The MINOR PLANET CIRCULARS/MINOR PLANETS AND COMETS are published, on behalf of Commission 20 of the International Astronomical Union, usually in batches on the date of each full moon, by:

Minor Planet Center
Smithsonian Astrophysical Observatory
Cambridge, MA 02138, U.S.A.

TWX 710-320-6842 ASTROGRAM CAM ** Brian G. Marsden, Director
Telephone 617-495-7244/7440/7444 ** Conrad M. Bardwell, Associate Director

ERRATA.

MPC	Line	
11204	-17	For O'Gyalla read Hurbanovo, formerly O'Gyalla
11422	5	For Landgraf read W. Landgraf
11432	- 1	Add The double designation 1975 TV2 = 1975 VH9 is by B. G. Marsden.

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CRITICAL LIST OF MINOR PLANETS.

As noted on MPC 11375 last month, the long-lost minor planets (1026) and (1179) have been recovered. Another such planet, (473), has now also been recovered; see IAUC 4292, MPC 11473 and 11502.

* * * * *

IDENTIFICATION CHANGES.

Continuation to MPC 11376.

Object		Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
1940 CP	*	1940 02 12.92		09 33.0	+19 20	1940 CB	14.5	020
1950 TR4	*	1950 10 13.02302		00 37 41.88	+15 12 40.1	1950 TB		012
1950 TR4		1950 10 14.92439		00 36 30.26	+15 09 43.6	1950 TB		012
1971 SD4	*	1971 09 27.91068		23 32 24.20	+07 00 34.0	1971 SD1	16.5	095
1974 XD1	*	1974 12 10.80600		02 25 12.75	+16 19 07.8	1974 VD	17.0	095
1978 GE5	*	1978 04 07.92487		13 16 15.60	-02 15 11.7	1978 EJ3	18.0	095
1986 WP2	*	1986 11 29.53854		04 39 56.91	+17 37 48.5	1986 WC	17	881
1986 WP2		1986 11 29.56493		04 39 55.39	+17 37 43.7	1986 WC		881

* * * * *

OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

046 Klet. Observer A. Mrkos.
091 St. Etienne. 0.41-m reflector. Observer R. Chanal.
186 Kitab. 0.4-m f/7.5 astrograph. Observers Z. Rakhmatov, Z. Mirmakhmudov and I. Pattakhov. From Kiev Komet. Tsirk.
293 Burlington remote site. Observer T. Handley.
305 Purple Mountain Observatory, Hainan Island station. 0.15-m f/10 refractor. 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. Long. and Parallax 109.53, -405, -132 (see MPC 11200).

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.
398 Nagatoro. Observer Kawasato. From Nihondaira Obs. Circ.
399 Kushiro. 0.16-m reflector. Observer S. Ueda. Measured by H. Kaneda. From Nihondaira Obs. Circ.
414 Mount Stromlo. 0.66-m refractor. 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.
474 Mount John University Observatory. 0.6-m reflector. Observer A. C. Gilmore. Measured by P. M. Kilmartin.
552 Osservatore S. Vittore. Observers C. Vacchi and G. Sassi. Measured by V. Goretti. C. Vacchi and E. Colombini.
561 Piszkesteto. Observer M. Lovas. Measured by I. Toth.
657 Climenhaga Observatory, Victoria. Observers J. B. Tatum and D. D. Balam.
675 Palomar. 1.5-m reflector + CCD. Observer J. Gibson.
691 University of Arizona, Kitt Peak. 0.91-m reflector, CCD in scanning mode. Observer J. V. Scotti.
695 Kitt Peak. Observers K. J. Meech and D. Jewitt.
707 Chamberlin Observatory field station. Observer J. Briggs. Measured by J. Briggs and E. Everhart.
786 U.S. Naval Observatory, Washington. 0.38-m astrograph. Observer R. E. Schmidt. Measured by R. S. Harrington.
801 Oak Ridge Observatory. Observers R. E. McCrosky, G. Schwartz and C.-Y. Shao.
881 Toyota. 0.31-m f/7 reflector. Observers K. Suzuki and T. Urata. From Nihondaira Obs. Circ.
887 Ojima. Observers T. Niijima and T. Urata. From Nihondaira Obs. Circ.
894 Kiyosato. Observer S. Miyasaka. From Nihondaira Obs. Circ.
984 Eastfield. 0.14-m f/5 Zeiss triplet. Observer H. B. Ridley. Measured by M. J. Hendrie.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
			Comet Bowell (1982 I)				
/1982 I	1985	09 21.4444	00 01 32.6	-01 38 46			695
/1982 I	1986	11 03.13207	00 17 57.0	+00 06 07	18 T		695
/1982 I	1986	11 03.16819	00 17 56.1	+00 06 07			695
/1982 I	1986	11 03.23207	00 17 56.4	+00 05 58			695
/1982 I	1986	11 03.26742	00 17 55.4	+00 05 55			695
/1982 I	1986	12 01.24795	00 14 36.67	-00 12 25.6		1	691
/1982 I	1986	12 02.15654	00 14 33.70	-00 12 45.2	21 T	2	691
			Periodic Comet Gunn				
/1982 X	1986	12 02.38134	07 32 35.94	+28 56 17.8			691
/1982 X	1986	12 02.38852	07 32 35.71	+28 56 19.4	18.6T		691
/1982 X	1986	12 02.39784	07 32 35.52	+28 56 20.9		3	691
			Periodic Comet Halley				
/1982i	1985	11 02.54968	05 16 05.75	+21 54 40.3			330
/1982i	1985	11 08.74545	04 44 17.62	+22 13 20.6		4	330
/1982i	1985	11 08.75795	04 44 12.89	+22 13 21.9			330
/1982i	1985	11 10.56557	04 32 25.09	+22 13 48.9			330
/1982i	1985	11 10.57807	04 32 19.87	+22 13 47.9			330
/1982i	1985	11 15.76934	03 50 53.55	+21 48 50.5			330

/1982i	1985	11	16.56481	03	43	33.06	+21	40	10.0	330
/1982i	1985	12	02.46896	00	50	21.62	+12	26	32.1	330
/1982i	1985	12	02.49106	00	50	08.10	+12	25	25.6	330
/1982i	1985	12	08.64240	23	56	17.16	+07	36	14.6	330
/1982i	1985	12	13.53829	23	23	57.35	+04	26	06.0	330
/1982i	1985	12	15.58201	23	12	48.83	+03	18	48.7	330
/1982i	1985	12	24.53696	22	35	57.22	-00	26	10.5	330
/1982i	1985	12	31.48515	22	16	15.96	-02	25	41.2	330
/1982i	1986	01	08.47525	21	58	47.99	-04	10	29.2	330
/1982i	1986	01	09.42525	21	56	57.06	-04	21	32.9	330
/1982i	1986	01	09.46935	21	56	51.81	-04	22	03.6	330
/1982i	1986	04	07.67016	16	21	39.98	-46	48	43.2	414
/1982i	1986	04	07.67363	16	21	34.88	-46	48	51.1	414
/1982i	1986	04	07.67711	16	21	29.82	-46	48	59.6	414
/1982i	1986	04	07.68058	16	21	24.72	-46	49	07.8	414
/1982i	1986	04	08.72294	15	55	18.98	-47	19	12.0	414
/1982i	1986	04	08.72641	15	55	13.61	-47	19	15.6	414
/1982i	1986	04	08.72988	15	55	08.19	-47	19	19.5	414
/1982i	1986	04	08.73336	15	55	02.79	-47	19	23.1	414
/1982i	1986	04	08.78434	15	53	44.74	-47	20	31.9	305
/1982i	1986	04	08.86108	15	51	45.05	-47	21	46.3	305
/1982i	1986	04	09.78016	15	27	41.92	-47	26	08.9	305
/1982i	1986	04	09.84058	15	26	05.21	-47	25	41.8	305
/1982i	1986	04	10.66113	15	04	20.39	-47	11	25.3	414
/1982i	1986	04	10.66461	15	04	14.83	-47	11	19.8	414
/1982i	1986	04	10.66808	15	04	09.28	-47	11	14.0	414
/1982i	1986	04	10.67155	15	04	03.72	-47	11	08.4	414
/1982i	1986	04	10.72322	15	02	42.37	-47	09	56.8	305
/1982i	1986	04	12.65169	14	13	10.32	-45	33	15.7	305
/1982i	1986	04	12.72183	14	11	26.50	-45	28	20.1	305
/1982i	1986	04	12.78407	14	09	54.57	-45	23	49.4	305
/1982i	1986	04	12.83502	14	08	39.59	-45	20	01.8	305
/1982i	1986	04	13.73884	13	47	27.50	-44	06	24.9	305
/1982i	1986	04	14.58752	13	28	56.87	-42	46	02.8	414
/1982i	1986	04	14.59308	13	28	49.86	-42	45	30.5	414
/1982i	1986	04	14.59655	13	28	45.45	-42	45	09.7	414
/1982i	1986	04	14.60002	13	28	41.08	-42	44	48.5	414
/1982i	1986	04	14.64856	13	27	41.21	-42	40	09.9	305
/1982i	1986	04	15.57086	13	09	19.78	-41	03	46.6	414
/1982i	1986	04	15.57433	13	09	15.81	-41	03	24.1	414
/1982i	1986	04	15.57780	13	09	11.83	-41	03	01.8	414
/1982i	1986	04	15.58127	13	09	07.87	-41	02	39.1	414
/1982i	1986	04	16.64023	12	50	15.16	-39	05	39.7	305
/1982i	1986	04	16.69440	12	49	20.24	-38	59	32.8	305
/1982i	1986	04	16.73051	12	48	43.86	-38	55	25.9	305
/1982i	1986	04	17.66384	12	34	04.58	-37	09	16.6	305
/1982i	1986	04	17.70412	12	33	28.33	-37	04	42.0	305
/1982i	1986	04	18.65065	12	20	15.89	-35	17	16.3	305
/1982i	1986	04	18.70829	12	19	29.94	-35	10	47.5	305
/1982i	1986	04	23.61591	11	31	13.74	-26	51	21.0	305
/1982i	1986	04	24.53049	11	24	57.33	-25	32	43.1	305
/1982i	1986	04	24.53957	11	24	53.75	-25	31	57.3	305
/1982i	1986	04	27.51174	11	08	25.16	-21	48	03.3	305
/1982i	1986	04	27.54785	11	08	14.60	-21	45	36.0	305
/1982i	1986	04	27.60167	11	07	59.45	-21	42	00.0	305
/1982i	1986	04	29.51226	10	59	56.56	-19	41	46.2	305
/1982i	1986	04	29.56017	10	59	45.19	-19	38	57.8	305
/1982i	1986	04	29.61399	10	59	32.93	-19	35	49.1	305
/1982i	1986	05	07.53957	10	38	47.41	-13	41	08.7	330

/1982i	1986	05	07.56284	10	38	45.00	-13	40	18.5			330
/1982i	1986	11	30.20556	11	39	57.59	-14	51	18.9			046
/1982i	1986	11	30.20903	11	39	57.54	-14	51	19.2			046
/1982i	1986	11	30.82222	11	39	54.12	-14	53	41.0	15	T	372
/1982i	1986	12	01.20243	11	39	51.89	-14	55	08.5			046
/1982i	1986	12	01.20625	11	39	51.88	-14	55	09.0			046
/1982i	1986	12	01.81597	11	39	48.18	-14	57	27.4	13	T	399
/1982i	1986	12	01.82986	11	39	48.09	-14	57	31.2			399
/1982i	1986	12	01.85694	11	39	47.88	-14	57	36.4	15	T	372
/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	03.88925	11	39	32.81	-15	05	12.6	14	T	330
/1982i	1986	12	04.47043	11	39	27.98	-15	07	18.1			691
/1982i	1986	12	04.48314	11	39	27.85	-15	07	20.5			691
/1982i	1986	12	04.86946	11	39	24.37	-15	08	45.1	14	T	330
/1982i	1986	12	05.87883	11	39	14.44	-15	12	22.9	14	T	330
/1982i	1986	12	06.86911	11	39	04.27	-15	15	51.7	14	T	330
/1982i	1986	12	10.86631	11	38	12.81	-15	29	13.6	12	T	330

Comet Shoemaker (1985 XII)

/1985 XII	1986	10	08.82535	05	45	42.16	-17	01	09.7			323
/1985 XII	1986	10	30.39608	05	26	40.76	-18	00	53.7			801
/1985 XII	1986	10	30.80451	05	26	14.98	-18	01	33.0			323

Periodic Comet Giacobini-Zinner

/1985 XIII	1985	05	30.94255	20	47	57.80	+32	35	15.2			186
/1985 XIII	1985	06	10.85892	21	11	29.40	+38	19	57.8			186
/1985 XIII	1985	06	10.86585	21	11	30.99	+38	20	19.3			186
/1985 XIII	1985	06	15.87097	21	23	35.82	+41	02	02.4			186
/1985 XIII	1985	06	15.87790	21	23	36.83	+41	02	16.2			186
/1985 XIII	1985	06	15.90144	21	23	40.40	+41	03	02.0			186
/1985 XIII	1985	06	15.91183	21	23	41.99	+41	03	17.0			186
/1985 XIII	1985	06	19.92522	21	34	11.34	+43	13	22.9			186
/1985 XIII	1985	06	19.93977	21	34	14.08	+43	13	58.3			186
/1985 XIII	1985	06	19.95015	21	34	15.83	+43	14	19.7			186
/1985 XIII	1985	06	20.79542	21	36	35.80	+43	41	39.0			186
/1985 XIII	1985	06	21.94296	21	39	47.62	+44	18	45.3			186
/1985 XIII	1985	06	22.88178	21	42	30.14	+44	49	03.2			186
/1985 XIII	1985	06	22.89269	21	42	31.82	+44	49	24.2			186
/1985 XIII	1985	06	23.91605	21	45	31.72	+45	22	20.4			186
/1985 XIII	1985	06	26.90409	21	54	42.53	+46	57	53.1			186
/1985 XIII	1985	06	26.91102	21	54	43.71	+46	58	02.8			186
/1985 XIII	1985	07	19.77218	23	37	55.62	+57	32	19.6			186
/1985 XIII	1985	07	19.77812	23	37	57.91	+57	32	26.8			186
/1985 XIII	1985	07	19.78366	23	37	59.83	+57	32	34.3			186
/1985 XIII	1985	07	21.89601	23	51	45.44	+58	12	21.5			186
/1985 XIII	1985	07	23.84306	00	05	14.15	+58	43	47.3			186
/1985 XIII	1985	07	23.84861	00	05	16.75	+58	43	52.5			186
/1985 XIII	1985	08	11.83561	02	45	21.28	+57	03	29.5			186
/1985 XIII	1985	08	11.83977	02	45	23.66	+57	03	20.5			186
/1985 XIII	1985	08	11.84394	02	45	25.79	+57	03	15.2			186
/1985 XIII	1985	08	11.84809	02	45	27.60	+57	03	08.1			186

Comet Hartley-Good (1985 XVII)

/1985 XVII	1985	10	17.36928	20	24	52.37	-09	19	12.7			474
/1985 XVII	1985	10	17.37223	20	24	51.06	-09	19	01.5			474
/1985 XVII	1985	11	05.78264	18	48	15.89	+06	44	08.5			984
/1985 XVII	1985	11	09.77569	18	35	36.43	+08	51	39.0			984

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/1985 XVII 1985 11 10.78368  18 32 36.38  +09 20 49.5                    984
/1985 XVII 1985 11 12.76250  18 26 52.92  +10 14 51.9                    984

                Comet Thiele (1985 XIX)
/1985 XIX  1985 11 05.89028  01 14 41.19  +40 52 17.3                    984

                Periodic Comet Ashbrook-Jackson
/1985a     1986 11 06.36110  05 15 25.64  +39 07 45.3                    691
/1985a     1986 11 06.38428  05 15 24.67  +39 07 50.6                    691
/1985a     1986 11 06.39507  05 15 24.17  +39 07 53.4                    691

                Periodic Comet Whipple
/1985h     1986 12 04.33661  03 19 20.81  +06 30 36.7          18.0T 5 691
/1985h     1986 12 04.35387  03 19 20.23  +06 30 34.5                    691
/1985h     1986 12 04.36194  03 19 19.97  +06 30 33.2                    691

                Periodic Comet Shajn-Schaldach
/1985i     1986 11 06.45534  05 52 15.47  +14 39 10.3                    691
/1985i     1986 11 06.46824  05 52 15.19  +14 39 08.5                    691
/1985i     1986 12 04.39178  05 36 48.28  +13 48 08.1                    691
/1985i     1986 12 04.41709  05 36 47.08  +13 48 06.6                6 691

                Comet Shoemaker (1986b)
/1986b     1986 12 02.40488  09 11 59.81  +19 45 43.5                    691
/1986b     1986 12 02.42380  09 11 58.27  +19 45 45.5          19.0T     691
/1986b     1986 12 02.43487  09 11 57.57  +19 45 47.2                7 691

                Periodic Comet Holmes
/1986f     1986 10 25.28311  04 55 15.65  +49 23 36.2                    691
/1986f     1986 10 25.29358  04 55 15.39  +49 23 39.5                    691
/1986f     1986 10 25.31063  04 55 14.85  +49 23 45.5                    691
/1986f     1986 10 30.37462  04 52 16.98  +49 49 13.0                    691
/1986f     1986 10 30.39318  04 52 16.24  +49 49 17.1                    691
/1986f     1986 10 30.41022  04 52 15.49  +49 49 22.2                    691

                Periodic Comet Forbes
/1986g     1986 06 09.20410  11 06 57.06  +06 56 53.7                    675
/1986g     1986 06 09.21167  11 06 57.35  +06 56 51.1                    675
/1986g     1986 06 10.21562  11 07 38.32  +06 50 46.4                    675
/1986g     1986 06 10.22417  11 07 38.65  +06 50 43.4                    675

                Periodic Comet Schwassmann-Wachmann 2
/1986h     1986 10 25.16619  02 02 29.79  +06 27 19.1                    691
/1986h     1986 10 25.17863  02 02 29.11  +06 27 15.6                    691
/1986h     1986 10 25.18541  02 02 28.79  +06 27 13.7                    691
/1986h     1986 10 30.24490  01 58 21.22  +06 03 49.3                    691
/1986h     1986 10 30.25539  01 58 20.71  +06 03 46.4                    691
/1986h     1986 10 30.26591  01 58 20.17  +06 03 43.8                    691
/1986h     1986 12 04.23003  01 36 10.30  +04 28 57.9                    691
/1986h     1986 12 04.23985  01 36 10.12  +04 28 57.4                    691
/1986h     1986 12 06.58542  01 35 30.08  +04 28 50.4                    399
/1986h     1986 12 06.60023  01 35 29.90  +04 28 51.2                    399
/1986h     1986 12 22.45475  01 34 34.10  +04 51 01.1                    399
/1986h     1986 12 22.47153  01 34 34.17  +04 51 02.6                    399

                Comet Churyumov-Solodovnikov (1986i)
/1986i     1986 09 09.63552  19 41 38.20  -40 05 07.8                    474
/1986i     1986 09 09.65392  19 41 36.34  -40 05 23.3                    474
/1986i     1986 10 07.44377  19 12 07.25  -44 13 59.0                    474
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/1986i	1986	10	07.45712	19	12	06.85	-44	14	03.5		474
/1986i	1986	10	08.60486	19	11	35.97	-44	20	30.8		323
/1986i	1986	10	31.39421	19	10	03.29	-46	02	31.9		474
/1986i	1986	10	31.41516	19	10	03.46	-46	02	36.4		474

Periodic Comet Comas Sola

/1986j	1986	11	30.14103	00	03	33.26	-11	43	30.6	17.6T	691
/1986j	1986	11	30.15728	00	03	33.29	-11	43	23.9	8	691
/1986j	1986	11	30.16008	00	03	33.28	-11	43	23.4		691

Periodic Comet Kohoutek

/1986k	1986	10	30.11519	20	59	56.95	-11	02	36.4	9	691
/1986k	1986	10	30.17442	20	59	58.19	-11	02	37.8	9	691
/1986k	1986	10	30.17911	20	59	58.44	-11	02	38.8	9	691

Comet Wilson (1986l)

/1986l	1986	08	28.92083	21	35	53.09	+21	23	04.9		984
/1986l	1986	10	03.64514	20	26	28.41	+09	28	40.2		323
/1986l	1986	10	07.57708	20	20	49.14	+08	01	41.0		323
/1986l	1986	10	08.64931	20	19	22.01	+07	38	11.8		323
/1986l	1986	10	09.66319	20	18	01.72	+07	16	09.2		323
/1986l	1986	10	20.54132	20	05	51.12	+03	28	32.0		323
/1986l	1986	10	21.48785	20	04	58.63	+03	09	43.7		323
/1986l	1986	10	22.48785	20	04	04.91	+02	49	58.6		323
/1986l	1986	10	23.48924	20	03	13.06	+02	30	28.2		323
/1986l	1986	10	27.48924	20	00	04.42	+01	14	26.2		323
/1986l	1986	10	28.49549	19	59	21.62	+00	55	50.4		323
/1986l	1986	10	29.48785	19	58	41.04	+00	37	40.8		323
/1986l	1986	10	31.49132	19	57	24.36	+00	01	42.1		323
/1986l	1986	11	25.39583	19	50	01.24	-06	17	26.8	9 T	372
/1986l	1986	11	25.39896	19	50	01.25	-06	17	29.8		372
/1986l	1986	11	26.70314	19	50	00.03	-06	34	12.8		046
/1986l	1986	11	26.70620	19	50	00.02	-06	34	15.2		046
/1986l	1986	11	29.36806	19	50	03.14	-07	07	28.8		399
/1986l	1986	11	29.37292	19	50	03.19	-07	07	33.5		399
/1986l	1986	12	01.40799	19	50	10.56	-07	32	13.0		398

Comet Sorrells (1986n)

/1986n	1986	11	28.19644	03	08	51.14	+28	01	04.0		801
/1986n	1986	11	29.87187	02	57	20.98	+27	37	20.8	10.5T	552
/1986n	1986	11	30.37422	02	53	54.78	+27	29	28.4	A	707
/1986n	1986	11	30.89479	02	50	23.28	+27	21	01.6	10.5T	552
/1986n	1986	12	01.68843	02	45	01.91	+27	07	25.8		399
/1986n	1986	12	01.69271	02	45	00.17	+27	07	21.3		399
/1986n	1986	12	01.86910	02	43	49.60	+27	04	17.4	10.5T	552
/1986n	1986	12	02.85590	02	37	15.84	+26	46	11.2	10.5T	552
/1986n	1986	12	03.87951	02	30	32.94	+26	26	17.2	10.5T	552
/1986n	1986	12	04.86493	02	24	12.66	+26	06	13.9	10.5T	552
/1986n	1986	12	05.11404	02	22	37.24	+26	01	01.4		786
/1986n	1986	12	05.59561	02	19	34.90	+25	50	51.9		894
/1986n	1986	12	05.62697	02	19	23.10	+25	50	07.6		399
/1986n	1986	12	05.63391	02	19	20.59	+25	49	58.9		399
/1986n	1986	12	05.66736	02	19	07.93	+25	49	18.9		894
/1986n	1986	12	06.31806	02	15	04.70	+25	35	07.7		293
/1986n	1986	12	06.32222	02	15	02.86	+25	35	04.1		293
/1986n	1986	12	06.65602	02	12	59.69	+25	27	39.1		399
/1986n	1986	12	06.66991	02	12	54.59	+25	27	20.1		399
/1986n	1986	12	07.63819	02	07	02.17	+25	05	34.6	9 T	372
/1986n	1986	12	08.66227	02	00	58.55	+24	41	54.4		399

/1986n	1986	12	09.23854	01	57	38.95	+24	28	24.4		657
/1986n	1986	12	18.34549	01	12	13.79	+20	49	23.0		657
/1986n	1986	12	20.22986	01	04	33.31	+20	05	47.9		657
/1986n	1986	12	22.42870	00	56	17.36	+19	16	46.0		399
/1986n	1986	12	22.43670	00	56	15.63	+19	16	35.4		399
/1986n	1986	12	30.53317	00	31	33.38	+16	37	07.5		399
/1986n	1986	12	30.53681	00	31	32.87	+16	37	04.8		399

Periodic Comet Urata-Niijima (1986o)

/1986o	1986	11	25.42639	01	18	48.74	+36	10	17.9		372
/1986o	1986	11	25.44861	01	18	46.99	+36	11	00.3		372
/1986o	1986	11	26.57431	01	17	41.73	+36	45	02.7	15.5T	399
/1986o	1986	11	28.73520	01	15	55.12	+37	47	45.5		046
/1986o	1986	11	28.74932	01	15	54.41	+37	48	05.5		046
/1986o	1986	11	30.33160	01	14	47.73	+38	31	53.3		707
/1986o	1986	12	01.26807	01	14	14.78	+38	57	00.0	15.9T	691
/1986o	1986	12	01.27888	01	14	14.39	+38	57	16.8		691
/1986o	1986	12	01.29154	01	14	13.90	+38	57	36.9		691
/1986o	1986	12	06.53738	01	12	27.35	+41	07	20.1		399
/1986o	1986	12	06.56191	01	12	27.02	+41	07	52.8		399
/1986o	1986	12	07.50486	01	12	22.31	+41	29	29.4		881
/1986o	1986	12	20.40983	01	18	20.37	+45	40	44.2	16 T	887
/1986o	1986	12	20.43403	01	18	21.50	+45	41	10.6		887

Periodic Comet Lovas 2 (1986p)

/1986p	1986	11	30.93507	01	48	14.89	+13	48	15.7	14 T	561
/1986p	1986	11	30.94757	01	48	15.86	+13	48	13.0		561
/1986p	1986	12	03.84931	01	50	17.08	+13	52	10.0	14 T	561
/1986p	1986	12	04.59826	01	50	51.4	+13	53	18	15.5T B	372
/1986p	1986	12	05.54624	01	51	33.68	+13	54	51.1	15 T	399
/1986p	1986	12	06.62819	01	52	24.44	+13	56	55.2		399
/1986p	1986	12	07.59132	01	53	10.8	+13	58	55	16 T	372
/1986p	1987	01	03.14921	02	21	20.79	+15	34	00.6	C	691
/1986p	1987	01	03.21661	02	21	25.53	+15	34	21.6	17 T C	691
/1986p	1987	01	03.23582	02	21	26.96	+15	34	25.2	C	691

Periodic Comet du Toit-Hartley

/1986q	1986	12	27.33888	06	57	03.42	+25	26	16.5	D	691
/1986q	1986	12	27.34874	06	57	02.63	+25	26	17.3	19.3T D	691
/1986q	1986	12	27.36418	06	57	01.46	+25	26	18.1	D	691
/1986q	1986	12	28.31181	06	55	49.37	+25	27	08.3	E	691
/1986q	1986	12	28.33734	06	55	47.33	+25	27	10.6	D	691
/1986q	1986	12	28.35090	06	55	46.22	+25	27	11.8	E	691

Note 1: image involved with star, measurement uncertain. 2: coma diameter 25"; no discernible nucleus, center of condensation measured. 3: 2′.2 tail in p.a. 272 . 4: correction to MPC 10209. 5: 100" tail in p.a. 274 . 6: 33" tail in p.a. 282 . 7: 1′.2 tail in p.a. 80 . 8: 27′ tail in p.a. 50 . 9: image faint, measurement uncertain. A: exposure stopped by clouds. B: very diffuse, difficult to measure. C: somewhat diffuse, coma 1′. D: essentially stellar with hint of diffuseness. E = 1 + D.

* * * * *

OBSERVATIONS OF MINOR PLANETS.

It has become necessary to simplify the manner in which the observations of minor planets are collected and published. Observations will continue to be published in order of observatory code and by object, but the

former will now be done rigorously, which means that observations made in the course of different programs at the same observatory will appear in a single item. In some instances an attempt will be made to distinguish among different observers by using different numerals in the notes column N. In a few programs the custom has been to indicate the discoverers of specific new objects. This will no longer be possible, although such information will continue to be filed by the Minor Planet Center and published if and when the corresponding minor planets are ever numbered. In order to ensure that this is done accurately, and if the proper assignment of credit is an important consideration in a particular program, program directors are encouraged to use for the discoveries by particular individuals a temporary designation scheme consisting of one or two initial letters and a sequence of numbers, such that the total number of characters is not more than five. From now on the unnumbered planets will be listed before the numbered ones.

Other notes with observations will in the future be indicated by upper or lower case letters. Combinations of several notes for a particular observation are therefore discouraged. Suggested "standard" notes are given by the following scheme. Not all these notes are utilized in the present batch of MPCs, and additional codes will presumably be added in the future.

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
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

Finally, the form of the headings for the observations at individual observatories is being simplified. The "Contact" is now given first, followed if appropriate by the names of observers and/or measurers and information about instruments and observing and reduction techniques. In some instances references are given to other publications from which the observations have been extracted; this can still be done in a limited way, but specific volume, page and issue numbers will now be omitted.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
024 Heidelberg							
R. M. West, European Southern Observatory, Karl Schwarzschild Strasse 2, D-8046 Garching bei Munchen, Federal Republic of Germany							
Observer K. Reinmuth							
ESO S-3000 measuring engine							
473	1901	02 13.90500	10 37 20.42	+08 58 46.7		V	024
473	1901	02 13.96125	10 37 17.34	+08 58 45.4	15.5		024
473	1901	02 17.91182	10 33 09.44	+08 56 31.5		R	024
473	1901	02 21.92988	10 28 50.13	+08 54 35.9	15.8		024
473	1901	03 13.96053	10 08 38.35	+08 41 10.7		R	024
1026	1923	08 14.00989	23 09 25.48	-14 21 37.8			024
1026	1923	09 11.90131	22 48 15.14	-18 09 38.9			024
1026	1923	09 11.93257	22 48 13.65	-18 09 48.3			024
033 Tautenburg							
S. Marx, Karl Schwarzchild Observatorium, DDR-6901 Tautenburg, Democratic Republic of Germany							
Observers F. Borngen, C. Hogner, F. Ludwig							
1.3-m Schmidt telescope							
1967 GF1	1986	09 10.10069	03 47 17.89	+03 25 10.9			033
1967 GF1	1986	09 10.12222	03 47 18.33	+03 25 04.9			033
1967 GF1	1986	10 10.02465	03 45 41.42	+00 24 48.9			033
1967 GF1	1986	10 10.10035	03 45 39.45	+00 24 18.3			033
1967 GF1	1986	11 07.95556	03 25 39.15	-02 19 49.5			033
1967 GF1	1986	11 07.98125	03 25 37.84	-02 19 56.2			033
1973 UF5	1986	09 09.08056	04 04 48.00	+33 18 44.7			033
1973 UF5	1986	09 09.10694	04 04 48.29	+33 18 52.1			033
1973 UF5	1986	10 10.98958	04 02 10.57	+35 36 45.2			033
1973 UF5	1986	10 11.06944	04 02 08.87	+35 37 02.6			033
1973 UF5	1986	10 27.89444	03 54 19.72	+36 29 25.4			033
1973 UF5	1986	10 27.93819	03 54 18.19	+36 29 32.6			033
1973 UF5	1986	11 07.91250	03 47 17.90	+36 51 22.8			033
1973 UF5	1986	11 07.99931	03 47 14.27	+36 51 30.5			033
046 Klet							
A. Mrkos, Dept. of Astronomy and Astrophysics, Charles University, Svedska 8, C-15000 Prague 5, Czechoslovakia							
Observers A. Mrkos, Z. Vavrova							
0.6-m Maksutov reflector							
1979 SN11	1986	11 07.87431	02 11 48.58	+15 34 19.6			046
1979 SN11	1986	11 07.89184	02 11 47.49	+15 34 12.4			046
1980 DL5	1986	11 03.95503	02 35 24.51	+16 04 52.4			046
1980 DL5	1986	11 03.96921	02 35 23.66	+16 04 50.3			046
1980 DL5	1986	11 07.94826	02 31 29.90	+15 52 12.9			046
1980 DL5	1986	11 07.96238	02 31 29.08	+15 52 10.7			046
1980 DL5	1986	11 09.89404	02 29 38.19	+15 45 59.9			046
1980 DL5	1986	11 09.91348	02 29 37.05	+15 45 57.2			046
1981 JU2	1986	11 07.94826	02 40 35.82	+17 02 10.7			046
1981 JU2	1986	11 07.96238	02 40 35.09	+17 02 06.5			046
1981 RM	1986	11 29.93167	04 47 53.04	+25 58 24.6			046
1981 RM	1986	11 29.94579	04 47 52.10	+25 58 23.0			046
1981 UT15	1986	11 29.93167	04 52 19.23	+25 04 25.6			046
1981 UT15	1986	11 29.94579	04 52 18.51	+25 04 24.7			046
1981 WV1	1986	11 25.86906	03 20 59.76	+20 27 12.8			046
1981 WV1	1986	11 25.88347	03 20 58.90	+20 27 10.1			046
1981 WV1	1986	11 26.84874	03 20 08.93	+20 23 54.2			046
1981 WV1	1986	11 26.86326	03 20 08.10	+20 23 59.7			046

1982	US6		1986	11	07.94826	02	34	03.71	+14	05	37.0	046
1982	US6		1986	11	07.96238	02	34	02.81	+14	05	37.1	046
1982	US6		1986	11	09.89404	02	32	02.15	+14	06	12.9	V 046
1982	US6		1986	11	09.91348	02	32	01.12	+14	06	16.3	V 046
1986	TR3		1986	10	04.96979	01	21	15.83	+08	45	19.4	046
1986	UK		1986	11	09.97847	01	55	58.12	+14	08	57.2	16.6 046
1986	UK		1986	11	09.99271	01	55	57.43	+14	08	56.9	046
1986	UM		1986	11	03.91962	02	04	28.67	+13	27	55.8	046
1986	UM		1986	11	03.93374	02	04	27.73	+13	27	55.7	046
1986	UM		1986	11	07.83900	02	00	24.50	+13	19	28.4	046
1986	UM		1986	11	07.85174	02	00	23.93	+13	19	27.8	046
1986	UM		1986	11	09.97847	01	58	16.66	+13	15	09.7	046
1986	UM		1986	11	09.99271	01	58	15.93	+13	15	06.3	046
1986	UN		1986	11	03.91962	02	05	32.06	+13	02	15.2	046
1986	UN		1986	11	03.93374	02	05	31.24	+13	02	12.4	046
1986	UN		1986	11	07.83900	02	01	52.99	+12	44	23.5	046
1986	UN		1986	11	07.85174	02	01	52.54	+12	44	19.9	046
1986	UN		1986	11	09.97847	01	59	58.77	+12	35	04.1	046
1986	UN		1986	11	09.99271	01	59	57.89	+12	34	59.9	046
1986	UO		1986	11	03.91962	02	06	45.80	+14	58	59.6	046
1986	UO		1986	11	03.93374	02	06	45.00	+14	58	57.4	046
1986	UO		1986	11	07.83900	02	03	20.71	+14	47	13.5	046
1986	UO		1986	11	07.85174	02	03	19.84	+14	47	12.6	046
1986	UO		1986	11	09.97847	02	01	34.69	+14	41	03.6	046
1986	UO		1986	11	09.99271	02	01	34.00	+14	41	01.3	046
1986	UP		1986	11	03.91962	02	05	19.75	+13	59	34.5	046
1986	UP		1986	11	03.93374	02	05	18.43	+13	59	37.3	046
1986	UP		1986	11	07.83900	02	00	14.52	+14	10	18.6	046
1986	UP		1986	11	07.85174	02	00	13.30	+14	10	22.6	046
1986	UQ		1986	11	07.83900	02	05	51.15	+14	00	11.9	046
1986	UQ		1986	11	07.85174	02	05	50.45	+14	00	06.4	046
1986	UQ		1986	11	09.85845	02	03	58.00	+13	46	30.1	046
1986	UQ		1986	11	09.87789	02	03	57.09	+13	46	23.1	046
1986	UQ		1986	11	09.97847	02	03	51.29	+13	45	40.9	046
1986	UQ		1986	11	09.99271	02	03	50.61	+13	45	35.0	046
1986	US		1986	11	07.85174	02	10	54.62	+14	16	29.7	17.2 046
1986	UT		1986	11	07.91296	02	09	57.13	+21	09	40.4	046
1986	UT		1986	11	07.92708	02	09	56.48	+21	09	35.5	046
1986	UU		1986	11	08.91111	02	08	28.00	+16	34	34.1	046
1986	UU		1986	11	08.92787	02	08	27.06	+16	34	22.6	046
1986	UV		1986	11	07.91296	02	09	00.08	+19	21	44.4	046
1986	UV		1986	11	07.92708	02	08	59.19	+19	21	39.2	046
1986	UH3	*	1986	10	28.81962	02	14	03.87	+14	57	43.6	046
1986	UH3		1986	10	28.83374	02	14	03.12	+14	57	40.2	046
1986	UH3		1986	11	03.91962	02	08	54.52	+14	31	12.5	046
1986	UH3		1986	11	03.93374	02	08	53.85	+14	31	08.8	046
1986	UH3		1986	11	07.83900	02	05	47.18	+14	14	19.6	046
1986	UH3		1986	11	07.85174	02	05	46.53	+14	14	16.7	046
1986	UH3		1986	11	09.85845	02	04	15.65	+14	05	57.1	046
1986	UH3		1986	11	09.87789	02	04	14.67	+14	05	49.3	046
1986	UH3		1986	11	09.97847	02	04	10.19	+14	05	25.7	046
1986	UH3		1986	11	09.99271	02	04	09.40	+14	05	22.0	046
1986	VM		1986	10	28.85422	02	25	01.22	+21	23	12.3	046
1986	VM		1986	10	28.86840	02	25	00.19	+21	23	03.3	046
1986	VM		1986	11	07.91296	02	14	22.72	+20	11	35.2	046
1986	VM		1986	11	07.92708	02	14	21.94	+20	11	29.9	046
1986	VO		1986	11	07.94826	02	31	21.36	+17	40	04.3	046
1986	VO		1986	11	07.96238	02	31	20.52	+17	39	57.6	046
1986	VO		1986	11	09.89404	02	29	25.31	+17	26	36.5	V 046

1986	VO		1986	11	09.91348	02	29	24.23	+17	26	29.4	V 046
1986	VT		1986	11	07.94826	02	42	10.99	+14	48	12.2	046
1986	VT		1986	11	07.96238	02	42	10.26	+14	48	07.6	046
1986	VT		1986	11	09.91348	02	40	34.20	+14	40	05.0	046
1986	VU		1986	11	07.98420	02	33	36.90	+21	54	20.7	046
1986	VU		1986	11	07.99838	02	33	36.15	+21	54	16.9	046
1986	VU		1986	11	09.94363	02	31	47.23	+21	46	34.5	046
1986	VU		1986	11	09.95637	02	31	46.55	+21	46	30.3	046
1986	VW		1986	11	07.98420	02	38	07.27	+22	13	49.0	046
1986	VW		1986	11	07.99838	02	38	06.59	+22	13	48.0	046
1986	VW		1986	11	09.94363	02	35	47.16	+22	10	14.1	046
1986	VW		1986	11	09.95637	02	35	46.22	+22	10	12.3	046
1986	VX		1986	11	07.98420	02	38	54.69	+22	53	36.7	046
1986	VX		1986	11	07.99838	02	38	53.62	+22	53	41.5	046
1986	VX		1986	11	09.94363	02	36	38.99	+23	03	05.8	046
1986	VX		1986	11	09.95637	02	36	38.17	+23	03	09.1	046
1986	VY		1986	11	07.98420	02	42	00.44	+24	05	05.7	046
1986	VY		1986	11	07.99838	02	41	59.61	+24	05	03.1	046
1986	VY		1986	11	09.94363	02	40	06.80	+23	59	34.6	046
1986	VY		1986	11	09.95637	02	40	05.94	+23	59	31.8	046
1986	VZ		1986	11	07.98420	02	41	59.86	+21	47	19.1	046
1986	VZ		1986	11	07.99838	02	41	59.30	+21	47	21.1	046
1986	VZ		1986	11	09.94363	02	39	50.84	+21	44	14.4	046
1986	VZ		1986	11	09.95637	02	39	49.95	+21	44	13.4	046
1986	VA1		1986	11	07.98420	02	44	09.84	+22	05	45.1	046
1986	VA1		1986	11	07.99838	02	44	09.06	+22	05	40.3	046
1986	VA1		1986	11	09.94363	02	42	08.54	+21	54	12.3	046
1986	VB1		1986	11	07.98420	02	45	09.85	+22	12	37.2	046
1986	VB1		1986	11	07.99838	02	45	09.22	+22	12	29.6	046
1986	VB1		1986	11	09.94363	02	43	15.61	+21	56	42.2	046
1986	VB1		1986	11	09.95637	02	43	14.98	+21	56	35.1	046
1986	VJ6		1986	11	07.87431	02	15	17.54	+16	09	21.1	16.6 046
1986	VJ6		1986	11	07.89184	02	15	16.76	+16	09	20.2	046
1986	VK6		1986	11	07.87431	02	17	04.67	+16	52	33.4	16.6 046
1986	VK6		1986	11	07.89184	02	17	04.06	+16	52	32.5	046
1986	VL6		1986	11	07.87431	02	21	30.20	+15	23	41.6	16.8 046
1986	VL6		1986	11	07.89184	02	21	29.83	+15	23	37.7	046
1986	VA7	*	1986	11	03.91962	02	07	56.21	+15	17	21.0	17.0 046
1986	VA7		1986	11	03.93374	02	07	55.31	+15	17	21.2	046
1986	VB7	*	1986	11	03.91962	02	08	27.84	+12	59	37.2	17.0 046
1986	VB7		1986	11	03.93374	02	08	26.89	+12	59	37.1	046
1986	VC7	*	1986	11	03.95503	02	39	26.75	+17	54	48.5	16.9 046
1986	VC7		1986	11	03.96921	02	39	25.85	+17	54	50.8	046
1986	VC7		1986	11	07.94826	02	34	58.30	+17	53	33.2	046
1986	VC7		1986	11	07.96238	02	34	57.47	+17	53	32.5	046
1986	VD7	*	1986	11	03.95503	02	39	39.61	+15	55	01.4	16.9 046
1986	VD7		1986	11	03.96921	02	39	38.91	+15	54	54.7	046
1986	VD7		1986	11	07.94826	02	36	15.60	+15	48	32.2	046
1986	VD7		1986	11	07.96238	02	36	14.79	+15	48	30.2	046
1986	VE7	*	1986	11	03.99028	02	39	46.15	+21	29	28.9	16.9 046
1986	VE7		1986	11	04.00440	02	39	45.19	+21	29	24.7	046
1986	VE7		1986	11	07.98420	02	35	40.28	+21	23	19.3	046
1986	VE7		1986	11	07.99838	02	35	39.71	+21	23	18.1	U 046
1986	VE7		1986	11	09.94363	02	33	39.89	+21	19	42.0	046
1986	VE7		1986	11	09.95637	02	33	38.82	+21	19	38.1	046
1986	VF7	*	1986	11	03.99028	02	43	06.14	+22	16	49.9	046
1986	VF7		1986	11	04.00440	02	43	05.65	+22	16	45.9	046
1986	VF7		1986	11	07.98420	02	39	43.62	+21	50	12.7	046
1986	VF7		1986	11	07.99838	02	39	42.65	+21	50	06.3	046

1986	VG7	*	1986	11	07.83900	02	07	09.37	+13	04	14.8	17.0	046
1986	VG7		1986	11	07.85174	02	07	08.65	+13	04	19.9		046
1986	VG7		1986	11	09.97847	02	04	42.39	+13	08	38.7		046
1986	VG7		1986	11	09.99271	02	04	41.70	+13	08	40.2		046
1986	VH7	*	1986	11	07.87431	02	19	46.79	+16	08	10.3	16.8	046
1986	VH7		1986	11	07.89184	02	19	45.72	+16	08	07.4		046
1986	VJ7	*	1986	11	07.87431	02	20	12.93	+17	40	44.5	16.9	046
1986	VJ7		1986	11	07.89184	02	20	11.97	+17	40	47.3		046
1986	VK7	*	1986	11	07.91296	02	05	55.46	+21	59	00.4	16.8	046
1986	VK7		1986	11	07.92708	02	05	54.30	+21	58	51.3		046
1986	VL7	*	1986	11	07.91296	02	10	12.53	+18	27	39.6	16.8	046
1986	VL7		1986	11	07.92708	02	10	11.90	+18	27	37.0		046
1986	VM7	*	1986	11	07.91296	02	16	21.96	+22	10	49.1	16.7	046
1986	VM7		1986	11	07.92708	02	16	21.28	+22	10	32.3		046
1986	VN7	*	1986	11	07.94826	02	35	15.55	+14	38	10.1	17.0	046
1986	VO7	*	1986	11	07.94826	02	38	41.02	+15	23	44.7	17.0	046
1986	VP7	*	1986	11	07.94826	02	42	25.34	+14	06	03.5	16.6	046
1986	VP7		1986	11	07.96238	02	42	24.29	+14	06	02.2		046
1986	VP7		1986	11	09.91348	02	40	13.49	+14	04	59.4		046
1986	VQ7	*	1986	11	07.94826	02	44	31.28	+14	29	05.2		046
1986	VQ7		1986	11	07.96238	02	44	30.41	+14	29	01.0		046
1986	VR7	*	1986	11	07.98420	02	44	00.12	+21	46	04.5	17.0	046
1986	VR7		1986	11	07.99838	02	43	59.01	+21	46	02.7		046
1986	WB		1986	11	30.89168	04	32	36.31	+23	20	53.3	16.8	046
1986	WB		1986	11	30.90580	04	32	35.18	+23	20	56.9		046
1986	WG		1986	11	25.90431	04	09	31.00	+19	36	55.7	16.0	046
1986	WG		1986	11	25.91854	04	09	30.10	+19	36	41.3		046
1986	WG		1986	11	26.88716	04	08	25.73	+19	19	00.3		046
1986	WG		1986	11	26.90134	04	08	24.98	+19	18	48.2		046
1986	WN	*	1986	11	25.86906	03	18	17.48	+20	24	02.6	16.7	046
1986	WN		1986	11	25.88347	03	18	16.51	+20	24	03.9		046
1986	WN		1986	11	26.84874	03	17	15.82	+20	24	14.9		046
1986	WN		1986	11	26.86326	03	17	14.85	+20	24	17.4		046
1986	WO	*	1986	11	25.86906	03	19	41.22	+20	06	50.8	17.0	046
1986	WO		1986	11	25.88347	03	19	40.49	+20	06	50.0		046
1986	WP	*	1986	11	25.86906	03	21	02.94	+21	22	49.7	17.0	046
1986	WP		1986	11	25.88347	03	21	02.14	+21	22	48.2		046
1986	WP		1986	11	26.84874	03	20	00.33	+21	20	26.2		046
1986	WP		1986	11	26.86326	03	19	59.56	+21	20	22.4		046
1986	WQ	*	1986	11	25.86906	03	21	44.40	+20	03	38.9	16.9	046
1986	WQ		1986	11	25.88347	03	21	43.69	+20	03	33.9		046
1986	WR	*	1986	11	25.86906	03	22	37.39	+20	07	53.1	16.5	046
1986	WR		1986	11	25.88347	03	22	36.25	+20	07	50.6		046
1986	WR		1986	11	26.84874	03	21	43.12	+20	04	47.0		046
1986	WR		1986	11	26.86326	03	21	42.28	+20	04	45.0		046
1986	WS	*	1986	11	25.86906	03	25	02.24	+20	28	20.0	16.8	046
1986	WS		1986	11	25.88347	03	25	01.77	+20	28	16.6		046
1986	WS		1986	11	26.84874	03	24	31.16	+20	24	36.4		046
1986	WS		1986	11	26.86326	03	24	30.66	+20	24	33.3		046
1986	WT	*	1986	11	25.86906	03	26	03.81	+21	17	02.4	17.0	046
1986	WT		1986	11	25.88347	03	26	02.71	+21	17	06.7	V	046
1986	WU	*	1986	11	25.86906	03	27	48.56	+22	43	58.5	17.0	046
1986	WU		1986	11	25.88347	03	27	47.80	+22	43	51.2		046
1986	WU		1986	11	26.84874	03	27	00.54	+22	34	24.4		046
1986	WU		1986	11	26.86326	03	26	59.62	+22	34	17.0		046
1986	WV	*	1986	11	25.86906	03	28	12.61	+22	22	58.9	17.0	046
1986	WV		1986	11	25.88347	03	28	11.70	+22	22	52.5		046
1986	WV		1986	11	26.84874	03	27	21.75	+22	14	39.6		046
1986	WV		1986	11	26.86326	03	27	20.94	+22	14	32.6		046

1986	WW	*	1986	11	25.90431	04	06	53.11	+21	14	49.8	16.9	046
1986	WW		1986	11	25.91854	04	06	52.20	+21	14	43.3		046
1986	WW		1986	11	26.88716	04	05	49.00	+21	07	20.7		046
1986	WW		1986	11	26.90134	04	05	48.19	+21	07	16.5		046
1986	WX	*	1986	11	25.90431	04	07	34.26	+22	19	06.7	17.0	046
1986	WX		1986	11	25.91854	04	07	33.52	+22	19	04.8	d	046
1986	WX		1986	11	26.88716	04	06	32.22	+22	15	30.0	d	046
1986	WX		1986	11	26.90134	04	06	31.43	+22	15	27.0		046
1986	WY	*	1986	11	25.90431	04	08	03.93	+19	33	48.7	16.7	046
1986	WY		1986	11	25.91854	04	08	03.08	+19	33	49.1		046
1986	WZ	*	1986	11	25.90431	04	08	39.19	+21	55	47.3	17.0	046
1986	WZ		1986	11	25.91854	04	08	38.51	+21	55	43.5		046
1986	WZ		1986	11	26.88716	04	07	41.58	+21	51	58.8		046
1986	WZ		1986	11	26.90134	04	07	40.91	+21	51	56.7		046
1986	WA1	*	1986	11	25.90431	04	09	22.84	+20	33	02.0	17.3	046
1986	WA1		1986	11	25.91854	04	09	21.86	+20	33	00.5		046
1986	WB1	*	1986	11	25.90431	04	10	55.56	+21	31	33.0	16.8	046
1986	WB1		1986	11	25.91854	04	10	54.66	+21	31	29.1		046
1986	WB1		1986	11	26.88716	04	09	49.61	+21	26	21.0		046
1986	WB1		1986	11	26.90134	04	09	48.63	+21	26	15.7		046
1986	WC1	*	1986	11	25.90431	04	12	53.97	+21	41	47.0	17.0	046
1986	WC1		1986	11	25.91854	04	12	53.05	+21	41	45.2		046
1986	WC1		1986	11	26.88716	04	12	01.01	+21	40	33.3		046
1986	WC1		1986	11	26.90134	04	12	00.13	+21	40	31.4		046
1986	WD1	*	1986	11	25.90431	04	13	56.01	+18	40	18.1	17.0	046
1986	WD1		1986	11	25.91854	04	13	55.20	+18	40	15.9		046
1986	WE1	*	1986	11	25.90431	04	14	16.21	+21	33	14.8	17.1	046
1986	WE1		1986	11	25.91854	04	14	15.22	+21	33	13.9		046
1986	WE1		1986	11	26.88716	04	13	22.54	+21	31	34.7		046
1986	WE1		1986	11	26.90134	04	13	21.88	+21	31	34.0		046
1986	WF1	*	1986	11	25.90431	04	14	29.36	+21	54	43.8	17.0	046
1986	WF1		1986	11	25.91854	04	14	28.32	+21	54	43.1		046
1986	WG1	*	1986	11	25.90431	04	14	55.85	+21	02	48.6	17.0	046
1986	WG1		1986	11	25.91854	04	14	55.01	+21	02	43.4		046
1986	WH1	*	1986	11	25.90431	04	15	11.05	+21	07	55.0	16.9	046
1986	WH1		1986	11	25.91854	04	15	10.24	+21	07	56.6		046
1986	WJ1	*	1986	11	25.90431	04	15	34.10	+20	58	58.0	16.8	046
1986	WJ1		1986	11	25.91854	04	15	33.57	+20	58	55.3		046
1986	WJ1		1986	11	26.88716	04	14	59.95	+20	56	30.4		046
1986	WJ1		1986	11	26.90134	04	14	59.34	+20	56	28.8		046
1986	WK1	*	1986	11	25.94383	04	36	05.40	+27	52	25.0		046
1986	WK1		1986	11	25.95969	04	36	04.14	+27	52	27.0		046
1986	WL1	*	1986	11	25.94383	04	40	32.01	+27	50	06.0	16.8	046
1986	WL1		1986	11	25.95969	04	40	30.95	+27	50	08.6		046
1986	WM1	*	1986	11	25.94383	04	42	09.75	+28	59	43.5	17.0	046
1986	WM1		1986	11	25.95969	04	42	08.48	+28	59	45.1		046
1986	WN1	*	1986	11	25.94383	04	44	29.24	+29	48	24.3	17.0	046
1986	WN1		1986	11	25.95969	04	44	28.22	+29	48	29.0		046
1986	WO1	*	1986	11	25.94383	04	46	46.27	+26	16	01.4	17.0	046
1986	WO1		1986	11	25.95969	04	46	45.17	+26	16	02.5		046
1986	WP1	*	1986	11	29.93167	04	48	35.41	+24	01	39.0	17.0	046
1986	WP1		1986	11	29.94579	04	48	34.37	+24	01	40.8		046
1986	WQ1	*	1986	11	29.93167	04	51	32.21	+24	44	01.8	16.8	046
1986	WQ1		1986	11	29.94579	04	51	31.29	+24	43	58.0		046
1986	WR1	*	1986	11	29.93167	04	52	04.17	+23	08	22.1	17.0	046
1986	WR1		1986	11	29.94579	04	52	03.44	+23	08	23.6		046
1986	WS1	*	1986	11	29.93167	04	56	58.71	+25	43	36.4	17.0	046
1986	WS1		1986	11	29.94579	04	56	57.90	+25	43	34.7		046
1986	WT1	*	1986	11	29.93167	04	58	13.38	+25	12	12.5	16.5	046

1986	WT1		1986	11	29.94579	04	58	12.34	+25	12	10.4		046
1986	WU1	*	1986	11	29.96442	04	35	35.30	+18	50	27.4	16.7	046
1986	WU1		1986	11	29.97854	04	35	34.48	+18	50	27.7		046
1986	WV1	*	1986	11	29.96442	04	35	53.01	+19	22	17.4	16.7	046
1986	WV1		1986	11	29.97854	04	35	52.08	+19	22	13.6		046
1986	WW1	*	1986	11	29.96442	04	38	17.15	+20	48	23.2	16.8	046
1986	WW1		1986	11	29.97854	04	38	16.32	+20	48	20.0		046
1986	WX1	*	1986	11	29.96442	04	40	08.07	+17	54	23.8	16.6	046
1986	WX1		1986	11	29.97854	04	40	07.30	+17	54	22.4		046
1986	WY1	*	1986	11	29.96442	04	42	06.80	+19	30	53.4	17.0	046
1986	WY1		1986	11	29.97854	04	42	06.04	+19	30	51.7		046
1986	WZ1	*	1986	11	29.96442	04	42	46.81	+19	38	07.3	17.0	046
1986	WZ1		1986	11	29.97854	04	42	46.16	+19	38	06.0		046
1986	WA2	*	1986	11	29.96442	04	44	36.69	+19	46	58.0	17.1	046
1986	WA2		1986	11	29.97854	04	44	36.01	+19	46	57.9		046
1986	WB2	*	1986	11	29.96442	04	46	20.65	+19	50	16.3	16.9	046
1986	WB2		1986	11	29.97854	04	46	19.96	+19	50	13.9		046
1986	WC2	*	1986	11	30.89168	04	22	08.39	+21	57	16.7	17.0	046
1986	WC2		1986	11	30.90580	04	22	07.57	+21	57	10.0	E	046
1986	WD2	*	1986	11	30.89168	04	22	37.86	+21	30	35.6	17.1	046
1986	WD2		1986	11	30.90580	04	22	37.04	+21	30	34.7		046
1986	WE2	*	1986	11	30.89168	04	25	19.40	+23	36	51.9	17.0	046
1986	WE2		1986	11	30.90580	04	25	18.41	+23	36	52.0		046
1986	WF2	*	1986	11	30.89168	04	25	54.17	+21	52	37.7	17.0	046
1986	WF2		1986	11	30.90580	04	25	53.31	+21	52	52.2		046
1986	WG2	*	1986	11	30.89168	04	26	06.75	+20	30	44.4	16.9	046
1986	WG2		1986	11	30.90580	04	26	05.82	+20	30	44.8		046
1986	WH2	*	1986	11	30.89168	04	26	26.67	+23	57	04.4	16.8	046
1986	WH2		1986	11	30.90580	04	26	25.75	+23	57	02.6		046
1986	WJ2	*	1986	11	30.89168	04	28	49.26	+22	48	31.9	16.9	046
1986	WJ2		1986	11	30.90580	04	28	48.37	+22	48	28.5		046
1986	WK2	*	1986	11	30.89168	04	29	53.99	+23	10	04.7	16.9	046
1986	WK2		1986	11	30.90580	04	29	53.09	+23	10	00.5		046
1986	WL2	*	1986	11	30.89168	04	30	42.09	+22	31	10.3	17.1	046
1986	WL2		1986	11	30.90580	04	30	40.94	+22	31	08.8		046
1986	WM2	*	1986	11	30.89168	04	32	24.90	+22	49	43.7	17.0	046
1986	WM2		1986	11	30.90580	04	32	23.75	+22	49	45.3		046
1986	WN2	*	1986	11	30.89168	04	34	40.10	+23	19	31.2	16.8	046
1986	WN2		1986	11	30.90580	04	34	39.22	+23	19	28.9		046
1986	WO2	*	1986	11	30.90580	04	31	14.12	+24	40	25.5		046
1986	XF		1986	11	25.94383	04	39	59.95	+25	55	24.8	16.9	046
1986	XF		1986	11	25.95969	04	39	58.82	+25	55	23.9		046
1986	XJ		1986	11	25.94383	04	47	45.53	+25	32	58.6	16.8	046
1986	XT		1986	11	25.94383	04	36	22.90	+28	17	27.9	17.0	046
1986	XT		1986	11	25.95969	04	36	21.91	+28	17	27.6		046
1986	XA1		1986	11	29.93167	04	52	03.46	+25	39	41.7	16.7	046
1986	XA1		1986	11	29.94579	04	52	02.36	+25	39	41.3		046
1986	XJ1		1986	11	25.90431	04	04	24.29	+20	56	04.1	16.8	046
1986	XJ1		1986	11	25.91854	04	04	23.46	+20	56	01.9		046
1986	XJ1		1986	11	26.88716	04	03	32.36	+20	54	24.2		046
1986	XJ1		1986	11	26.90134	04	03	31.88	+20	54	22.1		046
12			1986	11	29.96442	04	40	01.92	+18	44	23.8		046
12			1986	11	29.97854	04	40	00.95	+18	44	18.9		046
104			1986	11	29.93167	04	52	01.78	+24	45	59.1		046
104			1986	11	29.94579	04	52	00.99	+24	45	58.7		046
128			1986	11	26.88716	04	04	14.67	+18	24	37.8		046
128			1986	11	26.90134	04	04	13.78	+18	24	37.6		046
142			1986	11	08.91111	02	07	13.25	+16	23	11.5		046
142			1986	11	08.92787	02	07	12.24	+16	23	06.7		046

235	1986	11	29.93167	04	57	48.48	+24	21	09.3	046
235	1986	11	29.94579	04	57	47.62	+24	21	10.5	046
352	1986	11	29.96442	04	41	47.47	+21	55	35.9	046
352	1986	11	29.97854	04	41	46.46	+21	55	31.7	046
394	1986	11	30.89168	04	35	08.45	+22	27	08.6	046
394	1986	11	30.90580	04	35	07.51	+22	27	09.4	046
562	1986	11	25.90431	04	12	17.24	+19	13	02.2	046
562	1986	11	25.91854	04	12	16.38	+19	13	03.2	046
562	1986	11	26.88716	04	11	20.72	+19	13	49.8	046
562	1986	11	26.90134	04	11	19.95	+19	13	50.2	046
1028	1986	11	29.93167	04	51	34.04	+24	32	05.3	046
1028	1986	11	29.94579	04	51	33.23	+24	32	06.7	046
1061	1986	11	25.90431	04	09	04.18	+19	03	03.8	046
1061	1986	11	25.91854	04	09	03.38	+19	03	02.9	046
1061	1986	11	26.88716	04	08	11.25	+19	01	47.3	046
1061	1986	11	26.90134	04	08	10.54	+19	01	46.0	046
1068	1986	11	07.91296	02	10	13.26	+21	29	17.6	046
1068	1986	11	07.92708	02	10	12.44	+21	29	13.6	046
1135	1986	11	25.94383	04	45	59.19	+29	37	46.8	046
1135	1986	11	25.95969	04	45	58.14	+29	37	46.4	046
1202	1986	11	07.83900	02	07	58.02	+11	47	58.3	046
1202	1986	11	07.85174	02	07	57.52	+11	47	56.5	046
1202	1986	11	09.85845	02	06	38.48	+11	42	56.8	046
1202	1986	11	09.87789	02	06	37.60	+11	42	56.8	046
1202	1986	11	09.97847	02	06	33.65	+11	42	39.9	046
1202	1986	11	09.99271	02	06	33.11	+11	42	37.9	046
1686	1986	11	07.87431	02	21	08.15	+14	35	51.1	046
1686	1986	11	07.89184	02	21	07.34	+14	35	46.4	046
1793	1986	11	07.83900	02	07	20.62	+13	13	05.6	046
1793	1986	11	07.85174	02	07	19.78	+13	13	00.6	046
1793	1986	11	09.85845	02	05	21.48	+13	01	09.3	046
1793	1986	11	09.87789	02	05	20.56	+13	01	05.6	046
1793	1986	11	09.97847	02	05	14.61	+13	00	29.0	046
1793	1986	11	09.99271	02	05	13.69	+13	00	23.5	046
1797	1986	11	07.83900	02	09	16.08	+14	06	37.8	046
1797	1986	11	07.85174	02	09	15.11	+14	06	34.4	046
1797	1986	11	09.85845	02	07	12.98	+13	59	35.1	046
1797	1986	11	09.87789	02	07	11.67	+13	59	29.8	046
1797	1986	11	09.97847	02	07	05.51	+13	59	09.2	046
1797	1986	11	09.99271	02	07	04.70	+13	59	06.0	046
1815	1986	10	05.96146	01	09	45.38	+03	03	57.8	046
1840	1986	11	07.94826	02	37	52.37	+15	35	48.4	046
1840	1986	11	07.96238	02	37	51.67	+15	35	45.7	046
1840	1986	11	09.89404	02	36	11.20	+15	29	28.7	046
1840	1986	11	09.91348	02	36	10.07	+15	29	24.2	046
1858	1986	11	25.86906	03	17	22.57	+19	45	19.1	046
1858	1986	11	25.88347	03	17	21.86	+19	45	14.6	046
1858	1986	11	26.84874	03	16	30.49	+19	41	21.2	046
1858	1986	11	26.86323	03	16	29.72	+19	41	17.7	046
1881	1986	11	09.89404	02	42	48.08	+14	10	03.0	046
1881	1986	11	09.91348	02	42	47.28	+14	09	55.1	046
2004	1986	11	26.84874	03	13	45.47	+22	03	00.2	046
2004	1986	11	26.86326	03	13	44.58	+22	02	57.4	046
2112	1986	11	07.87431	02	19	53.33	+16	39	16.8	046
2142	1986	11	07.94826	02	34	04.36	+14	12	52.1	046
2142	1986	11	07.96238	02	34	03.96	+14	12	49.5	046
2293	1986	11	29.93167	04	48	21.11	+23	04	40.8	046
2293	1986	11	29.94579	04	48	20.36	+23	04	39.3	046
2446	1986	11	25.94383	04	34	47.64	+25	48	26.2	16.9 046

2446		1986	11	25.95969	04	34	46.41	+25 48 24.1		046
2563		1986	11	25.90431	04	07	02.38	+18 33 55.8		046
2563		1986	11	25.91854	04	07	01.65	+18 33 54.7		046
2563		1986	11	26.88716	04	06	11.95	+18 31 58.9		046
2563		1986	11	26.90134	04	06	11.24	+18 31 56.4		046
2809		1986	11	25.94383	04	42	40.56	+26 21 23.3		046
2809		1986	11	25.95969	04	42	39.44	+26 21 23.4		046
2847		1986	11	07.94826	02	44	02.53	+17 33 30.1	16.3	046
2847		1986	11	07.96238	02	44	01.60	+17 33 26.5		046
2847		1986	11	09.89404	02	41	55.14	+17 21 33.1		046
2847		1986	11	09.91348	02	41	54.18	+17 21 26.9		046
2849		1986	11	25.86906	03	23	29.07	+21 17 05.0		046
2849		1986	11	25.88347	03	23	28.13	+21 17 04.6		046
2849		1986	11	26.84874	03	22	28.99	+21 15 55.1		046
2849		1986	11	26.86326	03	22	28.12	+21 15 55.9		046
3029		1986	11	25.94383	04	44	47.65	+27 28 26.9		046
3029		1986	11	25.95969	04	44	46.32	+27 28 24.6		046
3327		1986	11	25.90431	04	09	03.27	+20 46 53.1		046
3327		1986	11	25.91854	04	09	02.54	+20 46 51.4		046
3327		1986	11	26.88716	04	08	12.26	+20 45 00.8		046
3327		1986	11	26.90134	04	08	11.66	+20 44 59.8		046
3349		1986	11	29.93167	04	48	26.70	+23 55 02.9		046
3349		1986	11	29.94579	04	48	25.83	+23 55 03.6		046

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Measurers C.-I. Lagerkvist, E. Onnela
AGK3

1985	SM1	*	1985	09	16.94950	02	06	25.40	+10 48 28.1	17.0	049
1985	SM1		1985	09	16.96751	02	06	24.88	+10 48 34.7		049
1985	SN1	*	1985	09	16.94950	01	57	08.25	+10 57 57.7	17.0	049
1985	SN1		1985	09	16.96751	01	57	08.17	+10 57 58.5		049
1985	TT		1985	10	24.00714	01	12	18.93	+05 08 27.4	17.0	049
1985	TT		1985	10	24.02369	01	12	18.23	+05 08 24.3		049
1985	TV		1985	10	16.97493	01	18	27.90	+06 36 54.2		049
1985	TV		1985	10	16.99086	01	18	27.09	+06 36 54.9		049
1985	TV		1985	10	20.89752	01	14	36.68	+06 40 52.1		049
1985	TV		1985	10	24.00714	01	11	36.72	+06 44 18.5	17.0	049
1985	TV		1985	10	24.02369	01	11	35.81	+06 44 18.7		049
1985	TW		1985	10	16.97493	01	19	03.55	+09 05 52.9		049
1985	TW		1985	10	16.99086	01	19	02.60	+09 05 48.6		049
1985	TW		1985	10	24.00714	01	12	53.69	+08 35 35.7	17.5	049
1985	TW		1985	10	24.02369	01	12	52.96	+08 35 30.0		049
1985	TA1		1985	10	24.00714	01	16	20.64	+07 19 42.7	16.5	049
1985	TA1		1985	10	24.02369	01	16	19.94	+07 19 36.4		049
1985	TE1		1985	10	16.97493	01	23	50.09	+08 26 24.9		049
1985	TE1		1985	10	16.99086	01	23	49.21	+08 26 20.7		049
1985	TE1		1985	10	24.00714	01	17	39.82	+07 46 25.5	17.0	049
1985	TE1		1985	10	24.02369	01	17	38.96	+07 46 19.9		049
1985	UB2		1985	10	17.01441	01	49	40.18	+07 01 00.6	15.0	049
1985	UB2		1985	10	17.03034	01	49	39.27	+07 01 01.6		049
1985	UB2		1985	10	20.92938	01	46	44.66	+06 44 44.5	17.0	049
1985	UB2		1985	10	20.94566	01	46	43.96	+06 44 41.6		049
1985	UC2		1985	10	20.92938	01	47	46.61	+07 03 57.6	16.5	049
1985	UC2		1985	10	20.94566	01	47	45.85	+07 03 49.7		049
1985	UG2		1985	10	20.92938	01	50	34.69	+07 48 29.2	16.0	049
1985	UG2		1985	10	20.94566	01	50	33.69	+07 48 23.5		049

1985	UG2		1985	10	24.06732	01	47	35.24	+07	29	05.4	16.5	049
1985	UG2		1985	10	24.08325	01	47	34.41	+07	29	00.8		049
1985	UH2		1985	10	20.92938	01	50	31.56	+07	27	48.5		049
1985	UH2		1985	10	20.94566	01	50	30.53	+07	27	44.7		049
1985	UH2		1985	10	24.06732	01	47	24.58	+07	16	15.4		049
1985	UH2		1985	10	24.08325	01	47	23.70	+07	16	12.1		049
1985	UD3	*	1985	10	16.93545	01	35	47.86	+06	56	07.4		049
1985	UD3		1985	10	16.95069	01	35	47.04	+06	56	04.8		049
1985	UE3	*	1985	10	16.93545	01	37	02.76	+08	33	40.0		049
1985	UE3		1985	10	16.95069	01	37	01.88	+08	33	35.7		049
1985	UF3	*	1985	10	16.93545	01	42	52.41	+06	12	09.9		049
1985	UF3		1985	10	16.95069	01	42	51.75	+06	11	54.8		049
1985	UF3		1985	10	17.01441	01	42	49.25	+06	11	09.8		049
1985	UF3		1985	10	17.03034	01	42	48.38	+06	10	55.7		049
1985	UG3	*	1985	10	16.97493	01	27	33.52	+09	07	49.2		049
1985	UG3		1985	10	16.99086	01	27	33.15	+09	07	48.8		049
1985	UH3	*	1985	10	17.01441	01	45	02.59	+05	21	14.8	15.5	049
1985	UH3		1985	10	17.03034	01	45	01.61	+05	21	06.2		049
1985	UJ3	*	1985	10	17.01441	01	46	56.60	+08	15	18.3	16.5	049
1985	UJ3		1985	10	17.03034	01	46	55.67	+08	15	16.1		049
1985	UJ3		1985	10	20.92938	01	43	09.56	+07	55	17.1		049
1985	UJ3		1985	10	20.94566	01	43	08.60	+07	55	13.4		049
1985	UJ3		1985	10	24.06732	01	40	10.51	+07	39	50.7		049
1985	UJ3		1985	10	24.08325	01	40	09.62	+07	39	48.0		049
1985	UK3	*	1985	10	17.01441	01	48	35.14	+09	01	59.2	15.5	049
1985	UK3		1985	10	17.03034	01	48	34.28	+09	01	58.4		049
1985	UK3		1985	10	20.92938	01	44	17.69	+08	49	30.8	16.0	049
1985	UK3		1985	10	20.94566	01	44	16.66	+08	49	29.3		049
1985	UL3	*	1985	10	20.85943	01	38	27.54	+06	32	08.8	16.5	049
1985	UL3		1985	10	20.88021	01	38	26.82	+06	32	04.0		049
1985	UM3	*	1985	10	20.92938	01	41	43.65	+06	04	22.6	16.5	049
1985	UM3		1985	10	20.94566	01	41	43.25	+06	04	19.9		049
1985	UN3	*	1985	10	20.92938	01	42	09.63	+06	32	23.4	17.0	049
1985	UN3		1985	10	20.94566	01	42	08.59	+06	32	23.7		049
1985	UO3	*	1985	10	20.92938	01	42	10.21	+07	03	00.5	17.0	049
1985	UO3		1985	10	20.94566	01	42	09.00	+07	03	04.9		049
1985	UO3		1985	10	24.06732	01	38	17.68	+07	13	33.1	17.0	049
1985	UO3		1985	10	24.08325	01	38	16.50	+07	13	39.2		049
1985	UP3	*	1985	10	20.92938	01	44	30.97	+05	10	24.6	17.5	049
1985	UP3		1985	10	20.94566	01	44	29.53	+05	10	16.9		049
1985	UQ3	*	1985	10	24.00714	01	17	48.92	+05	03	39.7	17.5	049
1985	UQ3		1985	10	24.02369	01	17	48.33	+05	03	47.6		049
1985	UR3	*	1985	10	24.00714	01	20	03.08	+07	29	48.3	17.0	049
1985	UR3		1985	10	24.02369	01	20	02.63	+07	29	44.0		049
1985	US3	*	1985	10	24.00714	01	20	20.72	+04	52	37.3	16.5	049
1985	US3		1985	10	24.02369	01	20	20.30	+04	52	40.8		049
1985	UT3	*	1985	10	24.03754	01	37	11.45	+07	36	51.5	16.0	049
1985	UT3		1985	10	24.05416	01	37	10.71	+07	36	38.8		049
1985	UT3		1985	10	24.06732	01	37	10.31	+07	36	27.1	15.5	049
1985	UT3		1985	10	24.08325	01	37	09.59	+07	36	17.0		049
1985	UU3	*	1985	10	24.06732	01	44	52.17	+05	14	14.5	16.5 d	049
1985	UU3		1985	10	24.08325	01	44	50.73	+05	14	06.9	d	049
1985	UV3	*	1985	10	24.06732	01	45	27.48	+06	35	52.5	17.0	049
1985	UV3		1985	10	24.08325	01	45	26.95	+06	35	59.1		049
1985	UW3	*	1985	10	24.06732	01	48	07.65	+08	43	26.8		049
1985	UW3		1985	10	24.08325	01	48	06.59	+08	43	18.7		049
1985	UX3	*	1985	10	20.85943	01	27	20.50	+08	54	07.9	17.0	049
1985	UX3		1985	10	20.88021	01	27	21.18	+08	54	14.4		049
1985	VE1		1985	10	16.93545	01	28	31.62	+05	30	13.0	17.5	049

1985	VE1	1985	10	16.95069	01	28	30.59	+05	30	10.4	049
1985	VE1	1985	10	20.85943	01	25	22.42	+05	09	42.4	049
1985	VE1	1985	10	20.88021	01	25	21.59	+05	09	37.3	049
1985	VE1	1985	10	20.89752	01	25	20.30	+05	09	28.0	049
1985	VE1	1985	10	20.91345	01	25	19.50	+05	09	21.0	049
1985	VE1	1985	10	24.00714	01	22	53.21	+04	53	51.3	049
1985	VE1	1985	10	24.02369	01	22	52.37	+04	53	49.7	049
1985	VE1	1985	10	24.03754	01	22	52.24	+04	53	43.7	16.5 049
1985	VE1	1985	10	24.05416	01	22	51.41	+04	53	40.5	049
6034	P-L	1985	10	16.93545	01	28	10.98	+07	49	18.1	049
6034	P-L	1985	10	16.95069	01	28	10.23	+07	49	13.9	049
6034	P-L	1985	10	16.97493	01	28	09.02	+07	49	01.2	049
6034	P-L	1985	10	16.99086	01	28	07.99	+07	48	50.5	049
6034	P-L	1985	10	24.00714	01	22	56.17	+06	40	27.0	16.0 049
6034	P-L	1985	10	24.02369	01	22	55.25	+06	40	20.0	049
33		1985	09	16.91072	01	50	31.54	+11	36	47.6	049
33		1985	09	16.93011	01	50	31.36	+11	36	49.6	049
197		1986	02	02.84214	05	55	50.26	+27	41	40.4	049
197		1986	02	02.85669	05	55	49.88	+27	41	41.2	049
197		1986	02	10.87570	05	53	32.91	+27	47	25.3	049
197		1986	02	10.89786	05	53	32.61	+27	47	27.1	049
197		1986	02	28.76006	05	54	46.77	+27	55	28.8	049
197		1986	02	28.81616	05	54	47.78	+27	55	28.5	049
197		1986	03	02.80866	05	55	26.18	+27	56	08.0	049
197		1986	03	02.85572	05	55	27.57	+27	56	05.4	049
197		1986	03	08.79575	05	57	56.35	+27	57	24.3	049
197		1986	03	08.81579	05	57	57.06	+27	57	20.7	049
946		1985	10	16.97493	01	17	02.76	+06	25	57.8	17.5 049
946		1985	10	16.99086	01	17	02.13	+06	25	53.5	049
946		1985	10	20.89752	01	14	01.74	+06	09	01.4	049
946		1985	10	20.91345	01	14	01.04	+06	08	57.3	049
946		1985	10	20.91345	01	14	01.08	+06	08	57.5	049
946		1985	10	24.00714	01	11	40.69	+05	55	58.8	049
946		1985	10	24.02369	01	11	39.96	+05	55	54.7	049
1259		1985	10	16.97493	01	24	01.63	+05	58	06.3	049
1259		1985	10	16.99086	01	24	01.00	+05	58	03.7	049
1259		1985	10	20.89752	01	21	05.08	+05	42	18.2	049
1259		1985	10	20.91345	01	21	04.68	+05	42	05.4	049
1259		1985	10	24.00714	01	18	47.86	+05	29	55.2	049
1259		1985	10	24.02369	01	18	47.10	+05	29	53.8	049
1738		1985	09	16.98274	02	15	01.76	+08	30	11.1	049
1738		1985	09	16.99732	02	15	01.53	+08	30	12.7	049
1738		1985	10	17.01441	01	50	53.88	+07	59	27.4	049
1738		1985	10	17.03034	01	50	52.94	+07	59	27.0	049
1738		1985	10	20.92938	01	46	31.52	+07	52	33.2	049
1738		1985	10	20.94566	01	46	30.39	+07	52	31.6	049
1738		1985	10	24.06732	01	43	03.21	+07	47	26.4	049
1738		1985	10	24.08325	01	43	02.51	+07	47	19.6	049
1912		1985	09	16.94950	02	10	57.80	+09	04	21.0	049
1912		1985	09	16.96751	02	10	57.53	+09	04	14.5	049
1912		1985	09	16.98274	02	10	57.24	+09	04	11.1	049
1912		1985	09	16.99732	02	10	57.04	+09	04	11.8	049
1912		1985	10	17.01441	01	52	37.44	+07	27	12.9	049
1912		1985	10	17.03034	01	52	36.69	+07	27	11.0	049
1912		1985	10	20.92938	01	49	21.86	+07	12	09.7	049
1912		1985	10	20.94566	01	49	21.02	+07	12	05.6	049
1912		1985	10	24.08325	01	46	43.07	+07	00	18.1	049
1938		1985	09	16.94950	01	59	30.05	+09	49	28.4	049
1938		1985	09	16.96751	01	59	29.38	+09	49	24.8	049

1938		1985	10	16.93545	01	34	52.84	+06	42	40.4	049
1938		1985	10	16.95069	01	34	51.81	+06	42	35.2	049
1938		1985	10	20.85943	01	31	00.46	+06	15	49.2	049
1938		1985	10	20.88021	01	30	59.26	+06	15	39.9	049
1938		1985	10	24.03754	01	27	55.21	+05	54	38.8	049
1938		1985	10	24.05416	01	27	54.24	+05	54	32.1	049
1967		1985	10	17.01441	01	46	42.85	+06	25	14.5	049
1967		1985	10	17.03034	01	46	41.92	+06	25	11.4	049
1967		1985	10	20.92938	01	42	45.54	+06	13	58.2	049
1967		1985	10	20.94566	01	42	44.54	+06	13	55.5	049
1967		1985	10	24.06732	01	39	34.66	+06	05	35.8	049
1967		1985	10	24.08325	01	39	33.59	+06	05	36.1	049
2058		1985	10	16.93545	01	41	31.16	+06	48	34.8	049
2058		1985	10	16.95069	01	41	30.54	+06	48	30.0	049
2058		1985	10	17.01441	01	41	27.76	+06	48	15.5	049
2058		1985	10	17.03034	01	41	26.76	+06	48	10.8	049
2058		1985	10	20.92938	01	38	24.40	+06	31	49.2	049
2058		1985	10	20.94566	01	38	23.68	+06	31	45.4	049
2058		1985	10	24.03754	01	36	00.32	+06	19	10.6	049
2058		1985	10	24.05416	01	35	59.51	+06	19	05.7	049
2417		1985	10	24.06732	01	52	07.50	+07	23	03.3	049
2417		1985	10	24.08325	01	52	06.79	+07	22	59.6	049
2517		1985	10	16.93545	01	32	00.54	+06	10	19.7	049
2517		1985	10	16.95069	01	31	59.73	+06	10	18.4	049
2517		1985	10	20.85943	01	28	56.95	+05	56	01.0	049
2517		1985	10	20.88021	01	28	56.01	+05	55	57.7	049
2517		1985	10	24.03754	01	26	30.71	+05	44	56.0	049
2517		1985	10	24.05416	01	26	29.94	+05	44	52.9	049
2527		1985	10	16.93545	01	36	29.10	+08	20	07.6	049
2527		1985	10	16.95069	01	36	28.25	+08	20	00.3	049
2527		1985	10	20.85943	01	33	12.98	+07	53	32.0	049
2527		1985	10	20.88021	01	33	12.03	+07	53	24.3	049
2527		1985	10	24.03754	01	30	37.00	+07	32	35.6	049
2527		1985	10	24.05416	01	30	36.19	+07	32	27.6	049
2901		1985	10	20.92938	01	51	00.90	+07	59	53.1	049
2901		1985	10	20.94566	01	50	59.99	+07	59	48.6	049
2901		1985	10	24.06732	01	48	21.14	+07	47	49.7	049
2901		1985	10	24.08325	01	48	20.37	+07	47	47.3	049

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

1986	TK4		1986	12	06.84222	01	26	31.81	+11	30	24.7	16.7	054
1986	WB		1986	12	06.91051	04	25	29.26	+23	37	28.7	16.6	054
1986	XE	*	1986	12	06.91051	04	19	05.52	+23	56	19.4	16.9	054
1986	XF	*	1986	12	06.91051	04	28	27.04	+25	46	18.0	16.8	054
1986	XG	*	1986	12	06.91051	04	34	46.46	+26	04	55.1	17.0	054
1986	XH	*	1986	12	06.91051	04	36	21.21	+27	05	59.3	16.8	054
1986	XJ	*	1986	12	06.91051	04	36	55.55	+24	56	25.0	16.8	054
22			1986	12	06.91051	04	32	38.10	+24	11	45.0		054
2446			1986	12	06.91051	04	22	13.54	+25	29	54.8		054
2809			1986	12	06.91051	04	30	02.84	+26	00	14.8		054
3029			1986	12	06.91051	04	31	37.47	+26	58	23.4		054

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

3018		1986 08 28.94131	21 36 52.95	-04 16 38.4							091
3018		1986 08 29.91493	21 36 10.68	-04 22 41.7							091
3018		1986 08 29.96111	21 36 08.51	-04 23 00.1							091
3018		1986 09 04.99791	21 32 12.37	-05 00 45.1							091

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

1986 TD		1986 10 05.05144	03 27 16.20	+28 55 54.6					16.7	E	092
1986 TD		1986 10 05.11875	03 27 13.53	+28 57 38.9						C	092
1986 TD		1986 10 09.01881	03 24 30.31	+30 37 52.8						C	092
1986 TD		1986 10 09.07644	03 24 27.44	+30 39 22.1							092
1986 TD		1986 10 09.13333	03 24 24.41	+30 40 52.9						C	092
1986 TD		1986 10 10.88750	03 22 54.26	+31 26 41.9							092
1986 TD		1986 10 10.97847	03 22 48.96	+31 29 07.9							092
1986 TD		1986 10 11.12014	03 22 40.96	+31 32 47.8							092
1986 TD		1986 10 12.10972	03 21 44.07	+31 58 55.5							092
1986 TP6	*	1986 10 05.05144	03 20 40.02	+30 55 18.0					17.2		092
1986 TP6		1986 10 05.11875	03 20 38.40	+30 55 21.9							092
1986 TQ6	*	1986 10 09.01881	03 24 40.97	+31 03 50.5					18.9	N	092
1986 TQ6		1986 10 09.07664	03 24 38.66	+31 03 50.6						N	092
1986 TQ6		1986 10 09.13333	03 24 35.31	+31 03 51.8						N	092

323 Perth
M. P. Candy, Perth Observatory, Bickley, WA 6076, Australia
Observers M. P. Candy, P. Jekabsons, A. McGrath, M. Kempin
0.3-m astrograph

1983 RD		1986 10 31.66944	01 47 26.43	-35 35 42.0							323
1986 RA		1986 09 26.69375	22 46 28.56	-08 56 52.5						C	323
1986 RA		1986 09 30.65903	23 01 44.79	-12 38 59.8							323
1986 RA		1986 10 01.66180	23 05 28.76	-13 29 23.7							323
1986 RA		1986 10 03.68472	23 12 49.07	-15 04 06.4							323
1986 RA		1986 10 07.69653	23 26 39.48	-17 43 57.5							323
1986 RA		1986 10 08.68056	23 29 54.11	-18 17 42.4							323
1986 RA		1986 10 09.69236	23 33 10.27	-18 50 17.8							323
1986 RA		1986 10 10.71597	23 36 24.85	-19 20 58.3							323
1986 RA		1986 10 27.60694	00 21 18.98	-23 37 13.5							323
1986 RA		1986 10 28.53194	00 23 22.61	-23 40 36.7							323
1986 RA		1986 10 31.52430	00 29 46.01	-23 46 06.0							323
1986 TO		1986 10 27.76111	02 55 39.07	-57 39 01.9							323
1986 TO		1986 10 31.75278	02 39 14.30	-60 26 24.8							323
648		1986 10 10.68264	22 35 10.42	+03 37 50.7							323
1036		1986 10 03.84028	09 27 30.24	-08 16 54.2							323
1101		1986 10 07.60625	22 30 16.81	+07 12 52.5							323
1935		1986 10 10.77778	02 35 16.04	+12 09 04.4							323
1935		1986 10 23.67639	02 27 52.66	+09 49 33.8							323
1935		1986 10 27.69236	02 25 05.61	+09 04 43.1							323
2234		1986 10 09.61806	20 05 04.88	-42 45 41.3							323
3015		1986 10 09.74028	00 50 03.66	-08 00 06.5							323
3015		1986 10 31.58750	00 32 56.42	-07 08 55.2							323

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

1986 UZ		1986 11 03.64375	02 56 24.56	+24 51 17.9							372
1986 UZ		1986 11 26.59201	02 31 22.60	+23 21 49.8					17		372

1986 UZ		1986 11 26.60521	02 31 21.97	+23 21 48.5						372
1986 UZ		1986 11 30.59931	02 28 05.96	+23 03 07.9			17			372
1986 WJ		1986 11 29.64653	02 28 31.11	+23 29 22.6			18			372
1986 WJ		1986 11 30.59931	02 27 41.43	+23 31 10.9			18			372
1986 WM	*	1986 11 30.73542	05 14 00.26	+20 08 24.6			16.5			372
1986 WM		1986 11 30.74583	05 13 59.77	+20 08 23.4						372
1986 WM		1986 12 01.74826	05 13 08.07	+20 07 25.3			17			372
1986 WM		1986 12 01.76007	05 13 07.29	+20 07 24.8						372
1986 WM		1986 12 04.66111	05 10 35.02	+20 04 32.1						372
1986 WM		1986 12 07.67118	05 07 54.76	+20 01 38.9						372

398 Nagatoro
N. Kawasato, 3-51, Hana-Koganei, Kodaira, Tokyo 187, Japan
Observer N. Kawasato
0.26-m and 0.76-m reflectors
Copied from Nihondaira Obs. Circ.

1930 VD		1986 12 29.58125	06 04 04.57	+22 49 46.4						398
1930 VD		1986 12 29.60069	06 04 03.39	+22 49 40.3						398
1980 RZ2		1986 12 06.45660	04 51 57.46	+36 05 28.5						398
1980 RZ2		1986 12 06.50660	04 51 54.21	+36 05 20.6						398
2090		1986 12 04.61389	02 46 57.69	+33 25 05.9						398
2090		1986 12 04.67535	02 46 54.90	+33 24 44.3						398

399 Kushiro
H. Kaneda, 8-8-B210, 10 Chome, Kashiwaoka, Makomanai,
Minami-Ku, Sapporo 005, Japan
Observer S. Ueda
Measurer H. Kaneda
0.16-m reflector
Copied from Nihondaira Obs. Circ.

1982 QO1		1986 12 06.68715	04 59 12.46	+23 54 24.1						399
1982 QO1		1986 12 06.69896	04 59 11.66	+23 54 23.0						399
1982 QO1		1986 12 06.71215	04 59 10.72	+23 54 18.5						399
1982 QO1		1986 12 08.71181	04 56 51.06	+23 47 31.4						399
1982 QO1		1986 12 08.72535	04 56 50.05	+23 47 29.0						399
1986 WL		1986 12 06.72813	05 01 25.76	+15 06 00.9						399
1986 WL		1986 12 06.73993	05 01 25.28	+15 05 57.2						399
1986 WL		1986 12 06.75133	05 01 24.44	+15 05 55.4						399
1986 WL		1986 12 08.68345	04 59 26.19	+15 00 16.5						399
1986 WL		1986 12 08.69618	04 59 25.47	+15 00 14.8						399

413 Siding Spring
R. H. McNaught, Siding Spring Observatory, Coonabarabran, N.S.W. 2857,
Australia
Observer D. Waldron
Measurers A. Good and R. H. McNaught
1.2-m U.K. Schmidt telescope

1986 UN3	*	1986 10 29.71794	03 49 27.28	-58 50 06.4			16		g	413
1986 UN3		1986 10 29.72639	03 49 29.39	-58 49 51.2					g	413
1986 WQ2	*	1986 11 21.50170	00 47 57.32	-31 37 36.9			17			413
1986 WQ2		1986 11 21.58503	00 47 56.91	-31 35 50.8						413
1986 WQ2		1986 11 23.50490	00 48 00.00	-30 53 16.1						413
1986 WQ2		1986 11 23.58823	00 47 59.98	-30 51 25.2						413
1986 WQ2		1986 12 03.51454	00 50 23.78	-27 02 19.2					W	413
1986 WQ2		1986 12 03.57704	00 50 24.98	-27 00 55.5					W	413
1986 WQ2		1986 12 05.52223	00 51 17.03	-26 14 36.2						413
1986 WQ2		1986 12 05.57598	00 51 18.34	-26 13 20.5						413
1986 WQ2		1986 12 05.59044	00 51 18.71	-26 12 58.6						413
1986 WQ2		1986 12 05.64433	00 51 19.81	-26 11 53.1					b	413

1986	XL1	*	1986	12	05.52223	00	42	58.53	-26	24	24.0	18	413
1986	XL1		1986	12	05.57598	00	42	58.39	-26	24	54.3		413
1986	XL1		1986	12	05.59044	00	42	57.90	-26	25	02.9		413
1986	XL1		1986	12	05.64433	00	42	57.50	-26	25	34.9		413
1986	XM1	*	1986	12	05.52233	00	43	20.15	-30	47	28.0	17	413
1986	XM1		1986	12	05.57598	00	43	23.34	-30	46	10.7		413
1986	XM1		1986	12	05.59044	00	43	24.22	-30	45	49.8		413
502			1986	12	03.51454	00	43	19.23	-26	53	28.5	15	413
502			1986	12	03.57704	00	43	19.39	-26	52	57.2		413
502			1986	12	05.52223	00	43	33.68	-26	35	32.7		413
502			1986	12	05.57598	00	43	33.99	-26	35	04.8		413
502			1986	12	05.59044	00	43	34.13	-26	34	54.8		413
502			1986	12	05.64433	00	43	34.41	-26	34	30.2		413
1179			1974	04	29.77292	19	50	47.90	-32	16	46.9		413
1179			1978	04	17.74597	16	45	56.70	-32	43	54.3		413
2035			1986	11	21.50170	00	57	34.30	-30	43	17.3	15	413
2035			1986	11	21.58503	00	57	32.10	-30	41	15.0		413
2035			1986	11	23.50490	00	56	53.85	-29	53	12.9		413
2035			1986	11	23.58823	00	56	52.12	-29	51	10.5		413
2035			1986	12	03.51454	00	55	54.21	-25	38	16.2		413
2035			1986	12	03.57704	00	55	54.29	-25	36	41.2		413

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

1983	PB		1986	06	13.44745	15	05	09.51	-15	42	24.8		474
1983	PB		1986	06	13.48003	15	05	07.94	-15	42	29.4		474
1983	PB		1986	07	13.33872	15	00	51.81	-17	45	13.4		474
1983	PB		1986	07	13.38160	15	00	52.87	-17	45	28.7		474
1983	QD		1986	05	14.68719	16	32	30.11	-37	47	54.5		474
1983	QD		1986	05	14.70981	16	32	28.90	-37	47	53.2		474
1983	RD		1986	10	29.50173	01	35	43.91	-36	42	30.6		474
1983	RD		1986	10	29.51681	01	35	48.96	-36	42	02.5		474
1984	FO		1985	10	18.63311	03	46	53.08	-05	36	13.7		474
1984	FO		1985	10	18.65852	03	46	52.04	-05	36	31.5		474
1984	YC		1986	07	13.42743	17	03	51.15	-38	48	10.4		474
1984	YC		1986	07	13.45185	17	03	49.95	-38	47	55.2		474
1985	CL		1986	10	07.48189	20	59	19.32	-26	29	43.9	u	474
1985	CL		1986	10	31.45156	21	14	22.15	-20	01	04.0	17.1	474
1985	CL		1986	10	31.48044	21	14	23.96	-20	00	34.1		474
1985	DX		1986	07	13.65856	21	38	05.54	-03	30	43.1		474
1985	DX		1986	07	13.68044	21	38	04.65	-03	30	42.3		474
1985	DX		1986	09	09.57985	20	49	12.03	-06	44	10.1		474
1985	DX		1986	09	09.60248	20	49	11.33	-06	44	16.4		474
1985	FE		1986	07	13.61088	21	31	56.94	-06	47	23.4		474
1985	FE		1986	07	13.63275	21	31	56.19	-06	47	22.2		474
1985	FD3		1986	07	13.71510	22	51	23.38	-28	15	13.0		474
1985	FD3		1986	07	13.74542	22	51	22.14	-28	15	11.0		474
1985	FD3		1986	09	09.68056	21	39	55.66	-24	13	10.0	u	474
1985	FD3		1986	10	30.46377	21	24	14.97	-15	43	07.0		474
1985	FD3		1986	10	30.49340	21	24	15.77	-15	42	48.2		474
1986	JK		1986	05	22.73263	16	34	35.43	-21	26	54.7		474
1986	JK		1986	05	22.73541	16	34	37.68	-21	27	06.8		474
1986	JK		1986	05	22.76041	16	35	00.83	-21	28	42.9		474
1986	JK		1986	05	22.76249	16	35	02.80	-21	28	51.6		474

1986	JK		1986	05	23.44252	16	46	52.94	-22	20	07.9	474
1986	JK		1986	05	23.44417	16	46	54.67	-22	20	16.2	474
1986	JK		1986	05	23.50329	16	47	59.17	-22	25	06.9	474
1986	JK		1986	05	23.50450	16	48	00.52	-22	25	13.1	474
1986	LV1	*	1986	06	13.44745	15	05	38.89	-15	23	49.9	17 T 474
1986	LV1		1986	06	13.48003	15	05	37.75	-15	23	54.7	t 474
1986	RA		1986	09	09.50392	21	36	06.80	+11	20	45.9	474
1986	RA		1986	09	09.50994	21	36	08.16	+11	20	20.1	474
1986	RA		1986	10	28.50928	00	23	18.44	-23	40	29.0	16.9 474
1986	RA		1986	10	28.52259	00	23	20.14	-23	40	28.0	474
1986	TO		1986	10	30.52031	02	44	42.79	-59	36	25.3	474
1986	TO		1986	10	30.52998	02	44	40.09	-59	36	50.3	474
1566			1986	07	12.50434	17	49	17.63	-37	26	04.3	u 474
1566			1986	07	13.49757	17	45	40.68	-37	24	54.1	474
1566			1986	07	13.55839	17	45	27.21	-37	24	49.1	474
1866			1985	06	18.41056	14	16	28.00	-20	32	31.5	474
1866			1985	06	18.42850	14	16	24.80	-20	32	55.4	474
3434			1985	11	09.44053	22	50	40.98	-12	35	00.0	474
3434			1985	11	09.46090	22	50	41.86	-12	34	50.9	474
3521			1986	10	31.51858	00	02	54.82	-04	26	18.6	18.3 474
3521			1986	10	31.54456	00	02	54.01	-04	26	18.7	474

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

1986	WG		1986	11	29.94375	04	05	03.04	+18	22	50.4	552
1986	WG		1986	11	30.93958	04	03	57.42	+18	04	24.5	16.1 552
1986	WG		1986	11	30.95000	04	03	56.56	+18	04	13.0	552
1986	WG		1986	12	01.91146	04	02	53.69	+17	46	27.8	16.1 552
1986	WG		1986	12	01.93611	04	02	51.97	+17	45	59.0	552
1986	WG		1986	12	02.89861	04	01	49.36	+17	28	10.9	16.1 552
1986	WG		1986	12	02.90903	04	01	48.64	+17	27	58.4	552
1986	WG		1986	12	03.93056	04	00	42.47	+17	09	04.9	16.1 552
1986	WG		1986	12	03.94236	04	00	41.78	+17	08	51.2	552
1986	WG		1986	12	04.90694	03	59	40.22	+16	51	02.4	16.2 552
1986	WG		1986	12	04.91736	03	59	39.65	+16	50	50.5	552
1986	WG		1986	12	05.92014	03	58	36.47	+16	32	23.6	16.2 552
1986	WG		1986	12	05.94306	03	58	35.11	+16	31	57.2	552
1986	WH		1986	11	29.89167	04	15	10.20	+20	37	20.5	16.1 552
1986	WH		1986	11	29.91042	04	15	09.28	+20	37	17.8	552
1986	WH		1986	11	30.90833	04	14	17.39	+20	35	18.0	16.1 552
1986	WH		1986	11	30.92639	04	14	16.46	+20	35	15.9	552
1986	WH		1986	12	01.88056	04	13	27.07	+20	33	19.1	16.2 552
1986	WH		1986	12	01.89722	04	13	26.16	+20	33	17.4	552
1986	WH		1986	12	02.86875	04	12	36.21	+20	31	21.0	16.2 552
1986	WH		1986	12	02.88611	04	12	35.31	+20	31	19.3	552
1986	WH		1986	12	03.89722	04	11	43.67	+20	29	18.5	16.3 552
1986	WH		1986	12	03.91528	04	11	42.63	+20	29	17.1	552
1986	WH		1986	12	04.87847	04	10	53.62	+20	27	21.5	16.3 552
1986	WH		1986	12	04.89444	04	10	52.84	+20	27	19.6	552
1986	WH		1986	12	05.87708	04	10	03.30	+20	25	19.5	16.4 552
1986	WH		1986	12	05.89722	04	10	02.27	+20	25	15.9	552
1986	XC		1986	12	05.96875	05	08	14.73	+21	50	16.5	15.7 552
1986	XC		1986	12	05.98333	05	08	13.83	+21	50	10.5	552
9			1986	11	29.89167	04	13	47.48	+20	44	44.8	9.7 552
9			1986	11	29.91042	04	13	46.32	+20	44	45.9	9.7 552

9	1986 11 30.90833	04 12 39.45	+20 45 44.7		9.7		552
9	1986 11 30.92639	04 12 38.20	+20 45 46.5				552
9	1986 12 01.88056	04 11 34.60	+20 46 40.5		9.7		552
9	1986 12 01.89722	04 11 33.51	+20 46 42.4				552
9	1986 12 02.86875	04 10 29.22	+20 47 39.4		9.8		552
9	1986 12 02.88611	04 10 28.09	+20 47 41.1				552
9	1986 12 03.89722	04 09 21.61	+20 48 38.9		9.8		552
9	1986 12 03.91528	04 09 20.39	+20 48 39.3				552

573 Eldagsen
W. Bonk, Nordstrasse 33, D-3257 Springe 3, Federal Republic of Germany
AGK3

12	1986 11 27.80556	04 42 27.24	+18 55 57.9				573
12	1986 11 27.81111	04 42 26.82	+18 55 56.7				573
12	1986 11 27.81667	04 42 26.46	+18 55 53.8				573
352	1986 11 29.77638	04 42 00.84	+21 56 31.9				573
352	1986 11 29.78194	04 42 00.46	+21 56 30.8				573
352	1986 11 29.78680	04 42 00.11	+21 56 27.5				573
409	1986 11 29.79583	04 48 49.72	+19 40 03.5				573
409	1986 11 29.80139	04 48 49.42	+19 40 03.0				573
409	1986 11 29.81667	04 48 48.56	+19 39 57.4				573
678	1986 11 29.73472	02 22 10.78	+23 02 22.8				573
678	1986 11 29.74583	02 22 10.39	+23 02 19.1				573
678	1986 11 29.75625	02 22 10.25	+23 02 13.9				573
678	1986 11 30.75278	02 21 46.18	+22 54 41.3				573
678	1986 11 30.75764	02 21 46.00	+22 54 40.0				573
678	1986 11 30.76667	02 21 45.93	+22 54 35.6				573

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

1930 VD	1986 12 09.44687	06 23 48.24	+24 24 37.2				657
1977 CC	1986 12 06.43785	06 29 58.51	+30 58 11.0				657
1986 TK4	1986 10 07.33062	02 03 46.24	+07 46 46.6				657
3085	1986 12 09.44687	06 23 21.19	+23 46 33.7				657

675 Palomar
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Measurers J. Alu, J. Gibson, C. Shoemaker, C. J. van Houten, I. van Houten-Groeneveld, R. M. West
1.5-m reflector, 1.2-m and 0.46-m Schmidt telescopes

1973 SO	1985 10 11.34409	01 24 48.72	+04 43 03.6			3	675
1973 SO	1985 10 13.31180	01 23 44.80	+04 38 38.9			3	675
1973 SO	1985 10 14.37795	01 23 10.10	+04 36 14.7		17.2	3	675
1973 SO	1985 10 14.40729	01 23 09.17	+04 36 12.9			3	675
1978 PU3	1986 12 03.43403	07 29 47.91	+12 03 20.5		18.8	2	675
1978 PU3	1986 12 03.47569	07 29 46.71	+12 03 17.3			2	675
1980 PH	1985 12 19.44611	10 58 28.30	+05 52 25.7			1	675
1980 PH	1985 12 19.46014	10 58 28.58	+05 52 22.5			1	675

1980	PH		1985	12	19.46757	10	58	28.76	+05	52	20.9		1 675
1980	PH		1986	01	18.48197	10	58	53.51	+05	04	16.4		1 675
1980	PH		1986	01	18.49069	10	58	53.30	+05	04	16.4		1 675
1980	PH		1986	01	20.43458	10	58	05.94	+05	05	57.8		1 675
1980	PH		1986	01	20.45167	10	58	05.48	+05	05	58.9		1 675
1980	PH		1986	03	22.32650	10	08	35.16	+08	43	34.4		1 675
1980	PH		1986	03	22.33569	10	08	34.80	+08	43	36.1		1 675
1980	PH		1986	04	08.22924	10	01	05.00	+09	20	36.5		1 675
1980	PH		1986	04	08.25181	10	01	04.65	+09	20	38.1		1 675
1985	TH3	*	1985	10	11.25104	00	17	33.52	+15	12	18.9	17.5	3 675
1985	TH3		1985	10	13.20747	00	15	37.52	+15	10	27.5		3 675
1985	TH3		1985	10	13.23733	00	15	35.79	+15	10	25.8		3 675
1985	TJ3		1985	09	16.35000	00	20	19.52	+12	23	26.2		3 675
1985	TJ3		1985	09	16.41250	00	20	17.27	+12	23	13.2		3 675
1985	TJ3	*	1985	10	12.26250	00	04	57.18	+10	25	09.7	17.5	3 675
1985	TJ3		1985	10	13.23733	00	04	25.73	+10	20	11.0		3 675
1985	TJ3		1985	10	14.23454	00	03	54.15	+10	15	05.2		3 675
1985	TK3	*	1985	10	14.37795	01	03	36.37	+01	17	38.2	17	3 675
1985	TK3		1985	10	14.40729	01	03	35.43	+01	17	31.9		3 675
1985	TL3		1985	09	21.41892	01	30	40.64	+04	13	54.9		3 675
1985	TL3		1985	09	21.44063	01	30	40.09	+04	13	48.1		3 675
1985	TL3	*	1985	10	14.37795	01	20	48.41	+02	15	41.7	16.8	3 675
1985	TL3		1985	10	14.40729	01	20	47.60	+02	15	33.5		3 675
1985	VO		1985	09	16.35000	00	39	38.71	+12	14	08.7		3 675
1985	VO		1985	09	16.41250	00	39	36.58	+12	14	07.2		3 675
1985	WJ	*	1985	11	16.23785	01	01	02.89	+03	51	18.7	17.5	3 675
1985	WJ		1985	11	16.26667	01	00	59.25	+03	51	18.9		3 675
1985	WK	*	1985	11	16.23785	01	07	29.42	+00	03	49.5		3 675
1985	WK		1985	11	16.26667	01	07	28.95	+00	03	54.0		3 675
1986	AE		1986	04	05.18125	07	40	13.13	+03	10	54.0		1 675
1986	AE		1986	04	05.19208	07	40	13.50	+03	10	52.9		1 675
1986	AE		1986	04	08.17583	07	42	08.01	+03	05	00.5		1 675
1986	AE		1986	04	08.18583	07	42	08.40	+03	04	59.2		1 675
1986	EB		1986	04	05.19861	09	35	17.25	+07	15	08.1		1 675
1986	EB		1986	04	05.20208	09	35	16.73	+07	15	00.7		1 675
1986	EB		1986	04	08.21431	09	29	00.03	+05	30	20.1		1 675
1986	EB		1986	04	08.22146	09	28	59.18	+05	30	05.6		1 675
1986	EB		1986	12	21.45806	13	39	41.46	+21	06	02.3		1 675
1986	EB		1986	12	21.46417	13	39	41.99	+21	05	56.6		1 675
1986	EB		1986	12	21.56319	13	39	50.16	+21	04	25.9		1 675
1986	EB		1986	12	21.57014	13	39	50.71	+21	04	19.7		1 675
1986	UG3	*	1986	10	31.34722	03	38	56.17	+25	40	03.8	19.0	2 675
1986	UG3		1986	10	31.38889	03	38	52.41	+25	40	42.7		2 675
1986	UG3		1986	11	05.32986	03	30	52.18	+26	59	41.4		2 675
1986	UG3		1986	11	05.37153	03	30	48.18	+27	00	17.2		2 675
1986	UJ3	*	1986	10	31.34722	03	41	04.71	+24	47	14.7	19.2	2 675
1986	UJ3		1986	10	31.38889	03	41	00.71	+24	47	54.9		2 675
1986	UJ3		1986	11	05.32986	03	32	46.89	+26	12	00.5		2 675
1986	UJ3		1986	11	05.37153	03	32	42.91	+26	12	36.9		2 675
1986	UO3	*	1986	10	31.34722	03	36	12.07	+25	12	40.0	18.5	2 675
1986	UO3		1986	10	31.38889	03	36	10.83	+25	12	29.1		2 675
1986	UO3		1986	11	05.32986	03	31	58.08	+24	46	28.5		2 675
1986	UO3		1986	11	05.37153	03	31	56.46	+24	46	15.7		2 675
1986	VS7	*	1986	11	09.38542	04	00	47.55	+33	40	49.4	18.0	2 675
1986	VS7		1986	11	09.42708	04	00	46.44	+33	40	46.6		2 675
1986	VS7		1986	11	27.28125	03	49	45.58	+32	53	01.1		2 675
1986	VS7		1986	11	27.32292	03	49	44.21	+32	52	54.5		2 675
1986	VT7	*	1986	11	09.38542	04	10	04.12	+35	35	19.2	17.5	2 675
1986	VT7		1986	11	09.42708	04	10	01.07	+35	35	29.1		2 675

1986	VU7	*	1986	11	09.38542	04	13	25.65	+32	18	37.3	18.5	2 675
1986	VU7		1986	11	09.42708	04	13	23.05	+32	18	50.3		2 675
1986	VU7		1986	11	27.28125	03	53	05.43	+33	29	54.3		2 675
1986	VU7		1986	11	27.32292	03	53	02.61	+33	29	51.4		2 675
1986	WA		1986	12	21.26944	01	24	06.10	+05	08	13.3		1 675
1986	WA		1986	12	21.27453	01	24	06.70	+05	08	10.9		1 675
1986	XN1	*	1986	12	03.43403	07	29	49.45	+11	51	07.3	18	2 675
1986	XN1		1986	12	03.47569	07	29	49.24	+11	51	42.8		2 675
1986	XO1	*	1986	12	03.43403	07	35	24.93	+08	50	21.8	19.5	2 675
1986	XO1		1986	12	03.47569	07	35	23.93	+08	49	47.9		2 675
1986	XP1	*	1986	12	03.43403	07	35	46.58	+08	51	23.0	19	2 675
1986	XP1		1986	12	03.47569	07	35	45.82	+08	50	58.5		2 675
7571	P-L	*	1960	10	17.28198	23	58	43.58	-05	19	36.8	18.4	4 675
7571	P-L		1960	10	22.23406	23	55	12.71	-05	26	13.8		4 675
7571	P-L		1960	10	25.25350	23	53	19.43	-05	28	22.6		4 675
7571	P-L		1960	10	26.31531	23	52	42.46	-05	28	47.2		4 675
1009			1986	06	26.31111	17	30	18.14	-09	38	31.0		1 675
1009			1986	06	26.31500	17	30	17.91	-09	38	30.5		1 675
1009			1986	06	27.42824	17	29	15.97	-09	35	55.8		1 675
1009			1986	06	27.43264	17	29	15.69	-09	35	55.2		1 675
1026			1953	06	14.25694	14	41	00.69	-08	49	30.9	17.0	5 675
1026			1953	06	14.28021	14	41	00.02	-08	49	34.0		5 675
3200			1986	08	15.50336	05	50	26.11	+46	16	54.3		1 675
3200			1986	08	15.50507	05	50	25.90	+46	16	56.5		1 675
3200			1986	08	15.50653	05	50	25.73	+46	16	58.6		1 675
3200			1986	08	16.48417	05	48	28.59	+46	38	30.2		1 675
3200			1986	08	16.48764	05	48	28.17	+46	38	35.0		1 675
3300			1986	11	27.28125	03	44	25.34	+35	48	39.4		2 675
3300			1986	11	27.32292	03	44	22.68	+35	48	40.0		2 675

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Flagstaff, AZ 86001, U.S.A.
Observer B. A. Skiff
Measurers E. Bowell, B. A. Skiff
0.33-m photographic telescope
PDS scanning microdensitometer
AGK3 and Perth 70 secondary nets, global solutions
See also MPC 9533

1929	TQ		1986	12	04.10289	01	28	04.15	+10	17	05.7	17.2	688
1929	TQ		1986	12	04.27456	01	28	03.76	+10	17	21.9		688
1936	XA		1986	12	04.10289	01	22	54.19	+13	54	32.9	17.0	688
1936	XA		1986	12	04.27456	01	22	53.86	+13	53	39.1		688
1973	SO		1986	12	04.19801	03	47	00.78	+23	24	51.3	17.0	688
1973	SO		1986	12	04.29318	03	46	57.24	+23	24	46.5		688
1976	SG2		1986	12	04.17216	01	59	05.42	+04	41	34.8	16.8	688
1976	SG2		1986	12	04.25240	01	59	04.46	+04	41	29.8		688
1978	JT1		1986	12	02.24109	04	29	25.90	+22	50	01.9	17.8	688
1978	JT1		1986	12	02.30767	04	29	22.67	+22	49	56.1	R	688
1980	DL5		1986	12	04.14331	02	11	47.08	+14	44	35.8	17.5	688
1980	DL5		1986	12	04.22360	02	11	44.62	+14	44	28.8		688
1981	RM		1986	12	02.24109	04	45	27.16	+25	51	20.1	17.5 R	688
1981	RM		1986	12	02.30767	04	45	23.23	+25	51	06.1	R	688
1981	RK5		1986	12	02.21882	04	17	17.14	+28	48	12.6	17.0 R	688
1981	RK5		1986	12	02.28560	04	17	12.49	+28	48	12.5		688
1981	TG2		1986	11	06.35829	04	13	47.31	+17	01	51.1	17.2	688
1981	TG2		1986	11	06.41490	04	13	44.72	+17	01	44.2		688
1981	UT15		1986	12	02.24109	04	50	03.31	+25	01	33.5	17.2	688
1981	UT15		1986	12	02.30767	04	49	59.44	+25	01	27.8	R	688

1982	UM2		1986	11	06.24867	02	28	56.40	+10	49	31.9	17.2	688
1982	UM2		1986	11	06.31056	02	28	53.12	+10	49	13.8		688
1982	UM2		1986	12	04.17216	02	10	22.03	+09	21	31.7	17.8	688
1982	UM2		1986	12	04.25240	02	10	20.40	+09	21	28.3		688
1982	UD7		1986	11	06.24867	02	30	25.73	+10	55	07.2	17.0	688
1982	UD7		1986	11	06.31056	02	30	22.50	+10	54	40.1		688
1982	UD7		1986	12	04.17216	02	13	35.60	+08	15	27.0	17.2	688
1982	UD7		1986	12	04.25240	02	13	34.16	+08	15	11.7		688
1985	TQ		1986	12	04.19801	03	43	55.17	+22	02	28.1	17.2	688
1985	TQ		1986	12	04.29318	03	43	51.71	+22	02	18.8		688
1985	TF3		1986	12	02.21882	04	33	33.80	+29	43	27.6	17.5	688
1985	TF3		1986	12	02.28560	04	33	31.14	+29	43	21.9		688
1986	TL1		1986	12	04.10289	01	22	48.49	+14	50	40.3	17.2	688
1986	TL1		1986	12	04.27456	01	22	49.90	+14	50	02.7		688
1986	TM1		1986	12	04.10289	01	30	25.30	+10	22	45.7	16.8	688
1986	TM1		1986	12	04.27456	01	30	25.83	+10	21	40.2		688
1986	TK4		1986	12	04.10289	01	25	52.37	+11	12	44.0	16.8	688
1986	TK4		1986	12	04.27456	01	25	53.94	+11	13	48.2		688
1986	UA		1986	12	04.17216	02	07	13.93	+09	56	36.1	16.8	688
1986	UA		1986	12	04.25240	02	07	12.32	+09	56	33.2		688
1986	UZ		1986	11	05.29786	02	54	29.96	+24	47	07.9	16.5	688
1986	UZ		1986	11	05.34178	02	54	26.76	+24	47	01.0		688
1986	UL1		1986	12	02.19630	03	26	00.14	+06	37	34.4	16.8	688
1986	UL1		1986	12	02.26362	03	25	57.06	+06	37	38.8		688
1986	VZ5		1986	12	04.17216	02	02	00.21	+07	47	58.6	17.0	688
1986	VZ5		1986	12	04.25240	02	01	57.59	+07	48	12.5		688
1986	VA6		1986	12	04.17216	02	01	24.10	+06	37	48.9	17.2	688
1986	VA6		1986	12	04.25240	02	01	21.72	+06	37	59.8		688
1986	VB6		1986	12	04.17216	02	10	02.16	+03	47	37.1	17.0	688
1986	VB6		1986	12	04.25240	02	10	01.07	+03	47	58.0		688
1986	VD6		1986	12	04.17216	02	03	36.64	+08	50	48.2	17.8	688
1986	VD6		1986	12	04.25240	02	03	33.83	+08	51	13.4		688
1986	VE6		1986	12	04.17216	02	12	01.29	+06	31	11.4	16.5 P	688
1986	VE6		1986	12	04.25240	02	11	59.46	+06	31	23.0		688
1986	VH6		1986	12	04.17216	02	18	36.33	+03	53	32.3	17.2	688
1986	VH6		1986	12	04.25240	02	18	34.03	+03	53	49.7		688
1986	VS6		1986	12	04.14331	02	13	02.92	+12	53	55.1	17.5	688
1986	VS6		1986	12	04.22360	02	13	00.54	+12	54	11.1		688
1986	WB		1986	12	02.24109	04	31	00.15	+23	24	51.5	16.8 P	688
1986	WB		1986	12	02.30767	04	30	55.29	+23	25	02.9	R	688
1986	XF		1986	12	02.21882	04	33	23.86	+25	51	32.9	17.0	688
1986	XF		1986	12	02.24109	04	33	22.48	+25	51	26.1	16.8 R	688
1986	XF		1986	12	02.28560	04	33	19.49	+25	51	26.4		688
1986	XF		1986	12	02.30767	04	33	17.65	+25	51	23.4		688
1986	XJ		1986	12	02.24109	04	41	33.77	+25	12	49.2	16.8 R	688
1986	XJ		1986	12	02.30767	04	41	29.39	+25	12	35.8		688
1986	XK	*	1986	12	02.19630	03	19	26.14	+05	52	04.4	17.2	688
1986	XK		1986	12	02.26362	03	19	22.80	+05	52	13.3		688
1986	XL	*	1986	12	02.19630	03	20	20.46	+09	07	30.6	17.0	688
1986	XL		1986	12	02.26362	03	20	16.64	+09	07	23.6		688
1986	XM	*	1986	12	02.19630	03	20	48.52	+06	24	18.0	17.0	688
1986	XM		1986	12	02.26362	03	20	46.24	+06	24	22.0		688
1986	XN	*	1986	12	02.19630	03	22	25.73	+03	41	44.9	16.5	688
1986	XN		1986	12	02.26362	03	22	23.15	+03	41	55.7		688
1986	XO	*	1986	12	02.19630	03	25	02.89	+03	14	15.6	16.0	688
1986	XO		1986	12	02.26362	03	24	59.87	+03	14	04.2		688
1986	XP	*	1986	12	02.19630	03	32	52.80	+07	16	40.9	16.2	688
1986	XP		1986	12	02.26362	03	32	49.37	+07	17	01.5		688
1986	XQ	*	1986	12	02.21882	04	06	42.55	+30	52	27.3	16.8	688

1986	XQ		1986	12	02.28560	04	06	37.91	+30	52	10.9	688
1986	XR	*	1986	12	02.21882	04	07	20.82	+26	43	22.9	16.8 D 688
1986	XR		1986	12	02.28560	04	07	16.26	+26	43	30.3	688
1986	XS	*	1986	12	02.21882	04	22	05.06	+33	02	35.4	17.2 688
1986	XS		1986	12	02.28560	04	22	00.25	+33	02	32.2	688
1986	XT	*	1986	12	02.21882	04	29	24.42	+28	06	46.9	17.0 R 688
1986	XT		1986	12	02.28560	04	29	20.04	+28	06	34.9	688
1986	XU	*	1986	12	02.21882	04	34	15.43	+26	50	37.7	17.2 R 688
1986	XU		1986	12	02.28560	04	34	10.51	+26	50	55.3	R 688
1986	XV	*	1986	12	02.24109	04	35	09.02	+17	51	49.3	17.0 D 688
1986	XV		1986	12	02.30767	04	35	04.73	+17	51	50.1	R 688
1986	XW	*	1986	12	02.24109	04	38	23.42	+23	47	52.9	17.0 688
1986	XW		1986	12	02.30767	04	38	18.87	+23	47	42.5	688
1986	XX	*	1986	12	02.24109	04	41	56.26	+22	53	37.3	16.8 R 688
1986	XX		1986	12	02.30767	04	41	51.27	+22	53	46.8	688
1986	XY	*	1986	12	02.24109	04	46	35.46	+21	20	19.3	17.5 R 688
1986	XY		1986	12	02.30767	04	46	31.89	+21	20	08.5	688
1986	XZ	*	1986	12	02.24109	04	48	44.36	+19	45	21.9	16.8 688
1986	XZ		1986	12	02.30767	04	48	40.66	+19	45	11.5	688
1986	XA1	*	1986	12	02.24109	04	49	20.46	+25	39	25.2	16.5 688
1986	XA1		1986	12	02.30767	04	49	15.68	+25	39	24.8	688
1986	XB1	*	1986	12	04.14331	01	53	56.55	+16	48	03.8	17.0 688
1986	XB1		1986	12	04.22360	01	53	54.56	+16	48	14.8	688
1986	XC1	*	1986	12	04.14331	01	59	24.26	+13	04	54.5	16.8 688
1986	XC1		1986	12	04.22360	01	59	24.37	+13	04	29.5	688
1986	XD1	*	1986	12	04.17216	02	02	19.64	+03	56	38.8	17.8 688
1986	XD1		1986	12	04.25240	02	02	19.12	+03	56	50.4	688
1986	XE1	*	1986	12	04.17216	02	03	04.55	+07	02	48.1	17.8 P 688
1986	XE1		1986	12	04.25240	02	03	02.84	+07	02	36.7	688
1986	XF1	*	1986	12	04.19801	03	41	16.06	+23	02	39.2	17.0 688
1986	XF1		1986	12	04.29318	03	41	10.69	+23	02	10.6	688
1986	XG1	*	1986	12	04.19801	03	46	47.60	+19	03	15.7	17.0 688
1986	XG1		1986	12	04.29318	03	46	41.48	+19	03	33.6	688
1986	XH1	*	1986	12	04.19801	03	47	53.93	+24	14	43.4	16.8 688
1986	XH1		1986	12	04.29318	03	47	47.44	+24	14	13.0	R 688
1986	XJ1	*	1986	12	04.19801	03	57	13.96	+20	41	42.7	17.0 688
1986	XJ1		1986	12	04.29318	03	57	08.98	+20	41	34.5	688
1986	XK1	*	1986	12	04.19801	04	02	10.13	+24	26	04.5	17.0 688
1986	XK1		1986	12	04.29318	04	02	03.65	+24	25	18.3	688
12			1986	12	02.24109	04	37	28.88	+18	32	17.4	688
12			1986	12	02.30767	04	37	24.27	+18	31	56.6	688
22			1986	12	02.24109	04	37	35.71	+23	55	57.5	688
22			1986	12	02.30767	04	37	31.34	+23	56	11.7	688
27			1986	12	04.14331	02	13	42.99	+11	25	00.4	688
27			1986	12	04.22360	02	13	40.76	+11	24	56.7	688
104			1986	12	02.24109	04	49	55.35	+24	45	04.8	688
104			1986	12	02.30767	04	49	51.57	+24	45	03.2	688
125			1986	12	04.17216	02	02	37.21	+06	45	25.1	688
125			1986	12	04.25240	02	02	35.24	+06	45	19.0	688
128			1986	11	06.35829	04	23	24.49	+18	21	44.8	688
128			1986	11	06.41490	04	23	21.85	+18	21	46.3	688
128			1986	12	04.19801	03	57	04.24	+18	25	42.2	688
128			1986	12	04.29318	03	56	58.64	+18	25	43.8	688
142			1986	12	04.08229	01	49	35.50	+14	25	35.0	688
142			1986	12	04.12302	01	49	34.48	+14	25	27.5	688
142			1986	12	04.14331	01	49	34.01	+14	25	23.2	688
142			1986	12	04.22360	01	49	31.89	+14	25	06.3	688
196			1986	12	04.17216	02	08	08.83	+07	59	06.4	688
196			1986	12	04.25240	02	08	06.57	+07	59	09.0	688

220	1986	12	04.10289	01	20	10.99	+15	48	08.7			688
220	1986	12	04.27456	01	20	14.24	+15	47	10.1			688
250	1986	12	04.10289	01	16	45.45	+12	26	55.3			688
250	1986	12	04.27456	01	16	42.71	+12	27	07.2			688
271	1986	12	02.13626	00	37	49.22	+08	13	43.5			688
274	1986	12	04.17216	02	03	11.88	+08	33	44.8			688
274	1986	12	04.25240	02	03	09.64	+08	33	40.4			688
352	1986	12	02.24109	04	39	15.30	+21	44	21.4			688
352	1986	12	02.30767	04	39	10.58	+21	44	01.5			688
362	1986	12	04.10289	01	17	36.58	+10	59	14.0			688
362	1986	12	04.27456	01	17	34.67	+10	59	28.7			688
368	1986	12	02.24109	04	31	12.08	+17	35	19.6			688
368	1986	12	02.30767	04	31	08.54	+17	35	07.5			688
377	1986	11	06.41490	04	06	50.33	+16	09	28.1			688
394	1986	12	02.24109	04	33	42.39	+22	27	26.6			688
394	1986	12	02.30767	04	33	38.00	+22	27	26.6			688
409	1986	12	02.24109	04	46	23.03	+19	26	17.9			688
409	1986	12	02.30767	04	46	18.89	+19	25	55.3			688
422	1986	12	02.21882	04	07	52.00	+29	10	41.5			688
422	1986	12	02.28560	04	07	46.87	+29	10	32.6			688
562	1986	11	06.35829	04	29	33.20	+18	55	19.5			688
562	1986	11	06.41490	04	29	30.79	+18	55	23.1			688
659	1986	12	04.19801	03	56	35.99	+25	51	36.2			688
659	1986	12	04.29318	03	56	32.66	+25	51	26.3			688
711	1986	12	02.21882	04	23	37.01	+31	19	43.4			688
711	1986	12	02.28560	04	23	31.64	+31	19	34.1			688
756	1986	12	02.19630	03	32	35.92	+04	50	37.6			688
756	1986	12	02.26362	03	32	33.06	+04	50	18.4			688
761	1986	12	04.10289	01	34	08.93	+10	44	48.0			688
761	1986	12	04.27456	01	34	06.44	+10	44	40.2			688
807	1986	12	02.19630	03	19	25.65	+01	34	56.5		16.5	688
807	1986	12	02.26362	03	19	22.58	+01	34	58.2			688
898	1986	12	04.10289	01	12	54.38	+13	49	45.3		16.8	688
898	1986	12	04.27456	01	12	54.51	+13	48	52.5			688
1004	1986	12	04.17216	02	00	59.21	+08	17	38.9			688
1004	1986	12	04.25240	02	00	57.54	+08	17	34.1			688
1028	1986	12	02.24109	04	49	29.15	+24	36	00.6			688
1028	1986	12	02.30767	04	49	25.46	+24	36	07.0			688
1059	1986	12	02.19630	03	34	25.01	+09	28	18.2			688
1059	1986	12	02.26362	03	34	21.50	+09	28	00.6			688
1061	1986	11	06.35829	04	25	04.55	+19	26	33.7			688
1061	1986	11	06.41490	04	25	02.48	+19	26	31.4			R 688
1061	1986	12	04.19801	04	01	46.79	+18	52	39.2			688
1061	1986	12	04.29318	04	01	41.76	+18	52	33.4			688
1153	1986	12	04.10289	01	18	24.81	+13	01	53.1			688
1153	1986	12	04.27456	01	18	25.23	+13	01	26.7			688
1179	1986	03	05.28919	11	39	35.41	+07	13	31.4		16.8	688
1179	1986	03	05.36267	11	39	31.09	+07	13	40.7			688
1202	1986	12	04.14331	01	54	42.73	+11	03	14.0			688
1202	1986	12	04.22360	01	54	41.28	+11	03	11.5			688
1269	1986	11	06.35829	04	10	35.27	+17	29	22.2			688
1269	1986	11	06.41490	04	10	33.22	+17	29	16.0			688
1294	1986	12	02.24109	04	48	16.97	+19	42	17.8			688
1294	1986	12	02.30767	04	48	12.58	+19	42	33.0			688
1343	1986	12	04.14331	01	59	13.98	+12	54	02.8			688
1343	1986	12	04.22360	01	59	11.64	+12	53	59.2			688
1464	1986	12	02.24109	04	51	59.98	+18	09	43.5			688
1464	1986	12	02.30767	04	51	56.08	+18	09	50.8			688
1499	1986	12	04.10289	01	15	56.83	+14	25	31.5		16.8	688

1499	1986	12	04.27456	01	15	57.35	+14	24	25.5			688
1560	1986	12	02.21882	04	10	17.14	+28	41	33.2			688
1560	1986	12	02.28560	04	10	13.02	+28	41	10.4			688
1686	1986	12	04.14331	02	04	50.29	+13	13	27.7			688
1686	1986	12	04.22360	02	04	48.25	+13	13	17.0			688
1749	1986	12	04.27456	01	34	20.81	+16	13	02.3			688
1764	1986	12	02.24109	04	49	04.79	+19	21	14.1			688
1764	1986	12	02.30767	04	49	01.28	+19	21	08.5			688
1793	1986	12	04.14331	01	48	16.04	+11	10	52.7			688
1793	1986	12	04.22360	01	48	14.24	+11	10	40.2			688
1797	1986	12	04.14331	01	50	16.17	+13	03	04.7			688
1797	1986	12	04.22360	01	50	14.47	+13	02	58.6		P	688
1822	1986	12	02.24109	04	53	46.08	+21	44	31.0			688
1822	1986	12	02.30767	04	53	41.07	+21	44	21.4			688
1834	1986	12	04.19801	03	59	59.74	+25	52	44.4			688
1834	1986	12	04.29318	03	59	54.58	+25	52	16.4			688
1836	1986	12	02.21882	04	15	53.32	+25	42	14.5	17.0		688
1836	1986	12	02.28560	04	15	49.37	+25	41	56.0			688
1856	1986	11	06.35829	04	20	18.45	+15	18	35.2	17.2	R	688
1861	1986	12	02.21882	04	18	37.45	+32	21	47.8			688
1861	1986	12	02.28560	04	18	33.14	+32	21	44.9			688
1935	1986	12	04.17216	02	06	33.38	+04	10	17.3			688
1935	1986	12	04.25240	02	06	32.92	+04	10	03.8			688
1936	1986	12	04.19801	03	55	26.90	+25	57	22.7			688
1936	1986	12	04.29318	03	55	21.07	+25	56	44.0			688
2095	1986	12	04.27456	01	15	00.96	+12	55	33.1			688
2112	1986	12	04.14331	02	04	14.86	+13	56	00.2			688
2112	1986	12	04.22360	02	04	13.75	+13	55	41.0			688
2124	1986	12	02.21882	04	28	30.29	+27	55	14.8			688
2129	1986	12	04.14331	02	13	42.67	+12	31	57.7			688
2129	1986	12	04.22360	02	13	40.66	+12	32	13.9			688
2188	1986	12	02.24109	04	53	52.88	+18	51	05.0		R	688
2188	1986	12	02.30767	04	53	49.24	+18	51	00.7			688
2260	1986	12	02.19630	03	33	54.10	+07	43	49.0	17.0		688
2260	1986	12	02.26362	03	33	51.83	+07	43	51.9			688
2293	1986	12	02.24109	04	46	17.81	+23	01	27.0			688
2293	1986	12	02.30767	04	46	14.06	+23	01	21.3			688
2307	1986	12	04.14331	02	08	58.76	+17	46	57.2			688
2307	1986	12	04.22360	02	08	56.64	+17	46	33.5			688
2348	1986	11	06.35829	04	19	33.82	+15	03	09.0			688
2348	1986	11	06.41490	04	19	31.31	+15	02	52.3			688
2352	1986	11	06.35829	04	09	15.19	+19	02	25.8	16.2		688
2352	1986	11	06.41490	04	09	12.77	+19	02	04.2			688
2362	1986	12	02.21882	04	13	36.78	+28	04	07.3	16.5		688
2362	1986	12	02.28560	04	13	31.66	+28	03	59.5			688
2410	1986	11	06.35829	04	19	56.47	+17	35	33.9			688
2410	1986	11	06.41490	04	19	53.38	+17	35	26.3			688
2446	1986	12	02.21882	04	27	35.27	+25	38	56.5			688
2446	1986	12	02.28560	04	27	30.56	+25	38	47.5			688
2446	1986	12	02.30767	04	27	28.74	+25	38	41.2		R	688
2563	1986	11	06.35829	04	22	23.82	+19	10	41.0			688
2563	1986	12	04.19801	04	00	01.22	+18	17	38.6	17.0		688
2563	1986	12	04.29318	03	59	56.28	+18	17	26.9			688
2644	1986	12	04.10289	01	18	27.27	+11	56	09.0			688
2644	1986	12	04.27456	01	18	26.96	+11	56	01.3			688
2779	1986	12	04.19801	03	51	33.30	+18	21	26.5			688
2779	1986	12	04.29318	03	51	26.83	+18	21	19.1			688
2809	1986	12	02.21882	04	35	25.69	+26	10	42.2		P	688
2809	1986	12	02.28560	04	35	20.90	+26	10	30.3			688

2846		1986	12	02.19630	03	28	14.23	+02	41	35.9	17.0 688
2846		1986	12	02.26362	03	28	11.28	+02	41	32.6	688
2872		1986	11	06.35829	04	08	21.50	+21	22	09.3	688
2872		1986	11	06.41490	04	08	19.04	+21	22	00.7	688
2872		1986	12	04.19801	03	43	10.95	+19	34	10.4	688
2872		1986	12	04.29318	03	43	05.67	+19	33	46.8	688
2885		1986	12	04.29318	03	37	50.50	+25	29	00.2	688
2900		1986	12	02.21882	04	20	49.16	+33	12	18.9	17.2 688
2900		1986	12	02.28560	04	20	45.08	+33	12	17.2	688
3058		1986	12	04.14331	02	12	53.82	+10	22	08.4	688
3058		1986	12	04.22360	02	12	52.53	+10	21	54.4	688
3081		1986	12	04.14331	02	08	04.74	+13	50	13.7	17.8 688
3081		1986	12	04.22360	02	08	02.39	+13	50	13.3	688
3306		1986	11	06.35829	04	15	25.11	+18	17	21.0	17.2 688
3320		1986	12	02.24109	04	40	33.70	+18	35	10.4	P 688
3320		1986	12	02.30767	04	40	29.06	+18	34	58.1	R 688
3327		1986	11	06.35829	04	24	54.05	+21	18	36.7	688
3327		1986	12	04.19801	04	01	58.11	+20	30	55.7	688
3327		1986	12	04.29318	04	01	53.34	+20	30	44.5	688
3339		1986	12	02.19630	03	14	38.31	+04	58	39.2	688
3339		1986	12	02.26362	03	14	35.19	+04	58	43.2	688
3340		1986	12	02.21882	04	19	34.60	+26	51	20.3	688
3340		1986	12	02.28560	04	19	29.32	+26	51	15.5	688
3347		1986	11	06.35829	04	19	39.57	+16	19	46.4	688
3347		1986	11	06.41490	04	19	37.34	+16	19	33.2	688
3349		1986	12	02.24109	04	46	07.44	+23	54	26.1	688
3349		1986	12	02.30767	04	46	03.17	+23	54	25.2	688
3436		1986	12	04.14331	02	07	20.26	+11	16	42.3	17.8 688
3436		1986	12	04.22360	02	07	18.41	+11	16	31.2	688
3510		1986	12	04.10289	01	11	58.77	+15	13	12.5	688
3510		1986	12	04.27456	01	11	58.26	+15	12	35.4	688
3533		1986	12	04.17216	02	10	20.24	+07	56	06.4	16.0 688
3533		1986	12	04.25240	02	10	18.61	+07	55	53.8	688

690 Lowell Observatory
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Measurer B. A. Skiff
0.33-m photographic telescope and 0.46-m astrograph

1948	LH	1948	06	01.22951	15	02	28.53	-13	46	36.0	690
1948	LH	1948	06	05.22770	14	59	45.19	-13	52	53.4	690
94		1986	10	28.50174	08	03	01.86	+29	30	36.2	690
94		1986	10	28.50660	08	03	02.05	+29	30	36.1	690
94		1986	10	28.51146	08	03	02.24	+29	30	36.5	690

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

1982	TX	1986	11	30.11203	22	52	53.02	-01	01	45.8	691
1982	TX	1986	11	30.13247	22	52	55.65	-01	01	50.8	18.0V 691
1982	TX	1986	11	30.13487	22	52	55.96	-01	01	51.5	691
1985	JA	1986	11	29.33171	04	17	02.22	-05	00	16.9	17.4V 691
1985	JA	1986	11	29.34049	04	17	01.16	-05	00	48.1	691
1985	JA	1986	11	29.34877	04	17	00.08	-05	01	18.3	691

1986	EB	1986	12	02.47500	13	09	56.34	+26	04	56.1	18.3V 691
1986	EB	1986	12	02.48532	13	09	57.35	+26	04	45.4	691
1986	EB	1986	12	02.49753	13	09	58.59	+26	04	35.1	691
1986	LA	1986	12	02.09771	00	23	39.79	+04	10	54.4	19.2V 691
1986	LA	1986	12	02.10178	00	23	40.36	+04	10	54.1	691
1986	LA	1986	12	02.13500	00	23	45.17	+04	10	50.4	691
1986	LA	1986	12	04.10412	00	28	36.67	+04	08	20.2	691
1986	LA	1986	12	04.10966	00	28	37.46	+04	08	19.8	691
1986	LA	1986	12	04.12148	00	28	39.14	+04	08	19.5	19.3V 691
1986	RA	1986	10	30.21551	00	27	00.48	-23	44	58.8	16.5V 691
1986	RA	1986	10	30.22615	00	27	01.78	-23	44	59.6	691
1986	RA	1986	11	30.16525	01	21	25.12	-19	54	22.2	17.9V 691
1986	RA	1986	11	30.17507	01	21	26.01	-19	54	14.8	691
1986	RA	1986	12	04.12642	01	27	27.75	-19	01	36.1	17.7V 691
1986	RA	1986	12	04.14350	01	27	29.25	-19	01	22.3	691
1986	RA	1986	12	04.15453	01	27	30.22	-19	01	12.6	691
1620		1986	12	02.35525	07	19	04.79	+50	03	23.1	691
1620		1986	12	02.36456	07	19	03.81	+50	03	30.7	691
1620		1986	12	02.37308	07	19	02.99	+50	03	36.3	691
2060		1986	11	29.35301	05	13	13.02	+17	19	23.0	691
2060		1986	11	29.37699	05	13	12.57	+17	19	22.8	691
2060		1986	11	29.38513	05	13	12.50	+17	19	22.5	691
2060		1986	12	02.32198	05	12	29.49	+17	17	59.9	17.8V 691
2060		1986	12	02.33174	05	12	29.36	+17	17	59.7	691
2060		1986	12	02.34854	05	12	29.08	+17	17	58.7	691
2202		1986	12	02.44146	09	06	33.17	+00	27	50.5	18.7V 691
2202		1986	12	02.45466	09	06	33.37	+00	27	47.1	691
2202		1986	12	02.46662	09	06	33.60	+00	27	43.6	691
2212		1986	12	02.28388	03	46	06.33	+29	22	56.0	691
2212		1986	12	02.29420	03	46	05.55	+29	22	53.4	691
2212		1986	12	02.30378	03	46	04.81	+29	22	52.0	18.7V 691
2212		1986	12	04.36890	03	43	31.05	+29	15	45.6	18.9V 691
2212		1986	12	04.37850	03	43	30.32	+29	15	43.1	691
2212		1986	12	04.38282	03	43	30.02	+29	15	42.1	691

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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

1936	XA	1986	10	29.18633	01	40	10.27	+18	25	06.2	801
1969	TR1	1986	12	01.00491	00	18	16.17	+04	13	53.4	W 801
1976	QX	1986	10	31.08231	23	37	29.12	-01	39	44.1	801
1976	SJ4	1986	11	30.40944	11	11	10.55	-00	46	43.8	W 801
1976	SJ4	1986	12	01.42935	11	12	26.18	-00	55	30.3	801
1977	QE1	1986	11	28.25334	03	42	34.33	+13	12	48.4	801
1978	SA3	1986	10	31.12466	23	52	22.34	+02	13	54.8	801
1978	SA3	1986	11	28.07906	23	51	49.87	+02	12	06.1	801
1978	SA3	1986	12	01.95969	23	52	59.42	+02	19	07.6	801
1978	SW6	1986	10	31.21858	02	40	03.73	+25	16	37.4	801
1978	SW6	1986	12	02.18253	02	08	54.75	+23	43	05.4	801
1978	TM6	1986	10	31.23980	02	55	25.71	+22	09	29.5	W 801
1978	TM6	1986	12	05.17118	02	25	45.49	+18	50	34.9	801
1979	SN11	1986	11	30.08566	01	57	49.68	+13	45	29.5	801
1979	VG	1986	11	28.10345	00	44	03.27	+06	45	35.4	801
1980	DL5	1986	11	30.17072	02	13	46.26	+14	51	11.9	801
1981	DQ2	1986	11	01.24577	01	02	33.76	+12	39	33.8	801
1981	EV20	1986	10	08.18918	23	34	59.71	+01	56	02.1	801

1981 EV20		1986	11	01.09305	23	21	52.22	+01	09	43.8		801
1981 RK5		1986	12	01.29763	04	18	16.70	+28	48	15.6		801
1981 SW6		1986	10	31.01350	21	34	10.89	-12	09	20.4	W	801
1981 TP1		1986	12	01.04830	00	35	25.93	+15	48	29.5		801
1981 TH4		1986	09	08.21768	22	18	55.08	-09	19	23.5		801
1981 TH4		1986	10	30.02708	22	00	15.29	-09	53	26.8		801
1981 UT15		1986	11	28.28813	04	53	54.36	+25	06	19.6		801
1981 XH2		1986	12	01.03016	00	33	35.53	+10	20	04.8	w	801
1982 VT		1986	12	05.11624	01	23	50.80	+07	15	30.1		801
1984 HZ1		1986	12	05.25839	03	12	24.02	+15	59	06.6		801
1984 YV		1986	11	29.99246	21	42	52.83	+10	52	03.6		801
1985 FE		1986	11	29.97181	21	33	44.36	-07	31	11.6		801
1985 JA		1986	11	30.25487	04	15	14.66	-05	55	40.9		801
1985 TQ		1986	11	28.23610	03	47	22.98	+22	11	59.7		801
1985 TC1		1986	11	28.18172	02	58	02.70	+26	38	44.3		801
1986 RA		1986	12	05.08820	01	28	54.78	-18	48	25.1	B	801
1986 RB		1986	10	30.99808	21	51	44.42	+11	31	52.7		801
1986 RB		1986	11	28.96140	22	20	26.10	+16	03	59.0		801
1986 TM		1986	11	28.97554	23	26	43.45	+07	35	33.9	S	801
1986 TA2		1986	12	01.98592	00	50	17.66	-00	52	09.3	S	801
1986 TO4		1986	11	28.12298	00	46	05.88	+08	51	59.7		801
1986 TO4		1986	12	02.00947	00	46	10.59	+08	37	19.4		801
1986 UK3	*	1986	10	29.18633	01	39	50.20	+18	24	35.1	18.0	801
1986 UL3	*	1986	10	29.18633	01	40	14.36	+18	09	06.0	17.5	801
1986 UM3	*	1986	10	30.24705	02	57	07.15	+21	13	28.8	18.0	801
1986 VB1		1986	12	05.17118	02	25	10.77	+18	30	22.8	17.5	801
1986 XX		1986	11	30.31094	04	44	14.81	+22	49	19.3		801
6548 P-L		1986	11	30.20469	02	49	15.30	+08	39	25.5		801
342		1986	11	29.97181	21	34	08.12	-07	26	04.2		801
342		1986	11	30.96165	21	35	15.84	-07	23	01.4		801
3498		1986	10	07.13853	22	42	00.77	+00	15	49.8		801
3526		1986	11	30.98413	23	51	39.84	-05	54	54.2	i	801

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Observers W. Ferreri, O. Pizarro, H.-E. Schuster
Measurers W. Ferreri, R. M. West
0.4-m GPO astrograph and 1.0-m Schmidt telescope

1986 EY4	*	1986	03	11.18924	12	24	25.73	-02	24	10.5	1	809
1986 EY4		1986	03	11.20799	12	24	26.82	-02	24	59.9	1	809
1026		1977	06	13.28267	20	04	15.88	-19	37	24.0	17.5 2	809
1026		1977	06	16.27102	20	03	58.52	-19	50	59.2	17.0 2	809
1026		1977	08	17.14467	19	23	55.99	-26	16	38.3	16.5 2	809
1026		1977	09	05.05123	19	26	57.10	-26	52	15.9	17.0 2	809

881 Toyota
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Observers K. Suzuki, T. Urata
0.31-m f/5.7 reflector
Copied from Nihondaira Obs. Circ.

1982 QO1		1986	12	01.54132	05	05	06.94	+24	10	48.2	15	881
1982 QO1		1986	12	01.55174	05	05	06.09	+24	10	46.9		881
1982 QO1		1986	12	07.52049	04	58	14.96	+23	51	36.9	15	881
1982 QO1		1986	12	07.55660	04	58	12.21	+23	51	29.7		881
1982 QO1		1986	12	08.58090	04	57	00.57	+23	48	00.8	15	881
1982 QO1		1986	12	08.60799	04	56	58.57	+23	47	55.1	16	881

1986 VG	1986	12	05.51493	01	32	28.65	+21	08	21.1	16.5	881
1986 VG	1986	12	05.54479	01	32	28.02	+21	08	17.4		881
1986 VG	1986	12	29.50313	01	33	25.84	+20	34	22.4	17	881
1986 VG	1986	12	29.54757	01	33	26.76	+20	34	22.5		881
1986 WB	1986	12	05.57535	04	27	03.09	+23	34	01.5	16.5	881
1986 WB	1986	12	05.60313	04	27	01.13	+23	34	05.8		881
1986 WB	1986	12	26.53368	04	06	41.60	+24	20	09.1	16.5	881
1986 WB	1986	12	26.57882	04	06	39.74	+24	20	15.8		881
1986 WC	1986	12	07.57188	04	33	45.21	+17	30	22.4	16.5	881
1986 WC	1986	12	07.59479	04	33	43.92	+17	30	19.6		881
1986 WC	1986	12	26.54896	04	19	38.98	+16	40	55.0	17	881
1986 WC	1986	12	26.59340	04	19	37.42	+16	40	50.0		881
1986 WD	1986	12	05.58993	04	40	10.06	+17	19	14.3	16.5	881
1986 WD	1986	12	05.61701	04	40	09.09	+17	19	10.9		881
1986 WD	1986	12	26.56435	04	29	07.01	+16	33	14.9	16.5	881
1986 WD	1986	12	26.60741	04	29	06.05	+16	33	09.7		881
1986 WE	1986	12	05.58993	04	39	05.98	+16	36	25.7	17	881
1986 WE	1986	12	05.61701	04	39	04.07	+16	36	27.5		881
1986 WE	1986	12	26.54896	04	17	59.13	+17	12	02.3	16.5	881
1986 WE	1986	12	26.59340	04	17	57.03	+17	12	06.2		881
1986 WL	1986	12	07.58368	05	00	33.73	+15	03	29.2	16	881
1986 WL	1986	12	07.60660	05	00	32.30	+15	03	25.6		881
1986 WL	1986	12	08.56771	04	59	33.75	+15	00	37.2	16	881
1986 WL	1986	12	08.59410	04	59	31.90	+15	00	33.4		881
1986 WL	1987	01	01.48576	04	37	19.47	+14	14	11.5	16.5	881
1986 WL	1987	01	01.51285	04	37	18.53	+14	14	06.4		881
3533	1986	11	26.60451	02	13	30.56	+08	23	14.6	15.5	881
3533	1986	11	26.62326	02	13	29.91	+08	23	10.0		881
3533	1986	12	05.53021	02	09	58.24	+07	52	47.8	15.5	881
3533	1986	12	05.55799	02	09	57.75	+07	52	42.4		881

883 Shizuoka
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Measurer T. Urata
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Copied from Nihondaira Obs. Circ.

1982 QO1	1986	12	06.57084	04	59	21.07	+23	54	50.6	15.5	883
1982 QO1	1986	12	08.53625	04	57	03.78	+23	48	10.3	15.5	883
1982 QO1	1986	12	08.57483	04	57	00.87	+23	48	01.8		883
1986 WL	1986	12	08.54932	04	59	34.62	+15	00	40.1		883
1986 WL	1986	12	08.58810	04	59	32.26	+15	00	33.7		883
1285	1986	12	23.55438	07	00	44.00	+28	03	19.2	16	883
1285	1986	12	23.58910	07	00	42.20	+28	03	20.7		883
1667	1987	01	03.58010	06	48	12.59	+25	41	44.4		883
1667	1987	01	03.65164	06	48	06.84	+25	41	58.8		883

887 Ojima
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0.30-m f/5.8 reflector
Copied from Nihondaira Obs. Circ.

1931 TC1	1986	11	29.72535	06	47	17.39	+35	08	33.5	17.5	887
1931 TC1	1986	12	01.71123	06	45	42.87	+35	17	27.2	17.5	887
1931 TC1	1986	12	01.72309	06	45	42.19	+35	17	29.0		887
1931 TC1	1986	12	08.69689	06	39	21.49	+35	46	16.1	17.5	887
1931 TC1	1986	12	08.70799	06	39	20.98	+35	46	19.7		887
1986 WK	1986	12	05.54016	03	35	25.59	+26	24	19.6	16	887
1986 WK	1986	12	05.56823	03	35	24.02	+26	24	21.1		887

1986	WK		1986	12	08.65052	03	32	57.49	+26	23	44.3	16.5	887
1986	WK		1986	12	08.66082	03	32	56.88	+26	23	39.5		887
1986	WK		1986	12	08.68137	03	32	55.84	+26	23	41.8		887
1986	WK		1986	12	20.44722	03	26	36.80	+26	19	20.5	17	887
1986	WK		1986	12	20.47014	03	26	36.34	+26	19	18.5		887
1986	WK		1987	01	03.46817	03	25	44.85	+26	18	25.1	17.5	887
1986	WK		1987	01	03.49514	03	25	45.02	+26	18	25.9		887
1986	YA	*	1986	12	20.44722	03	29	26.98	+25	19	15.9	16	887
1986	YA		1986	12	20.47014	03	29	26.26	+25	19	05.0		887
1986	YA		1986	12	22.49479	03	28	33.78	+25	02	15.4	15	887
1986	YA		1986	12	22.53021	03	28	32.77	+25	01	58.4		887
1986	YA		1986	12	24.51319	03	27	47.57	+24	45	55.3	15.5	887
1986	YA		1986	12	24.55243	03	27	46.67	+24	45	36.4		887
1986	YA		1986	12	26.53368	03	27	07.83	+24	30	03.5	15.5	887
1986	YA		1986	12	26.55139	03	27	07.37	+24	29	55.6		887
1986	YA		1987	01	01.50556	03	25	48.40	+23	45	55.2	15.5	887
1986	YA		1987	01	01.52813	03	25	48.08	+23	45	46.2		887
1986	YA		1987	01	03.50567	03	25	34.50	+23	32	12.9	16	887
1986	YA		1987	01	03.54063	03	25	34.26	+23	31	59.1		887
1986	YB	*	1986	12	20.44722	03	29	51.24	+26	09	52.5	16	887
1986	YB		1986	12	20.47014	03	29	50.40	+26	09	47.3		887
1986	YB		1986	12	22.50243	03	28	52.86	+25	57	57.2	16	887
1986	YB		1986	12	22.52083	03	28	52.28	+25	57	52.8		887
1986	YB		1986	12	24.52025	03	28	02.06	+25	46	29.4	16.5	887
1986	YB		1987	01	01.49549	03	25	46.29	+25	04	22.4	16.5	887
1986	YB		1987	01	01.51528	03	25	46.24	+25	04	15.2		887
1986	YB		1987	01	03.48194	03	25	28.87	+24	54	49.5	16.5	887
1986	YC	*	1986	12	22.55069	05	30	50.83	+22	36	20.2	17	887
1986	YC		1986	12	22.57986	05	30	48.82	+22	36	21.1		887
1986	YC		1986	12	24.58021	05	28	38.37	+22	37	36.5	17	887
1986	YC		1986	12	24.60382	05	28	36.54	+22	37	37.3		887
1986	YC		1986	12	26.56499	05	26	30.25	+22	38	48.2	17	887
1986	YC		1986	12	26.58907	05	26	28.97	+22	38	49.3		887
1986	YC		1987	01	01.57014	05	20	20.92	+22	42	03.5	17	887
1986	YC		1987	01	01.61644	05	20	17.96	+22	42	03.5		887
1986	YC		1987	01	03.56713	05	18	25.72	+22	43	01.6	17	887
1986	YC		1987	01	03.58403	05	18	24.49	+22	43	03.3		887
1986	YD	*	1986	12	22.55069	05	33	24.39	+22	06	24.7	16	887
1986	YD		1986	12	22.57986	05	33	22.73	+22	06	29.2		887
1986	YD		1986	12	24.57083	05	31	36.58	+22	10	22.4	15.5	887
1986	YD		1986	12	24.59421	05	31	35.14	+22	10	26.6		887
1986	YD		1986	12	26.56499	05	29	51.74	+22	14	14.3	16	887
1986	YD		1986	12	26.58907	05	29	50.49	+22	14	16.3		887
1986	YD		1987	01	01.60590	05	24	50.41	+22	25	37.4	16.5	887
1986	YD		1987	01	01.62847	05	24	49.37	+22	25	40.9		887
1986	YD		1987	01	03.55481	05	23	19.89	+22	29	15.2	16	887
1986	YD		1987	01	03.59759	05	23	17.84	+22	29	19.8		887
2176			1987	01	01.57014	05	19	03.86	+22	52	40.2	17	887
2176			1987	01	01.57014	05	19	03.86	+22	52	40.2	17	887
2176			1987	01	01.61644	05	19	01.56	+22	52	39.3		887
2176			1987	01	01.61644	05	19	01.56	+22	52	39.3		887

888 Gekko
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Measurer T. Urata
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1986 WB	1986 12 08.67917	04 23 26.68	+23 41 57.7			888
1986 WB	1986 12 08.69861	04 23 25.13	+23 42 01.2			888
1986 WC	1986 12 09.64931	04 32 02.09	+17 24 04.0			888
1986 WC	1986 12 09.66736	04 32 01.10	+17 24 00.8			888
1986 WE	1986 12 08.66458	04 35 41.14	+16 39 45.3			888
1986 WE	1986 12 08.68889	04 35 39.62	+16 39 46.0			888
1986 WE	1986 12 09.65833	04 34 35.57	+16 40 57.7			888
1986 WE	1986 12 09.67639	04 34 34.25	+16 40 59.1			888
1986 WL	1986 12 09.69583	04 58 24.10	+14 57 24.6			888
1986 WL	1986 12 09.71389	04 58 22.89	+14 57 22.4			888

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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, E = E. Bowell, f = T. Furuta, G = D. W. E. Green, M = B. G. Marsden, U = T. Urata.

Planet	H	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1978 TL4	12.4	781019	345.01	356.21	48.10	10.45	0.1452	3.1604	29	3	D	f
1979 QT8	14.7	790904	6.26	2.49	337.89	2.59	0.1603	2.2713	35	3	D	f
1982 UF8	12.5	821107	359.62	83.48	310.03	3.81	0.1919	3.1500	24	3	D	f
1985 UB2	11.0	851002	29.24	242.70	110.42	2.76	0.0246	3.2320	4	5	E	M
1985 UG2	14.5	851002	318.99	307.32	136.87	1.57	0.2487	2.1669	6	6	E	M
1985 UH2		851002	323.74	4.90	66.22	2.88	0.1767	2.2788	6	6		M
1985 UJ3	14.0	851002	37.04	214.66	105.33	1.37	0.2572	2.4386	7	6		M
1985 VE1	12.0	851022	70.48	151.47	149.44	2.81	0.1105	2.8674	21	0		M
1986 AE	13.5	860219	49.15	109.92	290.46	28.98	0.3763	2.7309	88	0		G
1986 TD	13.0	860927	337.87	53.87	27.02	33.95	0.3533	2.8659	7	9		M
1986 TM	11.5	861017	329.55	57.14	10.48	32.88	0.3258	2.8698	53	5		B
1986 TM1	12.8	861106	344.65	189.40	226.34	11.61	0.1565	2.5955	61	6		E
1986 UM	14.0	861017	351.76	7.98	32.39	5.52	0.0503	2.3014	12	8		G
1986 UO	13.5	861017	29.20	321.99	16.79	3.12	0.2949	2.7419	12	8		M
1986 UP	13.0	861017	74.55	253.30	34.94	22.20	0.2563	2.4086	10	6		G
1986 UQ	14.0	861017	58.26	85.11	233.98	2.40	0.1352	2.1493	12	0		G
1986 UT		861017	147.94	348.03	249.97	10.83	0.2075	3.0912	10	6		G
1986 UU	14.5	861017	27.08	110.29	236.34	5.75	0.2418	2.1483	11	6		G
1986 UV	12.5	861017	296.26	115.36	346.67	4.75	0.0332	2.7525	10	6		G
1986 UH3		861017	7.21	65.06	313.86	0.72	0.2381	2.6295	12	0		G
1986 VG	11.0	861216	318.08	100.51	352.13	9.92	0.0638	3.0064	55	0		U
1986 VM	13.0	861017	230.85	262.87	265.62	5.09	0.0544	2.2048	10	6		G
1986 VO	14.0	861106	56.80	81.04	249.09	3.17	0.1446	2.2670	6	6		G
1986 VT	14.0	861106	5.95	212.42	180.40	0.70	0.2468	2.8072	6	5	E	G
1986 VU	12.5	861106	40.94	16.93	334.76	4.22	0.1251	2.7592	6	6		G
1986 VW	14.0	861106	47.88	324.71	13.14	6.20	0.1836	2.1912	6	6		G
1986 VX	14.0	861106	356.36	22.35	28.19	12.24	0.2566	2.6497	6	6		G
1986 VY	14.5	861106	359.27	66.95	338.49	3.94	0.2217	2.3307	6	6		G
1986 VZ	14.0	861106	29.88	347.53	12.49	5.33	0.1984	2.3219	6	6		G
1986 VB1	14.5	861106	352.30	155.10	259.43	5.13	0.1376	2.2273	31	7		B
1986 VE7	14.0	861106	330.15	93.26	2.82	4.55	0.2866	2.6073	6	6		G
1986 WB	13.5	861126	17.23	341.54	63.40	7.43	0.1280	2.3189	34	0		M
1986 WD	9.0	861216	352.39	208.48	232.85	12.03	0.0668	5.2682	34	6		U

1986 WG	14.0	861126	316.58	250.71	241.38	18.08	0.2541	2.2421	10	0	M
1986 WJ	14.0	861126	48.90	299.54	36.49	19.27	0.2547	2.8304	4	4 E	M
1986 WK	13.5	861216	29.93	332.39	33.42	6.78	0.3747	2.7748	38	0	U
1986 WQ2	13.5	861126	69.63	217.08	96.69	22.25	0.0444	1.8292	14	8	G
1986 XF	14.0	861126	15.78	22.68	22.59	2.83	0.1739	2.5565	11	7	M
1986 XJ	12.0	861126	136.71	14.73	271.05	5.82	0.1054	2.7291	11	4	M
1986 XJ1	16.0	861126	347.82	28.53	56.91	0.52	0.2823	2.2630	8	6 E	M
1986 YA	10.5	861216	55.66	92.65	261.13	16.64	0.1872	3.1042	14	0	U
1986 YD	11.0	870105	55.28	287.62	91.43	8.20	0.1362	3.2164	12	0	U

1978 TL4 = 1978 TD5 = 1978 VL12 (T. Furuta, JAM 2030)
1979 QT8 = 1979 QO9 = 1979 SJ5 (T. Furuta, JAM 2030)
1982 UF8 = 1982 VU6 = 1982 VZ10 (T. Furuta, JAM 2030)

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

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

Comet Bowell (1982 I)
Epoch 1982 Mar. 12.0 ET = JDE 2445040.5
T 1982 Mar. 12.29297 ET

q	3.3639485	(1950.0)	P	Q
z	-0.0170401	Peri.	134.88879	-0.35903000	+0.93294887
	+/-0.0000015	Node	114.05380	-0.86424944	-0.32159117
e	1.0573220	Incl.	1.66488	-0.35237817	-0.16181945

From 100 observations 1980 Feb. 11-1986 Dec. 2, mean residual 1".4.

Periodic Comet Lovas 2 (1986p)
T 1986 Sept. 1.50290 ET

q	1.4479463	(1950.0)	P	Q
n	0.14910070	Peri.	70.63699	+0.99358761	+0.11007471
a	3.5222182	Node	283.03684	-0.11111209	+0.90832865
e	0.5889107	Incl.	1.51931	-0.02092269	+0.40351285
P	6.61				

From 19 observations 1986 Nov. 30-1987 Jan. 3.

Periodic Comet Tempel 1
Epoch 1988 Dec. 25.0 ET = JDE 2447520.5
T 1989 Jan. 4.44134 ET

q	1.4967266	(1950.0)	P	Q
n	0.17917697	Peri.	178.98009	-0.38550681	+0.90689766
a	3.1161230	Node	68.32735	-0.84781442	-0.27541380
e	0.5196831	Incl.	10.54446	-0.36413625	-0.31887908
P	5.50				

From 99 observations 1967-1983, mean residual 0".9.

Periodic Comet d’Arrest
Epoch 1989 Feb. 3.0 ET = JDE 2447560.5
T 1989 Feb. 4.19678 ET

q	1.2919823	(1950.0)	P	Q
n	0.15432670	Peri.	177.06800	+0.71967680	+0.65883552
a	3.4422467	Node	138.80172	-0.64356329	+0.75141513
e	0.6246689	Incl.	19.42840	-0.26056014	-0.03620873
P	6.39				

From 87 observations 1970-1982, mean residual 1".8. Nongravitational parameters A1 = +0.24, A2 = +0.1166.

Periodic Comet Churyumov-Gerasimenko
Epoch 1989 June 3.0 ET = JDE 2447680.5
T 1989 June 18.39719 ET

		(1950.0)	P	Q
q 1.2996823				
n 0.14955477	Peri.	11.38232	+0.47467898	-0.87497712
a 3.5150853	Node	50.35537	+0.79745372	+0.38168783
e 0.6302558	Incl.	7.11440	+0.37248815	+0.29787488
P 6.59				

From 69 observations 1969-1982. Nongravitational parameters A1 = +0.01, A2 = +0.0125.

Periodic Comet Gunn
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5
T 1989 Sept. 24.97985 ET

		(1950.0)	P	Q
q 2.4715442				
n 0.14399868	Peri.	196.93778	-0.09494806	+0.98141188
a 3.6049318	Node	67.86766	-0.89115320	-0.00912977
e 0.3143992	Incl.	10.37247	-0.44365621	-0.19169602
P 6.84				

From 88 observations 1954-1982, mean residual 1".4. Nongravitational parameters A1 = +2.38, A2 = +0.6128.

(473) Nolli = 1940 CD = 1940 CP = 1981 QR = 1986 PP4
Epoch 1987 July 24.0 ET = JDE 2447000.5

		(1950.0)	P	Q
M 343.29705				
n 0.22704776	Peri.	153.25581	-0.58153450	-0.80666349
a 2.6610798	Node	331.92467	+0.70050097	-0.43063532
e 0.1069146	Incl.	12.94286	+0.41366172	-0.40478048
P 4.34	H 12.0	G 0.25		

Residuals in seconds of arc

010213 024	(6.6-	1.2-)	810824 046	1.9-	2.1+	810905 046	0.6-	1.6-
010213 024	0.2+	0.5-	810824 046	0.7-	2.6+	810905 046	0.5-	2.5-
010217 024	0.9+	0.1-	810828 046	1.1-	1.3-	860809 071	0.6+	0.9+
010221 024	0.5+	0.4-	810828 046	0.0	1.5-	860809 071	0.3-	0.1+
010313 024	1.1-	1.3+	810830 704	2.5+	0.9-	860809 071	0.3-	0.4-
400210 012	(24.8-	30.4-)X	810902 704	0.7+	1.0+			
400212 020	(18.1+	10.0+)X	810902 095	1.4+	2.0+			

(3534)* 1936 XA = 1951 AT1 = 1983 AD1

Discovered 1936 Dec. 15 by E. Delporte at Uccle. The key identification 1936 XA = 1983 AD1 is by E. Bowell (MPC 7661).

Epoch 1987 July 24.0 ET = JDE 2447000.5

		(1950.0)	P	Q
M 19.40492				
n 0.21564286	Peri.	199.82968	+0.06143869	-0.99059840
a 2.7540976	Node	246.80687	+0.93271615	+0.10057874
e 0.1918279	Incl.	7.64163	+0.35533908	-0.09272931
P 4.57	H 12.5	G 0.25		

Residuals in seconds of arc

361215 012	0.3-	0.3-	830122 688	0.3+	2.0-	861004 688	0.1-	1.7-
361219 012	1.6+	0.8+	830215 688	0.6-	0.5+	861008 801	1.8+	0.8-
361221 012	0.7+	0.4+	830215 688	0.6-	0.1-	861029 801	0.7-	0.1-
361230 012	1.1+	4.0+	830316 688	1.1+	2.2-	861105 688	0.2+	0.6-
510113 711	3.4-	6.0+ Y	830316 688	0.6+	0.5-	861105 688	0.3-	0.1-
830112 688	1.0+	1.6-	861002 657	1.9-	1.3-	861204 688	0.1-	0.0
830112 688	1.6-	2.4-	861002 657	0.8-	0.3-	861204 688	0.2+	0.5+
830122 688	0.4+	1.9-	861004 688	1.2+	0.2-			

(3535)* 1979 SN11 = 1972 TB1

Discovered 1979 Sept. 24 by N. S. Chernykh at the Crimean Astrophysical Observatory. The identification was suggested by L. D. Schmadel (MPC 9028).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	56.02133	(1950.0)		P	Q
n	0.28270133	Peri.	163.13740	+0.41780593	-0.90813114
a	2.2992392	Node	262.15966	+0.83033212	+0.39379244
e	0.1844074	Incl.	1.56930	+0.36876386	+0.14221583
P	3.49	H	14.0	G 0.25	

Residuals in seconds of arc

721007	095	1.6-	0.2-	840226	809	0.0	0.2-	840306	809	0.1-	0.1-
790924	095	2.0+	0.3-	840226	095	1.4+	0.3-	840311	809	0.6+	0.3+
791014	095	0.8+	1.4+	840301	809	0.2-	0.2+	840311	809	0.3+	0.3+
791116	095	0.0	0.1+	840301	809	0.2-	0.6+	840311	809	0.1+	0.2+
791122	095	0.3+	0.4+	840301	809	0.0	0.8+	861107	046	0.5-	0.3-
840226	809	1.2-	0.4-	840306	809	0.0	0.5-	861107	046	2.0-	1.4-
840226	809	0.5-	0.5-	840306	809	0.2-	0.3-	861130	801	1.5+	0.7+

(3536)* 1981 EV20 = 1977 AN2

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

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	353.75821	(1950.0)		P	Q
n	0.27490365	Peri.	113.70489	-0.07854449	-0.99619760
a	2.3425150	Node	340.68660	+0.86805245	-0.04974831
e	0.0484661	Incl.	6.54486	+0.49022005	-0.07152235
P	3.59	H	14.1	G 0.25	

Residuals in seconds of arc

770113	095	0.9+	1.0+	810307	413	0.5-	0.7+	810407	413	0.9+	0.6-
770120	095	0.2-	0.3-	810307	413	2.1+	0.0	810410	413	0.3-	0.9+
791018	675	1.2-	0.8-	810311	413	0.8-	0.7+	810410	413	1.6+	0.3-
791018	675	0.2+	0.9+	810311	413	1.0+	0.4+	810412	413	1.1-	0.2-
810209	413	0.2-	0.7-	810316	413	1.5-	0.2-	810412	413	2.2+	1.8-
810213	413	0.8-	0.3+	810405	413	1.4-	0.4+	810430	413	0.1-	0.6-
810302	413	1.2-	1.7+	810405	413	0.8+	0.8-	810502	413	1.6+	0.8-
810302	413	0.6-	0.3+	810406	413	1.3-	0.3-	861008	801	2.2+	1.3-
810303	413	1.3-	0.5+	810406	413	1.4+	0.6-	861101	801	1.6-	0.0
810303	413	0.5-	0.7+	810407	413	2.2-	0.3+				

(3537)* 1982 VT = 1985 JE1

Discovered 1982 Nov. 15 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	115.69562	(1950.0)		P	Q
n	0.23680093	Peri.	277.87512	+0.76081130	+0.62323778
a	2.5875006	Node	43.81308	-0.44295068	+0.70246443
e	0.1581806	Incl.	15.15101	-0.47430040	+0.34368355
P	4.16	H	13.2	G 0.25	

Residuals in seconds of arc

821020	095	0.0	1.5-	850511	675	1.2-	4.8-	861008	801	1.2+	0.6-
821025	095	0.2+	2.9+	850511	675	1.1-	1.1-	861029	801	0.9+	0.2+
821109	095	0.7+	0.2-	850514	675	0.5-	1.2+	861205	801	0.5-	1.8+
821115	688	1.1+	1.4-	861007	688	0.3-	0.8-				
821115	688	1.1+	4.9-	861007	688	1.7-	0.1-				

(3538)* 6548 P-L = 1983 AX

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels. The identification is by E. Bowell (MPC 7663).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	43.57484	(1950.0)		P	Q
n	0.22934528	Peri.	263.26904	+0.28627927	-0.95806260
a	2.6432780	Node	170.06801	+0.90549189	+0.26620397
e	0.2654046	Incl.	4.20886	+0.31325487	+0.10607313
P	4.30	H	13.5	G 0.25	

Residuals in seconds of arc

600924	675	0.3-	0.1-	830107	046	0.0	1.3-	830112	675	0.7+	1.3+
600926	675	0.4+	0.1-	830107	046	2.9-	0.1-	830112	046	3.0-	1.1+
600927	675	0.4+	0.3+	830110	675	0.9+	0.1-	830112	046	2.1-	0.4+
600928	675	0.4+	0.0	830110	675	0.2-	1.1+	830121	688	2.0+	0.4-
601017	675	0.5-	0.6-	830111	675	1.2-	0.5+	830121	688	1.7+	0.7-
601022	675	1.3-	1.9-	830112	688	1.4+	2.4-	861008	801	1.0-	1.5+
601024	675	1.2+	0.3-	830112	688	2.0+	2.2-	861031	801	1.1-	0.7+
601026	675	1.5+	0.0	830112	675	0.3+	0.6+	861130	801	1.4+	0.5+

1976 WD = 1976 YV3 = 1977 AT = 1979 SP10 = 1986 XK1

The triple designation 1976 WD = 1976 YV3 = 1977 AT is by H. Oishi (JAM 1999). The identifications 1976 WD = 1979 SP10 and 1976 WD = 1986 XK1 are by L. D. Schmadel and by E. Bowell, respectively.

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

M	149.77826	(1950.0)		P	Q
n	0.29018095	Peri.	75.93408	+0.90683678	+0.39485756
a	2.2595623	Node	260.64085	-0.42076907	+0.82778101
e	0.0659272	Incl.	8.59305	-0.02450376	+0.39858010
P	3.40	H	13.0	G 0.25	

Residuals in seconds of arc

761120	801	0.8-	0.3+	770120	095	2.0+	0.7-	861204	688	0.7-	1.6-
761216	095	2.1-	1.3+	790929	095	0.1-	0.9+				
770113	095	1.3+	0.8+	861204	688	0.7+	0.3-				

1978 PO3 = 1986 UN

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

M	150.34567	(1950.0)		P	Q
n	0.25825269	Peri.	272.77005	+0.47975384	+0.87737398
a	2.4421575	Node	25.90309	-0.79831511	+0.43987738
e	0.1326182	Incl.	0.93818	-0.36404566	+0.19163194
P	3.82	H	13.5	G 0.25	

Residuals in seconds of arc

780808	095	0.5+	1.2+	861028	046	0.5-	1.8-	861107	046	0.9-	1.3-
780903	095	2.8-	0.3-	861028	046	0.8-	0.9-	861107	046	2.9+	1.5-
780906	809	1.7+	1.1-	861103	046	0.8-	0.7+	861109	046	1.1+	1.7+
780928	095	0.8+	0.4+	861103	046	0.6-	1.8+	861109	046	0.5-	1.2+

1979 SK = 1986 VA1

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

M	111.51007	(1950.0)		P	Q
n	0.28932663	Peri.	53.89215	+0.98740394	+0.15102749
a	2.2640081	Node	297.37857	-0.15678909	+0.89400598
e	0.2001924	Incl.	3.04440	-0.02122813	+0.42183409
P	3.41	H	15.0	G 0.25	

Residuals in seconds of arc

790919 046	1.9+	0.1+	790926 046	1.0+	0.1-	861103 046	0.7+	0.2+
790919 046	1.0-	1.6+	790927 046	0.3-	2.7-	861104 046	0.7-	1.0-
790925 046	0.5-	0.4+	790927 046	0.4-	1.0-	861107 046	1.4-	0.3+
790925 046	0.5+	1.0+	791019 046	0.8-	0.7+	861107 046	0.6+	0.5+
790926 046	1.0-	0.9-	791019 046	0.4+	1.2+	861109 046	0.9+	0.3-

1985 CL = 1969 EN1

The identification is by W. Landgraf and L. D. Schmadel, who found it independently.

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

M 30.04633		(1950.0)		P	Q
n 0.36644903	Peri.	69.11328	+0.42668014		-0.90402461
a 1.9340211	Node	355.37173	+0.66142279		+0.33163259
e 0.1006392	Incl.	18.90594	+0.61681760		+0.26973938
P 2.69	H	13.0	G	0.25	

Residuals in seconds of arc

690313 095	2.6-	3.0-	850318 675	0.2-	1.3+	861007 474	0.0	1.8-
850212 675	1.9-	0.9+	850320 675	0.3+	0.4-	861031 474	0.0	1.3-
850216 675	1.1-	1.7-	850323 675	1.1+	0.8+	861031 474	2.1+	0.5+
850222 675	1.1+	0.2-	850325 675	1.6+	0.2-			
850226 675	1.0-	0.3+	850417 801	2.4+	0.9+			

1985 DX = 1982 KC

The identification is by C. M. Bardwell and W. Landgraf, who found it independently.

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

M 241.97201		(1950.0)		P	Q
n 0.29203013	Peri.	287.48801	-0.98155311		-0.15893225
a 2.2500136	Node	243.47750	+0.18637159		-0.91938498
e 0.1082411	Incl.	6.82130	-0.04265109		-0.35982189
P 3.38	H	13.0	G	0.25	

Residuals in seconds of arc

820521 688	0.2-	0.8-	850302 474	0.1+	0.6-	850424 474	0.9-	1.0+
820521 688	0.1-	0.5-	850310 474	0.1+	0.6+	850424 474	0.8+	0.3+
850220 474	3.8-	0.2+	850310 474	0.0	0.5-	850525 801	0.3-	1.0+
850220 474	(2.2+	8.0-)	850320 474	1.6+	0.5+	860713 474	0.3-	0.1+
850301 474	0.0	1.2-	850320 474	1.4+	0.4+	860713 474	0.9-	0.1-
850301 474	0.1+	1.8-	850325 474	0.8+	0.8+	860909 474	0.7+	0.2-
850302 474	0.4-	1.0-	850325 474	1.0+	1.3+	860909 474	0.7+	0.0

1985 FD3 = 1982 QU

The identification is by W. Landgraf.

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

M 146.01680		(1950.0)		P	Q
n 0.23430330	Peri.	260.32453	-0.44136766		+0.88359780
a 2.6058614	Node	340.94551	-0.51221150		-0.39116312
e 0.1337390	Incl.	28.61724	-0.73677267		-0.25738366
P 4.21	H	13.0	G	0.25	

Residuals in seconds of arc

820818 801	0.7-	0.6+	850526 675	0.1-	0.6-	860713 474	0.1-	0.2-
850326 675	0.1-	0.3+	850526 675	0.1+	0.7-	860909 474	0.3+	0.4-
850411 675	0.0	2.1+	850527 675	0.0	0.2-	861030 474	0.8-	0.3+
850415 675	0.8+	0.3-	850527 675	0.1-	0.2-	861030 474	0.5+	0.6+
850526 675	0.2+	0.5-	860713 474	0.0	0.1-			

1986 RA
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	51.81357		(1950.0)		P		Q
n	0.16097636	Peri.	161.19177		+0.93045467		+0.36605613
a	3.3467863	Node	177.17910		-0.36383736		+0.92821721
e	0.6318191	Incl.	19.01100		-0.04331831		+0.06645091
P	6.12	H	16.0	G	0.25		

From 68 observations 1986 Aug. 11-Dec. 5, mean residual 1".3.

1986 RB
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	71.87624		(1950.0)		P		Q
n	0.27490353	Peri.	36.70151		+0.95839550		-0.21693914
a	2.3425157	Node	333.90370		+0.02262750		+0.70560991
e	0.2584880	Incl.	24.94428		+0.28454535		+0.67457547
P	3.59	H	12.5	G	0.25		

From 18 observations 1986 Aug. 9-Nov. 28, mean residual 1".6.

1986 WA
Epoch 1986 Nov. 26.0 ET = JDE 2446760.5

M	36.27505		(1950.0)		P		Q
n	0.53454238	Peri.	49.36223		+0.17112559		+0.89967478
a	1.5036541	Node	235.16177		-0.98499360		+0.14693670
e	0.7010304	Incl.	29.29630		-0.02244197		+0.41108990
P	1.84	H	16.0	G	0.25		

From 11 observations 1986 Nov. 30-Dec. 21.

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ORBITAL ELEMENTS BY L. D. SCHMADEL, ASTRONOMISCHES RECHEN-INSTITUT.

(1179) Mally
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	65.37235		(1950.0)		P		Q
n	0.23306112	Peri.	232.46536		-0.51105303		+0.85935706
a	2.6151072	Node	6.87396		-0.73290140		-0.42461006
e	0.1756372	Incl.	8.73326		-0.44908834		-0.28497673
P	4.23	H	13.9	G	0.25		

From 20 observations at 7 oppositions 1931-1986, mean residual 0".8.

(3539)* 1967 GF1 = 1950 JA = 1955 RH = 1981 QK2
Discovered 1967 Apr. 11 by F. Borngen at Tautenburg. The identifications are by S. Nakano (MPC 10840).
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	184.35247		(1950.0)		P		Q
n	0.22752264	Peri.	127.59325		-0.00938304		+0.98887620
a	2.6573758	Node	141.06171		-0.97564988		+0.02347847
e	0.1556533	Incl.	13.66209		-0.21913300		-0.14687624
P	4.33	H	13.1	G	0.25		

Residuals in seconds of arc

500513	012	2.7+	2.0-	670411	033	1.9-	0.6+	860910	033	0.7-	0.8-
500514	024	3.0-	1.6+	670411	033	0.7+	0.3-	860910	033	0.3+	0.4-
550913	760	0.7+	3.7+	670415	033	1.2-	0.4+	861010	033	0.1+	0.3+
550913	760	1.0+	0.3+	670415	033	1.3+	1.4-	861010	033	0.5+	0.5-
550921	760	2.4-	0.6+	810830	688	0.7+	0.5+	861107	033	0.5-	0.3-
670411	033	1.2+	0.4-	810830	688	0.3+	5.3-	861107	033	0.6+	0.8-
670411	033	0.3-	0.4-								

(3540)* 1973 UF5 = 1978 GJ2 = 1985 VO1

Discovered 1973 Oct. 27 by F. Borngen at Tautenburg. The identifications 1973 UF5 = 1985 VO1 and 1973 UF5 = 1978 GJ2 are by E. Bowell and by B. G. Marsden, respectively (MPC 10380).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 316.04811	(1950.0)		P	Q
n 0.08301338	Peri.	114.19079	-0.73271953	-0.65839014
a 5.2043997	Node	25.73322	+0.38491436	-0.60959380
n 0.1186112	Incl.	23.36285	+0.56121567	-0.44149499
P 11.87	H 9.0		G 0.25	

Residuals in seconds of arc

731027	033	0.5-	0.2+	731103	033	0.2-	0.3+	861010	033	0.2+	0.0
731027	033	1.2-	0.2+	780411	095	1.1+	1.1+	861011	033	0.1-	0.3-
731028	033	0.3+	0.3+	851107	688	0.2+	0.1-	861027	033	0.7+	0.1-
731031	033	0.3-	0.2+	851107	688	0.1+	0.1-	861027	033	0.9+	0.4+
731101	033	0.2+	0.3+	860909	033	1.0-	0.0	861107	033	0.2-	0.2-
731102	033	0.1-	0.2+	860909	033	0.5-	0.2-	861107	033	0.0	0.3-

* * * * *

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

The identifications are by E. Goffin unless otherwise stated.

(43) Ariadne

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 243.02147	(1950.0)		P	Q
n 0.30139652	Peri.	15.44709	+0.17048032	+0.98351975
a 2.2031491	Node	264.39690	-0.91029730	+0.13380632
e 0.1682767	Incl.	3.46851	-0.37722047	+0.12159262
P 3.27	H 8.01		G 0.25	

From 200 observations at 35 oppositions 1904-1985, mean residual 0".8.

(63) Ausonia

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 297.67050	(1950.0)		P	Q
n 0.26580092	Peri.	294.03236	+0.03102042	+0.99878502
a 2.3956961	Node	337.64410	-0.87652451	+0.00877218
e 0.1257058	Incl.	5.77781	-0.48035665	+0.04849250
P 3.71	H 7.52		G 0.25	

From 248 observations at 32 oppositions 1909-1985, mean residual 0".7.

(68) Leto

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 317.30805	(1950.0)		P	Q
n 0.21243542	Peri.	304.60357	+0.97453127	+0.20259904
a 2.7817500	Node	43.92975	-0.13175614	+0.86419450
e 0.1852481	Incl.	7.96520	-0.18146385	+0.46056650
P 4.64	H 6.84		G 0.11	

From 169 observations at 33 oppositions 1905-1985, mean residual 0".7.

(87) Sylvia

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 127.79874	(1950.0)		P	Q
n 0.15143727	Peri.	273.32025	+0.95493158	+0.23565454
a 3.4858942	Node	73.10818	-0.13558776	+0.88719629
e 0.0830348	Incl.	10.87207	-0.26404855	+0.39667327
P 6.51	H 6.95		G 0.28	

From 201 observations at 30 oppositions 1920-1984, mean residual 0".7.

(93) Minerva
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	136.92996		(1950.0)		P	Q
n	0.21570580	Peri.	274.10150	+0.13931293		+0.99019524
a	2.7535619	Node	3.95093	-0.83911053		+0.12354597
e	0.1415299	Incl.	8.56439	-0.52581881		+0.06519027
P	4.57	H	7.73	G	0.15	

From 137 observations at 34 oppositions 1913-1986, mean residual 0".8.

(150) Nuwa
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	266.52437		(1950.0)		P	Q
n	0.19129122	Peri.	153.44837	+0.99982922		+0.00758645
a	2.9831335	Node	206.13348	-0.01323033		+0.93049001
e	0.1246745	Incl.	2.19259	+0.01290290		+0.36623871
P	5.15	H	8.32	G	0.15	

From 135 observations at 31 oppositions 1906-1986, mean residual 0".8.

(230) Athamantis
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	155.30752		(1950.0)		P	Q
n	0.26797615	Peri.	138.93629	+0.94161474		-0.30563118
a	2.3827142	Node	239.39012	+0.24973558		+0.91536380
e	0.0607250	Incl.	9.44601	+0.22581812		+0.26210436
P	3.68	H	7.47	G	0.35	

From 277 observations at 34 oppositions 1901-1985, mean residual 0".6.

(298) Baptistina
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	22.67058		(1950.0)		P	Q
n	0.28933857	Peri.	134.81724	-0.79425135		-0.60740655
a	2.2639413	Node	7.82213	+0.52194676		-0.69464803
e	0.0958109	Incl.	6.28634	+0.31102472		-0.38538474
P	3.41	H	11.24	G	0.25	

From 42 observations at 18 oppositions 1892-1984, mean residual 1".0.

(310) Margarita
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	22.39433		(1950.0)		P	Q
n	0.21466265	Peri.	323.57563	-0.97431394		+0.22127222
a	2.7624752	Node	229.26281	-0.19135278		-0.91144662
e	0.1149881	Incl.	3.16575	-0.11872850		-0.34684818
P	4.59	H	10.47	G	0.15	

From 65 observations at 23 oppositions 1921-1985, mean residual 1".0.

(341) California
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	53.28608		(1950.0)		P	Q
n	0.30211591	Peri.	293.15058	+0.78439007		+0.61845184
a	2.1996504	Node	28.71349	-0.52681321		+0.70462009
e	0.1945001	Incl.	5.66561	-0.32741420		+0.34789058
P	3.26	H	10.96	G	0.25	

From 22 observations at 12 oppositions 1892-1982, mean residual 1".1.

(354) Eleonora
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	51.33969		(1950.0)		P		Q
n	0.21063192	Peri.	5.78788		-0.82422263		-0.52865105
a	2.7976062	Node	140.05923		+0.50600558		-0.84846605
e	0.1160354	Incl.	18.42784		+0.25419559		-0.02516804
P	4.68	H	6.32	G	0.32		

From 341 observations at 40 oppositions 1913-1985, mean residual 0".7.

(355) Gabriella
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	148.51865		(1950.0)		P		Q
n	0.24365893	Peri.	104.20579		-0.10383517		-0.99453683
a	2.5387182	Node	351.73196		+0.88133624		-0.08701411
e	0.1045984	Incl.	4.27211		+0.46093892		-0.05766318
P	4.05	H	10.49	G	0.15		

From 101 observations at 23 oppositions 1911-1986, mean residual 0".9.

(471) Papagena
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	79.02712		(1950.0)		P		Q
n	0.20059092	Peri.	313.20434		+0.77335266		-0.57986060
a	2.8902042	Node	83.87091		+0.63026072		+0.65949208
e	0.2296428	Incl.	14.93772		+0.06853526		+0.47836375
P	4.91	H	6.61	G	0.29		

From 183 observations at 31 oppositions 1901-1985, mean residual 0".8.

(868) Lova
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	84.93209		(1950.0)		P		Q
n	0.22164962	Peri.	285.81518		+0.74551604		-0.66015183
a	2.7041123	Node	115.59347		+0.64375614		+0.67762441
e	0.1466116	Incl.	5.83449		+0.17258003		+0.32407518
P	4.45	H	10.17	G	0.15		

From 66 observations at 25 oppositions 1923-1984, mean residual 0".9.

1985 RY3 = 1974 SB2 = 1979 OC15
The identifications were found independently by T. Kobayashi.
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	134.60985		(1950.0)		P		Q
n	0.17603653	Peri.	172.07296		+0.93215305		+0.36201450
a	3.1530804	Node	166.69828		-0.33358979		+0.86518444
e	0.1837931	Incl.	1.49845		-0.14074285		+0.34698903
P	5.60	H	11.8	G	0.25		

Residuals in seconds of arc

740919	095	0.2-	0.7+	850914	809	0.1+	0.0	850918	809	0.5+	0.4+
790721	095	0.5-	0.1-	850914	809	0.2+	0.0	850920	809	1.6-	0.2+
790730	095	0.4+	0.5+	850915	809	0.8+	0.3+	850920	809	1.4-	0.4+
850908	809	0.2-	1.0-	850915	809	1.0+	0.2+	850920	809	1.1-	0.4+
850908	809	0.3-	1.1-	850915	809	1.1+	0.2+	850921	809	0.3+	0.2+
850908	809	0.6-	1.1-	850916	809	0.7+	0.2+	850921	809	0.3+	0.2+
850911	809	0.6-	0.3-	850916	809	1.1+	0.0	850921	809	0.3+	0.2+
850911	809	0.4-	0.1-	850916	809	1.1+	0.0	850922	809	1.0-	0.7-
850911	809	0.3-	0.1-	850918	809	0.3+	0.3+	850922	809	0.7-	0.3-
850914	809	0.1+	0.1+	850918	809	0.4+	0.3+				

ORBITAL ELEMENTS BY T. KOBAYASHI, TOKYO.

The identifications are by T. Kobayashi unless otherwise stated.

Comet Hartley (1985 XIV)
Epoch 1985 Sept. 12.0 ET = JDE 2446320.5
T 1985 Sept. 28.38395 ET

		(1950.0)	P	Q
q 4.0001593				
z +0.0001276	Peri.	255.27532	+0.07836322	-0.34133867
+/-0.0000091	Node	249.50984	+0.60686098	-0.72908867
e 0.9994894	Incl.	89.32900	-0.79093550	-0.59322645

From 35 observations 1984 Nov. 17-1986 May 29, mean residual 1".2.

Comet Hartley-Good (1985 XVII)
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5
T 1985 Dec. 9.11640 ET

		(1950.0)	P	Q
q 0.6945825				
z +0.0002479	Peri.	87.03171	+0.05876166	-0.99748805
+/-0.0000117	Node	357.69749	-0.23294325	+0.02482934
e 0.9998278	Incl.	79.92285	+0.97071340	+0.06634078

From 121 observations 1985 Sept. 13-1986 Mar. 19, mean residual 1".4.
Nongravitational parameters A1 = +1.55, A2 = -0.1795.

Comet Thiele (1985 XIX)
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5
T 1985 Dec. 19.21109 ET

		(1950.0)	P	Q
q 1.3171396				
z +0.0126813	Peri.	52.99169	+0.84540523	-0.12841258
+/-0.0000045	Node	52.30782	-0.10958514	-0.99172081
e 0.9832970	Incl.	139.06565	+0.52276294	-0.00022418

From 89 observations 1985 Oct. 9-1986 July 30, mean residual 1".3.

Periodic Comet Schwassmann-Wachmann 1
Epoch 1989 Nov. 10.0 ET = JDE 2447840.5
T 1989 Oct. 26.72546 ET

		(1950.0)	P	Q
q 5.7717586				
n 0.06637080	Peri.	49.89710	+0.99181340	-0.04161866
a 6.0415911	Node	312.12285	-0.02347360	+0.86986485
e 0.0446625	Incl.	9.36734	+0.12551958	+0.49153131

P 14.85
From 430 observations 1957-1986, mean residual 1".4.

(3541)* 1984 ML = 1984 FV1 = 1926 GH = 1949 CL = 1953 FD = 1980 DM5 = 1980 ED1 = 1980 FF10 = 1981 QT1 = 1986 YC

Discovered 1984 June 18 at Perth. The double designation 1984 ML = 1984 FV1 and identifications 1984 ML = 1926 GH = 1949 CL = 1953 FD = 1980 DM5 = 1980 ED1 = 1980 FF10 = 1981 QT1 were also independently found by F. L. Bowman and S. Nakano, respectively. The identifications 1986 YC = 1949 CL = 1980 DM5 = 1980 ED1 = 1980 FF10 = 1981 QT1 = 1984 ML were also found independently by T. Urata. The double designation 1980 DM5 = 1980 FF10 was also suggested by N. S. Chernykh.
Epoch 1987 July 24.0 ET = JDE 2447000.5

		(1950.0)	P	Q
M 289.80458				
n 0.25569197	Peri.	131.02762	-0.73165772	+0.67807393
a 2.4584308	Node	91.79122	-0.64451863	-0.65471419
e 0.1464245	Incl.	4.01297	-0.22197460	-0.33401357

P 3.85 H 12.5 G 0.25

Residuals in seconds of arc

260406	024(13.6- | 2.4+)		810830	688	0.2+	0.6-		861224	887	1.3-	1.1-
260412	024(12.4+ | 5.9-)		840329	095	2.5+	1.2-		861226	887	2.2-	0.2+
490204	012	0.5-	0.8-	840404	095	1.9+	1.3-		861226	887	2.0+	0.5+
530317	094(51.9+ | 18.0+)X		840618	323	3.9-	1.9+		870101	887	1.2+	1.6+
530319	094 (6.2- | 9.8-)X		840619	323	2.7-	0.1+		870101	887	1.0-	0.2+
800221	095	2.2+	0.2+	840627	323	1.6-	0.0		870103	887	1.4+	0.6-
800315	095	0.8+	3.4-	861222	887	0.4-	1.1-		870103	887	1.9-	0.6+
800316	095	2.3-	2.3+	861222	887	1.0-	1.3-					
810830	688	1.5+	1.9-	861224	887	2.2+	1.0-					

1981 TL4 = 1966 PC = 1984 OJ

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	291.06709		(1950.0)	P	Q
n	0.27215752	Peri.	33.36675	+0.65958105	+0.74648719
a	2.3582462	Node	278.06494	-0.70752946	+0.57720010
e	0.1267300	Incl.	5.08779	-0.25368267	+0.33105425
P	3.62	H	13.0	G 0.25	

Residuals in seconds of arc

660813	095	0.3+	0.7-	811024	095	1.3-	0.9+		840731	046	0.3-	0.1-
811008	095	0.4+	0.7-	840730	046	0.4-	0.0		840731	046	0.4-	0.2+
811022	095	0.9+	0.1+	840730	046	0.8+	0.7+					

1985 RJ4 = 1974 SD1

The identification was found independently by C. M. Bardwell.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	132.75304		(1950.0)	P	Q
n	0.17952950	Peri.	309.21054	+0.95492560	+0.29603859
a	3.1120424	Node	33.58603	-0.25869549	+0.86607011
e	0.2125972	Incl.	2.26565	-0.14558072	+0.40284454
P	5.49	H	13.0	G 0.25	

Residuals in seconds of arc

740919	095	1.9-	0.5-	850916	809	0.4+	0.2+		850920	809	0.3-	0.6-
740921	095	0.9+	0.3-	850916	809	1.1+	0.3+		850920	809	0.2-	0.4-
740923	095	1.4+	0.1+	850918	809	0.7-	0.1-		850920	809	0.1-	0.4-
850911	809	1.0-	0.5-	850918	809	0.6-	0.1-		850920	809	0.1+	0.4-
850911	809	0.9-	0.6-	850918	809	0.6-	0.2-		850921	809	0.2+	0.1-
850911	809	1.0-	0.6-	850919	809	0.7-	0.5+		850921	809	0.2+	0.2-
850914	809	0.7+	0.2+	850919	809	0.5-	0.5+		850921	809	0.3+	0.2-
850914	809	1.0+	0.3+	850919	809	0.3-	0.4+		850921	809	0.3+	0.2-
850914	809	1.3+	0.5+	850919	809	0.1-	0.4+		850921	809	0.5+	0.2-
850915	809	1.0+	1.0+	850919	809	0.1+	0.4+		850921	809	0.6+	0.3-
850915	809	0.7+	0.8+	850919	809	0.3+	0.5+		850922	809	0.4-	0.1+
850915	809	0.3+	0.6+	850920	809	0.7-	0.4-		850922	809	0.5-	0.4-
850916	809	0.5-	0.0	850920	809	0.5-	0.4-					

1985 RK4 = 1979 JL = 1981 WZ6

The identification 1985 RK4 = 1979 JL was found independently by E. Goffin.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	104.15435		(1950.0)	P	Q
n	0.21545742	Peri.	40.80100	+0.62431955	-0.78116675
a	2.7556776	Node	10.56721	+0.71395173	+0.56960952
e	0.1041639	Incl.	0.59386	+0.31701424	+0.25558464
P	4.57	H	13.0	G 0.25	

Residuals in seconds of arc

790503	323	1.2+	0.1-	850915	809	0.9-	0.7-	850920	809	1.2-	0.4-
790504	323	1.1-	0.4+	850915	809	0.8-	0.7-	850920	809	1.1-	0.7-
811124	095	0.0	0.2+	850915	809	0.6-	0.6-	850920	809	0.7-	0.5-
850911	809	0.1+	0.0	850916	809	0.0	0.3-	850921	809	1.6+	1.0+
850911	809	0.1+	0.1-	850916	809	0.2+	0.3-	850921	809	1.7+	1.0+
850911	809	0.2+	0.1-	850916	809	0.4+	0.3-	850921	809	1.6+	1.0+
850914	809	0.1+	0.4+	850918	809	0.4-	0.4+	850922	809	0.4-	0.2-
850914	809	0.3+	0.5+	850918	809	0.3-	0.3+	850922	809	0.2-	0.2-
850914	809	0.4+	0.5+	850918	809	0.1-	0.4+				

1986 WC = 1951 TK = 1977 GZ = 1980 TS14
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	337.84150		(1950.0)	P	Q
n	0.17459687	Peri.	273.66876	-0.70795653	-0.70262152
a	3.1703831	Node	221.71341	+0.68312160	-0.65552233
e	0.0208612	Incl.	6.17356	+0.17928313	-0.27679141
P	5.65	H	11.5	G 0.25	

Residuals in seconds of arc

511003	024	0.4-	3.7+	801015	095	(2.7+	9.1-)	861207	881	0.4-	1.9+
511003	024	1.5+	0.8+	801017	095	0.5+	6.9-	861209	888	2.1+	0.9-
511004	024	1.1-	4.1-	861122	881	2.6+	0.9+ Y	861209	888	1.0+	0.8-
770410	381	0.1-	1.4-	861122	881	2.9-	1.9+ Y	861226	881	2.6-	0.4+
770410	381	1.1-	1.7-	861207	881	1.2+	0.5+	861226	881	0.8-	0.9+

1986 WE = 1938 GD
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	9.13856		(1950.0)	P	Q
n	0.25851740	Peri.	41.18388	-0.77441747	-0.62318003
a	2.4404853	Node	99.93184	+0.54751806	-0.74660943
e	0.1898456	Incl.	6.36487	+0.31701981	-0.23285406
P	3.81	H	13.0	G 0.25	

Residuals in seconds of arc

380405	062	3.4-	1.5+	861129	881	0.4-	0.4-	861209	888	3.0+	0.2-
380405	062	3.4+	0.4-	861129	881	1.4-	0.3-	861209	888	1.7+	0.1-
380405	062	0.5-	0.2-	861205	881	0.0	0.0	861226	881	1.6-	1.7+
380406	062	0.6+	0.8-	861205	881	0.5-	0.2+	861226	881	0.4+	0.9-
861122	881	1.8-	0.7+ Y	861208	888	0.2-	0.4-				
861122	881	1.2-	1.2+ Y	861208	888	1.9+	1.3-				

1986 WM = 1934 TG = 1957 UM = 1979 OO2 = 1980 UU
The key identification 1986 WM = 1979 OO2 is by T. Urata.
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	75.02956		(1950.0)	P	Q
n	0.17110955	Peri.	233.72161	+0.90519016	-0.42470479
a	3.2133144	Node	151.40033	+0.39986473	+0.83826501
e	0.1900827	Incl.	1.91779	+0.14401035	+0.34196142
P	5.76	H	12.0	G 0.25	

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

341005	094	(0.03+	0.01-)X	790727	675	0.4+	1.1+	861201	372	0.3-	1.8+
571030	024	1.4+	4.1-	801017	095	0.5-	1.8+	861204	372	1.9-	0.3-
790724	675	0.0	0.6+	861130	372	0.4-	0.6+	861207	372	0.4+	0.5+
790724	413	0.8-	1.3+	861130	372	0.5+	0.1+				
790725	675	0.0	0.1-	861201	372	1.8+	1.5+				

ORBITAL ELEMENTS BY H. OISHI, NIIZA, JAPAN.

The following orbital elements are taken in part from JAM 2031 and 2033-2036. The identifications are by H. Oishi unless otherwise stated.

(3542)* 1964 TN2 = 1981 SU7 = 1981 WS5

Discovered 1964 Oct. 9 at the Purple Mountain Observatory. The identifications are by T. Furuta (MPC 10294).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	61.22925		(1950.0)		P		Q
n	0.17462330	Peri.	69.85106		+0.90093696		+0.41061365
a	3.1700633	Node	265.69039		-0.43179448		+0.81604812
e	0.0952290	Incl.	8.09338		-0.04319870		+0.40677007
P	5.64	H	11.6	G	0.25		

Residuals in seconds of arc

641009	330	1.7+	2.1-	811002	095	0.1+	0.6-	861004	688	2.2- 0.1+
641030	330	2.2+	2.1+	811124	095	1.9-	3.1+	861004	688	1.6+ 0.2-
641111	330	3.1-	3.5-	860809	801	1.2-	0.3-			
810929	095	1.1+	0.4+	860901	801	1.4+	1.0+			

(3543)* 1964 VA3 = 1975 VF3 = 1980 PK = 1980 RJ3 = 1981 UE6 = 1981 UE18

Discovered 1964 Nov. 11 at the Purple Mountain Observatory.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	122.28324		(1950.0)		P		Q
n	0.17328581	Peri.	113.36299		+0.09835618		+0.99513578
a	3.1863542	Node	162.27885		-0.91952381		+0.09301414
e	0.1647326	Incl.	1.04549		-0.38052862		+0.03245232
P	5.69	H	11.4	G	0.25		

Residuals in seconds of arc

641111	330	2.5+	1.9-	751109	381	0.1+	0.6-	811030	381	0.7- 0.1+
641127	330	0.7+	0.1+	751109	381	(18.8-	1.5-)	811030	381	1.2- 0.4-
641203	330	(5.9-	6.4-)	800808	688	0.5-	1.7-	860901	801	1.2+ 0.1-
751102	095	2.4-	1.4-	800904	095	0.9-	0.9+	861003	801	2.5+ 1.0+
751107	095	0.6-	2.1+	811024	095	0.8-	1.3+			

(3544)* 1977 RD4 = 1936 QJ1 = 1943 GM = 1947 LO = 1951 RW1 = 1951 SJ = 1980 FM11 = 1981 RN5

Discovered 1977 Sept. 7 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	259.74421		(1950.0)		P		Q
n	0.26463333	Peri.	147.72928		+0.42910425		+0.89943134
a	2.4027377	Node	147.46331		-0.85801512		+0.43461129
e	0.2176030	Incl.	8.87989		-0.28227575		+0.04621990
P	3.72	H	12.4	G	0.25		

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

360812	078	(0.06-	0.01-)X	510902	711	2.4+	0.8+ Y	800316	095	3.4+ 1.2+
430406	062	1.3-	0.1+	510930	760	3.6-	0.2-	810909	095	0.5+ 1.4-
430406	062	1.5-	2.1+	510930	760	3.2+	0.5-	840503	095	1.9- 3.4-
430408	062	1.2-	3.1+	770907	095	2.0+	0.2+	840519	095	1.6+ 0.5-
470613	012	1.7+	1.0-	770912	095	3.3-	0.7+	840530	095	0.6+ 0.1-
510902	711	0.3+	1.2+ Y	770918	095	2.9-	1.2+			

(3545)* 1981 WK2 = 1981 SO1 = 1970 JJ = 1970 LN = 1972 XG2 = 1976 SB11 = 1979 FW1

Discovered 1981 Nov. 20 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	122.86431	(1950.0)		P	Q
n	0.20292663	Peri.	255.73309	+0.72723688	+0.68487980
a	2.8679838	Node	61.01785	-0.60798198	+0.67348786
e	0.0584444	Incl.	2.97857	-0.31856620	+0.27812544
P	4.86	H	12.2	G 0.25	

Residuals in seconds of arc

700514	808	0.4+	0.6+	810926	688	0.9-	1.8-	861007	801	0.3+	1.6+
700604	805	0.2+	0.1+	811026	095	(0.6+	5.1+)	861013	054	0.2-	2.4+
721201	095	0.1+	0.3+	811027	095	0.3+	0.8+	861029	801	0.1+	0.3+
760928	095	(6.2+	0.7+)	811102	688	0.3-	1.0-	861029	054	(12.3+	1.6+)
761025	095	1.7+	2.1-	811102	688	0.1-	3.4-	861102	054	1.1-	2.3+
790323	095	1.9-	3.0-	811120	688	0.2-	1.1-				
810926	688	1.8+	0.0	811120	688	0.1+	0.9-				

(3546)* 1983 SC = 1957 WJ = 1977 FH2 = 1979 SX10 = 1979 VC1

Discovered 1983 Sept. 28 at the Bulgarian National Observatory.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	82.93399	(1950.0)		P	Q
n	0.22301484	Peri.	247.95655	-0.72880918	+0.68276307
a	2.6930653	Node	335.01004	-0.57438489	-0.65072001
e	0.0256211	Incl.	7.02792	-0.37271863	-0.33226205
P	4.42	H	12.7	G 0.25	

Residuals in seconds of arc

571123	760	0.2+	2.1+	830928	071	0.0	0.2+	830930	071	0.8-	0.1+
571123	760	1.0-	1.0+	830928	071	1.0+	0.4+	830930	071	1.4+	0.4+
770326	095	0.4-	1.1+	830929	071	1.9-	0.2-	830930	071	2.9+	1.5+
790929	095	1.6+	1.4-	830929	071	3.2-	0.0	831005	071	2.8-	0.1-
791114	095	0.4-	1.7-	830929	071	0.2-	0.9+	831005	071	1.0+	0.7+
830910	071	2.7-	1.2-	830929	071	0.6-	0.2-	831028	071	0.5-	0.7+
830911	071	1.5+	0.4-	830929	071	3.1-	1.6-	831028	071	3.7+	1.0-
830911	675	(15.1-	3.2-)	830929	071	0.9+	1.2-	831028	071	2.1-	1.4+
830912	675	2.8+	0.9+	830930	071	0.5+	0.4+	860409	688	2.0-	0.4+
830913	675	3.0+	1.4+	830930	071	3.0+	1.2+	860409	688	1.3+	0.0
830928	071	2.2-	0.3-	830930	071	0.4-	1.0-	860512	801	2.2+	0.3+
830928	071	2.4-	0.7-	830930	071	0.4-	0.0				

1979 QZ1 = 1982 DP6 = 1985 RS3

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

M	49.17270	(1950.0)		P	Q
n	0.17926510	Peri.	84.21925	-0.00663936	-0.99997734
a	3.1151078	Node	6.16149	+0.91326738	-0.00651652
e	0.1446182	Incl.	0.59353	+0.40730653	-0.00168888
P	5.50	H	12.5	G 0.25	

Residuals in seconds of arc

790822	809	0.1+	0.0	850908	809	0.2+	0.8-	850916	809	0.1-	0.4+
790822	809	0.6+	0.6+	850908	809	0.3+	0.7-	850918	809	0.0	0.3+
790822	809	0.3-	0.4+	850908	809	0.5+	0.7-	850918	809	0.3+	0.4+
790823	809	0.5-	0.8-	850911	809	0.2-	0.1-	850918	809	0.5+	0.5+
790823	809	0.8-	0.4-	850911	809	0.0	0.1-	850920	809	0.7-	0.3-
790826	809	0.3-	0.5+	850911	809	0.2+	0.0	850920	809	0.7-	0.4-
790826	809	0.1+	0.4-	850914	809	0.2+	0.5+	850920	809	0.7-	0.2-
790826	809	0.2+	0.3-	850914	809	0.1+	0.5+	850921	809	0.8-	1.4+
790830	809	0.9+	0.4+	850914	809	0.5+	0.6+	850921	809	0.9-	1.4+
790830	809	(0.4+	10.1-)	850915	809	0.3+	0.9-	850921	809	0.8-	1.5+
820227	010	0.1-	0.3-	850915	809	0.5+	1.0-	850922	809	0.0	0.3-
850907	809	0.6+	0.7-	850915	809	0.5+	0.9-	850922	809	0.1+	0.3-
850907	809	0.4+	0.7-	850916	809	0.5-	0.4+				
850907	809	0.6+	0.7-	850916	809	0.2-	0.4+				

1982 TU = 1982 UK9 = 1982 VZ9 = 1951 YG2 = 1971 SD1 = 1981 ON

The key identifications 1982 TU = 1982 UK9 = 1982 VZ9 = 1951 YG2 = 1981 ON are by T. Furuta. The double designation 1982 UK9 = 1982 VZ9 was also suggested by L. V. Zhuravleva.

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

M	275.90520		(1950.0)		P		Q				
n	0.18735057	Peri.	145.06474		-0.16338453		-0.98047707				
a	3.0248249	Node	314.06016		+0.86687782		-0.08973482				
e	0.0830088	Incl.	8.75735		+0.47098655		-0.17496393				
P	5.26	H	11.9		G	0.25					

Residuals in seconds of arc

511227	711	0.7-	1.5+	Y	810730	033	0.3+	0.8-	821013	688	0.8+	3.9-
511228	711	1.3+	2.4+	Y	810730	033	0.3+	0.2-	821021	095	1.5+	0.9+
710916	095	3.5-	5.9+		821013	688	0.6+	4.6-	821111	095	0.9-	0.3+

1982 UY6 = 1982 VU = 1982 VE9 = 1969 TJ5

The triple designation 1982 UY6 = 1982 VU = 1982 VE9 is by T. Furuta.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	89.02316		(1950.0)		P		Q				
n	0.23108059	Peri.	296.76098		+0.86328843		+0.50073238				
a	2.6300282	Node	33.29944		-0.41239525		+0.77206960				
e	0.2535739	Incl.	6.61520		-0.29096949		+0.39137657				
P	4.27	H	13.6		G	0.25					

Residuals in seconds of arc

691014	095	3.8+	0.4+		821020	095	0.1-	0.3-	821115	688	0.7+	2.1+
691017	095	3.9-	0.3-		821109	095	0.5+	0.3-	821115	688	1.1-	1.5-

1985 RZ2 = 1975 VV1 = 1977 DB2 = 1980 TV10

The identifications were found independently by E. Goffin.

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

M	107.79381		(1950.0)		P		Q				
n	0.18327362	Peri.	255.42305		+0.99405150		-0.09300114				
a	3.0695186	Node	109.88848		+0.10758832		+0.91939043				
e	0.1702201	Incl.	3.45548		-0.01692268		+0.38219371				
P	5.38	H	12.7		G	0.25					

Residuals in seconds of arc

751102	095	0.2+	0.1-		850910	809	0.6-	0.3+	850917	809	0.5+	0.5+
770218	381	0.5+	2.1-		850910	809	0.3-	0.1-	850919	809	0.5+	0.9+
770218	381	0.9-	0.5+		850912	809	0.9-	0.1-	850919	809	0.6+	0.9+
770219	381	0.3+	0.2+		850912	809	0.7-	0.3-	850919	809	0.8+	0.9+
770219	381	0.3-	0.3+		850912	809	0.6-	0.5-	850919	809	1.1+	1.3+
801008	095	0.3-	0.0		850914	809	0.0	0.1+	850919	809	1.2+	1.3+
850905	809	1.9-	2.4-		850914	809	0.4+	0.1+	850919	809	1.4+	1.3+
850905	809	1.8-	2.0-		850914	809	0.6+	0.0	850920	809	1.1-	0.6-
850905	809	1.7-	2.0-		850915	809	0.9+	0.8+	850920	809	1.2-	0.5-
850907	809	0.3-	0.5-		850915	809	1.0+	0.6+	850920	809	0.9-	0.5-
850907	809	0.1+	0.7-		850915	809	1.0+	0.5+	850921	809	0.2+	0.2-
850907	809	0.3+	0.8-		850917	809	0.7+	0.4+	850921	809	0.6+	0.1-
850910	809	0.6-	0.3+		850917	809	0.8+	0.4+	850921	809	0.7+	0.3-

1985 RV4 = 1962 PH = 1974 VD = 1979 QG7 = 1980 WQ2

The key identification 1985 RV4 = 1962 PH is by T. Furuta.

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

M	130.02230		(1950.0)		P		Q				
n	0.17357651	Peri.	333.69043		+0.95376424		+0.30055464				
a	3.1828020	Node	8.81877		-0.27478138		+0.87308452				
e	0.1985423	Incl.	0.30894		-0.12177423		+0.38391449				
P	5.68	H	12.9		G	0.25					

Residuals in seconds of arc

620803	760	1.1+	1.4+	850915	809	1.5+	0.2-	850920	809	0.4-	0.3+
620803	760	0.0	0.4+	850916	809	0.4+	0.9-	850920	809	1.0-	0.4+
620809	760	0.5-	1.8+	850916	809	0.6+	0.9-	850921	809	0.2-	0.2+
741112	095	3.0-	0.6-	850916	809	0.8+	1.0-	850921	809	0.0	0.2+
790820	095	3.1-	1.0+	850918	809	0.8+	0.4-	850921	809	0.0	0.2+
801130	095	1.1+	3.9+	850918	809	0.6+	0.4-	850922	809	1.1-	0.4-
850915	809	1.3+	0.2-	850918	809	0.9+	0.3-	850922	809	0.5-	0.5-
850915	809	1.6+	0.2-	850920	809	0.8-	0.4+				

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

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

(3547)* 1978 TM6 = 1980 FG9 = 1982 UP5

Discovered 1978 Oct. 2 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	39.14192	(1950.0)	P	Q	
n	0.25289873	Peri.	160.04524	+0.27007090	-0.96042383
a	2.4764997	Node	274.23889	+0.87380336	+0.27421938
e	0.0515031	Incl.	3.91989	+0.40438769	+0.04888556
P	3.90	H	13.4	G 0.25	

Residuals in seconds of arc

770612	675	0.5-	1.1-	781101	095	0.8+	0.0	821109	095	0.4-	0.7-
770612	675	0.4-	1.9+	800316	095	0.1+	0.4+	821111	095	1.9-	3.1+
770613	675	1.2+	0.3-	821020	095	1.9-	0.4+	821114	095	0.9-	1.9+
770613	675	0.2-	1.3+	821021	095	1.0+	2.2-	861031	801	1.6+	0.4+
781002	095	0.9+	1.3+	821022	095	0.2+	0.6-	861205	801	0.3-	0.2+
781008	095	0.3+	2.3-	821108	095	(0.8-	5.7+)				

1982 EJ = 1976 NL = 1985 TJ3

The identification 1982 EJ = 1985 TJ3 is by C. M. Bardwell.

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

M	163.02444	(1950.0)	P	Q	
n	0.12652964	Peri.	25.42761	+0.06808431	+0.98956077
a	3.9295432	Node	248.69090	-0.93702332	+0.01970925
e	0.1177377	Incl.	7.83616	-0.34256653	+0.14276216
P	7.79	H	11.0	G 0.25	

Residuals in seconds of arc

760701	095	0.0	0.2+	820325	046	1.8-	2.4+	850916	675	0.3+	0.0
820315	046	0.9+	1.5+	820326	046	1.3-	0.0	851012	675	1.4-	1.0+
820315	046	(0.1-	3.8+)	820326	046	1.9+	1.5-	851013	675	0.9+	0.5-
820324	046	1.5+	0.8-	820326	046	1.2-	1.5-	851014	675	(4.7+	2.2-)
820324	046	(2.4-	3.3-)	850916	675	0.3+	0.7-				

1984 HE1 = 1969 RZ = 1986 TO4

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

M	121.65251	(1950.0)	P	Q	
n	0.17682588	Peri.	75.18981	+0.45496177	+0.88094565
a	3.1436899	Node	222.66045	-0.87291517	+0.41226697
e	0.0928228	Incl.	11.07487	-0.17615019	+0.23231598
P	5.57	H	12.0	G 0.25	

Residuals in seconds of arc

690910	095	0.6+	0.5-	840425	809	1.1-	0.2-	840507	809	0.0	0.1-
840403	095	1.6+	2.1-	840427	809	0.3-	0.3-	840507	809	0.6+	0.7-
840423	809	0.0	0.3+	840427	809	0.7-	0.3+	861009	033	0.4-	1.3+
840423	809	0.4-	0.2+	840430	809	0.6+	0.2-	861010	033	0.3+	1.5+
840423	809	0.7-	0.4+	840430	809	0.6+	0.2-	861128	801	1.0-	1.2-
840424	809	0.3-	0.3+	840504	809	0.2-	0.1+	861202	801	0.9+	1.1-
840424	809	0.9-	0.6+	840504	809	0.4-	0.4-				
840425	809	0.7-	0.0	840507	809	0.7+	0.1-				

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

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

1932 EO = 1972 RP = 1975 EJ1 = 1978 TR5 = 1978 WL

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

M	161.70280	(1950.0)		P	Q
n	0.18376564	Peri.	110.88652	-0.31872299	-0.94782728
a	3.0640373	Node	357.67184	+0.80229388	-0.26625993
e	0.0354421	Incl.	8.85563	+0.50471792	-0.17529717
P	5.36	H	11.5	G 0.25	

Residuals in seconds of arc

320314	024	0.2-	0.6+	721006	095	0.0	0.6+	781124	033	0.6+	0.8-
320315	024	0.9+	0.8-	750306	095	1.4+	1.3-	781124	033	0.4+	0.8-
320326	024	(10.8-	0.9+)	750315	095	0.8-	1.2+				
720907	095	0.6-	0.8+	781008	095	0.8-	0.1+				

1973 SZ3 = 1978 EM2 = 1986 XA1

The identification 1973 SZ3 = 1978 EM2 is by L. D. Schmadel.

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

M	90.93245	(1950.0)		P	Q
n	0.30774627	Peri.	14.75861	+0.68429139	-0.72886497
a	2.1727431	Node	32.07093	+0.66465701	+0.61079379
e	0.1315189	Incl.	2.41636	+0.29996057	+0.30933283
P	3.20	H	14.5	G 0.25	

Residuals in seconds of arc

730925	095	1.1-	0.1+	731103	033	0.5+	0.6-	861202	688	4.0-	0.2-
731031	033	0.2+	0.5-	780305	095	0.4-	0.4-	861202	688	1.6-	0.1+
731101	033	0.3-	0.8-	861129	046	2.7+	1.2-				
731102	033	1.2+	0.3-	861129	046	1.7+	1.6-				

1977 QA1 = 1977 TK8 = 1953 FL = 1966 BX = 1981 WV6

The double designation 1977 QA1 = 1977 TK8 is by T. Furuta (JAM 2000).

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

M	58.88444	(1950.0)		P	Q
n	0.29702841	Peri.	268.97636	-0.07574023	+0.99712678
a	2.2247007	Node	356.67909	-0.90590107	-0.06934052
e	0.1676207	Incl.	1.25047	-0.41666133	-0.03049709
P	3.32	H	13.0	G 0.25	

Residuals in seconds of arc

530316	024	2.9+	1.8+	770820	095	0.1+	0.8+	771007	095	0.1+	0.5-
530320	024	0.2+	4.6+	770822	095	1.0-	1.7+	811124	095	0.2+	2.7+
660130	330	0.3-	0.5-	770823	095	1.2+	3.3+				
770819	095	0.6+	0.7+	770824	095	1.5-	1.1+				

1979 HE3 = 1949 GE = 1975 DD

The identification 1979 HE3 = 1975 DD was suggested by W. Landgraf.

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

M	85.61828		(1950.0)	P	Q
n	0.26322058	Peri.	134.90371	-0.97555835	+0.21454930
a	2.4113320	Node	57.54074	-0.21411264	-0.87952589
e	0.1377496	Incl.	3.22590	-0.04941336	-0.42473851
P	3.74	H	14.5	G 0.25	

Residuals in seconds of arc

490404	760	2.1-	1.9-	790425	095	1.9-	0.4-	790502 323 2.0- 0.0
490404	760	0.3+	0.6-	790426	323	1.5-	0.7-	790517 323 4.1- 1.3+
490420	760	2.3-	0.2-	790427	323	1.8-	0.1+	790518 323 3.5- 1.3+
490420	760	0.1-	0.6-	790430	095	1.5-	1.6-	
750216	330	0.5+	2.2+	790501	323	0.8-	1.5-	

1979 QC1 = 1954 SH

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

M	29.76009		(1950.0)	P	Q
n	0.27419918	Peri.	60.38424	+0.88708156	-0.44738047
a	2.3465302	Node	325.82371	+0.32146223	+0.77553980
e	0.1735772	Incl.	11.68199	+0.33128288	+0.44540851
P	3.59	H	13.5	G 0.25	

Residuals in seconds of arc

540923	760	1.0+	0.3+	790822	809	0.4+	0.3+	790826 809 2.1- 0.1+
540927	760	0.2-	0.5-	790823	809	0.5-	0.6-	790830 809 0.9- 0.1+
540927	760	0.8-	0.1+	790823	809	0.4+	0.4-	790830 809 0.7- 0.1+
790822	809	0.2-	0.1-	790826	809	2.8+	0.1+	
790822	809	1.5+	0.7+	790826	809	0.6-	0.2-	

1982 VC3 = 1986 TA2

The identification is by E. Bowell.

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

M	89.59919		(1950.0)	P	Q
n	0.23518673	Peri.	260.32076	+0.90617002	+0.41105875
a	2.5993317	Node	75.35374	-0.33639138	+0.84306844
e	0.2774903	Incl.	5.89875	-0.25631373	+0.34679435
P	4.19	H	14.5	G 0.25	

Residuals in seconds of arc

821114	381	0.7-	0.5+	821213	381	0.9+	0.1+	861007 688 0.7+ 0.4+
821114	381	0.4-	0.4+	821214	381	0.1+	0.0	861007 688 0.4- 0.8-
821213	381	0.3-	0.4-	821214	381	0.2+	0.5-	861201 801 0.5- 0.5+

1985 VO = 1950 TR4 = 1973 SS5

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

M	12.51608		(1950.0)	P	Q
n	0.08495465	Peri.	66.28357	+0.46018162	-0.88737948
a	5.1248224	Node	355.97024	+0.59621923	+0.33234549
e	0.0751810	Incl.	23.58397	+0.65784155	+0.31953736
P	11.60	H	9.5	G 0.25	

Residuals in seconds of arc

501013	012	1.0-	0.2+	850916	675	0.4+	0.6-	851014 675 0.5- 0.7+
501014	012(39.8-		33.0-)	851012	675	0.4+	0.5-	851114 054 0.2+ 0.3+
730928	095	0.2-	0.0	851012	675	0.1+	0.8-	851115 054 0.2+ 0.3-
850916	675	0.3-	1.1+	851014	675	0.3+	0.2-	

1986 RW2 = 1975 RC1
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	89.67453	(1950.0)	P	Q
n	0.27234563	Peri. 310.86020	+0.98578874	+0.16691943
a	2.3571649	Node 39.54175	-0.14378311	+0.89664848
e	0.1655712	Incl. 1.70420	-0.08687338	+0.41007245
P	3.62	H 13.5	G 0.25	

Residuals in seconds of arc

750903	095	0.7+	0.1-	860906	688	0.2- 2.3+	861005	688 1.0+ 1.8-
750906	095	0.0	1.7-	860912	688	0.4+ 0.5+	861005	688 0.8+ 1.4-
860906	688	3.5-	0.9+	860912	688	0.7+ 1.1+		

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ORBITAL ELEMENTS BY S. NAKANO, SMITHSONIAN ASTROPHYSICAL OBSERVATORY.

The identifications are by S. Nakano unless otherwise stated.

Periodic Comet Finlay
Epoch 1988 June 8.0 ET = JDE 2447320.5
T 1988 June 6.07117 ET

q	1.0943828	(1950.0)	P	Q
n	0.14183691	Peri. 322.20306	+0.99680418	-0.06773150
a	3.6414683	Node 41.74184	+0.07947942	+0.89416665
e	0.6994666	Incl. 3.64739	-0.00802744	+0.44258157
P	6.95			

From 33 observations 1960-1981, mean residual 1".0. Nongravitational parameters A1 = +0.26, A2 = +0.0171.

Periodic Comet Longmore
Epoch 1988 Oct. 6.0 ET = JDE 2447440.5
T 1988 Oct. 12.18795 ET

q	2.4088763	(1950.0)	P	Q
n	0.14089488	Peri. 195.69584	-0.86611577	+0.48828280
a	3.6576818	Node 15.00241	-0.40253516	-0.55460556
e	0.3414199	Incl. 24.38642	-0.29632568	-0.67378972
P	7.00			

From 16 observations 1975-1982, mean residual 0".9.

Periodic Comet du Toit
Epoch 1988 Dec. 25.0 ET = JDE 2447520.5
T 1988 Dec. 25.92039 ET

q	1.2734659	(1950.0)	P	Q
n	0.06699723	Peri. 257.04859	+0.13531057	+0.98360561
a	6.0038728	Node 21.83532	-0.73836668	+0.18033302
e	0.7878926	Incl. 18.69371	-0.66068577	-0.00009029
P	14.71			

From 35 observations 1944-1974, mean residual 1".5.

A910 FA = 1951 GM = 1963 DK = 1971 CD = 1981 SP4 = 1986 WL
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	331.99682	(1950.0)	P	Q
n	0.24104220	Peri. 341.60961	-0.99949997	-0.00925373
a	2.5570636	Node 197.94106	+0.01818614	-0.95046857
e	0.1850774	Incl. 5.63290	-0.02586642	-0.31068291
P	4.09	H 12.0	G 0.25	

Residuals in seconds of arc

100330	024	2.7-	3.8-		810925	095	0.2+	1.1-		861208	883	0.1+	0.1-
100405	045	3.7-	2.3-		861130	881	1.0+	0.8+		861208	881	0.3+	0.6+
100410	045	1.7+	2.0-		861130	881	0.3+	0.1+		861208	399	0.3-	0.1+
100412	045	1.7+	7.5+		861206	399	1.8-	0.8-		861208	399	0.9+	0.6+
100416	045	2.5+	1.4-		861206	399	1.9+	2.3-		861209	888	1.1+	1.0+
100416	045	(13.1-	16.2+)		861206	399	0.0	2.0-		861209	888	0.1+	2.0+
510411	094	(26.1+ | 30.4-)X		861207	881	1.7-	0.7-		870101	881	(6.3- | 3.9+)
630227	760	(39.0+	8.0-)X		861207	881	1.4-	0.3-		870101	881	2.0-	0.1+
710201	029	0.3+	0.6+		861208	883	1.3-	0.4-					
710202	029	0.1-	1.1+		861208	881	2.9+	0.1-					

1953 XL1 = 1936 FU = 1945 BD = 1950 FK = 1959 CB1 = 1959 EB1 = 1978 GB3 = 1982 BK8

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

M	31.37927		(1950.0)	P	Q
n	0.21185568	Peri.	15.70190	-0.83059694	-0.52836767
a	2.7868280	Node	131.04168	+0.48249431	-0.84051801
e	0.0824655	Incl.	13.48557	+0.27804310	-0.11982103
P	4.65	H	11.5	G 0.25	

Residuals in seconds of arc

360319	012	(13.3+ | 2.2-)		500322	062	2.2-	0.7+		590202	690	(13.1- | 9.5+)Y
360327	012	8.4+	3.3-		531204	031	0.4-	1.3-		590308	690	0.2+	0.5+ Y
450115	062	1.5-	0.8-		531206	031	1.2-	0.9-		590310	690	(27.4-	1.3-)Y
450116	062	1.7-	1.3-		531209	031	1.8-	0.6-		780406	330	1.7-	2.0+
500321	062	2.0-	1.1+		531209	031	0.3-	0.2+		820120	330	3.5+	1.9+
500321	062	1.1-	0.9-		590201	690	(16.7-	2.5-)Y		820127	330	1.7+	3.0+

1981 EA1 = 1967 UU = 1975 HE = 1976 SS9 = 1978 GB5

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

M	14.12939		(1950.0)	P	Q
n	0.31295729	Peri.	38.68655	-0.90009670	-0.43445799
a	2.1485569	Node	115.53313	+0.39015135	-0.83718977
e	0.0467853	Incl.	2.07962	+0.19392742	-0.33220407
P	3.15	H	14.0	G 0.25	

Residuals in seconds of arc

671030	029	0.2-	0.3+		810305	809	0.8+	0.3-		810310	809	0.3-	1.2+
671030	029	0.2-	0.1-		810307	809	0.8-	1.4-		810310	809	0.2+	0.6+
671031	029	0.4+	0.2+		810307	809	0.2-	1.3-		810310	809	0.2+	0.0
671031	029	1.1-	0.1-		810307	809	0.3+	1.2-		810314	809	0.1+	0.1+
671031	029	1.1+	1.2+		810308	809	0.5-	0.9-		810314	809	1.0+	0.1+
750420	805	5.0+	2.3-		810308	809	0.4-	0.8-		810314	809	0.7+	0.1+
760929	095	0.9+	3.7-		810308	809	0.2-	0.7-		810315	809	0.1+	0.8-
780401	808	5.0-	1.1+		810308	809	1.7-	0.3+		810315	809	0.3+	0.9-
780401	808	4.2-	2.1+		810309	809	1.7+	1.3+		810315	809	0.5-	0.9-
810305	809	0.0	0.4-		810309	809	1.5+	1.1+					
810305	809	0.4+	0.4-		810309	809	1.3+	1.0+					

1983 XM1 = A919 QA = 1955 QB = 1962 BE = 1973 QV = 1975 BL1 = 1982 OC

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	12.37503		(1950.0)	P	Q
n	0.21892775	Peri.	41.65847	+0.96986614	+0.22268472
a	2.7264791	Node	305.21109	-0.24299259	+0.85458297
e	0.1633870	Incl.	6.94899	-0.01772799	+0.46914759
P	4.50	H	12.0	G 0.25	

Residuals in seconds of arc

190819	024	2.6+ 4.0-	730901	095	1.6- 5.5+	831204	561	0.5- 0.8+
190820	024	3.4+ 1.1-	750116	330	0.0 1.9-	831204	561	1.7- 1.1+
190822	024	0.1- 0.8-	750118	330(12.2+	0.9-)	831204	561	0.5+ 0.2-
190825	024	1.1- 3.4-	820717	688	1.6+ 0.3-	831204	561	0.9- 0.6-
550819	760	2.0- 0.1-	820717	688	1.2+ 0.1+	831205	561	1.4+ 0.6-
620128	760(47.5-	21.6-)X	820724	688	0.7+ 0.3-	831205	561	1.1+ 0.1-
730828	095	3.4- 5.3+	820724	688	0.9- 1.3-			

1985 JV1 = 1940 WD = 1959 GK = 1978 TH
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	268.43269	(1950.0)	P	Q	
n	0.23001474	Peri. 72.13389	-0.63111148	-0.74798972	
a	2.6381520	Node 58.78187	+0.58905288	-0.63447136	
e	0.1101532	Incl. 13.90047	+0.50469298	-0.19482679	
P	4.28	H 11.5	G 0.25		

Residuals in seconds of arc

401123	094(29.8-	8.1-)X	590406	760	3.0+ 0.0	850515	675	2.0- 1.0-
401129	062	0.2- 1.9-	590415	760	0.4+ 0.1-	850524	675	1.5- 3.0-
401129	062	0.9- 2.2-	590415	760	0.8- 1.3-	850524	675	1.3- 0.7+
401203	062	1.0+ 1.0-	781003	095	3.1+ 0.6-			
590406	760	0.2+ 0.6-	850513	675	1.2- 0.1-			

1985 RC3 = 1951 YV = 1979 QQ5 = 1982 DH5 = 1986 WH
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	28.40789	(1950.0)	P	Q	
n	0.16833275	Peri. 330.77292	+0.12887525	-0.99161983	
a	3.2485620	Node 111.82124	+0.91166246	+0.11489665	
e	0.1807201	Incl. 0.55641	+0.39020856	+0.05906660	
P	5.86	H 12.0	G 0.25		

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

511223	711(0.04-	0.00-)Y	850914	809	0.2+ 0.5-	861129	552	1.7+ 0.3-
511223	711(0.04-	0.00-)Y	850916	809	0.9- 0.3+	861130	552	0.3- 0.0
790830	809	0.2+ 4.5+	850916	809	1.0- 0.3+	861130	552	0.2+ 0.0
790830	809	0.0 5.4-	850916	809	1.2- 0.3+	861201	552	1.4- 1.6-
820222	010	0.2+ 0.5+	850918	809	1.3- 0.3-	861201	552	1.8- 1.3-
850906	809	1.3+ 0.1-	850918	809	1.2- 0.3-	861202	552	1.0- 0.4-
850906	809	1.4+ 0.2-	850918	809	1.3- 0.3-	861202	552	0.8- 0.0
850906	809	1.5+ 0.2-	850920	809	0.9+ 1.2+	861203	552	1.6+ 1.1+
850910	809	0.3- 0.3-	850920	809	0.9+ 1.3+	861203	552	0.4+ 1.8+
850910	809	0.2- 0.3-	850920	809	0.9+ 1.4+	861204	552	0.7- 2.1+
850910	809	0.3- 0.5-	861126	552	1.2+ 0.5-	861204	552	0.1+ 2.1+
850914	809	0.0 0.2-	861126	552	0.2- 1.4-	861205	552	0.1+ 0.3-
850914	809	0.1+ 0.4-	861129	552	0.6+ 0.2+	861205	552	0.3+ 1.6-

1986 TL1 = 1976 YJ1 = 1979 RN1 = 1984 AS
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	81.98933	(1950.0)	P	Q	
n	0.28965622	Peri. 109.64448	+0.89266771	-0.44447515	
a	2.2622903	Node 276.80587	+0.38015039	+0.83157230	
e	0.1299653	Incl. 4.31681	+0.24213640	+0.33306057	
P	3.40	H 14.0	G 0.25		

Residuals in seconds of arc

761216	095	3.0- 0.2+	840108	688	1.7- 2.3-	861105	688	0.5- 1.0+
761218	095	2.9+ 1.0+	840108	688	0.5+ 0.6-	861204	688	0.4+ 0.1+
790914	095	0.3+ 0.6-	861004	688	0.3- 0.0	861204	688	1.0+ 1.1-
840105	688	0.2- 1.7+	861004	688	0.4- 0.2+			
840105	688	1.2+ 0.1+	861105	688	0.2+ 0.4-			

1986 UL1 = 1951 KY = 1977 AB2 = 1978 GG2
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	150.97076		(1950.0)		P	Q
n	0.17883873	Peri.	194.74668	+0.31850186		+0.91867907
a	3.1200570	Node	94.25323	-0.84420853		+0.38700078
e	0.1731258	Incl.	13.54920	-0.43112472		-0.07911484
P	5.51	H	11.0	G	0.25	

Residuals in seconds of arc

510528	711	0.2+	0.7+	Y	861031	511	1.1-	1.3-	861202	688	0.4- 1.1+
770113	095	1.0-	1.1-		861101	511	1.3-	1.1+	861202	688	1.1+ 1.7+
770120	095	1.5+	1.2-		861105	511	0.5-	0.1-			
780411	095	0.7+	2.4+		861105	511	0.6+	0.4+			

7571 P-L = 1939 EK = 1970 EW = 1974 FL1 = 1976 UG5 = 1978 EJ3 = 1978 GL1 = 1978 JL2
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	173.58346		(1950.0)		P	Q
n	0.25302676	Peri.	119.58089	-0.89635689		-0.43841566
a	2.4756692	Node	34.53696	+0.35584310		-0.80007423
e	0.1108271	Incl.	6.66983	+0.26442393		-0.40947885
P	3.90	H	13.0	G	0.25	

Residuals in seconds of arc

390314	062	0.8-	3.2+		601025	675	1.2+	0.6-	761030	095	1.3- 1.7-
390318	062	2.0-	6.4-		601026	675	1.2+	0.7-	780306	095	0.6+ 1.3+
601017	675	0.8+	0.6-		700307	095	1.6+	0.2-	780407	095	2.6- 0.3-
601022	675	0.4+	0.8-		740321	095	1.3+	0.1-	780509	095	0.0 1.2-

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ORBITAL ELEMENTS BY T. URATA, SHIMIZU, JAPAN.

1986 YB = 1977 BR = 1981 YT
The identifications are by T. Urata.
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	79.50378		(1950.0)		P	Q
n	0.18970149	Peri.	100.59197	+0.92456984		-0.35076109
a	2.9997824	Node	280.06911	+0.26279656		+0.86982140
e	0.0961273	Incl.	8.69146	+0.27587784		+0.34695446
P	5.20	H	11.5	G	0.25	

Residuals in seconds of arc

770120	095	0.3+	0.7+		861220	887	1.2-	0.7+	870101	887	0.1+ 0.8+
811228	046	0.3+	1.0-		861222	887	0.1-	0.5-	870101	887	2.7+ 0.5-
811228	046	0.6-	0.6-		861222	887	0.8-	1.5+	870103	887	0.9- 1.3+
861220	887	0.4+	2.1-		861224	887	0.2-	0.0			

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

Periodic Comet Tempel 2
Epoch 1988 Oct. 6.0 ET = JDE 2447440.5
T 1988 Sept. 16.73254 ET

q	1.3834282		(1950.0)		P	Q
n	0.18625354	Peri.	191.03900	+0.64096627		+0.74417210
a	3.0366847	Node	119.11831	-0.68677913		+0.66544029
e	0.5444281	Incl.	12.43177	-0.34277786		+0.05828473
P	5.29					

From 110 observations 1961-1983, mean residual 1".2. Nongravitational parameters A1 = +0.05, A2 = +0.0016.

Periodic Comet Brorsen-Metcalf
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5
T 1989 Sept. 27.55272 ET

		(1950.0)	P	Q
q 0.4786244				
n 0.01396226	Peri.	129.63346	+0.13211254	-0.95910102
a 17.0804302	Node	310.87203	+0.77734982	+0.25695291
e 0.9719782	Incl.	19.33346	+0.61503946	-0.11874527

P 70.59
From 86 observations 1847-1919.

* * * * *

EPHEMERIDES.

Comet Bowell (1982 I) Elements MPC 11501

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1986 12 16	00 14.24	-00 13.1	3.620	3.824	100.0	4.0	20.1
1986 12 26	00 14.56	-00 09.9					
1987 01 05	00 15.32	-00 03.7	4.084	3.945	79.9	4.0	20.2
1987 01 15	00 16.50	+00 05.1					
1987 01 25	00 18.06	+00 16.2	4.528	4.066	60.3	3.5	20.3
1987 02 04	00 19.95	+00 29.4					
1987 02 14	00 22.14	+00 44.3	4.916	4.187	41.2	2.6	20.4

1986 WA a,e,i = 1.50, 0.70, 29 Elements MPC 11506

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1986 12 16	01 12.80	+05 51.5	0.719	1.450	115.8	37.7	17.4
1986 12 26	01 33.25	+04 44.2					
1987 01 05	01 50.65	+04 25.0	1.103	1.641	103.6	35.6	18.6
1987 01 15	02 06.60	+04 33.8					
1987 01 25	02 21.83	+04 59.3	1.502	1.808	90.9	33.0	19.4
1987 02 04	02 36.77	+05 34.7					
1987 02 14	02 51.62	+06 15.4	1.899	1.955	78.3	29.6	20.0
1987 02 24	03 06.47	+06 58.1					
1987 03 06	03 21.42	+07 40.7	2.277	2.082	66.1	25.8	20.4

1986 RA a,e,i = 3.35, 0.63, 19 Elements MPC 11506

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1986 12 16	01 45.24	-16 11.2	1.076	1.712	112.3	32.1	18.5
1986 12 26	02 00.00	-13 41.4					
1987 01 05	02 14.81	-11 11.0	1.380	1.862	102.6	31.0	19.2
1987 01 15	02 29.77	-08 44.0					
1987 01 25	02 44.90	-06 23.2	1.715	2.015	92.5	29.2	19.8
1987 02 04	03 00.23	-04 09.9					
1987 02 14	03 15.76	-02 05.8	2.070	2.168	82.1	26.8	20.3
1987 02 24	03 31.44	-00 11.6					
1987 03 06	03 47.27	+01 32.4	2.434	2.319	71.5	23.9	20.7

Periodic Comet Lovas 2 (1986p) Elements MPC 10501

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1986 12 16	02 00.77	+14 21.1	1.032	1.826	129.8	24.4	15.7
1986 12 26	02 11.48	+14 57.8					
1987 01 05	02 23.71	+15 42.9	1.317	1.950	115.2	27.1	16.5
1987 01 15	02 37.20	+16 33.6					
1987 01 25	02 51.68	+17 27.2	1.643	2.080	101.7	27.6	17.3
1987 02 04	03 06.94	+18 21.5					
1987 02 14	03 22.85	+19 14.6	1.996	2.212	89.0	26.5	17.9
1987 02 24	03 39.23	+20 04.9					
1987 03 06	03 56.00	+20 51.3	2.363	2.346	76.9	24.3	18.6

1983 RD a,e,i = 2.09, 0.49, 10 Elements MPC 11054

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1986	12 16	03 27.97	-11 08.5	0.448	1.337	134.4	31.8	17.1
1986	12 26	03 40.05	-06 39.9					
1987	01 05	03 52.51	-02 38.3	0.637	1.464	127.9	32.0	18.0
1987	01 15	04 05.79	+00 55.9					
1987	01 25	04 19.93	+04 03.3	0.872	1.596	118.4	32.9	18.9
1987	02 04	04 34.97	+06 45.7					
1987	02 14	04 50.82	+09 04.6	1.149	1.728	107.7	33.0	19.7
1987	02 24	05 07.34	+11 01.7					
1987	03 06	05 24.44	+12 38.9	1.458	1.857	96.7	32.0	20.4
1987	03 16	05 41.98	+13 57.5					
1987	03 26	05 59.82	+14 59.1	1.788	1.981	85.7	30.1	20.9

Periodic Comet du Toit-Hartley (1986q) Elements MPC 10519

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		m2
1986	12 16	07 08.56	+25 15.2	1.313	2.255	-2.49	+4.6	20.1
1986	12 26	06 57.98	+25 26.3					
1987	01 05	06 44.53	+25 33.0	1.127	2.108	-2.69	+3.7	19.5
1987	01 15	06 29.79	+25 30.8					
1987	01 25	06 15.86	+25 18.4	1.047	1.960	-2.49	+2.1	19.0
1987	02 04	06 04.79	+24 57.8					
1987	02 14	05 58.12	+24 33.0	1.051	1.811	-2.10	+1.5	18.7
1987	02 24	05 56.50	+24 07.7					
1987	03 06	06 00.05	+23 43.2	1.095	1.664	-1.83	+2.2	18.4
1987	03 16	06 08.51	+23 18.7					
1987	03 26	06 21.42	+22 51.4	1.141	1.524	-1.77	+3.5	18.1
1987	04 05	06 38.40	+22 17.5					
1987	04 15	06 59.02	+21 32.2	1.168	1.397	-1.90	+5.5	17.8
1987	04 25	07 22.89	+20 30.8					
1987	05 05	07 49.70	+19 08.8	1.172	1.294	-2.18	+8.3	17.5
1987	05 15	08 19.08	+17 22.0					
1987	05 25	08 50.69	+15 07.5	1.161	1.224	-2.51	+11.9	17.2
1987	06 04	09 24.20	+12 24.0					
1987	06 14	09 59.26	+09 12.8	1.153	1.199	-2.72	+15.8	17.1
1987	06 24	10 35.49	+05 37.7					
1987	07 04	11 12.59	+01 45.7	1.173	1.223	-2.62	+18.6	17.2
1987	07 14	11 50.15	-02 13.9					
1987	07 24	12 27.81	-06 10.3	1.245	1.291	-3.04	+18.4	17.6
1987	08 03	13 05.23	-09 53.6					
1987	08 13	13 42.06	-13 15.4	1.381	1.394	-3.25	+15.0	18.1
1987	08 23	14 18.01	-16 10.4					
1987	09 02	14 52.88	-18 36.3	1.579	1.520	-2.96	+10.0	18.8
1987	09 12	15 26.48	-20 32.9					
1987	09 22	15 58.74	-22 01.5	1.829	1.659	-2.43	+5.4	19.5
1987	10 02	16 29.62	-23 04.7					
1987	10 12	16 59.10	-23 44.9	2.115	1.806	-1.89	+1.8	20.2

Comet Churyumov-Solodovnikov (1986i) Elements MPC 11153

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1987	02 14	20 45.20	-54 02.1	4.582	3.909	42.3	9.8	19.2
1987	02 24	20 57.19	-55 21.8					
1987	03 06	21 09.21	-56 52.8	4.530	4.050	55.4	11.6	19.4
1987	03 16	21 21.19	-58 36.3					
1987	03 26	21 33.04	-60 33.4	4.434	4.194	69.7	12.9	19.5
1987	04 05	21 44.68	-62 45.1					
1987	04 15	21 55.98	-65 11.6	4.324	4.339	84.2	13.3	19.6
1987	04 25	22 06.80	-67 52.6					
1987	05 05	22 16.9	-70 46.9	4.238	4.486	97.7	12.9	19.7

1987 05 15	22 25.7	-73 52.4					
1987 05 25	22 32.6	-77 05.7	4.211	4.633	108.5	12.0	19.8
1987 06 04	22 35.3	-80 22.6					
1987 06 14	22 28.0	-83 37.3	4.269	4.782	114.6	11.1	19.9
1987 06 24	21 44	-86 39.2					
1987 07 04	17 30	-88 23.8	4.422	4.931	114.5	10.8	20.2
1987 07 14	13 55	-86 35.2					
1987 07 24	13 19.3	-84 08.9	4.661	5.080	108.8	10.9	20.4
1987 08 03	13 14.0	-81 53.3					
1987 08 13	13 17.6	-79 54.2	4.966	5.230	99.5	11.0	20.7

Periodic Comet Klemola — Elements MPC 10520

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1987 03 06	19 18.12	-12 53.3	2.654	2.248	55.6	21.4	20.1	
1987 03 16	19 39.40	-11 49.8						
1987 03 26	20 00.77	-10 34.8	2.366	2.137	64.6	24.9	19.7	
1987 04 05	20 22.16	-09 08.9						
1987 04 15	20 43.52	-07 33.4	2.088	2.035	73.0	28.1	19.2	
1987 04 25	21 04.81	-05 49.7						
1987 05 05	21 25.93	-03 59.9	1.828	1.946	81.1	30.8	18.7	
1987 05 15	21 46.84	-02 06.3						
1987 05 25	22 07.46	-00 11.7	1.593	1.872	89.0	32.7	18.2	
1987 06 04	22 27.64	+01 40.2						
1987 06 14	22 47.24	+03 25.5	1.384	1.817	97.2	33.7	17.8	
1987 06 24	23 06.06	+05 00.0						
1987 07 04	23 23.81	+06 18.6	1.203	1.783	106.6	33.1	17.4	
1987 07 14	23 40.14	+07 16.4						
1987 07 24	23 54.66	+07 48.3	1.053	1.773	117.9	30.4	17.1	
1987 08 03	00 06.89	+07 49.5						
1987 08 13	00 16.44	+07 16.8	0.939	1.786	132.3	24.8	16.9	
1987 08 23	00 22.99	+06 08.9						
1987 09 02	00 26.48	+04 28.6	0.875	1.823	150.6	15.8	16.8	
1987 09 12	00 27.31	+02 24.4						
1987 09 22	00 26.19	+00 09.6	0.882	1.881	171.5	4.5	17.0	
1987 10 02	00 24.22	-01 59.7						
1987 10 12	00 22.56	-03 48.5	0.976	1.957	164.9	7.6	17.4	
1987 10 22	00 22.12	-05 07.7						
1987 11 01	00 23.51	-05 53.9	1.156	2.048	144.8	16.2	17.9	
1987 11 11	00 26.96	-06 08.6						
1987 11 21	00 32.38	-05 56.2	1.407	2.151	127.0	21.5	18.6	
1987 12 01	00 39.64	-05 21.5						
1987 12 11	00 48.44	-04 29.6	1.713	2.264	111.2	23.9	19.2	
1987 12 21	00 58.54	-03 25.0						
1987 12 31	01 09.71	-02 11.2	2.055	2.382	96.9	24.2	19.8	
1988 01 10	01 21.73	-00 51.4						
1988 01 20	01 34.44	+00 31.8	2.418	2.505	83.5	23.0	20.4	

Periodic Comet Brooks 2 — Elements MPC 10521

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1987 03 06	20 25.12	-15 09.6	3.294	2.607	39.6	14.0	20.3	
1987 03 16	20 42.85	-14 03.4						
1987 03 26	21 00.48	-12 50.4	3.019	2.507	50.6	17.9	19.9	
1987 04 05	21 17.97	-11 31.3						
1987 04 15	21 35.28	-10 07.1	2.724	2.408	61.3	21.4	19.5	
1987 04 25	21 52.38	-08 38.5						
1987 05 05	22 09.24	-07 06.6	2.420	2.312	71.8	24.5	19.1	
1987 05 15	22 25.80	-05 32.8						
1987 05 25	22 42.03	-03 58.3	2.117	2.221	82.3	26.9	18.6	
1987 06 04	22 57.85	-02 24.8						

1987 06 14	23 13.16	-00 54.1	1.825	2.135	93.0	28.4	18.1
1987 06 24	23 27.85	+00 31.7					
1987 07 04	23 41.73	+01 50.0	1.552	2.057	104.4	28.6	17.6
1987 07 14	23 54.60	+02 58.0					
1987 07 24	00 06.18	+03 52.6	1.308	1.988	117.1	27.1	17.1
1987 08 03	00 16.12	+04 30.2					
1987 08 13	00 24.09	+04 47.3	1.101	1.930	131.8	23.1	16.6
1987 08 23	00 29.73	+04 40.9					
1987 09 02	00 32.80	+04 09.2	0.947	1.886	149.3	15.8	16.1
1987 09 12	00 33.37	+03 13.6					
1987 09 22	00 31.84	+01 59.2	0.861	1.858	169.8	5.5	15.9
1987 10 02	00 29.09	+00 35.9					
1987 10 12	00 26.32	-00 43.3	0.858	1.845	167.7	6.6	15.8
1987 10 22	00 24.74	-01 46.4					
1987 11 01	00 25.29	-02 24.5	0.936	1.850	147.0	17.0	16.0
1987 11 11	00 28.51	-02 34.0					
1987 11 21	00 34.45	-02 15.9	1.083	1.871	129.2	24.2	16.4
1987 12 01	00 42.97	-01 32.9					
1987 12 11	00 53.73	-00 29.7	1.281	1.908	114.2	28.1	16.8
1987 12 21	01 06.35	+00 49.0					
1987 12 31	01 20.52	+02 19.1	1.516	1.960	101.2	29.5	17.3
1988 01 10	01 35.93	+03 56.4					
1988 01 20	01 52.33	+05 37.6	1.777	2.024	89.5	29.1	17.8
1988 01 30	02 09.54	+07 19.9					
1988 02 09	02 27.40	+09 00.6	2.057	2.098	78.6	27.4	18.3
1988 02 19	02 45.77	+10 37.7					
1988 02 29	03 04.57	+12 09.5	2.346	2.181	68.2	24.9	18.7
1988 03 10	03 23.68	+13 34.5					
1988 03 20	03 43.02	+14 51.6	2.635	2.270	58.0	21.8	19.2
1988 03 30	04 02.54	+16 00.0					
1988 04 09	04 22.13	+16 58.9	2.915	2.364	47.9	18.3	19.6
1988 04 19	04 41.73	+17 48.0					
1988 04 29	05 01.27	+18 27.1	3.177	2.462	37.9	14.6	19.9

Periodic Comet Smirnova-Chernykh Elements NK 445

Date ET	R. A. (1950) Decl.	Delta	r	Elong.	Phase	m2
1987 03 06	21 12.11 -20 45.3	5.417	4.590	30.4	6.3	20.3
1987 03 16	21 21.77 -20 10.4					
1987 03 26	21 30.90 -19 37.3	5.246	4.605	45.7	8.9	20.2
1987 04 05	21 39.41 -19 06.7					
1987 04 15	21 47.21 -18 39.6	5.016	4.620	61.4	11.0	20.1
1987 04 25	21 54.22 -18 16.7					
1987 05 05	22 00.32 -17 59.0	4.744	4.634	77.6	12.3	20.0
1987 05 15	22 05.41 -17 47.2					
1987 05 25	22 09.40 -17 42.0	4.453	4.647	94.7	12.5	19.9
1987 06 04	22 12.15 -17 44.2					
1987 06 14	22 13.60 -17 53.9	4.171	4.660	112.9	11.6	19.8
1987 06 24	22 13.67 -18 11.2					
1987 07 04	22 12.32 -18 35.6	3.928	4.672	132.2	9.3	19.7
1987 07 14	22 09.62 -19 05.9					
1987 07 24	22 05.69 -19 40.5	3.758	4.684	152.6	5.7	19.6
1987 08 03	22 00.73 -20 17.0					
1987 08 13	21 55.09 -20 52.9	3.691	4.694	171.1	1.9	19.6
1987 08 23	21 49.17 -21 25.6					
1987 09 02	21 43.40 -21 52.7	3.740	4.704	160.7	4.1	19.6
1987 09 12	21 38.22 -22 12.7					
1987 09 22	21 33.99 -22 24.5	3.900	4.714	140.0	7.9	19.7
1987 10 02	21 30.99 -22 28.0					
1987 10 12	21 29.39 -22 23.3	4.148	4.722	119.7	10.6	19.8

1987 10 22	21 29.25	-22 11.1					
1987 11 01	21 30.57	-21 51.9	4.449	4.730	100.4	11.9	20.0
1987 11 11	21 33.25	-21 26.7					
1987 11 21	21 37.18	-20 55.9	4.769	4.737	82.2	11.9	20.1
1987 12 01	21 42.24	-20 20.2					
1987 12 11	21 48.28	-19 40.2	5.077	4.744	64.9	10.8	20.3
1987 12 21	21 55.14	-18 56.4					
1987 12 31	22 02.69	-18 09.2	5.345	4.749	48.4	8.9	20.4
1988 01 10	22 10.80	-17 19.2					
1988 01 20	22 19.35	-16 26.9	5.554	4.754	32.5	6.4	20.5

Periodic Comet Schwassmann-Wachmann 1 Elements MPC 11510

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1987 03 06	20 11.71	-22 47.2	6.603	5.934	44.3	6.7	(19.3)
1987 03 16	20 18.58	-22 22.7					
1987 03 26	20 24.80	-21 59.5	6.346	5.928	61.1	8.5	(19.2)
1987 04 05	20 30.28	-21 38.2					
1987 04 15	20 34.92	-21 19.2	6.043	5.922	78.3	9.5	(19.1)
1987 04 25	20 38.64	-21 03.2					
1987 05 05	20 41.35	-20 50.5	5.722	5.916	96.2	9.8	(19.0)
1987 05 15	20 42.98	-20 41.4					
1987 05 25	20 43.50	-20 36.1	5.412	5.911	114.9	8.9	(18.9)
1987 06 04	20 42.87	-20 34.7					
1987 06 14	20 41.13	-20 36.8	5.148	5.905	134.6	7.0	(18.8)
1987 06 24	20 38.34	-20 41.9					
1987 07 04	20 34.65	-20 49.2	4.962	5.900	155.2	4.2	(18.7)
1987 07 14	20 30.26	-20 57.9					
1987 07 24	20 25.44	-21 06.8	4.880	5.894	176.0	0.7	(18.6)
1987 08 03	20 20.49	-21 14.8					
1987 08 13	20 15.74	-21 21.2	4.917	5.889	162.1	3.0	(18.7)
1987 08 23	20 11.48	-21 25.1					
1987 09 02	20 07.99	-21 26.2	5.065	5.884	141.1	6.2	(18.7)
1987 09 12	20 05.47	-21 24.2					
1987 09 22	20 04.06	-21 19.1	5.302	5.878	120.7	8.4	(18.8)
1987 10 02	20 03.82	-21 10.7					
1987 10 12	20 04.78	-20 59.3	5.595	5.873	101.3	9.6	(18.9)
1987 10 22	20 06.88	-20 44.9					
1987 11 01	20 10.06	-20 27.4	5.911	5.868	82.7	9.7	(19.0)
1987 11 11	20 14.23	-20 07.0					
1987 11 21	20 19.28	-19 43.7	6.214	5.864	64.9	8.8	(19.1)
1987 12 01	20 25.09	-19 17.4					
1987 12 11	20 31.54	-18 48.4	6.476	5.859	47.7	7.1	(19.2)
1987 12 21	20 38.53	-18 16.6					
1987 12 31	20 45.93	-17 42.2	6.676	5.854	30.9	4.9	(19.3)

Periodic Comet Borrelly Elements MPC 10522

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1987 03 26	22 20.87	-32 56.3	3.568	2.934	44.0	13.7	20.4
1987 04 05	22 38.84	-32 14.0					
1987 04 15	22 56.94	-31 33.4	3.257	2.799	54.7	17.0	20.0
1987 04 25	23 15.20	-30 55.2					
1987 05 05	23 33.61	-30 20.7	2.924	2.662	65.1	20.1	19.6
1987 05 15	23 52.17	-29 50.9					
1987 05 25	00 10.90	-29 27.0	2.585	2.521	75.1	22.8	19.1
1987 06 04	00 29.79	-29 10.4					
1987 06 14	00 48.82	-29 02.2	2.251	2.378	84.4	25.2	18.5
1987 06 24	01 07.95	-29 03.8					
1987 07 04	01 27.12	-29 16.3	1.935	2.234	93.1	27.0	17.9
1987 07 14	01 46.20	-29 40.5					

1987 07 24	02 05.06	-30 17.2	1.645	2.090	100.8	28.5	17.3
1987 08 03	02 23.46	-31 06.5					
1987 08 13	02 41.09	-32 07.5	1.386	1.947	107.4	29.8	16.6
1987 08 23	02 57.58	-33 18.8					
1987 09 02	03 12.36	-34 37.4	1.159	1.808	112.8	31.0	15.9
1987 09 12	03 24.82	-35 58.1					
1987 09 22	03 34.17	-37 14.1	0.959	1.677	117.4	32.1	15.2
1987 10 02	03 39.50	-38 14.2					
1987 10 12	03 39.96	-38 41.9	0.782	1.560	121.9	32.9	14.4
1987 10 22	03 34.86	-38 14.4					
1987 11 01	03 24.23	-36 18.5	0.628	1.463	127.5	32.6	13.6
1987 11 11	03 09.38	-32 15.1					
1987 11 21	02 52.80	-25 29.1	0.516	1.393	133.4	31.0	13.0
1987 12 01	02 37.79	-15 53.3					
1987 12 11	02 27.10	-04 17.4	0.485	1.359	132.4	32.3	12.8
1987 12 21	02 22.24	+07 42.5					
1987 12 31	02 23.76	+18 37.4	0.564	1.365	121.4	38.0	13.1
1988 01 10	02 31.47	+27 45.6					
1988 01 20	02 45.01	+35 05.6	0.727	1.409	109.9	41.0	13.8
1988 01 30	03 04.05	+40 52.6					
1988 02 09	03 28.13	+45 22.3	0.936	1.486	101.2	40.6	14.6
1988 02 19	03 56.74	+48 46.0					
1988 02 29	04 29.21	+51 11.9	1.172	1.590	94.2	38.4	15.4
1988 03 10	05 04.47	+52 44.8					
1988 03 20	05 41.29	+53 29.0	1.426	1.711	88.0	35.6	16.1
1988 03 30	06 18.39	+53 29.4					
1988 04 09	06 54.54	+52 51.8	1.697	1.844	81.9	32.5	16.8
1988 04 19	07 28.92	+51 42.3					
1988 04 29	08 01.08	+50 07.6	1.982	1.985	75.4	29.4	17.5
1988 05 09	08 30.83	+48 13.8					
1988 05 19	08 58.26	+46 06.1	2.278	2.128	68.6	26.3	18.1
1988 05 29	09 23.58	+43 49.2					
1988 06 08	09 47.01	+41 26.5	2.580	2.273	61.2	23.0	18.6
1988 06 18	10 08.83	+39 00.9					
1988 06 28	10 29.26	+36 34.7	2.880	2.417	53.4	19.7	19.1
1988 07 08	10 48.51	+34 09.6					
1988 07 18	11 06.75	+31 46.9	3.169	2.559	45.3	16.4	19.6
1988 07 28	11 24.14	+29 27.7					
1988 08 07	11 40.80	+27 12.9	3.436	2.699	37.2	13.1	20.0

1985 RZ2 a,e,i = 3.07, 0.17, 3 Elements MPC 11515

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1986 12 16	06 27.65	+21 43.1	1.985	2.952	166.7	4.4	16.9
1986 12 26	06 18.49	+21 57.8					
1987 01 05	06 09.37	+22 11.5	2.016	2.986	168.5	3.8	16.9
1987 01 15	06 01.32	+22 24.0					
1987 01 25	05 55.14	+22 35.1	2.160	3.020	144.9	10.8	17.4
1987 02 04	05 51.31	+22 45.5					
1987 02 14	05 50.06	+22 55.5	2.395	3.053	123.5	15.6	17.8
1987 02 24	05 51.32	+23 05.2					
1987 03 06	05 54.93	+23 14.3	2.686	3.087	104.5	18.1	18.1
1987 03 16	06 00.63	+23 22.2					
1987 03 26	06 08.13	+23 28.2	2.998	3.120	87.6	18.6	18.4

1985 RY3 a,e,i = 3.15, 0.18, 1 Elements MPC 11509

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1986 12 16	06 40.67	+21 06.6	2.357	3.313	163.6	4.8	16.6
1986 12 26	06 32.07	+21 14.3					
1987 01 05	06 23.27	+21 21.9	2.369	3.345	171.6	2.5	16.5

1987 01 15	06 15.17	+21 28.9					
1987 01 25	06 08.50	+21 35.2	2.501	3.376	148.0	8.9	17.0
1987 02 04	06 03.77	+21 41.2					
1987 02 14	06 01.28	+21 47.0	2.730	3.406	126.0	13.6	17.3
1987 02 24	06 01.07	+21 52.7					
1987 03 06	06 03.03	+21 58.2	3.022	3.435	106.3	16.1	17.6
1987 03 16	06 07.00	+22 03.0					
1987 03 26	06 12.73	+22 06.6	3.340	3.463	88.7	16.7	17.9

1985 RV4 a,e,i = 3.18, 0.20, 0 Elements MPC 11515

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1986 12 16	06 51.27	+23 21.5	2.376	3.324	161.5	5.4	17.8
1986 12 26	06 42.69	+23 31.4					
1987 01 05	06 33.74	+23 39.5	2.380	3.359	174.1	1.7	17.6
1987 01 15	06 25.34	+23 45.0					
1987 01 25	06 18.26	+23 47.9	2.504	3.394	150.2	8.3	18.1
1987 02 04	06 13.08	+23 48.9					
1987 02 14	06 10.12	+23 48.7	2.729	3.427	128.1	13.1	18.4
1987 02 24	06 09.45	+23 47.7					
1987 03 06	06 11.00	+23 46.3	3.019	3.459	108.2	15.8	18.8
1987 03 16	06 14.61	+23 44.1					
1987 03 26	06 20.01	+23 40.9	3.340	3.490	90.3	16.6	19.0

1981 EA1 a,e,i = 2.15, 0.05, 2 Elements MPC 11520

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1986 12 16	07 04.74	+21 16.6	1.148	2.094	158.1	10.1	16.5
1986 12 26	06 54.32	+21 41.9					
1987 01 05	06 42.41	+22 08.5	1.103	2.085	176.1	1.8	16.0
1987 01 15	06 30.93	+22 32.7					
1987 01 25	06 21.63	+22 53.0	1.160	2.076	151.0	13.3	16.6
1987 02 04	06 15.75	+23 09.4					
1987 02 14	06 13.88	+23 22.6	1.300	2.069	128.9	21.8	17.1
1987 02 24	06 15.99	+23 32.9					
1987 03 06	06 21.74	+23 39.8	1.492	2.062	110.6	26.8	17.5
1987 03 16	06 30.68	+23 42.3					
1987 03 26	06 42.25	+23 39.3	1.708	2.057	95.4	28.9	17.8

1985 RJ4 a,e,i = 3.11, 0.21, 2 Elements MPC 11511

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1986 12 16	07 10.99	+25 20.9	2.355	3.283	157.0	6.7	17.9
1986 12 26	07 02.50	+25 38.9					
1987 01 05	06 53.28	+25 53.8	2.339	3.321	176.6	1.0	17.6
1987 01 15	06 44.29	+26 03.9					
1987 01 25	06 36.40	+26 08.9	2.444	3.357	154.1	7.4	18.0
1987 02 04	06 30.28	+26 09.4					
1987 02 14	06 26.38	+26 06.4	2.655	3.392	131.6	12.6	18.4
1987 02 24	06 24.84	+26 01.0					
1987 03 06	06 25.62	+25 54.1	2.938	3.426	111.4	15.6	18.8
1987 03 16	06 28.56	+25 45.8					
1987 03 26	06 33.43	+25 36.1	3.256	3.459	93.2	16.7	19.0

1979 QZ1 a,e,i = 3.12, 0.14, 1 Elements MPC 11514

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1986 12 16	07 46.56	+22 05.3	1.783	2.673	148.6	11.0	16.5
1986 12 26	07 39.98	+22 22.8					
1987 01 05	07 31.63	+22 42.2	1.703	2.681	172.5	2.7	16.1
1987 01 15	07 22.57	+23 00.4					
1987 01 25	07 13.98	+23 14.8	1.734	2.691	163.0	6.1	16.3
1987 02 04	07 06.93	+23 24.3					

1987 02 14	07 02.24	+23 28.7	1.871	2.703	140.0	13.6	16.7
1987 02 24	07 00.30	+23 28.3					
1987 03 06	07 01.18	+23 23.9	2.086	2.717	119.6	18.5	17.1
1987 03 16	07 04.76	+23 15.4					
1987 03 26	07 10.72	+23 02.8	2.347	2.733	101.9	20.9	17.4

1985 RK4 a,e,i = 2.76, 0.10, 1 Elements MPC 11511

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1986 12 16	09 15.88	+16 42.4	1.909	2.621	126.9	17.5	17.3
1986 12 26	09 13.86	+16 53.3					
1987 01 05	09 09.07	+17 15.9	1.749	2.641	149.0	11.0	16.9
1987 01 15	09 01.90	+17 47.4					
1987 01 25	08 53.09	+18 23.6	1.682	2.662	173.3	2.5	16.5
1987 02 04	08 43.66	+18 59.5					
1987 02 14	08 34.82	+19 30.4	1.728	2.684	161.9	6.6	16.8
1987 02 24	08 27.59	+19 53.3					
1987 03 06	08 22.70	+20 06.8	1.878	2.705	138.8	14.0	17.2
1987 03 16	08 20.53	+20 10.7					
1987 03 26	08 21.09	+20 05.6	2.106	2.727	118.6	18.7	17.6
1987 04 05	08 24.22	+19 52.0					
1987 04 15	08 29.61	+19 30.4	2.376	2.749	100.9	21.0	18.0

1953 XL1 a,e,i = 2.79, 0.08, 13 Elements MPC 11520

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1986 12 16	10 04.91	+11 04.0	2.005	2.567	113.9	20.5	16.0
1986 12 26	10 08.07	+11 34.5					
1987 01 05	10 08.68	+12 25.0	1.781	2.562	133.8	16.1	15.6
1987 01 15	10 06.64	+13 35.6					
1987 01 25	10 02.10	+15 03.4	1.626	2.559	156.5	8.8	15.1
1987 02 04	09 55.47	+16 42.6					
1987 02 14	09 47.61	+18 24.5	1.572	2.557	175.0	1.9	14.7
1987 02 24	09 39.58	+19 59.6					
1987 03 06	09 32.51	+21 20.0	1.631	2.557	153.5	10.0	15.2
1987 03 16	09 27.38	+22 21.0					
1987 03 26	09 24.75	+23 01.1	1.785	2.558	131.6	16.9	15.6
1987 04 05	09 24.88	+23 21.2					
1987 04 15	09 27.70	+23 23.0	2.002	2.561	112.6	21.2	16.0
1987 04 25	09 32.97	+23 09.0					
1987 05 05	09 40.38	+22 41.1	2.250	2.566	96.3	23.0	16.3

1981 TL4 a,e,i = 2.36, 0.13, 5 Elements MPC 11511

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 01 25	13 21.13	-14 54.1	2.167	2.525	99.6	22.6	17.6
1987 02 04	13 26.79	-15 53.2					
1987 02 14	13 30.20	-16 40.5	1.894	2.502	117.0	20.6	17.3
1987 02 24	13 31.02	-17 13.6					
1987 03 06	13 29.03	-17 29.9	1.661	2.478	136.8	15.9	16.8
1987 03 16	13 24.24	-17 27.1					
1987 03 26	13 16.96	-17 03.6	1.498	2.453	158.5	8.6	16.3
1987 04 05	13 07.93	-16 20.2					
1987 04 15	12 58.27	-15 21.1	1.432	2.427	170.4	4.0	16.0
1987 04 25	12 49.20	-14 13.2					
1987 05 05	12 41.84	-13 05.3	1.471	2.399	150.3	12.0	16.4
1987 05 15	12 36.99	-12 05.5					
1987 05 25	12 34.99	-11 19.4	1.596	2.371	129.4	19.3	16.7
1987 06 04	12 35.90	-10 50.4					
1987 06 14	12 39.55	-10 39.0	1.775	2.343	111.2	23.8	17.1
1987 06 24	12 45.66	-10 44.5					
1987 07 04	12 53.94	-11 05.4	1.981	2.314	95.7	25.9	17.3

1932 EO a,e,i = 3.06, 0.04, 9 Elements MPC 11517

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	03 26	17 56.06	-32 38.7	2.899	3.148	95.1	18.4	17.1
1987	04 05	18 02.31	-33 11.8					
1987	04 15	18 06.37	-33 46.0	2.633	3.152	112.3	17.1	16.9
1987	04 25	18 08.01	-34 21.1					
1987	05 05	18 07.03	-34 55.9	2.402	3.156	131.0	14.0	16.6
1987	05 15	18 03.41	-35 28.3					
1987	05 25	17 57.32	-35 55.3	2.237	3.160	150.7	9.0	16.3
1987	06 04	17 49.20	-36 13.7					
1987	06 14	17 39.82	-36 20.7	2.166	3.163	166.5	4.3	16.0
1987	06 24	17 30.15	-36 14.9					
1987	07 04	17 21.19	-35 57.2	2.203	3.165	157.2	7.2	16.2
1987	07 14	17 13.85	-35 30.4					
1987	07 24	17 08.71	-34 58.1	2.341	3.168	137.8	12.4	16.5
1987	08 03	17 06.12	-34 23.9					
1987	08 13	17 06.12	-33 50.5	2.554	3.169	118.8	16.3	16.8
1987	08 23	17 08.62	-33 19.7					
1987	09 02	17 13.41	-32 52.0	2.813	3.171	101.4	18.2	17.1

A923 NB a,e,i = 2.75, 0.32, 14 Elements MPC 8466

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	04 15	19 20.33	-19 04.9	2.363	2.647	95.0	22.2	16.4
1987	04 25	19 28.51	-17 59.9					
1987	05 05	19 34.73	-16 51.1	2.042	2.578	110.7	21.5	16.0
1987	05 15	19 38.74	-15 39.4					
1987	05 25	19 40.24	-14 26.0	1.753	2.508	128.0	18.6	15.6
1987	06 04	19 38.99	-13 12.4					
1987	06 14	19 34.95	-12 00.6	1.521	2.437	147.1	13.1	15.0
1987	06 24	19 28.26	-10 52.8					
1987	07 04	19 19.43	-09 51.9	1.371	2.367	164.9	6.4	14.5
1987	07 14	19 09.43	-09 00.9					
1987	07 24	18 59.42	-08 22.1	1.319	2.298	159.5	8.9	14.4
1987	08 03	18 50.69	-07 56.6					
1987	08 13	18 44.33	-07 43.8	1.360	2.231	139.6	17.1	14.7
1987	08 23	18 40.99	-07 41.5					
1987	09 02	18 41.02	-07 46.9	1.468	2.166	120.8	23.6	15.0
1987	09 12	18 44.41	-07 56.1					
1987	09 22	18 50.93	-08 06.0	1.614	2.105	104.6	27.5	15.2

1983 TC a,e,i = 2.69, 0.19, 12 Elements MPC 8462

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987	04 15	19 23.64	-13 35.9	2.297	2.561	-0.99	-4.0	17.8
1987	04 25	19 32.34	-12 18.6					
1987	05 05	19 39.11	-10 58.2	2.012	2.520	-1.16	-4.7	17.5
1987	05 15	19 43.68	-09 36.6					
1987	05 25	19 45.83	-08 15.8	1.756	2.479	-1.37	-5.5	17.1
1987	06 04	19 45.34	-06 59.1					
1987	06 14	19 42.19	-05 49.8	1.552	2.439	-1.60	-6.3	16.6
1987	06 24	19 36.55	-04 51.8					
1987	07 04	19 28.90	-04 09.1	1.424	2.400	-1.78	-7.1	16.2
1987	07 14	19 20.12	-03 44.6					
1987	07 24	19 11.26	-03 39.4	1.389	2.363	-1.81	-7.5	16.1
1987	08 03	19 03.48	-03 52.5					
1987	08 13	18 57.77	-04 20.2	1.446	2.328	-1.67	-7.3	16.4
1987	08 23	18 54.76	-04 58.3					
1987	09 02	18 54.78	-05 41.8	1.574	2.296	-1.46	-6.6	16.7
1987	09 12	18 57.84	-06 26.1					
1987	09 22	19 03.77	-07 07.7	1.748	2.266	-1.28	-5.7	17.0

1979 FV1 a,e,i = 3.44, 0.03, 7 Elements MPC 10033

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 05 05	19 56.49	-28 44.3	3.037	3.480	107.8	16.0	17.4
1987 05 15	19 58.83	-28 55.0					
1987 05 25	19 59.05	-29 10.4	2.788	3.485	126.3	13.5	17.1
1987 06 04	19 57.07	-29 29.8					
1987 06 14	19 52.96	-29 51.4	2.598	3.489	146.3	9.3	16.8
1987 06 24	19 46.97	-30 12.5					
1987 07 04	19 39.53	-30 30.3	2.498	3.494	166.2	4.0	16.5
1987 07 14	19 31.31	-30 42.1					
1987 07 24	19 23.05	-30 46.0	2.506	3.498	165.2	4.3	16.5
1987 08 03	19 15.55	-30 41.5					
1987 08 13	19 09.48	-30 29.2	2.623	3.502	145.0	9.5	16.9
1987 08 23	19 05.28	-30 10.5					
1987 09 02	19 03.23	-29 46.9	2.828	3.506	125.0	13.6	17.2
1987 09 12	19 03.38	-29 19.9					
1987 09 22	19 05.66	-28 50.5	3.092	3.510	106.4	15.9	17.4
1987 10 02	19 09.91	-28 19.0					
1987 10 12	19 15.92	-27 45.7	3.382	3.513	89.2	16.5	17.7

1975 VA9 a,e,i = 2.65, 0.16, 13 Elements MPC 9477

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 05 05	20 00.37	-22 12.4	2.486	2.926	105.8	19.4	17.7
1987 05 15	20 03.45	-21 38.1					
1987 05 25	20 04.15	-21 07.0	2.212	2.902	124.0	16.8	17.3
1987 06 04	20 02.29	-20 39.5					
1987 06 14	19 57.87	-20 15.6	1.990	2.877	144.4	11.8	16.9
1987 06 24	19 51.06	-19 54.5					
1987 07 04	19 42.30	-19 35.2	1.851	2.851	166.9	4.6	16.5
1987 07 14	19 32.39	-19 16.7					
1987 07 24	19 22.28	-18 58.1	1.819	2.823	168.9	4.0	16.4
1987 08 03	19 13.01	-18 39.3					
1987 08 13	19 05.50	-18 20.3	1.895	2.794	146.1	11.7	16.7
1987 08 23	19 00.34	-18 01.8					
1987 09 02	18 57.86	-17 43.7	2.056	2.764	125.2	17.4	17.1
1987 09 12	18 58.12	-17 25.7					
1987 09 22	19 00.98	-17 07.3	2.271	2.733	106.6	20.6	17.4
1987 10 02	19 06.24	-16 47.4					
1987 10 12	19 13.60	-16 24.9	2.507	2.700	90.1	21.7	17.6

1981 ET38 a,e,i = 2.78, 0.16, 10 Elements MPC 8908

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 05 05	19 50.30	-09 30.7	2.305	2.751	105.4	20.7	17.9
1987 05 15	19 54.50	-08 35.3					
1987 05 25	19 56.49	-07 44.6	2.039	2.717	122.2	18.4	17.5
1987 06 04	19 56.11	-07 01.3					
1987 06 14	19 53.32	-06 28.3	1.821	2.684	140.6	13.9	17.1
1987 06 24	19 48.25	-06 08.1					
1987 07 04	19 41.28	-06 02.9	1.678	2.651	158.7	8.0	16.7
1987 07 14	19 33.10	-06 13.6					
1987 07 24	19 24.60	-06 39.4	1.631	2.618	162.7	6.6	16.6
1987 08 03	19 16.78	-07 18.0					
1987 08 13	19 10.57	-08 05.4	1.683	2.586	146.0	12.6	16.9
1987 08 23	19 06.61	-08 57.7					
1987 09 02	19 05.30	-09 51.0	1.818	2.555	126.9	18.4	17.2
1987 09 12	19 06.76	-10 41.7					
1987 09 22	19 10.89	-11 27.2	2.007	2.524	109.4	22.0	17.5
1987 10 02	19 17.51	-12 05.6					
1987 10 12	19 26.35	-12 35.3	2.224	2.496	93.7	23.5	17.7

1986 EO a,e,i = 2.55, 0.08, 17 Elements MPC 10768

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	19 59.56	-25 26.7	2.250	2.716	106.6	20.8	16.8
1987	05 15	20 03.99	-26 17.9					
1987	05 25	20 05.89	-27 21.4	2.019	2.725	124.6	17.8	16.5
1987	06 04	20 05.01	-28 36.9					
1987	06 14	20 01.23	-30 01.9	1.842	2.734	144.5	12.4	16.2
1987	06 24	19 54.67	-31 31.8					
1987	07 04	19 45.75	-33 00.0	1.750	2.741	163.8	5.9	15.8
1987	07 14	19 35.36	-34 19.0					
1987	07 24	19 24.62	-35 22.6	1.763	2.747	161.9	6.6	15.9
1987	08 03	19 14.81	-36 07.6					
1987	08 13	19 07.05	-36 34.2	1.879	2.751	142.3	13.0	16.2
1987	08 23	19 02.04	-36 44.8					
1987	09 02	19 00.13	-36 42.7	2.075	2.755	122.8	17.9	16.6
1987	09 12	19 01.34	-36 31.3					
1987	09 22	19 05.43	-36 12.7	2.319	2.757	105.1	20.6	16.9
1987	10 02	19 12.13	-35 48.3					
1987	10 12	19 21.06	-35 18.9	2.583	2.758	89.3	21.2	17.2

1979 HE3 a,e,i = 2.41, 0.14, 3 Elements MPC 11518

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	19 57.86	-23 04.5	1.810	2.309	106.5	24.8	18.6
1987	05 15	20 03.70	-23 08.1					
1987	05 25	20 06.60	-23 20.9	1.619	2.340	123.9	21.1	18.3
1987	06 04	20 06.31	-23 43.6					
1987	06 14	20 02.78	-24 15.3	1.473	2.370	144.0	14.6	17.9
1987	06 24	19 56.20	-24 53.0					
1987	07 04	19 47.17	-25 32.4	1.401	2.401	166.2	5.8	17.5
1987	07 14	19 36.78	-26 07.8					
1987	07 24	19 26.33	-26 35.2	1.428	2.432	168.3	4.9	17.6
1987	08 03	19 17.16	-26 52.2					
1987	08 13	19 10.35	-26 58.9	1.554	2.461	146.2	13.2	18.1
1987	08 23	19 06.47	-26 56.8					
1987	09 02	19 05.75	-26 47.8	1.759	2.491	126.1	19.1	18.6
1987	09 12	19 08.05	-26 33.2					
1987	09 22	19 13.09	-26 13.7	2.015	2.519	108.4	22.2	19.0
1987	10 02	19 20.52	-25 49.6					
1987	10 12	19 29.95	-25 20.7	2.296	2.546	92.7	23.1	19.3

1984 UX1 a,e,i = 2.41, 0.12, 7 Elements MPC 10841

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 00.46	-27 31.5	2.176	2.648	106.7	21.4	18.2
1987	05 15	20 05.45	-27 55.3					
1987	05 25	20 07.85	-28 28.2	1.926	2.634	124.3	18.5	17.9
1987	06 04	20 07.35	-29 10.1					
1987	06 14	20 03.81	-29 59.1	1.728	2.618	144.0	13.2	17.5
1987	06 24	19 57.32	-30 51.5					
1987	07 04	19 48.27	-31 41.6	1.608	2.601	164.0	6.2	17.0
1987	07 14	19 37.58	-32 23.2					
1987	07 24	19 26.45	-32 51.2	1.590	2.582	164.1	6.2	17.0
1987	08 03	19 16.26	-33 03.1					
1987	08 13	19 08.20	-32 59.8	1.672	2.562	143.9	13.5	17.3
1987	08 23	19 03.04	-32 44.1					
1987	09 02	19 01.17	-32 19.1	1.834	2.540	124.0	19.2	17.7
1987	09 12	19 02.56	-31 47.8					
1987	09 22	19 06.97	-31 11.8	2.044	2.517	106.3	22.5	18.0
1987	10 02	19 14.09	-30 31.8					
1987	10 12	19 23.52	-29 47.9	2.275	2.493	90.6	23.6	18.2

1978 ON a,e,i = 2.75, 0.10, 3 Elements MPC 10951

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	19 59.00	-24 32.1	2.264	2.728	106.5	20.8	16.4
1987	05 15	20 04.09	-24 34.7					
1987	05 25	20 06.77	-24 44.5	2.006	2.707	124.1	18.1	16.0
1987	06 04	20 06.80	-25 01.9					
1987	06 14	20 04.10	-25 26.3	1.798	2.685	143.8	12.9	15.6
1987	06 24	19 58.75	-25 55.4					
1987	07 04	19 51.12	-26 25.9	1.668	2.664	165.2	5.6	15.1
1987	07 14	19 42.01	-26 53.5					
1987	07 24	19 32.42	-27 14.4	1.638	2.643	169.0	4.2	15.0
1987	08 03	19 23.55	-27 26.1					
1987	08 13	19 16.45	-27 28.2	1.711	2.622	147.4	12.0	15.4
1987	08 23	19 11.86	-27 21.7					
1987	09 02	19 10.17	-27 08.1	1.867	2.602	127.0	18.0	15.8
1987	09 12	19 11.45	-26 48.8					
1987	09 22	19 15.53	-26 24.8	2.077	2.583	108.9	21.6	16.1
1987	10 02	19 22.18	-25 56.2					
1987	10 12	19 31.04	-25 22.8	2.313	2.565	92.9	22.9	16.3

(3388) 1981 YR1 a,e,i = 2.36, 0.20, 25 Elements MPC 10399

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 13.43	-20 56.2	2.418	2.815	102.6	20.5	18.3
1987	05 15	20 17.37	-21 47.1					
1987	05 25	20 18.96	-22 52.3	2.167	2.825	121.0	17.9	18.0
1987	06 04	20 17.92	-24 12.5					
1987	06 14	20 14.13	-25 46.3	1.966	2.833	141.6	12.9	17.6
1987	06 24	20 07.58	-27 30.5					
1987	07 04	19 58.59	-29 18.9	1.849	2.837	162.9	6.0	17.2
1987	07 14	19 47.86	-31 03.7					
1987	07 24	19 36.40	-32 37.2	1.843	2.839	165.5	5.1	17.2
1987	08 03	19 25.43	-33 54.0					
1987	08 13	19 16.11	-34 51.8	1.949	2.837	144.7	11.9	17.5
1987	08 23	19 09.28	-35 31.7					
1987	09 02	19 05.45	-35 56.3	2.142	2.833	124.0	17.2	17.9
1987	09 12	19 04.75	-36 08.7					
1987	09 22	19 07.05	-36 11.8	2.387	2.825	105.5	20.0	18.2
1987	10 02	19 12.10	-36 07.3					
1987	10 12	19 19.58	-35 56.3	2.651	2.815	88.9	20.8	18.5

1980 FV1 a,e,i = 3.03, 0.11, 9 Elements MPC 10952

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 09.61	-30 46.9	2.761	3.180	105.3	17.8	19.0
1987	05 15	20 13.50	-31 01.3					
1987	05 25	20 15.12	-31 21.9	2.492	3.160	123.1	15.6	18.7
1987	06 04	20 14.27	-31 47.9					
1987	06 14	20 10.91	-32 17.3	2.274	3.140	142.4	11.4	18.4
1987	06 24	20 05.14	-32 47.0					
1987	07 04	19 57.32	-33 12.8	2.138	3.120	161.6	5.9	18.0
1987	07 14	19 48.15	-33 30.4					
1987	07 24	19 38.49	-33 36.7	2.106	3.098	164.9	4.9	17.9
1987	08 03	19 29.39	-33 30.1					
1987	08 13	19 21.76	-33 11.2	2.181	3.077	146.5	10.5	18.2
1987	08 23	19 16.28	-32 42.1					
1987	09 02	19 13.35	-32 05.5	2.344	3.054	126.6	15.4	18.5
1987	09 12	19 13.07	-31 23.8					
1987	09 22	19 15.35	-30 38.8	2.565	3.032	108.2	18.3	18.8
1987	10 02	19 20.00	-29 51.3					
1987	10 12	19 26.74	-29 01.7	2.815	3.010	91.4	19.4	19.0

(3472) 1981 EJ10 a,e,i = 2.72, 0.18, 4 Elements MPC 10940

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 03.34	-17 15.0	2.341	2.766	104.1	20.7	18.9
1987	05 15	20 08.21	-16 39.0					
1987	05 25	20 10.85	-16 07.6	2.062	2.729	121.3	18.5	18.5
1987	06 04	20 11.05	-15 42.6					
1987	06 14	20 08.71	-15 25.0	1.828	2.692	140.7	13.8	18.1
1987	06 24	20 03.88	-15 15.7					
1987	07 04	19 56.85	-15 14.5	1.669	2.655	162.0	6.8	17.6
1987	07 14	19 48.26	-15 20.4					
1987	07 24	19 39.02	-15 31.8	1.608	2.617	171.5	3.3	17.3
1987	08 03	19 30.19	-15 46.6					
1987	08 13	19 22.82	-16 02.8	1.651	2.580	150.2	11.3	17.7
1987	08 23	19 17.68	-16 18.6					
1987	09 02	19 15.27	-16 32.5	1.780	2.543	129.4	17.9	18.0
1987	09 12	19 15.76	-16 43.4					
1987	09 22	19 19.06	-16 50.1	1.966	2.506	110.9	22.0	18.3
1987	10 02	19 25.00	-16 51.4					
1987	10 12	19 33.28	-16 46.4	2.180	2.471	94.7	23.7	18.5

1984 UL2 a,e,i = 2.41, 0.23, 12 Elements MPC 9357

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 16.75	-21 33.1	2.528	2.910	101.9	19.8	17.7
1987	05 15	20 20.30	-21 00.2					
1987	05 25	20 21.53	-20 31.6	2.249	2.891	119.9	17.7	17.4
1987	06 04	20 20.21	-20 08.1					
1987	06 14	20 16.26	-19 49.5	2.015	2.869	140.1	13.1	17.0
1987	06 24	20 09.76	-19 35.3					
1987	07 04	20 01.04	-19 24.3	1.859	2.845	162.6	6.1	16.5
1987	07 14	19 50.79	-19 14.7					
1987	07 24	19 39.93	-19 05.0	1.807	2.818	173.1	2.5	16.3
1987	08 03	19 29.54	-18 54.1					
1987	08 13	19 20.66	-18 41.7	1.866	2.788	149.7	10.6	16.7
1987	08 23	19 14.01	-18 27.9					
1987	09 02	19 10.06	-18 13.1	2.016	2.755	128.0	16.8	17.0
1987	09 12	19 08.93	-17 57.2					
1987	09 22	19 10.53	-17 39.8	2.224	2.720	108.8	20.4	17.3
1987	10 02	19 14.67	-17 20.4					
1987	10 12	19 21.07	-16 57.9	2.458	2.682	91.8	21.8	17.5

1982 BU1 a,e,i = 2.44, 0.12, 3 Elements MPC 10625

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 11.98	-17 39.5	2.289	2.689	102.2	21.5	18.4
1987	05 15	20 16.59	-17 23.6					
1987	05 25	20 18.84	-17 15.8	2.052	2.701	119.8	19.0	18.1
1987	06 04	20 18.49	-17 17.4					
1987	06 14	20 15.49	-17 29.2	1.857	2.712	139.7	14.0	17.7
1987	06 24	20 09.93	-17 50.7					
1987	07 04	20 02.17	-18 20.1	1.736	2.721	162.0	6.6	17.3
1987	07 14	19 52.92	-18 54.6					
1987	07 24	19 43.12	-19 30.5	1.716	2.729	173.9	2.3	17.1
1987	08 03	19 33.84	-20 04.5					
1987	08 13	19 26.09	-20 34.3	1.804	2.734	150.9	10.4	17.5
1987	08 23	19 20.56	-20 58.4					
1987	09 02	19 17.69	-21 16.6	1.982	2.737	129.6	16.5	17.9
1987	09 12	19 17.59	-21 28.7					
1987	09 22	19 20.13	-21 34.8	2.219	2.739	110.6	20.1	18.3
1987	10 02	19 25.11	-21 34.8					
1987	10 12	19 32.25	-21 28.6	2.485	2.738	93.8	21.3	18.6

1983 QG a,e,i = 2.64, 0.35, 14 Elements MPC 8678

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	19 50.57	-24 28.7	1.785	2.311	108.4	24.5	17.6
1987	05 15	19 59.61	-25 18.5					
1987	05 25	20 06.57	-26 24.5	1.499	2.233	124.4	22.0	17.1
1987	06 04	20 11.01	-27 49.8					
1987	06 14	20 12.52	-29 35.5	1.262	2.156	142.1	16.8	16.5
1987	06 24	20 10.75	-31 40.0					
1987	07 04	20 05.55	-33 56.9	1.097	2.081	159.8	9.7	15.9
1987	07 14	19 57.35	-36 14.9					
1987	07 24	19 47.19	-38 20.0	1.021	2.009	161.2	9.4	15.6
1987	08 03	19 36.81	-39 59.4					
1987	08 13	19 28.29	-41 06.1	1.032	1.942	143.5	18.1	15.8
1987	08 23	19 23.29	-41 40.0					
1987	09 02	19 22.90	-41 44.8	1.108	1.881	125.3	26.0	16.1
1987	09 12	19 27.40	-41 25.8					
1987	09 22	19 36.48	-40 46.6	1.222	1.828	110.0	31.1	16.4
1987	10 02	19 49.58	-39 49.2					
1987	10 12	20 05.99	-38 34.3	1.355	1.784	97.4	33.7	16.7

1955 BG a,e,i = 2.64, 0.28, 14 Elements MPC 10402

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 20.85	-25 16.4	3.006	3.360	101.8	17.1	17.8
1987	05 15	20 24.11	-25 46.0					
1987	05 25	20 25.32	-26 25.0	2.723	3.349	120.2	15.2	17.5
1987	06 04	20 24.30	-27 13.4					
1987	06 14	20 20.95	-28 09.7	2.490	3.335	140.2	11.2	17.2
1987	06 24	20 15.33	-29 11.4					
1987	07 04	20 07.68	-30 14.5	2.340	3.317	160.8	5.8	16.9
1987	07 14	19 58.53	-31 14.2					
1987	07 24	19 48.63	-32 05.7	2.299	3.297	167.2	3.9	16.7
1987	08 03	19 38.90	-32 45.5					
1987	08 13	19 30.28	-33 12.3	2.370	3.274	148.1	9.4	17.0
1987	08 23	19 23.48	-33 26.3					
1987	09 02	19 19.02	-33 29.3	2.536	3.249	127.4	14.3	17.3
1987	09 12	19 17.13	-33 23.5					
1987	09 22	19 17.81	-33 10.9	2.762	3.220	108.2	17.2	17.5
1987	10 02	19 20.94	-32 52.7					
1987	10 12	19 26.28	-32 30.1	3.015	3.189	90.8	18.2	17.7

(3465) 1984 SQ5 a,e,i = 2.31, 0.05, 6 Elements MPC 10839

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 05.31	-17 46.5	1.735	2.205	103.8	26.4	17.5
1987	05 15	20 13.29	-17 37.1					
1987	05 25	20 18.66	-17 38.1	1.523	2.210	119.9	23.4	17.1
1987	06 04	20 21.07	-17 52.4					
1987	06 14	20 20.33	-18 21.3	1.348	2.216	138.8	17.6	16.7
1987	06 24	20 16.38	-19 04.7					
1987	07 04	20 09.52	-20 00.2	1.238	2.223	160.8	8.7	16.2
1987	07 14	20 00.52	-21 02.7					
1987	07 24	19 50.56	-22 05.5	1.218	2.232	175.3	2.2	15.9
1987	08 03	19 41.08	-23 02.4					
1987	08 13	19 33.46	-23 49.0	1.295	2.241	152.0	12.3	16.5
1987	08 23	19 28.62	-24 23.6					
1987	09 02	19 27.08	-24 46.3	1.454	2.250	131.2	19.7	16.9
1987	09 12	19 28.89	-24 57.7					
1987	09 22	19 33.82	-24 58.9	1.668	2.261	113.2	24.1	17.4
1987	10 02	19 41.53	-24 50.2					
1987	10 12	19 51.60	-24 32.1	1.912	2.272	97.6	25.8	17.7

1971 UD1 a,e,i = 2.21, 0.13, 2 Elements MPC 9465

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 07.50	-20 01.9	1.778	2.242	103.7	25.9	18.5
1987	05 15	20 15.86	-19 41.6					
1987	05 25	20 21.78	-19 29.0	1.529	2.213	119.6	23.4	18.1
1987	06 04	20 24.87	-19 26.5					
1987	06 14	20 24.84	-19 35.8	1.319	2.183	138.1	18.1	17.6
1987	06 24	20 21.50	-19 57.3					
1987	07 04	20 14.96	-20 29.5	1.170	2.153	159.6	9.5	17.1
1987	07 14	20 05.86	-21 08.6					
1987	07 24	19 55.30	-21 49.0	1.108	2.123	176.4	1.7	16.5
1987	08 03	19 44.82	-22 25.2					
1987	08 13	19 36.03	-22 53.1	1.141	2.094	152.8	12.8	17.1
1987	08 23	19 30.12	-23 11.2					
1987	09 02	19 27.84	-23 19.3	1.253	2.066	131.6	21.4	17.5
1987	09 12	19 29.34	-23 18.0					
1987	09 22	19 34.42	-23 07.8	1.417	2.039	113.7	26.8	17.9
1987	10 02	19 42.72	-22 48.5					
1987	10 12	19 53.78	-22 19.8	1.607	2.014	98.5	29.3	18.2

1983 VV1 a,e,i = 3.10, 0.04, 3 Elements MPC 8540

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 22.52	-22 27.7	2.887	3.232	100.8	17.8	17.7
1987	05 15	20 26.63	-22 19.6					
1987	05 25	20 28.74	-22 18.0	2.620	3.230	118.7	16.0	17.4
1987	06 04	20 28.67	-22 23.4					
1987	06 14	20 26.39	-22 35.3	2.398	3.228	138.3	12.1	17.1
1987	06 24	20 21.97	-22 52.7					
1987	07 04	20 15.65	-23 13.5	2.252	3.225	159.8	6.2	16.7
1987	07 14	20 07.96	-23 34.9					
1987	07 24	19 59.58	-23 54.1	2.208	3.222	175.6	1.4	16.4
1987	08 03	19 51.33	-24 08.8					
1987	08 13	19 44.02	-24 17.5	2.275	3.218	154.2	7.9	16.8
1987	08 23	19 38.31	-24 19.7					
1987	09 02	19 34.67	-24 15.9	2.441	3.214	132.9	13.3	17.2
1987	09 12	19 33.31	-24 06.6					
1987	09 22	19 34.25	-23 52.5	2.674	3.210	113.5	16.7	17.5
1987	10 02	19 37.38	-23 34.0					
1987	10 12	19 42.52	-23 11.2	2.946	3.205	95.8	18.1	17.7

1980 FB a,e,i = 3.20, 0.11, 2 Elements MPC 10830

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 20.62	-21 20.7	2.567	2.932	101.0	19.7	17.8
1987	05 15	20 25.83	-21 10.2					
1987	05 25	20 28.88	-21 06.9	2.328	2.947	118.4	17.6	17.5
1987	06 04	20 29.61	-21 11.6					
1987	06 14	20 27.96	-21 24.1	2.132	2.963	137.8	13.3	17.2
1987	06 24	20 24.01	-21 43.5					
1987	07 04	20 18.03	-22 07.8	2.008	2.980	159.2	7.0	16.8
1987	07 14	20 10.57	-22 33.8					
1987	07 24	20 02.40	-22 58.5	1.983	2.998	176.8	1.1	16.5
1987	08 03	19 54.39	-23 19.0					
1987	08 13	19 47.42	-23 33.4	2.067	3.017	155.2	8.1	17.0
1987	08 23	19 42.17	-23 41.0					
1987	09 02	19 39.09	-23 42.1	2.247	3.036	134.0	13.8	17.4
1987	09 12	19 38.38	-23 37.0					
1987	09 22	19 40.01	-23 26.3	2.495	3.056	114.9	17.3	17.7
1987	10 02	19 43.86	-23 10.3					
1987	10 12	19 49.70	-22 49.2	2.782	3.076	97.5	18.8	18.0

1983 NR a,e,i = 2.56, 0.13, 15 Elements MPC 8285

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 21.76	-31 57.4	1.816	2.266	103.0	25.7	17.1
1987	05 15	20 30.58	-31 26.0					
1987	05 25	20 36.48	-30 57.4	1.587	2.253	118.5	23.3	16.7
1987	06 04	20 39.08	-30 31.6					
1987	06 14	20 38.09	-30 07.5	1.393	2.242	136.6	18.1	16.3
1987	06 24	20 33.43	-29 42.4					
1987	07 04	20 25.35	-29 12.1	1.262	2.234	157.3	10.1	15.8
1987	07 14	20 14.71	-28 32.0					
1987	07 24	20 02.82	-27 39.1	1.219	2.230	172.4	3.5	15.5
1987	08 03	19 51.34	-26 33.5					
1987	08 13	19 41.82	-25 18.1	1.275	2.228	153.4	11.7	15.9
1987	08 23	19 35.27	-23 58.0					
1987	09 02	19 32.23	-22 37.1	1.418	2.229	132.7	19.4	16.4
1987	09 12	19 32.69	-21 18.1					
1987	09 22	19 36.36	-20 01.8	1.620	2.233	114.6	24.1	16.8
1987	10 02	19 42.87	-18 47.4					
1987	10 12	19 51.74	-17 33.7	1.857	2.241	99.0	26.1	17.1

1982 HF1 a,e,i = 2.72, 0.15, 11 Elements MPC 10625

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 19.86	-07 28.7	2.097	2.448	97.8	24.1	17.5
1987	05 15	20 26.22	-06 03.9					
1987	05 25	20 30.25	-04 43.9	1.892	2.474	113.3	22.1	17.3
1987	06 04	20 31.73	-03 31.8					
1987	06 14	20 30.59	-02 31.1	1.720	2.502	130.5	18.0	17.0
1987	06 24	20 26.89	-01 45.2					
1987	07 04	20 20.90	-01 17.6	1.607	2.531	148.7	12.0	16.7
1987	07 14	20 13.25	-01 10.1					
1987	07 24	20 04.76	-01 22.9	1.578	2.561	161.2	7.3	16.5
1987	08 03	19 56.43	-01 54.1					
1987	08 13	19 49.27	-02 39.3	1.648	2.592	153.0	10.2	16.7
1987	08 23	19 44.01	-03 33.1					
1987	09 02	19 41.14	-04 30.1	1.808	2.623	135.3	15.7	17.1
1987	09 12	19 40.87	-05 25.7					
1987	09 22	19 43.12	-06 16.2	2.036	2.655	117.6	19.6	17.5
1987	10 02	19 47.74	-06 59.1					
1987	10 12	19 54.45	-07 32.8	2.307	2.686	101.3	21.4	17.9

(3480) 1981 GB a,e,i = 3.03, 0.29, 4 Elements MPC 10948

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 27.11	-14 41.9	2.237	2.577	97.9	22.8	18.0
1987	05 15	20 32.99	-14 06.4					
1987	05 25	20 36.49	-13 38.9	2.046	2.635	114.7	20.4	17.7
1987	06 04	20 37.45	-13 21.3					
1987	06 14	20 35.83	-13 15.0	1.889	2.694	133.8	15.8	17.5
1987	06 24	20 31.73	-13 20.3					
1987	07 04	20 25.47	-13 36.7	1.797	2.753	155.1	9.0	17.2
1987	07 14	20 17.67	-14 02.3					
1987	07 24	20 09.13	-14 34.2	1.799	2.812	174.4	2.0	16.9
1987	08 03	20 00.80	-15 09.0					
1987	08 13	19 53.59	-15 43.3	1.908	2.871	157.6	7.7	17.4
1987	08 23	19 48.16	-16 14.7					
1987	09 02	19 44.95	-16 41.5	2.115	2.930	136.5	13.7	17.9
1987	09 12	19 44.12	-17 02.4					
1987	09 22	19 45.61	-17 16.9	2.393	2.988	117.2	17.4	18.3
1987	10 02	19 49.27	-17 24.8					
1987	10 12	19 54.85	-17 25.7	2.713	3.045	99.7	18.9	18.6

(3413) 1983 CB3 a,e,i = 2.25, 0.13, 6 Elements MPC 10534

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 20.16	-23 55.0	1.553	2.015	101.7	29.3	17.1
1987	05 15	20 30.19	-23 13.8					
1987	05 25	20 37.25	-22 38.1	1.367	2.035	116.8	26.4	16.8
1987	06 04	20 40.94	-22 10.1					
1987	06 14	20 41.00	-21 50.7	1.211	2.058	134.9	20.5	16.4
1987	06 24	20 37.34	-21 39.5					
1987	07 04	20 30.20	-21 34.6	1.111	2.082	156.3	11.3	15.9
1987	07 14	20 20.40	-21 32.2					
1987	07 24	20 09.26	-21 28.5	1.093	2.109	178.7	0.6	15.4
1987	08 03	19 58.42	-21 20.4					
1987	08 13	19 49.44	-21 06.7	1.170	2.136	156.2	11.0	16.1
1987	08 23	19 43.36	-20 47.9					
1987	09 02	19 40.73	-20 24.8	1.330	2.165	135.0	19.2	16.7
1987	09 12	19 41.56	-19 58.0					
1987	09 22	19 45.57	-19 27.6	1.550	2.194	116.8	24.1	17.1
1987	10 02	19 52.37	-18 53.0					
1987	10 12	20 01.50	-18 13.6	1.804	2.224	101.1	26.1	17.6

1983 XU a,e,i = 3.12, 0.16, 2 Elements MPC 10759

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 30.83	-20 24.5	3.231	3.524	98.5	16.4	18.6
1987	05 15	20 34.60	-20 18.4					
1987	05 25	20 36.57	-20 19.0	2.936	3.506	116.4	15.0	18.3
1987	06 04	20 36.60	-20 26.9					
1987	06 14	20 34.63	-20 42.2	2.683	3.487	136.1	11.7	18.0
1987	06 24	20 30.68	-21 04.1					
1987	07 04	20 24.95	-21 31.0	2.506	3.467	157.5	6.4	17.6
1987	07 14	20 17.82	-22 00.5					
1987	07 24	20 09.85	-22 29.9	2.430	3.446	177.6	0.7	17.2
1987	08 03	20 01.75	-22 56.3					
1987	08 13	19 54.29	-23 17.8	2.469	3.423	156.8	6.7	17.6
1987	08 23	19 48.10	-23 33.1					
1987	09 02	19 43.71	-23 41.9	2.609	3.399	135.1	12.1	17.9
1987	09 12	19 41.41	-23 44.3					
1987	09 22	19 41.30	-23 41.0	2.824	3.375	115.1	15.6	18.1
1987	10 02	19 43.35	-23 32.1					
1987	10 12	19 47.43	-23 18.1	3.079	3.349	96.9	17.2	18.4

1979 YN8 a,e,i = 2.76, 0.17, 8 Elements MPC 10632

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 26.73	-16 49.9	2.455	2.790	98.6	20.9	16.6
1987	05 15	20 32.63	-16 00.6					
1987	05 25	20 36.47	-15 15.2	2.168	2.756	115.2	19.4	16.2
1987	06 04	20 38.03	-14 35.1					
1987	06 14	20 37.14	-14 01.8	1.918	2.721	133.7	15.6	15.8
1987	06 24	20 33.73	-13 36.2					
1987	07 04	20 27.93	-13 19.1	1.733	2.686	154.4	9.4	15.4
1987	07 14	20 20.19	-13 10.3					
1987	07 24	20 11.22	-13 08.7	1.640	2.651	173.0	2.7	14.9
1987	08 03	20 01.97	-13 12.9					
1987	08 13	19 53.54	-13 20.6	1.652	2.617	157.4	8.6	15.2
1987	08 23	19 46.83	-13 29.8					
1987	09 02	19 42.53	-13 38.7	1.759	2.583	136.1	15.7	15.5
1987	09 12	19 40.99	-13 45.4					
1987	09 22	19 42.27	-13 48.6	1.934	2.549	116.8	20.6	15.9
1987	10 02	19 46.27	-13 46.9					
1987	10 12	19 52.72	-13 39.1	2.146	2.517	99.9	23.0	16.1

1981 WQ a,e,i = 2.28, 0.16, 8 Elements MPC 10762

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 34.53	-25 36.6	2.229	2.584	98.9	22.7	17.8
1987	05 15	20 41.21	-25 52.9					
1987	05 25	20 45.48	-26 20.1	1.994	2.599	115.8	20.5	17.5
1987	06 04	20 47.02	-26 59.1					
1987	06 14	20 45.62	-27 49.2	1.795	2.612	134.8	16.0	17.1
1987	06 24	20 41.16	-28 47.9					
1987	07 04	20 33.78	-29 50.4	1.663	2.622	155.4	9.3	16.7
1987	07 14	20 24.06	-30 50.1					
1987	07 24	20 12.93	-31 39.9	1.626	2.630	168.4	4.4	16.5
1987	08 03	20 01.67	-32 14.3					
1987	08 13	19 51.61	-32 30.9	1.695	2.634	152.3	10.3	16.8
1987	08 23	19 43.80	-32 30.7					
1987	09 02	19 38.93	-32 16.3	1.855	2.637	131.7	16.6	17.2
1987	09 12	19 37.24	-31 51.1					
1987	09 22	19 38.62	-31 17.9	2.078	2.636	112.9	20.5	17.6
1987	10 02	19 42.84	-30 38.6					
1987	10 12	19 49.52	-29 54.1	2.333	2.633	96.1	22.1	17.9

1985 XA a,e,i = 1.90, 0.05, 25 Elements MPC 10609

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987	05 05	20 23.24	-26 27.3	1.526	1.990	-1.85	+4.3	16.6
1987	05 15	20 34.99	-28 23.1					
1987	05 25	20 44.44	-30 45.5	1.321	1.994	-2.21	+2.3	16.2
1987	06 04	20 50.98	-33 37.5					
1987	06 14	20 53.99	-36 58.0	1.159	1.998	-2.73	+0.2	15.7
1987	06 24	20 52.74	-40 40.6					
1987	07 04	20 46.63	-44 30.6	1.065	1.999	-3.46	-0.2	15.4
1987	07 14	20 35.68	-48 06.1					
1987	07 24	20 20.88	-51 04.4	1.059	1.999	-4.33	+3.3	15.4
1987	08 03	20 04.53	-53 08.4					
1987	08 13	19 49.76	-54 13.9	1.137	1.998	-4.77	+8.2	15.7
1987	08 23	19 39.17	-54 28.3					
1987	09 02	19 34.22	-54 03.6	1.277	1.995	-4.34	+10.0	16.1
1987	09 12	19 35.09	-53 11.9					
1987	09 22	19 41.14	-52 01.5	1.451	1.991	-3.46	+8.6	16.4
1987	10 02	19 51.51	-50 37.2					
1987	10 12	20 05.23	-49 01.5	1.640	1.985	-2.62	+5.7	16.7

6552 P-L a,e,i = 2.27, 0.11, 7 Elements MPC 9761

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 32.45	-11 30.4	2.197	2.509	95.9	23.6	18.7
1987	05 15	20 39.46	-10 47.1					
1987	05 25	20 44.36	-10 10.8	1.941	2.501	111.8	22.1	18.4
1987	06 04	20 46.86	-09 44.4					
1987	06 14	20 46.76	-09 30.4	1.713	2.490	129.9	18.2	18.0
1987	06 24	20 43.94	-09 31.0					
1987	07 04	20 38.45	-09 48.0	1.542	2.478	150.5	11.7	17.5
1987	07 14	20 30.69	-10 21.0					
1987	07 24	20 21.37	-11 07.9	1.456	2.463	170.5	3.9	17.1
1987	08 03	20 11.54	-12 04.9					
1987	08 13	20 02.41	-13 06.3	1.472	2.447	159.5	8.3	17.3
1987	08 23	19 55.05	-14 07.0					
1987	09 02	19 50.24	-15 02.7	1.585	2.430	137.9	16.2	17.7
1987	09 12	19 48.42	-15 50.4					
1987	09 22	19 49.63	-16 28.5	1.767	2.411	118.2	21.5	18.1
1987	10 02	19 53.76	-16 56.1					
1987	10 12	20 00.50	-17 12.6	1.988	2.390	101.1	24.2	18.4

(3474) 1962 HE a,e,i = 2.56, 0.21, 6 Elements MPC 10946

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 12.44	-12 19.6	1.584	2.031	100.8	29.2	16.5
1987	05 15	20 23.38	-11 19.6					
1987	05 25	20 31.89	-10 26.5	1.388	2.033	114.8	26.9	16.1
1987	06 04	20 37.64	-09 44.0					
1987	06 14	20 40.39	-09 16.2	1.223	2.041	131.3	22.0	15.7
1987	06 24	20 39.99	-09 06.5					
1987	07 04	20 36.54	-09 17.6	1.107	2.054	150.6	14.1	15.3
1987	07 14	20 30.55	-09 49.5					
1987	07 24	20 22.93	-10 39.6	1.065	2.073	170.0	4.9	14.9
1987	08 03	20 14.96	-11 42.1					
1987	08 13	20 08.03	-12 49.7	1.113	2.097	160.8	9.1	15.2
1987	08 23	20 03.25	-13 55.4					
1987	09 02	20 01.35	-14 53.6	1.247	2.125	140.6	17.6	15.7
1987	09 12	20 02.59	-15 40.7					
1987	09 22	20 06.88	-16 15.0	1.446	2.157	122.4	23.1	16.2
1987	10 02	20 13.93	-16 35.6					
1987	10 12	20 23.35	-16 42.4	1.689	2.193	106.5	25.9	16.7

1970 NB a,e,i = 2.62, 0.24, 16 Elements MPC 11146

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 21.73	-13 21.3	2.148	2.510	98.9	23.4	16.1
1987	05 15	20 29.87	-13 18.0					
1987	05 25	20 36.15	-13 26.2	1.856	2.458	114.7	22.0	15.7
1987	06 04	20 40.26	-13 49.5					
1987	06 14	20 41.92	-14 30.9	1.598	2.406	132.8	18.0	15.2
1987	06 24	20 40.92	-15 32.8					
1987	07 04	20 37.16	-16 55.8	1.399	2.354	153.7	11.0	14.7
1987	07 14	20 30.89	-18 37.3					
1987	07 24	20 22.69	-20 31.0	1.289	2.304	176.8	1.4	14.0
1987	08 03	20 13.59	-22 28.2					
1987	08 13	20 04.94	-24 18.8	1.281	2.255	158.7	9.4	14.3
1987	08 23	19 58.01	-25 55.2					
1987	09 02	19 53.89	-27 13.0	1.365	2.208	136.4	18.4	14.7
1987	09 12	19 53.17	-28 10.9					
1987	09 22	19 56.01	-28 49.6	1.513	2.164	117.2	24.4	15.1
1987	10 02	20 02.29	-29 10.2					
1987	10 12	20 11.68	-29 14.0	1.695	2.124	101.0	27.5	15.4

(3400) 1981 GX a,e,i = 1.93, 0.10, 20 Elements MPC 10525

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 41.88	-06 28.9	1.759	2.062	92.3	29.3	18.2
1987	05 15	20 50.06	-03 50.8					
1987	05 25	20 55.73	-01 09.2	1.556	2.078	106.1	27.9	17.9
1987	06 04	20 58.56	+01 33.0					
1987	06 14	20 58.25	+04 11.4	1.377	2.092	121.2	24.5	17.6
1987	06 24	20 54.59	+06 40.2					
1987	07 04	20 47.60	+08 51.3	1.245	2.104	136.7	19.3	17.3
1987	07 14	20 37.70	+10 35.7					
1987	07 24	20 25.81	+11 45.2	1.183	2.113	147.8	14.8	17.0
1987	08 03	20 13.28	+12 14.7					
1987	08 13	20 01.70	+12 05.6	1.205	2.120	145.7	15.6	17.1
1987	08 23	19 52.41	+11 24.3					
1987	09 02	19 46.34	+10 20.6	1.306	2.125	132.8	20.4	17.4
1987	09 12	19 43.87	+09 05.4					
1987	09 22	19 44.94	+07 47.6	1.465	2.126	117.7	24.7	17.8
1987	10 02	19 49.32	+06 34.1					
1987	10 12	19 56.60	+05 29.8	1.659	2.126	103.4	27.2	18.1

(3451) 1984 HA1 a,e,i = 5.10, 0.07, 25 Elements MPC 10827

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 39.33	+04 22.3	4.635	4.742	89.9	12.3	15.5
1987	05 15	20 41.97	+05 04.6					
1987	05 25	20 43.37	+05 42.2	4.355	4.740	106.3	11.8	15.3
1987	06 04	20 43.49	+06 13.3					
1987	06 14	20 42.34	+06 36.1	4.104	4.738	123.3	10.3	15.1
1987	06 24	20 39.98	+06 49.0					
1987	07 04	20 36.55	+06 50.4	3.912	4.737	140.1	7.9	14.9
1987	07 14	20 32.28	+06 39.5					
1987	07 24	20 27.46	+06 16.2	3.807	4.736	153.2	5.5	14.8
1987	08 03	20 22.45	+05 40.8					
1987	08 13	20 17.63	+04 55.1	3.806	4.736	153.7	5.4	14.8
1987	08 23	20 13.38	+04 01.3					
1987	09 02	20 10.01	+03 02.2	3.911	4.736	140.8	7.7	14.9
1987	09 12	20 07.77	+02 00.7					
1987	09 22	20 06.82	+00 59.6	4.106	4.736	123.6	10.2	15.1
1987	10 02	20 07.23	+00 01.2					
1987	10 12	20 09.01	-00 52.4	4.367	4.737	105.8	11.7	15.3

1982 RU a,e,i = 3.15, 0.20, 15 Elements MPC 8677

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 33.52	-02 57.8	2.652	2.892	93.3	20.4	17.8
1987	05 15	20 40.03	-01 55.5					
1987	05 25	20 44.84	-00 58.0	2.364	2.853	108.5	19.7	17.5
1987	06 04	20 47.73	-00 08.2					
1987	06 14	20 48.58	+00 30.8	2.105	2.815	125.1	17.2	17.2
1987	06 24	20 47.29	+00 55.7					
1987	07 04	20 43.90	+01 03.1	1.898	2.778	142.9	12.7	16.8
1987	07 14	20 38.68	+00 50.5					
1987	07 24	20 32.10	+00 16.6	1.770	2.742	158.8	7.7	16.4
1987	08 03	20 24.88	-00 37.6					
1987	08 13	20 17.88	-01 48.6	1.740	2.708	158.5	7.9	16.4
1987	08 23	20 11.96	-03 10.9					
1987	09 02	20 07.84	-04 38.3	1.808	2.676	141.9	13.4	16.6
1987	09 12	20 06.02	-06 04.4					
1987	09 22	20 06.72	-07 24.6	1.957	2.646	123.4	18.5	16.9
1987	10 02	20 09.97	-08 35.0					
1987	10 12	20 15.64	-09 33.4	2.159	2.618	106.1	21.5	17.2

1973 UU4 a,e,i = 2.35, 0.23, 7 Elements MPC 9077

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 05	20 22.82	-10 27.3	1.892	2.263	97.9	26.2	18.7
1987	05 15	20 32.52	-09 22.5					
1987	05 25	20 40.32	-08 21.4	1.618	2.210	112.2	25.1	18.3
1987	06 04	20 45.90	-07 27.2					
1987	06 14	20 48.96	-06 43.7	1.374	2.157	128.3	21.7	17.8
1987	06 24	20 49.22	-06 14.9					
1987	07 04	20 46.53	-06 05.2	1.178	2.104	146.8	15.3	17.2
1987	07 14	20 41.06	-06 17.7					
1987	07 24	20 33.33	-06 53.8	1.054	2.054	165.5	7.1	16.6
1987	08 03	20 24.38	-07 51.8					
1987	08 13	20 15.65	-09 05.7	1.018	2.005	161.7	9.1	16.6
1987	08 23	20 08.57	-10 27.7					
1987	09 02	20 04.35	-11 49.4	1.067	1.960	141.5	18.7	16.9
1987	09 12	20 03.71	-13 03.5					
1987	09 22	20 06.84	-14 05.3	1.181	1.919	122.7	26.1	17.3
1987	10 02	20 13.61	-14 51.7					
1987	10 12	20 23.66	-15 20.8	1.333	1.883	106.9	30.5	17.7

1974 FV1 a,e,i = 5.22, 0.16, 13 Elements MPC 10843

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 05 05	20 48.15	-16 05.3	4.423	4.594	93.4	12.7	17.3
1987 05 15	20 51.04	-15 33.8					
1987 05 25	20 52.59	-15 06.2	4.109	4.577	111.4	11.9	17.1
1987 06 04	20 52.73	-14 43.1					
1987 06 14	20 51.44	-14 24.9	3.833	4.559	130.6	9.7	16.9
1987 06 24	20 48.78	-14 11.7					
1987 07 04	20 44.86	-14 03.3	3.628	4.543	150.9	6.2	16.6
1987 07 14	20 39.94	-13 59.3					
1987 07 24	20 34.32	-13 58.7	3.520	4.527	171.4	1.9	16.3
1987 08 03	20 28.43	-14 00.7					
1987 08 13	20 22.71	-14 04.0	3.528	4.512	164.5	3.4	16.4
1987 08 23	20 17.59	-14 07.5					
1987 09 02	20 13.44	-14 10.2	3.646	4.498	143.5	7.7	16.7
1987 09 12	20 10.55	-14 11.2					
1987 09 22	20 09.08	-14 09.8	3.855	4.485	123.2	10.8	16.9
1987 10 02	20 09.14	-14 05.4					
1987 10 12	20 10.70	-13 57.4	4.123	4.472	104.1	12.5	17.1

1981 EV27 a,e,i = 2.79, 0.06, 5 Elements MPC 10620

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 05 05	20 40.33	-13 03.0	2.465	2.734	94.4	21.6	19.6
1987 05 15	20 47.43	-12 21.7					
1987 05 25	20 52.63	-11 46.8	2.198	2.722	110.4	20.4	19.3
1987 06 04	20 55.69	-11 20.4					
1987 06 14	20 56.44	-11 04.5	1.961	2.710	128.3	17.1	18.9
1987 06 24	20 54.79	-11 00.8					
1987 07 04	20 50.78	-11 10.3	1.779	2.698	148.4	11.4	18.5
1987 07 14	20 44.70	-11 32.6					
1987 07 24	20 37.11	-12 06.1	1.682	2.687	169.5	3.9	18.1
1987 08 03	20 28.83	-12 47.5					
1987 08 13	20 20.85	-13 32.7	1.688	2.677	164.0	6.0	18.2
1987 08 23	20 14.10	-14 17.5					
1987 09 02	20 09.33	-14 58.3	1.795	2.667	142.5	13.3	18.6
1987 09 12	20 07.04	-15 32.6					
1987 09 22	20 07.37	-15 58.8	1.980	2.658	122.5	18.6	18.9
1987 10 02	20 10.30	-16 15.9					
1987 10 12	20 15.64	-16 23.4	2.213	2.650	104.8	21.4	19.3

1974 SB3 a,e,i = 2.23, 0.17, 5 Elements MPC 10634

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 05 05	20 35.69	-15 43.2	1.915	2.259	96.2	26.4	18.2
1987 05 15	20 45.51	-14 38.8					
1987 05 25	20 53.31	-13 37.3	1.649	2.220	110.8	25.2	17.8
1987 06 04	20 58.74	-12 41.2					
1987 06 14	21 01.48	-11 52.9	1.409	2.181	127.4	21.7	17.4
1987 06 24	21 01.24	-11 14.9					
1987 07 04	20 57.84	-10 49.9	1.218	2.142	146.7	15.1	16.8
1987 07 14	20 51.42	-10 39.2					
1987 07 24	20 42.55	-10 43.0	1.099	2.103	167.6	6.0	16.2
1987 08 03	20 32.28	-10 59.4					
1987 08 13	20 22.11	-11 24.6	1.071	2.064	163.9	7.8	16.2
1987 08 23	20 13.52	-11 53.9					
1987 09 02	20 07.75	-12 22.8	1.133	2.027	142.3	17.7	16.6
1987 09 12	20 05.53	-12 47.2					
1987 09 22	20 07.01	-13 04.3	1.260	1.992	122.9	25.0	17.0
1987 10 02	20 12.08	-13 12.1					
1987 10 12	20 20.36	-13 08.8	1.426	1.960	106.6	29.2	17.4

1983 RL4 a,e,i = 2.63, 0.27, 18 Elements MPC 9766

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 05 05	20 36.60	-00 50.6	2.227	2.477	92.0	24.0	18.7
1987 05 15	20 45.60	+00 20.9					
1987 05 25	20 52.99	+01 27.9	1.936	2.416	105.8	23.8	18.3
1987 06 04	20 58.49	+02 27.0					
1987 06 14	21 01.87	+03 13.9	1.667	2.356	120.9	21.7	17.9
1987 06 24	21 02.90	+03 43.7					
1987 07 04	21 01.40	+03 50.5	1.439	2.296	137.8	17.3	17.4
1987 07 14	20 57.44	+03 29.1					
1987 07 24	20 51.34	+02 35.1	1.275	2.238	155.0	11.1	16.9
1987 08 03	20 43.79	+01 07.4					
1987 08 13	20 35.87	-00 50.0	1.198	2.182	161.1	8.7	16.6
1987 08 23	20 28.79	-03 08.7					
1987 09 02	20 23.70	-05 36.8	1.216	2.128	146.0	15.4	16.8
1987 09 12	20 21.49	-08 02.1					
1987 09 22	20 22.58	-10 15.3	1.313	2.078	127.0	22.7	17.1
1987 10 02	20 27.07	-12 10.0					
1987 10 12	20 34.80	-13 42.7	1.464	2.033	109.9	27.5	17.5

1978 TR2 a,e,i = 2.85, 0.09, 1 Elements MPC 8391

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 05 25	21 07.81	-16 22.4	2.250	2.741	108.2	20.5	17.8
1987 06 04	21 11.80	-16 01.3					
1987 06 14	21 13.51	-15 49.7	2.001	2.724	125.9	17.6	17.5
1987 06 24	21 12.80	-15 48.6					
1987 07 04	21 09.62	-15 58.3	1.804	2.707	145.9	12.1	17.1
1987 07 14	21 04.15	-16 17.5					
1987 07 24	20 56.84	-16 43.9	1.688	2.690	168.2	4.4	16.6
1987 08 03	20 48.45	-17 13.8					
1987 08 13	20 39.94	-17 43.3	1.674	2.675	168.5	4.3	16.6
1987 08 23	20 32.33	-18 08.6					
1987 09 02	20 26.50	-18 27.3	1.763	2.660	146.0	12.3	17.0
1987 09 12	20 23.05	-18 37.9					
1987 09 22	20 22.25	-18 39.9	1.934	2.647	125.5	18.0	17.4
1987 10 02	20 24.14	-18 33.2					
1987 10 12	20 28.56	-18 17.9	2.158	2.634	107.4	21.2	17.7
1987 10 22	20 35.23	-17 54.1					
1987 11 01	20 43.88	-17 21.8	2.407	2.623	91.2	22.2	17.9

1985 BB a,e,i = 2.96, 0.03, 2 Elements MPC 10844

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 05 25	21 11.17	-18 33.9	2.380	2.861	108.1	19.7	19.0
1987 06 04	21 14.81	-18 29.3					
1987 06 14	21 16.21	-18 35.0	2.143	2.862	126.1	16.7	18.7
1987 06 24	21 15.25	-18 51.2					
1987 07 04	21 11.90	-19 17.1	1.961	2.863	146.3	11.4	18.4
1987 07 14	21 06.39	-19 50.7					
1987 07 24	20 59.18	-20 28.3	1.863	2.865	168.2	4.1	18.0
1987 08 03	20 50.96	-21 05.8					
1987 08 13	20 42.69	-21 38.7	1.869	2.867	167.7	4.3	18.0
1987 08 23	20 35.26	-22 03.9					
1987 09 02	20 29.49	-22 19.5	1.980	2.869	145.6	11.5	18.4
1987 09 12	20 25.93	-22 25.1					
1987 09 22	20 24.83	-22 21.1	2.174	2.872	125.2	16.6	18.8
1987 10 02	20 26.22	-22 08.1					
1987 10 12	20 29.96	-21 46.9	2.424	2.876	106.8	19.4	19.1
1987 10 22	20 35.82	-21 18.0					
1987 11 01	20 43.52	-20 41.8	2.698	2.880	90.3	20.2	19.3

1986 AG1 a,e,i = 1.96, 0.04, 21 Elements MPC 10610

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987	05 25	21 28.16	-21 39.0	1.463	1.985	-1.01	-18.1	16.5
1987	06 04	21 34.03	-19 49.7					
1987	06 14	21 36.54	-17 59.0	1.248	1.977	-1.32	-21.2	16.0
1987	06 24	21 35.23	-16 07.3					
1987	07 04	21 29.78	-14 14.9	1.072	1.968	-1.73	-24.2	15.5
1987	07 14	21 20.23	-12 22.5					
1987	07 24	21 07.18	-10 32.2	0.965	1.959	-2.11	-26.2	14.9
1987	08 03	20 52.00	-08 47.7					
1987	08 13	20 36.70	-07 13.5	0.953	1.950	-2.22	-26.2	14.8
1987	08 23	20 23.27	-05 53.3					
1987	09 02	20 13.27	-04 48.2	1.036	1.941	-1.97	-24.3	15.3
1987	09 12	20 07.50	-03 55.9					
1987	09 22	20 05.99	-03 12.9	1.190	1.933	-1.61	-21.5	15.8
1987	10 02	20 08.47	-02 34.6					
1987	10 12	20 14.41	-01 57.0	1.380	1.925	-1.33	-18.7	16.3
1987	10 22	20 23.28	-01 16.6					
1987	11 01	20 34.59	-00 30.9	1.585	1.918	-1.14	-16.3	16.6

(3446) 1942 EB a,e,i = 2.38, 0.16, 8 Elements MPC 10825

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 21.30	-25 07.6	2.256	2.738	107.6	20.6	18.4
1987	06 04	21 24.89	-25 28.6					
1987	06 14	21 25.94	-26 01.3	2.028	2.746	125.6	17.5	18.0
1987	06 24	21 24.24	-26 44.9					
1987	07 04	21 19.69	-27 36.8	1.853	2.751	145.5	12.1	17.7
1987	07 14	21 12.50	-28 32.1					
1987	07 24	21 03.16	-29 24.5	1.761	2.754	164.6	5.6	17.3
1987	08 03	20 52.54	-30 07.4					
1987	08 13	20 41.83	-30 35.5	1.775	2.755	161.4	6.7	17.4
1987	08 23	20 32.18	-30 46.3					
1987	09 02	20 24.59	-30 40.2	1.892	2.753	141.3	13.3	17.8
1987	09 12	20 19.69	-30 19.5					
1987	09 22	20 17.72	-29 47.1	2.088	2.748	121.4	18.2	18.1
1987	10 02	20 18.65	-29 05.7					
1987	10 12	20 22.24	-28 17.3	2.331	2.741	103.4	20.7	18.4
1987	10 22	20 28.17	-27 22.9					
1987	11 01	20 36.11	-26 23.2	2.593	2.731	87.2	21.3	18.7

1984 YC a,e,i = 2.74, 0.25, 32 Elements MPC 11237

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 30.04	-01 19.1	3.136	3.429	98.1	17.0	17.9
1987	06 04	21 30.63	+00 10.9					
1987	06 14	21 29.32	+01 36.7	2.861	3.425	115.6	15.5	17.7
1987	06 24	21 26.00	+02 56.3					
1987	07 04	21 20.68	+04 07.2	2.635	3.419	133.9	12.4	17.4
1987	07 14	21 13.52	+05 06.6					
1987	07 24	21 04.87	+05 52.0	2.489	3.411	150.6	8.4	17.2
1987	08 03	20 55.26	+06 21.6					
1987	08 13	20 45.41	+06 35.0	2.448	3.399	156.1	6.9	17.1
1987	08 23	20 36.07	+06 33.3					
1987	09 02	20 27.93	+06 19.2	2.518	3.386	143.8	10.1	17.2
1987	09 12	20 21.54	+05 56.6					
1987	09 22	20 17.22	+05 29.5	2.681	3.369	125.9	14.0	17.5
1987	10 02	20 15.12	+05 01.8					
1987	10 12	20 15.21	+04 36.7	2.905	3.350	108.0	16.5	17.7
1987	10 22	20 17.35	+04 16.7					
1987	11 01	20 21.38	+04 03.7	3.157	3.329	91.2	17.3	17.9

(3546) 1983 SC a,e,i = 2.69, 0.03, 7 Elements MPC 11514

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 24.75	-20 54.4	2.212	2.671	105.7	21.4	17.5
1987	06 04	21 29.18	-20 36.3					
1987	06 14	21 31.17	-20 27.6	1.981	2.676	123.2	18.5	17.2
1987	06 24	21 30.55	-20 28.5					
1987	07 04	21 27.23	-20 38.3	1.798	2.681	143.0	13.2	16.8
1987	07 14	21 21.37	-20 54.5					
1987	07 24	21 13.40	-21 13.8	1.692	2.686	164.9	5.6	16.4
1987	08 03	21 04.08	-21 31.8					
1987	08 13	20 54.46	-21 44.3	1.688	2.692	169.9	3.8	16.3
1987	08 23	20 45.61	-21 48.4					
1987	09 02	20 38.50	-21 42.9	1.789	2.697	147.8	11.5	16.7
1987	09 12	20 33.79	-21 28.0					
1987	09 22	20 31.76	-21 04.6	1.976	2.702	127.1	17.2	17.1
1987	10 02	20 32.46	-20 33.7					
1987	10 12	20 35.71	-19 56.1	2.219	2.708	108.6	20.4	17.5
1987	10 22	20 41.22	-19 12.2					
1987	11 01	20 48.71	-18 22.1	2.489	2.713	92.1	21.4	17.8

(3394) 1986 DB a,e,i = 2.32, 0.20, 7 Elements MPC 10518

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 28.06	-06 33.5	2.185	2.569	100.4	22.8	18.1
1987	06 04	21 32.09	-05 49.8					
1987	06 14	21 33.79	-05 17.6	1.971	2.602	117.6	20.2	17.8
1987	06 24	21 32.98	-04 59.4					
1987	07 04	21 29.60	-04 57.2	1.795	2.632	137.0	15.3	17.5
1987	07 14	21 23.81	-05 12.2					
1987	07 24	21 16.00	-05 44.2	1.689	2.659	158.3	8.1	17.2
1987	08 03	21 06.88	-06 31.0					
1987	08 13	20 57.41	-07 28.2	1.681	2.684	169.6	3.9	17.0
1987	08 23	20 48.59	-08 30.3					
1987	09 02	20 41.35	-09 32.0	1.781	2.705	150.6	10.6	17.4
1987	09 12	20 36.35	-10 28.4					
1987	09 22	20 33.90	-11 16.3	1.972	2.724	129.6	16.5	17.8
1987	10 02	20 34.08	-11 53.9					
1987	10 12	20 36.76	-12 20.2	2.224	2.740	110.6	19.9	18.2
1987	10 22	20 41.69	-12 35.2					
1987	11 01	20 48.61	-12 38.8	2.507	2.753	93.6	21.1	18.5

1986 AK a,e,i = 2.35, 0.34, 22 Elements MPC 10953

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987	05 25	21 49.37	-37 27.9	2.458	2.891	-0.72	-3.2	17.6
1987	06 04	21 53.91	-38 48.7					
1987	06 14	21 55.73	-40 22.7	2.276	2.936	-0.80	-4.1	17.4
1987	06 24	21 54.52	-42 06.6					
1987	07 04	21 50.03	-43 54.6	2.148	2.976	-0.91	-4.5	17.2
1987	07 14	21 42.27	-45 38.5					
1987	07 24	21 31.62	-47 08.7	2.102	3.013	-1.04	-4.1	17.1
1987	08 03	21 18.95	-48 15.9					
1987	08 13	21 05.60	-48 54.1	2.153	3.045	-1.13	-2.8	17.2
1987	08 23	20 53.04	-49 01.4					
1987	09 02	20 42.58	-48 40.4	2.299	3.074	-1.12	-1.6	17.4
1987	09 12	20 35.08	-47 56.4					
1987	09 22	20 30.87	-46 55.6	2.517	3.098	-1.01	-0.9	17.7
1987	10 02	20 29.92	-45 43.3					
1987	10 12	20 31.93	-44 23.8	2.781	3.118	-0.85	-0.8	18.0
1987	10 22	20 36.49	-42 59.9					
1987	11 01	20 43.20	-41 33.1	3.063	3.135	-0.71	-1.1	18.2

1981 EO15 a,e,i = 2.73, 0.07, 7 Elements MPC 10821

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 05 25	21 29.40	-06 42.0	2.433	2.795	100.2	20.9	19.1
1987 06 04	21 34.06	-05 48.5					
1987 06 14	21 36.71	-05 03.5	2.171	2.781	116.8	19.0	18.8
1987 06 24	21 37.18	-04 29.4					
1987 07 04	21 35.35	-04 08.3	1.949	2.767	135.4	15.0	18.4
1987 07 14	21 31.30	-04 01.9					
1987 07 24	21 25.24	-04 11.3	1.796	2.753	155.5	8.8	18.0
1987 08 03	21 17.71	-04 36.0					
1987 08 13	21 09.47	-05 13.4	1.736	2.738	169.3	3.9	17.7
1987 08 23	21 01.44	-05 59.9					
1987 09 02	20 54.52	-06 50.4	1.782	2.723	153.7	9.4	18.0
1987 09 12	20 49.48	-07 40.0					
1987 09 22	20 46.76	-08 24.6	1.921	2.708	133.2	15.7	18.3
1987 10 02	20 46.59	-09 01.2					
1987 10 12	20 48.95	-09 27.8	2.126	2.694	114.2	19.8	18.7
1987 10 22	20 53.67	-09 43.4					
1987 11 01	21 00.52	-09 47.5	2.368	2.679	97.2	21.6	18.9

1976 SZ9 a,e,i = 3.19, 0.21, 4 Elements MPC 9957

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 05 25	21 30.09	-19 08.0	2.680	3.086	104.0	18.6	18.2
1987 06 04	21 34.50	-18 57.5					
1987 06 14	21 36.97	-18 56.2	2.389	3.045	121.5	16.5	17.9
1987 06 24	21 37.31	-19 04.6					
1987 07 04	21 35.42	-19 22.5	2.146	3.005	140.9	12.3	17.5
1987 07 14	21 31.33	-19 48.4					
1987 07 24	21 25.27	-20 19.7	1.981	2.964	162.1	6.0	17.1
1987 08 03	21 17.72	-20 52.7					
1987 08 13	21 09.44	-21 22.8	1.917	2.924	172.5	2.6	16.8
1987 08 23	21 01.32	-21 46.3					
1987 09 02	20 54.27	-22 00.3	1.960	2.885	151.1	9.7	17.1
1987 09 12	20 49.04	-22 03.4					
1987 09 22	20 46.10	-21 55.8	2.095	2.847	130.0	15.7	17.4
1987 10 02	20 45.70	-21 38.0					
1987 10 12	20 47.83	-21 10.7	2.293	2.809	111.0	19.4	17.7
1987 10 22	20 52.32	-20 34.9					
1987 11 01	20 58.95	-19 50.8	2.521	2.773	94.0	20.9	17.9

1984 UA2 a,e,i = 2.24, 0.19, 4 Elements MPC 9356

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 05 25	21 02.18	-14 12.9	1.261	1.856	108.9	31.1	16.5
1987 06 04	21 13.58	-13 32.9					
1987 06 14	21 22.42	-13 06.0	1.073	1.836	123.0	27.6	16.1
1987 06 24	21 28.33	-12 56.3					
1987 07 04	21 30.90	-13 07.5	0.922	1.823	140.2	20.9	15.5
1987 07 14	21 30.01	-13 41.0					
1987 07 24	21 25.84	-14 35.1	0.826	1.816	160.9	10.6	15.0
1987 08 03	21 19.14	-15 44.1					
1987 08 13	21 11.32	-16 57.7	0.804	1.817	175.9	2.3	14.6
1987 08 23	21 04.01	-18 05.4					
1987 09 02	20 58.83	-18 58.3	0.865	1.824	153.2	14.5	15.2
1987 09 12	20 56.87	-19 31.6					
1987 09 22	20 58.53	-19 44.0	0.996	1.837	133.5	23.4	15.8
1987 10 02	21 03.75	-19 36.2					
1987 10 12	21 12.13	-19 09.8	1.177	1.857	117.0	28.6	16.3
1987 10 22	21 23.14	-18 26.6					
1987 11 01	21 36.27	-17 27.9	1.390	1.882	103.1	30.9	16.8

1981 EO8 a,e,i = 2.64, 0.17, 4 Elements MPC 10614

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 41.84	-12 17.8	2.584	2.921	99.1	20.0	19.3
1987	06 04	21 46.43	-11 40.4					
1987	06 14	21 49.06	-11 11.5	2.301	2.897	116.3	18.3	18.9
1987	06 24	21 49.54	-10 52.6					
1987	07 04	21 47.71	-10 44.9	2.056	2.871	135.5	14.4	18.6
1987	07 14	21 43.57	-10 48.7					
1987	07 24	21 37.30	-11 03.6	1.880	2.843	156.9	8.1	18.1
1987	08 03	21 29.33	-11 27.6					
1987	08 13	21 20.39	-11 57.7	1.802	2.814	176.6	1.2	17.7
1987	08 23	21 11.38	-12 30.0					
1987	09 02	21 03.27	-13 00.5	1.832	2.783	155.7	8.6	18.1
1987	09 12	20 56.90	-13 25.8					
1987	09 22	20 52.82	-13 43.7	1.960	2.751	133.7	15.3	18.4
1987	10 02	20 51.33	-13 52.8					
1987	10 12	20 52.47	-13 52.5	2.155	2.719	114.0	19.6	18.7
1987	10 22	20 56.08	-13 42.5					
1987	11 01	21 01.95	-13 22.9	2.385	2.685	96.5	21.6	19.0

(3432) Kobuchizawa a,e,i = 3.17, 0.25, 13 Elements MPC 10633

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 42.70	-30 50.8	2.038	2.494	104.6	23.1	16.1
1987	06 04	21 49.84	-31 04.2					
1987	06 14	21 54.25	-31 28.3	1.858	2.529	120.5	20.2	15.8
1987	06 24	21 55.67	-32 02.1					
1987	07 04	21 53.94	-32 42.5	1.720	2.568	138.1	15.3	15.6
1987	07 14	21 49.14	-33 24.3					
1987	07 24	21 41.68	-34 00.8	1.651	2.609	155.2	9.4	15.3
1987	08 03	21 32.33	-34 24.5					
1987	08 13	21 22.26	-34 29.6	1.675	2.652	160.5	7.3	15.3
1987	08 23	21 12.71	-34 13.8					
1987	09 02	21 04.82	-33 37.6	1.798	2.698	146.5	11.9	15.7
1987	09 12	20 59.34	-32 44.4					
1987	09 22	20 56.62	-31 38.4	2.007	2.745	128.3	16.7	16.1
1987	10 02	20 56.67	-30 23.4					
1987	10 12	20 59.30	-29 02.3	2.277	2.794	110.9	19.5	16.5
1987	10 22	21 04.17	-27 37.1					
1987	11 01	21 10.95	-26 08.9	2.583	2.843	94.8	20.4	16.8

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

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 47.08	-19 28.1	2.422	2.787	100.3	20.9	18.1
1987	06 04	21 51.89	-19 53.3					
1987	06 14	21 54.47	-20 32.7	2.215	2.836	118.0	18.4	17.8
1987	06 24	21 54.63	-21 26.4					
1987	07 04	21 52.25	-22 33.0	2.049	2.883	137.7	13.7	17.5
1987	07 14	21 47.40	-23 49.1					
1987	07 24	21 40.35	-25 09.3	1.959	2.928	158.4	7.3	17.3
1987	08 03	21 31.69	-26 26.9					
1987	08 13	21 22.27	-27 35.0	1.973	2.970	167.4	4.3	17.2
1987	08 23	21 13.05	-28 28.4					
1987	09 02	21 05.01	-29 04.1	2.096	3.010	149.5	9.8	17.6
1987	09 12	20 58.88	-29 22.0					
1987	09 22	20 55.10	-29 23.8	2.313	3.047	129.1	14.8	18.0
1987	10 02	20 53.84	-29 11.7					
1987	10 12	20 55.03	-28 48.2	2.592	3.081	110.1	17.7	18.3
1987	10 22	20 58.46	-28 15.4					
1987	11 01	21 03.88	-27 34.8	2.902	3.113	92.8	18.6	18.6

1981 EJ23 a,e,i = 2.72, 0.06, 4 Elements MPC 10541

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 43.64	-17 10.1	2.508	2.868	100.3	20.3	19.2
1987	06 04	21 48.61	-16 48.9					
1987	06 14	21 51.52	-16 37.5	2.247	2.861	117.5	18.4	18.9
1987	06 24	21 52.17	-16 36.7					
1987	07 04	21 50.42	-16 46.7	2.027	2.854	136.8	14.1	18.5
1987	07 14	21 46.28	-17 06.6					
1987	07 24	21 39.97	-17 34.1	1.877	2.846	158.4	7.6	18.1
1987	08 03	21 31.95	-18 05.5					
1987	08 13	21 23.02	-18 36.4	1.826	2.838	176.4	1.3	17.7
1987	08 23	21 14.09	-19 02.6					
1987	09 02	21 06.16	-19 20.7	1.883	2.828	154.7	8.8	18.2
1987	09 12	21 00.01	-19 28.8					
1987	09 22	20 56.18	-19 26.5	2.036	2.818	133.0	15.1	18.5
1987	10 02	20 54.90	-19 14.1					
1987	10 12	20 56.18	-18 52.2	2.256	2.808	113.5	19.0	18.9
1987	10 22	20 59.83	-18 21.7					
1987	11 01	21 05.62	-17 43.1	2.511	2.797	96.1	20.7	19.1

1981 EZ10 a,e,i = 2.78, 0.04, 3 Elements MPC 10615

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 45.24	-11 05.7	2.343	2.678	98.0	22.0	18.9
1987	06 04	21 51.23	-10 18.4					
1987	06 14	21 55.18	-09 40.1	2.097	2.680	114.3	20.2	18.6
1987	06 24	21 56.90	-09 12.6					
1987	07 04	21 56.22	-08 57.5	1.885	2.682	132.8	16.1	18.3
1987	07 14	21 53.13	-08 55.7					
1987	07 24	21 47.81	-09 06.9	1.736	2.685	153.7	9.6	17.9
1987	08 03	21 40.67	-09 29.7					
1987	08 13	21 32.47	-10 00.9	1.678	2.689	174.8	2.0	17.5
1987	08 23	21 24.11	-10 36.4					
1987	09 02	21 16.57	-11 11.5	1.726	2.693	159.1	7.7	17.8
1987	09 12	21 10.71	-11 42.1					
1987	09 22	21 07.08	-12 05.5	1.871	2.698	137.5	14.6	18.2
1987	10 02	21 05.96	-12 19.6					
1987	10 12	21 07.39	-12 23.5	2.088	2.703	117.9	19.0	18.6
1987	10 22	21 11.20	-12 17.1					
1987	11 01	21 17.17	-12 00.3	2.346	2.708	100.5	21.1	18.9

1985 DW a,e,i = 2.80, 0.09, 5 Elements MPC 10166

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 44.87	-14 22.2	2.527	2.868	99.1	20.4	17.2
1987	06 04	21 50.61	-14 08.3					
1987	06 14	21 54.45	-14 05.5	2.254	2.850	116.0	18.7	16.9
1987	06 24	21 56.19	-14 15.2					
1987	07 04	21 55.65	-14 38.4	2.019	2.831	135.0	14.7	16.5
1987	07 14	21 52.80	-15 14.5					
1987	07 24	21 47.75	-16 01.8	1.852	2.812	156.2	8.4	16.1
1987	08 03	21 40.89	-16 56.7					
1987	08 13	21 32.89	-17 53.9	1.780	2.792	176.8	1.2	15.6
1987	08 23	21 24.62	-18 47.9					
1987	09 02	21 17.05	-19 33.5	1.816	2.773	156.9	8.2	16.0
1987	09 12	21 11.05	-20 07.3					
1987	09 22	21 07.22	-20 27.7	1.949	2.753	135.1	14.9	16.4
1987	10 02	21 05.91	-20 34.6					
1987	10 12	21 07.19	-20 28.6	2.151	2.734	115.5	19.2	16.7
1987	10 22	21 10.92	-20 10.6					
1987	11 01	21 16.90	-19 41.7	2.391	2.715	98.1	21.2	17.0

1934 CC a,e,i = 2.62, 0.16, 13 Elements MPC 10402

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 50.11	-06 47.6	2.457	2.744	95.4	21.6	17.8
1987	06 04	21 55.54	-05 25.9					
1987	06 14	21 59.04	-04 08.8	2.173	2.713	111.3	20.4	17.4
1987	06 24	22 00.40	-02 58.2					
1987	07 04	21 59.39	-01 56.4	1.921	2.681	129.1	17.1	17.1
1987	07 14	21 55.94	-01 05.7					
1987	07 24	21 50.12	-00 28.6	1.729	2.648	148.4	11.6	16.6
1987	08 03	21 42.26	-00 07.0					
1987	08 13	21 33.07	-00 01.3	1.623	2.615	164.9	5.8	16.2
1987	08 23	21 23.44	-00 10.4					
1987	09 02	21 14.46	-00 31.2	1.621	2.581	157.2	8.7	16.3
1987	09 12	21 07.12	-00 59.1					
1987	09 22	21 02.12	-01 29.2	1.715	2.547	137.4	15.5	16.6
1987	10 02	20 59.88	-01 56.7					
1987	10 12	21 00.50	-02 18.0	1.881	2.513	118.3	20.5	17.0
1987	10 22	21 03.85	-02 30.6					
1987	11 01	21 09.70	-02 32.7	2.086	2.479	101.3	23.1	17.2

1940 ED a,e,i = 2.33, 0.15, 4 Elements MPC 9684

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 40.62	-09 09.7	1.725	2.123	98.4	28.2	17.9
1987	06 04	21 49.14	-08 14.5					
1987	06 14	21 55.19	-07 31.8	1.537	2.153	113.5	25.6	17.6
1987	06 24	21 58.52	-07 04.4					
1987	07 04	21 58.86	-06 55.2	1.375	2.185	131.4	20.4	17.3
1987	07 14	21 56.17	-07 06.1					
1987	07 24	21 50.64	-07 37.2	1.267	2.218	152.4	12.2	16.9
1987	08 03	21 42.81	-08 26.1					
1987	08 13	21 33.71	-09 27.3	1.241	2.251	174.1	2.6	16.5
1987	08 23	21 24.56	-10 33.4					
1987	09 02	21 16.63	-11 36.9	1.314	2.285	159.1	9.1	16.9
1987	09 12	21 10.95	-12 31.4					
1987	09 22	21 08.07	-13 13.1	1.477	2.319	137.5	17.0	17.5
1987	10 02	21 08.17	-13 40.2					
1987	10 12	21 11.14	-13 52.5	1.707	2.352	118.4	21.9	18.0
1987	10 22	21 16.66	-13 50.5					
1987	11 01	21 24.40	-13 35.0	1.976	2.384	101.7	24.1	18.4

1984 SH a,e,i = 2.16, 0.16, 3 Elements MPC 9826

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 20.34	-14 53.9	1.257	1.806	104.9	32.8	17.0
1987	06 04	21 32.97	-14 11.7					
1987	06 14	21 43.01	-13 42.9	1.084	1.804	118.5	29.6	16.6
1987	06 24	21 50.06	-13 31.3					
1987	07 04	21 53.68	-13 40.5	0.940	1.809	135.1	23.4	16.1
1987	07 14	21 53.64	-14 11.6					
1987	07 24	21 49.99	-15 03.1	0.846	1.820	155.4	13.4	15.6
1987	08 03	21 43.26	-16 09.0					
1987	08 13	21 34.73	-17 19.3	0.823	1.836	177.0	1.7	15.1
1987	08 23	21 26.03	-18 22.9					
1987	09 02	21 18.91	-19 10.8	0.884	1.857	157.5	12.0	15.7
1987	09 12	21 14.69	-19 38.0					
1987	09 22	21 13.95	-19 43.9	1.020	1.882	136.9	21.4	16.3
1987	10 02	21 16.82	-19 29.9					
1987	10 12	21 22.95	-18 58.0	1.211	1.911	119.5	27.0	16.9
1987	10 22	21 31.84	-18 10.6					
1987	11 01	21 43.01	-17 09.3	1.437	1.944	104.8	29.6	17.4

1980 FF12 a,e,i = 2.17, 0.09, 3 Elements MPC 9589

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 44.60	-16 48.8	1.611	2.047	100.0	29.2	18.2
1987	06 04	21 54.17	-16 04.7					
1987	06 14	22 01.16	-15 32.1	1.418	2.063	114.9	26.5	17.9
1987	06 24	22 05.22	-15 13.4					
1987	07 04	22 06.00	-15 10.3	1.253	2.082	132.8	21.0	17.5
1987	07 14	22 03.35	-15 22.8					
1987	07 24	21 57.38	-15 48.9	1.140	2.101	153.9	12.3	17.0
1987	08 03	21 48.62	-16 24.0					
1987	08 13	21 38.20	-17 01.0	1.108	2.120	176.6	1.6	16.5
1987	08 23	21 27.58	-17 32.9					
1987	09 02	21 18.31	-17 54.1	1.172	2.140	157.9	10.2	17.1
1987	09 12	21 11.61	-18 01.7					
1987	09 22	21 08.11	-17 55.3	1.322	2.161	136.2	18.8	17.6
1987	10 02	21 08.02	-17 35.7					
1987	10 12	21 11.12	-17 04.0	1.533	2.181	117.5	24.0	18.1
1987	10 22	21 17.03	-16 21.6					
1987	11 01	21 25.34	-15 29.2	1.780	2.201	101.3	26.2	18.5

1981 JJ2 a,e,i = 2.88, 0.08, 9 Elements MPC 10831

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 44.29	-02 50.4	2.462	2.747	95.3	21.5	18.1
1987	06 04	21 50.44	-01 48.4					
1987	06 14	21 54.75	-00 54.8	2.200	2.733	111.0	20.3	17.8
1987	06 24	21 57.05	-00 12.2					
1987	07 04	21 57.16	+00 16.7	1.968	2.720	128.5	17.0	17.4
1987	07 14	21 55.05	+00 29.2					
1987	07 24	21 50.82	+00 23.4	1.793	2.707	147.7	11.6	17.1
1987	08 03	21 44.81	-00 01.8					
1987	08 13	21 37.64	-00 45.0	1.703	2.695	165.4	5.4	16.7
1987	08 23	21 30.12	-01 42.9					
1987	09 02	21 23.16	-02 50.1	1.714	2.685	160.0	7.4	16.8
1987	09 12	21 17.62	-03 59.9					
1987	09 22	21 14.12	-05 06.6	1.825	2.675	140.3	13.9	17.1
1987	10 02	21 13.02	-06 05.1					
1987	10 12	21 14.43	-06 52.3	2.013	2.667	120.9	18.7	17.5
1987	10 22	21 18.25	-07 26.4					
1987	11 01	21 24.29	-07 46.6	2.248	2.659	103.4	21.3	17.8

1982 UR10 a,e,i = 3.18, 0.20, 2 Elements MPC 11055

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 49.15	-15 09.5	2.697	3.017	98.4	19.4	18.9
1987	06 04	21 54.87	-14 44.6					
1987	06 14	21 58.81	-14 28.8	2.400	2.977	115.1	18.0	18.6
1987	06 24	22 00.78	-14 23.3					
1987	07 04	22 00.61	-14 28.8	2.140	2.937	133.8	14.5	18.2
1987	07 14	21 58.24	-14 45.2					
1987	07 24	21 53.74	-15 11.4	1.946	2.897	154.6	8.7	17.8
1987	08 03	21 47.42	-15 44.8					
1987	08 13	21 39.87	-16 21.4	1.846	2.858	176.5	1.2	17.3
1987	08 23	21 31.87	-16 56.7					
1987	09 02	21 24.34	-17 26.5	1.854	2.821	159.4	7.2	17.6
1987	09 12	21 18.16	-17 47.2					
1987	09 22	21 13.97	-17 57.3	1.960	2.784	137.5	14.1	17.9
1987	10 02	21 12.18	-17 56.0					
1987	10 12	21 12.92	-17 43.3	2.139	2.749	117.7	18.8	18.2
1987	10 22	21 16.13	-17 19.8					
1987	11 01	21 21.62	-16 46.1	2.360	2.716	100.1	21.1	18.4

1981 EL19 a,e,i = 2.78, 0.15, 7 Elements MPC 9961

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 37.46	-06 37.5	2.021	2.387	98.2	24.8	16.9
1987	06 04	21 45.63	-05 39.9					
1987	06 14	21 51.81	-04 52.4	1.784	2.376	113.3	23.1	16.6
1987	06 24	21 55.75	-04 17.9					
1987	07 04	21 57.22	-03 59.5	1.578	2.368	130.5	19.1	16.2
1987	07 14	21 56.15	-03 59.8					
1987	07 24	21 52.60	-04 20.3	1.427	2.363	150.3	12.3	15.8
1987	08 03	21 46.94	-05 00.8					
1987	08 13	21 39.91	-05 58.1	1.356	2.361	170.3	4.1	15.4
1987	08 23	21 32.47	-07 06.6					
1987	09 02	21 25.74	-08 19.0	1.384	2.362	161.5	7.8	15.6
1987	09 12	21 20.71	-09 27.7					
1987	09 22	21 18.06	-10 26.9	1.505	2.367	140.5	15.7	16.0
1987	10 02	21 18.13	-11 12.6					
1987	10 12	21 20.98	-11 42.9	1.698	2.375	121.3	21.1	16.4
1987	10 22	21 26.39	-11 57.4					
1987	11 01	21 34.10	-11 56.3	1.936	2.385	104.4	23.8	16.8

(3495) 1981 NU a,e,i = 3.19, 0.14, 2 Elements MPC 11056

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 54.82	-12 55.0	2.867	3.145	96.4	18.7	17.1
1987	06 04	21 59.51	-12 36.2					
1987	06 14	22 02.36	-12 27.5	2.625	3.172	113.6	17.1	16.9
1987	06 24	22 03.26	-12 29.8					
1987	07 04	22 02.10	-12 43.7	2.419	3.199	132.9	13.5	16.6
1987	07 14	21 58.95	-13 08.4					
1987	07 24	21 53.97	-13 42.6	2.281	3.226	154.1	7.9	16.3
1987	08 03	21 47.54	-14 23.4					
1987	08 13	21 40.24	-15 07.1	2.240	3.252	176.7	1.0	16.0
1987	08 23	21 32.77	-15 49.6					
1987	09 02	21 25.86	-16 27.2	2.311	3.278	160.1	6.0	16.3
1987	09 12	21 20.18	-16 56.9					
1987	09 22	21 16.19	-17 17.3	2.487	3.304	138.2	11.7	16.7
1987	10 02	21 14.18	-17 27.7					
1987	10 12	21 14.25	-17 28.0	2.740	3.329	118.1	15.3	17.0
1987	10 22	21 16.31	-17 19.0					
1987	11 01	21 20.23	-17 01.0	3.040	3.353	99.7	17.0	17.3

1976 SD3 a,e,i = 3.23, 0.03, 4 Elements MPC 9956

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 57.66	-16 34.5	3.034	3.313	97.0	17.7	17.7
1987	06 04	22 02.29	-16 21.0					
1987	06 14	22 05.18	-16 17.0	2.762	3.311	114.3	16.2	17.5
1987	06 24	22 06.18	-16 22.9					
1987	07 04	22 05.18	-16 38.9	2.527	3.309	133.4	12.9	17.2
1987	07 14	22 02.19	-17 04.1					
1987	07 24	21 57.34	-17 36.5	2.361	3.306	154.3	7.7	16.8
1987	08 03	21 50.97	-18 13.1					
1987	08 13	21 43.61	-18 49.9	2.293	3.303	174.4	1.7	16.5
1987	08 23	21 35.94	-19 23.2					
1987	09 02	21 28.72	-19 49.5	2.336	3.299	159.2	6.2	16.8
1987	09 12	21 22.64	-20 06.3					
1987	09 22	21 18.23	-20 12.9	2.484	3.296	137.6	11.8	17.1
1987	10 02	21 15.81	-20 09.0					
1987	10 12	21 15.52	-19 55.1	2.709	3.292	117.5	15.6	17.4
1987	10 22	21 17.31	-19 32.2					
1987	11 01	21 21.06	-19 01.0	2.979	3.288	99.2	17.3	17.7

1982 KN1 a,e,i = 2.63, 0.12, 14 Elements MPC 10828

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 58.20	-18 51.9	2.325	2.656	97.6	22.2	17.4
1987	06 04	22 05.38	-19 15.5					
1987	06 14	22 10.51	-19 54.4	2.099	2.680	114.2	20.2	17.1
1987	06 24	22 13.36	-20 49.6					
1987	07 04	22 13.70	-22 00.9	1.909	2.704	132.7	16.0	16.8
1987	07 14	22 11.43	-23 25.6					
1987	07 24	22 06.63	-24 59.2	1.786	2.727	152.5	9.9	16.5
1987	08 03	21 59.65	-26 34.4					
1987	08 13	21 51.20	-28 02.5	1.756	2.750	165.8	5.2	16.3
1987	08 23	21 42.23	-29 15.7					
1987	09 02	21 33.82	-30 08.6	1.833	2.771	153.2	9.4	16.6
1987	09 12	21 26.97	-30 38.9					
1987	09 22	21 22.34	-30 47.6	2.004	2.792	133.5	15.1	17.0
1987	10 02	21 20.31	-30 37.2					
1987	10 12	21 20.95	-30 10.9	2.242	2.811	114.8	18.8	17.3
1987	10 22	21 24.07	-29 31.8					
1987	11 01	21 29.45	-28 42.0	2.518	2.829	97.8	20.3	17.7

1984 SE3 a,e,i = 2.19, 0.10, 4 Elements MPC 10755

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 53.70	-11 39.3	2.024	2.359	96.2	25.3	18.2
1987	06 04	22 01.99	-11 02.8					
1987	06 14	22 08.25	-10 37.7	1.773	2.346	111.6	23.7	17.9
1987	06 24	22 12.21	-10 26.7					
1987	07 04	22 13.55	-10 32.2	1.547	2.330	129.5	19.7	17.5
1987	07 14	22 12.06	-10 55.6					
1987	07 24	22 07.67	-11 37.1	1.375	2.313	150.3	12.6	17.0
1987	08 03	22 00.63	-12 34.2					
1987	08 13	21 51.62	-13 41.5	1.285	2.295	173.8	2.7	16.4
1987	08 23	21 41.70	-14 51.5					
1987	09 02	21 32.22	-15 55.8	1.295	2.275	161.7	8.0	16.6
1987	09 12	21 24.47	-16 47.9					
1987	09 22	21 19.35	-17 23.8	1.399	2.254	138.9	17.0	17.1
1987	10 02	21 17.41	-17 42.3					
1987	10 12	21 18.72	-17 43.7	1.571	2.233	119.0	23.0	17.5
1987	10 22	21 23.07	-17 29.2					
1987	11 01	21 30.15	-17 00.0	1.781	2.210	101.9	26.1	17.8

1981 EH14 a,e,i = 2.66, 0.18, 15 Elements MPC 8392

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	21 45.94	+04 05.0	2.248	2.505	92.5	23.8	18.7
1987	06 04	21 53.83	+05 37.8					
1987	06 14	22 00.00	+07 04.1	1.982	2.468	106.3	23.3	18.4
1987	06 24	22 04.24	+08 21.0					
1987	07 04	22 06.27	+09 24.2	1.739	2.432	121.7	20.8	18.0
1987	07 14	22 05.96	+10 09.2					
1987	07 24	22 03.26	+10 30.9	1.540	2.397	138.4	16.3	17.6
1987	08 03	21 58.35	+10 24.4					
1987	08 13	21 51.76	+09 47.0	1.409	2.363	154.4	10.7	17.2
1987	08 23	21 44.29	+08 38.8					
1987	09 02	21 37.01	+07 04.5	1.366	2.332	157.9	9.4	17.1
1987	09 12	21 31.03	+05 12.9					
1987	09 22	21 27.20	+03 14.5	1.417	2.302	143.5	15.0	17.3
1987	10 02	21 26.11	+01 19.9					
1987	10 12	21 27.97	-00 22.7	1.547	2.276	125.4	20.9	17.6
1987	10 22	21 32.70	-01 48.2					
1987	11 01	21 40.10	-02 53.8	1.731	2.252	108.5	24.7	18.0

1985 YP a,e,i = 1.73, 0.15, 16 Elements MPC 10763

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987	05 25	21 41.33	-08 22.5	1.253	1.716	-1.71	-17.9	18.0
1987	06 04	21 53.82	-04 55.6					
1987	06 14	22 04.16	-01 13.3	1.044	1.677	-2.24	-20.8	17.5
1987	06 24	22 11.99	+02 43.8					
1987	07 04	22 16.75	+06 53.5	0.864	1.638	-3.04	-24.0	17.0
1987	07 14	22 17.92	+11 11.0					
1987	07 24	22 14.97	+15 27.2	0.725	1.600	-4.15	-28.5	16.4
1987	08 03	22 07.60	+19 26.7					
1987	08 13	21 56.24	+22 49.7	0.639	1.565	-5.41	-36.5	16.0
1987	08 23	21 42.21	+25 16.3					
1987	09 02	21 27.91	+26 33.5	0.612	1.533	-6.06	-46.8	15.9
1987	09 12	21 16.11	+26 43.0					
1987	09 22	21 08.91	+25 58.3	0.635	1.507	-5.52	-51.3	16.0
1987	10 02	21 07.47	+24 38.7					
1987	10 12	21 11.86	+23 03.8	0.695	1.487	-4.37	-47.1	16.3
1987	10 22	21 21.55	+21 27.7					
1987	11 01	21 35.85	+20 00.4	0.778	1.474	-3.39	-38.6	16.7

9527 P-L a,e,i = 2.75, 0.05, 3 Elements MPC 11440

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	22 05.69	-08 36.9	2.666	2.890	92.4	20.5	17.8
1987	06 04	22 11.90	-07 57.9					
1987	06 14	22 16.37	-07 28.4	2.398	2.887	108.6	19.5	17.6
1987	06 24	22 18.90	-07 10.0					
1987	07 04	22 19.30	-07 04.5	2.156	2.883	126.8	16.4	17.2
1987	07 14	22 17.50	-07 13.0					
1987	07 24	22 13.53	-07 35.7	1.970	2.878	147.4	11.0	16.9
1987	08 03	22 07.62	-08 11.6					
1987	08 13	22 00.29	-08 57.8	1.870	2.872	169.7	3.6	16.5
1987	08 23	21 52.24	-09 50.0					
1987	09 02	21 44.35	-10 43.3	1.877	2.866	166.0	4.9	16.5
1987	09 12	21 37.49	-11 32.3					
1987	09 22	21 32.34	-12 13.3	1.990	2.859	143.4	12.1	16.9
1987	10 02	21 29.39	-12 43.5					
1987	10 12	21 28.83	-13 01.7	2.185	2.852	122.8	17.1	17.3
1987	10 22	21 30.64	-13 07.6					
1987	11 01	21 34.69	-13 01.5	2.432	2.844	104.2	19.8	17.6

1976 SF a,e,i = 3.18, 0.15, 1 Elements MPC 9956

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	22 06.36	-11 12.8	2.867	3.093	93.1	19.1	17.7
1987	06 04	22 12.51	-10 40.7					
1987	06 14	22 17.06	-10 17.4	2.572	3.064	109.5	18.2	17.4
1987	06 24	22 19.81	-10 04.3					
1987	07 04	22 20.58	-10 02.9	2.306	3.036	127.7	15.4	17.1
1987	07 14	22 19.30	-10 13.7					
1987	07 24	22 15.97	-10 36.6	2.098	3.008	148.0	10.3	16.7
1987	08 03	22 10.78	-11 10.1					
1987	08 13	22 04.16	-11 51.2	1.977	2.981	170.3	3.3	16.2
1987	08 23	21 56.75	-12 36.0					
1987	09 02	21 49.34	-13 19.8	1.963	2.954	166.5	4.6	16.3
1987	09 12	21 42.77	-13 58.1					
1987	09 22	21 37.73	-14 27.6	2.055	2.928	144.0	11.6	16.6
1987	10 02	21 34.73	-14 46.1					
1987	10 12	21 34.03	-14 52.7	2.231	2.902	123.4	16.7	16.9
1987	10 22	21 35.66	-14 47.5					
1987	11 01	21 39.52	-14 30.7	2.459	2.878	104.9	19.5	17.2

1983 QD a,e,i = 2.66, 0.17, 12 Elements MPC 9469

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	22 14.87	-11 18.8	2.634	2.842	91.2	20.9	16.8
1987	06 04	22 21.14	-10 15.3					
1987	06 14	22 25.65	-09 17.8	2.339	2.811	107.2	20.2	16.5
1987	06 24	22 28.18	-08 27.6					
1987	07 04	22 28.47	-07 46.2	2.068	2.780	125.0	17.4	16.1
1987	07 14	22 26.38	-07 14.5					
1987	07 24	22 21.85	-06 53.3	1.851	2.747	145.2	12.2	15.7
1987	08 03	22 15.04	-06 42.9					
1987	08 13	22 06.41	-06 42.0	1.716	2.713	167.1	4.8	15.2
1987	08 23	21 56.73	-06 48.7					
1987	09 02	21 46.98	-06 59.7	1.686	2.678	166.7	5.0	15.1
1987	09 12	21 38.22	-07 11.3					
1987	09 22	21 31.33	-07 20.2	1.762	2.643	144.2	12.8	15.5
1987	10 02	21 26.91	-07 23.6					
1987	10 12	21 25.24	-07 19.4	1.921	2.607	123.4	18.6	15.8
1987	10 22	21 26.31	-07 06.5					
1987	11 01	21 29.98	-06 44.1	2.129	2.571	105.0	21.9	16.1

(3393) 1984 WY1 a,e,i = 2.58, 0.07, 10 Elements MPC 10514

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	05 25	22 02.26	-06 11.9	2.207	2.465	92.3	24.2	17.5
1987	06 04	22 10.68	-05 32.8					
1987	06 14	22 17.23	-05 05.7	1.973	2.476	107.5	23.0	17.2
1987	06 24	22 21.67	-04 53.2					
1987	07 04	22 23.78	-04 57.9	1.761	2.488	125.0	19.6	16.9
1987	07 14	22 23.41	-05 21.9					
1987	07 24	22 20.54	-06 05.9	1.598	2.500	145.1	13.4	16.5
1987	08 03	22 15.38	-07 08.9					
1987	08 13	22 08.46	-08 26.9	1.513	2.512	167.8	4.9	16.1
1987	08 23	22 00.60	-09 53.3					
1987	09 02	21 52.81	-11 20.3	1.530	2.526	167.9	4.8	16.1
1987	09 12	21 46.13	-12 39.9					
1987	09 22	21 41.36	-13 46.3	1.650	2.539	145.1	13.1	16.6
1987	10 02	21 39.04	-14 36.2					
1987	10 12	21 39.34	-15 08.4	1.851	2.553	124.5	18.8	17.0
1987	10 22	21 42.21	-15 23.3					
1987	11 01	21 47.44	-15 21.9	2.104	2.567	106.4	21.8	17.4

1983 XS a,e,i = 3.10, 0.15, 5 Elements MPC 8540

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 28.39	-07 27.6	2.921	3.344	105.9	17.0	17.2
1987	06 24	22 29.83	-07 03.0					
1987	07 04	22 29.38	-06 48.7	2.686	3.367	124.4	14.4	17.0
1987	07 14	22 27.02	-06 45.2					
1987	07 24	22 22.83	-06 52.5	2.506	3.388	145.0	9.9	16.7
1987	08 03	22 17.02	-07 09.7					
1987	08 13	22 10.04	-07 34.9	2.414	3.409	167.0	3.8	16.4
1987	08 23	22 02.43	-08 05.4					
1987	09 02	21 54.88	-08 37.7	2.433	3.428	168.7	3.3	16.4
1987	09 12	21 48.06	-09 08.5					
1987	09 22	21 42.53	-09 34.8	2.564	3.446	146.5	9.2	16.8
1987	10 02	21 38.71	-09 54.5					
1987	10 12	21 36.82	-10 06.0	2.787	3.463	125.5	13.6	17.1
1987	10 22	21 36.88	-10 09.0					
1987	11 01	21 38.84	-10 02.9	3.070	3.479	106.1	15.9	17.4
1987	11 11	21 42.55	-09 48.2					
1987	11 21	21 47.81	-09 25.0	3.379	3.494	88.4	16.4	17.6

(3350) Scobee a,e,i = 2.31, 0.20, 3 Elements MPC 10305

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 06.33	-16 17.6	1.210	1.869	114.0	29.8	17.3
1987	06 24	22 15.41	-15 33.3					
1987	07 04	22 21.50	-15 01.9	1.034	1.852	129.1	25.2	16.8
1987	07 14	22 24.22	-14 44.8					
1987	07 24	22 23.31	-14 42.3	0.901	1.841	147.6	17.2	16.3
1987	08 03	22 18.86	-14 52.4					
1987	08 13	22 11.57	-15 09.4	0.833	1.838	169.1	6.0	15.7
1987	08 23	22 02.69	-15 26.3					
1987	09 02	21 53.95	-15 35.7	0.845	1.841	166.5	7.3	15.8
1987	09 12	21 47.06	-15 32.0					
1987	09 22	21 43.20	-15 13.3	0.938	1.852	145.0	18.1	16.4
1987	10 02	21 42.93	-14 39.3					
1987	10 12	21 46.25	-13 51.2	1.095	1.870	126.5	25.4	17.0
1987	10 22	21 52.77	-12 50.5					
1987	11 01	22 02.06	-11 38.2	1.295	1.893	111.0	29.3	17.5
1987	11 11	22 13.56	-10 15.6					
1987	11 21	22 26.83	-08 43.8	1.523	1.922	97.6	30.6	17.9

(3381) 1941 UG a,e,i = 2.45, 0.20, 4 Elements MPC 10397

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 15.47	-06 17.0	1.758	2.291	108.4	24.9	17.6
1987	06 24	22 21.30	-05 13.0					
1987	07 04	22 24.79	-04 19.6	1.508	2.245	124.5	21.9	17.2
1987	07 14	22 25.68	-03 39.5					
1987	07 24	22 23.77	-03 15.5	1.303	2.201	143.1	16.1	16.7
1987	08 03	22 19.05	-03 09.9					
1987	08 13	22 11.94	-03 22.9	1.167	2.159	163.8	7.5	16.1
1987	08 23	22 03.25	-03 52.7					
1987	09 02	21 54.19	-04 34.4	1.122	2.119	167.9	5.7	15.9
1987	09 12	21 46.19	-05 20.9					
1987	09 22	21 40.44	-06 04.9	1.169	2.082	146.7	15.4	16.3
1987	10 02	21 37.76	-06 40.3					
1987	10 12	21 38.50	-07 02.5	1.289	2.048	126.7	23.0	16.7
1987	10 22	21 42.59	-07 09.6					
1987	11 01	21 49.77	-07 00.4	1.456	2.019	109.6	27.6	17.0
1987	11 11	21 59.63	-06 35.0					
1987	11 21	22 11.75	-05 54.1	1.646	1.994	95.1	29.6	17.3

2820 P-L a,e,i = 2.27, 0.08, 5 Elements MPC 11338

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 30.14	-16 09.5	1.919	2.440	108.6	23.2	18.5
1987	06 24	22 34.52	-16 03.9					
1987	07 04	22 36.31	-16 12.6	1.696	2.438	126.1	19.7	18.2
1987	07 14	22 35.28	-16 35.7					
1987	07 24	22 31.32	-17 11.7	1.523	2.434	146.2	13.4	17.7
1987	08 03	22 24.56	-17 57.1					
1987	08 13	22 15.56	-18 45.5	1.429	2.428	167.7	5.1	17.3
1987	08 23	22 05.23	-19 30.0					
1987	09 02	21 54.85	-20 03.6	1.436	2.422	163.9	6.6	17.3
1987	09 12	21 45.71	-20 21.6					
1987	09 22	21 38.81	-20 22.4	1.542	2.413	142.0	14.9	17.8
1987	10 02	21 34.81	-20 06.5					
1987	10 12	21 33.90	-19 35.7	1.724	2.404	121.7	20.7	18.2
1987	10 22	21 35.96	-18 52.3					
1987	11 01	21 40.73	-17 57.7	1.951	2.393	104.0	23.7	18.5
1987	11 11	21 47.83	-16 53.3					
1987	11 21	21 56.89	-15 40.2	2.195	2.381	88.3	24.5	18.8

1981 EN26 a,e,i = 2.78, 0.16, 8 Elements MPC 10619

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 28.52	-02 08.3	2.649	3.055	103.8	18.8	18.9
1987	06 24	22 30.87	-01 44.6					
1987	07 04	22 31.24	-01 33.8	2.417	3.077	121.8	16.3	18.6
1987	07 14	22 29.58	-01 37.4					
1987	07 24	22 25.93	-01 56.2	2.234	3.098	142.0	11.7	18.3
1987	08 03	22 20.47	-02 30.1					
1987	08 13	22 13.65	-03 17.5	2.133	3.118	163.5	5.3	18.0
1987	08 23	22 06.06	-04 15.0					
1987	09 02	21 58.44	-05 18.1	2.139	3.135	169.1	3.5	17.9
1987	09 12	21 51.56	-06 21.4					
1987	09 22	21 46.05	-07 20.3	2.256	3.152	147.8	9.8	18.3
1987	10 02	21 42.37	-08 10.9					
1987	10 12	21 40.77	-08 50.7	2.466	3.166	126.7	14.6	18.7
1987	10 22	21 41.29	-09 18.6					
1987	11 01	21 43.86	-09 34.2	2.737	3.179	107.4	17.3	19.0
1987	11 11	21 48.30	-09 37.9					
1987	11 21	21 54.39	-09 30.4	3.036	3.190	89.9	18.0	19.3

1982 DQ6 a,e,i = 2.31, 0.09, 6 Elements MPC 10387

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 32.23	-17 11.1	1.931	2.450	108.4	23.2	17.8
1987	06 24	22 37.01	-17 04.7					
1987	07 04	22 39.26	-17 12.2	1.698	2.435	125.7	19.8	17.5
1987	07 14	22 38.72	-17 33.4					
1987	07 24	22 35.22	-18 07.2	1.514	2.420	145.5	13.8	17.0
1987	08 03	22 28.85	-18 49.7					
1987	08 13	22 20.10	-19 35.0	1.407	2.404	166.4	5.7	16.5
1987	08 23	22 09.84	-20 15.7					
1987	09 02	21 59.33	-20 44.8	1.400	2.387	164.1	6.6	16.6
1987	09 12	21 49.92	-20 57.4					
1987	09 22	21 42.70	-20 52.0	1.492	2.369	142.5	14.9	17.0
1987	10 02	21 38.39	-20 29.2					
1987	10 12	21 37.24	-19 51.2	1.659	2.350	122.3	21.0	17.4
1987	10 22	21 39.15	-19 00.3					
1987	11 01	21 43.87	-17 58.1	1.872	2.331	104.7	24.3	17.7
1987	11 11	21 51.03	-16 46.3					
1987	11 21	22 00.23	-15 25.7	2.104	2.311	89.2	25.3	18.0

1978 OP a,e,i = 2.70, 0.16, 15 Elements MPC 11338

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 16.25	-16 58.6	1.692	2.276	112.0	24.4	18.0
1987	06 24	22 23.27	-17 53.2					
1987	07 04	22 27.79	-19 09.4	1.501	2.280	128.8	20.3	17.7
1987	07 14	22 29.56	-20 46.4					
1987	07 24	22 28.44	-22 40.7	1.365	2.288	147.5	13.8	17.3
1987	08 03	22 24.53	-24 44.7					
1987	08 13	22 18.33	-26 47.2	1.310	2.299	163.2	7.3	17.0
1987	08 23	22 10.76	-28 36.1					
1987	09 02	22 03.03	-30 00.7	1.352	2.313	156.7	9.9	17.1
1987	09 12	21 56.45	-30 54.9					
1987	09 22	21 52.01	-31 18.1	1.483	2.330	138.3	16.7	17.6
1987	10 02	21 50.34	-31 12.8					
1987	10 12	21 51.62	-30 43.3	1.682	2.351	120.4	21.5	18.0
1987	10 22	21 55.69	-29 54.3					
1987	11 01	22 02.27	-28 49.3	1.923	2.373	104.4	23.9	18.4
1987	11 11	22 10.97	-27 31.7					
1987	11 21	22 21.40	-26 03.7	2.186	2.398	90.0	24.3	18.7

1984 DH1 a,e,i = 3.21, 0.14, 21 Elements MPC 10943

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 34.31	+13 38.0	3.403	3.650	95.9	16.1	16.7
1987	06 24	22 35.70	+15 00.0					
1987	07 04	22 35.42	+16 14.1	3.148	3.652	111.9	15.0	16.5
1987	07 14	22 33.42	+17 17.5					
1987	07 24	22 29.70	+18 07.7	2.933	3.653	128.5	12.6	16.3
1987	08 03	22 24.43	+18 41.4					
1987	08 13	22 17.91	+18 56.6	2.786	3.653	143.7	9.4	16.1
1987	08 23	22 10.60	+18 52.0					
1987	09 02	22 03.10	+18 27.9	2.732	3.651	151.6	7.6	16.0
1987	09 12	21 56.04	+17 46.9					
1987	09 22	21 50.00	+16 53.0	2.780	3.649	145.0	9.1	16.1
1987	10 02	21 45.45	+15 51.2					
1987	10 12	21 42.70	+14 47.1	2.924	3.645	129.8	12.1	16.3
1987	10 22	21 41.88	+13 45.2					
1987	11 01	21 42.98	+12 49.6	3.139	3.639	112.7	14.6	16.5
1987	11 11	21 45.91	+12 03.0					
1987	11 21	21 50.50	+11 27.0	3.395	3.633	95.9	15.7	16.7

1981 EA22 a,e,i = 2.73, 0.02, 13 Elements MPC 10618

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 28.44	-00 32.2	2.252	2.673	103.1	21.7	18.8
1987	06 24	22 33.00	-00 07.8					
1987	07 04	22 35.51	+00 01.1	2.015	2.674	120.2	19.2	18.5
1987	07 14	22 35.81	-00 07.8					
1987	07 24	22 33.85	-00 36.6	1.820	2.676	139.6	14.3	18.1
1987	08 03	22 29.73	-01 26.1					
1987	08 13	22 23.84	-02 34.5	1.699	2.678	161.1	7.0	17.7
1987	08 23	22 16.77	-03 58.0					
1987	09 02	22 09.38	-05 30.0	1.678	2.681	171.8	3.1	17.5
1987	09 12	22 02.61	-07 02.7					
1987	09 22	21 57.26	-08 28.7	1.765	2.684	150.3	10.7	18.0
1987	10 02	21 53.96	-09 42.2					
1987	10 12	21 53.04	-10 39.8	1.943	2.687	129.1	16.8	18.4
1987	10 22	21 54.56	-11 20.1					
1987	11 01	21 58.42	-11 43.1	2.182	2.690	110.1	20.3	18.7
1987	11 11	22 04.39	-11 49.8					
1987	11 21	22 12.22	-11 41.5	2.452	2.694	93.2	21.5	19.0

1971 SN1 a,e,i = 3.09, 0.21, 16 Elements MPC 8785

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 37.68	-28 45.2	2.151	2.684	110.7	20.7	16.7
1987	06 24	22 42.95	-29 03.5					
1987	07 04	22 45.72	-29 32.9	1.912	2.649	126.8	17.9	16.3
1987	07 14	22 45.73	-30 11.0					
1987	07 24	22 42.82	-30 54.2	1.727	2.617	143.9	13.2	16.0
1987	08 03	22 37.04	-31 36.0					
1987	08 13	22 28.86	-32 08.6	1.619	2.586	157.8	8.5	15.6
1987	08 23	22 19.09	-32 24.1					
1987	09 02	22 08.94	-32 16.4	1.608	2.558	155.0	9.6	15.6
1987	09 12	21 59.71	-31 43.4					
1987	09 22	21 52.47	-30 46.4	1.691	2.533	138.7	15.2	15.9
1987	10 02	21 47.96	-29 29.3					
1987	10 12	21 46.44	-27 56.8	1.850	2.511	120.8	20.0	16.2
1987	10 22	21 47.85	-26 13.2					
1987	11 01	21 51.96	-24 21.6	2.058	2.493	104.1	22.7	16.5
1987	11 11	21 58.39	-22 24.1					
1987	11 21	22 06.78	-20 22.0	2.291	2.478	88.9	23.5	16.7

1986 JV a,e,i = 3.01, 0.09, 11 Elements MPC 11055

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 38.10	-22 06.7	2.235	2.735	108.7	20.6	16.3
1987	06 24	22 43.29	-22 32.9					
1987	07 04	22 46.21	-23 12.8	2.015	2.735	125.6	17.6	16.0
1987	07 14	22 46.66	-24 05.0					
1987	07 24	22 44.55	-25 06.7	1.849	2.736	143.9	12.6	15.7
1987	08 03	22 39.95	-26 12.6					
1987	08 13	22 33.28	-27 15.5	1.764	2.739	160.3	7.2	15.4
1987	08 23	22 25.23	-28 08.2					
1987	09 02	22 16.76	-28 43.8	1.778	2.743	158.9	7.6	15.4
1987	09 12	22 08.95	-28 58.4					
1987	09 22	22 02.69	-28 51.2	1.890	2.749	141.6	13.1	15.7
1987	10 02	21 58.64	-28 23.6					
1987	10 12	21 57.14	-27 38.7	2.082	2.756	123.0	17.7	16.1
1987	10 22	21 58.18	-26 39.8					
1987	11 01	22 01.64	-25 29.5	2.326	2.764	105.6	20.2	16.4
1987	11 11	22 07.22	-24 10.3					
1987	11 21	22 14.63	-22 43.9	2.595	2.773	89.8	20.9	16.7

1982 UV1 a,e,i = 3.09, 0.18, 3 Elements MPC 10758

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 33.32	-10 34.1	2.247	2.707	105.9	21.2	17.3
1987	06 24	22 38.71	-10 16.6					
1987	07 04	22 42.08	-10 12.1	1.990	2.680	122.8	18.6	17.0
1987	07 14	22 43.25	-10 21.6					
1987	07 24	22 42.10	-10 45.6	1.780	2.656	142.0	13.6	16.6
1987	08 03	22 38.66	-11 23.0					
1987	08 13	22 33.23	-12 10.7	1.646	2.633	163.5	6.3	16.1
1987	08 23	22 26.37	-13 03.8					
1987	09 02	22 18.92	-13 56.3	1.610	2.613	172.3	3.0	15.9
1987	09 12	22 11.88	-14 41.9					
1987	09 22	22 06.15	-15 15.8	1.677	2.596	150.1	11.1	16.3
1987	10 02	22 02.45	-15 35.1					
1987	10 12	22 01.21	-15 38.7	1.831	2.581	129.2	17.4	16.7
1987	10 22	22 02.53	-15 27.0					
1987	11 01	22 06.34	-15 00.8	2.043	2.569	110.8	21.2	17.0
1987	11 11	22 12.41	-14 21.5					
1987	11 21	22 20.44	-13 30.4	2.286	2.560	94.4	22.6	17.3

1981 DK3 a,e,i = 2.68, 0.19, 12 Elements MPC 10514

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 39.16	-08 04.8	1.923	2.377	103.6	24.5	16.8
1987	06 24	22 45.10	-06 38.0					
1987	07 04	22 48.78	-05 17.3	1.669	2.342	119.4	22.2	16.4
1987	07 14	22 49.92	-04 04.3					
1987	07 24	22 48.27	-03 00.9	1.455	2.309	137.6	17.3	15.9
1987	08 03	22 43.76	-02 09.1					
1987	08 13	22 36.65	-01 30.1	1.307	2.279	158.0	9.6	15.4
1987	08 23	22 27.57	-01 04.7					
1987	09 02	22 17.58	-00 51.6	1.250	2.251	170.6	4.2	15.1
1987	09 12	22 08.02	-00 47.6					
1987	09 22	22 00.13	-00 48.6	1.291	2.228	151.9	12.2	15.4
1987	10 02	21 54.90	-00 49.6					
1987	10 12	21 52.81	-00 46.2	1.416	2.208	131.5	19.8	15.8
1987	10 22	21 53.96	-00 35.3					
1987	11 01	21 58.19	-00 14.6	1.598	2.192	113.6	24.5	16.2
1987	11 11	22 05.15	+00 17.1					
1987	11 21	22 14.47	+01 00.2	1.809	2.181	98.1	26.6	16.5

1982 FN a,e,i = 2.55, 0.21, 27 Elements MPC 10762

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 41.60	+11 10.5	2.331	2.628	95.3	22.6	18.9
1987	06 24	22 45.95	+11 41.0					
1987	07 04	22 48.17	+11 54.6	2.123	2.670	111.6	20.7	18.7
1987	07 14	22 48.12	+11 47.6					
1987	07 24	22 45.76	+11 16.6	1.942	2.712	130.3	16.6	18.4
1987	08 03	22 41.21	+10 19.0					
1987	08 13	22 34.85	+08 54.2	1.823	2.752	150.7	10.4	18.1
1987	08 23	22 27.29	+07 04.5					
1987	09 02	22 19.34	+04 55.9	1.801	2.790	165.7	5.1	17.9
1987	09 12	22 11.92	+02 37.5					
1987	09 22	22 05.81	+00 19.3	1.893	2.826	153.3	9.2	18.2
1987	10 02	22 01.61	-01 49.6					
1987	10 12	21 59.66	-03 42.6	2.089	2.860	132.6	14.9	18.6
1987	10 22	22 00.01	-05 16.3					
1987	11 01	22 02.60	-06 29.5	2.359	2.892	112.8	18.4	19.0
1987	11 11	22 07.20	-07 22.7					
1987	11 21	22 13.58	-07 57.3	2.668	2.922	94.8	19.7	19.3

1984 AR a,e,i = 3.13, 0.14, 1 Elements MPC 8535

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 44.88	-09 07.8	3.135	3.501	102.7	16.4	18.5
1987	06 24	22 47.43	-08 54.6					
1987	07 04	22 48.27	-08 51.8	2.854	3.487	120.9	14.5	18.2
1987	07 14	22 47.30	-08 59.7					
1987	07 24	22 44.50	-09 18.3	2.623	3.472	141.0	10.6	17.9
1987	08 03	22 39.97	-09 46.6					
1987	08 13	22 33.99	-10 22.3	2.474	3.455	162.9	4.9	17.5
1987	08 23	22 26.99	-11 02.6					
1987	09 02	22 19.56	-11 43.5	2.433	3.438	173.9	1.8	17.3
1987	09 12	22 12.40	-12 21.1					
1987	09 22	22 06.15	-12 52.2	2.506	3.419	151.0	8.2	17.7
1987	10 02	22 01.35	-13 14.3					
1987	10 12	21 58.36	-13 26.0	2.677	3.400	129.4	13.1	18.0
1987	10 22	21 57.35	-13 27.1					
1987	11 01	21 58.34	-13 17.5	2.915	3.379	109.6	16.1	18.2
1987	11 11	22 01.23	-12 57.8					
1987	11 21	22 05.87	-12 28.9	3.183	3.357	91.5	17.1	18.4

(3422) 1978 OJ a,e,i = 2.69, 0.15, 14 Elements MPC 10626

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	06 14	22 30.83	-15 13.1	1.762	2.291	108.1	24.9	16.4
1987	06 24	22 38.81	-15 51.9					
1987	07 04	22 44.48	-16 51.6	1.559	2.292	124.4	21.5	16.1
1987	07 14	22 47.56	-18 12.7					
1987	07 24	22 47.84	-19 53.2	1.404	2.296	142.8	15.5	15.7
1987	08 03	22 45.29	-21 47.8					
1987	08 13	22 40.21	-23 47.3	1.324	2.304	160.6	8.4	15.3
1987	08 23	22 33.29	-25 40.0					
1987	09 02	22 25.60	-27 14.3	1.338	2.315	160.8	8.2	15.4
1987	09 12	22 18.42	-28 21.3					
1987	09 22	22 12.86	-28 57.9	1.446	2.329	143.2	15.0	15.8
1987	10 02	22 09.76	-29 04.4					
1987	10 12	22 09.50	-28 44.5	1.628	2.345	124.7	20.5	16.2
1987	10 22	22 12.06	-28 02.7					
1987	11 01	22 17.26	-27 03.0	1.859	2.364	108.1	23.5	16.6
1987	11 11	22 24.74	-25 49.0					
1987	11 21	22 34.11	-24 23.5	2.116	2.386	93.3	24.4	16.9