986	11	28.71975	19	50	01.65	-06	59	30.5		046
/1986l	1986	11	30.09097	19	50	05.25	-07	16	20.7		707

Periodic Comet Grigg-Skjellerup

/1986m	1987	01	03.27785	06	19	29.83	-10	26	41.4	19.7T	691
/1986m	1987	01	03.28784	06	19	28.92	-10	26	45.9		691
/1986m	1987	01	03.29368	06	19	28.39	-10	26	47.6		691
/1986m	1987	01	31.08889	05	42	52.3	-10	49	53		807
/1986m	1987	01	31.19028	05	42	46.1	-10	49	22		807
/1986m	1987	02	01.10486	05	41	51.3	-10	45	12		807
/1986m	1987	02	01.19306	05	41	46.0	-10	44	46	20.6T	807
/1986m	1987	02	02.07083	05	40	55.5	-10	40	24		807
/1986m	1987	02	02.20208	05	40	47.9	-10	39	43	20.6T	807

Comet Sorrells (1986n)

/1986n	1986	11	05.31326	05	23	39.22	+27	34	23.0		688
/1986n	1986	11	06.37560	05	19	08.72	+27	44	47.4		688
/1986n	1986	11	06.43199	05	18	53.93	+27	45	21.1		688
/1986n	1986	11	07.36108	05	14	47.58	+27	54	08.6		688
/1986n	1986	11	07.36799	05	14	45.78	+27	54	12.6	8	688
/1986n	1986	11	28.76424	03	04	56.98	+27	53	27.4		046
/1986n	1986	11	28.76865	03	04	54.99	+27	53	23.0		046
/1986n	1986	11	29.87883	02	57	18.05	+27	37	13.7		046
/1986n	1986	11	29.88045	02	57	17.36	+27	37	12.9		046
/1986n	1986	11	30.87432	02	50	31.58	+27	21	22.1		046
/1986n	1986	11	30.87594	02	50	30.94	+27	21	19.8		046
/1986n	1986	12	01.85069	02	43	57.13	+27	04	32.9		091
/1986n	1986	12	01.85904	02	43	53.71	+27	04	27.2		046
/1986n	1986	12	01.86111	02	43	52.90	+27	04	26.0		091
/1986n	1986	12	01.86130	02	43	52.75	+27	04	24.7		046
/1986n	1986	12	03.80833	02	31	01.28	+26	27	42.6		046
/1986n	1986	12	03.81007	02	31	00.60	+26	27	41.5		046
/1986n	1986	12	04.84277	02	24	21.27	+26	06	41.3		046
/1986n	1986	12	04.84439	02	24	20.64	+26	06	39.2		046
/1986n	1986	12	27.99192	00	38	25.44	+17	23	25.2		801
/1986n	1986	12	29.00966	00	35	35.00	+17	04	27.8		801
/1986n	1986	12	29.48126	00	34	18.92	+16	55	51.4		894
/1986n	1986	12	29.52350	00	34	11.96	+16	55	07.6		894
/1986n	1987	01	03.94933	00	21	17.42	+15	25	15.5	9	801
/1986n	1987	01	04.15556	00	20	51.31	+15	22	04.9		293
/1986n	1987	01	04.16319	00	20	50.55	+15	22	01.1		293
/1986n	1987	01	04.47882	00	20	11.11	+15	17	14.2		894
/1986n	1987	01	04.53079	00	20	04.51	+15	16	31.9		894

/1986n	1987	01	04.72552	00	19	40.87	+15	13	39.4			046
/1986n	1987	01	04.72789	00	19	40.57	+15	13	38.3			046
/1986n	1987	01	07.10260	00	15	04.67	+14	40	09.8			657
/1986n	1987	01	08.15747	00	13	10.87	+14	26	11.9			657
/1986n	1987	01	22.43681	23	54	33.35	+12	04	09.3			894
/1986n	1987	01	22.46377	23	54	32.13	+12	03	59.9			894
/1986n	1987	01	24.47153	23	52	43.76	+11	49	57.9			894
/1986n	1987	01	24.48090	23	52	43.29	+11	49	57.3			894

Periodic Comet Urata-Niijima

/1986o	1986	11	06.20738	01	48	06.78	+23	55	22.6			688
/1986o	1986	11	06.26887	01	47	59.73	+23	58	04.9			688
/1986o	1986	12	01.09876	01	14	20.89	+38	52	30.7			801
/1986o	1986	12	02.07049	01	13	50.30	+39	17	59.0			801
/1986o	1986	12	28.23228	01	27	59.90	+47	41	15.4		A	801
/1986o	1986	12	29.23124	01	29	32.60	+47	55	19.4			691
/1986o	1986	12	29.24402	01	29	33.78	+47	55	29.7			691
/1986o	1986	12	29.24821	01	29	34.15	+47	55	33.1	16 T		691
/1986o	1986	12	30.19051	01	31	05.45	+48	08	30.7			691
/1986o	1986	12	30.19966	01	31	06.32	+48	08	38.2			691
/1986o	1986	12	30.20631	01	31	06.93	+48	08	44.6			691
/1986o	1987	01	01.38715	01	34	51.89	+48	37	41.1	16.5T		887
/1986o	1987	01	01.39826	01	34	52.98	+48	37	50.1			887

Periodic Comet Lovas 2

/1986p	1987	01	25.18418	02	51	57.75	+17	28	10.4	18.5T	B	691
/1986p	1987	01	25.19284	02	51	58.50	+17	28	15.2		B	691
/1986p	1987	01	25.20712	02	51	59.75	+17	28	18.1		B	691

Comet Levy (1987a)

/1987a	1987	01	08.83519	17	15	37.71	+09	25	32.2	12 T		385
/1987a	1987	01	08.84688	17	15	37.21	+09	25	19.9	10.7T		372
/1987a	1987	01	08.85902	17	15	36.66	+09	25	00.0	13 T		892
/1987a	1987	01	08.86250	17	15	36.53	+09	25	01.4			372
/1987a	1987	01	09.84410	17	14	42.22	+09	06	57.7	12 T		385
/1987a	1987	01	09.84792	17	14	41.65	+09	06	54.8	11.0T		372
/1987a	1987	01	09.85488	17	14	41.23	+09	06	44.6	11 T		892
/1987a	1987	01	09.85764	17	14	41.07	+09	06	42.7			372
/1987a	1987	01	10.51420	17	14	04.54	+08	54	36.0		C	688
/1987a	1987	01	10.52993	17	14	03.58	+08	54	19.0		C	688
/1987a	1987	01	10.84864	17	13	45.84	+08	48	19.1	11 T		892
/1987a	1987	01	10.85197	17	13	45.62	+08	48	16.9	12 T		883
/1987a	1987	01	10.85602	17	13	45.18	+08	48	16.7			877
/1987a	1987	01	10.86042	17	13	45.08	+08	48	10.5			372
/1987a	1987	01	10.86458	17	13	44.39	+08	48	01.4			892
/1987a	1987	01	11.51394	17	13	08.25	+08	36	05.5	12 T	C	688
/1987a	1987	01	11.53409	17	13	07.37	+08	35	39.4		C	688
/1987a	1987	01	12.54896	17	12	09.75	+08	16	47.0			688
/1987a	1987	01	20.84922	17	03	52.57	+05	37	59.0			399
/1987a	1987	01	20.85733	17	03	51.59	+05	37	56.4			399
/1987a	1987	01	26.84028	16	57	04.58	+03	37	44.9			399
/1987a	1987	01	26.84757	16	57	03.94	+03	37	37.8			399
/1987a	1987	01	26.85347	16	57	02.90	+03	37	28.7			399
/1987a	1987	01	29.43586	16	53	47.88	+02	43	43.8			801
/1987a	1987	01	30.82963	16	51	55.96	+02	14	10.1			399
/1987a	1987	01	30.84664	16	51	54.82	+02	13	49.2			399
/1987a	1987	02	01.52708	16	49	33.88	+01	37	36.8		D	691
/1987a	1987	02	01.53235	16	49	33.41	+01	37	29.7		D	691

Periodic Comet Wiseman-Skiff

/1987b	1986	12	28.29426	08	03	23.21	+08	18	50.4		14	T	E	688
/1987b	1986	12	28.33910	08	03	21.01	+08	17	32.3				E	688
/1987b	1987	01	01.64283	08	00	01.52	+06	16	15.6		13.5	T		892
/1987b	1987	01	19.11111	07	44	24.91	-00	13	30.0		14.5	T	E	688
/1987b	1987	01	19.13194	07	44	24.03	-00	13	52.3				E	688
/1987b	1987	01	20.50277	07	43	15.65	-00	36	06.6		15.5	T		892
/1987b	1987	01	20.53211	07	43	13.15	-00	36	40.0					892
/1987b	1987	01	20.62604	07	43	08.24	-00	38	04.9					372
/1987b	1987	01	21.19722	07	42	40.63	-00	47	00.8					690
/1987b	1987	01	21.20347	07	42	40.18	-00	47	09.8				F	688
/1987b	1987	01	21.23125	07	42	38.79	-00	47	33.8					688
/1987b	1987	01	21.49688	07	42	26.09	-00	51	37.1					399
/1987b	1987	01	22.20972	07	41	52.05	-01	02	15.0				G	688
/1987b	1987	01	22.23056	07	41	50.77	-01	02	36.4				F	688
/1987b	1987	01	22.59878	07	41	33.39	-01	07	56.0		15.5	T		892
/1987b	1987	01	24.33229	07	40	13.56	-01	31	59.3				F	690
/1987b	1987	01	24.47674	07	40	07.93	-01	33	51.6		16	T		372
/1987b	1987	02	01.29753	07	35	13.82	-02	58	23.2					688
/1987b	1987	02	01.30816	07	35	13.46	-02	58	28.6					688

Comet Nishikawa-Takamizawa-Tago (1987c)

/1987c	1987	01	20.47743	00	03	00.6	+06	27	59		9	T		876
/1987c	1987	01	20.52869	00	02	54.0	+06	26	40					864
/1987c	1987	01	21.38507	00	01	29.00	+06	07	05.3		9	T		391
/1987c	1987	01	21.39306	00	01	28.21	+06	06	54.7		9	T		391
/1987c	1987	01	21.40104	00	01	27.17	+06	06	47.0		9	T		391
/1987c	1987	01	21.99584	00	00	29.51	+05	53	24.7		9	T	H	801
/1987c	1987	01	22.38542	23	59	52.80	+05	44	56.0					391
/1987c	1987	01	22.39606	23	59	51.84	+05	44	39.8					391
/1987c	1987	01	22.40625	23	59	50.88	+05	44	24.4					391
/1987c	1987	01	22.41667	23	59	49.89	+05	44	10.8					391
/1987c	1987	01	22.48900	23	59	42.5	+05	42	31		10	T		372
/1987c	1987	01	24.08646	23	57	17.94	+05	08	40.5		8	T	E	688
/1987c	1987	01	24.09618	23	57	17.05	+05	08	29.2				E	688
/1987c	1987	01	24.39618	23	56	50.64	+05	02	15.9		9	T		892
/1987c	1987	01	24.40833	23	56	49.64	+05	02	01.9					892
/1987c	1987	01	24.41963	23	56	48.70	+05	01	47.9		9.5	T		372
/1987c	1987	01	24.43183	23	56	47.73	+05	01	35.8					894
/1987c	1987	01	24.44664	23	56	46.54	+05	01	12.4					894
/1987c	1987	01	24.44676	23	56	46.4	+05	01	12					892
/1987c	1987	01	25.37951	23	55	26.59	+04	42	22.0					399
/1987c	1987	01	25.38888	23	55	25.92	+04	42	10.7					391
/1987c	1987	01	25.39861	23	55	25.25	+04	41	59.4					391
/1987c	1987	01	25.41481	23	55	23.7	+04	41	40					892
/1987c	1987	01	25.42465	23	55	22.53	+04	41	28.1					892
/1987c	1987	01	25.43056	23	55	22.35	+04	41	23.9					399
/1987c	1987	01	25.43368	23	55	22.11	+04	41	20.5					892
/1987c	1987	01	26.42118	23	54	00.94	+04	21	55.6					376
/1987c	1987	01	26.42291	23	54	00.66	+04	21	55.2					892
/1987c	1987	01	26.43507	23	53	59.97	+04	21	36.3					376
/1987c	1987	01	27.08861	23	53	07.87	+04	09	07.6					688
/1987c	1987	01	27.09618	23	53	07.25	+04	08	57.8					688
/1987c	1987	01	27.39826	23	52	43.69	+04	03	17.4					391
/1987c	1987	01	27.42361	23	52	41.65	+04	02	48.8					385
/1987c	1987	01	27.43061	23	52	41.02	+04	02	42.2					385
/1987c	1987	01	27.99138	23	51	57.81	+03	52	12.6					801
/1987c	1987	01	28.38194	23	51	28.32	+03	45	02.5					391
/1987c	1987	01	28.39236	23	51	27.55	+03	44	50.9					391

/1987c	1987	01	28.40278	23	51	26.71	+03	44	40.2			391
/1987c	1987	01	28.98180	23	50	43.51	+03	34	08.4			801
/1987c	1987	01	29.38056	23	50	14.23	+03	26	59.7			391
/1987c	1987	01	29.39792	23	50	13.03	+03	26	41.2			391
/1987c	1987	01	29.40486	23	50	12.63	+03	26	34.2			391
/1987c	1987	01	29.68264	23	49	52.49	+03	21	34.5			063
/1987c	1987	01	29.76889	23	49	46.26	+03	20	04.8			494
/1987c	1987	01	29.97493	23	49	31.60	+03	16	32.4			811
/1987c	1987	01	29.97799	23	49	31.44	+03	16	25.8			801
/1987c	1987	01	30.38194	23	49	02.79	+03	09	23.1			391
/1987c	1987	01	30.38900	23	49	02.18	+03	09	16.8			391
/1987c	1987	01	30.39583	23	49	01.84	+03	09	09.0			391
/1987c	1987	01	30.40278	23	49	01.29	+03	08	59.9			391
/1987c	1987	01	30.76985	23	48	35.68	+03	02	42.7			494

Comet Terasako (1987d)

/1987d	1987	01	26.38194	23	30	55.46	-29	22	45.5	8	T	387
/1987d	1987	01	26.38805	23	30	58.7	-29	22	27	8	T	876
/1987d	1987	01	26.39358	23	31	01.5	-29	22	13			876
/1987d	1987	01	27.37916	23	38	00.9	-28	47	29	7.5	T	892
/1987d	1987	01	27.38274	23	38	00.67	-28	47	36.6			387
/1987d	1987	01	27.40208	23	38	10.26	-28	46	36.9	7.5	T	372
/1987d	1987	01	27.43505	23	38	24.01	-28	45	27.4			413
/1987d	1987	01	27.43516	23	38	24.26	-28	45	25.9			413
/1987d	1987	01	27.43566	23	38	24.51	-28	45	30.4			413
/1987d	1987	01	27.43576	23	38	24.59	-28	45	26.2			413
/1987d	1987	01	27.53264	23	39	05.00	-28	41	54.9			323
/1987d	1987	01	28.39826	23	45	01.81	-28	10	45.4			376
/1987d	1987	01	28.43576	23	45	17.22	-28	09	17.6			415
/1987d	1987	01	28.44340	23	45	20.39	-28	08	57.5			415
/1987d	1987	01	28.44392	23	45	20.70	-28	08	56.5			415
/1987d	1987	01	28.46186	23	45	27.79	-28	08	17.8			415
/1987d	1987	01	28.53472	23	45	57.76	-28	05	35.5			323
/1987d	1987	01	29.38472	23	51	38.32	-27	34	27.4			387
/1987d	1987	01	29.43682	23	51	59.27	-27	32	26.8			413
/1987d	1987	01	29.43692	23	51	59.32	-27	32	30.7		I	413
/1987d	1987	01	29.44281	23	52	01.44	-27	32	13.6		J	413
/1987d	1987	01	29.44291	23	52	01.54	-27	32	13.4		K	413
/1987d	1987	01	29.47010	23	52	12.20	-27	31	07.2			415
/1987d	1987	01	29.48229	23	52	16.94	-27	30	41.9			415
/1987d	1987	01	30.44869	23	58	32.89	-26	54	40.8			415
/1987d	1987	01	30.45893	23	58	36.80	-26	54	14.6			413
/1987d	1987	01	30.45904	23	58	36.86	-26	54	19.4		J	413
/1987d	1987	01	30.45968	23	58	37.39	-26	54	15.0			413
/1987d	1987	01	30.46944	23	58	40.85	-26	53	52.6			415
/1987d	1987	01	31.48333	00	05	03.55	-26	15	42.9			415
/1987d	1987	02	03.47633	00	22	47.38	-24	21	39.2			415
/1987d	1987	02	03.47840	00	22	48.39	-24	21	35.5			415

Periodic Comet Wild 3

/1987e	1987	01	29.45691	14	16	00.34	+03	03	01.8	19.5	T L	691
/1987e	1987	01	29.51588	14	16	03.47	+03	02	56.7		L	691
/1987e	1987	02	01.45810	14	18	39.52	+02	58	59.1			691
/1987e	1987	02	01.47042	14	18	40.19	+02	58	58.3			691
/1987e	1987	02	01.48010	14	18	40.66	+02	58	58.2			691

Periodic Comet Bus

/1987f	1987	01	29.33314	07	21	06.47	+18	40	25.6			691
/1987f	1987	01	29.34252	07	21	06.02	+18	40	26.6			691

/1987f	1987	01	29.38935	07	21	03.62	+18 40 33.5	19.5T	691
/1987f	1987	01	29.39821	07	21	03.23	+18 40 34.2		691
/1987f	1987	01	29.40701	07	21	02.77	+18 40 35.2	M	691
/1987f	1987	02	01.27994	07	18	45.58	+18 47 02.1		691
/1987f	1987	02	01.29691	07	18	44.79	+18 47 03.9		691
/1987f	1987	02	01.31620	07	18	43.82	+18 47 07.3		691

Periodic Comet Tempel 2

/1987g	1986	12	29.45763	11	19	58.71	+12 52 58.7	20.4T	691
/1987g	1986	12	29.48053	11	19	58.78	+12 53 02.7		691
/1987g	1986	12	29.48994	11	19	58.82	+12 53 03.7		691
/1987g	1987	01	25.37653	11	15	54.96	+14 43 13.2		691
/1987g	1987	01	25.39545	11	15	54.55	+14 43 18.8		691
/1987g	1987	01	25.41375	11	15	54.10	+14 43 25.1	20.0T	691
/1987g	1987	01	25.41836	11	15	54.00	+14 43 27.0		691
/1987g	1987	01	25.42293	11	15	53.91	+14 43 28.5		691

Note 1: image diffuse with no obvious central condensation; measurement uncertain. 2: weak, round coma 1′ in diameter, with condensation. 3: 60" tail in p.a. 250 . 4: 77" tail in p.a. 85 . 5: nuclear condensation quite weak. 6: exposure ended by clouds; very weak comet image. 7: observatory code originally erroneously given as 887. 8: right ascension uncertain. 9: poor reference star configuration. A: on a star. B: image diffuse; difficult to measure. C: diffuse with little or no condensation. D: asymmetric 3′ coma with nucleus off-centered in p.a. 115 ; 40" tail in p.a. 295 . E: diffuse with strong condensation. F: declination uncertain. G = 8 + F. H: at edge of plate; 20" tail to northeast. I: poor measure. J: weak image. K = I + J. L: image diffuse, 14" coma; image outside SAOC reference star set. M: image diffuse, 17" coma.

* * * * *

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.
010 Caussols								
J.-L. Heudier, CERGA Caussols, F-06460 Saint Vallier de Thiey, France								
Observers A. Barthelemy, J. Ciffreo, J.-L. Heudier, T. Laverge, C. Pollas								
0.9-m Schmidt telescope								
Observations in association with INAS								
1973 SZ3		1986 12	04.95556	04 46 06.18	+25 38 13.9			010
1973 SZ3		1986 12	05.01806	04 46 01.77	+25 38 11.3			010
1977 DN4		1986 11	25.89792	02 59 17.62	+13 34 12.4			010
1977 DN4		1986 11	25.91875	02 59 17.08	+13 34 10.5			010
1977 DN4		1986 11	25.92917	02 59 16.36	+13 34 08.6			010
1981 RM		1986 12	04.95556	04 42 35.76	+25 42 22.6			010
1981 UT15		1986 12	04.95556	04 47 21.46	+24 57 41.6			010
1982 TQ		1986 11	28.04583	05 36 01.78	+19 03 36.1			010
1982 TQ		1986 11	28.06667	05 36 00.58	+19 03 30.9			010
1982 TQ		1986 11	28.07708	05 35 59.98	+19 03 29.5			010
1984 EN		1986 12	01.83819	02 34 51.16	+21 50 49.9			010
1984 EN		1986 12	01.85903	02 34 50.03	+21 50 43.3			010
1984 EN		1986 12	01.86944	02 34 49.66	+21 50 40.7			010
1984 EN		1986 12	03.83611	02 33 26.62	+21 41 31.2			010
1984 EN		1986 12	03.85694	02 33 25.97	+21 41 28.6			010
1986 TB7		1986 12	01.84861	02 36 05.31	+19 20 17.9			010
1986 TB7		1986 12	03.83611	02 35 04.64	+19 06 54.7			010
1986 TB7		1986 12	03.85694	02 35 04.04	+19 06 47.5			010
1986 VZ		1986 12	01.83819	02 21 13.73	+20 58 59.1			010
1986 VZ		1986 12	01.85903	02 21 13.09	+20 58 56.2			010
1986 VZ		1986 12	01.86944	02 21 12.67	+20 58 54.1			010
1986 VZ		1986 12	03.83611	02 20 15.52	+20 55 29.5			010
1986 VZ		1986 12	03.85694	02 20 15.29	+20 55 27.5			010
1986 VZ		1986 12	03.86736	02 20 15.02	+20 55 25.4			010
1986 VR5		1986 12	03.83611	02 41 26.59	+21 06 43.9		r	010
1986 VR5		1986 12	03.85694	02 41 25.84	+21 06 37.5		r	010
1986 VR5		1986 12	03.86736	02 41 25.51	+21 06 32.9		r	010
1986 WB		1986 12	04.95556	04 27 46.91	+23 32 16.8		r	010
1986 WQ1		1986 12	04.95556	04 45 44.40	+24 25 26.2			010
1986 WK3	*	1986 11	25.84652	00 44 12.02	+20 33 46.8			010
1986 WK3		1986 11	25.86763	00 44 11.84	+20 33 39.6			010
1986 WK3		1986 11	25.87778	00 44 11.62	+20 33 33.0			010
1986 WL3	*	1986 11	25.85694	00 40 30.30	+16 32 52.3			010
1986 WL3		1986 11	25.87778	00 40 30.30	+16 32 46.5			010
1986 WM3	*	1986 11	25.85694	00 41 38.61	+19 29 01.5			010
1986 WM3		1986 11	25.87778	00 41 38.29	+19 28 56.2			010
1986 WN3	*	1986 11	25.85694	00 52 09.46	+17 14 58.7			010
1986 WN3		1986 11	25.87778	00 52 09.23	+17 14 54.7			010
1986 WN3		1986 11	27.82083	00 51 50.52	+17 07 42.7			010
1986 WO3	*	1986 11	25.85694	00 53 00.92	+17 24 44.5			010

1986	WO3		1986	11	25.87778	00	53	00.75	+17	24	37.9	010
1986	WP3	*	1986	11	25.85694	00	54	09.52	+16	22	24.1	010
1986	WP3		1986	11	25.87778	00	54	09.80	+16	22	19.5	010
1986	WP3		1986	11	27.82083	00	54	37.89	+16	15	37.1	010
1986	WQ3	*	1986	11	25.85694	00	55	24.12	+16	54	02.7	010
1986	WQ3		1986	11	25.87778	00	55	23.80	+16	54	03.4	010
1986	WQ3		1986	11	27.82083	00	54	46.97	+16	55	36.5	010
1986	WR3	*	1986	11	25.89792	02	39	11.61	+11	50	26.8	010
1986	WR3		1986	11	25.91875	02	39	11.21	+11	50	23.4	010
1986	WR3		1986	11	25.92569	02	39	11.13	+11	50	22.8	010
1986	WR3		1986	11	25.93264	02	39	10.86	+11	50	21.4	010
1986	WS3	*	1986	11	25.89792	02	39	12.52	+15	30	33.7	010
1986	WS3		1986	11	25.91875	02	39	11.54	+15	30	20.4	010
1986	WS3		1986	11	25.92569	02	39	11.14	+15	30	16.3	010
1986	WS3		1986	11	25.93264	02	39	10.92	+15	30	13.0	010
1986	WT3	*	1986	11	25.89792	02	40	01.00	+11	51	09.7	010
1986	WT3		1986	11	25.91875	02	40	00.56	+11	51	07.0	010
1986	WT3		1986	11	25.92917	02	40	00.20	+11	51	05.6	010
1986	WU3	*	1986	11	25.89792	02	40	04.77	+13	25	25.5	010
1986	WU3		1986	11	25.91875	02	40	03.92	+13	25	23.3	010
1986	WU3		1986	11	25.92917	02	40	03.35	+13	25	22.5	010
1986	WV3	*	1986	11	25.89792	02	42	12.05	+13	25	11.8	010
1986	WV3		1986	11	25.91875	02	42	10.93	+13	25	16.7	010
1986	WV3		1986	11	25.92569	02	42	10.57	+13	25	19.3	010
1986	WV3		1986	11	25.93264	02	42	10.03	+13	25	20.5	010
1986	WW3	*	1986	11	25.89792	02	42	33.19	+14	35	40.0	010
1986	WW3		1986	11	25.91875	02	42	32.92	+14	35	36.1	010
1986	WW3		1986	11	25.92917	02	42	32.43	+14	35	34.7	010
1986	WX3	*	1986	11	25.89792	02	44	07.09	+12	58	20.1	010
1986	WX3		1986	11	25.91875	02	44	06.51	+12	58	17.3	010
1986	WX3		1986	11	25.92569	02	44	06.33	+12	58	15.4	010
1986	WX3		1986	11	25.93264	02	44	06.11	+12	58	14.7	010
1986	WY3	*	1986	11	25.89792	02	44	11.02	+12	24	05.3	010
1986	WY3		1986	11	25.91875	02	44	10.76	+12	24	01.3	010
1986	WY3		1986	11	25.92917	02	44	10.58	+12	23	59.3	010
1986	WZ3	*	1986	11	25.89792	02	44	30.27	+11	50	24.8	010
1986	WZ3		1986	11	25.91875	02	44	29.65	+11	50	20.8	010
1986	WZ3		1986	11	25.92917	02	44	29.25	+11	50	19.4	010
1986	WA4	*	1986	11	25.89792	02	45	25.17	+13	06	15.0	010
1986	WA4		1986	11	25.91875	02	45	23.52	+13	06	06.9	010
1986	WB4	*	1986	11	25.89792	02	45	38.19	+15	43	19.8	010
1986	WB4		1986	11	25.91875	02	45	36.93	+15	43	19.6	010
1986	WB4		1986	11	25.92569	02	45	36.43	+15	43	19.5	010
1986	WB4		1986	11	25.93264	02	45	36.11	+15	43	19.5	010
1986	WC4	*	1986	11	25.89792	02	48	26.87	+15	01	03.3	010
1986	WC4		1986	11	25.91875	02	48	26.02	+15	00	58.6	010
1986	WC4		1986	11	25.92569	02	48	25.39	+15	00	55.3	010
1986	WC4		1986	11	25.93264	02	48	25.21	+15	00	54.0	010
1986	WD4	*	1986	11	25.89792	02	48	34.55	+14	00	25.3	010
1986	WD4		1986	11	25.91875	02	48	33.70	+14	00	20.0	010
1986	WD4		1986	11	25.92569	02	48	33.47	+14	00	18.0	010
1986	WD4		1986	11	25.93264	02	48	33.12	+14	00	16.0	010
1986	WE4	*	1986	11	25.89792	02	49	14.35	+15	58	34.2	010
1986	WE4		1986	11	25.91875	02	49	13.53	+15	58	30.9	010
1986	WE4		1986	11	25.92569	02	49	13.13	+15	58	28.9	010
1986	WE4		1986	11	25.93264	02	49	12.81	+15	58	28.2	010
1986	WF4	*	1986	11	25.89792	02	49	40.15	+11	37	05.7	010
1986	WF4		1986	11	25.91875	02	49	39.98	+11	37	01.7	010
1986	WF4		1986	11	25.92917	02	49	39.84	+11	37	00.4	010

1986	WG4	*	1986	11	25.89792	02	50	22.59	+12 53 17.5	010
1986	WG4		1986	11	25.91875	02	50	22.19	+12 53 11.0	010
1986	WG4		1986	11	25.92569	02	50	22.06	+12 53 09.0	010
1986	WG4		1986	11	25.93264	02	50	21.74	+12 53 05.7	010
1986	WH4	*	1986	11	25.89792	02	51	12.90	+13 33 00.6	010
1986	WH4		1986	11	25.91875	02	51	11.91	+13 32 56.0	010
1986	WH4		1986	11	25.92917	02	51	11.24	+13 32 54.6	010
1986	WJ4	*	1986	11	25.89792	02	51	19.76	+14 29 23.3	010
1986	WJ4		1986	11	25.91875	02	51	18.64	+14 29 21.3	010
1986	WJ4		1986	11	25.92917	02	51	17.87	+14 29 20.6	010
1986	WK4	*	1986	11	25.89792	02	53	34.35	+15 24 53.9	010
1986	WK4		1986	11	25.91875	02	53	33.26	+15 24 59.8	010
1986	WK4		1986	11	25.92917	02	53	32.81	+15 25 02.4	010
1986	WL4	*	1986	11	25.89792	02	53	43.77	+12 22 46.7	010
1986	WL4		1986	11	25.91875	02	53	43.41	+12 22 41.5	010
1986	WL4		1986	11	25.92917	02	53	42.96	+12 22 38.2	010
1986	WM4	*	1986	11	25.89792	02	53	53.56	+14 34 00.7	010
1986	WM4		1986	11	25.91875	02	53	52.93	+14 33 54.8	010
1986	WM4		1986	11	25.92569	02	53	52.61	+14 33 52.2	010
1986	WM4		1986	11	25.93264	02	53	52.39	+14 33 50.2	010
1986	WN4	*	1986	11	25.89792	02	53	58.44	+14 25 34.0	010
1986	WN4		1986	11	25.91875	02	53	57.72	+14 25 34.7	010
1986	WN4		1986	11	25.92569	02	53	57.09	+14 25 34.7	010
1986	WN4		1986	11	25.93264	02	53	57.00	+14 25 34.7	010
1986	WO4	*	1986	11	25.89792	02	54	37.42	+12 20 58.8	010
1986	WO4		1986	11	25.91875	02	54	36.12	+12 20 54.9	010
1986	WO4		1986	11	25.92569	02	54	36.03	+12 20 54.9	010
1986	WO4		1986	11	25.93264	02	54	35.86	+12 20 53.6	010
1986	WP4	*	1986	11	25.89792	02	54	59.82	+11 57 37.2	010
1986	WP4		1986	11	25.91875	02	54	59.11	+11 57 28.8	010
1986	WP4		1986	11	25.92569	02	54	58.98	+11 57 27.5	010
1986	WP4		1986	11	25.93264	02	54	58.53	+11 57 24.2	010
1986	WQ4	*	1986	11	25.89792	02	57	40.37	+13 16 40.5	010
1986	WQ4		1986	11	25.91875	02	57	39.16	+13 16 42.5	010
1986	WQ4		1986	11	25.92569	02	57	38.67	+13 16 42.5	010
1986	WQ4		1986	11	25.93264	02	57	38.58	+13 16 43.8	010
1986	WR4	*	1986	11	25.89792	02	57	54.50	+13 37 28.0	010
1986	WR4		1986	11	25.91875	02	57	53.78	+13 37 28.0	010
1986	WR4		1986	11	25.92569	02	57	53.29	+13 37 28.0	010
1986	WR4		1986	11	25.93264	02	57	53.11	+13 37 28.0	010
1986	WS4	*	1986	11	26.74514	22	56	43.32	+07 16 39.1	010
1986	WS4		1986	11	26.76597	22	56	44.20	+07 16 45.7	010
1986	WS4		1986	11	26.77778	22	56	44.64	+07 16 48.3	010
1986	WT4	*	1986	11	26.74514	22	56	59.24	+02 41 32.4	010
1986	WT4		1986	11	26.76597	22	57	00.24	+02 41 35.8	010
1986	WT4		1986	11	26.77778	22	57	01.03	+02 41 36.4	010
1986	WU4	*	1986	11	26.80417	01	00	01.61	+15 44 38.9	010
1986	WU4		1986	11	26.83542	01	00	01.90	+15 44 16.2	010
1986	WV4	*	1986	11	26.80417	01	02	34.41	+20 23 39.2	010
1986	WV4		1986	11	26.83542	01	02	33.54	+20 23 33.2	010
1986	WW4	*	1986	11	26.80417	01	07	15.14	+18 48 57.1	010
1986	WW4		1986	11	26.83542	01	07	14.17	+18 48 56.4	010
1986	WX4	*	1986	11	26.80417	01	08	44.09	+19 50 30.7	010
1986	WX4		1986	11	26.83542	01	08	44.41	+19 50 21.6	010
1986	WY4	*	1986	11	26.80417	01	08	47.66	+16 28 11.1	010
1986	WY4		1986	11	26.83542	01	08	46.44	+16 28 01.9	010
1986	WZ4	*	1986	11	26.80417	01	09	00.55	+19 46 22.7	010
1986	WZ4		1986	11	26.83542	01	08	59.53	+19 46 14.8	010
1986	WA5	*	1986	11	26.80417	01	09	57.94	+17 35 38.8	010

1986	WA5		1986	11	26.83542	01	09	57.57	+17	35	33.6	010
1986	WB5	*	1986	11	26.80417	01	10	21.79	+17	39	34.4	010
1986	WB5		1986	11	26.83542	01	10	21.28	+17	39	21.3	010
1986	WC5	*	1986	11	27.74583	22	24	29.82	+05	35	28.4	r 010
1986	WC5		1986	11	27.76667	22	24	30.99	+05	35	14.1	r 010
1986	WC5		1986	11	27.77708	22	24	31.48	+05	35	08.3	r 010
1986	WD5	*	1986	11	27.74583	22	29	26.27	+04	18	25.3	010
1986	WD5		1986	11	27.76667	22	29	27.14	+04	18	31.3	010
1986	WD5		1986	11	27.77708	22	29	27.62	+04	18	33.9	010
1986	WE5	*	1986	11	27.74583	22	31	52.43	+03	41	18.6	010
1986	WE5		1986	11	27.76667	22	31	53.22	+03	41	22.5	010
1986	WE5		1986	11	27.77708	22	31	54.05	+03	41	24.6	010
1986	WF5	*	1986	11	27.74583	22	33	10.25	+04	57	18.1	010
1986	WF5		1986	11	27.76667	22	33	11.74	+04	57	19.4	010
1986	WF5		1986	11	27.77708	22	33	12.17	+04	57	20.8	010
1986	WG5	*	1986	11	27.74583	22	39	33.25	+02	44	14.0	010
1986	WG5		1986	11	27.76667	22	39	34.43	+02	44	19.9	010
1986	WG5		1986	11	27.77708	22	39	35.04	+02	44	21.9	010
1986	WH5	*	1986	11	27.74583	22	40	50.13	+03	58	59.9	010
1986	WH5		1986	11	27.76667	22	40	51.66	+03	58	56.5	010
1986	WH5		1986	11	27.77708	22	40	52.40	+03	58	55.9	010
1986	WJ5	*	1986	11	27.75625	22	24	49.72	+05	26	45.9	r 010
1986	WJ5		1986	11	27.77708	22	24	50.33	+05	26	44.0	010
1986	WK5	*	1986	11	27.75625	22	25	34.51	+05	57	24.3	r 010
1986	WL5	*	1986	11	27.75625	22	30	04.66	+02	56	16.0	010
1986	WL5		1986	11	27.77708	22	30	05.54	+02	56	16.1	010
1986	WM5	*	1986	11	27.75625	22	33	12.76	+04	29	18.0	010
1986	WN5	*	1986	11	27.75625	22	33	24.14	+04	16	58.1	010
1986	WO5	*	1986	11	27.80000	00	53	59.07	+14	36	32.6	010
1986	WO5		1986	11	27.84167	00	53	57.73	+14	37	04.6	010
1986	WP5	*	1986	11	27.86319	01	16	35.55	+37	22	49.6	010
1986	WP5		1986	11	27.89097	01	16	33.97	+37	23	38.3	010
1986	WQ5	*	1986	11	27.91944	23	59	33.04	+13	31	51.7	010
1986	WQ5		1986	11	27.94028	23	59	33.35	+13	31	43.9	010
1986	WQ5		1986	11	27.95069	23	59	33.35	+13	31	40.0	010
1986	WR5	*	1986	11	27.96875	03	58	22.40	+34	30	25.8	010
1986	WR5		1986	11	27.98958	03	58	21.74	+34	30	17.6	010
1986	WR5		1986	11	28.00000	03	58	21.32	+34	30	14.9	010
1986	WS5	*	1986	11	27.96875	03	58	57.02	+34	01	21.7	010
1986	WS5		1986	11	27.98958	03	58	55.77	+34	01	18.6	010
1986	WS5		1986	11	28.00000	03	58	54.83	+34	01	16.9	010
1986	WT5	*	1986	11	27.96875	03	58	59.20	+33	34	17.4	010
1986	WT5		1986	11	27.98958	03	58	58.18	+33	34	06.5	010
1986	WT5		1986	11	28.00000	03	58	57.31	+33	34	02.9	010
1986	WU5	*	1986	11	27.96875	04	00	18.61	+34	54	11.2	010
1986	WU5		1986	11	27.98958	04	00	17.09	+34	54	03.5	010
1986	WU5		1986	11	28.00000	04	00	16.30	+34	54	00.0	010
1986	WV5	*	1986	11	27.96875	04	05	06.52	+37	23	51.5	010
1986	WV5		1986	11	27.98958	04	05	04.94	+37	23	49.9	010
1986	WV5		1986	11	28.00000	04	05	04.17	+37	23	49.0	010
1986	WW5	*	1986	11	27.96875	04	06	17.89	+37	21	42.6	010
1986	WW5		1986	11	27.98958	04	06	16.24	+37	21	52.1	010
1986	WW5		1986	11	28.00000	04	06	15.30	+37	21	53.9	010
1986	WX5	*	1986	11	27.96875	04	07	58.68	+35	09	03.7	010
1986	WX5		1986	11	27.98958	04	07	56.88	+35	09	00.1	010
1986	WX5		1986	11	28.00000	04	07	56.18	+35	08	58.7	010
1986	WX5		1986	12	03.97986	04	02	16.29	+34	57	50.6	010
1986	WX5		1986	12	04.00069	04	02	14.75	+34	57	47.0	010
1986	WX5		1986	12	04.01111	04	02	14.17	+34	57	45.6	010

1986	WY5	*	1986	11	27.96875	04	10	07.84	+35	07	03.7	010
1986	WY5		1986	11	27.98958	04	10	06.40	+35	06	55.1	010
1986	WY5		1986	11	28.00000	04	10	05.87	+35	06	51.7	010
1986	WZ5	*	1986	11	27.96875	04	16	30.02	+36	34	22.5	010
1986	WZ5		1986	11	27.98958	04	16	28.13	+36	34	32.5	010
1986	WZ5		1986	11	28.00000	04	16	27.27	+36	34	36.5	010
1986	WA6	*	1986	11	27.96875	04	17	09.45	+35	39	56.3	010
1986	WA6		1986	11	27.98958	04	17	07.99	+35	39	42.8	010
1986	WA6		1986	11	28.00000	04	17	07.45	+35	39	38.9	010
1986	WB6	*	1986	11	27.96875	04	17	55.78	+36	09	09.2	010
1986	WB6		1986	11	27.98958	04	17	54.39	+36	09	14.0	010
1986	WB6		1986	11	28.00000	04	17	53.53	+36	09	16.8	010
1986	WC6	*	1986	11	27.96875	04	18	10.81	+36	41	19.5	010
1986	WC6		1986	11	27.98958	04	18	09.17	+36	41	08.7	010
1986	WC6		1986	11	27.99652	04	18	08.79	+36	41	06.2	010
1986	WC6		1986	11	28.00347	04	18	08.29	+36	41	02.3	010
1986	WC6		1986	12	03.97986	04	13	03.36	+35	56	16.7	010
1986	WC6		1986	12	04.00069	04	13	01.84	+35	56	05.1	010
1986	WC6		1986	12	04.01111	04	13	01.35	+35	55	59.3	010
1986	WD6	*	1986	11	27.96875	04	19	25.84	+35	19	35.7	010
1986	WD6		1986	11	27.98958	04	19	24.28	+35	19	21.0	010
1986	WD6		1986	11	27.99652	04	19	23.95	+35	19	17.8	010
1986	WD6		1986	11	28.00347	04	19	23.36	+35	19	12.0	010
1986	WD6		1986	12	03.97986	04	14	12.35	+34	17	39.3	010
1986	WD6		1986	12	04.00069	04	14	11.33	+34	17	22.5	010
1986	WD6		1986	12	04.00638	04	14	10.86	+34	17	18.7	010
1986	WD6		1986	12	04.01458	04	14	10.43	+34	17	12.2	010
1986	WE6	*	1986	11	27.97917	03	57	30.90	+35	12	32.4	r 010
1986	WE6		1986	11	28.00000	03	57	29.48	+35	12	27.2	r 010
1986	WF6	*	1986	11	27.97917	03	58	27.04	+33	17	08.6	010
1986	WF6		1986	11	28.00000	03	58	25.54	+33	17	02.1	010
1986	WG6	*	1986	11	27.97917	04	03	24.96	+34	03	56.2	010
1986	WG6		1986	11	28.00000	04	03	23.28	+34	03	55.1	010
1986	WH6	*	1986	11	27.97917	04	06	47.90	+36	13	49.7	010
1986	WJ6	*	1986	11	27.97917	04	12	00.87	+33	09	36.2	010
1986	WJ6		1986	11	28.00000	04	11	59.47	+33	09	40.7	010
1986	WK6	*	1986	11	27.97917	04	14	13.00	+35	22	33.6	010
1986	WK6		1986	11	28.00000	04	14	11.77	+35	22	35.6	010
1986	WL6	*	1986	11	28.04583	05	21	33.60	+20	29	18.8	010
1986	WL6		1986	11	28.06667	05	21	32.30	+20	29	18.5	010
1986	WL6		1986	11	28.07708	05	21	31.65	+20	29	18.3	010
1986	WM6	*	1986	11	28.04583	05	21	54.05	+19	55	21.3	010
1986	WM6		1986	11	28.06667	05	21	53.08	+19	55	18.4	010
1986	WM6		1986	11	28.07708	05	21	52.53	+19	55	18.3	010
1986	WN6	*	1986	11	28.04583	05	24	04.61	+20	49	57.7	010
1986	WN6		1986	11	28.06667	05	24	03.44	+20	49	56.7	010
1986	WN6		1986	11	28.07708	05	24	02.93	+20	49	55.3	010
1986	WO6	*	1986	11	28.04583	05	24	08.82	+17	43	07.3	010
1986	WO6		1986	11	28.06667	05	24	07.34	+17	43	18.0	010
1986	WO6		1986	11	28.07708	05	24	06.75	+17	43	20.5	010
1986	WP6	*	1986	11	28.04583	05	26	46.94	+17	51	21.5	010
1986	WP6		1986	11	28.06667	05	26	46.03	+17	51	14.1	010
1986	WP6		1986	11	28.07708	05	26	45.35	+17	51	12.7	010
1986	WQ6	*	1986	11	28.04583	05	27	48.64	+17	25	13.3	r 010
1986	WQ6		1986	11	28.06667	05	27	47.14	+17	25	05.9	r 010
1986	WQ6		1986	11	28.07708	05	27	46.92	+17	25	04.5	r 010
1986	WR6	*	1986	11	28.04583	05	27	52.73	+22	10	12.5	010
1986	WR6		1986	11	28.06667	05	27	51.46	+22	10	12.3	010
1986	WR6		1986	11	28.07708	05	27	50.71	+22	10	10.2	010

1986	WS6	*	1986	11	28.04583	05	28	16.36	+20	23	42.7	010
1986	WS6		1986	11	28.06667	05	28	15.11	+20	23	45.7	010
1986	WS6		1986	11	28.07708	05	28	14.55	+20	23	46.3	010
1986	WT6	*	1986	11	28.04583	05	29	32.69	+17	51	30.9	010
1986	WT6		1986	11	28.06667	05	29	31.55	+17	51	18.4	010
1986	WT6		1986	11	28.07708	05	29	31.01	+17	51	15.7	010
1986	WU6	*	1986	11	28.04583	05	29	47.66	+17	33	59.9	010
1986	WU6		1986	11	28.06667	05	29	46.06	+17	34	01.6	010
1986	WU6		1986	11	28.07708	05	29	45.70	+17	34	01.6	010
1986	WV6	*	1986	11	28.04583	05	30	29.96	+21	57	01.2	010
1986	WV6		1986	11	28.06667	05	30	28.28	+21	56	31.0	010
1986	WV6		1986	11	28.07361	05	30	27.68	+21	56	20.5	010
1986	WV6		1986	11	28.08055	05	30	27.02	+21	56	11.9	010
1986	WW6	*	1986	11	28.04583	05	31	01.37	+22	32	18.6	r 010
1986	WW6		1986	11	28.06667	05	31	00.24	+22	32	14.6	r 010
1986	WW6		1986	11	28.07708	05	30	59.54	+22	32	11.2	r 010
1986	WX6	*	1986	11	28.04583	05	31	13.79	+22	31	05.4	010
1986	WX6		1986	11	28.06667	05	31	12.47	+22	31	00.1	010
1986	WX6		1986	11	28.07708	05	31	12.05	+22	30	59.4	010
1986	WY6	*	1986	11	28.04583	05	32	31.71	+18	29	16.5	010
1986	WY6		1986	11	28.06667	05	32	30.65	+18	29	21.6	010
1986	WY6		1986	11	28.07708	05	32	30.10	+18	29	22.2	010
1986	WZ6	*	1986	11	28.04583	05	32	54.83	+22	16	44.2	010
1986	WZ6		1986	11	28.06667	05	32	53.70	+22	16	48.7	010
1986	WZ6		1986	11	28.07708	05	32	53.14	+22	16	49.3	010
1986	WA7	*	1986	11	28.04583	05	34	29.94	+21	53	12.6	010
1986	WA7		1986	11	28.06667	05	34	28.68	+21	53	10.6	010
1986	WA7		1986	11	28.07708	05	34	28.25	+21	53	10.5	010
1986	WB7	*	1986	11	28.04583	05	35	11.89	+18	29	51.3	010
1986	WB7		1986	11	28.07708	05	35	10.24	+18	29	50.0	010
1986	WC7	*	1986	11	28.04583	05	35	58.78	+19	45	20.6	010
1986	WC7		1986	11	28.06667	05	35	57.71	+19	45	18.7	010
1986	WC7		1986	11	28.07708	05	35	57.06	+19	45	18.7	010
1986	WD7	*	1986	11	28.04583	05	37	37.49	+21	44	42.4	010
1986	WD7		1986	11	28.06667	05	37	36.13	+21	44	30.1	010
1986	WD7		1986	11	28.07708	05	37	35.75	+21	44	25.5	010
1986	WE7	*	1986	11	28.04583	05	40	20.12	+18	42	41.1	r 010
1986	WE7		1986	11	28.06667	05	40	18.83	+18	42	47.1	r 010
1986	WE7		1986	11	28.07361	05	40	18.33	+18	42	45.8	r 010
1986	WE7		1986	11	28.08055	05	40	17.87	+18	42	49.1	r 010
1986	WF7	*	1986	11	28.04583	05	40	31.59	+19	48	38.9	r 010
1986	WF7		1986	11	28.06667	05	40	30.53	+19	48	39.0	r 010
1986	WF7		1986	11	28.07708	05	40	30.02	+19	48	39.1	r 010
1986	WG7	*	1986	11	28.05625	05	26	38.81	+22	26	26.2	010
1986	WG7		1986	11	28.07708	05	26	37.49	+22	26	23.3	010
1986	WH7	*	1986	11	28.05625	05	27	27.98	+22	25	43.1	010
1986	WJ7	*	1986	11	28.05625	05	33	41.32	+18	26	09.2	010
1986	WJ7		1986	11	28.07708	05	33	40.04	+18	26	09.1	010
1986	WK7	*	1986	11	28.05625	05	33	42.11	+18	20	32.5	010
1986	WK7		1986	11	28.07708	05	33	40.82	+18	20	29.8	010
1986	WL7	*	1986	11	28.05625	05	37	41.06	+21	53	26.7	010
1986	WL7		1986	11	28.07708	05	37	39.75	+21	53	22.8	010
1986	XF		1986	12	04.95556	04	30	29.85	+25	48	39.0	010
1986	XF		1986	12	05.01806	04	30	25.98	+25	48	32.8	010
1986	XH		1986	12	04.95556	04	38	22.66	+27	21	51.8	010
1986	XH		1986	12	05.01806	04	38	18.70	+27	21	19.6	010
1986	XJ		1986	12	04.95556	04	38	50.83	+25	03	19.6	010
1986	XJ		1986	12	05.01806	04	38	47.28	+25	03	04.5	010
1986	XU		1986	12	04.95556	04	30	58.34	+27	03	24.0	010

1986	XU		1986	12	05.01806	04	30	53.64	+27	03	32.6	010
1986	XW		1986	12	04.95556	04	35	39.59	+23	41	04.5	010
1986	XW		1986	12	05.01806	04	35	36.51	+23	40	52.4	010
1986	XQ1	*	1986	12	01.06389	06	45	42.29	+33	48	47.5	010
1986	XQ1		1986	12	01.08472	06	45	40.93	+33	48	55.4	010
1986	XQ1		1986	12	01.09514	06	45	40.67	+33	48	58.0	010
1986	XR1	*	1986	12	01.06389	06	45	48.03	+35	26	03.5	010
1986	XR1		1986	12	01.08472	06	45	46.97	+35	26	10.8	010
1986	XR1		1986	12	01.09514	06	45	46.65	+35	26	13.4	010
1986	XS1	*	1986	12	01.06389	06	46	19.48	+34	15	28.5	010
1986	XS1		1986	12	01.08472	06	46	18.37	+34	15	33.8	010
1986	XS1		1986	12	01.09514	06	46	18.27	+34	15	34.5	010
1986	XT1	*	1986	12	01.06389	06	52	09.91	+33	02	40.2	r 010
1986	XT1		1986	12	01.08472	06	52	09.00	+33	02	54.8	r 010
1986	XT1		1986	12	01.09514	06	52	08.96	+33	03	00.0	r 010
1986	XU1	*	1986	12	01.15208	08	28	32.01	+10	27	58.5	010
1986	XU1		1986	12	01.17292	08	28	31.92	+10	27	55.9	010
1986	XU1		1986	12	01.18333	08	28	31.93	+10	27	52.0	010
1986	XV1	*	1986	12	01.15208	08	33	08.35	+11	57	56.6	010
1986	XV1		1986	12	01.17292	08	33	08.66	+11	57	51.4	010
1986	XV1		1986	12	01.18333	08	33	09.07	+11	57	48.2	010
1986	XW1	*	1986	12	01.15208	08	35	13.37	+10	30	22.5	010
1986	XW1		1986	12	01.17292	08	35	13.33	+10	30	17.3	010
1986	XW1		1986	12	01.18333	08	35	13.34	+10	30	11.4	010
1986	XX1	*	1986	12	01.15208	08	39	40.46	+10	34	48.9	010
1986	XX1		1986	12	01.17292	08	39	40.37	+10	34	45.0	010
1986	XX1		1986	12	01.18333	08	39	40.37	+10	34	39.8	010
1986	XY1	*	1986	12	01.15208	08	43	00.58	+11	22	04.0	010
1986	XY1		1986	12	01.17292	08	43	00.58	+11	21	56.8	010
1986	XY1		1986	12	01.18333	08	43	00.58	+11	21	52.9	010
1986	XZ1	*	1986	12	01.15208	08	43	37.03	+10	47	16.8	010
1986	XZ1		1986	12	01.17292	08	43	37.35	+10	46	55.2	010
1986	XZ1		1986	12	01.18333	08	43	37.40	+10	46	43.5	010
1986	XA2	*	1986	12	01.83819	02	21	16.38	+18	05	59.7	010
1986	XA2		1986	12	01.85903	02	21	15.71	+18	05	49.6	010
1986	XA2		1986	12	01.86944	02	21	15.49	+18	05	43.7	010
1986	XB2	*	1986	12	01.83819	02	29	36.33	+19	53	00.8	010
1986	XB2		1986	12	01.85903	02	29	35.31	+19	52	58.0	010
1986	XB2		1986	12	01.86944	02	29	34.80	+19	52	57.3	010
1986	XB2		1986	12	03.84653	02	28	17.82	+19	51	05.8	010
1986	XB2		1986	12	03.86736	02	28	17.13	+19	51	04.4	010
1986	XC2	*	1986	12	01.83819	02	34	36.90	+17	59	00.3	010
1986	XC2		1986	12	01.85903	02	34	35.76	+17	58	53.0	010
1986	XC2		1986	12	01.86944	02	34	35.30	+17	58	52.4	010
1986	XC2		1986	12	03.83611	02	33	22.62	+17	50	30.1	010
1986	XC2		1986	12	03.85694	02	33	22.30	+17	50	26.2	010
1986	XC2		1986	12	03.86736	02	33	21.61	+17	50	22.2	010
1986	XD2	*	1986	12	01.83819	02	37	54.42	+20	59	17.5	010
1986	XD2		1986	12	01.85903	02	37	53.63	+20	59	08.4	010
1986	XD2		1986	12	01.86944	02	37	53.35	+20	59	03.8	010
1986	XE2	*	1986	12	01.84861	02	22	38.69	+19	59	55.7	010
1986	XE2		1986	12	01.86944	02	22	37.46	+19	59	50.0	010
1986	XE2		1986	12	03.83611	02	21	20.80	+19	55	31.7	010
1986	XE2		1986	12	03.85694	02	21	20.29	+19	55	28.9	010
1986	XE2		1986	12	03.86736	02	21	19.70	+19	55	25.5	010
1986	XF2	*	1986	12	01.84861	02	38	08.74	+19	30	42.3	010
1986	XF2		1986	12	01.86944	02	38	08.18	+19	30	37.7	010
1986	XF2		1986	12	03.83611	02	37	18.76	+19	24	29.2	010
1986	XF2		1986	12	03.85694	02	37	17.51	+19	24	22.7	010

1986	XG2	*	1986	12	01.97569	05	17	48.32	+31	59	28.2	r 010
1986	XG2		1986	12	02.00694	05	17	46.44	+31	59	16.4	r 010
1986	XH2	*	1986	12	01.97569	05	21	50.23	+34	10	52.0	010
1986	XH2		1986	12	02.00694	05	21	49.06	+34	10	55.6	010
1986	XJ2	*	1986	12	01.97569	05	22	12.19	+32	56	47.1	010
1986	XJ2		1986	12	02.00694	05	22	11.10	+32	56	46.8	010
1986	XK2	*	1986	12	01.97569	05	22	34.54	+34	50	22.3	010
1986	XK2		1986	12	02.00694	05	22	32.89	+34	50	25.2	010
1986	XL2	*	1986	12	01.97569	05	34	08.01	+36	06	24.3	010
1986	XL2		1986	12	02.00694	05	34	06.18	+36	06	31.0	010
1986	XM2	*	1986	12	01.97569	05	38	33.54	+32	42	14.3	010
1986	XM2		1986	12	02.00694	05	38	32.44	+32	42	08.1	010
1986	XN2	*	1986	12	01.99132	05	24	17.34	+33	18	42.0	010
1986	XO2	*	1986	12	02.18889	09	43	28.96	-04	16	35.2	010
1986	XO2		1986	12	02.20972	09	43	29.84	-04	16	38.5	010
1986	XO2		1986	12	02.21493	09	43	30.23	-04	16	40.4	010
1986	XP2	*	1986	12	02.18889	09	44	35.43	-06	19	44.3	010
1986	XP2		1986	12	02.20972	09	44	35.87	-06	19	54.7	010
1986	XP2		1986	12	02.21493	09	44	36.00	-06	19	58.6	010
1986	XQ2	*	1986	12	02.88542	03	12	22.73	-03	43	42.8	010
1986	XQ2		1986	12	02.94792	03	12	21.69	-03	43	50.7	010
1986	XR2	*	1986	12	03.83611	02	20	11.30	+21	33	42.7	010
1986	XR2		1986	12	03.85694	02	20	10.74	+21	33	38.5	010
1986	XS2	*	1986	12	03.83611	02	39	07.66	+20	04	26.1	010
1986	XS2		1986	12	03.85694	02	39	07.33	+20	04	25.4	010
1986	XS2		1986	12	03.86736	02	39	06.77	+20	04	24.1	010
1986	XT2	*	1986	12	03.83611	02	40	16.26	+20	11	38.5	r 010
1986	XT2		1986	12	03.85694	02	40	15.89	+20	11	37.9	r 010
1986	XT2		1986	12	03.86736	02	40	15.52	+20	11	37.3	r 010
1986	XU2	*	1986	12	03.83611	02	40	22.06	+20	00	22.7	r 010
1986	XU2		1986	12	03.85694	02	40	21.64	+20	00	21.5	r 010
1986	XU2		1986	12	03.86736	02	40	21.13	+20	00	20.8	r 010
1986	XV2	*	1986	12	03.88681	03	12	09.47	+00	44	51.3	010
1986	XV2		1986	12	03.95556	03	12	04.82	+00	43	49.3	010
1986	XW2	*	1986	12	03.97986	04	08	03.33	+33	07	00.8	010
1986	XW2		1986	12	04.00069	04	08	02.09	+33	06	50.3	010
1986	XW2		1986	12	04.01111	04	08	01.57	+33	06	46.4	010
1986	XX2	*	1986	12	03.97986	04	09	30.16	+36	12	55.7	010
1986	XX2		1986	12	04.00069	04	09	28.38	+36	12	49.2	010
1986	XX2		1986	12	04.00638	04	09	28.11	+36	12	49.2	010
1986	XX2		1986	12	04.01458	04	09	27.40	+36	12	45.3	010
1986	XY2	*	1986	12	03.97986	04	10	02.62	+37	01	02.4	010
1986	XY2		1986	12	04.00069	04	10	00.38	+37	01	10.3	010
1986	XY2		1986	12	04.01111	04	09	59.68	+37	01	14.2	010
1986	XZ2	*	1986	12	03.97986	04	13	07.63	+32	58	50.1	010
1986	XZ2		1986	12	04.00069	04	13	06.33	+32	58	49.7	010
1986	XZ2		1986	12	04.01111	04	13	05.55	+32	58	48.5	010
1986	XA3	*	1986	12	03.97986	04	15	11.05	+34	49	41.5	010
1986	XA3		1986	12	04.00069	04	15	09.46	+34	49	36.6	010
1986	XA3		1986	12	04.01111	04	15	08.97	+34	49	32.7	010
1986	XB3	*	1986	12	03.97986	04	16	47.62	+36	00	18.4	010
1986	XB3		1986	12	04.00069	04	16	46.05	+36	00	10.3	010
1986	XB3		1986	12	04.01111	04	16	45.50	+36	00	07.8	010
1986	XC3	*	1986	12	04.06389	07	19	32.05	+30	15	52.8	010
1986	XC3		1986	12	04.09861	07	19	31.29	+30	15	56.4	010
1986	XC3		1986	12	04.10903	07	19	30.73	+30	15	58.8	010
1986	XD3	*	1986	12	04.06389	07	26	11.48	+31	25	49.5	010
1986	XD3		1986	12	04.09861	07	26	10.66	+31	25	56.5	010
1986	XD3		1986	12	04.10903	07	26	10.25	+31	26	00.4	010

1986	XE3	*	1986	12	04.06389	07	30	38.75	+27	23	55.3	010
1986	XE3		1986	12	04.09861	07	30	38.36	+27	23	52.7	010
1986	XF3	*	1986	12	04.06389	07	31	42.83	+29	36	06.2	010
1986	XF3		1986	12	04.09861	07	31	42.47	+29	36	04.9	010
1986	XF3		1986	12	04.10903	07	31	42.22	+29	36	04.2	010
1986	XG3	*	1986	12	04.06389	07	32	03.87	+28	28	19.3	010
1986	XG3		1986	12	04.09861	07	32	03.67	+28	28	33.0	010
1986	XG3		1986	12	04.10903	07	32	03.68	+28	28	38.8	010
1986	XH3	*	1986	12	04.18111	09	40	41.76	+55	36	45.4	010
1986	XH3		1986	12	04.22278	09	40	43.55	+55	37	10.8	010
1986	XJ3	*	1986	12	04.18111	09	43	53.57	+56	21	12.0	010
1986	XJ3		1986	12	04.22278	09	43	54.74	+56	21	34.2	010
1986	XK3	*	1986	12	04.18111	09	47	11.47	+57	05	04.5	010
1986	XK3		1986	12	04.22278	09	47	13.17	+57	05	28.8	010
1986	XL3	*	1986	12	04.18111	09	50	36.45	+57	48	35.7	010
1986	XL3		1986	12	04.22278	09	50	38.00	+57	48	55.2	010
1986	XM3	*	1986	12	04.89445	03	36	48.85	+33	18	58.5	010
1986	XM3		1986	12	04.91528	03	36	47.81	+33	18	51.8	010
1986	XM3		1986	12	04.92569	03	36	47.19	+33	18	51.0	010
1986	XN3	*	1986	12	04.89445	03	40	33.26	+36	52	38.7	010
1986	XN3		1986	12	04.91528	03	40	32.12	+36	52	32.1	010
1986	XN3		1986	12	04.92569	03	40	31.63	+36	52	30.8	010
1986	XO3	*	1986	12	04.89445	03	44	22.70	+33	00	30.0	010
1986	XO3		1986	12	04.91528	03	44	21.35	+33	00	22.3	010
1986	XO3		1986	12	04.92569	03	44	20.62	+33	00	17.8	010
1986	XP3	*	1986	12	04.89445	03	45	42.01	+33	08	16.4	010
1986	XP3		1986	12	04.91528	03	45	40.80	+33	07	58.2	010
1986	XP3		1986	12	04.92569	03	45	40.38	+33	07	51.8	010
1986	XQ3	*	1986	12	04.89445	03	46	24.08	+33	39	29.8	010
1986	XQ3		1986	12	04.91528	03	46	22.57	+33	39	34.6	010
1986	XQ3		1986	12	04.92569	03	46	21.53	+33	39	35.3	010
1986	XR3	*	1986	12	04.95556	04	27	23.41	+25	13	58.7	r 010
1986	XS3	*	1986	12	04.95556	04	30	18.52	+24	47	37.3	010
1986	XS3		1986	12	05.01806	04	30	17.62	+24	47	28.6	010
1986	XT3	*	1986	12	04.95556	04	30	34.59	+26	33	59.6	010
1986	XU3	*	1986	12	04.95556	04	33	44.73	+26	57	54.3	010
1986	XU3		1986	12	05.01806	04	33	41.72	+26	57	40.7	010
1986	XV3	*	1986	12	04.95556	04	33	59.96	+25	19	16.8	010
1986	XW3	*	1986	12	04.95556	04	35	28.37	+25	25	02.6	010
1986	XW3		1986	12	05.01806	04	35	25.53	+25	24	56.4	010
1986	XX3	*	1986	12	04.95556	04	36	00.28	+25	04	48.7	010
1986	XX3		1986	12	05.01806	04	35	56.29	+25	04	56.1	010
1986	XY3	*	1986	12	04.95556	04	36	14.70	+24	12	18.0	010
1986	XY3		1986	12	05.01806	04	36	11.66	+24	12	06.0	010
1986	XZ3	*	1986	12	04.95556	04	38	19.84	+25	20	45.9	010
1986	XZ3		1986	12	05.01806	04	38	14.89	+25	20	50.3	010
1986	XB4	*	1986	12	04.95556	04	38	45.90	+24	49	04.3	010
1986	XC4	*	1986	12	04.95556	04	38	48.59	+24	35	05.0	010
1986	XD4	*	1986	12	04.95556	04	39	12.94	+24	26	04.2	010
1986	XD4		1986	12	05.01806	04	39	09.46	+24	25	55.6	010
1986	XE4	*	1986	12	04.95556	04	39	18.63	+26	29	31.1	010
1986	XE4		1986	12	05.01806	04	39	14.60	+26	29	19.9	010
1986	XF4	*	1986	12	04.95556	04	43	21.37	+23	53	17.9	010
1986	XF4		1986	12	05.01806	04	43	17.76	+23	53	15.0	010
1986	XG4	*	1986	12	04.95556	04	45	08.86	+27	12	23.9	010
1986	XH4	*	1986	12	05.08056	06	55	46.78	+12	54	46.8	010
1986	XH4		1986	12	05.10139	06	55	46.07	+12	54	38.9	010
1986	XH4		1986	12	05.11180	06	55	45.62	+12	54	34.2	010
1986	XJ4	*	1986	12	05.95278	04	47	23.42	+11	27	50.1	010

1986	XJ4		1986	12	05.96320	04	47	22.72	+11	27	44.1	010
1986	XJ4		1986	12	05.97361	04	47	21.97	+11	27	40.7	010
1986	XK4	*	1986	12	05.95278	04	49	36.16	+11	33	28.4	010
1986	XK4		1986	12	05.96320	04	49	35.14	+11	33	24.3	010
1986	XK4		1986	12	05.97361	04	49	34.56	+11	33	22.2	010
1986	XL4	*	1986	12	05.95278	04	49	56.57	+08	10	08.8	010
1986	XL4		1986	12	05.96320	04	49	55.57	+08	10	05.3	010
1986	XL4		1986	12	05.97361	04	49	55.08	+08	10	02.6	010
1986	XM4	*	1986	12	05.95278	04	53	44.52	+11	22	33.0	010
1986	XM4		1986	12	05.96320	04	53	43.72	+11	22	31.6	010
1986	XM4		1986	12	05.97361	04	53	42.88	+11	22	29.5	010
1986	XN4	*	1986	12	05.95278	04	56	06.94	+10	32	25.7	010
1986	XN4		1986	12	05.96320	04	56	05.93	+10	32	24.3	010
1986	XN4		1986	12	05.97361	04	56	05.39	+10	32	24.2	010
1986	XO4	*	1986	12	05.95278	04	56	24.21	+12	31	03.7	010
1986	XO4		1986	12	05.96320	04	56	23.63	+12	31	01.0	010
1986	XO4		1986	12	05.97361	04	56	23.05	+12	30	58.3	010
1986	XP4	*	1986	12	05.95278	04	58	29.38	+11	04	57.8	010
1986	XP4		1986	12	05.96320	04	58	28.45	+11	04	53.2	010
1986	XP4		1986	12	05.97361	04	58	27.61	+11	04	49.8	010
1986	XQ4	*	1986	12	05.95278	04	58	58.49	+11	46	01.4	010
1986	XQ4		1986	12	05.96320	04	58	57.69	+11	46	03.3	010
1986	XQ4		1986	12	05.97361	04	58	56.75	+11	46	03.9	010
1986	XR4	*	1986	12	05.95278	04	59	00.93	+12	18	41.5	010
1986	XR4		1986	12	05.96320	04	58	59.95	+12	18	42.7	010
1986	XR4		1986	12	05.97361	04	58	59.33	+12	18	43.9	010
1986	XS4	*	1986	12	05.95278	04	59	18.95	+09	20	27.5	010
1986	XS4		1986	12	05.96320	04	59	18.42	+09	20	23.5	010
1986	XS4		1986	12	05.97361	04	59	17.36	+09	20	18.9	010
1986	XT4	*	1986	12	05.95278	04	59	19.81	+08	56	47.2	010
1986	XT4		1986	12	05.96320	04	59	19.20	+08	56	47.7	010
1986	XT4		1986	12	05.97361	04	59	18.58	+08	56	49.0	010
1986	XU4	*	1986	12	05.95278	04	59	55.91	+11	29	52.3	010
1986	XU4		1986	12	05.96320	04	59	54.94	+11	29	52.8	010
1986	XU4		1986	12	05.97361	04	59	53.91	+11	29	54.1	010
1986	XV4	*	1986	12	05.95278	04	59	57.49	+11	42	35.2	010
1986	XV4		1986	12	05.96320	04	59	56.60	+11	42	30.5	010
1986	XV4		1986	12	05.97361	04	59	55.84	+11	42	26.5	010
1986	XW4	*	1986	12	05.95278	05	02	42.06	+10	47	44.1	010
1986	XW4		1986	12	05.96320	05	02	41.26	+10	47	44.0	010
1986	XW4		1986	12	05.97361	05	02	40.42	+10	47	44.6	010
1986	XX4	*	1986	12	05.95278	05	03	19.03	+12	41	44.6	010
1986	XX4		1986	12	05.96320	05	03	18.23	+12	41	47.8	010
1986	XX4		1986	12	05.97361	05	03	17.47	+12	41	50.4	010
1986	XY4	*	1986	12	05.95278	05	04	47.28	+12	15	36.7	010
1986	XY4		1986	12	05.96320	05	04	46.03	+12	15	41.2	010
1986	XY4		1986	12	05.97361	05	04	45.10	+12	15	43.8	010
1986	XZ4	*	1986	12	05.95278	05	05	36.80	+12	41	53.0	010
1986	XZ4		1986	12	05.96320	05	05	35.90	+12	41	51.0	010
1986	XZ4		1986	12	05.97361	05	05	35.10	+12	41	48.4	010
22			1986	12	04.95556	04	34	42.22	+24	05	11.0	010
22			1986	12	05.01806	04	34	38.30	+24	05	22.9	010
102			1986	12	01.15208	08	37	39.51	+11	46	44.9	010
102			1986	12	01.17292	08	37	39.78	+11	46	50.8	010
102			1986	12	01.18333	08	37	39.95	+11	46	54.1	010
104			1986	12	04.95556	04	47	24.10	+24	43	33.8	010
104			1986	12	05.01806	04	47	20.88	+24	43	33.7	010
139			1986	12	04.89445	03	42	16.91	+35	04	38.1	010
139			1986	12	04.91528	03	42	15.20	+35	04	34.8	010

139	1986	12	04.92222	03	42	14.88	+35	04	33.5		010
139	1986	12	04.92917	03	42	14.14	+35	04	31.5		010
141	1986	11	26.74514	22	48	24.00	+05	55	08.4	r	010
141	1986	11	26.76597	22	48	25.35	+05	55	16.4	r	010
141	1986	11	26.77430	22	48	25.57	+05	55	17.0		010
141	1986	11	26.78125	22	48	26.23	+05	55	21.7		010
220	1986	11	26.80417	01	18	26.68	+16	35	57.3	r	010
220	1986	11	26.83542	01	18	26.85	+16	35	42.3	r	010
279	1986	11	25.89792	02	56	58.76	+15	36	14.7		010
279	1986	11	25.91875	02	56	57.63	+15	36	11.5		010
279	1986	11	25.92569	02	56	57.50	+15	36	11.5		010
279	1986	11	25.93264	02	56	57.27	+15	36	10.8		010
597	1986	12	01.83819	02	22	58.83	+19	45	04.7		010
597	1986	12	01.85903	02	22	57.72	+19	45	05.6		010
597	1986	12	01.86597	02	22	57.67	+19	45	05.6		010
597	1986	12	01.87292	02	22	57.12	+19	45	05.4		010
597	1986	12	03.83611	02	21	37.85	+19	46	29.2		010
597	1986	12	03.85694	02	21	37.16	+19	46	29.6		010
597	1986	12	03.86736	02	21	36.28	+19	46	29.4		010
638	1986	11	28.04583	05	19	25.32	+17	55	02.4	r	010
638	1986	11	28.06667	05	19	23.90	+17	55	01.9	r	010
638	1986	11	28.07708	05	19	23.35	+17	55	01.7	r	010
639	1986	11	26.74514	23	06	18.26	+05	22	55.3	r	010
639	1986	11	26.76597	23	06	19.23	+05	22	57.2	r	010
639	1986	11	26.77778	23	06	19.53	+05	22	57.9	r	010
881	1986	12	01.15208	08	44	41.88	+12	43	01.2		010
881	1986	12	01.17292	08	44	41.84	+12	42	58.5		010
881	1986	12	01.18333	08	44	41.79	+12	42	54.0		010
978	1986	11	26.74514	22	50	42.59	+05	39	43.9		010
978	1986	11	26.76597	22	50	43.95	+05	39	34.9		010
978	1986	11	26.77430	22	50	44.43	+05	39	34.3		010
978	1986	11	26.78125	22	50	45.00	+05	39	29.8		010
1000	1986	11	27.74583	22	33	26.49	+05	17	27.6		010
1000	1986	11	27.76667	22	33	27.19	+05	17	32.2		010
1000	1986	11	27.77708	22	33	27.40	+05	17	32.9		010
1028	1986	12	04.95556	04	46	59.74	+24	40	11.9		010
1028	1986	12	05.01806	04	46	56.63	+24	40	19.6		010
1046	1986	12	01.06389	06	44	15.99	+34	22	39.1		010
1046	1986	12	01.08472	06	44	15.04	+34	22	45.0		010
1046	1986	12	01.09167	06	44	14.99	+34	22	45.0		010
1046	1986	12	01.09861	06	44	14.83	+34	22	47.6		010
1066	1986	12	01.97569	05	32	10.45	+31	54	21.1	r	010
1066	1986	12	02.00694	05	32	09.02	+31	54	20.5	r	010
1084	1986	11	28.04583	05	29	51.11	+17	50	31.5		010
1084	1986	11	28.06667	05	29	49.64	+17	50	28.7		010
1084	1986	11	28.07708	05	29	49.23	+17	50	26.7		010
1112	1986	11	26.74510	22	49	25.38	+02	32	54.2	r	010
1112	1986	11	26.76597	22	49	26.47	+02	32	56.9	r	010
1112	1986	11	26.77778	22	49	26.56	+02	32	58.8	r	010
1130	1986	11	28.04583	05	38	45.93	+20	55	53.1		010
1130	1986	11	28.06667	05	38	44.48	+20	55	49.9		010
1130	1986	11	28.07361	05	38	44.11	+20	55	49.3		010
1130	1986	11	28.08055	05	38	43.36	+20	55	49.3		010
1212	1986	12	05.95278	04	49	53.27	+12	11	05.1		010
1212	1986	12	05.96320	04	49	52.69	+12	11	03.7		010
1212	1986	12	05.97361	04	49	52.16	+12	11	03.6		010
1260	1986	11	26.80417	01	01	43.77	+19	16	28.6		010
1260	1986	11	26.83542	01	01	43.45	+19	16	21.4		010
1267	1986	12	04.06389	07	36	27.89	+28	06	01.4		010

1267	1986	12	04.09861	07	36	27.50	+28	06	07.4		010
1267	1986	12	04.10903	07	36	27.25	+28	06	10.0		010
1278	1986	11	28.04583	05	39	23.21	+19	22	09.4		010
1278	1986	11	28.06667	05	39	21.65	+19	22	16.6		010
1278	1986	11	28.07361	05	39	21.37	+19	22	16.0		010
1278	1986	11	28.08055	05	39	20.77	+19	22	20.0		010
1315	1986	11	28.04583	05	37	13.27	+19	31	04.6		010
1315	1986	11	28.06667	05	37	12.30	+19	31	02.0		010
1315	1986	11	28.07708	05	37	11.89	+19	31	02.0		010
1366	1986	12	01.06389	06	42	00.53	+35	05	50.5		010
1366	1986	12	01.08472	06	41	59.46	+35	05	57.0		010
1366	1986	12	01.09167	06	41	59.25	+35	05	57.7		010
1366	1986	12	01.09861	06	41	58.61	+35	06	00.3		010
1499	1986	11	26.80417	01	16	07.27	+15	17	00.1	r	010
1499	1986	11	26.83542	01	16	07.13	+15	16	45.8	r	010
1521	1986	11	26.80417	00	58	53.09	+16	11	09.0		010
1521	1986	11	26.83542	00	58	52.41	+16	11	10.2		010
1521	1986	11	27.82083	00	58	35.53	+16	12	10.1	r	010
1540	1986	11	25.89792	02	52	03.19	+16	06	07.9		010
1540	1986	11	25.91875	02	52	02.02	+16	06	07.9		010
1540	1986	11	25.92569	02	52	01.52	+16	06	08.5		010
1540	1986	11	25.93264	02	52	01.20	+16	06	08.5		010
1583	1986	11	25.89792	02	41	16.12	+11	59	08.2		010
1583	1986	11	25.91875	02	41	16.00	+11	59	01.6		010
1583	1986	11	25.92569	02	41	15.96	+11	58	59.0		010
1583	1986	11	25.93264	02	41	15.83	+11	58	55.7		010
1659	1986	11	26.85764	01	28	32.47	+38	16	46.4		010
1659	1986	11	26.87847	01	28	31.92	+38	16	37.2		010
1683	1986	11	26.74514	22	57	31.52	+05	00	23.4		010
1683	1986	11	26.76597	22	57	32.44	+05	00	30.7		010
1683	1986	11	26.77778	22	57	33.10	+05	00	33.3		010
1718	1986	12	05.95278	04	52	46.58	+12	00	22.9		010
1718	1986	12	05.96320	04	52	45.51	+12	00	19.5		010
1718	1986	12	05.97361	04	52	44.58	+12	00	17.4		010
1826	1986	11	26.75555	22	56	05.89	+04	43	32.3		010
1826	1986	11	26.77778	22	56	06.41	+04	43	32.3		010
1855	1986	11	25.89792	02	45	02.77	+12	27	27.9		010
1855	1986	11	25.91875	02	45	01.80	+12	27	20.5		010
1855	1986	11	25.92569	02	45	01.40	+12	27	19.2		010
1855	1986	11	25.93264	02	45	01.05	+12	27	16.6		010
1989	1986	12	01.06389	06	32	28.17	+34	43	05.8	r	010
1989	1986	12	01.08472	06	32	26.72	+34	43	13.2	r	010
1989	1986	12	01.09167	06	32	26.24	+34	43	14.9	r	010
1989	1986	12	01.09861	06	32	25.86	+34	43	16.8	r	010
2030	1986	11	25.89792	02	44	23.54	+12	03	26.0		010
2030	1986	11	25.91875	02	44	23.32	+12	03	20.8		010
2030	1986	11	25.92569	02	44	23.01	+12	03	18.8		010
2030	1986	11	25.93264	02	44	22.92	+12	03	17.5		010
2031	1986	12	05.09097	06	57	17.08	+14	20	18.2		010
2051	1986	11	28.04583	05	29	57.80	+21	53	01.0		010
2051	1986	11	28.06667	05	29	56.53	+21	53	00.2		010
2051	1986	11	28.07708	05	29	55.83	+21	52	58.1		010
2054	1986	12	01.83819	02	35	51.24	+20	25	53.8		010
2054	1986	12	01.85903	02	35	50.36	+20	25	48.5		010
2054	1986	12	01.86944	02	35	49.94	+20	25	46.5		010
2054	1986	12	03.83611	02	34	36.97	+20	17	03.6		010
2054	1986	12	03.85694	02	34	36.73	+20	16	59.7		010
2054	1986	12	03.86736	02	34	36.27	+20	16	57.0		010
2404	1986	11	25.89792	02	48	58.11	+12	51	03.9		010

2404	1986	11	25.91875	02	48	57.84	+12	50	59.3	010
2404	1986	11	25.92569	02	48	57.26	+12	50	58.6	010
2404	1986	11	25.93264	02	48	57.26	+12	50	57.3	010
2521	1986	11	26.80417	01	04	57.77	+17	26	45.8	010
2521	1986	11	26.83542	01	04	57.50	+17	26	35.4	010
2522	1986	11	27.91944	24	04	13.59	+11	43	43.8	010
2522	1986	11	27.95417	24	04	13.95	+11	43	37.2	010
2730	1986	12	01.83819	02	31	37.66	+22	05	05.7	010
2730	1986	12	01.85903	02	31	36.59	+22	05	01.0	010
2730	1986	12	01.86944	02	31	36.12	+22	04	58.9	010
2730	1986	12	03.83611	02	30	16.90	+21	58	34.9	010
2730	1986	12	03.85694	02	30	16.48	+21	58	31.0	010
2730	1986	12	03.86736	02	30	15.87	+21	58	28.9	010
2750	1986	12	04.06389	07	15	51.85	+28	45	08.8	010
2750	1986	12	04.09861	07	15	51.29	+28	45	15.7	010
2750	1986	12	04.10903	07	15	50.99	+28	45	18.9	010
2794	1986	11	27.96875	04	15	02.43	+36	32	15.1	010
2794	1986	11	27.98958	04	15	00.85	+36	32	11.3	010
2794	1986	11	27.99652	04	15	00.26	+36	32	11.4	010
2794	1986	11	28.00347	04	14	59.50	+36	32	08.2	010
2809	1986	12	04.95556	04	32	16.18	+26	04	39.5	010
2809	1986	12	05.01806	04	32	12.07	+26	04	28.9	010
2818	1986	11	25.89792	02	50	46.05	+15	38	21.2	010
2818	1986	11	25.91875	02	50	44.74	+15	38	17.8	010
2818	1986	11	25.92917	02	50	44.15	+15	38	16.5	010
2864	1986	11	25.89792	02	58	20.04	+11	54	33.7	010
2864	1986	11	25.91875	02	58	19.15	+11	54	31.2	010
2864	1986	11	25.92569	02	58	18.79	+11	54	29.9	010
2864	1986	11	25.93264	02	58	18.52	+11	54	28.6	010
2875	1986	12	04.89445	03	29	27.98	+33	09	58.2	010
2875	1986	12	04.91528	03	29	26.85	+33	09	51.2	010
2875	1986	12	04.92569	03	29	26.45	+33	09	47.1	010
2879	1986	12	01.15208	08	44	53.71	+08	58	34.2	010
2879	1986	12	01.17292	08	44	53.32	+08	58	32.8	010
2879	1986	12	01.18333	08	44	54.50	+08	58	31.6	010
2903	1986	12	02.18889	09	43	56.26	-03	34	21.3	010
2903	1986	12	02.20972	09	43	56.78	-03	34	31.7	010
2903	1986	12	02.21493	09	43	57.09	-03	34	36.3	010
3029	1986	12	04.95556	04	33	58.89	+27	04	37.6	010
3029	1986	12	05.01806	04	33	54.36	+27	04	23.9	010
3060	1986	12	01.97569	05	29	03.78	+34	50	20.8	010
3060	1986	12	02.00694	05	29	01.55	+34	50	18.7	010
3080	1986	12	01.97569	05	25	01.92	+34	32	07.5	010
3080	1986	12	02.00694	05	25	00.22	+34	32	16.4	010
3117	1986	11	28.04583	05	35	25.82	+22	04	27.6	010
3117	1986	11	28.06667	05	35	24.51	+22	04	27.6	010
3117	1986	11	28.07708	05	35	23.80	+22	04	27.6	010
3137	1986	12	01.83819	02	34	58.24	+19	03	28.7	010
3137	1986	12	01.85903	02	34	57.46	+19	03	22.0	010
3137	1986	12	01.86944	02	34	57.32	+19	03	19.4	010
3137	1986	12	03.83611	02	33	59.87	+18	54	06.8	010
3137	1986	12	03.85694	02	33	59.18	+18	54	02.2	010
3137	1986	12	03.86736	02	33	58.95	+18	53	58.3	010
3139	1986	11	28.04583	05	33	04.45	+20	23	03.7	010
3139	1986	11	28.06667	05	33	03.25	+20	22	54.5	010
3139	1986	11	28.07708	05	33	02.69	+20	22	51.2	010
3300	1986	12	04.89445	03	36	42.88	+35	42	11.2	010
3300	1986	12	04.91528	03	36	41.59	+35	42	09.0	010
3300	1986	12	04.92569	03	36	40.95	+35	42	06.9	010

3314		1986	12	01.06389	06	47	52.88	+35	45	10.8	010
3314		1986	12	01.08472	06	47	51.76	+35	45	17.4	010
3314		1986	12	01.09514	06	47	51.23	+35	45	19.5	010
3363		1986	11	28.04583	05	25	51.12	+18	11	19.5	010
3363		1986	11	28.06667	05	25	49.94	+18	11	15.9	010
3363		1986	11	28.07708	05	25	49.43	+18	11	14.5	010
3510		1986	11	26.80417	01	12	50.67	+15	45	00.9	010
3510		1986	11	26.83542	01	12	50.58	+15	44	52.4	010
3539		1986	12	02.88542	03	04	44.29	-03	02	24.1	010
3539		1986	12	02.94792	03	04	41.93	-03	02	19.6	010
3547		1986	12	03.83611	02	26	28.14	+18	57	30.7	010
3547		1986	12	03.85694	02	26	27.09	+18	57	25.9	010
3547		1986	12	03.86736	02	26	26.96	+18	57	21.3	010

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Democratic Republic of Germany
Observers F. Borngen, H. Meusinger, C. Hogner, F. Ludwig
1.3-m Schmidt telescope
SAOC

1976	SG2		1986	11	27.85486	02	00	39.20	+04	53	15.3	16.5	033
1976	SG2		1986	11	28.87014	02	00	18.49	+04	50	35.9		033
1981	YS		1986	11	28.02118	05	59	27.77	+23	09	59.3	16.0	033
1981	YS		1986	11	28.03854	05	59	26.98	+23	10	06.3		033
1981	YS		1986	11	28.08924	05	59	24.67	+23	10	25.2		033
1981	YS		1986	11	28.96806	05	58	44.90	+23	15	58.8		033
1981	YS		1986	11	29.97326	05	57	57.80	+23	22	21.6		033
1986	UB1		1986	11	07.91250	03	44	23.83	+37	23	09.0	17.9	033
1986	UB1		1986	11	07.99931	03	44	16.06	+37	23	53.1		033
1986	VX5		1986	11	27.85486	02	03	42.04	+03	59	29.6	17.4	033
1986	VX5		1986	11	28.87014	02	03	15.22	+04	00	39.7		033
1986	VX5		1986	11	29.84028	02	02	51.16	+04	01	58.1		033
1986	VB6		1986	11	27.85486	02	11	51.00	+03	28	10.0	16.7	033
1986	VB6		1986	11	28.87014	02	11	27.96	+03	30	39.1		033
1986	VB6		1986	11	29.84028	02	11	07.97	+03	33	16.2		033
1986	VV7	*	1986	11	07.91250	03	39	46.80	+35	41	52.6	18.4	033
1986	VV7		1986	11	07.99931	03	39	40.19	+35	42	16.1		033
1986	VW7	*	1986	11	07.95556	03	25	52.65	-01	05	14.5	17.7	033
1986	VW7		1986	11	07.98125	03	25	51.10	-01	05	14.2		033
1986	VX7	*	1986	11	07.95556	03	30	54.92	-02	38	53.7	18.5	033
1986	VX7		1986	11	07.98125	03	30	53.47	-02	38	59.0		033
1986	VY7	*	1986	11	08.07708	06	21	33.46	+22	38	28.3	16.9	033
1986	VY7		1986	11	08.15417	06	21	32.82	+22	38	10.3		033
1986	VZ7	*	1986	11	08.07708	06	24	07.25	+20	55	58.0	19.1	033
1986	VZ7		1986	11	08.15417	06	24	05.54	+20	55	47.4		033
1986	WR2	*	1986	11	27.85486	02	02	06.73	+03	15	57.7	17.1	033
1986	WR2		1986	11	28.87014	02	01	58.30	+03	15	27.3	I	033
1986	WR2		1986	11	29.84028	02	01	52.31	+03	15	16.3		033
1986	WS2	*	1986	11	27.85486	02	02	14.09	+05	13	18.2	19.0	033
1986	WS2		1986	11	28.87014	02	01	39.95	+05	16	41.9		033
1986	WS2		1986	11	29.84028	02	01	08.84	+05	20	05.8		033
1986	WT2	*	1986	11	27.85486	02	03	01.44	+05	14	23.2	17.8	033
1986	WT2		1986	11	28.87014	02	02	36.08	+05	17	59.6		033
1986	WT2		1986	11	29.84028	02	02	14.02	+05	21	39.0		033
1986	WU2	*	1986	11	27.85486	02	05	49.34	+04	51	29.0	17.4	033
1986	WU2		1986	11	28.87014	02	05	15.01	+04	50	46.3		033
1986	WU2		1986	11	29.84028	02	04	43.51	+04	50	15.0	I	033
1986	WV2	*	1986	11	27.85486	02	07	59.36	+05	02	37.5	19.7	033
1986	WV2		1986	11	28.87014	02	07	25.35	+04	59	41.2		033

1986	WV2		1986	11	29.84028	02	06	54.31	+04	57	04.8			033
1986	WW2	*	1986	11	27.85486	02	08	04.82	+05	27	41.5	18.2		033
1986	WW2		1986	11	28.87014	02	07	33.08	+05	23	15.6			033
1986	WW2		1986	11	29.84028	02	07	04.00	+05	19	10.8			033
1986	WX2	*	1986	11	27.85486	02	10	30.29	+04	52	03.4	18.3		033
1986	WX2		1986	11	28.87014	02	10	13.00	+04	58	51.3			033
1986	WX2		1986	11	29.84028	02	09	58.62	+05	05	30.9			033
1986	WY2	*	1986	11	27.85486	02	12	20.89	+04	45	39.5	17.2		033
1986	WY2		1986	11	28.87014	02	11	48.42	+04	46	31.0			033
1986	WY2		1986	11	29.84028	02	11	18.79	+04	47	29.5			033
1986	WZ2	*	1986	11	27.94375	03	53	37.93	+04	22	05.7	19.8		033
1986	WZ2		1986	11	27.96597	03	53	37.27	+04	22	03.5			033
1986	WA3	*	1986	11	27.94375	03	59	24.96	+03	32	42.8	19.5		033
1986	WA3		1986	11	27.96597	03	59	23.85	+03	32	40.8			033
1986	WB3	*	1986	11	27.94375	04	00	37.51	+05	40	31.3	17.7		033
1986	WB3		1986	11	27.96597	04	00	36.35	+05	40	28.2			033
1986	WC3	*	1986	11	27.94375	04	02	19.25	+05	45	33.1	16.1		033
1986	WC3		1986	11	27.96597	04	02	18.00	+05	45	24.3			033
1986	WD3	*	1986	11	27.94375	04	03	20.36	+04	29	24.9	17.3	I	033
1986	WD3		1986	11	27.96597	04	03	18.90	+04	29	27.3			033
1986	WE3	*	1986	11	27.94375	04	03	20.95	+04	09	31.5	19.2		033
1986	WE3		1986	11	27.96597	04	03	19.71	+04	09	26.4			033
1986	WF3	*	1986	11	27.94375	04	03	27.83	+03	22	58.3	16.5		033
1986	WF3		1986	11	27.96597	04	03	26.73	+03	22	53.0			033
1986	WG3	*	1986	11	27.94375	04	06	02.80	+04	16	54.9	19.9		033
1986	WG3		1986	11	27.96597	04	06	01.60	+04	16	54.5			033
1986	WH3	*	1986	11	27.94375	04	06	10.17	+04	35	23.3	18.3		033
1986	WH3		1986	11	27.96597	04	06	09.38	+04	35	22.0			033
1986	WJ3	*	1986	11	28.02118	06	04	33.20	+24	29	32.3	18.3	I	033
1986	WJ3		1986	11	28.03854	06	04	32.38	+24	29	32.1			033
1986	WJ3		1986	11	28.08924	06	04	30.04	+24	29	30.7			033
1986	WJ3		1986	11	28.96806	06	03	50.51	+24	29	09.5			033
1986	WJ3		1986	11	29.97326	06	03	03.82	+24	28	42.5			033
1986	XD1		1986	11	27.85486	02	03	22.10	+03	48	35.5	17.7		033
1986	XD1		1986	11	28.87014	02	03	06.21	+03	49	06.4			033
1986	XD1		1986	11	29.84028	02	02	53.13	+03	49	53.0			033
86			1986	11	08.07708	06	18	11.37	+22	16	48.0	13.9		033
86			1986	11	08.15417	06	18	10.52	+22	16	54.9			033
792			1986	11	28.02118	06	00	45.53	+24	42	30.4	14.5		033
792			1986	11	28.03854	06	00	44.75	+24	42	26.8			033
792			1986	11	28.08924	06	00	42.28	+24	42	15.1			033
792			1986	11	28.96806	06	00	01.72	+24	38	52.3			033
792			1986	11	29.97326	05	59	13.58	+24	34	56.4			033
1461			1986	11	27.94375	04	05	09.63	+04	56	51.7	14.8		033
1461			1986	11	27.96597	04	05	08.41	+04	56	53.9			033
1935			1986	11	27.85486	02	07	29.39	+04	34	42.6	16.1		033
1935			1986	11	28.87014	02	07	15.57	+04	29	58.8			033
1935			1986	11	29.84028	02	07	04.13	+04	25	44.9			033
2019			1986	11	08.07708	06	22	14.31	+22	43	54.4	17.5		033
2019			1986	11	08.15417	06	22	12.79	+22	43	48.4			033
2058			1986	11	08.07708	06	16	29.56	+22	39	21.4	18.0		033
2058			1986	11	08.15417	06	16	28.00	+22	39	23.4			033
2817			1986	11	08.07708	06	28	58.67	+23	09	44.5	18.2		033
2817			1986	11	08.15417	06	28	57.87	+23	09	40.0			033
3057			1986	11	27.85486	02	01	04.75	+05	59	27.1	17.6		033
3057			1986	11	28.87014	02	00	25.13	+06	00	31.1			033
3089			1986	11	08.07708	06	22	39.00	+21	15	34.7	17.6		033
3089			1986	11	08.15417	06	22	37.42	+21	15	47.1			033
3115			1986	11	28.02118	05	57	56.08	+23	19	49.0	15.1		033

3115		1986	11	28.03854	05	57	55.28	+23	19	43.1		033
3115		1986	11	28.08924	05	57	52.74	+23	19	24.3		033
3115		1986	11	28.96806	05	57	10.88	+23	14	11.0		033
3115		1986	11	29.97326	05	56	21.22	+23	08	08.6		033
3319		1986	11	28.02118	06	00	02.76	+24	21	59.4	17.4	033
3319		1986	11	28.03854	06	00	02.02	+24	21	58.0		033
3319		1986	11	28.08924	05	59	59.73	+24	21	54.1		033
3319		1986	11	28.96806	05	59	20.59	+24	20	57.2		033
3319		1986	11	29.97326	05	58	34.70	+24	19	49.8		033
3338		1986	11	08.07708	06	23	50.02	+22	30	53.8	19.3	033
3338		1986	11	08.15417	06	23	48.59	+22	30	54.4		033

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Svedska 8, C-15000 Prague 5, Czechoslovakia
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0.6-m Maksutov reflector

1973	SZ3		1986	11	30.92692	04	50	53.26	+25	39	38.0	046
1973	SZ3		1986	11	30.94104	04	50	52.37	+25	39	37.9	046
1973	SZ3		1986	12	01.88606	04	49	45.61	+25	39	26.6	046
1973	SZ3		1986	12	01.90019	04	49	44.74	+25	39	26.4	046
1973	SZ3		1986	12	03.90069	04	47	22.32	+25	38	47.7	046
1973	SZ3		1986	12	03.91493	04	47	22.23	+25	38	48.0	046
1979	SK		1986	11	09.95637	02	42	07.78	+21	54	08.3	046
1981	RM		1986	11	30.92692	04	46	50.05	+25	55	23.8	046
1981	RM		1986	11	30.94104	04	46	49.26	+25	55	20.3	046
1981	RM		1986	12	01.88606	04	45	49.57	+25	52	21.9	046
1981	RM		1986	12	01.90019	04	45	48.97	+25	52	20.5	046
1981	RM		1986	12	03.90069	04	43	43.10	+25	45	56.5	046
1981	RM		1986	12	03.91493	04	43	42.20	+25	45	55.7	046
1981	RM		1986	12	07.94502	04	39	29.84	+25	32	17.5	16.9 046
1981	RM		1986	12	07.95914	04	39	28.76	+25	32	18.0	046
1981	RM		1986	12	09.00966	04	38	22.93	+25	28	31.7	046
1981	RM		1986	12	09.02425	04	38	21.96	+25	28	32.0	046
1981	UT15		1986	11	30.92692	04	51	20.81	+25	03	14.3	046
1981	UT15		1986	11	30.94104	04	51	20.00	+25	03	13.8	046
1981	UT15		1986	12	01.88606	04	50	24.36	+25	01	59.9	046
1981	UT15		1986	12	01.90019	04	50	23.67	+25	01	58.8	046
1981	UT15		1986	12	03.90069	04	48	25.07	+24	59	16.2	046
1981	UT15		1986	12	03.91493	04	48	24.14	+24	59	16.0	046
1981	WV1		1986	11	28.92021	03	18	23.53	+20	16	59.1	046
1981	WV1		1986	11	28.93583	03	18	22.72	+20	16	55.5	046
1984	FC		1986	11	29.89677	04	37	41.68	+29	01	36.7	046
1984	FC		1986	11	29.91089	04	37	40.87	+29	01	37.8	046
1984	FC		1986	12	04.85897	04	31	58.04	+29	01	12.4	046
1984	FC		1986	12	04.87321	04	31	57.09	+29	01	12.2	046
1984	FC		1986	12	07.94502	04	28	24.85	+28	59	27.5	046
1984	FC		1986	12	07.95914	04	28	23.91	+28	59	25.9	046
1984	FC		1986	12	09.00966	04	27	12.77	+28	58	35.1	046
1984	FC		1986	12	09.02425	04	27	11.69	+28	58	33.1	046
1986	US		1986	11	07.83900	02	10	55.25	+14	16	33.4	046
1986	VT		1986	11	09.89404	02	40	35.28	+14	40	09.9	046
1986	VN7		1986	11	07.96238	02	35	13.82	+14	38	02.5	046
1986	VO7		1986	11	07.96238	02	38	40.02	+15	23	41.8	046
1986	VP7		1986	11	09.89404	02	40	14.32	+14	05	00.8	046
1986	VA8	*	1986	11	07.94826	02	40	19.43	+15	22	06.2	046
1986	VA8		1986	11	07.96238	02	40	18.76	+15	22	04.4	046
1986	VA8		1986	11	09.89404	02	39	06.46	+15	12	19.2	046
1986	VA8		1986	11	09.91348	02	39	05.72	+15	12	15.6	046

1986	WB	1986	12	01.91969	04	31	23.08	+23	23	52.5	046
1986	WB	1986	12	01.93381	04	31	22.11	+23	23	55.0	046
1986	WB	1986	12	03.83889	04	29	06.01	+23	29	16.3	046
1986	WB	1986	12	03.85312	04	29	05.15	+23	29	18.1	046
1986	WC	1986	11	30.97264	04	39	17.11	+17	51	11.7	046
1986	WC	1986	11	30.98676	04	39	16.40	+17	51	08.0	046
1986	WC	1986	12	01.95638	04	38	27.58	+17	47	58.7	046
1986	WC	1986	12	01.97056	04	38	26.98	+17	47	56.3	046
1986	WG	1986	11	28.98537	04	06	06.47	+18	40	31.6	046
1986	WG	1986	11	28.99961	04	06	05.60	+18	40	16.3	046
1986	WG	1986	12	04.90278	03	59	40.51	+16	51	04.4	046
1986	WG	1986	12	04.91736	03	59	39.51	+16	50	48.3	046
1986	WG	1986	12	05.84861	03	58	40.90	+16	33	41.2	046
1986	WG	1986	12	05.86285	03	58	40.09	+16	33	26.4	046
1986	WG	1986	12	07.90903	03	56	33.58	+15	55	59.9	046
1986	WG	1986	12	07.92321	03	56	32.70	+15	55	45.8	046
1986	WN	1986	11	28.92021	03	15	08.98	+20	24	48.8	046
1986	WN	1986	11	28.93583	03	15	08.09	+20	24	48.0	046
1986	WO	1986	11	28.92021	03	16	41.46	+19	58	30.9	046
1986	WO	1986	11	28.93583	03	16	40.66	+19	58	35.1	046
1986	WP	1986	11	28.92021	03	17	51.26	+21	15	22.7	046
1986	WP	1986	11	28.93583	03	17	49.88	+21	15	18.4	046
1986	WQ	1986	11	28.92021	03	18	53.67	+19	51	02.5	046
1986	WQ	1986	11	28.93583	03	18	52.67	+19	51	01.1	046
1986	WR	1986	11	28.92021	03	19	52.36	+19	58	22.0	046
1986	WR	1986	11	28.93583	03	19	51.40	+19	58	14.9	046
1986	WS	1986	11	28.92021	03	23	25.73	+20	16	45.4	046
1986	WS	1986	11	28.93583	03	23	25.15	+20	16	40.8	046
1986	WU	1986	11	28.92021	03	25	21.65	+22	14	09.3	046
1986	WU	1986	11	28.93583	03	25	20.84	+22	14	00.1	046
1986	WV	1986	11	28.92021	03	25	37.00	+21	57	12.8	046
1986	WV	1986	11	28.93583	03	25	36.09	+21	57	02.0	046
1986	WW	1986	11	28.98537	04	03	34.22	+20	51	30.1	046
1986	WW	1986	11	28.99961	04	03	33.28	+20	51	22.5	046
1986	WY	1986	11	28.98537	04	04	33.08	+19	30	52.7	046
1986	WY	1986	11	28.99961	04	04	32.29	+19	30	54.1	046
1986	WZ	1986	11	28.98537	04	05	38.77	+21	43	49.6	046
1986	WZ	1986	11	28.99961	04	05	38.24	+21	43	46.4	046
1986	WB1	1986	11	28.98537	04	07	27.89	+21	15	08.1	046
1986	WB1	1986	11	28.99961	04	07	27.14	+21	15	03.8	046
1986	WC1	1986	11	28.98537	04	10	07.77	+21	37	54.3	046
1986	WC1	1986	11	28.99961	04	10	06.79	+21	37	56.8	046
1986	WD1	1986	11	26.88716	04	12	51.28	+18	40	18.5	046
1986	WD1	1986	11	26.90134	04	12	50.50	+18	40	19.6	046
1986	WD1	1986	11	28.98537	04	10	33.41	+18	40	27.1	046
1986	WD1	1986	11	28.99961	04	10	32.38	+18	40	26.5	046
1986	WD1	1986	12	05.84861	04	03	18.98	+18	41	14.9	17.0 046
1986	WD1	1986	12	05.86285	04	03	17.88	+18	41	16.3	046
1986	WE1	1986	11	28.98537	04	11	28.52	+21	27	59.4	046
1986	WE1	1986	11	28.99961	04	11	27.80	+21	28	00.6	046
1986	WF1	1986	11	28.98537	04	12	09.28	+21	54	42.9	046
1986	WF1	1986	11	28.99961	04	12	08.70	+21	54	40.7	046
1986	WG1	1986	11	28.98537	04	12	12.27	+20	48	28.7	046
1986	WG1	1986	11	28.99961	04	12	11.45	+20	48	23.3	046
1986	WJ1	1986	11	28.98537	04	13	46.79	+20	51	15.9	046
1986	WJ1	1986	11	28.99961	04	13	46.23	+20	51	12.9	046
1986	WK1	1986	11	29.89677	04	31	26.07	+27	56	47.9	046
1986	WK1	1986	11	29.91089	04	31	25.07	+27	56	48.4	046
1986	WL1	1986	11	29.89677	04	35	45.92	+27	56	31.1	046

1986	WL1	1986	11	29.91089	04	35	44.87	+27	56	31.3	046
1986	WL1	1986	12	04.85897	04	29	39.72	+28	01	40.3	046
1986	WL1	1986	12	04.87321	04	29	38.65	+28	01	42.6	046
1986	WL1	1986	12	07.94502	04	25	52.73	+28	03	24.6	046
1986	WL1	1986	12	07.95914	04	25	51.91	+28	03	24.7	046
1986	WL1	1986	12	09.00966	04	24	36.10	+28	03	43.1	046
1986	WL1	1986	12	09.02425	04	24	35.31	+28	03	42.7	046
1986	WO1	1986	11	29.89677	04	42	29.02	+26	13	29.6	046
1986	WO1	1986	11	29.91089	04	42	27.95	+26	13	27.3	046
1986	WO1	1986	12	04.85897	04	37	00.52	+26	07	54.2	046
1986	WO1	1986	12	04.87321	04	36	59.31	+26	07	52.8	046
1986	WQ1	1986	11	30.92692	04	50	23.41	+24	40	30.8	046
1986	WQ1	1986	11	30.94104	04	50	22.46	+24	40	28.3	046
1986	WQ1	1986	12	01.88606	04	49	17.30	+24	36	59.0	046
1986	WQ1	1986	12	01.90019	04	49	16.43	+24	36	56.4	046
1986	WQ1	1986	12	03.90069	04	46	57.99	+24	29	28.9	046
1986	WQ1	1986	12	03.91493	04	46	56.89	+24	29	24.8	046
1986	WS1	1986	11	30.92692	04	56	00.48	+25	41	18.7	046
1986	WS1	1986	11	30.94104	04	55	59.59	+25	41	17.4	046
1986	WS1	1986	12	01.88606	04	55	03.91	+25	39	00.8	046
1986	WS1	1986	12	01.90019	04	55	03.07	+25	38	58.4	046
1986	WS1	1986	12	03.90069	04	53	04.02	+25	33	58.7	046
1986	WS1	1986	12	03.91493	04	53	03.21	+25	33	57.0	046
1986	WT1	1986	11	30.92692	04	57	09.04	+25	09	49.0	046
1986	WT1	1986	11	30.94104	04	57	08.10	+25	09	46.3	046
1986	WT1	1986	12	01.88606	04	56	06.40	+25	07	20.7	046
1986	WT1	1986	12	01.90019	04	56	05.44	+25	07	18.2	046
1986	WT1	1986	12	03.90069	04	53	52.59	+25	01	59.0	046
1986	WT1	1986	12	03.91493	04	53	51.69	+25	01	57.8	046
1986	WU1	1986	11	30.97264	04	34	38.89	+18	49	27.8	046
1986	WU1	1986	11	30.98676	04	34	38.10	+18	49	26.7	046
1986	WV1	1986	11	30.97264	04	34	59.94	+19	20	29.0	046
1986	WV1	1986	11	30.98676	04	34	59.09	+19	20	27.3	046
1986	WV1	1986	12	01.95638	04	34	08.01	+19	18	41.8	046
1986	WV1	1986	12	01.97056	04	34	07.12	+19	18	38.8	046
1986	WW1	1986	11	30.97264	04	37	16.83	+20	42	44.0	046
1986	WW1	1986	11	30.98676	04	37	15.92	+20	42	38.8	046
1986	WW1	1986	12	01.95638	04	36	17.73	+20	37	09.3	046
1986	WW1	1986	12	01.97056	04	36	17.08	+20	37	05.7	046
1986	WA2	1986	11	30.97264	04	43	41.13	+19	45	54.8	046
1986	WA2	1986	11	30.98676	04	43	40.39	+19	45	53.4	046
1986	WA2	1986	12	01.95638	04	42	47.36	+19	44	47.1	046
1986	WA2	1986	12	01.97056	04	42	46.41	+19	44	45.4	046
1986	WC2	1986	12	01.91969	04	21	18.60	+21	48	23.8	046
1986	WC2	1986	12	01.93381	04	21	17.77	+21	48	17.0	046
1986	WC2	1986	12	03.83889	04	19	46.95	+21	31	53.2	046
1986	WC2	1986	12	03.85312	04	19	46.40	+21	31	46.2	046
1986	WD2	1986	12	01.91969	04	21	41.70	+21	29	36.7	17.1 046
1986	WD2	1986	12	01.93381	04	21	40.97	+21	29	37.3	046
1986	WD2	1986	12	03.83889	04	19	57.89	+21	27	55.9	046
1986	WD2	1986	12	03.85312	04	19	56.96	+21	27	52.9	046
1986	WF2	1986	12	01.91969	04	24	49.20	+21	48	48.7	17.0 046
1986	WF2	1986	12	01.93381	04	24	48.24	+21	48	47.0	046
1986	WH2	1986	12	01.91969	04	25	27.20	+23	55	39.7	046
1986	WH2	1986	12	01.93381	04	25	26.37	+23	55	36.4	046
1986	WH2	1986	12	03.83889	04	23	36.95	+23	52	53.8	046
1986	WH2	1986	12	03.85312	04	23	36.26	+23	52	52.2	046
1986	WJ2	1986	12	01.91969	04	27	55.53	+22	46	31.3	046
1986	WJ2	1986	12	01.93381	04	27	54.70	+22	46	29.4	046

1986	WJ2		1986	12	03.83889	04	26	15.51	+22	42	45.9		046
1986	WJ2		1986	12	03.85312	04	26	14.84	+22	42	46.0		046
1986	WL2		1986	12	01.91969	04	29	34.47	+22	29	16.6		046
1986	WL2		1986	12	01.93381	04	29	33.62	+22	29	17.3		046
1986	WM2		1986	12	01.91969	04	31	10.79	+22	50	40.1		046
1986	WM2		1986	12	01.93381	04	31	09.74	+22	50	40.5		046
1986	WM2		1986	12	03.83889	04	28	52.72	+22	52	12.9		046
1986	WM2		1986	12	03.85312	04	28	52.06	+22	52	13.7		046
1986	WN2		1986	12	01.91969	04	33	33.10	+23	13	50.9	16.8	046
1986	WN2		1986	12	01.93381	04	33	32.21	+23	13	48.6		046
1986	WN2		1986	12	03.83889	04	31	28.06	+23	03	09.1		046
1986	WN2		1986	12	03.85312	04	31	27.20	+23	03	04.4		046
1986	WO2		1986	11	30.89168	04	31	15.21	+22	40	21.6		046
1986	WP2		1986	11	30.97264	04	38	27.67	+17	34	07.1	16.9	046
1986	WP2		1986	11	30.98676	04	38	26.97	+17	34	05.5		046
1986	WP2		1986	12	01.95638	04	37	26.67	+17	31	35.5		046
1986	WP2		1986	12	01.97056	04	37	26.04	+17	31	30.3		046
1986	WM7	*	1986	11	28.92021	03	20	41.29	+19	49	25.9	16.9	046
1986	WM7		1986	11	28.93583	03	20	40.45	+19	49	24.8		046
1986	WN7	*	1986	11	29.89677	04	41	30.14	+29	18	39.7	16.8	046
1986	WN7		1986	11	29.91089	04	41	29.37	+29	18	38.4		046
1986	WN7		1986	12	04.85897	04	36	48.56	+29	05	38.7		046
1986	WN7		1986	12	04.87321	04	36	47.81	+29	05	36.3		046
1986	WN7		1986	12	07.94502	04	33	54.81	+28	56	25.8		046
1986	WN7		1986	12	07.95914	04	33	54.03	+28	56	21.3		046
1986	WN7		1986	12	09.00966	04	32	56.23	+28	53	02.4		046
1986	WN7		1986	12	09.02425	04	32	55.17	+28	53	00.0		046
1986	WO7	*	1986	11	29.89677	04	43	45.70	+28	32	26.3	16.6	046
1986	WO7		1986	11	29.91089	04	43	45.09	+28	32	24.5		046
1986	WO7		1986	12	04.85897	04	39	08.81	+28	22	06.8		046
1986	WO7		1986	12	04.87321	04	39	07.99	+28	22	04.2		046
1986	WO7		1986	12	07.94502	04	36	16.68	+28	14	35.7		046
1986	WO7		1986	12	07.95914	04	36	16.00	+28	14	34.7		046
1986	WP7	*	1986	11	29.93167	04	54	32.06	+26	02	45.7	17.0	046
1986	WP7		1986	11	29.94579	04	54	31.23	+26	02	42.4		046
1986	WP7		1986	11	30.92692	04	53	34.57	+25	58	17.6		046
1986	WP7		1986	12	01.88606	04	52	39.09	+25	53	49.0		046
1986	WP7		1986	12	01.90019	04	52	38.36	+25	53	45.2		046
1986	WQ7	*	1986	11	30.89168	04	33	19.63	+23	30	56.3	17.0	046
1986	WQ7		1986	11	30.90580	04	33	19.07	+23	30	56.2		046
1986	WQ7		1986	12	01.91969	04	32	34.52	+23	29	54.6		046
1986	WQ7		1986	12	01.93381	04	32	33.80	+23	29	54.3		046
1986	WQ7		1986	12	03.83889	04	31	10.34	+23	27	54.3		046
1986	WQ7		1986	12	03.85312	04	31	09.71	+23	27	55.0		046
1986	WR7	*	1986	11	30.92692	04	48	56.93	+25	46	44.8	17.0	046
1986	WR7		1986	11	30.94104	04	48	56.04	+25	46	43.0		046
1986	WR7		1986	12	03.90069	04	45	41.47	+25	39	46.0		046
1986	WR7		1986	12	03.91493	04	45	40.35	+25	39	46.4		046
1986	WS7	*	1986	11	30.97264	04	42	46.10	+19	29	33.4		046
1986	WS7		1986	11	30.98676	04	42	45.25	+19	29	35.1		046
1986	WS7		1986	12	01.95638	04	41	51.64	+19	30	17.9		046
1986	WS7		1986	12	01.97056	04	41	50.80	+19	30	18.5		046
1986	XF		1986	11	29.89677	04	35	51.41	+25	53	19.7		046
1986	XF		1986	11	29.91089	04	35	50.55	+25	53	18.1		046
1986	XF		1986	12	04.85897	04	30	36.00	+25	48	43.3		046
1986	XF		1986	12	04.87321	04	30	35.10	+25	48	42.2		046
1986	XF		1986	12	07.94502	04	27	22.36	+25	45	00.1		046
1986	XF		1986	12	07.95914	04	27	21.46	+25	44	58.3		046
1986	XF		1986	12	09.00966	04	26	16.96	+25	43	32.5		046

1986	XF		1986	12	09.02425	04	26	16.16	+25	43	31.8		046
1986	XH		1986	11	29.89677	04	43	39.59	+28	01	11.3	16.7	046
1986	XH		1986	11	29.91089	04	43	38.80	+28	01	05.4		046
1986	XH		1986	12	04.85897	04	38	29.25	+27	22	41.6		046
1986	XH		1986	12	04.87321	04	38	28.34	+27	22	34.9		046
1986	XH		1986	12	07.94502	04	35	17.46	+26	57	28.0		046
1986	XH		1986	12	07.95914	04	35	16.49	+26	57	20.5		046
1986	XH		1986	12	09.00966	04	34	12.10	+26	48	35.0		046
1986	XH		1986	12	09.02425	04	34	11.27	+26	48	29.0		046
1986	XJ		1986	11	25.95969	04	47	44.45	+25	32	54.8		046
1986	XJ		1986	11	29.89677	04	43	53.33	+25	20	37.9		046
1986	XJ		1986	11	29.91089	04	43	52.41	+25	20	33.7		046
1986	XJ		1986	12	04.85897	04	38	57.81	+25	03	43.0		046
1986	XJ		1986	12	04.87321	04	38	56.87	+25	03	40.7		046
1986	XJ		1986	12	07.94502	04	35	55.02	+24	52	41.7		046
1986	XJ		1986	12	07.95914	04	35	54.15	+24	52	38.2		046
1986	XJ		1986	12	09.00966	04	34	52.04	+24	48	46.6		046
1986	XJ		1986	12	09.02425	04	34	51.17	+24	48	43.7		046
1986	XT		1986	11	29.89677	04	31	59.26	+28	11	16.9		046
1986	XT		1986	11	29.91089	04	31	58.32	+28	11	15.9		046
1986	XT		1986	12	04.85897	04	26	31.99	+28	00	43.0		046
1986	XT		1986	12	04.87321	04	26	31.23	+28	00	40.0		046
1986	XU		1986	11	29.89677	04	37	01.09	+26	39	04.9	16.9	046
1986	XU		1986	11	29.91089	04	36	59.92	+26	39	08.8		046
1986	XU		1986	12	04.85897	04	31	05.46	+27	02	53.6		046
1986	XU		1986	12	04.87321	04	31	04.58	+27	02	57.5		046
1986	XU		1986	12	07.94502	04	27	23.52	+27	16	31.3		046
1986	XU		1986	12	07.95914	04	27	22.57	+27	16	34.2		046
1986	XU		1986	12	09.00966	04	26	07.72	+27	20	59.8		046
1986	XU		1986	12	09.02425	04	26	06.90	+27	20	59.2		046
1986	XJ1		1986	11	28.98537	04	01	42.33	+20	50	47.6		046
1986	XJ1		1986	11	28.99961	04	01	41.63	+20	50	46.7		046
1986	XV3		1986	12	04.85897	04	34	06.07	+25	19	28.3	16.9	046
1986	XV3		1986	12	04.87321	04	34	05.09	+25	19	24.9		046
1986	XV3		1986	12	07.94502	04	31	18.11	+25	16	10.8		046
1986	XV3		1986	12	07.95914	04	31	17.07	+25	16	10.8		046
1986	XV3		1986	12	09.00966	04	30	20.69	+25	14	58.6		046
1986	XV3		1986	12	09.02425	04	30	19.72	+25	14	58.0		046
1986	XW3		1986	12	04.85897	04	35	34.89	+25	25	11.5	17.0	046
1986	XW3		1986	12	04.87321	04	35	33.86	+25	25	11.6		046
1986	XW3		1986	12	07.94502	04	32	30.99	+25	21	58.6		046
1986	XW3		1986	12	07.95914	04	32	30.34	+25	22	04.7		046
1986	XZ3		1986	12	04.85897	04	38	28.20	+25	20	41.9	17.0	046
1986	XZ3		1986	12	04.87321	04	38	27.20	+25	20	43.4		046
1986	XZ3		1986	12	07.94502	04	34	35.50	+25	25	15.2		046
1986	XZ3		1986	12	07.95914	04	34	34.36	+25	25	15.5		046
1986	XZ3		1986	12	09.00966	04	33	15.17	+25	26	38.2		046
1986	XZ3		1986	12	09.02425	04	33	14.19	+25	26	41.3		046
1986	XB4		1986	12	04.85897	04	38	52.64	+24	49	16.2	17.0	046
1986	XB4		1986	12	04.87321	04	38	51.72	+24	49	16.5		046
1986	XB4		1986	12	07.94502	04	36	09.23	+24	47	24.8		046
1986	XB4		1986	12	07.95914	04	36	08.58	+24	47	26.0		046
1986	XE4		1986	12	07.94502	04	35	49.18	+26	20	48.9		046
1986	XE4		1986	12	07.95914	04	35	48.14	+26	20	46.7		046
1986	XE4		1986	12	09.00966	04	34	35.50	+26	17	31.5		046
1986	XE4		1986	12	09.02425	04	34	34.60	+26	17	29.5		046
1986	XB5	*	1986	12	03.83889	04	31	30.97	+22	50	27.3	17.2	046
1986	XB5		1986	12	03.85312	04	31	30.47	+22	50	18.8		046
1986	XC5	*	1986	12	04.85897	04	26	20.43	+26	48	21.2	17.0	046

1986	XC5		1986	12	04.87321	04	26	19.85	+26	48	18.1		046
1986	XD5	*	1986	12	04.90278	03	53	55.43	+17	35	57.4	16.7	046
1986	XD5		1986	12	04.91736	03	53	54.50	+17	36	03.6		046
1986	XD5		1986	12	05.84861	03	52	56.85	+17	41	15.0		046
1986	XD5		1986	12	05.86285	03	52	55.92	+17	41	21.7		046
1986	XD5		1986	12	07.90903	03	50	53.00	+17	52	54.7		046
1986	XD5		1986	12	07.92321	03	50	52.03	+17	53	01.1		046
1986	XE5	*	1986	12	04.90278	03	55	15.41	+17	42	34.5	16.7	046
1986	XE5		1986	12	04.91736	03	55	14.79	+17	42	39.7		046
1986	XE5		1986	12	05.84861	03	54	32.91	+17	47	48.3		046
1986	XE5		1986	12	05.86285	03	54	32.19	+17	47	52.9		046
1986	XE5		1986	12	07.90903	03	53	03.70	+17	59	14.5		046
1986	XE5		1986	12	07.92321	03	53	03.06	+17	59	20.2		046
1986	XF5	*	1986	12	04.90278	03	56	14.60	+17	12	51.4	17.2	046
1986	XF5		1986	12	04.91736	03	56	13.72	+17	12	50.7		046
1986	XF5		1986	12	05.84861	03	55	22.39	+17	10	11.3		046
1986	XF5		1986	12	05.86285	03	55	21.52	+17	10	10.7		046
1986	XF5		1986	12	07.90903	03	53	32.22	+17	04	42.0		046
1986	XF5		1986	12	07.92321	03	53	31.48	+17	04	40.2		046
1986	XG5	*	1986	12	04.90278	03	56	59.38	+17	57	51.3	16.8	046
1986	XG5		1986	12	04.91736	03	56	58.66	+17	57	49.3		046
1986	XG5		1986	12	05.84861	03	56	10.46	+17	55	22.7		046
1986	XG5		1986	12	05.86285	03	56	09.48	+17	55	20.6		046
1986	XG5		1986	12	07.90903	03	54	25.05	+17	50	06.7		046
1986	XG5		1986	12	07.92321	03	54	24.26	+17	50	03.6		046
1986	XH5	*	1986	12	04.90278	03	57	09.28	+17	15	23.6	16.8	046
1986	XH5		1986	12	04.91736	03	57	08.38	+17	15	27.5		046
1986	XH5		1986	12	05.84861	03	56	14.85	+17	18	33.1		046
1986	XH5		1986	12	05.86285	03	56	13.99	+17	18	36.4		046
1986	XH5		1986	12	07.90903	03	54	18.42	+17	25	33.3		046
1986	XH5		1986	12	07.92321	03	54	17.56	+17	25	37.7		046
1986	XJ5	*	1986	12	04.90278	03	58	02.16	+17	15	01.9	17.0	046
1986	XJ5		1986	12	04.91736	03	58	00.81	+17	14	57.6		046
1986	XJ5		1986	12	05.84861	03	57	02.87	+17	09	33.9		046
1986	XJ5		1986	12	05.86285	03	57	01.79	+17	09	27.6		046
1986	XJ5		1986	12	07.90903	03	54	56.66	+16	57	53.7		046
1986	XJ5		1986	12	07.92321	03	54	55.78	+16	57	49.0		046
1986	XK5	*	1986	12	04.90278	04	05	08.61	+16	26	54.3	17.0	046
1986	XK5		1986	12	04.91736	04	05	07.85	+16	26	50.5		046
1986	XK5		1986	12	05.84861	04	04	16.79	+16	21	00.2		046
1986	XK5		1986	12	05.86285	04	04	15.92	+16	20	57.0		046
1986	XK5		1986	12	07.90903	04	02	24.96	+16	08	17.8		046
1986	XK5		1986	12	07.92321	04	02	24.08	+16	08	12.6		046
1986	XL5	*	1986	12	05.84861	03	54	59.27	+16	21	11.4	17.0	046
1986	XL5		1986	12	05.86285	03	54	58.24	+16	21	12.2		046
1986	XL5		1986	12	07.90903	03	52	59.02	+16	20	44.1		046
1986	XL5		1986	12	07.92321	03	52	58.32	+16	20	42.5		046
1986	XM5	*	1986	12	07.94502	04	35	51.08	+25	18	14.1	17.2	046
1986	XM5		1986	12	07.95914	04	35	50.39	+25	18	14.8		046
12			1986	11	30.97264	04	38	53.83	+18	39	02.4		046
12			1986	11	30.98676	04	38	52.91	+18	38	58.2		046
12			1986	12	01.95638	04	37	47.71	+18	33	48.4		046
12			1986	12	01.97056	04	37	46.70	+18	33	44.0		046
104			1986	11	30.92692	04	51	07.44	+24	45	37.1		046
104			1986	11	30.94104	04	51	06.57	+24	45	36.4		046
104			1986	12	01.88606	04	50	14.86	+24	45	13.4		046
104			1986	12	01.90019	04	50	14.07	+24	45	13.2		046
104			1986	12	03.90069	04	48	23.63	+24	44	12.7		046
104			1986	12	03.91493	04	48	22.78	+24	44	12.1		046

128	1986	12	04.90278	03	56	24.26	+18	25	49.1	046
128	1986	12	04.91736	03	56	23.41	+18	25	49.4	046
128	1986	12	05.84861	03	55	31.29	+18	26	03.4	046
128	1986	12	05.86285	03	55	30.52	+18	26	03.7	046
128	1986	12	07.90903	03	53	37.85	+18	26	40.5	046
128	1986	12	07.92321	03	53	37.06	+18	26	41.1	046
235	1986	11	30.92692	04	56	50.74	+24	22	19.2	046
235	1986	11	30.94104	04	56	49.90	+24	22	19.4	046
235	1986	12	01.88606	04	55	54.43	+24	23	21.6	046
235	1986	12	01.90019	04	55	53.72	+24	23	22.5	046
235	1986	12	03.90069	04	53	55.46	+24	25	27.2	046
235	1986	12	03.91493	04	53	54.52	+24	25	28.6	046
394	1986	12	01.91969	04	34	02.81	+22	27	20.7	046
394	1986	12	01.93381	04	34	01.92	+22	27	21.0	046
394	1986	12	03.83889	04	32	00.84	+22	27	38.3	046
394	1986	12	03.85312	04	31	59.94	+22	27	38.4	046
562	1986	11	28.98537	04	09	20.50	+19	15	28.5	046
562	1986	11	28.99961	04	09	19.66	+19	15	29.6	046
1028	1986	11	30.92692	04	50	40.38	+24	33	48.2	046
1028	1986	11	30.94104	04	50	39.52	+24	33	49.4	046
1028	1986	12	01.88606	04	49	48.44	+24	35	23.2	046
1028	1986	12	01.90019	04	49	47.65	+24	35	24.5	046
1028	1986	12	03.90069	04	47	58.46	+24	38	37.8	046
1028	1986	12	03.91493	04	47	57.65	+24	38	38.8	046
1061	1986	11	28.98537	04	06	19.06	+18	59	04.4	046
1061	1986	11	28.99961	04	06	18.33	+18	59	02.8	046
1061	1986	12	04.90278	04	01	10.91	+18	51	44.7	046
1061	1986	12	04.91736	04	01	10.17	+18	51	43.8	046
1061	1986	12	05.84861	04	00	23.69	+18	50	39.1	046
1061	1986	12	05.86285	04	00	23.00	+18	50	38.8	046
1061	1986	12	07.90903	03	58	42.20	+18	48	25.8	046
1061	1986	12	07.92321	03	58	41.48	+18	48	25.3	046
1858	1986	11	28.92021	03	14	42.50	+19	33	12.2	046
1858	1986	11	28.93583	03	14	41.44	+19	33	09.9	046
2446	1986	11	29.89677	04	30	15.46	+25	42	50.0	046
2446	1986	11	29.91089	04	30	14.47	+25	42	48.0	046
2563	1986	11	28.98537	04	04	24.65	+18	27	48.1	046
2563	1986	11	28.99961	04	04	23.85	+18	27	45.3	046
2563	1986	12	04.90278	03	59	26.20	+18	16	13.4	046
2563	1986	12	04.91736	03	59	25.29	+18	16	10.8	046
2563	1986	12	05.84861	03	58	39.44	+18	14	25.3	046
2563	1986	12	05.86285	03	58	38.71	+18	14	23.7	046
2563	1986	12	07.90903	03	56	58.76	+18	10	47.8	046
2563	1986	12	07.92321	03	56	58.10	+18	10	35.9	046
2809	1986	11	29.89677	04	38	07.33	+26	15	00.9	046
2809	1986	11	29.91089	04	38	06.32	+26	14	58.5	046
2809	1986	12	04.85897	04	32	23.09	+26	04	56.8	046
2809	1986	12	04.87321	04	32	22.20	+26	04	54.5	046
2809	1986	12	07.94502	04	28	53.02	+25	57	46.2	046
2809	1986	12	07.95914	04	28	52.15	+25	57	42.4	046
2849	1986	11	28.92021	03	20	24.47	+21	13	28.4	046
2849	1986	11	28.93583	03	20	23.26	+21	13	27.2	046
3029	1986	11	29.89677	04	40	06.66	+27	19	08.1	046
3029	1986	11	29.91089	04	40	05.50	+27	19	04.4	046
3029	1986	12	04.85897	04	34	06.23	+27	04	55.8	046
3029	1986	12	04.87321	04	34	05.37	+27	04	53.4	046
3029	1986	12	07.94502	04	30	22.96	+26	54	56.6	046
3029	1986	12	07.95914	04	30	21.90	+26	54	52.4	046
3320	1986	11	30.97264	04	41	51.97	+18	39	38.5	046

3320		1986 11 30.98676	04 41 51.11	+18 39 35.0						046
3320		1986 12 01.95638	04 40 50.95	+18 36 11.5						046
3320		1986 12 01.97056	04 40 50.03	+18 36 05.7						046
3327		1986 11 28.98537	04 06 23.66	+20 41 02.0						046
3327		1986 11 28.99961	04 06 22.96	+20 40 59.0						046
3349		1986 11 30.92692	04 47 26.71	+23 54 50.1						046
3349		1986 11 30.94104	04 47 25.85	+23 54 49.9						046
3349		1986 12 01.88606	04 46 28.68	+23 54 32.8						046
3349		1986 12 01.90019	04 46 27.72	+23 54 32.4						046
3349		1986 12 03.90069	04 44 26.15	+23 53 49.6						046
3349		1986 12 03.91493	04 44 25.18	+23 53 46.3						046

049 Kvistaberg
C.-I. Lagerkvist, Astronomiska Observatoriet, Box 515,
S-75120 Uppsala, Sweden
Observers C.-I. Lagerkvist, T. Oja, D. Kiselman
Measurers C.-I. Lagerkvist, E. Onnela
AGK3

1986 TJ7	*	1986 10 02.88561	00 36 15.31	+03 45 14.1					17.5	049
1986 TJ7		1986 10 02.90015	00 36 14.69	+03 45 12.9						049
1986 TJ7		1986 10 02.95772	00 36 12.44	+03 44 46.5						049
1986 TJ7		1986 10 02.96949	00 36 11.87	+03 44 41.0						049
1986 TJ7		1986 10 11.92622	00 30 15.84	+02 52 44.9						049
1986 TJ7		1986 10 11.93938	00 30 15.35	+02 52 40.5						049
1986 TK7	*	1986 10 02.88561	00 43 15.81	+02 02 48.0					17.5	049
1986 TK7		1986 10 02.90015	00 43 15.09	+02 02 42.0						049
1986 TK7		1986 10 02.95772	00 43 11.89	+02 02 30.3						049
1986 TK7		1986 10 02.96949	00 43 11.17	+02 02 29.3						049
874		1986 10 02.88561	00 45 55.24	+04 41 00.4						049
874		1986 10 02.90015	00 45 54.62	+04 40 55.3						049
874		1986 10 02.95772	00 45 52.36	+04 40 29.0						049
874		1986 10 02.96949	00 45 51.86	+04 40 24.0						049
1546		1986 10 02.88561	00 45 03.17	+04 41 54.0						049
1546		1986 10 02.90015	00 45 02.56	+04 41 46.5						049
1546		1986 10 02.95772	00 45 00.26	+04 41 13.7						049
1546		1986 10 02.96949	00 44 59.79	+04 41 07.4						049
2229		1986 10 02.91412	00 31 11.18	+26 55 54.2						049
2229		1986 10 02.92448	00 31 10.61	+26 55 49.9						049
2502		1986 10 02.88561	00 40 49.38	+02 05 46.6						049
2502		1986 10 02.90015	00 40 48.53	+02 05 44.6						049
2502		1986 10 02.95772	00 40 45.37	+02 05 42.4						049
2752		1986 10 02.88561	00 44 11.70	+03 25 51.2						049
2752		1986 10 02.90015	00 44 11.06	+03 25 45.0						049
2752		1986 10 02.95772	00 44 08.64	+03 25 13.6						049
2752		1986 10 02.96949	00 44 08.12	+03 25 07.9						049

054 Brorfelde
H. G. Fogh Olsen, Copenhagen University Observatory, Brorfelde,
DK-4340 Tollose, Denmark
Observers K. Augustesen, P. Jensen
Measurer P. Jensen
0.45-m Schmidt
Observations in part in association with INAS

1977 KK1		1987 01 26.95218	08 24 53.26	+18 36 03.0					16.7	054
1986 VB8	*	1986 11 04.86786	01 13 18.03	+09 09 05.4					16.8	054
1986 VB8		1986 11 04.88175	01 13 17.57	+09 09 01.3						054
1986 XX		1986 12 06.91051	04 36 17.06	+23 03 18.8					16.8	054
1987 BG	*	1987 01 26.95218	08 23 45.97	+19 04 16.8					16.7	054
1987 BG		1987 01 29.90947	08 20 37.61	+18 52 44.4						054

1363		1987	01	26.95218	08	12	41.66	+18	18	18.4			054
1363		1987	01	29.90947	08	10	05.02	+18	26	42.6			054
1769		1987	01	26.95218	08	21	47.22	+20	09	48.2	17.1		054
2190		1987	01	26.95218	08	16	00.21	+18	50	15.1			054
2190		1987	01	29.90947	08	12	55.18	+18	59	24.6			054
2279		1987	01	26.95218	08	23	38.21	+17	59	30.4			054
2279		1987	01	29.90947	08	20	35.81	+18	14	25.9			054
3355		1987	01	26.95218	08	14	13.16	+17	35	58.1	16.8		054
3355		1987	01	29.90947	08	11	02.98	+17	54	26.0			054
3377		1987	01	26.95218	08	20	26.06	+17	30	17.8	16.7		054

091 St. Etienne
J.-L. Heudier, CERGA Caussols, F-06460 Saint Vallier de Thiey, France
Observer R. Chanal
0.41-m reflector

1372		1986	11	30.91667	02	05	25.49	+41	15	16.8			091
1372		1986	12	01.88542	02	04	50.73	+41	07	23.2			091
1372		1986	12	02.93402	02	04	15.42	+40	58	40.3			091
3080		1986	12	03.03680	05	23	44.85	+34	37	43.2			091

092 Piwnice
M. Antal, Astronomical Observatory, Hurbanovo, Czechoslovakia
Observer M. Antal
Reductions by E. M. Pittich
0.6-m Schmidt telescope
SAOC

1984	EN		1986	10	09.05419	03	22	28.90	+24	22	02.0	18.0	E 092
1984	EN		1986	10	09.11042	03	22	27.49	+24	22	04.8		E 092
1984	EN		1986	10	11.06181	03	21	33.68	+24	23	36.8		E 092
1984	EN		1986	10	11.09653	03	21	32.67	+24	23	37.3		E 092
1984	EN		1986	10	12.08333	03	21	02.58	+24	24	11.4	17.5	E 092
1985	TC1		1986	10	09.05419	03	25	08.78	+26	54	32.3	17.8	E 092
1985	TC1		1986	10	09.11042	03	25	07.54	+26	54	36.6		E 092
1985	TC1		1986	10	11.06181	03	24	22.17	+26	56	36.2	17.5	E 092
1985	TC1		1986	10	11.09653	03	24	21.29	+26	56	38.4		E 092
1985	TC1		1986	10	12.08333	03	23	57.33	+26	57	35.0	17.5	E 092
1986	TP6		1986	10	09.01881	03	18	54.80	+30	58	44.5	17.0	092
1986	TP6		1986	10	09.07644	03	18	53.01	+30	58	45.5		092
1986	TP6		1986	10	09.13333	03	18	51.23	+30	58	48.4	17.4	092
1986	TP6		1986	10	10.88750	03	17	57.87	+30	59	36.7		092
1986	TP6		1986	10	10.97847	03	17	54.86	+30	59	38.6		092
1986	TP6		1986	10	11.12014	03	17	50.24	+30	59	42.5		092
1986	TP6		1986	10	12.10972	03	17	17.85	+30	59	55.5		092
1986	TR6	*	1986	10	05.05144	03	14	21.55	+29	39	59.1	17.9	092
1986	TR6		1986	10	05.11875	03	14	20.18	+29	39	57.0		092
1986	TR6		1986	10	09.01881	03	12	58.55	+29	38	07.2	17.6	092
1986	TR6		1986	10	09.07644	03	12	57.23	+29	38	06.3		092
1986	TR6		1986	10	09.13333	03	12	55.98	+29	38	03.9		092
1986	TR6		1986	10	10.88750	03	12	15.46	+29	36	47.9		092
1986	TR6		1986	10	10.97847	03	12	13.30	+29	36	43.0		092
1986	TR6		1986	10	11.12014	03	12	09.80	+29	36	36.1		092
1986	TR6		1986	10	12.10972	03	11	45.69	+29	35	44.6		092
1986	TS6	*	1986	10	05.05144	03	15	17.43	+29	44	20.1	17.5	092
1986	TS6		1986	10	05.11875	03	15	16.07	+29	44	24.6		092
1986	TS6		1986	10	09.01881	03	13	49.67	+29	48	41.5	17.4	092
1986	TS6		1986	10	09.07644	03	13	48.29	+29	48	45.3		092
1986	TS6		1986	10	09.13333	03	13	46.93	+29	48	48.6		092
1986	TS6		1986	10	10.88750	03	13	03.98	+29	50	19.7		092
1986	TS6		1986	10	10.97847	03	13	01.74	+29	50	23.6		092

1986	TS6		1986	10	11.12014	03	12	58.15	+29	50	30.9		092
1986	TS6		1986	10	12.10972	03	12	32.83	+29	51	14.1	M	092
1986	TT6	*	1986	10	05.05144	03	20	28.21	+29	52	33.0	17.1	092
1986	TT6		1986	10	05.11875	03	20	26.84	+29	52	21.2		092
1986	TT6		1986	10	09.01881	03	19	04.15	+29	40	13.7	16.9	092
1986	TT6		1986	10	09.07644	03	19	02.86	+29	40	02.2		092
1986	TT6		1986	10	09.13333	03	19	01.49	+29	39	51.0	17.2	092
1986	TT6		1986	10	10.88750	03	18	20.68	+29	33	55.1		092
1986	TT6		1986	10	10.97847	03	18	18.47	+29	33	36.6		092
1986	TT6		1986	10	11.12014	03	18	14.99	+29	33	07.4		092
1986	TT6		1986	10	12.10972	03	17	50.79	+29	29	38.0		092
1986	TU6	*	1986	10	05.05144	03	27	38.83	+29	48	46.6	17.3 N	092
1986	TU6		1986	10	05.11575	03	27	37.16	+29	48	47.4	N	092
1986	TU6		1986	10	09.01881	03	26	00.56	+29	49	38.2	17.7	092
1986	TU6		1986	10	09.07644	03	25	58.95	+29	49	37.5		092
1986	TU6		1986	10	09.13333	03	25	57.33	+29	49	37.3	17.4	092
1986	TU6		1986	10	10.88750	03	25	06.64	+29	49	16.9		092
1986	TU6		1986	10	10.97847	03	25	03.85	+29	49	16.3		092
1986	TU6		1986	10	11.12014	03	24	59.47	+29	49	12.4		092
1986	TU6		1986	10	12.10972	03	24	28.64	+29	48	49.3		092
1986	TV6	*	1986	10	05.05144	03	19	32.73	+29	37	46.2	17.3	092
1986	TV6		1986	10	05.11875	03	19	30.80	+29	37	57.7		092
1986	TV6		1986	10	09.01881	03	17	30.02	+29	47	31.2	17.4	092
1986	TV6		1986	10	09.07644	03	17	28.01	+29	47	38.5		092
1986	TV6		1986	10	09.13333	03	17	26.01	+29	47	44.1	17.5	092
1986	TV6		1986	10	10.88750	03	16	22.12	+29	51	05.1		092
1986	TV6		1986	10	10.97847	03	16	18.24	+29	51	15.3		092
1986	TV6		1986	10	11.12014	03	16	12.67	+29	51	28.2		092
1986	TV6		1986	10	12.10972	03	15	33.41	+29	53	04.3		092
1986	TW6	*	1986	10	05.05144	03	19	34.57	+27	56	24.8	17.4 E	092
1986	TW6		1986	10	05.11875	03	19	33.06	+27	56	44.2	E	092
1986	TX6	*	1986	10	05.05144	03	19	35.99	+27	47	13.6	17.6 E	092
1986	TX6		1986	10	05.11875	03	19	35.19	+27	47	33.5	E	092
1986	TY6	*	1986	10	05.05144	03	24	20.90	+28	13	14.9	17.5 E	092
1986	TY6		1986	10	05.11875	03	24	20.55	+28	13	23.5	E	092
1986	TZ6	*	1986	10	09.05419	03	09	01.90	+26	22	40.2	17.4 N	092
1986	TZ6		1986	10	09.11042	03	09	00.49	+26	22	35.9	N	092
1986	TZ6		1986	10	11.06181	03	08	09.78	+26	19	52.3	N	092
1986	TZ6		1986	10	11.09653	03	08	08.92	+26	19	46.8	N	092
1986	TZ6		1986	10	12.08333	03	07	40.09	+26	18	01.6	17.5 N	092
1986	TA7	*	1986	10	09.05419	03	12	05.58	+26	31	39.6	17.0	092
1986	TA7		1986	10	09.11042	03	12	03.17	+26	31	52.1		092
1986	TA7		1986	10	11.06181	03	10	39.04	+26	39	25.0	17.5	092
1986	TA7		1986	10	11.09653	03	10	37.37	+26	39	32.8		092
1986	TA7		1986	10	12.08333	03	09	52.15	+26	43	06.2	17.5 N	092
1986	TB7	*	1986	10	09.05419	03	14	18.57	+24	58	33.3	18.0	092
1986	TB7		1986	10	09.11042	03	14	17.24	+24	58	23.1		092
1986	TB7		1986	10	11.06181	03	13	24.79	+24	51	57.2	18.5	092
1986	TB7		1986	10	11.09653	03	13	23.56	+24	51	48.2		092
1986	TB7		1986	10	12.08333	03	12	54.86	+24	48	18.7	18.0	092
1986	UY		1986	10	09.05419	03	15	28.05	+24	40	35.3	16.7	092
1986	UY		1986	10	09.11042	03	15	26.84	+24	40	48.9		092
1986	UY		1986	10	11.06181	03	14	43.61	+24	48	55.5		092
1986	UY		1986	10	11.09653	03	14	42.65	+24	49	03.8		092
1986	UY		1986	10	12.08333	03	14	17.30	+24	52	54.4	16.5	092
1986	UZ		1986	10	09.05419	03	18	19.76	+24	47	37.6	16.2	092
1986	UZ		1986	10	09.11042	03	18	18.12	+24	47	46.4		092
1986	UZ		1986	10	11.06181	03	17	21.67	+24	52	16.7		092
1986	UZ		1986	10	11.09653	03	17	20.56	+24	52	21.4		092

1986 UZ		1986	10	12.08333	03	16	48.64	+24	54	24.3	16.5 092
1986 VR5		1986	10	09.05419	03	26	34.06	+26	05	45.9	18.6 E 092
1986 VR5		1986	10	09.11042	03	26	32.95	+26	05	44.3	E 092
1986 VR5		1986	10	11.06181	03	25	53.77	+26	04	07.0	18.2 E 092
1986 VR5		1986	10	11.09653	03	25	52.94	+26	04	03.8	E 092
1986 VR5		1986	10	12.08333	03	25	29.98	+26	02	58.6	18.0 E 092
2103		1986	10	05.05144	03	24	25.57	+28	09	31.0	17.2 E 092
2103		1986	10	05.11875	03	24	23.86	+28	09	31.4	E 092

413 Siding Spring
M. Hartley, U.K. Schmidt Telescope Unit, Coonabarabran, N.S.W. 2857, Australia (1)
R. H. McNaught, Siding Spring Observatory, Coonabarabran, N.S.W. 2857, Australia (2)
R. M. West, European Southern Observatory, Karl Schwarzschild Strasse 2, D-8046 Garching bei Munchen, Federal Republic of Germany (5)
Observers M. Hartley, D. Waldron
Measurers M. Hartley, R. McNaught, R. M. West
1.2-m U.K. Schmidt telescope

1938 DN1		1982	10	13.64389	02	42	20.46	-02	17	22.7	17.5 5 413
1938 DN1		1982	10	15.65124	02	41	01.57	-02	37	20.3	5 413
1985 DO2		1985	01	21.71101	11	11	45.64	-03	12	57.1	1 413
1987 AB	*	1987	01	10.65641	10	19	30.64	-01	53	21.6	16 2 413
1987 AB		1987	01	10.73975	10	19	27.50	-01	49	36.0	2 413

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

1985 RC3		1986	12	22.79514	03	57	52.41	+19	55	52.3	16.7 552
1985 RC3		1986	12	22.81597	03	57	51.69	+19	55	50.5	552
1986 WG		1986	12	22.82986	03	44	14.25	+11	45	09.7	16.8 552
1986 WG		1986	12	22.84167	03	44	13.78	+11	44	59.8	552
1986 XC		1986	12	22.85694	04	52	16.69	+20	08	55.1	16.5 552
1986 XC		1986	12	22.87153	04	52	15.92	+20	08	51.6	552
1987 AA	*	1987	01	06.92465	06	52	35.24	+19	58	33.2	16.3 552
1987 AA		1987	01	08.94236	06	50	31.63	+20	26	57.4	16.3 552
1987 AA		1987	01	08.95417	06	50	30.79	+20	27	06.2	552
1987 BA	*	1987	01	23.91319	08	09	21.91	+17	12	00.3	16.5 552
1987 BA		1987	01	23.93125	08	09	20.72	+17	12	19.0	552
2235		1987	01	22.86111	06	00	01.43	-04	00	02.9	15.5 552
2235		1987	01	22.88403	06	00	00.77	-03	59	56.5	552
2411		1987	01	23.95278	08	07	56.27	+19	44	00.5	16.6 552
2411		1987	01	23.97014	08	07	54.96	+19	44	05.3	552

565 Bassano Bresciano
U. Quadri, Osservatorio Astronomico 'Brixia', Via S. Michele 4, I-25020 Bassano Bresciano (Brescia), Italy
Observers U. Quadri, V. Marinello
0.15-m astrometric reflector
SAOC

1		1986	05	25.84314	10	52	32.93	+19	45	10.7	565
1		1986	05	25.85378	10	52	33.41	+19	45	04.5	565
1		1986	05	25.86420	10	52	33.88	+19	44	58.8	565
1		1986	05	25.87514	10	52	34.46	+19	44	52.5	565
1		1986	05	25.88573	10	52	34.90	+19	44	46.3	565
1		1986	05	26.84549	10	53	20.30	+19	35	48.4	565
1		1986	05	26.85590	10	53	20.72	+19	35	42.7	565

1	1986 05 26.86632	10 53 21.29	+19 35 36.1		565
1	1986 05 26.87674	10 53 21.70	+19 35 31.5		565
1	1986 05 26.88715	10 53 22.27	+19 35 24.7		565
6	1986 05 30.85556	12 45 28.66	+13 32 29.9		565
6	1986 05 30.87292	12 45 28.61	+13 32 26.6		565
6	1986 05 30.89028	12 45 28.54	+13 32 22.5		565
6	1986 05 30.90764	12 45 28.32	+13 32 18.0		565

568 Mauna Kea
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Observers D. J. Tholen, W. K. Hartmann, F. Cheigh
2.24-m telescope, positions from encoders
AGK3

1973 SO	1986 12 31.31374	03 34 11.23	+23 00 11.6	16.6V	568
1985 TQ	1986 12 31.32918	03 31 56.25	+21 23 57.4	16.9V	568
659	1986 12 31.34514	03 43 59.33	+25 04 04.5	16.1V	568
3124	1986 12 31.38406	05 15 01.59	+14 27 25.2	17.5V	568

573 Eldagsen
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AGK3

12	1986 11 30.78333	04 39 06.89	+18 40 01.1		573
12	1986 11 30.78750	04 39 06.65	+18 40 00.9		573
12	1986 11 30.79167	04 39 06.32	+18 39 58.9		573
352	1986 12 03.75069	04 37 34.30	+21 36 42.7		573
352	1986 12 03.75833	04 37 33.86	+21 36 42.2		573
352	1986 12 03.76667	04 37 33.33	+21 36 39.5		573
409	1986 12 03.77639	04 44 50.54	+19 17 33.8		573
409	1986 12 03.78056	04 44 50.26	+19 17 32.1		573
409	1986 12 03.78472	04 44 50.09	+19 17 30.9		573

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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

1940 YE	1987 01 07.40701	09 24 29.74	+22 58 15.3		657
1940 YE	1987 01 07.44729	09 24 28.14	+22 58 12.5		657
1940 YE	1987 01 08.44556	09 23 45.99	+22 56 43.9		657
1940 YE	1987 01 08.48792	09 23 43.94	+22 56 39.2		657
86	1986 12 10.24861	05 59 39.35	+23 15 27.3		657
222	1987 01 07.42993	08 33 59.99	+20 43 39.4		657
471	1986 12 10.23889	06 33 25.48	+25 39 31.4		657
541	1987 01 07.45667	08 09 59.74	+15 42 42.6		657
828	1987 01 07.42993	08 30 15.83	+20 25 47.7		657
830	1986 12 09.26667	05 21 41.70	+28 45 38.9		657
946	1987 01 07.42993	08 31 11.59	+20 37 57.5		657
1237	1986 12 09.26667	05 27 25.62	+29 23 56.0		657
1278	1986 12 09.25903	05 26 25.58	+20 00 12.7		657

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Observers S. J. Bus, E. Helin, C. Shoemaker, E. Shoemaker, B. A. Skiff
Measurers J. Alu, C. Shoemaker, R. M. West
1.2-m and 0.46-m Schmidt telescopes

1938	DN1		1953	12	31.20799	03	49	28.54	-01	38	28.1	18.0	5 675
1949	WQ	*	1949	11	30.43333	07	56	55.53	+02	31	00.5	19.0	5 675
1949	WQ		1949	11	30.46076	07	56	55.33	+02	30	53.4		5 675
1978	PO3		1986	10	07.36458	02	31	12.93	+14	59	11.8	17.5	2 675
1978	PO3		1986	10	07.40625	02	31	10.91	+14	59	03.6		2 675
1978	PO3		1986	10	08.35764	02	30	27.09	+14	56	00.4		2 675
1978	PO3		1986	10	08.40972	02	30	24.62	+14	55	50.7		2 675
1985	JK1		1985	05	24.31950	15	13	50.50	-12	00	52.1		3 675
1985	JK1		1985	05	24.34317	15	13	49.38	-12	00	51.3		3 675
1985	JW1		1985	05	24.31950	14	51	44.89	-10	13	22.2		3 675
1985	JW1		1985	05	24.34317	14	51	43.68	-10	13	25.1		3 675
1985	TM3		1985	09	16.44131	01	04	17.05	+22	42	49.9		3 675
1985	TM3		1985	09	16.50451	01	04	14.79	+22	42	40.9		3 675
1985	TM3	*	1985	10	11.32013	00	47	31.25	+20	26	52.0	17.3	3 675
1985	TM3		1985	10	13.27621	00	46	08.02	+20	11	05.4		3 675
1985	TN3		1985	09	15.43924	01	20	42.14	+20	32	05.7		3 675
1985	TN3		1985	09	15.46545	01	20	40.89	+20	32	14.7		3 675
1985	TN3	*	1985	10	11.32013	00	54	01.15	+21	47	23.7	16.5	3 675
1985	TN3		1985	10	13.27621	00	51	48.36	+21	46	43.9		3 675
1985	TO3		1985	09	15.43924	01	17	09.60	+20	17	54.7		3 675
1985	TO3		1985	09	15.46545	01	17	08.82	+20	17	53.3		3 675
1985	TO3	*	1985	10	11.32013	00	58	13.13	+18	58	43.4	17.5	3 675
1985	TO3		1985	10	13.27621	00	56	31.08	+18	45	05.3		3 675
1985	TP3		1985	09	16.44131	01	16	41.68	+17	28	39.3		3 675
1985	TP3		1985	09	16.50451	01	16	39.99	+17	28	44.0		3 675
1985	TP3		1985	09	17.40243	01	16	17.95	+17	29	34.6		3 675
1985	TP3		1985	09	17.42916	01	16	17.21	+17	29	35.4		3 675
1985	TP3	*	1985	10	11.32013	00	59	23.87	+16	26	12.7	16.7	3 675
1985	TP3		1985	10	13.27621	00	57	45.57	+16	14	49.1		3 675
1985	TQ3		1985	09	15.43924	01	25	12.87	+20	35	42.6		3 675
1985	TQ3		1985	09	15.46545	01	25	11.97	+20	35	42.1		3 675
1985	TQ3	*	1985	10	11.32013	01	05	41.35	+19	24	26.4	17.5	3 675
1985	TQ3		1985	10	13.27621	01	03	58.39	+19	14	29.1		3 675
1985	TR3	*	1985	10	11.32013	01	13	02.14	+16	28	01.8	16	3 675
1985	TR3		1985	10	13.27621	01	11	03.29	+16	16	58.5		3 675
1985	TS3		1985	09	15.43924	01	31	19.66	+22	35	24.5		3 675
1985	TS3		1985	09	15.46545	01	31	19.11	+22	35	27.9		3 675
1985	TS3	*	1985	10	11.32013	01	13	02.88	+21	54	12.1	15.2	3 675
1985	TS3		1985	10	13.27621	01	11	15.55	+21	41	51.0		3 675
1985	UJ		1985	09	21.41892	01	47	21.94	+06	09	50.7		3 675
1985	UJ		1985	09	21.44063	01	47	21.58	+06	10	08.0		3 675
1985	UJ		1985	10	11.32482	01	38	48.08	+10	31	36.2	16.5	3 675
1985	UJ		1985	10	11.35364	01	38	46.71	+10	31	58.1		3 675
1985	UJ		1985	10	13.34878	01	37	18.87	+10	58	05.8		3 675
1986	TU		1986	10	06.19444	22	30	35.45	+03	44	48.7		2 675
1986	TU		1986	10	06.23958	22	30	34.33	+03	43	51.1		2 675
1986	TV		1986	10	06.19444	22	34	07.85	+05	41	32.7		2 675
1986	TV		1986	10	06.23958	22	34	06.86	+05	41	07.4		2 675
1986	TD7	*	1986	10	07.36458	02	30	52.05	+13	44	08.6	17.5	2 675
1986	TD7		1986	10	07.40625	02	30	49.79	+13	44	13.4		2 675
1986	TD7		1986	10	08.35764	02	29	59.40	+13	45	51.7		2 675
1986	TD7		1986	10	08.40972	02	29	56.55	+13	45	57.8		2 675
1986	TE7	*	1986	10	07.36458	02	39	08.26	+16	56	07.2	17.2	2 675
1986	TE7		1986	10	07.40625	02	39	07.27	+16	55	44.6		2 675
1986	TE7		1986	10	08.35764	02	38	47.43	+16	46	38.1		2 675
1986	TE7		1986	10	08.40972	02	38	46.15	+16	46	07.9		2 675
1986	TF7	*	1986	10	07.36458	02	43	48.28	+14	11	27.0	19.0	2 675
1986	TF7		1986	10	07.40625	02	43	44.90	+14	11	58.1		2 675
1986	TF7		1986	10	08.35764	02	42	27.85	+14	24	43.9		2 675

1986	TF7		1986	10	08.40972	02	42	23.62	+14	25	21.5	2 675
1986	TG7	*	1986	10	07.36458	02	52	10.57	+14	43	59.3	18.0 2 675
1986	TG7		1986	10	07.40625	02	52	09.06	+14	43	54.6	2 675
1986	TG7		1986	10	08.35764	02	51	35.95	+14	41	53.2	2 675
1986	TG7		1986	10	08.40972	02	51	34.18	+14	41	47.7	2 675
1986	TH7	*	1986	10	07.36458	02	52	17.21	+14	46	26.3	18.0 2 675
1986	TH7		1986	10	07.40625	02	52	15.48	+14	46	21.7	2 675
1986	TH7		1986	10	08.35764	02	51	37.78	+14	44	08.8	2 675
1986	TH7		1986	10	08.40972	02	51	35.94	+14	44	03.4	2 675
1986	UP3	*	1986	10	31.34722	03	37	41.88	+23	42	04.2	19 2 675
1986	UP3		1986	10	31.38889	03	37	40.33	+23	41	57.8	2 675
1986	UP3		1986	11	05.32986	03	35	01.74	+23	32	43.1	2 675
1986	UP3		1986	11	05.37153	03	35	00.76	+23	32	39.1	2 675
1986	UQ3	*	1986	10	31.34722	03	40	19.87	+27	53	27.6	18.0 2 675
1986	UQ3		1986	10	31.38889	03	40	18.64	+27	53	23.4	2 675
1986	UQ3		1986	11	05.32986	03	37	43.11	+27	45	11.3	2 675
1986	UQ3		1986	11	05.37153	03	37	42.00	+27	45	07.3	2 675
1986	UR3	*	1986	10	31.34722	03	42	31.15	+22	25	29.1	18.5 2 675
1986	UR3		1986	10	31.38889	03	42	29.09	+22	25	26.7	2 675
1986	UR3		1986	11	05.32986	03	39	43.84	+22	22	47.4	2 675
1986	UR3		1986	11	05.37153	03	39	42.08	+22	22	46.2	2 675
1986	US3	*	1986	10	31.34722	03	47	30.59	+26	21	48.6	18.5 2 675
1986	US3		1986	10	31.38889	03	47	29.07	+26	21	44.6	2 675
1986	US3		1986	11	05.32986	03	45	49.71	+26	07	03.4	2 675
1986	US3		1986	11	05.37153	03	45	48.52	+26	06	59.7	2 675
1986	UT3	*	1986	10	31.34722	03	48	38.02	+23	36	40.6	19.5 2 675
1986	UT3		1986	10	31.38889	03	48	36.71	+23	36	38.7	2 675
1986	UT3		1986	11	05.32986	03	46	01.23	+23	33	37.2	2 675
1986	UT3		1986	11	05.37153	03	46	00.11	+23	33	36.0	2 675
1986	UU3	*	1986	10	31.34722	03	46	40.76	+27	33	43.7	18.5 2 675
1986	UU3		1986	10	31.38889	03	46	39.47	+27	33	40.5	2 675
1986	UU3		1986	11	05.32986	03	43	52.01	+27	29	52.9	2 675
1986	UU3		1986	11	05.37153	03	43	50.32	+27	29	48.7	2 675
1986	UV3	*	1986	10	31.34722	03	47	42.20	+26	12	19.4	18.0 2 675
1986	UV3		1986	10	31.38889	03	47	40.49	+26	12	10.3	2 675
1986	UV3		1986	11	05.32986	03	43	55.90	+25	52	34.8	2 675
1986	UV3		1986	11	05.37153	03	43	53.96	+25	52	24.8	2 675
1986	UW3	*	1986	10	31.34722	03	49	55.13	+27	34	29.0	17.8 2 675
1986	UW3		1986	10	31.38889	03	49	53.49	+27	34	15.9	2 675
1986	UW3		1986	11	05.32986	03	46	24.66	+27	02	00.1	2 675
1986	UW3		1986	11	05.37153	03	46	22.75	+27	01	44.0	2 675
1986	UX3	*	1986	10	31.34722	03	51	54.58	+25	34	44.4	18.2 2 675
1986	UX3		1986	10	31.38889	03	51	52.41	+25	34	54.2	2 675
1986	UX3		1986	11	05.32986	03	47	14.26	+25	56	28.3	2 675
1986	UX3		1986	11	05.37153	03	47	12.05	+25	56	37.0	2 675
1986	UY3	*	1986	10	31.34722	03	47	53.50	+27	39	41.7	17.5 2 675
1986	UY3		1986	10	31.38889	03	47	51.03	+27	39	38.9	2 675
1986	UY3		1986	11	05.32986	03	42	36.01	+27	32	57.2	2 675
1986	UY3		1986	11	05.37153	03	42	33.01	+27	32	53.6	2 675
1986	UZ3	*	1986	10	31.34722	03	48	24.68	+24	36	39.2	18.0 2 675
1986	UZ3		1986	10	31.38889	03	48	23.25	+24	36	33.5	2 675
1986	UZ3		1986	11	05.32986	03	45	44.65	+24	26	45.5	2 675
1986	UZ3		1986	11	05.37153	03	45	43.22	+24	26	40.1	2 675
1986	UA4	*	1986	10	31.34722	03	48	31.99	+25	54	23.1	18.5 2 675
1986	UA4		1986	10	31.38889	03	48	30.26	+25	54	26.5	2 675
1986	UA4		1986	11	05.32986	03	44	06.75	+26	03	13.2	2 675
1986	UA4		1986	11	05.37153	03	44	04.49	+26	03	16.7	2 675
1986	UB4	*	1986	10	31.34722	03	49	32.29	+25	02	27.2	18.5 2 675
1986	UB4		1986	10	31.38889	03	49	30.07	+25	02	27.0	2 675

1986	UB4		1986	11	05.32986	03	44	43.62	+25	00	25.4		2 675
1986	UB4		1986	11	05.37153	03	44	41.34	+25	00	23.7		2 675
1986	UC4	*	1986	10	31.34722	03	50	19.76	+22	51	50.4	18.0	2 675
1986	UC4		1986	10	31.38889	03	50	17.61	+22	51	41.4		2 675
1986	UC4		1986	11	05.32986	03	45	49.80	+22	34	35.0		2 675
1986	UC4		1986	11	05.37153	03	45	47.29	+22	34	25.2		2 675
1986	UD4	*	1986	10	31.34722	03	51	06.58	+23	42	10.9	18.0	2 675
1986	UD4		1986	10	31.38889	03	51	04.15	+23	42	08.1		2 675
1986	UD4		1986	11	05.32986	03	46	18.61	+23	36	22.4		2 675
1986	UD4		1986	11	05.37153	03	46	15.98	+23	36	18.4		2 675
1986	UE4	*	1986	10	31.34722	03	42	47.53	+27	12	41.0	18.0	2 675
1986	UE4		1986	10	31.38889	03	42	45.37	+27	12	42.6		2 675
1986	UE4		1986	11	05.32986	03	38	28.51	+27	18	09.4		2 675
1986	UE4		1986	11	05.37153	03	38	26.10	+27	18	11.7		2 675
1986	UF4	*	1986	10	31.34722	03	43	38.38	+26	50	55.5	16.5	2 675
1986	UF4		1986	10	31.38889	03	43	36.38	+26	50	54.9		2 675
1986	UF4		1986	11	05.32986	03	39	33.52	+26	50	00.6		2 675
1986	UF4		1986	11	05.37153	03	39	31.35	+26	49	59.3		2 675
1986	UG4	*	1986	10	31.34722	03	44	05.40	+26	42	54.5	17.5	2 675
1986	UG4		1986	10	31.38889	03	44	02.95	+26	42	58.3		2 675
1986	UG4		1986	11	05.32986	03	39	12.16	+26	49	22.1		2 675
1986	UG4		1986	11	05.37153	03	39	09.42	+26	49	24.2		2 675
1986	UH4	*	1986	10	31.34722	03	44	55.24	+26	58	20.4	18.0	2 675
1986	UH4		1986	10	31.38889	03	44	53.20	+26	58	13.1		2 675
1986	UH4		1986	11	05.32986	03	40	49.61	+26	44	39.1		2 675
1986	UH4		1986	11	05.37153	03	40	47.52	+26	44	31.4		2 675
1986	UJ4	*	1986	10	31.34722	03	45	24.42	+27	03	46.2	18.5	2 675
1986	UJ4		1986	10	31.38889	03	45	22.32	+27	03	45.9		2 675
1986	UJ4		1986	11	05.32986	03	41	03.29	+27	02	52.7		2 675
1986	UJ4		1986	11	05.37153	03	41	00.81	+27	02	51.4		2 675
1986	UK4	*	1986	10	31.34722	03	48	02.61	+23	28	37.2	18.0	2 675
1986	UK4		1986	10	31.38889	03	48	00.89	+23	28	34.0		2 675
1986	UK4		1986	11	05.32986	03	44	21.28	+23	22	14.1		2 675
1986	UK4		1986	11	05.37153	03	44	19.27	+23	22	10.4		2 675
1986	UL4	*	1986	10	31.34722	03	51	15.08	+23	14	26.9	18.0	2 675
1986	UL4		1986	10	31.38889	03	51	12.59	+23	14	25.4		2 675
1986	UL4		1986	11	05.32986	03	45	35.23	+23	11	40.7		2 675
1986	UL4		1986	11	05.37153	03	45	32.02	+23	11	38.1		2 675
1986	UM4	*	1986	10	31.34722	03	40	14.79	+25	35	19.4	17.5	2 675
1986	UM4		1986	10	31.38889	03	40	13.07	+25	35	14.4		2 675
1986	UM4		1986	11	05.32986	03	36	41.16	+25	22	31.4		2 675
1986	UM4		1986	11	05.37153	03	36	39.20	+25	22	24.7		2 675
1986	UN4	*	1986	10	31.34722	03	40	32.73	+26	09	52.5	18.5	2 675
1986	UN4		1986	10	31.38889	03	40	30.63	+26	09	45.9		2 675
1986	UN4		1986	11	05.32986	03	36	10.01	+25	57	10.8		2 675
1986	UN4		1986	11	05.37153	03	36	07.50	+25	57	04.9		2 675
1986	UO4	*	1986	10	31.34722	03	41	19.40	+26	19	13.0	18.0	2 675
1986	UO4		1986	10	31.38889	03	41	17.58	+26	19	00.9		2 675
1986	UO4		1986	11	05.32986	03	37	41.33	+25	55	05.9		2 675
1986	UO4		1986	11	05.37153	03	37	39.32	+25	54	52.6		2 675
1986	UP4	*	1986	10	31.34722	03	44	39.54	+26	18	05.0	18.5	2 675
1986	UP4		1986	10	31.38889	03	44	37.49	+26	17	55.8		2 675
1986	UP4		1986	11	05.32986	03	40	24.74	+25	58	33.1		2 675
1986	UP4		1986	11	05.37153	03	40	22.58	+25	58	21.8		2 675
1986	UQ4	*	1986	10	31.34722	03	45	06.96	+25	53	35.0	18.0	2 675
1986	UQ4		1986	10	31.38889	03	45	04.66	+25	53	39.5		2 675
1986	UQ4		1986	11	05.32986	03	40	21.63	+26	02	12.8		2 675
1986	UQ4		1986	11	05.37153	03	40	18.81	+26	02	16.2		2 675
1986	VB		1986	10	07.36458	02	33	57.83	+16	45	14.4	18.5	2 675

1986	VB		1986	10	07.40625	02	33	54.37	+16	45	50.0		2 675
1986	VB		1986	10	08.35764	02	32	34.70	+16	59	34.3		2 675
1986	VB		1986	10	08.40972	02	32	31.18	+17	00	11.5		2 675
1986	WP		1986	10	31.34722	03	48	16.55	+22	05	31.6	17.5	2 675
1986	WP		1986	10	31.38889	03	48	14.28	+22	05	29.5		2 675
1986	WP		1986	11	05.32986	03	43	27.92	+22	01	22.7		2 675
1986	WP		1986	11	05.37153	03	43	25.34	+22	01	20.4		2 675
1986	YF	*	1986	12	30.35764	07	43	30.79	+07	24	27.5	18.0	2 675
1986	YF		1986	12	30.39236	07	43	29.16	+07	24	42.2		2 675
1986	YF		1987	01	04.33681	07	39	13.29	+08	07	12.2		2 675
1986	YF		1987	01	04.37847	07	39	11.07	+08	07	33.7		2 675
1986	YG	*	1986	12	30.35764	07	49	41.16	+09	05	35.5	18.5	2 675
1986	YG		1986	12	30.39236	07	49	39.51	+09	05	36.9		2 675
1986	YG		1987	01	04.33681	07	45	44.67	+09	17	34.3		2 675
1986	YG		1987	01	04.37847	07	45	42.99	+09	17	39.1		2 675
1986	YH	*	1986	12	30.46181	10	02	35.79	+27	29	51.5	17.5	2 675
1986	YH		1986	12	30.49653	10	02	34.26	+27	29	31.8		2 675
1986	YJ	*	1986	12	30.46181	10	09	18.23	+24	45	39.3	17.5	2 675
1986	YJ		1986	12	30.49653	10	09	17.66	+24	45	47.8		2 675
1986	YK	*	1986	12	30.46181	10	21	42.20	+24	22	25.3	17.0	2 675
1986	YK		1986	12	30.49653	10	21	41.93	+24	22	04.5		2 675
1986	YL	*	1986	12	27.41806	08	58	12.09	+18	26	41.1	18.0	2 675
1986	YL		1986	12	27.45972	08	58	10.53	+18	27	03.5		2 675
1986	YM	*	1986	12	27.41806	08	59	26.05	+21	06	44.8	18.2	2 675
1986	YM		1986	12	27.45972	08	59	24.97	+21	07	06.5		2 675
1986	YN	*	1986	12	27.41806	09	05	10.93	+22	15	59.5	18.5	2 675
1986	YN		1986	12	27.45972	09	05	09.94	+22	16	19.2		2 675
1986	YO	*	1986	12	27.41806	09	07	54.82	+19	58	08.9	18.0	2 675
1986	YO		1986	12	27.45972	09	07	53.08	+19	58	25.3		2 675
1986	YP	*	1986	12	27.41806	09	08	45.56	+19	11	42.5	18.0	2 675
1986	YP		1986	12	27.45972	09	08	45.01	+19	11	53.2		2 675
1986	YQ	*	1986	12	27.41806	09	10	53.02	+16	57	40.8	18.2	2 675
1986	YQ		1986	12	27.45972	09	10	53.79	+16	57	26.8		2 675
1986	YT	*	1986	12	30.30208	06	30	40.72	+28	17	19.5	17.5	2 675
1986	YT		1986	12	30.35069	06	30	36.98	+28	17	33.8		2 675
1986	YT		1987	01	01.29583	06	28	25.43	+28	27	13.7		2 675
1986	YT		1987	01	01.34444	06	28	21.73	+28	27	26.7		2 675
1986	YU	*	1986	12	30.30208	06	33	05.83	+28	27	58.7	17.0	2 675
1986	YU		1986	12	30.35069	06	33	01.90	+28	27	56.2		2 675
1986	YU		1987	01	01.29583	06	30	27.84	+28	25	44.6		2 675
1986	YU		1987	01	01.34444	06	30	23.97	+28	25	40.5		2 675
1986	YV	*	1986	12	30.30208	06	34	18.07	+27	17	24.6	18.0	2 675
1986	YV		1986	12	30.35069	06	34	14.76	+27	17	31.1		2 675
1986	YV		1987	01	01.29583	06	32	09.42	+27	21	47.9		2 675
1986	YV		1987	01	01.34444	06	32	06.24	+27	21	53.7		2 675
1986	YW	*	1986	12	30.30208	06	22	10.98	+30	07	29.6	16.5	2 675
1986	YW		1986	12	30.35069	06	22	07.59	+30	07	48.0		2 675
1986	YW		1987	01	01.29583	06	19	57.42	+30	19	57.3		2 675
1986	YW		1987	01	01.34444	06	19	53.92	+30	20	14.8		2 675
1986	YX	*	1986	12	30.30208	06	22	16.13	+28	24	31.4	17.5	2 675
1986	YX		1986	12	30.35069	06	22	12.86	+28	24	41.8		2 675
1986	YX		1987	01	01.29583	06	20	17.16	+28	31	25.1		2 675
1986	YX		1987	01	01.34444	06	20	14.18	+28	31	34.2		2 675
1986	YY	*	1986	12	30.30208	06	25	54.89	+26	56	15.5	17.5	2 675
1986	YY		1986	12	30.35069	06	25	51.70	+26	56	08.4		2 675
1986	YY		1987	01	01.29583	06	23	49.38	+26	50	50.4		2 675
1986	YY		1987	01	01.34444	06	23	46.19	+26	50	41.7		2 675
1986	YZ	*	1986	12	30.30208	06	28	59.25	+27	08	30.5	18.5	2 675
1986	YZ		1986	12	30.35069	06	28	56.50	+27	08	36.1		2 675

1986	YZ		1987	01	01.29583	06	26	48.20	+27	13	10.3	2 675
1986	YZ		1987	01	01.34444	06	26	44.97	+27	13	16.1	2 675
1986	YA1	*	1986	12	30.30208	06	29	12.07	+27	12	08.4	18.5 2 675
1986	YA1		1986	12	30.35069	06	29	08.76	+27	12	03.1	2 675
1986	YA1		1987	01	01.29583	06	26	51.18	+27	07	25.8	2 675
1986	YA1		1987	01	01.34444	06	26	47.69	+27	07	18.9	2 675
1987	AC	*	1987	01	04.33681	07	31	57.36	+08	49	17.7	16.5 2 675
1987	AC		1987	01	04.37847	07	31	54.29	+08	50	27.5	2 675
1987	AD	*	1987	01	04.33681	07	51	46.51	+10	10	29.4	16.5 2 675
1987	AD		1987	01	04.37847	07	51	42.99	+10	09	53.8	2 675
473			1958	04	19.29618	14	03	53.80	-32	11	02.0	17.0 5 675
473			1958	04	19.36389	14	03	49.40	-32	10	57.8	5 675
1993			1986	12	30.35764	07	47	30.05	+09	10	01.3	17.0 2 675
1993			1986	12	30.39236	07	47	28.59	+09	10	05.4	2 675
1993			1987	01	04.33681	07	43	44.98	+09	23	31.3	2 675
1993			1987	01	04.37847	07	43	43.08	+09	23	39.1	2 675
2454			1985	09	17.40243	01	35	19.16	+18	03	02.7	3 675
2454			1985	09	17.42916	01	35	18.39	+18	02	58.0	3 675
3074			1986	12	30.30208	06	26	11.07	+27	34	03.0	17.0 2 675
3074			1986	12	30.35069	06	26	07.37	+27	34	02.9	2 675
3074			1987	01	01.29583	06	23	51.48	+27	34	18.1	2 675
3074			1987	01	01.34444	06	23	47.92	+27	34	17.4	2 675
3369			1985	10	11.32013	00	54	50.81	+18	36	25.8	17.0 3 675
3369			1985	10	13.27621	00	53	19.73	+18	24	55.5	3 675
3540			1985	10	11.32482	01	53	50.83	+13	17	59.2	17.5 3 675
3540			1985	10	11.35364	01	53	49.90	+13	17	59.8	3 675
3540			1985	10	13.34878	01	52	41.58	+13	16	47.9	3 675

688 Lowell Observatory, Anderson Mesa Station
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road,
Flagstaff, AZ 86001, U.S.A.
Observers B. A. Skiff, S. J. Bus
Measurers E. Bowell, B. A. Skiff, S. J. Bus
1.8-m reflector + CCD (1) and 0.33-m photographic telescope
PDS scanning microdensitometer
AGK3 and Perth 70 secondary nets, global solutions
See also MPC 9533

1939	SF		1986	12	28.29426	08	09	23.31	+07	05	00.3	17.5 688
1939	SF		1986	12	28.33910	08	09	21.03	+07	04	52.1	688
1977	KK1		1987	02	02.27932	08	19	37.15	+18	54	59.1	1 688
1977	KK1		1987	02	02.28605	08	19	36.82	+18	55	00.3	1 688
1983	AD		1984	06	01.28125	16	21	04.36	-20	15	50.4	17.5 688
1983	AD		1984	06	01.31181	16	21	02.51	-20	15	52.6	688
1983	SA		1987	02	02.30640	08	45	41.86	+46	22	03.2	1 688
1983	SA		1987	02	02.31551	08	45	41.44	+46	22	03.6	1 688
1983	SA		1987	02	02.32329	08	45	41.10	+46	22	04.0	1 688
1986	LA		1987	02	02.13118	02	37	58.01	+09	07	29.5	1 688
1986	LA		1987	02	02.13845	02	37	58.80	+09	07	32.7	1 688
1986	LA		1987	02	02.14762	02	37	59.93	+09	07	36.3	1 688
1986	RA		1987	02	01.16081	02	55	51.16	-04	46	55.6	1 688
1986	RA		1987	02	01.16938	02	55	51.95	-04	46	48.4	1 688
1986	WA		1987	02	01.13703	02	32	29.24	+05	23	47.9	1 688
1986	WA		1987	02	01.14618	02	32	30.00	+05	23	49.9	1 688
1986	YR	*	1986	12	28.29426	07	54	22.48	+05	23	01.0	16.8 688
1986	YR		1986	12	28.33910	07	54	20.22	+05	22	58.2	688
1986	YS	*	1986	12	28.29426	07	55	31.15	+06	49	54.4	17.0 688
1986	YS		1986	12	28.33910	07	55	29.43	+06	50	00.8	688
38			1986	11	06.20738	01	55	28.74	+23	40	11.1	688
38			1986	11	06.26887	01	55	25.34	+23	39	48.8	688

59		1986	12	28.29426	07	50	44.43	+09	18	54.5	688
59		1986	12	28.33910	07	50	42.16	+09	18	59.6	688
88		1987	01	27.08861	23	49	49.43	+03	36	30.6	688
88		1987	01	27.09618	23	49	50.14	+03	36	34.7	688
386		1987	01	19.11111	07	36	15.30	-02	32	58.0	688
400		1987	01	22.09931	00	07	36.92	+09	19	45.5	688
478		1986	12	28.29426	08	11	28.67	+02	32	36.7	688
478		1986	12	28.33910	08	11	26.80	+02	32	27.1	688
478		1987	01	19.11111	07	54	12.06	+01	57	16.4	688
529		1986	12	28.31668	08	38	12.26	+31	03	34.4	688
529		1986	12	28.36097	08	38	10.76	+31	03	52.2	688
539		1986	11	06.20738	01	44	01.50	+21	50	58.7	688
539		1986	11	06.26887	01	43	58.72	+21	50	29.4	688
603		1986	12	28.31668	08	24	49.00	+30	53	21.3	688
603		1986	12	28.36097	08	24	47.26	+30	53	27.6	688
639		1987	01	22.08715	00	04	57.80	+08	45	03.1	688
639		1987	01	22.09931	00	04	58.75	+08	45	07.2	688
640		1987	01	24.08646	23	58	53.87	+07	41	11.1	688
640		1987	01	24.09618	23	58	54.58	+07	41	12.7	688
657		1987	01	22.09931	00	05	37.40	+10	45	41.1	688
663		1987	01	19.11111	07	43	59.03	-03	59	33.3	688
693		1986	12	28.31668	08	30	33.31	+36	58	11.3	688
693		1986	12	28.36097	08	30	31.05	+36	58	20.8	688
721		1986	12	28.31668	08	22	02.68	+30	45	57.3	688
721		1986	12	28.36097	08	22	01.09	+30	46	07.9	688
977		1986	12	28.31668	08	29	06.86	+32	52	19.5	688
977		1986	12	28.36097	08	29	05.34	+32	52	39.5	688
1112		1987	01	24.09618	23	52	32.68	+07	33	09.2	688
1181		1987	01	24.09618	00	02	20.48	+04	36	07.6	688
2192		1986	12	28.29426	07	54	27.45	+07	06	38.8	688
2192		1986	12	28.33910	07	54	25.64	+07	06	40.4	688
2374		1986	12	28.31668	08	44	11.16	+35	16	39.8	688
2374		1986	12	28.36097	08	44	09.30	+35	16	48.1	688
2706		1986	12	28.31668	08	40	19.67	+32	58	23.5	688
2706		1986	12	28.36097	08	40	18.25	+32	58	39.5	688
3232		1986	12	28.33910	08	03	51.03	+06	45	39.9	688
3496		1987	02	01.18110	03	49	04.92	-08	48	58.4	1 688
3496		1987	02	01.18735	03	49	05.55	-08	48	43.5	1 688

690 Lowell Observatory
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road,
Flagstaff, AZ 86001, U.S.A.
Observers R. Burnham, Jr., C. D. Slaughter
Measurers E. Bowell, B. A. Skiff
0.33-m photographic telescope and 0.46-m astrograph

1959	CB1	1959	01	31.27552	09	08	46.26	+17	02	00.0	690
1959	CB1	1959	02	01.28475	09	07	55.54	+17	11	38.1	690
1959	CB1	1959	02	02.27897	09	07	05.26	+17	21	08.1	690
1959	CB1	1959	02	07.28988	09	02	50.22	+18	08	41.0	690
1959	EB1	1959	03	06.22917	08	44	30.11	+21	42	12.8	690
1959	EB1	1959	03	08.22153	08	43	44.01	+21	53	36.4	690
1959	EB1	1959	03	10.21528	08	43	05.11	+22	04	18.9	690
1959	EB1	1959	03	11.16667	08	42	49.04	+22	09	13.9	690

691 Kitt Peak, Steward Observatory
T. Gehrels, Space Sciences Building, University of Arizona,
Tucson, AZ 85721, U.S.A.
Observers T. Gehrels, J. V. Scotti
Measurer J. V. Scotti

0.91-m SPACEWATCH telescope, CCD in scanning mode
SAOC 1984
See also MPC 9198 and 10373

1983 RD	1986	12	29.26666	03	44	06.45	-05	17	28.5	17.9V 691
1983 RD	1986	12	29.27301	03	44	06.86	-05	17	19.7	691
1983 RD	1986	12	29.28955	03	44	08.05	-05	16	55.2	691
1985 VS	1986	12	30.25984	05	09	52.39	-05	05	33.8	18.8V 691
1985 VS	1986	12	30.28078	05	09	51.72	-05	05	33.5	691
1985 VS	1986	12	30.31387	05	09	50.77	-05	05	35.3	691
1985 VS	1987	01	29.26804	04	59	39.45	-04	27	31.2	18.9V 691
1985 VS	1987	01	29.29813	04	59	39.10	-04	27	26.6	691
1985 VS	1987	01	29.31402	04	59	38.95	-04	27	23.8	691
1985 VS	1987	02	01.23927	04	59	12.64	-04	19	38.0	691
1985 VS	1987	02	01.24343	04	59	12.62	-04	19	37.2	691
1985 VS	1987	02	01.26964	04	59	12.37	-04	19	32.5	691
1986 EB	1986	12	27.51094	13	48	02.58	+19	32	37.5	17.5V 691
1986 EB	1986	12	27.51868	13	48	03.16	+19	32	30.7	691
1986 RA	1986	12	30.14856	02	06	07.21	-12	38	57.6	18.6V 691
1986 RA	1986	12	30.16201	02	06	08.38	-12	38	45.1	691
1986 RA	1986	12	30.16944	02	06	09.03	-12	38	38.4	691
2060	1986	12	28.28370	05	06	04.59	+17	08	23.7	17.9V 691
2060	1986	12	28.28926	05	06	04.51	+17	08	23.5	691
2060	1986	12	28.32181	05	06	04.02	+17	08	23.4	691
2202	1986	12	27.45635	08	58	39.63	+00	42	20.1	18.9V 691
2202	1986	12	27.46758	08	58	39.07	+00	42	24.0	691
2202	1986	12	27.47890	08	58	38.28	+00	42	28.1	691
3200	1986	12	29.15986	00	15	15.48	+22	13	20.4	691
3200	1986	12	29.16912	00	15	15.94	+22	13	14.9	18.6V 691
3200	1986	12	29.18743	00	15	16.79	+22	13	07.9	691

707 Chamberlin Observatory Field Station
E. Everhart, 985 Dick Mountain, Bailey, CO 80421
Observer J. Briggs
Measurers E. Everhart, J. Briggs
0.40-m reflector

1986 RA	1986	10	26.21667	00	18	10.06	-23	30	49.5	707

760 Goethe Link
F. K. Edmondson, Swain Hall West 319A, Indiana University,
Bloomington, IN 47401, U.S.A.
Measurers D. Owings et al.

1963 KE	1963	05	23.12146	14	40	31.65	+06	00	40.5	760
1963 KE	1963	05	23.16521	14	40	29.85	+06	00	29.2	760
1963 WA	1963	11	19.10415	03	01	51.30	+05	42	17.2	760
1963 WA	1963	11	19.14721	03	01	48.50	+05	42	21.3	760
708	1952	09	18.12300	22	14	19.83	-12	30	16.5	760
708	1952	09	18.15565	22	14	18.49	-12	30	21.2	760
708	1952	09	27.19762	22	08	48.95	-12	48	00.9	760
708	1952	09	27.23928	22	08	47.60	-12	48	04.9	760
710	1953	11	06.33608	05	06	20.29	+20	40	36.8	760
710	1953	11	06.38192	05	06	18.97	+20	40	37.2	760
723	1949	12	29.42638	13	01	44.11	-05	16	25.7	760
723	1949	12	29.44861	13	01	45.20	-05	16	31.1	760
752	1957	10	01.36632	01	43	33.97	+00	59	32.9	A 760
752	1957	10	01.40592	01	43	31.97	+00	59	21.7	A 760
769	1955	01	16.21043	06	03	12.90	+31	42	35.4	760
769	1955	01	16.25557	06	03	10.66	+31	42	33.7	760
782	1953	06	04.21700	16	47	05.81	-21	09	07.7	760
782	1953	06	04.25485	16	47	02.70	-21	09	10.5	760

801 Oak Ridge
R. E. McCrosky, Harvard-Smithsonian Center for Astrophysics,
60 Garden Street, Cambridge, MA 02138, U.S.A.
Observers R. E. McCrosky, C.-Y. Shao, G. Schwartz
1.5-m reflector
AC

1929	TQ	1987	01	03.96273	01	43	42.27	+12	20	49.9		801
1936	UB	1986	11	30.10337	01	30	33.69	-01	46	04.4		801
1936	UB	1986	12	29.03344	01	31	44.96	+03	04	42.2		801
1938	DN1	1986	12	05.04162	00	46	39.77	-09	27	28.6		801
1939	SF	1986	12	05.42321	08	22	45.86	+08	35	18.1		801
1939	SF	1986	12	28.34493	08	09	20.63	+07	04	50.1		801
1941	UL	1986	12	29.26235	05	37	25.26	+23	30	51.1		801
1942	DB	1986	12	01.31617	04	40	00.25	+40	00	28.5		801
1942	DB	1986	12	28.28942	04	10	44.79	+37	49	41.1		801
1953	TH	1986	12	04.97204	00	02	33.28	+11	57	46.7		801
1953	TH	1986	12	28.95911	00	22	41.68	+13	24	55.1		801
1969	TK	1986	11	28.36808	06	12	23.43	+24	48	37.7		801
1969	TK	1987	01	04.31640	05	45	12.46	+24	12	28.5		801
1977	CC	1987	01	04.33174	06	01	31.90	+29	04	18.7	I	801
1977	DN4	1986	12	01.22524	02	55	26.23	+13	22	25.2		801
1978	SQ2	1986	11	28.16216	01	44	02.68	+30	32	21.6		801
1978	SQ2	1987	01	03.98901	01	43	26.31	+27	55	37.1		801
1978	SL7	1986	11	01.12940	23	21	47.65	-04	10	43.3		801
1978	TQ7	1986	11	30.03542	23	57	11.89	-12	08	00.3		801
1979	SR9	1986	12	01.26873	03	36	10.15	+18	20	34.6		801
1979	SR9	1986	12	29.17286	03	15	54.81	+17	34	19.0		801
1979	VG	1986	12	01.07500	00	44	29.81	+06	56	41.8	W	801
1980	DL5	1986	10	29.24625	02	40	59.49	+16	22	18.8		801
1980	DL5	1986	10	30.22453	02	40	02.56	+16	19	26.8		801
1980	OF	1986	10	30.19480	01	53	28.34	+28	08	59.1		801
1980	OF	1986	12	29.06146	01	35	22.57	+23	15	17.0		801
1981	EJ17	1986	12	05.31341	04	30	32.66	+10	47	28.5		801
1981	EJ17	1986	12	29.19533	04	10	20.97	+09	57	52.6		801
1981	RK5	1986	12	28.25081	03	53	52.03	+28	20	36.2		801
1981	TP1	1986	12	28.99740	00	44	38.87	+14	11	20.7		801
1981	TG2	1986	12	28.11552	03	33	45.93	+15	47	10.0		801
1982	EJ	1986	12	28.09674	03	07	34.88	+19	11	47.3		801
1982	EJ	1986	12	29.13988	03	07	19.16	+19	09	19.1		801
1982	TQ	1986	12	01.35814	05	32	44.79	+18	51	56.0		801
1982	TQ	1986	12	28.20876	05	05	00.88	+17	34	38.3		801
1982	TW	1987	01	04.13172	03	04	50.60	+16	37	34.8		801
1983	AV	1986	11	30.29348	04	34	18.46	+12	16	46.1		801
1983	AV	1986	12	28.13608	04	07	08.56	+13	50	25.5		801
1983	AE1	1986	11	01.28168	03	37	03.95	+38	22	23.7	t	801
1983	AE1	1986	12	05.24004	03	05	54.38	+35	26	57.9		801
1983	CS2	1986	11	01.26621	03	14	09.25	+22	29	28.0		801
1983	CS2	1986	12	28.04986	02	33	47.83	+19	31	33.0		801
1984	DU2	1986	12	01.18042	01	46	44.02	+05	02	07.4		801
1984	DU2	1987	01	04.01293	01	44	19.30	+06	34	05.4		801
1984	DB3	1986	12	01.19932	02	52	40.54	+28	35	29.5		801
1984	DB3	1987	01	04.06287	02	41	30.06	+28	05	28.1		801
1984	EV	1986	12	01.34026	05	15	07.22	+34	22	14.5		801
1984	EV	1986	12	29.24042	04	42	27.33	+33	26	49.9	w	801
1984	HZ1	1987	01	04.10755	03	01	53.81	+14	52	23.6		801
1984	JJ2	1986	11	30.34100	05	47	36.25	+11	45	35.2		801
1984	JJ2	1986	12	28.32228	05	20	37.76	+12	48	33.9		801
1985	FC	1986	10	30.20974	02	01	55.45	+34	37	54.4		801
1985	FC	1986	12	01.15253	01	08	19.12	+36	00	31.8		801

1985	TT		1986	11	28.27074	04	54	29.72	+14	12	16.7	801
1985	TT		1986	12	28.18746	04	35	15.33	+13	36	29.2	801
1985	VO		1986	12	29.21969	02	11	26.36	+38	21	25.5	801
1986	EB		1986	12	28.43614	13	49	15.56	+19	18	26.1	801
1986	RB		1986	12	27.94889	23	09	50.65	+21	09	55.5	801
1986	RB		1987	01	29.00614	00	19	40.43	+27	20	37.5	801
1986	RB		1987	02	02.03635	00	29	19.97	+28	07	04.3	801
1986	RC2		1986	12	27.98229	23	52	56.43	-13	24	58.6	801
1986	TM		1986	12	27.96247	23	42	31.87	+14	11	07.7	801
1986	TM		1987	01	29.01999	00	23	19.91	+22	12	21.6	801
1986	TM		1987	02	02.05194	00	29	49.43	+23	15	41.0	801
1986	VT6		1986	12	28.01011	01	44	00.90	+19	12	56.5	801
1986	XA5	*	1986	12	01.34026	05	14	37.19	+34	23	11.2	18.5 801
1986	YE	*	1986	12	28.13608	04	07	08.94	+13	50	04.0	18 801
3520			1986	10	31.15860	00	47	52.44	-04	16	45.2	801
3540			1986	11	28.21215	03	32	35.78	+37	02	01.1	801

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Observers H. Debehogne, O. Pizarro, H.-E. Schuster
Measurers H. Debehogne (assisted by G. Peeters), R. M. West
0.4-m GPO astrograph and 1.0-m Schmidt telescope

A904	PC		1982	02	19.33689	13	22	41.61	-23	33	46.9	18.0 5 809
1936	UB		1980	10	09.04007	21	15	01.35	-42	45	19.5	17.0 5 809
1936	UB		1985	04	22.32060	16	48	21.17	-23	52	13.4	18.0 5 809
1978	GF5	*	1978	04	13.35639	17	21	03.60	-32	06	13.7	19.0 5 809
1981	SQ1		1986	08	25.06250	21	09	19.40	-13	52	21.1	15.9 3 809
1981	SQ1		1986	08	25.06806	21	09	19.22	-13	52	22.4	3 809
1981	SQ1		1986	08	25.07361	21	09	18.98	-13	52	23.7	3 809
1981	SQ1		1986	08	26.01701	21	08	41.11	-13	56	31.2	3 809
1981	SQ1		1986	08	26.02188	21	08	40.91	-13	56	32.6	3 809
1981	SQ1		1986	08	26.02674	21	08	40.68	-13	56	33.8	3 809
1981	SQ1		1986	08	27.01458	21	08	01.87	-14	00	50.3	3 809
1981	SQ1		1986	08	27.02014	21	08	01.66	-14	00	52.6	3 809
1981	SQ1		1986	08	27.02569	21	08	01.46	-14	00	54.1	3 809
1981	SQ1		1986	08	28.01736	21	07	23.20	-14	05	07.9	3 809
1981	SQ1		1986	08	28.02292	21	07	23.00	-14	05	09.1	3 809
1981	SQ1		1986	08	28.02847	21	07	22.82	-14	05	10.4	3 809
1981	SQ1		1986	08	29.05417	21	06	44.14	-14	09	29.7	3 809
1981	SQ1		1986	08	29.05972	21	06	43.96	-14	09	31.2	3 809
1981	SQ1		1986	08	29.06528	21	06	43.76	-14	09	32.7	3 809
1981	SQ1		1986	08	31.15729	21	05	28.29	-14	18	09.5	3 809
1981	SQ1		1986	08	31.16389	21	05	28.09	-14	18	11.0	3 809
1981	SQ1		1986	08	31.16979	21	05	27.89	-14	18	12.6	3 809
1981	SQ1		1986	09	01.01701	21	04	58.97	-14	21	37.2	3 809
1981	SQ1		1986	09	01.02188	21	04	58.80	-14	21	38.2	3 809
1981	SQ1		1986	09	01.02674	21	04	58.63	-14	21	39.8	3 809
1981	SQ1		1986	09	02.02049	21	04	25.44	-14	25	34.9	3 809
1981	SQ1		1986	09	02.02535	21	04	25.28	-14	25	36.4	3 809
1981	SQ1		1986	09	02.03021	21	04	25.10	-14	25	37.5	3 809
1981	SQ1		1986	09	03.03090	21	03	52.86	-14	29	29.7	3 809
1981	SQ1		1986	09	03.03576	21	03	52.70	-14	29	30.7	3 809
1981	SQ1		1986	09	03.04062	21	03	52.50	-14	29	32.0	3 809
1981	TW		1986	08	26.03299	21	13	00.21	-15	12	27.5	16.5 3 809
1981	TW		1986	08	26.03785	21	13	00.02	-15	12	28.4	3 809
1981	TW		1986	08	26.04271	21	12	59.80	-15	12	29.2	3 809

1981	TW		1986	08	28.01736	21	11	33.98	-15	17	52.3	3 809
1981	TW		1986	08	28.02292	21	11	33.76	-15	17	53.0	3 809
1981	TW		1986	08	28.02847	21	11	33.56	-15	17	54.1	3 809
1981	TW		1986	08	31.15729	21	09	22.98	-15	26	00.5	3 809
1981	TW		1986	08	31.16389	21	09	22.77	-15	26	01.3	3 809
1981	TW		1986	08	31.16979	21	09	22.53	-15	26	02.0	3 809
1981	TW		1986	09	01.01701	21	08	48.82	-15	28	06.4	3 809
1981	TW		1986	09	01.02188	21	08	48.62	-15	28	07.2	3 809
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1981	TW		1986	09	02.02049	21	08	09.48	-15	30	31.9	3 809
1981	TW		1986	09	02.02535	21	08	09.29	-15	30	32.8	3 809
1981	TW		1986	09	02.03021	21	08	09.10	-15	30	33.5	3 809
1981	TW		1986	09	03.03090	21	07	30.79	-15	32	53.1	3 809
1981	TW		1986	09	03.03576	21	07	30.60	-15	32	54.2	3 809
1981	TW		1986	09	03.04062	21	07	30.40	-15	32	54.9	3 809
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1983	AD		1980	07	11.21517	16	40	32.53	-25	25	12.1	18.5 5 809
1986	QJ	*	1986	08	25.06250	21	08	20.18	-13	01	46.1	17.6 3 809
1986	QJ		1986	08	25.06806	21	08	19.86	-13	01	47.0	3 809
1986	QJ		1986	08	25.07361	21	08	19.55	-13	01	47.6	3 809
1986	QJ		1986	08	26.06667	21	07	22.39	-13	03	55.2	3 809
1986	QJ		1986	08	26.07222	21	07	22.06	-13	03	56.0	3 809
1986	QJ		1986	08	26.07778	21	07	21.74	-13	03	56.7	3 809
1986	QJ		1986	08	27.01458	21	06	29.16	-13	05	55.4	3 809
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1986	QJ		1986	08	27.02569	21	06	28.52	-13	05	56.6	3 809
1986	QJ		1986	08	27.99722	21	05	34.71	-13	07	55.9	3 809
1986	QJ		1986	08	28.00278	21	05	34.41	-13	07	56.7	3 809
1986	QJ		1986	08	28.00833	21	05	34.11	-13	07	57.2	3 809
1986	QJ		1986	08	29.05417	21	04	37.80	-13	10	00.9	3 809
1986	QJ		1986	08	29.05972	21	04	37.55	-13	10	01.5	3 809
1986	QJ		1986	08	29.06528	21	04	37.10	-13	10	02.1	3 809
1986	QK	*	1986	08	25.06250	21	09	53.25	-12	38	26.1	17.4 3 809
1986	QK		1986	08	25.06806	21	09	52.98	-12	38	26.3	3 809
1986	QK		1986	08	25.07361	21	09	52.71	-12	38	26.4	3 809
1986	QK		1986	08	26.04861	21	09	03.42	-12	38	54.8	3 809
1986	QK		1986	08	26.05417	21	09	03.16	-12	38	54.8	3 809
1986	QK		1986	08	26.06007	21	09	02.90	-12	38	54.9	3 809
1986	QK		1986	08	26.06667	21	09	02.35	-12	38	56.3	3 809
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1986	QK		1986	08	31.98715	21	04	32.49	-12	41	04.9	3 809
1986	QK		1986	08	31.99201	21	04	32.29	-12	41	05.2	3 809
1986	QK		1986	08	31.99688	21	04	32.08	-12	41	05.2	3 809
1986	QK		1986	09	02.00104	21	03	51.96	-12	41	17.5	3 809
1986	QK		1986	09	02.00590	21	03	51.66	-12	41	17.6	3 809
1986	QK		1986	09	02.01076	21	03	51.46	-12	41	17.6	3 809
1986	QL	*	1986	08	25.06250	21	10	07.49	-14	33	52.1	16.9 3 809
1986	QL		1986	08	25.06806	21	10	07.26	-14	33	53.2	3 809
1986	QL		1986	08	25.07361	21	10	07.02	-14	33	54.3	3 809

1986	QL		1986	08	26.01701	21	09	25.05	-14	37	06.3	3 809
1986	QL		1986	08	26.02188	21	09	24.83	-14	37	07.4	3 809
1986	QL		1986	08	26.02674	21	09	24.60	-14	37	08.4	3 809
1986	QL		1986	08	26.03299	21	09	24.35	-14	37	09.6	3 809
1986	QL		1986	08	26.03785	21	09	24.13	-14	37	10.5	3 809
1986	QL		1986	08	26.04271	21	09	23.92	-14	37	11.6	3 809
1986	QL		1986	08	27.01458	21	08	41.45	-14	40	25.2	3 809
1986	QL		1986	08	27.02014	21	08	41.24	-14	40	26.4	3 809
1986	QL		1986	08	27.02569	21	08	41.02	-14	40	27.5	3 809
1986	QL		1986	08	28.01736	21	07	58.48	-14	43	43.5	3 809
1986	QL		1986	08	28.02292	21	07	58.25	-14	43	44.0	3 809
1986	QL		1986	08	28.02847	21	07	58.03	-14	43	44.8	3 809
1986	QL		1986	08	29.05417	21	07	14.83	-14	47	04.3	3 809
1986	QL		1986	08	29.05972	21	07	14.63	-14	47	05.1	3 809
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1986	QL		1986	08	31.16389	21	05	49.07	-14	53	39.3	3 809
1986	QL		1986	08	31.16979	21	05	48.86	-14	53	40.2	3 809
1986	QL		1986	09	01.01701	21	05	15.93	-14	56	13.9	3 809
1986	QL		1986	09	01.02188	21	05	15.73	-14	56	14.7	3 809
1986	QL		1986	09	01.02674	21	05	15.54	-14	56	15.8	3 809
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1986	QL		1986	09	02.02535	21	04	37.42	-14	59	13.3	3 809
1986	QL		1986	09	02.03021	21	04	37.25	-14	59	14.3	3 809
1986	QL		1986	09	03.03090	21	04	00.18	-15	02	07.9	3 809
1986	QL		1986	09	03.03576	21	03	59.99	-15	02	08.4	3 809
1986	QL		1986	09	03.04062	21	03	59.80	-15	02	09.3	3 809
1986	QM	*	1986	08	25.06250	21	12	48.00	-14	20	05.8	17.4 3 809
1986	QM		1986	08	25.06806	21	12	47.75	-14	20	06.6	3 809
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1986	QM		1986	08	26.03299	21	12	03.63	-14	22	22.1	3 809
1986	QM		1986	08	26.03785	21	12	03.41	-14	22	23.3	3 809
1986	QM		1986	08	26.04271	21	12	03.18	-14	22	23.9	3 809
1986	QM		1986	08	27.01458	21	11	19.79	-14	24	37.7	3 809
1986	QM		1986	08	27.02014	21	11	19.56	-14	24	38.6	3 809
1986	QM		1986	08	27.02569	21	11	19.34	-14	24	39.3	3 809
1986	QM		1986	08	28.01736	21	10	36.35	-14	26	52.8	3 809
1986	QM		1986	08	28.02292	21	10	36.14	-14	26	53.5	3 809
1986	QM		1986	08	28.02847	21	10	35.93	-14	26	54.2	3 809
1986	QM		1986	08	29.05417	21	09	52.85	-14	29	07.2	3 809
1986	QM		1986	08	29.05972	21	09	52.64	-14	29	07.8	3 809
1986	QM		1986	08	29.06528	21	09	52.44	-14	29	08.5	3 809
1986	QM		1986	09	01.01701	21	07	57.66	-14	34	58.7	3 809
1986	QM		1986	09	01.02188	21	07	57.48	-14	34	59.4	3 809
1986	QM		1986	09	01.02674	21	07	57.28	-14	35	00.0	3 809
1986	QM		1986	09	02.02049	21	07	21.71	-14	36	47.3	3 809
1986	QM		1986	09	02.02535	21	07	21.53	-14	36	47.6	3 809
1986	QM		1986	09	02.03021	21	07	21.35	-14	36	47.8	3 809
1986	QM		1986	09	03.03090	21	06	47.18	-14	38	30.7	3 809
1986	QM		1986	09	03.03576	21	06	47.02	-14	38	30.4	3 809
1986	QM		1986	09	03.04062	21	06	46.85	-14	38	29.8	3 809
1986	QN	*	1986	08	25.06250	21	12	53.81	-14	15	46.4	17.2 3 809
1986	QN		1986	08	25.06806	21	12	53.56	-14	15	48.4	3 809
1986	QN		1986	08	25.07361	21	12	53.29	-14	15	50.6	3 809
1986	QN		1986	08	26.03299	21	12	06.18	-14	22	16.8	3 809
1986	QN		1986	08	26.03785	21	12	05.92	-14	22	18.9	3 809
1986	QN		1986	08	26.04271	21	12	05.69	-14	22	20.7	3 809
1986	QN		1986	08	27.01458	21	11	18.65	-14	28	49.4	3 809
1986	QN		1986	08	27.02014	21	11	18.39	-14	28	51.4	3 809

1986	QN		1986	08	27.02569	21	11	18.15	-14	28	53.5	3 809
1986	QN		1986	08	28.01736	21	10	30.98	-14	35	25.9	3 809
1986	QN		1986	08	28.02292	21	10	30.73	-14	35	27.8	3 809
1986	QN		1986	08	28.02847	21	10	30.50	-14	35	30.0	3 809
1986	QN		1986	08	29.05417	21	09	42.68	-14	42	13.0	3 809
1986	QN		1986	08	29.05972	21	09	42.45	-14	42	14.6	3 809
1986	QN		1986	08	29.06528	21	09	42.21	-14	42	16.6	3 809
1986	QN		1986	08	31.15729	21	08	08.03	-14	55	39.4	3 809
1986	QN		1986	08	31.16389	21	08	07.81	-14	55	41.5	3 809
1986	QN		1986	08	31.16979	21	08	07.57	-14	55	43.5	3 809
1986	QN		1986	09	01.01701	21	07	31.29	-15	01	01.2	3 809
1986	QN		1986	09	01.02188	21	07	31.05	-15	01	03.1	3 809
1986	QN		1986	09	01.02674	21	07	30.82	-15	01	05.0	3 809
1986	QN		1986	09	02.02049	21	06	49.06	-15	07	13.9	3 809
1986	QN		1986	09	02.02535	21	06	48.86	-15	07	15.7	3 809
1986	QN		1986	09	02.03021	21	06	48.68	-15	07	17.8	3 809
1986	QN		1986	09	03.03090	21	06	08.00	-15	13	21.6	3 809
1986	QN		1986	09	03.03576	21	06	07.77	-15	13	23.1	3 809
1986	QN		1986	09	03.04062	21	06	07.57	-15	13	25.5	3 809
1986	QO	*	1986	08	26.04861	21	14	07.23	-12	50	52.1	15.9 3 809
1986	QO		1986	08	26.05417	21	14	07.02	-12	50	53.4	3 809
1986	QO		1986	08	26.06007	21	14	06.81	-12	50	54.5	3 809
1986	QO		1986	08	28.03472	21	12	42.50	-12	57	12.0	3 809
1986	QO		1986	08	28.04028	21	12	42.28	-12	57	13.2	3 809
1986	QO		1986	08	28.04583	21	12	42.06	-12	57	14.2	3 809
1986	QO		1986	08	30.27882	21	11	12.16	-13	04	04.1	3 809
1986	QO		1986	08	30.28472	21	11	11.97	-13	04	05.0	3 809
1986	QO		1986	08	30.29028	21	11	11.77	-13	04	06.0	3 809
1986	QO		1986	08	31.17708	21	10	38.62	-13	06	42.3	3 809
1986	QO		1986	08	31.18160	21	10	38.43	-13	06	43.3	3 809
1986	QO		1986	08	31.18542	21	10	38.33	-13	06	44.1	3 809
1986	QP	*	1986	08	26.06667	21	08	40.94	-12	18	07.9	17.1 3 809
1986	QP		1986	08	26.07222	21	08	40.72	-12	18	09.2	3 809
1986	QP		1986	08	26.07778	21	08	40.50	-12	18	10.7	3 809
1986	QP		1986	08	27.99722	21	07	17.58	-12	27	41.0	3 809
1986	QP		1986	08	28.00278	21	07	17.37	-12	27	42.7	3 809
1986	QP		1986	08	28.00833	21	07	17.16	-12	27	44.2	3 809
1986	QP		1986	08	30.27882	21	05	43.51	-12	38	48.5	3 809
1986	QP		1986	08	30.28472	21	05	43.30	-12	38	50.2	3 809
1986	QP		1986	08	30.29028	21	05	43.09	-12	38	52.0	3 809
379			1986	08	26.03299	21	12	04.41	-14	46	49.2	3 809
379			1986	08	26.03785	21	12	04.20	-14	46	50.8	3 809
379			1986	08	26.04271	21	12	03.98	-14	46	51.9	3 809
379			1986	08	28.01736	21	10	44.82	-14	54	27.0	3 809
379			1986	08	28.02292	21	10	44.62	-14	54	28.1	3 809
379			1986	08	28.02847	21	10	44.40	-14	54	29.6	3 809
379			1986	08	31.15729	21	08	45.78	-15	05	59.1	3 809
379			1986	08	31.16389	21	08	45.60	-15	05	59.2	3 809
379			1986	08	31.16979	21	08	45.42	-15	06	01.4	3 809
379			1986	09	01.01701	21	08	15.18	-15	09	00.7	3 809
379			1986	09	01.02188	21	08	15.00	-15	09	01.5	3 809
379			1986	09	01.02674	21	08	14.82	-15	09	02.8	3 809
379			1986	09	02.02049	21	07	40.18	-15	12	28.8	3 809
379			1986	09	02.02535	21	07	40.00	-15	12	29.9	3 809
379			1986	09	02.03021	21	07	39.85	-15	12	30.9	3 809
379			1986	09	03.03090	21	07	06.00	-15	15	53.0	3 809
379			1986	09	03.03576	21	07	05.84	-15	15	54.0	3 809
379			1986	09	03.04062	21	07	05.68	-15	15	55.0	3 809
473			1984	04	09.22523	13	38	09.07	-28	37	40.2	17.0 2 809

848	1986	08	25.06250	21	13	22.63	-14	27	39.4	3 809
848	1986	08	25.06806	21	13	22.42	-14	27	40.9	3 809
848	1986	08	25.07361	21	13	22.22	-14	27	42.3	3 809
848	1986	08	26.03299	21	12	42.79	-14	31	02.5	3 809
848	1986	08	26.03785	21	12	42.59	-14	31	04.0	3 809
848	1986	08	26.04271	21	12	42.37	-14	31	04.7	3 809
848	1986	08	27.01458	21	12	03.11	-14	34	26.0	3 809
848	1986	08	27.02014	21	12	02.87	-14	34	27.5	3 809
848	1986	08	27.02569	21	12	02.66	-14	34	28.6	3 809
848	1986	08	28.01736	21	11	23.46	-14	37	50.6	3 809
848	1986	08	28.02292	21	11	23.19	-14	37	51.6	3 809
848	1986	08	28.02847	21	11	22.97	-14	37	52.9	3 809
848	1986	08	29.05417	21	10	43.39	-14	41	19.6	3 809
848	1986	08	29.05972	21	10	43.17	-14	41	20.6	3 809
848	1986	08	29.06528	21	10	42.96	-14	41	21.6	3 809
848	1986	08	31.15729	21	09	25.05	-14	48	04.8	3 809
848	1986	08	31.16389	21	09	24.82	-14	48	06.0	3 809
848	1986	08	31.16979	21	09	24.63	-14	48	07.0	3 809
848	1986	09	01.01701	21	08	54.62	-14	50	45.3	3 809
848	1986	09	01.02188	21	08	54.43	-14	50	46.5	3 809
848	1986	09	01.02674	21	08	54.27	-14	50	47.3	3 809
848	1986	09	02.02049	21	08	19.88	-14	53	49.6	3 809
848	1986	09	02.02535	21	08	19.70	-14	53	50.4	3 809
848	1986	09	02.03021	21	08	19.54	-14	53	51.2	3 809
848	1986	09	03.03090	21	07	45.93	-14	56	49.4	3 809
848	1986	09	03.03576	21	07	45.77	-14	56	50.2	3 809
848	1986	09	03.04062	21	07	45.60	-14	56	51.2	3 809
1020	1986	08	26.04861	21	13	35.27	-12	02	27.6	3 809
1020	1986	08	26.05417	21	13	35.05	-12	02	29.3	3 809
1020	1986	08	26.06007	21	13	34.84	-12	02	31.1	3 809
1020	1986	08	28.03472	21	12	10.02	-12	12	12.8	3 809
1020	1986	08	28.04028	21	12	09.81	-12	12	14.4	3 809
1020	1986	08	28.04583	21	12	09.61	-12	12	16.0	3 809
1020	1986	08	30.27882	21	10	37.13	-12	23	01.8	3 809
1020	1986	08	30.28472	21	10	36.92	-12	23	03.4	3 809
1020	1986	08	30.29028	21	10	36.70	-12	23	04.8	3 809
1020	1986	08	31.17708	21	10	01.48	-12	27	15.7	3 809
1020	1986	08	31.18160	21	10	01.30	-12	27	16.8	3 809
1020	1986	08	31.18542	21	10	01.10	-12	27	19.3	3 809
1020	1986	09	02.00104	21	08	51.51	-12	35	46.5	3 809
1020	1986	09	02.00590	21	08	51.31	-12	35	48.2	3 809
1020	1986	09	02.01076	21	08	51.12	-12	35	49.8	3 809
1833	1986	08	26.06667	21	02	34.95	-11	53	28.8	3 809
1833	1986	08	26.07222	21	02	34.80	-11	53	31.0	3 809
1833	1986	08	26.07778	21	02	34.64	-11	53	33.3	3 809
1833	1986	08	27.99722	21	01	23.16	-12	10	25.6	3 809
1833	1986	08	28.00278	21	01	22.99	-12	10	28.2	3 809
1833	1986	08	28.00833	21	01	22.85	-12	10	30.4	3 809
1833	1986	08	31.98715	20	59	08.38	-12	44	30.4	3 809
1833	1986	08	31.99201	20	59	08.22	-12	44	33.1	3 809
1833	1986	08	31.99688	20	59	08.03	-12	44	35.8	3 809
1833	1986	09	03.00451	20	58	07.97	-13	01	09.9	3 809
1833	1986	09	03.00938	20	58	07.79	-13	01	12.4	3 809
1833	1986	09	03.01424	20	58	07.63	-13	01	15.2	3 809
2762	1986	08	25.06250	21	06	58.18	-14	14	48.5	3 809
2762	1986	08	25.06806	21	06	57.90	-14	14	49.6	3 809
2762	1986	08	25.07361	21	06	57.62	-14	14	50.3	3 809
2762	1986	08	26.01701	21	06	05.73	-14	17	24.4	3 809
2762	1986	08	26.02188	21	06	05.44	-14	17	25.2	3 809

2762		1986 08 26.02674	21 06 05.18	-14 17 26.3				3	809
2762		1986 08 27.01458	21 05 11.74	-14 20 05.6				3	809
2762		1986 08 27.02014	21 05 11.48	-14 20 06.7				3	809
2762		1986 08 27.02569	21 05 11.18	-14 20 07.2				3	809
3516		1986 08 26.03299	21 13 29.60	-14 48 13.4				3	809
3516		1986 08 26.03785	21 13 29.40	-14 48 14.8				3	809
3516		1986 08 26.04271	21 13 29.19	-14 48 16.1				3	809
3516		1986 08 28.01736	21 12 04.17	-14 56 40.1				3	809
3516		1986 08 28.02292	21 12 03.95	-14 56 41.4				3	809
3516		1986 08 28.02847	21 12 03.73	-14 56 43.0				3	809
3516		1986 08 31.15729	21 09 55.58	-15 09 29.2				3	809
3516		1986 08 31.16389	21 09 55.38	-15 09 30.2				3	809
3516		1986 08 31.16979	21 09 55.19	-15 09 31.6				3	809
3516		1986 09 02.02049	21 08 44.02	-15 16 44.2				3	809
3516		1986 09 02.02535	21 08 43.82	-15 16 45.1				3	809
3516		1986 09 02.03021	21 08 43.64	-15 16 46.3				3	809
3516		1986 09 03.03090	21 08 06.50	-15 20 33.2				3	809
3516		1986 09 03.03576	21 08 06.33	-15 20 34.2				3	809
3516		1986 09 03.04062	21 08 06.15	-15 20 34.9				3	809
3529		1986 08 26.06667	21 01 52.55	-12 40 39.9				3	809
3529		1986 08 26.07222	21 01 52.28	-12 40 41.0				3	809
3529		1986 08 26.07778	21 01 52.02	-12 40 42.2				3	809

881 Toyota
T. Urata, 1-8-303, 1 Chome, Dobayashi, Shimizu, Shizuoka 424, Japan
Observers K. Suzuki, T. Urata
0.31-m f/5.7 reflector
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1940 YE		1987 01 25.55313	09 08 28.25	+22 28 43.5			16.5		881
1940 YE		1987 01 25.57396	09 08 27.03	+22 28 41.5					881
1986 WB		1987 01 04.48507	04 02 16.83	+24 38 14.8			16.5		881
1986 WB		1987 01 04.51146	04 02 16.34	+24 38 12.5					881
1986 WD		1987 01 04.49757	04 25 26.15	+16 18 29.8			16.5		881
1986 WD		1987 01 04.52326	04 25 25.67	+16 18 29.6					881
1986 WD		1987 01 20.49965	04 21 15.79	+16 01 36.6			17		881
1986 WD		1987 01 20.51979	04 21 15.33	+16 01 36.6					881
1987 BJ	*	1987 01 31.54479	09 43 38.9	+10 51 05			15	N	881
1987 BJ		1987 01 31.56493	09 43 37.9	+10 51 17				N	881

883 Shizuoka
T. Urata, 1-8-303, 1 Chome, Dobayashi, Shimizu, Shizuoka 424, Japan
Observer M. Kizawa
Measurer T. Urata
0.31-m f/6.4 reflector
Copied from Nihondaira Obs. Circ.

1118		1987 01 26.60747	08 21 27.06	+25 07 48.4			16		883
1118		1987 01 26.63472	08 21 25.68	+25 07 47.1			16		883

887 Ojima
T. Urata, 1-8-303, 1 Chome, Dobayashi, Shimizu, Shizuoka 424, Japan
Observers T. Niijima, T. Urata
0.30-m f/5.8 reflector
Copied from Nihondaira Obs. Circ.

1940 YE		1987 01 25.66181	09 08 21.43	+22 28 31.0			16.5		887
1986 YA		1987 01 20.48417	03 27 46.71	+21 58 34.2			16		887
1986 YA		1987 01 20.50444	03 27 47.14	+21 58 27.3					887
1986 YB		1987 01 20.44551	03 27 22.49	+23 51 03.8			16.5		887
1986 YB		1987 01 20.45646	03 27 22.69	+23 50 59.4					887
1986 YB		1987 01 30.40816	03 31 51.33	+23 28 37.9			17		887

1986 YB		1987 01 30.43466	03	31	52.18	+23	28	38.5				887
1986 YD		1987 01 24.49560	05	12	11.72	+23	07	49.4		16.5		887
1986 YD		1987 01 24.50799	05	12	11.36	+23	07	50.5				887
1986 YD		1987 01 27.51594	05	11	29.64	+23	13	32.9		16.8		887
1986 YD		1987 01 27.56229	05	11	28.91	+23	13	37.3				887
1987 BB	*	1987 01 25.62153	08	40	10.22	+18	07	07.9		16.5		887
1987 BB		1987 01 25.65139	08	40	08.15	+18	07	17.4				887
1987 BB		1987 01 28.60972	08	37	10.75	+18	19	08.9		16.5		887
1987 BB		1987 01 28.64861	08	37	08.22	+18	19	19.1				887
1987 BB		1987 01 30.59375	08	35	11.15	+18	27	05.3		16.5		887
1987 BB		1987 01 30.62037	08	35	09.35	+18	27	13.2				887
1987 BC	*	1987 01 28.61910	08	35	39.86	+16	15	34.0		17		887
1987 BC		1987 01 28.63924	08	35	38.86	+16	15	39.7				887
1987 BC		1987 01 28.65799	08	35	37.66	+16	15	42.7				887
1987 BD	*	1987 01 28.61910	08	35	59.1	+15	48	16		17.5	F	887
1987 BD		1987 01 28.63924	08	35	57.8	+15	48	19			F	887
1987 BD		1987 01 28.65799	08	35	56.7	+15	48	18			F	887
1987 BE	*	1987 01 28.61910	08	38	02.56	+15	38	40.9		16.5		887
1987 BE		1987 01 28.63924	08	38	01.55	+15	38	47.6				887
1987 BE		1987 01 28.65799	08	38	00.59	+15	38	54.3				887
1987 BF	*	1987 01 28.61910	08	38	47.30	+16	06	13.4		17		887
1987 BF		1987 01 28.63924	08	38	45.95	+16	06	15.3				887
1987 BF		1987 01 28.65799	08	38	44.54	+16	06	15.9				887
1987 BH	*	1987 01 30.42196	03	31	28.94	+21	19	03.8		17		887
1987 BH		1987 01 30.44554	03	31	29.73	+21	19	06.9				887
1334		1987 01 28.61910	08	37	43.43	+16	49	08.0		15		887
1334		1987 01 28.63924	08	37	42.38	+16	49	14.9				887
1334		1987 01 28.65799	08	37	41.44	+16	49	22.2				887
1345		1987 01 28.61910	08	38	25.89	+15	44	41.3		15.5		887
1345		1987 01 28.63924	08	38	25.12	+15	44	49.1				887
1345		1987 01 28.65799	08	38	24.31	+15	44	54.8				887
2402		1987 01 24.43542	03	35	17.69	+26	39	46.4		16		887

888 Gekko
Y. Oshima, Gekko Observatory, Kan-nami, Shizuoka 419-01, Japan
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Measurer T. Urata
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1986 WD		1987 01 06.61597	04	24	41.67	+16	15	33.0				888
1986 WD		1987 01 06.65417	04	24	40.97	+16	15	28.3				888
1986 YD		1987 01 06.63403	05	21	04.98	+22	34	56.7				888
1986 YD		1987 01 06.67292	05	21	03.20	+22	35	01.6				888

* * * * *

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, G = D. W. E. Green, M = B. G. Marsden, N = S. Nakano, U = T. Urata.

Planet	H	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1978 RR7		780820	182.06	343.16	170.55	6.72	0.0770	2.3521	8	4	D	M
1978 RQ9		780820	115.78	222.95	349.00	7.20	0.0798	2.3234	8	8	D	M

1978	RV9		780820	24.97	137.19	157.62	4.76	0.2296	2.4580	8	8	F M
1978	RZ9		780820	41.66	113.39	162.65	19.74	0.1898	2.2142	8	9	D M
1978	RE10		780820	347.98	11.54	343.54	10.72	0.2934	2.3028	8	0	D M
1979	FN3	15.0	790328	313.94	84.82	176.38	4.22	0.2530	2.9452	2	3	D N
1984	EP	12.0	840301	18.83	337.44	164.94	5.39	0.0766	3.1133	33	4	D M
1985	DO2	15.5	850204	202.46	156.59	164.52	22.26	0.3077	1.8064	37	7	M
1985	JW1	12.0	850515	341.73	187.46	64.27	15.80	0.1338	3.2139	11	4	M
1985	TM3	13.0	850912	20.12	87.38	250.48	10.89	0.2276	3.1564	27	4	M
1985	TN3	13.0	850912	32.71	340.45	344.76	14.55	0.1795	2.6211	28	4	M
1985	TO3	15.0	850912	5.75	82.45	275.43	5.65	0.1900	2.2755	28	4	M
1985	TP3	14.5	850912	358.11	85.18	283.13	4.17	0.2137	2.2779	27	6	M
1985	UJ	15.5	851002	356.44	4.30	20.18	8.86	0.4162	2.6333	33	0	M
1986	QJ	13.5	860818	99.99	248.55	305.42	6.98	0.2552	2.2518	4	0	E M
1986	QK	15.0	860818	342.09	45.01	302.09	4.53	0.1797	2.2961	8	0	M
1986	QL	12.0	860818	93.15	326.72	251.44	1.18	0.0726	2.8479	9	0	M
1986	QO	13.0	860818	16.25	33.29	264.69	1.81	0.1780	2.4561	5	0	M
1986	QP	14.0	860818	330.60	178.41	195.30	2.63	0.2948	2.6990	4	9	E M
1986	TU	13.5	860927	175.80	345.13	189.09	26.72	0.1203	1.8652	2	6	E M
1986	TV	14.5	860927	351.47	139.29	222.00	11.21	0.0607	2.4711	2	6	E M
1986	TB3	13.5	861106	68.88	120.30	171.08	5.34	0.1979	2.3002	31	6	D b
1986	TR6	10.0	860927	24.45	97.22	277.96	11.85	0.0903	5.1894	7	9	E M
1986	TS6	10.0	860927	298.00	137.07	347.65	11.07	0.1536	5.1603	7	9	E M
1986	TT6	9.0	860927	292.05	250.63	241.29	34.37	0.1780	5.1853	7	9	E M
1986	TU6	12.0	860927	172.30	303.92	284.71	9.10	0.0639	2.9329	7	9	E M
1986	TV6	13.0	860927	53.60	355.97	325.45	7.47	0.1972	2.5720	7	9	B
1986	TZ6	14.5	860927	19.67	86.64	271.15	5.45	0.2262	2.4404	3	5	E B
1986	TA7	14.0	860927	38.97	318.87	7.05	10.25	0.3034	2.8028	3	5	B
1986	TB7	13.5	861106	36.52	111.42	246.98	9.76	0.1375	2.9899	56	7	B
1986	UY	14.0	861017	0.47	44.85	351.67	4.97	0.1650	2.2412	49	0	B
1986	VB	16.0	861017	24.33	337.29	24.32	21.19	0.0864	1.9552	29	6	M
1986	VZ	14.0	861106	33.17	340.83	13.51	5.59	0.2107	2.3682	30	9	G
1986	VR5	14.5	861106	329.36	177.05	266.72	5.78	0.0929	2.3540	56	0	N
1986	VX5	13.5	861106	14.46	266.89	111.39	5.53	0.1384	2.7511	24	5	G
1986	VB6	14.0	861106	22.28	238.24	128.59	4.95	0.1870	2.2599	28	7	G
1986	WB	13.0	861126	16.94	341.92	63.39	7.40	0.1281	2.3168	43	0	G
1986	WD	9.0	870105	356.68	205.27	232.97	12.11	0.0613	5.2539	59	0	U
1986	WG	13.5	861126	314.75	253.95	241.73	22.37	0.2633	2.4125	27	0	G
1986	WN	14.0	861126	359.28	11.71	47.01	5.59	0.1463	2.3090	3	6	E G
1986	WR	14.0	861126	0.86	57.75	359.51	0.82	0.1951	2.2561	3	4	E G
1986	WS	9.0	861126	177.29	357.71	240.46	16.56	0.0169	5.0824	3	6	E G
1986	WU	15.0	861126	352.18	176.54	255.77	5.84	0.2311	2.2615	3	6	G
1986	WV	13.5	861126	40.04	107.11	250.25	9.54	0.2278	2.7415	3	6	E G
1986	WW	13.0	861126	176.66	1.84	244.44	11.22	0.0779	2.3340	3	6	E G
1986	WZ	14.0	861126	20.20	133.44	259.26	1.82	0.2074	2.5857	3	6	E G
1986	WB1	13.5	861126	279.78	274.12	247.06	4.51	0.1482	2.2950	3	6	E G
1986	WC1	13.0	861126	7.27	356.85	56.38	2.29	0.2000	3.1387	3	6	E G
1986	WD1	13.5	861126	50.72	269.15	79.75	5.22	0.2319	2.5514	10	8	G
1986	WE1	13.5	861126	12.68	348.91	54.87	1.14	0.2305	3.0431	3	4	E G
1986	WJ1	9.5	861126	7.98	172.27	243.49	8.00	0.0810	5.2086	3	6	E G
1986	WO1	14.5	861126	23.57	18.25	12.76	2.28	0.2228	2.3596	11	7	D N
1986	WQ1	13.5	861126	52.27	88.81	273.85	3.08	0.1465	2.3135	4	6	E G
1986	WS1	13.5	861126	14.99	111.39	296.67	2.43	0.1960	2.7388	4	8	G
1986	WT1	13.5	861126	315.27	202.26	288.75	2.22	0.1695	2.3536	4	7	G
1986	WV1	12.0	861126	313.61	336.44	151.84	1.75	0.1454	3.1596	2	6	E G
1986	WW1	12.0	861126	99.45	62.67	245.57	12.06	0.2000	2.6872	2	6	E G
1986	WA2	12.5	861126	358.86	318.26	112.53	2.40	0.0821	2.9798	2	6	E G
1986	WC2	15.5	861126	3.42	169.42	249.44	5.65	0.2862	2.4298	3	6	E M
1986	WD2	13.0	861126	358.60	0.08	68.20	3.20	0.1241	3.1254	3	6	E G
1986	WH2	13.0	861126	358.44	40.58	28.61	2.09	0.1471	2.9128	3	6	E G

1986	WJ2	14.5	861126	358.13	94.07	335.91	0.49	0.2967	2.7203	3	6	E	M
1986	WM2	14.5	861126	357.61	6.98	63.02	4.40	0.0932	2.1901	3	5	E	G
1986	WN2	12.5	861126	232.27	313.15	254.56	9.31	0.1427	2.4239	3	6	E	G
1986	WP2	12.5	861126	200.91	51.18	180.53	3.08	0.1115	2.4560	2	4	E	G
1986	WR2	14.5	861126	1.79	229.02	175.22	5.46	0.2374	2.3744	2	3	E	G
1986	WS2	15.0	861126	359.09	329.96	75.52	7.92	0.0783	2.3532	2	3	E	G
1986	WT2	15.0	861126	357.23	318.46	92.38	5.05	0.1659	2.2441	2	3		G
1986	WU2	12.5	861126	310.99	3.93	116.49	5.20	0.2730	3.0571	2	3		G
1986	WV2	15.0	861126	146.56	69.82	181.45	7.23	0.1011	2.3588	2	3	E	G
1986	WW2	13.5	861126	178.65	27.88	197.18	10.20	0.0465	2.4507	2	3	E	G
1986	WX2	15.5	861126	20.66	282.77	87.94	6.24	0.2846	2.4218	2	3		G
1986	WY2	12.5	861126	19.49	279.68	100.48	6.38	0.0942	2.8342	2	3		G
1986	WJ3	13.5	861126	38.75	110.33	282.69	1.89	0.1157	2.8762	2	5	E	G
1986	WN7	12.5	861126	26.18	79.90	313.10	5.04	0.1690	3.1499	9	5		G
1986	WO7	12.0	861126	357.68	111.15	321.95	4.16	0.1505	3.1640	8	6		G
1986	WP7	13.0	861126	358.78	164.10	268.27	7.35	0.1233	2.8284	2	5	E	G
1986	WQ7	10.5	861126	179.11	201.17	48.75	3.30	0.0582	3.9062	3	6	E	G
1986	XC	12.5	861126	28.45	138.45	251.89	8.77	0.2027	2.7164	18	6		M
1986	XH	13.5	861216	0.15	167.64	267.22	10.99	0.1261	2.5877	9	0		N
1986	XJ	12.0	861126	131.04	19.46	271.31	5.73	0.1032	2.7350	13	7		G
1986	XT	14.0	861126	31.08	14.34	355.51	3.33	0.3119	2.6045	9	6		G
1986	XU	14.0	861126	334.95	44.93	57.45	11.95	0.1526	2.5541	9	8		G
1986	XX	13.5	861126	249.44	116.89	68.52	9.09	0.0535	2.3185	7	4		M
1986	XD1	15.0	861126	352.77	263.51	155.39	4.30	0.2141	2.2874	6	5		G
1986	XV3	12.0	861126	28.36	2.16	32.91	3.56	0.0969	3.1986	4	6	E	G
1986	XZ3	13.0	861126	265.24	127.41	59.91	9.25	0.2096	2.3404	4	6		G
1986	XE4		861126	25.72	67.13	328.46	2.20	0.1261	2.1976	4	6	E	G
1986	XD5	14.5	861126	7.83	335.57	75.09	8.06	0.1955	2.2223	3	6		G
1986	XE5	15.5	861126	18.35	305.17	79.21	5.03	0.3400	2.2975	3	6	E	G
1986	XF5	14.5	861126	30.67	193.68	184.22	1.79	0.1954	2.3191	3	6		G
1986	XG5	11.5	861126	105.16	103.76	189.19	2.06	0.2500	2.8389	3	5	E	G
1986	XH5	13.5	861126	344.84	11.12	75.63	10.14	0.2212	2.8819	3	6		G
1986	XJ5	13.0	861126	173.82	17.74	230.55	7.49	0.1117	2.2201	3	5	E	G
1986	XK5	13.5	861126	357.00	199.94	227.83	7.40	0.1068	2.4823	3	6	E	G
1987	BB	15.0	870125	351.34	350.32	148.27	0.29	0.1891	2.1799	5	6	E	M

1978 RR7 = 1978 RP11 (T. Furuta, JAM 2040)
1978 RQ9 = 1978 RH16 (H. Oishi, JAM 2043)
1978 RV9 = 1978 RL16 (H. Oishi, JAM 2043)
1978 RZ9 = 1978 RM16 (H. Oishi, JAM 2043)
1978 RE10 = 1978 RK16 (H. Oishi, JAM 2042)
1979 FN3 = 1979 GA (S. Nakano)
1984 EP = 1984 FZ1 (T. Furuta, JAM 2040)
1986 TB3 = 1986 VE5 (F. N. Bowman)
1986 WO1 = 1986 XG (S. Nakano)

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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 Lovas 2 (1986p)
T 1986 Sept. 1.95970 ET

			(1950.0)	P	Q
q	1.4545344				
n	0.14704082	Peri.	71.26421	+0.99447371	+0.10173286
a	3.5550369	Node	282.89044	-0.10352741	+0.90924360
e	0.5908525	Incl.	1.52438	-0.01743880	+0.40364155
P	6.70				

From 22 observations 1986 Nov. 30-1987 Jan. 25.

Periodic Comet Wiseman-Skiff (1987b)
T 1986 Nov. 22.71235 ET

q	1.5052921		(1950.0)	P	Q
n	0.15071550	Peri.	171.72995	+0.11906238	-0.94242519
a	3.4970145	Node	271.01609	+0.89208908	+0.23971504
e	0.5695494	Incl.	18.21318	+0.43589130	-0.23317690
P	6.54				

From 17 observations 1986 Dec. 28-1987 Feb. 1.

Periodic Comet Niijima-Urata (1986o)
T 1986 Nov. 22.93481 ET

q	1.4492474		(1950.0)	P	Q
n	0.14874948	Peri.	21.38053	+0.62319109	-0.75241877
a	3.5277604	Node	31.28388	+0.64464028	+0.33978064
e	0.5891877	Incl.	24.25327	+0.44279992	+0.56428283
P	6.63				

From 57 observations 1986 Oct. 29-1987 Jan. 1.

Comet Terasako (1987d)
T 1986 Dec. 24.89751 ET

q	0.3951223		(1950.0)	P	Q
		Peri.	195.60907	+0.31830941	+0.69072314
		Node	96.93341	-0.78457445	+0.57638240
e	1.0	Incl.	40.84960	-0.53209214	-0.43667479

From 23 observations 1987 Jan. 27-Feb. 3.

Comet Levy (1987a)
T 1986 Dec. 17.56382 ET

q	0.9221874		(1950.0)	P	Q
		Peri.	95.32189	-0.05659791	-0.95823399
		Node	16.39210	-0.51853587	-0.21172713
e	1.0	Incl.	96.61777	+0.85318066	-0.19224785

From 18 observations 1987 Jan. 8-Feb. 1.

Comet Nishikawa-Takamizawa-Tago (1987c)
T 1987 Mar. 17.26153 ET

q	0.8729088		(1950.0)	P	Q
		Peri.	200.18892	+0.90758330	-0.41972740
		Node	175.32716	-0.36424053	-0.77400358
e	1.0	Incl.	172.22492	-0.20885734	-0.47407528

From 48 observations 1987 Jan. 20-30.

Comet Sorrells (1986n)
Epoch 1987 Mar. 26.0 ET = JDE 2446880.5
T 1987 Mar. 9.75804 ET

q	1.7203261		(1950.0)	P	Q
z	+0.0008629	Peri.	70.26891	+0.94625675	+0.04804251
	+/-0.0001961	Node	74.08326	-0.05004502	-0.95524382
e	0.9985155	Incl.	160.57462	+0.31952100	-0.29189240

From 98 observations 1986 Nov. 2-1987 Jan. 24, mean residual 1".0.

(473) Nolli
Epoch 1987 July 24.0 ET = JDE 2447000.5
M 343.31412

			(1950.0)	P	Q
n	0.22704808	Peri.	153.24503	-0.58137526	-0.80677972
a	2.6610773	Node	331.92423	+0.70059314	-0.43051193
e	0.1069620	Incl.	12.94127	+0.41372946	-0.40468007
P	4.34	H	12.0	G	0.25

Residuals in seconds of arc

010213	024	(6.4-	1.0-)	580419	675	0.3+	2.5+	810905	046	0.4-	1.4-
010213	024	0.4+	0.3-	810824	046	1.5-	1.8+	810905	046	0.4-	2.3-
010217	024	1.2+	0.0	810824	046	0.3-	2.3+	840409	809	2.6+	1.9+
010221	024	0.7+	0.2-	810828	046	0.8-	1.4-	860809	071	1.9-	4.7+
010313	024	1.3-	1.3+	810828	046	0.3+	1.7-	860809	071	2.7-	3.8+
400210	012(45.9-	15.0-)X		810830	704	2.7+	1.0-	860809	071	2.8-	3.3+
400212	020 (3.0-	25.4+)X		810902	704	0.9+	1.0+				
580419	675	0.2-	3.0+	810902	095	1.6+	2.0+				

(3548)* 1973 SO = 1954 CB = 1957 JX = 1978 EE5 = 1985 TZ

Discovered 1973 Sept. 19 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels. The key identification 1973 SO = 1985 TZ is by E. Bowell (MPC 10379).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	13.91693	(1950.0)	P	Q	
n	0.08503522	Peri.	26.46229	+0.35613920	-0.92952337
a	5.1215745	Node	42.85904	+0.83041803	+0.26789320
e	0.0913354	Incl.	8.08478	+0.42845159	+0.25341572
P	11.59	H	9.7	G 0.25	

Residuals in seconds of arc

540209	760	1.4+	1.3+	731004	675	0.3-	0.4-	851015	688	0.2-	0.5-
540209	760	0.3+	1.4+	731005	675	0.1-	0.2-	851107	688	1.9+	0.0
570505	076 (6.3+	7.1+)X		780306	095	0.9-	1.4-	851107	688	1.7+	1.1-
730919	675	0.2+	0.4+	851011	675	0.3-	0.6+	861029	801	0.2+	0.9-
730920	675	0.3-	0.2+	851013	675	1.7-	1.5+	861031	801	0.7+	0.1-
730924	675	0.1-	0.2-	851014	675	0.7-	0.3+	861204	688	0.0	1.5-
730925	675	0.1+	0.2-	851014	675	0.0	2.4+	861204	688	0.6-	0.8-
730929	675	0.4-	0.7-	851015	688	0.4+	0.5+	861231	568	0.6-	0.1+

(3549)* 1981 YH = 1964 DC = 1973 AE1 = 1980 PO1 = 1985 TQ3

Discovered 1981 Dec. 30 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	45.29873	(1950.0)	P	Q	
n	0.21512539	Peri.	209.95862	-0.69212336	-0.71041725
a	2.7585123	Node	284.17486	+0.68557956	-0.59179428
e	0.1696367	Incl.	7.56032	+0.22571202	-0.38090268
P	4.58	H	13.0	G 0.25	

Residuals in seconds of arc

640217	760(26.9-	45.3-)X		811220	688	1.1+	1.1-	811230	688	1.1+	0.4-
730101	095	0.5+	1.7+	811220	046	1.6-	0.5-	850915	675	0.6+	0.6-
800806	809	0.5+	0.3-	811220	046	1.5-	0.7+	850915	675	0.7+	0.4-
800807	809	0.4+	0.8-	811228	046	1.5+	0.3-	851011	675	2.1-	2.3+
800809	809	0.1+	0.7-	811228	046	1.3-	0.3+	851013	675	0.2-	1.2+
811220	688	1.2+	0.5-	811230	688	0.9-	1.0-				

(3550)* 1981 YS = 1938 JD = 1951 YL2 = 1961 XM = 1961 XZ = 1962 AB

Discovered 1981 Dec. 20 by A. Mrkos at Klet. The double designation 1961 XM = 1961 XZ was found by B. Potter (MPC 2280).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	25.30223	(1950.0)	P	Q	
n	0.19688131	Peri.	28.90787	-0.32527565	-0.91190941
a	2.9263958	Node	81.02092	+0.81151368	-0.40503829
e	0.1571856	Incl.	14.67515	+0.48542898	+0.06606979
P	5.01	H	12.0	G 0.25	

Residuals in seconds of arc

380505	024	(2.8-	82.7+)X	811203	330	1.6-	1.3+	830416	046	0.1+	1.0+
511227	711	0.7-	3.9+ Y	811219	330	(5.0-	0.8-)	830416	046	0.1+	0.0
511228	711	(4.1+	4.4-)Y	811220	046	0.7-	0.4-	850815	474	0.4-	1.5+
611206	012	2.3-	2.0+	811220	046	1.6+	0.2+	850815	474	0.5-	1.2+
611206	760	2.9+	1.7-	811222	330	0.3-	0.8-	861128	033	0.3-	1.0-
611206	760	0.8+	2.0-	811228	046	0.5-	0.6-	861128	033	0.1-	0.5-
620110	760	4.6-	1.7+	811228	046	0.8+	0.5-	861128	033	0.4+	0.7-
620110	760	2.0+	1.7+	820116	330	0.3+	0.5+	861128	033	0.2-	0.6-
811125	095	1.1+	1.1-	820120	330	1.3+	0.9+	861129	033	0.1-	1.1-

(3551)* 1983 RD

Discovered 1983 Sept. 12 by R. S. Dunbar at Palomar.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	95.17153		(1950.0)	P	Q
n	0.32588906	Peri.	192.99295	+0.99344558	-0.11270988
a	2.0913314	Node	173.38957	+0.11395909	+0.96363426
e	0.4872918	Incl.	9.51801	+0.00889938	+0.24229218
P	3.02	H	16.8	G 0.25	

Residuals in seconds of arc

830907	675	0.0	0.7+	831005	474	0.2+	0.2-	860730	691	1.0+	0.5+
830907	675	1.0+	1.0+	831006	413	0.8+	1.5-	860730	691	1.1+	0.6+
830907	675	0.1-	0.2+	831006	413	(3.6-	1.2-)	860730	691	1.1+	0.6+
830907	675	1.8+	0.3+	831007	049	(0.6-	4.7-)Y	860731	688	0.5-	0.7+
830907	675	1.3+	0.2+	831007	049	1.6-	0.3- Y	860731	688	0.6+	0.2+
830907	675	0.2+	0.7+	831007	413	0.4+	1.1-	860731	691	1.0+	0.6+
830912	675	2.2-	1.1-	831007	413	2.4-	0.7-	860731	691	1.1+	0.5+
830912	675	2.3-	1.1+	831007	413	1.8+	0.9-	860731	691	1.1+	0.8+
830913	010	2.2+	0.8-	831007	413	1.6-	0.4-	860801	675	2.0-	0.7-
830913	010	1.9-	1.7+	831008	801	0.6-	0.6+	860801	675	(4.5+	1.6-)
830913	675	2.1+	0.8-	831008	413	(4.2+	0.5+)	860804	801	0.2+	0.1+
830913	675	1.0+	0.6-	831008	413	(1.6-	3.3+)	860807	552	0.1+	0.3+
830913	675	0.1+	0.4+	831009	675	0.2-	0.8-	860831	293	(6.7-	3.0+)
830913	675	0.1-	0.2+	831009	675	0.8-	0.2-	860831	293	(7.5-	8.5+)
830914	688	0.3+	2.9+	831010	808	1.6+	0.7-	860807	552	0.5+	2.2-
830914	675	0.0	0.8+	831010	808	2.5+	0.3-	860807	552	1.6+	0.4+
830914	688	0.6-	1.0-	831011	808	0.0	0.4+	860809	801	0.1+	0.1+
830914	688	0.3+	0.8-	831011	808	0.5+	1.5+	860901	801	1.4-	1.0-
830914	675	1.1+	1.9-	831128	675	0.2-	0.7-	860901	691	0.9-	0.6+
830914	688	1.1-	0.2-	831130	675	(10.2-	1.1+)	860901	691	1.0-	0.9+
830914	688	1.2+	2.5-	831130	675	(7.8-	1.9-)	860901	691	0.4-	1.4+
830914	688	0.7+	1.3-	831205	474	2.4+	1.9+	860903	691	1.1-	0.1-
830914	688	0.6-	1.3-	831205	474	1.5+	1.0+	860903	691	0.6-	0.5-
830914	688	0.7+	1.4-	831209	801	0.0	0.9-	860903	691	0.8-	0.6-
830915	657	(2.1+	3.5+)	831214	675	0.8-	0.8+	860909	033	1.0-	0.3-
830915	474	1.6-	1.0+	831229	474	0.8-	1.7+	860909	033	1.9-	0.5+
830915	474	0.3-	0.3-	831229	474	0.7-	1.1+	861001	568	0.6-	1.3+
830916	474	0.3-	0.9+	840104	801	0.8+	0.8+	861004	568	0.9+	0.5+
830916	474	0.6-	1.4+	840104	675	(3.6-	2.0-)	861029	474	0.2-	0.5+
830928	474	2.1-	0.4-	840104	675	(1.9-	2.3-)	861029	474	1.8+	1.3+
830928	474	1.2-	0.0	840107	675	0.2-	1.7+	861031	323	0.7-	1.2+
831005	808	0.6+	0.6+	840107	675	0.4-	2.1-	861229	691	0.0	1.3+
831005	808	0.3+	0.1+	860727	691	2.5-	1.9+	861229	691	0.5-	0.7+
831005	474	0.8+	0.1-	860727	691	2.2+	1.0+	861229	691	0.2+	0.7+

(3552)* 1983 SA

Discovered 1983 Sept. 26 by P. Wild at Zimmerwald.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	165.11097		(1950.0)	P	Q
n	0.11315758	Peri.	316.65065	+0.61402256	+0.78429437
a	4.2333121	Node	350.02417	-0.50868775	+0.30734930
e	0.7139139	Incl.	30.77934	-0.60350067	+0.53890514
P	8.71	H	13.2	G 0.25	

Residuals in seconds of arc

830910	688	2.1-	1.4+	831010	801	3.5-	0.5+	831108	026	1.6+	0.5+
830910	688	0.7+	0.5-	831010	026	0.0	0.5+	831109	801	0.4-	0.6+
830912	675	2.1-	0.8-	831011	688	0.9+	0.0	831109	026	0.6+	0.1-
830912	675	0.6-	3.0-	831012	688	0.5+	1.6-	831130	801	2.1-	1.1-
830926	026	0.2+	0.9+	831012	026	0.4+	0.1+	831130	675	2.3-	0.2+
830928	026	0.6+	0.4+	831013	026	1.1+	0.8-	831130	675	4.0-	0.2-
831001	026	0.5+	0.3+	831013	026	1.3+	0.0	831201	026	2.5+	0.8-
831001	026	0.0	2.4+	831027	675	0.1-	0.6+	831201	026	0.9+	0.2+
831002	026	1.3+	0.5+	831027	046	0.7+	0.5+	831215	675	0.1-	1.0-
831002	026	0.9+	0.1-	831027	046	0.4+	1.9+	840103	801	2.2-	0.5+
831003	026	0.8+	0.2+	831027	026	1.2+	0.3+	840124	675	0.2-	0.2-
831004	688	3.1+	0.5-	831029	675	0.1-	1.1+	840202	801	1.7-	1.7-
831004	688	1.8+	1.3-	831101	801	1.1-	0.4-	840222	675	0.2-	0.3-
831004	026	0.0	0.2+	831101	026	0.9+	0.7-	840303	801	0.2-	1.6+
831005	026	0.3+	0.1-	831102	046	1.1-	0.5-	841005	675	0.6-	1.2-
831006	675	0.8-	1.0+	831102	046	1.5-	0.3-	841202	675	0.5-	0.1+
831006	675	0.5-	0.4-	831102	026	1.0+	0.0	870202	688	0.2+	0.1-
831007	801	1.7-	1.6+	831104	707	0.1-	0.6+	870202	688	0.2+	0.1-
831009	675	0.5+	1.6-	831106	026	1.7+	0.0	870202	688	0.3+	0.1-
831009	675	0.6-	0.2+	831107	675	0.1+	0.7+				
831009	675	0.8-	0.6-	831107	675	1.3+	0.5+				

(3553)* 1985 JA

Discovered 1985 May 14 by C. Shoemaker at Palomar.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	53.88744		(1950.0)	P	Q
n	0.46732573	Peri.	288.87369	-0.79642057	-0.37871219
a	1.6445847	Node	231.97692	+0.41993029	-0.90734737
e	0.3206869	Incl.	36.76271	-0.43516989	-0.18247693
P	2.11	H	16.8	G 0.25	

Residuals in seconds of arc

850511	675	0.9+	2.2+	850523	474	1.8-	0.4+	850908	675	1.7+	0.1-
850514	675	0.7-	0.9+	850523	474	0.7-	2.0-	850908	675	1.8+	0.2+
850514	675	0.8+	0.5+	850524	474	1.1+	1.8-	860816	675	0.3-	0.5+
850515	675	(2.0+	4.5-)	850524	474	0.8+	0.6-	860816	675	0.1+	0.6+
850518	688	0.5-	1.2-	850525	474	0.8-	0.1-	860903	691	0.8+	0.8-
850518	688	(1.3+	3.8-)	850525	474	0.3-	0.3+	860903	691	0.2+	1.2-
850518	688	0.9-	1.4-	850607	675	0.5+	0.4+	860903	691	0.4+	0.5-
850519	688	1.2+	0.2+	850607	675	0.5+	0.4+	860926	691	1.1-	0.3+
850519	688	1.3+	0.2+	850608	675	0.4+	0.5+	860926	691	1.7-	0.0
850519	675	(5.4+	7.2-)	850608	675	0.5+	0.5+	860926	691	1.4-	0.3+
850519	675	0.3-	0.6-	850619	801	2.5-	1.4+	860927	691	0.3-	1.2-
850520	688	1.0+	2.5-	850619	691	(2.9+	1.8-)	860927	691	1.0-	1.1-
850520	688	1.0-	1.8-	850619	691	(3.5+	1.0-)	861024	691	1.3+	0.2+
850520	675	(3.3+	5.2+)	850619	691	(3.0+	1.0-)	861024	691	0.5+	0.7+
850520	675	(7.3+	4.2-)	850621	801	1.0-	2.5+	861024	691	0.8+	0.2+
850521	801	0.6+	1.1+	850728	675	0.5-	0.5-	861129	691	0.4-	1.1-
850521	688	(1.6+	6.0-)	850728	675	0.5-	0.6-	861129	691	0.3-	0.6-
850521	688	(1.6+	5.9-)	850907	675	0.7+	0.1-	861129	691	1.4-	1.0-
850523	801	0.4-	0.4+	850907	675	0.5+	0.0	861130	801	0.5+	0.2+

(3554)* 1986 EB

Discovered 1986 Mar. 4 by C. Shoemaker and E. Shoemaker at Palomar.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	316.22403		(1950.0)	P	Q
n	1.02588715	Peri.	359.30903	+0.99896736	+0.04337263
a	0.9736503	Node	358.04473	-0.03954838	+0.68355593
e	0.2803628	Incl.	23.36000	-0.02236361	+0.72860834
P	0.96	H	16.2	G 0.25	

Residuals in seconds of arc

860304	675	0.2-	0.8-	860402	046	0.8+	0.4-	860506	675	1.3-	0.2-
860305	675	1.6-	0.2+	860402	552	2.2+	1.8-	860514	691	0.1+	0.7-
860308	675	0.5-	1.2+	860402	552	(1.7-	3.1-)	860514	691	0.3+	0.7-
860308	675	0.9-	0.5-	860403	675	1.3-	0.6+	860514	691	0.2+	0.5-
860309	675	0.8-	1.3+	860403	675	1.5-	0.2+	860609	675	0.3-	0.5+
860309	675	0.3+	1.4+	860404	801	0.1-	0.7+	860609	675	0.3-	0.4+
860312	801	0.8+	1.4+	860404	675	2.4-	1.3+	860610	675	0.4-	0.6+
860312	801	0.1-	0.5+	860404	675	1.3-	0.3+	860610	675	0.5-	0.3+
860313	657	0.6-	0.2-	860405	675	0.7-	0.5+	860617	675	0.3-	0.5-
860315	657	1.7+	2.8-	860405	675	0.8-	0.6+	860617	675	0.1-	0.4-
860320	801	2.4-	1.3+	860407	568	0.5+	0.0	860617	675	0.8+	0.5-
860320	801	0.1+	0.7+	860408	675	0.4+	1.4+	860618	675	0.2+	0.9-
860321	675	0.4+	1.7-	860408	675	0.5+	1.3+	860618	675	0.0	1.0-
860321	675	0.6+	1.6-	860408	054	0.3+	1.0+	861202	691	1.3+	0.9-
860322	675	0.4+	0.0	860414	691	0.8+	0.4-	861202	691	1.0+	2.1-
860322	675	0.0	0.1-	860414	691	0.8+	0.2-	861202	691	1.3+	1.1-
860328	552	1.4+	0.9+	860414	691	0.9+	0.2-	861221	675	1.3-	0.8+
860328	552	1.2+	0.0	860415	691	1.3+	0.4+	861221	675	1.1-	0.6+
860331	046	2.0-	2.8-	860415	691	1.1+	0.4+	861221	675	1.3-	0.7+
860331	046	(4.2-	4.4-)	860415	691	1.3+	0.2+	861221	675	1.5-	0.9+
860401	046	0.8+	1.0-	860426	568	0.9-	0.5-	861227	691	1.0+	0.0
860401	046	1.1+	1.2-	860501	568	0.7+	0.3+	861227	691	0.9+	0.2+
860402	046	2.1+	0.2+	860505	675	2.6-	0.5+	861228	801	0.3+	0.7-

A904 PC = 1955 MM = 1975 XE2 = 1981 DU3

The 1982 observation was identified by R. M. West. The double designation 1955 MM = 1955 MS (NAZ 12, 23) is invalid.

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

M	241.28875		(1950.0)	P	Q
n	0.21091278	Peri.	85.91986	+0.96888342	-0.16372736
a	2.7951276	Node	283.42958	+0.06939371	+0.89956809
e	0.1186723	Incl.	11.00227	+0.23759091	+0.40493283
P	4.67	H	11.0	G 0.25	

Residuals in seconds of arc

040815	024	4.2-	0.5+	040905	024	7.0+	3.8-	751201	095	1.7+	3.0+
040817	045	2.0-	2.5-	550628	760	1.4+	0.7+	810223	095	2.2-	3.0-
040819	045	0.4+	3.6+	550628	760	2.0-	0.4+	820219	809	0.2+	0.0

1981 JX1 = 1986 WP

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

M	231.16918		(1950.0)	P	Q
n	0.27345757	Peri.	218.37493	-0.32153236	+0.94611516
a	2.3507707	Node	32.92075	-0.85027921	-0.27058733
e	0.0186543	Incl.	4.06332	-0.41670399	-0.17790052
P	3.60	H	14.5	G 0.25	

Residuals in seconds of arc

810411	675	5.3+	2.3+	861031	675	1.1-	1.7-	861126	046	0.7-	0.7-
810411	675	5.7+	2.2+	861031	675	0.3+	2.3-	861126	046	1.7+	2.4-
810505	675	0.6-	0.3+	861105	675	5.9-	1.4-	861128	046	5.5+	1.8+
810506	675	4.2-	3.2-	861105	675	5.2-	1.1-	861128	046	0.1+	0.2-
810510	675	4.2-	0.8-	861125	046	1.9+	0.6-				
810511	675	3.2-	1.6-	861125	046	4.0+	0.1-				

1983 AD

The 1984 observations were identified by E. Bowell. The 1977 and 1980 observations were identified by R. M. West.

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

M	13.60242	(1950.0)		P	Q
n	0.24025502	Peri.	64.43864	-0.71636833	-0.67772294
a	2.5626459	Node	72.40462	+0.56125374	-0.70095302
e	0.1224685	Incl.	10.02023	+0.41450048	-0.22216319
P	4.10	H	14.0	G 0.25	

Residuals in seconds of arc

770930	809	0.8+	1.8-	830116	688	0.1+	0.3-	840601	688	1.4-	1.6-
800711	809	0.3+	0.4+	830116	688	0.4-	0.4-	840601	688	0.3+	1.3-
830109	688	2.1+	3.1-	830215	688	0.1-	0.2+				
830109	688	0.7-	1.3+	830215	688	1.0-	0.1-				

1985 VS

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	44.32957	(1950.0)		P	Q
n	0.08149748	Peri.	206.20968	+0.60018434	-0.76608823
a	5.2687381	Node	208.73839	+0.79181867	+0.60973274
e	0.0243918	Incl.	28.57457	+0.11314569	-0.20330962
P	12.09	H	11.0	G 0.25	

Residuals in seconds of arc

851106	691	0.6-	0.8+	851119	691	0.8+	1.2-	861230	691	1.0+	0.8-
851106	691	0.5-	1.3+	851119	691	0.5+	0.7-	861230	691	0.3+	0.1-
851106	691	0.4+	1.2+	851119	691	0.6+	1.2-	861230	691	0.7+	1.4-
851115	691	0.5-	0.5-	851205	691	0.1+	0.2+	870129	691	0.1-	0.5+
851115	691	0.5-	0.7-	851205	691	0.1-	0.2+	870129	691	0.5-	0.5+
851115	691	0.8-	0.0	851205	691	0.2+	0.2+	870129	691	0.2-	0.8+
851116	691	0.6-	0.6-	860113	691	1.0+	1.0+	870201	691	0.4-	0.1-
851116	691	0.1+	0.5-	860113	691	0.7-	0.7+	870201	691	0.2-	0.0
851116	691	0.3-	0.4-	860113	691	1.2+	0.6+	870201	691	0.6-	0.3+

1986 LA

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	174.30850	(1950.0)		P	Q
n	0.51325849	Peri.	86.53847	+0.70495893	+0.69491524
a	1.5449412	Node	229.37668	-0.70200638	+0.65514982
e	0.3167273	Incl.	10.77245	-0.10109376	+0.29643130
P	1.92	H	18.5	G 0.25	

From 49 observations 1986 June 4-1987 Feb. 2, mean residual 0".9.

1986 RA

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	51.81969	(1950.0)		P	Q
n	0.16099558	Peri.	161.19229	+0.93045885	+0.36604557
a	3.3465199	Node	177.17925	-0.36382659	+0.92822083
e	0.6317911	Incl.	19.01059	-0.04331904	+0.06645848
P	6.12	H	16.0	G 0.25	

From 76 observations 1986 Sept. 2-1987 Feb. 1, mean residual 1".2.

1986 RB
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	71.88467	(1950.0)	P	Q
n	0.27489841	Peri. 36.68295	+0.95846274	-0.21663444
a	2.3425447	Node 333.90383	+0.02239087	+0.70560311
e	0.2584616	Incl. 24.94566	+0.28433751	+0.67468050
P	3.59	H 12.5	G 0.25	

From 20 observations 1986 Aug. 9-1987 Feb. 2, mean residual 1".7.

1986 WA
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	164.33802	(1950.0)	P	Q
n	0.53382447	Peri. 49.36728	+0.17099884	+0.89961175
a	1.5050020	Node 235.15494	-0.98502125	+0.14690640
e	0.7014299	Incl. 29.31459	-0.02219305	+0.41123863
P	1.85	H 16.0	G 0.25	

From 19 observations 1986 Nov. 30-1987 Feb. 1, mean residual 1".2.

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

(64) Angelina
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	314.47579	(1950.0)	P	Q
n	0.22449596	Peri. 179.44167	-0.62225087	-0.78261775
a	2.6812071	Node 309.03888	+0.71809771	-0.56165733
e	0.1247361	Incl. 1.30581	+0.31167216	-0.26842223
P	4.39	H 7.65	G 0.37	

From 164 observations at 38 oppositions 1903-1986, mean residual 0".9.

(74) Galatea
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	327.02134	(1950.0)	P	Q
n	0.21290424	Peri. 174.13998	+0.98099695	-0.19290785
a	2.7776648	Node 197.02541	+0.17499773	+0.92595497
e	0.2394803	Incl. 4.06855	+0.08379013	+0.32464437
P	4.63	H 8.84	G 0.15	

From 107 observations at 29 oppositions 1908-1986, mean residual 0".9.

(187) Lamberta
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	65.39828	(1950.0)	P	Q
n	0.21880538	Peri. 194.93841	-0.80505166	+0.58930621
a	2.7274956	Node 21.60328	-0.52356300	-0.65206035
e	0.2398835	Incl. 10.62695	-0.27887920	-0.47700680
P	4.50	H 8.16	G 0.13	

From 54 observations at 23 oppositions 1902-1986, mean residual 1".0.

(302) Clarissa
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	293.66257	(1950.0)	P	Q
n	0.26418498	Peri. 54.66860	+0.46851230	-0.88342365
a	2.4054554	Node 7.40573	+0.78996605	+0.41502793
e	0.1123531	Incl. 3.41300	+0.39553744	+0.21751891
P	3.73	H 10.94	G 0.15	

From 61 observations at 20 oppositions 1909-1984, mean residual 0".8.

(313) Chaldaea
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	290.66282	(1950.0)	P	Q
n	0.26893099	Peri. 314.86573	-0.65954265	-0.75155637
a	2.3770710	Node 176.32834	+0.73387069	-0.64754603
e	0.1791152	Incl. 11.62523	+0.16259553	-0.12588553
P	3.67	H 8.86	G 0.05	

From 96 observations at 29 oppositions 1902-1983, mean residual 0".9.

(481) Emita
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	0.49075	(1950.0)	P	Q
n	0.21720792	Peri. 347.86635	+0.57947033	-0.79976170
a	2.7408522	Node 66.52051	+0.76127753	+0.46245718
e	0.1565238	Incl. 9.84517	+0.29098224	+0.38277222
P	4.54	H 8.75	G 0.15	

From 53 observations at 24 oppositions 1907-1985, mean residual 0".9.

(739) Mandeville
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	132.01845	(1950.0)	P	Q
n	0.21779251	Peri. 43.59572	-0.96933469	+0.03268164
a	2.7359454	Node 136.43151	-0.06781733	-0.98820489
e	0.1435296	Incl. 20.69459	+0.23620134	-0.14960954
P	4.53	H 8.72	G 0.15	

From 58 observations at 19 oppositions 1918-1986, mean residual 0".9.

(794) Irenaea
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	54.77245	(1950.0)	P	Q
n	0.17606062	Peri. 132.63809	+0.39016254	+0.92019640
a	3.1527865	Node 160.25783	-0.86989489	+0.37971640
e	0.2858991	Incl. 5.40337	-0.30175499	+0.09515273
P	5.60	H 11.20	G 0.15	

From 91 observations at 10 oppositions 1936-1985, mean residual 0".9.

(858) El Djezair
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	49.34620	(1950.0)	P	Q
n	0.20945971	Peri. 174.85083	-0.47196979	+0.87005621
a	2.8080341	Node 66.92234	-0.81424881	-0.36831285
e	0.1039795	Incl. 8.89756	-0.33799909	-0.32763979
P	4.71	H 10.17	G 0.25	

From 30 observations at 17 oppositions 1908-1983, mean residual 1".2.

(884) Priamus
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	38.02057	(1950.0)	P	Q
n	0.08417324	Peri. 332.59654	+0.06785430	+0.98881234
a	5.1564800	Node 301.02048	-0.88459360	-0.00194850
e	0.1220052	Incl. 8.91718	-0.46139999	+0.14915215
P	11.71	H 8.89	G 0.15	

From 58 observations at 17 oppositions 1917-1984, mean residual 0".9.

(963) Iduberga
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	157.38192	(1950.0)	P	Q
n	0.29243391	Peri. 4.97509	+0.39120576	-0.91208699
a	2.2479375	Node 62.04159	+0.83945465	+0.29900807
e	0.1372510	Incl. 7.98496	+0.37719218	+0.28052004
P	3.37	H 12.55	G 0.25	

From 28 observations at 13 oppositions 1921-1983, mean residual 1".2.

(970) Primula
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	14.07390	(1950.0)	P	Q
n	0.24033911	Peri. 93.03667	+0.71227525	-0.69878833
a	2.5620430	Node 311.30553	+0.60397555	+0.65810742
e	0.2676722	Incl. 5.04212	+0.35759965	+0.28033818
P	4.10	H 12.3	G 0.25	

From 43 observations at 12 oppositions 1921-1984, mean residual 1".1.

(1121) Natascha
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	137.73775	(1950.0)	P	Q
n	0.24245725	Peri. 50.25037	+0.67076065	-0.74166044
a	2.5470996	Node 357.60959	+0.64347944	+0.58493843
e	0.1586299	Incl. 6.14669	+0.36880125	+0.32830905
P	4.07	H 11.4	G 0.25	

From 44 observations at 14 oppositions 1930-1985, mean residual 1".0.

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

1984 EN = 1958 DZ
The identification was suggested by W. Landgraf.
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	5.62022	(1950.0)	P	Q
n	0.26599750	Peri. 150.84237	-0.48104824	-0.87598871
a	2.3945204	Node 327.87447	+0.79095044	-0.41635150
e	0.0803750	Incl. 3.79127	+0.37814018	-0.24350607
P	3.71	H 13.0	G 0.25	

Residuals in seconds of arc

580224	760	0.5+	1.3+	840303	809	0.5-	1.8+	840309	809	0.2-	1.4+
580224	760	0.1+	0.3-	840303	809	0.8-	1.4+	840310	809	0.8+	0.6+
840223	809	0.1-	1.4-	840303	809	1.0-	1.3+	840310	809	0.9+	1.2+
840223	809	0.0	1.4-	840304	809	1.2-	1.9+	840310	809	0.9+	1.1+
840223	809	0.0	0.8-	840304	809	1.0-	2.0+	840329	688	1.9+	0.4+
840225	809	0.0	1.1-	840304	809	0.5-	1.9+	840331	688	0.1-	2.3-
840225	809	0.3+	1.2-	840305	809	1.0-	0.3+	840331	688	0.1+	1.8-
840225	809	0.7+	1.2-	840305	809	0.7-	0.1+	861009	092	0.2-	0.0
840226	809	0.6-	0.7-	840305	809	0.4-	0.0	861009	092	1.4+	0.2-
840226	809	0.2-	1.0-	840306	809	0.5-	0.3+	861011	092	0.2+	0.6+
840226	809	0.3+	1.0-	840306	809	0.1+	0.5+	861011	092	1.2+	0.2-
840228	809	0.3+	0.7-	840306	688	0.7+	3.7-	861012	092	0.2+	0.7+
840228	809	0.2+	0.2-	840306	809	0.2+	0.4-	861201	010	1.0-	0.7-
840228	809	0.8+	0.2-	840306	688	0.7+	1.6-	861201	010	(3.3-	1.4-)
840301	809	1.1-	0.4-	840308	809	0.5-	0.6+	861201	010	1.8-	1.0-
840301	809	0.8-	0.3-	840308	809	0.2+	0.4+	861203	010	(2.4+	3.8+)
840301	688	2.6+	0.5-	840308	809	0.2-	0.6+	861203	010	(5.8+	7.0+)
840301	809	0.4-	0.0	840309	809	0.8-	1.6+				
840301	688	1.9+	1.8-	840309	809	0.7-	1.3+				

1984 FM = 1986 UB1
The identification is by D. W. E. Green.
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	343.22103	(1950.0)	P	Q
n	0.27266585	Peri. 139.08501	-0.95516817	-0.20370369
a	2.3553191	Node 31.21630	+0.00029988	-0.72633817
e	0.2307405	Incl. 24.49056	+0.29606363	-0.65645842
P	3.61	H 14.0	G 0.25	

Residuals in seconds of arc

840329	675	0.4+	0.6+	840424	046	(5.2-	6.8-)	840504	688	0.7-	0.2-
840329	675	0.6-	0.8+	840424	046	(2.4-	3.4-)	840508	675	0.2-	0.1-
840331	675	(3.1+	0.2-)	840425	046	0.9-	1.9+	840509	675	0.2+	0.7-
840331	675	1.9+	0.1+	840425	046	(1.1-	3.6+)	840526	675	1.1-	0.9+
840408	688	1.3+	1.2-	840427	675	0.1+	0.3-	840527	675	0.7-	1.1+
840408	688	(2.6+	0.8-)	840427	046	0.3-	1.1+	861027	033	0.3+	0.0
840419	046	0.6+	3.1-	840427	046	0.5-	0.6-	861027	033	0.0	0.2-
840419	046	(0.4+	4.2-)	840429	675	1.0+	0.5+	861107	033	0.2+	0.9-
840422	046	0.9+	0.4-	840504	688	2.3-	1.2-	861107	033	0.2+	0.3-

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ORBITAL ELEMENTS BY T. KOBAYASHI, TOKYO.

The following orbital elements are taken in part from Kobataka Circ. Nos. 1, 4 and 19. The identifications are by T. Kobayashi unless otherwise stated.

Periodic Comet Kowal-Mrkos (1984 X)
Epoch 1984 May 20.0 ET = JDE 2445840.5
T 1984 June 7.63169 ET

q	1.9511319	(1950.0)	P	Q
n	0.13459428	Peri. 338.10569	-0.68657744	+0.72547077
a	3.7709575	Node 248.49810	-0.65914148	-0.64894450
e	0.4825898	Incl. 2.95696	-0.30682883	-0.22926667
P	7.32			

From 8 observations 1984 Apr. 23-May 19, mean residual 1".62.

Periodic Comet Shoemaker 1 (1984 XVI)
Epoch 1984 Sept. 17.0 ET = JDE 2445960.5
T 1984 Sept. 16.64489 ET

q	1.9768690	(1950.0)	P	Q
n	0.13624977	Peri. 18.68402	+0.98769679	+0.00042713
a	3.7403496	Node 339.31037	-0.11692418	+0.66606548
e	0.4714748	Incl. 26.27125	+0.10384502	+0.74589315
P	7.23			

From 66 observations 1984 Sept. 22-1985 Feb. 19, mean residual 1".23.

Periodic Comet Shoemaker 2 (1984 XVIII)
Epoch 1984 Sept. 17.0 ET = JDE 2445960.5
T 1984 Sept. 26.69042 ET

q	1.3196982	(1950.0)	P	Q
n	0.12567828	Peri. 317.56923	+0.93811768	-0.17230646
a	3.9472615	Node 54.81887	+0.32045123	+0.76082857
e	0.6656674	Incl. 21.56444	-0.13132488	+0.62565994
P	7.84			

From 8 observations 1984 Nov. 18-Dec. 20, mean residual 1".61.

Comet Shoemaker (1985 II)
Epoch 1985 Jan. 15.0 ET = JDE 2446080.5
T 1985 Jan. 3.88788 ET

		(1950.0)	P	Q
q 1.2145104				
z +0.0239562	Peri.	229.23401	-0.01971494	-0.98644192
+/-0.0000192	Node	222.75689	+0.97429257	+0.01762252
e 0.9709050	Incl.	13.88557	+0.22442217	-0.16316184

From 65 observations 1984 Oct. 25-1985 Apr. 11, mean residual 1".43.

Periodic Comet Kojima (1985o)
Epoch 1986 Mar. 31.0 ET = JDE 2446520.5
T 1986 Apr. 4.70360 ET

		(1950.0)	P	Q
q 2.4138065				
n 0.12497972	Peri.	348.38676	-0.79424057	-0.60756644
a 3.9619564	Node	154.19585	+0.55866420	-0.73456283
e 0.3907539	Incl.	0.88250	+0.23890633	-0.30212658
P 7.89				

From 70 observations 1970-1985, mean residual 1".32.

Periodic Comet de Vico-Swift
Epoch 1987 Oct. 12.0 ET = JDE 2447080.5
T 1987 Oct. 5.40294 ET

		(1950.0)	P	Q
q 2.1532171				
n 0.13433451	Peri.	1.14212	+0.99999345	-0.00316254
a 3.7758175	Node	359.03381	+0.00189020	+0.87094099
e 0.4297349	Incl.	5.98670	+0.00308575	+0.49137744
P 7.34				

From 13 observations 1965 Aug. 4-Oct. 15, mean residual 0".6; not linked to 1894 and 1844.

(3555)* 1931 TC1 = 1972 VW = 1981 WP

Discovered 1931 Oct. 6 by K. Reinmuth at Heidelberg. The identification 1981 WP = 1972 VW was independently suggested by L. D. Schmadel.
Epoch 1987 July 24.0 ET = JDE 2447000.5

		(1950.0)	P	Q
M 139.14748				
n 0.21815393	Peri.	308.68105	+0.90147419	+0.42666950
a 2.7329227	Node	26.30064	-0.32824841	+0.78352569
e 0.2378561	Incl.	9.45463	-0.28212988	+0.45170856
P 4.52	H 12.5		G 0.25	

Residuals in seconds of arc

311006	024	5.4+	5.5+	811124	688	0.3-	1.8-	861201	887	0.8+	1.5+
311013	024	6.9-	0.5-	811124	688	1.6+	1.5-	861201	887	0.1-	0.1+
311017	024	0.8-	2.9-	811124	095	0.2+	1.1-	861208	887	1.6-	0.8+
721108	095	4.6+	1.1-	811202	688	1.2+	3.3-	861208	887	0.4+	1.9+
811004	095	5.5-	4.6+	811202	688	0.9+	2.3-				
811023	095	1.6+	0.8+	861129	887	0.1+	2.6+				

1966 CL = 1977 DX
Epoch 1987 July 24.0 ET = JDE 2447000.5

		(1950.0)	P	Q
M 241.23986				
n 0.26820124	Peri.	100.50861	-0.71498382	+0.69785617
a 2.3813809	Node	123.76241	-0.65970475	-0.65334973
e 0.1675917	Incl.	2.92112	-0.23149036	-0.29348066
P 3.67	H 14.0		G 0.25	

Residuals in seconds of arc

660213	330	1.5+	0.6-	770213	675	1.6-	0.0	770218	381	0.2+	0.6-
660214	330	0.5-	1.0-	770214	675	0.9-	0.6+	770219	381	0.2+	1.1+
660225	330	1.2-	0.9+	770218	381	1.7+	1.1-	770219	381	0.6+	0.6+

1966 TE = 1955 SA1 = 1985 TE
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 275.56017	(1950.0)	P	Q	
n 0.36127942	Peri. 313.93852	+0.81248914	+0.57905973	
a 1.9524230	Node 11.26123	-0.38472883	+0.61953462	
e 0.0674495	Incl. 20.21003	-0.43800129	+0.52996857	
P 2.73	H 15.0	G 0.25		

Residuals in seconds of arc

550918 760(92.9- 93.1-)X	661017 095	4.9- 2.9+	851011 675	0.4- 1.0-	
661011 095 5.8- 5.1+	661020 095	2.8+ 1.1-	851013 675	1.2+ 0.6+	
661013 095 7.9+ 6.9-	851011 675	0.8- 0.3+			

1986 RM = 1952 RD = 1952 SO1 = 1959 UF = 1969 QO = 1976 WW
The double designation 1952 RD = 1952 SO1 is by O. Kippes (NAZ 12, 23).
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 69.80013	(1950.0)	P	Q	
n 0.29073466	Peri. 51.78005	+0.94506952	-0.32521374	
a 2.2566880	Node 327.16113	+0.27774438	+0.85196826	
e 0.1865894	Incl. 3.47378	+0.17234168	+0.41034877	
P 3.39	H 14.0	G 0.25		

Residuals in seconds of arc

520913 760 3.3- 0.4-	690823 095	3.4+ 0.8+	860906 046	0.8- 0.8+	
520913 760(10.1+ 29.9-)X	690908 095	0.6+ 0.2+	860908 054	(5.9+ 1.9+)	
520916 839 0.7+ 0.3-	761118 381	0.4- 0.5+	860912 054	1.9+ 0.0	
520916 839 0.9+ 1.3-	761118 381	0.7+ 0.9-	861001 054	0.7- 0.5+	
591028 760(10.6- 25.9-)X	860905 046	3.1- 0.3-			

1986 TC1 = 1979 QO = 1979 QM5
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 64.88002	(1950.0)	P	Q	
n 0.29156175	Peri. 263.83105	+0.70769443	-0.70511786	
a 2.2524181	Node 140.99436	+0.67292309	+0.65352902	
e 0.1855193	Incl. 4.05142	+0.21527450	+0.27515201	
P 3.38	H 14.0	G 0.25		

Residuals in seconds of arc

790822 809 3.2- 2.9-	790826 809	1.2+ 3.7+	861011 026	0.3+ 0.8+	
790822 809 3.5+ 0.8-	861004 688	0.2- 0.1+	861105 688	0.9+ 0.4-	
790822 809 1.9- 1.7-	861004 688	1.4+ 0.3-	861105 688	0.5- 0.3-	
790823 809 0.7- 1.4-	861007 026	1.1- 0.6-			
790826 809 1.1+ 3.0+	861008 026	0.7- 0.6+			

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

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

(3556)* 1964 UO = 1981 YT1
Discovered 1964 Oct. 30 at the Purple Mountain Observatory.
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 36.92871	(1950.0)	P	Q	
n 0.17681063	Peri. 142.01486	+0.91430287	-0.37979576	
a 3.1438644	Node 240.86438	+0.32082777	+0.89118555	
e 0.2341704	Incl. 9.27180	+0.24722421	+0.24807961	
P 5.57	H 12.5	G 0.25		

Residuals in seconds of arc

641030	330	1.1+	0.3+		860905	688	0.2+	0.1+		860911	054	0.4-	0.4+
641111	330	0.4+	1.0+		860905	688	1.6-	0.1+		861003	801	1.1-	1.4-
641127	330	1.6-	1.5-		860908	801	0.9+	0.0		861005	688	0.9+	1.2+
811219	330	0.0	0.8+		860911	688	0.8-	0.0		861005	688	0.9+	0.7+
811222	330	0.0	0.7-		860911	688	1.0+	1.0-					

(3557)* 1977 QE1 = 1969 TD3 = 1985 QO

Discovered 1977 Aug. 19 by N. S. Chernykh at the Crimean Astrophysical Observatory. The identification 1977 QE1 = 1969 TD3 was independently suggested by W. Landgraf (MPC 10165).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	116.86518		(1950.0)	P	Q
n	0.12302807	Peri.	125.53839	+0.65994272	+0.75124092
a	4.0037465	Node	185.79187	-0.71885528	+0.62725846
e	0.1744958	Incl.	6.03841	-0.21845524	+0.20538720
P	8.01	H	10.8	G 0.25	

Residuals in seconds of arc

691009	095	0.7+	2.2-		850910	046	1.9+	1.9-		850918	688	1.1-	0.9+
770819	095	1.0+	1.3+		850911	046	4.5+	1.9-		850918	688	1.6-	0.1+
770820	095	2.1+	0.3-		850911	046	2.7+	1.6-		850923	054	0.7-	0.6-
770822	095	0.6-	1.9+		850911	054	1.9-	0.4+		851010	054	1.2-	1.7+
770824	095	0.2-	1.8+		850912	046	3.1+	1.4-		851012	688	0.7+	0.9+
770912	095	4.3-	0.4+		850912	046	2.0+	1.6-		851012	688	0.1+	0.2-
770919	095	0.3+	1.3+		850914	688	1.1-	0.9+		851012	054	2.0-	1.0+
850822	688	1.2-	0.0		850914	688	1.1-	0.5+		861030	801	1.0-	1.1+
850822	688	1.6-	0.2+		850915	054	2.1-	0.1+		861031	801	0.1+	0.9-
850910	046	3.9+	2.0-		850917	054	2.1-	0.5+		861128	801	0.8+	0.0

(3558)* 1978 SQ2 = 1955 QZ = 1984 BO

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

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	174.82920		(1950.0)	P	Q
n	0.25851642	Peri.	302.73088	+0.30224571	+0.95122528
a	2.4404914	Node	344.49596	-0.77876912	+0.20902866
e	0.0678492	Incl.	13.36523	-0.54969645	+0.22688649
P	3.81	H	12.5	G 0.25	

Residuals in seconds of arc

550825	760	1.6+	0.1+		781008	095	1.0+	0.4-		840201	046	1.6+	1.4-
550825	760	1.4-	0.8-		840126	046	0.1-	1.7-		840204	046	0.6+	1.4+
550825	760	1.3+	0.8-		840126	046	1.0+	0.1+		840204	046	0.3+	1.6+
780902	675	0.9+	0.1+		840129	046	0.3+	0.8-		861128	801	0.2-	0.3-
780926	095	3.4-	2.6+		840129	046	0.1+	0.7-		870103	801	0.3+	0.2-
781002	095	1.0+	0.7-		840201	046	4.1-	1.9-					

(3559)* 1980 PH = 1941 SA2 = 1984 QH1

Discovered 1980 Aug. 8 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory. The key identification 1980 PH = 1984 QH1 was found independently by Bowell (MPC 9210).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	240.65278		(1950.0)	P	Q
n	0.25157461	Peri.	70.11383	+0.91018148	-0.41146381
a	2.4851819	Node	314.14918	+0.35084500	+0.82693833
e	0.2178181	Incl.	3.80494	+0.22017597	+0.38323692
P	3.92	H	13.9	G 0.25	

Residuals in seconds of arc

410923 024	0.1+	0.1+	840925 688	0.5-	0.2-	851219 675	0.4+	0.1-
800808 688	1.9+	2.3-	840925 688	0.4+	0.3+	860118 675	0.6+	0.0
800902 688	0.8-	0.9-	840928 688	0.8+	0.6+	860118 675	0.6+	0.4-
800904 688	0.5+	0.0	840928 688	1.0-	0.8-	860120 675	0.2-	0.2-
800907 688	1.4+	0.4-	840928 688	0.1+	0.4+	860120 675	0.1-	0.1-
800907 095	1.7-	1.2+	840928 688	0.9+	1.1-	860322 675	1.5-	0.8-
800909 095	2.7-	0.8+	841026 688	1.4-	0.3-	860322 675	1.4-	0.8-
800911 095	1.5+	0.2-	841026 688	0.4-	1.9-	860408 675	0.8-	2.0-
840831 688	2.1+	1.0-	851219 675	0.6+	0.1-	860408 675	0.8-	1.9-
840831 688	1.1+	0.8+	851219 675	0.1+	0.2-			

(3560)* 1980 RZ2 = 1980 RX4 = 1933 SY = 1951 CT = 1978 JE1

Discovered 1980 Sept. 3 at the Purple Mountain Observatory. The key identification 1980 RZ2 = 1951 CT is by H. Oishi (JAM 1988). The double designation 1980 RZ2 = 1980 RX4 is by B. G. Marsden (MPC 9203).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	87.39677	(1950.0)	P	Q	
n	0.18800291	Peri.	55.27243	+0.93034253	-0.35493292
a	3.0178177	Node	325.25551	+0.26071120	+0.81689849
e	0.1136583	Incl.	9.30156	+0.25786129	+0.45464215
P	5.24	H	10.5	G 0.25	

Residuals in seconds of arc

330926 094(33.8-	9.3+)X		850819 071	0.2+	0.3-	861013 657	0.2-	0.5-
510207 012	0.3-	2.7-	850819 071	0.2+	0.0	861013 657	0.8-	0.1-
510209 711	2.1+	4.5+ Y	850820 071	1.1-	0.4-	861106 657	0.4-	2.0-
780506 095	0.9-	0.9+	850821 071	2.0-	1.2+	861206 398	0.9+	1.4+
800903 330	1.7-	0.4+	850821 071	2.4+	1.6+	861206 398	0.4+	0.8+
800908 095	2.3-	1.0+	850824 071	1.2+	0.8+			
800913 330	1.1+	2.1-	850824 071	0.8+	0.1-			

(3561)* 1983 HO = 1977 QT

Discovered 1983 Apr. 18 by N. G. Thomas at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	120.32381	(1950.0)	P	Q	
n	0.12500217	Peri.	181.69471	+0.48809280	+0.86002409
a	3.9614820	Node	117.54499	-0.79874448	+0.50884353
e	0.1310213	Incl.	9.65743	-0.35181340	+0.03790533
P	7.88	H	10.8	G 0.25	

Residuals in seconds of arc

770818 095	0.1+	1.5+	830507 688	0.8-	1.1-	861003 801	2.1+	1.9-
770819 095	0.1-	1.3-	830515 688	1.9-	0.9-	861007 801	1.4+	2.7-
830418 688	0.4-	1.3-	830515 688	0.6-	1.7-	861029 801	0.5-	2.1-
830418 688	0.1-	0.3-	840726 801	1.1+	0.7-			
830507 688	0.4+	1.3-	850917 801	0.6-	0.9-			

(3562)* 1984 AZ = A909 BM = 1952 BM2 = 1952 DZ1 = 1965 YF = 1978 NC5

Discovered 1984 Jan. 8 by J. Wagner at the Anderson Mesa Station of the Lowell Observatory. The identifications 1984 AZ = 1952 DZ1 = 1965 YF are by W. Landgraf (MPC 8901).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	324.66032	(1950.0)	P	Q	
n	0.27560048	Peri.	60.93499	-0.88972620	-0.44548443
a	2.3385648	Node	92.45567	+0.37640681	-0.83944785
e	0.1544372	Incl.	5.72452	+0.25827349	-0.31124096
P	3.58	H	13.3	G 0.25	

Residuals in seconds of arc

090127	024	0.8-	3.3+		780713	675	2.3+	0.9+	Y	861007	688	0.5+	1.2-
520130	675	0.8-	0.1+		840105	688	0.5+	0.8+		861007	688	1.5+	1.8+
520130	675	1.2-	0.1-		840105	688	1.2-	0.0		861031	801	0.7-	0.6-
520224	711	4.0+	5.9-	Y	840108	688	1.5-	0.9+		861105	688	2.2+	0.7+
651220	330	(13.9+	13.4+)		840108	688	2.1-	0.4+		861105	688	1.2-	0.7-
651224	330	(5.8+	76.1+)		840126	688	1.0+	1.9-		861202	688	1.3+	0.7-
780710	675	0.8+	5.0-	Y	840126	688	0.1-	2.7-		861202	688	0.2-	0.7-
780711	675	3.9-	1.2-	Y	840308	801	0.2+	0.2+					

(3563)* 1985 FE = 1978 VL6

Discovered 1985 Mar. 23 by A. C. Gilmore and P. M. Kilmartin at the Mount John University Observatory.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	119.95348		(1950.0)	P	Q
n	0.21058702	Peri.	346.12418	-0.27776092	+0.95303779
a	2.7980039	Node	267.64452	-0.86940860	-0.30283111
e	0.1768050	Incl.	6.93824	-0.40862887	-0.00350605
P	4.68	H	11.7	G 0.25	

Residuals in seconds of arc

781105	675	0.0	0.1-		850325	474	0.3-	0.4-		860710	801	0.2+	0.1+
781106	675	0.0	0.1+		850327	474	1.3-	0.3-		860713	474	2.5-	0.6+
781107	675	1.1-	0.6+		850327	474	0.2+	1.1-		860713	474	1.9-	0.1+
781108	675	1.0+	0.1-		850329	474	1.9+	0.3+		860802	688	1.1+	1.2+
850323	474	0.5-	0.5+		850329	474	1.9+	0.1+		860802	688	1.7+	2.1+
850323	474	0.8-	2.4+		850414	474	0.8-	0.1-		860804	801	0.7-	1.1+
850324	474	1.1+	0.2-		850414	474	1.1-	0.4+		860806	657	0.7+	1.8-
850324	474	0.3+	0.3+		850526	474	0.3-	0.6-		860806	657	1.1+	2.3-
850325	474	0.2+	0.9-		850526	474	0.7-	0.7-		861129	801	0.1-	1.4-

(3564)* 1985 TC1 = 1979 HY1 = 1979 HW2 = 1980 JU

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

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	218.64072		(1950.0)	P	Q
n	0.08179195	Peri.	192.37041	-0.81551852	+0.56904499
a	5.2560844	Node	23.29344	-0.50562892	-0.61194823
e	0.0389610	Incl.	15.46421	-0.28154740	-0.54927876
P	12.05	H	9.0	G 0.25	

Residuals in seconds of arc

790420	095	0.6-	0.5-		851107	688	0.1+	0.0		861011	092	0.4+	0.2+
790425	095	1.2-	1.9-		851107	688	0.9+	0.4+		861012	092	0.5+	0.8+
800510	095	0.9+	1.4+		860108	801	0.4-	1.0+		861029	801	0.2-	0.8+
851015	688	1.0+	0.6-		860113	801	0.3+	0.0		861029	801	0.5-	0.1+
851015	688	1.5+	0.5-		861009	092	0.5-	0.7+		861105	688	1.2-	0.7-
851020	688	0.5+	1.4-		861009	092	0.3+	1.4+		861105	688	0.6-	2.0-
851020	688	1.7-	1.4-		861011	092	0.8+	0.0		861128	801	0.6-	0.6+

1942 RJ = 1985 TS3

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

M	217.88295		(1950.0)	P	Q
n	0.29863058	Peri.	58.50077	+0.95285712	+0.28700842
a	2.2167364	Node	284.66332	-0.30126519	+0.85633177
e	0.2296100	Incl.	5.83990	-0.03609149	+0.42932747
P	3.30	H	14.0	G 0.25	

Residuals in seconds of arc

420907	062	0.1-	0.2-		421003	062	0.8+	1.0-		851011	675	0.6-	0.1+
420911	062	1.3+	0.7+		850915	675	1.5-	0.5+		851013	675	0.3-	1.4-
420914	062	1.6-	0.0		850915	675	0.6-	0.8-					

1952 QX = 1952 SC = 1952 TJ = 1974 DE1 = 1986 WE7

The triple designation 1952 QX = 1952 SC = 1952 TJ is by O. Kippes (MPC 936, 1331). The identification 1952 QX = 1974 DE1 is by L. D. Schmadel.

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

M	113.28427	(1950.0)		P	Q
n	0.29335752	Peri.	272.05571	+0.95704029	-0.27690666
a	2.2432212	Node	104.02813	+0.28854347	+0.88029222
e	0.1715887	Incl.	5.08578	+0.02857522	+0.38523800
P	3.36	H	13.5	G 0.25	

Residuals in seconds of arc

520828	760	2.1+	0.5+	520920	760	2.1-	1.4-	740216	095	0.4-	1.5-
520828	760	1.2+	0.5+	520925	760	1.0-	0.4-	861128	010	0.6+	2.0-
520916	760	0.9-	0.7+	520925	760	1.5-	0.7+	861128	010	0.6+	1.5+
520916	760	0.0	0.1-	521009	839	1.3+	1.2-	861128	010	0.4-	0.6-
520920	760	1.1+	0.5+	521009	839	0.2+	1.1-	861128	010	0.8-	1.9+

1977 VA

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	295.22489	(1950.0)		P	Q
n	0.38710624	Peri.	172.20688	+0.80670996	-0.58984450
a	1.8645868	Node	224.00507	+0.53931590	+0.75981810
e	0.3943938	Incl.	2.97780	+0.24157275	+0.27342261
P	2.55	H	19.5	G 0.25	

From 17 observations 1977 Oct. 11-1978 Jan. 12, mean residual 1".0.

1979 MA4 = 1986 TJ7

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

M	69.21217	(1950.0)		P	Q
n	0.15515873	Peri.	146.68596	+0.90532474	+0.42459551
a	3.4299366	Node	188.20859	-0.40370046	+0.85274420
e	0.1899577	Incl.	4.13062	-0.13195855	+0.30421371
P	6.35	H	13.0	G 0.25	

Residuals in seconds of arc

790623	413	0.1+	0.1-	790726	675	0.9+	0.7+	861002	049	(0.7-	4.6+)
790624	413	0.4-	0.6-	790727	675	1.0-	0.1+	861002	049	1.4+	1.4-
790625	413	0.1-	0.1+	790728	413	1.3-	1.4-	861002	049	(0.2+	2.7-)
790629	413	0.7+	0.0	790730	095	0.7-	0.6+	861011	049	0.7-	0.4+
790721	095	0.3+	1.2+	790731	095	1.7+	0.3-	861011	049	0.3-	0.4+
790724	413	0.5-	0.4-	790823	675	0.6-	1.0-				
790726	675	1.0+	0.6+	861002	049	0.5-	0.6+				

1981 VS = 1981 UV20 = 1972 XO1 = 1986 YR

The identifications 1981 VS = 1972 XO1 and 1981 VS = 1986 YR are by W. Landgraf and E. Bowell, respectively. The double designation 1981 VS = 1981 UV20 is by H. Oishi (JAM 1929) and L. D. Schmadel (MPC 10022), who found it independently.

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

M	77.91691	(1950.0)		P	Q
n	0.21274026	Peri.	204.20396	+0.63795434	-0.76700654
a	2.7790975	Node	206.31959	+0.72935266	+0.63042518
e	0.2867366	Incl.	8.90946	+0.24710111	+0.11943644
P	4.63	H	13.0	G 0.25	

Residuals in seconds of arc

721203 095	0.2+	1.8+	811031 704	0.6+	2.5+	811202 688	0.3+	4.3-
811022 095	0.6-	3.2+	811031 704	0.4+	3.4+	811202 688	0.2-	2.9-
811024 095	2.3+	4.0+	811105 688	1.0+	1.2+	811218 688	1.7-	2.0-
811025 330	1.5+	2.0-	811105 688	1.4+	1.0+	811218 688	2.0-	2.0-
811028 095	0.7-	3.1+	811120 688	0.1-	2.9-	861228 688	0.5+	1.5+
811029 330	2.8-	2.5-	811120 688	0.5-	3.4-	861228 688	0.1-	1.1+

1982 DR2 = 1979 SE12 = 1986 XY1

The identification 1982 DR2 = 1979 SE12 is by B. G. Marsden.

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

M	34.25816	(1950.0)		P	Q
n	0.17245850	Peri.	207.29305	-0.49595947	-0.82589779
a	3.1965427	Node	273.55675	+0.83761406	-0.37358636
e	0.0809617	Incl.	15.58639	+0.22896918	-0.42228673
P	5.72	H	12.5	G 0.25	

Residuals in seconds of arc

790919 033	0.1-	0.2+	820228 809	0.2+	0.0	861201 010	0.2+	0.2+
790919 033	0.3+	0.4+	820304 809	0.9+	0.1-	861201 010	0.1+	0.2+
820218 809	0.8-	0.7-	820305 809	1.0+	0.2-			
820224 809	0.5-	0.4-	861201 010	0.4+	0.5-			

1984 FN = 1986 VT6

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

M	20.02302	(1950.0)		P	Q
n	0.28376897	Peri.	81.80744	-0.57279681	-0.76525925
a	2.2934730	Node	47.48169	+0.50227132	-0.61086754
e	0.3062735	Incl.	23.48607	+0.64778649	-0.20302494
P	3.47	H	14.5	G 0.25	

Residuals in seconds of arc

840329 675	0.3+	0.2-	840331 675	0.2-	0.3+	861106 688	0.9-	0.7-
840329 675	1.1-	0.6+	840429 675	0.6+	0.1-	861106 688	0.4+	0.6+
840331 675	1.0+	0.6-	840430 675	0.6-	0.0	861228 801	0.6+	0.3+

1985 TL3 = 1985 WK = 1971 OK1 = 1979 HQ2

The double designation 1985 TL3 = 1985 WK is by F. Bowman.

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

M	5.96041	(1950.0)		P	Q
n	0.08161173	Peri.	246.52634	+0.29823961	-0.95373884
a	5.2638302	Node	186.48190	+0.95137468	+0.30023644
e	0.0635785	Incl.	19.60923	+0.07706714	-0.01550140
P	12.08	H	9.5	G 0.25	

Residuals in seconds of arc

710729 095	0.0	0.1-	850921 675	0.4-	0.5+	851116 675	0.4-	1.0-
790424 095	0.1+	1.2+	851014 675	0.2-	0.3+	851116 675	0.4+	0.3-
850921 675	0.4+	0.8+	851014 675	0.2+	1.1+			

1986 PA

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	212.69344	(1950.0)		P	Q
n	0.90374115	Peri.	296.35022	-0.07386598	-0.99451739
a	1.0595139	Node	157.51365	+0.96999303	-0.08888770
e	0.4435686	Incl.	11.15916	+0.23164052	+0.05508296
P	1.09	H	18.0	G 0.25	

From 15 observations 1986 Aug. 2-Sept. 3, mean residual 1".0.

1986 RC2
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	93.40414	(1950.0)	P	Q
n	0.36967673	Peri. 185.77776	+0.98717479	-0.15705292
a	1.9227433	Node 183.65110	+0.15846356	+0.98575114
e	0.0839418	Incl. 26.72859	+0.01937114	-0.06024181
P	2.67	H 12.0	G 0.25	

From 10 observations 1986 Sept. 13-Dec. 27, mean residaul 0".8.

1986 TM
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	26.30813	(1950.0)	P	Q
n	0.20276228	Peri. 57.16525	+0.40485049	-0.90903643
a	2.8695333	Node 10.47824	+0.54552783	+0.15346601
e	0.3256632	Incl. 32.88253	+0.73382250	+0.38742865
P	4.86	H 11.5	G 0.25	

From 8 observations 1986 Oct. 6-1987 Feb. 2, mean residual 0".8.

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ORBITAL ELEMENTS BY T. URATA, SHIMIZU, JAPAN.

The following orbital elements are copied from NOC 1616.

(3565)* 1986 YD = 1968 TG = 1977 FO1 = 1982 DF1
Discovered 1986 Dec. 22 by T. Niijima and T. Urata at Ojima. The identifications are by T. Urata.
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	52.77736	(1950.0)	P	Q
n	0.17127313	Peri. 333.32270	+0.41245304	-0.90212536
a	3.2112681	Node 92.09036	+0.85678030	+0.33688810
e	0.1142820	Incl. 7.28368	+0.30953193	+0.26958530
P	5.75	H 11.5	G 0.25	

Residuals in seconds of arc

681015	095	4.4-	0.6+	861222	887	1.1-	1.0-	870103	887	0.6-	0.7-
681023	095	4.0+	0.3+	861224	887	0.7+	0.2+	870106	888	2.1+	0.5-
770326	095	0.3+	0.9+	861224	887	1.6-	1.6+	870106	888	0.8+	0.3+
820221	688	0.6+	2.1-	861226	887	1.3-	1.8+	870124	887	0.8+	0.7+
820221	688	1.0-	0.1+	861226	887	0.7-	1.0+	870124	887	1.1-	1.0-
820304	688	2.2-	0.7-	870101	887	0.2+	0.5-	870127	887	1.6+	1.3+
820304	688	2.8+	3.0+	870101	887	1.1+	0.5+	870127	887	0.2-	0.6+
861222	887	0.5-	2.0-	870103	887	0.1-	0.6-				

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ORBITAL ELEMENTS BY H. OISHI, NIIZA, JAPAN.

The identifications are by H. Oishi unless otherwise stated.

(3566)* 1979 YA9 = 1980 BO = 1980 BM6 = 1980 CP = 1951 CO1 = 1962 CO = 1964 WM = 1973 GF1 = 1975 XT1 = 1978 PX1 = 1978 QD1 = 1984 HQ2
Discovered 1979 Dec. 24 by L. V. Zhuravleva at the Crimean Astrophysical Observatory. The identifications 1979 YA9 = 1980 BO = 1980 CP = 1951 CO1 = 1962 CO = 1964 WM = 1973 GF1 = 1978 PX1 = 1978 QD1 = 1984 HQ2 are by T. Furuta.

Epoch 1987 July 24.0 ET = JDE 2447000.5
M 23.37542 (1950.0) P Q
n 0.27166483 Peri. 194.32832 -0.54706396 -0.83625391
a 2.3610967 Node 288.85004 +0.77181923 -0.48659614
e 0.1253698 Incl. 2.26624 +0.32406188 -0.25279161
P 3.63 H 12.8 G 0.25
Residuals in seconds of arc

510207	711	0.1-	0.1-	Y	751202	095 (2.8- 18.8+)	800122	688 1.0+ 0.5-
620204	760	(9.4- 37.2+)		X	780808	095 0.2- 1.9+	800123	095 2.5- 0.1-
641127	330	1.6-	2.5+		780831	095 2.3- 2.5-	800211	688 0.2- 1.7-
730402	095	1.6+	2.0+		791224	095 1.4- 1.7-	800211	688 0.7- 3.2+
751201	095	4.3+	2.3+		800122	688 1.1- 0.3-	840427	095 2.8+ 0.2+

1969 TJ1 = 1969 VB = 1982 YO1 = 1982 YT1 = 1983 AK3

The identifications 1969 TJ1 = 1982 YO1 = 1982 YT1 = 1983 AK3 are by T. Furuta.

Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)
M 69.34816 (1950.0) P Q
n 0.23809348 Peri. 34.47101 +0.46412944 -0.88239733
a 2.5781325 Node 28.10794 +0.77127231 +0.35974312
e 0.0370514 Incl. 9.43020 +0.43557191 +0.30324881
P 4.14 H 13.0 G 0.25
Residuals in seconds of arc

691008	095	3.7-	0.7+		691104	095 2.6- 0.3+	830109	095 2.3- 0.1+
691013	095	3.1+	1.1+		821223	095 0.3+ 0.7+		
691016	095	3.1+	2.1-		821224	095 1.9+ 0.9-		

1978 PJ2 = 1978 RZ10 = 1982 JY2
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)
M 150.14733 (1950.0) P Q
n 0.17746462 Peri. 230.02698 +0.51599540 -0.85648058
a 3.1361420 Node 188.94035 +0.81042144 +0.49332872
e 0.1484631 Incl. 5.08541 +0.27742717 +0.15188083
P 5.55 H 12.6 G 0.25
Residuals in seconds of arc

780808	095	0.5-	0.4+		780910	809 0.8+ 2.2+	820516	675 0.6- 0.3-
780906	809	0.5+	1.8-		780910	809 0.4+ 0.4+	820517	675 0.2+ 0.1+
780910	809	1.1-	0.4+		820515	675 1.4+ 0.4+	820518	675 0.1- 0.8+
780910	809	0.2-	1.7-		820516	675 0.9- 1.1-		

1978 PG3 = 1978 RD3 = 1978 TY = 1974 SK2 = 1979 YN9 = 1980 BK3

The identifications are by T. Furuta.

Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)
M 172.99562 (1950.0) P Q
n 0.23944284 Peri. 258.03162 -0.71041005 +0.69839789
a 2.5684376 Node 326.15376 -0.56954588 -0.64306785
e 0.0108929 Incl. 8.97998 -0.41344292 -0.31417212
P 4.12 H 12.6 G 0.25
Residuals in seconds of arc

740920	095	0.9+	0.3-		780903	095 0.6+ 1.6+	800122	095 0.1- 1.3-
740922	095	0.0	1.0-		781002	095 0.9- 0.7+		
780808	095	0.5-	1.1-		791225	095 0.2+ 1.4+		

1986 YA = 1975 XJ2 = 1985 OU
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M 91.05887	(1950.0)		P	Q
n 0.18080030	Peri. 94.40580		+0.95636973	+0.07920409
a 3.0974489	Node 261.23174		-0.17690150	+0.92303200
e 0.1792429	Incl. 16.53157		+0.23251408	+0.37648193
P 5.45	H 10.5	G 0.25		

Residuals in seconds of arc

751202 095	0.4+	5.4-	861222 887	0.3-	1.0+	870101 887	0.5-	0.5-
850717 071	(12.3-	6.8+)	861224 887	0.1+	0.1-	870103 887	0.7-	0.3-
850718 071	0.4-	0.9+	861224 887	0.0	0.1-	870103 887	0.8-	0.1+
861220 887	0.4-	2.7+	861226 887	1.0+	2.0+	870120 887	0.7+	1.3-
861220 887	1.1-	3.2+	861226 887	0.6-	2.4+	870120 887	1.3+	2.9-
861222 887	0.8+	0.6+	870101 887	0.8+	1.1-			

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ORBITAL ELEMENTS BY S. NAKANO, SMITHSONIAN ASTROPHYSICAL OBSERVATORY.

The identifications are by S. Nakano unless otherwise stated.

(2167) Erin
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 53.83028	(1950.0)		P	Q
n 0.24274386	Peri. 274.59461		-0.96946817	-0.22373012
a 2.5450943	Node 252.50212		+0.24508455	-0.89750210
e 0.1808996	Incl. 6.04162		-0.00806394	-0.38004580
P 4.06	H 11.7	G 0.25		

From 29 observations at 6 oppositions 1954-1983, mean residual 1".3.

(2189) Zaragoza
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 51.51031	(1950.0)		P	Q
n 0.26463566	Peri. 216.53520		+0.95185397	+0.24145430
a 2.4027236	Node 128.39392		-0.19146181	+0.94943088
e 0.2251965	Incl. 13.94475		-0.23940843	+0.20070084
P 3.72	H 12.4	G 0.25		

From 28 observations at 6 oppositions 1975-1986, mean residual 1".0.

(2248) Kanda
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 336.19742	(1950.0)		P	Q
n 0.18089714	Peri. 149.94505		-0.99804962	+0.06039719
a 3.0963372	Node 33.52877		-0.06144040	-0.90564000
e 0.1214327	Incl. 1.63748		-0.01104657	-0.41972417
P 5.45	H 11.06	G 0.15		

From 61 observations at 9 oppositions 1933-1984, mean residual 1".1.

(2249) Yamamoto
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 299.78638	(1950.0)		P	Q
n 0.17358310	Peri. 110.86371		-0.19836897	+0.97938017
a 3.1827151	Node 147.61991		-0.92368190	-0.17374465
e 0.0992634	Incl. 4.09744		-0.32781321	-0.10308871
P 5.68	H 11.40	G 0.15		

From 30 observations at 11 oppositions 1942-1984, mean residual 1".4.

(2250) Stalingrad
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 169.88309		(1950.0)	P	Q
n 0.17456639	Peri.	173.07407	+0.87155388	+0.49019651
a 3.1707521	Node	157.56378	-0.45107441	+0.80970040
e 0.2011234	Incl.	1.51053	-0.19216066	+0.32263390
P 5.65	H 11.6		G 0.25	

From 27 observations at 8 oppositions 1968-1984, mean residual 1".0.

(2251) Tikhov
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 78.00912		(1950.0)	P	Q
n 0.22095753	Peri.	181.93139	+0.96749577	-0.25127354
a 2.7097559	Node	192.73119	+0.23370910	+0.93150351
e 0.1483162	Incl.	7.43643	+0.09660222	+0.26298823
P 4.46	H 11.6		G 0.25	

From 21 observations at 9 oppositions 1950-1981, mean residual 1".0.

(2252) CERGA
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 46.77902		(1950.0)	P	Q
n 0.23297984	Peri.	23.39433	+0.93061999	-0.36597846
a 2.6157154	Node	358.06828	+0.32302032	+0.82454530
e 0.0721559	Incl.	4.23615	+0.17205901	+0.43149139
P 4.23	H 12.85		G 0.15	

From 41 observations at 10 oppositions 1949-1985, mean residual 1".4.

(2271) Kiso
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 193.42251		(1950.0)	P	Q
n 0.21505228	Peri.	176.05105	+0.67210437	+0.73932439
a 2.7591375	Node	136.17219	-0.68093132	+0.63884295
e 0.0598966	Incl.	3.38835	-0.29087497	+0.21278895
P 4.58	H 11.4		G 0.25	

From 49 observations at 16 oppositions 1928-1985, mean residual 1".4.

(2294) 1977 PL1
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 141.30661		(1950.0)	P	Q
n 0.23778023	Peri.	41.99952	+0.88555710	+0.45300005
a 2.5803912	Node	290.79275	-0.45008311	+0.78192541
e 0.1194977	Incl.	6.31663	-0.11495139	+0.42823313
P 4.15	H 11.4		G 0.25	

From 38 observations at 13 oppositions 1944-1984, mean residual 1".2.

(2295) 1977 QD1
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 335.52466		(1950.0)	P	Q
n 0.19919787	Peri.	69.67080	+0.91740678	-0.39668984
a 2.9036633	Node	313.68558	+0.34681589	+0.83599747
e 0.0962072	Incl.	2.50880	+0.19515004	+0.37913772
P 4.95	H 12.2		G 0.25	

From 21 observations at 8 oppositions 1952-1985, mean residual 1".2.

(2320) 1979 QJ
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 150.80853		(1950.0)	P	Q
n 0.17473007	Peri.	251.26643	+0.96821978	-0.17803897
a 3.1687717	Node	118.65719	+0.22509804	+0.92642968
e 0.1273588	Incl.	11.54683	-0.10900146	+0.33170797
P 5.64	H	10.7	G 0.25	

From 46 observations at 9 oppositions 1942-1981, mean residual 1".3.

(2321) Luznice
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 265.38201		(1950.0)	P	Q
n 0.18945070	Peri.	4.32429	+0.64371020	-0.75907097
a 3.0024232	Node	45.64413	+0.69794489	+0.53023029
e 0.0685154	Incl.	7.81334	+0.31386319	+0.37771299
P 5.20	H	11.7	G 0.25	

From 24 observations at 8 oppositions 1957-1985, mean residual 1".4.

(2322) Kitt Peak
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 167.03298		(1950.0)	P	Q
n 0.28390965	Peri.	191.05643	+0.90326337	-0.42896044
a 2.2927108	Node	194.35877	+0.39679167	+0.84426244
e 0.0411095	Incl.	2.40430	+0.16331459	+0.32126917
P 3.47	H	12.6	G 0.25	

From 34 observations at 8 oppositions 1954-1985, mean residual 1".4.

(2323) Zverev
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 269.65494		(1950.0)	P	Q
n 0.17798295	Peri.	91.86832	-0.14107357	-0.98995980
a 3.1300441	Node	6.26233	+0.87306596	-0.12860723
e 0.1658329	Incl.	4.63908	+0.46674840	-0.05864953
P 5.54	H	11.1	G 0.25	

From 33 observations at 7 oppositions 1951-1984, mean residual 1".4.

(2324) Janice
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 23.14540		(1950.0)	P	Q
n 0.18144597	Peri.	294.92530	-0.24331647	+0.96993687
a 3.0900902	Node	320.99150	-0.88731020	-0.22442630
e 0.1708426	Incl.	0.40267	-0.39176232	-0.09410264
P 5.43	H	11.64	G 0.15	

From 39 observations at 13 oppositions 1911-1986, mean residual 1".5.

(2325) Chernykh
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 111.87279		(1950.0)	P	Q
n 0.17600294	Peri.	262.50653	+0.74001117	-0.67224736
a 3.1534753	Node	139.73058	+0.62950122	+0.68092589
e 0.1609975	Incl.	1.91579	+0.23687903	+0.29055708
P 5.60	H	12.05	G 0.15	

From 35 observations at 6 oppositions 1957-1981, mean residual 1".5.

(2345) Fucik
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 51.48273		(1950.0)	P	Q
n 0.18803302	Peri.	138.31739	+0.13103572	-0.98252505
a 3.0174955	Node	303.74654	+0.86227601	+0.17875003
e 0.0714427	Incl.	9.14752	+0.48919294	-0.05189360
P 5.24	H 10.80	G 0.25		

From 37 observations at 9 oppositions 1935-1982, mean residual 1".6.

(2393) Suzuki
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 245.52069		(1950.0)	P	Q
n 0.17056537	Peri.	102.60187	+0.84467985	+0.52000015
a 3.2201454	Node	226.23031	-0.53343211	+0.79811377
e 0.1985403	Incl.	10.12507	-0.04434108	+0.30432590
P 5.78	H 10.6	G 0.25		

From 32 observations at 10 oppositions 1898-1984, mean residual 2".4.

(3567)* 1930 VD = 1930 XO = 1930 XQ = 1967 SB = 1972 VN1 = 1972 XC2 = 1972 YD1 = 1978 EP4

Discovered 1930 Nov. 15 by E. Delporte at Uccle. The double designation 1930 XO = 1930 XQ was published in AN 251, 129. The double designation 1930 VD = 1930 XO is by E. Bowell and C. M. Bardwell, who found it independently (MPC 5313).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 67.69366		(1950.0)	P	Q
n 0.21175779	Peri.	137.15917	+0.66083995	-0.74112307
a 2.7876813	Node	271.11041	+0.65253586	+0.64532193
e 0.3104367	Incl.	6.80315	+0.37079310	+0.18519231
P 4.65	H 12.6	G 0.25		

Residuals in seconds of arc

301115	012	9.4-	0.1+	Y	301214	690	4.3+	1.9+	721230	095	1.4+	1.4-
301116	012	(20.7+ | 2.4-)Y		301216	690	3.1+	0.3+	780306	095	1.2-	0.9-
301117	012	(25.4-	11.5-)Y		670930	095	(14.9+	6.8+)	861106	657	0.9-	1.6-
301121	389	1.0+	2.4+		671004	095	0.2-	0.6-	861106	657	0.6-	1.5-
301124	012	(20.8+ | 3.8-)Y		671006	095	2.2+	2.6-	861209	657	0.4-	2.1-
301130	094	(24.9+ | 59.7-)X		721109	095	0.7-	6.6+	861229	398	0.4+	0.2+
301213	690	1.6+	2.9-		721201	095	(9.1- | 2.7+)	861229	398	0.4+	0.4-

(3568)* 1936 UB = 1975 WZ1

Discovered 1936 Oct. 17 by M. Laugier at Nice. The 1980 and 1985 observations were identified by R. M. West.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 77.01831		(1950.0)	P	Q
n 0.17797422	Peri.	281.17973	+0.88634319	+0.36693738
a 3.1301464	Node	57.87115	-0.17045445	+0.82565209
e 0.2488005	Incl.	19.47986	-0.43051251	+0.42855056
P 5.54	H 12.3	G 0.25		

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

361016	020	(0.06- | 0.06+)		361108	020	3.2-	1.3-	801009	809	1.1+	0.6+
361017	020	(7.1+ | 12.3+)		361108	020	5.1+	2.7-	850422	809	0.9-	0.8-
361021	020	0.6-	3.0-		361110	020	(71.2- | 24.4-)X	861130	801	1.0+	2.0+
361021	020	2.1+	3.6+		361117	020	3.8+	2.0+	861202	688	1.3-	1.4+
361024	020	1.1-	5.5-		361117	020	(14.7+ | 3.5-)	861202	688	0.9-	1.7+
361024	020	1.8-	5.9+		751124	033	2.8-	1.2+	861229	801	1.5-	3.0+
361025	020	2.2+	5.6-		751125	033	3.2-	1.1+				
361025	020	3.6+	5.3-		751125	033	2.3-	1.5+				

(3569)* 1938 DN1 = 1955 GB = 1984 DJ3

Discovered 1938 Feb. 20 by K. Reinmuth at Heidelberg. The 1953 and 1982 observations were identified by R. M. West.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 340.88812		(1950.0)	P	Q
n 0.23647087	Peri.	315.21381	-0.45541311	-0.88691843
a 2.5899076	Node	161.44642	+0.86963380	-0.46176139
e 0.1241895	Incl.	14.05903	+0.19061993	-0.01233326
P 4.17	H	12.9	G 0.25	

Residuals in seconds of arc

380220	024	(3.2-	12.7-)	550401	760	0.7-	0.0	840227	095	0.2+	1.3-
380223	024	0.7-	3.5+	550401	760	0.1-	1.4-	861007	688	1.8+	2.0+
380303	024	(8.9+	0.2+)	550416	760	2.1-	3.2+	861007	688	0.2+	1.3+
380305	024	4.4+	0.3-	550416	760	0.3+	1.7-	861008	801	0.5-	0.3+
380309	024	1.0-	1.0-	821013	413	(4.7-	5.8-)	861205	801	1.7+	0.3-
531231	675	1.6-	0.6-	821015	413	1.9-	2.4-				

(3570)* 1979 XO = 1931 UK = 1970 AA1 = 1971 GA = 1977 LS = 1978 SZ = 1982 KF1 = 1984 WC1

Discovered 1979 Dec. 14 at the Purple Mountain Observatory.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 291.38246		(1950.0)	P	Q
n 0.18755613	Peri.	219.56151	+0.55390127	+0.80924464
a 3.0226084	Node	84.92915	-0.70536199	+0.58101736
e 0.0832090	Incl.	11.33325	-0.44233228	+0.08684437
P 5.26	H	11.5	G 0.25	

Residuals in seconds of arc

311017	690	0.8+	0.2-	780927	095	0.3-	0.0	841127	046	0.0	0.3-
311018	690	0.7+	1.8-	781007	095	0.3+	0.2+	841127	046	1.1+	1.0-
700105	095	0.3-	0.5-	791117	095	3.7-	0.4-	841128	046	1.8+	1.0-
710415	026	0.6+	1.1-	791214	330	0.5-	0.6-	841128	046	0.3-	1.2-
710429	026	1.2-	1.4-	791218	095	0.8+	3.2+	841130	046	2.2+	1.9-
770612	675	0.9-	0.8-	820524	675	0.5-	2.8-	841201	046	0.1-	1.0-
770613	675	1.5-	0.7-	820527	675	0.6+	0.8-				

1971 BK = 1971 FM = 1982 DY2 = 1982 DD6

The identification 1971 BK = 1982 DY2 was suggested by E. Bowell. The double designations 1971 BK = 1971 FM and 1982 DY2 = 1982 DD6 are by G. R. Kastel' (MPC 3705) and by S. Nakano (MPC 10752), respectively.

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

M 196.54769		(1950.0)	P	Q
n 0.26983359	Peri.	323.35179	-0.56163938	-0.82684534
a 2.3717719	Node	160.76166	+0.77893224	-0.54055162
e 0.1775825	Incl.	5.18882	+0.27897271	-0.15534070
P 3.65	H	13.0	G 0.25	

Residuals in seconds of arc

710122	095	0.3-	1.8+	820221	704	1.7+	2.1+	820227	010	1.2-	1.1-
710128	095	0.1+	2.3-	820222	010	0.7-	0.5-				
710319	095	(47.5+	6.5-)	820222	704	0.5+	0.0				

1971 SX1 = 1972 YQ = 1973 AY = 1979 FT3 = 1980 NM = 1981 TN3

The double designation 1972 YQ = 1973 AY is by C. M. Bardwell (MPC 6840). The identification 1971 SX1 = 1972 YM (NOC 1034) is invalid.

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

M 59.14954		(1950.0)	P	Q
n 0.19551227	Peri.	195.25856	+0.99511379	-0.09854451
a 2.9400467	Node	170.39056	+0.09399132	+0.92648053
e 0.0325567	Incl.	2.10317	+0.03023545	+0.36321179
P 5.04	H	12.0	G 0.25	

Residuals in seconds of arc

710923	095	0.3-	0.6+		800711	805	0.7-	1.2-		800713	805	0.2-	0.6-
711010	095	0.2+	2.0-		800712	805	1.6+	0.2+		811007	095	(8.0-	3.3-)
711011	095	0.0	1.2-		800712	805	0.3+	1.4+		811022	095	0.3-	1.2+
721229	095	2.5+	0.5+		800712	805	0.3+	1.2+		811024	095	0.5-	0.1+
730101	095	1.2-	1.1-		800712	805	0.0	0.1-					
790331	095	1.6-	0.2-		800713	805	0.1+	1.4-					

1976 QE1 = 1968 DA1 = 1982 QW1

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

M	3.65266		(1950.0)	P	Q
n	0.15751253	Peri.	243.68690	-0.59950172	+0.79821759
a	3.3956807	Node	348.88885	-0.58158853	-0.48484332
e	0.1958625	Incl.	17.73579	-0.54986587	-0.35745718
P	6.26	H	11.0	G 0.25	

Residuals in seconds of arc

680228	095	1.3+	1.6+		820817	809	0.1-	0.1+		820821	809	0.7+	0.0
760826	095	3.1-	2.2-		820819	809	0.9+	0.1+		820822	809	0.3+	0.4-
760924	095	0.2+	1.5+		820819	809	0.2+	0.0		820822	809	1.1+	0.0
760928	095	0.9+	2.9+		820819	809	0.3+	0.3+					
820817	809	1.7-	0.6-		820821	809	1.2-	0.2-					

1978 QX2 = 1979 WR2 = 1982 GF = 1985 XM

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

M	316.14724		(1950.0)	P	Q
n	0.17057013	Peri.	224.75915	-0.77339107	+0.63379670
a	3.2200918	Node	354.52513	-0.53687162	-0.66571656
e	0.0867238	Incl.	7.80772	-0.33709809	-0.39385683
P	5.78	H	11.5	G 0.25	

Residuals in seconds of arc

780831	095	1.1+	0.3+		820414	046	0.9-	0.5+		820420	704	0.9-	1.1+
780905	095	1.1+	1.1+		820415	046	1.7+	0.3-		851209	046	0.7+	0.3+
780927	095	1.5-	2.8-		820415	046	0.7-	0.8-		851209	046	0.7-	0.5-
791116	095	0.6+	1.4-		820419	046	1.1-	1.1-					
820414	046	2.0+	0.5-		820419	046	1.3-	1.2-					

1978 SJ3 = 1971 SM1 = 1981 KF

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

M	203.66763		(1950.0)	P	Q
n	0.27799494	Peri.	145.02646	+0.78238566	+0.62270407
a	2.3251215	Node	176.40551	-0.60296974	+0.76163078
e	0.1485362	Incl.	9.73223	-0.15588511	+0.17932704
P	3.55	H	13.0	G 0.25	

Residuals in seconds of arc

710916	095	1.0+	2.9+		781005	095	0.6-	2.2+		810601	046	1.0-	0.3+
710923	095	0.5-	5.0-		781008	095	0.7+	0.4+		810601	046	1.5-	0.5-
780926	095	0.3-	1.3-		810531	046	2.2+	1.0-		810602	046	1.4-	0.1-
781002	095	0.2-	0.6+		810531	046	2.9+	0.2-		810602	046	1.2-	1.1+

1978 SL5 = 1968 UA1 = 1979 YD8 = 1984 YD4 = 1986 EK2

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

M	1.62365		(1950.0)	P	Q
n	0.19139112	Peri.	300.35292	+0.03679883	+0.99927141
a	2.9821013	Node	331.75061	-0.90931532	+0.02928095
e	0.0316831	Incl.	1.22561	-0.41447737	+0.02448000
P	5.15	H	12.5	G 0.25	

Residuals in seconds of arc

681022 095	1.5-	1.2-	791223 095	3.9+	3.3+	860314 071	1.2-	1.9-
780927 095	0.5-	0.1+	841227 095	1.4-	0.6-	860314 071	0.7-	1.2-
781003 095	0.7+	1.7-	841229 095	2.1-	1.6-			
781007 095	2.3+	0.2-	841231 095	0.7+	0.5+			

1979 SV9 = A923 RC = 1965 UR1 = 1986 TG5

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

M 129.35563		(1950.0)	P	Q	
n 0.28231879	Peri.	126.03887	+0.76301130	+0.64600500	
a 2.3013202	Node	193.76574	-0.61894681	+0.72030787	
e 0.1367945	Incl.	5.34479	-0.18632925	+0.25265414	
P 3.49	H	13.5	G 0.25		

Residuals in seconds of arc

230911 024	1.1-	0.2-	791016 095	1.8+	4.4+	861010 046	0.1-	0.7-
651019 330	1.6+	4.4+	791111 095	0.6-	0.2+	861010 046	0.2+	1.1-
790922 095	1.4-	1.9+	861001 010	0.4-	4.4-			
790928 095	1.8-	0.6+	861001 010	1.1+	5.2-			

1985 VE1 = 1974 HO2 = 1976 YV2 = 1980 RK4

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

M 170.98123		(1950.0)	P	Q	
n 0.20421014	Peri.	190.29923	+0.92544057	+0.37804802	
a 2.8559595	Node	147.45173	-0.34418121	+0.86668967	
e 0.0735946	Incl.	2.69398	-0.15842677	+0.32546693	
P 4.83	H	13.0	G 0.25		

Residuals in seconds of arc

740424 805	0.5+	1.3+	851020 688	0.8-	0.1-	851024 049	2.2-	2.5+
740425 805	0.3+	2.6+	851020 688	0.7-	2.3-	851024 049	(3.0-	5.7+)
761216 095	0.0	1.9+	851020 049	3.1+	3.8+	851024 049	(4.9+	3.8+)
800907 095	0.2+	0.8-	851020 049	(5.9+	5.1+)	851024 049	(4.2+	5.5+)
851016 049	(6.5+	0.2+)	851020 049	0.8-	1.1+	851107 688	0.8-	1.2-
851016 049	2.4+	2.5+	851020 049	1.1-	1.0-	851107 688	0.3-	2.6-

1986 QN = 1978 QA3 = 1982 QH1

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

M 34.08853		(1950.0)	P	Q	
n 0.24123832	Peri.	239.11164	+0.82794190	-0.55971589	
a 2.5556775	Node	154.87302	+0.53858971	+0.77614246	
e 0.2451373	Incl.	4.73829	+0.15631164	+0.29038079	
P 4.09	H	14.0	G 0.25		

Residuals in seconds of arc

780831 095	1.3+	2.1-	860826 809	0.3-	0.6+	860831 809	1.5+	0.1+
780905 095	1.5-	4.2+	860827 809	0.8-	0.2-	860831 809	2.0+	0.3+
820819 675	0.7+	1.9-	860827 809	0.6-	0.0	860901 809	0.6+	0.7+
820819 675	0.2-	1.8-	860827 809	0.1-	0.2+	860901 809	0.3+	0.6+
820913 675	0.2-	1.0-	860828 809	0.7-	0.0	860901 809	0.1+	0.6+
820913 675	0.3+	0.8-	860828 809	0.4-	0.3+	860902 809	0.4-	0.1-
860825 809	1.5-	0.2+	860828 809	0.2+	0.3+	860902 809	0.3-	0.1-
860825 809	0.9-	0.5+	860829 809	0.0	1.2-	860902 809	0.2+	0.4-
860825 809	0.7-	0.6+	860829 809	0.5+	0.6-	860903 809	0.5+	0.5+
860826 809	0.4-	0.5+	860829 809	0.9+	0.5-	860903 809	0.2+	0.8+
860826 809	0.6-	0.4+	860831 809	0.2+	0.3-	860903 809	0.2+	0.1+

1986 TP6 = 1951 AD = 1951 CN

The double designation 1951 AD = 1951 CC (MPC 640) is invalid.

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

M 268.96589		(1950.0)	P	Q
n 0.18622334	Peri.	253.37271	-0.96531244	+0.21849458
a 3.0370189	Node	299.05033	-0.12928366	-0.87562431
e 0.0695027	Incl.	9.41077	-0.22684274	-0.43074609
P 5.29	H	11.5	G 0.25	

Residuals in seconds of arc

510109 024	0.7-	0.1+	861005 092	0.3+	0.6-	861010 092	0.2+	0.1+
510210 760(58.3-		6.3+)	861009 092	0.5+	0.3+	861010 092	0.3-	0.2-
510210 760	0.7+	0.1-	861009 092	0.0	0.7-	861011 092	0.5+	1.1+
861005 092	0.4-	0.1-	861009 092	0.7-	0.3+	861012 092	0.1-	0.2-

1986 WL1 = 1984 DL1

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

M 57.86026		(1950.0)	P	Q
n 0.28454607	Peri.	39.95311	+0.17773375	-0.98140534
a 2.2892955	Node	39.96249	+0.87154316	+0.12277647
e 0.0557461	Incl.	6.48003	+0.45697181	+0.14754490
P 3.46	H	13.5	G 0.25	

Residuals in seconds of arc

840226 095	0.0	2.0+	861129 046	2.1-	1.1+	861207 046	4.1-	0.8+
840305 095	0.1+	1.9-	861129 046	1.8-	0.0	861207 046	1.0-	0.6+
861125 046	3.6-	0.6-	861204 046	4.5+	1.1-	861209 046	0.9+	0.4-
861125 046	2.2-	0.2+	861204 046	4.7+	0.5+	861209 046	4.7+	0.9-

1986 XF = 1969 UF2 = 1973 SS3 = 1973 SM6

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

M 76.69416		(1950.0)	P	Q
n 0.23452325	Peri.	15.29690	+0.76511203	-0.64351138
a 2.6042319	Node	24.80005	+0.58501787	+0.68027283
e 0.1553714	Incl.	3.04566	+0.26899380	+0.35088742
P 4.20	H	13.5	G 0.25	

Residuals in seconds of arc

691018 095	1.7-	0.1-	861129 046	0.6-	0.0	861204 010	2.4+	0.5-
691105 095	2.0+	0.7-	861202 688	1.9+	5.9+	861205 010	5.5+	2.4-
730925 095	0.4-	1.0+	861202 688	3.1+	0.2+	861206 054	1.3+	0.8-
730928 095	0.2+	0.7-	861202 688	2.6+	2.8+	861207 046	4.3-	0.3+
861125 046	0.0	0.7-	861202 688	2.5-	1.0+	861207 046	4.2-	0.3-
861125 046	1.5-	1.3-	861204 046	1.0+	1.8-	861209 046	3.2-	0.8-
861129 046	1.4-	1.1+	861204 046	1.3+	2.0-	861209 046	1.6-	0.2-

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NEW NAMES OF MINOR PLANETS.

(2413) van de Hulst = 6816 P-L

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

Named in honor of Henk C. van de Hulst, husband of Wil van de Hulst (see 2412) and astrophysicist at the Leiden Observatory. A leader in the development of radioastronomy in the Netherlands, van de Hulst predicted the instellar hydrogen 21-cm line. He has made contributions to the theory of light scattering by small particles, about which topic he wrote two books. He is active in promoting international cooperation in space research.

(2858) Carlosporter = 1975 XB
Discovered 1975 Dec. 1 by H. Wroblewski at Cerro El Roble.
Named in memory of Carlos Porter (1867-1942), Chilean zoologist, director of the Valparaiso museum and a professor at Chilean and foreign universities, honored by the Chilean Academy of Natural Sciences and in several other countries. From 1911 to 1928 he was in charge of the invertebrate section of the Museum of Natural History in Santiago.

(3162) Nostalgia = 1980 YH
Discovered 1980 Dec. 16 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Named in remembrance of good things that are no more. Name proposed by the discoverer, following a suggestion by J. Meeus.

(3236) Strand = 1982 BH1
Discovered 1982 Jan. 24 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Named in honor of Kaj Aa. Strand, former Scientific Director of the U.S. Naval Observatory. Strand is known for his advances in the photographic astrometry of double stars. He was responsible for the construction and initial programs of the Naval Observatory's 1.55-meter astrometric reflector and its associated semi-automatic measuring machine. These led to the determination of stellar trigonometric parallaxes having an order-of-magnitude greater accuracy than heretofore possible, thus expanding the realm of the nearest stars. Name suggested by and citation prepared by R. S. Harrington.

(3267) Glo = 1981 AA
Discovered 1981 Jan. 3 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Named in honor of Eleanor F. ("Glo") Helin, planetary scientist at the Jet Propulsion Laboratory, in appreciation of her extraordinary contributions to the discovery of near-earth minor planets. Her finding of 1976 AA (= 2062 Aten) heralded the recognition of a new class of planet-crossers, and her initiation of the Palomar planet-crossing asteroid survey has resulted in increased worldwide interest in the observation of minor planets. Helin's education and experience as a geologist and in the analysis of meteorites has provided a unique background for her interest in asteroids and comets. Citation prepared by R. Helin.

(3412) Kafka = 1983 AU2
Discovered 1983 Jan. 10 by R. Kirk and D. Rudy at Palomar.
Named in memory of the Bohemian writer Franz Kafka (1883-1924). In his novels and short stories (of which "The Castle", "The Trial" and "Metamorphosis" are best known), Kafka depicted the fatalistic struggles of ordinary individuals to cope with a world turned surreal and incomprehensibly hostile.

(3416) Dorrit = 1931 VP
Discovered 1931 Nov. 8 by K. Reinmuth at Heidelberg.
Named in honor of Dorrit Hoffleit, renowned authority on variable stars, director of the Maria Mitchell Observatory from 1957 to 1978, research astronomer at Harvard and later Yale. The summer research internship program she conducted at the M.M.O. provided training for more than 100 female students, many of whom subsequently became well-known astronomers. Her research at Harvard also included stellar spectra and meteors. Author of the third and fourth editions (1964, 1982) of the Yale Bright Star Catalogue, she was also in charge of the Yale astrometric zone work for several

years. Name proposed by B. G. Marsden, who found the identifications involving this planet. Citation prepared in collaboration with J. A. Mattei.

(3472) Upgren = 1981 EJ10

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

Named in honor of Arthur R. Upgren, Jr., director of Van Vleck Observatory and president of IAU Commission 24. He has contributed to our knowledge of galactic structure by the determination of parallaxes and proper motions of both nearby stars and the halo population. Name suggested by J. Caruso and K. Gloria.

(3495) Colchagua = 1981 NU

Discovered 1981 July 2 by L. E. Gonzalez at the Cerro El Roble Station of the University of Chile.

Named for the Provincia de Colchagua, situated in the central part of Chile. It is the land of the "huasos", cheerful cattlemen and agriculturists. The province includes the city of San Fernando, birthplace of the discoverer.

(3496) Arieso = 1977 RC

Discovered 1977 Sept. 5 by H. E. Schuster at the European Southern Observatory.

This Pallas-type object was the first to be discovered during the 1977 survey of High-Inclination Minor Planets jointly conducted by the Astronomisches Rechen-Institut and the European Southern Observatory. The name, consisting of the acronyms of the two institutions involved, was suggested by the astronomers involved, L. D. Schmadel, J. Schubart, H.-E. Schuster and R. M. West.

(3499) Hoppe = 1981 VW1

Discovered 1981 Nov. 3 by F. Borngen and K. Kirsch at Tautenburg.

Named in honor of Johannes Hoppe (1907-), appointed professor of astronomy at the University of Jena in 1959. He studied the physical processes involved with the passage of meteors through the earth's atmosphere, in particular the differentiation relative to height, the real deceleration and mass loss, vaporization and fragmentation, with conclusions concerning the size and consistency of meteoroidal bodies. He is also the author of the monograph "Planeten-Sterne-Nebel" and of the chapter "Planetensystem" in the "Grundriss der Astrophysik" of Graff-Lambrecht.

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EPHEMERIDES.

Comet Terasako (1987d) Elements MPC 11614

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1987 01 25		23 20.78	-30 10.0	1.316	0.865	41.1	48.4	7.0
1987 02 04		00 25.74	-24 01.7					
1987 02 14		01 14.18	-17 51.9	1.614	1.239	50.1	37.7	9.0
1987 02 24		01 51.43	-12 27.4					
1987 03 06		02 21.42	-07 56.0	2.042	1.586	49.4	28.3	10.6
1987 03 16		02 46.61	-04 12.6					
1987 03 26		03 08.53	-01 08.7	2.510	1.910	43.3	21.0	11.8
1987 04 05		03 28.13	+01 23.0					
1987 04 15		03 46.00	+03 28.3	2.967	2.215	34.6	14.9	12.8

Periodic Comet Wiseman-Skiff (1987b) Elements MPC 11614

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1987	01 25	07 39.74	-01 40.6	0.694	1.644	156.3	13.9	14.9
1987	02 04	07 34.01	-03 19.3					
1987	02 14	07 31.80	-04 07.1	0.844	1.734	142.3	20.4	15.5
1987	02 24	07 33.24	-04 19.7					
1987	03 06	07 38.04	-04 11.1	1.054	1.839	128.0	25.2	16.3
1987	03 16	07 45.72	-03 52.9					
1987	03 26	07 55.69	-03 33.0	1.310	1.954	115.0	27.5	17.0
1987	04 05	08 07.46	-03 16.5					
1987	04 15	08 20.59	-03 06.9	1.601	2.075	103.3	28.1	17.7
1987	04 25	08 34.71	-03 06.0					
1987	05 05	08 49.53	-03 14.6	1.917	2.200	92.2	27.3	18.3
1987	05 15	09 04.83	-03 32.8					
1987	05 25	09 20.42	-04 00.4	2.249	2.327	81.6	25.5	18.9
1987	06 04	09 36.17	-04 36.8					
1987	06 14	09 51.97	-05 21.4	2.588	2.455	71.1	23.0	19.5

(3554) 1986 EB a,e,i = 0.97, 0.28, 23 Elements MPC 11618

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	01 25	14 16.38	+12 22.7	0.568	1.187	96.1	55.5	17.2
1987	01 30	14 18.67	+11 04.5					
1987	02 04	14 19.72	+09 42.9	0.504	1.210	103.8	52.3	16.9
1987	02 09	14 19.30	+08 16.2					
1987	02 14	14 17.09	+06 42.0	0.437	1.227	113.2	47.7	16.5
1987	02 19	14 12.68	+04 57.6					
1987	02 24	14 05.54	+02 59.9	0.370	1.239	124.8	41.0	15.9
1987	03 01	13 55.03	+00 45.1					
1987	03 06	13 40.48	-01 50.3	0.311	1.245	139.7	31.0	15.3
1987	03 11	13 21.30	-04 48.0					
1987	03 16	12 57.21	-08 05.0	0.267	1.246	158.0	17.4	14.6
1987	03 21	12 28.59	-11 30.9					
1987	03 26	11 56.83	-14 48.1	0.251	1.242	166.1	11.1	14.3
1987	03 31	11 24.32	-17 38.1					
1987	04 05	10 53.69	-19 50.1	0.265	1.233	147.9	25.6	14.8
1987	04 10	10 26.92	-21 24.7					
1987	04 15	10 04.84	-22 29.6	0.303	1.218	129.5	39.5	15.4
1987	04 20	09 47.42	-23 14.1					
1987	04 25	09 34.16	-23 46.4	0.352	1.198	115.1	49.5	16.0
1987	04 30	09 24.43	-24 12.7					
1987	05 05	09 17.55	-24 37.1	0.403	1.173	104.0	56.6	16.4
1987	05 10	09 12.93	-25 02.2					
1987	05 15	09 10.07	-25 29.0	0.450	1.143	95.1	61.8	16.8
1987	05 20	09 08.58	-25 58.1					
1987	05 25	09 08.16	-26 29.6	0.490	1.107	87.7	66.0	17.0
1987	05 30	09 08.57	-27 03.8					
1987	06 04	09 09.57	-27 40.3	0.519	1.068	81.3	69.9	17.2
1987	06 09	09 10.96	-28 18.7					
1987	06 14	09 12.55	-28 58.1	0.535	1.024	75.6	73.9	17.3
1987	06 19	09 14.19	-29 37.0					
1987	06 24	09 15.74	-30 14.4	0.537	0.977	70.3	78.5	17.3
1987	06 29	09 17.04	-30 48.3					
1987	07 04	09 17.89	-31 16.1	0.523	0.927	65.1	84.2	17.4
1987	07 09	09 18.10	-31 34.1					
1987	07 14	09 17.46	-31 37.1	0.494	0.876	59.5	91.5	17.4
1987	07 19	09 15.83	-31 18.1					
1987	07 24	09 13.06	-30 28.1	0.451	0.826	52.9	101.3	17.5
1987	07 29	09 09.11	-28 55.0					
1987	08 03	09 04.06	-26 23.7	0.402	0.780	44.4	114.5	18.0

Comet Levy (1987a) Elements MPC 11614

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1987 01 25	16 59.26	+04 15.4	1.355	1.143	55.8	45.4	11.7
1987 02 04	16 45.87	+00 43.2					
1987 02 14	16 27.28	-03 15.6	1.143	1.364	79.3	45.3	12.1
1987 02 24	16 00.37	-07 51.0					
1987 03 06	15 21.47	-13 01.5	0.939	1.609	112.9	34.6	12.4
1987 03 16	14 28.85	-18 10.3					
1987 03 26	13 27.59	-21 58.9	0.916	1.862	153.2	14.0	13.0
1987 04 05	12 29.82	-23 36.4					
1987 04 15	11 45.12	-23 34.0	1.178	2.114	151.4	13.1	14.1
1987 04 25	11 14.73	-22 50.2					
1987 05 05	10 55.67	-22 02.2	1.626	2.363	125.9	20.2	15.3
1987 05 15	10 44.62	-21 25.4					
1987 05 25	10 39.04	-21 03.6	2.150	2.608	105.3	22.0	16.3
1987 06 04	10 37.27	-20 57.1					
1987 06 14	10 38.14	-21 04.5	2.693	2.848	88.2	20.9	17.2
1987 06 24	10 40.90	-21 24.2					
1987 07 04	10 45.03	-21 54.8	3.220	3.082	73.1	18.4	17.9
1987 07 14	10 50.13	-22 35.2					
1987 07 24	10 55.94	-23 24.2	3.708	3.312	59.6	15.3	18.5

Comet Hartley (1985 XIV) Elements MPC 11510

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1987 02 14	16 58.42	-58 16.4	6.056	5.778	69.1	9.2	20.5
1987 02 24	17 01.69	-58 26.7					
1987 03 06	17 02.91	-58 37.9	5.899	5.891	84.7	9.7	20.6
1987 03 16	17 01.91	-58 48.3					
1987 03 26	16 58.61	-58 56.1	5.730	6.005	101.3	9.4	20.6
1987 04 05	16 52.99	-58 58.7					
1987 04 15	16 45.22	-58 53.3	5.582	6.120	118.2	8.3	20.6
1987 04 25	16 35.64	-58 37.0					
1987 05 05	16 24.74	-58 07.4	5.496	6.236	133.8	6.7	20.6
1987 05 15	16 13.21	-57 23.1					
1987 05 25	16 01.78	-56 24.0	5.503	6.353	144.3	5.3	20.7
1987 06 04	15 51.12	-55 11.5					
1987 06 14	15 41.76	-53 48.4	5.624	6.471	143.8	5.3	20.9
1987 06 24	15 34.04	-52 18.2					
1987 07 04	15 28.11	-50 44.7	5.858	6.590	132.6	6.5	21.0
1987 07 14	15 24.01	-49 11.3					
1987 07 24	15 21.63	-47 41.1	6.189	6.709	116.8	7.8	21.2
1987 08 03	15 20.83	-46 16.3					
1987 08 13	15 21.44	-44 58.2	6.584	6.828	99.7	8.4	21.4
1987 08 23	15 23.28	-43 47.7					
1987 09 02	15 26.18	-42 45.1	7.009	6.948	82.4	8.3	21.6
1987 09 12	15 29.98	-41 50.3					
1987 09 22	15 34.52	-41 02.8	7.429	7.069	65.3	7.4	21.8

Periodic Comet Lovas 2 (1986p) Elements MPC 11613

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1987 03 06	03 56.05	+20 51.4	2.365	2.347	76.9	24.3	18.6
1987 03 16	04 13.10	+21 32.8					
1987 03 26	04 30.32	+22 08.5	2.731	2.481	65.0	21.4	19.1
1987 04 05	04 47.66	+22 38.0					
1987 04 15	05 05.01	+23 00.9	3.084	2.613	53.4	17.9	19.6
1987 04 25	05 22.31	+23 16.9					
1987 05 05	05 39.51	+23 26.0	3.410	2.743	41.8	14.2	20.0
1987 05 15	05 56.52	+23 28.4					
1987 05 25	06 13.30	+23 24.0	3.699	2.870	30.3	10.3	20.4

Periodic Comet Urata-Niijima (1986o) Elements MPC 11614

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1987	03 06	04 50.57	+53 07.4	1.464	1.813	93.2	33.1	19.4
1987	03 16	05 25.61	+52 08.3					
1987	03 26	05 59.06	+50 47.5	1.729	1.936	86.0	30.9	20.1
1987	04 05	06 30.58	+49 09.1					
1987	04 15	07 00.01	+47 17.5	2.019	2.065	78.3	28.4	20.7
1987	04 25	07 27.39	+45 16.1					
1987	05 05	07 52.86	+43 08.0	2.328	2.197	70.0	25.5	21.3

Comet Nishikawa-Takamizawa-Tago (1987c) Elements MPC 11614

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1987	04 05	22 55.03	-10 44.3	1.594	0.938	33.4	36.0	7.2
1987	04 10	22 49.94	-12 03.3					
1987	04 15	22 44.11	-13 32.7	1.393	1.017	46.8	46.0	7.3
1987	04 20	22 37.15	-15 17.1					
1987	04 25	22 28.48	-17 22.6	1.160	1.117	61.6	52.4	7.3
1987	04 30	22 17.13	-19 57.7					
1987	05 05	22 01.56	-23 14.1	0.915	1.230	79.3	53.7	7.2
1987	05 10	21 39.13	-27 25.3					
1987	05 15	21 05.28	-32 40.1	0.692	1.352	103.5	46.6	7.0
1987	05 20	20 12.73	-38 36.7					
1987	05 25	18 54.59	-43 28.5	0.562	1.478	137.8	27.4	6.9
1987	05 30	17 19.91	-44 19.3					
1987	06 04	15 57.40	-40 44.8	0.618	1.607	159.1	13.0	7.5
1987	06 09	15 00.98	-35 29.9					
1987	06 14	14 25.25	-30 38.7	0.834	1.737	139.6	22.3	8.5
1987	06 19	14 02.46	-26 45.6					
1987	06 24	13 47.57	-23 47.0	1.125	1.867	121.3	27.7	9.5
1987	06 29	13 37.68	-21 31.6					
1987	07 04	13 31.10	-19 48.7	1.445	1.997	107.1	29.1	10.3
1987	07 09	13 26.79	-18 30.2					
1987	07 14	13 24.12	-17 30.2	1.774	2.125	95.4	28.4	11.0
1987	07 19	13 22.64	-16 44.4					
1987	07 24	13 22.09	-16 09.6	2.102	2.253	85.0	26.7	11.6
1987	07 29	13 22.24	-15 43.7					
1987	08 03	13 22.97	-15 24.8	2.423	2.379	75.4	24.4	12.2
1987	08 08	13 24.14	-15 11.6					
1987	08 13	13 25.67	-15 03.1	2.733	2.504	66.3	21.8	12.7
1987	08 18	13 27.50	-14 58.5					
1987	08 23	13 29.58	-14 57.1	3.027	2.627	57.6	19.0	13.1
1987	08 28	13 31.87	-14 58.3					
1987	09 02	13 34.32	-15 01.9	3.303	2.749	49.0	16.1	13.5
1987	09 07	13 36.91	-15 07.3					
1987	09 12	13 39.61	-15 14.3	3.558	2.870	40.6	13.2	13.8
1987	09 17	13 42.39	-15 22.6					
1987	09 22	13 45.24	-15 32.0	3.789	2.989	32.3	10.3	14.1

1986 PA a,e,i = 1.06, 0.44, 11 Elements MPC 11630

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987	04 15	19 32.67	-05 36.7	0.997	1.414	-1.30	+4.7	20.3
1987	04 25	19 42.63	-03 40.3					
1987	05 05	19 49.06	-01 42.1	0.864	1.475	-1.79	+6.2	20.0
1987	05 15	19 51.30	+00 14.0					
1987	05 25	19 48.46	+02 02.3	0.724	1.514	-2.59	+7.1	19.5
1987	06 04	19 39.54	+03 33.4					
1987	06 14	19 23.94	+04 33.4	0.606	1.529	-3.70	+5.4	18.9
1987	06 24	19 01.93	+04 45.7					
1987	07 04	18 35.57	+03 56.0	0.545	1.522	-4.38	+0.0	18.4

1987 07 14	18 08.73	+02 03.9					
1987 07 24	17 45.45	-00 34.1	0.565	1.493	-3.67	-2.8	18.7
1987 08 03	17 28.44	-03 35.3					
1987 08 13	17 18.51	-06 39.9	0.647	1.440	-2.42	-0.6	19.2
1987 08 23	17 15.14	-09 37.4					
1987 09 02	17 17.47	-12 23.3	0.749	1.365	-1.57	+2.8	19.6
1987 09 12	17 24.56	-14 56.0					
1987 09 22	17 35.61	-17 15.7	0.839	1.265	-1.10	+5.7	19.9

Comet Sorrells (1986n) Elements MPC 11614

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1987 04 15	23 28.99	+11 05.6	2.587	1.784	29.5	16.1	15.6
1987 04 25	23 24.96	+11 27.7					
1987 05 05	23 19.00	+11 49.3	2.354	1.869	49.8	24.3	15.6
1987 05 15	23 10.28	+12 07.3					
1987 05 25	22 57.72	+12 17.4	2.026	1.983	73.0	29.2	15.5
1987 06 04	22 39.88	+12 12.1					
1987 06 14	22 15.08	+11 39.6	1.676	2.119	101.0	28.1	15.4
1987 06 24	21 41.89	+10 23.2					
1987 07 04	21 00.33	+08 06.2	1.434	2.271	135.1	18.4	15.3
1987 07 14	20 13.58	+04 47.5					
1987 07 24	19 27.64	+00 54.4	1.469	2.435	156.6	9.5	15.7
1987 08 03	18 48.17	-02 52.1					
1987 08 13	18 17.68	-06 05.6	1.810	2.607	132.8	16.6	16.5
1987 08 23	17 55.77	-08 41.3					
1987 09 02	17 40.92	-10 44.9	2.328	2.785	106.3	20.3	17.3
1987 09 12	17 31.47	-12 24.0					
1987 09 22	17 26.05	-13 45.0	2.903	2.967	83.8	19.7	18.0
1987 10 02	17 23.65	-14 52.4					
1987 10 12	17 23.49	-15 49.4	3.462	3.151	63.8	16.5	18.7
1987 10 22	17 25.00	-16 38.3					
1987 11 01	17 27.76	-17 20.4	3.962	3.336	45.1	12.2	19.2

Periodic Comet Jackson-Neujmin Elements MPC 10519

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1987 04 15	23 29.03	-01 19.7	2.266	1.508	31.7	20.4	20.1
1987 04 25	00 00.58	+00 53.7					
1987 05 05	00 32.58	+03 05.7	2.165	1.455	34.8	23.3	19.8
1987 05 15	01 04.87	+05 11.9					
1987 05 25	01 37.28	+07 08.3	2.098	1.437	37.7	25.5	19.7
1987 06 04	02 09.58	+08 51.1					
1987 06 14	02 41.49	+10 17.0	2.062	1.457	41.0	27.2	19.7
1987 06 24	03 12.75	+11 24.2					
1987 07 04	03 43.08	+12 11.4	2.045	1.511	45.1	28.5	19.8
1987 07 14	04 12.17	+12 38.7					
1987 07 24	04 39.82	+12 46.8	2.035	1.595	50.5	29.4	20.1
1987 08 03	05 05.80	+12 37.3					
1987 08 13	05 29.92	+12 12.2	2.018	1.702	57.4	30.1	20.3
1987 08 23	05 52.05	+11 33.6					
1987 09 02	06 12.04	+10 44.0	1.983	1.824	66.1	30.4	20.6

Comet Bowell (1982 I) Elements MPC 11501

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1987 05 05	00 43.22	+02 59.8	5.509	4.667	32.4	2.1	20.6
1987 05 15	00 45.50	+03 13.5					
1987 05 25	00 47.54	+03 25.6	5.410	4.786	50.5	3.0	20.6
1987 06 04	00 49.29	+03 35.7					
1987 06 14	00 50.72	+03 43.7	5.242	4.905	68.8	3.6	20.6
1987 06 24	00 51.80	+03 49.3					

1987 07 04	00 52.50	+03 52.5	5.036	5.024	87.4	3.9	20.7
1987 07 14	00 52.80	+03 53.2					
1987 07 24	00 52.71	+03 51.4	4.824	5.143	106.4	3.7	20.7
1987 08 03	00 52.22	+03 47.1					
1987 08 13	00 51.34	+03 40.5	4.644	5.261	126.0	3.1	20.7
1987 08 23	00 50.12	+03 31.9					
1987 09 02	00 48.59	+03 21.4	4.532	5.379	146.0	2.1	20.7
1987 09 12	00 46.82	+03 09.5					
1987 09 22	00 44.87	+02 56.7	4.519	5.497	166.4	0.9	20.7
1987 10 02	00 42.82	+02 43.5					
1987 10 12	00 40.76	+02 30.4	4.624	5.614	172.5	0.5	20.8
1987 10 22	00 38.77	+02 18.0					
1987 11 01	00 36.93	+02 06.7	4.849	5.731	151.8	1.7	20.8
1987 11 11	00 35.33	+01 57.2					
1987 11 21	00 34.01	+01 49.6	5.183	5.848	130.9	2.7	20.9
1987 12 01	00 33.04	+01 44.3					
1987 12 11	00 32.45	+01 41.6	5.597	5.964	110.2	3.3	21.0
1987 12 21	00 32.24	+01 41.4					
1987 12 31	00 32.44	+01 43.8	6.052	6.081	89.9	3.5	21.1
1988 01 10	00 33.03	+01 48.6					
1988 01 20	00 33.99	+01 55.8	6.507	6.197	70.0	3.3	21.2

Periodic Comet Forbes (1886g) Elements MPC 10524

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1987 05 05	00 45.23	+03 12.3	2.716	1.934	31.9	16.0	19.6
1987 05 15	01 04.63	+05 24.5					
1987 05 25	01 23.03	+07 26.9	2.714	2.057	40.8	18.8	19.8
1987 06 04	01 40.41	+09 19.2					
1987 06 14	01 56.74	+11 01.2	2.676	2.183	50.9	21.2	20.0
1987 06 24	02 11.94	+12 32.9					
1987 07 04	02 25.91	+13 54.6	2.601	2.311	62.3	22.9	20.1
1987 07 14	02 38.51	+15 06.4					
1987 07 24	02 49.58	+16 08.6	2.491	2.439	75.3	23.8	20.1
1987 08 03	02 58.89	+17 01.3					
1987 08 13	03 06.23	+17 44.8	2.355	2.566	90.1	23.3	20.1
1987 08 23	03 11.34	+18 19.2					
1987 09 02	03 13.97	+18 44.1	2.212	2.691	107.4	21.0	20.0
1987 09 12	03 13.94	+18 59.4					
1987 09 22	03 11.14	+19 04.5	2.089	2.814	127.4	16.5	19.8
1987 10 02	03 05.68	+18 58.8					
1987 10 12	02 57.94	+18 42.5	2.026	2.934	150.1	9.8	19.7
1987 10 22	02 48.57	+18 16.5					
1987 11 01	02 38.47	+17 43.4	2.062	3.051	174.3	1.8	19.5
1987 11 11	02 28.64	+17 06.9					
1987 11 21	02 19.97	+16 31.5	2.217	3.165	160.4	6.0	19.9
1987 12 01	02 13.12	+16 01.4					
1987 12 11	02 08.45	+15 39.6	2.483	3.276	137.4	11.8	20.4

1977 VA a,e,i = 1.86, 0.39, 3 Elements MPC 11629

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987 05 25	19 04.31	-19 13.1	1.247	2.108	-2.00	-4.1	22.4
1987 06 04	18 59.43	-18 52.8					
1987 06 14	18 50.57	-18 36.6	1.039	2.022	-2.47	-4.5	21.7
1987 06 24	18 38.08	-18 24.0					
1987 07 04	18 23.12	-18 14.2	0.916	1.929	-2.74	-3.9	21.1
1987 07 14	18 07.61	-18 06.9					
1987 07 24	17 53.70	-18 02.7	0.888	1.831	-2.56	-2.8	21.3
1987 08 03	17 43.29	-18 03.5					
1987 08 13	17 37.53	-18 10.5	0.931	1.727	-2.11	-2.2	21.6

1987 08 23	17 36.77	-18 23.5					
1987 09 02	17 40.94	-18 41.0	1.008	1.620	-1.72	-2.1	21.9

Periodic Comet Denning-Fujikawa — Elements MPC 10520

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		m2
1987 05 25		22 34.94	-23 03.3	0.931	1.388	-4.14	-31.5	20.3
1987 06 04		23 27.36	-19 13.2					
1987 06 14		00 27.81	-13 28.3	0.716	1.151	-5.09	-54.3	18.9
1987 06 24		01 33.80	-05 51.6					
1987 07 04		02 40.56	+02 32.1	0.684	0.935	-3.62	-52.8	17.9
1987 07 14		03 43.82	+10 11.2					
1987 07 24		04 41.99	+16 10.8	0.837	0.788	-1.68	-29.8	17.6
1987 08 03		05 35.39	+20 21.0					
1987 08 13		06 24.54	+22 53.1	1.082	0.780	-1.30	-12.8	18.1
1987 08 23		07 09.29	+24 05.4					
1987 09 02		07 49.20	+24 19.4	1.322	0.917	-1.24	-3.3	19.2
1987 09 12		08 24.18	+23 55.9					
1987 09 22		08 54.54	+23 11.3	1.506	1.130	-1.03	+0.8	20.4

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

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987 05 25		00 54.19	-05 32.1	1.848	1.483	-1.59	+9.1	18.9
1987 06 04		01 24.69	-06 36.4					
1987 06 14		01 58.04	-07 59.9	1.608	1.398	-1.98	+7.4	18.6
1987 06 24		02 34.69	-09 42.7					
1987 07 04		03 14.88	-11 42.2	1.413	1.307	-2.42	+3.0	18.3
1987 07 14		03 58.48	-13 50.6					
1987 07 24		04 44.83	-15 55.6	1.303	1.216	-2.80	-5.5	18.1
1987 08 03		05 32.65	-17 43.3					
1987 08 13		06 20.32	-19 01.2	1.292	1.129	-3.09	-16.3	18.0
1987 08 23		07 06.39	-19 43.3					
1987 09 02		07 49.87	-19 49.3	1.352	1.055	-3.26	-25.1	17.9
1987 09 12		08 30.44	-19 22.6					
1987 09 22		09 08.34	-18 28.1	1.428	1.005	-3.29	-30.2	17.8

Periodic Comet Kohoutek — Elements IAUC 4240

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1987 05 25		01 47.91	+15 35.3	3.032	2.243	32.4	14.0	19.1
1987 06 04		02 08.68	+17 24.3					
1987 06 14		02 30.21	+19 08.5	2.813	2.148	40.8	18.0	18.9
1987 06 24		02 52.54	+20 46.3					
1987 07 04		03 15.69	+22 15.8	2.584	2.059	48.7	21.8	18.8
1987 07 14		03 39.63	+23 35.0					
1987 07 24		04 04.34	+24 41.9	2.353	1.979	56.3	25.3	18.6
1987 08 03		04 29.70	+25 34.7					
1987 08 13		04 55.56	+26 11.5	2.127	1.908	63.7	28.4	18.4
1987 08 23		05 21.72	+26 30.9					
1987 09 02		05 47.92	+26 31.9	1.910	1.851	71.2	31.1	18.2
1987 09 12		06 13.85	+26 14.0					
1987 09 22		06 39.17	+25 37.7	1.705	1.808	79.1	33.0	17.9
1987 10 02		07 03.50	+24 44.0					
1987 10 12		07 26.47	+23 34.9	1.514	1.783	87.9	34.0	17.7
1987 10 22		07 47.72	+22 13.1					
1987 11 01		08 06.81	+20 41.9	1.339	1.775	98.1	33.6	17.4
1987 11 11		08 23.38	+19 05.1					
1987 11 21		08 37.00	+17 26.8	1.183	1.787	110.5	31.2	17.1
1987 12 01		08 47.24	+15 51.8					
1987 12 11		08 53.75	+14 24.3	1.053	1.816	126.0	26.0	16.7
1987 12 21		08 56.26	+13 08.7					

1987 12 31	08 54.82	+12 08.8	0.968	1.862	145.2	17.5	16.3
1988 01 10	08 49.98	+11 26.4					
1988 01 20	08 42.77	+11 01.8	0.952	1.922	166.6	6.8	16.0
1988 01 30	08 34.76	+10 52.7					
1988 02 09	08 27.59	+10 54.7	1.025	1.995	165.3	7.2	16.3
1988 02 19	08 22.55	+11 02.7					
1988 02 29	08 20.42	+11 11.9	1.188	2.078	144.8	15.9	16.9
1988 03 10	08 21.40	+11 18.4					
1988 03 20	08 25.30	+11 19.5	1.424	2.168	126.4	21.7	17.6
1988 03 30	08 31.76	+11 13.5					
1988 04 09	08 40.31	+10 59.2	1.709	2.265	110.6	24.5	18.2
1988 04 19	08 50.52	+10 36.5					
1988 04 29	09 02.03	+10 05.2	2.027	2.365	96.6	25.0	18.7
1988 05 09	09 14.49	+09 25.6					
1988 05 19	09 27.66	+08 38.4	2.362	2.468	83.8	24.1	19.0
1988 05 29	09 41.33	+07 43.9					
1988 06 08	09 55.33	+06 43.1	2.701	2.572	71.8	22.0	19.4
1988 06 18	10 09.54	+05 36.6					
1988 06 28	10 23.88	+04 25.1	3.031	2.677	60.3	19.3	19.6
1988 07 08	10 38.25	+03 09.4					
1988 07 18	10 52.63	+01 50.3	3.342	2.782	48.9	16.0	19.8
1988 07 28	11 06.97	+00 28.3					
1988 08 07	11 21.23	-00 55.6	3.623	2.886	37.5	12.4	20.0

1981 VS a,e,i = 2.78, 0.29, 9 Elements MPC 11629

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 01 25	07 29.56	+06 18.4	1.342	2.296	161.3	7.9	15.9
1987 02 04	07 22.29	+07 07.9					
1987 02 14	07 17.56	+08 03.7	1.488	2.354	143.1	14.6	16.4
1987 02 24	07 15.75	+09 00.0					
1987 03 06	07 16.93	+09 52.7	1.714	2.414	124.1	19.9	17.0
1987 03 16	07 20.87	+10 38.6					
1987 03 26	07 27.22	+11 15.8	1.990	2.475	107.2	22.6	17.4
1987 04 05	07 35.61	+11 43.3					
1987 04 15	07 45.68	+12 00.6	2.293	2.537	92.1	23.3	17.8
1987 04 25	07 57.08	+12 07.6					
1987 05 05	08 09.54	+12 04.4	2.603	2.598	78.6	22.4	18.1

1985 VE1 a,e,i = 2.86, 0.07, 3 Elements MPC 11639

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 01 25	07 44.72	+19 15.3	2.035	3.010	170.5	3.1	17.2
1987 02 04	07 36.40	+19 44.4					
1987 02 14	07 29.69	+20 09.4	2.145	3.019	146.7	10.3	17.6
1987 02 24	07 25.17	+20 29.2					
1987 03 06	07 23.13	+20 43.7	2.348	3.028	125.0	15.6	18.0
1987 03 16	07 23.63	+20 52.5					
1987 03 26	07 26.49	+20 55.8	2.608	3.035	105.8	18.4	18.3
1987 04 05	07 31.51	+20 53.6					
1987 04 15	07 38.40	+20 45.7	2.891	3.042	88.9	19.2	18.6
1987 04 25	07 46.87	+20 31.9					
1987 05 05	07 56.67	+20 12.3	3.173	3.048	73.7	18.5	18.8

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

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 01 25	08 00.68	+07 41.1	1.674	2.643	167.0	4.8	16.6
1987 02 04	07 51.07	+08 40.8					
1987 02 14	07 43.04	+09 45.3	1.754	2.653	149.6	10.8	16.9
1987 02 24	07 37.35	+10 49.4					
1987 03 06	07 34.42	+11 49.1	1.929	2.661	128.4	17.0	17.3

1987 03 16	07 34.34	+12 41.5					
1987 03 26	07 36.96	+13 25.2	2.165	2.667	109.3	20.7	17.7
1987 04 05	07 42.01	+13 59.2					
1987 04 15	07 49.19	+14 23.1	2.430	2.670	92.6	22.0	18.0
1987 04 25	07 58.14	+14 36.9					
1987 05 05	08 08.60	+14 40.7	2.697	2.670	77.7	21.7	18.2

1982 DR2 a,e,i = 3.20, 0.08, 16 Elements MPC 11630

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 01 25	08 12.36	+07 43.2	1.968	2.938	168.0	4.0	16.6
1987 02 04	08 03.59	+07 35.0					
1987 02 14	07 55.97	+07 34.4	2.030	2.940	152.3	9.0	16.9
1987 02 24	07 50.20	+07 39.1					
1987 03 06	07 46.73	+07 46.3	2.190	2.942	131.4	14.6	17.3
1987 03 16	07 45.74	+07 53.6					
1987 03 26	07 47.18	+07 58.9	2.419	2.946	112.4	18.2	17.6
1987 04 05	07 50.86	+08 00.4					
1987 04 15	07 56.54	+07 56.8	2.681	2.951	95.5	19.8	17.9
1987 04 25	08 03.94	+07 47.0					
1987 05 05	08 12.80	+07 30.5	2.952	2.957	80.5	19.7	18.1
1987 05 15	08 22.87	+07 06.8					
1987 05 25	08 33.93	+06 35.7	3.211	2.964	66.9	18.3	18.2

1978 QX2 a,e,i = 3.22, 0.09, 8 Elements MPC 11638

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 01 25	09 39.95	+21 30.0	2.217	3.169	162.3	5.4	16.1
1987 02 04	09 31.78	+21 57.9					
1987 02 14	09 23.07	+22 20.3	2.176	3.152	169.5	3.3	16.0
1987 02 24	09 14.71	+22 33.8					
1987 03 06	09 07.57	+22 36.6	2.252	3.136	147.8	9.7	16.3
1987 03 16	09 02.31	+22 28.2					
1987 03 26	08 59.29	+22 09.4	2.422	3.120	126.5	14.9	16.6
1987 04 05	08 58.65	+21 41.3					
1987 04 15	09 00.30	+21 05.1	2.652	3.104	107.4	18.0	16.9
1987 04 25	09 04.06	+20 21.8					
1987 05 05	09 09.68	+19 32.2	2.910	3.088	90.5	19.1	17.1
1987 05 15	09 16.89	+18 36.6					
1987 05 25	09 25.44	+17 35.5	3.168	3.073	75.4	18.6	17.3

(3549) 1981 YH a,e,i = 2.76, 0.17, 8 Elements MPC 11615

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 01 25	10 22.46	+01 46.6	1.410	2.295	146.4	13.7	16.2
1987 02 04	10 15.74	+01 32.2					
1987 02 14	10 07.24	+01 35.7	1.330	2.303	167.1	5.5	15.8
1987 02 24	09 58.13	+01 54.0					
1987 03 06	09 49.68	+02 21.7	1.352	2.314	161.5	7.8	16.0
1987 03 16	09 43.09	+02 52.4					
1987 03 26	09 39.10	+03 20.3	1.471	2.329	140.5	15.8	16.4
1987 04 05	09 38.05	+03 40.8					
1987 04 15	09 39.93	+03 51.1	1.662	2.347	121.5	21.4	16.9
1987 04 25	09 44.47	+03 49.8					
1987 05 05	09 51.35	+03 36.4	1.896	2.368	105.1	24.3	17.3
1987 05 15	10 00.19	+03 11.1					
1987 05 25	10 10.63	+02 34.7	2.151	2.392	90.9	25.0	17.6
1987 06 04	10 22.38	+01 47.8					
1987 06 14	10 35.18	+00 51.4	2.411	2.418	78.3	24.3	17.8
1987 06 24	10 48.81	-00 13.4					
1987 07 04	11 03.14	-01 25.7	2.665	2.447	66.7	22.4	18.0

1942 RJ a,e,i = 2.22, 0.23, 6 Elements MPC 11628

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	01 25	11 03.32	-00 38.2	1.914	2.713	136.4	14.5	18.3
1987	02 04	10 57.01	-00 29.7					
1987	02 14	10 48.55	-00 04.2	1.774	2.721	159.5	7.3	17.9
1987	02 24	10 38.68	+00 35.9					
1987	03 06	10 28.38	+01 25.9	1.742	2.725	170.3	3.5	17.7
1987	03 16	10 18.78	+02 19.5					
1987	03 26	10 10.83	+03 10.5	1.825	2.726	148.4	11.1	18.1
1987	04 05	10 05.20	+03 53.9					
1987	04 15	10 02.19	+04 26.3	2.001	2.722	126.7	17.2	18.5
1987	04 25	10 01.81	+04 46.0					
1987	05 05	10 03.91	+04 52.6	2.234	2.716	107.7	20.7	18.8
1987	05 15	10 08.23	+04 46.3					
1987	05 25	10 14.44	+04 28.0	2.489	2.705	91.1	22.0	19.1
1987	06 04	10 22.28	+03 58.4					
1987	06 14	10 31.48	+03 18.6	2.742	2.691	76.4	21.5	19.3
1987	06 24	10 41.82	+02 29.5					
1987	07 04	10 53.13	+01 31.9	2.975	2.674	63.1	19.8	19.4

1966 TE a,e,i = 1.95, 0.07, 20 Elements MPC 11625

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	01 25	13 30.17	-00 26.0	1.613	2.068	102.8	27.7	18.7
1987	02 04	13 35.44	-01 49.9					
1987	02 14	13 37.63	-03 08.2	1.377	2.060	120.3	24.5	18.3
1987	02 24	13 36.22	-04 21.2					
1987	03 06	13 30.73	-05 28.7	1.180	2.050	141.2	17.7	17.7
1987	03 16	13 21.09	-06 31.0					
1987	03 26	13 07.81	-07 27.4	1.057	2.038	165.8	6.9	17.1
1987	04 05	12 52.15	-08 17.4					
1987	04 15	12 36.13	-09 02.2	1.036	2.026	167.0	6.4	17.0
1987	04 25	12 21.80	-09 43.9					
1987	05 05	12 10.74	-10 26.3	1.117	2.012	142.3	17.8	17.6
1987	05 15	12 03.76	-11 13.3					
1987	05 25	12 00.93	-12 07.4	1.270	1.997	121.7	25.6	18.1
1987	06 04	12 01.98	-13 10.2					
1987	06 14	12 06.42	-14 22.3	1.459	1.981	105.0	29.7	18.4
1987	06 24	12 13.75	-15 43.2					
1987	07 04	12 23.57	-17 12.3	1.659	1.965	91.3	31.1	18.7

1978 PJ2 a,e,i = 3.14, 0.15, 5 Elements MPC 11632

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	01 25	13 42.42	-10 25.3	3.150	3.404	96.4	16.7	18.5
1987	02 04	13 46.13	-10 36.1					
1987	02 14	13 48.02	-10 35.7	2.884	3.425	115.4	15.1	18.3
1987	02 24	13 47.97	-10 23.6					
1987	03 06	13 45.95	-09 59.8	2.661	3.446	136.2	11.5	18.0
1987	03 16	13 42.08	-09 24.9					
1987	03 26	13 36.63	-08 40.6	2.516	3.465	158.7	6.0	17.7
1987	04 05	13 30.06	-07 49.8					
1987	04 15	13 22.99	-06 56.3	2.480	3.483	177.2	0.8	17.4
1987	04 25	13 16.07	-06 04.6					
1987	05 05	13 09.93	-05 18.8	2.562	3.499	154.6	7.1	17.8
1987	05 15	13 05.07	-04 42.2					
1987	05 25	13 01.80	-04 16.8	2.744	3.515	133.1	12.1	18.2
1987	06 04	13 00.29	-04 03.7					
1987	06 14	13 00.55	-04 02.6	2.998	3.529	113.6	15.3	18.5
1987	06 24	13 02.50	-04 12.8					
1987	07 04	13 06.02	-04 33.2	3.290	3.542	96.0	16.6	18.7

1976 QE1 a,e,i = 3.40, 0.20, 18 Elements MPC 11638

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	01 25	14 00.59	-21 15.4	2.670	2.822	88.5	20.4	16.3
1987	02 04	14 07.70	-23 04.2					
1987	02 14	14 13.02	-24 49.8	2.385	2.801	104.6	20.0	16.0
1987	02 24	14 16.23	-26 31.5					
1987	03 06	14 16.98	-28 07.2	2.127	2.782	121.9	17.6	15.7
1987	03 16	14 15.06	-29 34.1					
1987	03 26	14 10.40	-30 48.6	1.925	2.766	140.2	13.3	15.3
1987	04 05	14 03.23	-31 46.4					
1987	04 15	13 54.18	-32 23.7	1.806	2.753	156.2	8.5	15.0
1987	04 25	13 44.21	-32 38.9					
1987	05 05	13 34.50	-32 33.2	1.786	2.743	157.1	8.2	15.0
1987	05 15	13 26.20	-32 11.5					
1987	05 25	13 20.15	-31 40.5	1.865	2.736	142.1	13.1	15.2
1987	06 04	13 16.84	-31 07.3					
1987	06 14	13 16.44	-30 37.8	2.022	2.732	124.8	17.8	15.5
1987	06 24	13 18.82	-30 16.1					
1987	07 04	13 23.79	-30 04.3	2.230	2.731	108.7	20.7	15.8

(3570) 1979 XO a,e,i = 3.02, 0.08, 11 Elements MPC 11637

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	02 14	14 27.12	-01 26.8	2.616	3.080	108.8	17.7	16.8
1987	02 24	14 29.90	-01 10.5					
1987	03 06	14 30.52	-00 44.6	2.357	3.064	127.6	14.9	16.5
1987	03 16	14 28.90	-00 10.9					
1987	03 26	14 25.07	+00 27.7	2.159	3.048	147.6	10.1	16.2
1987	04 05	14 19.27	+01 07.5					
1987	04 15	14 12.00	+01 43.8	2.053	3.032	164.6	5.0	15.8
1987	04 25	14 03.95	+02 11.8					
1987	05 05	13 55.93	+02 27.5	2.056	3.016	158.1	7.2	15.9
1987	05 15	13 48.75	+02 28.2					
1987	05 25	13 43.02	+02 13.1	2.162	2.999	138.8	12.9	16.2
1987	06 04	13 39.20	+01 42.7					
1987	06 14	13 37.48	+00 58.5	2.345	2.983	119.7	17.2	16.5
1987	06 24	13 37.87	+00 02.7					
1987	07 04	13 40.29	-01 02.7	2.576	2.966	102.5	19.6	16.8
1987	07 14	13 44.59	-02 15.8					
1987	07 24	13 50.57	-03 34.6	2.825	2.950	86.9	20.1	17.0

A904 PC a,e,i = 2.80, 0.12, 11 Elements MPC 11618

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	02 14	14 58.79	-28 44.2	2.873	3.096	93.6	18.6	17.6
1987	02 24	15 04.12	-29 34.3					
1987	03 06	15 07.37	-30 16.9	2.588	3.087	111.0	17.5	17.3
1987	03 16	15 08.27	-30 50.5					
1987	03 26	15 06.67	-31 13.0	2.337	3.075	130.0	14.4	17.0
1987	04 05	15 02.55	-31 21.7					
1987	04 15	14 56.19	-31 14.3	2.152	3.063	150.1	9.4	16.6
1987	04 25	14 48.11	-30 49.2					
1987	05 05	14 39.12	-30 06.6	2.062	3.049	165.7	4.7	16.3
1987	05 15	14 30.21	-29 09.5					
1987	05 25	14 22.30	-28 03.1	2.081	3.034	156.0	7.8	16.5
1987	06 04	14 16.14	-26 53.7					
1987	06 14	14 12.21	-25 47.6	2.200	3.018	136.3	13.4	16.8
1987	06 24	14 10.69	-24 49.5					
1987	07 04	14 11.58	-24 02.5	2.394	3.001	117.4	17.5	17.1
1987	07 14	14 14.74	-23 27.8					
1987	07 24	14 19.95	-23 05.4	2.631	2.982	100.1	19.6	17.3

1978 SL5 a,e,i = 2.98, 0.03, 1 Elements MPC 11638

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	03 26	17 57.68	-24 46.8	2.635	2.895	94.8	20.1	17.8
1987	04 05	18 04.86	-24 50.5					
1987	04 15	18 09.92	-24 53.7	2.367	2.892	111.7	18.8	17.5
1987	04 25	18 12.62	-24 57.0					
1987	05 05	18 12.77	-25 00.9	2.131	2.890	130.6	15.4	17.2
1987	05 15	18 10.31	-25 05.0					
1987	05 25	18 05.37	-25 08.6	1.958	2.889	151.5	9.6	16.8
1987	06 04	17 58.33	-25 10.4					
1987	06 14	17 49.89	-25 09.2	1.876	2.888	174.0	2.1	16.4
1987	06 24	17 40.95	-25 04.5					
1987	07 04	17 32.51	-24 56.6	1.901	2.888	162.7	6.0	16.6
1987	07 14	17 25.49	-24 47.0					
1987	07 24	17 20.52	-24 37.2	2.027	2.888	140.9	12.8	17.0
1987	08 03	17 18.01	-24 28.9					
1987	08 13	17 18.08	-24 22.9	2.230	2.888	121.2	17.5	17.3
1987	08 23	17 20.64	-24 19.5					
1987	09 02	17 25.54	-24 18.1	2.479	2.889	103.7	19.8	17.6

1986 AH a,e,i = 1.93, 0.12, 24 Elements MPC 10610

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987	05 05	20 18.12	-03 41.8	1.608	2.003	-1.57	+6.9	18.2
1987	05 15	20 28.29	-03 32.8					
1987	05 25	20 36.39	-03 41.0	1.366	1.976	-1.91	+7.4	17.8
1987	06 04	20 42.02	-04 13.1					
1987	06 14	20 44.78	-05 16.9	1.145	1.948	-2.39	+7.7	17.2
1987	06 24	20 44.30	-06 59.9					
1987	07 04	20 40.29	-09 28.2	0.971	1.919	-3.00	+7.8	16.6
1987	07 14	20 32.90	-12 41.7					
1987	07 24	20 22.76	-16 30.9	0.876	1.890	-3.55	+8.9	15.8
1987	08 03	20 11.26	-20 36.0					
1987	08 13	20 00.32	-24 31.9	0.884	1.861	-3.78	+11.9	16.2
1987	08 23	19 51.83	-27 58.8					
1987	09 02	19 47.24	-30 46.3	0.983	1.833	-3.63	+14.1	16.8
1987	09 12	19 47.27	-32 53.4					
1987	09 22	19 51.93	-34 23.7	1.139	1.806	-3.24	+13.8	17.2
1987	10 02	20 00.89	-35 21.6					
1987	10 12	20 13.57	-35 50.8	1.318	1.782	-2.77	+11.6	17.6

1984 SQ3 a,e,i = 2.21, 0.14, 5 Elements MPC 9287

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987	05 25	21 20.47	-22 31.3	1.388	1.944	-1.77	-10.4	16.8
1987	06 04	21 31.73	-22 13.3					
1987	06 14	21 40.34	-22 07.0	1.190	1.926	-2.09	-13.7	16.4
1987	06 24	21 45.85	-22 14.4					
1987	07 04	21 47.83	-22 36.4	1.028	1.913	-2.53	-16.9	15.9
1987	07 14	21 46.04	-23 10.8					
1987	07 24	21 40.58	-23 52.5	0.922	1.904	-2.98	-18.7	15.3
1987	08 03	21 32.12	-24 32.9					
1987	08 13	21 22.09	-25 02.1	0.893	1.899	-3.18	-17.4	15.0
1987	08 23	21 12.27	-25 12.6					
1987	09 02	21 04.46	-25 01.0	0.949	1.899	-2.95	-14.2	15.5
1987	09 12	20 59.93	-24 28.4					
1987	09 22	20 59.18	-23 38.4	1.077	1.903	-2.48	-11.7	16.0
1987	10 02	21 02.22	-22 34.4					
1987	10 12	21 08.65	-21 19.0	1.256	1.912	-2.01	-10.5	16.5
1987	10 22	21 17.92	-19 54.1					
1987	11 01	21 29.52	-18 20.6	1.466	1.925	-1.66	-9.9	16.9

1971 BK a,e,i = 2.37, 0.18, 5 Elements MPC 11637

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 46.71	-09 43.7	2.480	2.793	97.2	21.1	18.1
1987	06 04	21 51.70	-09 15.6					
1987	06 14	21 54.69	-08 58.4	2.217	2.791	114.2	19.4	17.8
1987	06 24	21 55.47	-08 54.0					
1987	07 04	21 53.89	-09 04.0	1.989	2.787	133.4	15.4	17.5
1987	07 14	21 49.93	-09 29.0					
1987	07 24	21 43.73	-10 08.4	1.826	2.780	155.1	8.9	17.1
1987	08 03	21 35.74	-10 59.6					
1987	08 13	21 26.69	-11 58.5	1.758	2.771	176.9	1.1	16.6
1987	08 23	21 17.50	-12 59.5					
1987	09 02	21 09.17	-13 57.2	1.802	2.759	156.9	8.2	17.0
1987	09 12	21 02.56	-14 47.1					
1987	09 22	20 58.25	-15 26.4	1.944	2.744	134.6	15.1	17.4
1987	10 02	20 56.54	-15 53.5					
1987	10 12	20 57.47	-16 08.4	2.155	2.726	114.6	19.4	17.7
1987	10 22	21 00.88	-16 11.1					
1987	11 01	21 06.55	-16 02.3	2.403	2.707	96.8	21.4	18.0

1986 GG a,e,i = 2.44, 0.04, 7 Elements MPC 10610

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987	06 14	22 32.19	-19 22.1	1.797	2.336	-1.19	-9.0	17.1
1987	06 24	22 38.10	-19 25.2					
1987	07 04	22 41.38	-19 43.0	1.589	2.335	-1.38	-10.8	16.7
1987	07 14	22 41.75	-20 15.2					
1987	07 24	22 39.05	-20 59.4	1.429	2.335	-1.60	-12.2	16.3
1987	08 03	22 33.36	-21 50.9					
1987	08 13	22 25.22	-22 42.1	1.345	2.336	-1.77	-12.5	15.9
1987	08 23	22 15.53	-23 24.8					
1987	09 02	22 05.58	-23 51.4	1.356	2.338	-1.78	-11.3	16.0
1987	09 12	21 56.76	-23 57.6					
1987	09 22	21 50.14	-23 42.7	1.462	2.340	-1.62	-9.5	16.4
1987	10 02	21 46.41	-23 08.5					
1987	10 12	21 45.78	-22 18.2	1.644	2.344	-1.39	-8.1	16.8
1987	10 22	21 48.13	-21 14.8					
1987	11 01	21 53.18	-20 00.7	1.872	2.348	-1.17	-7.3	17.2
1987	11 11	22 00.53	-18 37.8					
1987	11 21	22 09.81	-17 07.3	2.124	2.353	-1.01	-6.9	17.5

(1179) Mally a,e,i = 2.62, 0.18, 9 Elements MPC 11506

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 54.34	-16 12.0	1.981	2.422	103.1	24.1	18.3
1987	06 24	22 59.80	-15 51.3					
1987	07 04	23 02.71	-15 44.0	1.789	2.459	119.9	21.0	18.0
1987	07 14	23 02.87	-15 49.9					
1987	07 24	23 00.16	-16 08.0	1.638	2.497	139.3	15.4	17.7
1987	08 03	22 54.65	-16 35.2					
1987	08 13	22 46.79	-17 06.5	1.557	2.535	160.6	7.6	17.4
1987	08 23	22 37.31	-17 36.2					
1987	09 02	22 27.30	-17 58.0	1.573	2.573	169.9	3.9	17.3
1987	09 12	22 17.93	-18 07.4					
1987	09 22	22 10.20	-18 02.5	1.695	2.610	149.6	11.2	17.7
1987	10 02	22 04.83	-17 43.2					
1987	10 12	22 02.13	-17 10.7	1.905	2.648	128.8	17.1	18.2
1987	10 22	22 02.10	-16 26.9					
1987	11 01	22 04.58	-15 33.5	2.175	2.684	110.2	20.3	18.6
1987	11 11	22 09.25	-14 31.9					
1987	11 21	22 15.79	-13 23.2	2.476	2.719	93.4	21.3	19.0

1937 UE a,e,i = 3.15, 0.18, 0 Elements MPC 8900

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 50.45	-07 22.0	2.752	3.106	100.8	18.7	17.5
1987	06 24	22 54.79	-06 54.2					
1987	07 04	22 57.38	-06 36.9	2.459	3.070	118.0	17.0	17.2
1987	07 14	22 58.05	-06 31.2					
1987	07 24	22 56.68	-06 38.0	2.209	3.034	137.2	13.1	16.8
1987	08 03	22 53.28	-06 57.2					
1987	08 13	22 48.03	-07 27.5	2.032	2.999	158.6	7.1	16.4
1987	08 23	22 41.33	-08 06.2					
1987	09 02	22 33.82	-08 49.3	1.954	2.963	178.3	0.6	15.9
1987	09 12	22 26.29	-09 31.9					
1987	09 22	22 19.55	-10 09.4	1.986	2.928	155.1	8.3	16.3
1987	10 02	22 14.35	-10 37.9					
1987	10 12	22 11.17	-10 55.0	2.116	2.893	133.2	14.6	16.7
1987	10 22	22 10.27	-10 59.5					
1987	11 01	22 11.72	-10 51.1	2.314	2.859	113.5	18.6	16.9
1987	11 11	22 15.40	-10 30.3					
1987	11 21	22 21.11	-09 57.8	2.548	2.826	95.9	20.4	17.2

1981 EL21 a,e,i = 2.72, 0.09, 2 Elements MPC 10308

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 44.58	-05 22.1	2.074	2.482	101.3	23.7	17.0
1987	06 24	22 51.03	-04 35.5					
1987	07 04	22 55.40	-04 01.4	1.836	2.474	117.4	21.4	16.7
1987	07 14	22 57.46	-03 41.8					
1987	07 24	22 57.05	-03 38.4	1.635	2.468	135.9	16.6	16.3
1987	08 03	22 54.10	-03 52.4					
1987	08 13	22 48.88	-04 22.7	1.499	2.464	157.1	9.2	15.9
1987	08 23	22 41.87	-05 06.8					
1987	09 02	22 33.93	-05 59.6	1.453	2.462	177.1	1.2	15.4
1987	09 12	22 26.13	-06 54.3					
1987	09 22	22 19.49	-07 44.3	1.511	2.461	155.8	9.6	15.9
1987	10 02	22 14.86	-08 24.2					
1987	10 12	22 12.75	-08 50.3	1.659	2.462	134.3	16.9	16.3
1987	10 22	22 13.32	-09 01.4					
1987	11 01	22 16.52	-08 56.9	1.873	2.465	115.3	21.4	16.7
1987	11 11	22 22.10	-08 37.8					
1987	11 21	22 29.75	-08 04.9	2.122	2.470	98.5	23.3	17.1

1981 EA11 a,e,i = 2.68, 0.20, 11 Elements MPC 7615

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 49.69	-16 09.4	1.807	2.279	104.1	25.6	17.8
1987	06 24	22 57.37	-15 12.9					
1987	07 04	23 02.70	-14 24.8	1.564	2.246	119.5	23.2	17.4
1987	07 14	23 05.35	-13 45.8					
1987	07 24	23 05.03	-13 16.0	1.360	2.217	137.4	18.1	16.9
1987	08 03	23 01.56	-12 54.7					
1987	08 13	22 55.09	-12 39.2	1.218	2.192	158.4	9.8	16.4
1987	08 23	22 46.20	-12 25.9					
1987	09 02	22 35.96	-12 10.3	1.163	2.171	176.1	1.8	15.9
1987	09 12	22 25.81	-11 48.0					
1987	09 22	22 17.15	-11 16.6	1.206	2.154	154.1	11.7	16.4
1987	10 02	22 11.10	-10 34.9					
1987	10 12	22 08.28	-09 42.9	1.334	2.143	133.0	19.9	16.9
1987	10 22	22 08.77	-08 41.5					
1987	11 01	22 12.42	-07 31.2	1.521	2.137	114.8	24.9	17.3
1987	11 11	22 18.86	-06 12.5					
1987	11 21	22 27.68	-04 45.9	1.741	2.136	99.2	27.2	17.6

6073 P-L a,e,i = 2.74, 0.05, 4 Elements MPC 7943

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 58.88	-08 22.7	2.283	2.643	99.2	22.3	18.8
1987	06 24	23 04.55	-07 42.2					
1987	07 04	23 08.15	-07 13.4	2.046	2.651	115.7	20.2	18.6
1987	07 14	23 09.48	-06 57.2					
1987	07 24	23 08.39	-06 54.7	1.845	2.659	134.6	15.8	18.2
1987	08 03	23 04.85	-07 05.6					
1987	08 13	22 59.08	-07 28.5	1.709	2.667	156.1	8.9	17.8
1987	08 23	22 51.54	-08 00.1					
1987	09 02	22 43.03	-08 36.0	1.667	2.676	179.3	0.3	17.3
1987	09 12	22 34.51	-09 10.6					
1987	09 22	22 26.96	-09 39.2	1.733	2.686	157.0	8.4	17.8
1987	10 02	22 21.19	-09 57.9					
1987	10 12	22 17.72	-10 04.6	1.895	2.695	135.0	15.2	18.3
1987	10 22	22 16.75	-09 58.7					
1987	11 01	22 18.27	-09 40.2	2.126	2.705	115.4	19.4	18.7
1987	11 11	22 22.09	-09 09.9					
1987	11 21	22 27.94	-08 28.7	2.396	2.715	98.0	21.1	19.0

1983 EW a,e,i = 2.20, 0.15, 3 Elements MPC 8213

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 55.29	-04 27.0	1.667	2.076	98.5	28.9	17.3
1987	06 24	23 03.68	-03 39.0					
1987	07 04	23 09.62	-03 07.4	1.484	2.111	113.8	26.2	17.0
1987	07 14	23 12.82	-02 54.6					
1987	07 24	23 13.02	-03 03.1	1.328	2.145	132.0	20.6	16.7
1987	08 03	23 10.09	-03 34.0					
1987	08 13	23 04.27	-04 25.8	1.225	2.180	153.7	11.9	16.3
1987	08 23	22 56.13	-05 34.4					
1987	09 02	22 46.72	-06 51.9	1.206	2.214	177.8	1.0	15.8
1987	09 12	22 37.37	-08 08.7					
1987	09 22	22 29.37	-09 15.9	1.287	2.248	157.7	9.8	16.4
1987	10 02	22 23.70	-10 07.0					
1987	10 12	22 20.91	-10 39.0	1.459	2.281	135.6	17.8	16.9
1987	10 22	22 21.10	-10 51.6					
1987	11 01	22 24.12	-10 45.7	1.694	2.313	116.4	22.6	17.4
1987	11 11	22 29.64	-10 23.2					
1987	11 21	22 37.29	-09 46.2	1.965	2.343	99.6	24.6	17.8

(3470) 1975 ES a,e,i = 2.35, 0.14, 3 Elements MPC 10939

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	23 04.45	-02 48.4	2.246	2.557	95.8	23.3	18.0
1987	06 24	23 10.10	-02 01.1					
1987	07 04	23 13.67	-01 26.2	2.017	2.579	112.2	21.4	17.7
1987	07 14	23 14.94	-01 05.8					
1987	07 24	23 13.73	-01 01.4	1.817	2.599	131.0	17.2	17.4
1987	08 03	23 09.98	-01 14.4					
1987	08 13	23 03.90	-01 44.4	1.677	2.618	152.5	10.3	17.0
1987	08 23	22 55.93	-02 29.3					
1987	09 02	22 46.86	-03 24.9	1.628	2.634	174.8	2.0	16.6
1987	09 12	22 37.70	-04 24.8					
1987	09 22	22 29.46	-05 22.7	1.687	2.648	158.8	7.9	16.9
1987	10 02	22 23.03	-06 12.5					
1987	10 12	22 18.95	-06 50.2	1.847	2.660	136.4	15.0	17.4
1987	10 22	22 17.44	-07 13.8					
1987	11 01	22 18.52	-07 22.6	2.078	2.670	116.3	19.5	17.8
1987	11 11	22 21.98	-07 17.0					
1987	11 21	22 27.56	-06 58.0	2.347	2.677	98.4	21.4	18.1

7571 P-L a,e,i = 2.48, 0.11, 7 Elements MPC 11522

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	23 06.84	-13 41.1	2.385	2.741	99.4	21.4	18.0
1987	06 24	23 12.17	-13 29.7					
1987	07 04	23 15.44	-13 31.4	2.140	2.746	116.3	19.4	17.7
1987	07 14	23 16.42	-13 46.7					
1987	07 24	23 14.94	-14 15.2	1.932	2.749	135.4	15.1	17.4
1987	08 03	23 10.92	-14 55.3					
1987	08 13	23 04.55	-15 42.9	1.791	2.750	156.4	8.5	17.0
1987	08 23	22 56.30	-16 32.9					
1987	09 02	22 46.94	-17 18.7	1.748	2.750	170.9	3.3	16.7
1987	09 12	22 37.48	-17 54.2					
1987	09 22	22 28.92	-18 15.2	1.814	2.747	153.1	9.5	17.0
1987	10 02	22 22.15	-18 19.5					
1987	10 12	22 17.74	-18 07.4	1.976	2.744	131.8	15.7	17.4
1987	10 22	22 15.90	-17 40.2					
1987	11 01	22 16.65	-16 59.8	2.203	2.738	112.3	19.6	17.8
1987	11 11	22 19.79	-16 08.0					
1987	11 21	22 25.05	-15 06.6	2.463	2.731	94.9	21.1	18.0

1982 VZ a,e,i = 3.18, 0.19, 2 Elements MPC 9360

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	23 02.95	-06 45.5	2.884	3.183	97.7	18.4	18.1
1987	06 24	23 07.80	-06 21.2					
1987	07 04	23 11.00	-06 07.5	2.584	3.147	114.6	17.1	17.8
1987	07 14	23 12.40	-06 05.7					
1987	07 24	23 11.85	-06 16.5	2.321	3.110	133.6	13.7	17.5
1987	08 03	23 09.30	-06 40.1					
1987	08 13	23 04.87	-07 15.2	2.126	3.073	154.7	8.1	17.1
1987	08 23	22 58.85	-07 59.5					
1987	09 02	22 51.77	-08 48.9	2.028	3.036	177.2	0.9	16.6
1987	09 12	22 44.36	-09 38.5					
1987	09 22	22 37.40	-10 23.2	2.040	2.999	159.0	6.9	16.9
1987	10 02	22 31.65	-10 58.8					
1987	10 12	22 27.69	-11 22.2	2.155	2.963	136.8	13.3	17.2
1987	10 22	22 25.86	-11 32.2					
1987	11 01	22 26.31	-11 28.4	2.345	2.927	116.6	17.7	17.5
1987	11 11	22 28.98	-11 11.2					
1987	11 21	22 33.72	-10 41.6	2.576	2.892	98.5	19.8	17.7

1983 VE a,e,i = 2.63, 0.28, 4 Elements MPC 8464

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 53.54	-02 19.0	2.095	2.454	98.1	24.2	17.5
1987	06 24	23 01.42	-01 12.6					
1987	07 04	23 07.60	-00 15.1	1.803	2.392	113.1	23.0	17.1
1987	07 14	23 11.79	+00 30.8					
1987	07 24	23 13.69	+01 02.4	1.543	2.330	130.1	19.5	16.6
1987	08 03	23 13.06	+01 16.7					
1987	08 13	23 09.81	+01 11.5	1.337	2.270	149.7	13.0	16.1
1987	08 23	23 04.12	+00 45.7					
1987	09 02	22 56.56	+00 00.8	1.209	2.211	170.7	4.2	15.5
1987	09 12	22 48.15	-00 58.2					
1987	09 22	22 40.12	-02 03.7	1.177	2.154	161.9	8.3	15.5
1987	10 02	22 33.76	-03 06.8					
1987	10 12	22 30.05	-03 59.2	1.237	2.101	139.8	17.8	15.9
1987	10 22	22 29.52	-04 35.5					
1987	11 01	22 32.32	-04 52.7	1.363	2.051	120.3	24.7	16.2
1987	11 11	22 38.29	-04 49.8					
1987	11 21	22 47.09	-04 27.5	1.526	2.007	103.9	28.5	16.5

1927 UE a,e,i = 2.24, 0.20, 6 Elements MPC 10756

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 41.40	+00 36.6	1.488	1.938	99.7	31.1	16.5
1987	06 24	22 52.94	+02 33.1					
1987	07 04	23 02.66	+04 22.3	1.267	1.900	112.1	29.7	16.0
1987	07 14	23 10.24	+06 00.6					
1987	07 24	23 15.28	+07 23.7	1.074	1.867	126.6	25.9	15.6
1987	08 03	23 17.39	+08 25.7					
1987	08 13	23 16.41	+09 01.1	0.922	1.839	143.7	19.1	15.0
1987	08 23	23 12.43	+09 04.4					
1987	09 02	23 06.07	+08 32.7	0.830	1.817	161.9	9.9	14.5
1987	09 12	22 58.58	+07 29.3					
1987	09 22	22 51.52	+06 02.8	0.816	1.801	163.3	9.2	14.4
1987	10 02	22 46.47	+04 27.2					
1987	10 12	22 44.55	+02 57.3	0.881	1.792	144.8	18.7	14.8
1987	10 22	22 46.23	+01 43.9					
1987	11 01	22 51.53	+00 53.5	1.011	1.791	126.7	26.4	15.3
1987	11 11	23 00.09	+00 28.4					
1987	11 21	23 11.39	+00 27.8	1.184	1.796	111.3	30.8	15.8

1978 VL7 a,e,i = 2.17, 0.07, 2 Elements MPC 10941

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	23 08.45	-02 43.7	1.786	2.128	94.8	28.4	18.0
1987	06 24	23 17.53	-01 34.1					
1987	07 04	23 24.45	-00 37.2	1.581	2.145	109.4	26.6	17.7
1987	07 14	23 28.90	+00 04.5					
1987	07 24	23 30.57	+00 28.3	1.397	2.162	126.6	22.2	17.3
1987	08 03	23 29.22	+00 31.6					
1987	08 13	23 24.85	+00 13.4	1.259	2.179	147.0	14.7	16.9
1987	08 23	23 17.77	-00 25.7					
1987	09 02	23 08.77	-01 21.7	1.196	2.196	170.1	4.6	16.4
1987	09 12	22 59.05	-02 27.4					
1987	09 22	22 49.95	-03 33.9	1.230	2.213	164.2	7.1	16.6
1987	10 02	22 42.71	-04 32.6					
1987	10 12	22 38.18	-05 16.9	1.360	2.229	141.4	16.2	17.2
1987	10 22	22 36.68	-05 43.9					
1987	11 01	22 38.24	-05 52.3	1.561	2.244	121.4	22.2	17.7
1987	11 11	22 42.59	-05 42.8					
1987	11 21	22 49.37	-05 17.0	1.805	2.259	104.1	25.1	18.1

1986 GC a,e,i = 2.36, 0.08, 7 Elements MPC 10840

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	23 21.25	-13 13.4	2.043	2.374	96.0	25.2	18.4
1987	06 24	23 29.58	-12 55.6					
1987	07 04	23 35.80	-12 52.5	1.826	2.392	111.4	23.3	18.2
1987	07 14	23 39.63	-13 05.3					
1987	07 24	23 40.78	-13 34.2	1.636	2.410	129.1	19.1	17.8
1987	08 03	23 39.04	-14 18.0					
1987	08 13	23 34.43	-15 13.0	1.500	2.426	149.2	12.4	17.5
1987	08 23	23 27.24	-16 13.4					
1987	09 02	23 18.16	-17 11.1	1.448	2.443	167.3	5.2	17.1
1987	09 12	23 08.28	-17 57.6					
1987	09 22	22 58.81	-18 26.6	1.498	2.458	158.0	8.8	17.4
1987	10 02	22 50.91	-18 34.6					
1987	10 12	22 45.38	-18 21.4	1.645	2.473	137.3	15.9	17.8
1987	10 22	22 42.62	-17 49.2					
1987	11 01	22 42.69	-17 00.6	1.862	2.486	117.9	20.7	18.2
1987	11 11	22 45.41	-15 58.6					
1987	11 21	22 50.48	-14 45.7	2.120	2.499	100.7	22.9	18.6

1981 EZ18 a,e,i = 2.69, 0.04, 2 Elements MPC 11045

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	23 16.89	-03 19.5	2.306	2.570	93.1	23.2	18.8
1987	06 24	23 24.39	-02 23.2					
1987	07 04	23 30.08	-01 37.5	2.058	2.568	108.5	22.0	18.6
1987	07 14	23 33.72	-01 04.3					
1987	07 24	23 35.09	-00 45.2	1.835	2.568	126.1	18.7	18.2
1987	08 03	23 34.00	-00 41.9					
1987	08 13	23 30.48	-00 54.7	1.663	2.568	146.3	12.6	17.8
1987	08 23	23 24.74	-01 22.8					
1987	09 02	23 17.32	-02 03.5	1.572	2.569	168.9	4.4	17.4
1987	09 12	23 09.08	-02 51.5					
1987	09 22	23 01.01	-03 41.0	1.583	2.571	166.8	5.1	17.4
1987	10 02	22 54.11	-04 25.4					
1987	10 12	22 49.17	-04 59.7	1.698	2.574	144.1	13.1	17.9
1987	10 22	22 46.65	-05 20.6					
1987	11 01	22 46.72	-05 26.6	1.893	2.577	123.5	18.7	18.3
1987	11 11	22 49.30	-05 17.7					
1987	11 21	22 54.18	-04 54.5	2.138	2.581	105.3	21.7	18.6

1985 HV1 a,e,i = 3.13, 0.16, 1 Elements MPC 10395

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	23 28.40	-04 34.6	3.417	3.581	91.0	16.5	18.1
1987	06 24	23 32.76	-04 09.7					
1987	07 04	23 35.66	-03 54.3	3.120	3.570	108.1	15.7	17.9
1987	07 14	23 36.96	-03 49.3					
1987	07 24	23 36.54	-03 55.4	2.852	3.557	127.0	13.2	17.6
1987	08 03	23 34.35	-04 12.7					
1987	08 13	23 30.44	-04 40.4	2.644	3.543	147.8	8.8	17.3
1987	08 23	23 25.03	-05 17.1					
1987	09 02	23 18.49	-05 59.8	2.529	3.527	170.3	2.8	16.9
1987	09 12	23 11.36	-06 44.8					
1987	09 22	23 04.25	-07 28.1	2.527	3.511	166.3	3.9	17.0
1987	10 02	22 57.82	-08 05.8					
1987	10 12	22 52.62	-08 34.6	2.639	3.493	143.6	9.8	17.3
1987	10 22	22 49.04	-08 52.8					
1987	11 01	22 47.32	-08 59.3	2.840	3.473	122.3	14.0	17.6
1987	11 11	22 47.52	-08 54.0					
1987	11 21	22 49.57	-08 37.6	3.096	3.453	102.9	16.2	17.8

(3531) 1981 FB a,e,i = 2.62, 0.15, 13 Elements MPC 11437

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	23 22.84	+05 35.3	2.825	2.973	88.3	20.0	18.4
1987	06 24	23 28.93	+06 21.1					
1987	07 04	23 33.45	+06 56.4	2.544	2.961	104.1	19.4	18.1
1987	07 14	23 36.21	+07 19.0					
1987	07 24	23 37.02	+07 26.7	2.281	2.947	121.9	17.0	17.8
1987	08 03	23 35.74	+07 17.1					
1987	08 13	23 32.40	+06 48.4	2.066	2.931	141.9	12.3	17.5
1987	08 23	23 27.15	+06 00.1					
1987	09 02	23 20.40	+04 53.3	1.933	2.914	163.4	5.7	17.1
1987	09 12	23 12.83	+03 32.0					
1987	09 22	23 05.21	+02 02.0	1.906	2.895	167.9	4.2	16.9
1987	10 02	22 58.41	+00 30.9					
1987	10 12	22 53.16	-00 54.0	1.991	2.874	146.2	11.1	17.3
1987	10 22	22 49.93	-02 07.3					
1987	11 01	22 48.99	-03 05.0	2.166	2.852	124.8	16.6	17.6
1987	11 11	22 50.38	-03 45.6					
1987	11 21	22 53.97	-04 08.9	2.398	2.829	105.6	19.7	17.9

1982 FT a,e,i = 1.77, 0.28, 20 Elements MPC 8538

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	00 00.67	-16 13.0	1.299	1.627	88.4	38.6	18.0
1987	06 24	00 10.84	-14 17.0					
1987	07 04	00 17.83	-12 32.8	1.176	1.703	101.7	35.8	17.8
1987	07 14	00 21.22	-11 00.8					
1987	07 24	00 20.50	-09 41.2	1.050	1.777	118.7	30.1	17.5
1987	08 03	00 15.15	-08 33.7					
1987	08 13	00 04.99	-07 36.7	0.951	1.849	140.5	20.4	17.1
1987	08 23	23 50.40	-06 48.2					
1987	09 02	23 32.67	-06 05.2	0.920	1.916	166.9	6.9	16.7
1987	09 12	23 13.98	-05 24.5					
1987	09 22	22 56.73	-04 43.8	0.991	1.979	165.6	7.3	16.9
1987	10 02	22 42.84	-04 01.2					
1987	10 12	22 33.30	-03 15.3	1.162	2.036	140.8	18.0	17.7
1987	10 22	22 28.20	-02 25.3					
1987	11 01	22 27.18	-01 30.2	1.404	2.088	120.2	24.3	18.3
1987	11 11	22 29.62	-00 29.3					
1987	11 21	22 34.89	+00 37.8	1.684	2.133	102.8	26.8	18.8

1981 EW32 a,e,i = 2.54, 0.31, 10 Elements MPC 10515

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	23 04.42	+07 08.9	1.428	2.022	110.5	28.1	18.1
1987	07 14	23 12.83	+08 26.3					
1987	07 24	23 19.25	+09 26.5	1.195	1.960	124.7	25.2	17.6
1987	08 03	23 23.31	+10 03.8					
1987	08 13	23 24.79	+10 11.9	1.003	1.903	141.3	19.4	17.0
1987	08 23	23 23.62	+09 45.0					
1987	09 02	23 20.09	+08 39.2	0.870	1.852	160.3	10.6	16.3
1987	09 12	23 15.06	+06 56.7					
1987	09 22	23 09.77	+04 46.4	0.816	1.810	168.0	6.6	16.0
1987	10 02	23 05.69	+02 24.2					
1987	10 12	23 04.10	+00 08.4	0.845	1.777	149.1	16.8	16.4
1987	10 22	23 05.76	-01 46.1					
1987	11 01	23 10.95	-03 10.0	0.944	1.755	130.0	25.7	16.8
1987	11 11	23 19.48	-04 00.2					
1987	11 21	23 30.93	-04 17.5	1.091	1.745	114.0	31.1	17.3
1987	12 01	23 44.85	-04 05.1					
1987	12 11	00 00.74	-03 27.1	1.268	1.747	100.9	33.6	17.7

1981 KE a,e,i = 1.91, 0.15, 26 Elements MPC 7460

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 02.00	-40 49.1	1.564	2.175	113.2	25.5	17.7
1987	07 14	00 10.45	-42 57.4					
1987	07 24	00 15.33	-45 20.7	1.421	2.160	124.0	23.0	17.4
1987	08 03	00 15.80	-47 51.3					
1987	08 13	00 11.20	-50 16.3	1.329	2.141	131.6	20.7	17.2
1987	08 23	00 01.22	-52 19.9					
1987	09 02	23 46.49	-53 43.7	1.300	2.119	132.7	20.5	17.1
1987	09 12	23 28.99	-54 12.9					
1987	09 22	23 11.53	-53 41.3	1.335	2.094	126.5	22.7	17.2
1987	10 02	22 56.93	-52 11.9					
1987	10 12	22 46.91	-49 55.6	1.426	2.066	115.8	25.8	17.4
1987	10 22	22 41.90	-47 05.2					
1987	11 01	22 41.57	-43 51.8	1.558	2.035	103.6	28.3	17.6
1987	11 11	22 45.16	-40 24.2					
1987	11 21	22 51.89	-36 48.1	1.714	2.002	91.6	29.6	17.8
1987	12 01	23 01.10	-33 07.2					
1987	12 11	23 12.22	-29 24.0	1.882	1.967	80.0	29.5	18.0

1983 WG a,e,i = 2.80, 0.22, 11 Elements MPC 8540

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	23 54.13	-14 50.8	2.644	3.110	107.9	18.1	18.5
1987	07 14	23 57.59	-15 17.6					
1987	07 24	23 59.10	-15 57.9	2.372	3.074	125.4	15.6	18.1
1987	08 03	23 58.46	-16 50.7					
1987	08 13	23 55.60	-17 53.3	2.157	3.037	144.2	11.2	17.7
1987	08 23	23 50.57	-19 01.5					
1987	09 02	23 43.66	-20 09.1	2.027	2.999	160.7	6.4	17.4
1987	09 12	23 35.48	-21 08.8					
1987	09 22	23 26.81	-21 54.1	2.004	2.958	158.0	7.3	17.4
1987	10 02	23 18.58	-22 20.2					
1987	10 12	23 11.66	-22 24.6	2.084	2.917	139.6	12.8	17.6
1987	10 22	23 06.67	-22 08.0					
1987	11 01	23 04.02	-21 32.0	2.245	2.874	120.1	17.4	17.9
1987	11 11	23 03.80	-20 39.7					
1987	11 21	23 05.94	-19 33.7	2.455	2.831	102.0	20.0	18.1
1987	12 01	23 10.27	-18 16.4					
1987	12 11	23 16.52	-16 50.1	2.683	2.786	85.6	20.6	18.3

1968 FJ a,e,i = 2.35, 0.13, 3 Elements MPC 10612

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	23 54.43	-00 37.9	2.080	2.505	102.5	23.3	17.6
1987	07 14	23 59.10	-00 18.8					
1987	07 24	00 01.51	-00 15.8	1.866	2.530	119.8	20.4	17.3
1987	08 03	00 01.42	-00 30.2					
1987	08 13	23 58.75	-01 02.4	1.692	2.552	139.9	14.8	16.9
1987	08 23	23 53.58	-01 51.3					
1987	09 02	23 46.32	-02 53.7	1.592	2.573	162.7	6.7	16.5
1987	09 12	23 37.70	-04 03.6					
1987	09 22	23 28.69	-05 13.9	1.593	2.592	172.6	2.9	16.3
1987	10 02	23 20.37	-06 16.8					
1987	10 12	23 13.67	-07 06.4	1.703	2.609	148.9	11.4	16.9
1987	10 22	23 09.20	-07 39.2					
1987	11 01	23 07.28	-07 53.9	1.902	2.624	127.3	17.5	17.3
1987	11 11	23 07.92	-07 51.2					
1987	11 21	23 10.97	-07 32.4	2.157	2.638	108.2	20.8	17.7
1987	12 01	23 16.16	-06 59.3					
1987	12 11	23 23.20	-06 13.9	2.438	2.649	91.2	21.8	18.0

1981 EO7 a,e,i = 2.60, 0.11, 13 Elements MPC 8392

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	23 41.89	+10 04.8	2.094	2.495	100.9	23.6	18.6
1987	07 14	23 47.90	+10 52.1					
1987	07 24	23 51.94	+11 23.8	1.843	2.473	116.8	21.5	18.2
1987	08 03	23 53.73	+11 36.2					
1987	08 13	23 53.14	+11 25.9	1.628	2.452	135.1	17.0	17.8
1987	08 23	23 50.14	+10 50.1					
1987	09 02	23 44.99	+09 47.3	1.476	2.432	155.7	9.8	17.3
1987	09 12	23 38.32	+08 19.8					
1987	09 22	23 30.99	+06 33.3	1.417	2.413	170.9	3.8	17.0
1987	10 02	23 24.09	+04 37.5					
1987	10 12	23 18.64	+02 43.6	1.462	2.395	153.2	10.8	17.3
1987	10 22	23 15.37	+01 01.5					
1987	11 01	23 14.71	-00 21.6	1.600	2.379	131.8	18.1	17.7
1987	11 11	23 16.77	-01 22.4					
1987	11 21	23 21.41	-02 00.1	1.800	2.365	112.7	22.7	18.1
1987	12 01	23 28.39	-02 15.7					
1987	12 11	23 37.40	-02 11.4	2.034	2.352	96.1	24.6	18.4

1982 BJ a,e,i = 2.32, 0.20, 24 Elements MPC 10828

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	23 57.09	-18 59.5	2.273	2.770	108.6	20.4	18.9
1987	07 14	00 01.83	-20 26.6					
1987	07 24	00 04.37	-22 13.2	2.054	2.769	125.4	17.4	18.6
1987	08 03	00 04.44	-24 16.6					
1987	08 13	00 01.87	-26 31.2	1.895	2.766	142.1	13.0	18.3
1987	08 23	23 56.69	-28 48.8					
1987	09 02	23 49.21	-30 58.3	1.826	2.759	152.3	9.8	18.1
1987	09 12	23 40.14	-32 48.3					
1987	09 22	23 30.47	-34 09.9	1.858	2.750	146.3	11.7	18.2
1987	10 02	23 21.37	-34 57.8					
1987	10 12	23 13.88	-35 11.9	1.982	2.737	130.4	16.1	18.4
1987	10 22	23 08.73	-34 55.5					
1987	11 01	23 06.30	-34 13.5	2.173	2.722	113.2	19.6	18.7
1987	11 11	23 06.63	-33 11.2					
1987	11 21	23 09.54	-31 53.3	2.398	2.703	97.1	21.3	19.0
1987	12 01	23 14.76	-30 23.4					
1987	12 11	23 21.96	-28 44.7	2.631	2.682	82.2	21.3	19.2

(3507) 1982 UX a,e,i = 3.15, 0.14, 3 Elements MPC 11337

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	23 54.48	-04 26.0	2.532	2.948	104.0	19.5	16.5
1987	07 14	23 58.21	-04 16.9					
1987	07 24	23 59.96	-04 20.8	2.311	2.973	121.7	16.9	16.3
1987	08 03	23 59.60	-04 38.1					
1987	08 13	23 57.12	-05 08.0	2.137	2.999	141.7	12.1	16.0
1987	08 23	23 52.67	-05 48.6					
1987	09 02	23 46.60	-06 36.3	2.044	3.025	163.5	5.4	15.6
1987	09 12	23 39.49	-07 26.2					
1987	09 22	23 32.08	-08 13.3	2.056	3.052	171.0	2.9	15.6
1987	10 02	23 25.16	-08 52.5					
1987	10 12	23 19.44	-09 19.9	2.179	3.078	149.1	9.6	16.0
1987	10 22	23 15.43	-09 33.8					
1987	11 01	23 13.42	-09 33.3	2.394	3.105	127.9	14.6	16.4
1987	11 11	23 13.50	-09 19.1					
1987	11 21	23 15.58	-08 52.4	2.672	3.131	108.7	17.4	16.7
1987	12 01	23 19.52	-08 14.4					
1987	12 11	23 25.10	-07 26.7	2.980	3.158	91.2	18.2	17.0

(3485) 1983 NU a,e,i = 2.44, 0.16, 2 Elements MPC 10950

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	23 48.36	-00 39.6	1.598	2.090	103.9	28.2	16.6
1987	07 14	23 55.63	+00 19.7					
1987	07 24	00 00.34	+01 03.5	1.418	2.113	119.6	24.7	16.3
1987	08 03	00 02.16	+01 29.6					
1987	08 13	00 00.92	+01 36.5	1.273	2.138	138.3	18.4	15.9
1987	08 23	23 56.66	+01 23.7					
1987	09 02	23 49.78	+00 52.9	1.190	2.167	160.4	9.0	15.5
1987	09 12	23 41.20	+00 09.0					
1987	09 22	23 32.11	-00 41.2	1.196	2.198	174.9	2.3	15.2
1987	10 02	23 23.87	-01 29.2					
1987	10 12	23 17.61	-02 07.5	1.301	2.231	151.7	12.2	15.9
1987	10 22	23 14.01	-02 31.6					
1987	11 01	23 13.35	-02 38.8	1.489	2.265	130.7	19.4	16.4
1987	11 11	23 15.56	-02 29.0					
1987	11 21	23 20.35	-02 03.3	1.734	2.301	112.5	23.4	16.9
1987	12 01	23 27.39	-01 23.2					
1987	12 11	23 36.31	-00 30.6	2.011	2.337	96.5	24.7	17.3

(3481) 1982 DS6 a,e,i = 2.24, 0.14, 5 Elements MPC 10949

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	23 42.65	+02 34.1	1.763	2.237	103.9	26.2	17.6
1987	07 14	23 49.89	+03 19.1					
1987	07 24	23 55.02	+03 48.1	1.517	2.204	119.6	23.6	17.2
1987	08 03	23 57.67	+03 57.9					
1987	08 13	23 57.60	+03 45.6	1.307	2.170	138.1	18.2	16.7
1987	08 23	23 54.65	+03 09.0					
1987	09 02	23 48.99	+02 08.2	1.161	2.137	159.9	9.3	16.1
1987	09 12	23 41.29	+00 47.3					
1987	09 22	23 32.59	-00 45.7	1.103	2.104	175.0	2.4	15.7
1987	10 02	23 24.27	-02 19.6					
1987	10 12	23 17.70	-03 42.6	1.142	2.073	151.2	13.4	16.2
1987	10 22	23 13.83	-04 46.4					
1987	11 01	23 13.18	-05 26.1	1.262	2.043	129.6	22.0	16.6
1987	11 11	23 15.82	-05 40.7					
1987	11 21	23 21.53	-05 31.6	1.433	2.016	111.4	27.2	17.0
1987	12 01	23 29.97	-05 00.8					
1987	12 11	23 40.74	-04 11.3	1.630	1.991	96.1	29.5	17.3

1975 VG9 a,e,i = 2.61, 0.13, 12 Elements MPC 9584

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 01.95	+08 16.5	2.611	2.918	97.2	20.2	17.3
1987	07 14	00 05.36	+09 29.9					
1987	07 24	00 06.83	+10 34.6	2.345	2.909	113.9	18.6	17.0
1987	08 03	00 06.13	+11 28.5					
1987	08 13	00 03.17	+12 09.4	2.115	2.899	132.6	14.9	16.7
1987	08 23	23 57.94	+12 34.8					
1987	09 02	23 50.71	+12 42.9	1.953	2.887	152.6	9.3	16.3
1987	09 12	23 42.04	+12 33.0					
1987	09 22	23 32.69	+12 06.7	1.888	2.873	166.2	4.8	16.0
1987	10 02	23 23.63	+11 27.8					
1987	10 12	23 15.78	+10 42.0	1.933	2.858	152.8	9.2	16.2
1987	10 22	23 09.86	+09 55.6					
1987	11 01	23 06.30	+09 14.4	2.077	2.841	132.3	15.0	16.6
1987	11 11	23 05.28	+08 42.8					
1987	11 21	23 06.73	+08 23.4	2.289	2.823	112.8	18.8	16.9
1987	12 01	23 10.49	+08 17.4					
1987	12 11	23 16.30	+08 25.1	2.535	2.804	95.3	20.5	17.2

1978 RM2 a,e,i = 2.74, 0.01, 5 Elements MPC 11142

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	23 53.01	+02 36.9	2.336	2.728	101.5	21.4	18.1
1987	07 14	23 57.80	+03 06.6					
1987	07 24	00 00.61	+03 22.4	2.092	2.728	118.5	19.1	17.8
1987	08 03	00 01.24	+03 22.3					
1987	08 13	23 59.60	+03 05.4	1.889	2.727	138.0	14.4	17.5
1987	08 23	23 55.74	+02 31.2					
1987	09 02	23 49.94	+01 41.3	1.757	2.727	160.0	7.3	17.1
1987	09 12	23 42.81	+00 39.5					
1987	09 22	23 35.11	-00 28.7	1.725	2.727	175.7	1.6	16.7
1987	10 02	23 27.79	-01 36.4					
1987	10 12	23 21.72	-02 36.6	1.802	2.727	152.5	9.7	17.2
1987	10 22	23 17.53	-03 24.5					
1987	11 01	23 15.62	-03 56.8	1.974	2.727	130.7	16.0	17.6
1987	11 11	23 16.10	-04 12.2					
1987	11 21	23 18.89	-04 11.3	2.208	2.727	111.3	19.7	18.0
1987	12 01	23 23.81	-03 55.0					
1987	12 11	23 30.59	-03 24.9	2.475	2.728	94.0	21.1	18.3

1986 LC a,e,i = 2.60, 0.14, 14 Elements MPC 11055

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 00.56	-09 43.8	2.428	2.859	104.6	20.1	17.1
1987	07 14	00 04.87	-10 18.3					
1987	07 24	00 07.14	-11 09.3	2.204	2.878	122.3	17.4	16.8
1987	08 03	00 07.17	-12 16.1					
1987	08 13	00 04.91	-13 36.4	2.031	2.895	141.7	12.5	16.5
1987	08 23	00 00.42	-15 05.7					
1987	09 02	23 54.02	-16 37.6	1.941	2.910	160.3	6.7	16.2
1987	09 12	23 46.32	-18 04.0					
1987	09 22	23 38.11	-19 17.3	1.956	2.924	161.2	6.4	16.2
1987	10 02	23 30.30	-20 11.5					
1987	10 12	23 23.73	-20 43.4	2.078	2.936	142.8	11.9	16.6
1987	10 22	23 18.99	-20 52.9					
1987	11 01	23 16.45	-20 41.5	2.286	2.946	123.0	16.4	16.9
1987	11 11	23 16.22	-20 12.1					
1987	11 21	23 18.19	-19 27.8	2.546	2.955	104.6	18.9	17.2
1987	12 01	23 22.21	-18 31.1					
1987	12 11	23 28.00	-17 24.6	2.829	2.961	87.9	19.4	17.5

(3473) A924 EG a,e,i = 2.36, 0.16, 1 Elements MPC 10946

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 05.25	-00 02.7	2.314	2.681	99.8	21.9	18.6
1987	07 14	00 09.71	+00 21.8					
1987	07 24	00 12.09	+00 32.4	2.077	2.696	117.1	19.6	18.3
1987	08 03	00 12.15	+00 27.7					
1987	08 13	00 09.77	+00 07.0	1.878	2.708	136.9	14.8	18.0
1987	08 23	00 04.99	-00 29.2					
1987	09 02	23 58.07	-01 18.7	1.750	2.718	159.4	7.5	17.6
1987	09 12	23 49.64	-02 17.2					
1987	09 22	23 40.53	-03 18.8	1.723	2.726	176.1	1.4	17.2
1987	10 02	23 31.73	-04 16.6					
1987	10 12	23 24.22	-05 04.7	1.808	2.731	152.2	9.8	17.7
1987	10 22	23 18.67	-05 39.0					
1987	11 01	23 15.52	-05 57.1	1.988	2.733	129.9	16.2	18.1
1987	11 11	23 14.88	-05 58.9					
1987	11 21	23 16.66	-05 45.2	2.230	2.733	110.2	19.8	18.5
1987	12 01	23 20.67	-05 17.3					
1987	12 11	23 26.63	-04 36.9	2.502	2.731	92.7	21.1	18.8

1982 VR4 a,e,i = 3.10, 0.18, 2 Elements MPC 10516

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	23 53.17	-00 37.6	2.134	2.560	102.8	22.8	17.3
1987	07 14	23 59.59	-00 04.0					
1987	07 24	00 04.04	+00 15.9	1.895	2.548	119.0	20.4	17.0
1987	08 03	00 06.27	+00 20.3					
1987	08 13	00 06.16	+00 08.4	1.696	2.539	137.7	15.6	16.6
1987	08 23	00 03.67	-00 19.7					
1987	09 02	23 59.03	-01 02.2	1.565	2.533	159.1	8.2	16.2
1987	09 12	23 52.79	-01 54.7					
1987	09 22	23 45.74	-02 51.5	1.528	2.531	177.4	1.0	15.8
1987	10 02	23 38.87	-03 45.4					
1987	10 12	23 33.14	-04 29.7	1.595	2.533	154.4	9.8	16.3
1987	10 22	23 29.27	-05 00.0					
1987	11 01	23 27.74	-05 13.4	1.754	2.537	133.0	16.6	16.7
1987	11 11	23 28.68	-05 09.5					
1987	11 21	23 32.02	-04 49.2	1.977	2.545	114.1	20.8	17.1
1987	12 01	23 37.57	-04 13.7					
1987	12 11	23 45.06	-03 25.1	2.237	2.557	97.3	22.5	17.4

1983 RX2 a,e,i = 2.46, 0.14, 6 Elements MPC 8534

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	23 53.49	-09 13.4	1.624	2.141	106.0	27.2	17.8
1987	07 14	00 02.16	-08 58.9					
1987	07 24	00 08.49	-09 01.0	1.418	2.131	121.3	24.0	17.4
1987	08 03	00 12.10	-09 20.9					
1987	08 13	00 12.70	-09 57.5	1.252	2.125	139.2	18.2	16.9
1987	08 23	00 10.16	-10 48.1					
1987	09 02	00 04.67	-11 46.6	1.149	2.122	159.0	9.8	16.5
1987	09 12	23 56.94	-12 44.0					
1987	09 22	23 48.08	-13 30.6	1.132	2.123	167.3	6.0	16.3
1987	10 02	23 39.51	-13 57.7					
1987	10 12	23 32.58	-14 00.6	1.208	2.127	149.0	14.0	16.7
1987	10 22	23 28.19	-13 38.7					
1987	11 01	23 26.83	-12 54.0	1.364	2.135	129.2	21.1	17.2
1987	11 11	23 28.54	-11 50.0					
1987	11 21	23 33.06	-10 30.3	1.572	2.146	111.9	25.3	17.7
1987	12 01	23 40.07	-08 58.1					
1987	12 11	23 49.17	-07 16.0	1.811	2.160	96.7	26.9	18.0

(3452) 1980 OA a,e,i = 2.27, 0.08, 2 Elements MPC 10829

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	23 57.60	-03 32.1	1.617	2.094	102.9	28.2	17.2
1987	07 14	00 06.27	-02 48.6					
1987	07 24	00 12.65	-02 20.4	1.410	2.090	118.0	25.4	16.8
1987	08 03	00 16.33	-02 09.6					
1987	08 13	00 17.00	-02 17.2	1.235	2.087	136.1	19.7	16.3
1987	08 23	00 14.49	-02 43.1					
1987	09 02	00 08.93	-03 24.9	1.118	2.086	157.5	10.7	15.8
1987	09 12	00 00.97	-04 16.6					
1987	09 22	23 51.68	-05 10.3	1.086	2.088	175.6	2.1	15.4
1987	10 02	23 42.52	-05 56.7					
1987	10 12	23 34.90	-06 27.7	1.149	2.092	153.9	12.1	15.9
1987	10 22	23 29.85	-06 39.2					
1987	11 01	23 27.91	-06 29.6	1.295	2.098	132.5	20.4	16.5
1987	11 11	23 29.18	-06 00.0					
1987	11 21	23 33.41	-05 12.6	1.498	2.106	114.2	25.3	16.9
1987	12 01	23 40.27	-04 09.7					
1987	12 11	23 49.36	-02 54.1	1.732	2.115	98.5	27.4	17.3

1981 QZ2 a,e,i = 3.21, 0.15, 2 Elements MPC 8384

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 07.22	-00 27.8	2.536	2.884	99.5	20.3	17.6
1987	07 14	00 12.11	-00 04.9					
1987	07 24	00 15.11	+00 05.1	2.308	2.908	116.6	18.2	17.4
1987	08 03	00 16.05	+00 01.3					
1987	08 13	00 14.85	-00 16.5	2.118	2.932	135.9	13.9	17.1
1987	08 23	00 11.56	-00 47.5					
1987	09 02	00 06.42	-01 29.6	2.000	2.957	157.5	7.5	16.7
1987	09 12	23 59.94	-02 19.0					
1987	09 22	23 52.76	-03 10.9	1.980	2.984	177.6	0.8	16.4
1987	10 02	23 45.70	-03 59.7					
1987	10 12	23 39.54	-04 40.3	2.072	3.010	155.7	7.8	16.9
1987	10 22	23 34.87	-05 09.2					
1987	11 01	23 32.11	-05 24.3	2.264	3.038	133.9	13.6	17.3
1987	11 11	23 31.43	-05 25.0					
1987	11 21	23 32.81	-05 12.0	2.527	3.066	114.1	17.1	17.6
1987	12 01	23 36.15	-04 46.2					
1987	12 11	23 41.23	-04 09.2	2.829	3.094	96.2	18.4	17.9

1982 FH3 a,e,i = 2.45, 0.09, 3 Elements MPC 10844

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 06.57	+02 43.5	2.081	2.446	98.4	24.3	17.5
1987	07 14	00 12.86	+03 20.3					
1987	07 24	00 17.02	+03 42.2	1.863	2.467	114.7	22.0	17.2
1987	08 03	00 18.80	+03 47.3					
1987	08 13	00 18.01	+03 34.1	1.677	2.486	133.6	17.2	16.9
1987	08 23	00 14.63	+03 02.2					
1987	09 02	00 08.87	+02 12.8	1.552	2.506	155.5	9.6	16.5
1987	09 12	00 01.31	+01 09.6					
1987	09 22	23 52.79	-00 01.3	1.521	2.525	179.2	0.3	16.0
1987	10 02	23 44.39	-01 11.9					
1987	10 12	23 37.16	-02 14.7	1.598	2.543	156.3	9.1	16.6
1987	10 22	23 31.87	-03 03.7					
1987	11 01	23 29.02	-03 35.4	1.770	2.561	134.0	16.2	17.0
1987	11 11	23 28.77	-03 48.8					
1987	11 21	23 31.01	-03 44.6	2.009	2.577	114.3	20.5	17.5
1987	12 01	23 35.54	-03 24.1					
1987	12 11	23 42.06	-02 49.5	2.284	2.593	96.9	22.1	17.8

1950 SJ a,e,i = 2.25, 0.22, 8 Elements MPC 8142

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	23 32.36	+09 05.0	1.245	1.781	103.4	33.7	17.0
1987	07 14	23 44.46	+11 06.2					
1987	07 24	23 54.48	+12 52.5	1.071	1.765	115.5	31.3	16.6
1987	08 03	00 01.96	+14 18.7					
1987	08 13	00 06.50	+15 18.9	0.923	1.756	130.2	26.2	16.1
1987	08 23	00 07.77	+15 46.8					
1987	09 02	00 05.78	+15 36.1	0.817	1.757	148.0	17.7	15.6
1987	09 12	00 01.08	+14 44.6					
1987	09 22	23 54.77	+13 15.1	0.774	1.765	165.9	8.0	15.2
1987	10 02	23 48.44	+11 19.0					
1987	10 12	23 43.70	+09 13.5	0.811	1.781	159.8	11.2	15.4
1987	10 22	23 41.67	+07 16.2					
1987	11 01	23 42.96	+05 40.3	0.926	1.805	140.3	20.5	16.0
1987	11 11	23 47.56	+04 32.7					
1987	11 21	23 55.15	+03 54.7	1.102	1.836	122.8	26.9	16.6
1987	12 01	00 05.32	+03 44.5					
1987	12 11	00 17.57	+03 58.4	1.320	1.872	107.7	30.1	17.1

1981 DV a,e,i = 2.63, 0.05, 14 Elements MPC 11044

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 04.87	+12 48.8	2.439	2.717	94.6	21.9	19.5
1987	07 14	00 10.77	+13 38.9					
1987	07 24	00 14.84	+14 16.0	2.181	2.709	110.5	20.6	19.3
1987	08 03	00 16.84	+14 37.2					
1987	08 13	00 16.61	+14 39.7	1.951	2.701	128.5	17.1	18.9
1987	08 23	00 14.08	+14 20.7					
1987	09 02	00 09.41	+13 38.1	1.777	2.692	148.8	11.2	18.5
1987	09 12	00 03.02	+12 32.2					
1987	09 22	23 55.61	+11 06.0	1.692	2.683	168.1	4.4	18.1
1987	10 02	23 48.08	+09 25.8					
1987	10 12	23 41.40	+07 40.4	1.716	2.673	159.3	7.6	18.3
1987	10 22	23 36.34	+05 59.1					
1987	11 01	23 33.48	+04 29.7	1.843	2.663	137.8	14.5	18.7
1987	11 11	23 33.06	+03 17.5					
1987	11 21	23 35.07	+02 24.8	2.047	2.653	117.5	19.3	19.0
1987	12 01	23 39.39	+01 52.1					
1987	12 11	23 45.77	+01 38.4	2.295	2.643	99.5	21.6	19.3

1976 GD2 a,e,i = 2.25, 0.14, 8 Elements MPC 10830

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 10.00	+08 15.8	2.019	2.344	95.4	25.6	18.9
1987	07 14	00 16.81	+09 03.5					
1987	07 24	00 21.46	+09 35.7	1.807	2.372	111.2	23.5	18.6
1987	08 03	00 23.66	+09 49.8					
1987	08 13	00 23.21	+09 43.2	1.621	2.399	129.7	19.0	18.3
1987	08 23	00 20.02	+09 13.8					
1987	09 02	00 14.28	+08 20.9	1.490	2.424	151.3	11.6	17.9
1987	09 12	00 06.55	+07 06.9					
1987	09 22	23 57.70	+05 37.1	1.447	2.447	173.4	2.7	17.5
1987	10 02	23 48.85	+04 00.2					
1987	10 12	23 41.15	+02 26.3	1.511	2.468	158.7	8.5	17.9
1987	10 22	23 35.44	+01 04.0					
1987	11 01	23 32.27	-00 00.6	1.675	2.487	136.1	16.1	18.4
1987	11 11	23 31.80	-00 44.8					
1987	11 21	23 33.94	-01 08.3	1.909	2.504	116.0	20.8	18.8
1987	12 01	23 38.47	-01 12.3					
1987	12 11	23 45.06	-00 59.0	2.180	2.519	98.3	22.8	19.2

(3417) 1937 GG a,e,i = 2.42, 0.23, 8 Elements MPC 10611

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 20.68	-07 09.5	2.449	2.795	99.0	21.1	18.9
1987	07 14	00 25.36	-07 16.5					
1987	07 24	00 27.99	-07 38.2	2.225	2.826	116.3	18.8	18.6
1987	08 03	00 28.36	-08 14.8					
1987	08 13	00 26.34	-09 05.0	2.039	2.853	135.7	14.4	18.3
1987	08 23	00 21.94	-10 06.2					
1987	09 02	00 15.38	-11 13.7	1.925	2.878	156.5	8.1	18.0
1987	09 12	00 07.18	-12 21.1					
1987	09 22	23 58.11	-13 21.5	1.912	2.900	167.4	4.3	17.9
1987	10 02	23 49.10	-14 08.7					
1987	10 12	23 41.06	-14 38.2	2.012	2.919	150.1	9.8	18.2
1987	10 22	23 34.70	-14 48.5					
1987	11 01	23 30.51	-14 40.0	2.207	2.935	129.1	15.2	18.6
1987	11 11	23 28.66	-14 14.6					
1987	11 21	23 29.12	-13 34.6	2.466	2.949	109.6	18.4	18.9
1987	12 01	23 31.73	-12 42.4					
1987	12 11	23 36.26	-11 40.3	2.756	2.959	92.0	19.4	19.2

1981 EM a,e,i = 2.46, 0.26, 6 Elements MPC 8284

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	23 57.57	-03 28.8	1.697	2.165	102.9	27.2	17.9
1987	07 14	00 06.60	-02 16.8					
1987	07 24	00 13.73	-01 13.4	1.437	2.107	117.4	25.3	17.4
1987	08 03	00 18.52	-00 20.4					
1987	08 13	00 20.60	+00 20.8	1.212	2.052	134.3	20.7	16.9
1987	08 23	00 19.61	+00 48.8					
1987	09 02	00 15.39	+01 03.1	1.042	2.000	154.5	12.5	16.2
1987	09 12	00 08.29	+01 05.2					
1987	09 22	23 59.12	+00 58.2	0.949	1.953	177.6	1.3	15.5
1987	10 02	23 49.30	+00 47.7					
1987	10 12	23 40.54	+00 41.0	0.948	1.911	158.1	11.3	15.9
1987	10 22	23 34.25	+00 44.2					
1987	11 01	23 31.42	+01 01.8	1.028	1.875	136.2	21.5	16.3
1987	11 11	23 32.38	+01 36.2					
1987	11 21	23 37.01	+02 27.2	1.164	1.847	118.0	28.2	16.8
1987	12 01	23 44.97	+03 34.3					
1987	12 11	23 55.81	+04 55.5	1.332	1.827	103.1	31.7	17.1

1986 FA a,e,i = 2.24, 0.09, 5 Elements MPC 10633

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 16.66	-04 26.0	1.975	2.357	98.9	25.2	18.4
1987	07 14	00 23.34	-03 59.0					
1987	07 24	00 27.79	-03 46.7	1.757	2.373	115.0	22.8	18.1
1987	08 03	00 29.69	-03 50.2					
1987	08 13	00 28.79	-04 09.5	1.571	2.387	133.9	17.8	17.7
1987	08 23	00 24.98	-04 43.8					
1987	09 02	00 18.42	-05 29.8	1.445	2.400	155.5	10.0	17.3
1987	09 12	00 09.68	-06 21.7					
1987	09 22	23 59.69	-07 12.7	1.412	2.412	173.4	2.8	16.9
1987	10 02	23 49.65	-07 54.8					
1987	10 12	23 40.81	-08 22.1	1.484	2.421	154.1	10.4	17.4
1987	10 22	23 34.10	-08 31.4					
1987	11 01	23 30.10	-08 21.7	1.649	2.430	132.2	17.6	17.8
1987	11 11	23 28.97	-07 54.3					
1987	11 21	23 30.61	-07 11.3	1.877	2.436	112.8	22.0	18.2
1987	12 01	23 34.77	-06 14.7					
1987	12 11	23 41.11	-05 06.7	2.136	2.441	95.8	23.7	18.6

1981 DZ a,e,i = 2.68, 0.09, 9 Elements MPC 10819

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 14.28	+11 46.3	2.640	2.878	93.0	20.7	19.3
1987	07 14	00 19.33	+12 44.6					
1987	07 24	00 22.56	+13 32.2	2.389	2.886	109.2	19.4	19.1
1987	08 03	00 23.76	+14 06.7					
1987	08 13	00 22.79	+14 26.0	2.165	2.894	127.4	16.2	18.8
1987	08 23	00 19.62	+14 27.6					
1987	09 02	00 14.39	+14 09.8	1.998	2.901	147.6	10.8	18.4
1987	09 12	00 07.53	+13 32.6					
1987	09 22	23 59.68	+12 37.7	1.920	2.906	166.4	4.6	18.1
1987	10 02	23 51.69	+11 29.5					
1987	10 12	23 44.44	+10 14.6	1.953	2.910	159.8	6.8	18.2
1987	10 22	23 38.68	+09 00.1					
1987	11 01	23 34.93	+07 52.7	2.091	2.913	138.9	12.9	18.6
1987	11 11	23 33.46	+06 57.1					
1987	11 21	23 34.29	+06 16.2	2.309	2.914	118.7	17.3	18.9
1987	12 01	23 37.33	+05 51.1					
1987	12 11	23 42.35	+05 41.6	2.573	2.915	100.3	19.4	19.2

2126 P-L a,e,i = 2.47, 0.04, 7 Elements MPC 11338

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 15.18	+01 30.0	2.168	2.503	96.9	23.8	17.9
1987	07 14	00 21.42	+02 34.8					
1987	07 24	00 25.65	+03 29.6	1.918	2.494	112.8	22.1	17.5
1987	08 03	00 27.57	+04 12.7					
1987	08 13	00 26.93	+04 42.8	1.698	2.485	131.1	17.9	17.1
1987	08 23	00 23.59	+04 58.5					
1987	09 02	00 17.64	+04 59.0	1.537	2.475	152.3	10.9	16.7
1987	09 12	00 09.52	+04 45.5					
1987	09 22	00 00.02	+04 20.5	1.465	2.466	174.5	2.2	16.2
1987	10 02	23 50.26	+03 48.9					
1987	10 12	23 41.45	+03 17.0	1.498	2.456	158.9	8.4	16.5
1987	10 22	23 34.56	+02 50.6					
1987	11 01	23 30.26	+02 34.6	1.630	2.446	136.4	16.2	17.0
1987	11 11	23 28.84	+02 32.0					
1987	11 21	23 30.25	+02 43.6	1.830	2.437	116.5	21.3	17.4
1987	12 01	23 34.30	+03 09.7					
1987	12 11	23 40.67	+03 49.2	2.067	2.427	99.2	23.6	17.7

1985 CH2 a,e,i = 2.57, 0.07, 10 Elements MPC 10310

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07 04	00 09.65	-00 29.7	2.360	2.712	99.0	21.7	19.0
1987 07 14	00 15.69	-00 24.1					
1987 07 24	00 19.88	-00 34.1	2.101	2.701	115.7	19.8	18.6
1987 08 03	00 21.96	-01 01.5					
1987 08 13	00 21.77	-01 46.7	1.878	2.690	134.8	15.5	18.3
1987 08 23	00 19.22	-02 49.2					
1987 09 02	00 14.44	-04 06.4	1.723	2.678	156.3	8.7	17.8
1987 09 12	00 07.87	-05 33.0					
1987 09 22	00 00.18	-07 01.5	1.665	2.665	173.5	2.4	17.5
1987 10 02	23 52.29	-08 23.6					
1987 10 12	23 45.20	-09 31.6	1.716	2.651	154.2	9.4	17.8
1987 10 22	23 39.71	-10 20.6					
1987 11 01	23 36.41	-10 48.1	1.864	2.637	132.3	16.2	18.2
1987 11 11	23 35.56	-10 54.3					
1987 11 21	23 37.18	-10 41.0	2.077	2.622	112.7	20.3	18.6
1987 12 01	23 41.13	-10 10.4					
1987 12 11	23 47.16	-09 25.0	2.323	2.607	95.4	22.1	18.8

1985 GB a,e,i = 3.25, 0.11, 2 Elements MPC 10039

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07 04	00 20.78	+00 05.1	3.276	3.534	96.2	16.6	18.1
1987 07 14	00 24.21	+00 24.0					
1987 07 24	00 26.06	+00 32.7	3.009	3.544	113.9	15.2	17.9
1987 08 03	00 26.20	+00 30.6					
1987 08 13	00 24.56	+00 17.5	2.779	3.553	133.4	12.0	17.6
1987 08 23	00 21.17	-00 06.0					
1987 09 02	00 16.22	-00 38.5	2.621	3.561	154.9	6.9	17.3
1987 09 12	00 10.05	-01 17.4					
1987 09 22	00 03.15	-01 59.5	2.565	3.568	177.1	0.8	16.9
1987 10 02	23 56.14	-02 40.6					
1987 10 12	23 49.63	-03 16.8	2.626	3.574	158.6	5.8	17.3
1987 10 22	23 44.19	-03 45.0					
1987 11 01	23 40.24	-04 02.7	2.795	3.579	136.3	11.0	17.6
1987 11 11	23 38.02	-04 08.9					
1987 11 21	23 37.62	-04 03.4	3.044	3.584	115.6	14.4	17.9
1987 12 01	23 39.02	-03 46.6					
1987 12 11	23 42.09	-03 19.5	3.336	3.587	96.7	15.8	18.1

1981 EZ7 a,e,i = 2.69, 0.15, 6 Elements MPC 11044

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07 04	00 02.72	+06 52.5	1.912	2.281	97.6	26.2	19.2
1987 07 14	00 11.09	+07 59.3					
1987 07 24	00 17.47	+08 52.4	1.694	2.283	112.4	24.3	18.9
1987 08 03	00 21.53	+09 29.0					
1987 08 13	00 23.04	+09 46.4	1.506	2.290	129.7	19.9	18.6
1987 08 23	00 21.86	+09 42.3					
1987 09 02	00 18.07	+09 15.2	1.369	2.299	150.0	12.7	18.1
1987 09 12	00 12.14	+08 26.1					
1987 09 22	00 04.86	+07 19.0	1.315	2.312	171.3	3.8	17.7
1987 10 02	23 57.33	+06 01.1					
1987 10 12	23 50.72	+04 42.3	1.360	2.328	161.4	7.9	18.0
1987 10 22	23 45.96	+03 31.2					
1987 11 01	23 43.66	+02 35.0	1.500	2.346	139.6	15.9	18.5
1987 11 11	23 44.07	+01 57.6					
1987 11 21	23 47.11	+01 39.9	1.713	2.368	120.1	21.2	19.0
1987 12 01	23 52.58	+01 41.4					
1987 12 11	00 00.16	+02 00.2	1.969	2.391	103.0	23.7	19.3

1966 PK a,e,i = 2.98, 0.22, 2 Elements MPC 10938

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 04.23	-02 24.8	2.000	2.410	101.0	24.5	16.9
1987	07 14	00 12.31	-01 43.3					
1987	07 24	00 18.49	-01 14.6	1.757	2.387	116.3	22.4	16.6
1987	08 03	00 22.45	-01 00.4					
1987	08 13	00 23.95	-01 01.6	1.550	2.369	134.0	17.9	16.1
1987	08 23	00 22.85	-01 18.4					
1987	09 02	00 19.19	-01 49.2	1.403	2.354	154.6	10.6	15.7
1987	09 12	00 13.40	-02 30.2					
1987	09 22	00 06.21	-03 15.6	1.342	2.344	175.8	1.8	15.2
1987	10 02	23 58.68	-03 58.3					
1987	10 12	23 51.94	-04 31.2	1.382	2.339	158.5	9.0	15.6
1987	10 22	23 46.96	-04 49.4					
1987	11 01	23 44.39	-04 49.8	1.513	2.338	136.9	16.9	16.0
1987	11 11	23 44.52	-04 32.1					
1987	11 21	23 47.31	-03 57.5	1.711	2.342	117.9	21.9	16.4
1987	12 01	23 52.60	-03 07.4					
1987	12 11	00 00.07	-02 04.2	1.950	2.351	101.3	24.2	16.8

(3524) 1981 EE27 a,e,i = 2.62, 0.13, 13 Elements MPC 11433

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 16.72	+05 39.0	2.669	2.937	94.9	20.2	18.8
1987	07 14	00 22.09	+05 55.3					
1987	07 24	00 25.73	+05 57.7	2.395	2.928	111.8	18.8	18.5
1987	08 03	00 27.44	+05 44.3					
1987	08 13	00 27.05	+05 13.7	2.153	2.918	130.9	15.2	18.1
1987	08 23	00 24.52	+04 25.0					
1987	09 02	00 19.94	+03 18.9	1.974	2.907	152.6	9.2	17.7
1987	09 12	00 13.69	+01 58.3					
1987	09 22	00 06.33	+00 28.3	1.891	2.894	176.3	1.3	17.2
1987	10 02	23 58.67	-01 04.2					
1987	10 12	23 51.57	-02 31.4	1.923	2.879	159.4	7.0	17.6
1987	10 22	23 45.79	-03 46.7					
1987	11 01	23 41.92	-04 45.4	2.061	2.862	136.4	13.8	17.9
1987	11 11	23 40.25	-05 25.3					
1987	11 21	23 40.88	-05 46.3	2.274	2.845	115.7	18.2	18.3
1987	12 01	23 43.72	-05 49.2					
1987	12 11	23 48.59	-05 36.0	2.527	2.826	97.3	20.2	18.6

1983 VP7 a,e,i = 2.63, 0.19, 13 Elements MPC 10840

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 23.23	-06 39.3	1.748	2.145	98.2	28.0	15.5
1987	07 14	00 31.49	-05 22.0					
1987	07 24	00 37.38	-04 14.2	1.549	2.159	113.0	25.7	15.2
1987	08 03	00 40.50	-03 16.7					
1987	08 13	00 40.56	-02 29.7	1.378	2.178	130.6	20.7	14.8
1987	08 23	00 37.35	-01 53.1					
1987	09 02	00 30.95	-01 25.9	1.260	2.200	151.6	12.6	14.4
1987	09 12	00 21.92	-01 05.8					
1987	09 22	00 11.24	-00 49.7	1.225	2.227	175.3	2.1	13.9
1987	10 02	00 00.29	-00 33.8					
1987	10 12	23 50.51	-00 13.9	1.292	2.256	160.1	8.7	14.3
1987	10 22	23 43.00	+00 12.6					
1987	11 01	23 38.44	+00 47.8	1.455	2.289	137.8	16.9	14.9
1987	11 11	23 37.01	+01 32.6					
1987	11 21	23 38.55	+02 26.8	1.686	2.324	118.4	22.0	15.4
1987	12 01	23 42.79	+03 30.1					
1987	12 11	23 49.33	+04 41.7	1.958	2.361	101.5	24.1	15.8

1981 ED28 a,e,i = 2.72, 0.09, 3 Elements MPC 10026

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07	04	00 17.48	+01 23.9	2.219	2.543	96.4	23.4	19.2
1987 07	14	00 24.50	+01 58.0					
1987 07	24	00 29.60	+02 18.3	1.990	2.555	112.4	21.6	19.0
1987 08	03	00 32.49	+02 23.3					
1987 08	13	00 33.00	+02 12.0	1.791	2.569	130.8	17.4	18.6
1987 08	23	00 31.01	+01 44.1					
1987 09	02	00 26.65	+01 00.6	1.650	2.584	151.9	10.6	18.2
1987 09	12	00 20.31	+00 05.2					
1987 09	22	00 12.69	-00 56.9	1.598	2.600	174.9	2.0	17.8
1987 10	02	00 04.72	-01 58.8					
1987 10	12	23 57.42	-02 53.3	1.654	2.616	160.5	7.3	18.1
1987 10	22	23 51.63	-03 35.0					
1987 11	01	23 47.97	-04 00.2	1.809	2.633	138.1	14.6	18.6
1987 11	11	23 46.73	-04 07.8					
1987 11	21	23 47.91	-03 58.4	2.039	2.650	118.0	19.2	19.0
1987 12	01	23 51.39	-03 33.1					
1987 12	11	23 56.93	-02 54.1	2.310	2.668	100.3	21.3	19.4

1985 AF a,e,i = 2.40, 0.19, 6 Elements MPC 9680

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07	04	00 25.81	+08 55.2	2.542	2.763	91.5	21.6	18.2
1987 07	14	00 31.75	+10 00.5					
1987 07	24	00 35.95	+10 57.1	2.257	2.738	107.4	20.7	17.9
1987 08	03	00 38.14	+11 42.8					
1987 08	13	00 38.06	+12 15.6	1.996	2.711	125.3	17.8	17.5
1987 08	23	00 35.55	+12 33.0					
1987 09	02	00 30.57	+12 32.8	1.787	2.681	145.6	12.3	17.0
1987 09	12	00 23.39	+12 13.8					
1987 09	22	00 14.58	+11 36.4	1.663	2.649	166.4	5.1	16.6
1987 10	02	00 05.05	+10 43.7					
1987 10	12	23 55.89	+09 41.7	1.645	2.615	162.7	6.5	16.6
1987 10	22	23 48.12	+08 38.0					
1987 11	01	23 42.54	+07 39.9	1.732	2.579	140.7	14.1	17.0
1987 11	11	23 39.63	+06 53.6					
1987 11	21	23 39.49	+06 22.3	1.899	2.540	119.9	19.7	17.3
1987 12	01	23 42.06	+06 07.9					
1987 12	11	23 47.11	+06 10.3	2.110	2.501	101.6	22.7	17.6

4069 P-L a,e,i = 3.09, 0.04, 9 Elements MPC 9299

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07	04	00 22.92	+08 13.0	2.991	3.200	92.5	18.5	19.3
1987 07	14	00 27.92	+08 45.2					
1987 07	24	00 31.31	+09 06.2	2.720	3.202	109.2	17.4	19.1
1987 08	03	00 32.92	+09 14.5					
1987 08	13	00 32.64	+09 08.7	2.479	3.203	127.9	14.5	18.8
1987 08	23	00 30.43	+08 47.8					
1987 09	02	00 26.40	+08 11.5	2.297	3.203	148.8	9.4	18.5
1987 09	12	00 20.86	+07 21.1					
1987 09	22	00 14.31	+06 19.5	2.208	3.203	171.0	2.8	18.1
1987 10	02	00 07.40	+05 11.0					
1987 10	12	00 00.87	+04 01.5	2.232	3.203	163.8	5.0	18.2
1987 10	22	23 55.37	+02 56.6					
1987 11	01	23 51.44	+02 01.1	2.367	3.202	141.3	11.2	18.6
1987 11	11	23 49.39	+01 18.5					
1987 11	21	23 49.34	+00 50.2	2.587	3.201	120.3	15.5	18.9
1987 12	01	23 51.27	+00 36.7					
1987 12	11	23 55.06	+00 37.4	2.858	3.199	101.2	17.6	19.2

1977 QA1 a,e,i = 2.22, 0.17, 1 Elements MPC 11517

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 21.09	+01 41.4	1.681	2.046	95.5	29.6	16.8
1987	07 14	00 30.23	+02 44.0					
1987	07 24	00 37.04	+03 31.9	1.502	2.084	110.2	27.2	16.6
1987	08 03	00 41.12	+04 02.9					
1987	08 13	00 42.18	+04 15.4	1.344	2.122	127.9	22.1	16.2
1987	08 23	00 40.01	+04 08.2					
1987	09 02	00 34.67	+03 41.4	1.233	2.161	149.1	13.9	15.8
1987	09 12	00 26.67	+02 57.9					
1987	09 22	00 16.96	+02 03.1	1.200	2.201	173.2	3.1	15.4
1987	10 02	00 06.85	+01 05.1					
1987	10 12	23 57.77	+00 12.7	1.269	2.239	162.0	7.9	15.8
1987	10 22	23 50.80	-00 27.1					
1987	11 01	23 46.63	-00 49.8	1.432	2.277	139.1	16.6	16.3
1987	11 11	23 45.48	-00 54.0					
1987	11 21	23 47.22	-00 40.3	1.665	2.314	119.2	21.9	16.9
1987	12 01	23 51.57	-00 10.3					
1987	12 11	23 58.17	+00 33.8	1.939	2.349	101.9	24.2	17.3

1982 KC1 a,e,i = 2.52, 0.13, 5 Elements MPC 10767

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 25.48	+07 36.1	2.413	2.654	92.1	22.5	18.0
1987	07 14	00 31.77	+08 22.0					
1987	07 24	00 36.18	+08 55.4	2.181	2.678	108.2	21.1	17.7
1987	08 03	00 38.45	+09 14.4					
1987	08 13	00 38.41	+09 17.3	1.972	2.701	126.6	17.5	17.4
1987	08 23	00 35.96	+09 02.5					
1987	09 02	00 31.19	+08 29.4	1.816	2.723	147.7	11.4	17.1
1987	09 12	00 24.49	+07 39.3					
1987	09 22	00 16.49	+06 35.4	1.748	2.743	170.5	3.5	16.7
1987	10 02	00 08.07	+05 23.4					
1987	10 12	00 00.22	+04 10.7	1.790	2.762	163.7	5.8	16.9
1987	10 22	23 53.75	+03 04.1					
1987	11 01	23 49.30	+02 09.4	1.939	2.780	140.8	13.0	17.3
1987	11 11	23 47.19	+01 30.2					
1987	11 21	23 47.47	+01 07.6	2.168	2.795	119.9	17.8	17.7
1987	12 01	23 50.03	+01 01.7					
1987	12 11	23 54.65	+01 11.2	2.444	2.809	101.4	20.1	18.1

1981 EH4 a,e,i = 2.62, 0.23, 8 Elements MPC 10768

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	23 57.07	+10 19.0	1.687	2.079	97.4	29.0	17.8
1987	07 14	00 07.96	+11 58.8					
1987	07 24	00 17.12	+13 26.9	1.466	2.054	110.4	27.6	17.5
1987	08 03	00 24.17	+14 39.7					
1987	08 13	00 28.77	+15 33.2	1.270	2.034	125.6	23.9	17.0
1987	08 23	00 30.60	+16 03.1					
1987	09 02	00 29.52	+16 04.6	1.118	2.021	143.6	17.2	16.6
1987	09 12	00 25.77	+15 34.8					
1987	09 22	00 20.00	+14 33.8	1.032	2.014	163.2	8.3	16.1
1987	10 02	00 13.32	+13 06.6					
1987	10 12	00 07.15	+11 24.2	1.034	2.015	165.1	7.3	16.1
1987	10 22	00 02.70	+09 39.8					
1987	11 01	00 00.89	+08 06.3	1.125	2.021	145.3	16.3	16.6
1987	11 11	00 02.12	+06 52.7					
1987	11 21	00 06.36	+06 03.2	1.289	2.035	126.1	23.1	17.1
1987	12 01	00 13.39	+05 38.6					
1987	12 11	00 22.82	+05 37.1	1.503	2.054	109.6	26.8	17.5

1982 DN a,e,i = 2.36, 0.17, 2 Elements MPC 10832

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 34.16	+04 37.9	2.391	2.620	91.3	22.8	18.4
1987	07 14	00 40.66	+05 18.0					
1987	07 24	00 45.28	+05 45.7	2.156	2.644	107.4	21.5	18.2
1987	08 03	00 47.75	+05 59.2					
1987	08 13	00 47.85	+05 57.3	1.942	2.665	125.9	17.9	17.9
1987	08 23	00 45.45	+05 38.9					
1987	09 02	00 40.59	+05 04.0	1.780	2.685	147.2	11.8	17.5
1987	09 12	00 33.60	+04 14.4					
1987	09 22	00 25.10	+03 14.0	1.705	2.701	170.9	3.4	17.1
1987	10 02	00 15.98	+02 08.5					
1987	10 12	00 07.26	+01 05.2	1.741	2.716	164.5	5.6	17.3
1987	10 22	23 59.87	+00 10.4					
1987	11 01	23 54.51	-00 30.8	1.884	2.728	141.0	13.2	17.7
1987	11 11	23 51.56	-00 55.8					
1987	11 21	23 51.09	-01 04.1	2.107	2.737	119.9	18.2	18.1
1987	12 01	23 53.04	-00 56.0					
1987	12 11	23 57.16	-00 33.2	2.376	2.744	101.3	20.6	18.5

1983 WA a,e,i = 2.73, 0.22, 8 Elements MPC 10029

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 29.69	+11 39.1	2.868	3.036	89.6	19.6	19.1
1987	07 14	00 35.49	+12 35.5					
1987	07 24	00 39.74	+13 23.3	2.563	2.999	105.5	19.1	18.8
1987	08 03	00 42.20	+14 00.3					
1987	08 13	00 42.66	+14 24.5	2.280	2.960	123.3	16.6	18.4
1987	08 23	00 40.98	+14 33.6					
1987	09 02	00 37.11	+14 25.5	2.048	2.919	143.2	12.0	18.0
1987	09 12	00 31.27	+13 58.8					
1987	09 22	00 23.89	+13 13.9	1.899	2.877	163.9	5.5	17.6
1987	10 02	00 15.70	+12 13.1					
1987	10 12	00 07.59	+11 01.9	1.857	2.834	165.3	5.1	17.5
1987	10 22	00 00.47	+09 47.1					
1987	11 01	23 55.09	+08 35.9	1.924	2.789	144.0	12.1	17.8
1987	11 11	23 51.98	+07 34.9					
1987	11 21	23 51.32	+06 47.9	2.079	2.743	122.8	17.6	18.1
1987	12 01	23 53.16	+06 17.5					
1987	12 11	23 57.34	+06 03.9	2.285	2.696	103.9	20.8	18.3

1967 UV a,e,i = 2.26, 0.11, 5 Elements MPC 10841

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 26.04	-02 58.1	1.999	2.338	96.2	25.6	17.9
1987	07 14	00 34.72	-02 19.8					
1987	07 24	00 41.55	-01 54.4	1.744	2.313	111.2	24.2	17.5
1987	08 03	00 46.18	-01 43.6					
1987	08 13	00 48.26	-01 48.5	1.515	2.288	128.5	20.3	17.1
1987	08 23	00 47.49	-02 09.3					
1987	09 02	00 43.71	-02 45.1	1.337	2.262	148.8	13.3	16.6
1987	09 12	00 37.11	-03 32.0					
1987	09 22	00 28.28	-04 24.2	1.239	2.235	170.4	4.3	16.0
1987	10 02	00 18.30	-05 13.4					
1987	10 12	00 08.54	-05 51.2	1.241	2.209	161.0	8.5	16.2
1987	10 22	00 00.32	-06 11.4					
1987	11 01	23 54.66	-06 10.3	1.337	2.183	138.6	17.5	16.6
1987	11 11	23 52.11	-05 47.8					
1987	11 21	23 52.74	-05 05.5	1.502	2.157	118.6	23.7	17.0
1987	12 01	23 56.41	-04 05.7					
1987	12 11	00 02.80	-02 51.1	1.704	2.133	101.6	26.9	17.4

1985 JF a,e,i = 3.18, 0.09, 17 Elements MPC 10403

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 33.43	+12 34.9	3.332	3.456	88.4	17.1	18.4
1987	07 14	00 38.39	+13 02.4					
1987	07 24	00 41.88	+13 19.5	3.046	3.452	105.1	16.5	18.2
1987	08 03	00 43.74	+13 24.4					
1987	08 13	00 43.85	+13 15.4	2.781	3.447	123.6	14.2	17.9
1987	08 23	00 42.17	+12 51.4					
1987	09 02	00 38.75	+12 11.3	2.572	3.441	144.1	9.9	17.6
1987	09 12	00 33.84	+11 15.7					
1987	09 22	00 27.83	+10 06.5	2.451	3.434	166.0	4.1	17.3
1987	10 02	00 21.28	+08 47.4					
1987	10 12	00 14.86	+07 23.7	2.445	3.426	167.6	3.6	17.2
1987	10 22	00 09.18	+06 01.2					
1987	11 01	00 04.79	+04 45.5	2.554	3.417	145.3	9.5	17.6
1987	11 11	00 02.06	+03 41.0					
1987	11 21	00 01.17	+02 50.4	2.759	3.408	123.8	13.9	17.9
1987	12 01	00 02.17	+02 14.8					
1987	12 11	00 04.99	+01 54.2	3.022	3.398	104.0	16.3	18.1

1979 MP1 a,e,i = 2.44, 0.12, 2 Elements MPC 5846

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 04	00 19.14	+02 23.1	1.792	2.146	95.7	28.1	19.5
1987	07 14	00 29.25	+03 21.4					
1987	07 24	00 37.40	+04 05.8	1.581	2.151	109.9	26.4	19.2
1987	08 03	00 43.22	+04 34.0					
1987	08 13	00 46.39	+04 44.1	1.394	2.159	126.7	22.1	18.8
1987	08 23	00 46.65	+04 34.6					
1987	09 02	00 43.88	+04 05.1	1.253	2.169	146.8	14.8	18.4
1987	09 12	00 38.39	+03 17.8					
1987	09 22	00 30.82	+02 17.3	1.187	2.183	169.9	4.6	17.9
1987	10 02	00 22.29	+01 11.6					
1987	10 12	00 14.13	+00 10.0	1.218	2.199	165.6	6.5	18.1
1987	10 22	00 07.53	-00 39.3					
1987	11 01	00 03.37	-01 10.5	1.344	2.217	142.8	15.7	18.6
1987	11 11	00 02.08	-01 21.1					
1987	11 21	00 03.68	-01 11.5	1.543	2.237	122.8	21.8	19.1
1987	12 01	00 08.00	-00 43.3					
1987	12 11	00 14.70	+00 01.0	1.787	2.259	105.5	24.8	19.5

1983 QF a,e,i = 2.65, 0.21, 23 Elements MPC 11424

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	00 37.71	+03 16.6	2.087	2.617	110.1	21.4	16.1
1987	08 03	00 42.55	+02 27.4					
1987	08 13	00 45.34	+01 14.2	1.818	2.571	128.2	18.0	15.7
1987	08 23	00 45.85	-00 24.2					
1987	09 02	00 43.97	-02 27.3	1.608	2.526	148.7	12.0	15.2
1987	09 12	00 39.83	-04 50.2					
1987	09 22	00 33.82	-07 24.6	1.490	2.480	167.8	4.9	14.7
1987	10 02	00 26.70	-09 58.1					
1987	10 12	00 19.47	-12 17.4	1.482	2.435	157.7	8.9	14.8
1987	10 22	00 13.18	-14 11.8					
1987	11 01	00 08.75	-15 34.5	1.575	2.391	136.0	16.8	15.2
1987	11 11	00 06.75	-16 24.2					
1987	11 21	00 07.45	-16 43.0	1.739	2.348	116.1	22.2	15.5
1987	12 01	00 10.84	-16 34.3					
1987	12 11	00 16.74	-16 02.7	1.937	2.306	99.0	24.9	15.8
1987	12 21	00 24.88	-15 12.1					
1987	12 31	00 34.99	-14 06.2	2.143	2.267	84.3	25.6	16.0

1981 GG a,e,i = 2.65, 0.18, 14 Elements MPC 10544

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	00 59.63	-06 05.6	2.651	3.124	108.4	18.0	18.9
1987	08 03	01 01.17	-06 10.2					
1987	08 13	01 00.63	-06 25.4	2.402	3.117	126.8	15.1	18.6
1987	08 23	00 57.86	-06 50.2					
1987	09 02	00 52.88	-07 22.3	2.211	3.108	147.2	10.1	18.3
1987	09 12	00 45.92	-07 57.9					
1987	09 22	00 37.43	-08 32.5	2.112	3.097	166.4	4.4	17.9
1987	10 02	00 28.14	-09 01.0					
1987	10 12	00 18.89	-09 18.7	2.126	3.083	160.1	6.3	18.0
1987	10 22	00 10.54	-09 22.6					
1987	11 01	00 03.80	-09 11.3	2.250	3.068	138.9	12.3	18.3
1987	11 11	23 59.11	-08 44.8					
1987	11 21	23 56.69	-08 04.5	2.457	3.050	118.2	16.6	18.7
1987	12 01	23 56.55	-07 12.0					
1987	12 11	23 58.56	-06 09.2	2.711	3.031	99.3	18.7	18.9
1987	12 21	00 02.49	-04 57.7					
1987	12 31	00 08.15	-03 38.8	2.980	3.009	82.2	18.9	19.1

1982 BG1 a,e,i = 2.24, 0.11, 5 Elements MPC 7016

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	00 48.88	+11 15.9	1.859	2.329	104.4	25.0	18.2
1987	08 03	00 54.04	+12 24.3					
1987	08 13	00 56.82	+13 20.5	1.617	2.306	120.7	22.2	17.8
1987	08 23	00 56.89	+14 01.8					
1987	09 02	00 54.00	+14 24.9	1.416	2.282	139.8	16.6	17.3
1987	09 12	00 48.21	+14 27.1					
1987	09 22	00 39.92	+14 06.8	1.284	2.257	161.0	8.3	16.8
1987	10 02	00 30.05	+13 25.1					
1987	10 12	00 19.94	+12 27.6	1.247	2.232	167.6	5.5	16.6
1987	10 22	00 10.97	+11 22.5					
1987	11 01	00 04.34	+10 20.0	1.310	2.207	146.5	14.4	17.0
1987	11 11	00 00.77	+09 28.4					
1987	11 21	00 00.49	+08 53.3	1.452	2.181	125.7	21.6	17.4
1987	12 01	00 03.44	+08 37.3					
1987	12 11	00 09.32	+08 40.5	1.643	2.156	107.6	25.8	17.8
1987	12 21	00 17.75	+09 01.6					
1987	12 31	00 28.39	+09 38.6	1.856	2.132	92.1	27.5	18.1

(3466) 1975 EA6 a,e,i = 2.34, 0.16, 2 Elements MPC 10842

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	00 57.46	+03 57.9	2.003	2.473	105.3	23.3	17.8
1987	08 03	01 01.27	+04 11.4					
1987	08 13	01 02.63	+04 09.1	1.802	2.504	123.2	19.8	17.5
1987	08 23	01 01.33	+03 50.5					
1987	09 02	00 57.31	+03 15.8	1.646	2.533	144.0	13.6	17.2
1987	09 12	00 50.85	+02 27.3					
1987	09 22	00 42.48	+01 29.0	1.571	2.560	167.3	5.0	16.8
1987	10 02	00 33.12	+00 27.2					
1987	10 12	00 23.88	-00 30.6	1.601	2.585	167.4	4.9	16.8
1987	10 22	00 15.78	-01 18.0					
1987	11 01	00 09.67	-01 50.1	1.739	2.607	143.9	13.0	17.3
1987	11 11	00 06.02	-02 04.8					
1987	11 21	00 04.96	-02 02.0	1.959	2.628	122.7	18.4	17.8
1987	12 01	00 06.44	-01 42.7					
1987	12 11	00 10.21	-01 09.0	2.230	2.647	104.0	21.2	18.2
1987	12 21	00 16.00	-00 22.8					
1987	12 31	00 23.53	+00 33.9	2.520	2.663	87.4	21.6	18.5

1985 GX a,e,i = 2.69, 0.18, 14 Elements MPC 10042

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	00 49.48	+02 19.2	2.434	2.909	107.8	19.4	17.6
1987	08 03	00 53.11	+01 56.4					
1987	08 13	00 54.78	+01 16.7	2.162	2.877	126.0	16.6	17.2
1987	08 23	00 54.31	+00 19.6					
1987	09 02	00 51.62	-00 54.1	1.946	2.843	146.5	11.3	16.8
1987	09 12	00 46.87	-02 21.4					
1987	09 22	00 40.43	-03 57.1	1.819	2.808	167.6	4.4	16.4
1987	10 02	00 32.94	-05 33.6					
1987	10 12	00 25.28	-07 02.6	1.802	2.771	162.9	6.1	16.4
1987	10 22	00 18.35	-08 16.7					
1987	11 01	00 12.94	-09 10.7	1.892	2.734	140.8	13.3	16.7
1987	11 11	00 09.61	-09 42.3					
1987	11 21	00 08.63	-09 51.8	2.063	2.696	119.9	18.5	17.1
1987	12 01	00 10.08	-09 40.8					
1987	12 11	00 13.83	-09 12.1	2.280	2.657	101.4	21.3	17.3
1987	12 21	00 19.67	-08 28.2					
1987	12 31	00 27.38	-07 31.6	2.511	2.618	85.1	22.0	17.5

1948 KF a,e,i = 2.31, 0.28, 11 Elements MPC 8209

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	01 01.16	-11 31.0	1.210	1.824	109.7	31.6	15.9
1987	08 03	01 08.68	-11 49.1					
1987	08 13	01 12.57	-12 24.7	1.103	1.879	125.2	26.1	15.6
1987	08 23	01 12.50	-13 14.1					
1987	09 02	01 08.37	-14 10.7	1.034	1.939	143.3	18.1	15.3
1987	09 12	01 00.64	-15 04.3					
1987	09 22	00 50.27	-15 43.9	1.031	2.002	159.4	10.2	15.1
1987	10 02	00 38.80	-15 59.3					
1987	10 12	00 27.99	-15 45.3	1.117	2.067	155.6	11.5	15.4
1987	10 22	00 19.22	-15 02.6					
1987	11 01	00 13.40	-13 55.1	1.290	2.133	137.9	18.2	16.0
1987	11 11	00 10.82	-12 28.9					
1987	11 21	00 11.33	-10 49.4	1.532	2.199	120.0	22.9	16.6
1987	12 01	00 14.61	-09 01.0					
1987	12 11	00 20.25	-07 06.8	1.818	2.264	103.8	25.0	17.1
1987	12 21	00 27.84	-05 09.1					
1987	12 31	00 37.04	-03 09.5	2.127	2.328	89.0	25.0	17.5

1984 DV a,e,i = 3.01, 0.11, 10 Elements MPC 9360

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	00 59.79	+13 41.2	2.333	2.716	101.0	21.5	17.4
1987	08 03	01 04.24	+14 57.2					
1987	08 13	01 06.63	+16 04.0	2.083	2.703	117.4	19.4	17.1
1987	08 23	01 06.72	+16 59.6					
1987	09 02	01 04.34	+17 41.4	1.873	2.691	135.9	15.1	16.7
1987	09 12	00 59.58	+18 06.9					
1987	09 22	00 52.76	+18 14.4	1.734	2.682	155.8	8.8	16.4
1987	10 02	00 44.53	+18 03.2					
1987	10 12	00 35.85	+17 35.9	1.691	2.674	167.2	4.8	16.1
1987	10 22	00 27.77	+16 57.1					
1987	11 01	00 21.25	+16 13.4	1.755	2.668	151.1	10.3	16.4
1987	11 11	00 16.97	+15 31.8					
1987	11 21	00 15.27	+14 58.0	1.911	2.664	130.8	16.3	16.8
1987	12 01	00 16.24	+14 35.9					
1987	12 11	00 19.72	+14 27.4	2.131	2.661	112.0	20.1	17.1
1987	12 21	00 25.48	+14 32.8					
1987	12 31	00 33.26	+14 51.6	2.385	2.661	95.2	21.6	17.4

1981 ET a,e,i = 2.75, 0.25, 10 Elements MPC 10289

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987 07 24		01 02.97	+04 17.3	1.641	2.127	-1.24	-13.2	16.3
1987 08 03		01 09.23	+05 38.1					
1987 08 13		01 12.78	+06 47.8	1.467	2.158	-1.41	-14.5	16.0
1987 08 23		01 13.31	+07 44.9					
1987 09 02		01 10.62	+08 28.0	1.330	2.193	-1.64	-15.9	15.6
1987 09 12		01 04.87	+08 56.6					
1987 09 22		00 56.57	+09 10.4	1.259	2.233	-1.82	-17.3	15.3
1987 10 02		00 46.73	+09 11.4					
1987 10 12		00 36.71	+09 03.9	1.283	2.277	-1.84	-17.5	15.1
1987 10 22		00 27.82	+08 53.2					
1987 11 01		00 21.15	+08 45.5	1.408	2.323	-1.66	-16.1	15.7
1987 11 11		00 17.30	+08 45.5					
1987 11 21		00 16.43	+08 56.0	1.619	2.372	-1.40	-13.9	16.3
1987 12 01		00 18.43	+09 18.3					
1987 12 11		00 22.98	+09 52.3	1.887	2.423	-1.17	-11.7	16.7
1987 12 21		00 29.74	+10 37.0					
1987 12 31		00 38.38	+11 31.2	2.186	2.475	-0.99	-9.8	17.1

1982 TL1 a,e,i = 3.02, 0.05, 8 Elements MPC 9032

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07 24		01 05.76	+04 45.9	2.612	3.009	103.1	19.2	17.5
1987 08 03		01 09.06	+05 18.9					
1987 08 13		01 10.41	+05 41.8	2.351	2.999	120.8	16.9	17.2
1987 08 23		01 09.62	+05 53.9					
1987 09 02		01 06.62	+05 54.9	2.138	2.990	140.9	12.3	16.8
1987 09 12		01 01.54	+05 45.4					
1987 09 22		00 54.71	+05 26.7	2.005	2.980	163.2	5.6	16.4
1987 10 02		00 46.71	+05 01.7					
1987 10 12		00 38.36	+04 34.5	1.977	2.971	173.0	2.4	16.2
1987 10 22		00 30.51	+04 09.2					
1987 11 01		00 23.96	+03 50.3	2.063	2.961	149.5	9.8	16.6
1987 11 11		00 19.30	+03 41.0					
1987 11 21		00 16.84	+03 43.3	2.243	2.952	127.7	15.4	17.0
1987 12 01		00 16.69	+03 58.0					
1987 12 11		00 18.76	+04 24.9	2.484	2.944	108.2	18.5	17.3
1987 12 21		00 22.89	+05 03.1					
1987 12 31		00 28.86	+05 51.6	2.754	2.935	90.7	19.6	17.6

1985 CX a,e,i = 2.85, 0.10, 16 Elements MPC 11425

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07 24		01 09.42	-13 45.9	2.482	2.965	108.4	19.0	16.7
1987 08 03		01 12.80	-14 29.7					
1987 08 13		01 14.01	-15 25.6	2.279	2.982	125.3	16.1	16.4
1987 08 23		01 12.91	-16 30.8					
1987 09 02		01 09.46	-17 40.8	2.133	2.998	142.6	11.8	16.2
1987 09 12		01 03.86	-18 49.2					
1987 09 22		00 56.54	-19 49.2	2.072	3.014	155.4	8.0	16.0
1987 10 02		00 48.18	-20 33.5					
1987 10 12		00 39.65	-20 57.0	2.114	3.028	151.5	9.1	16.1
1987 10 22		00 31.81	-20 57.0					
1987 11 01		00 25.41	-20 33.7	2.255	3.042	135.3	13.3	16.4
1987 11 11		00 20.95	-19 49.5					
1987 11 21		00 18.67	-18 47.8	2.474	3.055	117.2	16.7	16.7
1987 12 01		00 18.61	-17 32.1					
1987 12 11		00 20.63	-16 06.0	2.741	3.067	99.8	18.4	17.0
1987 12 21		00 24.54	-14 32.1					
1987 12 31		00 30.11	-12 52.7	3.027	3.078	83.7	18.5	17.2

(3447) 1956 SC a,e,i = 1.99, 0.03, 21 Elements MPC 10826

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	01 22.27	+04 01.4	1.617	2.048	99.5	29.3	16.6
1987	08 03	01 28.11	+05 58.0					
1987	08 13	01 31.19	+07 51.8	1.398	2.046	115.2	26.6	16.2
1987	08 23	01 30.98	+09 42.3					
1987	09 02	01 26.95	+11 27.8	1.209	2.044	134.1	20.8	15.8
1987	09 12	01 18.83	+13 05.6					
1987	09 22	01 06.80	+14 31.0	1.083	2.041	156.0	11.5	15.2
1987	10 02	00 51.81	+15 38.7					
1987	10 12	00 35.64	+16 26.0	1.051	2.038	168.1	5.8	15.0
1987	10 22	00 20.40	+16 54.4					
1987	11 01	00 08.03	+17 10.1	1.123	2.033	148.0	15.0	15.4
1987	11 11	23 59.68	+17 21.9					
1987	11 21	23 55.71	+17 37.1	1.277	2.029	126.8	23.0	15.9
1987	12 01	23 55.95	+18 01.0					
1987	12 11	23 59.91	+18 36.4	1.478	2.023	108.8	27.4	16.4
1987	12 21	00 07.05	+19 23.9					
1987	12 31	00 16.91	+20 23.3	1.698	2.017	93.8	29.1	16.7

1971 QP1 a,e,i = 3.03, 0.11, 9 Elements MPC 9469

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	01 04.16	+14 01.9	2.372	2.736	99.8	21.5	17.5
1987	08 03	01 08.89	+15 15.3					
1987	08 13	01 11.59	+16 19.5	2.121	2.725	116.2	19.5	17.2
1987	08 23	01 12.03	+17 12.4					
1987	09 02	01 10.05	+17 51.8	1.909	2.715	134.7	15.3	16.8
1987	09 12	01 05.68	+18 15.2					
1987	09 22	00 59.21	+18 20.8	1.766	2.708	154.8	9.1	16.4
1987	10 02	00 51.25	+18 08.2					
1987	10 12	00 42.73	+17 39.6	1.717	2.702	168.0	4.4	16.2
1987	10 22	00 34.65	+16 59.3					
1987	11 01	00 27.99	+16 14.0	1.776	2.697	152.8	9.7	16.5
1987	11 11	00 23.46	+15 30.5					
1987	11 21	00 21.42	+14 54.6	1.929	2.694	132.2	15.8	16.8
1987	12 01	00 22.02	+14 30.2					
1987	12 11	00 25.11	+14 19.4	2.149	2.694	113.2	19.6	17.2
1987	12 21	00 30.49	+14 22.5					
1987	12 31	00 37.89	+14 39.1	2.405	2.695	96.2	21.3	17.5

1979 MV6 a,e,i = 2.42, 0.06, 4 Elements MPC 8675

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	01 00.60	+10 16.4	1.847	2.288	102.1	25.7	18.2
1987	08 03	01 07.22	+11 02.2					
1987	08 13	01 11.53	+11 32.7	1.634	2.294	118.3	22.9	17.8
1987	08 23	01 13.19	+11 45.9					
1987	09 02	01 12.00	+11 39.5	1.456	2.302	137.3	17.3	17.4
1987	09 12	01 07.98	+11 12.7					
1987	09 22	01 01.49	+10 26.0	1.344	2.311	159.5	8.8	17.0
1987	10 02	00 53.28	+09 23.2					
1987	10 12	00 44.52	+08 11.2	1.325	2.321	174.8	2.2	16.7
1987	10 22	00 36.42	+06 58.7					
1987	11 01	00 30.10	+05 54.7	1.410	2.331	151.6	11.7	17.2
1987	11 11	00 26.30	+05 06.0					
1987	11 21	00 25.30	+04 36.2	1.582	2.343	130.0	18.8	17.7
1987	12 01	00 27.14	+04 26.2					
1987	12 11	00 31.60	+04 35.1	1.812	2.355	111.2	23.0	18.1
1987	12 21	00 38.35	+05 00.6					
1987	12 31	00 47.10	+05 40.5	2.072	2.367	94.8	24.5	18.5

1978 RD6 a,e,i = 2.74, 0.16, 14 Elements MPC 8466

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	00 54.61	+14 01.7	1.899	2.332	102.0	25.2	17.3
1987	08 03	01 01.64	+14 21.2					
1987	08 13	01 06.40	+14 21.0	1.693	2.348	118.2	22.4	16.9
1987	08 23	01 08.65	+13 58.4					
1987	09 02	01 08.22	+13 11.4	1.523	2.367	137.4	16.8	16.6
1987	09 12	01 05.23	+11 59.6					
1987	09 22	01 00.04	+10 25.3	1.422	2.389	159.8	8.4	16.2
1987	10 02	00 53.39	+08 34.3					
1987	10 12	00 46.32	+06 36.4	1.417	2.414	175.4	1.9	15.9
1987	10 22	00 39.89	+04 42.4					
1987	11 01	00 35.03	+03 02.6	1.520	2.440	151.7	11.1	16.5
1987	11 11	00 32.37	+01 43.9					
1987	11 21	00 32.16	+00 49.3	1.714	2.469	130.1	17.8	16.9
1987	12 01	00 34.43	+00 18.8					
1987	12 11	00 39.00	+00 10.4	1.969	2.498	111.1	21.6	17.4
1987	12 21	00 45.61	+00 21.2					
1987	12 31	00 53.98	+00 47.9	2.255	2.530	94.5	22.8	17.7

1982 DD2 a,e,i = 2.26, 0.11, 5 Elements MPC 11144

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	01 05.28	+06 30.8	1.988	2.421	102.5	24.2	17.9
1987	08 03	01 11.41	+06 49.4					
1987	08 13	01 15.38	+06 52.1	1.740	2.403	119.2	21.6	17.5
1987	08 23	01 16.86	+06 37.2					
1987	09 02	01 15.59	+06 03.3	1.530	2.384	138.7	16.2	17.1
1987	09 12	01 11.54	+05 10.9					
1987	09 22	01 04.97	+04 02.4	1.390	2.363	161.2	7.9	16.6
1987	10 02	00 56.52	+02 43.2					
1987	10 12	00 47.28	+01 21.8	1.347	2.341	172.9	3.0	16.3
1987	10 22	00 38.46	+00 07.5					
1987	11 01	00 31.24	-00 51.3	1.410	2.318	149.1	12.7	16.7
1987	11 11	00 26.48	-01 29.3					
1987	11 21	00 24.57	-01 44.6	1.558	2.295	127.2	20.0	17.1
1987	12 01	00 25.64	-01 37.7					
1987	12 11	00 29.49	-01 10.8	1.759	2.271	108.4	24.3	17.5
1987	12 21	00 35.84	-00 26.7					
1987	12 31	00 44.41	+00 32.0	1.982	2.246	92.2	25.9	17.8

1982 TD1 a,e,i = 3.02, 0.04, 10 Elements MPC 8794

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	01 16.50	+06 40.8	2.800	3.139	99.9	18.6	17.6
1987	08 03	01 19.62	+07 19.3					
1987	08 13	01 20.85	+07 48.5	2.541	3.142	117.6	16.6	17.3
1987	08 23	01 20.02	+08 07.8					
1987	09 02	01 17.04	+08 16.7	2.324	3.144	137.6	12.5	17.0
1987	09 12	01 12.03	+08 15.2					
1987	09 22	01 05.26	+08 04.1	2.185	3.146	159.8	6.3	16.6
1987	10 02	00 57.26	+07 45.4					
1987	10 12	00 48.77	+07 22.2	2.151	3.148	176.0	1.3	16.3
1987	10 22	00 40.60	+06 58.3					
1987	11 01	00 33.53	+06 37.8	2.233	3.148	152.7	8.3	16.8
1987	11 11	00 28.15	+06 24.3					
1987	11 21	00 24.81	+06 20.3	2.416	3.149	130.5	13.8	17.1
1987	12 01	00 23.66	+06 27.1					
1987	12 11	00 24.68	+06 45.2	2.667	3.149	110.4	17.0	17.5
1987	12 21	00 27.70	+07 14.2					
1987	12 31	00 32.54	+07 53.2	2.951	3.148	92.3	18.2	17.7

1982 BQ a,e,i = 2.26, 0.10, 6 Elements MPC 10766

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	01 10.50	+01 34.7	2.041	2.478	103.2	23.5	18.0
1987	08 03	01 16.08	+01 31.4					
1987	08 13	01 19.42	+01 11.7	1.808	2.478	120.2	20.7	17.7
1987	08 23	01 20.23	+00 34.9					
1987	09 02	01 18.31	-00 18.5	1.618	2.476	139.9	15.2	17.3
1987	09 12	01 13.68	-01 25.7					
1987	09 22	01 06.66	-02 41.9	1.500	2.472	161.4	7.5	16.8
1987	10 02	00 57.93	-03 59.6					
1987	10 12	00 48.54	-05 09.9	1.483	2.467	167.3	5.1	16.7
1987	10 22	00 39.65	-06 04.9					
1987	11 01	00 32.32	-06 39.1	1.572	2.459	146.1	13.0	17.1
1987	11 11	00 27.31	-06 50.4					
1987	11 21	00 25.00	-06 39.4	1.746	2.450	125.0	19.3	17.5
1987	12 01	00 25.44	-06 08.3					
1987	12 11	00 28.49	-05 20.2	1.971	2.439	106.4	22.8	17.9
1987	12 21	00 33.88	-04 18.0					
1987	12 31	00 41.31	-03 04.5	2.218	2.427	90.0	23.9	18.1

6627 P-L a,e,i = 3.06, 0.10, 3 Elements MPC 8385

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	01 04.87	+06 35.7	2.412	2.814	102.6	20.6	18.4
1987	08 03	01 09.88	+06 55.5					
1987	08 13	01 12.96	+07 02.3	2.157	2.801	119.7	18.3	18.1
1987	08 23	01 13.90	+06 55.0					
1987	09 02	01 12.59	+06 33.1	1.947	2.790	139.2	13.7	17.7
1987	09 12	01 09.09	+05 57.2					
1987	09 22	01 03.67	+05 09.3	1.810	2.780	161.2	6.7	17.3
1987	10 02	00 56.89	+04 13.4					
1987	10 12	00 49.56	+03 15.2	1.775	2.771	174.7	1.9	17.0
1987	10 22	00 42.56	+02 20.9					
1987	11 01	00 36.74	+01 36.3	1.850	2.763	151.5	9.9	17.4
1987	11 11	00 32.76	+01 05.7					
1987	11 21	00 30.96	+00 51.2	2.019	2.758	129.8	16.0	17.8
1987	12 01	00 31.51	+00 53.4					
1987	12 11	00 34.33	+01 11.2	2.250	2.753	110.5	19.6	18.1
1987	12 21	00 39.24	+01 43.2					
1987	12 31	00 46.04	+02 27.4	2.513	2.750	93.3	20.9	18.4

1974 QU1 a,e,i = 2.64, 0.24, 2 Elements MPC 8533

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	00 50.85	+06 58.0	1.666	2.173	105.7	26.8	16.9
1987	08 03	00 59.40	+07 50.0					
1987	08 13	01 05.89	+08 27.8	1.431	2.135	120.8	24.1	16.4
1987	08 23	01 09.93	+08 48.9					
1987	09 02	01 11.17	+08 51.3	1.234	2.101	138.7	18.5	15.9
1987	09 12	01 09.49	+08 33.8					
1987	09 22	01 05.03	+07 56.9	1.100	2.072	159.9	9.6	15.3
1987	10 02	00 58.44	+07 04.2					
1987	10 12	00 50.84	+06 03.0	1.051	2.048	176.4	1.8	14.9
1987	10 22	00 43.58	+05 02.4					
1987	11 01	00 38.02	+04 12.4	1.096	2.030	152.9	12.9	15.4
1987	11 11	00 35.13	+03 40.2					
1987	11 21	00 35.35	+03 29.3	1.221	2.020	131.9	21.4	15.9
1987	12 01	00 38.76	+03 40.7					
1987	12 11	00 45.13	+04 12.4	1.401	2.015	114.1	26.5	16.3
1987	12 21	00 54.11	+05 01.7					
1987	12 31	01 05.35	+06 05.6	1.613	2.018	99.2	28.8	16.7