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TWX 710-320-6842 ASTROGRAM CAM ** Brian G. Marsden, Director
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ERRATA.

MPC	Line	
11442	-19 to -18	For the former name of read the name of a part of
11562	- 9 to - 8	The remarks for codes 413 and 415 should be exchanged.
11826	19	For 3 3 D B read 3 3 E B
11864	16	For m1 read V
11865	-26	For MPC 11614 read MPC 11738

* * * * *

CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Mag.	N Obs.
1938 GG	1938 04	05.0351	13 38 06.47	+07 35 57.4	TI 12		062
1985 RK4	1987 01	28.28405	08 49 00.92	+18 39 35.3	MPC11716	17	801
1986 PA	1986 09	09.47279	18 01 39.66	-18 06 37.2	MPC11799		474
1987 BA2 *	1987 01	28.28264	09 20 36.74	-01 19 32.1	MPC11717	16.8	809
1987 BA2	1987 01	28.29306	09 20 36.07	-01 19 31.1	MPC11717	16.8	809
1987 HM *	1987 04	28.33333	13 15 03.59	-08 07 00.9	MPC11811	17.0	1 675
1987 HM	1987 04	30.26250	13 13 45.20	-07 49 06.6	MPC11811		1 675

Note 1: time originally erroneously given as 24 hr earlier.

* * * * *

IDENTIFICATION CHANGES.

Continuation to MPC 11777.

Object	Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
1939 UQ *	1939 10	18.87019	02 03 08.17	+11 52 30.2	1939 TL		062
1939 UQ	1939 10	18.89958	02 03 06.59	+11 52 18.5	1939 TL		062
1939 VP *	1939 11	11.77544	01 42 43.13	+09 16 49.5	1939 TL		062
1969 VL3 *	1969 11	05.85391	02 29 24.16	+15 41 03.8	1969 UK2	16.5	095
1987 BU3 *	1987 01	29.16181	07 58 54.09	+16 44 27.0	1987 BP1	17	809
1987 BU3	1987 01	29.17222	07 58 53.36	+16 44 29.3	1987 BP1	17	809

* * * * *

OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

085 Kiev. Observers K. Churyumov and K. Smirnova.
089 Nikolaev. Observer N. D. Kalinenkov.
095 Crimean Astrophysical Observatory. Observer N. S. Chernykh.
102 Zvenigorod. 0.40-m f/5 Zeiss astrograph. Observers N. S. Bakhtigaraev and A. N. Biryukov. Measured by V. I. Panferova, G. S. Shibalova and N. N. Kubyshkina. From Kiev Komet Tsirk.
114 Engelhardt Observatory, Zelenchukskaya station. Observer V. N. Kitkin. In part from Kiev Komet Tsirk.
129 Ordubad. Observers S. V. Tolbin and A. A. Kiselev.
136 Engelhardt Observatory. Observers I. A. Dubyago, M. I. Kibardina and S. S. Tokhtas'ev. From Kiev Komet Tsirk.
168 Kourovskaya. 0.42-m f/1.9 camera. Observers S. Timofeev, A. Ryazanov, A. Seleznev, A. Tearo, N. Matkin, G. Kaizer, S. Pyatkesom, L. F. Istomin, T. I. Levitskaya and A. P. Rybin. From Kiev Komet Tsirk.
186 Kitab. Observer E. Mirmakhmudov.
190 Gissar. Observer S. I. Gerasimenko.
210 Alma Ata. Observers K. I. Churyumov and F. K. Rspaev.
217 Assah. Observers K. I. Churyumov and F. K. Rspaev.
293 Burlington remote site. Observer T. Handley.
299 Bosscha Observatory, Lembang. Schmidt telescope. Observers M. Ratag and B. Hidayat. Long. and Parallax 107.62, -423, +050 (see MPC 11200). From Acta Astron.
323 Perth Observatory, Bickley. 0.3-m astrograph. Observers M. P. Candy, S. Ewing, P. Jekabsons, J. Johnston and A. McGrath.
372 Geisei. 0.6-m reflector. Observer T. Seki. From Orient. Astron. Assoc. Comet Bull. and Yamamoto Circ.
373 Oishi Astronomical Observatory. 0.30-m f/5.3 reflector. Observer M. Tsumura. Reduced by T. Nomura. From Nihondaira Obs. Circ.
399 Kushiro. 0.16-m reflector. Observer S. Ueda. Measured by H. Kaneda. In part from Nihondaira Obs. Circ.
400 Kitami. Observers K. Endate, T. Fujii and M. Yanai. Measured by K. Watanabe. Long. and Parallax 143.78, -308, -293 (see MPC 11200).
413 Siding Spring. 1.2-m U.K. Schmidt. Observer K. S. Russell. Measured by R. H. McNaught.
415 Kambah, near Canberra. Observer D. Herald.
474 Mt. John University Observatory. 0.6-m reflector. Observer A. C. Gilmore. Measured by P. M. Kilmartin.
483 Carter Observatory, Black Birch Station. Twin 0.2-m astrograph. Observer G. Douglass. Communicated by R. S. Harrington.
553 Chorzow. 0.20-m f/5 camera. Observer T. Firszt. From Acta Astron.
657 Victoria. Observers D. D. Balam and J. Tatum.
675 Palomar. 1.5-m reflector + CCD and 0.46-m Schmidt. Observers J. Gibson (1985 VIII), C. Shoemaker, E. Shoemaker and H. Holt (1987o).
691 University of Arizona, Kitt Peak. 0.91-m SPACEWATCH telescope, CCD in scanning mode. Observers T. Gehrels and J. Scotti. Measured by R. McCarty.
707 Chamberlin Observatory field station. Observer J. Briggs. Measured by J. Briggs and E. Everhart.
771 Boyeros Observatory, Havana. Observers O. V. Nikonov, S. Tolbin, E. Zhilinskij, A. Kulish, R. Farin'yas, Kh. P. Doval' and M. A. Sid. Long. and Parallax 277.57, -393, -166 (see MPC 11200).
801 Oak Ridge Observatory. Observers R. E. McCrosky, G. Schwartz and C.-Y. Shao.
805 Cerro El Roble. Observers C. Torres and C. Monsalve. Measured by Torres.
892 YGCO Hoshikawa and Nagano Stations. 0.25-m f/3.4 Wright-Schmidt. Observer T. Kojima. From Nihondaira Obs. Circ.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N Obs.
		Periodic Comet Schwassmann-Wachmann 1				
/1974 II	1987	04 29.74878	20 40 03.81	-20 56 42.8	14 T	892
/1974 II	1987	04 29.75469	20 40 03.62	-20 56 44.3		892
/1974 II	1987	06 21.38542	20 39 09.62	-20 40 17.4		707
/1974 II	1987	06 27.34514	20 37 11.76	-20 44 08.1		707
		Comet Bowell (1982 I)				
/1982 I	1982	08 15.7492	18 00 37.50	-23 02 26.2		136
/1982 I	1982	08 18.7826	18 01 20.18	-23 03 51.8		136
/1982 I	1982	08 18.8096	18 01 20.61	-23 03 51.9		136
		Periodic Comet Churyumov-Gerasimenko				
/1982 VIII	1982	11 27.96910	06 50 54.58	+32 59 55.9		553
		Periodic Comet Halley				
/1982i	1985	09 21.88644	06 13 02.12	+19 44 47.2		217
/1982i	1985	10 21.05476	05 52 03.40	+20 59 38.2		129
/1982i	1985	10 22.96582	05 48 16.27	+21 07 33.5		129
/1982i	1985	10 31.07030	05 25 42.52	+21 43 51.3		085
/1982i	1985	11 16.78461	03 41 28.43	+21 37 23.8		168
/1982i	1985	11 16.78539	03 41 27.82	+21 37 23.6		168
/1982i	1985	11 24.78247	02 15 10.03	+18 18 32.2		129
/1982i	1985	11 24.81802	02 14 45.24	+18 17 06.6		129
/1982i	1985	11 26.64936	01 53 37.66	+17 02 57.4		129
/1982i	1985	12 06.63312	00 12 11.81	+09 05 51.4		129
/1982i	1985	12 06.67430	00 11 50.83	+09 03 56.6		129
/1982i	1985	12 12.59925	23 29 30.63	+04 59 19.1		217
/1982i	1985	12 12.60339	23 29 29.13	+04 59 10.0		217
/1982i	1985	12 12.60737	23 29 27.69	+04 59 01.7		217
/1982i	1985	12 12.62045	23 29 22.93	+04 58 33.3		217
/1982i	1985	12 16.58733	23 07 46.51	+02 48 09.3		217
/1982i	1985	12 16.60716	23 07 40.74	+02 47 34.0		217
/1982i	1985	12 16.61289	23 07 39.05	+02 47 23.8		217
/1982i	1985	12 16.63422	23 07 32.80	+02 46 45.7		217
/1982i	1985	12 16.75278	23 06 58.08	+02 43 15.5		217
/1982i	1985	12 16.75466	23 06 57.54	+02 43 12.8		217
/1982i	1985	12 17.57331	23 03 05.38	+02 19 35.8		217
/1982i	1985	12 17.57510	23 03 04.85	+02 19 33.0		210
/1982i	1985	12 17.57957	23 03 03.59	+02 19 25.1		217
/1982i	1985	12 17.62362	23 02 51.33	+02 18 10.9		217
/1982i	1985	12 31.63476	22 15 53.90	-02 27 56.0		129
/1982i	1986	01 03.58333	22 09 00.72	-03 09 23.6		186
/1982i	1986	01 13.55037	21 49 15.24	-05 07 33.4		217
/1982i	1986	01 13.55145	21 49 15.17	-05 07 34.7		217
/1982i	1986	01 13.55257	21 49 15.06	-05 07 35.2		217
/1982i	1986	01 13.55709	21 49 14.56	-05 07 38.3		217
/1982i	1986	01 13.55897	21 49 14.35	-05 07 39.5		217
/1982i	1986	01 13.58277	21 49 11.77	-05 07 56.0		217
/1982i	1986	01 21.67154	21 34 55.66	-06 34 58.4		089
/1982i	1986	03 04.46248	20 20 25.63	-17 36 04.9		771
/1982i	1986	03 05.46501	20 18 35.45	-17 59 54.3		771
/1982i	1986	03 09.44064	20 10 51.17	-19 42 33.0		771
/1982i	1986	03 12.43457	20 04 17.62	-21 10 43.2		771
/1982i	1986	03 13.43821	20 01 53.88	-21 42 52.1		771
/1982i	1986	03 14.43779	19 59 23.34	-22 16 16.4		771
/1982i	1986	03 15.41404	19 56 48.52	-22 50 32.9		771

/1982i	1986	03	16.42078	19	53	59.43	-23	27	31.1				771
/1982i	1986	03	19.43715	19	44	21.79	-25	30	37.0				771
/1982i	1986	03	20.43360	19	40	42.22	-26	15	49.3				771
/1982i	1986	03	21.44193	19	36	42.89	-27	04	10.5				771
/1982i	1986	03	29.40723	18	48	13.31	-35	19	14.3				771
/1982i	1986	04	05.42392	17	11	32.13	-44	42	25.6				771
/1982i	1986	04	20.80180	11	55	22.53	-31	23	14.0				129
/1982i	1986	04	20.80370	11	55	21.20	-31	23	02.6				129
/1982i	1986	04	23.79082	11	29	58.38	-26	36	00.4				129
/1982i	1986	04	23.79219	11	29	58.04	-26	35	48.4				129
/1982i	1986	04	23.81874	11	29	46.06	-26	33	36.9				129
/1982i	1986	04	23.81960	11	29	46.28	-26	33	30.6				129
/1982i	1986	04	24.71750	11	23	44.74	-25	17	16.0				129
/1982i	1986	04	24.71856	11	23	44.45	-25	17	06.7				129
/1982i	1986	04	24.72053	11	23	43.78	-25	17	02.6				129
/1982i	1986	04	24.79752	11	23	14.04	-25	10	41.3				129
/1982i	1986	04	25.78754	11	17	18.76	-23	52	20.4				129
/1982i	1986	04	25.79724	11	17	15.49	-23	51	34.7				129
/1982i	1986	04	25.79807	11	17	15.07	-23	51	28.5				129
/1982i	1986	04	27.82942	11	06	56.45	-21	26	53.6				129
/1982i	1986	04	30.78124	10	55	23.43	-18	30	33.8				129
/1982i	1986	05	01.81094	10	52	06.33	-17	37	16.2				129
/1982i	1986	05	02.75451	10	49	22.91	-16	51	43.7				129
/1982i	1986	05	02.82362	10	49	11.52	-16	48	32.0				089
/1982i	1986	05	11.69041	10	32	47.98	-11	38	13.6				217
/1982i	1986	05	11.69395	10	32	47.73	-11	38	06.8				217
/1982i	1986	05	11.69709	10	32	47.51	-11	38	04.0				217
/1982i	1986	05	11.70249	10	32	47.10	-11	37	54.3				217
/1982i	1986	05	15.74246	10	28	53.09	-10	05	20.2				129
/1982i	1986	05	15.76600	10	28	51.80	-10	04	56.3				129
/1982i	1986	05	15.77339	10	28	51.38	-10	04	47.6				129
/1982i	1986	05	19.77710	10	26	20.44	-08	52	59.5				129
/1982i	1986	05	19.79158	10	26	19.92	-08	52	44.7				129
/1982i	1986	05	20.74325	10	25	53.62	-08	38	00.1				129
/1982i	1986	05	20.74515	10	25	53.51	-08	37	59.1				129
/1982i	1986	05	24.74055	10	24	34.41	-07	44	25.5				129
/1982i	1986	05	24.74246	10	24	34.47	-07	44	23.5				129
/1982i	1986	05	25.71951	10	24	21.87	-07	33	07.5				129
/1982i	1986	05	25.74201	10	24	21.64	-07	32	49.5				129
/1982i	1986	05	26.73414	10	24	11.49	-07	21	55.5				129
/1982i	1986	05	26.73656	10	24	11.42	-07	21	59.5				129
/1982i	1986	05	26.83662	10	24	10.55	-07	20	51.6				089
/1982i	1986	05	27.72583	10	24	03.39	-07	11	42.6				129
/1982i	1986	05	27.72883	10	24	03.55	-07	11	41.3				129
/1982i	1986	05	28.73473	10	23	57.73	-07	01	52.0				129
/1982i	1986	06	05.68549	10	24	18.62	-06	01	46.2				210
/1982i	1986	06	05.69825	10	24	18.79	-06	01	45.2				210
/1982i	1986	06	12.73689	10	25	52.05	-05	28	47.3				129
/1982i	1986	12	08.06716	11	38	50.29	-15	19	58.7				114
/1982i	1986	12	11.06298	11	38	09.91	-15	29	49.8				114
/1982i	1986	12	12.06444	11	37	54.56	-15	33	01.0				114
/1982i	1986	12	13.11149	11	37	37.44	-15	36	16.0				114
/1982i	1987	03	23.73610	10	09	27.31	-10	53	05.9				190
/1982i	1987	04	20.80417	09	51	26.61	-07	39	16.3		16	T 1	095
/1982i	1987	04	20.80978	09	51	26.47	-07	39	18.6			1	095
/1982i	1987	04	24.47882	09	50	00.17	-07	17	30.9		15	T	892
/1982i	1987	04	24.52101	09	49	59.58	-07	17	18.5				892

Periodic Comet Hartley-IRAS

/1984	III	1984	03	28.0300	20	24	12.90	+60	01	25.4	136
/1984	III	1984	04	01.7517	20	12	21.32	+64	02	54.5	136
/1984	III	1984	04	01.8312	20	12	06.66	+64	06	53.4	136
/1984	III	1984	04	01.9792	20	11	39.37	+64	14	33.0	136

Periodic Comet Smirnova-Chernykh

/1984	V	1987	06	30.76014	22	12	55.12	-18	26	55.5		18	T	2 413
/1984	V	1987	06	30.82264	22	12	54.56	-18	27	03.8				413

Periodic Comet Clark

/1984	VIII	1984	06	28.69213	20	45	33.99	-36	48	00.8	299
/1984	VIII	1984	06	29.71364	20	45	58.39	-37	00	18.5	299
/1984	VIII	1984	07	10.88444	20	47	23.43	-39	01	12.1	299
/1984	VIII	1984	07	26.81375	20	42	42.32	-40	41	07.8	299
/1984	VIII	1984	07	28.72241	20	41	54.84	-40	45	52.2	299
/1984	VIII	1984	07	31.77516	20	40	37.80	-40	50	00.3	299
/1984	VIII	1984	08	02.74339	20	39	50.16	-40	50	26.1	299
/1984	VIII	1984	08	04.82207	20	39	01.94	-40	49	02.2	299

Comet Austin (1984 XIII)

/1984	XIII	1984	09	26.9389	07	49	50.42	+38	24	46.2	136
/1984	XIII	1984	09	26.9701	07	49	42.88	+38	25	52.6	136
/1984	XIII	1984	10	04.9568	07	06	40.49	+43	30	15.9	136

Comet Shoemaker (1985 II)

/1985	II	1984	12	17.7698	02	51	42.82	-09	51	59.5	136
/1985	II	1984	12	17.7927	02	51	46.07	-09	52	42.9	136
/1985	II	1984	12	17.8083	02	51	48.75	-09	53	13.2	136

Periodic Comet Gehrels 3

/1985	IV	1987	05	01.34394	14	04	45.70	-13	22	09.0			3	691
/1985	IV	1987	05	01.38485	14	04	44.21	-13	21	59.8		19.4T	3	691
/1985	IV	1987	05	01.38961	14	04	43.96	-13	21	59.0			3	691
/1985	IV	1987	05	23.23774	13	53	01.01	-12	13	52.3				691
/1985	IV	1987	05	23.29214	13	52	59.57	-12	13	43.4				691
/1985	IV	1987	05	23.29725	13	52	59.39	-12	13	42.5				691
/1985	IV	1987	05	24.26917	13	52	34.93	-12	11	13.6				691
/1985	IV	1987	05	24.28271	13	52	34.56	-12	11	11.8				691
/1985	IV	1987	05	24.29691	13	52	34.16	-12	11	08.7				691

Comet Machholz (1985 VIII)

/1985	VIII	1985	09	07.15868	15	17	39.61	-04	14	13.9		20.5T	675
/1985	VIII	1985	09	07.16250	15	17	40.25	-04	14	18.2			675
/1985	VIII	1985	09	07.16625	15	17	40.83	-04	14	22.4			675
/1985	VIII	1985	09	07.17000	15	17	41.47	-04	14	28.2			675

Comet Shoemaker (1985 XII)

/1985	XII	1987	01	28.60486	03	55	33.39	-11	04	40.9	323
/1985	XII	1987	01	30.57361	03	54	41.81	-10	47	45.1	323
/1985	XII	1987	02	03.61319	03	53	07.62	-10	13	00.6	323
/1985	XII	1987	02	24.55972	03	48	49.10	-07	18	01.3	323

Comet Thiele (1985 XIX)

/1985	XIX	1985	12	08.64491	21	13	01.10	+14	11	04.1	114
/1985	XIX	1985	12	09.65002	21	11	32.56	+13	50	24.8	114
/1985	XIX	1985	12	10.65074	21	10	10.15	+13	30	53.5	114
/1985	XIX	1985	12	14.64021	21	05	28.46	+12	22	26.6	114

Comet Wilson (1986l)

/1986l	1986	08	27.83351	21	38	12.77	+21	38	54.2		102
/1986l	1986	08	27.83507	21	38	12.65	+21	38	54.6		102
/1986l	1986	08	27.85556	21	38	10.15	+21	38	34.7		102
/1986l	1986	08	27.87083	21	38	08.32	+21	38	20.9		102
/1986l	1986	08	27.89410	21	38	05.03	+21	38	01.4		102
/1986l	1986	08	27.89479	21	38	04.98	+21	38	02.7		102
/1986l	1986	09	08.83420	21	12	28.55	+18	18	52.6		102
/1986l	1986	09	08.84861	21	12	26.54	+18	18	32.5		102
/1986l	1986	09	09.77049	21	10	30.26	+18	01	02.7		102
/1986l	1986	09	10.74861	21	08	27.16	+17	42	07.1		102
/1986l	1986	09	10.77778	21	08	23.51	+17	41	33.3		102
/1986l	1986	09	10.82292	21	08	17.75	+17	40	40.6		102
/1986l	1986	09	10.86354	21	08	12.65	+17	39	51.7		102
/1986l	1986	09	27.71458	20	35	58.06	+11	41	01.2		102
/1986l	1986	09	27.75382	20	35	53.94	+11	40	09.0		102
/1986l	1987	03	25.67049	20	54	42.01	-32	10	07.0		483
/1986l	1987	03	25.68438	20	54	42.87	-32	10	35.9		483
/1986l	1987	04	01.62292	21	03	33.84	-36	54	27.0		483
/1986l	1987	04	01.64236	21	03	35.22	-36	55	13.4		483
/1986l	1987	04	13.62624	21	31	00.64	-50	16	59.7		483
/1986l	1987	04	13.65625	21	31	07.21	-50	19	43.2		483
/1986l	1987	04	22.60035	22	40	29.26	-67	36	41.7	4	483
/1986l	1987	04	22.60486	22	40	33.57	-67	37	19.2	4	483
/1986l	1987	04	28.74306	02	41	33.36	-77	48	55.3	5	323
/1986l	1987	04	29.33715	03	20	18.53	-77	36	08.8		483
/1986l	1987	04	29.34063	03	20	31.91	-77	35	59.6		483
/1986l	1987	04	29.48299	03	29	38.55	-77	29	45.1		483
/1986l	1987	05	02.35451	05	48	07.37	-72	15	12.3		483
/1986l	1987	05	02.46042	05	51	30.69	-71	58	56.6		323
/1986l	1987	05	02.50347	05	52	51.94	-71	52	08.6		323
/1986l	1987	05	05.58403	06	58	24.35	-63	04	14.5		323
/1986l	1987	05	05.62431	06	58	58.60	-62	57	00.5		323
/1986l	1987	05	07.41146	07	19	49.54	-57	42	19.7		483
/1986l	1987	05	15.48611	08	04	14.11	-37	53	03.5		323
/1986l	1987	05	18.44167	08	12	27.13	-32	32	18.2		323
/1986l	1987	05	18.48056	08	12	32.62	-32	28	26.6		323
/1986l	1987	05	19.54375	08	15	01.79	-30	46	30.0		323
/1986l	1987	05	22.45600	08	20	55.75	-26	38	32.6		415
/1986l	1987	05	22.45706	08	20	55.92	-26	38	27.5		415
/1986l	1987	05	23.44824	08	22	42.14	-25	23	25.7		415
/1986l	1987	05	23.45024	08	22	42.38	-25	23	14.7		415
/1986l	1987	05	24.40685	08	24	19.45	-24	14	52.3		415
/1986l	1987	05	24.40752	08	24	19.43	-24	14	50.1		415
/1986l	1987	05	25.56806	08	26	10.15	-22	56	45.8		323
/1986l	1987	05	29.51667	08	31	44.78	-19	06	25.4		323
/1986l	1987	05	29.57083	08	31	48.94	-19	03	34.7		323
/1986l	1987	06	28.36469	08	59	04.75	-05	12	44.7		415
/1986l	1987	06	29.40323	08	59	50.17	-04	58	20.4		415
/1986l	1987	06	29.40454	08	59	50.25	-04	58	22.2		415
/1986l	1987	07	04.34320	09	03	21.26	-03	56	57.8		415
/1986l	1987	07	04.34798	09	03	21.46	-03	56	56.2		415

Periodic Comet Grigg-Skjellerup

/1986m	1987	04	25.13215	06	44	20.09	+03	33	23.4		691
/1986m	1987	04	25.13944	06	44	21.14	+03	33	28.1		691
/1986m	1987	05	19.49167	07	56	04.14	+07	48	56.0		323
/1986m	1987	06	22.17674	10	18	57.95	+12	27	11.4	6	707
/1986m	1987	06	22.18785	10	19	01.33	+12	27	14.6	6	707

/1986m	1987	06	28.17153	10	49	18.69	+12	53	53.0			707
/1986m	1987	06	28.18889	10	49	23.97	+12	53	55.8			707
			Comet Sorrells (1986n)									
/1986n	1987	04	29.77963	23	22	23.97	+11	38	11.3			892
/1986n	1987	05	07.78507	23	16	53.59	+11	54	43.9			372
/1986n	1987	05	08.47229	23	16	20.22	+11	55	58.0			657
/1986n	1987	05	09.78368	23	15	14.1	+11	58	29			892
/1986n	1987	05	20.44255	23	04	00.93	+12	14	00.1			657
/1986n	1987	05	23.44479	22	59	59.67	+12	16	28.3			657
/1986n	1987	05	25.44670	22	57	03.98	+12	17	23.1			657
/1986n	1987	05	31.69652	22	46	29.11	+12	15	59.7	11	T	892
/1986n	1987	06	01.70764	22	44	33.06	+12	15	03.4			400
/1986n	1987	06	03.43757	22	41	04.82	+12	12	48.1			657
/1986n	1987	06	04.66337	22	38	30.13	+12	10	45.2			400
/1986n	1987	06	04.66944	22	38	29.26	+12	10	46.3			400
/1986n	1987	06	04.68646	22	38	27.17	+12	10	41.5			400
/1986n	1987	06	04.69132	22	38	26.57	+12	10	42.7			400
/1986n	1987	06	04.71076	22	38	23.90	+12	10	41.6			400
/1986n	1987	06	06.30347	22	34	52.44	+12	07	20.3			293
/1986n	1987	06	06.30972	22	34	51.57	+12	07	19.5			293
/1986n	1987	06	06.66111	22	34	04.29	+12	06	31.3			892
/1986n	1987	06	06.68194	22	34	01.10	+12	06	29.7			892
/1986n	1987	06	06.69097	22	33	59.77	+12	06	27.2			400
/1986n	1987	06	06.69409	22	33	59.51	+12	06	23.1			892
/1986n	1987	06	07.43368	22	32	16.37	+12	04	33.7			657
/1986n	1987	06	08.40833	22	29	56.75	+12	01	47.0			657
/1986n	1987	06	14.40729	22	13	57.75	+11	37	15.6			657
/1986n	1987	06	18.36153	22	01	46.54	+11	12	37.2			657
/1986n	1987	06	19.34174	21	58	32.31	+11	05	15.4			657
/1986n	1987	06	20.34062	21	55	09.51	+10	57	17.3			657
/1986n	1987	06	20.42847	21	54	51.16	+10	56	34.9			707
/1986n	1987	06	23.64861	21	43	19.30	+10	26	45.9			400
/1986n	1987	06	23.66771	21	43	15.02	+10	26	35.6			400
/1986n	1987	06	23.67326	21	43	13.81	+10	26	32.2			400
/1986n	1987	06	24.31049	21	40	50.51	+10	19	51.4			657
/1986n	1987	06	25.62604	21	35	47.73	+10	05	19.3			400
/1986n	1987	06	25.63715	21	35	45.14	+10	05	10.8			400
/1986n	1987	06	25.64757	21	35	42.62	+10	05	04.3			400
/1986n	1987	06	27.38889	21	28	48.37	+09	44	10.5			707
			Periodic Comet du Toit-Hartley									
/1986q	1987	05	01.16645	07	39	37.67	+19	40	34.9			691
/1986q	1987	05	01.17333	07	39	38.81	+19	40	30.6			691
/1986q	1987	05	01.18965	07	39	41.36	+19	40	22.6			691
/1986q	1987	05	25.16631	08	51	50.44	+15	01	16.8	17.4T	7	691
/1986q	1987	05	25.18120	08	51	53.38	+15	01	03.8			691
/1986q	1987	05	25.19029	08	51	55.12	+15	00	55.2			691
			Comet Levy (1987a)									
/1987a	1987	05	01.22380	11	02	08.55	-22	18	52.0		8	691
/1987a	1987	05	01.25368	11	02	05.26	-22	18	43.7		8	691
/1987a	1987	05	02.17935	11	00	29.11	-22	14	21.7	19.4T		691
/1987a	1987	05	02.21082	11	00	25.80	-22	14	12.6			691
/1987a	1987	05	23.16572	10	40	05.01	-21	06	03.2		9	691
/1987a	1987	05	23.19611	10	40	04.14	-21	05	58.7		A	691
/1987a	1987	05	24.15213	10	39	41.54	-21	04	24.9		A	691
/1987a	1987	05	24.18560	10	39	40.48	-21	04	23.7	20.5T	A	691

Periodic Comet Wiseman-Skiff

/1987b	1987	05	01.13729	08	43	47.48	-03	09	52.3		B	691
/1987b	1987	05	01.14253	08	43	47.90	-03	09	52.1		C	691
/1987b	1987	05	01.15832	08	43	49.31	-03	09	54.5	18.6T		691
/1987b	1987	05	02.13494	08	45	16.88	-03	10	53.1		B	691
/1987b	1987	05	02.14037	08	45	17.27	-03	10	52.1		C	691
/1987b	1987	05	02.15605	08	45	18.72	-03	10	53.4	18.9T		691
/1987b	1987	05	23.15816	09	17	36.24	-03	54	29.7	19.0T		691
/1987b	1987	05	23.17252	09	17	37.67	-03	54	32.6			691
/1987b	1987	05	25.16081	09	20	44.69	-04	00	46.9	19.4T		691
/1987b	1987	05	25.17133	09	20	45.72	-04	00	49.0			691

Comet Nishikawa-Takamizawa-Tago (1987c)

/1987c	1987	04	29.80010	22	17	25.15	-19	54	26.7	8 T		372
/1987c	1987	05	07.79132	21	49	38.26	-25	34	02.3	7 T		372
/1987c	1987	05	18.85833	20	24	43.42	-37	32	44.1			323
/1987c	1987	05	18.90139	20	24	11.69	-37	35	52.0			323
/1987c	1987	05	26.77361	18	16	20.00	-44	33	01.7			323
/1987c	1987	05	26.80972	18	15	37.49	-44	33	35.8			323
/1987c	1987	05	27.69792	17	58	18.01	-44	42	50.6			323
/1987c	1987	05	28.69653	17	38	48.65	-44	41	02.6			323
/1987c	1987	05	28.71736	17	38	24.68	-44	40	54.5			323

Periodic Comet Wild 3

/1987e	1987	06	22.23924	13	49	03.65	-02	15	13.0		D	707
/1987e	1987	06	22.27118	13	49	04.11	-02	15	32.6		D	707

Periodic Comet Tempel 2

/1987g	1987	05	23.22407	10	23	37.61	+20	10	48.3			691
/1987g	1987	05	23.26200	10	23	38.28	+20	10	40.4			691
/1987g	1987	05	23.26200	10	23	38.42	+20	10	38.3	19.8T		691

Periodic Comet Klemola

/1987i	1987	06	19.36847	22	57	29.09	+04	17	48.6			657
/1987i	1987	06	22.67419	23	03	38.54	+04	48	16.3	14 T		399
/1987i	1987	06	22.68513	23	03	39.85	+04	48	22.2			399
/1987i	1987	06	23.66771	23	05	28.56	+04	57	02.1			400
/1987i	1987	06	25.78299	23	09	20.18	+05	15	19.9	15 T		372

Comet Torres (1987j)

/1987j	1987	03	29.07153	13	50	47.91	-48	56	57.9		E	805
/1987j	1987	04	22.1388	12	57	52.0	-40	50	31		F	805
/1987j	1987	04	22.2329	12	57	40.7	-40	48	06		F	805
/1987j	1987	04	22.2419	12	57	39.7	-40	47	53		F	805
/1987j	1987	04	22.2579	12	57	37.7	-40	47	31		F	805
/1987j	1987	04	22.2669	12	57	36.8	-40	47	16		F	805
/1987j	1987	04	22.2759	12	57	35.8	-40	47	06		F	805
/1987j	1987	05	26.60660	12	11	19.46	-25	21	07.3			323
/1987j	1987	05	29.62153	12	09	13.39	-24	06	37.9			323
/1987j	1987	05	31.07126	12	08	18.71	-23	31	46.7			801
/1987j	1987	06	22.16958	12	01	09.58	-15	59	50.5	15.3T		691
/1987j	1987	06	22.17260	12	01	09.53	-15	59	47.4			691
/1987j	1987	06	23.15837	12	01	05.53	-15	43	05.9		B	691
/1987j	1987	06	23.16919	12	01	05.49	-15	42	54.8	15.3T	G	691
/1987j	1987	06	25.19931	12	01	00.62	-15	09	32.3			707

Periodic Comet Reinmuth 2

/1987l	1987	06	24.35701	20	38	11.15	-19	30	25.3			657

Periodic Comet Harrington

/1987n	1987	05	23.40891	19	51	31.05	-15	32	08.3	18.9	T	H 691
/1987n	1987	05	23.42144	19	51	31.55	-15	32	07.9			691
/1987n	1987	05	23.46410	19	51	33.10	-15	32	07.7			691

Comet Shoemaker (1987o)

/1987o	1987	05	06.71458	16	37	10.16	+08	25	44.8			323
/1987o	1987	05	06.74132	16	37	08.72	+08	25	58.3			I 372
/1987o	1987	05	07.72639	16	36	06.92	+08	35	40.6			372
/1987o	1987	05	07.77257	16	36	03.71	+08	36	07.3			372
/1987o	1987	05	08.37785	16	35	25.65	+08	42	01.4			657
/1987o	1987	05	09.32410	16	34	25.71	+08	51	16.8			675
/1987o	1987	05	09.33333	16	34	25.12	+08	51	21.8			675
/1987o	1987	05	09.75139	16	33	58.37	+08	55	23.9	15.5	T	892
/1987o	1987	05	09.76042	16	33	57.61	+08	55	29.7			892
/1987o	1987	05	09.76252	16	33	57.2	+08	55	25			373
/1987o	1987	05	16.52795	16	26	36.90	+09	58	32.8	15	T	399
/1987o	1987	05	16.54294	16	26	35.92	+09	58	38.7			399
/1987o	1987	05	16.55926	16	26	34.90	+09	58	48.4			399
/1987o	1987	05	18.56307	16	24	21.72	+10	16	32.6	15	T	399
/1987o	1987	05	18.57176	16	24	21.10	+10	16	38.2			399
/1987o	1987	05	18.58270	16	24	20.36	+10	16	43.6			399
/1987o	1987	05	18.70972	16	24	11.96	+10	17	50.2			323
/1987o	1987	05	20.38201	16	22	19.84	+10	32	07.3			657
/1987o	1987	05	23.31213	16	19	02.64	+10	56	34.3	16	T	691
/1987o	1987	05	23.32273	16	19	01.94	+10	56	39.6			691
/1987o	1987	05	23.33322	16	19	01.20	+10	56	44.7			691
/1987o	1987	05	24.30957	16	17	55.36	+11	04	37.4	16	T	J 691
/1987o	1987	05	24.31888	16	17	54.74	+11	04	42.0			691
/1987o	1987	05	24.33355	16	17	53.75	+11	04	48.9			691
/1987o	1987	05	24.34458	16	17	53.00	+11	04	54.2			691
/1987o	1987	05	24.60277	16	17	35.62	+11	06	57.5			372
/1987o	1987	05	24.61493	16	17	34.77	+11	07	02.8			372
/1987o	1987	05	29.32048	16	12	17.15	+11	42	56.7			675
/1987o	1987	05	29.32048	16	12	17.15	+11	42	56.7			675
/1987o	1987	05	29.72153	16	11	50.01	+11	45	54.7			323
/1987o	1987	05	30.26750	16	11	13.43	+11	49	47.5			801
/1987o	1987	05	30.36996	16	11	06.47	+11	50	32.0			675
/1987o	1987	05	30.36996	16	11	06.47	+11	50	32.0			675
/1987o	1987	05	31.35069	16	10	00.55	+11	57	27.1			675
/1987o	1987	05	31.35069	16	10	00.55	+11	57	27.1			675
/1987o	1987	06	01.17700	16	09	05.37	+12	03	11.4			801
/1987o	1987	06	01.36736	16	08	52.52	+12	04	29.2			675
/1987o	1987	06	01.36736	16	08	52.52	+12	04	29.2			675
/1987o	1987	06	03.42646	16	06	35.38	+12	18	13.4			657
/1987o	1987	06	03.68611	16	06	17.91	+12	19	58.0	17	T	372
/1987o	1987	06	18.30354	15	50	47.26	+13	38	44.6			657
/1987o	1987	06	20.31667	15	48	47.65	+13	47	01.5			657
/1987o	1987	06	20.33785	15	48	46.01	+13	47	11.8			K 707
/1987o	1987	06	20.36354	15	48	44.42	+13	47	17.5			707
/1987o	1987	06	22.37929	15	46	47.09	+13	55	00.3	16.1	T	691
/1987o	1987	06	22.38633	15	46	46.68	+13	55	02.2			L 691
/1987o	1987	06	25.27569	15	44	03.10	+14	05	05.1			707
/1987o	1987	06	26.29792	15	43	06.65	+14	08	20.0			707

Periodic Comet Borrelly

/1987p	1987	06	05.72721	00	33	04.49	-29	08	06.5	19	N	474
/1987p	1987	06	05.76182	00	33	08.25	-29	08	03.0			474
/1987p	1987	06	07.75257	00	36	55.50	-29	06	01.4	19	N	474

Note 1: very faint, diffuse, image; measurement difficult. 2: narrow tail 5′-10′ long in p.a. 253 . 3: tail 3′.5 long in p.a. 209 . 4: diffuse and uncondensed. 5: correction to MPC 11780. 6: poor distribution of reference stars. 7: tail 1′.1 long in p.a. 97 . 8: poor seeing. 9: involved with star. A: extremely weak, measurement uncertain. B: twilight. C: weak and diffuse, position uncertain. D: weak image. E: trailed image; interference from star at end. F: plates tilted in telescope and time uncertain. G: tail 4′.5 long curving from p.a. 122 toward p.a. 168 . H: tail 11" long in p.a. 256 . I: stellar. J: tail 5′ long in p.a. 145 . K: tail 4′ long. L: straight, narrow tail > 5′.4 long in p.a. 140 .

* * * * *

OBSERVATIONS OF MINOR PLANETS.

The observations are listed separately for each observatory code. Alphabetic note codes shown with some of the observations are defined according to the scheme below. Numerical codes are defined in the headings for the individual observatories.

A earlier approximate position inferior
a sense of motion ambiguous
B black or dark plate
b bad seeing
C correction to earlier position
c crowded star field
D declination uncertain
d diffuse image
E at or near edge of plate
F faint image
G poor guiding
g no guiding
I involved with star
i inkdot measured
M measurement difficult
N near edge of plate, measurement uncertain
O image out of focus
o plate measured in one direction only
P position uncertain
p poor image
R right ascension uncertain
r outside reference star set
S poor sky
s streaked image
T time uncertain
t trailed image
U uncertain image
u unconfirmed image
V very faint image
W weak image
w weak solution

Object Date UT R. A. (1950) Decl. Mag. N Obs.

010 Caussols
J.-L. Heudier, CERGA Caussols, F-06460 Saint Vallier de Thiey, France
Observers A. Barthelemy, R. Chemin, J. Ciffreo, J.-L. Heudier, T. Laverge, C. Pollas

0.9-m Schmidt telescope
Observations in association with INAS

```
1940 YE    1987 01 08.07083  09 24 02.03  +22 57 18.5                    010
1940 YE    1987 01 08.09167  09 24 01.18  +22 57 15.6                    010
1940 YE    1987 01 08.10243  09 24 00.62  +22 57 13.6                    010
1978 PU3   1987 01 30.90347  06 37 23.35  +14 01 39.8                    010
1978 PU3   1987 01 30.93611  06 37 21.97  +14 01 49.3                    010
1981 JD2   1987 01 08.07083  09 29 50.00  +21 31 26.8                    010
1981 JD2   1987 01 08.09167  09 29 49.16  +21 31 31.7                    010
1981 JD2   1987 01 08.10243  09 29 48.71  +21 31 34.7                    010
1981 VS    1987 01 30.97153  07 24 58.19  +06 46 48.7                    010
1981 VS    1987 01 30.99236  07 24 57.26  +06 46 54.7                    010
1981 VS    1987 01 31.00278  07 24 56.77  +06 46 58.1                    010
1982 BG1   1984 11 27.96778  04 44 35.07  +29 49 05.6                    010
1982 BG1   1984 11 28.00956  04 44 31.84  +29 48 56.0                    010
1984 WN1   1984 11 27.96778  04 43 01.97  +29 31 57.9                    010
1984 WN1   1984 11 28.00956  04 42 59.48  +29 31 55.3                    010
1984 WO2 * 1984 11 27.96778  04 22 12.66  +28 07 55.3                    010
1984 WO2   1984 11 28.00956  04 22 10.38  +28 07 52.2                    010
1984 WP2 * 1984 11 27.96778  04 23 58.33  +27 12 49.2                    010
1984 WP2   1984 11 28.00956  04 23 55.16  +27 12 41.5                    010
1984 WQ2 * 1984 11 27.96778  04 24 20.96  +26 52 59.0                    010
1984 WQ2   1984 11 28.00956  04 24 17.67  +26 52 51.1                    010
1984 WR2 * 1984 11 27.96778  04 24 44.28  +29 00 28.9                    010
1984 WR2   1984 11 28.00956  04 24 41.71  +29 00 16.0                    010
1984 WS2 * 1984 11 27.96778  04 24 45.54  +26 54 21.1                    010
1984 WS2   1984 11 28.00956  04 24 42.95  +26 54 08.9                    010
1984 WT2 * 1984 11 27.96778  04 25 41.50  +28 17 33.2                    010
1984 WT2   1984 11 28.00956  04 25 38.61  +28 17 10.5                    010
1984 WU2 * 1984 11 27.96778  04 25 58.11  +28 03 27.8                    010
1984 WU2   1984 11 28.00956  04 25 55.47  +28 03 13.2                    010
1984 WV2 * 1984 11 27.96778  04 26 14.86  +29 08 15.1                    010
1984 WV2   1984 11 28.00956  04 26 11.48  +29 08 24.4                    010
1984 WW2 * 1984 11 27.96778  04 26 39.59  +26 44 42.4                    010
1984 WW2   1984 11 28.00956  04 26 37.40  +26 44 28.6                    010
1984 WX2 * 1984 11 27.96778  04 26 45.89  +27 36 35.5                    010
1984 WX2   1984 11 28.00956  04 26 43.42  +27 36 13.0                    010
1984 WY2 * 1984 11 27.96778  04 27 51.18  +26 28 15.9                    010
1984 WY2   1984 11 28.00956  04 27 48.88  +26 28 06.4                    010
1984 WZ2 * 1984 11 27.96778  04 28 32.53  +29 54 11.9                    010
1984 WZ2   1984 11 28.00956  04 28 29.45  +29 53 54.2                    010
1984 WA3 * 1984 11 27.96778  04 29 05.41  +31 03 16.6                    010
1984 WA3   1984 11 28.00956  04 29 01.87  +31 03 13.2                    010
1984 WB3 * 1984 11 27.96778  04 29 15.00  +30 52 37.1                    010
1984 WB3   1984 11 28.00956  04 29 11.49  +30 52 37.0                    010
1984 WC3 * 1984 11 27.96778  04 29 32.05  +26 25 59.4                    010
1984 WC3   1984 11 28.00956  04 29 29.44  +26 25 50.0                    010
1984 WD3 * 1984 11 27.96778  04 30 12.75  +29 01 49.0                    010
1984 WD3   1984 11 28.00956  04 30 09.54  +29 01 46.3                    010
1984 WE3 * 1984 11 27.96778  04 30 18.20  +28 47 51.9                    010
1984 WE3   1984 11 28.00956  04 30 15.54  +28 47 47.5                    010
1984 WF3 * 1984 11 27.96778  04 30 32.38  +28 45 54.3                    010
1984 WF3   1984 11 28.00956  04 30 29.34  +28 45 52.3                    010
1984 WG3 * 1984 11 27.96778  04 30 42.44  +26 43 32.2                    010
1984 WG3   1984 11 28.00956  04 30 39.69  +26 43 36.7                    010
1984 WH3 * 1984 11 27.96778  04 31 30.37  +26 51 03.2                    010
1984 WH3   1984 11 28.00956  04 31 27.47  +26 51 06.0                    010
1984 WJ3 * 1984 11 27.96778  04 32 27.50  +30 26 52.7                    010
1984 WJ3   1984 11 28.00956  04 32 24.30  +30 26 46.3                    010
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1984	WK3	*	1984	11	27.96778	04	33	36.51	+27	49	35.0	010
1984	WK3		1984	11	28.00956	04	33	33.95	+27	49	26.9	010
1984	WL3	*	1984	11	27.96778	04	34	06.76	+26	50	39.0	010
1984	WL3		1984	11	28.00956	04	34	03.79	+26	50	31.7	010
1984	WM3	*	1984	11	27.96778	04	34	38.42	+28	10	54.6	010
1984	WM3		1984	11	28.00956	04	34	34.75	+28	10	55.6	010
1984	WN3	*	1984	11	27.96778	04	34	52.17	+30	59	27.2	010
1984	WN3		1984	11	28.00956	04	34	48.98	+30	59	25.6	010
1984	WO3	*	1984	11	27.96778	04	34	56.56	+27	16	50.9	010
1984	WO3		1984	11	28.00956	04	34	53.94	+27	16	41.7	010
1984	WP3	*	1984	11	27.96778	04	35	31.64	+27	32	37.0	010
1984	WP3		1984	11	28.00956	04	35	28.36	+27	32	37.6	010
1984	WQ3	*	1984	11	27.96778	04	35	35.34	+28	51	21.2	010
1984	WQ3		1984	11	28.00956	04	35	33.10	+28	51	15.1	010
1984	WR3	*	1984	11	27.96778	04	35	40.52	+27	16	31.0	010
1984	WR3		1984	11	28.00956	04	35	37.87	+27	16	19.0	010
1984	WS3	*	1984	11	27.96778	04	37	56.47	+29	58	16.0	010
1984	WS3		1984	11	28.00956	04	37	53.57	+29	58	04.5	010
1984	WT3	*	1984	11	27.96778	04	38	12.05	+27	00	50.6	010
1984	WT3		1984	11	28.00956	04	38	09.90	+27	00	58.4	010
1984	WU3	*	1984	11	27.96778	04	38	16.34	+30	26	19.3	010
1984	WU3		1984	11	28.00956	04	38	13.40	+30	26	15.7	010
1984	WV3	*	1984	11	27.96778	04	38	28.69	+26	54	47.3	010
1984	WV3		1984	11	28.00956	04	38	26.53	+26	54	45.6	010
1984	WW3	*	1984	11	27.96778	04	38	39.54	+28	32	30.0	010
1984	WW3		1984	11	28.00956	04	38	36.67	+28	32	17.9	010
1984	WX3	*	1984	11	27.96778	04	39	24.95	+26	25	43.4	010
1984	WX3		1984	11	28.00956	04	39	22.08	+26	25	43.9	010
1984	WY3	*	1984	11	27.96778	04	39	49.62	+28	16	19.5	010
1984	WY3		1984	11	28.00956	04	39	46.07	+28	16	27.6	010
1984	WZ3	*	1984	11	27.96778	04	41	45.81	+28	21	36.5	010
1984	WZ3		1984	11	28.00956	04	41	43.47	+28	21	41.8	010
1984	WA4	*	1984	11	27.96778	04	42	28.22	+30	40	58.0	010
1984	WA4		1984	11	28.00956	04	42	25.13	+30	40	55.0	010
1984	WB4	*	1984	11	27.96778	04	43	21.95	+29	27	11.4	010
1984	WB4		1984	11	28.00956	04	43	19.08	+29	26	47.7	010
1984	WC4	*	1984	11	27.96778	04	43	29.87	+27	41	24.8	010
1984	WC4		1984	11	28.00956	04	43	27.17	+27	41	20.8	010
1984	WD4	*	1984	11	27.96778	04	43	36.86	+29	26	34.9	010
1984	WD4		1984	11	28.00956	04	43	33.77	+29	26	26.2	010
1984	WE4	*	1984	11	27.96778	04	45	26.75	+28	37	34.1	010
1984	WE4		1984	11	28.00956	04	45	24.09	+28	37	21.2	010
1984	WF4	*	1984	11	27.96778	04	45	39.19	+29	35	58.9	E 010
1984	WF4		1984	11	28.00956	04	45	36.05	+29	35	53.1	E 010
1984	WG4	*	1984	11	27.96778	04	45	50.25	+27	49	25.6	E 010
1984	WG4		1984	11	28.00956	04	45	47.46	+27	49	20.0	E 010
1987	AD		1987	01	30.97153	07	15	46.14	+04	53	58.0	010
1987	AD		1987	01	30.99236	07	15	44.56	+04	53	44.1	010
1987	AD		1987	01	31.00278	07	15	43.95	+04	53	39.9	010
1987	AO	*	1987	01	08.07083	09	24	51.26	+24	30	06.3	010
1987	AO		1987	01	08.09167	09	24	50.33	+24	30	09.2	010
1987	AO		1987	01	08.10243	09	24	49.83	+24	30	11.3	010
1987	AP	*	1987	01	08.07083	09	25	42.73	+23	23	34.4	010
1987	AP		1987	01	08.09167	09	25	42.03	+23	23	39.2	010
1987	AP		1987	01	08.10243	09	25	41.56	+23	23	42.5	010
1987	AQ	*	1987	01	08.07083	09	25	50.61	+23	17	27.5	010
1987	AQ		1987	01	08.09167	09	25	49.82	+23	17	28.4	010
1987	AQ		1987	01	08.10243	09	25	49.25	+23	17	30.1	010
1987	AR	*	1987	01	08.07083	09	26	34.66	+22	49	22.4	010

1987	AR		1987	01	08.09167	09	26	34.12	+22	49	26.6	010
1987	AR		1987	01	08.10243	09	26	33.75	+22	49	30.1	010
1987	AS	*	1987	01	08.07083	09	30	27.32	+25	25	10.2	010
1987	AS		1987	01	08.09167	09	30	26.33	+25	25	10.3	010
1987	AS		1987	01	08.10243	09	30	25.75	+25	25	10.4	010
1987	AT	*	1987	01	08.07083	09	35	37.70	+24	10	20.8	010
1987	AT		1987	01	08.09167	09	35	37.12	+24	10	28.3	010
1987	AT		1987	01	08.10243	09	35	36.77	+24	10	32.6	010
1987	AU	*	1987	01	08.07083	09	38	23.79	+21	36	13.1	010
1987	AU		1987	01	08.09167	09	38	22.95	+21	36	18.1	010
1987	AU		1987	01	08.10243	09	38	22.48	+21	36	21.0	010
1987	AV	*	1987	01	08.07083	09	39	16.51	+21	46	31.5	010
1987	AV		1987	01	08.09167	09	39	16.04	+21	46	38.3	010
1987	AV		1987	01	08.10243	09	39	15.65	+21	46	43.4	010
1987	AW	*	1987	01	08.07083	09	41	13.63	+24	16	18.1	010
1987	AW		1987	01	08.09167	09	41	12.94	+24	16	25.0	010
1987	AW		1987	01	08.10243	09	41	12.51	+24	16	30.1	010
1987	AX	*	1987	01	08.07083	09	42	12.13	+22	48	54.3	010
1987	AX		1987	01	08.09167	09	42	11.45	+22	48	59.6	010
1987	AX		1987	01	08.10243	09	42	11.09	+22	49	02.6	010
1987	AY	*	1987	01	08.07083	09	43	00.23	+24	42	25.7	010
1987	AY		1987	01	08.09167	09	42	59.49	+24	42	35.7	010
1987	AY		1987	01	08.10243	09	42	59.08	+24	42	40.2	010
1987	BV2	*	1987	01	30.90347	06	23	52.57	+17	49	37.5	010
1987	BV2		1987	01	30.92430	06	23	51.90	+17	49	36.2	010
1987	BV2		1987	01	30.93611	06	23	51.42	+17	49	35.7	010
1987	BW2	*	1987	01	30.90347	06	24	29.89	+15	14	14.4	010
1987	BW2		1987	01	30.92430	06	24	29.26	+15	14	14.2	010
1987	BW2		1987	01	30.93611	06	24	28.89	+15	14	14.0	010
1987	BX2	*	1987	01	30.90347	06	26	28.14	+15	09	12.4	010
1987	BX2		1987	01	30.93611	06	26	27.07	+15	09	14.3	010
1987	BY2	*	1987	01	30.90347	06	27	33.51	+16	09	12.1	010
1987	BY2		1987	01	30.92430	06	27	32.80	+16	09	13.8	010
1987	BY2		1987	01	30.93611	06	27	32.26	+16	09	16.2	010
1987	BZ2	*	1987	01	30.90347	06	27	58.50	+16	46	48.3	010
1987	BZ2		1987	01	30.92430	06	27	57.86	+16	46	51.5	010
1987	BZ2		1987	01	30.93611	06	27	57.39	+16	46	54.0	010
1987	BA3	*	1987	01	30.90347	06	29	21.83	+17	45	08.4	010
1987	BA3		1987	01	30.92430	06	29	22.17	+17	45	10.6	010
1987	BA3		1987	01	30.93611	06	29	22.38	+17	45	12.6	010
1987	BB3	*	1987	01	30.90347	06	31	44.67	+17	03	51.4	010
1987	BB3		1987	01	30.92430	06	31	43.90	+17	03	58.9	010
1987	BB3		1987	01	30.93611	06	31	43.33	+17	04	04.5	010
1987	BC3	*	1987	01	30.90347	06	32	33.65	+16	07	13.4	010
1987	BC3		1987	01	30.92430	06	32	32.87	+16	07	10.0	010
1987	BC3		1987	01	30.93611	06	32	32.40	+16	07	07.7	010
1987	BD3	*	1987	01	30.90347	06	32	58.13	+17	25	23.8	010
1987	BD3		1987	01	30.92430	06	32	57.14	+17	25	22.1	010
1987	BD3		1987	01	30.93611	06	32	56.61	+17	25	21.5	010
1987	BE3	*	1987	01	30.90347	06	35	46.80	+16	22	30.8	010
1987	BE3		1987	01	30.93611	06	35	45.96	+16	22	38.8	010
1987	BF3	*	1987	01	30.90347	06	36	26.80	+18	46	36.2	010
1987	BF3		1987	01	30.92430	06	36	25.93	+18	46	43.8	010
1987	BF3		1987	01	30.93611	06	36	25.27	+18	46	50.2	010
1987	BG3	*	1987	01	30.90347	06	37	51.50	+17	02	48.6	010
1987	BG3		1987	01	30.92430	06	37	50.77	+17	02	51.3	010
1987	BG3		1987	01	30.93611	06	37	50.15	+17	02	54.4	010
1987	BH3	*	1987	01	30.90347	06	37	57.72	+18	38	06.1	010
1987	BH3		1987	01	30.92430	06	37	56.80	+18	38	08.6	010

1987	BH3		1987	01	30.93611	06	37	56.15	+18	38	11.0	010
1987	BJ3	*	1987	01	30.90347	06	39	18.64	+16	40	29.5	010
1987	BJ3		1987	01	30.92430	06	39	17.74	+16	40	33.3	010
1987	BJ3		1987	01	30.93611	06	39	17.01	+16	40	36.6	010
1987	BK3	*	1987	01	30.90347	06	41	05.85	+16	24	54.6	010
1987	BK3		1987	01	30.92430	06	41	04.85	+16	25	02.0	010
1987	BK3		1987	01	30.93611	06	41	04.32	+16	25	06.7	010
1987	BL3	*	1987	01	30.90347	06	41	15.19	+16	56	19.7	010
1987	BL3		1987	01	30.92430	06	41	14.21	+16	56	25.5	010
1987	BL3		1987	01	30.93611	06	41	13.68	+16	56	27.9	010
1987	BM3	*	1987	01	30.90347	06	43	02.86	+15	35	01.6	010
1987	BM3		1987	01	30.92430	06	43	01.81	+15	34	54.4	010
1987	BM3		1987	01	30.93611	06	43	01.03	+15	34	49.6	010
1987	BN3	*	1987	01	30.97153	07	15	23.30	+03	52	53.6	010
1987	BN3		1987	01	30.99236	07	15	22.12	+03	53	29.9	010
1987	BN3		1987	01	31.00278	07	15	22.00	+03	53	49.4	010
1987	BO3	*	1987	01	30.97153	07	17	49.90	+04	34	30.9	010
1987	BO3		1987	01	30.99236	07	17	49.01	+04	34	33.1	010
1987	BO3		1987	01	31.00278	07	17	48.49	+04	34	34.5	010
1987	BP3	*	1987	01	30.97153	07	18	55.70	+05	54	07.4	010
1987	BP3		1987	01	30.99236	07	18	54.62	+05	54	08.5	010
1987	BP3		1987	01	31.00278	07	18	54.07	+05	54	10.3	010
1987	BQ3	*	1987	01	30.97153	07	26	35.70	+06	53	37.3	010
1987	BQ3		1987	01	31.00278	07	26	34.39	+06	54	10.2	010
1987	BR3	*	1987	01	30.97153	07	29	14.83	+03	13	40.3	010
1987	BR3		1987	01	30.99236	07	29	13.88	+03	13	46.9	010
1987	BR3		1987	01	31.00278	07	29	13.42	+03	13	50.0	010
1987	BS3	*	1987	01	30.97153	07	32	50.02	+06	39	34.3	010
1987	BS3		1987	01	30.99236	07	32	48.99	+06	39	43.2	010
1987	BS3		1987	01	31.00278	07	32	48.52	+06	39	46.4	010
1987	BT3	*	1987	01	30.97153	07	33	42.63	+07	43	58.3	010
1987	BT3		1987	01	31.00278	07	33	40.86	+07	44	05.6	010
1987	DB1		1987	02	23.02153	10	29	15.09	+15	16	18.5	010
1987	DB1		1987	02	23.05278	10	29	13.15	+15	16	22.8	010
1987	DA5	*	1987	02	23.02153	10	32	36.14	+14	46	11.8	010
1987	DA5		1987	02	23.05278	10	32	34.12	+14	46	13.4	010
1987	DB5	*	1987	02	23.02153	10	32	49.06	+17	28	25.1	010
1987	DB5		1987	02	23.04236	10	32	47.91	+17	28	33.2	010
1987	DB5		1987	02	23.05278	10	32	47.42	+17	28	37.1	010
1987	DC5	*	1987	02	23.02153	10	33	13.02	+15	57	15.1	010
1987	DC5		1987	02	23.04236	10	33	11.64	+15	57	22.3	010
1987	DC5		1987	02	23.05278	10	33	11.10	+15	57	25.3	010
1987	DD5	*	1987	02	23.02153	10	34	19.90	+15	47	43.4	010
1987	DD5		1987	02	23.04236	10	34	18.66	+15	47	53.0	010
1987	DD5		1987	02	23.05278	10	34	17.95	+15	47	56.4	010
1987	DE5	*	1987	02	23.02153	10	34	27.96	+17	14	41.3	010
1987	DE5		1987	02	23.04236	10	34	26.33	+17	14	57.3	010
1987	DE5		1987	02	23.05278	10	34	25.77	+17	15	00.6	010
1987	DF5	*	1987	02	23.02153	10	34	33.78	+15	48	12.7	010
1987	DF5		1987	02	23.04236	10	34	32.55	+15	48	19.7	010
1987	DF5		1987	02	23.05278	10	34	31.86	+15	48	24.3	010
1987	DG5	*	1987	02	23.02153	10	36	48.33	+15	55	09.9	010
1987	DG5		1987	02	23.04236	10	36	47.24	+15	55	22.7	010
1987	DG5		1987	02	23.05278	10	36	46.70	+15	55	30.4	010
1987	DH5	*	1987	02	23.02153	10	37	30.63	+16	19	29.5	010
1987	DH5		1987	02	23.04236	10	37	29.37	+16	19	37.3	010
1987	DH5		1987	02	23.05278	10	37	28.57	+16	19	41.6	010
1987	DJ5	*	1987	02	23.02153	10	38	30.87	+14	52	55.1	010
1987	DJ5		1987	02	23.05278	10	38	28.17	+14	52	38.6	010

1987	DK5	*	1987	02	23.02153	10	39	14.80	+15	41	20.9	010
1987	DK5		1987	02	23.04236	10	39	13.75	+15	41	23.7	010
1987	DK5		1987	02	23.05278	10	39	13.10	+15	41	25.5	010
1987	DL5	*	1987	02	23.02153	10	40	10.98	+17	41	41.8	010
1987	DL5		1987	02	23.05278	10	40	09.40	+17	41	50.9	010
1987	DM5	*	1987	02	23.02153	10	43	26.48	+18	27	14.9	010
1987	DM5		1987	02	23.05278	10	43	22.91	+18	27	00.8	010
1987	DN5	*	1987	02	23.02153	10	43	55.65	+18	30	14.5	010
1987	DN5		1987	02	23.05278	10	43	52.63	+18	30	04.9	010
1987	DO5	*	1987	02	23.02153	10	44	44.61	+18	01	28.9	010
1987	DO5		1987	02	23.05278	10	44	42.45	+18	01	44.7	010
1987	DP5	*	1987	02	23.02153	10	46	15.33	+15	57	13.7	010
1987	DP5		1987	02	23.04236	10	46	14.23	+15	57	18.2	010
1987	DP5		1987	02	23.05278	10	46	13.46	+15	57	21.1	010
1987	EA		1987	02	23.02153	10	34	06.60	+14	34	42.7	010
1987	EA		1987	02	23.04236	10	34	05.37	+14	34	48.5	010
1987	EA		1987	02	23.05278	10	34	04.71	+14	34	51.2	010
1987	EC1		1987	02	23.02153	10	48	24.93	+15	39	19.2	010
1987	EC1		1987	02	23.05278	10	48	23.00	+15	39	32.3	010
1987	HE2	*	1987	04	22.91111	11	47	47.28	-04	37	50.0	010
1987	HE2		1987	04	22.93194	11	47	46.89	-04	37	45.4	010
1987	HE2		1987	04	22.94169	11	47	46.59	-04	37	39.4	010
1987	HF2	*	1987	04	23.92847	12	24	31.34	-12	36	23.1	010
1987	HF2		1987	04	23.94930	12	24	30.32	-12	36	24.5	010
1987	HF2		1987	04	23.95972	12	24	29.78	-12	36	24.7	010
1987	HG2	*	1987	04	23.92847	12	30	52.66	-11	30	12.6	010
1987	HG2		1987	04	23.94930	12	30	51.64	-11	30	06.7	010
1987	HG2		1987	04	23.95972	12	30	51.21	-11	30	04.1	010
1987	HH2	*	1987	04	23.92847	12	36	31.45	-12	01	56.9	010
1987	HH2		1987	04	23.94930	12	36	30.51	-12	01	49.9	010
1987	HH2		1987	04	23.95972	12	36	30.02	-12	01	47.6	010
1987	HJ2	*	1987	04	23.92847	12	36	50.78	-12	01	59.3	010
1987	HJ2		1987	04	23.94930	12	36	49.53	-12	01	51.7	010
1987	HJ2		1987	04	23.95972	12	36	48.85	-12	01	46.9	010
1987	HK2	*	1987	04	23.92847	12	37	03.05	-11	27	50.0	010
1987	HK2		1987	04	23.94930	12	37	02.22	-11	27	38.9	010
1987	HK2		1987	04	23.95972	12	37	01.81	-11	27	33.1	010
1987	HL2	*	1987	04	23.92847	12	39	37.61	-11	39	48.1	010
1987	HL2		1987	04	23.94930	12	39	36.72	-11	39	39.7	010
1987	HL2		1987	04	23.95972	12	39	36.19	-11	39	35.5	010
1987	HM2	*	1987	04	23.92847	12	40	51.13	-09	50	37.7	010
1987	HM2		1987	04	23.94930	12	40	49.69	-09	50	17.8	010
1987	HN2	*	1987	04	23.92847	12	41	24.92	-09	46	36.0	010
1987	HN2		1987	04	23.94930	12	41	23.62	-09	46	29.7	010
1987	HN2		1987	04	23.95972	12	41	23.14	-09	46	27.6	010
7571	P-L		1984	11	27.96778	04	43	22.19	+28	51	41.4	010
7571	P-L		1984	11	28.00956	04	43	19.23	+28	51	42.8	010
120			1987	01	08.07083	09	25	22.06	+20	46	38.9	010
120			1987	01	08.10243	09	25	20.97	+20	46	41.5	010
438			1984	11	27.96778	04	43	40.31	+26	33	54.1	010
438			1984	11	28.00956	04	43	37.65	+26	33	55.3	010
600			1987	01	30.90347	06	38	06.33	+15	43	08.3	010
600			1987	01	30.92430	06	38	05.59	+15	43	13.8	010
600			1987	01	30.93611	06	38	05.02	+15	43	18.4	010
653			1987	01	30.90347	06	44	31.40	+16	43	18.5	010
653			1987	01	30.92430	06	44	30.62	+16	43	25.6	010
653			1987	01	30.93611	06	44	30.05	+16	43	30.0	010
904			1987	01	22.91875	06	57	28.24	-00	16	48.4	010
904			1987	01	22.95000	06	57	27.68	-00	16	41.3	010

904	1987	01	23.88889	06	56	46.84	-00	12	35.6		010
904	1987	01	23.95139	06	56	44.27	-00	12	21.3		010
958	1987	04	22.91111	12	00	46.80	-03	28	23.5	E	010
958	1987	04	22.94169	12	00	45.89	-03	28	17.1	E	010
1200	1987	01	30.90347	06	28	37.86	+17	07	40.9		010
1200	1987	01	30.92430	06	28	37.17	+17	07	41.4		010
1200	1987	01	30.93611	06	28	36.58	+17	07	42.3		010
1328	1987	04	22.91111	11	51	53.16	-03	53	22.3		010
1328	1987	04	22.93194	11	51	52.75	-03	53	17.2		010
1328	1987	04	22.94169	11	51	52.47	-03	53	13.6		010
1402	1987	01	30.90347	06	29	06.09	+16	14	05.3		010
1402	1987	01	30.92430	06	29	05.27	+16	14	03.1		010
1402	1987	01	30.93611	06	29	04.76	+16	14	01.7		010
1480	1987	02	23.02153	10	40	07.64	+18	51	57.3		010
1480	1987	02	23.04236	10	40	06.28	+18	52	05.3		010
1480	1987	02	23.05278	10	40	05.45	+18	52	09.9		010
1488	1987	02	23.02153	10	29	18.48	+15	52	42.7		010
1488	1987	02	23.04236	10	29	17.45	+15	52	44.2		010
1488	1987	02	23.05278	10	29	16.73	+15	52	44.8		010
1603	1987	01	30.90347	06	37	52.19	+18	45	42.8		010
1603	1987	01	30.92430	06	37	51.38	+18	45	48.3		010
1603	1987	01	30.93611	06	37	50.80	+18	45	51.5		010
1678	1987	04	23.92847	12	32	50.10	-11	00	10.1		010
1678	1987	04	23.94930	12	32	49.24	-11	00	07.8		010
1678	1987	04	23.95972	12	32	48.74	-11	00	06.5		010
1680	1987	02	23.02153	10	48	33.36	+14	42	22.4		010
1680	1987	02	23.04236	10	48	32.40	+14	42	31.2		010
1680	1987	02	23.05278	10	48	31.78	+14	42	35.9		010
1738	1987	02	23.02153	10	41	51.24	+16	07	36.1		010
1738	1987	02	23.04236	10	41	49.99	+16	07	43.7		010
1738	1987	02	23.05278	10	41	49.23	+16	07	48.1		010
1900	1984	11	27.96778	04	24	52.12	+29	21	26.2		010
1900	1984	11	28.00956	04	24	49.06	+29	21	05.7		010
2192	1987	01	30.99236	07	28	35.09	+08	12	19.2		010
2192	1987	01	31.00278	07	28	34.64	+08	12	21.0		010
2242	1987	04	22.91111	12	01	13.29	-02	29	40.0	E	010
2242	1987	04	22.94169	12	01	12.17	-02	29	31.8	E	010
2244	1987	02	23.02153	10	33	17.22	+18	25	56.0		010
2244	1987	02	23.04236	10	33	16.20	+18	26	03.6		010
2244	1987	02	23.05278	10	33	15.51	+18	26	07.9		010
2278	1987	01	08.07083	09	25	50.13	+21	31	41.6		010
2278	1987	01	08.09167	09	25	49.40	+21	31	46.6		010
2278	1987	01	08.10243	09	25	48.91	+21	31	49.4		010
2491	1987	01	30.90347	06	42	12.17	+15	36	10.7		010
2491	1987	01	30.92430	06	42	11.14	+15	36	40.2		010
2491	1987	01	30.93611	06	42	10.69	+15	36	53.3		010
2529	1987	01	30.90347	06	34	49.66	+16	44	49.8		010
2529	1987	01	30.92430	06	34	48.78	+16	44	52.7		010
2529	1987	01	30.93611	06	34	48.20	+16	44	54.5		010
2618	1987	01	31.86319	07	19	49.90	+18	55	22.5	p	010
2618	1987	01	31.89340	07	19	48.52	+18	55	23.0	p	010
2664	1987	01	31.86319	07	15	11.10	+18	10	35.5	p	010
2664	1987	01	31.89340	07	15	09.63	+18	10	42.0	p	010
2701	1987	02	23.02153	10	33	45.76	+15	04	46.8	p	010
2701	1987	02	23.05278	10	33	44.04	+15	04	55.7		010
2843	1987	04	23.92847	12	24	53.33	-11	43	51.2		010
2843	1987	04	23.94930	12	24	52.63	-11	43	43.5		010
2843	1987	04	23.95972	12	24	52.22	-11	43	38.0		010
2870	1987	02	23.02153	10	27	60.00	+16	00	52.0		010

2870		1987	02	23.04236	10	27	58.72	+16	00	59.3	010
2870		1987	02	23.05278	10	27	58.08	+16	01	02.7	010
2914		1987	01	31.86319	07	09	40.80	+18	34	40.6	p 010
2914		1987	01	31.89340	07	09	39.21	+18	34	46.6	p 010
3083		1987	01	08.07083	09	27	25.29	+22	04	38.3	010
3083		1987	01	08.09167	09	27	23.98	+22	04	40.2	010
3083		1987	01	08.10243	09	27	24.07	+22	04	41.1	010
3105		1987	01	30.90347	06	35	24.55	+18	10	43.6	010
3105		1987	01	30.92430	06	35	24.10	+18	10	48.2	010
3105		1987	01	30.93611	06	35	22.94	+18	10	52.7	010
3350		1984	11	27.96778	04	43	28.41	+28	00	59.4	010
3350		1984	11	28.00956	04	43	25.24	+28	00	55.5	010
3437		1987	01	08.07083	09	41	10.81	+21	05	04.4	010
3437		1987	01	08.09167	09	41	10.37	+21	05	08.4	010
3437		1987	01	08.10243	09	41	09.99	+21	05	11.8	010

033 Tautenburg
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Observer H. Meusinger
Measurer F. Borngen
1.3-m Schmidt telescope
SAOC

1987	DM		1987	03	26.84062	09	53	57.30	+17	03	06.2	033
1987	DM		1987	03	26.87778	09	53	56.49	+17	03	07.3	033
1987	EC		1987	04	24.88437	10	47	11.76	+11	16	01.6	033
1987	EC		1987	04	24.90764	10	47	11.68	+11	15	57.2	033
1987	EC		1987	04	24.92049	10	47	11.58	+11	15	53.9	033
1987	EC		1987	04	24.93056	10	47	11.53	+11	15	51.9	033
1987	EC		1987	04	27.90000	10	47	07.78	+11	04	39.3	033
1987	EC		1987	04	27.92986	10	47	07.71	+11	04	31.8	18.6 033
1987	EC		1987	04	29.93160	10	47	12.63	+10	56	24.0	033
1987	HU	*	1987	04	24.88437	10	39	36.18	+10	25	14.3	033
1987	HU		1987	04	27.90000	10	40	27.79	+10	23	19.6	033
1987	HU		1987	04	27.92986	10	40	28.31	+10	23	18.3	19.3 033
1070			1987	04	24.88437	10	37	10.04	+10	57	45.6	033
1070			1987	04	24.90764	10	37	09.95	+10	57	49.9	033
1070			1987	04	24.92049	10	37	09.92	+10	57	52.4	033
1070			1987	04	24.93056	10	37	09.86	+10	57	53.6	033
1070			1987	04	27.90000	10	37	06.44	+11	06	16.2	033
1070			1987	04	27.92986	10	37	06.44	+11	06	20.4	16.7 033
1070			1987	04	29.89306	10	37	09.58	+11	11	12.8	033
1070			1987	04	29.93160	10	37	09.66	+11	11	17.8	033
2905			1987	04	24.88437	10	42	09.37	+11	15	37.1	033
2905			1987	04	24.90764	10	42	09.23	+11	15	31.8	033
2905			1987	04	24.92049	10	42	09.15	+11	15	28.9	033
2905			1987	04	24.93056	10	42	09.11	+11	15	26.8	033
2905			1987	04	27.90000	10	42	02.24	+11	03	56.3	033
2905			1987	04	27.92986	10	42	02.23	+11	03	49.0	16.2 033
2905			1987	04	29.89306	10	42	05.31	+10	55	36.3	033
2905			1987	04	29.93160	10	42	05.44	+10	55	26.4	033

046 Klet
A. Mrkos, Dept. of Astronomy and Astrophysics, Charles University,
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Observers A. Mrkos, Z. Vavrova
0.6-m Maksutov reflector

1964	CG		1987	04	28.94815	14	54	37.24	-13	06	49.6	046
1964	CG		1987	04	28.96233	14	54	36.52	-13	06	46.1	046

1964	CG		1987	04	29.94126	14	53	50.01	-13	03	40.4	046
1964	CG		1987	04	29.95538	14	53	49.36	-13	03	37.3	046
1979	FE		1987	04	24.01887	15	34	22.84	+03	55	32.5	17.1 046
1979	FE		1987	04	24.03322	15	34	21.85	+03	55	38.0	046
1979	FE		1987	04	28.00208	15	31	06.47	+04	13	24.1	046
1979	FE		1987	04	28.01620	15	31	05.87	+04	13	25.4	046
1979	UY3		1987	04	24.96285	13	55	47.06	-12	40	26.1	16.7 046
1979	UY3		1987	04	24.97708	13	55	46.38	-12	40	23.2	046
1979	UY3		1987	04	27.89705	13	53	22.67	-12	29	18.2	046
1979	UY3		1987	04	27.91111	13	53	21.98	-12	29	15.3	046
1983	TR2		1987	04	27.86273	13	39	10.22	-13	51	55.8	046
1983	TR2		1987	04	27.87685	13	39	09.50	-13	51	54.0	046
1987	HW	*	1987	04	23.90451	13	42	25.26	-13	16	48.8	16.7 046
1987	HW		1987	04	23.92083	13	42	24.27	-13	16	49.4	046
1987	HW		1987	04	24.92552	13	41	27.80	-13	15	22.6	046
1987	HW		1987	04	24.93976	13	41	26.94	-13	15	22.7	046
1987	HW		1987	04	27.86273	13	38	44.48	-13	11	01.8	046
1987	HW		1987	04	27.87685	13	38	43.69	-13	10	58.0	046
1987	HX	*	1987	04	23.90451	13	45	41.52	-10	34	18.9	16.9 046
1987	HX		1987	04	23.92083	13	45	40.74	-10	34	12.3	046
1987	HY	*	1987	04	23.90451	13	46	06.79	-10	13	57.2	16.8 046
1987	HY		1987	04	23.92083	13	46	05.79	-10	13	51.6	046
1987	HY		1987	04	24.92552	13	45	16.47	-10	08	07.4	046
1987	HY		1987	04	24.93976	13	45	15.78	-10	08	02.2	046
1987	HY		1987	04	27.86273	13	42	54.60	-09	51	34.1	046
1987	HY		1987	04	27.87685	13	42	53.82	-09	51	30.1	046
1987	HZ	*	1987	04	23.90451	13	46	45.82	-10	50	47.7	16.8 046
1987	HZ		1987	04	23.92083	13	46	45.11	-10	50	44.7	046
1987	HZ		1987	04	24.92552	13	45	36.79	-10	46	55.5	046
1987	HZ		1987	04	24.93976	13	45	35.73	-10	46	52.2	046
1987	HA1	*	1987	04	23.90451	13	48	08.66	-10	36	39.0	16.8 046
1987	HA1		1987	04	23.92083	13	48	07.83	-10	36	34.6	046
1987	HA1		1987	04	24.92552	13	47	22.00	-10	32	15.7	046
1987	HA1		1987	04	24.93976	13	47	21.18	-10	32	11.0	046
1987	HA1		1987	04	27.86273	13	45	09.60	-10	20	00.8	046
1987	HA1		1987	04	27.87685	13	45	09.06	-10	19	56.8	046
1987	HB1	*	1987	04	23.90451	13	50	24.31	-10	47	33.1	16.6 046
1987	HB1		1987	04	23.92083	13	50	23.32	-10	47	26.0	046
1987	HB1		1987	04	24.92552	13	49	32.52	-10	41	16.1	046
1987	HB1		1987	04	24.93976	13	49	31.68	-10	41	09.6	046
1987	HB1		1987	04	27.86273	13	47	06.28	-10	23	35.7	046
1987	HB1		1987	04	27.87685	13	47	05.54	-10	23	30.8	046
1987	HC1	*	1987	04	23.94062	14	15	36.71	-04	16	12.5	17.0 046
1987	HC1		1987	04	23.95475	14	15	36.13	-04	16	05.9	046
1987	HD1	*	1987	04	23.94062	14	17	31.15	-05	41	48.9	16.9 046
1987	HD1		1987	04	23.95475	14	17	30.51	-05	41	44.4	046
1987	HE1	*	1987	04	23.94062	14	23	56.42	-04	41	35.5	16.6 046
1987	HE1		1987	04	23.95475	14	23	55.66	-04	41	29.2	046
1987	HE1		1987	04	24.99653	14	23	00.82	-04	33	13.6	046
1987	HE1		1987	04	27.96771	14	20	21.89	-04	10	14.7	046
1987	HE1		1987	04	27.98189	14	20	21.14	-04	10	08.6	046
1987	HF1	*	1987	04	23.94062	14	26	43.66	-06	55	15.0	17.1 046
1987	HF1		1987	04	23.95475	14	26	43.02	-06	55	06.9	046
1987	HF1		1987	04	24.99653	14	25	48.96	-06	48	59.2	046
1987	HF1		1987	04	25.01076	14	25	48.08	-06	48	51.7	046
1987	HG1	*	1987	04	24.01887	15	37	00.51	+04	39	14.5	16.8 046
1987	HG1		1987	04	24.03322	15	36	59.69	+04	39	20.0	046
1987	HH1	*	1987	04	24.01887	15	37	02.78	+03	23	52.3	16.7 046

1987	HH1		1987	04	24.03322	15	37	02.01	+03	23	54.3	046
1987	HJ1	*	1987	04	24.89028	13	03	35.19	-12	54	49.1	17.0 046
1987	HJ1		1987	04	24.90556	13	03	34.38	-12	54	45.8	046
1987	HK1	*	1987	04	24.92552	13	48	24.18	-11	47	49.0	16.7 046
1987	HK1		1987	04	24.93976	13	48	23.51	-11	47	50.1	046
1987	HL1	*	1987	04	24.96285	13	56	22.62	-11	39	59.3	17.0 046
1987	HL1		1987	04	24.97708	13	56	21.71	-11	39	51.6	046
1987	HM1	*	1987	04	24.96285	14	06	08.84	-12	16	49.2	16.7 046
1987	HM1		1987	04	24.97708	14	06	08.02	-12	16	48.3	046
1987	HM1		1987	04	27.89705	14	03	39.15	-12	13	39.3	046
1987	HM1		1987	04	27.91111	14	03	38.40	-12	13	39.1	046
1987	HM1		1987	04	28.87876	14	02	49.23	-12	12	36.9	046
1987	HM1		1987	04	28.89288	14	02	48.47	-12	12	36.1	046
1987	HN1	*	1987	04	24.99653	14	17	23.85	-04	53	41.1	17.2 046
1987	HN1		1987	04	25.01076	14	17	23.19	-04	53	41.2	046
1987	HO1	*	1987	04	24.99653	14	17	56.86	-05	33	02.4	17.0 046
1987	HO1		1987	04	25.01076	14	17	56.00	-05	33	04.5	046
1987	HP1	*	1987	04	24.99653	14	21	14.98	-05	10	25.6	17.2 046
1987	HP1		1987	04	25.01076	14	21	14.13	-05	10	20.6	046
1987	HQ1	*	1987	04	24.99653	14	23	24.07	-04	35	05.7	17.1 046
1987	HQ1		1987	04	25.01076	14	23	23.18	-04	34	55.8	046
1987	HR1	*	1987	04	27.86273	13	44	40.26	-09	46	33.2	17.0 046
1987	HR1		1987	04	27.87685	13	44	39.35	-09	46	29.1	046
1987	HS1	*	1987	04	28.00208	15	38	37.96	+02	04	57.8	16.9 046
1987	HS1		1987	04	28.01620	15	38	37.49	+02	05	04.9	046
1987	HT1	*	1987	04	28.91557	14	27	08.91	-11	17	44.7	17.0 046
1987	HT1		1987	04	28.92963	14	27	08.19	-11	17	43.0	046
1987	HT1		1987	04	29.90382	14	26	20.72	-11	13	24.2	046
1987	HT1		1987	04	29.91794	14	26	19.85	-11	13	19.9	046
1987	HU1	*	1987	04	28.91557	14	29	19.05	-10	22	29.6	17.1 046
1987	HU1		1987	04	28.92963	14	29	18.33	-10	22	26.6	046
1987	HU1		1987	04	29.90382	14	28	22.09	-10	17	30.6	046
1987	HU1		1987	04	29.91794	14	28	21.41	-10	17	29.3	046
1987	HV1	*	1987	04	28.91557	14	29	29.89	-11	32	50.4	17.0 046
1987	HV1		1987	04	28.92963	14	29	28.99	-11	32	48.1	046
1987	HV1		1987	04	29.90382	14	28	33.69	-11	30	07.6	046
1987	HV1		1987	04	29.91794	14	28	32.81	-11	30	08.3	046
1987	HW1	*	1987	04	28.91557	14	33	34.67	-10	59	59.1	17.2 046
1987	HW1		1987	04	28.92963	14	33	33.54	-10	59	50.0	046
1987	HX1	*	1987	04	28.91557	14	36	02.71	-11	32	42.3	17.0 046
1987	HX1		1987	04	28.92963	14	36	01.84	-11	32	31.0	046
1987	HY1	*	1987	04	28.94815	14	46	02.17	-14	32	17.0	16.9 046
1987	HY1		1987	04	28.96233	14	46	01.36	-14	32	12.6	046
1987	HZ1	*	1987	04	28.94815	14	48	06.74	-13	28	43.5	17.0 046
1987	HZ1		1987	04	28.96233	14	48	05.79	-13	28	42.0	046
1987	HZ1		1987	04	29.94126	14	47	02.68	-13	27	02.0	046
1987	HZ1		1987	04	29.95538	14	47	01.68	-13	26	55.8	046
1987	HA2	*	1987	04	28.94815	14	48	26.14	-11	49	49.0	16.5 046
1987	HA2		1987	04	28.96233	14	48	25.39	-11	49	43.0	046
1987	HA2		1987	04	29.94126	14	47	31.13	-11	43	00.2	046
1987	HA2		1987	04	29.95538	14	47	30.29	-11	42	55.3	046
1987	HB2	*	1987	04	28.94815	14	53	14.52	-12	59	16.4	16.9 046
1987	HB2		1987	04	28.96233	14	53	13.61	-12	59	10.1	046
1987	HB2		1987	04	29.94126	14	52	24.28	-12	52	44.1	046
1987	HB2		1987	04	29.95538	14	52	23.48	-12	52	41.1	046
1987	HC2	*	1987	04	29.01528	15	06	36.04	-12	13	17.6	16.9 046
1987	HC2		1987	04	29.02940	15	06	35.44	-12	13	12.6	046
1987	HC2		1987	04	29.97506	15	05	49.09	-12	08	43.2	046
1987	HC2		1987	04	29.98918	15	05	48.50	-12	08	40.4	046

1987	HD2	*	1987	04	29.01528	15	13	22.00	-15	32	51.0	16.2	046
1987	HD2		1987	04	29.02940	15	13	21.46	-15	32	48.4		046
1987	HD2		1987	04	29.97506	15	12	40.76	-15	28	59.8		046
1987	HD2		1987	04	29.98918	15	12	40.04	-15	28	55.7		046
1987	HP2	*	1987	04	29.90382	14	35	12.42	-11	41	57.8		046
1987	HP2		1987	04	29.91794	14	35	11.61	-11	41	55.7		046
229			1987	04	23.84444	11	23	04.24	+05	20	46.4		046
229			1987	04	23.85868	11	23	03.95	+05	20	48.4		046
260			1987	04	28.03785	15	56	10.05	-12	05	50.1		046
260			1987	04	28.05197	15	56	09.58	-12	05	47.2		046
276			1987	04	24.96285	13	54	41.99	-11	16	09.8		046
276			1987	04	24.97708	13	54	41.42	-11	16	01.5		046
276			1987	04	27.89705	13	52	40.56	-10	46	30.1		046
276			1987	04	27.91111	13	52	40.01	-10	46	21.8		046
276			1987	04	28.87876	13	52	00.50	-10	36	37.9		046
276			1987	04	28.89288	13	51	59.93	-10	36	29.2		046
321			1987	04	24.96285	14	00	08.97	-11	42	35.1		046
321			1987	04	24.97708	14	00	08.27	-11	42	32.4		046
321			1987	04	27.89705	13	57	43.06	-11	31	52.5		046
321			1987	04	27.91111	13	57	42.43	-11	31	49.5		046
321			1987	04	28.87876	13	56	54.67	-11	28	18.1		046
321			1987	04	28.89288	13	56	53.99	-11	28	15.2		046
348			1987	04	28.03785	16	03	23.86	-12	13	11.3		046
348			1987	04	28.05197	16	03	23.35	-12	13	10.3		046
449			1987	04	28.94815	14	55	43.90	-13	02	15.2		046
449			1987	04	28.96233	14	55	43.07	-13	02	12.3		046
449			1987	04	29.94126	14	54	47.45	-12	58	57.7		046
449			1987	04	29.95538	14	54	46.65	-12	58	55.3		046
497			1987	04	23.90451	13	44	33.79	-13	43	06.6		046
497			1987	04	23.92083	13	44	32.99	-13	43	02.5		046
497			1987	04	24.92552	13	43	43.90	-13	39	16.0		046
497			1987	04	24.93976	13	43	43.13	-13	39	12.1		046
497			1987	04	27.86273	13	41	20.84	-13	28	09.3		046
497			1987	04	27.87685	13	41	20.18	-13	28	06.3		046
809			1987	05	24.90075	15	52	12.86	-07	29	47.1		046
809			1987	05	24.91487	15	52	11.92	-07	29	44.0		046
809			1987	05	28.91429	15	48	06.79	-07	16	25.8		046
809			1987	05	28.92899	15	48	05.62	-07	16	22.9		046
901			1987	04	24.89028	13	03	30.22	-12	09	59.7		046
901			1987	04	24.90556	13	03	29.38	-12	09	53.7		046
986			1987	04	25.03206	14	36	08.11	+03	04	30.5		046
986			1987	04	25.04616	14	36	07.43	+03	04	32.7		046
993			1987	04	23.90451	13	48	57.01	-09	58	02.0	16.7	046
993			1987	04	23.92083	13	48	56.14	-09	57	56.1		046
993			1987	04	24.92552	13	48	08.21	-09	52	55.9		046
993			1987	04	24.93976	13	48	07.38	-09	52	51.9		046
993			1987	04	27.86273	13	45	49.52	-09	38	37.2		046
993			1987	04	27.87685	13	45	48.85	-09	38	32.9		046
1140			1987	04	28.03785	15	57	44.93	-13	23	22.0		046
1140			1987	04	28.05197	15	57	44.29	-13	23	21.7		046
1149			1987	04	27.93113	14	09	38.85	-25	41	54.9		046
1149			1987	04	27.94525	14	09	38.17	-25	41	50.7		046
1193			1987	04	29.01528	15	02	56.41	-14	26	43.6		046
1193			1987	04	29.02940	15	02	55.50	-14	26	46.9		046
1193			1987	04	29.97506	15	01	56.64	-14	29	46.6		046
1193			1987	04	29.98918	15	01	55.65	-14	29	48.1		046
1196			1987	04	24.01887	15	29	20.88	+03	54	57.5		046
1196			1987	04	24.03322	15	29	20.15	+03	55	01.1		046
1196			1987	04	28.00208	15	26	09.02	+04	07	50.4		046

1196	1987	04	28.01620	15	26	08.30	+04	07	52.6	046
1412	1987	04	28.91557	14	34	39.02	-11	17	45.0	046
1412	1987	04	28.92963	14	34	38.14	-11	17	42.6	046
1412	1987	04	29.90382	14	33	35.20	-11	14	33.3	046
1412	1987	04	29.91794	14	33	34.18	-11	14	30.5	046
1412	1987	04	29.91794	14	33	34.09	-11	14	30.6	046
1415	1987	04	24.89028	13	04	48.18	-13	01	47.9	046
1415	1987	04	24.90556	13	04	47.50	-13	01	43.6	046
1968	1987	04	28.91557	14	27	38.68	-10	02	09.4	046
1968	1987	04	28.92963	14	27	37.99	-10	02	07.5	046
1968	1987	04	29.90382	14	26	46.15	-09	59	36.9	046
1968	1987	04	29.91794	14	26	45.40	-09	59	35.7	046
1983	1987	04	24.92552	13	45	40.10	-12	55	52.4	046
1983	1987	04	24.93976	13	45	39.31	-12	55	48.2	046
2264	1987	04	24.96285	14	00	19.72	-12	23	47.9	046
2264	1987	04	24.97708	14	00	19.01	-12	23	43.7	046
2264	1987	04	27.89705	13	58	03.04	-12	11	25.5	046
2264	1987	04	27.91111	13	58	02.55	-12	11	22.8	046
2264	1987	04	28.87876	13	57	17.66	-12	07	16.7	046
2264	1987	04	28.89288	13	57	17.01	-12	07	13.6	046
2296	1987	04	24.96285	13	57	32.81	-11	40	22.5	046
2296	1987	04	24.97708	13	57	31.98	-11	40	18.0	046
2296	1987	04	27.89705	13	55	16.49	-11	29	19.1	046
2296	1987	04	27.91111	13	55	15.92	-11	29	15.7	046
2296	1987	04	28.87876	13	54	31.61	-11	25	39.2	046
2296	1987	04	28.89288	13	54	30.91	-11	25	36.6	046
2393	1987	04	24.85486	11	26	11.38	-05	52	47.1	046
2393	1987	04	24.86944	11	26	11.17	-05	52	42.4	046
2474	1987	04	24.85486	11	25	03.62	-05	52	36.5	046
2474	1987	04	24.86944	11	25	03.41	-05	52	30.1	046
2487	1987	04	24.89028	13	03	57.13	-09	35	54.7	16.8 046
2487	1987	04	24.90556	13	03	56.55	-09	35	49.2	046
2683	1987	04	24.96285	14	01	11.37	-14	10	59.9	046
2683	1987	04	24.97708	14	01	10.60	-14	10	57.2	046
2683	1987	04	27.89705	13	58	47.32	-13	58	57.7	046
2683	1987	04	27.91111	13	58	46.81	-13	58	55.8	046
2683	1987	04	28.87876	13	57	59.53	-13	54	55.8	046
2683	1987	04	28.89288	13	57	58.88	-13	54	52.1	046
2853	1987	04	27.89705	13	55	48.97	-10	45	03.0	046
2853	1987	04	27.91111	13	55	48.38	-10	44	58.9	046
2899	1987	04	23.90451	13	44	07.10	-11	55	06.5	046
2899	1987	04	23.92083	13	44	06.22	-11	55	02.5	046
2899	1987	04	24.92552	13	43	02.41	-11	50	40.7	046
2899	1987	04	24.93976	13	43	01.62	-11	50	38.2	046
2899	1987	04	27.86273	13	39	57.97	-11	38	05.7	046
2899	1987	04	27.87685	13	39	57.15	-11	37	59.6	046
2919	1987	04	24.96285	14	06	20.74	-11	00	22.6	16.8 046
2919	1987	04	24.97708	14	06	19.99	-11	00	18.2	046
2919	1987	04	27.89705	14	04	04.96	-10	47	23.2	046
2919	1987	04	27.91111	14	04	04.30	-10	47	19.5	046
2919	1987	04	28.87876	14	03	19.60	-10	43	04.0	046
2919	1987	04	28.89288	14	03	18.96	-10	43	00.9	046
2976	1987	04	28.94815	14	49	08.68	-12	41	43.4	046
2976	1987	04	28.96233	14	49	08.11	-12	41	38.9	046
2976	1987	04	29.94126	14	48	28.31	-12	36	46.9	046
2976	1987	04	29.95538	14	48	27.74	-12	36	41.3	046
2981	1987	04	24.96285	13	59	38.22	-11	37	03.7	046
2981	1987	04	24.97708	13	59	37.43	-11	36	59.0	046
2981	1987	04	27.89705	13	57	21.95	-11	23	56.4	046

2981		1987	04	27.91111	13	57	21.19	-11	23	52.7		046
2981		1987	04	28.87876	13	56	36.55	-11	19	34.7		046
2981		1987	04	28.89288	13	56	35.96	-11	19	30.1		046
3146		1987	04	23.94062	14	23	25.80	-05	26	19.4		046
3146		1987	04	23.95475	14	23	25.11	-05	26	11.1		046
3146		1987	04	24.99653	14	22	36.02	-05	15	42.1		046
3146		1987	04	25.01076	14	22	35.29	-05	15	33.8		046
3146		1987	04	27.96771	14	20	14.09	-04	46	14.5		046
3146		1987	04	27.98189	14	20	13.36	-04	46	06.6		046
3166		1987	04	29.90382	14	30	26.05	-08	43	36.0		046
3166		1987	04	29.91794	14	30	24.99	-08	43	35.8		046
3166		1987	04	29.91794	14	30	25.18	-08	43	35.8		046
3423		1987	04	24.92552	13	36	58.41	-10	39	20.7		046
3423		1987	04	24.93976	13	36	57.65	-10	39	16.7		046

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

1980	RU2		1987	03	30.89801	10	42	19.59	+09	01	24.5	17.0	054
1981	SE1		1987	04	25.91225	13	13	18.70	-01	44	42.4	16.7	054
1982	UO7		1987	04	17.92116	12	31	33.17	+05	47	53.0	16.9	054
1982	UO7		1987	04	23.91155	12	27	06.81	+05	58	13.6		054
1984	GA		1987	03	30.89801	10	43	11.23	+08	42	48.6		054
1987	BM1		1987	02	23.96935	09	44	57.34	+32	15	10.0	16.9	054
1987	CJ		1987	03	30.89801	10	42	49.04	+11	43	57.1	17.2	054
1987	DB		1987	02	23.96935	09	41	53.11	+32	03	01.7	17.2 P	054
1987	DC		1987	02	23.96935	09	46	20.03	+33	23	18.5	16.8	054
1987	DJ		1987	03	02.92302	10	23	13.54	+25	28	35.3	17.1	054
1987	DD1		1987	03	30.89801	10	40	36.02	+12	50	23.3	17.3	054
1987	DF1		1987	03	30.89801	10	45	54.79	+12	52	16.4	17.5 V	054
1987	DQ5	*	1987	02	18.79766	07	10	10.72	+18	16	57.4	17.0	054
1987	DR5	*	1987	02	22.91051	08	16	52.14	+27	55	55.4	16.8	054
1987	DR5		1987	02	23.92659	08	16	08.44	+27	57	30.2		054
1987	DR5		1987	03	01.87093	08	12	33.20	+28	02	57.5		054
1987	HO2	*	1987	04	25.91225	13	18	59.69	-00	57	04.6	17.1	054
380			1987	04	17.92116	12	32	02.03	+06	27	03.6	E	054
380			1987	04	23.91155	12	27	48.55	+06	43	06.3		054
744			1987	04	17.92116	12	28	26.40	+06	39	42.0		054
744			1987	04	23.91155	12	25	14.81	+07	00	56.4		054
974			1987	04	25.91225	13	13	38.98	+00	15	09.2		054
1052			1987	04	17.92116	12	24	59.80	+05	29	36.5		054
1052			1987	04	23.91155	12	20	27.27	+05	47	31.2		054
1070			1987	03	30.89801	10	43	54.13	+08	59	14.3		054
1097			1987	03	30.89801	10	36	06.32	+10	04	31.5		054
1210			1987	02	22.91051	08	17	57.66	+26	15	02.4		054
1361			1987	03	30.89801	10	40	17.43	+09	32	47.2		054
1428			1987	03	02.92302	10	17	14.08	+26	38	35.3		054
1549			1987	04	17.92116	12	21	41.87	+07	34	43.1		054
1592			1987	03	02.92302	10	20	35.58	+25	37	27.0		054
1602			1987	04	25.91225	13	09	39.57	-00	58	22.4		054
1839			1987	03	02.92302	10	21	16.07	+26	17	06.2		054
2117			1987	03	02.94663	11	00	13.95	+10	58	37.6		054
2117			1987	03	30.89801	10	39	30.19	+12	45	00.2	17.4	054
2203			1987	03	30.89801	10	41	23.38	+10	25	51.2	17.6 V	054

2249		1987	03	30.89801	10	38	41.88	+10	35	50.4	054
2353		1987	03	30.89801	10	40	08.16	+12	53	23.5	17.5 V 054
2501		1987	03	30.89801	10	41	00.43	+10	23	24.9	054
2512		1987	04	23.91155	12	29	51.72	+06	02	23.8	054
2586		1987	04	25.91225	13	13	32.32	-02	53	45.7	054
2684		1987	04	17.92116	12	24	04.16	+07	33	53.3	054
2722		1987	03	30.89801	10	38	20.04	+10	02	44.5	17.6 V 054
2898		1987	03	02.92302	10	15	39.64	+25	16	14.0	054
3103		1987	02	23.96935	09	44	41.35	+33	06	47.5	054
3116		1987	04	25.91225	13	18	31.99	-00	26	08.1	054
3132		1987	03	02.94663	11	01	01.80	+11	23	55.0	054
3132		1987	03	30.89801	10	42	26.21	+13	20	56.5	17.6 V 054
3302		1987	03	30.89801	10	37	09.89	+10	05	28.8	17.6 V 054
3345		1987	02	18.79072	07	09	24.37	+21	55	53.5	054
3345		1987	02	18.80808	07	09	23.97	+21	55	42.4	054
3596		1985	10	15.84975	00	21	46.92	+11	51	53.7	17.0 054

062 Turku
L. Oterma, Sirkkalank 31, SF-20700 Turku, Finland
Observer L. Oterma
Measurer A. Niemi

1939	UQ	1939	10	07.86153	02	11	03.56	+12	59	40.1	16.5 E 062
1939	UQ	1939	11	11.77544	01	44	52.61	+09	22	57.2	16.6 062

095 Crimean Astrophysical Observatory
N. S. Chernykh, Crimean Astrophysical Observatory, P.O. Nauchnyj,
Crimea 334413, U.S.S.R.

1986	WD	1973	09	28.99282	02	08	31.49	+19	06	28.9	095
1986	WD	1973	10	27.90103	01	54	54.22	+17	24	20.6	095

220 Kavalur
Long. and Parallax 78.83, -416, -092 (see MPC 11200)
R. Rajamohan, Indian Institute of Astrophysics, Bangalore 560034, India
Observers R. Rajmohan, K. Kuppuswamy, A. Paranjpe
0.45-m f/3 Schmidt
SAOC

1986	XO2	1987	03	05.85833	09	33	53.46	+12	17	51.0	14.0 220
1986	XO2	1987	03	06.84375	09	33	18.20	+12	40	52.8	220
1987	BJ	1987	03	02.67361	09	19	34.56	+15	11	21.4	220
1987	BJ	1987	03	02.72986	09	19	32.20	+15	11	42.2	220
1987	DS	1987	03	03.69514	09	27	24.81	+17	16	05.2	220
84		1987	03	05.85833	09	35	35.81	+13	49	40.8	14.0 220
84		1987	03	06.84375	09	34	43.06	+13	51	27.6	220
606		1987	03	02.78819	09	28	41.09	+12	43	48.7	14.7 220
606		1987	03	03.83194	09	27	49.28	+12	45	43.4	220
606		1987	03	04.85833	09	26	59.09	+12	47	26.8	220
656		1987	03	06.90417	10	01	08.98	+11	42	55.7	14.4 220
656		1987	03	07.88542	10	00	28.48	+11	46	50.6	220
917		1987	03	06.90417	09	58	49.97	+13	45	27.2	15.9 220
917		1987	03	07.88542	09	57	56.22	+13	48	30.5	220
1045		1987	02	19.70833	09	03	49.57	+16	23	13.0	16.3 220
1045		1987	02	21.75139	09	02	04.23	+16	30	38.4	220
1045		1987	02	22.68750	09	01	17.57	+16	33	55.7	220
1094		1987	02	22.75208	09	14	16.20	+13	47	08.0	15.7 220
1094		1987	02	26.68750	09	11	34.82	+14	31	18.9	220
1094		1987	02	27.69792	09	10	56.00	+14	42	19.0	220
2691		1987	03	06.84375	09	29	36.38	+13	27	47.9	220

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

1957 HK		1987 05 01.15382	13 13 10.01	-07 40 59.5			293
1984 UQ		1987 05 01.29618	14 37 59.81	-09 40 11.2			293

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

1984 UQ		1987 04 29.65347	14 39 18.56	-09 59 18.5		16	372
1984 UQ		1987 04 29.66319	14 39 17.99	-09 59 10.4			372
1984 UQ		1987 05 03.68125	14 36 05.04	-09 12 28.7		16	372
1984 UQ		1987 05 04.69896	14 35 16.07	-09 00 45.9			372
1984 UQ		1987 05 04.70590	14 35 15.79	-09 00 41.6			372
1984 UQ		1987 05 07.70729	14 32 52.60	-08 26 34.3		16	372

391 Sendai Observatory, Ayashi Station
M. Koishikawa, Sendai Municipal Observatory, 1-1 Sakuragaoka-koen, Sendai 980, Japan
0.20-m reflector
Copied from Nihondaira Obs. Circ.

1987 GA		1987 05 15.47396	11 14 28.11	+15 19 06.3		17.5	391
1987 GA		1987 05 15.51841	11 14 29.06	+15 18 41.3			391
1987 GA		1987 05 20.48576	11 17 00.00	+14 23 07.7		17.5	391
1987 GA		1987 05 20.48750	11 17 01.53	+14 22 50.8			391
1987 GA		1987 05 20.53229	11 17 01.51	+14 22 35.5			391
1987 GA		1987 05 21.49132	11 17 35.33	+14 11 29.0			391

413 Siding Spring
R. H. McNaught, Siding Spring Observatory, Coonabarabran, N.S.W. 2357, Australia
Observer K. S. Russell
Measurer R. H. McNaught
1.2-m U.K. Schmidt telescope

1981 FD		1987 05 30.52274	15 17 06.15	-21 08 08.2		19	413
1981 FD		1987 05 30.53663	15 17 05.50	-21 08 08.2			413
1981 SU2		1987 05 30.52274	15 05 06.66	-20 52 56.1		18	413
1981 SU2		1987 05 30.53363	15 05 05.95	-20 52 52.0			413
1984 VA		1987 05 30.52274	15 24 16.12	-18 56 50.0		19	413
1984 VA		1987 05 30.53663	15 24 15.42	-18 56 48.0			413
1987 HK		1987 05 30.52274	15 18 54.37	-20 04 28.2		16	413
1987 HK		1987 05 30.53663	15 18 53.62	-20 04 27.1			413
1987 JA		1987 05 30.52274	15 15 29.94	-20 58 50.2		18	413
1987 JA		1987 05 30.53663	15 15 29.11	-20 58 49.1			413
1987 JG		1987 05 30.52274	15 18 25.05	-19 24 14.5		17	413
1987 JG		1987 05 30.53663	15 18 24.28	-19 24 08.8			413
1987 KM	*	1987 05 30.52274	15 15 55.58	-21 22 30.5		18	413
1987 KM		1987 05 30.53663	15 15 54.84	-21 22 27.9			413
1987 KN	*	1987 05 30.52274	15 18 16.75	-21 01 53.6		18	413
1987 KN		1987 05 30.53663	15 18 16.23	-21 01 51.6			413
1987 KO	*	1987 05 30.52274	15 18 21.36	-21 03 40.9		19	413
1987 KO		1987 05 30.53663	15 18 20.67	-21 03 40.3			413
1987 KP	*	1987 05 30.52274	15 20 19.70	-21 13 09.6		19	413
1987 KP		1987 05 30.53663	15 20 19.06	-21 13 12.0			413
1987 KQ	*	1987 05 30.52274	15 22 14.16	-21 09 56.4		18	413
1987 KQ		1987 05 30.53663	15 22 13.36	-21 09 57.0			413
1987 KR	*	1987 05 30.52274	15 23 20.11	-21 24 13.0		19	413

1987	KR		1987	05	30.53663	15	23	19.37	-21	24	12.3		413
1987	KS	*	1987	05	30.52274	15	02	29.46	-20	28	38.2	17	413
1987	KS		1987	05	30.53663	15	02	28.70	-20	28	38.1		413
1987	KT	*	1987	05	30.52274	15	06	38.16	-20	25	36.9	19	413
1987	KT		1987	05	30.53663	15	06	37.60	-20	25	37.0		413
1987	KU	*	1987	05	30.52274	15	08	36.91	-20	22	14.7	18	413
1987	KU		1987	05	30.53663	15	08	36.18	-20	22	13.7		413
1987	KV	*	1987	05	30.52274	15	08	44.85	-20	37	47.6	18	413
1987	KV		1987	05	30.53663	15	08	44.09	-20	37	44.4		413
1987	KW	*	1987	05	30.52274	15	10	42.24	-20	33	25.3	19	413
1987	KW		1987	05	30.53663	15	10	41.55	-20	33	21.0		413
1987	KX	*	1987	05	30.52274	15	10	58.95	-20	49	10.0	18	413
1987	KX		1987	05	30.53663	15	10	58.29	-20	49	08.1		413
1987	KY	*	1987	05	30.52274	15	11	18.44	-21	39	34.7	16	413
1987	KY		1987	05	30.53663	15	11	17.56	-21	39	34.9		413
1987	KZ	*	1987	05	30.52274	15	13	11.52	-20	54	29.4	18	413
1987	KZ		1987	05	30.53663	15	13	10.92	-20	54	28.8		413
1987	KA1	*	1987	05	30.52274	15	13	54.09	-20	45	42.7	19	413
1987	KA1		1987	05	30.53663	15	13	53.54	-20	45	41.4		413
1987	KB1	*	1987	05	30.52274	15	14	04.78	-21	00	08.5	19	413
1987	KB1		1987	05	30.53663	15	14	04.16	-21	00	07.8		413
1987	KC1	*	1987	05	30.52274	15	20	45.04	-18	40	44.8	16	413
1987	KC1		1987	05	30.53663	15	20	44.40	-18	40	44.7		413
1987	KG1	*	1987	05	30.52274	15	01	58.91	-18	58	15.5	19	413
1987	KG1		1987	05	30.53663	15	01	58.11	-18	58	14.0		413
1987	KH1	*	1987	05	30.52274	15	03	38.15	-20	55	45.2	18	413
1987	KH1		1987	05	30.53663	15	03	37.49	-20	55	39.7		413
1987	KJ1	*	1987	05	30.52274	15	03	50.52	-23	11	36.9	19	F 413
1987	KJ1		1987	05	30.53663	15	03	49.60	-23	11	34.3		F 413
1987	KK1	*	1987	05	30.52274	15	04	18.36	-18	55	05.9	18	413
1987	KK1		1987	05	30.53663	15	04	17.48	-18	55	06.8		413
1987	KL1	*	1987	05	30.52274	15	04	18.72	-19	43	39.7	18	413
1987	KL1		1987	05	30.53663	15	04	18.04	-19	43	36.1		413
1987	KM1	*	1987	05	30.52274	15	04	22.40	-21	07	40.2	19	F 413
1987	KM1		1987	05	30.53663	15	04	21.91	-21	07	37.1		F 413
1987	KN1	*	1987	05	30.52274	15	04	53.06	-22	17	32.2	19	F 413
1987	KN1		1987	05	30.53663	15	04	52.23	-22	17	31.6		F 413
1987	KO1	*	1987	05	30.52274	15	05	10.13	-19	31	57.4	18	413
1987	KO1		1987	05	30.53663	15	05	09.59	-19	31	53.3		413
1987	KP1	*	1987	05	30.52274	15	05	24.76	-19	50	55.2	18	413
1987	KP1		1987	05	30.53663	15	05	24.08	-19	50	51.4		413
1987	KQ1	*	1987	05	30.52274	15	05	29.98	-23	23	40.8	20	F 413
1987	KQ1		1987	05	30.53663	15	05	29.37	-23	23	37.5		F 413
1987	KR1	*	1987	05	30.52274	15	05	49.75	-21	36	51.4	18	413
1987	KR1		1987	05	30.53663	15	05	49.10	-21	36	47.1		413
1987	KS1	*	1987	05	30.52274	15	06	16.07	-22	21	56.3	19	413
1987	KS1		1987	05	30.53663	15	06	15.38	-22	21	55.2		413
1987	KT1	*	1987	05	30.52274	15	06	21.04	-21	03	35.0	19	F 413
1987	KT1		1987	05	30.53663	15	06	20.14	-21	03	29.5		F 413
1987	KU1	*	1987	05	30.52274	15	06	25.21	-23	26	02.7	19	413
1987	KU1		1987	05	30.53663	15	06	24.49	-23	26	01.2		413
1987	KV1	*	1987	05	30.52274	15	06	40.72	-22	24	08.8	18	413
1987	KV1		1987	05	30.53663	15	06	39.56	-22	24	10.2		I 413
1987	KW1	*	1987	05	30.52274	15	07	37.00	-23	31	00.0	18	413
1987	KW1		1987	05	30.53663	15	07	36.17	-23	30	57.6		413
1987	KX1	*	1987	05	30.52274	15	07	52.20	-19	09	39.4	19	413
1987	KX1		1987	05	30.53663	15	07	51.58	-19	09	37.4		413
1987	KY1	*	1987	05	30.52274	15	08	24.49	-18	52	11.7	17	413
1987	KY1		1987	05	30.53663	15	08	23.52	-18	52	14.3		413

1987	KZ1	*	1987	05	30.52274	15	08	52.05	-19	06	52.2	19	413
1987	KZ1		1987	05	30.53663	15	08	51.25	-19	06	50.6		413
1987	KA2	*	1987	05	30.52274	15	08	56.14	-22	00	53.4	19	413
1987	KA2		1987	05	30.53663	15	08	55.25	-22	00	53.1		413
1987	KB2	*	1987	05	30.52274	15	09	17.71	-22	11	26.6	18	413
1987	KB2		1987	05	30.53663	15	09	16.93	-22	11	23.2		413
1987	KC2	*	1987	05	30.52274	15	09	37.01	-19	34	42.5	18	413
1987	KC2		1987	05	30.53663	15	09	36.33	-19	34	40.2		413
1987	KD2	*	1987	05	30.52274	15	09	48.42	-18	49	35.5	19	413
1987	KD2		1987	05	30.53663	15	09	47.65	-18	49	34.3		413
1987	KE2	*	1987	05	30.52274	15	09	53.46	-23	27	39.9	19	413
1987	KE2		1987	05	30.53663	15	09	52.42	-23	27	45.2		413
1987	KF2	*	1987	05	30.52274	15	10	02.21	-22	36	30.1	19	413
1987	KF2		1987	05	30.53663	15	10	01.54	-22	36	28.9		413
1987	KG2	*	1987	05	30.52274	15	10	03.09	-18	56	56.1	18	413
1987	KG2		1987	05	30.53663	15	10	02.37	-18	56	36.8	p	413
1987	KH2	*	1987	05	30.52274	15	10	26.85	-21	53	17.1	18	413
1987	KH2		1987	05	30.53663	15	10	26.11	-21	53	10.6		413
1987	KJ2	*	1987	05	30.52274	15	10	52.15	-18	36	50.8	19	413
1987	KJ2		1987	05	30.53663	15	10	51.50	-18	36	49.2		413
1987	KK2	*	1987	05	30.52274	15	11	02.85	-20	10	33.0	18	413
1987	KK2		1987	05	30.53663	15	11	02.06	-20	10	28.6		413
1987	KL2	*	1987	05	30.52274	15	11	14.62	-20	19	08.5	19	413
1987	KL2		1987	05	30.53663	15	11	14.01	-20	19	04.1		413
1987	KM2	*	1987	05	30.52274	15	11	46.08	-22	06	39.8	18	413
1987	KM2		1987	05	30.53663	15	11	45.26	-22	06	34.4		413
1987	KN2	*	1987	05	30.52274	15	12	44.94	-19	12	08.0	18	413
1987	KN2		1987	05	30.53663	15	12	44.33	-19	12	01.6		413
1987	KO2	*	1987	05	30.52274	15	12	50.12	-18	23	29.3	18	413
1987	KO2		1987	05	30.53663	15	12	49.45	-18	23	27.2		413
1987	KP2	*	1987	05	30.52274	15	12	56.89	-24	05	30.9	17	413
1987	KP2		1987	05	30.53663	15	12	56.06	-24	05	27.8		413
1987	KQ2	*	1987	05	30.52274	15	13	00.22	-24	03	23.4	18	413
1987	KQ2		1987	05	30.53663	15	12	59.89	-24	03	23.5		413
1987	KR2	*	1987	05	30.52274	15	13	04.01	-18	21	35.0	19	413
1987	KR2		1987	05	30.53663	15	13	03.41	-18	21	30.7		413
1987	KS2	*	1987	05	30.52274	15	13	35.62	-19	44	17.2	19	413
1987	KT2	*	1987	05	30.52274	15	13	54.57	-23	21	07.7	18	413
1987	KT2		1987	05	30.53663	15	13	53.82	-23	21	02.4		413
1987	KU2	*	1987	05	30.52274	15	14	07.92	-18	02	34.4	17	413
1987	KU2		1987	05	30.53663	15	14	07.44	-18	02	14.1		413
1987	KV2	*	1987	05	30.52274	15	14	35.82	-19	11	47.7	19	413
1987	KV2		1987	05	30.53663	15	14	35.20	-19	11	46.7		413
1987	KW2	*	1987	05	30.52274	15	14	46.31	-20	26	57.6	18	413
1987	KW2		1987	05	30.53663	15	14	45.52	-20	26	57.2		413
1987	KX2	*	1987	05	30.52274	15	14	56.41	-21	46	48.3	18	413
1987	KX2		1987	05	30.53663	15	14	55.69	-21	46	46.3		413
1987	KY2	*	1987	05	30.52274	15	14	57.18	-21	39	06.0	18	413
1987	KY2		1987	05	30.53663	15	14	56.41	-21	39	02.2		413
1987	KZ2	*	1987	05	30.52274	15	15	05.29	-18	57	53.7	18	413
1987	KZ2		1987	05	30.53663	15	15	04.53	-18	57	53.1		413
1987	KA3	*	1987	05	30.52274	15	15	49.06	-18	50	35.8	19	413
1987	KA3		1987	05	30.53663	15	15	48.38	-18	50	35.7		413
1987	KB3	*	1987	05	30.52274	15	16	09.75	-23	10	00.5	19	413
1987	KB3		1987	05	30.53663	15	16	09.10	-23	09	55.5		413
1987	KC3	*	1987	05	30.52274	15	16	20.76	-19	03	09.2	19	413
1987	KC3		1987	05	30.53663	15	16	20.04	-19	03	05.4		413
1987	KD3	*	1987	05	30.52274	15	16	52.09	-21	46	42.6	19	413
1987	KD3		1987	05	30.53663	15	16	51.52	-21	46	39.1		413

1987	KE3	*	1987	05	30.52274	15	16	54.19	-20	10	58.4	19	413
1987	KE3		1987	05	30.53663	15	16	53.53	-20	10	56.6		413
1987	KF3	*	1987	05	30.52274	15	17	01.90	-22	47	46.4	17	413
1987	KF3		1987	05	30.53663	15	17	01.12	-22	47	45.6		413
1987	KG3	*	1987	05	30.52274	15	17	02.04	-23	24	54.8	19	413
1987	KG3		1987	05	30.53663	15	17	01.24	-23	24	49.5		413
1987	KH3	*	1987	05	30.52274	15	17	26.80	-18	46	17.0	19 V	413
1987	KH3		1987	05	30.53663	15	17	26.03	-18	46	14.3	V	413
1987	KJ3	*	1987	05	30.52274	15	17	41.05	-21	52	09.7	19	413
1987	KJ3		1987	05	30.53663	15	17	40.30	-21	52	08.3		413
1987	KK3	*	1987	05	30.52274	15	17	41.83	-23	08	52.0	19	413
1987	KK3		1987	05	30.53663	15	17	41.26	-23	08	50.0		413
1987	KL3	*	1987	05	30.52274	15	17	43.87	-22	21	55.3	18	413
1987	KL3		1987	05	30.53663	15	17	43.18	-22	21	47.6		413
1987	KM3	*	1987	05	30.52274	15	17	45.79	-23	21	04.8	19	413
1987	KM3		1987	05	30.53663	15	17	45.29	-23	21	00.1		413
1987	KN3	*	1987	05	30.52274	15	17	51.73	-22	01	50.1	17	413
1987	KN3		1987	05	30.53663	15	17	50.83	-22	01	50.0		413
1987	KO3	*	1987	05	30.52274	15	18	00.63	-18	23	06.6	19	413
1987	KO3		1987	05	30.53663	15	18	00.26	-18	23	11.7		413
1987	KP3	*	1987	05	30.52274	15	18	01.93	-19	52	10.9	19	413
1987	KP3		1987	05	30.53663	15	18	01.22	-19	52	04.6		413
1987	KQ3	*	1987	05	30.52274	15	18	04.55	-22	46	44.2	19	413
1987	KQ3		1987	05	30.53663	15	18	03.94	-22	46	44.0		413
1987	KR3	*	1987	05	30.52274	15	18	19.62	-19	14	24.4	19	413
1987	KR3		1987	05	30.53663	15	18	18.78	-19	14	22.8		413
1987	KS3	*	1987	05	30.52274	15	18	26.95	-22	08	07.3	17	413
1987	KS3		1987	05	30.53663	15	18	26.19	-22	08	06.3		413
1987	KT3	*	1987	05	30.52274	15	18	43.67	-19	15	17.4	20 V	413
1987	KT3		1987	05	30.53663	15	18	43.12	-19	15	15.3	V	413
1987	KU3	*	1987	05	30.52274	15	18	47.00	-20	38	39.6	19	413
1987	KU3		1987	05	30.53663	15	18	46.21	-20	38	37.3		413
1987	KV3	*	1987	05	30.52274	15	18	48.88	-20	24	35.2	19 F	413
1987	KV3		1987	05	30.53663	15	18	48.10	-20	24	33.0	F	413
1987	KW3	*	1987	05	30.52274	15	19	12.85	-22	06	09.8	18	413
1987	KW3		1987	05	30.53663	15	19	12.05	-22	06	04.7		413
1987	KX3	*	1987	05	30.52274	15	19	30.21	-22	52	20.9	19	413
1987	KX3		1987	05	30.53663	15	19	29.60	-22	52	15.6		413
1987	KY3	*	1987	05	30.52274	15	19	48.17	-22	39	17.7	19	413
1987	KY3		1987	05	30.53663	15	19	47.32	-22	39	17.0		413
1987	KZ3	*	1987	05	30.52274	15	20	00.39	-24	04	24.0	19	413
1987	KZ3		1987	05	30.53663	15	19	59.61	-24	04	20.4		413
1987	KA4	*	1987	05	30.52274	15	20	38.98	-19	16	45.0	19	413
1987	KA4		1987	05	30.53663	15	20	38.13	-19	16	45.6		413
1987	KB4	*	1987	05	30.52274	15	20	42.70	-23	34	05.6	19	413
1987	KB4		1987	05	30.53663	15	20	41.94	-23	33	57.8		413
1987	KC4	*	1987	05	30.52274	15	20	44.67	-20	54	02.4	19 F	413
1987	KC4		1987	05	30.53663	15	20	44.08	-20	53	59.9	F	413
1987	KD4	*	1987	05	30.52274	15	21	26.60	-23	33	29.7	19	413
1987	KD4		1987	05	30.53663	15	21	25.64	-23	33	27.8		413
1987	KE4	*	1987	05	30.52274	15	21	51.04	-19	56	11.0	19	413
1987	KE4		1987	05	30.53663	15	21	50.19	-19	56	08.0		413
1987	KF4	*	1987	05	30.52274	15	21	58.58	-18	07	16.5	19	413
1987	KF4		1987	05	30.53663	15	21	57.82	-18	07	14.5		413
1987	KG4	*	1987	05	30.52274	15	22	29.96	-19	06	56.9	19	413
1987	KH4	*	1987	05	30.52274	15	22	42.52	-18	55	34.0	19	413
1987	KH4		1987	05	30.53663	15	22	41.89	-18	55	32.3		413
1987	KJ4	*	1987	05	30.52274	15	22	55.24	-18	48	12.1	19	413
1987	KJ4		1987	05	30.53663	15	22	54.18	-18	48	10.2		413

1987	KK4	*	1987	05	30.52274	15	23	21.17	-19	15	45.1		18	413
1987	KK4		1987	05	30.53663	15	23	20.38	-19	15	42.5			413
1987	KL4	*	1987	05	30.52274	15	23	43.73	-19	14	13.0		17	413
1987	KL4		1987	05	30.53663	15	23	42.90	-19	14	11.5			413
1987	KM4	*	1987	05	30.52274	15	23	52.00	-20	08	22.2		19	413
1987	KM4		1987	05	30.53663	15	23	51.25	-20	08	19.8			413
1987	KN4	*	1987	05	30.52274	15	24	00.75	-19	30	51.3		18	413
1987	KN4		1987	05	30.53663	15	24	00.07	-19	30	48.9			413
1987	KO4	*	1987	05	30.52274	15	24	14.72	-20	20	37.5		18	413
1987	KO4		1987	05	30.53663	15	24	14.01	-20	20	34.5			413
1987	KP4	*	1987	05	30.52274	15	24	14.80	-19	35	58.7		19	413
1987	KP4		1987	05	30.53663	15	24	14.01	-19	35	53.1			413
1987	KQ4	*	1987	05	30.52274	15	24	19.22	-21	59	39.3		19	F 413
1987	KQ4		1987	05	30.53663	15	24	18.38	-21	59	37.4			F 413
1987	KR4	*	1987	05	30.52274	15	24	21.43	-20	24	18.2		19	413
1987	KR4		1987	05	30.53663	15	24	20.70	-20	24	17.7			413
1987	KS4	*	1987	05	30.52274	15	24	43.08	-19	57	35.2		19	F 413
1987	KT4	*	1987	05	30.52274	15	24	48.31	-19	15	00.4		19	413
1987	KT4		1987	05	30.53663	15	24	47.39	-19	14	49.9			413
1987	KU4	*	1987	05	30.52274	15	24	52.18	-22	55	56.7		19	413
1987	KU4		1987	05	30.53663	15	24	51.18	-22	55	55.6			413
1987	KV4	*	1987	05	30.52274	15	25	07.61	-19	21	52.6		18	413
1987	KV4		1987	05	30.53663	15	25	06.89	-19	21	48.5			413
1987	KW4	*	1987	05	30.52274	15	25	15.43	-22	59	51.2		19	413
1987	KW4		1987	05	30.53663	15	25	14.46	-22	59	51.0			413
1987	KX4	*	1987	05	30.52274	15	25	30.12	-24	09	42.5		19	413
1987	KX4		1987	05	30.53663	15	25	29.31	-24	09	35.2			413
1987	KY4	*	1987	05	30.52274	15	25	31.85	-20	36	08.0		19	413
1987	KY4		1987	05	30.53663	15	25	31.31	-20	36	03.9			413
1987	KZ4	*	1987	05	30.52274	15	25	59.26	-21	13	21.2		19	413
1987	KZ4		1987	05	30.53663	15	25	58.52	-21	13	18.2			413
1987	KA5	*	1987	05	30.52274	15	26	15.56	-18	43	19.3		18	413
1987	KA5		1987	05	30.53663	15	26	14.88	-18	43	17.1			413
1987	KB5	*	1987	05	30.52274	15	26	57.15	-19	18	33.3		17	413
1987	KB5		1987	05	30.53663	15	26	56.42	-19	18	32.9			413
1987	KC5	*	1987	05	30.52274	15	27	09.18	-19	40	48.3		18	413
1987	KC5		1987	05	30.53363	15	27	08.37	-19	40	43.5			413
1987	KD5	*	1987	05	30.52274	15	27	34.24	-20	08	53.2		18	413
1987	KD5		1987	05	30.53663	15	27	33.57	-20	08	48.2			413
1987	KE5	*	1987	05	30.52274	15	27	34.56	-18	11	53.8		18	413
1987	KE5		1987	05	30.53663	15	27	33.44	-18	12	01.2			413
1987	KF5	*	1987	05	30.52274	15	27	44.36	-19	15	14.6		18	413
1987	KF5		1987	05	30.53663	15	27	43.68	-19	15	09.3			413
1987	ME	*	1987	06	30.76014	22	12	45.00	-17	27	12.3		17	a 413
1987	ME		1987	06	30.82958	22	12	42.96	-17	27	16.0			a 413
1987	MF	*	1987	06	30.76014	22	13	34.43	-17	30	43.7		16	a 413
1987	MF		1987	06	30.82958	22	13	32.76	-17	30	43.0			a 413
1987	MG	*	1987	06	30.76014	22	15	28.87	-19	27	21.8		18	a 413
1987	MG		1987	06	30.82958	22	15	28.20	-19	27	12.5			a 413
1987	MH	*	1987	06	30.76014	22	15	40.36	-18	03	05.0		18	a 413
1987	MH		1987	06	30.82958	22	15	39.74	-18	03	15.8			a 413
1987	MJ	*	1987	06	30.76014	22	16	21.79	-17	58	31.1		18	a 413
1987	MJ		1987	06	30.82958	22	16	22.98	-17	58	59.5			a 413
1987	MK	*	1987	06	30.76014	22	18	05.64	-17	40	29.7		16	a 413
1987	MK		1987	06	30.82958	22	18	05.73	-17	40	15.7			a 413
1987	ML	*	1987	06	30.76014	22	18	26.84	-18	42	16.1		18	a 413
1987	ML		1987	06	30.82958	22	18	25.98	-18	41	58.3			a 413
1987	MM	*	1987	06	30.76014	22	19	36.03	-18	15	24.2		16	a 413
1987	MM		1987	06	30.82958	22	19	35.20	-18	15	03.6			a 413

1987	MN	*	1987	06	30.76014	22	22	10.92	-19	36	56.3	18 a 413
1987	MN		1987	06	30.82958	22	22	12.67	-19	37	14.0	a 413
95			1987	01	09.66341	08	45	15.51	+00	59	58.9	13 413
95			1987	01	09.73980	08	45	12.02	+00	59	53.7	413
331			1987	05	30.52274	15	10	23.94	-22	58	34.8	14 413
331			1987	05	30.53663	15	10	23.17	-22	58	32.7	413
429			1987	01	09.66341	08	44	24.87	+02	57	02.3	14 413
429			1987	01	09.73980	08	44	21.21	+02	57	03.7	413
523			1987	05	30.52274	15	24	29.20	-21	04	45.3	14 413
523			1987	05	30.53663	15	24	28.52	-21	04	42.4	413
601			1987	01	09.66341	08	30	15.81	+02	24	12.6	16 413
601			1987	01	09.73980	08	30	12.8	+02	24	24.6	413
629			1987	06	30.76014	22	24	32.37	-19	35	22.9	16 413
629			1987	06	30.82958	22	24	31.97	-19	35	35.9	413
1109			1987	05	30.52274	15	27	22.62	-22	02	17.7	14 413
1109			1987	05	30.53663	15	27	21.93	-22	02	13.8	413
1236			1987	05	30.52274	15	16	55.25	-22	21	30.0	14 413
1236			1987	05	30.53663	15	16	54.21	-22	21	32.2	413
1367			1987	01	09.66341	08	36	22.95	-01	39	55.2	17 413
1367			1987	01	09.73980	08	36	18.11	-01	40	27.8	413
1599			1987	05	30.52274	15	23	12.85	-20	47	07.9	16 413
1599			1987	05	30.53663	15	23	12.14	-20	47	06.6	413
1681			1987	06	30.76014	22	17	10.81	-17	16	41.8	16 413
1681			1987	06	30.82958	22	17	10.53	-17	16	54.3	413
1768			1987	05	30.52274	15	07	57.07	-21	15	14.1	16 413
1768			1987	05	30.53663	15	07	56.27	-21	15	11.6	413
2119			1987	05	30.52274	15	06	41.16	-21	18	45.6	15 413
2119			1987	05	30.53663	15	06	40.33	-21	18	40.8	413
2202			1987	01	09.66341	08	43	34.76	+02	30	25.1	18 V 413
2202			1987	01	09.73980	08	43	28.91	+02	31	09.6	p 413
2238			1987	05	30.52274	15	26	56.54	-19	40	42.8	17 413
2238			1987	05	30.53663	15	26	55.78	-19	40	40.5	413
2351			1987	05	30.52274	15	19	42.47	-24	10	22.4	18 413
2351			1987	05	30.53663	15	19	41.65	-24	10	19.3	413
2558			1987	05	30.52274	15	26	19.97	-21	23	02.5	18 413
2558			1987	05	30.53663	15	26	19.00	-21	23	03.3	413
2565			1987	05	30.52274	15	19	40.32	-21	34	13.3	18 413
2565			1987	05	30.53663	15	19	39.50	-21	34	11.6	413
2649			1987	05	30.52274	15	07	01.66	-20	31	53.3	16 413
2649			1987	05	30.53663	15	07	00.88	-20	31	50.3	413
2973			1987	05	30.52274	15	07	15.88	-19	58	46.6	16 413
2973			1987	05	30.53663	15	07	15.10	-19	58	45.5	413
3003			1987	06	30.76014	22	20	00.61	-18	49	51.7	16 413
3003			1987	06	30.82958	22	20	00.89	-18	50	10.0	413
3559			1987	05	30.52274	15	02	30.90	-23	04	21.2	18 413
3559			1987	05	30.53663	15	02	30.09	-23	04	17.8	413

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

1981	FD		1987	05	07.58277	15	38	21.90	-22	03	16.4	18 474
1981	FD		1987	05	07.61130	15	38	20.08	-22	03	13.3	474
1981	FD		1987	06	20.40404	15	07	02.51	-20	29	41.4	19 474
1981	FD		1987	06	20.44698	15	07	01.98	-20	29	38.9	19 474
1987	JA		1987	05	07.58277	15	39	33.04	-21	57	46.7	18 I 474
1987	JA		1987	05	07.61130	15	39	31.28	-21	57	44.4	I 474

1987	JE	*	1987	05	04.61227	15	45	15.23	-22 16 40.5	18	474
1987	JE		1987	05	04.64097	15	45	13.60	-22 16 44.2		474
1987	JF	*	1987	05	04.61227	15	47	14.92	-22 25 01.7	18	474
1987	JF		1987	05	04.71100	15	47	10.78	-22 24 22.1		474
1987	JG	*	1987	05	05.63935	15	41	26.16	-22 18 09.7	17	474
1987	JG		1987	05	05.66863	15	41	24.43	-22 18 00.3		474
1987	JG		1987	05	07.58277	15	39	42.89	-22 06 11.8	17	474
1987	JG		1987	05	07.61130	15	39	41.23	-22 06 01.6		474

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

2		1986	01	13.87672	05	43	02.01	-30 27 28.0		491
2		1986	01	13.88791	05	43	01.54	-30 27 19.1		491
2		1986	01	13.89888	05	43	01.17	-30 27 10.9		491
2		1986	01	14.85177	05	42	28.36	-30 14 46.7		491
2		1986	01	14.85869	05	42	28.11	-30 14 42.3		491
2		1986	01	14.86562	05	42	27.90	-30 14 36.3		491
2		1986	02	10.95186	05	38	35.44	-22 11 26.6		491
2		1986	02	10.95879	05	38	35.57	-22 11 16.8		491
2		1986	02	10.96571	05	38	35.73	-22 11 08.0		491
2		1986	02	11.93014	05	38	54.07	-21 50 50.0		491
2		1986	02	11.93706	05	38	54.27	-21 50 40.3		491
2		1986	02	11.94399	05	38	54.32	-21 50 31.2		491
8		1986	03	05.22388	13	30	30.96	-00 03 15.5		491
8		1986	03	05.22930	13	30	30.83	-00 03 13.0		491
8		1986	03	05.23519	13	30	30.61	-00 03 11.0		491
8		1986	03	11.10938	13	27	22.57	+00 34 03.0		491
8		1986	03	11.11492	13	27	22.41	+00 34 04.8		491
8		1986	03	11.12115	13	27	22.17	+00 34 07.7		491
8		1986	03	11.12669	13	27	21.95	+00 34 10.3		491
8		1986	03	11.97956	13	26	50.24	+00 39 49.7		491
8		1986	03	11.98545	13	26	49.98	+00 39 53.2		491
8		1986	03	11.99099	13	26	49.75	+00 39 55.0		491
97		1986	03	05.22388	13	32	54.76	-00 41 14.6		491
97		1986	03	05.22930	13	32	54.69	-00 41 11.8		491
97		1986	03	05.23519	13	32	54.52	-00 41 07.9		491
97		1986	03	11.97956	13	29	44.56	+00 11 44.8		491
97		1986	03	11.98545	13	29	44.32	+00 11 47.9		491
97		1986	03	11.99099	13	29	44.13	+00 11 50.6		491
144		1986	03	10.96082	10	27	50.89	+17 01 03.6		491
144		1986	03	12.01711	10	26	59.18	+17 05 08.7		491
197		1986	01	14.05004	06	08	40.48	+27 16 10.1		491
197		1986	01	15.00434	06	07	51.13	+27 17 53.2		491
197		1986	02	10.98430	05	53	31.64	+27 47 32.0		491
197		1986	02	11.96252	05	53	22.57	+27 48 07.1		491
216		1986	01	14.06597	03	46	02.34	+06 33 32.1		491
216		1986	01	14.07289	03	46	02.51	+06 33 33.9		491
216		1986	01	14.07982	03	46	02.68	+06 33 35.7		491
216		1986	01	15.02236	03	46	23.55	+06 35 24.5		491
216		1986	01	15.02928	03	46	23.69	+06 35 25.8		491
216		1986	01	15.03621	03	46	23.86	+06 35 26.2		491
389		1986	01	14.08778	03	57	28.94	+24 57 57.8		491
389		1986	01	14.09575	03	57	28.82	+24 57 55.7		491
389		1986	01	14.10336	03	57	28.78	+24 57 54.5		491
389		1986	01	15.04590	03	57	23.13	+24 53 54.5		491
389		1986	01	15.05422	03	57	23.06	+24 53 52.3		491

389	1986	01	15.06114	03	57	22.99	+24	53	50.6	491
389	1986	01	15.06801	03	57	22.94	+24	53	49.3	491
389	1986	02	10.92889	04	05	23.41	+23	38	49.3	491
389	1986	02	10.93513	04	05	23.63	+23	38	48.7	491
389	1986	02	10.94136	04	05	23.87	+23	38	47.5	491
389	1986	02	11.90607	04	06	02.24	+23	37	25.1	491
389	1986	02	11.91369	04	06	02.55	+23	37	23.0	491
389	1986	02	11.92131	04	06	02.89	+23	37	23.2	491
464	1986	03	10.99440	10	34	57.91	+21	37	44.2	491
464	1986	03	12.08136	10	34	07.05	+21	42	26.1	491
532	1986	01	14.06597	03	49	18.33	+07	43	07.8	491
532	1986	01	14.07289	03	49	18.24	+07	43	10.5	491
532	1986	01	14.07982	03	49	18.14	+07	43	13.8	491
532	1986	01	15.02236	03	49	07.17	+07	49	39.3	491
532	1986	01	15.02928	03	49	07.09	+07	49	42.4	491
532	1986	01	15.03621	03	49	06.99	+07	49	45.1	491
532	1986	02	10.87522	03	53	16.61	+11	12	06.2	491
532	1986	02	10.88215	03	53	16.74	+11	12	08.9	491
532	1986	02	10.88907	03	53	16.93	+11	12	12.6	491
532	1986	02	11.84721	03	53	44.91	+11	19	50.5	491
532	1986	02	11.85413	03	53	45.07	+11	19	53.7	491
532	1986	02	11.86106	03	53	45.28	+11	19	56.7	491
704	1986	01	13.97818	01	23	24.49	+24	54	21.9	491
704	1986	01	13.98545	01	23	24.99	+24	54	21.2	491
704	1986	01	13.99255	01	23	25.37	+24	54	19.5	491
704	1986	01	14.94064	01	24	27.59	+24	52	02.6	491
704	1986	01	14.94757	01	24	28.04	+24	52	01.2	491
704	1986	01	14.95449	01	24	28.47	+24	52	00.0	491
735	1986	02	11.05043	10	18	21.58	+35	26	23.9	491
735	1986	02	12.09513	10	17	17.61	+35	31	15.4	491
735	1986	03	10.92152	09	50	55.98	+36	18	02.9	491
735	1986	03	11.95152	09	50	05.00	+36	18	49.0	491
1036	1985	12	09.95619	04	11	47.48	-10	51	28.8	491
1036	1985	12	09.96242	04	11	47.23	-10	51	32.2	491
1036	1985	12	09.96866	04	11	46.87	-10	51	34.2	491
1036	1985	12	12.78902	04	09	33.41	-11	07	35.5	491
1036	1985	12	12.79595	04	09	33.09	-11	07	39.1	491
1036	1985	12	12.80287	04	09	32.74	-11	07	40.8	491
1036	1986	01	13.95134	04	03	26.45	-09	49	11.2	491
1036	1986	01	13.96381	04	03	26.63	-09	49	05.7	491
1036	1986	01	14.91883	04	03	45.66	-09	42	18.7	491
1036	1986	01	14.92991	04	03	45.89	-09	42	14.2	491
1036	1986	02	10.90050	04	21	18.88	-06	00	36.1	491
1036	1986	02	10.90812	04	21	19.27	-06	00	33.6	491
1036	1986	02	10.91573	04	21	19.66	-06	00	29.3	491
1036	1986	02	11.87595	04	22	12.37	-05	52	15.7	491
1036	1986	02	11.88495	04	22	12.92	-05	52	09.7	491
1036	1986	02	11.89395	04	22	13.42	-05	52	06.1	491
1036	1986	03	10.87912	04	51	46.95	-02	16	43.2	491
1036	1986	03	10.88983	04	51	47.56	-02	16	37.4	491
1511	1986	03	10.96082	10	31	16.59	+17	15	49.8	491
1511	1986	03	12.01711	10	30	21.66	+17	20	18.2	491
1589	1986	03	10.96082	10	31	44.65	+17	42	26.1	491
1589	1986	03	12.01711	10	30	48.63	+17	47	15.8	491
1654	1986	03	10.99440	10	34	43.71	+20	46	40.7	491
2038	1986	02	11.05043	10	18	12.37	+34	52	08.9	491
2038	1986	02	12.09513	10	17	07.67	+35	00	52.4	491
2038	1986	03	10.92152	09	49	34.81	+36	52	52.7	491
2038	1986	03	11.95152	09	48	43.62	+36	52	29.9	491

3156		1986	01	14.01748	03	11	19.66	+39 17 01.4		491
3156		1986	01	14.97595	03	11	34.04	+39 12 56.3		491

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

1981	WM4		1986	12	28.87222	04	47	38.83	+19 36 39.0	16.6	552
1981	WM4		1986	12	28.90694	04	47	37.31	+19 36 29.2		552
1981	WM4		1987	01	03.87083	04	43	53.41	+19 07 53.0	16.8	552
1981	WM4		1987	01	03.90347	04	43	52.57	+19 07 43.1		552
1982	WB		1987	02	21.89722	09	37	56.69	+06 54 31.7	18.0	552
1982	WB		1987	02	21.92500	09	37	55.12	+06 54 38.7		552
1982	WB		1987	02	23.86389	09	36	04.09	+07 03 41.5	18.0	552
1982	WB		1987	02	23.89097	09	36	02.48	+07 03 49.7		552
1987	MC	*	1987	06	18.94236	17	36	45.02	-06 16 32.6	15	552
1987	MC		1987	06	18.97500	17	36	43.36	-06 16 31.8	15	552
1987	MC		1987	06	21.89444	17	34	19.68	-06 16 36.8	15	552
1987	MC		1987	06	21.91806	17	34	18.24	-06 16 39.7	15	552
1987	MC		1987	06	22.89444	17	33	30.73	-06 17 16.2	15	552
1987	MC		1987	06	22.91806	17	33	29.47	-06 17 16.4	15	552
1987	MC		1987	06	23.87917	17	32	43.11	-06 18 10.2	15	552
1987	MC		1987	06	23.92361	17	32	40.83	-06 18 12.2	15	552
1987	MC		1987	06	24.87986	17	31	55.13	-06 19 20.8	15	552
1987	MC		1987	06	24.90347	17	31	53.93	-06 19 22.8	15	552
1987	MC		1987	06	25.87361	17	31	08.13	-06 20 48.7	15	552
1987	MC		1987	06	25.89722	17	31	06.89	-06 20 52.7	15	552

553 Chorzow
I. Wlodarczyk, Planetarium and Astronomical Observatory,
PL-41500 Chorzow, Poland
Observers E. Blaszczak, T. Firszt, J. Gasior, R. Kaminski, T. Modrzejowski,
S. Mzyk, B. Pawicka, W. Sieron, K. Stanek, R. Syroczynski,
M. Szczepanski, I. Wlodarczyk
0.20-m f/5 Zeiss camera
From Acta Astronomica

	1		1979	09	27.92813	01	14	15.92	-08 19 45.1		553
	1		1979	10	12.87303	01	01	44.29	-09 21 17.3		553
	1		1979	10	12.94178	01	01	40.68	-09 21 29.5		553
	1		1979	10	14.91014	00	59	59.88	-09 27 21.5		553
	1		1979	10	14.93611	00	59	58.50	-09 27 25.3		553
	2		1983	06	07.96828	19	08	55.61	+22 09 33.0		553
	2		1983	06	07.98950	19	08	54.82	+22 09 39.7		553
	2		1983	06	08.01797	19	08	53.60	+22 09 47.8		553
	2		1983	06	30.96840	18	51	43.24	+22 38 52.6		553
	2		1983	06	30.98507	18	51	42.39	+22 38 49.9		553
	2		1983	07	01.00590	18	51	41.42	+22 38 51.4		553
	2		1983	07	09.91311	18	44	17.28	+22 10 34.0		553
	2		1983	07	09.92839	18	44	16.59	+22 10 30.8		553
	2		1983	07	09.94575	18	44	15.62	+22 10 28.3		553
	3		1982	07	24.87166	17	43	30.90	-06 04 30.9		553
	3		1982	07	24.88416	17	43	30.46	-06 04 33.2		553
	3		1982	07	24.90360	17	43	29.93	-06 04 40.0		553
	3		1983	09	10.98819	02	22	30.29	+04 51 39.9		553
	3		1983	09	11.00903	02	22	30.70	+04 51 30.1		553
	3		1983	09	11.02917	02	22	31.09	+04 51 16.8		553
	4		1981	03	05.93819	10	21	29.66	+20 32 55.5		553
	4		1983	11	08.96850	05	49	30.21	+18 00 42.3		553

4	1983	11	08.98238	05	49	29.93	+18	00	41.1	553
4	1983	11	09.00738	05	49	29.18	+18	00	41.5	553
4	1983	12	12.94034	05	19	57.15	+18	32	30.9	553
4	1983	12	12.94381	05	19	56.91	+18	32	31.9	553
4	1983	12	12.95083	05	19	56.48	+18	32	32.3	553
4	1983	12	29.90194	05	01	52.43	+19	00	15.4	553
4	1983	12	29.91653	05	01	51.84	+19	00	17.4	553
4	1983	12	29.92764	05	01	51.10	+19	00	17.3	553
5	1983	03	13.90779	10	35	59.47	+12	50	49.7	553
5	1983	03	13.93557	10	35	58.40	+12	51	01.3	553
5	1983	03	13.98418	10	35	56.29	+12	51	26.2	553
6	1982	03	15.99672	12	07	32.77	+14	10	56.7	553
6	1982	03	16.01620	12	07	31.81	+14	11	08.0	553
6	1982	03	16.03620	12	07	30.71	+14	11	19.9	553
6	1982	03	26.89035	11	58	11.29	+15	44	22.6	553
6	1982	03	26.91470	11	58	09.91	+15	44	35.0	553
6	1982	03	26.93826	11	58	08.72	+15	44	45.2	553
6	1983	06	30.92604	17	27	26.51	-04	23	51.5	553
6	1983	06	30.94132	17	27	25.70	-04	23	54.8	553
6	1983	06	30.95804	17	27	24.61	-04	24	01.8	553
9	1977	04	18.00590	14	51	21.76	-11	36	43.7	553
10	1977	04	17.81840	10	31	13.76	+04	06	44.2	553
11	1982	11	22.92552	05	45	47.54	+17	58	11.3	553
11	1982	11	22.94427	05	45	46.75	+17	58	10.9	553
11	1982	11	22.96719	05	45	45.50	+17	58	10.9	553
12	1982	10	05.86597	00	07	59.09	+13	40	36.9	553
12	1982	10	05.90139	00	07	57.37	+13	40	13.4	553
12	1982	10	05.92986	00	07	55.96	+13	39	53.2	553
12	1982	10	21.87406	23	58	20.81	+10	41	45.5	553
12	1982	10	21.88933	23	58	20.45	+10	41	36.5	553
12	1982	10	21.90604	23	58	20.03	+10	41	23.9	553
12	1982	10	22.92152	23	57	56.80	+10	30	48.0	553
12	1982	10	26.88194	23	56	44.44	+09	50	56.5	553
12	1982	10	26.91111	23	56	43.99	+09	50	38.2	553
18	1983	03	13.90779	10	41	53.00	+12	05	53.0	553
18	1983	03	13.93557	10	41	51.37	+12	06	05.2	553
18	1983	03	13.98418	10	41	49.10	+12	06	28.5	553
20	1977	03	22.85590	07	19	15.51	+21	18	28.7	553
20	1983	09	10.92639	01	54	02.44	+11	57	00.7	553
20	1983	09	10.94722	01	54	02.04	+11	56	59.9	553
20	1983	09	10.97361	01	54	01.67	+11	56	57.9	553
20	1983	09	15.90646	01	52	44.65	+11	48	40.2	553
20	1983	09	15.92868	01	52	44.25	+11	48	37.1	553
20	1983	09	15.94060	01	52	44.01	+11	48	35.1	553
20	1983	10	07.88322	01	39	07.92	+10	25	17.9	553
20	1983	10	07.91169	01	39	06.36	+10	25	08.2	553
20	1983	10	07.95058	01	39	04.22	+10	24	57.1	553
39	1983	11	09.01641	05	20	07.67	+07	27	47.9	553
39	1983	11	09.03377	05	20	07.20	+07	27	43.1	553
39	1983	11	09.05183	05	20	06.45	+07	27	36.8	553
39	1983	12	12.91111	04	52	59.45	+06	11	37.7	553
39	1983	12	12.92155	04	52	58.79	+06	11	37.4	553
39	1983	12	12.93207	04	52	58.34	+06	11	37.6	553
39	1983	12	29.86340	04	39	31.46	+06	39	11.2	553
39	1983	12	29.87868	04	39	30.98	+06	39	13.4	553
39	1983	12	29.89257	04	39	30.31	+06	39	16.8	553
40	1982	03	26.83618	10	07	13.28	+18	15	23.4	553
40	1982	03	26.85567	10	07	12.53	+18	15	25.3	553
40	1982	03	26.87785	10	07	11.82	+18	15	27.3	553

40	1982	03	27.90951	10	06	41.41	+18	16	47.4	553
40	1982	03	27.93704	10	06	40.67	+18	16	48.6	553
42	1977	02	17.93022	09	36	00.30	+25	34	25.1	553
42	1983	12	12.96360	06	16	26.45	+24	27	52.5	553
42	1983	12	12.97922	06	16	25.47	+24	27	55.8	553
42	1983	12	29.93926	05	57	02.78	+25	18	41.6	553
42	1983	12	29.95507	05	57	01.78	+25	18	45.4	553
42	1983	12	29.97382	05	57	00.42	+25	18	47.3	553
44	1983	10	07.96273	02	29	24.97	+08	20	52.6	553
44	1983	10	07.98044	02	29	24.31	+08	20	46.0	553
44	1983	10	08.01100	02	29	23.11	+08	20	38.0	553
44	1983	11	07.89249	02	02	16.32	+05	35	12.0	553
44	1983	11	07.91512	02	02	15.22	+05	35	06.7	553
44	1983	11	07.93609	02	02	14.08	+05	35	00.3	553
44	1983	11	08.91988	02	01	20.71	+05	30	44.1	553
44	1983	11	08.93794	02	01	19.72	+05	30	42.1	553
44	1983	11	08.95669	02	01	18.69	+05	30	37.1	553
44	1983	11	10.84410	01	59	38.81	+05	22	00.6	553
44	1983	11	10.86562	01	59	37.71	+05	22	57.5	553
44	1983	11	10.89048	01	59	36.31	+05	22	50.8	553
57	1983	11	09.04037	05	34	56.47	+06	04	29.0	553
57	1983	11	09.05183	05	34	56.18	+06	04	22.7	553
57	1983	12	29.86340	04	59	29.89	+02	23	34.9	553
57	1983	12	29.87868	04	59	29.25	+02	23	34.3	553
57	1983	12	29.89257	04	59	28.72	+02	23	35.8	553
63	1977	10	17.82326	22	32	20.04	-06	17	26.8	553
69	1977	09	13.96042	00	28	36.40	+03	47	48.5	553
69	1983	12	12.99138	06	50	18.94	+09	14	17.0	553
69	1983	12	13.01325	06	50	18.10	+09	14	16.5	553
93	1977	10	09.94962	01	22	33.76	+12	53	04.4	553
93	1977	10	14.97361	01	17	48.22	+12	40	00.0	553
324	1984	03	19.82703	08	39	51.64	+19	56	10.9	553
324	1984	03	19.85906	08	39	51.17	+19	56	05.6	553
433	1981	09	04.94503	02	30	33.50	+34	52	39.4	553
433	1981	09	04.99295	02	30	36.61	+34	53	39.9	553
433	1981	09	05.02214	02	30	38.91	+34	54	20.3	553
433	1981	10	09.90451	02	53	08.93	+47	55	17.5	553
433	1981	10	09.93576	02	53	09.02	+47	55	54.8	553
433	1981	10	09.97755	02	53	07.81	+47	56	46.1	553
433	1981	10	11.93142	02	52	38.85	+48	38	10.1	553
433	1982	01	16.88413	02	52	50.63	+32	11	32.0	553
433	1982	01	19.73472	03	02	06.73	+30	54	29.0	553
433	1982	01	19.77049	03	02	13.54	+30	53	30.4	553
433	1982	01	19.81806	03	02	22.78	+30	52	16.8	553
433	1982	01	19.85660	03	02	29.90	+30	51	14.3	553
433	1982	01	20.75821	03	05	29.60	+30	27	02.7	553
433	1982	01	20.78194	03	05	34.15	+30	26	24.2	553
433	1982	01	20.80208	03	05	38.55	+30	25	53.2	553
433	1982	01	20.82292	03	05	42.03	+30	25	17.5	553
433	1982	02	04.72431	03	58	01.47	+23	56	07.2	553
433	1982	02	04.78819	03	58	15.05	+23	54	34.5	553
433	1982	02	04.85347	03	58	29.03	+23	52	49.1	553
433	1982	02	16.75174	04	42	15.02	+19	01	42.5	553
433	1982	02	16.79896	04	42	25.16	+19	00	35.3	553
433	1982	03	15.83535	06	20	36.61	+09	32	52.2	553
433	1982	03	15.87068	06	20	43.88	+09	32	13.3	553
532	1977	01	27.73715	05	10	11.45	+17	37	30.2	553
914	1977	09	13.91632	23	46	23.20	+44	25	35.9	553

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Measurers D. D. Balam, D. J. Tholen
CFH 3.6-m telescope and 2.24-m telescope

1987 HR	*	1987 04 23.54375	13 02 48.55	+30 49 53.5		18	1	568
1987 HR		1987 04 25.46181	13 01 22.59	+30 51 42.6			1	568
1987 KF		1987 06 08.36863	14 31 48.05	+08 41 29.8		16.8V	2	568
1987 KF		1987 06 08.47128	14 31 49.64	+08 37 24.9			2	568
1172		1987 06 08.59356	21 54 51.09	+05 47 37.7		15.5V	2	568

573 Eldagsen
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AGK3

2		1987 04 17.86562	16 19 47.90	+20 44 13.7		573
2		1987 04 17.87876	16 19 47.54	+20 44 24.8		573
2		1987 04 17.88310	16 19 47.47	+20 44 28.5		573
2		1987 04 22.86519	16 17 20.06	+21 52 48.3		573
2		1987 04 22.86940	16 17 19.97	+21 52 51.9		573
2		1987 04 22.87836	16 17 19.67	+21 52 58.6		573
70		1987 02 23.79196	09 58 12.84	+30 17 57.5		573
70		1987 02 23.79984	09 58 12.36	+30 18 00.0		573
70		1987 02 23.80361	09 58 12.28	+30 18 00.9		573
94		1987 01 30.75894	07 29 22.58	+32 39 42.3		573
94		1987 01 30.76389	07 29 22.26	+32 39 41.6		573
94		1987 01 30.77264	07 29 21.84	+32 39 41.1		573
94		1987 02 01.74282	07 27 44.80	+32 37 47.5		573
94		1987 02 01.74755	07 27 44.63	+32 37 45.8		573
94		1987 02 01.75336	07 27 44.25	+32 37 45.5		573
110		1987 02 23.81802	09 45 58.90	+22 53 43.9		573
110		1987 02 23.82215	09 45 58.71	+22 53 44.5		573
110		1987 02 23.82603	09 45 58.51	+22 53 44.9		573
511		1987 04 23.84578	13 04 55.20	+17 10 36.2		573
511		1987 04 23.85934	13 04 54.65	+17 10 36.8		573
511		1987 04 23.86347	13 04 54.59	+17 10 37.2		573
511		1987 04 24.84430	13 04 15.18	+17 11 20.7		573
511		1987 04 24.84899	13 04 14.96	+17 11 21.0		573
511		1987 04 24.85793	13 04 14.60	+17 11 21.3		573
532		1987 04 17.83854	12 56 06.14	+23 53 05.1		573
532		1987 04 17.84783	12 56 05.75	+23 53 04.8		573
532		1987 04 17.85263	12 56 05.65	+23 53 04.4		573
532		1987 04 22.84570	12 52 38.34	+23 47 04.7		573
532		1987 04 22.85000	12 52 38.26	+23 47 04.1		573
532		1987 04 22.85405	12 52 37.96	+23 47 03.8		573

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1984 UQ		1987 05 05.34590	14 34 45.27	-08 53 23.2		657
1984 UQ		1987 05 06.27854	14 34 00.68	-08 42 44.5		657
1984 UQ		1987 05 06.34660	14 33 57.34	-08 42 00.5		657
1984 UQ		1987 06 03.30146	14 16 55.13	-04 28 53.7		657
100		1987 05 10.35417	15 15 46.06	-08 15 06.1		657
101		1987 03 30.29104	11 12 37.55	+01 33 09.1		657
283		1987 05 08.45597	20 44 37.36	-20 46 13.2		657

351	1987	05	08.45597	20	43	15.51	-20	06	57.2	657
582	1987	05	10.32951	16	40	36.41	+21	15	44.5	657
749	1987	03	30.41396	14	46	28.15	-05	10	50.9	657
1026	1987	05	20.36535	17	17	05.29	-17	07	20.8	657
1201	1987	03	30.34799	12	56	14.77	-07	57	43.7	657
3223	1987	05	20.27014	16	31	53.97	-06	53	56.0	657
3223	1987	05	20.33410	16	31	50.66	-06	53	44.3	657
3554	1987	03	31.33132	11	22	11.67	-17	48	22.0	657
3554	1987	04	01.29486	11	16	06.35	-18	16	23.0	657

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Observers J. Gibson, E. Helin, H. Holt, D. Schneeberger, C. Shoemaker, E. Shoemaker, S. Singer-Brewster
Measurers J. Alu, J. Gibson, C. Shoemaker
1.5-m reflector + CCD, 1.2-m and 0.46-m Schmidt telescopes

1957	HK	1987	04	28.33333	13	15	04.00	-08	07	01.5	16.0 2 675
1957	HK	1987	04	28.36076	13	15	02.71	-08	06	45.5	2 675
1971	QN	1987	05	22.39722	16	39	51.57	-23	53	11.3	17.2 2 675
1971	QN	1987	05	23.36528	16	38	55.81	-23	49	42.1	2 675
1980	RU2	1987	04	01.22639	10	41	22.53	+09	02	11.6	17.5 2 675
1980	RU2	1987	04	01.27500	10	41	20.57	+09	02	12.3	2 675
1980	RU2	1987	04	03.20000	10	40	01.22	+09	03	01.3	2 675
1980	RU2	1987	04	03.24681	10	39	59.24	+09	03	01.8	2 675
1982	KB1	1987	04	25.45868	18	51	59.93	-31	46	18.7	3 675
1982	KB1	1987	04	25.49305	18	52	01.38	-31	46	34.3	3 675
1984	DA	1987	05	03.31458	15	01	34.97	+26	13	21.5	17.5 2 675
1984	DA	1987	05	03.35625	15	01	32.56	+26	13	46.7	2 675
1984	DA	1987	05	05.33333	14	59	38.95	+26	32	37.0	2 675
1984	DA	1987	05	05.39583	14	59	35.45	+26	33	05.5	2 675
1984	GA	1987	04	01.22639	10	42	17.40	+08	45	16.8	17.0 2 675
1984	GA	1987	04	01.27500	10	42	15.53	+08	45	21.0	2 675
1984	GA	1987	04	03.20000	10	41	03.64	+08	48	19.3	2 675
1984	GA	1987	04	03.24861	10	41	01.99	+08	48	22.2	2 675
1984	KD	1987	05	08.18292	10	04	59.44	+30	03	49.9	1 675
1984	KD	1987	05	08.19444	10	04	59.66	+30	03	43.4	1 675
1984	KD	1987	05	09.18750	10	05	24.86	+29	53	49.9	1 675
1984	KD	1987	05	09.19542	10	05	25.03	+29	53	45.4	1 675
1985	TE1	1987	04	01.22639	10	42	32.66	+07	49	49.3	16.5 2 675
1985	TE1	1987	04	01.27500	10	42	31.04	+07	49	59.1	2 675
1985	TE1	1987	04	03.20000	10	41	26.68	+07	57	04.7	2 675
1985	TE1	1987	04	03.24861	10	41	25.23	+07	57	13.6	2 675
1985	TR3	1987	04	25.22916	12	51	27.83	-13	35	48.8	3 675
1985	TR3	1987	04	25.25763	12	51	26.36	-13	35	38.5	3 675
1985	TR3	1987	05	29.21215	12	38	41.24	-10	49	35.0	3 675
1985	TR3	1987	05	30.18871	12	38	49.05	-10	47	29.0	3 675
1987	DD	1987	05	08.17326	11	00	42.23	+44	46	07.5	1 675
1987	DD	1987	05	08.17743	11	00	42.30	+44	46	04.2	1 675
1987	DD	1987	05	09.26792	11	01	08.35	+44	30	47.9	1 675
1987	DD	1987	05	09.27597	11	01	08.54	+44	30	40.9	1 675
1987	DE	1987	04	21.14895	09	32	15.42	+25	42	07.2	3 675
1987	DE	1987	04	22.18177	09	33	25.44	+25	45	59.7	3 675
1987	DF	1987	04	21.18315	10	09	50.45	+19	48	03.4	3 675
1987	DF	1987	04	22.15625	10	10	10.81	+19	54	16.9	3 675
1987	DF	1987	04	23.20902	10	10	34.63	+20	00	41.7	3 675

1987	FF1		1987	04	27.21875	12	08	21.02	+21	54	03.4	16.8	2 675
1987	FF1		1987	04	27.26736	12	08	19.86	+21	53	51.7		2 675
1987	FG1		1987	04	27.21875	12	07	47.86	+23	21	18.9	16.8	2 675
1987	FG1		1987	04	27.26736	12	07	46.31	+23	21	00.9		2 675
1987	GF		1987	05	09.30273	11	03	15.04	+13	41	16.1		1 675
1987	GF		1987	05	09.31285	11	03	15.62	+13	41	17.3		1 675
1987	GG		1987	05	07.24069	15	25	07.96	+40	53	15.5		1 675
1987	GG		1987	05	07.24875	15	25	07.65	+40	53	17.1		1 675
1987	GE1	*	1987	04	01.22639	10	40	07.35	+08	17	16.7	18.0	2 675
1987	GE1		1987	04	01.27500	10	40	05.20	+08	17	20.6		2 675
1987	GE1		1987	04	03.20000	10	38	36.65	+08	20	08.6		2 675
1987	GE1		1987	04	03.24861	10	38	34.84	+08	20	11.5		2 675
1987	GF1	*	1987	04	01.22639	10	44	31.42	+08	44	48.3	18.0	2 675
1987	GF1		1987	04	01.27500	10	44	29.91	+08	44	55.4		2 675
1987	GF1		1987	04	03.20000	10	43	31.48	+08	49	40.7		2 675
1987	GF1		1987	04	03.24861	10	43	30.38	+08	49	45.1		2 675
1987	GG1	*	1987	04	01.22639	10	42	52.00	+07	45	36.7	18.0	2 675
1987	GG1		1987	04	01.27500	10	42	50.01	+07	45	45.9		2 675
1987	GG1		1987	04	03.20000	10	41	30.11	+07	51	55.5		2 675
1987	GG1		1987	04	03.24861	10	41	29.02	+07	52	02.2		2 675
1987	GH1	*	1987	04	01.22639	10	42	57.54	+07	31	14.8	17.5	2 675
1987	GH1		1987	04	01.27500	10	42	55.86	+07	31	25.7		2 675
1987	GH1		1987	04	03.20000	10	41	54.01	+07	38	17.4		2 675
1987	GH1		1987	04	03.24861	10	41	52.63	+07	38	25.9		2 675
1987	GJ1	*	1987	04	01.22639	10	44	07.12	+08	06	36.8	17.0	2 675
1987	GJ1		1987	04	01.27500	10	44	05.74	+08	06	44.0		2 675
1987	GJ1		1987	04	03.20000	10	43	07.81	+08	12	24.5		2 675
1987	GJ1		1987	04	03.24861	10	43	06.54	+08	12	31.7		2 675
1987	GK1	*	1987	04	01.22639	10	39	48.71	+08	40	36.6	19.0	2 675
1987	GK1		1987	04	01.27500	10	39	46.62	+08	40	45.9		2 675
1987	GK1		1987	04	03.20000	10	38	44.77	+08	45	06.5		2 675
1987	GL1	*	1987	04	01.22639	10	40	37.99	+08	47	35.1	18.5	2 675
1987	GL1		1987	04	01.27500	10	40	36.48	+08	47	40.9		2 675
1987	GL1		1987	04	03.20000	10	39	39.53	+08	51	54.7		2 675
1987	GL1		1987	04	03.24861	10	39	38.09	+08	51	58.3		2 675
1987	GM1	*	1987	04	01.22639	10	41	42.97	+08	48	36.0	18.5	2 675
1987	GM1		1987	04	01.27500	10	41	41.50	+08	48	40.7		2 675
1987	GM1		1987	04	03.20000	10	40	41.90	+08	52	40.8		2 675
1987	GM1		1987	04	03.24861	10	40	40.48	+08	52	44.6		2 675
1987	GN1	*	1987	04	01.22639	10	43	15.15	+08	36	07.6	18.5	2 675
1987	GN1		1987	04	01.27500	10	43	13.27	+08	36	13.0		2 675
1987	GN1		1987	04	03.20000	10	41	59.53	+08	40	22.4		2 675
1987	GN1		1987	04	03.24861	10	41	57.95	+08	40	26.5		2 675
1987	HF		1987	04	28.31528	10	25	46.24	+23	23	07.4	17.5	2 675
1987	HF		1987	04	30.19965	10	26	05.53	+23	18	06.3		2 675
1987	HN	*	1987	04	27.21875	12	06	04.40	+22	03	29.4	16.5	2 675
1987	HN		1987	04	27.26736	12	06	02.95	+22	03	23.5		2 675
1987	HO	*	1987	04	27.21875	12	15	29.68	+22	00	02.9	17	2 675
1987	HO		1987	04	27.26736	12	15	28.52	+21	59	58.1		2 675
1987	HP	*	1987	04	27.21875	12	17	02.88	+22	07	01.0	16.8	2 675
1987	HP		1987	04	27.26736	12	17	01.31	+22	06	54.2		2 675
1987	HQ	*	1987	04	28.33333	13	15	30.40	-08	35	52.7	16.5	2 675
1987	HQ		1987	04	30.26250	13	14	06.38	-08	27	19.7		2 675
1987	HS	*	1987	04	25.32951	14	29	48.24	+26	56	30.4	18	3 675
1987	HS		1987	04	25.35746	14	29	46.63	+26	56	42.5		3 675
1987	HT	*	1987	04	25.38923	15	47	00.39	+11	13	28.9	18.1	3 675
1987	HT		1987	04	25.41770	15	46	59.17	+11	13	30.5		3 675
1987	HV	*	1987	04	23.43819	16	50	06.57	+01	00	56.5	18	3 675
1987	HV		1987	04	23.46684	16	50	06.50	+01	01	12.0		3 675

1987	JB	*	1987	05	02.26007	14	32	37.41	-07	23	37.1	17.5	2 675
1987	JB		1987	05	02.28611	14	32	35.90	-07	23	26.2		2 675
1987	JC		1987	04	30.36285	14	42	04.13	-10	40	59.1	17.0	2 675
1987	JC		1987	04	30.40278	14	42	02.58	-10	40	44.4		2 675
1987	JC	*	1987	05	02.26007	14	40	29.30	-10	29	20.5	17.0	2 675
1987	JC		1987	05	02.28611	14	40	27.95	-10	29	12.3		2 675
1987	JD	*	1987	05	02.26007	14	49	23.34	-05	16	16.1	17.5	2 675
1987	JD		1987	05	02.28611	14	49	21.82	-05	16	10.8		2 675
1987	JJ	*	1987	05	08.30295	14	50	26.81	-16	41	37.8	18 R	1 675
1987	JJ		1987	05	08.31847	14	50	25.97	-16	41	35.4		1 675
1987	JJ		1987	05	09.36364	14	49	31.44	-16	38	35.7		1 675
1987	JJ		1987	05	09.38181	14	49	30.40	-16	38	32.8		1 675
1987	JK	*	1987	05	03.31458	14	58	40.94	+22	29	58.7	18.0	2 675
1987	JK		1987	05	03.35625	14	58	36.61	+22	29	16.0		2 675
1987	JK		1987	05	05.33333	14	55	13.88	+21	53	59.7		2 675
1987	JK		1987	05	05.39583	14	55	07.48	+21	52	49.3		2 675
1987	KA	*	1987	05	23.19722	13	30	24.93	-17	44	12.2	17.2	2 675
1987	KA		1987	05	23.21771	13	30	24.7	-17	44	27		2 675
1987	KB		1987	05	22.39722	16	24	18.35	-21	16	36.6	16.0	2 675
1987	KB		1987	05	23.36528	16	23	28.08	-21	06	33.8		2 675
1987	KC	*	1987	05	22.39722	16	32	33.24	-20	36	49.3	17.5	2 675
1987	KC		1987	05	23.36528	16	31	50.81	-20	33	44.0		2 675
1987	KD	*	1987	05	22.39722	16	32	41.75	-20	35	56.1	17.0	2 675
1987	KD		1987	05	23.36528	16	31	40.02	-20	29	51.1		2 675
1987	KE	*	1987	05	22.37535	16	00	21.81	-29	59	39.7	17.0	2 675
1987	KE		1987	05	23.35035	15	59	28.40	-30	00	57.7		2 675
1987	KF	*	1987	05	29.24670	14	29	57.69	+16	46	45.7	16.5	3 675
1987	KF		1987	05	30.34462	14	29	59.10	+15	44	09.5		3 675
1987	KF		1987	05	31.19462	14	30	03.51	+14	57	40.0		3 675
1987	KF		1987	05	31.39132	14	30	03.23	+14	47	06.0		3 675
1987	KF		1987	06	01.28247	14	30	09.63	+14	00	30.7		3 675
1987	KF		1987	06	22.18924	14	38	33.80	+01	19	31.6	18	3 675
1987	KF		1987	06	23.20243	14	39	12.57	+00	53	26.6	18	3 675
1987	KG	*	1987	05	22.37535	15	57	18.25	-33	45	22.6	17.0	2 675
1987	KG		1987	05	23.35035	15	56	17.75	-33	40	37.6		2 675
1987	KH	*	1987	05	22.37535	16	03	33.34	-32	38	15.4	17.5	2 675
1987	KH		1987	05	23.35035	16	02	28.05	-32	35	23.9		2 675
1987	KJ	*	1987	05	22.35382	15	15	15.50	-27	35	58.4	17.0	2 675
1987	KJ		1987	05	23.30712	15	14	12.85	-27	36	12.2		2 675
1987	KK	*	1987	05	22.35382	15	39	27.17	-27	47	59.6	17.0	2 675
1987	KK		1987	05	23.30712	15	38	14.37	-27	50	16.8		2 675
1987	KL	*	1987	05	29.36857	16	57	05.21	-18	59	44.2	17	3 675
1987	KL		1987	05	29.39670	16	57	01.87	-19	00	31.5		3 675
1987	KD1	*	1987	05	29.32049	16	38	59.17	+10	03	40.1	16.5	3 675
1987	KD1		1987	05	31.39757	16	37	24.51	+10	11	12.5		3 675
1987	KD1		1987	05	31.42569	16	37	23.16	+10	11	17.2		3 675
1987	KE1		1987	05	31.41163	17	29	35.98	+13	25	23.6		3 675
1987	KE1	*	1987	05	31.43802	17	29	34.75	+13	25	25.4	17	3 675
1987	KF1	*	1987	05	30.43940	17	11	31.14	+03	56	54.0	17.7	3 675
1987	KF1		1987	05	31.43402	17	10	58.66	+04	02	41.5		3 675
1987	MD	*	1987	06	26.33264	17	08	59.63	+12	35	58.6	16.0	2 675
1987	MD		1987	06	28.31389	17	07	32.05	+12	24	41.2		2 675
1987	MO	*	1987	06	28.42778	21	40	49.61	+03	46	58.6	17.0	2 675
1987	MO		1987	06	30.42292	21	40	30.50	+04	38	14.8		2 675
1168			1987	06	28.42778	21	21	59.70	+06	18	15.1	16.2	2 675
1168			1987	06	30.42292	21	22	04.19	+06	36	40.2		2 675
1566			1987	06	16.21229	08	29	16.41	+40	07	26.9		1 675
1566			1987	06	16.21417	08	29	19.38	+40	07	17.9		1 675
1566			1987	06	16.22583	08	29	38.07	+40	06	23.5		1 675

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1566       1987 06 16.22917  08 29 43.47  +40 06 07.5                1 675
2027       1987 04 28.31528  10 35 36.08  +22 04 53.9          17.5  2 675
2027       1987 04 30.19965  10 35 42.23  +21 54 59.5                2 675
2925       1987 04 28.33333  13 15 29.89  -08 38 43.8          17.0  2 675
2925       1987 04 28.36076  13 15 28.45  -08 38 33.2                2 675
2928       1987 05 22.37535  15 56 13.96  -33 38 45.9          17.0  2 675
2928       1987 05 23.35035  15 55 20.30  -33 35 42.5                2 675
3397       1987 05 29.21215  12 40 35.67  -11 00 07.5          17.8  3 675
3397       1987 05 30.18871  12 40 31.54  -11 07 28.1                3 675
3554       1987 04 21.15381  09 44 00.78  -23 22 33.1                3 675
3554       1987 04 22.17743  09 41 10.01  -23 29 25.9                3 675
```

688 Lowell Observatory, Anderson Mesa Station
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road,
Flagstaff, AZ 86001, U.S.A.
Observer S. J. Bus
Measurers E. Bowell, S. J. Bus
1.8-m reflector + CCD

```
1566       1987 06 23.16262  11 34 43.01  +18 58 58.7                  688
1566       1987 06 23.16435  11 34 45.25  +18 58 33.3                  688
1566       1987 06 23.16574  11 34 47.03  +18 58 13.2                  688
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691 Kitt Peak, Steward Observatory
T. Gehrels, Space Sciences Building, University of Arizona,
Tucson, AZ 85721, U.S.A.
Observers T. Gehrels, J. V. Scotti
Measurer R. McCarty
0.91-m SPACEWATCH telescope, CCD in scanning mode
SAOC 1984
See also MPC 9198 and 10373

```
1981 FD    1987 06 23.17494  15 06 37.02  -20 27 19.8          18.9V   691
1981 FD    1987 06 23.18069  15 06 36.96  -20 27 19.3                  691
1981 FD    1987 06 23.19334  15 06 36.85  -20 27 19.1          18.9V   691
1981 FD    1987 06 23.25657  15 06 36.29  -20 27 16.0          19.0V   691
1984 KD    1987 05 01.27198  10 03 04.23  +31 07 56.6          19.6V b 691
1984 KD    1987 05 01.28035  10 03 04.32  +31 07 52.8                b 691
1984 KD    1987 05 01.29988  10 03 04.43  +31 07 42.1                b 691
1984 KD    1987 05 02.23573  10 03 13.82  +30 59 30.7                  691
1984 KD    1987 05 02.26093  10 03 14.02  +30 59 18.6                  691
1984 KD    1987 05 02.26844  10 03 14.13  +30 59 14.4                  691
1984 KD    1987 05 02.27306  10 03 14.19  +30 59 11.4                  691
1985 RW    1987 05 01.20130  11 39 37.54  -22 41 57.0          18.3V   691
1985 RW    1987 05 01.21096  11 39 37.57  -22 41 45.8                  691
1985 RW    1987 05 01.25825  11 39 37.74  -22 40 49.1                b 691
1985 RW    1987 05 02.16236  11 39 45.43  -22 22 58.8                  691
1985 RW    1987 05 02.16675  11 39 45.47  -22 22 55.5                  691
1985 RW    1987 05 25.19490  11 52 12.08  -16 02 19.4                  691
1985 RW    1987 05 25.21321  11 52 13.02  -16 02 04.6          19.2V   691
1985 RW    1987 05 25.21826  11 52 13.28  -16 02 01.2                  691
1985 YP    1987 05 23.44398  21 39 07.49  -08 54 04.9          18.3V   691
1985 YP    1987 05 23.45641  21 39 08.50  -08 53 50.6                I 691
1985 YP    1987 05 23.45914  21 39 08.74  -08 53 46.9                  691
1985 YP    1987 05 24.44358  21 40 29.36  -08 34 18.8                  691
1985 YP    1987 05 24.45046  21 40 29.93  -08 34 10.7                  691
1985 YP    1987 05 24.45991  21 40 30.66  -08 33 59.7                  691
1986 GW    1987 05 23.33953  18 44 52.58  -19 32 33.9                c 691
1986 GW    1987 05 23.38334  18 44 51.76  -19 32 32.1          18.9V c 691
1986 GW    1987 05 23.40000  18 44 51.40  -19 32 31.4                c 691
1986 GW    1987 05 24.41491  18 44 32.22  -19 32 05.8                c 691
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1986	GW	1987	05	24.42495	18	44	31.97	-19	32	04.9	c	691
1986	GW	1987	05	24.46530	18	44	31.20	-19	32	04.6	c	691
1986	PA	1987	05	23.34637	19	49	17.54	+01	45	51.0	c	691
1986	PA	1987	05	23.35991	19	49	17.14	+01	45	59.3	c	691
1986	PA	1987	05	23.37140	19	49	16.75	+01	46	06.4	c	691
1986	PA	1987	05	24.35006	19	48	47.08	+01	56	15.0	c	691
1986	PA	1987	05	24.39433	19	48	45.55	+01	56	42.4	c	691
1986	PA	1987	05	24.40193	19	48	45.22	+01	56	46.9	c	691
1987	KF	1987	06	17.18344	14	35	39.25	+03	39	08.7		691
1987	KF	1987	06	17.18775	14	35	39.38	+03	39	00.7		691
1987	KF	1987	06	17.20125	14	35	39.76	+03	38	37.4		691
1987	KF	1987	06	23.26619	14	39	14.83	+00	51	48.7		691
1987	KF	1987	06	23.27444	14	39	15.13	+00	51	36.3		691
1987	KF	1987	06	23.29150	14	39	15.74	+00	51	10.6	17.6V	691
1566		1987	06	16.15630	08	27	46.72	+40	11	42.3	s	691
1566		1987	06	16.17343	08	28	13.96	+40	10	24.6	s	691
1566		1987	06	16.17738	08	28	20.32	+40	10	06.6	s	691
1566		1987	06	17.15876	08	55	14.54	+38	41	48.4	s	691
1566		1987	06	17.17274	08	55	38.08	+38	40	16.4	s	691
1566		1987	06	17.17497	08	55	41.77	+38	40	01.1	s	691
1566		1987	06	18.16860	09	23	59.65	+36	35	37.2	s	691
1566		1987	06	18.17678	09	24	13.67	+36	34	25.6	s	691
1566		1987	06	18.17900	09	24	17.43	+36	34	05.6	s	691
1566		1987	06	22.18233	11	12	35.63	+22	57	11.8	s	691
1566		1987	06	22.19525	11	12	53.77	+22	54	03.2	s	691
1566		1987	06	22.20846	11	13	12.32	+22	50	50.0	s	691
1566		1987	06	24.19204	11	55	34.69	+14	53	43.0	16.3V s	691
1566		1987	06	24.20969	11	55	54.62	+14	49	33.1	s	691
1566		1987	06	24.22249	11	56	09.14	+14	46	31.6	s	691
1866		1987	05	01.30683	13	28	38.27	+40	18	30.4	b	691
1866		1987	05	01.32036	13	28	37.00	+40	18	25.3	17.7V b	691
1866		1987	05	01.33076	13	28	35.99	+40	18	21.0	b	691
1866		1987	05	02.28604	13	27	09.95	+40	12	11.2		691
1866		1987	05	02.30060	13	27	08.59	+40	12	05.6		691
1866		1987	05	02.31219	13	27	07.53	+40	12	00.9	18.0V	691
2561		1987	05	23.33920	18	44	43.00	-19	30	00.1	18.4V c	691
2561		1987	05	23.38323	18	44	41.72	-19	29	59.4	c	691
2561		1987	05	23.39966	18	44	41.22	-19	29	59.2	c	691
2561		1987	05	24.41422	18	44	12.04	-19	29	43.5	c	691
2561		1987	05	24.42471	18	44	11.38	-19	29	47.6	c	691
2561		1987	05	24.46459	18	44	10.37	-19	29	41.8	c	691
3295		1987	05	03.34164	16	59	05.43	-10	40	51.7		691
3295		1987	05	03.35225	16	59	05.05	-10	40	49.3		691
3295		1987	05	03.36988	16	59	04.46	-10	40	44.6	18.6V	691
3295		1987	05	03.42017	16	59	02.82	-10	40	32.9		691

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

1987	KF	1987	06	24.28056	14	39	55.08	+00	26	21.6	t	707

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

A908	TC	1987	03	27.09754	09	09	48.60	-04	12	42.6	801
A908	TC	1987	04	27.06281	09	12	07.00	-01	10	28.6	801
1949	PL	1987	03	30.15679	10	20	04.34	+10	55	25.0	801
1949	PL	1987	04	27.10878	10	17	40.54	+11	26	39.6	W 801
1957	HK	1987	04	27.25091	13	15	49.70	-08	17	18.9	801
1964	CG	1987	04	27.35382	14	55	52.18	-13	11	49.4	801
1964	CG	1987	05	31.19178	14	31	28.77	-11	46	11.7	801
1966	BO	1987	04	02.38570	16	04	38.02	-07	35	37.7	801
1966	BO	1987	04	26.33802	15	59	28.98	-05	19	19.9	801
1966	TE	1987	04	27.18454	12	18	56.46	-09	50	53.8	801
1969	TB2	1984	11	27.20537	02	45	56.72	+17	40	13.5	801
1969	TB2	1987	05	02.21514	13	51	54.70	-12	15	22.0	801
1969	TB2	1987	05	31.13784	13	34	45.86	-10	54	25.5	801
1969	TE2	1987	02	25.31242	11	17	50.95	+01	50	49.5	801
1969	TE2	1987	04	02.25945	10	50	02.25	+05	46	25.2	W 801
1969	TE2	1987	04	27.13572	10	45	16.91	+07	00	33.2	801
1976	GU3	1987	05	31.09280	11	34	12.63	+04	31	35.4	801
1976	SJ4	1987	04	27.15886	10	59	59.19	+03	11	43.4	801
1976	YP1	1986	10	30.05504	22	01	02.15	-13	02	32.2	801
1978	QX2	1987	02	26.26106	09	12	58.10	+22	35	26.2	801
1978	QX2	1987	04	28.04737	09	05	35.32	+20	07	19.6	801
1978	ST6	1987	04	27.08906	09	16	14.32	+08	51	14.9	801
1979	FE	1987	03	29.38517	15	46	56.67	+01	28	01.0	801
1979	FE	1987	04	26.29973	15	32	32.08	+04	06	04.8	801
1979	FE	1987	05	30.19272	15	01	31.97	+04	41	25.7	801
1979	KD	1987	05	31.16787	13	39	57.11	+02	16	51.9	801
1979	ML3	1987	05	02.28896	16	42	59.74	-20	59	22.2	w 801
1979	ML3	1987	05	31.22985	16	20	23.01	-19	18	10.3	801
1979	SA10	1987	02	25.06355	05	52	15.62	+16	11	46.4	801
1980	EE2	1987	02	27.17717	09	26	22.53	+08	38	29.0	801
1980	EE2	1987	04	28.06924	09	31	06.87	+10	41	27.9	801
1980	FV	1987	04	26.27935	13	44	22.89	-17	21	08.8	801
1980	FV	1987	05	31.11675	13	19	33.17	-15	02	12.6	801
1980	RU2	1987	04	28.13228	10	30	18.26	+08	37	24.3	801
1981	EF	1987	04	27.20549	12	23	01.89	-09	58	18.1	801
1981	JD2	1987	02	24.15397	08	42	35.60	+24	56	08.0	801
1981	SE1	1987	03	27.33255	13	39	24.09	-05	32	22.8	801
1981	SE1	1987	04	26.23129	13	13	02.09	-01	42	34.1	801
1981	YX1	1987	04	30.27659	15	04	22.95	-18	58	07.2	801
1981	YX1	1987	05	02.24112	15	02	37.42	-18	45	02.0	801
1982	TR	1987	02	26.35010	11	48	40.14	-02	28	37.3	801
1982	TR	1987	05	01.13449	11	03	09.24	+01	15	37.7	801
1983	AK	1987	04	27.29503	15	37	23.46	-09	27	59.4	801
1983	AK	1987	05	31.21300	15	04	13.14	-09	22	21.9	801
1983	AN	1987	04	26.09302	10	24	25.26	+20	22	09.4	o 801
1983	BN	1987	01	29.18318	05	42	16.24	+22	15	27.0	801
1983	BN	1987	02	26.15803	05	42	13.23	+23	12	52.8	801
1983	DE	1987	04	02.34119	13	35	27.93	-04	14	13.1	W 801
1983	DE	1987	04	27.23351	13	12	20.49	-02	11	28.0	801
1983	TR2	1987	04	26.25999	13	40	37.92	-13	53	54.9	801
1984	QJ1	1987	05	02.30989	16	48	21.13	-18	20	10.0	I 801
1984	QJ1	1987	05	31.25313	16	24	37.68	-16	02	08.0	801
1984	UQ	1987	03	27.38666	14	57	11.12	-15	40	47.2	801
1984	UQ	1987	04	30.21318	14	38	51.87	-09	52	48.4	801
1984	WX	1987	04	02.36838	15	57	49.52	-06	07	27.4	801
1984	WX	1987	04	26.31585	15	48	27.20	-04	53	09.7	801
1985	TX	1987	01	04.43110	11	47	39.58	-01	21	40.5	801
1985	TX	1987	02	24.31714	11	39	31.11	-00	55	07.8	801
1985	TX	1987	05	01.11016	10	58	35.40	+04	28	28.0	801

1985	TR3		1987	03	30.32370	13	16	38.84	-16	13	04.3	801
1985	TR3		1987	04	26.21570	12	50	38.93	-13	29	14.5	801
1986	XO2		1987	04	28.11381	09	49	36.02	+24	36	49.6	801
1987	FX1	*	1987	03	30.34348	14	10	25.28	-18	32	24.0	17.5 801
1987	GG		1987	05	30.21710	15	12	21.49	+39	11	42.5	801
1987	GG		1987	06	01.19847	15	11	37.76	+38	48	20.7	801
1987	GD1	*	1987	04	02.20847	10	17	53.39	+16	15	07.3	18 w 801
1987	JH	*	1987	05	02.24112	15	03	32.64	-18	42	49.3	17 801
1987	KF		1987	06	24.12631	14	39	48.82	+00	30	09.2	801
79			1987	04	28.06924	09	31	17.19	+10	41	08.1	801
366			1987	04	28.04737	09	05	43.85	+19	59	39.2	801
449			1987	04	27.35382	14	57	13.52	-13	07	27.7	801
1539			1987	04	26.07325	10	17	43.43	+11	30	23.2	801
1539			1987	04	27.10878	10	17	45.98	+11	30	10.6	w 801
1566			1987	06	19.09152	09	50	30.41	+34	07	44.1	S 801
1566			1987	06	20.12139	10	19	29.49	+30	49	02.6	i 801
3554			1987	04	26.03191	09	31	53.24	-23	52	22.6	801
3554			1987	04	27.04013	09	29	47.95	-23	57	47.7	801

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Observers H. Debehogne, E. W. Elst
Measurers H. Debehogne (assisted by G. Peeters), E. W. Elst
0.4-m GPO astrograph

1980	SD		1987	02	05.34097	11	54	26.44	+12	32	51.9	4 809
1980	SD		1987	02	05.35277	11	54	26.11	+12	32	54.9	4 809
1986	LW1	*	1986	06	04.10938	15	15	00.82	-24	36	18.8	17 4 809
1986	LW1		1986	06	04.11319	15	14	59.02	-24	36	15.9	4 809
1986	LW1		1986	06	07.14028	15	12	23.25	-24	31	11.9	17 4 809
1986	LW1		1986	06	07.15625	15	12	22.38	-24	31	10.1	4 809
1987	BA		1987	01	22.23749	08	11	08.58	+16	41	02.4	4 809
1987	BA		1987	01	23.23471	08	10	04.80	+16	59	31.4	4 809
1987	BA		1987	01	23.24513	08	10	04.22	+16	59	41.9	4 809
1987	BA		1987	01	28.18749	08	04	51.10	+18	30	52.0	16.5 4 809
1987	BA		1987	01	28.19791	08	04	50.49	+18	31	02.4	4 809
1987	BA		1987	01	29.19235	08	03	48.47	+18	49	08.1	4 809
1987	BA		1987	01	29.20277	08	03	47.85	+18	49	18.2	4 809
1987	BA		1987	01	30.18263	08	02	47.45	+19	07	01.7	16.5 4 809
1987	BA		1987	01	30.19374	08	02	46.76	+19	07	13.9	4 809
1987	BA		1987	01	30.20346	08	02	46.06	+19	07	25.5	4 809
1987	BA		1987	01	30.21389	08	02	45.44	+19	07	36.7	4 809
1987	BA		1987	01	31.16388	08	01	47.60	+19	24	38.5	16.5 4 809
1987	BA		1987	01	31.17500	08	01	46.95	+19	24	50.0	4 809
1987	BA		1987	02	01.18402	08	00	46.13	+19	42	49.6	4 809
1987	BA		1987	02	01.19582	08	00	45.45	+19	43	01.9	4 809
1987	BO1		1987	01	26.04514	06	39	22.29	+09	57	43.5	16 4 809
1987	BO1		1987	01	26.05625	06	39	21.65	+09	57	35.3	4 809
1987	BO1		1987	01	26.06667	06	39	21.10	+09	57	27.6	4 809
1987	BO1		1987	01	27.06944	06	38	28.75	+09	44	57.8	4 809
1987	BO1		1987	01	27.08160	06	38	28.13	+09	44	49.3	4 809
1987	BO1		1987	01	27.09236	06	38	27.52	+09	44	42.5	4 809
1987	BO1		1987	01	28.05990	06	37	39.62	+09	32	59.2	4 809
1987	BO1		1987	01	28.07014	06	37	39.10	+09	32	52.5	4 809
1987	BO1		1987	01	28.08056	06	37	38.53	+09	32	45.9	4 809
1987	BO1		1987	01	28.09097	06	37	37.99	+09	32	38.0	4 809
1987	BO1		1987	01	28.10139	06	37	37.50	+09	32	30.3	4 809

1987	BO1	1987	01	29.07708	06	36	51.71	+09	20	59.7		4 809
1987	BO1	1987	01	29.08750	06	36	51.16	+09	20	53.1		4 809
1987	BO1	1987	01	30.09722	06	36	06.25	+09	09	18.2		4 809
1987	BO1	1987	01	30.10764	06	36	05.80	+09	09	12.6		4 809
1987	BO1	1987	02	03.08333	06	33	34.83	+08	26	57.5		4 809
1987	BO1	1987	02	03.09375	06	33	34.45	+08	26	51.3		4 809
1987	BP1	1987	01	22.18958	08	03	41.07	+16	06	58.0	17	4 809
1987	BP1	1987	01	22.20833	08	03	40.01	+16	07	04.6		4 809
1987	BP1	1987	01	23.21181	08	02	49.44	+16	14	25.2		4 809
1987	BP1	1987	01	23.22222	08	02	48.91	+16	14	31.3		4 809
1987	BP1	1987	01	27.11181	07	59	35.45	+16	43	09.2	17	4 809
1987	BP1	1987	01	27.12222	07	59	35.08	+16	43	13.5		4 809
1987	BP1	1987	01	28.11458	07	58	46.92	+16	50	33.0		4 809
1987	BP1	1987	01	28.12500	07	58	46.43	+16	50	37.3		4 809
1987	BP1	1987	01	28.13403	07	58	45.95	+16	50	42.4		4 809
1987	BP1	1987	01	28.14549	07	58	45.28	+16	50	48.2		4 809
1987	BP1	1987	01	28.15625	07	58	44.73	+16	50	53.0		4 809
1987	BP1	1987	01	30.16181	07	57	09.81	+17	05	42.5		4 809
1987	BP1	1987	01	30.17222	07	57	09.20	+17	05	47.8		4 809
1987	BP1	1987	01	31.14201	07	56	24.81	+17	12	58.3		4 809
1987	BP1	1987	01	31.15451	07	56	24.31	+17	13	01.4		4 809
1987	BP1	1987	02	02.14931	07	54	55.87	+17	27	41.1		4 809
1987	BP1	1987	02	02.15972	07	54	55.41	+17	27	45.3		4 809
1987	BP1	1987	02	03.10417	07	54	15.51	+17	34	37.6		4 809
1987	BP1	1987	02	03.11667	07	54	14.99	+17	34	43.8		4 809
1987	BP1	1987	02	03.12708	07	54	14.50	+17	34	47.5		4 809
1987	BP1	1987	02	03.13819	07	54	14.01	+17	34	52.7		4 809
1987	BP1	1987	02	03.14791	07	54	13.39	+17	34	58.2		4 809
1987	BP1	1987	02	03.15832	07	54	12.99	+17	35	03.2		4 809
1987	BP1	1987	02	05.16389	07	52	52.01	+17	49	25.6		4 809
1987	BP1	1987	02	05.17431	07	52	51.58	+17	49	29.8		4 809
1987	BQ1	1987	01	22.18958	08	06	21.89	+16	01	07.2	16.8	4 809
1987	BQ1	1987	01	22.20833	08	06	20.77	+16	01	12.2		4 809
1987	BQ1	1987	01	22.23749	08	06	18.75	+16	01	24.8		4 809
1987	BQ1	1987	01	23.21181	08	05	14.99	+16	07	28.4		4 809
1987	BQ1	1987	01	23.22222	08	05	14.25	+16	07	33.8		4 809
1987	BQ1	1987	01	23.23471	08	05	13.36	+16	07	34.0		4 809
1987	BQ1	1987	01	23.24513	08	05	12.76	+16	07	37.1		4 809
1987	BQ1	1987	01	27.11181	08	01	02.73	+16	31	47.3	17	4 809
1987	BQ1	1987	01	27.12222	08	01	02.11	+16	31	50.7		4 809
1987	BQ1	1987	01	28.11458	07	59	59.43	+16	37	57.0		4 809
1987	BQ1	1987	01	28.12500	07	59	58.83	+16	38	00.9		4 809
1987	BQ1	1987	01	28.13403	07	59	58.26	+16	38	05.2		4 809
1987	BQ1	1987	01	28.14549	07	59	57.43	+16	38	08.8		4 809
1987	BQ1	1987	01	28.15625	07	59	56.74	+16	38	13.8		4 809
1987	BQ1	1987	01	29.16181	07	58	54.11	+16	44	25.0		4 809
1987	BQ1	1987	01	29.17222	07	58	53.35	+16	44	28.7		4 809
1987	BQ1	1987	01	30.16181	07	57	52.45	+16	50	32.0		4 809
1987	BQ1	1987	01	30.17222	07	57	51.67	+16	50	36.0		4 809
1987	BQ1	1987	01	31.14201	07	56	52.96	+16	56	31.7		4 809
1987	BQ1	1987	01	31.15451	07	56	52.26	+16	56	34.0		4 809
1987	BQ1	1987	02	02.14931	07	54	54.48	+17	08	35.3		4 809
1987	BQ1	1987	02	02.15972	07	54	54.01	+17	08	37.6		4 809
1987	BQ1	1987	02	03.10417	07	53	59.99	+17	14	16.1		4 809
1987	BQ1	1987	02	03.11667	07	53	59.30	+17	14	20.4		4 809
1987	BQ1	1987	02	03.12708	07	53	58.75	+17	14	23.4		4 809
1987	BQ1	1987	02	03.13819	07	53	57.97	+17	14	28.1		4 809
1987	BQ1	1987	02	03.14791	07	53	57.36	+17	14	32.2		4 809
1987	BQ1	1987	02	03.15832	07	53	56.84	+17	14	36.9		4 809

1987	BQ1	1987	02	05.16389	07	52	05.93	+17	26	16.7		4 809
1987	BQ1	1987	02	05.17431	07	52	05.33	+17	26	19.6		4 809
1987	BR1	1987	01	22.23749	08	09	33.43	+16	40	22.4		4 809
1987	BR1	1987	01	23.23471	08	08	26.01	+16	41	39.7		4 809
1987	BR1	1987	01	23.24513	08	08	25.28	+16	41	40.3		4 809
1987	BR1	1987	01	27.13298	08	04	06.10	+16	47	05.7		4 809
1987	BR1	1987	01	27.14374	08	04	05.35	+16	47	07.1		4 809
1987	BR1	1987	01	28.13403	08	03	00.56	+16	48	29.9	17	4 809
1987	BR1	1987	01	28.14549	08	02	59.82	+16	48	31.1		4 809
1987	BR1	1987	01	28.15625	08	02	59.05	+16	48	32.4		4 809
1987	BR1	1987	01	28.16667	08	02	58.24	+16	48	34.1		4 809
1987	BR1	1987	01	28.17777	08	02	57.58	+16	48	35.3		4 809
1987	BR1	1987	01	30.16181	08	00	50.08	+16	51	20.7		4 809
1987	BR1	1987	01	30.17222	08	00	49.41	+16	51	21.3		4 809
1987	BR1	1987	01	31.14201	07	59	48.48	+16	52	43.9		4 809
1987	BR1	1987	01	31.15451	07	59	47.73	+16	52	43.0		4 809
1987	BR1	1987	02	02.14931	07	57	45.50	+16	55	30.5		4 809
1987	BR1	1987	02	02.15972	07	57	44.94	+16	55	31.6		4 809
1987	BR1	1987	02	03.10417	07	56	48.95	+16	56	49.2		4 809
1987	BR1	1987	02	03.11667	07	56	48.24	+16	56	50.6		4 809
1987	BR1	1987	02	03.12708	07	56	47.61	+16	56	50.0		4 809
1987	BR1	1987	02	03.13819	07	56	46.87	+16	56	52.0		4 809
1987	BR1	1987	02	03.14791	07	56	46.26	+16	56	51.9		4 809
1987	BR1	1987	02	03.15832	07	56	45.60	+16	56	53.5		4 809
1987	BR1	1987	02	05.16389	07	54	50.46	+16	59	33.0		4 809
1987	BR1	1987	02	05.17431	07	54	49.95	+16	59	32.9		4 809
1987	BS1	1987	01	23.25903	08	20	09.22	+16	16	13.2		4 809
1987	BS1	1987	01	23.26944	08	20	08.62	+16	16	13.0		4 809
1987	BS1	1987	01	25.27778	08	17	52.33	+16	10	32.2		4 809
1987	BS1	1987	01	25.28819	08	17	51.66	+16	10	30.7		4 809
1987	BS1	1987	01	27.15347	08	15	46.44	+16	05	20.9		4 809
1987	BS1	1987	01	27.16389	08	15	45.63	+16	05	18.7		4 809
1987	BS1	1987	02	05.18333	08	06	09.28	+15	41	08.1		4 809
1987	BS1	1987	02	05.19375	08	06	08.65	+15	41	06.2		4 809
1987	BS1	1987	02	06.17083	08	05	11.21	+15	38	33.5		4 809
1987	BS1	1987	02	06.18681	08	05	10.17	+15	38	32.2		4 809
1987	BT1	1987	01	26.10624	07	36	09.59	+14	26	41.8	17.5	4 809
1987	BT1	1987	01	26.11666	07	36	08.94	+14	26	41.2		4 809
1987	BT1	1987	01	26.12708	07	36	08.28	+14	26	41.2		4 809
1987	BT1	1987	01	30.14166	07	32	13.86	+14	26	10.2		4 809
1987	BT1	1987	01	30.15207	07	32	13.25	+14	26	10.2		4 809
1987	BT1	1987	01	31.12013	07	31	19.20	+14	26	07.4		4 809
1987	BT1	1987	01	31.13194	07	31	18.62	+14	26	07.3		4 809
1987	BU1	1987	01	25.33542	09	00	23.19	+10	42	58.5	17.2	4 809
1987	BU1	1987	01	26.26215	08	59	29.69	+10	45	34.5		4 809
1987	BU1	1987	01	26.27291	08	59	28.97	+10	45	36.2		4 809
1987	BU1	1987	01	28.22152	08	57	34.85	+10	51	23.5		4 809
1987	BU1	1987	01	28.24651	08	57	33.51	+10	51	27.7		4 809
1987	BU1	1987	01	31.26250	08	54	34.02	+11	01	13.0		4 809
1987	BU1	1987	01	31.27360	08	54	33.40	+11	01	13.6		4 809
1987	BU1	1987	02	02.21042	08	52	38.31	+11	07	54.5		4 809
1987	BU1	1987	02	02.22083	08	52	37.71	+11	07	55.9		4 809
1987	BU1	1987	02	05.23402	08	49	39.95	+11	18	46.8		4 809
1987	BU1	1987	02	05.24513	08	49	39.38	+11	18	48.6		4 809
1987	BU1	1987	02	06.21597	08	48	43.03	+11	22	25.9		4 809
1987	BU1	1987	02	06.22777	08	48	42.41	+11	22	28.6		4 809
1987	BV1	1987	01	24.25764	09	01	17.81	+09	49	14.7	16	4 809
1987	BV1	1987	01	24.27846	09	01	16.85	+09	49	23.0		4 809
1987	BV1	1987	01	24.28888	09	01	16.49	+09	49	27.8		4 809

1987	BV1	1987	01	25.33542	09	00	30.14	+09	55	35.3		4 809
1987	BV1	1987	01	26.26215	08	59	48.85	+10	01	08.2		4 809
1987	BV1	1987	01	26.27291	08	59	48.33	+10	01	12.5		4 809
1987	BV1	1987	01	28.22152	08	58	20.48	+10	13	03.0		4 809
1987	BV1	1987	01	28.24651	08	58	19.30	+10	13	12.3		4 809
1987	BV1	1987	01	31.26250	08	56	01.29	+10	32	02.1		4 809
1987	BV1	1987	01	31.27360	08	56	00.80	+10	32	05.8		4 809
1987	BV1	1987	02	02.21042	08	54	31.73	+10	44	27.6		4 809
1987	BV1	1987	02	02.22083	08	54	31.26	+10	44	31.4		4 809
1987	BV1	1987	02	03.24061	08	53	44.12	+10	51	06.4		4 809
1987	BV1	1987	02	03.25208	08	53	43.56	+10	51	10.6		4 809
1987	BV1	1987	02	06.21597	08	51	27.47	+11	10	29.0		4 809
1987	BV1	1987	02	06.22777	08	51	26.88	+11	10	33.8		4 809
1987	BW1	1987	01	25.33542	09	04	39.51	+09	15	30.9	17.4	4 809
1987	BW1	1987	01	26.26215	09	03	45.02	+09	17	47.6		4 809
1987	BW1	1987	01	26.27291	09	03	44.25	+09	17	49.4		4 809
1987	BW1	1987	01	31.26250	08	58	42.31	+09	32	11.0		4 809
1987	BW1	1987	01	31.27360	08	58	41.55	+09	32	12.9		4 809
1987	BW1	1987	02	03.24061	08	55	39.89	+09	42	09.0		4 809
1987	BW1	1987	02	03.25208	08	55	39.19	+09	42	10.2		4 809
1987	BW1	1987	02	06.21597	08	52	39.74	+09	52	52.2		4 809
1987	BW1	1987	02	06.22777	08	52	39.01	+09	52	56.1		4 809
1987	BX1	1987	01	24.33472	09	03	09.77	+05	44	47.3	16.5	4 809
1987	BX1	1987	01	25.34444	09	02	19.00	+05	45	51.5		4 809
1987	BX1	1987	01	25.35485	09	02	18.47	+05	45	51.8		4 809
1987	BX1	1987	01	27.28124	09	00	40.16	+05	48	24.6		4 809
1987	BX1	1987	01	27.29167	09	00	39.67	+05	48	26.7		4 809
1987	BX1	1987	01	29.27430	08	58	56.29	+05	51	38.9		4 809
1987	BX1	1987	01	29.28471	08	58	55.82	+05	51	40.6		4 809
1987	BX1	1987	01	30.29514	08	58	02.39	+05	53	33.9		4 809
1987	BX1	1987	01	30.30624	08	58	01.73	+05	53	34.6		4 809
1987	BX1	1987	02	02.24027	08	55	26.03	+05	59	55.0		4 809
1987	BX1	1987	02	02.25278	08	55	25.37	+05	59	56.7		4 809
1987	BX1	1987	02	06.25139	08	51	53.03	+06	10	28.0		4 809
1987	BX1	1987	02	06.26944	08	51	52.05	+06	10	30.8		4 809
1987	BY1	1987	01	27.23681	08	25	06.71	+14	33	23.2	17.2	4 809
1987	BY1	1987	01	27.24792	08	25	06.18	+14	33	32.4		4 809
1987	BY1	1987	02	01.21597	08	21	05.23	+15	41	26.1		4 809
1987	BY1	1987	02	01.22639	08	21	04.63	+15	41	35.8		4 809
1987	BY1	1987	02	03.19653	08	19	33.03	+16	08	17.6		4 809
1987	BY1	1987	02	03.20833	08	19	32.40	+16	08	28.5		4 809
1987	BZ1	1987	01	27.25833	08	33	37.05	+13	20	28.0	17	4 809
1987	BZ1	1987	01	27.26874	08	33	36.45	+13	20	33.8		4 809
1987	BZ1	1987	01	31.21458	08	30	04.23	+13	58	58.5		4 809
1987	BZ1	1987	01	31.22499	08	30	03.59	+13	59	05.9		4 809
1987	BZ1	1987	02	03.21736	08	27	25.41	+14	28	19.3		4 809
1987	BZ1	1987	02	03.22985	08	27	24.87	+14	28	25.5		4 809
1987	BZ1	1987	02	06.19582	08	24	52.92	+14	57	12.1		4 809
1987	BZ1	1987	02	06.20693	08	24	52.41	+14	57	16.7		4 809
1987	BA2	1987	01	31.28679	09	18	04.62	-01	20	02.9	16.8	4 809
1987	BA2	1987	01	31.29930	09	18	04.03	-01	20	03.2		4 809
1987	BA2	1987	02	01.28749	09	17	13.26	-01	19	50.0		4 809
1987	BA2	1987	02	01.29861	09	17	12.71	-01	19	49.8		4 809
1987	BA2	1987	02	02.26250	09	16	23.13	-01	19	28.9		4 809
1987	BA2	1987	02	02.27499	09	16	22.45	-01	19	28.3		4 809
1987	BA2	1987	02	03.26250	09	15	31.32	-01	18	53.7		4 809
1987	BA2	1987	02	03.27360	09	15	30.66	-01	18	53.5		4 809
1987	BA2	1987	02	04.30416	09	14	36.98	-01	18	07.0		4 809
1987	BA2	1987	02	04.31458	09	14	36.43	-01	18	06.6		4 809

1987	BA2	1987	02	06.27846	09	12	53.65	-01	16	06.1		4 809
1987	BA2	1987	02	06.28888	09	12	53.13	-01	16	06.0		4 809
1987	BB2	1987	01	28.11458	07	56	09.43	+16	52	47.3	17	4 809
1987	BB2	1987	01	28.12500	07	56	08.82	+16	52	49.2		4 809
1987	BB2	1987	01	30.16181	07	54	13.81	+16	58	05.0		4 809
1987	BB2	1987	01	30.17222	07	54	13.24	+16	58	06.3		4 809
1987	BB2	1987	01	31.14201	07	53	20.41	+17	00	37.9		4 809
1987	BB2	1987	01	31.15451	07	53	19.68	+17	00	38.9		4 809
1987	BB2	1987	02	02.14931	07	51	34.71	+17	05	44.1		4 809
1987	BB2	1987	02	02.15972	07	51	34.19	+17	05	45.4		4 809
1987	BB2	1987	02	03.10417	07	50	46.73	+17	08	09.6		4 809
1987	BB2	1987	02	03.11667	07	50	46.22	+17	08	11.6		4 809
1987	BB2	1987	02	03.12708	07	50	45.69	+17	08	13.2		4 809
1987	BB2	1987	02	03.13819	07	50	45.09	+17	08	15.5		4 809
1987	BC2	1987	01	30.16181	07	55	04.55	+17	22	50.6		4 809
1987	BC2	1987	01	30.17222	07	55	03.87	+17	22	52.2		4 809
1987	BC2	1987	01	31.14201	07	54	03.26	+17	24	23.3		4 809
1987	BC2	1987	01	31.15451	07	54	02.47	+17	24	23.1		4 809
1987	BC2	1987	02	02.14931	07	52	01.14	+17	27	22.6		4 809
1987	BC2	1987	02	02.15972	07	52	00.57	+17	27	22.8		4 809
1987	BC2	1987	02	03.10417	07	51	05.09	+17	28	47.0		4 809
1987	BC2	1987	02	03.11667	07	51	04.39	+17	28	47.7		4 809
1987	BC2	1987	02	03.12708	07	51	03.85	+17	28	47.7		4 809
1987	BC2	1987	02	03.13819	07	51	03.13	+17	28	49.6		4 809
1987	BC2	1987	02	05.16389	07	49	08.70	+17	31	41.4		4 809
1987	BC2	1987	02	05.17431	07	49	08.18	+17	31	41.8		4 809
1987	BE2	1987	01	28.11458	08	00	14.30	+17	21	43.7	17	4 809
1987	BE2	1987	01	28.12500	08	00	13.77	+17	21	46.0		4 809
1987	BE2	1987	01	28.13403	08	00	13.30	+17	21	50.3		4 809
1987	BE2	1987	01	28.14549	08	00	12.61	+17	21	53.3		4 809
1987	BE2	1987	01	28.15625	08	00	12.05	+17	21	55.7		4 809
1987	BE2	1987	01	30.16181	07	58	25.16	+17	30	25.3		4 809
1987	BE2	1987	01	30.17222	07	58	24.64	+17	30	27.4		4 809
1987	BE2	1987	01	31.14201	07	57	33.76	+17	34	35.6		4 809
1987	BE2	1987	01	31.15451	07	57	33.13	+17	34	37.1		4 809
1987	BE2	1987	02	02.14931	07	55	50.16	+17	43	00.1		4 809
1987	BE2	1987	02	02.15972	07	55	49.67	+17	43	01.7		4 809
1987	BE2	1987	02	03.10417	07	55	02.09	+17	46	57.2		4 809
1987	BE2	1987	02	03.11667	07	55	01.50	+17	47	00.1		4 809
1987	BE2	1987	02	03.12708	07	55	00.83	+17	47	02.7		4 809
1987	BE2	1987	02	03.13819	07	55	00.21	+17	47	05.3		4 809
1987	BE2	1987	02	03.14791	07	54	59.67	+17	47	07.7		4 809
1987	BE2	1987	02	03.15832	07	54	59.05	+17	47	10.5		4 809
1987	BE2	1987	02	05.16389	07	53	19.91	+17	55	22.6		4 809
1987	BE2	1987	02	05.17431	07	53	19.50	+17	55	23.0		4 809
1987	BF2	1987	01	27.11181	08	02	10.45	+15	44	59.7	17	4 809
1987	BF2	1987	01	27.12222	08	02	09.86	+15	45	04.4		4 809
1987	BF2	1987	01	28.11458	08	01	10.08	+15	52	46.9		4 809
1987	BF2	1987	01	28.12500	08	01	09.47	+15	52	51.1		4 809
1987	BF2	1987	01	28.13403	08	01	08.98	+15	52	56.2		4 809
1987	BF2	1987	01	28.14549	08	01	08.18	+15	53	02.3		4 809
1987	BF2	1987	01	28.15625	08	01	07.54	+15	53	06.7		4 809
1987	BF2	1987	01	30.16181	07	59	08.63	+16	08	46.8		4 809
1987	BF2	1987	01	30.17222	07	59	08.09	+16	08	50.9		4 809
1987	BF2	1987	01	31.14201	07	58	11.71	+16	16	25.9		4 809
1987	BF2	1987	01	31.15451	07	58	10.98	+16	16	29.9		4 809
1987	BF2	1987	02	02.14931	07	56	17.47	+16	32	00.2		4 809
1987	BF2	1987	02	02.15972	07	56	16.91	+16	32	04.2		4 809
1987	BF2	1987	02	03.10417	07	55	24.73	+16	39	22.8		4 809

1987	BF2		1987	02	03.11667	07	55	24.03	+16	39	28.6		4 809
1987	BF2		1987	02	03.12708	07	55	23.48	+16	39	32.0		4 809
1987	BF2		1987	02	03.13819	07	55	22.85	+16	39	36.6		4 809
1987	BF2		1987	02	03.14791	07	55	22.30	+16	39	42.1		4 809
1987	BF2		1987	02	03.15832	07	55	21.67	+16	39	47.9		4 809
1987	BF2		1987	02	05.16389	07	53	33.85	+16	55	07.2		4 809
1987	BF2		1987	02	05.17431	07	53	33.35	+16	55	10.7		4 809
1987	BS2	*	1987	01	28.18749	08	05	18.01	+18	24	05.4	17	4 809
1987	BS2		1987	01	28.19791	08	05	17.52	+18	24	07.3		4 809
1987	BS2		1987	01	29.19235	08	04	20.53	+18	28	56.1		4 809
1987	BS2		1987	01	29.20277	08	04	19.98	+18	28	57.9		4 809
1987	BS2		1987	01	30.18263	08	03	24.79	+18	33	39.3	17	4 809
1987	BS2		1987	01	30.19374	08	03	24.13	+18	33	43.0		4 809
1987	BS2		1987	01	30.20346	08	03	23.49	+18	33	46.1		4 809
1987	BS2		1987	01	30.21389	08	03	23.05	+18	33	48.7		4 809
1987	BS2		1987	01	31.16388	08	02	30.26	+18	38	19.5	17	4 809
1987	BS2		1987	01	31.17500	08	02	29.64	+18	38	22.7		4 809
1987	BS2		1987	02	01.18402	08	01	34.62	+18	43	07.1		4 809
1987	BS2		1987	02	02.17014	08	00	41.93	+18	47	41.5	17	4 809
1987	BS2		1987	02	02.18124	08	00	41.36	+18	47	43.8		4 809
1987	BS2		1987	02	03.16806	07	59	49.87	+18	52	16.0		4 809
1987	BS2		1987	02	03.17847	07	59	49.25	+18	52	18.7		4 809
1987	BT2	*	1987	01	28.18749	08	09	09.25	+19	06	28.8	17.5	4 809
1987	BT2		1987	01	28.19791	08	09	08.89	+19	06	31.6		4 809
1987	BT2		1987	01	29.19235	08	08	18.99	+19	12	40.3		4 809
1987	BT2		1987	01	29.20277	08	08	18.57	+19	12	42.5		4 809
1987	BT2		1987	01	30.20346	08	07	28.73	+19	18	52.3		4 809
1987	BT2		1987	01	30.21389	08	07	28.30	+19	18	56.0		4 809
1987	BU2	*	1987	01	30.18263	08	06	30.80	+18	29	39.3	17	4 809
1987	BU2		1987	01	30.19374	08	06	29.79	+18	29	30.6		4 809
1987	BU2		1987	01	30.20346	08	06	28.79	+18	29	18.8		4 809
1987	BU2		1987	01	30.21389	08	06	27.85	+18	29	12.0		4 809
1987	BU2		1987	01	31.16388	08	04	54.54	+18	16	35.4	17	4 809
1987	BU2		1987	01	31.17500	08	04	53.34	+18	16	26.5		4 809
1987	BU2		1987	02	01.18402	08	03	15.62	+18	02	58.8		4 809
1987	BU2		1987	02	01.19582	08	03	14.43	+18	02	49.0		4 809
1987	BU2		1987	02	02.17014	08	01	42.12	+17	49	54.0	17	4 809
1987	BU2		1987	02	02.18124	08	01	41.08	+17	49	45.7		4 809
1987	BV3	*	1987	01	30.18263	08	01	12.96	+18	48	14.2	17.5	4 809
1987	BV3		1987	01	30.19374	08	01	12.49	+18	48	18.2		4 809
1987	BV3		1987	01	31.16388	08	00	25.80	+18	53	46.5	17.5	4 809
1987	BV3		1987	01	31.17500	08	00	25.32	+18	53	49.9		4 809
1987	CG		1987	02	02.33403	11	15	55.51	+05	53	35.5	17	4 809
1987	CG		1987	02	02.34444	11	15	55.07	+05	53	36.4		4 809
1987	CG		1987	02	02.36527	11	15	54.11	+05	53	41.3		4 809
1987	CG		1987	02	02.37569	11	15	53.46	+05	53	41.2		4 809
1987	CG		1987	02	04.32395	11	14	59.31	+05	59	11.1		4 809
1987	CG		1987	02	04.33403	11	14	59.04	+05	59	12.4		4 809
1987	CG		1987	02	05.30208	11	14	29.77	+06	02	06.3		4 809
1987	CG		1987	02	05.31388	11	14	29.57	+06	02	07.8		4 809
1987	CH		1987	02	02.33403	11	16	15.79	+05	34	46.1	17	4 809
1987	CH		1987	02	02.34444	11	16	15.65	+05	34	50.6		4 809
1987	CH		1987	02	02.36527	11	16	15.15	+05	34	59.1		4 809
1987	CH		1987	02	02.37569	11	16	14.89	+05	35	01.9		4 809
1987	CH		1987	02	04.32395	11	15	33.74	+05	47	30.2		4 809
1987	CH		1987	02	04.33403	11	15	33.52	+05	47	33.0		4 809
1987	CH		1987	02	05.30208	11	15	10.25	+05	54	04.3		4 809
1987	CH		1987	02	05.31388	11	15	10.04	+05	54	08.4		4 809
1987	CJ		1987	02	02.33403	11	17	14.16	+04	52	31.3	17	4 809

1987	CJ	1987	02	02.34444	11	17	13.98	+04	52	35.6	4 809
1987	CJ	1987	02	02.36527	11	17	13.53	+04	52	41.6	4 809
1987	CJ	1987	02	02.37569	11	17	13.27	+04	52	44.3	4 809
1987	CJ	1987	02	04.32395	11	16	30.78	+05	04	15.3	4 809
1987	CJ	1987	02	04.33403	11	16	30.53	+05	04	18.5	4 809
1987	CJ	1987	02	05.30208	11	16	07.47	+05	10	16.1	4 809
1987	CJ	1987	02	05.31388	11	16	07.31	+05	10	18.8	4 809
29		1986	08	27.13194	22	41	27.42	-12	07	29.3	3 809
29		1986	08	27.13750	22	41	27.12	-12	07	30.6	3 809
29		1986	08	27.14305	22	41	26.80	-12	07	31.4	3 809
29		1986	08	28.23472	22	40	24.65	-12	10	53.8	3 809
29		1986	08	28.24028	22	40	24.34	-12	10	54.8	3 809
29		1986	08	28.24583	22	40	24.00	-12	10	55.8	3 809
29		1986	09	01.14479	22	36	40.71	-12	22	33.4	3 809
29		1986	09	01.14965	22	36	40.41	-12	22	34.3	3 809
29		1986	09	01.15451	22	36	40.12	-12	22	35.2	3 809
29		1986	09	02.20035	22	35	39.89	-12	25	34.7	3 809
29		1986	09	02.20521	22	35	39.59	-12	25	35.4	3 809
29		1986	09	02.21007	22	35	39.30	-12	25	36.5	3 809
29		1986	09	04.22292	22	33	43.57	-12	31	12.9	3 809
29		1986	09	04.22778	22	33	43.26	-12	31	13.1	3 809
29		1986	09	04.23298	22	33	43.02	-12	31	14.6	3 809
29		1986	09	05.32396	22	32	40.47	-12	34	09.0	3 809
29		1986	09	05.32951	22	32	40.15	-12	34	09.9	3 809
29		1986	09	05.33507	22	32	39.82	-12	34	10.7	3 809
29		1986	09	07.21840	22	30	53.18	-12	39	00.6	3 809
29		1986	09	07.22326	22	30	52.88	-12	39	01.6	3 809
29		1986	09	07.22813	22	30	52.63	-12	39	02.5	3 809
29		1986	09	08.34618	22	29	49.70	-12	41	45.0	3 809
29		1986	09	08.35104	22	29	49.45	-12	41	45.6	3 809
29		1986	09	08.35590	22	29	49.18	-12	41	46.2	3 809
29		1986	09	11.23021	22	27	11.31	-12	48	14.0	3 809
29		1986	09	11.23576	22	27	10.99	-12	48	14.8	3 809
29		1986	09	11.24062	22	27	10.73	-12	48	15.3	3 809
35		1986	08	26.13750	22	32	18.74	-13	29	58.3	3 809
35		1986	08	26.14305	22	32	18.48	-13	29	59.6	3 809
35		1986	08	26.14861	22	32	18.19	-13	30	00.5	3 809
35		1986	08	27.09097	22	31	31.01	-13	32	48.7	3 809
35		1986	08	27.09653	22	31	30.72	-13	32	49.8	3 809
35		1986	08	27.10208	22	31	30.44	-13	32	50.7	3 809
35		1986	08	29.19167	22	29	45.41	-13	38	56.8	3 809
35		1986	08	29.19722	22	29	45.12	-13	38	57.7	3 809
35		1986	08	29.20278	22	29	44.83	-13	38	58.8	3 809
35		1986	09	01.12882	22	27	18.61	-13	47	10.9	3 809
35		1986	09	01.13403	22	27	18.32	-13	47	11.6	3 809
35		1986	09	01.13923	22	27	18.07	-13	47	12.6	3 809
35		1986	09	02.18385	22	26	26.05	-13	50	01.1	3 809
35		1986	09	02.18906	22	26	25.77	-13	50	02.3	3 809
35		1986	09	02.19427	22	26	25.51	-13	50	03.3	3 809
35		1986	09	04.19410	22	24	46.83	-13	55	17.2	3 809
35		1986	09	04.19896	22	24	46.56	-13	55	18.2	3 809
35		1986	09	04.20382	22	24	46.33	-13	55	18.8	3 809
35		1986	09	05.30799	22	23	52.21	-13	58	04.4	3 809
35		1986	09	05.31285	22	23	52.02	-13	58	05.0	3 809
35		1986	09	05.31771	22	23	51.74	-13	58	05.8	3 809
35		1986	09	09.11840	22	20	50.36	-14	06	56.4	3 809
35		1986	09	09.12326	22	20	50.10	-14	06	57.3	3 809
35		1986	09	09.12812	22	20	49.87	-14	06	58.0	3 809
35		1986	09	09.15729	22	20	48.53	-14	07	01.0	3 809

35	1986	09	09.16215	22	20	48.30	-14	07	02.0	3 809
35	1986	09	09.16701	22	20	48.04	-14	07	02.4	3 809
35	1986	09	11.20868	22	19	13.55	-14	11	20.2	3 809
35	1986	09	11.21354	22	19	13.34	-14	11	20.9	3 809
35	1986	09	11.21840	22	19	13.11	-14	11	21.5	3 809
35	1986	09	11.26632	22	19	10.91	-14	11	27.2	3 809
35	1986	09	11.27187	22	19	10.63	-14	11	27.5	3 809
35	1986	09	11.27674	22	19	10.40	-14	11	28.4	3 809
52	1986	08	28.27222	23	25	49.60	-10	23	43.2	3 809
52	1986	08	28.27778	23	25	49.35	-10	23	45.3	3 809
52	1986	08	28.28333	23	25	49.10	-10	23	47.7	3 809
52	1986	09	01.39479	23	23	07.36	-10	49	44.5	3 809
52	1986	09	01.39965	23	23	07.13	-10	49	46.3	3 809
52	1986	09	01.40451	23	23	06.95	-10	49	47.9	3 809
52	1986	09	03.37743	23	21	46.39	-11	02	15.6	3 809
52	1986	09	03.38229	23	21	46.21	-11	02	17.3	3 809
52	1986	09	03.38715	23	21	45.99	-11	02	19.1	3 809
52	1986	09	07.39340	23	18	58.13	-11	27	21.4	3 809
52	1986	09	07.39826	23	18	57.93	-11	27	22.9	3 809
52	1986	09	07.40312	23	18	57.72	-11	27	25.3	3 809
52	1986	09	08.40208	23	18	15.23	-11	33	34.3	3 809
52	1986	09	08.40660	23	18	15.05	-11	33	36.1	3 809
52	1986	09	08.41146	23	18	14.85	-11	33	37.5	3 809
160	1986	08	26.15833	21	48	39.32	-17	31	35.4	3 809
160	1986	08	26.16389	21	48	39.05	-17	31	36.6	3 809
160	1986	08	26.16944	21	48	38.72	-17	31	38.0	3 809
160	1986	08	27.05555	21	47	52.37	-17	34	18.1	3 809
160	1986	08	27.06111	21	47	52.06	-17	34	19.7	3 809
160	1986	08	27.06667	21	47	51.77	-17	34	21.0	3 809
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160	1986	08	28.06111	21	46	59.86	-17	37	17.5	3 809
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160	1986	08	28.13333	21	46	55.96	-17	37	30.0	3 809
160	1986	08	28.13889	21	46	55.66	-17	37	30.8	3 809
160	1986	08	28.14444	21	46	55.36	-17	37	31.6	3 809
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160	1986	08	29.13403	21	46	04.18	-17	40	21.4	3 809
160	1986	08	29.13958	21	46	03.88	-17	40	22.3	3 809
160	1986	08	30.22083	21	45	08.33	-17	43	22.7	3 809
160	1986	08	30.22639	21	45	08.07	-17	43	23.5	3 809
160	1986	08	30.23194	21	45	07.77	-17	43	24.6	3 809
160	1986	08	30.29873	21	45	04.27	-17	43	34.2	3 809
160	1986	08	30.30451	21	45	03.97	-17	43	35.1	3 809
160	1986	08	30.31030	21	45	03.66	-17	43	36.0	3 809
160	1986	09	01.03472	21	43	37.34	-17	48	06.8	3 809
160	1986	09	01.03993	21	43	37.07	-17	48	07.1	3 809
160	1986	09	01.04479	21	43	36.82	-17	48	07.9	3 809
160	1986	09	01.05104	21	43	36.52	-17	48	09.5	3 809
160	1986	09	01.05590	21	43	36.28	-17	48	10.1	3 809
160	1986	09	01.06076	21	43	36.01	-17	48	11.1	3 809
160	1986	09	01.08993	21	43	34.51	-17	48	15.3	3 809
160	1986	09	01.09479	21	43	34.25	-17	48	16.1	3 809
160	1986	09	01.09965	21	43	34.02	-17	48	16.8	3 809
160	1986	09	02.06007	21	42	46.65	-17	50	38.8	3 809
160	1986	09	02.06493	21	42	46.38	-17	50	39.6	3 809
160	1986	09	02.06979	21	42	46.15	-17	50	40.7	3 809
160	1986	09	02.13090	21	42	43.02	-17	50	49.8	3 809
160	1986	09	02.13576	21	42	42.78	-17	50	50.5	3 809
160	1986	09	02.14062	21	42	42.55	-17	50	51.3	3 809

160	1986	09	03.07847	21	41	57.03	-17	53	03.2	3 809
160	1986	09	03.08368	21	41	56.76	-17	53	03.9	3 809
160	1986	09	03.08854	21	41	56.55	-17	53	04.3	3 809
160	1986	09	04.01562	21	41	12.28	-17	55	10.4	3 809
160	1986	09	04.02048	21	41	12.04	-17	55	10.8	3 809
160	1986	09	04.02535	21	41	11.81	-17	55	11.8	3 809
160	1986	09	04.06215	21	41	10.03	-17	55	16.6	3 809
160	1986	09	04.06701	21	41	09.78	-17	55	17.2	3 809
160	1986	09	04.07188	21	41	09.52	-17	55	18.0	3 809
160	1986	09	05.04549	21	40	23.81	-17	57	22.3	3 809
160	1986	09	05.05104	21	40	23.55	-17	57	23.0	3 809
160	1986	09	05.05590	21	40	23.31	-17	57	23.6	3 809
160	1986	09	06.02743	21	39	38.54	-17	59	21.7	3 809
160	1986	09	06.03299	21	39	38.29	-17	59	22.9	3 809
160	1986	09	06.03785	21	39	38.08	-17	59	23.3	3 809
160	1986	09	06.07118	21	39	36.50	-17	59	27.7	3 809
160	1986	09	06.07604	21	39	36.28	-17	59	28.5	3 809
160	1986	09	06.08090	21	39	36.04	-17	59	28.9	3 809
160	1986	09	06.10243	21	39	34.96	-17	59	30.3	3 809
160	1986	09	06.10729	21	39	34.74	-17	59	31.1	3 809
160	1986	09	06.11215	21	39	34.50	-17	59	32.2	3 809
160	1986	09	08.03299	21	38	08.89	-18	03	04.9	3 809
160	1986	09	08.03785	21	38	08.70	-18	03	05.1	3 809
160	1986	09	08.04271	21	38	08.52	-18	03	05.4	3 809
160	1986	09	08.07882	21	38	06.89	-18	03	09.9	3 809
160	1986	09	08.08368	21	38	06.67	-18	03	10.3	3 809
160	1986	09	08.08854	21	38	06.44	-18	03	10.9	3 809
160	1986	09	10.13576	21	36	39.38	-18	06	27.4	3 809
160	1986	09	10.14062	21	36	39.16	-18	06	27.7	3 809
160	1986	09	10.14549	21	36	38.95	-18	06	28.1	3 809
160	1986	09	10.28021	21	36	33.19	-18	06	39.4	3 809
160	1986	09	10.28507	21	36	32.98	-18	06	40.2	3 809
160	1986	09	10.28993	21	36	32.77	-18	06	40.3	3 809
160	1986	09	12.13889	21	35	19.00	-18	09	08.3	3 809
160	1986	09	12.14410	21	35	18.76	-18	09	08.6	3 809
160	1986	09	12.14896	21	35	18.56	-18	09	09.2	3 809
160	1986	09	12.19757	21	35	16.59	-18	09	12.4	3 809
160	1986	09	12.20243	21	35	16.40	-18	09	12.8	3 809
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181	1986	08	26.14861	22	27	21.46	-14	27	27.6	3 809
181	1986	08	31.33958	22	23	42.08	-15	10	40.7	3 809
181	1986	08	31.34479	22	23	41.84	-15	10	43.1	3 809
181	1986	08	31.35000	22	23	41.63	-15	10	45.3	3 809
192	1987	02	02.33403	11	17	57.15	+05	46	31.5	4 809
192	1987	02	02.34444	11	17	56.66	+05	46	34.3	4 809
192	1987	02	02.36527	11	17	55.91	+05	46	37.5	4 809
192	1987	02	02.37569	11	17	55.47	+05	46	38.6	4 809
192	1987	02	03.28402	11	17	20.06	+05	48	46.3	4 809
192	1987	02	03.29444	11	17	19.45	+05	48	48.2	4 809
192	1987	02	03.30486	11	17	19.08	+05	48	49.6	4 809
192	1987	02	04.32395	11	16	37.82	+05	51	21.6	4 809
192	1987	02	04.33403	11	16	37.36	+05	51	23.2	4 809
192	1987	02	05.30208	11	15	56.77	+05	53	54.4	4 809
192	1987	02	05.31388	11	15	56.31	+05	53	56.2	4 809
197	1987	02	05.34097	11	55	38.20	+13	21	08.0	4 809
197	1987	02	05.35277	11	55	38.00	+13	21	12.2	4 809
313	1986	08	29.09583	21	30	55.48	-05	25	40.2	3 809

313	1986	08	29.10139	21	30	55.19	-05	25	43.1	3 809
313	1986	08	29.10694	21	30	54.91	-05	25	46.0	3 809
320	1987	01	26.04514	06	39	27.16	+10	41	44.8	4 809
320	1987	01	26.05625	06	39	26.74	+10	41	45.7	4 809
320	1987	01	26.06667	06	39	26.28	+10	41	46.2	4 809
320	1987	01	27.06944	06	38	47.21	+10	43	42.5	4 809
320	1987	01	27.08160	06	38	46.75	+10	43	43.8	4 809
320	1987	01	27.09236	06	38	46.33	+10	43	45.8	4 809
320	1987	01	28.05990	06	38	09.79	+10	45	40.6	4 809
320	1987	01	28.07014	06	38	09.42	+10	45	41.4	4 809
320	1987	01	28.08056	06	38	09.03	+10	45	42.6	4 809
320	1987	01	28.09097	06	38	08.63	+10	45	44.1	4 809
320	1987	01	28.10139	06	38	08.19	+10	45	45.4	4 809
379	1986	09	05.01007	21	06	02.68	-15	22	17.6	3 809
379	1986	09	05.01493	21	06	02.52	-15	22	18.7	3 809
379	1986	09	05.01979	21	06	02.36	-15	22	19.7	3 809
379	1986	09	06.00938	21	05	32.53	-15	25	24.7	3 809
379	1986	09	06.01424	21	05	32.38	-15	25	25.9	3 809
379	1986	09	06.01910	21	05	32.24	-15	25	27.0	3 809
379	1986	09	07.02882	21	05	03.07	-15	28	29.8	3 809
379	1986	09	07.03403	21	05	02.89	-15	28	30.9	3 809
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379	1986	09	08.01562	21	04	35.86	-15	31	22.5	3 809
379	1986	09	08.02048	21	04	35.72	-15	31	23.6	3 809
379	1986	09	08.02535	21	04	35.60	-15	31	24.2	3 809
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379	1986	09	11.04549	21	03	20.69	-15	39	38.6	3 809
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379	1986	09	12.03542	21	02	59.02	-15	42	08.2	3 809
379	1986	09	13.00590	21	02	39.10	-15	44	28.4	3 809
379	1986	09	13.01007	21	02	39.03	-15	44	29.2	3 809
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383	1986	08	27.17234	22	50	09.52	-11	23	44.7	3 809
383	1986	08	27.17812	22	50	09.27	-11	23	46.4	3 809
383	1986	08	27.18391	22	50	09.00	-11	23	48.3	3 809
383	1986	08	29.25625	22	48	37.06	-11	34	18.5	3 809
383	1986	08	29.26215	22	48	36.79	-11	34	20.2	3 809
383	1986	08	29.26805	22	48	36.52	-11	34	22.0	3 809
383	1986	09	01.24549	22	46	22.12	-11	49	21.6	3 809
383	1986	09	01.25035	22	46	21.89	-11	49	22.9	3 809
383	1986	09	01.25521	22	46	21.67	-11	49	24.9	3 809
383	1986	09	02.29687	22	45	34.16	-11	54	36.4	3 809
383	1986	09	02.30173	22	45	33.92	-11	54	38.3	3 809
383	1986	09	02.30660	22	45	33.69	-11	54	39.8	3 809
383	1986	09	03.27604	22	44	49.48	-11	59	28.4	3 809
383	1986	09	03.28090	22	44	49.25	-11	59	30.2	3 809
383	1986	09	03.28576	22	44	49.02	-11	59	31.3	3 809
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383	1986	09	03.34618	22	44	46.15	-11	59	49.1	3 809
383	1986	09	03.35104	22	44	45.93	-11	59	50.4	3 809
383	1986	09	04.26354	22	44	04.27	-12	04	19.9	3 809

383	1986	09	04.26840	22	44	04.05	-12	04	21.3	3	809
383	1986	09	04.27326	22	44	03.83	-12	04	22.9	3	809
383	1986	09	04.28299	22	44	03.36	-12	04	25.2	3	809
383	1986	09	04.28785	22	44	03.17	-12	04	26.6	3	809
383	1986	09	04.29288	22	44	02.95	-12	04	28.2	3	809
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383	1986	09	06.32951	22	42	29.71	-12	14	20.7	3	809
383	1986	09	06.33437	22	42	29.49	-12	14	22.2	3	809
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383	1986	09	06.37083	22	42	27.83	-12	14	31.9	3	809
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383	1986	09	09.27048	22	40	16.16	-12	28	09.9	3	809
383	1986	09	09.33403	22	40	13.23	-12	28	26.2	3	809
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383	1986	09	10.37430	22	39	26.44	-12	33	10.7	3	809
383	1986	09	10.37847	22	39	26.23	-12	33	11.7	3	809
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383	1986	09	11.34479	22	38	43.14	-12	37	31.3	3	809
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383	1986	09	13.35763	22	37	14.47	-12	46	15.7	3	809
383	1986	09	13.36180	22	37	14.32	-12	46	16.7	3	809
383	1986	09	13.36597	22	37	14.16	-12	46	17.5	3	809
383	1986	09	14.37708	22	36	30.31	-12	50	33.4	3	809
383	1986	09	14.38125	22	36	30.14	-12	50	34.3	3	809
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417	1986	08	29.10139	21	26	18.17	-06	51	23.9	3	809
417	1986	08	29.10694	21	26	17.94	-06	51	25.9	3	809
417	1986	09	03.05972	21	22	53.18	-07	18	40.2	3	809
417	1986	09	03.06389	21	22	53.00	-07	18	41.6	3	809
417	1986	09	03.06805	21	22	52.84	-07	18	42.9	3	809
417	1986	09	05.02743	21	21	37.31	-07	29	22.3	3	809
417	1986	09	05.03229	21	21	37.10	-07	29	23.7	3	809
417	1986	09	05.03715	21	21	36.90	-07	29	25.0	3	809
417	1986	09	07.04757	21	20	22.89	-07	40	13.5	3	809
417	1986	09	07.05243	21	20	22.71	-07	40	14.7	3	809
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417	1986	09	09.03437	21	19	13.67	-07	50	43.3	3	809
417	1986	09	09.03924	21	19	13.50	-07	50	45.2	3	809
417	1986	09	09.04410	21	19	13.34	-07	50	46.5	3	809
417	1986	09	10.10694	21	18	37.90	-07	56	18.6	3	809
417	1986	09	10.11111	21	18	37.76	-07	56	20.2	3	809
417	1986	09	10.11528	21	18	37.62	-07	56	21.4	3	809
417	1986	09	12.05174	21	17	36.45	-08	06	17.6	3	809
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642	1986	08	27.11181	22	43	11.58	-14	31	57.3	3 809
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642	1986	08	27.12291	22	43	11.06	-14	31	59.2	3 809
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642	1986	08	29.22153	22	41	33.67	-14	38	26.8	3 809
642	1986	09	01.16215	22	39	16.20	-14	47	10.4	3 809
642	1986	09	01.16701	22	39	15.97	-14	47	11.3	3 809
642	1986	09	01.17187	22	39	15.73	-14	47	12.2	3 809
642	1986	09	02.21701	22	38	26.68	-14	50	12.4	3 809
642	1986	09	02.22187	22	38	26.45	-14	50	13.4	3 809
642	1986	09	02.22674	22	38	26.18	-14	50	13.8	3 809
642	1986	09	03.31076	22	37	35.23	-14	53	16.7	3 809
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642	1986	09	03.32049	22	37	34.82	-14	53	18.6	3 809
642	1986	09	04.24132	22	36	51.74	-14	55	50.1	3 809
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642	1986	09	04.25104	22	36	51.23	-14	55	51.7	3 809
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642	1986	09	05.35312	22	35	59.62	-14	58	48.8	3 809
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642	1986	09	06.31910	22	35	14.65	-15	01	21.4	3 809
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935	1986	08	29.13403	21	40	18.93	-16	26	40.6	3 809
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1089	1986	08	29.39375	23	44	53.51	-09	09	43.1	3 809
1089	1986	08	29.39974	23	44	53.21	-09	09	45.3	3 809
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1097	1987	02	02.34444	11	18	50.69	+05	22	08.9	4 809
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1408	1987	01	25.35485	09	03	22.07	+05	13	28.3		4 809
1408	1987	01	27.28124	09	01	54.11	+05	20	03.5		4 809
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1408	1987	01	29.27430	09	00	21.77	+05	27	18.9		4 809
1408	1987	01	29.28471	09	00	21.26	+05	27	20.5		4 809
1408	1987	01	30.29514	08	59	33.98	+05	31	11.6		4 809
1408	1987	01	30.30624	08	59	33.43	+05	31	13.6		4 809
1408	1987	02	02.24027	08	57	16.05	+05	42	53.3		4 809
1408	1987	02	02.25278	08	57	15.47	+05	42	56.7		4 809
1408	1987	02	06.25139	08	54	08.29	+06	00	03.9		4 809
1408	1987	02	06.26944	08	54	07.44	+06	00	08.5		4 809
1507	1987	01	28.18749	08	06	58.85	+17	36	52.1	17.8	4 809
1507	1987	01	28.19791	08	06	58.23	+17	36	52.1		4 809
1516	1986	08	28.27222	23	29	19.77	-12	09	59.3		3 809
1516	1986	08	28.27778	23	29	19.51	-12	10	02.1		3 809
1516	1986	08	28.28333	23	29	19.25	-12	10	04.7		3 809
1516	1986	09	01.39479	23	26	07.40	-12	42	15.7		3 809
1516	1986	09	01.39965	23	26	07.17	-12	42	17.9		3 809
1516	1986	09	01.40451	23	26	06.95	-12	42	20.0		3 809
1516	1986	09	03.37743	23	24	31.82	-12	57	35.4		3 809
1516	1986	09	03.38229	23	24	31.60	-12	57	37.7		3 809
1516	1986	09	03.38715	23	24	31.37	-12	57	39.9		3 809
1516	1986	09	07.39340	23	21	14.12	-13	27	50.5		3 809
1516	1986	09	07.39826	23	21	13.88	-13	27	52.5		3 809
1516	1986	09	07.40312	23	21	13.64	-13	27	54.5		3 809
1545	1986	08	26.15833	21	41	57.14	-18	12	28.8		3 809
1545	1986	08	26.16389	21	41	56.86	-18	12	30.1		3 809
1545	1986	08	26.16944	21	41	56.59	-18	12	31.4		3 809
1545	1986	08	27.05555	21	41	13.56	-18	15	46.2		3 809
1545	1986	08	27.06111	21	41	13.27	-18	15	47.5		3 809
1545	1986	08	27.06667	21	41	13.00	-18	15	48.7		3 809
1545	1986	08	29.12847	21	39	33.61	-18	23	09.9		3 809
1545	1986	08	29.13403	21	39	33.34	-18	23	11.1		3 809
1545	1986	08	29.13958	21	39	33.07	-18	23	12.2		3 809
1545	1986	09	02.06007	21	36	29.87	-18	36	12.0		3 809
1545	1986	09	02.06493	21	36	29.65	-18	36	12.9		3 809
1545	1986	09	02.06979	21	36	29.41	-18	36	13.8		3 809
1545	1986	09	02.08576	21	36	28.59	-18	36	17.1		3 809
1545	1986	09	02.09062	21	36	28.38	-18	36	17.9		3 809
1545	1986	09	02.09549	21	36	28.17	-18	36	19.1		3 809
1545	1986	09	04.01562	21	35	01.73	-18	42	11.4		3 809
1545	1986	09	04.02048	21	35	01.51	-18	42	12.4		3 809
1545	1986	09	04.02535	21	35	01.29	-18	42	13.3		3 809
1545	1986	09	04.03437	21	35	00.94	-18	42	14.8		3 809
1545	1986	09	04.03924	21	35	00.71	-18	42	15.7		3 809
1545	1986	09	04.04410	21	35	00.49	-18	42	16.7		3 809

1545	1986	09	06.04340	21	33	33.12	-18	48	02.2	3 809
1545	1986	09	06.04861	21	33	32.88	-18	48	03.0	3 809
1545	1986	09	06.05382	21	33	32.67	-18	48	03.9	3 809
1545	1986	09	08.05000	21	32	08.50	-18	53	25.9	3 809
1545	1986	09	08.05521	21	32	08.26	-18	53	26.5	3 809
1545	1986	09	08.06042	21	32	08.01	-18	53	27.2	3 809
1586	1986	08	27.17234	22	49	40.16	-11	09	30.2	3 809
1586	1986	08	27.17812	22	49	39.85	-11	09	32.6	3 809
1586	1986	08	27.18391	22	49	39.53	-11	09	35.0	3 809
1586	1986	08	29.25625	22	47	50.70	-11	23	32.1	3 809
1586	1986	08	29.26215	22	47	50.41	-11	23	34.3	3 809
1586	1986	08	29.26805	22	47	50.11	-11	23	37.2	3 809
1586	1986	09	01.24549	22	45	11.76	-11	43	31.2	3 809
1586	1986	09	01.25035	22	45	11.49	-11	43	33.1	3 809
1586	1986	09	01.25521	22	45	11.23	-11	43	35.0	3 809
1586	1986	09	02.29687	22	44	15.42	-11	50	27.4	3 809
1586	1986	09	02.30173	22	44	15.16	-11	50	29.4	3 809
1586	1986	09	02.30660	22	44	14.92	-11	50	31.6	3 809
1586	1986	09	03.27604	22	43	23.13	-11	56	53.0	3 809
1586	1986	09	03.28090	22	43	22.87	-11	56	55.2	3 809
1586	1986	09	03.28576	22	43	22.60	-11	56	56.9	3 809
1586	1986	09	03.34132	22	43	19.46	-11	57	18.2	3 809
1586	1986	09	03.34618	22	43	19.19	-11	57	20.1	3 809
1586	1986	09	03.35104	22	43	18.93	-11	57	22.0	3 809
1586	1986	09	04.26354	22	42	30.23	-12	03	18.4	3 809
1586	1986	09	04.26840	22	42	29.99	-12	03	20.5	3 809
1586	1986	09	04.27326	22	42	29.71	-12	03	22.7	3 809
1586	1986	09	04.28299	22	42	29.20	-12	03	26.0	3 809
1586	1986	09	04.28785	22	42	28.92	-12	03	27.6	3 809
1586	1986	09	04.29288	22	42	28.65	-12	03	29.9	3 809
1586	1986	09	06.32465	22	40	40.26	-12	16	30.3	3 809
1586	1986	09	06.32951	22	40	40.00	-12	16	32.2	3 809
1586	1986	09	06.33437	22	40	39.74	-12	16	34.3	3 809
1586	1986	09	06.36666	22	40	37.99	-12	16	45.7	3 809
1586	1986	09	06.37083	22	40	37.76	-12	16	47.5	3 809
1586	1986	09	06.37500	22	40	37.54	-12	16	48.9	3 809
1586	1986	09	09.22674	22	38	07.36	-12	34	31.4	3 809
1586	1986	09	09.23160	22	38	07.11	-12	34	33.2	3 809
1586	1986	09	09.23646	22	38	06.85	-12	34	34.8	3 809
1586	1986	09	09.26076	22	38	05.53	-12	34	44.1	3 809
1586	1986	09	09.26562	22	38	05.27	-12	34	45.8	3 809
1586	1986	09	09.27048	22	38	05.04	-12	34	47.4	3 809
1586	1986	09	09.33403	22	38	01.60	-12	35	10.1	3 809
1586	1986	09	09.33958	22	38	01.32	-12	35	12.1	3 809
1586	1986	09	09.34514	22	38	01.02	-12	35	14.1	3 809
1586	1986	09	10.36944	22	37	07.81	-12	41	24.4	3 809
1586	1986	09	10.37430	22	37	07.56	-12	41	25.8	3 809
1586	1986	09	10.37847	22	37	07.38	-12	41	27.1	3 809
1586	1986	09	11.32049	22	36	18.87	-12	47	01.5	3 809
1586	1986	09	11.32535	22	36	18.62	-12	47	03.3	3 809
1586	1986	09	11.33021	22	36	18.36	-12	47	04.8	3 809
1586	1986	09	11.33993	22	36	17.84	-12	47	08.3	3 809
1586	1986	09	11.34479	22	36	17.60	-12	47	10.0	3 809
1586	1986	09	11.34965	22	36	17.36	-12	47	11.6	3 809
1586	1986	09	13.35763	22	34	35.70	-12	58	42.5	3 809
1586	1986	09	13.36180	22	34	35.50	-12	58	44.0	3 809
1586	1986	09	13.36597	22	34	35.30	-12	58	45.3	3 809
1586	1986	09	14.37708	22	33	45.03	-13	04	23.4	3 809
1586	1986	09	14.38125	22	33	44.82	-13	04	24.9	3 809

1586	1986	09	14.38541	22	33	44.61	-13	04	26.4	3 809
1615	1986	09	07.07882	21	35	30.70	-14	10	33.7	3 809
1615	1986	09	07.08368	21	35	30.51	-14	10	34.9	3 809
1615	1986	09	07.08854	21	35	30.34	-14	10	36.3	3 809
1615	1986	09	10.18993	21	33	33.67	-14	22	05.0	3 809
1615	1986	09	10.19479	21	33	33.52	-14	22	06.0	3 809
1615	1986	09	10.19965	21	33	33.36	-14	22	07.3	3 809
1615	1986	09	12.15729	21	32	24.80	-14	28	54.0	3 809
1615	1986	09	12.16215	21	32	24.64	-14	28	55.0	3 809
1615	1986	09	12.16704	21	32	24.48	-14	28	56.1	3 809
1630	1986	08	26.17778	22	45	51.93	-14	33	23.1	3 809
1630	1986	08	26.18333	22	45	51.68	-14	33	24.6	3 809
1630	1986	08	26.18889	22	45	51.45	-14	33	26.0	3 809
1630	1986	08	27.11181	22	45	10.25	-14	37	29.8	3 809
1630	1986	08	27.11736	22	45	09.97	-14	37	31.8	3 809
1630	1986	08	27.12291	22	45	09.73	-14	37	33.0	3 809
1630	1986	08	29.21042	22	43	35.55	-14	46	39.2	3 809
1630	1986	08	29.21597	22	43	35.28	-14	46	40.5	3 809
1630	1986	08	29.22153	22	43	35.05	-14	46	42.3	3 809
1630	1986	09	01.16215	22	41	21.42	-14	59	11.5	3 809
1630	1986	09	01.16701	22	41	21.20	-14	59	12.8	3 809
1630	1986	09	01.17187	22	41	21.00	-14	59	14.1	3 809
1630	1986	09	02.21701	22	40	33.23	-15	03	34.4	3 809
1630	1986	09	02.22187	22	40	33.00	-15	03	35.6	3 809
1630	1986	09	02.22674	22	40	32.77	-15	03	36.5	3 809
1630	1986	09	03.31076	22	39	43.23	-15	08	01.6	3 809
1630	1986	09	03.31562	22	39	43.01	-15	08	02.8	3 809
1630	1986	09	03.32049	22	39	42.79	-15	08	04.1	3 809
1630	1986	09	04.24132	22	39	00.87	-15	11	46.6	3 809
1630	1986	09	04.24618	22	39	00.65	-15	11	47.9	3 809
1630	1986	09	04.25104	22	39	00.42	-15	11	49.4	3 809
1630	1986	09	05.34305	22	38	10.76	-15	16	08.2	3 809
1630	1986	09	05.34826	22	38	10.51	-15	16	09.7	3 809
1630	1986	09	05.35312	22	38	10.27	-15	16	10.9	3 809
1630	1986	09	06.30937	22	37	26.95	-15	19	53.7	3 809
1630	1986	09	06.31424	22	37	26.73	-15	19	55.0	3 809
1630	1986	09	06.31910	22	37	26.52	-15	19	56.3	3 809
1630	1986	09	07.23437	22	36	45.22	-15	23	25.8	3 809
1630	1986	09	07.23900	22	36	45.04	-15	23	26.6	3 809
1630	1986	09	07.24386	22	36	44.81	-15	23	27.5	3 809
1630	1986	09	09.18507	22	35	17.91	-15	30	40.3	3 809
1630	1986	09	09.18993	22	35	17.69	-15	30	41.2	3 809
1630	1986	09	09.19479	22	35	17.47	-15	30	42.4	3 809
1630	1986	09	11.28576	22	33	44.98	-15	38	05.9	3 809
1630	1986	09	11.29062	22	33	44.77	-15	38	06.6	3 809
1630	1986	09	11.29549	22	33	44.56	-15	38	07.6	3 809
1630	1986	09	14.35798	22	31	32.23	-15	48	13.5	3 809
1630	1986	09	14.36285	22	31	32.02	-15	48	14.3	3 809
1630	1986	09	14.36771	22	31	31.82	-15	48	15.1	3 809
1668	1987	02	01.21597	08	18	37.51	+15	36	40.3	4 809
1668	1987	02	01.22639	08	18	36.87	+15	36	44.1	4 809
1668	1987	02	03.19653	08	16	55.30	+15	44	50.6	4 809
1668	1987	02	03.20833	08	16	54.64	+15	44	53.8	4 809
1674	1986	08	27.17234	22	51	05.41	-11	00	56.1	3 809
1674	1986	08	27.17812	22	51	05.14	-11	00	57.8	3 809
1674	1986	08	27.18391	22	51	04.89	-11	00	59.3	3 809
1674	1986	08	29.25625	22	49	35.84	-11	10	57.7	3 809
1674	1986	08	29.26215	22	49	35.57	-11	10	59.4	3 809
1674	1986	08	29.26805	22	49	35.31	-11	11	01.0	3 809

1674	1986	09	01.24549	22	47	25.56	-11	25	16.3	3	809
1674	1986	09	01.25035	22	47	25.33	-11	25	18.0	3	809
1674	1986	09	01.25521	22	47	25.12	-11	25	19.3	3	809
1674	1986	09	02.29687	22	46	39.32	-11	30	15.8	3	809
1674	1986	09	02.30173	22	46	39.08	-11	30	17.4	3	809
1674	1986	09	02.30660	22	46	38.86	-11	30	18.6	3	809
1674	1986	09	03.27604	22	45	56.21	-11	34	53.3	3	809
1674	1986	09	03.28090	22	45	55.98	-11	34	55.0	3	809
1674	1986	09	03.28576	22	45	55.75	-11	34	56.4	3	809
1674	1986	09	04.28299	22	45	11.74	-11	39	36.5	3	809
1674	1986	09	04.28785	22	45	11.56	-11	39	37.9	3	809
1674	1986	09	04.29288	22	45	11.35	-11	39	39.3	3	809
1674	1986	09	06.36666	22	43	39.80	-11	49	14.4	3	809
1674	1986	09	06.37083	22	43	39.62	-11	49	15.6	3	809
1674	1986	09	06.37500	22	43	39.44	-11	49	16.8	3	809
1674	1986	09	07.32465	22	42	57.77	-11	53	38.0	3	809
1674	1986	09	07.32951	22	42	57.56	-11	53	39.3	3	809
1674	1986	09	07.33437	22	42	57.35	-11	53	40.5	3	809
1674	1986	09	09.26076	22	41	33.13	-12	02	18.6	3	809
1674	1986	09	09.26562	22	41	32.89	-12	02	20.2	3	809
1674	1986	09	09.27048	22	41	32.68	-12	02	21.5	3	809
1674	1986	09	09.33403	22	41	29.92	-12	02	38.1	3	809
1674	1986	09	09.33958	22	41	29.67	-12	02	39.5	3	809
1674	1986	09	09.34514	22	41	29.42	-12	02	41.0	3	809
1674	1986	09	10.36944	22	40	44.88	-12	07	11.4	3	809
1674	1986	09	10.37430	22	40	44.69	-12	07	13.0	3	809
1674	1986	09	10.37847	22	40	44.52	-12	07	13.9	3	809
1674	1986	09	11.33993	22	40	03.07	-12	11	23.7	3	809
1674	1986	09	11.34479	22	40	02.86	-12	11	24.9	3	809
1674	1986	09	11.34965	22	40	02.64	-12	11	26.4	3	809
1674	1986	09	13.35763	22	38	37.03	-12	19	54.2	3	809
1674	1986	09	13.36180	22	38	36.85	-12	19	55.3	3	809
1674	1986	09	13.36597	22	38	36.68	-12	19	56.5	3	809
1674	1986	09	14.37708	22	37	54.12	-12	24	06.7	3	809
1674	1986	09	14.38125	22	37	53.94	-12	24	07.6	3	809
1674	1986	09	14.38541	22	37	53.77	-12	24	08.6	3	809
1677	1987	02	03.28402	11	12	29.96	+06	05	53.9	4	809
1677	1987	02	03.29444	11	12	29.48	+06	05	53.2	4	809
1677	1987	02	03.30486	11	12	29.11	+06	05	52.6	4	809
1677	1987	02	04.32395	11	11	46.60	+06	05	18.5	4	809
1677	1987	02	04.33403	11	11	46.20	+06	05	17.9	4	809
1703	1986	08	26.17778	22	50	21.76	-14	46	50.6	3	809
1703	1986	08	26.18333	22	50	21.48	-14	46	53.3	3	809
1703	1986	08	26.18889	22	50	21.18	-14	46	56.0	3	809
1703	1986	08	27.11181	22	49	38.50	-14	54	42.0	3	809
1703	1986	08	27.11736	22	49	38.22	-14	54	45.0	3	809
1703	1986	08	27.12291	22	49	37.95	-14	54	47.7	3	809
1703	1986	08	29.21042	22	47	58.56	-15	12	07.9	3	809
1703	1986	08	29.21597	22	47	58.27	-15	12	10.9	3	809
1703	1986	08	29.22153	22	47	58.01	-15	12	13.4	3	809
1703	1986	09	01.16215	22	45	35.70	-15	35	47.0	3	809
1703	1986	09	01.16701	22	45	35.45	-15	35	49.2	3	809
1703	1986	09	01.17187	22	45	35.21	-15	35	51.4	3	809
1703	1986	09	02.23229	22	44	43.27	-15	44	03.3	3	809
1703	1986	09	02.23715	22	44	42.99	-15	44	05.8	3	809
1703	1986	09	02.24201	22	44	42.76	-15	44	08.0	3	809
1703	1986	09	03.32604	22	43	49.60	-15	52	18.7	3	809
1703	1986	09	03.33090	22	43	49.35	-15	52	20.8	3	809
1703	1986	09	03.33576	22	43	49.10	-15	52	22.9	3	809

1703	1986	09	05.14549	22	42	21.97	-16	05	35.4	3	809
1703	1986	09	05.15035	22	42	21.74	-16	05	37.6	3	809
1703	1986	09	05.15521	22	42	21.52	-16	05	39.7	3	809
1703	1986	09	07.25035	22	40	40.91	-16	20	08.4	3	809
1703	1986	09	07.25521	22	40	40.66	-16	20	10.6	3	809
1703	1986	09	07.26007	22	40	40.41	-16	20	12.5	3	809
1703	1986	09	09.20104	22	39	09.99	-16	32	45.5	3	809
1703	1986	09	09.20799	22	39	09.64	-16	32	48.1	3	809
1703	1986	09	09.22049	22	39	09.02	-16	32	52.5	3	809
1703	1986	09	11.30312	22	37	34.73	-16	45	20.0	3	809
1703	1986	09	11.30799	22	37	34.52	-16	45	21.5	3	809
1703	1986	09	11.31285	22	37	34.29	-16	45	23.5	3	809
1737	1986	08	26.11736	21	56	29.03	-12	13	50.8	3	809
1737	1986	08	26.12291	21	56	28.77	-12	13	51.3	3	809
1737	1986	08	26.12847	21	56	28.51	-12	13	52.1	3	809
1833	1986	09	04.99306	20	57	13.91	-13	17	06.4	3	809
1833	1986	09	04.99757	20	57	13.78	-13	17	08.9	3	809
1833	1986	09	05.00243	20	57	13.64	-13	17	11.3	3	809
1833	1986	09	06.99549	20	56	25.61	-13	32	42.6	3	809
1833	1986	09	07.00035	20	56	25.47	-13	32	44.7	3	809
1833	1986	09	07.00521	20	56	25.36	-13	32	46.7	3	809
1833	1986	09	09.05104	20	55	42.33	-13	48	09.8	3	809
1833	1986	09	09.05604	20	55	42.19	-13	48	11.9	3	809
1833	1986	09	09.06105	20	55	42.05	-13	48	13.9	3	809
1887	1986	09	06.04340	21	31	54.46	-20	19	14.3	3	809
1887	1986	09	06.04861	21	31	54.20	-20	19	14.1	3	809
1887	1986	09	06.05382	21	31	53.95	-20	19	14.0	3	809
1887	1986	09	12.08854	21	27	42.56	-20	12	18.8	3	809
1887	1986	09	12.09347	21	27	42.39	-20	12	18.4	3	809
1887	1986	09	12.09833	21	27	42.20	-20	12	17.9	3	809
1914	1986	08	29.38819	23	42	31.17	-09	41	19.9	3	809
1914	1986	08	29.39375	23	42	30.93	-09	41	23.0	3	809
1914	1986	08	29.39974	23	42	30.66	-09	41	26.2	3	809
1942	1986	09	05.14549	22	36	44.55	-16	27	37.9	3	809
1942	1986	09	05.15035	22	36	44.03	-16	27	33.8	3	809
1942	1986	09	05.15521	22	36	43.53	-16	27	29.7	3	809
1942	1986	09	11.14896	22	26	51.66	-15	04	48.4	3	809
1942	1986	09	11.15382	22	26	51.20	-15	04	44.3	3	809
1942	1986	09	11.15868	22	26	50.74	-15	04	40.2	3	809
1942	1986	09	13.33819	22	23	26.67	-14	33	14.4	3	809
1942	1986	09	13.34236	22	23	26.26	-14	33	11.0	3	809
1942	1986	09	13.34687	22	23	25.87	-14	33	07.3	3	809
2079	1986	08	26.17778	22	47	08.15	-14	24	22.4	3	809
2079	1986	08	26.18333	22	47	07.82	-14	24	22.9	3	809
2079	1986	08	26.18889	22	47	07.50	-14	24	23.4	3	809
2079	1986	08	27.11181	22	46	12.30	-14	25	56.5	3	809
2079	1986	08	27.11736	22	46	11.95	-14	25	57.0	3	809
2079	1986	08	27.12291	22	46	11.63	-14	25	57.6	3	809
2079	1986	08	29.21042	22	44	05.42	-14	29	18.7	3	809
2079	1986	08	29.21597	22	44	05.06	-14	29	19.3	3	809
2079	1986	08	29.22153	22	44	04.73	-14	29	19.8	3	809
2079	1986	09	01.16215	22	41	05.67	-14	33	35.8	3	809
2079	1986	09	01.16701	22	41	05.37	-14	33	36.3	3	809
2079	1986	09	01.17187	22	41	05.09	-14	33	36.9	3	809
2079	1986	09	02.21701	22	40	01.24	-14	34	59.6	3	809
2079	1986	09	02.22187	22	40	00.94	-14	35	00.0	3	809
2079	1986	09	02.22674	22	40	00.63	-14	35	00.1	3	809
2079	1986	09	03.31076	22	38	54.33	-14	36	20.1	3	809
2079	1986	09	03.31562	22	38	53.98	-14	36	20.6	3	809

2079	1986	09	03.32049	22	38	53.75	-14	36	21.2	3 809
2079	1986	09	04.24132	22	37	57.73	-14	37	25.0	3 809
2079	1986	09	04.24618	22	37	57.45	-14	37	25.5	3 809
2079	1986	09	04.25104	22	37	57.15	-14	37	25.8	3 809
2079	1986	09	05.34305	22	36	50.70	-14	38	35.0	3 809
2079	1986	09	05.34826	22	36	50.37	-14	38	35.4	3 809
2079	1986	09	05.35312	22	36	50.06	-14	38	35.8	3 809
2079	1986	09	06.30937	22	35	52.28	-14	39	32.5	3 809
2079	1986	09	06.31424	22	35	51.98	-14	39	32.9	3 809
2079	1986	09	06.31910	22	35	51.68	-14	39	33.2	3 809
2079	1986	09	07.23437	22	34	56.73	-14	40	22.2	3 809
2079	1986	09	07.23900	22	34	56.45	-14	40	22.5	3 809
2079	1986	09	07.24386	22	34	56.15	-14	40	22.7	3 809
2079	1986	09	09.18507	22	33	00.56	-14	41	50.6	3 809
2079	1986	09	09.18993	22	33	00.28	-14	41	50.9	3 809
2079	1986	09	09.19479	22	33	00.00	-14	41	51.0	3 809
2079	1986	09	11.28576	22	30	57.27	-14	42	58.6	3 809
2079	1986	09	11.29062	22	30	56.98	-14	42	58.8	3 809
2079	1986	09	11.29549	22	30	56.70	-14	42	59.0	3 809
2131	1987	02	06.27846	09	13	51.50	-01	38	25.0	4 809
2131	1987	02	06.28888	09	13	50.20	-01	38	32.2	4 809
2184	1986	08	29.09583	21	32	11.97	-06	45	36.0	3 809
2184	1986	08	29.10139	21	32	11.76	-06	45	36.8	3 809
2184	1986	08	29.10694	21	32	11.51	-06	45	38.1	3 809
2184	1986	09	03.05972	21	28	47.29	-07	03	50.6	3 809
2184	1986	09	03.06389	21	28	47.13	-07	03	51.7	3 809
2184	1986	09	03.06805	21	28	46.97	-07	03	52.3	3 809
2203	1987	02	02.33403	11	18	48.26	+06	40	55.7	4 809
2203	1987	02	02.34444	11	18	48.04	+06	40	57.0	4 809
2203	1987	02	02.36527	11	18	47.52	+06	41	01.3	4 809
2203	1987	02	02.37569	11	18	47.28	+06	41	03.2	4 809
2203	1987	02	03.28402	11	18	21.35	+06	44	05.2	4 809
2203	1987	02	03.29444	11	18	21.02	+06	44	06.7	4 809
2203	1987	02	03.30486	11	18	20.83	+06	44	08.9	4 809
2203	1987	02	04.32395	11	17	50.95	+06	47	35.7	4 809
2203	1987	02	04.33403	11	17	50.69	+06	47	38.0	4 809
2203	1987	02	05.30208	11	17	21.43	+06	50	59.6	4 809
2203	1987	02	05.31388	11	17	21.10	+06	51	01.1	4 809
2210	1986	08	26.13750	22	28	57.62	-12	58	49.6	3 809
2210	1986	08	26.14305	22	28	57.37	-12	58	51.8	3 809
2210	1986	08	26.14861	22	28	57.09	-12	58	54.2	3 809
2210	1986	08	27.09097	22	28	16.42	-13	05	23.6	3 809
2210	1986	08	27.09653	22	28	16.17	-13	05	25.9	3 809
2210	1986	08	27.10208	22	28	15.92	-13	05	28.4	3 809
2210	1986	08	29.19167	22	26	44.43	-13	19	43.3	3 809
2210	1986	08	29.19722	22	26	44.18	-13	19	45.5	3 809
2210	1986	08	29.20278	22	26	43.94	-13	19	47.8	3 809
2210	1986	09	01.12882	22	24	36.51	-13	39	09.8	3 809
2210	1986	09	01.13403	22	24	36.26	-13	39	11.7	3 809
2210	1986	09	01.13923	22	24	36.02	-13	39	13.8	3 809
2210	1986	09	02.18385	22	23	50.64	-13	45	56.5	3 809
2210	1986	09	02.18906	22	23	50.39	-13	45	58.6	3 809
2210	1986	09	02.19427	22	23	50.16	-13	46	00.5	3 809
2210	1986	09	04.19410	22	22	25.05	-13	58	29.1	3 809
2210	1986	09	04.19896	22	22	24.82	-13	58	31.1	3 809
2210	1986	09	04.20382	22	22	24.60	-13	58	32.7	3 809
2210	1986	09	05.30799	22	21	38.21	-14	05	11.1	3 809
2210	1986	09	05.31285	22	21	37.99	-14	05	12.6	3 809
2210	1986	09	05.31771	22	21	37.79	-14	05	14.5	3 809

2210	1986	09	06.27674	22	20	58.68	-14	10	51.8	3	809
2210	1986	09	06.28160	22	20	58.46	-14	10	53.6	3	809
2210	1986	09	06.28646	22	20	58.26	-14	10	55.3	3	809
2210	1986	09	07.20035	22	20	21.79	-14	16	08.8	3	809
2210	1986	09	07.20521	22	20	21.58	-14	16	10.5	3	809
2210	1986	09	07.21042	22	20	21.39	-14	16	12.2	3	809
2210	1986	09	11.20868	22	17	50.47	-14	37	16.1	3	809
2210	1986	09	11.21354	22	17	50.28	-14	37	17.4	3	809
2210	1986	09	11.21840	22	17	50.08	-14	37	18.8	3	809
2249	1987	02	02.33403	11	14	26.73	+05	54	10.1	4	809
2249	1987	02	02.34444	11	14	26.51	+05	54	12.6	4	809
2249	1987	02	02.36527	11	14	26.01	+05	54	18.0	4	809
2249	1987	02	02.37569	11	14	25.83	+05	54	19.7	4	809
2249	1987	02	03.28402	11	14	03.68	+05	57	52.0	4	809
2249	1987	02	03.29444	11	14	03.42	+05	57	53.4	4	809
2249	1987	02	03.30486	11	14	03.23	+05	57	55.6	4	809
2249	1987	02	04.32395	11	13	37.13	+06	01	59.0	4	809
2249	1987	02	04.33403	11	13	36.92	+06	02	01.2	4	809
2249	1987	02	05.30208	11	13	11.16	+06	05	58.6	4	809
2249	1987	02	05.31388	11	13	10.91	+06	06	00.8	4	809
2356	1987	01	31.28679	09	15	08.38	-02	15	51.7	4	809
2356	1987	01	31.29930	09	15	07.84	-02	15	48.1	4	809
2356	1987	02	01.28749	09	14	25.70	-02	11	05.8	4	809
2356	1987	02	01.29861	09	14	25.22	-02	11	02.7	4	809
2356	1987	02	02.26250	09	13	44.03	-02	06	19.3	4	809
2356	1987	02	02.27499	09	13	43.46	-02	06	15.6	4	809
2356	1987	02	03.26250	09	13	00.93	-02	01	14.0	4	809
2356	1987	02	03.27360	09	13	00.43	-02	01	10.9	4	809
2356	1987	02	04.30416	09	12	15.82	-01	55	46.8	4	809
2356	1987	02	04.31458	09	12	15.37	-01	55	43.5	4	809
2356	1987	02	06.27846	09	10	50.17	-01	44	59.1	4	809
2356	1987	02	06.28888	09	10	49.69	-01	44	56.0	4	809
2432	1986	08	29.31944	23	06	05.55	-11	39	46.2	3	809
2432	1986	08	29.32500	23	06	05.22	-11	39	47.3	3	809
2432	1986	08	29.33055	23	06	04.88	-11	39	48.4	3	809
2432	1986	08	31.38728	23	04	01.84	-11	47	06.8	3	809
2432	1986	08	31.39205	23	04	01.55	-11	47	07.8	3	809
2432	1986	08	31.39683	23	04	01.25	-11	47	08.8	3	809
2432	1986	09	01.34687	23	03	03.60	-11	50	29.3	3	809
2432	1986	09	01.35174	23	03	03.30	-11	50	30.3	3	809
2432	1986	09	01.35660	23	03	03.01	-11	50	31.3	3	809
2432	1986	09	02.38958	23	01	59.75	-11	54	06.4	3	809
2432	1986	09	02.39375	23	01	59.51	-11	54	07.4	3	809
2432	1986	09	02.39791	23	01	59.26	-11	54	08.3	3	809
2478	1987	01	24.25764	09	03	59.99	+08	47	55.9	4	809
2478	1987	01	24.27846	09	03	58.64	+08	47	59.8	4	809
2478	1987	01	24.28888	09	03	58.04	+08	48	02.8	4	809
2478	1987	01	25.33542	09	02	55.35	+08	51	10.1	4	809
2478	1987	01	26.26215	09	01	59.17	+08	54	09.7	4	809
2478	1987	01	26.27291	09	01	58.49	+08	54	12.2	4	809
2478	1987	01	31.26250	08	56	47.27	+09	12	17.6	4	809
2478	1987	01	31.27360	08	56	46.54	+09	12	20.0	4	809
2478	1987	02	03.24061	08	53	38.96	+09	24	31.2	4	809
2478	1987	02	03.25208	08	53	38.14	+09	24	34.1	4	809
2525	1986	08	28.15278	22	00	22.44	-16	27	23.8	3	809
2525	1986	08	28.15833	22	00	22.18	-16	27	25.4	3	809
2525	1986	08	28.16389	22	00	21.94	-16	27	26.6	3	809
2525	1986	08	30.32361	21	58	43.54	-16	36	43.3	3	809
2525	1986	08	30.32917	21	58	43.29	-16	36	44.7	3	809

2525	1986	08	30.33472	21	58	43.03	-16	36	46.1	3 809
2525	1986	09	01.10729	21	57	24.11	-16	44	05.1	3 809
2525	1986	09	01.11215	21	57	23.88	-16	44	06.2	3 809
2525	1986	09	01.11736	21	57	23.66	-16	44	07.4	3 809
2525	1986	09	02.16632	21	56	37.41	-16	48	18.8	3 809
2525	1986	09	02.17118	21	56	37.19	-16	48	20.2	3 809
2525	1986	09	02.17604	21	56	36.95	-16	48	21.4	3 809
2525	1986	09	03.16910	21	55	53.78	-16	52	12.9	3 809
2525	1986	09	03.17396	21	55	53.57	-16	52	13.7	3 809
2525	1986	09	03.17882	21	55	53.34	-16	52	14.7	3 809
2525	1986	09	04.11423	21	55	13.27	-16	55	47.8	3 809
2525	1986	09	04.11944	21	55	13.02	-16	55	49.1	3 809
2525	1986	09	04.12465	21	55	12.78	-16	55	49.9	3 809
2525	1986	09	05.22014	21	54	26.32	-16	59	51.4	3 809
2525	1986	09	05.22500	21	54	26.08	-16	59	52.4	3 809
2525	1986	09	05.22951	21	54	25.88	-16	59	53.6	3 809
2525	1986	09	06.17951	21	53	46.53	-17	03	15.9	3 809
2525	1986	09	06.18437	21	53	46.33	-17	03	16.8	3 809
2525	1986	09	06.18924	21	53	46.12	-17	03	17.8	3 809
2525	1986	09	07.09618	21	53	09.31	-17	06	25.4	3 809
2525	1986	09	07.10104	21	53	09.09	-17	06	26.3	3 809
2525	1986	09	07.10590	21	53	08.91	-17	06	27.4	3 809
2525	1986	09	08.23576	21	52	23.51	-17	10	11.6	3 809
2525	1986	09	08.24271	21	52	23.23	-17	10	12.8	3 809
2525	1986	09	08.24965	21	52	22.95	-17	10	14.1	3 809
2525	1986	09	10.31840	21	51	03.25	-17	16	40.9	3 809
2525	1986	09	10.32326	21	51	03.08	-17	16	41.8	3 809
2525	1986	09	10.32812	21	51	02.91	-17	16	42.6	3 809
2525	1986	09	12.27465	21	49	51.91	-17	22	15.2	3 809
2525	1986	09	12.27951	21	49	51.72	-17	22	16.1	3 809
2525	1986	09	12.28437	21	49	51.53	-17	22	17.1	3 809
2553	1986	08	27.13194	22	40	10.28	-13	25	04.6	3 809
2553	1986	08	27.13750	22	40	10.04	-13	25	06.5	3 809
2553	1986	08	27.14305	22	40	09.81	-13	25	08.7	3 809
2553	1986	08	28.23472	22	39	21.96	-13	31	32.8	3 809
2553	1986	08	28.24028	22	39	21.70	-13	31	34.9	3 809
2553	1986	08	28.24583	22	39	21.42	-13	31	37.0	3 809
2553	1986	09	01.14479	22	36	29.64	-13	54	06.1	3 809
2553	1986	09	01.14965	22	36	29.43	-13	54	07.7	3 809
2553	1986	09	01.15451	22	36	29.20	-13	54	09.7	3 809
2553	1986	09	02.20035	22	35	42.76	-14	00	04.2	3 809
2553	1986	09	02.20521	22	35	42.54	-14	00	06.0	3 809
2553	1986	09	02.21007	22	35	42.34	-14	00	07.4	3 809
2553	1986	09	04.22292	22	34	13.52	-14	11	16.3	3 809
2553	1986	09	04.22778	22	34	13.30	-14	11	17.8	3 809
2553	1986	09	04.23298	22	34	13.07	-14	11	19.3	3 809
2553	1986	09	05.32396	22	33	25.07	-14	17	13.9	3 809
2553	1986	09	05.32951	22	33	24.83	-14	17	15.8	3 809
2553	1986	09	05.33507	22	33	24.59	-14	17	17.6	3 809
2553	1986	09	09.13438	22	30	40.70	-14	37	07.6	3 809
2553	1986	09	09.13923	22	30	40.48	-14	37	08.7	3 809
2553	1986	09	09.14410	22	30	40.26	-14	37	10.3	3 809
2553	1986	09	11.14896	22	29	15.93	-14	47	03.6	3 809
2553	1986	09	11.15382	22	29	15.72	-14	47	05.0	3 809
2553	1986	09	11.15868	22	29	15.51	-14	47	06.4	3 809
2553	1986	09	13.33819	22	27	46.01	-14	57	21.6	3 809
2553	1986	09	13.34236	22	27	45.84	-14	57	22.7	3 809
2553	1986	09	13.34687	22	27	45.65	-14	57	24.2	3 809
2682	1986	08	29.29740	22	57	47.58	-13	05	06.0	3 809

2682	1986	08	29.30382	22	57	47.26	-13	05	09.8	3 809
2682	1986	08	29.31024	22	57	46.93	-13	05	13.8	3 809
2682	1986	08	31.37187	22	56	08.81	-13	24	19.0	3 809
2682	1986	08	31.37674	22	56	08.58	-13	24	21.9	3 809
2682	1986	08	31.38160	22	56	08.34	-13	24	24.6	3 809
2682	1986	09	01.32882	22	55	22.88	-13	33	04.1	3 809
2682	1986	09	01.33368	22	55	22.62	-13	33	07.1	3 809
2682	1986	09	01.33854	22	55	22.37	-13	33	09.9	3 809
2682	1986	09	02.37569	22	54	32.10	-13	42	30.8	3 809
2682	1986	09	02.37986	22	54	31.90	-13	42	32.8	3 809
2682	1986	09	02.38403	22	54	31.69	-13	42	34.9	3 809
2682	1986	09	04.32917	22	52	57.45	-13	59	47.0	3 809
2682	1986	09	04.33472	22	52	57.17	-13	59	50.1	3 809
2682	1986	09	04.34028	22	52	56.89	-13	59	52.7	3 809
2682	1986	09	06.38009	22	51	18.07	-14	17	17.7	3 809
2682	1986	09	06.38426	22	51	17.88	-14	17	19.6	3 809
2682	1986	09	06.38843	22	51	17.67	-14	17	21.4	3 809
2682	1986	09	07.30868	22	50	33.54	-14	25	00.4	3 809
2682	1986	09	07.31354	22	50	33.31	-14	25	02.9	3 809
2682	1986	09	07.31840	22	50	33.10	-14	25	05.5	3 809
2682	1986	09	07.34062	22	50	31.99	-14	25	15.7	3 809
2682	1986	09	07.34549	22	50	31.76	-14	25	18.0	3 809
2682	1986	09	07.35035	22	50	31.55	-14	25	20.1	3 809
2682	1986	09	09.35347	22	48	56.43	-14	41	23.4	3 809
2682	1986	09	09.35868	22	48	56.21	-14	41	25.8	3 809
2682	1986	09	09.36389	22	48	55.98	-14	41	28.1	3 809
2682	1986	09	11.35868	22	47	23.54	-14	56	36.9	3 809
2682	1986	09	11.36354	22	47	23.33	-14	56	39.2	3 809
2682	1986	09	11.36840	22	47	23.13	-14	56	41.3	3 809
2722	1987	02	02.33403	11	15	05.26	+05	50	30.5	4 809
2722	1987	02	02.34444	11	15	05.03	+05	50	33.8	4 809
2722	1987	02	02.36527	11	15	04.65	+05	50	36.6	4 809
2722	1987	02	02.37569	11	15	04.47	+05	50	38.6	4 809
2722	1987	02	03.28402	11	14	42.57	+05	53	34.7	4 809
2722	1987	02	03.29444	11	14	42.26	+05	53	37.3	4 809
2722	1987	02	03.30486	11	14	42.04	+05	53	38.6	4 809
2722	1987	02	04.32395	11	14	16.19	+05	57	02.0	4 809
2722	1987	02	04.33403	11	14	15.93	+05	57	04.5	4 809
2722	1987	02	05.30208	11	13	50.27	+06	00	25.6	4 809
2722	1987	02	05.31388	11	13	50.02	+06	00	27.3	4 809
2756	1986	08	26.15833	21	42	28.74	-18	06	39.7	3 809
2756	1986	08	26.16389	21	42	28.44	-18	06	40.8	3 809
2756	1986	08	26.16944	21	42	28.12	-18	06	41.6	3 809
2756	1986	08	27.05555	21	41	37.96	-18	07	51.8	3 809
2756	1986	08	27.06111	21	41	37.64	-18	07	52.5	3 809
2756	1986	08	27.06667	21	41	37.30	-18	07	53.1	3 809
2756	1986	08	29.12847	21	39	41.90	-18	10	16.5	3 809
2756	1986	08	29.13403	21	39	41.58	-18	10	16.8	3 809
2756	1986	08	29.13958	21	39	41.26	-18	10	16.9	3 809
2756	1986	09	01.03472	21	37	05.09	-18	12	47.4	3 809
2756	1986	09	01.03993	21	37	04.81	-18	12	47.7	3 809
2756	1986	09	01.04479	21	37	04.54	-18	12	47.9	3 809
2756	1986	09	02.06007	21	36	11.46	-18	13	26.3	3 809
2756	1986	09	02.06493	21	36	11.21	-18	13	26.5	3 809
2756	1986	09	02.06979	21	36	10.95	-18	13	26.7	3 809
2756	1986	09	02.08576	21	36	10.09	-18	13	27.0	3 809
2756	1986	09	02.09062	21	36	09.84	-18	13	27.2	3 809
2756	1986	09	02.09549	21	36	09.59	-18	13	27.4	3 809
2756	1986	09	04.03437	21	34	31.57	-18	14	17.9	3 809

2756	1986	09	04.03924	21	34	31.33	-18	14	18.1		3 809
2756	1986	09	04.04410	21	34	31.09	-18	14	18.2		3 809
2756	1986	09	06.02743	21	32	55.29	-18	14	38.8		3 809
2756	1986	09	06.03299	21	32	55.02	-18	14	39.0		3 809
2756	1986	09	06.03785	21	32	54.77	-18	14	39.2		3 809
2756	1986	09	08.03299	21	31	23.63	-18	14	28.0		3 809
2756	1986	09	08.03785	21	31	23.40	-18	14	27.8		3 809
2756	1986	09	08.04271	21	31	23.18	-18	14	27.5		3 809
2756	1986	09	10.13576	21	29	53.40	-18	13	41.3		3 809
2756	1986	09	10.14062	21	29	53.19	-18	13	41.0		3 809
2756	1986	09	10.14549	21	29	53.00	-18	13	40.6		3 809
2758	1986	08	26.11736	21	54	51.04	-13	18	53.9		3 809
2758	1986	08	26.12291	21	54	50.73	-13	18	55.3		3 809
2758	1986	08	26.12847	21	54	50.43	-13	18	56.5		3 809
2758	1986	09	08.09479	21	42	52.51	-13	56	08.2		3 809
2758	1986	09	08.09965	21	42	52.25	-13	56	08.7		3 809
2758	1986	09	08.10451	21	42	52.00	-13	56	09.3		3 809
2758	1986	09	10.18993	21	41	10.60	-14	00	38.8		3 809
2758	1986	09	10.19479	21	41	10.36	-14	00	39.3		3 809
2758	1986	09	10.19965	21	41	10.11	-14	00	39.9		3 809
2758	1986	09	12.15729	21	39	40.71	-14	04	25.8		3 809
2758	1986	09	12.16215	21	39	40.48	-14	04	26.5		3 809
2758	1986	09	12.16704	21	39	40.26	-14	04	27.0		3 809
2798	1986	08	29.09583	21	26	41.14	-05	51	12.5		3 809
2798	1986	08	29.10139	21	26	40.85	-05	51	14.3		3 809
2798	1986	08	29.10694	21	26	40.59	-05	51	16.3		3 809
2798	1986	09	03.05972	21	22	50.46	-06	21	05.9		3 809
2798	1986	09	03.06389	21	22	50.28	-06	21	07.3		3 809
2798	1986	09	03.06805	21	22	50.08	-06	21	08.7		3 809
2798	1986	09	05.02743	21	21	26.44	-06	32	56.3		3 809
2798	1986	09	05.03229	21	21	26.23	-06	32	57.8		3 809
2798	1986	09	05.03715	21	21	26.04	-06	32	59.6		3 809
2798	1986	09	07.04757	21	20	05.15	-06	44	58.1		3 809
2798	1986	09	07.05243	21	20	04.96	-06	44	59.7		3 809
2798	1986	09	07.05729	21	20	04.79	-06	45	01.6		3 809
2798	1986	09	09.03437	21	18	50.71	-06	56	40.0		3 809
2798	1986	09	09.03924	21	18	50.54	-06	56	41.5		3 809
2798	1986	09	09.04410	21	18	50.37	-06	56	43.1		3 809
2798	1986	09	10.10694	21	18	12.69	-07	02	54.5		3 809
2798	1986	09	10.11111	21	18	12.53	-07	02	55.8		3 809
2798	1986	09	10.11528	21	18	12.37	-07	02	57.1		3 809
2798	1986	09	12.05174	21	17	08.56	-07	14	02.8		3 809
2798	1986	09	12.05521	21	17	08.45	-07	14	03.8		3 809
2798	1986	09	12.06076	21	17	08.27	-07	14	05.5		3 809
2798	1986	09	13.02743	21	16	38.68	-07	19	31.3		3 809
2798	1986	09	13.03125	21	16	38.56	-07	19	32.8		3 809
2798	1986	09	13.03507	21	16	38.43	-07	19	33.6		3 809
2911	1986	09	07.32465	22	47	04.55	-10	57	13.6	17.0	3 809
2911	1986	09	07.32951	22	47	04.33	-10	57	15.6		3 809
2911	1986	09	07.33437	22	47	04.11	-10	57	17.7		3 809
2911	1986	09	09.33403	22	45	34.13	-11	11	58.1		3 809
2911	1986	09	09.33958	22	45	33.88	-11	12	00.5		3 809
2911	1986	09	09.34514	22	45	33.64	-11	12	03.0		3 809
2911	1986	09	11.33993	22	44	05.27	-11	26	23.3		3 809
2911	1986	09	11.34479	22	44	04.99	-11	26	25.4		3 809
2911	1986	09	11.34965	22	44	04.89	-11	26	27.6		3 809
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2911	1986	09	13.36180	22	42	37.23	-11	40	34.8		3 809
2911	1986	09	13.36597	22	42	37.06	-11	40	36.4		3 809

2911	1986	09	14.37708	22	41	53.79	-11	47	33.1	3 809
2911	1986	09	14.38125	22	41	53.62	-11	47	34.8	3 809
2911	1986	09	14.38541	22	41	53.43	-11	47	36.5	3 809
2929	1987	01	26.04514	06	39	58.24	+10	51	50.7	4 809
2929	1987	01	26.05625	06	39	57.81	+10	51	52.7	4 809
2929	1987	01	26.06667	06	39	57.43	+10	51	57.9	4 809
2929	1987	01	29.07708	06	38	03.05	+11	10	30.1	4 809
2929	1987	01	29.08750	06	38	02.62	+11	10	34.5	4 809
3009	1986	08	26.17778	22	48	34.69	-13	57	59.6	3 809
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3009	1986	08	26.18889	22	48	34.07	-13	58	00.4	3 809
3009	1986	08	27.11181	22	47	42.95	-13	58	56.3	3 809
3009	1986	08	27.11736	22	47	42.64	-13	58	56.7	3 809
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3009	1986	08	29.22153	22	45	43.23	-14	00	51.2	3 809
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3009	1986	09	03.32049	22	40	50.72	-14	03	35.9	3 809
3009	1986	09	04.24132	22	39	58.56	-14	03	46.4	3 809
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3009	1986	09	05.38646	22	38	53.45	-14	03	47.2	3 809
3009	1986	09	06.30937	22	38	02.06	-14	03	41.3	3 809
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3019	1986	08	28.20278	22	16	17.38	-14	41	38.1	3 809
3019	1986	09	01.27951	22	13	02.15	-15	01	59.6	3 809
3019	1986	09	01.28437	22	13	01.91	-15	02	01.2	3 809
3019	1986	09	01.28924	22	13	01.67	-15	02	02.3	3 809

3019	1986	09	02.33021	22	12	12.45	-15	07	02.6	3 809
3019	1986	09	02.33507	22	12	12.23	-15	07	03.5	3 809
3019	1986	09	02.33993	22	12	12.00	-15	07	05.1	3 809
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3019	1986	09	03.19618	22	11	32.01	-15	11	09.8	3 809
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3019	1986	09	04.14549	22	10	47.81	-15	15	35.0	3 809
3019	1986	09	05.23785	22	09	57.23	-15	20	34.4	3 809
3019	1986	09	05.24340	22	09	56.97	-15	20	36.1	3 809
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3019	1986	09	07.11354	22	08	32.33	-15	28	52.8	3 809
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3032	1986	08	26.17778	22	45	37.17	-13	02	17.7	3 809
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3032	1986	08	26.18889	22	45	36.62	-13	02	21.2	3 809
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3032	1986	09	03.31076	22	39	12.82	-13	44	32.9	3 809
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3032	1986	09	03.32049	22	39	12.39	-13	44	35.3	3 809
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3032	1986	09	04.25104	22	38	28.15	-13	49	11.5	3 809
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3032	1986	09	05.38646	22	37	34.09	-13	54	42.6		3 809
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3032	1986	09	06.31424	22	36	50.32	-13	59	07.9		3 809
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3055	1986	08	29.38055	23	36	56.46	-11	21	40.6		3 809
3055	1986	09	01.37951	23	33	58.73	-11	23	50.4		3 809
3055	1986	09	01.38437	23	33	58.42	-11	23	50.6		3 809
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Observers F. P. Vieira, J. A. de Campos, J. A. Fernandez
Measurers J. F. Caldeira, E. R. Netto, G. G. Vieira
0.40-m f/5 astrograph
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887 Ojima
T. Urata, 1-8-303, 1 Chome, Dobayashi, Shimizu, Shizuoka 424, Japan
Observer T. Niijima
Measurer M. Kizawa
0.30-m f/5.8 reflector
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1986 DA 1986 03 12.59896 10 19 07.23 +33 01 59.0 887

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2	1984 09 20.97465	22 34 23.67	-01 11 46.8			983
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2	1984	10	18.90035	22	22	05.28	-06	41	58.2	983
2	1984	10	18.90521	22	22	05.21	-06	42	01.1	983
2	1984	11	20.77639	22	28	00.38	-10	20	56.1	983
2	1984	11	20.78125	22	28	00.52	-10	20	57.3	983
2	1984	11	20.78611	22	28	00.67	-10	20	58.5	983
2	1985	11	19.13160	06	21	49.11	-28	59	50.1	983
2	1985	11	19.13576	06	21	49.04	-28	59	53.6	983
2	1985	11	19.13993	06	21	48.97	-28	59	57.0	983
2	1985	12	14.00903	06	07	59.55	-32	53	02.5	983
2	1985	12	14.01389	06	07	59.30	-32	53	03.7	983
2	1985	12	14.01875	06	07	59.05	-32	53	04.7	983
3	1978	05	30.09913	20	28	02.49	-04	21	17.9	983
3	1978	05	30.10330	20	28	02.49	-04	21	16.9	983
3	1978	05	30.10747	20	28	02.48	-04	21	16.4	983
3	1978	08	01.97535	19	52	36.10	-05	42	50.4	983
3	1978	08	01.97951	19	52	35.88	-05	42	51.8	983
3	1978	08	01.98368	19	52	35.67	-05	42	53.4	983
3	1978	08	03.97813	19	50	54.24	-05	55	21.2	983
3	1978	08	03.98229	19	50	54.02	-05	55	22.7	983
3	1978	08	03.98646	19	50	53.79	-05	55	24.5	983
3	1978	08	29.93385	19	34	23.79	-08	59	13.7	983
3	1978	08	29.93837	19	34	23.67	-08	59	16.0	983
3	1978	08	29.94288	19	34	23.56	-08	59	17.8	983
3	1978	09	05.90330	19	32	29.83	-09	49	10.6	983
3	1978	09	05.90781	19	32	29.77	-09	49	12.6	983
3	1978	09	05.91233	19	32	29.70	-09	49	14.4	983
3	1983	10	11.04618	02	21	00.76	-01	08	30.9	983
3	1983	10	11.05035	02	21	00.65	-01	08	34.1	983
3	1983	10	11.05451	02	21	00.52	-01	08	37.7	983
3	1983	11	26.92674	01	55	53.20	-07	37	56.8	983
3	1983	11	26.93090	01	55	53.14	-07	37	56.9	983
3	1983	11	26.93507	01	55	53.09	-07	37	56.8	983
3	1983	11	28.92049	01	55	35.28	-07	37	40.8	983
3	1983	11	28.92465	01	55	35.24	-07	37	40.8	983
3	1983	11	28.92882	01	55	35.21	-07	37	40.4	983
3	1983	11	29.89132	01	55	29.17	-07	37	02.4	983
3	1983	11	29.89583	01	55	29.13	-07	37	02.0	983
3	1983	11	29.90035	01	55	29.08	-07	37	01.8	983
3	1984	01	04.81285	02	11	17.51	-04	07	19.0	983
3	1984	01	04.81701	02	11	17.70	-04	07	16.7	983
3	1984	01	04.82118	02	11	17.94	-04	07	14.3	983
3	1985	03	16.02292	12	32	25.37	+01	20	49.1	983
3	1985	03	16.02778	12	32	25.15	+01	20	51.8	983
3	1985	03	16.03264	12	32	24.92	+01	20	54.6	983
3	1985	04	15.97326	12	09	13.22	+05	33	48.3	983
3	1985	04	15.97882	12	09	13.01	+05	33	50.3	983
3	1985	04	15.98438	12	09	12.78	+05	33	52.4	983
3	1985	05	09.91007	11	59	49.79	+07	11	04.5	983
3	1985	05	09.91562	11	59	49.73	+07	11	04.8	983
3	1985	05	09.92118	11	59	49.68	+07	11	05.4	983
4	1978	05	30.04531	16	58	16.47	-15	32	10.4	983
4	1978	05	30.04878	16	58	16.27	-15	32	10.2	983
4	1978	05	30.05226	16	58	16.04	-15	32	10.6	983
4	1978	06	07.00713	16	50	11.75	-15	48	40.9	983
4	1978	06	07.01095	16	50	11.51	-15	48	41.1	983
4	1978	06	07.01442	16	50	11.27	-15	48	42.0	983
4	1978	08	07.89201	16	29	58.30	-20	11	49.3	983
4	1978	08	07.89618	16	29	58.45	-20	11	50.4	983
4	1978	08	07.90035	16	29	58.58	-20	11	51.9	983

4	1983	10	16.18785	05	51	29.36	+17	58	46.5	983
4	1983	10	16.19201	05	51	29.42	+17	58	46.5	983
4	1983	10	16.19618	05	51	29.48	+17	58	46.4	983
4	1984	01	24.86354	04	46	03.65	+20	00	06.7	983
4	1984	01	24.86771	04	46	03.60	+20	00	07.4	983
4	1984	01	24.87188	04	46	03.52	+20	00	08.2	983
4	1985	03	19.16111	14	23	27.18	-01	51	02.3	983
4	1985	03	19.16597	14	23	27.05	-01	51	00.5	983
4	1985	03	19.17083	14	23	26.98	-01	50	59.0	983
4	1985	05	09.97049	13	44	05.23	+01	49	04.2	983
4	1985	05	09.97483	13	44	05.03	+01	49	04.4	983
4	1985	05	09.97934	13	44	04.80	+01	49	04.8	983
5	1983	03	09.97708	10	38	47.64	+12	22	43.3	983
5	1983	03	09.98194	10	38	47.40	+12	22	45.7	983
5	1983	03	09.98681	10	38	47.18	+12	22	47.9	983
5	1983	03	14.96667	10	35	16.74	+12	57	57.9	983
5	1983	03	14.97153	10	35	16.52	+12	57	59.8	983
5	1983	03	14.97639	10	35	16.32	+12	58	02.1	983
5	1983	04	04.94410	10	26	41.38	+14	28	44.0	983
5	1983	04	04.95104	10	26	41.30	+14	28	44.6	983
5	1983	04	04.95799	10	26	41.23	+14	28	45.4	983
5	1983	04	05.88576	10	26	35.71	+14	30	25.4	983
5	1983	04	05.89271	10	26	35.67	+14	30	25.8	983
5	1983	04	05.89688	10	26	35.62	+14	30	26.3	983
5	1983	04	07.92604	10	26	28.54	+14	33	23.1	983
5	1983	04	07.93160	10	26	28.53	+14	33	23.5	983
5	1983	04	07.93715	10	26	28.50	+14	33	24.1	983
5	1983	04	08.91771	10	26	27.83	+14	34	28.9	983
5	1983	04	08.92326	10	26	27.83	+14	34	29.0	983
5	1983	04	08.92882	10	26	27.81	+14	34	29.6	983
5	1984	07	03.02917	18	56	57.91	-17	40	49.0	983
5	1984	07	03.03542	18	56	57.53	-17	40	49.9	983
5	1984	07	03.04167	18	56	57.18	-17	40	50.8	983
5	1984	08	23.94201	18	24	28.80	-19	53	23.2	983
5	1984	08	23.94896	18	24	28.73	-19	53	24.3	983
5	1984	08	23.95590	18	24	28.72	-19	53	24.8	983
5	1985	11	13.87465	23	34	34.66	-08	17	20.9	983
5	1985	11	13.88160	23	34	34.63	-08	17	21.0	983
5	1985	11	13.88854	23	34	34.65	-08	17	20.5	983
6	1978	02	03.08056	11	04	54.78	+11	49	09.3	983
6	1978	02	03.08542	11	04	54.60	+11	49	12.2	983
6	1978	02	03.09028	11	04	54.43	+11	49	15.0	983
6	1978	02	14.09306	10	57	14.24	+13	41	57.4	983
6	1978	02	14.09792	10	57	14.01	+13	42	00.7	983
6	1978	02	14.10278	10	57	13.78	+13	42	03.8	983
6	1978	03	07.06285	10	38	58.86	+17	12	54.2	983
6	1978	03	07.06701	10	38	58.65	+17	12	56.1	983
6	1978	03	07.07118	10	38	58.42	+17	12	58.7	983
6	1978	03	11.02049	10	35	35.15	+17	46	57.3	983
6	1978	03	11.02465	10	35	34.94	+17	46	59.3	983
6	1978	03	11.02882	10	35	34.72	+17	47	01.3	983
6	1978	03	16.10035	10	31	29.20	+18	26	22.9	983
6	1978	03	16.10451	10	31	29.00	+18	26	24.7	983
6	1978	03	16.10868	10	31	28.81	+18	26	26.3	983
6	1978	04	13.00521	10	18	00.58	+20	25	48.5	983
6	1978	04	13.00937	10	18	00.54	+20	25	48.6	983
6	1978	04	13.01354	10	18	00.49	+20	25	49.0	983
6	1978	05	29.95000	10	35	00.67	+18	44	33.1	983
6	1978	05	29.95486	10	35	00.91	+18	44	31.5	983

6	1978	05	29.95972	10	35	01.13	+18	44	29.9	983
6	1978	05	31.94792	10	36	35.80	+18	34	39.8	983
6	1978	05	31.95278	10	36	36.01	+18	34	38.2	983
6	1978	05	31.95764	10	36	36.26	+18	34	36.7	983
6	1983	07	07.97326	17	21	11.08	-05	03	15.0	983
6	1983	07	07.97743	17	21	10.86	-05	03	16.6	983
6	1983	07	07.98160	17	21	10.64	-05	03	18.2	983
6	1983	07	11.97465	17	18	01.04	-05	29	12.2	983
6	1983	07	11.97882	17	18	00.87	-05	29	13.7	983
6	1983	07	11.98299	17	18	00.68	-05	29	15.5	983
6	1984	11	03.14931	06	48	33.22	+04	12	00.2	983
6	1984	11	03.15417	06	48	33.28	+04	11	59.0	983
6	1984	11	03.15903	06	48	33.35	+04	11	57.7	983
6	1984	11	23.12604	06	47	10.12	+03	19	58.9	983
6	1984	11	23.13021	06	47	10.02	+03	19	58.6	983
6	1984	11	23.13438	06	47	09.90	+03	19	58.3	983
6	1984	12	26.96632	06	18	39.84	+05	07	05.9	983
6	1984	12	26.97049	06	18	39.58	+05	07	07.7	983
6	1984	12	26.97465	06	18	39.29	+05	07	09.5	983
6	1985	01	14.93611	06	00	52.89	+07	54	15.5	983
6	1985	01	14.94097	06	00	52.68	+07	54	18.4	983
6	1985	01	14.94583	06	00	52.45	+07	54	21.1	983
7	1978	02	03.03299	10	05	14.11	+02	50	11.9	983
7	1978	02	03.03715	10	05	13.85	+02	50	12.7	983
7	1978	02	03.04132	10	05	13.60	+02	50	13.5	983
7	1978	02	14.06979	09	54	04.06	+03	32	49.0	983
7	1978	02	14.07396	09	54	03.79	+03	32	50.1	983
7	1978	02	14.07813	09	54	03.53	+03	32	51.4	983
7	1978	03	07.04201	09	34	25.42	+05	20	08.9	983
7	1978	03	07.04618	09	34	25.24	+05	20	10.1	983
7	1978	03	07.05035	09	34	25.03	+05	20	11.3	983
7	1978	03	11.00104	09	31	37.17	+05	40	09.2	983
7	1978	03	11.00521	09	31	36.98	+05	40	10.5	983
7	1978	03	11.00937	09	31	36.82	+05	40	11.5	983
7	1978	03	16.08160	09	28	37.45	+06	04	18.1	983
7	1978	03	16.08576	09	28	37.32	+06	04	19.3	983
7	1978	03	16.08993	09	28	37.18	+06	04	20.5	983
7	1978	04	12.96215	09	25	16.70	+07	28	39.0	983
7	1978	04	12.96632	09	25	16.75	+07	28	39.4	983
7	1978	04	12.97049	09	25	16.83	+07	28	39.8	983
7	1978	05	29.92708	09	59	01.29	+06	20	20.4	983
7	1978	05	29.93194	09	59	01.60	+06	20	19.1	983
7	1978	05	29.93681	09	59	01.88	+06	20	18.1	983
7	1978	05	31.92847	10	01	09.16	+06	12	17.9	983
7	1978	05	31.93333	10	01	09.47	+06	12	16.5	983
7	1978	05	31.93819	10	01	09.77	+06	12	15.6	983
7	1983	07	04.94028	17	07	19.86	-21	49	19.3	983
7	1983	07	04.94514	17	07	19.59	-21	49	18.5	983
7	1983	07	04.95000	17	07	19.32	-21	49	17.6	983
7	1983	07	07.94097	17	04	47.41	-21	41	18.4	983
7	1983	07	07.94583	17	04	47.17	-21	41	17.6	983
7	1983	07	07.95069	17	04	46.93	-21	41	17.1	983
7	1983	07	11.93333	17	01	42.93	-21	31	04.8	983
7	1983	07	11.93819	17	01	42.72	-21	31	03.8	983
7	1983	07	11.94306	17	01	42.49	-21	31	03.4	983
7	1984	11	03.13229	05	52	25.16	+25	52	35.7	983
7	1984	11	03.13646	05	52	25.15	+25	52	34.9	983
7	1984	11	03.14063	05	52	25.18	+25	52	33.7	983
7	1984	11	23.11285	05	46	16.37	+24	33	01.9	983

7		1984	11	23.11701	05	46	16.18	+24 33 00.7	983
7		1984	11	23.12118	05	46	15.98	+24 32 59.6	983
7		1984	12	26.95035	05	13	46.83	+21 31 57.3	983
7		1984	12	26.95451	05	13	46.60	+21 31 56.4	983
7		1984	12	26.95868	05	13	46.40	+21 31 55.2	983
7		1985	01	14.92014	05	03	48.06	+20 13 32.8	983
7		1985	01	14.92500	05	03	48.01	+20 13 32.0	983
7		1985	01	14.92986	05	03	47.94	+20 13 31.0	983
8		1983	06	01.93299	14	25	00.67	-05 54 34.1	983
8		1983	06	01.93854	14	25	00.45	-05 54 33.8	983
8		1983	06	01.94410	14	25	00.20	-05 54 34.0	983
8		1984	09	05.09340	01	51	44.23	+00 25 59.4	983
8		1984	09	05.09757	01	51	44.26	+00 25 58.3	983
8		1984	09	05.10174	01	51	44.29	+00 25 57.1	983
8		1984	10	26.97882	01	22	21.17	-04 32 39.7	983
8		1984	10	26.98299	01	22	20.95	-04 32 40.2	983
8		1984	10	26.98715	01	22	20.72	-04 32 40.8	983
8		1984	11	19.92049	01	09	45.37	-03 54 02.9	983
8		1984	11	19.92465	01	09	45.32	-03 54 01.3	983
8		1984	11	19.92882	01	09	45.27	-03 54 00.3	983
8		1984	12	17.88750	01	19	08.24	-00 05 33.4	983
8		1984	12	17.89375	01	19	08.47	-00 05 29.5	983
8		1984	12	17.89861	01	19	08.71	-00 05 26.4	983
9		1984	01	13.24618	12	27	34.49	+04 42 50.5	983
9		1984	01	13.25174	12	27	34.67	+04 42 49.8	983
9		1984	01	13.25729	12	27	34.88	+04 42 49.8	983
9		1984	03	02.02431	12	23	20.31	+07 10 27.5	983
9		1984	03	02.02917	12	23	20.05	+07 10 29.6	983
9		1984	03	02.03403	12	23	19.82	+07 10 31.0	983
9		1984	03	30.95208	11	56	43.09	+09 43 37.9	983
9		1984	03	30.95694	11	56	42.83	+09 43 39.2	983
9		1984	03	30.96181	11	56	42.56	+09 43 39.9	983
9		1984	04	04.97847	11	52	19.53	+09 59 05.4	983
9		1984	04	04.98333	11	52	19.26	+09 59 06.1	983
9		1984	04	04.98819	11	52	19.02	+09 59 06.9	983
10		1983	04	05.98733	13	38	02.95	-16 24 02.5	983
10		1983	04	05.99184	13	38	02.76	-16 24 01.6	983
10		1983	04	05.99635	13	38	02.54	-16 24 00.3	983
10		1983	04	08.98194	13	35	50.37	-16 12 45.0	983
10		1983	04	08.98681	13	35	50.13	-16 12 43.4	983
10		1983	04	08.99167	13	35	49.92	-16 12 42.5	983
10		1983	05	02.93333	13	18	04.76	-14 19 27.8	983
10		1983	05	02.93819	13	18	04.55	-14 19 26.5	983
10		1983	05	02.94306	13	18	04.36	-14 19 25.0	983
10		1984	07	03.05556	21	07	39.77	-14 27 20.3	983
10		1984	07	03.06042	21	07	39.63	-14 27 20.6	983
10		1984	07	03.06528	21	07	39.48	-14 27 20.9	983
10		1984	07	08.10000	21	04	57.92	-14 31 19.6	983
10		1984	07	08.10486	21	04	57.75	-14 31 20.0	983
10		1984	07	08.10972	21	04	57.58	-14 31 20.4	983
10		1984	08	23.96458	20	30	25.03	-15 58 37.1	983
10		1984	08	23.96944	20	30	24.85	-15 58 37.6	983
10		1984	08	23.97431	20	30	24.66	-15 58 38.1	983
10		1984	08	27.93125	20	28	10.39	-16 05 02.3	983
10		1984	08	27.93611	20	28	10.21	-16 05 02.5	983
10		1984	08	27.94097	20	28	10.04	-16 05 03.0	983
10		1984	09	18.87882	20	21	45.99	-16 24 32.6	983
10		1984	09	18.88438	20	21	45.95	-16 24 32.7	983
10		1984	09	18.88993	20	21	45.97	-16 24 32.9	983

10	1984	09	20.87604	20	21	43.55	-16	24	48.3	983
10	1984	09	20.88160	20	21	43.55	-16	24	48.4	983
10	1984	09	20.88715	20	21	43.54	-16	24	48.7	983
10	1985	11	13.96111	01	05	26.77	+12	21	30.5	983
10	1985	11	13.96736	01	05	26.57	+12	21	28.7	983
10	1985	11	13.97361	01	05	26.39	+12	21	27.2	983
10	1985	12	06.88507	00	59	27.73	+11	11	54.8	983
10	1985	12	06.89167	00	59	27.71	+11	11	53.8	983
10	1985	12	06.89792	00	59	27.68	+11	11	53.3	983
11	1978	12	04.99097	04	01	28.06	+13	59	08.3	983
11	1978	12	04.99583	04	01	27.76	+13	59	08.0	983
11	1978	12	05.00069	04	01	27.47	+13	59	07.8	983
11	1978	12	22.91736	03	46	45.53	+13	55	02.9	983
11	1978	12	22.92222	03	46	45.31	+13	55	03.3	983
11	1978	12	22.92708	03	46	45.14	+13	55	03.3	983
11	1978	12	27.90417	03	44	02.76	+13	59	56.1	983
11	1978	12	27.90903	03	44	02.61	+13	59	56.2	983
11	1978	12	27.91389	03	44	02.45	+13	59	56.6	983
11	1983	01	07.97708	05	01	32.60	+18	24	13.1	983
11	1983	01	07.98194	05	01	32.40	+18	24	13.3	983
11	1983	01	07.98681	05	01	32.17	+18	24	13.8	983
11	1983	02	09.86285	04	54	40.64	+19	35	09.4	983
11	1983	02	09.86840	04	54	40.72	+19	35	10.6	983
11	1983	02	09.87396	04	54	40.80	+19	35	11.1	983
11	1984	03	02.04063	12	34	51.88	+02	24	04.0	983
11	1984	03	02.04618	12	34	51.65	+02	24	06.2	983
11	1984	03	02.05174	12	34	51.46	+02	24	08.3	983
11	1984	03	30.96875	12	11	35.29	+05	41	45.5	983
11	1984	03	30.97361	12	11	35.03	+05	41	47.2	983
11	1984	03	30.97847	12	11	34.77	+05	41	49.0	983
11	1984	04	04.99375	12	07	16.36	+06	11	40.9	983
11	1984	04	04.99861	12	07	16.10	+06	11	42.5	983
11	1984	04	05.00347	12	07	15.88	+06	11	43.9	983
11	1985	10	16.85174	21	25	28.04	-19	09	44.2	983
11	1985	10	16.85729	21	25	28.23	-19	09	43.4	983
11	1985	10	16.86285	21	25	28.42	-19	09	42.5	983
12	1983	12	13.11354	08	32	10.47	+08	52	37.4	983
12	1983	12	13.12049	08	32	10.29	+08	52	36.4	983
12	1983	12	13.12743	08	32	10.10	+08	52	35.4	983
12	1983	12	14.10388	08	31	45.52	+08	50	05.2	983
12	1983	12	14.11076	08	31	45.34	+08	50	03.6	983
12	1983	12	14.11771	08	31	45.15	+08	50	02.5	983
12	1985	03	19.18299	15	09	01.33	-23	07	36.2	983
12	1985	03	19.18993	15	09	01.42	-23	07	36.0	983
12	1985	03	19.19688	15	09	01.48	-23	07	35.9	983
12	1985	05	10.95486	14	41	33.46	-18	14	14.6	983
12	1985	05	10.95972	14	41	33.18	-18	14	11.3	983
12	1985	05	10.96458	14	41	32.87	-18	14	08.9	983
12	1985	06	07.89028	14	22	03.18	-13	57	36.2	983
12	1985	06	07.89514	14	22	03.10	-13	57	34.0	983
12	1985	06	07.90000	14	22	02.97	-13	57	31.8	983
13	1983	12	13.15313	09	07	20.33	+40	04	10.1	983
13	1983	12	13.15868	09	07	20.35	+40	04	13.5	983
13	1983	12	13.16424	09	07	20.39	+40	04	17.0	983
13	1983	12	14.14410	09	07	27.58	+40	14	27.1	983
13	1983	12	14.14965	09	07	27.65	+40	14	30.6	983
13	1983	12	14.15521	09	07	27.65	+40	14	33.8	983
13	1984	03	27.84861	08	08	30.89	+41	35	40.0	983
13	1984	03	27.88681	08	08	32.27	+41	35	16.4	983

13	1984	03	27.89653	08	08	32.62	+41	35	10.4	983
13	1985	05	21.07014	16	17	39.77	-31	35	23.9	983
13	1985	05	21.07639	16	17	39.32	-31	35	25.1	983
13	1985	05	21.08264	16	17	38.91	-31	35	26.5	983
13	1985	06	07.95764	15	56	41.69	-32	16	39.9	983
13	1985	06	07.96389	15	56	41.27	-32	16	40.3	983
13	1985	06	07.97014	15	56	40.84	-32	16	40.7	983
13	1985	06	20.90000	15	44	05.63	-32	22	12.8	983
13	1985	06	20.90625	15	44	05.34	-32	22	13.1	983
13	1985	06	20.91250	15	44	05.00	-32	22	12.9	983
14	1984	03	30.98542	14	00	13.11	+03	54	22.6	983
14	1984	03	30.99028	14	00	12.90	+03	54	23.9	983
14	1984	03	30.99514	14	00	12.70	+03	54	24.9	983
14	1984	04	05.03576	13	56	20.76	+04	15	25.5	983
14	1984	04	05.03993	13	56	20.55	+04	15	26.5	983
14	1984	04	05.04410	13	56	20.34	+04	15	27.5	983
14	1984	05	04.93576	13	30	52.22	+04	48	25.0	983
14	1984	05	04.93993	13	30	52.01	+04	48	24.5	983
14	1984	05	04.94479	13	30	51.80	+04	48	23.9	983
14	1984	05	22.90278	13	22	10.13	+03	32	04.6	983
14	1984	05	22.90764	13	22	10.01	+03	32	02.8	983
14	1984	05	22.91250	13	22	09.97	+03	32	01.1	983
14	1984	05	25.87917	13	21	34.23	+03	13	14.1	983
14	1984	05	25.88403	13	21	34.19	+03	13	12.4	983
14	1984	05	25.88889	13	21	34.13	+03	13	10.3	983
14	1985	10	07.86354	21	35	16.15	-25	55	15.8	983
14	1985	10	07.87049	21	35	16.11	-25	55	14.8	983
14	1985	10	07.87743	21	35	16.04	-25	55	13.8	983
14	1985	11	07.81007	21	43	34.42	-23	49	30.9	983
14	1985	11	07.81701	21	43	34.65	-23	49	28.8	983
14	1985	11	07.82465	21	43	34.93	-23	49	26.3	983
15	1983	03	14.99132	11	52	53.89	-16	45	10.3	983
15	1983	03	14.99618	11	52	53.63	-16	45	09.5	983
15	1983	03	15.00104	11	52	53.35	-16	45	08.3	983
15	1983	04	04.96875	11	34	38.39	-15	06	16.3	983
15	1983	04	04.97361	11	34	38.16	-15	06	14.8	983
15	1983	04	04.97847	11	34	37.90	-15	06	13.0	983
15	1983	04	05.91736	11	33	54.39	-15	00	44.5	983
15	1983	04	05.92292	11	33	54.13	-15	00	42.6	983
15	1983	04	05.92778	11	33	53.90	-15	00	41.2	983
15	1983	04	08.93750	11	31	39.69	-14	42	51.3	983
15	1983	04	08.94236	11	31	39.49	-14	42	49.3	983
15	1983	04	08.94722	11	31	39.26	-14	42	47.7	983
15	1983	05	02.86042	11	20	09.42	-12	24	43.6	983
15	1983	05	02.86528	11	20	09.35	-12	24	42.0	983
15	1983	05	02.87014	11	20	09.26	-12	24	40.9	983
15	1985	11	13.92882	00	50	41.19	+27	03	25.6	983
15	1985	11	13.93368	00	50	41.09	+27	03	22.8	983
15	1985	11	13.93785	00	50	41.01	+27	03	20.6	983
15	1985	12	06.85122	00	53	08.35	+23	56	52.7	983
15	1985	12	06.85573	00	53	08.44	+23	56	51.3	983
15	1985	12	06.86024	00	53	08.58	+23	56	49.3	983
16	1983	06	01.95347	14	44	27.08	-11	26	00.8	983
16	1983	06	01.95972	14	44	26.84	-11	26	00.1	983
16	1983	06	01.96597	14	44	26.61	-11	25	59.1	983
16	1984	07	03.07153	21	14	20.83	-13	56	28.0	983
16	1984	07	03.07639	21	14	20.73	-13	56	28.9	983
16	1984	07	03.08125	21	14	20.61	-13	56	29.5	983
16	1984	07	08.11667	21	12	12.65	-14	08	41.8	983

16	1984	07	08.12153	21	12	12.53	-14	08	43.0	983
16	1984	07	08.12639	21	12	12.37	-14	08	43.6	983
16	1984	08	23.98056	20	38	15.32	-17	17	17.6	983
16	1984	08	23.98542	20	38	15.12	-17	17	18.6	983
16	1984	08	23.99028	20	38	14.93	-17	17	19.6	983
16	1984	08	27.95208	20	35	47.93	-17	31	51.3	983
16	1984	08	27.95694	20	35	47.73	-17	31	52.1	983
16	1984	08	27.96181	20	35	47.57	-17	31	53.3	983
16	1984	09	18.90069	20	28	42.32	-18	26	54.0	983
16	1984	09	18.90694	20	28	42.31	-18	26	54.4	983
16	1984	09	18.91181	20	28	42.29	-18	26	55.1	983
16	1984	09	20.89340	20	28	40.35	-18	29	31.5	983
16	1984	09	20.89896	20	28	40.33	-18	29	32.0	983
16	1984	09	20.90451	20	28	40.36	-18	29	32.6	983
16	1985	11	19.11458	05	04	34.61	+18	04	00.5	983
16	1985	11	19.11944	05	04	34.36	+18	03	59.8	983
16	1985	11	19.12431	05	04	34.11	+18	03	59.6	983
16	1985	12	13.97639	04	42	22.67	+17	31	04.9	983
16	1985	12	13.98125	04	42	22.40	+17	31	04.6	983
16	1985	12	13.98681	04	42	22.07	+17	31	04.4	983
17	1985	10	07.91146	22	27	44.56	-16	01	37.8	983
17	1985	10	07.91840	22	27	44.46	-16	01	38.3	983
17	1985	10	07.92535	22	27	44.36	-16	01	38.5	983
17	1985	11	07.83958	22	32	58.73	-15	06	26.9	983
17	1985	11	07.84722	22	32	58.94	-15	06	24.1	983
17	1985	11	07.85486	22	32	59.16	-15	06	21.6	983
18	1978	12	05.04826	06	40	42.90	+06	37	36.9	983
18	1978	12	05.05243	06	40	42.69	+06	37	36.9	983
18	1978	12	05.05660	06	40	42.47	+06	37	36.9	983
18	1983	03	09.99688	10	45	21.08	+11	32	43.7	983
18	1983	03	10.00243	10	45	20.77	+11	32	46.4	983
18	1983	03	10.00799	10	45	20.44	+11	32	49.6	983
18	1983	03	11.00972	10	44	26.24	+11	41	30.1	983
18	1983	03	11.01458	10	44	26.00	+11	41	32.2	983
18	1983	03	11.01944	10	44	25.73	+11	41	34.7	983
18	1983	04	04.94410	10	27	14.41	+14	24	07.0	983
18	1983	04	04.95104	10	27	14.23	+14	24	08.7	983
18	1983	04	04.95799	10	27	14.04	+14	24	10.5	983
18	1983	04	05.88576	10	26	51.56	+14	27	56.5	983
18	1983	04	05.89132	10	26	51.39	+14	27	58.0	983
18	1983	04	05.89688	10	26	51.24	+14	27	59.2	983
18	1983	04	07.92604	10	26	06.33	+14	35	37.6	983
18	1983	04	07.93160	10	26	06.21	+14	35	38.9	983
18	1983	04	07.93715	10	26	06.09	+14	35	39.8	983
18	1983	04	08.91771	10	25	46.68	+14	39	03.5	983
18	1983	04	08.92326	10	25	46.58	+14	39	04.7	983
18	1983	04	08.92882	10	25	46.45	+14	39	05.7	983
18	1984	05	23.02986	16	57	43.85	-06	09	28.9	983
18	1984	05	23.03472	16	57	43.57	-06	09	28.0	983
18	1984	05	23.03958	16	57	43.29	-06	09	27.1	983
18	1984	05	26.00208	16	54	54.93	-06	00	18.7	983
18	1984	05	26.00694	16	54	54.60	-06	00	17.4	983
18	1984	05	26.01181	16	54	54.30	-06	00	16.5	983
18	1984	06	20.95486	16	28	58.74	-05	39	21.8	983
18	1984	06	20.95972	16	28	58.45	-05	39	22.0	983
18	1984	06	20.96458	16	28	58.19	-05	39	22.6	983
18	1984	06	26.93056	16	23	54.35	-05	51	06.7	983
18	1984	06	26.93542	16	23	54.07	-05	51	07.3	983
18	1984	06	26.94028	16	23	53.88	-05	51	08.3	983

18	1985	11	22.15000	07	21	07.69	+07	40	35.9	983
18	1985	11	22.15486	07	21	07.67	+07	40	35.4	983
18	1985	11	22.16042	07	21	07.62	+07	40	34.7	983
19	1984	01	13.22118	11	48	59.99	-00	33	31.7	983
19	1984	01	13.22812	11	49	00.06	-00	33	32.3	983
19	1984	01	13.23507	11	49	00.18	-00	33	33.0	983
19	1984	03	02.00347	11	28	56.69	+01	31	05.2	983
19	1984	03	02.00972	11	28	56.37	+01	31	06.7	983
19	1984	03	02.01597	11	28	56.03	+01	31	08.9	983
19	1984	03	30.92882	11	04	08.89	+04	24	27.1	983
19	1984	03	30.93576	11	04	08.60	+04	24	29.4	983
19	1984	03	30.94271	11	04	08.30	+04	24	31.7	983
19	1984	04	04.94931	11	00	54.72	+04	48	33.4	983
19	1984	04	04.95556	11	00	54.50	+04	48	35.0	983
19	1984	04	04.96181	11	00	54.28	+04	48	36.6	983
19	1985	05	21.09965	17	38	11.10	-21	38	51.7	983
19	1985	05	21.10660	17	38	10.78	-21	38	50.9	983
19	1985	05	21.11354	17	38	10.42	-21	38	50.6	983
20	1983	10	06.97986	01	39	53.93	+10	30	02.0	983
20	1983	10	06.98472	01	39	53.61	+10	30	00.4	983
20	1983	10	06.98958	01	39	53.37	+10	29	58.9	983
20	1983	10	10.98611	01	36	24.04	+10	08	28.5	983
20	1983	10	10.99097	01	36	23.72	+10	08	27.0	983
20	1983	10	10.99583	01	36	23.48	+10	08	25.2	983
20	1983	10	31.90972	01	17	08.81	+08	06	38.5	983
20	1983	10	31.91458	01	17	08.53	+08	06	36.8	983
20	1983	10	31.91944	01	17	08.28	+08	06	35.2	983
20	1983	11	25.88472	01	03	26.36	+06	34	01.8	983
20	1983	11	25.88958	01	03	26.30	+06	34	01.3	983
20	1983	11	25.89444	01	03	26.23	+06	34	00.7	983
20	1983	11	26.86319	01	03	16.16	+06	32	40.5	983
20	1983	11	26.86806	01	03	16.13	+06	32	40.1	983
20	1983	11	26.87292	01	03	16.07	+06	32	39.5	983
20	1983	11	28.84097	01	03	01.11	+06	30	31.5	983
20	1983	11	28.84583	01	03	01.07	+06	30	31.1	983
20	1983	11	28.85069	01	03	01.02	+06	30	30.7	983
20	1983	11	29.83333	01	02	56.33	+06	29	44.4	983
20	1983	11	29.83819	01	02	56.30	+06	29	44.1	983
20	1983	11	29.84306	01	02	56.27	+06	29	44.0	983
20	1983	11	30.83542	01	02	53.37	+06	29	09.1	983
20	1983	11	30.84028	01	02	53.36	+06	29	09.1	983
20	1983	11	30.84514	01	02	53.35	+06	29	08.8	983
20	1984	01	02.79757	01	17	50.89	+07	53	14.5	983
20	1984	01	02.80312	01	17	51.19	+07	53	16.3	983
20	1984	01	02.80868	01	17	51.47	+07	53	17.8	983
20	1985	03	19.11250	13	27	19.41	-09	26	45.3	983
20	1985	03	19.11806	13	27	19.16	-09	26	44.0	983
20	1985	03	19.12292	13	27	18.95	-09	26	42.6	983
20	1985	04	15.99410	13	02	47.84	-06	49	26.5	983
20	1985	04	15.99965	13	02	47.53	-06	49	24.5	983
20	1985	04	16.00521	13	02	47.23	-06	49	22.4	983
20	1985	05	09.92813	12	46	29.06	-04	59	11.4	983
20	1985	05	09.93368	12	46	28.93	-04	59	10.5	983
20	1985	05	09.93924	12	46	28.78	-04	59	09.3	983
21	1983	03	10.93681	08	22	59.30	+23	02	44.4	983
21	1983	03	10.94444	08	22	59.15	+23	02	44.1	983
21	1983	03	10.95208	08	22	58.97	+23	02	44.3	983
21	1983	03	12.92361	08	22	20.67	+23	03	36.4	983
21	1983	03	12.93125	08	22	20.52	+23	03	36.8	983

21	1983	03	12.93889	08	22	20.36	+23	03	36.8	983
21	1985	11	15.93507	02	27	29.35	+11	16	48.2	983
21	1985	11	15.94062	02	27	29.10	+11	16	47.6	983
21	1985	11	15.94618	02	27	28.72	+11	16	46.9	983
21	1985	12	06.90694	02	14	09.57	+10	55	11.9	983
21	1985	12	06.91250	02	14	09.43	+10	55	12.3	983
21	1985	12	06.91944	02	14	09.29	+10	55	12.4	983
22	1983	03	11.05035	11	58	54.99	+21	46	50.6	983
22	1983	03	11.05590	11	58	54.67	+21	46	52.1	983
22	1983	03	11.06146	11	58	54.39	+21	46	53.5	983
22	1983	04	04.98889	11	38	00.64	+22	41	44.2	983
22	1983	04	04.99514	11	38	00.36	+22	41	44.2	983
22	1983	04	05.00139	11	38	00.08	+22	41	43.7	983
22	1983	04	05.93611	11	37	19.76	+22	41	10.9	983
22	1983	04	05.94236	11	37	19.50	+22	41	10.4	983
22	1983	04	05.94861	11	37	19.20	+22	41	10.3	983
22	1983	04	08.95833	11	35	14.89	+22	38	06.8	983
22	1983	04	08.96458	11	35	14.63	+22	38	06.2	983
22	1983	04	08.97083	11	35	14.36	+22	38	05.6	983
22	1983	05	02.88056	11	25	15.49	+21	11	32.0	983
22	1983	05	02.88681	11	25	15.42	+21	11	30.3	983
22	1983	05	02.89306	11	25	15.36	+21	11	27.8	983
22	1983	05	05.88889	11	24	53.39	+20	54	06.6	983
22	1983	05	05.89514	11	24	53.31	+20	54	04.7	983
22	1983	05	05.90139	11	24	53.29	+20	54	02.1	983
22	1984	05	23.00625	16	18	25.38	-20	59	19.7	983
22	1984	05	23.01250	16	18	25.00	-20	59	20.1	983
22	1984	05	23.01875	16	18	24.65	-20	59	20.5	983
22	1984	05	25.98299	16	15	38.43	-21	02	43.8	983
22	1984	05	25.98924	16	15	38.08	-21	02	44.4	983
22	1984	05	25.99479	16	15	37.73	-21	02	44.5	983
22	1984	06	20.93264	15	53	16.48	-21	28	42.0	983
22	1984	06	20.93889	15	53	16.21	-21	28	42.3	983
22	1984	06	20.94514	15	53	15.97	-21	28	42.8	983
22	1984	06	26.90903	15	49	25.50	-21	35	18.0	983
22	1984	06	26.91528	15	49	25.27	-21	35	18.8	983
22	1984	06	26.92153	15	49	25.06	-21	35	19.1	983
22	1985	10	07.88681	21	41	02.62	-32	42	56.9	983
22	1985	10	07.89306	21	41	02.56	-32	42	54.9	983
22	1985	10	07.89931	21	41	02.52	-32	42	53.1	983
22	1985	11	13.80729	21	54	09.92	-28	15	12.1	983
22	1985	11	13.81424	21	54	10.23	-28	15	08.7	983
22	1985	11	13.82118	21	54	10.53	-28	15	04.7	983
23	1984	11	19.96076	02	45	43.29	+10	20	19.4	983
23	1984	11	19.96632	02	45	42.96	+10	20	19.7	983
23	1984	11	19.97187	02	45	42.62	+10	20	19.8	983
23	1984	12	17.93194	02	25	30.70	+11	28	04.8	983
23	1984	12	17.93819	02	25	30.58	+11	28	06.6	983
23	1984	12	17.94444	02	25	30.45	+11	28	08.1	983
23	1985	01	14.82604	02	29	04.90	+14	11	39.7	983
23	1985	01	14.83299	02	29	05.10	+14	11	42.7	983
23	1985	01	14.83993	02	29	05.31	+14	11	45.6	983
25	1978	01	12.93225	05	43	38.54	-04	01	58.8	983
25	1978	01	12.93711	05	43	38.32	-04	01	57.7	983
25	1978	01	12.94197	05	43	38.03	-04	01	57.2	983
25	1978	02	02.90451	05	32	22.13	-02	39	59.1	983
25	1978	02	02.91146	05	32	22.00	-02	39	57.0	983
25	1978	02	02.91840	05	32	21.87	-02	39	54.7	983
25	1978	03	06.93646	05	35	54.49	+00	29	46.6	983

25	1978	03	06.94132	05	35	54.68	+00	29	48.3	983
25	1978	03	06.94618	05	35	54.82	+00	29	50.5	983
25	1978	03	10.89479	05	37	54.61	+00	53	19.0	983
25	1978	03	10.90174	05	37	54.84	+00	53	21.2	983
25	1978	03	10.90868	05	37	55.04	+00	53	23.5	983
25	1983	05	05.91806	12	34	27.35	-09	43	22.3	983
25	1983	05	05.92431	12	34	27.15	-09	43	16.3	983
25	1983	05	05.93056	12	34	26.96	-09	43	11.0	983
25	1983	05	10.91181	12	32	24.44	-08	31	19.2	983
25	1983	05	10.91806	12	32	24.27	-08	31	13.8	983
25	1983	05	10.92431	12	32	24.16	-08	31	08.7	983
25	1984	11	20.01771	03	11	18.64	+06	05	04.4	983
25	1984	11	20.02465	03	11	18.23	+06	04	59.8	983
25	1984	11	20.03160	03	11	17.83	+06	04	54.9	983
25	1984	12	17.97187	02	53	09.40	+02	38	00.9	983
25	1984	12	17.97882	02	53	09.28	+02	37	59.5	983
25	1984	12	17.98576	02	53	09.12	+02	37	58.2	983
27	1985	07	18.92535	18	10	36.93	-23	42	10.1	983
27	1985	07	18.93229	18	10	36.56	-23	42	10.1	983
27	1985	07	18.93924	18	10	36.19	-23	42	10.4	983
28	1983	02	09.88646	05	13	09.07	+14	02	31.2	983
28	1983	02	09.89201	05	13	09.17	+14	02	33.4	983
28	1983	02	09.89757	05	13	09.23	+14	02	35.5	983
28	1984	04	05.08056	14	56	22.58	-02	55	29.8	983
28	1984	04	05.08681	14	56	22.37	-02	55	27.3	983
28	1984	04	05.09306	14	56	22.18	-02	55	25.0	983
28	1984	05	04.96458	14	34	11.62	-00	07	31.3	983
28	1984	05	04.97083	14	34	11.32	-00	07	29.6	983
28	1984	05	04.97708	14	34	11.01	-00	07	28.5	983
28	1984	05	04.98403	14	34	10.61	-00	07	26.9	983
28	1984	05	04.99028	14	34	10.37	-00	07	25.1	983
28	1984	05	04.99653	14	34	10.06	-00	07	23.5	983
28	1984	05	22.96111	14	21	12.34	+00	34	16.2	983
28	1984	05	22.96736	14	21	12.07	+00	34	16.5	983
28	1984	05	22.97361	14	21	11.87	+00	34	16.9	983
28	1984	05	25.93576	14	19	30.95	+00	35	25.7	983
28	1984	05	25.94271	14	19	30.68	+00	35	25.3	983
28	1984	05	25.94965	14	19	30.47	+00	35	25.5	983
28	1985	07	18.99062	20	02	51.07	-14	20	41.0	983
28	1985	07	18.99757	20	02	50.69	-14	20	42.9	983
28	1985	07	19.00521	20	02	50.31	-14	20	44.8	983
29	1983	12	13.13611	08	58	36.38	+25	27	17.9	983
29	1983	12	13.14097	08	58	36.31	+25	27	18.5	983
29	1983	12	13.14583	08	58	36.29	+25	27	19.2	983
29	1983	12	14.12569	08	58	29.97	+25	29	25.5	983
29	1983	12	14.13056	08	58	29.92	+25	29	26.1	983
29	1983	12	14.13542	08	58	29.86	+25	29	26.5	983
29	1984	01	12.06944	08	41	30.17	+26	56	29.5	983
29	1984	01	12.07431	08	41	29.86	+26	56	30.3	983
29	1984	01	12.07917	08	41	29.59	+26	56	31.2	983
29	1984	01	27.99062	08	24	28.10	+27	33	43.7	983
29	1984	01	27.99479	08	24	27.76	+27	33	43.8	983
29	1984	01	27.99896	08	24	27.49	+27	33	44.0	983
29	1984	03	01.90833	07	57	49.85	+27	01	05.9	983
29	1984	03	01.91319	07	57	49.72	+27	01	05.1	983
29	1984	03	01.91806	07	57	49.63	+27	01	04.3	983
29	1985	05	10.97153	15	05	56.25	-25	40	04.3	983
29	1985	05	10.97639	15	05	55.94	-25	40	03.7	983
29	1985	05	10.98125	15	05	55.62	-25	40	03.0	983

29	1985	06	07.91285	14	41	39.56	-24	06	06.3	983
29	1985	06	07.91840	14	41	39.38	-24	06	05.3	983
29	1985	06	07.92396	14	41	39.16	-24	06	03.8	983
30	1985	07	19.03437	21	18	55.34	-15	37	13.0	983
30	1985	07	19.03993	21	18	55.08	-15	37	13.8	983
30	1985	07	19.04618	21	18	54.78	-15	37	14.7	983
30	1985	10	05.84201	20	36	37.58	-17	21	30.2	983
30	1985	10	05.84896	20	36	37.78	-17	21	29.2	983
30	1985	10	05.85590	20	36	37.97	-17	21	28.4	983
31	1983	10	11.02847	02	07	27.45	+10	05	34.3	983
31	1983	10	11.03333	02	07	27.17	+10	05	35.4	983
31	1983	10	11.03819	02	07	26.89	+10	05	36.9	983
31	1983	10	31.95833	01	43	28.75	+11	26	31.7	983
31	1983	10	31.96319	01	43	28.40	+11	26	32.5	983
31	1983	10	31.96806	01	43	28.06	+11	26	33.9	983
31	1983	11	25.90347	01	19	01.25	+13	09	36.4	983
31	1983	11	25.90833	01	19	01.03	+13	09	38.0	983
31	1983	11	25.91319	01	19	00.81	+13	09	39.3	983
31	1983	11	26.88125	01	18	20.96	+13	14	10.1	983
31	1983	11	26.88611	01	18	20.76	+13	14	11.3	983
31	1983	11	26.89097	01	18	20.56	+13	14	12.8	983
31	1983	11	28.85868	01	17	04.42	+13	23	33.0	983
31	1983	11	28.86424	01	17	04.22	+13	23	34.7	983
31	1983	11	28.86979	01	17	03.98	+13	23	36.5	983
31	1983	11	29.85382	01	16	28.42	+13	28	21.8	983
31	1983	11	29.85938	01	16	28.21	+13	28	23.6	983
31	1983	11	29.86493	01	16	28.02	+13	28	25.5	983
31	1983	11	30.87812	01	15	53.15	+13	33	22.9	983
31	1983	11	30.88368	01	15	52.96	+13	33	24.7	983
31	1983	11	30.88924	01	15	52.75	+13	33	26.0	983
31	1985	01	27.13611	12	27	55.29	+30	30	23.4	983
31	1985	01	27.14236	12	27	55.23	+30	30	25.1	983
31	1985	01	27.14861	12	27	55.14	+30	30	26.9	983
31	1985	03	16.00243	11	47	26.37	+32	35	31.7	983
31	1985	03	16.00799	11	47	25.94	+32	35	30.8	983
31	1985	03	16.01354	11	47	25.54	+32	35	29.8	983
31	1985	04	15.92778	11	18	11.27	+29	05	46.5	983
31	1985	04	15.93403	11	18	11.04	+29	05	42.6	983
31	1985	04	15.94028	11	18	10.82	+29	05	38.8	983
37	1983	07	14.94062	18	18	53.39	-27	56	06.5	983
37	1983	07	14.94757	18	18	53.06	-27	56	06.7	983
37	1983	07	14.95451	18	18	52.62	-27	56	06.6	983
37	1984	10	26.96389	01	20	58.91	+10	32	54.4	983
37	1984	10	26.96875	01	20	58.66	+10	32	53.1	983
37	1984	10	26.97361	01	20	58.38	+10	32	52.3	983
37	1984	11	19.89896	01	05	39.81	+09	29	18.3	983
37	1984	11	19.90451	01	05	39.70	+09	29	17.8	983
37	1984	11	19.91007	01	05	39.58	+09	29	17.3	983
37	1984	12	17.86528	01	08	44.06	+10	00	11.4	983
37	1984	12	17.87153	01	08	44.25	+10	00	12.4	983
37	1984	12	17.87778	01	08	44.44	+10	00	13.7	983
39	1978	10	03.00486	02	04	44.99	+00	00	43.4	983
39	1978	10	03.00972	02	04	44.82	+00	00	40.8	983
39	1978	10	03.01458	02	04	44.62	+00	00	38.2	983
39	1978	11	25.90035	01	31	04.76	-04	33	54.2	983
39	1978	11	25.90660	01	31	04.61	-04	33	53.7	983
39	1978	11	25.91233	01	31	04.50	-04	33	53.6	983
39	1978	12	22.83194	01	33	45.35	-03	01	02.4	983
39	1978	12	22.83681	01	33	45.44	-03	01	01.0	983

39	1978	12	22.84167	01	33	45.57	-03	00	59.3	983
39	1978	12	27.80347	01	36	07.66	-02	31	10.3	983
39	1978	12	27.80833	01	36	07.84	-02	31	08.2	983
39	1978	12	27.81319	01	36	07.98	-02	31	06.4	983
39	1983	10	16.12847	05	24	38.98	+09	19	27.2	983
39	1983	10	16.13333	05	24	39.04	+09	19	25.1	983
39	1984	01	02.86319	04	37	06.59	+06	52	00.9	983
39	1984	01	02.86806	04	37	06.40	+06	52	01.9	983
39	1984	01	02.87222	04	37	06.32	+06	52	02.8	983
39	1984	01	04.88819	04	36	01.61	+06	59	19.4	983
39	1984	01	04.89306	04	36	01.46	+06	59	20.5	983
39	1984	01	04.89792	04	36	01.30	+06	59	21.6	983
39	1984	01	24.88299	04	31	03.39	+08	34	39.9	983
39	1984	01	24.88854	04	31	03.40	+08	34	41.4	983
39	1984	01	24.89410	04	31	03.39	+08	34	43.7	983
39	1984	01	27.86632	04	31	13.60	+08	51	32.5	983
39	1984	01	27.87188	04	31	13.62	+08	51	34.5	983
39	1984	01	27.87743	04	31	13.64	+08	51	36.5	983
39	1985	01	27.07674	11	27	43.83	+03	47	25.9	983
39	1985	01	27.08368	11	27	43.73	+03	47	28.1	983
39	1985	01	27.09063	11	27	43.58	+03	47	30.0	983
39	1985	03	15.95417	10	57	55.67	+09	20	38.5	983
39	1985	03	15.96042	10	57	55.38	+09	20	41.4	983
39	1985	03	15.96667	10	57	55.10	+09	20	44.0	983
39	1985	04	15.90521	10	41	57.02	+12	03	30.5	983
39	1985	04	15.91215	10	41	56.91	+12	03	31.5	983
39	1985	04	15.91910	10	41	56.80	+12	03	32.8	983
40	1978	01	12.90587	04	09	05.39	+19	44	55.6	983
40	1978	01	12.91142	04	09	05.33	+19	44	56.8	983
40	1978	01	12.91698	04	09	05.27	+19	44	57.3	983
40	1978	02	02.86076	04	13	31.24	+20	42	59.2	983
40	1978	02	02.86632	04	13	31.41	+20	43	00.4	983
40	1978	02	02.87222	04	13	31.58	+20	43	01.7	983
40	1978	03	06.91979	04	44	02.85	+22	39	52.1	983
40	1978	03	06.92326	04	44	03.09	+22	39	53.0	983
40	1978	03	06.92674	04	44	03.38	+22	39	53.5	983
40	1978	03	10.87188	04	49	17.61	+22	53	53.1	983
40	1978	03	10.87743	04	49	18.07	+22	53	54.0	983
40	1978	03	10.88299	04	49	18.51	+22	53	55.3	983
40	1983	07	08.07222	19	51	36.05	-23	16	08.9	983
40	1983	07	08.07708	19	51	35.75	-23	16	10.4	983
40	1983	07	08.08194	19	51	35.44	-23	16	12.0	983
40	1983	07	15.01667	19	44	30.25	-23	51	41.3	983
40	1983	07	15.02153	19	44	29.93	-23	51	42.7	983
40	1983	07	15.02639	19	44	29.61	-23	51	44.1	983
40	1984	11	03.17153	07	00	24.82	+21	21	59.7	983
40	1984	11	03.17778	07	00	24.94	+21	21	59.9	983
40	1984	11	03.18403	07	00	25.08	+21	22	00.2	983
40	1984	11	23.13993	07	01	04.78	+21	50	51.3	983
40	1984	11	23.14549	07	01	04.65	+21	50	52.0	983
40	1984	11	23.15104	07	01	04.53	+21	50	52.9	983
40	1984	12	26.98125	06	32	23.75	+23	34	08.0	983
40	1984	12	26.98611	06	32	23.42	+23	34	08.7	983
40	1984	12	26.99097	06	32	23.06	+23	34	09.8	983
42	1984	01	24.90382	05	34	17.26	+26	05	47.3	983
42	1984	01	24.91076	05	34	17.03	+26	05	47.5	983
42	1984	01	24.91771	05	34	16.78	+26	05	47.8	983
42	1984	01	27.90208	05	32	47.59	+26	09	29.5	983
42	1984	01	27.90972	05	32	47.38	+26	09	30.3	983

42	1984	01	27.91736	05	32	47.17	+26	09	30.7	983
42	1985	01	27.10417	12	04	34.92	+11	37	11.8	983
42	1985	01	27.11181	12	04	34.88	+11	37	14.2	983
42	1985	01	27.11944	12	04	34.81	+11	37	16.5	983
42	1985	03	15.97917	11	34	16.16	+16	52	56.0	983
42	1985	03	15.98681	11	34	15.70	+16	52	58.7	983
42	1985	03	15.99444	11	34	15.25	+16	53	01.2	983
42	1985	04	15.95000	11	09	47.80	+18	19	43.4	983
42	1985	04	15.95764	11	09	47.54	+18	19	43.3	983
42	1985	04	15.96528	11	09	47.32	+18	19	43.4	983
44	1983	10	11.06319	02	27	16.41	+08	04	27.4	983
44	1983	10	11.06806	02	27	16.16	+08	04	25.9	983
44	1983	10	11.07292	02	27	15.95	+08	04	24.4	983
44	1983	10	16.08611	02	23	21.57	+07	36	40.6	983
44	1983	10	16.09097	02	23	21.33	+07	36	38.5	983
44	1983	10	16.09583	02	23	21.06	+07	36	37.0	983
44	1983	10	31.99931	02	08	44.64	+06	08	19.4	983
44	1983	11	01.00417	02	08	44.35	+06	08	17.6	983
44	1983	11	01.00903	02	08	44.05	+06	08	16.2	983
44	1983	11	26.94236	01	48	20.77	+04	43	21.1	983
44	1983	11	26.94722	01	48	20.60	+04	43	20.5	983
44	1983	11	26.95208	01	48	20.45	+04	43	20.3	983
44	1983	11	28.90069	01	47	25.37	+04	42	00.5	983
44	1983	11	28.90556	01	47	25.21	+04	42	00.1	983
44	1983	11	28.91042	01	47	25.07	+04	42	00.1	983
44	1983	11	30.89514	01	46	35.80	+04	41	27.6	983
44	1983	11	30.90008	01	46	35.67	+04	41	27.5	983
44	1983	11	30.90486	01	46	35.57	+04	41	27.5	983
44	1984	01	02.82882	01	50	39.65	+06	22	56.8	983
44	1984	01	02.83437	01	50	39.82	+06	22	58.4	983
44	1984	01	02.83993	01	50	40.03	+06	23	00.4	983
44	1984	01	04.79410	01	51	54.08	+06	34	31.8	983
44	1984	01	04.79965	01	51	54.29	+06	34	33.8	983
44	1984	01	04.80521	01	51	54.49	+06	34	36.0	983
45	1983	07	08.04896	19	35	39.85	-14	54	54.6	983
45	1983	07	08.05486	19	35	39.54	-14	54	56.1	983
45	1983	07	08.06076	19	35	39.28	-14	54	57.5	983
45	1983	07	12.06840	19	32	10.54	-15	10	58.9	983
45	1983	07	12.07396	19	32	10.25	-15	11	00.3	983
45	1983	07	12.07951	19	32	09.96	-15	11	01.5	983
45	1984	11	19.93611	01	44	06.53	+01	26	05.1	983
45	1984	11	19.94444	01	44	06.24	+01	26	04.1	983
45	1984	11	19.95208	01	44	05.97	+01	26	03.3	983
45	1984	12	17.90764	01	37	01.64	+01	38	39.6	983
45	1984	12	17.91528	01	37	01.60	+01	38	40.8	983
45	1984	12	17.92292	01	37	01.64	+01	38	42.5	983
45	1985	11	22.16701	08	17	27.64	+13	58	30.3	983
45	1985	11	22.17396	08	17	27.69	+13	58	29.9	983
45	1985	11	22.18090	08	17	27.78	+13	58	29.4	983
51	1983	10	10.94306	23	09	43.85	-06	00	15.4	983
51	1983	10	10.94931	23	09	43.64	-06	00	17.9	983
51	1983	10	10.95590	23	09	43.42	-06	00	21.1	983
51	1983	10	11.95069	23	09	13.62	-06	07	27.5	983
51	1983	10	11.95694	23	09	13.43	-06	07	30.4	983
51	1983	10	11.96319	23	09	13.25	-06	07	33.0	983
51	1983	10	31.88229	23	04	29.75	-07	47	24.6	983
51	1983	10	31.88958	23	04	29.76	-07	47	25.6	983
51	1983	10	31.89722	23	04	29.75	-07	47	26.9	983
51	1983	11	25.86215	23	12	47.17	-07	58	38.4	983

51	1983	11	25.86910	23	12	47.41	-07	58	37.8	983
51	1983	11	25.87604	23	12	47.67	-07	58	37.6	983
51	1983	11	26.83507	23	13	23.67	-07	56	48.2	983
51	1983	11	26.84201	23	13	23.94	-07	56	47.6	983
51	1983	11	26.84896	23	13	24.17	-07	56	46.8	983
51	1983	11	28.81840	23	14	41.56	-07	52	35.4	983
51	1983	11	28.82535	23	14	41.80	-07	52	34.6	983
51	1983	11	28.83229	23	14	42.07	-07	52	33.2	983
51	1983	11	29.81076	23	15	22.28	-07	50	14.7	983
51	1983	11	29.81771	23	15	22.51	-07	50	14.1	983
51	1983	11	29.82465	23	15	22.81	-07	50	12.9	983
51	1983	11	30.81215	23	16	04.47	-07	47	44.0	983
51	1983	11	30.81910	23	16	04.76	-07	47	43.2	983
51	1983	11	30.82604	23	16	05.05	-07	47	41.6	983
51	1984	11	23.16076	08	15	08.84	+06	29	24.3	983
51	1984	11	23.16771	08	15	08.98	+06	29	22.3	983
51	1984	11	23.17465	08	15	09.08	+06	29	19.9	983
51	1984	12	28.10694	08	08	14.16	+04	56	33.0	983
51	1984	12	28.11319	08	08	13.87	+04	56	33.6	983
51	1984	12	28.11944	08	08	13.60	+04	56	34.1	983
51	1985	01	26.97222	07	40	52.01	+06	55	39.4	983
51	1985	01	26.97847	07	40	51.63	+06	55	41.8	983
51	1985	01	26.98472	07	40	51.27	+06	55	44.5	983
51	1985	03	15.90174	07	25	56.52	+12	46	47.6	983
51	1985	03	15.90868	07	25	56.69	+12	46	49.9	983
51	1985	03	15.91562	07	25	56.86	+12	46	52.5	983
52	1983	02	09.96042	07	54	32.49	+20	02	29.8	983
52	1983	02	09.96667	07	54	32.23	+20	02	31.5	983
52	1983	02	09.97292	07	54	31.97	+20	02	33.3	983
52	1983	03	10.88681	07	45	09.66	+21	40	10.9	983
52	1983	03	10.89306	07	45	09.66	+21	40	11.8	983
52	1983	03	10.89931	07	45	09.66	+21	40	12.6	983
52	1983	03	12.86736	07	45	18.70	+21	44	04.8	983
52	1983	03	12.87361	07	45	18.74	+21	44	05.6	983
52	1983	03	12.87986	07	45	18.75	+21	44	06.2	983
52	1985	07	18.94757	18	28	46.57	-18	36	14.5	983
52	1985	07	18.95451	18	28	46.27	-18	36	15.6	983
52	1985	07	18.96146	18	28	45.95	-18	36	16.6	983
63	1983	03	10.90764	07	58	51.00	+23	51	25.0	983
63	1983	03	10.91528	07	58	50.88	+23	51	23.8	983
63	1983	03	10.92292	07	58	50.80	+23	51	23.0	983
63	1983	03	12.89375	07	58	27.47	+23	46	54.1	983
63	1983	03	12.90139	07	58	27.38	+23	46	53.4	983
63	1983	03	12.90903	07	58	27.26	+23	46	52.0	983
63	1984	06	26.96667	17	45	33.69	-33	39	17.9	983
63	1984	06	26.97153	17	45	33.35	-33	39	17.3	983
63	1984	06	26.97639	17	45	33.03	-33	39	16.0	983
63	1985	12	09.89826	03	02	40.44	+26	22	10.8	983
63	1985	12	09.90521	03	02	40.12	+26	22	08.6	983
63	1985	12	09.91215	03	02	39.78	+26	22	06.8	983
68	1983	10	07.00069	01	57	16.29	+06	36	28.2	983
68	1983	10	07.00556	01	57	16.03	+06	36	27.9	983
68	1983	10	07.01042	01	57	15.76	+06	36	27.4	983
68	1983	10	11.00556	01	53	46.87	+06	31	52.7	983
68	1983	10	11.01042	01	53	46.58	+06	31	52.4	983
68	1983	10	11.01528	01	53	46.31	+06	31	52.0	983
68	1983	10	31.93403	01	34	19.80	+06	13	43.4	983
68	1983	10	31.93889	01	34	19.55	+06	13	43.1	983
68	1983	10	31.94375	01	34	19.29	+06	13	43.0	983

68	1983	11	25.92049	01	19	19.07	+06	43	08.8	983
68	1983	11	25.92604	01	19	18.98	+06	43	09.4	983
68	1983	11	25.93160	01	19	18.85	+06	43	10.6	983
68	1983	11	26.90035	01	19	03.81	+06	45	54.2	983
68	1983	11	26.90590	01	19	03.73	+06	45	55.3	983
68	1983	11	26.91146	01	19	03.64	+06	45	56.2	983
68	1983	11	28.88229	01	18	37.92	+06	51	51.2	983
68	1983	11	28.88785	01	18	37.86	+06	51	52.3	983
68	1983	11	28.89340	01	18	37.79	+06	51	53.0	983
68	1983	11	29.87396	01	18	27.51	+06	55	01.3	983
68	1983	11	29.87951	01	18	27.46	+06	55	02.7	983
68	1983	11	29.88507	01	18	27.40	+06	55	03.3	983
68	1983	11	30.86007	01	18	18.89	+06	58	17.5	983
68	1983	11	30.86562	01	18	18.84	+06	58	19.2	983
68	1983	11	30.87118	01	18	18.79	+06	58	19.8	983
68	1984	12	28.12743	09	22	50.38	+26	35	02.3	983
68	1984	12	28.13438	09	22	50.16	+26	35	04.2	983
68	1984	12	28.14132	09	22	49.98	+26	35	06.5	983
68	1985	01	27.02882	08	59	38.35	+29	05	17.2	983
68	1985	01	27.03576	08	59	37.94	+29	05	18.8	983
68	1985	01	27.04271	08	59	37.52	+29	05	20.7	983
68	1985	03	15.92917	08	24	51.58	+29	44	52.0	983
68	1985	03	15.93681	08	24	51.46	+29	44	51.1	983
68	1985	03	15.94444	08	24	51.34	+29	44	50.1	983
88	1983	12	13.17257	09	09	26.69	+13	30	03.8	983
88	1983	12	13.17960	09	09	26.61	+13	30	03.3	983
88	1983	12	13.18646	09	09	26.55	+13	30	02.7	983
88	1983	12	14.16285	09	09	15.83	+13	29	02.6	983
88	1983	12	14.16979	09	09	15.76	+13	29	02.1	983
88	1983	12	14.17674	09	09	15.65	+13	29	01.7	983
88	1984	01	28.00799	08	40	50.16	+14	13	10.0	983
88	1984	01	28.01493	08	40	49.78	+14	13	11.2	983
88	1984	01	28.02187	08	40	49.41	+14	13	11.9	983
88	1984	03	01.92708	08	14	42.10	+15	28	59.3	983
88	1984	03	01.93472	08	14	41.90	+15	28	59.8	983
88	1984	03	01.94236	08	14	41.66	+15	29	00.7	983
88	1985	05	10.92951	12	53	52.70	-13	30	53.1	983
88	1985	05	10.93646	12	53	52.48	-13	30	51.0	983
88	1985	05	10.94479	12	53	52.21	-13	30	48.3	983
89	1983	03	11.02743	11	44	35.15	-17	42	07.2	983
89	1983	03	11.03437	11	44	34.82	-17	42	06.6	983
89	1983	03	11.04132	11	44	34.37	-17	42	06.2	983
89	1985	11	19.17431	06	35	59.04	+42	06	24.4	983
89	1985	11	19.18056	06	35	58.78	+42	06	24.9	983
89	1985	11	19.18681	06	35	58.53	+42	06	25.5	983
89	1985	12	13.95451	06	09	34.42	+41	48	18.3	983
89	1985	12	13.96007	06	09	33.95	+41	48	17.2	983
89	1985	12	13.96563	06	09	33.49	+41	48	16.1	983
97	1983	07	12.02049	18	45	09.87	-08	41	19.6	983
97	1983	07	12.02743	18	45	09.52	-08	41	21.0	983
97	1983	07	12.03437	18	45	09.13	-08	41	22.3	983
97	1983	07	14.96493	18	42	36.44	-08	50	55.2	983
97	1983	07	14.97187	18	42	36.06	-08	50	56.7	983
97	1983	07	14.97882	18	42	35.69	-08	50	58.4	983
97	1984	11	19.98160	02	46	38.31	-05	31	20.1	983
97	1984	11	19.98715	02	46	38.07	-05	31	21.4	983
97	1984	11	19.99271	02	46	37.82	-05	31	22.4	983
97	1985	01	14.86493	02	52	22.87	-00	09	10.5	983
97	1985	01	14.87188	02	52	23.23	-00	09	05.9	983

97	1985	01	14.87882	02	52	23.60	-00	09	01.2	983
115	1985	10	07.93264	22	32	04.93	+08	06	47.5	983
115	1985	10	07.93750	22	32	04.77	+08	06	46.8	983
115	1985	10	07.94236	22	32	04.61	+08	06	45.9	983
115	1985	11	13.83056	22	37	11.34	+07	25	39.1	983
115	1985	11	13.83681	22	37	11.60	+07	25	39.5	983
115	1985	11	13.84306	22	37	11.90	+07	25	40.2	983
129	1983	10	16.15764	05	48	50.35	+10	18	40.8	983
129	1983	10	16.16528	05	48	50.34	+10	18	39.9	983
129	1983	10	16.17292	05	48	50.36	+10	18	38.3	983
129	1984	12	28.14896	10	36	58.13	+09	44	18.5	983
129	1984	12	28.15590	10	36	58.22	+09	44	19.5	983
129	1984	12	28.16285	10	36	58.29	+09	44	20.5	983
129	1985	01	27.05243	10	33	08.84	+12	15	53.4	983
129	1985	01	27.05938	10	33	08.64	+12	15	56.8	983
129	1985	01	27.06632	10	33	08.44	+12	15	59.7	983
129	1985	04	15.88021	09	50	45.95	+20	34	25.7	983
129	1985	04	15.88715	09	50	45.99	+20	34	25.9	983
129	1985	04	15.89479	09	50	46.05	+20	34	26.0	983
148	1978	01	12.86318	03	35	22.66	-14	18	00.5	983
148	1978	01	12.88678	03	35	22.96	-14	17	37.6	983
148	1978	01	12.89303	03	35	23.05	-14	17	31.8	983
148	1978	02	02.83958	03	46	07.67	-08	34	39.6	983
148	1978	02	02.84583	03	46	07.96	-08	34	33.6	983
148	1978	02	02.85208	03	46	08.23	-08	34	27.5	983
148	1978	02	06.85069	03	49	19.33	-07	29	09.6	983
148	1978	02	06.85694	03	49	19.63	-07	29	03.7	983
148	1978	02	06.86319	03	49	19.94	-07	28	57.5	983
148	1978	03	04.85208	04	17	00.39	-00	49	41.7	983
148	1978	03	06.89931	04	19	37.07	-00	20	47.4	983
148	1978	03	06.90347	04	19	37.37	-00	20	44.4	983
148	1978	03	06.90764	04	19	37.69	-00	20	40.4	983
148	1978	03	10.85069	04	24	48.49	+00	33	43.9	983
148	1978	03	10.85694	04	24	49.00	+00	33	49.0	983
148	1978	03	10.86319	04	24	49.49	+00	33	54.3	983
148	1983	01	07.99965	07	30	57.84	-01	50	05.3	983
148	1983	01	08.00521	07	30	57.52	-01	50	02.0	983
148	1983	01	08.01042	07	30	57.21	-01	49	58.6	983
148	1983	02	09.93194	07	05	19.68	+05	08	01.2	983
148	1983	02	09.93819	07	05	19.52	+05	08	06.6	983
148	1983	02	09.94444	07	05	19.31	+05	08	11.3	983
148	1984	04	05.01493	13	25	48.63	+20	45	42.2	983
148	1984	04	05.02188	13	25	48.31	+20	45	45.9	983
148	1984	04	05.02882	13	25	47.99	+20	45	49.0	983
148	1984	05	03.89757	13	05	05.95	+23	02	44.7	983
148	1984	05	22.87917	12	57	13.72	+22	41	14.9	983
148	1984	05	22.88681	12	57	13.63	+22	41	13.6	983
148	1984	05	22.89444	12	57	13.56	+22	41	11.5	983
148	1985	06	24.97535	17	37	44.20	+08	33	27.6	983
148	1985	06	24.98229	17	37	43.81	+08	33	25.7	983
148	1985	06	24.98929	17	37	43.50	+08	33	24.3	983
192	1983	03	09.94965	08	56	34.90	+20	44	07.6	983
192	1983	03	09.95660	08	56	34.64	+20	44	07.1	983
192	1983	03	09.96354	08	56	34.37	+20	44	06.7	983
192	1983	03	10.96389	08	56	00.21	+20	43	19.7	983
192	1983	03	10.97153	08	55	59.92	+20	43	19.4	983
192	1983	03	10.97917	08	55	59.66	+20	43	19.0	983
192	1983	04	04.85208	08	51	06.42	+19	51	44.4	983
192	1983	04	04.85972	08	51	06.52	+19	51	42.8	983

192	1983	04	04.86736	08	51	06.54	+19	51	41.5	983
192	1983	04	05.84653	08	51	15.88	+19	48	34.3	983
192	1983	04	05.85417	08	51	15.95	+19	48	32.7	983
192	1983	04	05.86181	08	51	16.02	+19	48	31.3	983
192	1984	04	05.05243	14	20	24.19	-21	57	28.2	983
192	1984	04	05.05937	14	20	23.81	-21	57	27.8	983
192	1984	04	05.06632	14	20	23.43	-21	57	27.0	983
192	1984	05	22.92049	13	36	18.45	-18	59	17.4	983
192	1984	05	22.92743	13	36	18.18	-18	59	15.5	983
192	1984	05	22.95104	13	36	17.17	-18	59	09.1	983
192	1984	05	24.91076	13	35	02.66	-18	50	32.6	983
192	1984	05	24.91771	13	35	02.37	-18	50	30.9	983
192	1984	05	24.92465	13	35	02.13	-18	50	29.0	983
192	1985	10	09.93090	23	36	36.62	+04	00	39.5	983
192	1985	10	09.93507	23	36	36.44	+04	00	39.5	983
192	1985	10	09.94028	23	36	36.20	+04	00	39.9	983
192	1985	11	07.86319	23	31	29.15	+05	00	35.3	983
192	1985	11	07.86806	23	31	29.22	+05	00	36.1	983
192	1985	11	07.87292	23	31	29.33	+05	00	37.1	983
192	1985	12	06.83229	23	55	32.79	+07	44	39.1	983
192	1985	12	06.83785	23	55	33.19	+07	44	41.6	983
192	1985	12	06.84375	23	55	33.62	+07	44	44.3	983
196	1983	03	12.95521	10	14	53.79	+21	47	40.9	983
196	1983	03	12.96215	10	14	53.51	+21	47	42.2	983
196	1983	03	12.96910	10	14	53.20	+21	47	43.0	983
196	1983	03	14.94132	10	13	32.11	+21	52	16.3	983
196	1983	03	14.94826	10	13	31.83	+21	52	17.0	983
196	1983	03	14.95521	10	13	31.54	+21	52	18.2	983
196	1983	04	04.88368	10	03	20.48	+22	03	13.3	983
196	1983	04	04.89063	10	03	20.35	+22	03	12.8	983
196	1983	04	04.89757	10	03	20.22	+22	03	12.1	983
196	1983	04	07.89549	10	02	36.46	+21	59	26.0	983
196	1983	04	07.90243	10	02	36.35	+21	59	25.5	983
196	1983	04	07.90938	10	02	36.28	+21	59	24.8	983
196	1985	10	05.86424	20	55	49.73	-26	19	44.8	983
196	1985	10	05.87187	20	55	49.78	-26	19	43.7	983
196	1985	10	05.87882	20	55	49.84	-26	19	42.7	983
216	1983	05	02.95625	13	52	37.96	-12	10	04.8	983
216	1983	05	02.96389	13	52	37.63	-12	10	01.8	983
216	1983	05	02.97153	13	52	37.27	-12	09	58.6	983
216	1984	06	26.98542	18	13	03.01	-06	28	21.1	983
216	1984	06	26.99271	18	13	02.57	-06	28	20.3	983
216	1984	06	26.99965	18	13	02.22	-06	28	19.3	983
216	1984	06	29.99887	18	10	22.36	-06	23	34.9	983
216	1984	06	30.02465	18	10	20.95	-06	23	32.9	983
216	1984	06	30.03160	18	10	20.58	-06	23	32.2	983
216	1984	07	02.98438	18	07	44.50	-06	20	02.4	983
216	1984	07	02.99132	18	07	44.11	-06	20	01.9	983
216	1984	07	02.99826	18	07	43.76	-06	20	01.9	983
216	1985	11	15.99028	04	09	52.26	+11	16	15.9	983
216	1985	11	15.99514	04	09	52.01	+11	16	12.8	983
216	1985	11	16.00000	04	09	51.78	+11	16	09.5	983
216	1985	12	12.92917	03	49	36.21	+07	22	50.1	983
216	1985	12	12.93472	03	49	36.01	+07	22	48.4	983
216	1985	12	12.93958	03	49	35.83	+07	22	46.7	983
230	1983	02	09.91042	05	37	22.29	+13	45	33.0	983
230	1983	02	09.91632	05	37	22.32	+13	45	33.3	983
230	1983	02	09.92188	05	37	22.34	+13	45	33.6	983
230	1985	10	07.95035	22	33	38.46	+06	12	11.2	983

230	1985	10	07.95590	22	33	38.34	+06	12	08.3	983
230	1985	10	07.96146	22	33	38.21	+06	12	05.5	983
230	1985	11	13.85174	22	41	38.55	+02	32	04.5	983
230	1985	11	13.85868	22	41	38.82	+02	32	04.0	983
230	1985	11	13.86563	22	41	39.13	+02	32	02.5	983
324	1983	12	13.19410	09	50	54.48	+19	03	35.5	983
324	1983	12	13.20104	09	50	54.47	+19	03	34.6	983
324	1983	12	13.20799	09	50	54.42	+19	03	34.2	983
324	1984	01	12.10833	09	37	21.47	+19	25	35.4	983
324	1984	01	12.11458	09	37	21.16	+19	25	36.2	983
324	1984	01	12.12083	09	37	20.80	+19	25	36.7	983
324	1984	01	28.03056	09	21	43.46	+19	57	01.1	983
324	1984	01	28.03681	09	21	43.06	+19	57	01.9	983
324	1984	01	28.04306	09	21	42.64	+19	57	02.6	983
324	1984	03	01.95243	08	48	24.61	+20	21	50.7	983
324	1984	03	01.95937	08	48	24.32	+20	21	50.5	983
324	1984	03	01.96632	08	48	24.00	+20	21	50.2	983
324	1984	03	27.91840	08	38	41.74	+19	36	56.7	983
324	1984	03	27.92535	08	38	41.73	+19	36	55.4	983
324	1984	03	27.93229	08	38	41.69	+19	36	54.3	983
324	1985	03	16.04167	12	36	53.19	-14	53	57.0	983
324	1985	03	16.05069	12	36	52.72	-14	53	55.8	983
324	1985	03	16.05833	12	36	52.30	-14	53	54.5	983
324	1985	05	09.88125	11	57	20.17	-11	16	14.3	983
324	1985	05	09.88889	11	57	20.00	-11	16	12.8	983
324	1985	05	09.89653	11	57	19.81	-11	16	10.8	983
349	1984	01	13.19931	11	24	24.84	+13	54	26.3	983
349	1984	01	13.20556	11	24	24.83	+13	54	26.9	983
349	1984	01	13.21181	11	24	24.78	+13	54	28.0	983
349	1984	03	01.98021	10	57	28.90	+17	04	17.1	983
349	1984	03	01.98576	10	57	28.59	+17	04	18.7	983
349	1984	03	01.99132	10	57	28.31	+17	04	20.0	983
349	1984	03	27.94167	10	37	12.50	+17	57	37.3	983
349	1984	03	27.94792	10	37	12.23	+17	57	37.4	983
349	1984	03	27.95417	10	37	12.03	+17	57	37.4	983
349	1984	03	30.90903	10	35	28.16	+17	57	35.6	983
349	1984	03	30.91528	10	35	27.94	+17	57	36.1	983
349	1984	03	30.92153	10	35	27.75	+17	57	35.5	983
349	1984	04	04.92014	10	32	55.48	+17	54	37.8	983
349	1984	04	04.92639	10	32	55.33	+17	54	37.6	983
349	1984	04	04.93333	10	32	55.12	+17	54	37.2	983
349	1985	05	10.99097	15	17	31.64	-22	29	34.1	983
349	1985	05	10.99722	15	17	31.28	-22	29	33.6	983
349	1985	05	11.00347	15	17	30.95	-22	29	33.2	983
349	1985	06	07.93472	14	54	23.83	-21	45	13.9	983
349	1985	06	07.94097	14	54	23.59	-21	45	13.7	983
349	1985	06	07.94792	14	54	23.30	-21	45	12.7	983
354	1983	07	04.91458	16	36	05.67	+01	28	47.6	983
354	1983	07	04.92083	16	36	05.49	+01	28	45.2	983
354	1983	07	04.92708	16	36	05.27	+01	28	42.5	983
354	1983	07	05.91042	16	35	34.89	+01	22	05.3	983
354	1983	07	05.91675	16	35	34.68	+01	22	02.5	983
354	1983	07	05.92292	16	35	34.50	+01	22	00.1	983
354	1983	07	07.91875	16	34	36.39	+01	08	08.6	983
354	1983	07	07.92500	16	34	36.21	+01	08	06.0	983
354	1983	07	07.93125	16	34	36.02	+01	08	03.2	983
354	1983	07	11.91319	16	32	55.22	+00	38	57.3	983
354	1983	07	11.91944	16	32	55.05	+00	38	54.4	983
354	1983	07	11.92569	16	32	54.90	+00	38	51.7	983

354	1984	08	24.02569	22	20	58.54	-16	02	28.1	983
354	1984	08	24.03194	22	20	58.26	-16	02	31.6	983
354	1984	08	24.03819	22	20	57.97	-16	02	34.8	983
354	1984	09	20.94549	22	01	40.67	-19	40	24.2	983
354	1984	09	20.95243	22	01	40.47	-19	40	26.8	983
354	1984	09	20.95937	22	01	40.21	-19	40	28.9	983
354	1984	10	18.87465	21	54	47.67	-21	15	18.8	983
354	1984	10	18.88160	21	54	47.62	-21	15	19.0	983
354	1984	10	18.88854	21	54	47.68	-21	15	19.4	983
354	1985	11	15.97257	03	58	48.04	-08	08	38.7	983
354	1985	11	15.97812	03	58	47.74	-08	08	40.0	983
354	1985	11	15.98368	03	58	47.46	-08	08	40.9	983
354	1985	12	09.92222	03	38	38.38	-08	09	49.3	983
354	1985	12	09.92917	03	38	38.05	-08	09	48.1	983
354	1985	12	09.93542	03	38	37.78	-08	09	46.9	983
389	1978	01	12.99646	07	55	53.28	+17	38	32.3	983
389	1978	01	13.00278	07	55	52.86	+17	38	32.1	983
389	1978	01	13.00903	07	55	52.49	+17	38	32.0	983
389	1978	02	02.95417	07	34	46.19	+17	28	05.0	983
389	1978	02	02.96042	07	34	45.81	+17	28	04.8	983
389	1978	02	02.96667	07	34	45.50	+17	28	04.5	983
389	1978	02	14.02153	07	26	25.40	+17	22	12.4	983
389	1978	02	14.02760	07	26	25.16	+17	22	12.1	983
389	1978	02	14.03403	07	26	24.93	+17	22	11.9	983
389	1978	03	06.99653	07	20	17.67	+17	06	20.5	983
389	1978	03	07.00278	07	20	17.67	+17	06	19.9	983
389	1978	03	07.00903	07	20	17.67	+17	06	19.8	983
389	1978	03	10.95208	07	20	39.24	+17	02	20.1	983
389	1978	03	10.95833	07	20	39.27	+17	02	19.5	983
389	1978	03	10.96458	07	20	39.31	+17	02	19.4	983
389	1978	03	30.86701	07	29	05.78	+16	34	21.3	983
389	1978	03	30.87465	07	29	06.06	+16	34	20.5	983
389	1978	03	30.88160	07	29	06.34	+16	34	19.9	983
389	1983	06	01.91007	13	43	56.17	-21	51	11.8	983
389	1983	06	01.91701	13	43	56.06	-21	51	09.0	983
389	1983	06	01.92396	13	43	55.94	-21	51	06.6	983
389	1984	08	24.00243	22	01	53.08	-01	36	28.2	983
389	1984	08	24.00938	22	01	52.66	-01	36	29.5	983
389	1984	08	24.01632	22	01	52.28	-01	36	30.7	983
389	1984	09	20.91250	21	40	42.37	-03	19	33.2	983
389	1984	09	20.92014	21	40	42.11	-03	19	34.9	983
389	1984	09	20.92778	21	40	41.87	-03	19	36.4	983
389	1984	10	18.85000	21	35	51.16	-04	31	31.3	983
389	1984	10	18.85764	21	35	51.25	-04	31	32.2	983
389	1984	10	18.86528	21	35	51.30	-04	31	32.7	983
451	1983	07	14.94062	18	20	43.93	-27	33	36.1	983
451	1983	07	14.94757	18	20	43.62	-27	33	37.6	983
451	1983	07	14.95451	18	20	43.24	-27	33	39.2	983
451	1984	10	26.94132	23	57	15.56	-22	56	11.7	983
451	1984	10	26.94826	23	57	15.35	-22	56	10.4	983
451	1984	10	26.95521	23	57	15.17	-22	56	09.2	983
451	1984	11	20.84132	23	52	54.56	-20	37	09.5	983
451	1984	11	20.84931	23	52	54.62	-20	37	05.6	983
451	1984	11	20.85694	23	52	54.65	-20	37	02.1	983
451	1985	11	19.15000	06	30	01.87	+21	18	52.2	983
451	1985	11	19.15625	06	30	01.70	+21	18	54.1	983
451	1985	11	19.16250	06	30	01.56	+21	18	55.4	983
451	1985	12	14.02639	06	12	42.35	+23	24	03.9	983
451	1985	12	14.03264	06	12	41.99	+23	24	05.9	983

451	1985	12	14.03889	06	12	41.63	+23	24	07.8	983
471	1983	04	05.96146	12	10	30.62	+21	26	05.9	983
471	1983	04	05.96840	12	10	30.29	+21	26	06.8	983
471	1983	04	05.97535	12	10	29.96	+21	26	07.3	983
471	1984	05	05.00729	15	47	47.91	-08	53	09.7	983
471	1984	05	05.01424	15	47	47.56	-08	53	09.1	983
471	1984	05	05.02188	15	47	47.15	-08	53	08.2	983
471	1984	05	22.98229	15	32	39.87	-08	41	05.3	983
471	1984	05	22.98924	15	32	39.53	-08	41	05.6	983
471	1984	05	22.99618	15	32	39.15	-08	41	05.3	983
471	1984	05	25.96007	15	30	09.18	-08	41	04.6	983
471	1984	05	25.96701	15	30	08.85	-08	41	04.5	983
471	1984	05	25.97396	15	30	08.47	-08	41	04.3	983
471	1984	06	20.90590	15	12	00.86	-09	11	40.0	983
471	1984	06	20.91285	15	12	00.65	-09	11	41.0	983
471	1984	06	20.91979	15	12	00.44	-09	11	41.7	983
471	1985	07	19.01632	20	43	27.41	-33	01	21.3	983
471	1985	07	19.02187	20	43	27.13	-33	01	24.6	983
471	1985	07	19.02743	20	43	26.83	-33	01	27.3	983
471	1985	10	05.81701	20	08	34.15	-35	22	05.8	983
471	1985	10	05.82465	20	08	34.34	-35	22	04.2	983
471	1985	10	05.83160	20	08	34.60	-35	22	02.4	983
480	1978	03	11.13924	14	39	17.08	-30	14	28.5	983
480	1978	03	11.14757	14	39	17.07	-30	14	27.9	983
480	1978	03	11.15590	14	39	17.05	-30	14	26.7	983
480	1978	03	16.14687	14	38	54.96	-30	07	14.8	983
480	1978	03	16.15521	14	38	54.87	-30	07	14.2	983
480	1978	03	16.16354	14	38	54.76	-30	07	13.1	983
480	1978	04	13.05139	14	25	05.78	-27	41	52.7	983
480	1978	04	13.05972	14	25	05.37	-27	41	48.3	983
480	1978	04	13.06736	14	25	05.01	-27	41	44.2	983
480	1978	05	29.99931	13	51	40.57	-18	47	50.0	983
480	1978	05	30.00694	13	51	40.42	-18	47	44.5	983
480	1978	05	30.01458	13	51	40.24	-18	47	39.8	983
480	1983	07	14.98889	18	45	04.27	+02	31	49.9	983
480	1983	07	14.99653	18	45	03.85	+02	31	50.4	983
480	1983	07	15.00417	18	45	03.46	+02	31	51.3	983
511	1983	07	08.02813	19	12	59.94	-21	58	49.3	983
511	1983	07	08.03507	19	12	59.61	-21	58	50.7	983
511	1983	07	08.04201	19	12	59.29	-21	58	52.5	983
511	1983	07	12.04618	19	09	45.43	-22	16	04.0	983
511	1983	07	12.05313	19	09	45.08	-22	16	05.9	983
511	1983	07	12.06007	19	09	44.75	-22	16	07.5	983
511	1984	09	05.05000	23	54	34.59	-22	36	39.9	983
511	1984	09	05.05625	23	54	34.35	-22	36	42.7	983
511	1984	09	05.06250	23	54	34.11	-22	36	45.5	983
511	1984	09	20.98229	23	43	04.73	-24	23	13.2	983
511	1984	09	20.98924	23	43	04.42	-24	23	15.4	983
511	1984	09	20.99618	23	43	04.06	-24	23	17.7	983
511	1984	10	18.91267	23	25	24.89	-25	26	01.9	983
511	1984	10	18.91858	23	25	24.68	-25	26	02.0	983
511	1984	10	18.92517	23	25	24.52	-25	26	01.0	983
511	1984	11	20.80208	23	22	54.99	-23	14	22.0	983
511	1984	11	20.80972	23	22	55.13	-23	14	19.0	983
511	1984	11	20.81736	23	22	55.24	-23	14	15.8	983
511	1985	12	14.04722	06	30	24.24	+16	10	45.5	983
511	1985	12	14.05208	06	30	24.00	+16	10	47.1	983
511	1985	12	14.05694	06	30	23.75	+16	10	48.9	983
532	1978	03	11.17153	15	39	41.22	+03	09	27.8	983

532	1978	03	11.17639	15	39	41.34	+03	09	29.3	983
532	1978	03	11.18125	15	39	41.47	+03	09	30.8	983
532	1978	03	16.17431	15	41	44.47	+03	35	15.4	983
532	1978	03	16.17917	15	41	44.58	+03	35	17.0	983
532	1978	03	16.18403	15	41	44.68	+03	35	18.5	983
532	1978	04	13.08177	15	39	25.59	+06	05	52.6	983
532	1978	04	13.08594	15	39	25.48	+06	05	53.8	983
532	1978	04	13.09010	15	39	25.33	+06	05	54.9	983
532	1978	05	30.02569	15	02	07.21	+05	47	08.0	983
532	1978	05	30.03056	15	02	06.99	+05	47	06.0	983
532	1978	05	30.03542	15	02	06.76	+05	47	04.1	983
532	1978	06	06.99028	14	57	08.78	+04	49	53.1	983
532	1978	06	06.99514	14	57	08.61	+04	49	50.8	983
532	1978	06	07.00000	14	57	08.43	+04	49	48.3	983
532	1978	08	03.86701	15	07	15.13	-05	36	08.9	983
532	1978	08	03.87257	15	07	15.38	-05	36	12.7	983
532	1978	08	03.87812	15	07	15.64	-05	36	16.5	983
532	1978	08	07.86771	15	10	35.92	-06	22	12.1	983
532	1978	08	07.87326	15	10	36.23	-06	22	15.9	983
532	1978	08	07.87882	15	10	36.49	-06	22	19.8	983
532	1983	07	04.96528	18	07	01.63	-17	56	22.1	983
532	1983	07	04.97014	18	07	01.38	-17	56	24.1	983
532	1983	07	04.97500	18	07	01.09	-17	56	25.6	983
532	1983	07	07.98750	18	04	18.34	-18	16	11.2	983
532	1983	07	07.99236	18	04	18.07	-18	16	13.2	983
532	1983	07	07.99722	18	04	17.80	-18	16	14.8	983
532	1983	07	11.98958	18	00	53.20	-18	42	20.6	983
532	1983	07	11.99444	18	00	52.96	-18	42	22.6	983
532	1983	07	11.99931	18	00	52.69	-18	42	24.5	983
532	1984	09	05.07292	00	12	27.96	-21	31	14.5	983
532	1984	09	05.07917	00	12	27.69	-21	31	17.6	983
532	1984	09	05.08542	00	12	27.43	-21	31	20.6	983
532	1984	10	18.93160	23	40	08.07	-24	34	29.0	983
532	1984	10	18.93715	23	40	07.84	-24	34	28.8	983
532	1984	10	18.94271	23	40	07.65	-24	34	28.7	983
532	1985	11	16.00590	04	33	14.70	+04	27	49.6	983
532	1985	11	16.01215	04	33	14.36	+04	27	49.3	983
532	1985	11	16.01771	04	33	14.09	+04	27	48.9	983
532	1985	12	12.94618	04	08	08.27	+04	58	16.4	983
532	1985	12	12.95174	04	08	07.97	+04	58	17.4	983
532	1985	12	12.95729	04	08	07.65	+04	58	18.6	983
568	1978	08	03.95000	19	17	12.15	-02	10	32.2	983
568	1978	08	03.95764	19	17	11.80	-02	10	32.9	983
568	1978	08	03.96736	19	17	11.36	-02	10	32.8	983
582	1978	03	07.07951	12	51	01.69	+16	08	30.0	983
582	1978	03	07.08646	12	51	01.45	+16	08	38.3	983
582	1978	03	07.09341	12	51	01.24	+16	08	47.3	983
582	1978	03	11.03854	12	48	48.97	+17	29	36.3	983
582	1978	03	11.04549	12	48	48.69	+17	29	44.8	983
582	1978	03	11.05243	12	48	48.46	+17	29	53.1	983
582	1978	03	16.11840	12	45	31.87	+19	10	08.9	983
582	1978	03	16.12535	12	45	31.58	+19	10	16.8	983
582	1978	03	16.13229	12	45	31.28	+19	10	24.5	983
582	1978	04	13.02465	12	24	54.15	+25	52	55.9	983
582	1978	04	13.03160	12	24	53.92	+25	52	59.2	983
582	1978	04	13.03854	12	24	53.65	+25	53	02.7	983
582	1978	05	29.96944	12	19	19.48	+26	09	03.9	983
582	1978	05	29.97708	12	19	19.70	+26	09	01.5	983
582	1978	05	29.98472	12	19	19.83	+26	08	58.9	983

582	1978	05	31.96944	12	20	12.78	+25	57	27.2	983
582	1978	05	31.97708	12	20	12.95	+25	57	24.9	983
582	1978	05	31.98472	12	20	13.19	+25	57	22.1	983
582	1978	06	06.92708	12	23	19.22	+25	19	20.3	983
582	1978	06	06.93472	12	23	19.48	+25	19	16.5	983
582	1978	06	06.94236	12	23	19.72	+25	19	13.9	983
704	1983	05	05.94931	13	11	21.87	-31	30	41.2	983
704	1983	05	05.95556	13	11	21.58	-31	30	38.1	983
704	1983	05	05.96181	13	11	21.34	-31	30	35.7	983
704	1983	05	10.93646	13	08	11.49	-30	53	36.4	983
704	1983	05	10.94340	13	08	11.25	-30	53	33.1	983
704	1983	05	10.95035	13	08	10.98	-30	53	30.1	983
704	1985	11	13.94444	00	57	16.71	+32	18	09.3	983
704	1985	11	13.94931	00	57	16.58	+32	18	05.9	983
704	1985	11	13.95417	00	57	16.47	+32	18	03.1	983
704	1985	12	06.86632	00	56	04.28	+28	29	43.6	983
704	1985	12	06.87187	00	56	04.36	+28	29	40.8	983
704	1985	12	06.87743	00	56	04.43	+28	29	37.7	983

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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, G = D. W. E. Green, I = H. Oishi, M = B. G. Marsden, N = S. Nakano.

Planet	H	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1978 TP2	14.6	780929	338.29	246.08	159.63	4.30	0.1528	2.3133	30	3	D	I
1978 TV2	15.2	780929	13.49	278.90	73.10	3.36	0.2596	2.3288	30	3	D	I
1980 TQ4	15.3	801008	3.06	341.54	25.24	6.01	0.2817	2.4416	3	4		I
1985 PL1	13.3	850823	294.56	217.01	188.29	12.96	0.1195	2.9156	10	6	D	I
1985 QJ2	11.9	850823	111.67	9.10	191.43	12.02	0.1477	2.5724	7	6	D	I
1987 BO1	14.5	870125	27.10	154.63	276.73	23.05	0.2222	2.3226	12	0		G
1987 BP1	14.5	870125	358.93	341.10	142.25	5.45	0.2521	2.5444	14	0	D	G
1987 BR1	14.0	870125	35.53	166.84	272.72	3.75	0.0943	2.2574	14	0		G
1987 BS1	13.5	870125	24.64	157.58	294.21	11.78	0.1294	2.5636	15	0		G
1987 BT1	14.0	870125	327.40	257.43	263.27	6.86	0.1351	2.4878	7	9	E	G
1987 BU1	14.0	870125	27.47	210.70	240.92	3.48	0.1641	2.4346	12	0		G
1987 BW1	14.5	870125	27.89	209.44	243.24	4.04	0.1506	2.3244	12	0	D	G
1987 BX1	12.5	870125	350.70	263.54	241.04	6.60	0.1724	2.7911	13	0		G
1987 BY1	14.5	870125	13.55	326.40	135.63	13.15	0.2389	2.5739	8	0		G
1987 BZ1	13.0	870125	52.78	279.38	139.77	14.00	0.1391	2.6600	10	8		G
1987 BA2	12.0	870125	344.26	257.95	258.12	12.05	0.0945	2.9638	6	0		G
1987 BB2	14.5	870125	12.56	230.05	232.95	1.95	0.1823	2.2725	6	0		G
1987 BC2	13.5	870125	65.92	111.51	275.11	4.15	0.2490	2.3374	7	0		G
1987 BE2	12.0	870125	148.37	182.04	142.61	5.91	0.1481	2.7220	8	0		G
1987 BS2	14.5	870125	6.13	326.55	146.92	2.38	0.1655	2.3576	6	0		G
1987 BT2	12.0	870125	311.40	54.54	126.13	10.83	0.1080	3.1056	2	6	E	G
1987 BU2	15.0	870125	1.25	178.83	302.71	16.98	0.0645	1.8446	3	0		G
1987 CG	11.5	870214	257.35	259.58	4.92	1.56	0.0293	2.8784	60	0	D	G
1987 CH	14.0	870125	27.65	318.03	145.69	4.85	0.2321	2.4026	3	9		G
1987 CJ	12.0	870214	14.56	347.38	155.74	10.49	0.0471	3.0139	57	0		M
1987 DD	12.5	870326	67.24	359.78	84.64	29.81	0.1019	2.6335	73	0		B

1987 DF	13.0	870306	296.88	88.11	159.56	23.03	0.2249	2.3601	59	9		B
1987 FG1	11.0	870326	61.61	56.86	49.99	22.94	0.0833	3.2196	30	6		B
1987 GA	13.0	870415	334.74	167.37	49.21	11.08	0.1981	2.6867	47	0		N
1987 GF	14.5	870415	39.18	293.05	177.28	21.54	0.3203	2.3301	38	0		B
1987 HK	13.0	870505	294.48	359.50	311.31	1.07	0.1175	2.5904	39	4		M
1987 HW	12.5	870415	316.41	239.52	20.55	9.18	0.0966	2.8288	4	6	E	G
1987 HY	12.0	870415	176.89	187.93	202.77	3.74	0.1095	2.7048	4	6	E	G
1987 HA1	12.5	870415	359.70	91.85	116.78	0.32	0.1236	3.1374	4	6	E	G
1987 HB1	13.0	870415	45.67	296.74	204.17	2.64	0.2200	2.6520	4	6	E	G
1987 HE1	14.0	870415	317.20	117.31	155.18	5.08	0.2040	2.2174	4	5		G
1987 HM1	12.5	870415	336.10	207.50	35.56	9.08	0.1401	3.2346	4	6	E	G
1987 JA	13.5	870505	124.02	63.43	29.87	3.70	0.1857	2.3384	25	6		M
1987 JG	14.0	870505	341.69	7.32	245.66	5.61	0.0856	2.2954	25	6		B
1987 KB	12.0	870505	356.11	0.63	244.17	19.27	0.0671	2.6885	4	3	E	M
1987 MC	13.0	870614	341.26	122.72	170.95	7.57	0.2331	2.2987	7	0		G

1978 TP2 = 1978 VF12 (S. Nakano; H. Oishi, JAM 2075)
1978 TV2 = 1978 VM12 (S. Nakano; H. Oishi, JAM 2075)
1985 PL1 = 1985 QH2 = 1985 QY3 (H. Oishi, JAM 2074)
1985 QJ2 = 1985 QX3 (H. Oishi, JAM 2074)
1987 BP1 = 1987 BD2 (D. W. E. Green)
1987 BW1 = 1987 CK (E. W. Elst)
1987 CG = 1987 GY (D. W. E. Green, S. Nakano)

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

The orbit for (2424) was computed in collaboration with M. Gressmann, Falkensee.

(7) Iris
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	278.20585		(1950.0)	P	Q
n	0.26750605	Peri.	144.91404	+0.71354747	-0.69421577
a	2.3855049	Node	259.34758	+0.61879077	+0.68766959
e	0.2296503	Incl.	5.51303	+0.32855440	+0.21254412
P	3.68	H	5.56	G 0.25	

From 2694 observations at 42 oppositions 1901-1985, mean residual 0".6.

(20) Massalia
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	301.44528		(1950.0)	P	Q
n	0.26351111	Peri.	254.95583	-0.19062526	-0.98164796
a	2.4095546	Node	206.03533	+0.90528615	-0.17365887
e	0.1442779	Incl.	0.70661	+0.37963008	-0.07880282
P	3.74	H	6.52	G 0.26	

From 403 observations at 41 oppositions 1907-1986, mean residual 1".0.

(44) Nysa
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	293.96266		(1950.0)	P	Q
n	0.26115349	Peri.	341.74087	-0.38821248	-0.92027955
a	2.4240347	Node	131.07171	+0.85333929	-0.37894263
e	0.1499609	Incl.	3.70766	+0.34799874	-0.09740659
P	3.77	H	7.05	G 0.44	

From 398 observations at 38 oppositions 1906-1986, mean residual 0".9.

(1825) Klare
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	115.01858	(1950.0)	P	Q
n	0.22495568	Peri. 143.24760	+0.31236431	-0.94760932
a	2.6775530	Node 288.46555	+0.85390004	+0.31090534
e	0.1152826	Incl. 4.03976	+0.41627305	+0.07331065
P	4.38	H 11.8	G 0.25	

From 23 observations at 11 oppositions 1934-1987, mean residual 0".9.

(2424) Tautenburg
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	215.29578	(1950.0)	P	Q
n	0.27375547	Peri. 91.85371	-0.51991556	-0.85072855
a	2.3490603	Node 29.87647	+0.70914943	-0.48019502
e	0.1359732	Incl. 8.90721	+0.47622987	-0.21371399
P	3.60	H 13.0	G 0.25	

From 28 observations at 9 oppositions 1924-1984, mean residual 1".0.

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

The identifications are by E. Goffin unless otherwise stated.

(1927) Suvanto
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	359.54296	(1950.0)	P	Q
n	0.22854467	Peri. 96.41206	-0.53417631	-0.83896416
a	2.6494475	Node 26.69995	+0.65494634	-0.48841970
e	0.1489964	Incl. 13.36979	+0.53451003	-0.23996946
P	4.31	H 11.8	G 0.25	

From 21 observations at 6 oppositions 1930-1986, mean residual 1".0.

(1935) Lucerna
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	61.17503	(1950.0)	P	Q
n	0.23150772	Peri. 197.63041	+0.79627859	-0.60232799
a	2.6267923	Node 199.72762	+0.57307383	+0.78077122
e	0.2266388	Incl. 9.55792	+0.19371833	+0.16612432
P	4.26	H 13.3	G 0.25	

From 29 observations at 5 oppositions 1969-1986, mean residual 0".8.

(1940) Whipple
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	144.88996	(1950.0)	P	Q
n	0.18417960	Peri. 186.90836	-0.01132502	-0.99346791
a	3.0594383	Node 263.78537	+0.92275787	+0.03336271
e	0.0686163	Incl. 6.55862	+0.38521379	-0.10912576
P	5.35	H 11.2	G 0.25	

From 82 observations at 10 oppositions 1962-1984, mean residual 0".7.

(1988) Delores
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	37.16004	(1950.0)	P	Q
n	0.31172246	Peri. 234.75295	+0.94163540	+0.32899211
a	2.1542230	Node 105.94666	-0.27969603	+0.88250762
e	0.1028415	Incl. 4.25397	-0.18733102	+0.33607215
P	3.16	H 13.6	G 0.25	

From 38 observations at 8 oppositions 1952-1986, mean residual 1".1.

(2009) Voloshina
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	84.19728	(1950.0)	P	Q
n	0.17906487	Peri. 10.11416	-0.45784730	-0.88774927
a	3.1174234	Node 107.14762	+0.81210079	-0.43946673
e	0.1410731	Incl. 2.86246	+0.36175703	-0.13700447
P	5.50	H 11.0	G 0.25	

From 64 observations at 12 oppositions 1926-1984, mean residual 0".9.

(2014) Vasilevskis
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	265.50039	(1950.0)	P	Q
n	0.26461812	Peri. 81.97563	+0.24618554	+0.95783536
a	2.4028297	Node 203.92305	-0.96887643	+0.23912096
e	0.2834785	Incl. 21.42648	-0.02590629	+0.15928775
P	3.72	H 12.54	G 0.25	

From 39 observations at 6 oppositions 1973-1984, mean residual 0".8.

(2016) Heinemann
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	275.93306	(1950.0)	P	Q
n	0.17697061	Peri. 342.34487	+0.99996394	+0.00702459
a	3.1419694	Node 17.25475	-0.00443497	+0.91120595
e	0.1788000	Incl. 0.92196	-0.00724260	+0.41189121
P	5.57	H 11.2	G 0.25	

From 22 observations at 7 oppositions 1905-1986, mean residual 1".0.

(2051) Chang
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	92.21047	(1950.0)	P	Q
n	0.20585142	Peri. 171.92637	+0.89169378	-0.45243910
a	2.8407530	Node 214.98396	+0.41394542	+0.82713356
e	0.0758866	Incl. 1.34480	+0.18311577	+0.33339006
P	4.79	H 11.7	G 0.25	

From 68 observations at 10 oppositions 1928-1986, mean residual 0".8.

(2079) Jacchia
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	277.75508	(1950.0)	P	Q
n	0.23529061	Peri. 145.65922	-0.74955296	-0.66130348
a	2.5985614	Node 352.72695	+0.54387803	-0.59018706
e	0.0796265	Incl. 13.29898	+0.37731559	-0.46298697
P	4.19	H 12.2	G 0.25	

From 17 observations at 5 oppositions 1976-1986, mean residual 1".0.

(2085) Henan
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	353.91254	(1950.0)	P	Q
n	0.22217035	Peri. 292.11596	+0.64169025	-0.76468487
a	2.6998853	Node 117.82918	+0.72597227	+0.58074230
e	0.0855470	Incl. 3.83071	+0.24738205	+0.27927662
P	4.44	H 11.85	G 0.15	

From 15 observations at 7 oppositions 1962-1984, mean residual 1".0.

(2112) Ulyanov
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	77.09450	(1950.0)	P	Q
n	0.29132641	Peri. 155.66232	+0.77725628	-0.62698833
a	2.2536310	Node 243.26960	+0.56716628	+0.73433508
e	0.1372822	Incl. 3.37115	+0.27238774	+0.26007236
P	3.38	H 12.6	G 0.25	

From 22 observations at 8 oppositions 1908-1986, mean residual 1".3.

(2129) Cosicosi
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	97.57360	(1950.0)	P	Q
n	0.30604861	Peri. 317.80662	+0.95913431	-0.27092146
a	2.1807662	Node 58.08604	+0.27843442	+0.85235696
e	0.1733346	Incl. 5.51823	+0.05035521	+0.44731328
P	3.22	H 14.0	G 0.25	

From 18 observations at 5 oppositions 1973-1986, mean residual 1".1.

(2154) Underhill
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	0.23698	(1950.0)	P	Q
n	0.23051287	Peri. 120.46834	-0.51359778	-0.85803045
a	2.6343446	Node 0.43948	+0.73360733	-0.43974631
e	0.1255819	Incl. 7.76038	+0.44501416	-0.26534306
P	4.28	H 12.6	G 0.25	

From 47 observations at 7 oppositions 1958-1986, mean residual 0".9.

(2156) Kate
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	276.25109	(1950.0)	P	Q
n	0.29358054	Peri. 4.05156	+0.93488527	-0.35393061
a	2.2420805	Node 16.75314	+0.32296644	+0.81678375
e	0.2014180	Incl. 5.35123	+0.14724882	+0.45562861
P	3.36	H 12.67	G 0.25	

From 26 observations at 10 oppositions 1917-1986, mean residual 1".0.

(2165) Young
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	147.97642	(1950.0)	P	Q
n	0.17695276	Peri. 23.16932	+0.74055513	-0.67197371
a	3.1421807	Node 19.05346	+0.61388306	+0.67320785
e	0.1601198	Incl. 0.95215	+0.27335999	+0.30861387
P	5.57	H 11.5	G 0.25	

From 60 observations at 9 oppositions 1956-1985, mean residual 0".7.

(2186) Keldysh
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	26.23443	(1950.0)	P	Q
n	0.22460437	Peri. 131.25182	+0.55144478	-0.83326262
a	2.6803443	Node 285.23963	+0.75247623	+0.51743211
e	0.1007469	Incl. 2.36268	+0.36012245	+0.19477530
P	4.39	H 12.4	G 0.25	

From 22 observations at 10 oppositions 1929-1986, mean residual 1".1.

(2190) Coubertin
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	320.62480	(1950.0)	P	Q
n	0.25385566	Peri. 316.83473	-0.78004149	+0.62556355
a	2.4702722	Node 261.89439	-0.57005230	-0.71989663
e	0.0924987	Incl. 0.82972	-0.25802258	-0.30069768
P	3.88	H 13.58	G 0.25	

From 28 observations at 7 oppositions 1960-1987, mean residual 1".0.

(2199) Klet
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	225.14185	(1950.0)	P	Q
n	0.29375857	Peri. 141.76748	+0.31829591	+0.94474388
a	2.2411746	Node 146.58275	-0.90101145	+0.32719777
e	0.2011472	Incl. 8.18431	-0.29473051	+0.02001547
P	3.36	H 13.1	G 0.25	

From 47 observations at 7 oppositions 1941-1985, mean residual 1".0.

(2204) Lyyli
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	272.75033	(1950.0)	P	Q
n	0.23598874	Peri. 282.20807	+0.10519448	-0.98757112
a	2.5934340	Node 160.56053	+0.99283040	+0.09759355
e	0.4030173	Incl. 20.54163	+0.05676192	+0.12320222
P	4.18	H 12.80	G 0.15	

From 26 observations at 5 oppositions 1943-1985, mean residual 1".0.

(2231) Durrell
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	63.77111	(1950.0)	P	Q
n	0.21894947	Peri. 23.00137	+0.99464807	-0.09349288
a	2.7262988	Node 342.19482	+0.05717810	+0.85262893
e	0.2521506	Incl. 8.26956	+0.08605744	+0.51408461
P	4.50	H 12.5	G 0.25	

From 25 observations at 5 oppositions 1941-1986, mean residual 1".0.

(2256) 4519 P-L
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	5.59481	(1950.0)	P	Q
n	0.18041889	Peri. 195.73051	+0.65504992	+0.75554944
a	3.1018065	Node 115.19354	-0.69231795	+0.60409074
e	0.1617476	Incl. 0.46808	-0.30266392	+0.25341553
P	5.46	H 11.9	G 0.25	

From 32 observations at 9 oppositions 1960-1986, mean residual 1".0.

(2257) Kaarina
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	60.27748	(1950.0)	P	Q
n	0.25127821	Peri. 126.78922	+0.99742948	-0.01027828
a	2.4871358	Node 233.90667	-0.01515087	+0.93703165
e	0.2383804	Incl. 5.03467	+0.07003490	+0.34909318
P	3.92	H 13.1	G 0.25	

From 15 observations at 4 oppositions 1939-1986, mean residual 1".1.

(2260) Neoptolemus
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	25.67835	(1950.0)	P	Q
n	0.08333867	Peri. 322.33174	+0.63669122	-0.70841083
a	5.1908482	Node 85.92405	+0.76067304	+0.51219496
e	0.0452332	Incl. 17.78029	+0.12649436	+0.48560315
P	11.83	H 8.95	G 0.15	

From 29 observations at 4 oppositions 1951-1986, mean residual 1".0.

(2285) Ron Helin
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	102.64191	(1950.0)	P	Q
n	0.29802483	Peri. 182.15881	+0.93698971	+0.34752945
a	2.2197348	Node 157.40346	-0.31910489	+0.89295570
e	0.2073972	Incl. 5.32915	-0.14220533	+0.28610031
P	3.31	H 13.7	G 0.25	

From 23 observations at 4 oppositions 1976-1986, mean residual 1".2.

(2303) Retsina
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	222.64581	(1950.0)	P	Q
n	0.18927862	Peri. 329.36643	-0.95623731	-0.28011754
a	3.0042426	Node 195.08936	+0.28722912	-0.95374480
e	0.1112050	Incl. 18.94665	-0.05576415	-0.10911014
P	5.21	H 11.5	G 0.25	

From 20 observations at 5 oppositions 1974-1986, mean residual 1".0.

(2354) Lavrov
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	321.95208	(1950.0)	P	Q
n	0.21852700	Peri. 190.03330	+0.99488670	-0.10090904
a	2.7298114	Node 175.75139	+0.09615907	+0.93362161
e	0.1050508	Incl. 3.26575	+0.03088495	+0.34375581
P	4.51	H 11.4	G 0.25	

From 88 observations at 10 oppositions 1929-1985, mean residual 0".7.

(2359) Debehogne
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	352.39493	(1950.0)	P	Q
n	0.26089637	Peri. 75.72558	+0.19596830	+0.98006269
a	2.4256270	Node 205.64604	-0.92631751	+0.17405125
e	0.1129774	Incl. 4.34162	-0.32176434	+0.09582947
P	3.78	H 12.93	G 0.25	

From 117 observations at 6 oppositions 1931-1986, mean residual 0".7.

(2360) Volgo-Don
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	241.94174	(1950.0)	P	Q
n	0.22572880	Peri. 2.23941	+0.76246943	-0.64598949
a	2.6714358	Node 38.08196	+0.59267815	+0.67463091
e	0.1957786	Incl. 3.39985	+0.25956304	+0.35717043
P	4.37	H 12.43	G 0.15	

From 21 observations at 5 oppositions 1949-1984, mean residual 1".1.

(2364) Seillier
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	224.87841	(1950.0)	P	Q
n	0.17395172	Peri. 171.64955	-0.82630543	+0.54904938
a	3.1782171	Node 42.45496	-0.52687426	-0.67474214
e	0.1317842	Incl. 10.71972	-0.19905487	-0.49322188
P	5.67	H 10.77	G 0.15	

From 51 observations at 4 oppositions 1978-1984, mean residual 0".7.

(2496) Fernandus
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	126.90731	(1950.0)	P	Q
n	0.30822069	Peri. 292.75829	-0.09615170	-0.99535534
a	2.1705087	Node 162.75730	+0.91896971	-0.09060576
e	0.0336676	Incl. 0.91893	+0.38242585	-0.03253219
P	3.20	H 13.5	G 0.25	

From 23 observations at 5 oppositions 1953-1984, mean residual 1".0.

(2498) Tsesevich
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	2.82293	(1950.0)	P	Q
n	0.19775486	Peri. 1.63888	+0.89646764	+0.44299357
a	2.9177714	Node 332.05910	-0.40677021	+0.81367431
e	0.0826781	Incl. 1.23788	-0.17573776	+0.37641841
P	4.98	H 12.03	G 0.15	

From 44 observations at 7 oppositions 1972-1985, mean residual 0".8.

(2551) Decabrina
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	358.68160	(1950.0)	P	Q
n	0.17723559	Peri. 29.47163	+0.76402512	-0.64518319
a	3.1388369	Node 10.70853	+0.58971897	+0.69703765
e	0.1895429	Incl. 0.63740	+0.26171961	+0.31285327
P	5.56	H 12.40	G 0.43	

From 26 observations at 4 oppositions 1955-1986, mean residual 1".2.

(2644) Victor Jara
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	158.87990	(1950.0)	P	Q
n	0.30837727	Peri. 308.70683	+0.43818742	+0.89882457
a	2.1697739	Node 347.26946	-0.80947072	+0.38959020
e	0.1656979	Incl. 2.68016	-0.39083110	+0.20083294
P	3.20	H 13.86	G 0.25	

From 41 observations at 7 oppositions 1973-1986, mean residual 0".8.

(2677) 1935 FF
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	3.15231	(1950.0)	P	Q
n	0.19035886	Peri. 13.97184	-0.87835287	+0.47594367
a	2.9928663	Node 194.69710	-0.45365036	-0.85927171
e	0.0519275	Incl. 10.08531	-0.15065715	-0.18742931
P	5.18	H 11.87	G 0.15	

From 20 observations at 8 oppositions 1930-1986, mean residual 0".8.

(2726) Kotelnikov
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	197.29690	(1950.0)	P	Q
n	0.20381487	Peri. 46.80149	+0.73761281	-0.67522078
a	2.8596451	Node 355.66831	+0.61129776	+0.66907242
e	0.0732481	Incl. 1.56255	+0.28677934	+0.31051410
P	4.84	H 12.4	G 0.25	

From 16 observations at 6 oppositions 1955-1986, mean residual 1".1.

(2754) 1966 PD
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	80.76509	(1950.0)	P	Q
n	0.29644813	Peri. 90.53012	+0.99068141	-0.09336081
a	2.2275984	Node 274.82949	+0.04571562	+0.91379591
e	0.2321739	Incl. 5.71155	+0.12829821	+0.39529835
P	3.32	H 13.6	G 0.25	

From 17 observations at 5 oppositions 1966-1986, mean residual 0".9.

(2818) 2580 P-L
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	331.71501	(1950.0)	P	Q
n	0.26913625	Peri. 101.25392	-0.94864533	-0.31312905
a	2.3758622	Node 60.51186	+0.26631667	-0.86723903
e	0.1504873	Incl. 2.96131	+0.17072629	-0.38710033
P	3.66	H 13.89	G 0.25	

From 27 observations at 6 oppositions 1960-1986, mean residual 0".9.

(2823) van der Laan
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	55.66448	(1950.0)	P	Q
n	0.26344761	Peri. 126.49672	+0.96561339	-0.25248245
a	2.4099417	Node 248.20072	+0.21202204	+0.90276650
e	0.0912305	Incl. 3.82848	+0.15045745	+0.34823162
P	3.74	H 13.3	G 0.25	

From 32 observations at 6 oppositions 1960-1986, mean residual 0".8.

(2868) 1972 UA
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	42.77865	(1950.0)	P	Q
n	0.20876092	Peri. 259.92618	+0.78325458	-0.61543657
a	2.8142969	Node 137.98357	+0.60938535	+0.73195682
e	0.1747334	Incl. 7.55765	+0.12313308	+0.29236457
P	4.72	H 13.22	G 0.15	

From 71 observations at 4 oppositions 1972-1986, mean residual 0".8.

(2872) Gentelec
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	3.74130	(1950.0)	P	Q
n	0.21728605	Peri. 239.60553	-0.51003097	-0.85903996
a	2.7401951	Node 241.12338	+0.80531338	-0.45899934
e	0.1192749	Incl. 2.86733	+0.30222306	-0.22664942
P	4.54	H 12.62	G 0.15	

From 20 observations at 4 oppositions 1977-1986, mean residual 0".9.

(2920) Automedon
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	343.08907	(1950.0)	P	Q
n	0.08337883	Peri. 203.46725	+0.29781415	-0.91362211
a	5.1891814	Node 230.43090	+0.92281690	+0.34974226
e	0.0312592	Incl. 21.04133	+0.24436798	-0.20730408
P	11.82	H 8.83	G 0.15	

From 27 observations at 5 oppositions 1981-1986, mean residual 0".9.

(2999) Dante
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	345.65214	(1950.0)	P	Q
n	0.28806620	Peri. 38.59629	-0.38870277	-0.91432949
a	2.2706029	Node 74.53852	+0.81333223	-0.39845252
e	0.1047260	Incl. 6.77072	+0.43289818	-0.07236836
P	3.42	H 13.36	G 0.18	

From 38 observations at 4 oppositions 1978-1986, mean residual 1".0.

(3009) Coventry
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	107.44100	(1950.0)	P	Q
n	0.30287271	Peri. 315.77294	+0.80773135	+0.58944372
a	2.1959846	Node 8.13222	-0.51644673	+0.71663390
e	0.2051839	Incl. 4.55438	-0.28434635	+0.37281624
P	3.25	H 13.82	G 0.25	

From 21 observations at 5 oppositions 1973-1986, mean residual 1".3.

(3010) Ushakov
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	253.91265	(1950.0)	P	Q
n	0.17166172	Peri. 170.31046	+0.45564815	+0.88970399
a	3.2064200	Node 126.79070	-0.81902944	+0.43155941
e	0.1882982	Incl. 2.03863	-0.34867683	+0.14894054
P	5.74	H 12.43	G 0.15	

From 22 observations at 5 oppositions 1977-1984, mean residual 0".7.

(3057) Malaren
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	279.27040	(1950.0)	P	Q
n	0.29010977	Peri. 122.40953	-0.94804156	+0.29367203
a	2.2599274	Node 74.91867	-0.31744921	-0.84774092
e	0.0748374	Incl. 7.28085	-0.02105223	-0.44169228
P	3.40	H 13.48	G 0.25	

From 20 observations at 4 oppositions 1976-1986, mean residual 1".0.

(3192) A'Hearn
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	175.13362	(1950.0)	P	Q
n	0.26912634	Peri. 90.07447	-0.83331160	-0.55121618
a	2.3759205	Node 56.47514	+0.48508536	-0.76544902
e	0.1708353	Incl. 2.87841	+0.26511124	-0.33203693
P	3.66	H 13.8	G 0.25	

From 21 observations at 4 oppositions 1975-1986, mean residual 0".9.

(3631)* 1987 BV1 = 1952 UD = 1957 QD = 1968 UC2 = 1971 BN = 1972 LW = 1982 FR2

Discovered 1987 Jan. 25 by E. W. Elst at the European Southern Observatory.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 225.40931		(1950.0)		P	Q
n 0.18111601	Peri.	149.26110		+0.50888258	+0.85225135
a 3.0938421	Node	150.80864		-0.83167425	+0.52309720
e 0.0817833	Incl.	14.39708		-0.22216315	-0.00607934
P 5.44	H	10.4	G	0.25	

Residuals in seconds of arc

521021	760	1.9-	2.1+	820326	033	0.1+	0.5-	870131	809	0.4-	0.6+
521021	760	1.2+	0.0	820326	033	0.1+	0.4-	870131	809	0.0	0.1+
570826	760	0.7+	0.5+	870124	809	1.4-	0.5-	870202	809	0.5+	0.5+
570826	760	0.2-	0.4+	870124	809	1.6-	0.6+	870202	809	0.9+	0.3+
570928	760	0.7-	1.2-	870124	809	0.0	1.7+	870203	809	0.7-	0.8+
570928	760	0.3+	1.2-	870125	809	1.0+	1.7-	870203	809	1.0-	0.6+
681023	095	0.5+	1.9-	870125	809	2.0+	1.5-	870205	809	1.0-	0.1-
710122	095	0.2+	1.1-	870125	809	0.1-	0.3-	870205	809	0.2-	0.1-
710128	095	(3.0-	3.9-)	870126	809	0.3+	0.2+	870205	809	0.1-	0.9-
720610	095	(3.1-	8.1+)	870126	809	0.0	0.6+	870205	809	1.1+	1.6-
820324	033	0.3-	0.1-	870128	809	0.4+	0.5+	870206	809	0.2+	0.2-
820324	033	0.2-	0.1+	870128	809	0.2+	0.5+	870206	809	0.3-	0.1-

1975 XJ = 1987 BF2

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

M 42.46851		(1950.0)		P	Q
n 0.27994101	Peri.	349.36595		-0.64725604	-0.75709628
a 2.3143333	Node	140.88226		+0.70925277	-0.64077772
e 0.0460246	Incl.	8.08047		+0.27932084	-0.12731513
P 3.52	H	13.6	G	0.25	

Residuals in seconds of arc

751201	805	0.5-	0.7+	870128	809	0.0	0.5-	870203	809	0.1-	1.1+
751204	805	0.0	0.3-	870129	809	(8.1-	4.0+)	870203	809	0.1+	1.1+
751205	805	0.5+	0.3-	870129	809	(5.2-	0.7-)	870203	809	0.8+	0.4-
870127	809	0.3-	1.9+	870130	809	0.9-	0.2-	870203	809	1.0+	0.9-
870127	809	0.7+	1.7+	870130	809	0.5+	1.0-	870203	809	1.1+	0.1+
870128	809	0.9-	0.7-	870131	809	0.1-	0.5+	870203	809	0.7+	1.1+
870128	809	0.3-	1.4-	870131	809	0.2+	1.3-	870205	809	1.4-	0.5+
870128	809	0.8+	0.6-	870202	809	0.9-	0.2+	870205	809	0.4-	0.7-
870128	809	0.4-	0.1+	870202	809	0.2-	0.6-				

1979 QW3 = 1982 FG1

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

M 122.10812		(1950.0)		P	Q
n 0.26017070	Peri.	61.41032		-0.73041859	+0.68298120
a 2.4301401	Node	161.66522		-0.63206949	-0.67314019
e 0.1522632	Incl.	0.91728		-0.25879883	-0.28358239
P 3.79	H	13.8	G	0.25	

Residuals in seconds of arc

790822	809	0.6-	1.4-	790826	809	0.5+	0.4+	820327	046	3.1-	0.4-
790822	809	0.8+	0.5-	790826	809	0.6-	0.3+	820327	046	0.6-	1.8-
790822	809	0.2-	0.5-	790826	809	0.8-	0.4+	820327	046	2.0+	2.2+
790823	809	0.7+	0.4+	820324	046	1.5+	0.5+	820327	046	0.9+	0.6+
790823	809	0.2+	0.8+	820324	046	0.6-	1.0-				

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

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

(2722) Abalakin
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	318.69592		(1950.0)		P		Q
n	0.17268364	Peri.	112.73131		-0.40843963		+0.91253658
a	3.1937574	Node	133.14382		-0.84777569		-0.37059430
e	0.1581404	Incl.	1.67354		-0.33830969		-0.17302272
P	5.71	H	12.27	G	0.15		

From 52 observations at 6 oppositions 1976-1987, mean residuals 1".2.

(3632)* 1976 SJ4 = 1953 TB = 1985 QW

Discovered 1976 Sept. 24 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	86.02706		(1950.0)		P		Q
n	0.21388931	Peri.	237.63601		+0.19770385		-0.97942758
a	2.7691299	Node	201.07384		+0.93288780		+0.20065672
e	0.3086080	Incl.	6.45642		+0.30105404		+0.02141274
P	4.61	H	12.4	G	0.25		

Residuals in seconds of arc

531010	094	(30.0-	45.8-)X	850909	046	(6.0+	1.3+)	850913	046	0.8+	1.5-
531012	094	(2.2+	3.4-)X	850910	046	0.5+	0.0	861130	801	0.8+	1.3-
760924	095	2.1-	0.5-	850910	046	1.1-	0.0	861201	801	0.6-	0.7-
760929	095	1.4+	1.4+	850911	046	0.1+	0.1-	870304	688	1.3-	2.1-
761026	095	0.5+	0.2-	850911	046	2.9-	0.5-	870304	688	0.2-	0.8-
850822	046	0.7-	2.2-	850912	046	1.9+	1.6+	870305	376	2.1-	1.8-
850822	046	0.4+	0.6-	850912	046	0.3+	0.3+	870305	376	3.4+	1.7+
850909	046	(2.3+	5.4-)	850913	046	1.7+	0.6-	870427	801	1.1-	1.8+

(3633)* 1980 EE2 = 1980 BU2 = 1975 VS1 = 1984 KO

Discovered 1980 Mar. 13 at the El Leoncito Station of the Felix Aquilar Observatory. The double designation 1980 EE2 = 1980 BU2 is by B. G. Marsden (MPC 9210).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	29.44610		(1950.0)		P		Q
n	0.28045485	Peri.	293.15582		-0.95690522		-0.28699705
a	2.3115010	Node	230.19602		+0.28304938		-0.88762330
e	0.1029581	Incl.	3.30795		+0.06492651		-0.36021877
P	3.51	H	12.7	G	0.25		

Residuals in seconds of arc

751102	095	0.5-	0.2-	800314	808	0.1-	0.3+	851014	010	1.0+	1.2-
770518	675	0.6-	1.2+	800314	808	0.1+	0.7-	851015	010	(7.4-	2.1+)
770519	675	0.3+	0.9+	800318	808	0.6-	0.5-	870227	801	0.1-	0.1-
800124	095	0.3+	0.8-	840522	071	1.0+	1.2-	870428	801	0.9-	1.1+
800313	808	0.7+	0.3+	840522	071	1.3-	0.1+				
800313	808	0.4+	0.4-	840522	071	0.2+	2.1-				

(3634)* 1980 FV = 1980 DZ4 = 1967 JK = 1977 LL

Discovered 1980 Mar.16 by C.-I. Lagerkvist at the European Southern Observatory. The double designation 1980 FV = 1980 DZ4 is by B. G. Marsden

(MPC 9203). The identification 1980 FV = 1967 JK was also suggested by W. Landgraf (MPC 9465).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	307.46616	(1950.0)	P	Q	
n	0.29287268	Peri.	320.09796	+0.52177641	+0.85274354
a	2.2456917	Node	341.31463	-0.76225190	+0.45338387
e	0.0901874	Incl.	4.30308	-0.38304232	+0.25936753
P	3.37	H	14.0	G 0.25	

Residuals in seconds of arc

670506	808	0.3-	0.4+	800316	809	0.3-	0.0	800317	809	0.2+	0.2+
670510	808	0.5+	0.8+	800316	809	0.5+	0.1-	800323	809	0.6+	0.9-
770608	808	0.1+	1.2+	800316	809	0.3-	0.1+	810905	095	0.6+	1.2-
770608	808	0.2+	0.4-	800316	809	0.5-	0.2+	870426	801	0.9+	0.7+
770611	808	0.4-	1.3-	800317	809	0.1-	0.3+	870531	801	0.6-	0.3-
770611	808	0.6-	0.8-	800317	809	0.2-	0.0				
800221	095	0.9-	1.8-	800317	809	0.0	0.2+				

(3635)* 1981 WO1

Discovered 1981 Nov. 21 by L. Kohoutek at the German-Spanish Astronomical Center, Calar Alto.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	83.80340	(1950.0)	P	Q	
n	0.40993795	Peri.	249.09966	-0.51529892	-0.81366750
a	1.7946949	Node	234.80924	+0.85625176	-0.47559495
e	0.0844019	Incl.	19.22472	+0.03605466	-0.33429723
P	2.40	H	14.7	G 0.25	

Residuals in seconds of arc

811121	493	0.3-	0.5-	820225	801	0.9+	0.4+	861128	801	2.8+	3.8-
811123	493	0.8-	0.1+	820227	801	2.1+	0.4-	870104	474	1.2+	1.2-
811203	493	0.7+	0.6+	850323	474	1.0+	1.3+	870104	474	1.5+	0.2-
811204	493	0.4-	0.2+	850324	474	1.3+	0.1-	870205	474	0.1-	1.4+
811205	493	0.5-	0.2+	850324	474	0.4-	0.1+	870205	474	0.5-	1.0+
811205	493	0.2-	0.3+	850521	801	0.0	0.5-	870223	474	1.8-	0.1+
811231	801	0.1-	0.3+	850621	801	0.6-	0.1+	870223	474	2.1-	0.2+

(3636)* 1982 UJ2 = 1973 AB4 = 1980 DU2

Discovered 1982 Oct. 17 by A. Mrkos at Klet. The key identification 1982 UJ2 = 1973 AB4 is by W. Landgraf (MPC 8901).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	77.35471	(1950.0)	P	Q	
n	0.28680739	Peri.	93.30900	-0.49875618	-0.86614630
a	2.2772418	Node	26.68476	+0.76404893	-0.45686711
e	0.1756763	Incl.	4.10382	+0.40923282	-0.20264014
P	3.44	H	14.0	G 0.25	

Residuals in seconds of arc

730102	095	0.9-	0.2-	821022	046	1.6+	1.1+	870320	877	2.0-	0.3+
730104	095	2.4+	0.0	821022	046	1.9+	0.3-	870320	877	0.3+	1.8-
800220	095	2.5-	2.2+	821025	095	0.1-	0.2+	870321	046	2.9+	3.5-
821017	046	0.1-	0.4-	821109	095	1.5-	1.3+	870321	046	1.2+	2.7-
821017	046	0.7+	3.6-	821114	095	0.2-	1.1+	870327	801	0.4+	1.6+
821020	095	0.6+	1.1-	850917	801	0.4-	0.5-	870329	801	0.3+	0.3+
821021	046	0.6-	0.3+	870304	688	1.1-	1.4+				
821021	046	1.5-	0.6-	870304	688	1.4-	1.2+				

(3637)* 1984 UQ = 1942 GB = 1942 GX = 1946 GD = 1950 HU = 1959 OA = 1972 TJ2 = 1983 HF1

Discovered 1984 Oct. 23 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	336.51124	(1950.0)		P	Q
n	0.24155116	Peri.	67.60929	+0.07971469	+0.99010698
a	2.5534653	Node	207.73670	-0.98124560	+0.05754545
e	0.1262960	Incl.	14.36559	-0.17550679	+0.12797144
P	4.08	H	12.1	G 0.25	

Residuals in seconds of arc

420411	020	0.1+	2.7-	840927	675	1.0+	1.5-	870429	372	0.3-	2.2+
420411	020	(3.1+	3.2-)	841023	688	0.0	2.1-	870429	372	1.5-	3.4+
420412	012	(43.2-	22.4-)X	841023	688	0.5-	1.6-	870430	801	0.1+	0.4+
460405	078	(42.2-	34.7-)X	841029	688	2.4-	0.6-	870501	293	0.4+	1.2-
500417	760	(5.9-	0.1+)	841029	688	0.3+	0.9-	870503	372	0.9-	0.1-
500417	760	1.5-	1.6-	870327	801	0.3-	0.5+	870504	372	0.9-	0.5-
590730	760	0.6-	0.6+	870423	372	2.7+	0.3+	870504	372	0.1+	1.0-
590730	760	0.3+	0.6+	870423	372	(7.0+	0.8-)	870505	657	0.4+	1.3-
721008	095	2.2+	1.4-	870424	372	2.0+	1.9+	870506	657	1.0-	0.4-
830419	688	1.1+	2.9-	870424	372	0.9+	0.2+	870506	657	0.6-	2.8-
830419	688	0.1-	1.0-	870427	372	0.4+	0.6-	870507	372	1.2+	0.4+
840927	675	0.7+	0.3-	870427	372	2.0-	0.2+	870603	657	0.9-	1.1-

(3638)* 1984 WX = 1984 YM2 = 1981 FL1 = 1986 CN

Discovered 1984 Nov. 20 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory. The double designation 1984 WX = 1984 YM2 is by F. Bowman (MPC 10151).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	336.35722	(1950.0)		P	Q
n	0.18825630	Peri.	165.28650	+0.07762137	+0.97961264
a	3.0151091	Node	108.89796	-0.93332175	+0.13674762
e	0.0715200	Incl.	11.29446	-0.35055019	-0.14717052
P	5.24	H	11.5	G 0.25	

Residuals in seconds of arc

810331	095	0.0	0.0	841223	095	0.4+	0.8-	860413	801	0.3+	1.3+
841120	688	1.8-	0.2+	860207	046	0.3-	0.3-	870402	801	0.6-	1.2-
841120	688	1.5+	0.2-	860207	046	0.0	0.2+	870426	801	0.1-	0.8-
841127	688	2.2-	0.3+	860215	046	(47.5-	46.1+)				
841127	688	2.7+	1.3-	860215	046	(50.6-	47.0+)				

(3639)* 1985 TX = 1957 BH = 1974 UM = 1974 VY = 1974 WL = 1976 GO5

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

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	152.85803	(1950.0)		P	Q
n	0.26480070	Peri.	182.37732	+0.71432574	-0.69934042
a	2.4017251	Node	222.03639	+0.64266702	+0.67009962
e	0.0989846	Incl.	2.20166	+0.27697987	+0.24877597
P	3.72	H	13.7	G 0.25	

Residuals in seconds of arc

570130	024	0.5+	1.0+	851011	010	(5.6-	2.5-)	851107	688	0.1-	0.2-
741023	330	3.0+	2.3+	851015	688	0.9+	0.9+	870104	801	0.3-	2.4+
741112	095	0.8-	2.0-	851015	688	0.3+	0.5+	870224	801	1.2+	0.4+
741118	095	1.5-	3.6-	851020	688	0.3+	0.3+	870501	801	0.2-	0.4-
760402	095	0.9-	1.6-	851020	688	0.5+	0.4+				
851011	010	2.7-	0.9+	851107	688	0.1-	0.2+				

(3640)* 1985 TR3 = 1955 SS = 1960 CB = 1970 CS = 1972 VJ1

Discovered 1985 Oct. 11 by C. Shoemaker at Palomar.

Epoch 1987 July 24.0 ET = JDE 2447000.5
M 138.16281 (1950.0) P Q
n 0.29699532 Peri. 155.28072 +0.10194029 -0.99224768
a 2.2248615 Node 288.80399 +0.89970905 +0.12244682
e 0.0862048 Incl. 4.30641 +0.42441937 -0.02124431
P 3.32 H 13.0 G 0.25
Residuals in seconds of arc

550917	760	1.3+	0.9-	721109	095	(0.9+ 8.1+)	870330 801	0.9+ 1.7-
550917	760	0.5-	0.9-	850917	675	0.8- 1.4+	870425 675	0.5- 1.5+
600201	760	0.2+	0.7-	850917	675	(4.2- 2.1+)	870425 675	0.2- 0.3+
600201	760	(24.5+	0.5+)	851011	675	0.4- 0.8+	870426 801	1.1+ 0.7-
700210	805	0.2+	0.2+	851013	675	0.4- 1.4+	870529 675	1.2- 0.9+
700210	805	0.4+	0.2+	851108	675	1.0+ 1.2-	870530 675	0.0 0.5+
700210	805	0.9-	0.4+	851108	675	0.2- 0.1-		

1978 OK = 1975 XA2 = 1980 DO3 = 1987 DD5
The identification 1978 OK = 1980 DO3 was suggested by W. Landgraf.
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)
M 154.89982 (1950.0) P Q
n 0.28284651 Peri. 287.02676 +0.92955862 -0.36028759
a 2.2984569 Node 94.14631 +0.36099520 +0.84643036
e 0.2195612 Incl. 4.49631 +0.07485477 +0.39210777
P 3.48 H 13.5 G 0.25
Residuals in seconds of arc

751201	095	0.7+	3.4-	780731	323	1.0- 2.5+	800220 095	0.3- 1.0-
780710	675	2.7+	3.9- Y	780806	323	0.9- 1.4-	870223 010	1.0- 1.9-
780711	675	5.9+	2.8- Y	780806	323	0.5- 0.7-	870223 010	0.1+ 0.7-
780713	675	(7.0+	3.2+)Y	780809	323	0.1+ 0.7-	870223 010	0.6- 1.6-
780728	323	4.5-	0.8+	780809	323	(6.8- 4.1-)		

1978 SQ4 = 1978 RT5 = 1987 GN1
The double designation 1978 SQ4 = 1978 RT5 is by L. D. Schmadel (MPC 7586). The identification 1978 SQ4 = 1987 GN1 was found independently by S. Nakano.
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)
M 150.06587 (1950.0) P Q
n 0.27353061 Peri. 37.94244 +0.84755160 -0.53065148
a 2.3503523 Node 354.09012 +0.46568127 +0.75091175
e 0.2221505 Incl. 4.50079 +0.25455301 +0.39311646
P 3.60 H 14.5 G 0.25
Residuals in seconds of arc

780913	095	0.1+	0.3+	781003	095	0.3+ 0.1+	870401 675	2.7+ 1.4-
780926	095	2.6-	1.3-	781007	095	0.9+ 0.1-	870403 675	3.5- 1.4+
780927	095	0.4-	0.9-	870401	675	0.8+ 0.2-	870403 675	0.8+ 0.4-

1978 VL11 = 1987 DR5
The identification was found independently by S. Nakano.
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)
M 334.39147 (1950.0) P Q
n 0.26272290 Peri. 143.11369 -0.78680194 +0.60966678
a 2.4143763 Node 74.73009 -0.58738817 -0.69179924
e 0.1670139 Incl. 5.72143 -0.18952004 -0.38693699
P 3.75 H 13.0 G 0.25
Residuals in seconds of arc

781105	675	0.1-	0.8-	781108	675	0.5- 0.1-	870222 054	0.5+ 0.6-
781106	675	0.4-	0.7-	781129	675	0.3+ 0.1-	870223 054	0.2+ 0.1-
781107	675	0.3-	0.4+	781130	675	0.1+ 0.6-	870301 054	0.0 0.6-

1979 QM1 = 1987 GH1

The identification was found independently by S. Nakano.

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

M	222.40563	(1950.0)		P	Q
n	0.20274039	Peri.	140.53604	+0.89331532	+0.44941354
a	2.8697456	Node	192.75961	-0.41666162	+0.82489762
e	0.1196782	Incl.	1.01191	-0.16846614	+0.34288684
P	4.86	H	13.0	G 0.25	

Residuals in seconds of arc

790822	809	0.2+	0.5-	790826	809	0.5+	0.5-	870401	675	0.9-	1.6+
790822	809	0.2+	0.4-	790826	809	0.2-	1.1-	870401	675	1.0-	1.8+
790822	809	0.3+	0.8-	790826	809	0.7-	1.1-	870403	675	2.9-	0.8+
790823	809	0.1-	1.1-	790830	809	0.3+	0.5-	870403	675	0.0	0.8-
790823	809	1.4+	1.2-	790830	809	0.4-	1.2-				

1984 DA

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

M	88.12977	(1950.0)		P	Q
n	0.37073414	Peri.	357.92526	-0.91883201	-0.36713074
a	1.9190894	Node	158.67316	+0.36755844	-0.92967053
e	0.0574948	Incl.	23.45965	+0.14369600	+0.03045854
P	2.66	H	14.5	G 0.25	

Residuals in seconds of arc

840224	675	1.5-	2.1+	840307	675	0.5+	2.4-	870503	675	7.3+	0.6-
840224	675	3.3+	0.1-	840307	675	1.7+	6.7-	870505	675	8.4-	3.2+
840225	675	3.4-	3.5+	840404	801	2.7+	0.6+	870505	675	4.7-	1.2-
840225	675	2.6-	2.7+	870503	675	5.9+	0.4-				

1985 RW

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	95.41637	(1950.0)		P	Q
n	0.35839906	Peri.	246.96417	-0.56743649	-0.77206070
a	1.9628697	Node	240.76091	+0.82294615	-0.51998446
e	0.0754195	Incl.	19.15015	+0.02784729	-0.36542912
P	2.75	H	15.5	G 0.25	

Residuals in seconds of arc

850913	691	1.6-	1.3-	850917	691	0.3+	0.2+	860113	691	0.6-	0.2+
850913	691	0.7-	1.1-	850917	691	0.6+	0.2-	860113	691	0.4+	0.0
850913	691	0.9-	1.0-	850917	691	0.2+	0.4+	860113	691	0.9+	0.1-
850914	691	0.3+	0.0	851007	691	0.0	0.5-	870501	691	0.3+	0.8+
850914	691	0.5+	0.2-	851007	691	2.1+	0.0	870501	691	0.2+	0.5+
850914	691	0.0	0.6+	851014	691	0.1-	0.7+	870501	691	0.1-	0.8+
850916	691	0.0	0.3+	851014	691	0.4+	0.9+	870502	691	0.5-	0.8+
850916	691	0.3+	0.3+	851014	691	0.6+	0.5+	870502	691	0.4-	1.1-
850916	691	0.2+	0.4+	851205	691	0.2-	0.4-	870525	691	0.4+	0.7-
850916	691	0.4-	0.9+	851205	691	0.2-	0.4-	870525	691	0.6+	0.2-
850916	691	0.1+	0.4+	851205	691	1.0-	0.1-	870525	691	0.7+	0.7-

1985 UL = 1985 VG1 = 1984 JB1 = 1987 HE2

The double designation 1985 UL = 1985 VG1 is by S. Nakano (MPC 10817).

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

M	28.49896	(1950.0)		P	Q
n	0.30040518	Peri.	303.44186	-0.97327313	+0.22121920
a	2.2079978	Node	249.40462	-0.18269905	-0.90852899
e	0.0331593	Incl.	3.77657	-0.13914193	-0.35445330
P	3.28	H	13.0	G 0.25	

Residuals in seconds of arc

840503 688	0.3+	0.1-	851021 046	0.1-	0.3+	870422 010	1.8-	0.9+
840503 688	0.6-	0.2+	851021 046	1.5-	2.1+	870422 010	1.3+	1.9-
851020 046	1.7-	2.2-	851024 046	1.5+	0.8-	870422 010	0.9+	0.6+
851020 046	0.6-	0.2+	851107 688	2.5+	0.5-			

1986 PA
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 212.67234		(1950.0)		P	Q
n 0.90360168	Peri.	296.37188	-0.07398244		-0.99449884
a 1.0596230	Node	157.49765	+0.97002306		-0.08902186
e 0.4439370	Incl.	11.17180	+0.23147757		+0.05520105
P 1.09	H	18.0	G	0.25	

Residuals in seconds of arc

860802 675	(8.0+	4.3+)	860815 675	1.3-	0.6+	860909 474	0.1-	1.7+
860802 675	0.7+	0.8-	860816 675	0.5-	0.3+	860909 474	1.8-	0.4+
860804 675	1.3-	0.9-	860816 675	0.7-	0.4+	870523 691	0.6+	0.1-
860804 675	(4.4-	3.0-)	860902 801	(0.1-	2.4+)	870523 691	1.0+	0.3-
860805 675	(7.7+	4.0+)	860902 691	0.1+	0.5-	870523 691	0.6+	0.4-
860805 675	(4.2+	3.1+)	860902 691	0.4+	0.9-	870524 691	0.9-	0.3+
860809 675	(3.4+	1.5-)	860902 691	0.4-	0.7-	870524 691	0.2-	0.3+
860809 675	1.4+	0.4+	860903 691	1.7+	0.5-	870524 691	1.0-	0.1+
860810 801	0.9+	0.5+	860903 691	1.1+	0.2-			
860815 675	0.5-	0.8+	860903 691	0.1+	0.8-			

1987 DE = 1969 EB = 1980 GS = 1981 PO
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 32.48965		(1950.0)		P	Q
n 0.27347589	Peri.	8.42476	-0.92596682		-0.31778852
a 2.3506611	Node	150.39078	+0.31789364		-0.94754676
e 0.1824143	Incl.	24.38006	+0.20378688		+0.03414086
P 3.60	H	13.0	G	0.25	

Residuals in seconds of arc

690311 095	(19.9-	11.0-)	810806 046	0.3-	0.8-	870302 220	(0.3-	6.3-)
800412 033	0.1+	0.2-	870223 675	0.2-	0.0	870303 220	(0.2-	5.0-)
800412 033	0.1+	0.4-	870223 675	0.1+	0.9+	870304 220	(4.5+	9.9-)
800413 033	1.4-	0.1-	870225 220	3.1+	0.6-	870421 675	1.6-	1.5+
800414 033	1.1+	0.2-	870227 675	0.5-	2.3-	870422 675	0.0	1.2+
800414 033	0.0	0.1-	870227 675	0.5-	2.1-			
810806 046	0.3+	0.2+	870227 220	1.1-	2.4+			

1987 GG = 1979 QG
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M 23.95132		(1950.0)		P	Q
n 0.22912005	Peri.	64.54588	-0.79749713		+0.53009009
a 2.6450153	Node	145.22408	-0.54380916		-0.83838182
e 0.3148434	Incl.	30.33904	+0.26128513		-0.12696623
P 4.30	H	13.0	G	0.25	

Residuals in seconds of arc

790822 675	0.4-	0.0	870402 675	(11.8-	2.3+)	870413 675	0.3-	0.5+
790822 675	0.8-	1.5+	870402 675	(10.8-	0.0)	870413 675	0.3-	0.3+
790823 809	(4.1+	3.0+)	870406 675	(1.3-	7.4+)	870507 675	0.2+	0.4-
790823 809	(4.5+	3.8+)	870406 675	(1.3-	4.9+)	870507 675	0.3+	0.4-
790823 675	0.4+	1.7-	870411 675	0.1+	0.2-	870530 801	0.1-	0.4+
790823 675	0.8+	0.3+	870411 675	0.0	0.2-	870601 801	0.0	0.2-

1987 KF
Epoch 1987 May 25.0 ET = JDE 2446940.5

M 29.54461		(1950.0)	P	Q
n 0.39566923	Peri.	15.48073	-0.53985596	-0.81859099
a 1.8375868	Node	107.56433	+0.74876778	-0.57345061
e 0.6788348	Incl.	11.87129	+0.38458075	-0.03260665
P 2.49	H 16.0		G 0.25	

From 16 observations 1987 May 29-June 24.

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ORBITAL ELEMENTS BY S. NAKANO, SMITHSONIAN ASTROPHYSICAL OBSERVATORY.

The identifications are by S. Nakano unless otherwise stated.

(3641)* A922 WC = 1977 LJ = 1978 RQ4 = 1982 HZ1 = 1987 FK
Discovered 1922 Nov. 24 by G. Van Biesbroeck at the Yerkes Observatory.
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 266.70160		(1950.0)	P	Q
n 0.19014149	Peri.	293.17709	+0.78961549	+0.59699152
a 2.9951469	Node	30.73027	-0.41047862	+0.68570267
e 0.1248371	Incl.	16.11137	-0.45608626	+0.41642883
P 5.18	H 11.8		G 0.25	

Residuals in seconds of arc

221124	754	0.4+	1.2+	221223	754	1.4+	0.3-	870322	033	2.2+	2.1+
221125	754	(9.3-	0.0)	770608	808	0.6-	0.3-	870323	033	1.8+	2.1+
221129	754	2.4-	2.1+	770608	808	1.8-	0.0	870327	688	1.1+	1.7+
221202	754	1.6-	0.7-	780907	095	2.4-	3.8+	870327	688	0.9-	0.4-
221210	754	2.2+	1.9+	820427	046	0.2+	0.4-				
221216	754	0.6-	1.8- Y	820427	046	0.9+	0.6-				

(3642)* 1953 XL1 = 1936 FU = 1945 BD = 1950 FK = 1959 CB1 = 1959 EB1
= 1978 GB3 = 1982 BK8
Discovered 1953 Dec. 4 by H. Gessner at Sonneberg.
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 31.36503		(1950.0)	P	Q
n 0.21185427	Peri.	15.71961	-0.83075388	-0.52811997
a 2.7868348	Node	131.04103	+0.48224304	-0.84066193
e 0.0824687	Incl.	13.48565	+0.27801015	-0.11990335
P 4.65	H 10.8		G 0.25	

Residuals in seconds of arc

360319	012	(6.5+	0.7+)	531209	031	0.6-	0.0	590311	690	2.2-	3.0-
360327	012	1.7+	0.7-	531209	031	0.9+	0.8+	780406	330	0.4-	0.6+
450115	062	1.0-	0.9+	590131	690	0.0	0.2+	820120	330	0.1+	0.8+
450116	062	1.2-	0.4+	590201	690	0.1+	0.1-	820127	330	1.6-	2.0+
500321	062	0.7-	1.4+	590202	690	0.5-	0.0	870205	376	0.5+	1.0-
500321	062	0.2+	0.5-	590207	690	1.0+	1.6-	870205	376	0.3-	0.9+
500322	062	0.9-	1.0+	590306	690	3.3+	2.7-	870321	033	0.3+	0.6+
531204	031	0.8+	0.8-	590308	690	(5.5-	4.4-)	870321	033	0.5+	0.7+
531206	031	0.0	0.3-	590310	690	(4.0-	5.7-)	870322	033	0.2+	1.0+

(3643)* 1978 UN2 = 1978 WY14 = 1937 WK = 1963 TY = 1967 TJ = 1983 AS
Discovered 1978 Oct. 29 at the Purple Mountain Observatory.
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 112.93296		(1950.0)	P	Q
n 0.26453166	Peri.	3.17966	+0.50880095	-0.83737234
a 2.4033533	Node	56.32618	+0.78441335	+0.35530646
e 0.1496538	Incl.	13.89313	+0.35470731	+0.41540929
P 3.73	H 13.1		G 0.25	

Residuals in seconds of arc

371130	754	2.3+	2.8+		781029	330	0.8-	1.3+		830109	688	1.1+	0.9-
371201	754	(54.8-	35.0+)		781101	095	1.6+	1.5+		830116	688	1.4+	0.4-
631014	760	2.4-	1.5-		781107	330	0.7-	0.4-		830116	688	1.8+	0.2-
631014	760	1.8-	0.9+		781130	330	3.9+	0.5-		870227	801	1.0+	2.8+
671013	029	3.7-	1.7-		830107	046	1.5-	0.1+		870402	801	0.7-	0.9+
671014	029	2.9-	1.2-		830107	046	0.7-	0.8-					
671014	029	2.0-	0.1-		830109	688	1.6+	0.4+					

1938 GG = 1952 UO = 1952 WD = 1975 TC5 = 1975 VG7

The identifications 1938 GG = 1952 UO = 1952 WD = 1975 TC5 were found independently by L. D. Schmadel.

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

M	221.59061		(1950.0)	P	Q
n	0.17341573	Peri.	164.69249	-0.89469242	+0.33803199
a	3.1847689	Node	39.31168	-0.44271876	-0.58416582
e	0.0555436	Incl.	27.44468	-0.05937657	-0.73789204
P	5.68	H	10.5	G 0.25	

Residuals in seconds of arc

380405	062	0.6+	0.5-		380423	062	0.2-	2.0+		521116	760	0.4+	0.0
380406	062	0.9-	0.5+		380428	062	1.9-	1.0+		751014	095	1.0+	0.2+
380408	062	0.1-	1.4+		521023	760	1.2-	0.1-		751106	095	0.6-	0.6-
380409	062	2.1+	2.2-		521023	760	1.2-	0.1-					
380409	062	0.7+	1.9-		521116	760	1.3+	0.9+					

1950 JB = 1950 JL = 1950 LO = 1984 YU5 = 1985 BW

The double designations 1950 JB = 1950 JL and 1950 JB = 1950 LO are by B. Potter and O. Kippes, respectively (MPC 491, 1452). The identification and double designation 1950 JB = 1984 YU5 = 1985 BW were found independently by H. Oishi (JAM 2079).

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

M	48.83939		(1950.0)	P	Q
n	0.24678530	Peri.	186.62439	+0.54639152	+0.80641011
a	2.5172367	Node	116.72548	-0.75628985	+0.59108766
e	0.0268802	Incl.	14.66912	-0.35983603	-0.01783579
P	3.99	H	11.5	G 0.25	

Residuals in seconds of arc

500508	760	2.2+	1.4-		500514	024	0.5-	3.0+		841228	095	0.6-	0.2+
500508	760	0.7+	1.2-		500607	760	2.2-	2.0-		850118	046	0.5-	0.3+
500513	012	0.6-	0.3-		500607	760	0.5+	1.9+		850118	046	1.0+	0.6-

1977 EO = 1970 AM = 1984 GB1 = 1985 TQ2

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

M	343.75726		(1950.0)	P	Q
n	0.29339632	Peri.	224.22839	-0.87897060	+0.47569579
a	2.2430234	Node	344.08030	-0.39652821	-0.76812378
e	0.0958832	Incl.	7.02140	-0.26490765	-0.42860165
P	3.36	H	13.5	G 0.25	

Residuals in seconds of arc

700104	095	0.5-	1.5-		840403	095	0.1+	0.1-		851015	010	1.2-	1.0-
770309	095	0.8+	0.9+		840405	095	1.7-	2.4-					
770313	095	0.4+	0.4+		851014	010	2.3+	0.8-					

1979 ME9 = 1979 RH = 1963 UT = 1971 ST1 = 1982 FQ3

The double designation 1979 ME9 = 1979 RH was found independently by H. Oishi (JAM 2068).

Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)
M 348.58140 (1950.0) P Q
n 0.24113176 Peri. 304.09906 +0.81428976 +0.57248271
a 2.5564304 Node 21.47663 -0.40766745 +0.68163626
e 0.1308874 Incl. 15.18398 -0.41320628 +0.45567045
P 4.09 H 12.5 G 0.25
Residuals in seconds of arc

631023	760(98.0+	35.6+)X	820323	809	0.6-	1.1+	820329	809	0.7+	0.5+
710923	095	3.2-	4.7+	820323	809	1.1-	0.7+	820329	809	0.9+	0.4+
711011	095	1.0+	1.9-	820323	809	1.1-	0.1+	820329	809	1.0+	0.5+
790628	805	0.6-	0.0	820324	809	0.1+	0.3+	820329	809	1.2+	1.1+
790628	805	1.0-	0.2+	820324	809	0.2+	0.4+	820329	809	1.3+	1.0+
790629	805	1.5-	0.2-	820324	809	0.3+	0.2+	820329	809	1.6+	0.7+
790629	805	3.2+	0.2+	820327	809	1.2+	1.5-	820331	809	1.2-	0.4-
790629	805	1.7-	0.8-	820327	809	1.6+	1.6-	820331	809	1.3-	0.2-
790901	095	1.7+	0.4-	820327	809	1.8+	1.3-	820331	809	0.6-	0.1+
820322	809	0.2-	0.0	820328	809	0.8-	0.4+	820401	809	0.7-	0.3-
820322	809	0.1-	0.1-	820328	809	0.5-	0.4+	820401	809	0.6-	0.3-
820322	809	0.2-	0.2-	820328	809	0.5-	0.5+	820401	809	0.6-	0.3-

1980 FO3 = 1964 TM = 1974 FK = 1977 TL7 = 1984 BE = 1986 EQ
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)
M 215.16954 (1950.0) P Q
n 0.15776586 Peri. 19.34040 +0.96084059 -0.27691186
a 3.3920447 Node 356.68402 +0.22508535 +0.80152850
e 0.1700237 Incl. 10.21312 +0.16162285 +0.52997348
P 6.25 H 11.0 G 0.25
Residuals in seconds of arc

641012	760(73.2+	10.0+)X	800316	809	0.7+	0.0	800317	809	0.3+	0.3-
740322	805	0.5+	0.6+	800316	809	0.3+	0.4-	800323	809	0.6-	1.3-
740323	805	0.4-	4.0+	800316	809	0.5+	0.3-	840124	675	0.3-	1.2+
771010	095	0.4-	0.4+	800317	809	0.3+	0.2-	860305	688	0.6-	0.4+
800221	095	1.7+	1.9-	800317	809	0.2-	0.2+	860305	688	2.0-	0.7+
800316	809	0.1-	0.2+	800317	809	0.2+	0.7-				

1982 XV = 1964 FJ = 1984 HK
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)
M 350.39999 (1950.0) P Q
n 0.29986955 Peri. 88.48865 -0.81190365 +0.58276576
a 2.2106263 Node 127.15526 -0.55137332 -0.74600086
e 0.0597157 Incl. 2.48750 -0.19183308 -0.32228372
P 3.29 H 13.5 G 0.25
Residuals in seconds of arc

640318	760	0.0	0.1- X	821214	381	1.3+	0.6-	840419	046	0.9+	0.1+
821213	381	0.6-	0.9+	821214	381	1.1-	0.0	840425	046	0.1-	0.7+
821213	381	0.3+	0.0	840419	046	1.2+	2.1-	840425	046	1.9-	1.6+

1982 XQ1 = 1979 FC2 = 1985 GF
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)
M 139.92907 (1950.0) P Q
n 0.17157129 Peri. 61.21867 -0.85939356 +0.51108434
a 3.2075530 Node 149.50996 -0.47901547 -0.79424591
e 0.1066444 Incl. 1.73318 -0.17884876 -0.32858217
P 5.74 H 12.5 G 0.25
Residuals in seconds of arc

790323	095	0.1-	0.3-	821214	381	0.1+	0.8+	850414	688	0.1+	1.6+
821213	381	1.0-	0.9-	821214	381	0.8+	0.2+	850423	688	0.7+	0.5-
821213	381	0.1+	0.1+	850414	688	1.6+	0.2+	850423	688	2.3-	1.0-

1984 HK1 = 1976 SX1 = 1981 UC11
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	6.37728	(1950.0)		P	Q
n	0.20268364	Peri.	96.58288	+0.24162523	-0.97033294
a	2.8702813	Node	339.42869	+0.88048929	+0.22289240
e	0.0399133	Incl.	1.37643	+0.40786745	+0.09366412
P	4.86	H	12.5	G	0.25

Residuals in seconds of arc

760924	095	0.5-	0.0	840426	809	0.7-	0.1-	840430	809	0.3-	0.5-
760928	095	0.6+	0.1-	840426	809	0.2+	0.0	840430	809	0.9+	0.2-
811022	095	0.9+	0.6+	840427	809	0.0	0.3-	840505	809	0.3+	1.2+
811024	095	1.0-	0.5-	840427	809	0.1-	0.1+	840505	809	0.2-	0.1-

1984 JA1 = 1950 LR = 1967 JH = 1969 UB = 1974 SR2 = 1975 WX
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	190.55712	(1950.0)		P	Q
n	0.17588482	Peri.	15.76325	-0.28940212	+0.94829737
a	3.1548933	Node	237.57903	-0.89401941	-0.31642079
e	0.2285481	Incl.	8.87978	-0.34201711	+0.02469778
P	5.60	H	11.0	G	0.25

Residuals in seconds of arc

500608	760	0.8+	0.1-	740920	095	0.7-	2.8+	840503	688	0.2-	0.2-
500608	760	0.8+	0.8-	740922	095	0.6-	1.9-	840530	491	1.3+	1.2-
670505	095	2.3-	2.2+	751128	095	2.4+	1.7+	840531	491	1.2+	1.7+
691016	095	1.4-	0.8-	840503	688	0.9-	0.0				

1984 SR1 = 1977 KM1 = 1978 WS2
The identification 1984 SR1 = 1978 WS2 was suggested by W. Landgraf.
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	35.18116	(1950.0)		P	Q
n	0.31089487	Peri.	8.58653	+0.28516574	+0.95810140
a	2.1580486	Node	277.98549	-0.88094756	+0.25094880
e	0.0706969	Incl.	1.55503	-0.37763991	+0.13808118
P	3.17	H	14.0	G	0.25

Residuals in seconds of arc

770518	675	0.3-	0.1+	840927	046	2.5+	0.3+	840930	046	2.6-	0.9-
770519	675	0.3+	0.1+	840927	046	1.3-	1.7+	840930	046	0.6+	1.3+
781129	675	0.7-	0.1+	840929	046	0.8-	1.9-				
781130	675	0.7+	0.1+	840929	046	1.6+	0.5-				

1986 WB1 = 1976 YJ5 = 1984 BA1
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	12.81165	(1950.0)		P	Q
n	0.29442818	Peri.	246.70197	-0.69503703	-0.71652006
a	2.2377797	Node	247.46807	+0.68086884	-0.62943663
e	0.1189629	Incl.	3.68412	+0.23095703	-0.30068012
P	3.35	H	14.0	G	0.25

Residuals in seconds of arc

761218	095	0.0	0.1+	861125	046	1.7-	0.2-	861126	046	0.2+	1.4-
840129	704	1.0-	0.6-	861125	046	0.5-	0.4+	861128	046	0.8-	0.6+
840201	704	1.0+	0.5+	861126	046	0.2+	0.5-	861128	046	2.6+	1.0+

1987 DJ = 1985 YN1
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M	171.38663	(1950.0)		P	Q
n	0.18745221	Peri.	278.07928	+0.98224619	-0.01486367
a	3.0237314	Node	82.91557	+0.09217072	+0.90647598
e	0.1167650	Incl.	10.86207	-0.16339211	+0.42199570
P	5.26	H	11.5	G	0.25

Residuals in seconds of arc

851217 010	1.8-	0.1-	870219 054	0.5-	0.2-	870224 054	2.1+	1.2-
851217 010	2.7+	0.9+	870220 054	0.5-	1.1+	870226 054	1.8-	0.8-
851219 010	0.9-	0.8-	870222 054	0.6+	0.5+	870302 054	0.0	0.6+

1987 DF1 = 1980 TY1 = 1983 FF = 1983 HY1
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M 321.73552		(1950.0)		P	Q
n 0.23582783	Peri.	94.54870		-0.30277585	+0.94900410
a 2.5946187	Node	157.22067		-0.93938858	-0.28160329
e 0.1440057	Incl.	13.11469		-0.16085985	-0.14174203
P 4.18	H	13.0	G	0.00	

Residuals in seconds of arc

801005 809	0.2+	1.3-	830416 033	0.4-	0.2+	870224 054	0.4-	0.5-
830316 688	0.9+	1.2-	830416 033	0.1+	1.1+	870330 054	0.4-	1.2+
830316 688	1.0-	2.3-	870223 054	0.8+	0.3+			

1987 FF1 = 1981 WF1
Epoch 1987 July 24.0 ET = JDE 2447000.5 (J-P)

M 100.25248		(1950.0)		P	Q
n 0.23636303	Peri.	357.09701		-0.05777297	-0.96783779
a 2.5907005	Node	96.12598		+0.92079540	-0.14642481
e 0.1391574	Incl.	14.25618		+0.38574360	+0.20457221
P 4.17	H	13.0	G	0.25	

Residuals in seconds of arc

811124 688	0.3+	0.2-	870328 675	0.1-	0.3+	870427 675	1.9+	1.2+
811124 688	1.7+	0.4-	870328 675	1.9+	0.7-	870427 675	(5.2+	1.6+)
811202 688	0.6-	1.0+	870403 675	(5.6-	0.9-)			
811202 688	1.5-	0.3-	870403 675	3.5-	0.7-			

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ORBITAL ELEMENTS BY T. KOBAYASHI, GUNMA, JAPAN.

(3644)* 1931 TW = 1973 AZ3 = 1977 FJ3
Discovered 1931 Oct. 5 by K. Reinmuth at Heidelberg.
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 140.35612		(1950.0)		P	Q
n 0.29230146	Peri.	81.51724		+0.23356686	-0.97232569
a 2.2486165	Node	354.96587		+0.86603797	+0.21055862
e 0.0935846	Incl.	3.53536		+0.44206872	+0.10123155
P 3.37	H	13.0	G	0.25	

Residuals in seconds of arc

311005 024	0.4-	0.7+	870207 887	0.5-	0.0	870327 688	0.2+	0.2-
311007 024	(7.5-	2.3-)	870207 887	2.0-	1.2+	870331 887	1.0-	0.0
311012 024	2.4-	1.1+	870207 887	0.4-	0.3-	870331 887	2.2-	0.9+
311103 024	2.1+	0.4-	870228 801	1.3-	1.0+	870404 887	1.0+	1.9-
730102 095	0.2-	0.0	870326 887	0.3+	1.0+	870404 887	0.4+	1.8-
730104 095	0.6+	0.5+	870326 887	1.2+	0.6+			
770326 095	1.7+	2.2+	870327 688	2.3+	0.6-			

(3645)* 1981 QZ = 1959 SN = 1973 YD3
Discovered 1981 Aug. 28 by A. Mrkos at Klet.
Epoch 1987 July 24.0 ET = JDE 2447000.5

M 92.04038		(1950.0)		P	Q
n 0.22220173	Peri.	107.71075		+0.97934140	-0.16076655
a 2.6996311	Node	261.67545		+0.10361451	+0.91984659
e 0.0812108	Incl.	7.12083		+0.17365041	+0.35782170
P 4.44	H	11.9	G	0.25	

Residuals in seconds of arc

590930 024	0.4-	1.0+	810904 046	0.7-	1.5-	810906 046	1.1-	0.1+
731225 095	0.2-	1.3-	810905 095	1.1+	1.2+	810923 095	0.7-	0.2+
810828 046	0.8+	0.3+	810905 046	0.3+	0.5-	870104 801	0.0	0.4+
810828 046	1.8+	0.1-	810905 046	0.5-	1.3-	870129 801	0.0	0.6+
810904 046	(1.7-	3.8-)	810906 046	0.6-	0.1+			

(3646)* 1985 RK4 = 1979 JL = 1981 WZ6

Discovered 1985 Sept. 11 by H. Debehogne at the European Southern Observatory. The identification 1985 RK4 = 1979 JL was found independently by E. Goffin (MPC 11511).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	104.23511	(1950.0)		P	Q
n	0.21540945	Peri.	40.61633	+0.62680494	-0.77917389
a	2.7560867	Node	10.56935	+0.71213273	+0.57187991
e	0.1035781	Incl.	0.59406	+0.31620016	+0.25659583
P	4.58	H	13.0	G 0.25	

Residuals in seconds of arc

790503 323	1.5+	0.7+	850915 809	0.8-	0.6-	850920 809	0.8-	0.4-
790504 323	0.9-	1.3+	850915 809	0.6-	0.6-	850921 809	1.5+	1.0+
811124 095	0.0	0.9+	850916 809	0.1+	0.2-	850921 809	1.5+	1.0+
850911 809	0.1+	0.0	850916 809	0.2+	0.2-	850921 809	1.5+	1.1+
850911 809	0.1+	0.1-	850916 809	0.4+	0.2-	850922 809	0.6-	0.2-
850911 809	0.2+	0.1-	850918 809	0.3-	0.5+	850922 809	0.4-	0.2-
850914 809	0.2+	0.4+	850918 809	0.3-	0.3+	870128 801	0.6+	0.1-
850914 809	0.3+	0.5+	850918 809	0.1-	0.4+	870226 801	0.5-	0.9+
850914 809	0.5+	0.5+	850920 809	1.3-	0.3-			
850915 809	0.8-	0.6-	850920 809	1.1-	0.6-			

(3647)* 1986 AD1 = 1958 DP = 1975 VM5 = 1977 DO3 = 1979 QK8

Discovered 1986 Jan. 11 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory. The double designation 1975 VM5 = 1975 XA4 (MPC 9064) is invalid.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	244.37282	(1950.0)		P	Q
n	0.21019748	Peri.	217.60527	+0.95383747	+0.27811612
a	2.8014597	Node	125.87017	-0.23020948	+0.91944587
e	0.0990686	Incl.	8.03996	-0.19286701	+0.27797610
P	4.69	H	11.5	G 0.25	

Residuals in seconds of arc

580223 760	0.6+	1.0+	770218 381	1.5+	0.3+	860111 688	0.6+	1.3-
580223 760	1.3-	0.5+	770219 381	0.6+	1.0+	860111 688	0.7-	0.0
751102 095	0.1+	1.0+	770219 381	0.4+	0.8+	860210 881	0.3+	2.2-
751107 095	0.6+	0.6+	790826 095	0.2-	1.7+	860212 881	2.0-	0.4+
770218 381	0.4-	0.0	790914 095	0.3-	1.4-	860212 881	0.2+	0.6-

1974 QT1 = 1948 RK = 1984 WL2

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	332.01943	(1950.0)		P	Q
n	0.30333767	Peri.	20.55155	+0.99472449	-0.09850782
a	2.1937400	Node	345.01602	+0.07163252	+0.86675987
e	0.1802839	Incl.	6.35648	+0.07342998	+0.48890034
P	3.25	H	14.5	G 0.25	

Residuals in seconds of arc

480907 690	5.3+	1.2-	740824 095	1.3+	0.9-	841120 675	0.4-	0.3-
480908 690	3.0-	0.5-	740827 095	3.1-	1.7+	841121 675	0.4+	0.3+
480909 690	0.9-	0.8-	740911 095	0.3+	1.8+			

1974 RG1 = 1951 RH = 1979 VL1 = 1983 PK
The identification 1974 RG1 = 1972 GR (NOC 997) is invalid.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	303.63110		(1950.0)	P	Q
n	0.21528663	Peri.	8.55792	+0.95255408	+0.29704124
a	2.7571349	Node	333.86334	-0.28740362	+0.80599886
e	0.1657008	Incl.	8.66769	-0.10019921	+0.51198861
P	4.58	H	13.0	G 0.25	

Residuals in seconds of arc

510904	024	1.7+	0.8+	740920	095	0.7-	3.9-	830813	688	0.5-	1.3+
510905	024	1.8+	1.7-	740922	095	0.1+	2.5+	830902	688	0.7+	1.0-
510906	024	1.5-	2.4-	791114	095	0.1+	0.6-	830902	688	0.1-	0.5+
740912	095	1.0-	4.3+	830813	688	0.6-	0.0				

1974 SR1 = 1933 UG1 = 1981 SM7

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	296.81245		(1950.0)	P	Q
n	0.28801015	Peri.	326.82950	+0.72800605	+0.68539833
a	2.2708974	Node	349.85925	-0.60843209	+0.63559685
e	0.2413852	Incl.	5.00892	-0.31593919	+0.35531082
P	3.42	H	14.0	G 0.25	

Residuals in seconds of arc

331019	024	1.2+	2.2-	740923	095	0.9+	0.1+	811002	095	0.8-	1.0+
740919	095	2.0-	0.3-	741009	095	0.1-	1.0+				
740921	095	0.8+	0.0	810929	095	0.2+	0.8+				

1975 UF = 1986 RC3

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	36.85929		(1950.0)	P	Q
n	0.17540859	Peri.	268.51422	+0.91821379	-0.39449846
a	3.1605947	Node	114.71936	+0.37712768	+0.84343144
e	0.1995875	Incl.	2.23454	+0.12107083	+0.36468394
P	5.62	H	13.5	G 0.25	

Residuals in seconds of arc

751027	026	0.2-	1.0+	751109	381	0.5+	0.5-	860906	688	4.4-	0.7+
751028	026	1.8-	0.4-	751109	381	0.0	0.2-	860912	688	0.1+	0.1+
751029	026	1.5+	0.0	860906	688	5.5+	1.8-	860912	688	0.4+	1.6+

1977 EK1 = 1984 FU1

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	341.85007		(1950.0)	P	Q
n	0.28383514	Peri.	5.55627	-0.94789317	+0.31793027
a	2.2931120	Node	193.03750	-0.29566873	-0.90180921
e	0.1533643	Incl.	5.20534	-0.11865304	-0.29267814
P	3.47	H	14.5	G 0.25	

Residuals in seconds of arc

770313	095	0.9+	0.3-	770410	381	0.3+	0.0	840404	095	0.1-	1.6+
770322	095	0.9-	0.2-	770410	381	0.2-	1.0+				
770325	095	0.4+	0.5+	840329	095	0.2-	2.7-				

1977 EM1 = 1969 VL3 = 1971 DY = 1979 QD4 = 1980 TJ12

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	3.97468		(1950.0)	P	Q
n	0.17900786	Peri.	114.88929	-0.56369972	-0.82597307
a	3.1180852	Node	9.42489	+0.75024868	-0.51369988
e	0.1277576	Incl.	1.16629	+0.34549898	-0.23212263
P	5.51	H	12.5	G 0.25	

Residuals in seconds of arc

691105	095	0.0	0.3+		770325	095	0.5+	1.0-		790823	809	1.9-	1.5+
710218	095	1.2+	3.8+		790822	809	2.5+	1.6+		801010	095	0.1-	1.6+
770313	095	0.5+	1.6+		790822	809	1.3-	1.0+		801017	095	0.3-	0.6-
770322	095	0.2-	1.2+		790823	809	1.3-	0.9+					

1977 QD3 = 1986 TA7
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	114.80575		(1950.0)	P	Q
n	0.22855569	Peri.	316.36107	+0.80349599	+0.59488240
a	2.6493623	Node	7.23967	-0.48510126	+0.67624543
e	0.2433394	Incl.	10.31441	-0.34506661	+0.43451934
P	4.31	H	13.5	G 0.25	

Residuals in seconds of arc

770822	095	0.2-	1.1-		861009	092	0.3+	1.3+		861012	092	1.0-	0.5-
770824	095	0.6-	1.4+		861009	092	0.3+	0.3+		861012	092	2.0+	1.4-
770907	095	1.9+	3.5-		861011	092	0.5-	0.1+					
770907	095	1.1-	3.2+		861011	092	1.2-	0.3+					

1985 AE = 1979 OO7
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	245.49924		(1950.0)	P	Q
n	0.26941494	Peri.	342.55501	-0.47965206	-0.87718735
a	2.3742235	Node	136.10094	+0.80872072	-0.45159027
e	0.0827065	Incl.	1.80359	+0.34044778	-0.16312136
P	3.66	H	14.5	G 0.25	

Residuals in seconds of arc

790724	413	1.3-	0.0		850120	372	2.6+	0.1-		850125	372	3.6-	0.9-
790727	675	1.4+	0.1-		850120	372	2.7+	0.5+		850125	372	2.2+	1.8+
850115	881	1.1-	0.8+		850121	881	2.5-	1.0+					
850115	881	0.9-	0.2-		850121	881	0.6+	2.9-					

1986 XH = 1983 AP2
Epoch 1987 July 24.0 ET = JDE 2447000.5

M	39.69629		(1950.0)	P	Q
n	0.23319300	Peri.	183.20050	+0.00533874	-0.97946418
a	2.6141212	Node	266.55937	+0.92185081	+0.08292413
e	0.1201378	Incl.	11.64876	+0.38750817	-0.18377568
P	4.23	H	13.5	G 0.25	

Residuals in seconds of arc

830110	675	1.0+	0.0		861129	046	1.0+	0.1-		861206	054	2.3-	0.7-
830110	675	1.3-	0.5-		861204	046	0.5-	0.7+		861207	046	0.7+	0.2-
830111	675	0.0	1.5+		861204	046	0.4-	0.7+		861207	046	0.3-	0.6-
830112	675	0.3+	1.1-		861204	010	(5.9-	3.4-)		861209	046	0.6+	0.4-
861129	046	0.5-	0.4-		861205	010	(4.7-	5.4-)		861209	046	1.7+	1.0+

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ORBITAL ELEMENTS BY H. OISHI, NIIZA, JAPAN.

The following orbital elements are taken from JAM 2075-2078 and 2080. The identifications are by H. Oishi unless otherwise stated.

(3648)* 1957 HK = 1953 FE1 = 1972 GG = 1983 CW2 = 1983 EJ1
Discovered 1957 Apr. 24 at La Plata.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 357.02072		(1950.0)	P	Q
n 0.26264511	Peri.	31.18310	-0.50602351	+0.86000105
a 2.4148482	Node	208.57419	-0.81696906	-0.50238878
e 0.1074853	Incl.	7.91540	-0.27658952	-0.08946347
P 3.75	H 12.6		G 0.25	

Residuals in seconds of arc

530320	760	1.5+	0.0	720414	095	(8.7-	3.3-)	870423	372	(6.1+	5.0-)
530320	760	2.0-	1.2-	830215	688	0.3+	1.3-	870423	372	(7.6+	0.8-)
570424	839	0.3-	1.7-	830215	688	0.5+	1.9-	870427	801	1.0-	0.8-
570501	839	1.1+	0.4+	830314	095	0.8-	1.4+	870428	675	2.0+	1.4+
570507	839	1.3-	1.1+	860111	801	0.1-	3.1+	870428	675	0.8+	1.8+
570524	839	0.3+	0.9-	870327	801	0.8-	0.2-	870501	293	0.1-	2.0+

(3649)* 1976 HQ = 1976 JD2 = 1976 KY1 = 1978 VK12 = 1986 AK1

Discovered 1976 Apr. 26 at the El Leoncito Station of the Felix Aguilar Observatory.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 22.23047		(1950.0)	P	Q
n 0.17733560	Peri.	89.06307	-0.88193040	+0.45844490
a 3.1376567	Node	118.21651	-0.46663208	-0.81615476
e 0.0638584	Incl.	7.14943	-0.06673292	-0.35173809
P 5.56	H 11.7		G 0.25	

Residuals in seconds of arc

760426	808	1.1+	0.2+	781102	095	0.3+	0.8-	860117	688	0.2-	1.1-
760426	808	1.7+	3.6-	860111	688	0.1-	0.5+	870225	801	0.3+	0.0
760502	095	1.2-	0.8-	860111	688	0.3-	1.4+	870327	801	0.3+	1.5+
760525	095	2.3-	2.0+	860117	688	0.5+	1.3-				

(3650)* 1978 UO2 = 1950 PB = 1956 TC = 1956 UQ = 1982 HT

Discovered 1978 Oct. 30 at the Purple Mountain Observatory. The identifications 1978 UO2 = 1950 PB = 1956 TC were independently found by L. D. Schmadel (MPC 10516). The double designation 1956 TC = 1956 UQ was found by S. Kanda and A. Patry (MPC 1752, 2565). The double designation 1956 TE = 1956 UQ (MPC 1765) is invalid.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 254.21723		(1950.0)	P	Q
n 0.17820511	Peri.	279.70925	+0.72046709	+0.67593394
a 3.1274421	Node	38.02354	-0.49540542	+0.65810346
e 0.2354427	Incl.	14.57875	-0.48528409	+0.33168229
P 5.53	H 11.9		G 0.25	

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

500810	078	(0.03-	0.00+)Y	780927	095	1.0-	1.3+	820418	688	0.1+	0.6-
561005	760	0.5-	2.1+	781003	095	2.0-	1.9+	820418	688	0.8-	0.0
561005	760	3.1+	2.6-	781007	095	0.5-	0.2+	870225	801	0.6-	1.2+
561029	760	1.0-	1.2-	781030	330	0.3+	1.2-	870402	801	1.9+	1.3-
561029	760	1.8+	3.0-	781102	095	0.0	2.4+	870501	801	0.7-	0.6+

(3651)* 1978 VB5 = 1943 ES = 1980 JM

Discovered 1978 Nov. 7 by E. Helin and S. J. Bus at Palomar.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 356.52414		(1950.0)	P	Q
n 0.26866606	Peri.	137.13996	-0.87485889	+0.46914464
a 2.3786334	Node	71.20578	-0.47168191	-0.76854197
e 0.1052358	Incl.	7.31409	-0.11017306	-0.43502476
P 3.67	H 13.7		G 0.25	

Residuals in seconds of arc

430309	062	0.6+	0.2-	781130	675	1.5+	0.7-	800514	046	0.3+	3.1-
430309	062	1.5+	0.4-	781130	675	1.3-	0.8-	800514	046	1.0-	0.7+
430310	062	2.1-	0.9+	800511	046	1.2-	0.1-	830113	801	1.1+	0.5+
781105	675	0.0	0.2-	800511	046	1.8+	1.7+	830214	801	(14.1+	1.8+)
781106	675	2.2+	0.9-	800512	046	2.4-	1.0-	870225	801	1.3+	0.3+
781107	675	0.2+	0.1+	800512	046	3.6+	0.2-	870303	688	0.3-	1.4-
781108	675	1.0-	0.1+	800513	046	1.5-	0.0	870303	688	1.9-	2.1+
781129	675	1.1-	1.0-	800513	046	0.5-	0.6-	870330	801	0.5+	0.2-

(3652)* 1981 TC3 = 1977 PT = 1984 JD1

Discovered 1981 Oct. 6 by T. M. Smirnova at the Crimean Astrophysical Observatory. The identifications are by T. Furuta (MPC 10296).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	264.23982	(1950.0)		P	Q
n	0.27061619	Peri.	61.71684	+0.59836836	+0.80041733
a	2.3671923	Node	245.08102	-0.74823688	+0.54222349
e	0.1916431	Incl.	2.26741	-0.28652551	+0.25558909
P	3.64	H	13.2	G	0.25

Residuals in seconds of arc

770807	095	1.2+	1.9+	811027	095	0.1+	1.1+	870303	688	1.3+	0.4-
770813	095	1.8-	0.6+	840503	688	0.7-	1.9-	870303	688	1.1-	1.3+
811006	095	2.0+	2.3-	840503	688	0.1+	1.5-				
811021	095	1.2-	1.5-	870228	801	0.4+	0.4+				

1971 SX3 = 1971 TA1 = 1986 GD1

The double designation 1971 SX3 = 1971 TA1 is by B. G. Marsden (MPC 9064).

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

M	180.13263	(1950.0)		P	Q
n	0.23315963	Peri.	283.71333	-0.42800726	-0.90264768
a	2.6143758	Node	191.93523	+0.89037590	-0.41256829
e	0.1347352	Incl.	12.60545	+0.15505012	-0.12253395
P	4.23	H	12.7	G	0.25

Residuals in seconds of arc

710926	805	2.1+	0.8+	860414	046	1.1-	0.8-	860415	046	0.2-	0.8-
710927	805	1.4-	0.6-	860414	046	0.5-	0.6+				
711011	095	0.7-	0.3-	860415	046	1.7+	0.9+				

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ORBITAL ELEMENTS BY K. ICHIKAWA, OKAZAKI, JAPAN.

The following orbital elements are taken from JAM 2080.

1982 UQ5 = 1982 VA6 = 1933 FV = 1977 FT1

The double designation 1982 UQ5 = 1982 VA6 is by S. Nakano (MPC 11332). The key identification 1982 UQ5 = 1933 FV was found by both T. Furuta and W. Landgraf. The identification 1982 UQ5 = 1977 FT1 is by H. Oishi.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	56.43536	(1950.0)		P	Q
n	0.29138077	Peri.	150.98321	-0.60462039	-0.79636378
a	2.2533507	Node	336.20799	+0.72315761	-0.54069923
e	0.0679162	Incl.	2.19579	+0.33388211	-0.27101489
P	3.38	H	13.6	G	0.25

Residuals in seconds of arc

330323	024	0.7+	0.3+	821020	095	1.4+	0.1+	821109	095	1.2-	0.1-
330327	024	0.0	0.2-	821021	095	0.7-	1.8-	821114	095	0.1-	2.7+
770326	095	0.3-	0.7-	821108	095	1.2+	0.9-				

ORBITAL ELEMENTS BY T. URATA, SHIMIZU, JAPAN.

The identifications are by T. Urata. The following orbital elements are taken in part from NOC 1652.

(3653)* 1979 HF5 = 1983 RW

Discovered 1979 Apr. 25 by N. S. Chernykh at the Crimean Astrophysical Observatory. The identification was found independently by C. M. Bardwell (MPC 8287).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	138.97822	(1950.0)		P	Q
n	0.29467870	Peri.	73.88897	-0.23902827	+0.97100647
a	2.2365068	Node	182.29030	-0.92059779	-0.22774693
e	0.0992307	Incl.	4.95449	-0.30881255	-0.07264819
P	3.34	H	13.5	G	0.25

Residuals in seconds of arc

790425	095	0.4-	1.3-	830904	688	4.1+	0.4+	841224	801	0.9-	0.9-
790428	095	1.2-	0.4+	830905	046	0.1+	0.9+	850120	801	1.0+	0.1+
790430	095	1.6+	0.4-	830906	046	2.3-	1.6+	850320	801	0.4-	0.0
790526	095	0.6-	1.6-	830908	046	1.1-	3.7-	860605	801	1.6-	0.9+
830904	688	1.0+	0.6+	830908	046	0.9-	2.4-	860710	801	1.1+	1.0+

1978 VN = 1971 DF1

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

M	186.19465	(1950.0)		P	Q
n	0.21681237	Peri.	307.67417	-0.90745686	+0.41501525
a	2.7441902	Node	256.93087	-0.36119448	-0.85018681
e	0.1495844	Incl.	3.85293	-0.21461731	-0.32395175
P	4.55	H	13.0	G	0.25

Residuals in seconds of arc

710218	095	4.1-	0.8-	781030	010	2.2-	0.2-	781101	010	2.1+	0.3+
710223	095	4.1+	0.8+	781101	010	0.1+	0.0				

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

Comet Shoemaker (1987o)

T 1986 Nov. 17.15711 ET

q	5.4568461	(1950.0)		P	Q
		Peri.	17.01285	-0.23702037	-0.63295214
		Node	267.62412	-0.95489494	+0.01210025
e	1.0	Incl.	132.46836	-0.17887707	+0.77409636

From 36 observations, 1987 Apr. 25-June 26.

Comet Torres (1987j)

T 1987 Apr. 10.30133 ET

q	3.6242162	(1950.0)		P	Q
		Peri.	329.10104	-0.76470130	-0.61336730
		Node	193.79614	-0.27486633	+0.03325300
e	1.0	Incl.	124.07865	-0.58282109	+0.78909746

From 19 observations, 1987 Mar. 28-June 25.

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

Comet Machholz (1985 VIII)
T 1985 June 28.73876 ET

q 0.1062521	(1950.0)		P	Q
	Peri.	274.50831	-0.31931793	-0.94496263
	Node	194.72917	+0.94194072	-0.30825246
e 1.0	Incl.	16.28270	+0.10384481	-0.10966334

From 28 observations 1985 May 28-Sept. 7.

Comet Nishikawa-Takamizawa-Tago (1987c)
Epoch 1987 Mar. 26.0 ET = JDE 2446880.5
T 1987 Mar. 17.34404 ET

q 0.8695789	(1950.0)		P	Q
z +0.0048966	Peri.	200.40214	+0.90591735	-0.42331072
+/-0.0000470	Node	175.31397	-0.36734627	-0.77265120
e 0.9957421	Incl.	172.23648	-0.21064301	-0.47309424

From 64 observations 1987 Jan. 21-May 28, mean residual 1".2.

(3654)* 1949 QH1 = 1949 SN = 1939 UQ = 1956 UO = 1973 SF3 = 1973 UY = 1980 WN2 = 1983 NZ

Discovered 1949 Aug. 21 at the Goethe Link Observatory, Indiana University. The identifications 1949 QH1 = 1949 SN = 1973 SF3 = 1973 UY = 1980 WN2 are by S. Nakano (MPC 11049), 1949 QH1 = 1956 UO = 1983 NZ were found by S. Nakano (unpublished) and H. Oishi (JAM 2079) and 1949 QH1 = 1939 UQ by H. Oishi (JAM 2079).

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 16.09818	(1950.0)		P	Q
n 0.28964086	Peri.	181.96394	+0.92457865	-0.38077541
a 2.2623658	Node	200.43237	+0.35003437	+0.86226098
e 0.2011024	Incl.	2.10494	+0.15043359	+0.33394024
P 3.40	H 14.4		G 0.25	

Residuals in seconds of arc

391007	062	2.2+	2.1+	490827	760	0.5+	0.1+	801130 095	1.2- 1.8-
391018	062	0.1-	0.1-	490927	760	0.6-	0.7-	801210 095	0.7- 0.1-
391018	062	1.4-	0.1-	490927	760	0.2-	1.4+	830713 688	0.8- 0.1+
391111	062	1.0-	0.5+	561029	760	1.9-	1.6+	830713 688	0.5- 1.9-
490821	760	1.2+	0.4+	561029	760	0.2-	0.1-	850220 675	0.1+ 0.5-
490821	760	0.3-	1.2-	730922	095	4.4+	0.3-	850222 675	0.7+ 0.9-
490827	760	1.0-	0.1+	731026	095	0.5+	2.0-		

(3655)* 1978 SA3 = 1982 FZ3

Discovered 1978 Sept. 26 by L. V. Zhuravleva at the Crimean Astrophysical Observatory. The identification was found by F. N. Bowman, T. Urata and J. G. Williams (MPC 7453). The identification 1978 SA3 = 1943 GJ (MPC 7453) is invalid.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M 26.13848	(1950.0)		P	Q
n 0.12345892	Peri.	42.86099	+0.93458365	-0.35484653
a 3.9944262	Node	337.88498	+0.30552850	+0.83699013
e 0.2100472	Incl.	3.84512	+0.18222444	+0.41657108
P 7.98	H 11.0		G 0.25	

Residuals in seconds of arc

780926	095	0.0	0.8-	820330	809	0.1-	1.0-	860907	026	0.3-	0.4-
781002	095	0.2-	1.3-	820330	809	0.0	0.6-	860911	026	1.5+	2.0+
781005	095	0.6+	0.7-	820401	809	1.0-	0.7-	860930	552	0.5+	0.3+
781008	095	1.0+	0.1-	820401	809	0.7-	0.5-	860930	552	1.7+	0.1-
820329	809	(0.8+	4.9+)	820401	809	0.7-	0.5-	861031	801	0.1-	0.9+
820329	809	(0.1+	4.6+)	860903	026	0.1-	0.9+	861128	801	2.8-	0.3-
820329	809	(0.2-	5.1+)	860906	688	3.1-	3.1-	861201	801	3.6+	0.2+
820330	809	0.2+	1.5-	860906	688	0.1-	1.7-				

1979 SU9 = 1978 NU7 = 1987 GJ1

The identifications 1979 SU9 and 1978 NU7 and 1979 SU9 = 1987 GJ1 are by S. J. Bus (MPC 10761) and C. M. Bardwell, respectively.

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	138.39368	(1950.0)		P	Q
n	0.17917890	Peri.	35.48933	+0.81976363	-0.57270200
a	3.1161006	Node	359.44952	+0.52420535	+0.75038095
e	0.1662638	Incl.	0.29896	+0.23064329	+0.33006188
P	5.50	H	12.0	G 0.25	

Residuals in seconds of arc

780705	675	0.7-	0.0	791016	095	1.9-	1.3+	870401	675	1.2+	0.4-
780706	675	0.7+	0.7+	791111	095	1.4+	1.3-	870403	675	1.0-	1.0+
790922	095	0.9+	1.4+	791116	095	0.3+	0.1+	870403	675	2.0+	0.1-
790928	095	1.0-	0.2-	870401	675	1.6-	1.2+				

1981 FD

Epoch 1987 July 24.0 ET = JDE 2447000.5

M	41.45248	(1950.0)		P	Q
n	0.16981216	Peri.	138.15697	-0.92430161	-0.38137530
a	3.2296604	Node	19.43936	+0.33727677	-0.83435868
e	0.4765866	Incl.	2.55101	+0.17863628	-0.39799305
P	5.80	H	15.0	G 0.25	

Residuals in seconds of arc

810209	413	0.6-	0.6-	810406	675	0.3-	0.6-	810508	801	(6.3+	4.1+)
810212	413	0.1+	0.3-	810406	675	2.6+	1.3-	810601	801	(3.2-	3.8+)
810213	413	0.1-	1.1-	810407	675	0.7-	0.9-	870507	474	1.4+	1.3+
810302	413	0.3-	0.6-	810407	675	3.1+	0.8-	870507	474	0.6+	1.1+
810302	413	0.2-	0.1-	810407	675	0.8+	0.1+	870530	413	0.1-	1.3+
810311	413	0.8-	0.8+	810409	688	1.7-	0.0	870530	413	0.1+	0.8-
810311	413	1.1-	2.0+	810409	688	0.6-	0.8+	870620	474	0.5-	0.1-
810315	413	0.6-	1.8+	810411	801	(0.6-	5.0+)	870620	474	0.1+	0.3-
810315	413	0.1-	3.0+	810411	801	(0.2+	4.4+)	870623	691	0.4-	0.5-
810330	688	0.5+	1.1-	810423	801	1.0+	2.6+	870623	691	0.6-	0.3-
810330	688	0.6+	1.8-	810430	474	1.5-	0.3-	870623	691	0.5-	0.6-
810401	688	0.5+	0.6-	810430	474	0.8+	1.1-	870623	691	0.5-	0.6-
810401	688	0.8+	0.8-	810504	474	1.6-	0.1+				
810405	688	(3.6+	0.1+)	810504	474	1.9-	0.4-				

1981 FQ = 1979 YA10 = 1987 KC1

The identifications 1981 FQ = 1979 YA10 and 1981 FQ = 1987 KC1 are by S. J. Bus and B. G. Marsden, respectively.

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

M	13.74204	(1950.0)		P	Q
n	0.17972208	Peri.	202.95043	-0.60067389	+0.79948924
a	3.1098250	Node	30.13161	-0.73261769	-0.54902338
e	0.1538572	Incl.	0.31947	-0.32009718	-0.24370121
P	5.48	H	12.0	G 0.25	

Residuals in seconds of arc

791220	675	0.9-	0.8-		810306	809	1.1+	0.8-		810311	809	0.5+	0.4+
791220	675	0.9+	0.5+		810306	809	1.2+	0.7-		810312	809	0.8+	0.2+
810202	413	0.8-	0.9-		810306	809	1.4+	0.6-		810312	809	1.0+	0.2+
810213	413	0.0	0.9-		810307	809	0.5+	0.6-		810312	809	1.3+	0.3+
810301	809	1.0-	0.1+		810307	809	0.6+	0.5-		810316	413	0.2-	0.3-
810301	809	0.8-	0.1-		810307	809	0.7+	0.6-		810316	413	1.2+	0.1+
810301	809	0.4-	0.3-		810307	413	0.1-	0.9+		810328	801	2.9+	1.0+
810302	413	0.5-	0.7+		810307	413	0.8+	0.5+		810329	413	0.1-	0.0
810302	413	0.4+	0.2-		810308	809	0.5-	0.0		810329	413	0.6+	0.0
810303	809	0.6-	0.3-		810308	809	0.5-	0.3-		810401	801	3.1-	2.9+
810303	809	0.7-	0.0		810308	809	0.4-	0.4-		810407	413	0.4-	0.1+
810303	809	1.0-	0.3-		810308	095	0.6-	0.0		810407	413	0.9+	0.3+
810303	413	0.4-	0.3+		810309	809	0.7-	0.5-		810408	413	1.3+	0.1+
810303	413	1.7+	0.4-		810309	809	0.5-	0.5-		810411	413	0.2+	0.5+
810304	809	1.8-	0.5-		810309	809	0.4-	0.4-		810426	413	1.2+	2.1-
810304	809	1.6-	0.0		810310	809	0.4+	0.6+		810430	413	3.6-	0.4+
810304	809	1.3-	0.3+		810310	809	0.3+	0.5+		810502	413	0.5+	0.1+
810305	809	0.3-	0.1+		810310	809	0.4+	0.3+		870530	413	0.0	0.6+
810305	809	0.6-	0.1+		810311	809	0.5+	0.6+		870530	413	0.2-	1.4-
810305	809	0.9-	0.1+		810311	809	0.5+	0.5+					

1982 SF = 1977 EQ2 = 1987 BQ1

The identifications are by E. Goffin.

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

M	132.27155		(1950.0)	P	Q
n	0.28872493	Peri.	234.63424	+0.93324236	-0.35527889
a	2.2671524	Node	146.08597	+0.35272595	+0.87806385
e	0.1770378	Incl.	5.47663	+0.06814033	+0.32059442
P	3.41	H	13.5	G 0.25	

Residuals in seconds of arc

770312	381	0.5-	0.4+		870122	809	1.0-	0.3-		870130	809	0.6+	0.1-
770312	381	0.2-	0.7-		870123	809	1.2+	0.8-		870130	809	1.1-	0.0
770315	381	0.5+	0.3+		870123	809	0.7+	0.7+		870131	809	1.3-	1.7+
770315	381	0.2-	1.1-		870123	809	0.2+	3.8-		870131	809	0.1-	0.6-
820922	688	2.3-	0.7-		870123	809	1.7+	4.5-		870202	809	1.3-	0.7+
820922	688	0.9+	0.9+		870127	809	2.4-	2.0+		870202	809	1.0+	0.7-
821009	688	1.5+	0.2+		870127	809	1.4-	1.5+		870203	809	0.1-	1.5+
821009	688	0.2+	0.2-		870128	809	0.6-	0.5-		870203	809	0.6+	1.4+
821017	688	0.7-	0.4-		870128	809	0.5+	0.5-		870203	809	1.6+	0.6+
821017	688	0.5+	0.2+		870128	809	0.8+	0.4+		870203	809	0.2-	1.4+
870122	809	3.0-	0.1-		870128	809	0.4-	0.3-		870203	809	0.7-	2.0+
870122	809	0.7-	2.1-		870128	809	0.2-	0.7+		870203	809	0.7+	3.0+
870122	809	0.2-	1.2-		870129	809	2.1+	0.3+		870205	809	0.4+	0.0
870122	809	1.1+	0.8-		870129	809	0.9+	0.2+		870205	809	0.2+	0.7-

1985 YP = 1986 AF = 1986 CF

The triple designation is by F. N. Bowman (MPC 10610). The double designation 1986 AF = 1986 CF was suggested by C. Shoemaker (MPC 10610).

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

M	306.85465		(1950.0)	P	Q
n	0.43447845	Peri.	109.81301	+0.86166739	-0.42187213
a	1.7264662	Node	276.01768	+0.28985909	+0.86535928
e	0.1493930	Incl.	16.47606	+0.41654654	+0.27051289
P	2.27	H	15.0	G 0.25	

Residuals in seconds of arc

851218	688	(5.0+	1.9+)	860205	675	0.2-	1.7+	860514	691	0.1-	0.0
851218	688	0.5-	0.9-	860511	691	0.1+	0.2+	870523	691	0.6-	0.2-
851218	675	0.9-	2.0+	860511	691	0.3-	0.4-	870523	691	0.4-	0.5-
860107	675	0.4+	0.7+	860511	691	0.6+	0.2-	870523	691	0.1-	0.0
860107	675	0.8+	0.2-	860512	691	0.5+	0.2-	870524	691	0.1+	0.5+
860110	675	1.3+	0.3-	860512	691	1.6-	2.0+	870524	691	0.5+	0.4+
860116	675	0.6+	0.8-	860514	691	0.3+	0.2+	870524	691	0.2+	0.2+
860205	675	1.8-	2.5-	860514	691	0.5+	0.1-				

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NEW NAMES OF MINOR PLANETS.

(2564) Kayala = 1977 QX

Discovered 1977 Aug. 19 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named for the river in "The Song of Igor's Campaign" on the occasion of the 800th aniversary of the old Russian literary monument.

(2578) Saint-Exupery = 1975 VW3

Discovered 1975 Nov. 2 by T. M. Smirnova at the Crimean Astrophysical Observatory.

Named in memory of the French writer Antoine de Saint-Exupery (1900-1944), some time pilot, author of several novels and the world-famous tale "The Little Prince".

(2641) Lipschutz = 1949 GJ

Discovered 1949 Apr. 4 at the Goethe Link Observatory, Indiana University.

Named in honor of Michael E. Lipschutz, professor of chemistry at Purdue University and author or co-author of more than 100 scientific papers on meteorites, radiochemistry, cosmochemistry, the Antarctic and extraterrestrial materials processing. Recipient of the first annual Nininger Award for meteorite research in 1962, he has also received three NASA achievement awards and in 1986 was given a certificate of appreciation by the National Commission on Space. He has served as treasurer and council member of the Meteoritical Society (1979-1984), was associate editor of the proceedings of the eleventh lunar and planetary science conference (1980) and co-convenor of a workship on Antarctic Glaciology and Meteorites (1982). Name proposed by F. K. Edmondson.

(2653) Principia = 1964 VP

Discovered 1964 Nov. 4 at the Goethe Link Observatory, Indiana University.

Named in honor of Isaac Newton's Philosophiae Naturalis Principia Mathematica on the three-hundredth anniversary of its publication. The culminating work of the seventeenth-century scientific revolution, weaving together many diverse strands into one consistent fabric and establishing the enduring paradigm of modern science, Newton's book was also of major importance for astronomy, including programs for the discovery and observation of minor planets. Name proposed by F. K. Edmondson. Citation prepared by R. S. Westfall.

(2770) Tsvet = 1977 SM1

Discovered 1977 Sept. 19 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Mikhail Semenovich Tsvet (1872-1919), physiologist and plant biochemist, the founder of chromatography.

(2832) Lada = 1975 EC1
Discovered 1975 Mar. 6 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named for the ancient Slavic goddess of marriage and family happiness.

(2869) Nepryadva = 1980 RM2
Discovered 1980 Sept. 7 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named to commemorate the Russian victory over the Tatar-Mongolians in the battle at Kulikovo near the Nepryadva River on 1380 Sept. 8.

(2902) Westerlund = 1980 FN3
Discovered 1980 Mar. 16 by C.-I. Lagerkvist at the European Southern Observatory.
Named in honor of Bengt E. Westerlund, director of the Uppsala Astronomical Observatory, on the occasion of his retirement. Well known for his study of the structure of the Milky Way and for his work on the Magellanic Clouds, he has for many years given strong moral support to the Uppsala program on minor planets and comets, and he has even participated in the observations of minor planets with the Schmidt telescope at the Uppsala southern station.

(3065) Sarahill = 1984 CV
Discovered 1984 Feb. 8 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Named in honor of Sarah J. Hill, professor of astronomy at Wellesley College (1952-1974) and chairman of its astronomy department (1952-1971). Her enthusiasm for teaching and for observational astronomy influenced ten graduates to earn doctorates and become professional astronomers. Many others among her students earned advanced degrees in astronomy or related fields. Name proposed by the discoverer following a suggestion by F. Vilas, who provided the citation.

(3094) Chukokkala = 1979 FE2
Discovered 1979 Mar. 23 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of Kornej Ivanovich Chukovskij, pen name of Nikolaj Vasil'evich Kornejchukov (1882-1969), outstanding writer and literary scholar, known especially for his poetry for children. The name comes from Chukovskij's album "Chukokkala". Many prominent writers, artists and other men of culture included their notes, poetry, and paintings in this work.

(3098) van Sprang = 4579 P-L
Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.
Named in honor of Bert van Sprang, a Dutch amateur who is very active in popularizing astronomy. An organization of young amateur astronomers, founded by him, has at present 1400 members. He initiated the International Astronomical Youth Camps, which are held in various European countries each year. He also gives many popular lectures and stimulates the contruction of small telescopes by young people.

(3128) Obruchev = 1979 FJ2
Discovered 1979 Mar. 23 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of Vladimir Afanasjevich Obruchev (1863-1956), outstanding geologist and geographer who made a valuable contribution to the geologic exploration of Siberia and central Asia. He also wrote popular books on science and science-fiction novels.

(3158) Anga = 1976 SU2

Discovered 1976 Sept. 24 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named for a Siberian village, birthplace of the Russian ethnographers Ivan Evseevich Venyaminov (1797-1879) and Afanasij Prokopevich Shchapov (1831-1876). The former was the first explorer of the Aleutians and the latter a historian and popularizer of culture.

(3172) Hirst = 1981 WW

Discovered 1981 Nov. 24 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in honor of William P. Hirst, computer of the orbits of several of the minor planets discovered in Johannesburg. A Yorkshireman by birth, he worked for many years as Shell Oil's chief chemist in South Africa. He led the Cape Town Moonwatch team from its inception in 1957, and following his retirement from Shell he served for several years at the Smithsonian Astrophysical Observatory as Moonwatch world coordinator. After returning to South Africa he continued to lecture on celestial mechanics at the University of Cape Town until the age of 83. Name proposed by the discoverer, following a suggestion by R. Hurly and B. G. Marsden.

(3186) Manuilova = 1973 SD3

Discovered 1973 Sept. 22 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of the prominent sculptor Ol'ga Maksimilianovna Manuilova (1893-1984).

(3208) Lunn = 1981 JM

Discovered 1981 May 3 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in memory of Borge Lunn (1912-1986), Danish civil engineer and metallurgist who did much to encourage the study of metal and iron meteorites. He invented a particular unmagnetized bronze for deepwater experiments on the marine Galathea expedition in 1950, and for his work on the metallurgy of sleeve bearing metals he was awarded the Hunt Medal of the American Society of Lubrication Engineers. Twice chairman of the Danish Metallurgical Society, he served as head of the department of metallurgy at the Technical University of Denmark and was permanent censor in metallurgy in that department for 27 years. Name proposed by the discoverer, following a suggestion by J. Gradie.

(3209) Buchwald = 1982 BL1

Discovered 1982 Jan. 24 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in honor of Vagn Fabritius Buchwald, associate professor in the department of metallurgy at the Technical University of Denmark. Participant in numerous expeditions, most recently to Antarctica, to search for iron meteorites, he discovered the 20-tonne iron meteorite Agpalilik in Greenland in 1963. Among his international publications is the three-volume Handbook of Iron Meteorites (1975) and a catalogue of Meteorites (1965, 1976). Name proposed by the discoverer, following a suggestion by J. Gradie.

(3210) Lupiskho = 1983 WH1

Discovered 1983 Nov. 29 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in honor of Dmitrij Fedorovich Lupishko, deputy director of the Kharkov Astronomical Observatory. An assiduous observer of minor-planet lightcurves, Lupishko has made fundamental contributions to the understanding of how photometric data may be used to derive the shapes and spin states of

these bodies. He has also undertaken photometry of Mars and since its inception in 1984 has been chairman of the Working Group on Asteroids of the U.S.S.R. Academy of Sciences. Citation prepared by V. A. Shor at the request of the discoverer.

(3222) Liller = 1983 NJ

Discovered 1983 July 10 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in honor of William Liller, formerly Robert Wheeler Willson Professor of Applied Astronomy at Harvard University, on the occasion of his sixtieth birthday. A premier observer, he has made substantial contributions through observations of a broad range of astronomical objects and phenomena: planetary nebulae, minor planets, comets, novae, variable stars, globular clusters, x-ray sources, quasars, solar eclipses and stellar occultations. Now living in Chile, he has in recent years participated in the PROBLICOM survey and has discovered several novae. During the recent passage of Halley's Comet he was a crucial member of the IHW Island Network. He has been a leader in astronomical education and an important supporter of amateur astronomy. His enthusiastic encouragement has been greatly appreciated by his colleagues and students.

(3232) Brest = 1974 SL

Discovered 1974 Sept. 19 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named for the well-known city in Byelorussia.

(3233) Krisbarons = 1977 RA6

Discovered 1977 Sept. 9 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named for Krisjanis Barons (1835-1923), prominent Latvian folklorist, writer and public figure. He collected and published the most complete collection of 'dainas', Latvian folksongs.

(3234) Hergiani = 1978 QO2

Discovered 1978 Aug. 31 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Mikhail Vissarionovich Hergiani (1932-1969), outstanding Soviet mountaineer.

(3242) Bakhchisaraj = 1979 SG9

Discovered 1979 Sept. 22 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named for a town in the Crimea, the center of the district in which the Crimean Astrophysical Observatory is located. The name is widely known, thanks to Pushkin's poem "The Bakhchisaraj Fountain".

(3273) Drukar = 1975 TS2

Discovered 1975 Oct. 3 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named for Ivan Fedorov (ca. 1510-1583), the first printer of books in Russia and the Ukraine. In old Russian (and in modern Ukrainian) the word means 'bookprinter'.

(3275) Oberndorfer = 1982 HE1

Discovered 1982 Apr. 25 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in honor of Hans Oberndorfer, director of the Bavarian Public Observatory, which he founded in Munich in 1947. He has contributed greatly to the development of German amateur astronomy and is well known for his

publications on telescope construction and for his articles in the periodical Sterne und Weltraum. Name proposed by the discoverer, following a suggestion by L. D. Schmadel, H. Schwaiger and J. Stromeyer, the last of whom prepared the citation.

(3277) Aaronson = 1984 AF1

Discovered 1984 Jan. 8 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in memory of Marc Aaronson (1950-1987), associate professor of astronomy at the University of Arizona, killed in a tragic accident at the 4-m telescope at Kitt Peak. After completing his dissertation on the infrared properties of spiral galaxies, Aaronson demonstrated the determination of relative distances of galaxies independently of redshifts and detected the decelerative effect of the Virgo cluster on the Hubble flow. His observations of globular clusters in the Magellanic clouds showed carbon stars to be a characteristic of stellar populations of intermediate age, and his measurement of the large velocity dispersion of carbon stars in dwarf spheroidal galaxies suggested that even the smallest galaxies possess halos of cold dark matter.

(3286) Anatoliya = 1980 BV

Discovered 1980 Jan. 23 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in memory of Anatolij Vasilevich Karachkin (1947-1984), brother of the discoverer's husband, a skilled specialist in the construction of industrial establishments.

(3403) Tammy = 1981 SW

Discovered 1981 Sept. 25 by L. G. Taff at the Lincoln Laboratory ETS, New Mexico.

Named in honor of the wife of R. L. Irelan, principal night assistant at Lincoln Laboratory's Observatory, as a token of thanks for her patience and support during the years of strange and trying schedules of this effort.

(3413) Andriana = 1983 CB3

Discovered 1983 Feb. 15 by N. G. Thomas at the Anderson Mesa Station of the Lowell Observatory.

Named in honor of Andriana Marie Hazelton, granddaughter of the discoverer.

(3420) Standish = 1984 EB

Discovered 1984 Mar. 1 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in honor of E. Myles Standish, Jr., celestial mechanician at the Jet Propulsion Laboratory, who has continually improved the accuracy of planetary ephemerides by making use of diverse types of data, including optical astrometry, planetary ring occultations, radio interferometry, planetary radar and spacecraft tracking data. His efforts have been important in making the JPL planetary ephemeris an international standard. Name proposed by the discoverer following a suggestion by D. K. Yeomans, who provided the citation.

(3437) Kapitsa = 1982 UZ5

Discovered 1982 Oct. 20 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in memory of the celebrated physicist Pyotr Leonidovich Kapitsa (1894-1984), recipient of the Nobel prize for physics in 1978.

(3453) Dostoevsky = 1981 SS5
Discovered 1981 Sept. 27 by L. G. Karachkina at the Crimean Astrophysical Observatory.
Named for the great Russian writer Fyodor Mikhailovich Dostoevsky (1821-1881).

(3467) Bernheim = 1981 SF2
Discovered 1981 Sept. 26 by N. G. Thomas at the Anderson Mesa Station of the Lowell Observatory.
Named in honor of Robert Burnham, Jr., past staff member of the Lowell Observatory during the Lowell Proper Motion Survey, discoverer or codiscoverer of six comets, and author of the Celestial Handbook, a 2000-page 'wunderwerk' of the Universe Beyond the Solar System. Bernheim is the ancestral Bohemian name of the Burnham family.

(3469) Bulgakov = 1982 UL7
Discovered 1982 Oct. 21 by L. G. Karachkina at the Crimean Astrophysical Observatory.
Named in memory of Mikhail Afanasevich Bulgakov (1891-1940), Soviet writer and dramatist.

(3479) Malaparte = 1980 TQ
Discovered 1980 Oct. 3 by Z. Vavrova at Klet.
Named in memory of the discoverer's favorite writer and poet, Curzio Malaparte, born Kurt Suckert in Pratto, near Florence, in 1898.

(3508) Pasternak = 1980 DO5
Discovered 1980 Feb. 21 by L. G. Karachkina at the Crimean Astrophysical Observatory.
Named in memory of Boris Leonidovich Pasternak (1890-1960), famous poet and writer.

(3516) Rusheva = 1982 UH7
Discovered 1982 Oct. 21 by L. G. Karachkina at the Crimean Astrophysical Observatory.
Named in memory of Nadya Rusheva (1952-1969), a talented painter who died in her youth.

(3525) Paul = 1983 CX2
Discovered 1983 Feb. 15 by N. G. Thomas at the Anderson Mesa Station of the Lowell Observatory.
Named in honor of Paul J. Baltutis, son-in-law of the discoverer.

(3539) Weimar = 1967 GF1
Discovered 1967 Apr. 11 by F. Borngen at Tautenburg.
Named for the venerable town, 30 km from Tautenburg, renowned for its contributors (Goethe, Schiller and others) to 'classical' German literature around the end of the eighteenth century and the home of several famous musicians and painters. The town is also known for the Weimar Republic (1919) and the Weimar Constitution.

(3561) Devine = 1983 HO
Discovered 1983 Apr. 18 by N. G. Thomas at the Anderson Mesa Station of the Lowell Observatory.
Named in honor of John Devine Hazelton, son-in-law of the discoverer and great-grandson of Colonel John Devine, who was with the forces under General Gordon at Khartoum.

(3583) Burdett = 1929 TQ
Discovered 1929 Oct. 5 by C. W. Tombaugh at the Lowell Observatory.
Named for the discoverer's home town in Kansas.

(3598) Saucier = 1977 KK1
Discovered 1977 May 18 by E. S. Bus at Palomar.
Named in honor of Agnes Elizabeth Saucier, grandmother of the discoverer.

(3607) Naniwa = 1977 DO4
Discovered 1977 Feb. 18 by H. Kosai and K. Hurukawa at the Tokyo Observatory's Kiso Station.
This planet is being given the former name of Osaka, where co-discoverer Hurukawa grew up.

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EPHEMERIDES.

1987 KF a,e,i = 1.84, 0.68, 12 Elements MPC 11998

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07	04	14 47.19	-03 08.9	0.970	1.708	118.6	31.5	18.3
1987 07	14	14 56.09	-06 09.6					
1987 07	24	15 06.17	-08 41.3	1.327	1.884	106.3	31.2	19.2
1987 08	03	15 17.27	-10 51.6					
1987 08	13	15 29.23	-12 45.3	1.708	2.045	93.9	29.6	19.9
1987 08	23	15 41.92	-14 25.3					
1987 09	02	15 55.25	-15 53.8	2.097	2.190	81.6	27.1	20.4

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

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07	04	18 35.51	+03 56.3	0.545	1.523	152.9	17.7	18.4
1987 07	14	18 08.68	+02 04.3					
1987 07	24	17 45.41	-00 33.8	0.566	1.493	139.8	26.0	18.7
1987 08	03	17 28.41	-03 34.9					
1987 08	13	17 18.48	-06 39.5	0.648	1.441	118.7	38.1	19.2
1987 08	23	17 15.12	-09 37.0					
1987 09	02	17 17.45	-12 22.8	0.750	1.365	100.7	46.6	19.6
1987 09	12	17 24.54	-14 55.5					
1987 09	22	17 35.58	-17 15.2	0.840	1.266	86.2	52.3	19.9
1987 10	02	17 50.04	-19 22.3					
1987 10	12	18 07.40	-21 17.0	0.891	1.142	74.1	57.2	19.9
1987 10	22	18 27.28	-23 00.1					
1987 11	01	18 49.34	-24 32.3	0.886	0.996	63.7	63.4	19.8
1987 11	11	19 13.00	-25 55.6					
1987 11	21	19 37.35	-27 14.1	0.805	0.833	54.2	74.2	19.5
1987 12	01	20 00.58	-28 36.1					
1987 12	11	20 18.59	-30 17.3	0.641	0.677	43.1	96.6	19.4

1982 XB a,e,i = 1.84, 0.45, 4 Elements MPC 7841

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987 09	02	02 08.55	+03 53.2	0.659	1.499	-4.76	-31.6	20.7
1987 09	07	02 16.78	+04 07.6					
1987 09	12	02 25.07	+04 19.7	0.552	1.436	-5.92	-38.1	20.2
1987 09	17	02 33.47	+04 29.4					
1987 09	22	02 42.00	+04 37.0	0.454	1.373	-7.49	-46.4	19.6
1987 09	27	02 50.75	+04 43.1					

1987 10 02	02 59.85	+04 48.5	0.367	1.311	-9.67	-56.9	19.0
1987 10 07	03 09.47	+04 54.4					
1987 10 12	03 19.85	+05 01.9	0.291	1.251	-12.75	-70.1	18.4
1987 10 17	03 31.30	+05 12.9					
1987 10 22	03 44.26	+05 29.8	0.225	1.195	-17.20	-86.1	17.7
1987 10 27	03 59.38	+05 56.2					
1987 11 01	04 17.64	+06 36.7	0.170	1.143	-23.70	-103.6	17.0
1987 11 06	04 40.39	+07 36.4					
1987 11 11	05 09.37	+09 00.3	0.125	1.098	-32.81	-112.9	16.3
1987 11 16	05 46.63	+10 50.7					
1987 11 21	06 33.78	+13 01.4	0.095	1.061	-41.99	-71.8	15.9
1987 11 26	07 30.18	+15 09.7					
1987 12 01	08 30.95	+16 41.3	0.087	1.034	-40.54	+55.4	16.0
1987 12 06	09 28.44	+17 16.8					
1987 12 11	10 17.03	+17 07.1	0.099	1.019	-27.24	+131.9	16.7
1987 12 16	10 55.40	+16 34.9					
1987 12 21	11 24.85	+15 57.8	0.122	1.017	-17.43	+137.5	17.2
1987 12 26	11 47.30	+15 24.2					
1987 12 31	12 04.44	+14 57.2	0.149	1.027	+1.18	+131.7	17.6
1988 01 05	12 17.48	+14 37.7					
1988 01 10	12 27.21	+14 26.4	0.176	1.049	+0.88	+127.5	17.9
1988 01 15	12 34.09	+14 23.3					
1988 01 20	12 38.41	+14 28.5	0.200	1.082	-0.08	+125.0	18.0
1988 01 25	12 40.36	+14 40.9					
1988 01 30	12 40.13	+14 58.9	0.223	1.124	-1.20	+121.6	18.1
1988 02 04	12 37.91	+15 21.2					
1988 02 09	12 33.86	+15 45.8	0.247	1.173	-2.30	+114.9	18.1
1988 02 14	12 28.19	+16 10.8					
1988 02 19	12 21.21	+16 33.6	0.276	1.228	-3.26	+103.4	18.2
1988 02 24	12 13.36	+16 51.2					
1988 02 29	12 05.12	+17 01.8	0.313	1.287	-3.96	+87.8	18.3

1974 RG1 a,e,i = 2.76, 0.17, 9 Elements MPC 12004

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07 04		16 39.62	-35 02.3	1.669	2.598	149.7	11.4	16.8
1987 07 14		16 33.80	-34 11.6					
1987 07 24		16 31.10	-33 20.2	1.788	2.564	130.2	17.6	17.1
1987 08 03		16 31.66	-32 32.2					
1987 08 13		16 35.31	-31 50.0	1.966	2.531	112.3	21.7	17.4
1987 08 23		16 41.78	-31 14.2					
1987 09 02		16 50.76	-30 44.0	2.175	2.499	96.5	23.7	17.7
1987 09 12		17 01.93	-30 18.1					
1987 09 22		17 14.97	-29 54.4	2.394	2.468	82.3	23.8	17.8

1971 SX3 a,e,i = 2.61, 0.13, 13 Elements MPC 12007

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07 04		19 47.57	-02 23.6	2.014	2.966	154.8	8.4	17.1
1987 07 14		19 39.24	-02 38.8					
1987 07 24		19 30.66	-03 09.5	1.989	2.967	160.6	6.5	17.0
1987 08 03		19 22.68	-03 53.3					
1987 08 13		19 16.07	-04 46.4	2.069	2.966	146.3	10.9	17.2
1987 08 23		19 11.36	-05 44.7					
1987 09 02		19 08.92	-06 44.2	2.237	2.963	127.6	15.7	17.6
1987 09 12		19 08.84	-07 41.5					
1987 09 22		19 11.07	-08 34.2	2.467	2.958	109.6	18.6	17.9
1987 10 02		19 15.48	-09 20.4					
1987 10 12		19 21.85	-09 58.8	2.727	2.952	92.9	19.7	18.1
1987 10 22		19 29.93	-10 28.5					
1987 11 01		19 39.52	-10 49.1	2.993	2.944	77.6	19.2	18.3

1979 ME9 a,e,i = 2.56, 0.13, 15 Elements MPC 11999

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07 04	22 19.72	-35 57.6	1.422	2.239	132.7	19.5	15.9
1987 07 14	22 18.03	-37 00.5					
1987 07 24	22 12.54	-38 00.9	1.304	2.231	147.9	14.0	15.5
1987 08 03	22 03.66	-38 47.6					
1987 08 13	21 52.50	-39 09.4	1.264	2.225	155.2	11.0	15.3
1987 08 23	21 40.68	-38 58.7					
1987 09 02	21 30.00	-38 13.3	1.311	2.222	146.2	14.6	15.5
1987 09 12	21 21.97	-36 57.1					
1987 09 22	21 17.37	-35 17.4	1.439	2.222	130.1	20.2	15.9
1987 10 02	21 16.43	-33 21.5					
1987 10 12	21 18.92	-31 15.5	1.625	2.226	113.9	24.2	16.3
1987 10 22	21 24.37	-29 03.4					
1987 11 01	21 32.32	-26 47.6	1.850	2.233	99.1	26.0	16.6
1987 11 11	21 42.26	-24 29.2					
1987 11 21	21 53.78	-22 08.9	2.093	2.242	85.5	26.1	16.9
1987 12 01	22 06.55	-19 46.8					
1987 12 11	22 20.27	-17 23.1	2.340	2.255	72.8	24.7	17.1

1985 YP a,e,i = 1.73, 0.15, 16 Elements MPC 12011

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07 04	22 16.60	+06 52.7	0.864	1.638	120.9	32.2	17.0
1987 07 14	22 17.76	+11 10.2					
1987 07 24	22 14.79	+15 26.4	0.725	1.600	132.9	27.7	16.4
1987 08 03	22 07.40	+19 25.8					
1987 08 13	21 56.02	+22 48.8	0.639	1.565	141.4	23.8	16.0
1987 08 23	21 41.98	+25 15.3					
1987 09 02	21 27.68	+26 32.4	0.612	1.533	140.9	24.5	15.9
1987 09 12	21 15.89	+26 41.9					
1987 09 22	21 08.71	+25 57.1	0.635	1.507	132.3	29.5	16.0
1987 10 02	21 07.28	+24 37.6					
1987 10 12	21 11.70	+23 02.8	0.695	1.487	121.8	34.8	16.3
1987 10 22	21 21.41	+21 26.8					
1987 11 01	21 35.73	+19 59.6	0.778	1.474	112.1	38.6	16.7
1987 11 11	21 53.82	+18 47.6					
1987 11 21	22 14.94	+17 53.1	0.880	1.469	103.5	40.8	17.0
1987 12 01	22 38.46	+17 17.6					
1987 12 11	23 03.77	+17 00.2	0.999	1.472	95.8	41.7	17.3

1984 SR1 a,e,i = 2.16, 0.07, 2 Elements MPC 12001

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07 04	23 10.01	-03 43.5	1.389	2.027	113.9	27.3	17.3
1987 07 14	23 14.34	-03 02.0					
1987 07 24	23 15.64	-02 38.8	1.219	2.037	131.3	22.0	16.9
1987 08 03	23 13.68	-02 36.4					
1987 08 13	23 08.56	-02 54.8	1.098	2.049	152.1	13.4	16.4
1987 08 23	23 00.75	-03 32.2					
1987 09 02	22 51.26	-04 23.1	1.054	2.062	175.2	2.4	15.9
1987 09 12	22 41.54	-05 19.0					
1987 09 22	22 33.04	-06 11.1	1.105	2.075	159.5	9.8	16.4
1987 10 02	22 26.98	-06 51.8					
1987 10 12	22 24.05	-07 16.4	1.243	2.090	137.5	18.8	16.9
1987 10 22	22 24.40	-07 23.3					
1987 11 01	22 27.90	-07 12.4	1.443	2.106	118.5	24.5	17.4
1987 11 11	22 34.17	-06 44.8					
1987 11 21	22 42.79	-06 02.2	1.680	2.122	102.3	27.1	17.8
1987 12 01	22 53.36	-05 06.0					
1987 12 11	23 05.52	-03 58.2	1.932	2.139	88.1	27.4	18.2

1974 QT1 a,e,i = 2.19, 0.18, 6 Elements MPC 12003

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07 04	23 19.34	-09 15.7	1.239	1.894	113.9	29.4	17.5
1987 07 14	23 26.84	-08 07.8					
1987 07 24	23 31.43	-07 10.9	1.047	1.865	129.4	24.9	17.0
1987 08 03	23 32.64	-06 26.7					
1987 08 13	23 30.23	-05 55.5	0.899	1.840	148.3	16.8	16.4
1987 08 23	23 24.26	-05 36.6					
1987 09 02	23 15.41	-05 27.2	0.817	1.820	170.8	5.1	15.7
1987 09 12	23 05.10	-05 21.9					
1987 09 22	22 55.13	-05 14.9	0.818	1.807	165.0	8.3	15.9
1987 10 02	22 47.30	-05 00.5					
1987 10 12	22 42.87	-04 34.7	0.901	1.799	142.7	19.6	16.4
1987 10 22	22 42.32	-03 56.1					
1987 11 01	22 45.65	-03 03.7	1.044	1.799	124.1	27.2	16.9
1987 11 11	22 52.43	-01 58.3					
1987 11 21	23 02.15	-00 40.8	1.226	1.805	108.7	31.2	17.4
1987 12 01	23 14.32	+00 47.8					
1987 12 11	23 28.46	+02 25.9	1.430	1.817	95.8	32.6	17.8

1982 XQ1 a,e,i = 3.21, 0.11, 2 Elements MPC 12000

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07 24	00 53.16	+04 40.8	3.063	3.483	106.0	16.3	18.4
1987 08 03	00 54.89	+04 45.9					
1987 08 13	00 54.86	+04 39.8	2.815	3.493	124.8	13.8	18.2
1987 08 23	00 53.02	+04 22.2					
1987 09 02	00 49.41	+03 53.7	2.624	3.503	145.6	9.4	17.9
1987 09 12	00 44.27	+03 15.8					
1987 09 22	00 37.96	+02 31.0	2.524	3.512	168.1	3.4	17.5
1987 10 02	00 31.03	+01 43.1					
1987 10 12	00 24.13	+00 56.3	2.537	3.520	168.2	3.3	17.5
1987 10 22	00 17.86	+00 14.7					
1987 11 01	00 12.79	-00 18.1	2.666	3.527	145.3	9.2	17.9
1987 11 11	00 09.29	-00 39.8					
1987 11 21	00 07.57	-00 49.3	2.887	3.534	123.8	13.4	18.2
1987 12 01	00 07.70	-00 46.4					
1987 12 11	00 09.61	-00 31.7	3.167	3.539	104.1	15.7	18.5
1987 12 21	00 13.17	-00 06.3					
1987 12 31	00 18.23	+00 28.7	3.470	3.543	86.1	16.1	18.7

1979 QW3 a,e,i = 2.43, 0.15, 1 Elements MPC 11991

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 07 24	01 16.52	+07 45.3	2.299	2.662	99.5	22.1	18.7
1987 08 03	01 21.10	+08 09.1					
1987 08 13	01 23.52	+08 19.5	2.072	2.685	116.8	19.7	18.4
1987 08 23	01 23.54	+08 15.4					
1987 09 02	01 21.04	+07 56.0	1.881	2.706	136.8	14.8	18.1
1987 09 12	01 16.11	+07 22.0					
1987 09 22	01 09.05	+06 34.9	1.762	2.726	159.5	7.4	17.7
1987 10 02	01 00.52	+05 38.7					
1987 10 12	00 51.43	+04 39.2	1.746	2.743	176.0	1.5	17.4
1987 10 22	00 42.78	+03 42.6					
1987 11 01	00 35.49	+02 55.3	1.843	2.757	151.8	9.8	17.9
1987 11 11	00 30.24	+02 21.6					
1987 11 21	00 27.36	+02 03.6	2.035	2.770	129.5	16.0	18.3
1987 12 01	00 26.96	+02 02.0					
1987 12 11	00 28.92	+02 15.8	2.290	2.781	109.7	19.5	18.7
1987 12 21	00 33.02	+02 43.5					
1987 12 31	00 39.03	+03 23.3	2.575	2.789	92.1	20.6	19.0

1985 AE a,e,i = 2.37, 0.08, 2 Elements MPC 12005

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	01 15.17	+06 28.2	2.076	2.468	100.3	23.9	19.0
1987	08 03	01 21.67	+06 56.9					
1987	08 13	01 26.08	+07 11.9	1.825	2.452	116.6	21.7	18.7
1987	08 23	01 28.10	+07 11.9					
1987	09 02	01 27.45	+06 55.6	1.610	2.436	135.7	16.8	18.3
1987	09 12	01 24.05	+06 23.2					
1987	09 22	01 18.05	+05 36.1	1.459	2.418	157.7	9.1	17.8
1987	10 02	01 10.02	+04 38.1					
1987	10 12	01 00.89	+03 35.8	1.403	2.400	176.5	1.4	17.3
1987	10 22	00 51.83	+02 36.8					
1987	11 01	00 44.04	+01 48.8	1.454	2.382	153.2	10.8	17.8
1987	11 11	00 38.44	+01 17.5					
1987	11 21	00 35.55	+01 05.4	1.595	2.364	130.9	18.4	18.2
1987	12 01	00 35.57	+01 13.0					
1987	12 11	00 38.38	+01 39.0	1.797	2.345	111.6	23.0	18.6
1987	12 21	00 43.74	+02 21.1					
1987	12 31	00 51.36	+03 17.0	2.027	2.327	94.9	24.9	18.9

1950 JB a,e,i = 2.52, 0.03, 15 Elements MPC 11999

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	07 24	01 28.99	-06 45.5	2.059	2.474	101.7	23.7	16.0
1987	08 03	01 36.60	-07 24.9					
1987	08 13	01 42.09	-08 21.6	1.845	2.478	117.3	21.3	15.7
1987	08 23	01 45.15	-09 34.8					
1987	09 02	01 45.53	-11 01.8	1.671	2.483	134.4	16.9	15.4
1987	09 12	01 43.12	-12 37.0					
1987	09 22	01 38.08	-14 12.9	1.565	2.489	150.6	11.4	15.1
1987	10 02	01 30.88	-15 39.6					
1987	10 12	01 22.38	-16 46.9	1.549	2.494	155.9	9.4	15.0
1987	10 22	01 13.67	-17 27.3					
1987	11 01	01 05.86	-17 36.8	1.632	2.500	143.4	13.7	15.2
1987	11 11	00 59.87	-17 16.0					
1987	11 21	00 56.26	-16 28.3	1.797	2.505	125.7	18.7	15.6
1987	12 01	00 55.27	-15 18.6					
1987	12 11	00 56.84	-13 51.9	2.018	2.511	108.6	21.8	16.0
1987	12 21	01 00.77	-12 12.8					
1987	12 31	01 06.82	-10 24.7	2.268	2.517	92.9	23.0	16.2

1978 VN a,e,i = 2.74, 0.15, 4 Elements MPC 12008

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	08 13	03 12.46	+20 48.6	3.020	3.149	87.9	18.8	18.7
1987	08 23	03 18.66	+21 15.4					
1987	09 02	03 23.11	+21 35.0	2.735	3.144	104.5	18.1	18.5
1987	09 12	03 25.58	+21 46.9					
1987	09 22	03 25.83	+21 50.3	2.472	3.137	123.3	15.5	18.2
1987	10 02	03 23.72	+21 44.2					
1987	10 12	03 19.29	+21 27.9	2.262	3.129	144.5	10.7	17.8
1987	10 22	03 12.77	+21 01.1					
1987	11 01	03 04.68	+20 24.4	2.141	3.118	167.7	3.9	17.4
1987	11 11	02 55.80	+19 40.1					
1987	11 21	02 47.04	+18 51.9	2.135	3.106	167.2	4.1	17.4
1987	12 01	02 39.29	+18 04.6					
1987	12 11	02 33.28	+17 22.8	2.244	3.092	143.5	10.9	17.8
1987	12 21	02 29.43	+16 50.1					
1987	12 31	02 27.97	+16 28.7	2.444	3.077	121.7	15.8	18.1
1988	01 10	02 28.87	+16 19.3					
1988	01 20	02 31.99	+16 21.4	2.696	3.060	102.2	18.3	18.4

1981 EO42 a,e,i = 2.53, 0.14, 6 Elements MPC 10543

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 09 02	03 19.58	+20 56.1	1.688	2.186	105.5	26.4	17.9
1987 09 12	03 26.68	+21 57.1					
1987 09 22	03 30.98	+22 50.7	1.481	2.184	121.9	23.0	17.5
1987 10 02	03 32.05	+23 35.8					
1987 10 12	03 29.63	+24 10.5	1.316	2.186	141.3	16.6	17.1
1987 10 22	03 23.78	+24 32.5					
1987 11 01	03 15.10	+24 39.4	1.222	2.191	163.3	7.5	16.6
1987 11 11	03 04.80	+24 31.0					
1987 11 21	02 54.43	+24 09.9	1.223	2.199	168.2	5.3	16.5
1987 12 01	02 45.60	+23 42.2					
1987 12 11	02 39.53	+23 15.1	1.324	2.211	146.1	14.4	17.0
1987 12 21	02 36.81	+22 54.8					
1987 12 31	02 37.60	+22 45.2	1.505	2.225	125.6	21.1	17.5
1988 01 10	02 41.69	+22 47.4					
1988 01 20	02 48.72	+23 00.9	1.735	2.243	107.9	24.7	18.0
1988 01 30	02 58.29	+23 23.9					
1988 02 09	03 10.02	+23 54.0	1.990	2.262	92.7	25.8	18.3

1985 CN1 a,e,i = 2.30, 0.10, 3 Elements MPC 10029

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 09 22	04 58.39	+25 07.3	1.913	2.336	101.9	24.9	18.9
1987 10 02	05 05.93	+25 36.4					
1987 10 12	05 10.80	+26 02.9	1.663	2.314	118.6	22.3	18.5
1987 10 22	05 12.53	+26 26.9					
1987 11 01	05 10.72	+26 47.8	1.452	2.291	138.4	16.7	18.0
1987 11 11	05 05.29	+27 03.7					
1987 11 21	04 56.56	+27 11.9	1.311	2.269	161.2	8.1	17.5
1987 12 01	04 45.46	+27 09.8					
1987 12 11	04 33.52	+26 56.9	1.268	2.246	171.3	3.8	17.2
1987 12 21	04 22.48	+26 35.6					
1987 12 31	04 13.89	+26 11.1	1.330	2.224	147.7	13.7	17.6
1988 01 10	04 08.74	+25 48.8					
1988 01 20	04 07.40	+25 32.9	1.475	2.202	126.0	21.2	18.1
1988 01 30	04 09.82	+25 25.1					
1988 02 09	04 15.67	+25 25.2	1.671	2.182	107.6	25.5	18.4
1988 02 19	04 24.54	+25 31.7					
1988 02 29	04 36.03	+25 42.3	1.887	2.162	92.0	27.3	18.7

1964 VT1 a,e,i = 2.76, 0.07, 4 Elements MPC 11739

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 09 22	05 06.44	+23 38.4	2.201	2.576	100.2	22.6	17.7
1987 10 02	05 13.03	+24 00.7					
1987 10 12	05 17.13	+24 20.9	1.960	2.576	117.4	20.1	17.4
1987 10 22	05 18.38	+24 39.4					
1987 11 01	05 16.56	+24 55.9	1.758	2.577	137.3	15.1	17.0
1987 11 11	05 11.70	+25 09.5					
1987 11 21	05 04.14	+25 18.5	1.629	2.580	160.1	7.5	16.6
1987 12 01	04 54.67	+25 21.6					
1987 12 11	04 44.50	+25 18.5	1.602	2.584	174.3	2.2	16.3
1987 12 21	04 34.91	+25 10.6					
1987 12 31	04 27.13	+25 00.6	1.686	2.589	150.6	10.7	16.8
1988 01 10	04 21.99	+24 52.0					
1988 01 20	04 19.87	+24 47.2	1.863	2.595	128.7	17.2	17.2
1988 01 30	04 20.83	+24 47.8					
1988 02 09	04 24.69	+24 53.6	2.100	2.602	109.5	20.9	17.6
1988 02 19	04 31.15	+25 04.0					
1988 02 29	04 39.88	+25 17.6	2.366	2.610	92.8	22.3	17.9

1978 PS4 a,e,i = 2.57, 0.19, 12 Elements MPC 9473

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 09 22	05 13.19	+37 05.0	1.972	2.324	97.3	25.4	17.8
1987 10 02	05 21.79	+38 03.9					
1987 10 12	05 27.26	+39 00.2	1.784	2.363	113.2	22.8	17.6
1987 10 22	05 29.11	+39 52.7					
1987 11 01	05 26.96	+40 38.0	1.628	2.404	131.6	18.0	17.3
1987 11 11	05 20.80	+41 11.1					
1987 11 21	05 11.10	+41 25.7	1.533	2.445	151.0	11.3	17.0
1987 12 01	04 59.01	+41 16.0					
1987 12 11	04 46.28	+40 40.3	1.533	2.487	161.7	7.2	16.9
1987 12 21	04 34.69	+39 42.2					
1987 12 31	04 25.74	+38 29.6	1.638	2.528	148.4	11.8	17.2
1988 01 10	04 20.24	+37 12.0					
1988 01 20	04 18.37	+35 57.0	1.835	2.569	128.9	17.3	17.7
1988 01 30	04 19.98	+34 49.6					
1988 02 09	04 24.65	+33 51.9	2.095	2.610	110.5	20.7	18.1
1988 02 19	04 31.91	+33 03.8					
1988 02 29	04 41.35	+32 24.1	2.388	2.650	94.1	21.9	18.4

1983 QA a,e,i = 2.36, 0.26, 9 Elements MPC 8385

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 09 22	05 10.26	+34 07.0	1.496	1.917	98.2	31.2	17.1
1987 10 02	05 21.81	+35 05.1					
1987 10 12	05 29.83	+35 58.5	1.348	1.968	113.2	27.8	16.8
1987 10 22	05 33.69	+36 46.8					
1987 11 01	05 32.88	+37 27.5	1.224	2.023	131.4	21.6	16.5
1987 11 11	05 27.33	+37 55.7					
1987 11 21	05 17.52	+38 04.5	1.155	2.080	152.2	12.8	16.2
1987 12 01	05 04.86	+37 47.9					
1987 12 11	04 51.46	+37 04.7	1.172	2.139	165.4	6.7	16.0
1987 12 21	04 39.48	+36 00.0					
1987 12 31	04 30.61	+34 43.8	1.289	2.199	150.4	12.7	16.5
1988 01 10	04 25.69	+33 26.7					
1988 01 20	04 24.77	+32 16.3	1.494	2.258	130.3	19.4	17.1
1988 01 30	04 27.54	+31 16.5					
1988 02 09	04 33.48	+30 27.8	1.758	2.317	112.1	23.2	17.6
1988 02 19	04 42.04	+29 49.0					
1988 02 29	04 52.74	+29 18.0	2.055	2.375	96.1	24.5	18.0

(3416) Dorrit a,e,i = 1.92, 0.21, 22 Elements MPC 10610

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 09 22	05 29.83	+38 10.9	1.554	1.907	93.9	31.7	17.8
1987 10 02	05 41.61	+40 49.6					
1987 10 12	05 50.20	+43 36.1	1.401	1.958	108.3	29.0	17.5
1987 10 22	05 54.62	+46 30.2					
1987 11 01	05 53.71	+49 27.3	1.274	2.007	124.1	24.2	17.2
1987 11 11	05 46.39	+52 17.4					
1987 11 21	05 32.07	+54 44.3	1.203	2.054	139.1	18.4	17.0
1987 12 01	05 11.64	+56 28.1					
1987 12 11	04 48.20	+57 13.9	1.211	2.097	145.5	15.4	17.0
1987 12 21	04 26.09	+57 00.3					
1987 12 31	04 09.16	+56 00.4	1.306	2.138	137.6	18.1	17.3
1988 01 10	03 59.15	+54 34.3					
1988 01 20	03 55.96	+52 59.4	1.475	2.174	123.1	22.3	17.7
1988 01 30	03 58.71	+51 27.3					
1988 02 09	04 06.20	+50 03.8	1.692	2.207	108.1	25.1	18.1
1988 02 19	04 17.43	+48 49.9					
1988 02 29	04 31.57	+47 44.8	1.934	2.236	94.2	26.2	18.4