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

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EDITORIAL NOTICE.

Technological progress during the past year or two has permitted many observers to secure credit for discoveries of minor planets by rapidly communicating to the Minor Planet Center accurate measurements of positions of new discoveries of minor planets on a single night. While the current great interest in minor-planet work is gratifying, to make observations on a single night cannot be regarded as scientifically productive, particularly when no information is supplied about an object's motion or brightness. Beginning with the observations reported after the preparation of this batch of MPCs, the Minor Planet Center proposes generally to delay processing new discoveries until accurate (or good semiaccurate) positions are available from a second night close enough to the discovery night that there is no ambiguity concerning the identification. While an exception might be made in the case of an unusual object, the remaining "one-night stands" are expected generally to be delayed on the order of four to six months, so as to allow their possible amalgamation with more extended series of data by observers who are unable to reduce or communicate their results as rapidly; in such a case the discoverer would be defined as the earliest who satisfactorily observes the object on more than one night.

Observers are encouraged to communicate their data by electronic mail (via the CBAT/MPC Computer Service or to the addresses MARSDEN@CFA.BITNET or MARSDEN@CFAPS2.SPAN). The Minor Planet Center tries to cooperate with such observers by advising them of possible identifications for their new discoveries and whether further follow-up might be appropriate. If follow-up of a new discovery is attempted, this should be with the aim of extending the total arc to at least 7-10 days and preferably to 20-40 days (although further observations at the same opposition become redundant once an identification has been clearly established). Like the original discovery observations, follow-up data are also best obtained (and communicated) from a pair of nights in quick succession, thereby eliminating the possibility of misidentification (or allowing another new discovery to be credited): except for an object in the vicinity of the earth, a short-arc elliptical orbit, such as might be derived from observations on three nights covering an arc of 2-4 days, has negligible value over a "Vaisala" fit to observations on the first and last nights on the assumption that the object is at perihelion and at some representative distance.

* * * * *

ERRATA.

MPC	Line					
12209	-18	For	(3149) Okudjeva	read	(3149) Okudzhava
12209	-15	For	Okudjeva	read	Okudzhava

12806 - 3 For (3559) Violamayer read (3559) Violaumayer
12814 -22 to -13 These lines should be deleted.

The ephemerides on MPC 12727-12743 and 12818 covering the range 1988 03 01-1988 08 08 are correct as stated but are not for standard dates.

* * * * *

CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object		Date	UT	R. A. (1950)	Decl.	Reference	Mag.	N Obs.
269		1954 05	30.16	14 14.3	-04 07	MPC 1106	13.5	1 760
592		1954 05	30.15722	14 25 49.85	-02 25 09.1	MPC 3620		1 760
592		1954 05	30.19924	14 25 48.48	-02 25 05.6	MPC 3620		1 760
631		1954 05	30.25	16 49.4	-09 13	MPC 1106	13.4	1 760
824		1954 05	30.25	16 51.4	-09 26	MPC 1106	14.0	1 760
1011		1954 05	30.15722	14 17 01.45	-04 10 26.4	MPC 1201	16.8	1 760
1011		1954 05	30.19924	14 17 00.20	-04 10 29.4	MPC 1201		1 760
1085		1954 05	30.25	16 39.2	-12 33	MPC 1106	14.4	1 760
1954 KA		1954 05	30.24506	16 47 47.59	-12 34 21.2	MPC 7442		1 760
1954 KA	*	1954 05	30.25	16 47.8	-12 33	MPC 1107	16.6	1 760
1954 KA		1954 05	30.28809	16 47 45.02	-12 34 16.2	MPC 7443		1 760
1954 KB		1954 05	30.24506	16 34 00.37	-13 21 46.0	MPC 7443		1 760
1954 KB	*	1954 05	30.25	16 34.1	-13 21	MPC 1107	17.1	1 760
1954 KB		1954 05	30.28809	16 33 57.41	-13 21 49.5	MPC 7443		1 760
1954 KS	*	1954 05	30.25	16 27.7	-11 23	MPC 8956	15.3	1 760
1979 SG2		1979 09	19.92584	00 27 03.18	+15 08 32.1	MPC 8492	16.5	049
1979 SU2		1979 09	22.00833	00 38 48.94	+12 51 21.2	MPC 8492	16.5	049
1979 SJ12	*	1979 09	20.00409	01 10 55.20	+13 21 31.3	MPC 8492	16.5	049
1979 SK12	*	1979 09	20.00409	01 25 42.66	+12 00 24.2	MPC 8493	15.5	049
1979 SK12		1979 09	20.03733	01 25 41.41	+12 00 36.2	MPC 8493		049
1987 YE	*	1987 12	23.90139	06 10 29.91	+23 44 19.8	MPC12754	16	017
1987 YE		1987 12	23.94097	06 10 38.08	+23 43 50.0	MPC12754		017

Note 1: date originally erroneously given as 1954 05 29.

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IDENTIFICATION CHANGES.

Continuation to MPC 12745.

Object		Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
A917 CF	*	1917 02	10.81654	08 42 49.36	+16 36 22.3	A917 BC		024
1979 FK4	*	1979 03	27.22743	11 41 18.70	-10 35 35.7	1979 FH	15.6	688
1981 TP4	*	1981 10	05.30833	23 41 33.80	+01 15 21.0	1981 SZ1	16.8	688
1981 TP4		1981 10	05.34931	23 41 31.84	+01 15 01.4	1981 SZ1		688

* * * * *

IDENTIFICATIONS.

The following list of identifications with numbered minor planets continues that on MPC 12625-12626.

	Note		Note
1951 CE1 = (1596)	1	1986 CG2 = (1026)	2

Note 1: identification by L. D. Schmadel. 2: identification by S. Nakano.

IDENTIFICATION WITH A COMET.

S. Nakano has made another cometary identification (cf. MPC 12626) among the minor-planet designations:

1988 AH = P/Reinmuth 1

* * * * *

OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

006 Fabra Observatory, Barcelona. 0.38-m f/11 Mailhat astrograph. Observer J. M. Codina. Measured by N. Torras.
024 Heidelberg. Bruce 0.40-m f/5 astrograph. Observers S. Dobereiner, J. Heidt and H. Mandel.
046 Klet. Observers A. Mrkos and Z. Vavrova.
086 Odessa. Observers L. Ya. Skoblikova and Yu. M. Gorbanev. From Kiev Komet. Tsirk.
089 Nikolaev. Observers S. S. Guzii, N. D. Kalinenkov and A. A. Shlyapnikov. From Kiev Komet. Tsirk.
102 Zvenigorod. Observers V. P. Osipenko and V. A. Yurevich. Measured by N. N. Kubitskina, V. I. Panferova and G. S. Tsibalova. From Kiev Komet. Tsirk.
136 Engelhardt Observatory, Kasan. Observers S. S. Tokhtas'ev and S. K. Fomin. From Kiev Komet. Tsirk.
168 Kourovskaya. 0.42-m f/1.9 camera. Observers S. N. Timofeev and A. R. Tearo. Reduced by T. I. Pevitskaya, N. D. Kalinina, O. G. Yuminova and E. V. Zvonareva. From Kiev Komet. Tsirk.
364 JCPM Kagoshima Station. 0.25-m f/4.2 Wright Schmidt telescope. Observer M. Mukai. Communicated by M. Takeishi. Long. and Parallax 130.57, -363, -222 (see MPC 11200).
372 Geisei. Observer T. Seki.
380 Ishiki. Observer N. Kojima. From Orient. Astron. Assoc. Comet. Bull.
381 Tokyo Observatory, Kiso Station. Observers T. Nakamura and M. Hamabe. Measured by H. Kosai.
397 Sapporo Science Center. 0.60-m f/3.5 reflector. Observer K. Watanabe.
399 Kushiro. Observers S. Ueda and M. Matsuyama. Measured by H. Kaneda and K. Watanabe.
400 Kitami. Observers K. Endate and T. Fujii. Measured by K. Watanabe and M. Yanai.
413 Siding Spring. Uppsala Southern Schmidt. Observer R. H. McNaught.
418 Tamworth, N.S.W. 0.15-m f/4.7 reflector. Observer G. Garradd. Measured by R. H. McNaught. Long. and Parallax 150.94, -366, +218 (see MPC 11200).
474 Mt. John. Observer A. C. Gilmore. Measured by P. M. Kilmartin.
493 Calar Alto. 0.80-m f/3 Schmidt. Observers L. Kohoutek, D. Groote and H.-J. Hagen. Measurered by Kohoutek.
502 Colchester. 0.25-m f/7 reflector. Observer M. J. Hendrie.
503 Cambridge. Observer J. D. Shanklin.
568 Mauna Kea. Observers D. J. Tholen, W. K. Hartmann, D. P. Cruikshank and C. Kaminski. IRTF encoders.
576 Burwash. 0.57-m reflector. Observer A. Young.
585 Kiev comet station. Observers F. I. Kravtsov and S. V. Pasechnik. From Kiev Komet. Tsirk.
657 Victoria. Observers D. D. Balam and J. Tatum.
675 Palomar. Observers C. Shoemaker, E. Shoemaker, J. Gibson, H. Holt, A. Maury, J. Mueller and J. Phinney.

691 University of Arizona, Kitt Peak. 0.91-m SPACEWATCH telescope, CCD in scanning mode. Observer J. V. Scotti.
781 Quito. 0.21-m f/3.5 camera. Observers Yu. V. Sizonenko, S. V. Kaltygina, U. Davila and L. Espin. From Kiev Komet. Tsirk. Long. and Parallax 281.51, -426, -2 (see MPC 11200).
782 Quito-comet astrograph station. Observers Yu. V. Sizonenko, S. V. Kaltygina, U. Davila and L. Espin. From Kiev Komet. Tsirk. Long. and Parallax 281.65, -426, 0 (see MPC 11200).
801 Oak Ridge Observatory. Observers R. E. McCrosky and C.-Y. Shao.
872 Tokushima. Observer M. Iwamoto. From Orient. Astron. Assoc. Comet Bull.
892 YGCO Hoshikawa, Nagano and Chiyoda Stations. Observers S. Hayakawa and T. Kojima.
894 Kiyasato. Observers S. Miyasaka, Y. Sakakibara and N. Sasanuma.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
		Periodic Comet Swift-Gehrels					
/1981 XIX	1982	01 17.46944	02 00 14.04	+25 01 35.0			887
		Periodic Comet Kearns-Kwee					
/1981 XX	1982	01 17.53264	06 22 37.32	+31 20 59.2			887
/1981 XX	1982	01 17.55764	06 22 36.17	+31 20 45.8			887
/1981 XX	1982	01 23.58333	06 19 57.61	+30 42 01.8			887
/1981 XX	1982	01 23.60069	06 19 57.23	+30 41 55.3			887
		Periodic Comet Gunn					
/1982 X	1988	01 15.43624	10 27 28.62	+23 15 52.6	17.4T		691
/1982 X	1988	01 15.45722	10 27 28.11	+23 15 59.1		1	691
/1982 X	1988	01 15.46289	10 27 27.98	+23 16 00.7			691
/1982 X	1988	02 14.19205	10 09 54.34	+25 51 05.0	16.6T	2	691
/1982 X	1988	02 14.21628	10 09 53.26	+25 51 12.3	19.6N		691
/1982 X	1988	02 14.23965	10 09 52.19	+25 51 18.7			691
/1982 X	1988	02 14.25726	10 09 51.37	+25 51 23.9			691
		Periodic Comet Encke					
/1984 VI	1987	08 13.33563	11 57 53.97	-10 00 25.1			474
/1984 VI	1987	08 13.34514	11 57 58.60	-10 01 02.3			474
/1984 VI	1987	08 19.35453	12 45 02.20	-15 55 19.7			474
/1984 VI	1987	08 19.36771	12 45 07.94	-15 55 59.2			474
		Periodic Comet Shoemaker 1					
/1984 XVI	1984	10 14.54340	22 57 04.70	+19 39 02.3			380
		Periodic Comet Giacobini-Zinner					
/1985 XIII	1985	08 27.76568	04 43 43.41	+43 02 09.4			168
/1985 XIII	1985	08 27.77332	04 43 46.51	+43 01 37.9			168
/1985 XIII	1985	08 27.89763	04 44 30.42	+42 52 43.4			168
/1985 XIII	1985	08 27.90457	04 44 32.78	+42 52 11.8			168
/1985 XIII	1985	08 27.92436	04 44 40.09	+42 50 49.7			168
/1985 XIII	1985	08 28.81082	04 49 49.55	+41 45 44.2			168
/1985 XIII	1985	08 28.81464	04 49 50.93	+41 45 26.7			168
/1985 XIII	1985	08 28.81649	04 49 51.40	+41 45 20.6			168
/1985 XIII	1985	08 28.88177	04 50 13.73	+41 40 32.1			168
/1985 XIII	1985	08 28.88391	04 50 14.68	+41 40 22.8			168
/1985 XIII	1985	08 28.92575	04 50 29.58	+41 37 13.9			168
/1985 XIII	1985	08 28.93131	04 50 30.85	+41 36 54.6			168
/1985 XIII	1985	08 28.93391	04 50 32.03	+41 36 42.6			168
/1985 XIII	1985	09 09.94155	05 47 38.37	+25 21 20.5			168

/1985	XIII	1985	09	09.95527	05	47	41.69	+25	20	12.9	168
/1985	XIII	1985	09	09.95839	05	47	42.31	+25	19	56.2	168
/1985	XIII	1985	09	09.96117	05	47	42.76	+25	19	42.6	168
/1985	XIII	1985	09	09.98791	05	47	49.26	+25	17	27.1	168
/1985	XIII	1985	09	09.99832	05	47	51.52	+25	16	33.4	168
/1985	XIII	1985	09	23.89068	06	32	13.13	+06	32	46.3	168
				Periodic Comet Ciffreo							
/1985	XVI	1985	11	12.07500	04	31	05.81	+24	31	12.2	102
				Comet Thiele (1985 XIX)							
/1985	XIX	1985	11	21.66249	22	04	02.31	+24	12	24.5	102
/1985	XIX	1985	12	02.71840	21	24	05.32	+16	38	53.4	102
/1985	XIX	1985	12	03.66181	21	22	00.41	+16	11	59.4	102
/1985	XIX	1985	12	09.65590	21	11	31.98	+13	50	13.7	102
				Periodic Comet Ashbrook-Jackson							
/1986	II	1988	01	21.32810	09	01	33.19	+30	37	55.7	19.9T 691
/1986	II	1988	01	21.34363	09	01	32.43	+30	37	58.1	691
/1986	II	1988	03	13.15356	08	27	39.53	+30	53	57.7	691
/1986	II	1988	03	13.25751	08	27	37.26	+30	53	46.2	20.0T 691
				Periodic Comet Halley							
/1986	III	1985	12	08.80150	23	55	05.88	+07	29	21.7	102
/1986	III	1986	01	03.04639	22	10	12.69	-03	02	07.1	781
/1986	III	1986	01	12.03508	21	52	01.74	-04	50	53.2	781
/1986	III	1986	01	13.04228	21	50	09.99	-05	02	03.6	781
/1986	III	1986	03	27.41632	19	04	10.42	-32	54	44.9	781
/1986	III	1986	05	03.12465	10	48	22.86	-16	34	38.4	782
/1986	III	1986	05	04.17235	10	45	43.20	-15	48	37.5	782
/1986	III	1986	05	06.06979	10	41	32.96	-14	33	10.6	781
/1986	III	1986	05	11.73573	10	32	44.92	-11	37	04.4	168
/1986	III	1986	05	11.73790	10	32	44.60	-11	36	58.4	168
/1986	III	1986	05	11.74716	10	32	43.96	-11	36	44.8	168
/1986	III	1986	05	11.74954	10	32	43.90	-11	36	40.6	8.8T 168
/1986	III	1986	05	15.04154	10	29	26.84	-10	19	52.7	782
/1986	III	1986	05	15.07031	10	29	25.36	-10	19	09.4	782
/1986	III	1986	05	15.75929	10	28	51.89	-10	05	05.7	168
/1986	III	1986	05	15.76354	10	28	52.07	-10	04	59.6	168
/1986	III	1986	05	15.76667	10	28	51.85	-10	05	03.2	168
/1986	III	1986	05	15.76858	10	28	51.67	-10	04	53.8	168
/1986	III	1986	05	15.77222	10	28	51.48	-10	04	50.0	9.1T 168
/1986	III	1986	05	16.10822	10	28	35.84	-09	57	57.3	781
/1986	III	1986	05	16.11887	10	28	35.39	-09	57	48.9	781
/1986	III	1986	05	16.12934	10	28	35.05	-09	57	34.0	781
/1986	III	1986	05	28.86858	10	23	57.15	-07	00	36.2	493
/1986	III	1986	05	28.86979	10	23	57.13	-07	00	35.7	493
/1986	III	1986	06	11.85475	10	25	37.51	-05	32	01.4	493
/1986	III	1986	06	11.85718	10	25	37.46	-05	32	00.7	493
/1986	III	1986	11	27.21059	11	40	08.94	-14	39	29.5	493
/1986	III	1986	11	27.22604	11	40	08.92	-14	39	33.5	493
/1986	III	1986	11	29.20660	11	40	02.13	-14	47	25.5	493
/1986	III	1986	11	29.22014	11	40	02.09	-14	47	27.9	493
/1986	III	1986	11	30.20694	11	39	57.49	-14	51	18.3	493
/1986	III	1986	12	01.22396	11	39	51.91	-14	55	12.8	493
/1986	III	1987	05	21.89669	09	45	14.66	-05	13	33.7	493
/1986	III	1987	05	28.88958	09	45	28.39	-04	52	38.7	493
/1986	III	1988	02	14.36541	10	01	50.83	-09	21	58.5	17.9T 691
/1986	III	1988	02	14.37887	10	01	50.37	-09	21	56.1	21.3N 691

Comet Churyumov-Solodovnikov (1986 IX)

/1986 IX	1987	06	20.55948	22	08	21.61	-85	39	47.6				474
/1986 IX	1987	06	20.58818	22	08	12.87	-85	40	18.6				474

Periodic Comet Whipple

/1986 XII	1988	01	15.30118	08	08	11.46	+08	20	20.1		21.2N		691
/1986 XII	1988	01	15.30587	08	08	11.26	+08	20	21.0				691
/1986 XII	1988	01	15.31046	08	08	11.09	+08	20	21.6				691
/1986 XII	1988	01	15.32409	08	08	10.52	+08	20	23.7				691
/1986 XII	1988	01	15.32862	08	08	10.33	+08	20	24.5				691
/1986 XII	1988	01	15.33314	08	08	10.19	+08	20	25.7		19.6T		691
/1986 XII	1988	01	21.30215	08	04	12.16	+08	36	54.0		21.3N	3	691
/1986 XII	1988	01	21.31418	08	04	11.67	+08	36	56.4		19.6T		691
/1986 XII	1988	01	21.31900	08	04	11.42	+08	36	56.9				691
/1986 XII	1988	03	14.15125	07	42	09.97	+11	40	36.3		20.4T		691
/1986 XII	1988	03	14.21686	07	42	09.79	+11	40	49.6				691

Comet Shoemaker (1986 XIV)

/1986 XIV	1988	01	15.48861	15	48	29.54	+18	27	51.5		18.8N	4	691
/1986 XIV	1988	01	15.49588	15	48	29.58	+18	27	55.0		16.8T		691
/1986 XIV	1988	01	15.50694	15	48	29.69	+18	27	59.6				691

Comet Terasako (1986 XVIII)

/1986 XVIII	1987	02	24.37924	01	52	41.55	-12	15	55.6				474
/1986 XVIII	1987	02	24.39179	01	52	43.73	-12	15	33.0				474
/1986 XVIII	1987	03	05.37872	02	19	44.03	-08	11	02.1				474
/1986 XVIII	1987	03	05.39174	02	19	46.64	-08	10	42.0				474
/1986 XVIII	1987	03	06.37420	02	22	28.34	-07	46	24.8				474
/1986 XVIII	1987	03	06.38884	02	22	30.03	-07	46	04.6				474

Periodic Comet Schwassmann-Wachmann 2

/1986h	1988	01	20.77222	13	18	52.62	-04	38	47.3		15 T		892
/1986h	1988	01	20.81116	13	18	54.71	-04	38	54.9				892
/1986h	1988	01	21.45517	13	19	27.71	-04	40	42.0		15.7T	5	691
/1986h	1988	01	21.47021	13	19	28.46	-04	40	44.7		18.8N		691
/1986h	1988	02	24.80902	13	33	17.16	-04	40	22.7				892

Periodic Comet Comas Sola

/1986j	1988	01	21.44579	13	24	54.98	+07	04	13.8		16.3T	6	691
/1986j	1988	01	21.49470	13	24	56.83	+07	04	12.2				691
/1986j	1988	02	15.41501	13	32	35.66	+07	36	57.4				801

Periodic Comet Kohoutek

/1986k	1987	12	18.63453	08	55	26.85	+13	28	26.5				894
/1986k	1987	12	18.65569	08	55	27.29	+13	28	13.7				894
/1986k	1987	12	24.77986	08	55	32.69	+12	47	15.2				894
/1986k	1988	01	11.55277	08	48	19.29	+11	24	41.1				892
/1986k	1988	01	11.55972	08	48	18.73	+11	24	38.0				892
/1986k	1988	01	20.96262	08	41	20.22	+11	03	34.3			7	503
/1986k	1988	01	21.23652	08	41	07.27	+11	03	09.1		18.3N	8	691
/1986k	1988	01	21.24470	08	41	06.82	+11	03	08.3				691
/1986k	1988	01	23.24998	08	39	29.79	+11	00	32.0				801
/1986k	1988	02	08.47916	08	27	17.11	+10	57	12.9				892
/1986k	1988	02	10.53506	08	26	01.36	+10	58	31.5		14 T		892
/1986k	1988	02	10.57291	08	25	59.85	+10	58	32.5				892
/1986k	1988	02	13.01355	08	24	37.93	+11	00	13.9				503
/1986k	1988	02	13.23105	08	24	31.32	+11	00	25.6		18.0N		691
/1986k	1988	02	13.24086	08	24	30.99	+11	00	25.9				691
/1986k	1988	02	14.92140	08	23	40.57	+11	01	44.0				503

/1986k	1988	02	15.53472	08	23	23.19	+11	02	19.4				892
/1986k	1988	02	15.57291	08	23	22.18	+11	02	19.8				892
/1986k	1988	02	15.81213	08	23	15.69	+11	02	30.0		16.0T		046
/1986k	1988	02	15.82625	08	23	15.29	+11	02	30.5				046
/1986k	1988	02	16.97937	08	22	44.76	+11	03	32.6				503
/1986k	1988	02	17.20072	08	22	39.09	+11	03	44.0				801
/1986k	1988	02	19.53541	08	21	46.23	+11	05	54.0		14 T		892
/1986k	1988	02	19.58831	08	21	44.91	+11	05	57.0				892
/1986k	1988	02	19.63750	08	21	43.85	+11	05	56.7				894

Comet Wilson (1986l)

/1986l	1986	08	17.92774	21	58	50.67	+23	38	23.7				089
/1986l	1986	08	17.95664	21	58	47.02	+23	38	05.4				089
/1986l	1986	08	18.02702	21	58	38.41	+23	37	24.6				089
/1986l	1986	08	26.79593	21	40	25.69	+21	53	22.9				089
/1986l	1986	08	26.81495	21	40	23.31	+21	53	09.0				089
/1986l	1986	08	26.85816	21	40	17.79	+21	52	32.0				089
/1986l	1986	08	27.85865	21	38	09.37	+21	38	31.2				089
/1986l	1986	08	28.78237	21	36	10.90	+21	25	10.4				089
/1986l	1986	08	28.81189	21	36	07.13	+21	24	44.1				089
/1986l	1986	08	29.76973	21	34	03.64	+21	10	31.4				089
/1986l	1986	08	29.78720	21	34	01.53	+21	10	15.7				089
/1986l	1986	08	30.83414	21	31	46.18	+20	54	15.0				089
/1986l	1986	09	02.82981	21	25	19.26	+20	06	00.0		16.0N		585
/1986l	1986	09	08.81442	21	12	31.08	+18	19	13.9		15.5N		585
/1986l	1986	09	10.81597	21	08	18.59	+17	40	45.0				102
/1986l	1987	12	17.74730	09	01	00.17	+07	09	14.6				894
/1986l	1987	12	17.76308	09	00	58.72	+07	09	22.9				894
/1986l	1987	12	18.64666	08	59	35.98	+07	17	18.2				894
/1986l	1987	12	18.66496	08	59	34.38	+07	17	57.4				894
/1986l	1987	12	24.76042	08	49	33.33	+08	18	31.2				894
/1986l	1988	01	20.95336	07	59	30.38	+13	12	39.7				503
/1986l	1988	01	23.23100	07	55	21.66	+13	36	24.6				801
/1986l	1988	02	06.59444	07	31	19.88	+15	53	23.8				892
/1986l	1988	02	06.63229	07	31	16.51	+15	53	44.5				892
/1986l	1988	02	07.47743	07	30	00.34	+16	00	57.3				892
/1986l	1988	02	07.49548	07	29	58.75	+16	01	06.7				892
/1986l	1988	02	08.45833	07	28	33.33	+16	09	21.3				892
/1986l	1988	02	10.53819	07	25	33.64	+16	26	31.8				892
/1986l	1988	02	13.00221	07	22	09.44	+16	46	11.9				503
/1986l	1988	02	13.27123	07	21	47.75	+16	48	19.6		17.7N	9	691
/1986l	1988	02	13.32505	07	21	43.40	+16	48	44.8			A	691
/1986l	1988	02	14.87800	07	19	40.75	+17	00	40.9				503
/1986l	1988	02	16.47152	07	17	39.27	+17	12	32.8				892
/1986l	1988	02	16.96363	07	17	02.52	+17	16	10.7				503
/1986l	1988	02	17.11598	07	16	51.29	+17	17	18.1				801
/1986l	1988	02	19.49693	07	14	00.39	+17	34	16.8		13 T	B	892
/1986l	1988	02	19.52083	07	13	58.89	+17	34	25.3				892
/1986l	1988	02	19.52690	07	13	58.19	+17	34	30.1				892
/1986l	1988	02	22.06225	07	11	07.08	+17	51	46.3				801
/1986l	1988	03	10.52361	06	56	19.62	+19	30	54.3		14 T		892

Periodic Comet Grigg-Skjellerup

/1986m	1987	06	21.30346	10	14	39.07	+12	22	37.6				474
/1986m	1987	06	21.31683	10	14	42.95	+12	22	42.0				474
/1986m	1987	06	22.30242	10	19	35.72	+12	28	05.3				474
/1986m	1987	06	22.30797	10	19	37.41	+12	28	06.5				474
/1986m	1987	06	22.31527	10	19	39.54	+12	28	08.9				474

Comet Sorrells (1986n)

/1986n	1986	11	23.79688	03	39	10.00	+28	44	09.1	136
/1986n	1986	11	24.76002	03	32	34.33	+28	37	09.4	136
/1986n	1986	11	24.95208	03	31	14.83	+28	35	36.2	102
/1986n	1986	11	25.78657	03	25	30.10	+28	28	11.3	136
/1986n	1986	11	26.78271	03	18	37.42	+28	18	00.0	136
/1986n	1986	11	30.82546	02	50	51.55	+27	22	07.9	136
/1986n	1986	12	08.89890	01	59	36.04	+24	36	23.6	136

Comet Nishikawa-Takamizawa-Tago (1987c)

/1987c	1987	01	31.70251	23	47	31.82	+02	46	56.7	086
/1987c	1987	01	31.73631	23	47	29.77	+02	46	22.7	086
/1987c	1987	01	31.75049	23	47	28.65	+02	46	01.2	086

Periodic Comet Tempel 2

/1987g	1988	02	13.44025	15	26	43.70	-04	27	07.7	19.3T 691
/1987g	1988	02	13.44370	15	26	43.97	-04	27	07.3	691
/1987g	1988	02	13.45987	15	26	45.05	-04	27	07.0	691

Periodic Comet Howell

/1987h	1988	01	09.16015	00	56	20.62	+01	54	07.1	675
/1987h	1988	01	09.16412	00	56	20.86	+01	54	09.1	675
/1987h	1988	01	09.17003	00	56	21.15	+01	54	12.0	675
/1987h	1988	01	09.17341	00	56	21.31	+01	54	13.6	675
/1987h	1988	01	13.20417	01	00	05.08	+02	26	33.3	675
/1987h	1988	01	13.21029	01	00	05.47	+02	26	36.6	675

Comet Torres (1987j)

/1987j	1987	06	21.35294	12	01	13.76	-16	13	46.2	474
/1987j	1987	06	21.37117	12	01	13.66	-16	13	28.8	474
/1987j	1988	01	15.47061	13	25	20.18	+08	31	50.8	19.2N C 691
/1987j	1988	01	15.47565	13	25	20.11	+08	31	54.5	691

Periodic Comet Brooks 2

/1987m	1988	01	16.00146	01	45	37.85	+04	56	45.4	801

Periodic Comet Harrington

/1987n	1987	11	19.43559	22	01	51.32	-22	26	22.0	474
/1987n	1987	11	19.46069	22	01	55.11	-22	26	01.3	474

Periodic Comet Borrelly

/1987p	1987	10	25.57451	03	31	39.36	-37	44	59.9	474
/1987p	1987	10	25.57906	03	31	39.08	-37	44	57.3	474
/1987p	1987	11	18.63668	02	56	41.87	-27	20	38.5	474
/1987p	1987	11	18.64119	02	56	41.38	-27	20	25.9	474
/1987p	1987	11	19.94527	02	54	32.70	-26	20	20.7	502
/1987p	1987	11	25.51105	02	45	39.00	-21	28	56.7	872
/1987p	1987	11	25.88509	02	45	04.62	-21	07	34.7	046
/1987p	1987	11	25.88747	02	45	04.42	-21	07	28.8	046
/1987p	1987	12	12.28958	02	26	08.01	-02	43	44.2	657
/1987p	1987	12	15.23368	02	24	17.28	+00	50	22.4	657
/1987p	1987	12	17.60217	02	23	11.00	+03	41	30.5	894
/1987p	1987	12	17.61793	02	23	10.56	+03	42	38.2	894
/1987p	1987	12	19.21481	02	22	39.06	+05	36	39.2	657
/1987p	1987	12	19.47295	02	22	35.00	+05	55	02.8	872
/1987p	1987	12	22.76632	02	22	03.21	+09	44	44.4	502
/1987p	1987	12	22.77604	02	22	03.24	+09	45	24.4	502
/1987p	1987	12	23.56146	02	22	01.09	+10	39	03.8	7 364
/1987p	1987	12	23.56319	02	22	00.97	+10	39	11.5	364

/1987p	1988	01	06.72326	02	28	17.71	+24	58	23.6			046
/1987p	1988	01	06.72500	02	28	17.83	+24	58	29.3			046
/1987p	1988	01	09.71784	02	31	10.85	+27	31	40.3			046
/1987p	1988	01	09.71888	02	31	10.99	+27	31	44.7			046
/1987p	1988	01	10.71870	02	32	15.75	+28	20	42.8			046
/1987p	1988	01	10.71975	02	32	15.82	+28	20	45.0			046
/1987p	1988	01	11.55625	02	33	11.91	+29	00	55.0			364
/1987p	1988	01	11.55938	02	33	12.23	+29	01	03.5			364
/1987p	1988	01	12.71591	02	34	35.68	+29	55	16.0			046
/1987p	1988	01	12.71701	02	34	35.76	+29	55	20.2			046
/1987p	1988	01	13.84601	02	36	00.7	+30	46	52			024
/1987p	1988	01	14.86273	02	37	20.93	+31	32	15.5			503
/1987p	1988	01	15.97802	02	38	53.45	+32	20	50.0			801
/1987p	1988	01	16.48438	02	39	36.37	+32	42	28.6			364
/1987p	1988	01	16.48611	02	39	36.73	+32	42	34.2			364
/1987p	1988	01	18.44687	02	42	32.81	+34	03	50.8			892
/1987p	1988	01	20.93970	02	46	34.25	+35	41	53.6			503
/1987p	1988	01	21.75395	02	47	58.34	+36	12	43.3			503
/1987p	1988	01	22.99690	02	50	09.65	+36	58	36.0			801
/1987p	1988	02	04.82044	03	17	29.35	+43	38	09.9			503
/1987p	1988	02	06.84433	03	22	32.40	+44	30	02.8			503
/1987p	1988	02	08.44270	03	26	39.96	+45	09	05.3			892
/1987p	1988	02	08.52604	03	26	52.99	+45	11	05.7			364
/1987p	1988	02	08.53646	03	26	54.47	+45	11	21.2			364
/1987p	1988	02	11.77999	03	35	39.45	+46	25	09.1			503
/1987p	1988	02	12.99203	03	39	02.19	+46	50	57.2			503
/1987p	1988	02	14.83691	03	44	18.96	+47	28	38.5			503
/1987p	1988	02	15.03877	03	44	54.07	+47	32	39.3			801
/1987p	1988	02	15.47042	03	46	09.56	+47	41	09.0			892
/1987p	1988	02	15.49548	03	46	13.88	+47	41	36.1			892
/1987p	1988	02	15.79089	03	47	06.15	+47	47	18.2			046
/1987p	1988	02	15.79321	03	47	06.54	+47	47	19.8			046
/1987p	1988	02	16.77089	03	50	00.22	+48	05	52.2			046
/1987p	1988	02	16.77245	03	50	00.50	+48	05	53.0			046
/1987p	1988	02	16.95027	03	50	31.97	+48	09	10.1			503
/1987p	1988	02	19.48217	03	58	13.51	+48	54	22.6			892
/1987p	1988	02	19.50231	03	58	17.05	+48	54	43.7			892
/1987p	1988	02	28.95479	04	29	02.93	+51	11	16.0			503
/1987p	1988	03	04.91404	04	46	15.30	+52	03	49.6			503
/1987p	1988	03	10.45312	05	06	06.49	+52	47	48.7	11	T	892
/1987p	1988	03	10.46527	05	06	09.44	+52	47	50.8			892
/1987p	1988	03	15.24243	05	23	39.22	+53	13	39.5			657
/1987p	1988	03	16.23583	05	27	19.59	+53	17	43.7			657

Periodic Comet Russell 2

/1987q	1987	08	19.43497	19	50	13.64	-42	33	16.2			474
/1987q	1987	08	19.46442	19	50	13.29	-42	33	07.8			474

Periodic Comet Reinmuth 1

/1987r	1988	01	11.49166	03	59	50.08	+12	30	58.6			892
/1987r	1988	01	23.04789	04	00	48.38	+13	48	33.6			801
/1987r	1988	01	23.51059	04	00	56.90	+13	51	58.5	16	T	892
/1987r	1988	01	23.56140	04	00	57.63	+13	52	21.3			892
/1987r	1988	02	10.47962	04	12	09.09	+16	14	36.2	16	T	892
/1987r	1988	02	10.52390	04	12	11.63	+16	14	58.2			892
/1987r	1988	02	13.20700	04	14	47.30	+16	37	24.2	16.4	T	691
/1987r	1988	02	13.21196	04	14	47.58	+16	37	26.8			691
/1987r	1988	02	13.22458	04	14	48.36	+16	37	32.6	19.1	N D	691
/1987r	1988	02	15.47748	04	17	09.79	+16	56	29.3			892

/1987r	1988	02	15.50873	04	17	11.71	+16	56	43.2		892
/1987r	1988	02	19.02600	04	21	11.56	+17	26	21.8		801
/1987r	1988	02	19.45486	04	21	42.2	+17	30	00		892
/1987r	1988	02	19.48796	04	21	44.79	+17	30	15.8	16 T	892
/1987r	1988	02	19.51880	04	21	47.66	+17	30	23.8		892
/1987r	1988	03	14.13101	04	57	40.81	+20	39	52.1	18.7N E	691
/1987r	1988	03	14.14494	04	57	42.34	+20	39	58.5		691

Comet Bradfield (1987s)

/1987s	1987	08	19.39064	14	20	59.70	-21	25	03.6		474
/1987s	1987	08	19.39836	14	21	00.40	-21	24	57.2		474
/1987s	1987	10	12.11979	16	20	55.07	-08	03	08.8		657
/1987s	1987	10	13.11285	16	23	55.60	-07	43	28.2		657
/1987s	1987	10	19.11910	16	42	49.57	-05	37	23.3		657
/1987s	1987	10	27.08576	17	09	50.99	-02	29	41.2		657
/1987s	1987	11	04.08792	17	39	35.81	+01	03	31.7		657
/1987s	1987	11	05.09123	17	43	32.49	+01	31	58.6		657
/1987s	1987	11	06.09885	17	47	33.36	+02	00	54.8		657
/1987s	1987	11	06.71771	17	50	03.04	+02	18	54.6		046
/1987s	1987	11	08.70359	17	58	12.07	+03	17	29.3		046
/1987s	1987	11	08.70428	17	58	12.24	+03	17	30.3		046
/1987s	1987	11	14.73211	18	24	29.05	+06	23	21.6		046
/1987s	1987	11	14.73292	18	24	29.29	+06	23	22.8		046
/1987s	1987	11	14.74001	18	24	31.43	+06	23	36.2		502
/1987s	1987	11	14.75353	18	24	35.13	+06	24	01.5		502
/1987s	1987	11	15.69808	18	28	56.27	+06	54	10.2		046
/1987s	1987	11	15.69906	18	28	56.53	+06	54	10.5		046
/1987s	1987	11	17.13144	18	35	40.93	+07	40	12.9		657
/1987s	1987	11	17.76502	18	38	43.06	+08	00	52.7		502
/1987s	1987	11	17.77667	18	38	46.42	+08	01	14.3		502
/1987s	1987	11	20.72567	18	53	21.39	+09	38	11.9		046
/1987s	1987	11	23.72650	19	09	00.91	+11	18	18.8		046
/1987s	1987	11	23.72859	19	09	01.61	+11	18	22.4		046
/1987s	1987	11	23.73359	19	09	03.23	+11	18	30.4		024
/1987s	1987	11	25.72162	19	19	54.98	+12	25	21.8		046
/1987s	1987	11	26.74662	19	25	40.35	+12	59	50.2		046
/1987s	1987	11	26.74731	19	25	40.62	+12	59	51.6		046
/1987s	1987	12	13.13420	21	12	05.16	+21	27	00.9		657
/1987s	1987	12	16.83021	21	38	57.47	+22	54	01.6		006
/1987s	1987	12	16.83681	21	39	00.35	+22	54	10.2		006
/1987s	1987	12	18.83056	21	53	39.72	+23	34	39.6		006
/1987s	1987	12	18.83542	21	53	41.87	+23	34	45.2		006
/1987s	1987	12	19.46195	21	58	18.12	+23	46	30.2		872
/1987s	1987	12	21.81458	22	15	35.81	+24	26	13.9		006
/1987s	1987	12	21.82465	22	15	40.20	+24	26	23.1		006
/1987s	1987	12	25.77327	22	44	17.90	+25	17	46.1		502
/1987s	1987	12	25.77951	22	44	20.56	+25	17	50.3		502
/1987s	1987	12	27.73021	22	58	09.65	+25	36	22.6		006
/1987s	1987	12	27.73576	22	58	11.96	+25	36	25.3		006
/1987s	1987	12	29.73160	23	12	02.19	+25	51	01.6		006
/1987s	1987	12	29.73715	23	12	04.45	+25	51	03.8		006
/1987s	1987	12	30.74201	23	18	54.40	+25	56	51.1		006
/1987s	1987	12	30.74861	23	18	57.07	+25	56	53.2		006
/1987s	1988	01	06.70880	00	03	25.33	+26	12	09.9		046
/1987s	1988	01	06.70949	00	03	25.59	+26	12	09.7		046
/1987s	1988	01	07.79942	00	09	53.98	+26	11	23.1		576
/1987s	1988	01	07.80984	00	09	57.76	+26	11	22.2		576
/1987s	1988	01	09.69903	00	20	51.55	+26	08	24.3		046
/1987s	1988	01	09.69972	00	20	51.76	+26	08	23.5		046

/1987s	1988	01	10.71130	00	26	31.64	+26	06	04.8			046
/1987s	1988	01	10.71216	00	26	31.92	+26	06	04.8			046
/1987s	1988	01	11.39687	00	30	17.80	+26	04	18.3			892
/1987s	1988	01	11.41006	00	30	22.15	+26	04	16.3			892
/1987s	1988	01	11.49514	00	30	49.78	+26	03	59.5			364
/1987s	1988	01	11.49826	00	30	50.80	+26	03	59.5			364
/1987s	1988	01	12.70816	00	37	22.00	+26	00	14.1			046
/1987s	1988	01	12.70903	00	37	22.31	+26	00	13.9			046
/1987s	1988	01	13.74774	00	42	49.6	+25	56	37			024
/1987s	1988	01	14.85417	00	48	30.78	+25	52	23.5			503
/1987s	1988	01	15.45038	00	51	31.28	+25	50	00.5			400
/1987s	1988	01	15.46080	00	51	34.28	+25	49	55.4			400
/1987s	1988	01	16.45243	00	56	29.13	+25	45	45.5			364
/1987s	1988	01	16.45417	00	56	29.67	+25	45	43.4			364
/1987s	1988	01	19.38493	01	10	25.85	+25	32	10.6			397
/1987s	1988	01	19.40528	01	10	31.29	+25	32	04.1			397
/1987s	1988	01	20.93067	01	17	26.17	+25	24	24.7		F	503
/1987s	1988	01	21.74693	01	21	03.95	+25	20	17.8			503
/1987s	1988	01	22.78089	01	25	31.71	+25	14	57.5			503
/1987s	1988	02	04.81211	02	14	38.77	+24	06	48.6			503
/1987s	1988	02	06.83788	02	21	15.04	+23	56	52.3			503
/1987s	1988	02	07.39791	02	23	02.14	+23	54	09.3			399
/1987s	1988	02	07.40058	02	23	02.81	+23	54	08.3			399
/1987s	1988	02	08.42726	02	26	16.46	+23	49	17.4			364
/1987s	1988	02	08.42865	02	26	16.71	+23	49	16.5			364
/1987s	1988	02	10.75843	02	33	24.31	+23	38	25.4			046
/1987s	1988	02	10.76387	02	33	25.34	+23	38	25.2			046
/1987s	1988	02	11.77490	02	36	25.77	+23	33	55.0			503
/1987s	1988	02	12.74650	02	39	16.81	+23	29	32.6			046
/1987s	1988	02	12.74888	02	39	17.28	+23	29	33.9			046
/1987s	1988	02	14.83060	02	45	14.98	+23	20	37.1			503
/1987s	1988	02	15.43946	02	46	57.41	+23	18	06.2			892
/1987s	1988	02	15.48443	02	47	04.96	+23	17	54.1			892
/1987s	1988	02	15.78128	02	47	54.69	+23	16	38.9			046
/1987s	1988	02	15.78296	02	47	54.90	+23	16	38.6			046
/1987s	1988	02	16.76152	02	50	37.10	+23	12	38.4			046
/1987s	1988	02	16.76314	02	50	37.34	+23	12	37.6			046
/1987s	1988	02	16.94083	02	51	06.53	+23	11	53.9			503
/1987s	1988	02	19.43229	02	57	48.26	+23	02	07.6			892
/1987s	1988	02	19.44270	02	57	50.04	+23	02	04.6			892

Comet Rudenko (1987u)

/1987u	1987	11	18.62001	10	36	57.66	-41	14	04.6			474
/1987u	1987	11	18.62730	10	36	55.98	-41	14	55.9			474

Periodic Comet Gehrels 1

/1987v	1988	01	15.20523	03	50	53.70	+31	28	27.9	17.2T	G	691
/1987v	1988	01	15.21314	03	50	53.72	+31	28	27.2			691
/1987v	1988	01	15.22920	03	50	53.82	+31	28	25.7	19.8N		691
/1987v	1988	02	12.23905	04	02	37.37	+31	01	48.8	20.7N		691
/1987v	1988	02	12.24274	04	02	37.54	+31	01	48.8	17.6T		691
/1987v	1988	02	12.26529	04	02	38.48	+31	01	48.2			691
/1987v	1988	03	13.17130	04	30	54.30	+31	07	51.5	21.1N		691
/1987v	1988	03	13.20124	04	30	56.39	+31	07	52.8	18.1T		691

Periodic Comet Helin

/1987w	1988	01	15.12922	01	30	27.30	+04	13	14.7	19.9T		691
/1987w	1988	01	15.14972	01	30	28.32	+04	13	23.5			691

/1987w	1988	01	21.20204	01	36	37.41	+04	57	19.6	19.8T	H	691
/1987w	1988	01	21.21969	01	36	38.32	+04	57	27.8		H	691
			Periodic Comet West-Kohoutek-Ikemura									
/1987x	1988	01	15.41334	13	52	29.11	+28	10	38.9	21.5N		691
/1987x	1988	01	15.42598	13	52	29.81	+28	10	45.5			691
/1987x	1988	01	15.42948	13	52	30.20	+28	10	45.8	18.3T	I	691
/1987x	1988	01	21.43425	13	58	20.01	+29	03	02.2			691
/1987x	1988	01	21.44027	13	58	20.15	+29	03	07.9			691
			Comet Levy (1987y)									
/1987y	1987	10	14.75747	14	54	40.52	+16	50	40.2			046
			Periodic Comet Shoemaker-Holt									
/1987z	1987	11	14.77164	00	54	52.39	+06	47	17.3			046
/1987z	1987	11	14.78414	00	54	52.03	+06	47	17.7			046
/1987z	1987	11	15.79392	00	54	34.39	+06	43	58.4			046
/1987z	1987	11	15.80538	00	54	34.19	+06	43	55.7			046
/1987z	1987	11	25.77720	00	52	41.34	+06	17	52.9			046
/1987z	1987	11	25.79358	00	52	41.28	+06	17	52.9			046
/1987z	1988	01	20.42205	01	16	39.64	+07	41	56.0	15 T		381
/1987z	1988	01	20.51667	01	16	44.62	+07	42	21.9	15 T	J	381
/1987z	1988	01	21.14394	01	17	18.31	+07	45	10.8			691
/1987z	1988	01	21.15243	01	17	18.74	+07	45	13.1			691
/1987z	1988	01	21.16385	01	17	19.36	+07	45	16.4			691
/1987z	1988	01	22.01181	01	18	05.16	+07	49	06.3			801
/1987z	1988	01	22.97754	01	18	57.99	+07	53	33.5			801
/1987z	1988	02	18.13975	01	46	55.90	+10	15	28.3		K	675
/1987z	1988	02	19.13559	01	48	07.97	+10	21	29.2			675
			Periodic Comet Mueller									
/1987a1	1988	01	15.16384	01	17	14.50	+14	46	19.0			691
/1987a1	1988	01	15.18595	01	17	15.72	+14	46	26.6			691
/1987a1	1988	02	12.14140	01	49	21.67	+17	46	27.1	18.7T		691
/1987a1	1988	02	12.15466	01	49	22.76	+17	46	34.1			691
/1987a1	1988	02	12.17332	01	49	24.16	+17	46	41.2			691
/1987a1	1988	02	13.14771	01	50	41.29	+17	53	34.3	18.4T		691
/1987a1	1988	02	13.16584	01	50	42.65	+17	53	41.1			691
/1987a1	1988	02	13.17178	01	50	43.06	+17	53	44.4			691
			Comet McNaught (1987b1)									
/1987b1	1987	10	31.39610	15	20	40.51	-44	26	03.3			474
/1987b1	1987	10	31.40079	15	20	41.61	-44	25	53.4			474
/1987b1	1988	01	16.86996	18	37	18.57	+16	42	19.4			892
/1987b1	1988	01	16.87170	18	37	18.87	+16	42	25.1			892
/1987b1	1988	01	20.86221	18	49	03.52	+20	42	59.6			892
/1987b1	1988	01	20.86545	18	49	04.09	+20	43	12.1			892
/1987b1	1988	01	23.80801	18	58	14.79	+23	43	00.3			400
/1987b1	1988	01	23.81773	18	58	16.62	+23	43	36.1			400
/1987b1	1988	01	26.76823	19	07	57.87	+26	45	09.5			399
/1987b1	1988	01	26.77054	19	07	58.34	+26	45	18.5			399
/1987b1	1988	01	26.77546	19	07	59.34	+26	45	35.1			399
/1987b1	1988	01	29.83298	19	18	35.37	+29	54	03.5	7.5T		892
/1987b1	1988	01	29.85138	19	18	39.32	+29	55	11.7			892
/1987b1	1988	01	30.75550	19	21	53.81	+30	50	47.4		L	503
/1987b1	1988	02	03.23260	19	34	57.15	+34	23	09.5			503
/1987b1	1988	02	06.75567	19	49	05.32	+37	54	30.5			503
/1987b1	1988	02	12.77860	20	15	41.45	+43	40	04.5			503
/1987b1	1988	02	14.82233	20	25	28.69	+45	31	16.0			503

/1987b1	1988	02	15.43733	20	28	30.49	+46	04	03.6	801
/1987b1	1988	02	16.74097	20	35	01.21	+47	12	14.4	046
/1987b1	1988	02	16.74271	20	35	01.74	+47	12	19.0	046
/1987b1	1988	02	16.75938	20	35	07.71	+47	13	09.4	400
/1987b1	1988	02	16.76979	20	35	10.79	+47	13	44.6	400
/1987b1	1988	02	19.42727	20	49	01.02	+49	27	25.7	801
/1987b1	1988	02	19.43263	20	49	02.67	+49	27	41.1	801
/1987b1	1988	02	19.79490	20	50	59.20	+49	45	17.7	892
/1987b1	1988	02	19.79716	20	50	59.91	+49	45	24.7	892
/1987b1	1988	02	19.79988	20	51	00.73	+49	45	33.3	892
/1987b1	1988	03	16.48514	23	37	22.22	+63	20	41.3	657

Periodic Comet Longmore

/1987c1	1988	02	14.38752	10	54	34.73	+37	10	50.3	19.2N 691
/1987c1	1988	02	14.39828	10	54	34.03	+37	10	51.4	17.2T 691
/1987c1	1988	02	14.41494	10	54	32.97	+37	10	53.8	691
/1987c1	1988	02	14.45550	10	54	30.40	+37	10	58.9	691

Comet Ichimura (1987d1)

/1987d1	1987	11	25.98758	03	33	00.60	-28	30	45.9	046
/1987d1	1987	11	25.99105	03	32	58.35	-28	31	27.2	046
/1987d1	1987	11	25.99105	03	32	58.35	-28	31	27.2	046
/1987d1	1987	12	06.42951	00	42	52.45	-57	38	34.8	418
/1987d1	1987	12	07.43802	00	16	24.53	-59	07	19.1	418

Periodic Comet Tempel 1

/1987e1	1988	01	15.23865	08	50	26.15	+30	27	13.6	19.2T 691
/1987e1	1988	01	15.24839	08	50	25.67	+30	27	17.2	691
/1987e1	1988	01	15.26549	08	50	24.71	+30	27	23.5	691
/1987e1	1988	03	13.14663	07	58	30.90	+33	08	02.7	19.8T 691
/1987e1	1988	03	13.21668	07	58	29.26	+33	07	56.5	691
/1987e1	1988	03	13.26383	07	58	28.22	+33	07	52.0	691

Comet Furuyama (1987f1)

/1987f1	1987	11	26.93194	04	56	43.17	+21	57	50.7	046
/1987f1	1987	11	26.93750	04	56	41.57	+21	57	31.9	046
/1987f1	1987	11	27.02535	04	56	16.30	+21	53	19.5	046
/1987f1	1988	01	06.73333	02	15	12.77	-11	26	01.3	046
/1987f1	1988	01	06.73854	02	15	12.08	-11	26	10.6	046
/1987f1	1988	01	09.73589	02	09	07.69	-12	48	04.3	046
/1987f1	1988	01	09.74041	02	09	07.25	-12	48	10.3	046
/1987f1	1988	01	10.72981	02	07	16.56	-13	13	15.4	046
/1987f1	1988	01	10.73433	02	07	16.10	-13	13	23.4	046
/1987f1	1988	01	11.52326	02	05	50.99	-13	32	41.3	364
/1987f1	1988	01	11.52986	02	05	50.29	-13	32	51.2	364
/1987f1	1988	01	12.72500	02	03	47.38	-14	01	05.1	046
/1987f1	1988	01	12.72940	02	03	46.89	-14	01	13.4	046
/1987f1	1988	01	14.83293	02	00	25.36	-14	47	55.3	503
/1987f1	1988	01	16.46563	01	58	01.88	-15	21	47.8	364
/1987f1	1988	01	16.47083	01	58	01.60	-15	21	53.3	364
/1987f1	1988	01	20.42928	01	52	56.35	-16	36	17.1	892
/1987f1	1988	01	20.46701	01	52	53.55	-16	36	56.6	892
/1987f1	1988	01	22.02185	01	51	09.46	-17	03	28.9	801
/1987f1	1988	01	22.77464	01	50	22.11	-17	15	50.2	7 503
/1987f1	1988	02	06.76389	01	40	03.72	-20	31	57.9	503

Comet Jensen-Shoemaker (1987g1)

/1987g1	1988	01	21.09367	00	40	39.73	-10	31	31.4	691
/1987g1	1988	01	21.13171	00	40	41.46	-10	31	42.1	691

Comet Liller (1988a)

/1988a	1988	01	20.37916	23	52	46.61	-21	58	48.0			892
/1988a	1988	01	25.41458	23	54	39.53	-18	31	10.5	10	T	372
/1988a	1988	01	30.76528	23	57	07.16	-14	48	14.2		L	503
/1988a	1988	02	06.77095	00	00	56.55	-09	51	52.8			503
/1988a	1988	02	08.38993	00	01	54.60	-08	42	30.7			892
/1988a	1988	02	08.40104	00	01	55.18	-08	42	03.8			892
/1988a	1988	02	12.77212	00	04	40.39	-05	33	13.8			503
/1988a	1988	02	14.78216	00	06	00.31	-04	05	26.2			503
/1988a	1988	02	16.75110	00	07	20.64	-02	38	50.3			046
/1988a	1988	02	16.75284	00	07	20.73	-02	38	45.2			046
/1988a	1988	03	15.81767	00	29	55.46	+19	30	08.5		L	503

Comet Shoemaker (1988b)

/1988b	1988	01	23.46734	10	27	59.55	+35	02	16.7	16	T	675
/1988b	1988	01	23.50069	10	27	57.46	+35	02	17.8			675
/1988b	1988	02	12.32292	10	07	10.2	+34	35	57	17	T	675
/1988b	1988	02	12.35764	10	07	08.2	+34	35	54			675
/1988b	1988	02	13.61736	10	05	45.94	+34	32	53.2	16.5	T	372
/1988b	1988	02	13.62864	10	05	45.18	+34	32	54.4			372
/1988b	1988	02	15.29437	10	03	56.85	+34	28	37.4			801
/1988b	1988	02	15.61006	10	03	36.7	+34	27	47			892
/1988b	1988	02	15.73125	10	03	28.61	+34	27	27.4	17	T	372
/1988b	1988	02	16.54131	10	02	35.91	+34	25	13.2			892
/1988b	1988	02	17.33868	10	01	44.36	+34	22	58.0			801
/1988b	1988	02	17.68299	10	01	22.13	+34	21	58.6	16.5	T	372
/1988b	1988	02	17.80972	10	01	13.78	+34	21	35.8			372
/1988b	1988	02	18.34659	10	00	39.33	+34	20	01.5	16.7	T	691
/1988b	1988	02	18.37006	10	00	37.77	+34	19	57.3			691
/1988b	1988	02	18.37902	10	00	37.22	+34	19	55.7			691
/1988b	1988	02	18.38509	10	00	36.80	+34	19	54.8			691
/1988b	1988	02	18.39486	10	00	36.19	+34	19	53.1	19.0N	M	691
/1988b	1988	02	19.55313	09	59	21.70	+34	16	20.7			568
/1988b	1988	02	19.65312	09	59	15.18	+34	15	59.4	16	T	892
/1988b	1988	02	19.69201	09	59	12.82	+34	15	53.0			892
/1988b	1988	02	21.58889	09	57	11.55	+34	09	45.1	17.1	T	568
/1988b	1988	03	13.27078	09	37	10.13	+32	37	53.5	16.8	T N	691
/1988b	1988	03	13.27797	09	37	09.77	+32	37	51.6	19.0N		691
/1988b	1988	03	13.29487	09	37	08.88	+32	37	46.0			691

Comet Maury-Phinney (1988c)

/1988c	1988	02	16.34167	10	31	35.9	+35	23	39	17	T	675
/1988c	1988	02	16.37292	10	31	30.6	+35	25	45			675
/1988c	1988	02	17.34149	10	28	51.7	+36	31	04			675
/1988c	1988	02	17.39062	10	28	43.4	+36	34	24			675
/1988c	1988	02	19.24076	10	23	31.70	+38	35	02.9			801
/1988c	1988	02	19.67118	10	22	17.6	+39	02	12	18	T	372
/1988c	1988	03	06.33229	09	35	03.36	+51	43	00.5			675
/1988c	1988	03	06.33562	09	35	02.78	+51	43	07.4			675
/1988c	1988	03	06.33924	09	35	02.13	+51	43	14.8			675
/1988c	1988	03	07.29073	09	32	12.84	+52	15	28.0	17.5N		675
/1988c	1988	03	07.29816	09	32	12.20	+52	15	34.8			675
/1988c	1988	03	07.30045	09	32	11.85	+52	15	39.3			675
/1988c	1988	03	07.30333	09	32	11.31	+52	15	44.9			675
/1988c	1988	03	13.35142	09	15	12.10	+55	07	39.4			691
/1988c	1988	03	13.37654	09	15	08.06	+55	08	15.0			691
/1988c	1988	03	13.38266	09	15	07.13	+55	08	24.6			691
/1988c	1988	03	14.39100	09	12	28.30	+55	32	11.0	18.2T	O	691

/1988c	1988	03	14.43475	09	12	21.50	+55	33	09.4	691
/1988c	1988	03	14.43929	09	12	20.72	+55	33	15.8	21.4N 691

Periodic Comet Hartley 3

/1988d	1988	02	19.39271	10	12	27.07	-03	01	10.3	675
/1988d	1988	02	19.44132	10	12	24.74	-03	01	07.2	675
/1988d	1988	02	19.65133	10	12	14.30	-03	00	44.9	413
/1988d	1988	02	22.50434	10	09	52.50	-02	56	20.9	413
/1988d	1988	02	22.57219	10	09	49.31	-02	56	15.3	413
/1988d	1988	02	23.54322	10	09	01.60	-02	54	29.4	413
/1988d	1988	02	25.60628	10	07	20.45	-02	50	24.5	413
/1988d	1988	03	06.42696	09	59	49.31	-02	25	34.1	675
/1988d	1988	03	06.43378	09	59	49.01	-02	25	32.9	675
/1988d	1988	03	07.30743	09	59	12.43	-02	22	58.6	675
/1988d	1988	03	07.31113	09	59	12.26	-02	22	58.0	675
/1988d	1988	03	07.31770	09	59	11.97	-02	22	56.8	675
/1988d	1988	03	09.53661	09	57	41.87	-02	16	14.8	17 T 372
/1988d	1988	03	09.54965	09	57	41.25	-02	16	12.5	372
/1988d	1988	03	10.54069	09	57	02.47	-02	13	03.2	18 T 413
/1988d	1988	03	13.30698	09	55	19.40	-02	04	24.8	16.3T P 691
/1988d	1988	03	13.33008	09	55	18.56	-02	04	20.3	19.2N 691
/1988d	1988	03	13.33789	09	55	18.26	-02	04	18.6	691
/1988d	1988	03	14.22889	09	54	47.17	-02	01	26.7	691
/1988d	1988	03	14.36575	09	54	42.29	-02	01	01.2	691
/1988d	1988	03	14.37341	09	54	41.93	-02	00	58.6	691

Note 1: tail 6′.7 in p.a. 280 . 2: tail 3′.8 in p.a. 284 . 3: tail 19" in p.a. 333 . 4: tail 1′.8 in p.a. 149 . 5: tail > 14′ in p.a. 291 . 6: tail 5′.9 in p.a. 293 . 7: weak, diffuse image. 8: tail > 6′ in p.a. 297 . 9: tail > 6′.3 in p.a. 131 ; secondary nucleus at 8".4 in p.a. 117 , 1.9 mag fainter. A: secondary at 8".0 in p.a. 122 . B: secondary 6".3 east, 4".2 south, 3 mag fainter. C: tail 4′.6 in p.a. 172 . D: tail 1′.4 in p.a. 80 . E: tail 64" in p.a. 88 . F: images trailed. G: tail 1′.2 in p.a. 242 . H: diffuse and uncondensed; measurement uncertain. I: tail 40" in p.a. 295 . J: tail 5" in p.a. 70 . K: very dark film, difficult to measure. L: low altitude. M: tail 4′.5 in p.a. 11 . N: tail 4′.0 in p.a. 12 . O: tail 43" in p.a. 153 . P: tail > 8′.1 in p.a. 306 .

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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 R. Chemin, J.-L. Heudier, C. Labeyrie, T. Laverge, C. Pollas, V. Shkodrov							
0.9-m Schmidt telescope							
Observations in association with INAS							
3769	1987	11 11.84306	23 52 11.57	-05 43 46.5			010
3769	1987	11 11.87662	23 52 11.66	-05 43 50.0			010
3769	1987	11 20.81944	23 52 51.16	-05 05 18.1			010
3769	1987	11 20.85903	23 52 51.47	-05 05 07.3			010
033 Tautenburg							
S. Marx, Karl Schwarzschild Observatorium, DDR-6901 Tautenburg, Democratic Republic of Germany							
Observers F. Borngen, H. Meusinger, C. Hogner, F. Ludwig, K.-H. Mau							
Measurer F. Borngen							
1.3-m Schmidt telescope							
SAOC							
1953 TH	1988	02 13.94028	10 37 09.10	+10 43 12.7			033
1953 TH	1988	02 13.97569	10 37 07.18	+10 43 15.2			033
1953 TH	1988	02 13.98958	10 37 05.99	+10 43 18.2			033
1953 TH	1988	02 14.02778	10 37 03.93	+10 43 21.3			033
1953 TH	1988	02 14.04201	10 37 03.12	+10 43 23.1			033
1953 TH	1988	02 14.94132	10 36 09.79	+10 45 07.1			033
1953 TH	1988	02 14.95972	10 36 08.45	+10 45 09.8			033
1953 TH	1988	02 15.00000	10 36 06.28	+10 45 13.6			033
1953 TH	1988	02 15.01701	10 36 05.12	+10 45 16.1	16.0		033
1953 TH	1988	02 15.96597	10 35 08.23	+10 47 06.2			033
1953 TH	1988	02 16.09826	10 35 00.05	+10 47 21.9		I	033
1973 SM	1988	01 12.84861	05 35 24.42	+21 04 21.7	17.6	I	033
1973 SM	1988	01 12.89722	05 35 22.97	+21 04 20.7			033
1979 QL8	1988	01 12.84861	05 31 24.93	+21 46 11.0	19.5		033
1979 QL8	1988	01 12.89722	05 31 22.35	+21 46 08.6			033
1980 TY14	1988	01 12.95556	07 41 49.51	+32 11 13.7	16.8		033
1980 TY14	1988	01 12.98403	07 41 47.18	+32 11 16.4			033
1983 PW	1988	01 11.91389	06 33 25.89	+17 50 23.4	17.6		033
1983 PW	1988	01 11.95972	06 33 22.79	+17 50 26.4			033

1984	WK		1988	01	11.91389	06	30	15.22	+18	44	28.3	16.5	033
1984	WK		1988	01	11.95972	06	30	11.41	+18	44	02.3		033
1986	PJ4		1987	11	26.04722	07	12	27.37	+17	45	06.2	18.7	033
1986	PJ4		1987	11	26.08889	07	12	26.27	+17	45	07.2		033
1986	PJ4		1988	01	11.91389	06	29	11.15	+19	05	08.5	18.2	033
1986	PJ4		1988	01	11.95972	06	29	08.18	+19	05	15.0		033
1986	TK2		1988	02	14.04201	10	40	11.56	+12	43	57.6		033
1986	TK2		1988	02	14.94132	10	39	22.16	+12	50	53.7		033
1986	TK2		1988	02	15.01701	10	39	17.78	+12	51	29.2	19.1	033
1986	TK2		1988	02	15.96597	10	38	24.72	+12	58	51.6		033
1986	TK2		1988	02	16.09826	10	38	17.13	+12	59	51.5	V	033
1986	UT		1988	01	11.91389	06	22	40.21	+18	05	34.7	17.5	033
1986	UT		1988	01	11.95972	06	22	37.93	+18	05	32.8		033
1986	WC		1988	01	11.97986	10	23	15.07	+01	29	53.7		033
1986	WC		1988	01	13.04271	10	22	57.67	+01	29	33.9	16.9	033
1986	WC		1988	01	14.07361	10	22	39.47	+01	29	24.0	W	033
1986	WC		1988	02	10.92361	10	07	25.49	+02	24	44.8		033
1986	WC		1988	02	11.02222	10	07	21.04	+02	25	07.5	16.6	033
1987	YG		1988	01	11.88854	07	37	16.07	+25	21	46.2	17.1	033
1987	YG		1988	01	11.93715	07	37	12.38	+25	21	46.5		033
1988	AG		1988	01	12.95556	07	43	22.20	+32	32	56.5	16.3	033
1988	AG		1988	01	12.98403	07	43	20.22	+32	32	55.8		033
1988	AM	*	1988	01	11.91389	06	22	40.16	+20	13	50.2	18.5	033
1988	AM		1988	01	11.95972	06	22	37.39	+20	13	53.5		033
1988	AN	*	1988	01	11.91389	06	22	55.34	+19	11	15.5	18.6	033
1988	AN		1988	01	11.95972	06	22	53.16	+19	11	14.1		033
1988	AO	*	1988	01	11.91389	06	25	48.94	+18	21	37.0	18.2	033
1988	AO		1988	01	11.95972	06	25	45.82	+18	21	41.9		033
1988	AP	*	1988	01	11.91389	06	26	09.67	+17	38	35.7	18.3	033
1988	AP		1988	01	11.95972	06	26	06.87	+17	38	43.6		033
1988	AQ	*	1988	01	11.91389	06	26	15.58	+18	53	03.4	18.3	033
1988	AQ		1988	01	11.95972	06	26	13.73	+18	53	02.1		033
1988	AR	*	1988	01	11.91389	06	26	25.60	+19	25	45.9	16.9	033
1988	AR		1988	01	11.95972	06	26	22.88	+19	26	15.8		033
1988	AS	*	1988	01	11.91389	06	27	31.36	+17	33	04.1	18.1	033
1988	AS		1988	01	11.95972	06	27	28.52	+17	33	11.1		033
1988	AT	*	1988	01	11.91389	06	28	11.22	+17	45	39.2	20.3	033
1988	AT		1988	01	11.95972	06	28	08.39	+17	45	36.2		033
1988	AU	*	1988	01	11.91389	06	28	58.09	+20	03	11.1	17.8	033
1988	AU		1988	01	11.95972	06	28	55.41	+20	03	13.0		033
1988	AV	*	1988	01	11.91389	06	30	48.08	+20	36	06.5	19.8	033
1988	AV		1988	01	11.95972	06	30	45.73	+20	36	14.2		033
1988	AW	*	1988	01	11.91389	06	30	48.82	+19	56	20.8	17.9	033
1988	AW		1988	01	11.95972	06	30	46.16	+19	56	28.9		033
1988	AX	*	1988	01	11.91389	06	31	23.92	+19	58	02.3	18.9	033
1988	AX		1988	01	11.95972	06	31	21.33	+19	57	48.8		033
1988	AY	*	1988	01	11.91389	06	32	31.01	+17	44	38.2	20.0	033
1988	AY		1988	01	11.95972	06	32	28.31	+17	44	34.8		033
1988	AZ	*	1988	01	11.91389	06	33	26.65	+18	26	52.8	18.0	033
1988	AZ		1988	01	11.95972	06	33	25.04	+18	26	53.7		033
1988	AA1	*	1988	01	11.91389	06	33	34.73	+18	01	44.5	18.7	033
1988	AA1		1988	01	11.95972	06	33	32.12	+18	01	55.4		033
1988	AB1	*	1988	01	11.91389	06	34	04.33	+19	49	32.3	17.3	033
1988	AB1		1988	01	11.95972	06	34	02.02	+19	49	35.2		033
1988	AC1	*	1988	01	11.91389	06	34	11.71	+18	11	00.6	17.4	033
1988	AC1		1988	01	11.95972	06	34	08.80	+18	10	45.3		033
1988	AD1	*	1988	01	11.91389	06	34	18.53	+20	17	58.1	17.0	033
1988	AD1		1988	01	11.95972	06	34	16.06	+20	18	01.8		033
1988	AC2	*	1988	01	11.74132	04	00	24.02	+29	12	42.7	20.1	033

1988	AC2		1988	01	11.79340	04	00	22.97	+29	12	44.7		033
1988	AD2	*	1988	01	11.74132	04	01	10.62	+32	05	51.4	16.8	033
1988	AD2		1988	01	11.79340	04	01	09.82	+32	05	56.4		033
1988	AE2	*	1988	01	11.74132	04	01	29.56	+29	55	38.2	18.7	033
1988	AE2		1988	01	11.79340	04	01	28.82	+29	55	36.5		033
1988	AF2	*	1988	01	11.74132	04	01	42.95	+29	56	57.6	19.3	033
1988	AF2		1988	01	11.79340	04	01	42.06	+29	56	43.7		033
1988	AG2	*	1988	01	11.74132	04	02	16.19	+31	22	10.6	18.1	033
1988	AG2		1988	01	11.79340	04	02	14.88	+31	22	10.6		033
1988	AH2	*	1988	01	11.74132	04	02	34.19	+29	20	26.4	18.3	033
1988	AH2		1988	01	11.79340	04	02	34.00	+29	20	20.0		033
1988	AJ2	*	1988	01	11.74132	04	02	49.44	+30	42	34.6	19.3	033
1988	AJ2		1988	01	11.79340	04	02	48.68	+30	42	25.6		033
1988	AK2	*	1988	01	11.74132	04	08	39.98	+31	56	47.1	19.4	033
1988	AK2		1988	01	11.79340	04	08	39.25	+31	56	43.3		033
1988	AL2	*	1988	01	11.74132	04	09	31.86	+31	12	50.2	19.7	033
1988	AL2		1988	01	11.79340	04	09	31.17	+31	12	43.9		033
1988	AM2	*	1988	01	11.74132	04	09	36.14	+32	13	53.4	19.0	033
1988	AM2		1988	01	11.79340	04	09	35.61	+32	13	35.4		033
1988	AN2	*	1988	01	11.74132	04	09	36.63	+30	00	22.5	19.6	033
1988	AN2		1988	01	11.79340	04	09	36.28	+30	00	17.7		033
1988	AO2	*	1988	01	11.74132	04	11	21.99	+30	52	34.1	19.8	033
1988	AO2		1988	01	11.79340	04	11	21.59	+30	52	27.1		033
1988	AP2	*	1988	01	11.74132	04	11	36.11	+31	50	05.2	18.5 I	033
1988	AP2		1988	01	11.79340	04	11	35.15	+31	50	02.0		033
1988	AQ2	*	1988	01	11.74132	04	11	40.66	+31	32	12.4	18.7	033
1988	AQ2		1988	01	11.79340	04	11	39.91	+31	32	03.5		033
1988	AR2	*	1988	01	11.76875	05	14	06.36	+38	28	31.2	18.2	033
1988	AR2		1988	01	11.83958	05	14	03.53	+38	28	23.1		033
1988	AS2	*	1988	01	11.76875	05	17	36.76	+37	23	26.4	18.8	033
1988	AS2		1988	01	11.83958	05	17	33.53	+37	23	00.7		033
1988	AT2	*	1988	01	11.76875	05	18	19.94	+39	04	53.3	18.6	033
1988	AT2		1988	01	11.83958	05	18	16.33	+39	04	43.8		033
1988	AU2	*	1988	01	11.76875	05	22	03.36	+37	29	58.1	19.0	033
1988	AU2		1988	01	11.83958	05	21	59.03	+37	30	00.3		033
1988	AV2	*	1988	01	11.88854	07	36	30.05	+26	58	15.3	19.2	033
1988	AV2		1988	01	11.93715	07	36	27.18	+26	58	19.3		033
1988	AW2	*	1988	01	11.88854	07	37	16.34	+27	37	32.8	18.3	033
1988	AW2		1988	01	11.93715	07	37	14.54	+27	37	37.2		033
1988	AX2	*	1988	01	11.88854	07	41	06.22	+26	15	52.7	18.5	033
1988	AX2		1988	01	11.93715	07	41	02.88	+26	15	55.2		033
1988	AY2	*	1988	01	11.88854	07	42	17.24	+26	22	45.9	18.7	033
1988	AY2		1988	01	11.93715	07	42	13.76	+26	23	02.9		033
1988	AZ2	*	1988	01	11.88854	07	42	23.68	+26	01	36.2	18.1	033
1988	AZ2		1988	01	11.93715	07	42	20.62	+26	01	44.4		033
1988	AA3	*	1988	01	11.88854	07	42	43.75	+26	10	19.1	16.5	033
1988	AA3		1988	01	11.93715	07	42	40.77	+26	10	34.1		033
1988	AB3	*	1988	01	11.88854	07	43	07.50	+25	05	52.4	19.0	033
1988	AB3		1988	01	11.93715	07	43	04.00	+25	06	11.7		033
1988	AC3	*	1988	01	11.88854	07	43	20.14	+24	55	23.2	17.3	033
1988	AC3		1988	01	11.93715	07	43	17.02	+24	55	35.5		033
1988	AD3	*	1988	01	11.88854	07	43	27.43	+27	46	35.8	19.1 V	033
1988	AD3		1988	01	11.93715	07	43	23.81	+27	46	33.0		033
1988	AE3	*	1988	01	11.88854	07	44	49.97	+25	57	08.1	18.3	033
1988	AE3		1988	01	11.93715	07	44	46.77	+25	57	13.8		033
1988	AF3	*	1988	01	11.88854	07	45	11.97	+27	56	42.3	18.6	033
1988	AF3		1988	01	11.93715	07	45	08.34	+27	56	26.6		033
1988	AG3	*	1988	01	11.88854	07	47	01.48	+25	13	30.7	17.5	033
1988	AG3		1988	01	11.93715	07	46	58.61	+25	13	50.9		033

1988	AH3	*	1988	01	11.88854	07	47	23.21	+26	28	32.9	19.2	V 033
1988	AH3		1988	01	11.93715	07	47	19.81	+26	28	45.9		033
1988	AJ3	*	1988	01	11.88854	07	48	45.80	+24	52	46.2	18.8	033
1988	AJ3		1988	01	11.93715	07	48	42.57	+24	52	59.4		033
1988	AK3	*	1988	01	11.88854	07	49	35.85	+27	20	03.5	19.3	033
1988	AK3		1988	01	11.93715	07	49	33.14	+27	20	11.7		033
1988	AL3	*	1988	01	12.84861	05	24	58.13	+22	52	32.9	19.0	033
1988	AL3		1988	01	12.89722	05	24	56.31	+22	52	34.4		033
1988	AM3	*	1988	01	12.84861	05	29	05.34	+22	45	14.4	19.1	033
1988	AM3		1988	01	12.89722	05	29	03.42	+22	45	09.0		033
1988	AN3	*	1988	01	12.84861	05	30	38.15	+21	54	22.5	17.9	033
1988	AN3		1988	01	12.89722	05	30	36.06	+21	54	14.0		033
1988	AO3	*	1988	01	12.84861	05	31	42.49	+22	29	11.3	19.2	033
1988	AO3		1988	01	12.89722	05	31	40.40	+22	29	17.1		033
1988	AP3	*	1988	01	12.84861	05	32	20.76	+20	42	10.1	17.4	I 033
1988	AP3		1988	01	12.89722	05	32	18.19	+20	42	15.1		033
1988	AQ3	*	1988	01	12.84861	05	34	25.63	+23	19	45.1	20.0	033
1988	AQ3		1988	01	12.89722	05	34	23.48	+23	19	41.7		033
1988	AR3	*	1988	01	12.84861	05	35	01.95	+23	04	40.7	19.3	033
1988	AR3		1988	01	12.89722	05	34	59.39	+23	04	38.3		033
1988	AS3	*	1988	01	12.84861	05	36	18.01	+20	52	11.5	17.1	033
1988	AS3		1988	01	12.89722	05	36	15.97	+20	52	05.5		033
1988	AT3	*	1988	01	12.87361	05	59	56.89	+24	46	32.4	17.6	033
1988	AT3		1988	01	12.92153	05	59	54.46	+24	46	20.2		033
1988	AU3	*	1988	01	12.87361	06	07	05.84	+23	08	49.4	18.2	033
1988	AU3		1988	01	12.92153	06	07	03.73	+23	08	54.3		033
1988	AV3	*	1988	01	12.87361	06	11	42.26	+24	50	40.3	19.3	033
1988	AV3		1988	01	12.92153	06	11	39.95	+24	50	42.2		033
1988	AW3	*	1988	01	11.97986	10	17	50.74	+03	02	25.2		033
1988	AW3		1988	01	13.04271	10	17	27.63	+03	01	01.5	17.5	033
1988	AW3		1988	01	14.07361	10	17	03.77	+02	59	50.3		W 033
1988	AW3		1988	02	10.92361	09	58	12.55	+03	27	00.7		033
1988	AW3		1988	02	11.02222	09	58	07.20	+03	27	17.5	16.6	033
1988	AX3	*	1988	01	11.97986	10	25	05.25	+03	28	40.7		033
1988	AX3		1988	01	13.04271	10	24	49.57	+03	27	08.4	18.7	033
1988	AX3		1988	01	14.07361	10	24	32.68	+03	25	50.3		W 033
1988	AX3		1988	02	10.92361	10	07	13.49	+04	00	32.5		033
1988	AX3		1988	02	11.02222	10	07	08.08	+04	00	52.4	18.6	033
1988	AA4	*	1988	01	12.95556	07	32	29.98	+30	49	06.7	18.2	033
1988	AA4		1988	01	12.98403	07	32	27.80	+30	49	15.3		033
1988	AB4	*	1988	01	12.95556	07	34	51.08	+29	51	17.3	18.9	033
1988	AB4		1988	01	12.98403	07	34	49.35	+29	51	25.5		033
1988	AC4	*	1988	01	12.95556	07	35	58.43	+30	50	38.2	18.5	033
1988	AC4		1988	01	12.98403	07	35	56.20	+30	50	29.6		033
1988	AD4	*	1988	01	12.95556	07	36	05.45	+30	42	59.6	18.6	033
1988	AD4		1988	01	12.98403	07	36	03.49	+30	43	11.3		033
1988	AE4	*	1988	01	12.95556	07	36	05.66	+30	19	08.0	18.7	033
1988	AE4		1988	01	12.98403	07	36	03.72	+30	19	16.8		033
1988	AF4	*	1988	01	12.95556	07	36	27.84	+30	42	56.6	19.3	V 033
1988	AF4		1988	01	12.98403	07	36	25.97	+30	42	56.7		033
1988	AG4	*	1988	01	12.95556	07	38	34.15	+30	35	18.4	18.9	V 033
1988	AG4		1988	01	12.98403	07	38	31.81	+30	35	20.3		033
1988	AH4	*	1988	01	12.95556	07	39	25.47	+31	24	21.6	18.7	I 033
1988	AH4		1988	01	12.98403	07	39	23.84	+31	24	23.7		033
1988	AJ4	*	1988	01	12.95556	07	42	30.00	+30	52	49.5	18.1	033
1988	AJ4		1988	01	12.98403	07	42	28.18	+30	52	50.2		033
1988	AK4	*	1988	01	12.95556	07	43	29.39	+30	03	30.7	18.8	V 033
1988	AK4		1988	01	12.98403	07	43	27.07	+30	03	31.1		033
1988	AL4	*	1988	01	12.95556	07	44	23.92	+30	31	16.7	19.1	V 033

1988	AL4		1988	01	12.98403	07	44	22.01	+30	31	16.2		033
1988	AM4	*	1988	01	13.73924	02	05	19.65	+33	35	39.0	18.5	033
1988	AM4		1988	01	13.79688	02	05	20.87	+33	35	34.3		033
1988	AN4	*	1988	01	13.76632	03	26	20.53	+32	18	15.4	19.8	033
1988	AN4		1988	01	13.82674	03	26	20.60	+32	17	56.0		033
1988	AO4	*	1988	01	13.76632	03	26	21.37	+31	42	20.2	18.7	033
1988	AO4		1988	01	13.82674	03	26	21.13	+31	42	08.2		033
1988	AP4	*	1988	01	13.76632	03	29	19.76	+32	17	48.1	18.2	033
1988	AP4		1988	01	13.82674	03	29	19.83	+32	17	38.1		033
1988	AQ4	*	1988	01	13.76632	03	33	23.80	+31	40	08.0	18.3	033
1988	AQ4		1988	01	13.82674	03	33	24.13	+31	39	56.0		033
1988	AR4	*	1988	01	13.76632	03	33	54.19	+31	31	42.0	18.1	033
1988	AR4		1988	01	13.82674	03	33	53.43	+31	31	44.6		033
1988	AS4	*	1988	01	13.76632	03	36	35.69	+30	52	06.9	18.0	033
1988	AS4		1988	01	13.82674	03	36	35.33	+30	51	57.4		033
1988	AT4	*	1988	01	13.85799	05	04	37.84	+06	37	51.9	18.8	E 033
1988	AT4		1988	01	13.91458	05	04	35.89	+06	38	01.2		E 033
1988	AU4	*	1988	01	13.85799	05	16	04.81	+05	01	21.3	18.5	033
1988	AU4		1988	01	13.91458	05	16	03.00	+05	01	22.6		033
1988	AV4	*	1988	01	13.85799	05	16	44.06	+03	27	52.4	18.1	E 033
1988	AV4		1988	01	13.91458	05	16	42.46	+03	27	45.7		E 033
1988	BH1		1988	01	12.95556	07	40	58.93	+30	02	04.8	17.0	033
1988	BH1		1988	01	12.98403	07	40	56.98	+30	02	08.4		033
1988	BJ1		1988	01	12.95556	07	43	49.55	+31	02	26.8	15.9	033
1988	BJ1		1988	01	12.98403	07	43	47.49	+31	02	32.3		033
1988	BX2		1988	01	19.98160	10	35	23.43	+12	01	54.4		033
1988	BX2	*	1988	01	20.00972	10	35	22.67	+12	02	01.2	17.8	033
1988	BX2		1988	01	20.98889	10	34	58.09	+12	05	49.3		033
1988	BX2		1988	01	21.01424	10	34	57.53	+12	05	54.1		033
1988	BY2		1988	01	19.98160	10	36	14.41	+10	39	53.4		033
1988	BY2	*	1988	01	20.00972	10	36	13.57	+10	39	51.8	17.9	033
1988	BY2		1988	01	20.98889	10	35	44.61	+10	38	57.4		033
1988	BY2		1988	01	21.01424	10	35	43.76	+10	38	54.9		033
1988	BZ2		1988	01	19.98160	10	40	47.95	+13	11	30.0		033
1988	BZ2	*	1988	01	20.00972	10	40	46.90	+13	11	38.6	18.1	033
1988	BZ2		1988	01	20.98889	10	40	13.10	+13	15	59.7		033
1988	BZ2		1988	01	21.01424	10	40	12.18	+13	16	05.0		033
1988	BA3		1988	01	19.98160	10	45	59.87	+13	33	57.4		033
1988	BA3	*	1988	01	20.00972	10	45	58.89	+13	33	54.5	17.4	033
1988	BA3		1988	01	20.98889	10	45	29.00	+13	32	33.1		033
1988	BA3		1988	01	21.01424	10	45	28.16	+13	32	30.7		033
1988	BA3		1988	01	22.07778	10	44	53.42	+13	31	09.3		033
1988	BB3		1988	01	19.98160	10	46	08.51	+11	24	05.2		033
1988	BB3	*	1988	01	20.00972	10	46	07.99	+11	24	15.1	17.6	033
1988	BB3		1988	01	20.98889	10	45	49.86	+11	30	19.0		033
1988	BB3		1988	01	21.01424	10	45	49.33	+11	30	28.1		033
1988	BB3		1988	01	22.07778	10	45	27.79	+11	37	15.1		033
1988	CV	*	1988	02	13.94028	10	35	29.39	+11	28	08.3	V	033
1988	CV		1988	02	13.97569	10	35	28.27	+11	28	21.7	V	033
1988	CV		1988	02	13.98958	10	35	27.60	+11	28	30.1	V	033
1988	CV		1988	02	14.02778	10	35	26.46	+11	28	45.1	V	033
1988	CV		1988	02	14.04201	10	35	25.55	+11	28	58.3		033
1988	CV		1988	02	14.94132	10	34	50.54	+11	36	58.0		033
1988	CV		1988	02	15.01701	10	34	47.49	+11	37	38.3	18.3	033
1988	CV		1988	02	15.96597	10	34	10.05	+11	46	06.3		033
1988	CW	*	1988	02	13.94028	10	43	54.51	+12	12	38.1	V	033
1988	CW		1988	02	13.97569	10	43	53.25	+12	12	49.7	V	033
1988	CW		1988	02	13.98958	10	43	52.39	+12	12	59.5	V	033
1988	CW		1988	02	14.04201	10	43	50.01	+12	13	24.5		033

1988	CW		1988	02	14.94132	10	43	08.99	+12	20	43.5		033
1988	CW		1988	02	15.01701	10	43	05.37	+12	21	20.4	17.8	033
1988	CW		1988	02	15.96597	10	42	21.61	+12	29	03.8		033
1988	CW		1988	02	16.09826	10	42	15.27	+12	30	09.0		033
1988	CX	*	1988	02	14.04201	10	36	47.01	+11	56	28.7		033
1988	CX		1988	02	14.94132	10	36	09.11	+12	02	22.8		033
1988	CX		1988	02	15.01701	10	36	05.76	+12	02	52.6	18.5	033
1988	CX		1988	02	15.96597	10	35	25.15	+12	09	07.0		033
1988	CX		1988	02	16.09826	10	35	19.30	+12	09	58.5		033
1988	CY	*	1988	02	14.04201	10	38	40.61	+12	24	38.4	V	033
1988	CY		1988	02	14.94132	10	38	06.02	+12	32	32.1		033
1988	CY		1988	02	15.01701	10	38	02.88	+12	33	13.1	18.8	033
1988	CY		1988	02	15.96597	10	37	25.61	+12	41	36.4		033
1988	CZ	*	1988	02	14.04201	10	40	23.02	+12	25	54.7	V	033
1988	CZ		1988	02	14.94132	10	39	34.92	+12	29	53.7		033
1988	CZ		1988	02	15.01701	10	39	30.69	+12	30	14.0	18.9	033
1988	CZ		1988	02	15.96597	10	38	39.10	+12	34	25.6		033
1988	CA1	*	1988	02	14.04201	10	45	08.63	+11	23	12.1		033
1988	CA1		1988	02	14.94132	10	44	23.76	+11	31	10.0		033
1988	CA1		1988	02	15.01701	10	44	19.81	+11	31	51.2	19.3	033
1988	CA1		1988	02	15.96597	10	43	31.24	+11	40	19.6		033
1988	CA1		1988	02	16.09826	10	43	24.08	+11	41	33.3	V	033
1988	CB1	*	1988	02	14.94132	10	46	51.30	+10	37	38.6		033
1988	CB1		1988	02	15.01701	10	46	48.06	+10	37	58.6	18.7	033
1988	CB1		1988	02	15.96597	10	46	07.07	+10	42	17.5		033
1988	CF6		1988	02	10.92361	10	09	00.21	+04	31	54.2		033
1988	CF6		1988	02	11.02222	10	08	54.57	+04	32	12.6	16.9	033
1988	CM6	*	1988	02	10.92361	09	57	23.87	+03	22	39.1		033
1988	CM6		1988	02	11.02222	09	57	17.95	+03	22	52.5	19.8	033
1988	CN6	*	1988	02	10.92361	09	58	15.80	+03	53	23.0		033
1988	CN6		1988	02	11.02222	09	58	09.81	+03	53	41.3	19.2	033
1988	CO6	*	1988	02	10.92361	10	00	35.00	+04	49	51.5		033
1988	CO6		1988	02	11.02222	10	00	29.21	+04	50	21.2	15.7	033
1988	CP6	*	1988	02	10.92361	10	08	58.83	+04	10	56.0		033
1988	CP6		1988	02	11.02222	10	08	53.84	+04	11	38.1	19.3	033
7604	P-L		1988	01	12.87361	06	01	28.19	+25	16	06.1	18.0	033
7604	P-L		1988	01	12.92153	06	01	25.45	+25	16	10.0		033
29			1988	01	12.95556	07	42	21.45	+30	42	05.0	9.0	033
29			1988	01	12.98403	07	42	19.45	+30	42	07.6		033
241			1988	01	13.04271	10	26	45.09	+03	30	15.5	13.5	033
241			1988	01	14.07361	10	26	23.21	+03	30	06.0		033
241			1988	02	10.92361	10	09	51.89	+04	14	43.5		033
241			1988	02	11.02222	10	09	47.25	+04	15	01.8	12.5	033
279			1988	01	12.87361	06	09	23.98	+24	37	17.6	15.9	033
279			1988	01	12.92153	06	09	22.11	+24	37	18.7		033
296			1988	01	12.84861	05	29	46.50	+21	56	31.9	16.3	033
296			1988	01	12.89722	05	29	44.24	+21	56	34.2		033
349			1988	01	11.74132	04	03	31.47	+29	20	10.5	11.5	033
349			1988	01	11.79340	04	03	30.68	+29	20	05.9		033
357			1988	01	19.98160	10	46	14.42	+11	31	14.8		033
357			1988	01	20.00972	10	46	13.91	+11	31	25.2	14.3	033
357			1988	01	20.03889	10	46	13.20	+11	31	37.4		033
357			1988	01	20.08958	10	46	12.41	+11	31	54.9		033
357			1988	01	20.98889	10	45	55.51	+11	37	35.4		033
357			1988	01	21.01424	10	45	55.00	+11	37	45.0		033
357			1988	01	21.93542	10	45	36.63	+11	43	41.8		033
357			1988	01	21.99444	10	45	35.55	+11	44	02.6		033
357			1988	01	22.07778	10	45	33.68	+11	44	35.9		033
400			1988	01	13.76632	03	39	42.63	+32	33	57.0	16.6	033

400	1988	01	13.82674	03	39	42.03	+32	33	40.9		033
479	1988	01	19.98160	10	38	58.24	+10	29	19.6		033
479	1988	01	20.00972	10	38	57.52	+10	29	30.0	14.1	033
479	1988	01	20.03889	10	38	56.68	+10	29	40.8		033
479	1988	01	20.08958	10	38	55.54	+10	29	58.4		033
479	1988	01	20.98889	10	38	32.91	+10	35	26.1		033
479	1988	01	21.01424	10	38	32.26	+10	35	34.7		033
479	1988	01	21.93542	10	38	07.85	+10	41	18.9		033
479	1988	01	21.99444	10	38	06.34	+10	41	39.3		033
479	1988	01	22.07778	10	38	03.80	+10	42	12.6		033
539	1988	01	11.97986	10	14	41.03	+03	43	28.4		033
539	1988	01	13.04271	10	14	11.38	+03	43	06.6	15.5	033
575	1988	01	13.73924	02	02	27.43	+31	12	17.9	16.7	033
575	1988	01	13.79688	02	02	29.89	+31	12	11.8		033
1061	1988	02	13.98958	10	44	37.65	+11	19	43.1	V	033
1061	1988	02	14.02778	10	44	36.28	+11	19	53.8	V	033
1061	1988	02	14.04201	10	44	35.44	+11	19	59.0		033
1061	1988	02	14.94132	10	43	56.26	+11	24	22.8		033
1061	1988	02	14.95972	10	43	55.38	+11	24	28.5	V	033
1061	1988	02	15.00000	10	43	53.65	+11	24	39.9	V	033
1061	1988	02	15.01701	10	43	52.88	+11	24	45.3	17.3	033
1061	1988	02	15.96597	10	43	11.02	+11	29	24.3		033
1061	1988	02	16.09826	10	43	04.96	+11	30	04.2		033
1178	1988	01	11.97986	10	26	39.03	+03	37	58.7		033
1178	1988	01	13.04271	10	26	39.79	+03	39	00.7	15.8	033
1178	1988	01	14.07361	10	26	38.80	+03	40	13.3		033
1259	1988	02	13.94028	10	47	23.07	+11	28	21.7		033
1259	1988	02	13.97569	10	47	21.78	+11	28	30.0		033
1259	1988	02	13.98958	10	47	20.92	+11	28	34.7		033
1259	1988	02	14.02778	10	47	19.53	+11	28	45.9		033
1259	1988	02	14.04201	10	47	18.75	+11	28	50.4		033
1259	1988	02	14.94132	10	46	40.85	+11	33	12.8		033
1259	1988	02	14.95972	10	46	39.92	+11	33	19.0		033
1259	1988	02	15.00000	10	46	38.30	+11	33	30.0		033
1259	1988	02	15.01701	10	46	37.56	+11	33	34.6	14.9	033
1259	1988	02	15.96597	10	45	56.83	+11	38	13.1		033
1259	1988	02	16.09826	10	45	50.93	+11	38	52.2		033
1332	1988	02	13.94028	10	35	29.11	+11	19	32.2		033
1332	1988	02	13.97569	10	35	27.68	+11	19	39.8		033
1332	1988	02	13.98958	10	35	26.78	+11	19	44.1		033
1332	1988	02	14.02778	10	35	25.39	+11	19	52.6		033
1332	1988	02	14.04201	10	35	24.58	+11	19	57.1		033
1332	1988	02	14.94132	10	34	44.42	+11	23	40.2		033
1332	1988	02	14.95972	10	34	43.30	+11	23	45.8		033
1332	1988	02	15.00000	10	34	41.85	+11	23	53.4		033
1332	1988	02	15.01701	10	34	40.91	+11	23	59.1	15.8	033
1462	1988	01	12.87361	06	11	10.38	+24	43	41.4	17.0	033
1462	1988	01	12.92153	06	11	08.03	+24	43	41.9		033
1606	1988	01	11.97986	10	26	00.39	+02	25	36.1		033
1606	1988	01	13.04271	10	25	35.94	+02	27	08.7	18.2	033
1606	1988	01	14.07361	10	25	11.03	+02	28	49.3	W	033
1606	1988	02	10.92361	10	07	39.99	+04	05	08.2		033
1606	1988	02	11.02222	10	07	35.22	+04	05	37.6	17.7	033
1615	1988	01	12.84861	05	36	05.85	+21	08	53.3	15.6	033
1615	1988	01	12.89722	05	36	03.96	+21	08	54.7		033
1638	1988	01	12.87361	06	03	02.69	+23	03	01.0	17.5	033
1638	1988	01	12.92153	06	03	00.27	+23	03	01.0		033
1658	1988	01	12.84861	05	29	46.30	+22	31	41.5	16.9	033
1658	1988	01	12.89722	05	29	43.91	+22	31	46.9		033

1878		1988	01	12.84861	05	27	04.78	+20 37 38.3	16.6	033
1878		1988	01	12.89722	05	27	02.77	+20 37 37.6		033
1914		1988	01	11.91389	06	27	18.90	+20 27 44.0	17.1	033
1914		1988	01	11.95972	06	27	16.05	+20 27 51.3		033
1956		1988	01	12.84861	05	27	39.48	+21 22 37.8	17.3	033
1956		1988	01	12.89722	05	27	37.59	+21 22 37.7		033
2506		1988	01	11.91389	06	26	09.45	+20 22 41.8	16.9	033
2506		1988	01	11.95972	06	26	06.99	+20 22 45.0		033
2533		1988	01	12.84861	05	26	03.44	+20 57 35.6	16.1	033
2533		1988	01	12.89722	05	26	01.68	+20 57 34.7		033
2873		1988	01	12.87361	06	04	50.06	+23 07 49.0	17.9	033
2873		1988	01	12.92153	06	04	47.18	+23 07 54.5		033
3536		1988	01	19.98160	10	42	27.53	+11 53 10.0		033
3536		1988	01	20.00972	10	42	26.77	+11 53 11.8	18.0	033
3536		1988	01	20.98889	10	41	59.97	+11 53 47.7		033
3536		1988	01	21.01424	10	41	59.21	+11 53 48.0		033
3696		1988	01	11.88854	07	41	42.47	+26 26 14.3	18.4	033
3696		1988	01	11.93715	07	41	39.74	+26 26 14.6		033

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1981	UE10	1987	11	26.95208	03	55	52.02	+17 16 11.3		046
1981	UE10	1987	11	26.96632	03	55	51.31	+17 16 09.1		046
1981	WV1	1988	02	15.88539	09	14	46.71	+16 20 08.2		046
1981	WV1	1988	02	15.90021	09	14	45.92	+16 20 12.2		046
1981	WV1	1988	02	16.88212	09	13	56.22	+16 23 32.7		046
1981	WV1	1988	02	16.89624	09	13	55.55	+16 23 34.5		046
1983	TE1	1987	11	23.82811	02	33	22.80	+11 19 10.6		046
1983	TE1	1987	11	25.90292	02	32	04.70	+11 07 07.3		046
1983	TE1	1987	11	25.91744	02	32	04.09	+11 07 03.5		046
1984	DE	1988	01	09.78902	07	03	55.05	+28 30 19.9		046
1984	DE	1988	01	09.80325	07	03	54.00	+28 30 20.0		046
1984	DE	1988	01	10.81940	07	02	47.50	+28 28 41.7		046
1984	DE	1988	01	10.83363	07	02	46.51	+28 28 40.9		046
1984	DE	1988	01	12.87124	07	00	33.97	+28 25 07.2		046
1984	DE	1988	01	12.88576	07	00	33.28	+28 25 07.0		046
1984	FS	1988	02	15.84818	08	23	04.84	+14 33 26.8	16.1	046
1984	FS	1988	02	15.86230	08	23	04.26	+14 33 34.2		046
1984	FS	1988	02	16.84722	08	22	24.64	+14 43 45.2		046
1984	FS	1988	02	16.86134	08	22	23.98	+14 43 54.5		046
1984	HK1	1988	01	20.94138	08	25	42.77	+20 33 28.2		046
1984	HK1	1988	01	20.95550	08	25	42.08	+20 33 29.4		046
1985	JV1	1987	11	15.87622	03	31	37.46	+17 02 05.6		046
1985	JV1	1987	11	15.89045	03	31	36.46	+17 02 07.7		046
1985	JV1	1987	11	23.92157	03	22	39.79	+17 17 48.6		046
1985	JV1	1987	11	23.93569	03	22	38.79	+17 17 49.8		046
1985	JV1	1987	11	26.00656	03	20	22.74	+17 21 57.7		046
1985	JV1	1987	11	26.02103	03	20	21.72	+17 21 59.6		046
1985	JV1	1987	11	26.98889	03	19	18.86	+17 23 53.7		046
1985	JV1	1987	11	27.00312	03	19	18.13	+17 23 56.1		046
1986	TE	1988	01	09.82218	07	17	46.16	+19 40 31.7		046
1986	TE	1988	01	09.83641	07	17	45.19	+19 40 31.9		046
1986	TE	1988	01	10.85429	07	16	37.23	+19 40 38.2		046
1986	TE	1988	01	10.86853	07	16	36.41	+19 40 38.0		046
1986	VU	1988	02	15.92162	09	55	54.23	+13 24 28.6		046
1986	VU	1988	02	15.93574	09	55	53.29	+13 24 33.8		046

1987	SK11	*	1987	09	21.99579	00	35	03.91	+05	54	52.7	17.0	046
1987	SK11		1987	09	22.01021	00	35	03.24	+05	54	42.7		046
1987	UG		1987	11	15.83142	02	37	53.99	+14	14	10.5	16.6	046
1987	UG		1987	11	15.84549	02	37	53.46	+14	14	07.5		046
1987	UG		1987	11	23.82811	02	32	14.01	+13	36	54.2		046
1987	UG		1987	11	23.84225	02	32	13.47	+13	36	50.5		046
1987	UG		1987	11	25.90292	02	31	00.99	+13	28	43.9		046
1987	UG		1987	11	25.91744	02	31	00.62	+13	28	41.5		046
1987	VQ	*	1987	11	15.83142	02	35	15.17	+13	19	53.8	16.8	046
1987	VQ		1987	11	15.84549	02	35	14.35	+13	19	48.6		046
1987	VQ		1987	11	23.82811	02	28	28.78	+12	41	55.7		046
1987	VQ		1987	11	23.84225	02	28	28.11	+12	41	51.6		046
1987	VQ		1987	11	25.90292	02	26	56.62	+12	33	22.1		046
1987	VQ		1987	11	25.91744	02	26	56.12	+12	33	22.1		046
1987	VR	*	1987	11	15.83142	02	38	29.36	+12	14	24.2	16.6	046
1987	VR		1987	11	15.84549	02	38	28.69	+12	14	22.2		046
1987	VR		1987	11	23.82811	02	32	57.75	+11	26	20.4		046
1987	VR		1987	11	23.84225	02	32	57.07	+11	26	14.2		046
1987	VR		1987	11	25.90292	02	31	40.10	+11	14	52.8		046
1987	VR		1987	11	25.91744	02	31	39.69	+11	14	47.8		046
1987	VS	*	1987	11	15.83142	02	41	10.26	+12	22	56.5		046
1987	VS		1987	11	15.84549	02	41	09.70	+12	22	46.0		046
1987	VT	*	1987	11	15.83142	02	41	23.22	+11	07	33.3	16.8	046
1987	VT		1987	11	15.84549	02	41	22.23	+11	07	35.8		046
1987	VT		1987	11	23.82811	02	33	26.73	+11	32	11.1		046
1987	VT		1987	11	23.84225	02	33	25.85	+11	32	14.2		046
1987	VT		1987	11	25.90292	02	31	34.46	+11	39	10.0		046
1987	VT		1987	11	25.91744	02	31	33.68	+11	39	14.6		046
1987	VU	*	1987	11	15.83142	02	41	31.39	+10	19	26.4	16.6	046
1987	VU		1987	11	15.84549	02	41	30.62	+10	19	26.9		046
1987	VU		1987	11	23.82811	02	34	29.31	+10	32	35.8		046
1987	VU		1987	11	23.84225	02	34	28.58	+10	32	37.2		046
1987	VU		1987	11	25.90292	02	32	51.72	+10	37	02.9		046
1987	VU		1987	11	25.91744	02	32	51.19	+10	37	04.9		046
1987	VV	*	1987	11	15.83142	02	42	46.01	+13	29	14.2	16.8	046
1987	VV		1987	11	15.84549	02	42	45.38	+13	29	14.9		046
1987	VW	*	1987	11	15.87622	03	25	19.49	+18	01	46.8	16.7	046
1987	VW		1987	11	15.89045	03	25	18.44	+18	01	49.9		046
1987	VX	*	1987	11	15.87622	03	27	08.80	+16	28	13.1	16.8	046
1987	VX		1987	11	15.89045	03	27	08.10	+16	28	11.4		046
1987	VY	*	1987	11	15.87622	03	31	00.25	+17	10	45.5	16.8	046
1987	VY		1987	11	15.89045	03	30	59.29	+17	10	50.7		046
1987	VZ	*	1987	11	15.87622	03	33	29.10	+19	10	41.5	16.8	046
1987	VZ		1987	11	15.89045	03	33	28.09	+19	10	39.9		046
1987	VZ		1987	11	23.92157	03	24	37.56	+18	57	18.6	16.6	046
1987	VZ		1987	11	23.93569	03	24	36.56	+18	57	17.0		046
1987	VZ		1987	11	26.00656	03	22	25.37	+18	53	49.4		046
1987	VZ		1987	11	26.02103	03	22	24.52	+18	53	49.6		046
1987	VZ		1987	11	26.98889	03	21	24.37	+18	52	10.5		046
1987	VZ		1987	11	27.00312	03	21	23.57	+18	52	09.3		046
1987	VA1	*	1987	11	15.92205	03	04	02.17	+24	26	55.9	16.6	046
1987	VA1		1987	11	15.93819	03	04	01.19	+24	26	54.7		046
1987	VB1	*	1987	11	15.92205	03	04	14.62	+24	12	01.5	16.8	046
1987	VB1		1987	11	15.93819	03	04	13.76	+24	12	04.0		046
1987	VC1	*	1987	11	15.92205	03	05	21.79	+20	32	47.3	16.5	046
1987	VC1		1987	11	15.93819	03	05	20.94	+20	32	46.4		046
1987	VC1		1987	11	23.86278	02	57	30.40	+20	16	59.9		046
1987	VC1		1987	11	23.87690	02	57	29.60	+20	16	57.7		046
1987	VC1		1987	11	25.95899	02	55	34.21	+20	12	39.8		046

1987	VC1		1987	11	25.97288	02	55	33.36	+20	12	36.1		046
1987	VD1	*	1987	11	15.92205	03	09	22.07	+22	40	06.0	16.7	046
1987	VD1		1987	11	15.93819	03	09	20.94	+22	40	10.7		046
1987	WA		1987	11	15.87622	03	33	56.43	+17	43	59.1	16.7	046
1987	WA		1987	11	15.89045	03	33	55.45	+17	43	59.1		046
1987	WA		1987	11	23.92157	03	25	48.57	+17	38	52.1		046
1987	WA		1987	11	23.93569	03	25	47.52	+17	38	51.9		046
1987	WA		1987	11	26.00656	03	23	46.27	+17	37	38.9		046
1987	WA		1987	11	26.02103	03	23	45.53	+17	37	38.3		046
1987	WA		1987	11	26.98889	03	22	49.33	+17	37	03.9		046
1987	WA		1987	11	27.00312	03	22	48.71	+17	37	05.7		046
1987	WB		1987	11	15.87622	03	35	00.17	+18	41	36.3	16.7	046
1987	WB		1987	11	15.89045	03	34	59.40	+18	41	31.9		046
1987	WB		1987	11	23.92157	03	28	18.22	+17	56	16.1		046
1987	WB		1987	11	23.93569	03	28	17.45	+17	56	11.9		046
1987	WB		1987	11	26.00656	03	26	36.38	+17	44	34.4		046
1987	WB		1987	11	26.02103	03	26	35.61	+17	44	29.5		046
1987	WB		1987	11	26.98889	03	25	48.87	+17	39	08.8		046
1987	WB		1987	11	27.00312	03	25	48.13	+17	39	02.5		046
1987	WP		1987	11	26.95208	03	56	09.21	+15	11	09.2	16.7	046
1987	WP		1987	11	26.96632	03	56	08.30	+15	10	58.5		046
1987	WO1		1987	11	23.92157	03	22	44.63	+18	08	34.1	16.6	046
1987	WO1		1987	11	23.93569	03	22	44.21	+18	08	31.4		046
1987	WO1		1987	11	26.00656	03	20	51.25	+17	55	17.1		046
1987	WO1		1987	11	26.02103	03	20	50.30	+17	55	12.1		046
1987	WO1		1987	11	26.98889	03	19	58.88	+17	49	05.2		046
1987	WO1		1987	11	27.00312	03	19	58.18	+17	49	00.6		046
1987	WD4	*	1987	11	23.86278	02	56	27.47	+24	20	09.4	16.7	046
1987	WD4		1987	11	23.87690	02	56	26.75	+24	20	07.9		046
1987	WD4		1987	11	25.95899	02	54	32.67	+24	17	53.6		046
1987	WD4		1987	11	25.97288	02	54	32.09	+24	17	54.4		046
1987	WE4	*	1987	11	23.86278	02	56	50.96	+24	09	20.1	16.7	046
1987	WE4		1987	11	23.87690	02	56	50.22	+24	09	17.4		046
1987	WE4		1987	11	25.95899	02	55	05.37	+24	07	47.9		046
1987	WE4		1987	11	25.97288	02	55	04.90	+24	07	45.8		046
1987	WG4	*	1987	11	23.92157	03	29	01.88	+15	44	11.5	16.7	046
1987	WG4		1987	11	23.93569	03	29	01.10	+15	44	13.7		046
1987	WG4		1987	11	26.00656	03	26	41.67	+15	48	36.6		046
1987	WG4		1987	11	26.02103	03	26	40.80	+15	48	38.2		046
1987	WG4		1987	11	26.98889	03	25	36.31	+15	50	45.6		046
1987	WG4		1987	11	27.00312	03	25	35.62	+15	50	48.1		046
1987	WH4	*	1987	11	26.00656	03	26	16.88	+18	34	25.6	17.0	046
1987	WH4		1987	11	26.02103	03	26	16.23	+18	34	19.6		046
1987	WH4		1987	11	26.98889	03	25	21.06	+18	32	21.9		046
1987	WH4		1987	11	27.00312	03	25	20.39	+18	32	18.9		046
1987	WJ4	*	1987	11	26.00656	03	28	09.58	+16	24	11.5	17.0	046
1987	WJ4		1987	11	26.02103	03	28	09.02	+16	24	09.7		046
1987	WK4	*	1987	11	26.00656	03	29	33.44	+17	40	06.7	16.9	046
1987	WK4		1987	11	26.02103	03	29	32.26	+17	40	09.7		046
1987	WL4	*	1987	11	26.00656	03	31	38.43	+17	49	54.2	16.3	046
1987	WL4		1987	11	26.02103	03	31	37.77	+17	49	48.6		046
1987	WM4	*	1987	11	26.95208	03	50	41.60	+15	22	40.6		046
1987	WM4		1987	11	26.96632	03	50	41.52	+15	22	45.6		046
1987	WN4	*	1987	11	26.95208	03	52	38.89	+15	07	03.0	16.7	046
1987	WN4		1987	11	26.96632	03	52	38.45	+15	07	03.4		046
1987	WO4	*	1987	11	26.95208	03	56	55.09	+16	08	25.0	16.8	046
1987	WO4		1987	11	26.96632	03	56	54.33	+16	08	23.1		046
1987	WP4	*	1987	11	26.95208	03	57	29.92	+17	43	59.9	17.0	046
1987	WP4		1987	11	26.96632	03	57	29.16	+17	44	08.3		046

1987	WQ4	*	1987	11	26.95208	03	58	56.52	+17	25	14.0	16.9	046
1987	WQ4		1987	11	26.96632	03	58	55.43	+17	25	20.4		046
1987	WR4	*	1987	11	26.95208	03	59	34.26	+16	04	20.2	16.7	046
1987	WR4		1987	11	26.96632	03	59	33.11	+16	04	24.6		046
1987	WS4	*	1987	11	26.95208	04	04	45.29	+15	26	58.0	16.6	046
1987	WS4		1987	11	26.96632	04	04	44.53	+15	26	52.1		046
1987	WT4	*	1987	11	26.98889	03	18	25.77	+17	51	43.9	16.9	046
1987	WT4		1987	11	27.00312	03	18	24.88	+17	51	49.6		046
1987	WU4	*	1987	11	26.98889	03	21	23.31	+15	11	20.1	17.0	046
1987	WU4		1987	11	27.00312	03	21	22.61	+15	11	21.0		046
1988	AE1	*	1988	01	09.78902	06	57	50.94	+27	11	36.8	16.8	046
1988	AE1		1988	01	09.80325	06	57	50.02	+27	11	37.8		046
1988	AE1		1988	01	10.81940	06	56	37.87	+27	11	20.4		046
1988	AE1		1988	01	10.83363	06	56	36.81	+27	11	20.9		046
1988	AE1		1988	01	12.87124	06	54	14.70	+27	10	24.2		046
1988	AE1		1988	01	12.88576	06	54	13.54	+27	10	25.3		046
1988	AF1	*	1988	01	09.78902	07	08	01.85	+28	08	30.0	16.4	046
1988	AF1		1988	01	09.80325	07	08	00.91	+28	08	32.4		046
1988	AF1		1988	01	10.81940	07	07	02.05	+28	11	11.7		046
1988	AF1		1988	01	10.83363	07	07	01.23	+28	11	15.9		046
1988	AF1		1988	01	12.87124	07	05	04.78	+28	16	10.5		046
1988	AF1		1988	01	12.88576	07	05	03.95	+28	16	12.6		046
1988	AG1	*	1988	01	09.78902	07	08	32.81	+28	29	54.8	16.9	046
1988	AG1		1988	01	09.80325	07	08	32.10	+28	29	57.3		046
1988	AH1	*	1988	01	09.78902	07	08	54.09	+29	50	30.7	16.9	046
1988	AH1		1988	01	09.80325	07	08	53.43	+29	50	30.9		046
1988	AJ1	*	1988	01	10.89162	08	07	35.73	+24	58	07.4	16.7	046
1988	AJ1		1988	01	10.90586	08	07	34.77	+24	58	08.0		046
1988	AJ1		1988	01	12.90741	08	05	30.49	+24	59	43.6		046
1988	AJ1		1988	01	12.92170	08	05	29.50	+24	59	43.8		046
1988	AJ1		1988	01	13.96127	08	04	24.25	+25	00	29.5		046
1988	AJ1		1988	01	13.97667	08	04	23.40	+25	00	29.5		046
1988	AJ1		1988	01	20.87384	07	57	07.97	+25	03	39.4		046
1988	AJ1		1988	01	20.88796	07	57	06.86	+25	03	40.8	17.0	046
1988	AK1	*	1988	01	10.89162	08	14	04.92	+26	18	19.0	16.8	046
1988	AK1		1988	01	10.90586	08	14	04.02	+26	18	19.3		046
1988	AK1		1988	01	12.90741	08	11	51.23	+26	23	39.5		046
1988	AK1		1988	01	12.92170	08	11	50.27	+26	23	42.7		046
1988	AK1		1988	01	13.96127	08	10	40.32	+26	26	18.4		046
1988	AK1		1988	01	13.97667	08	10	39.32	+26	26	19.6		046
1988	AK1		1988	01	20.87384	08	02	44.01	+26	41	26.2		046
1988	AK1		1988	01	20.88796	08	02	43.19	+26	41	26.7		046
1988	AL1	*	1988	01	10.89162	08	16	10.48	+24	10	14.9	16.6	046
1988	AL1		1988	01	10.90586	08	16	09.60	+24	10	20.3		046
1988	AL1		1988	01	12.90741	08	14	19.79	+24	22	46.8		046
1988	AL1		1988	01	12.92170	08	14	19.02	+24	22	51.9		046
1988	AL1		1988	01	13.96127	08	13	20.40	+24	29	18.1		046
1988	AL1		1988	01	13.97667	08	13	19.65	+24	29	22.3		046
1988	AL1		1988	01	20.87384	08	06	38.26	+25	10	26.3		046
1988	AL1		1988	01	20.88796	08	06	37.41	+25	10	32.4		046
1988	AL1		1988	01	20.90671	08	06	36.18	+25	10	38.7		046
1988	AL1		1988	01	20.92083	08	06	35.29	+25	10	44.9		046
1988	AM1	*	1988	01	10.89162	08	19	56.31	+24	31	22.6	16.5	046
1988	AM1		1988	01	10.90586	08	19	55.34	+24	31	21.9		046
1988	AM1		1988	01	12.90741	08	17	35.47	+24	29	16.0		046
1988	AM1		1988	01	12.92170	08	17	34.37	+24	29	14.6		046
1988	AM1		1988	01	13.96127	08	16	19.87	+24	28	02.6		046
1988	AM1		1988	01	13.97667	08	16	18.76	+24	27	59.8		046
1988	AM1		1988	01	14.92918	08	15	09.99	+24	26	50.4		046

1988	AM1		1988	01	14.94330	08	15	09.03	+24	26	49.3	046
1988	AM1		1988	01	15.86076	08	14	02.49	+24	25	35.9	046
1988	AM1		1988	01	15.87500	08	14	01.38	+24	25	35.5	046
1988	AM1		1988	01	16.86840	08	12	48.67	+24	24	13.4	046
1988	AM1		1988	01	16.88247	08	12	47.41	+24	24	12.4	046
1988	AM1		1988	01	20.87384	08	07	52.09	+24	17	41.9	046
1988	AM1		1988	01	20.88796	08	07	51.05	+24	17	41.7	046
1988	AM1		1988	01	20.90671	08	07	49.58	+24	17	36.5	046
1988	AM1		1988	01	20.92083	08	07	48.47	+24	17	35.2	046
1988	AN1	*	1988	01	12.83681	07	31	05.03	+19	18	48.4	16.8 046
1988	AN1		1988	01	12.85098	07	31	04.26	+19	18	54.2	046
1988	AN1		1988	01	13.88940	07	30	00.39	+19	26	34.5	046
1988	AN1		1988	01	13.90352	07	29	59.49	+19	26	41.2	046
1988	AN1		1988	01	14.86083	07	29	00.54	+19	33	46.2	046
1988	AN1		1988	01	14.87499	07	28	59.80	+19	33	52.2	046
1988	AO1	*	1988	01	12.90741	08	18	27.68	+24	20	34.5	16.7 046
1988	AO1		1988	01	12.92170	08	18	26.95	+24	20	38.4	046
1988	AO1		1988	01	13.96127	08	17	28.07	+24	26	58.0	046
1988	AO1		1988	01	13.97667	08	17	26.93	+24	27	04.8	046
1988	AO1		1988	01	14.92918	08	16	32.44	+24	32	49.4	16.5 046
1988	AO1		1988	01	14.94330	08	16	31.59	+24	32	53.6	046
1988	AO1		1988	01	15.86076	08	15	38.45	+24	38	26.0	046
1988	AO1		1988	01	15.87500	08	15	37.65	+24	38	31.1	046
1988	AO1		1988	01	16.86840	08	14	39.79	+24	44	26.2	046
1988	AO1		1988	01	16.88247	08	14	38.62	+24	44	32.2	046
1988	AO1		1988	01	20.90671	08	10	39.24	+25	07	48.6	046
1988	AO1		1988	01	20.92083	08	10	38.27	+25	07	54.1	046
1988	AP1	*	1988	01	13.88940	07	33	01.94	+20	59	32.8	046
1988	AP1		1988	01	13.90352	07	33	01.57	+20	59	36.8	046
1988	AQ1	*	1988	01	13.92418	07	48	09.89	+21	37	07.4	16.8 046
1988	AQ1		1988	01	13.93836	07	48	08.79	+21	37	04.4	046
1988	AR1	*	1988	01	13.92418	07	50	39.73	+22	29	49.9	16.8 046
1988	AR1		1988	01	13.93836	07	50	38.76	+22	29	55.4	046
1988	AR1		1988	01	14.89619	07	49	36.09	+22	35	46.9	046
1988	AR1		1988	01	14.91031	07	49	35.15	+22	35	55.1	046
1988	AR1		1988	01	15.89358	07	48	30.62	+22	41	55.9	046
1988	AR1		1988	01	15.90781	07	48	29.61	+22	42	00.8	046
1988	AS1	*	1988	01	13.99791	08	30	32.40	+20	03	10.5	16.6 046
1988	AS1		1988	01	14.01203	08	30	31.67	+20	03	18.7	046
1988	AS1		1988	01	14.96382	08	29	42.44	+20	12	49.4	046
1988	AS1		1988	01	14.97794	08	29	41.69	+20	12	57.6	046
1988	AS1		1988	01	15.92708	08	28	51.16	+20	22	30.0	046
1988	AS1		1988	01	15.94132	08	28	50.39	+20	22	39.3	046
1988	AT1	*	1988	01	13.99791	08	32	54.51	+19	21	22.8	16.5 046
1988	AT1		1988	01	14.01203	08	32	53.89	+19	21	24.3	046
1988	AT1		1988	01	14.96382	08	31	55.68	+19	23	25.3	046
1988	AT1		1988	01	14.97794	08	31	54.96	+19	23	28.0	046
1988	AT1		1988	01	15.92708	08	30	55.89	+19	25	29.6	046
1988	AT1		1988	01	15.94132	08	30	54.99	+19	25	31.5	046
1988	AT1		1988	01	20.94138	08	25	31.09	+19	36	32.3	17.0 046
1988	AT1		1988	01	20.95550	08	25	30.08	+19	36	33.6	046
1988	AU1	*	1988	01	13.99791	08	36	51.90	+21	13	35.2	16.6 046
1988	AU1		1988	01	14.01203	08	36	51.20	+21	13	37.1	046
1988	AU1		1988	01	14.96382	08	35	58.13	+21	15	41.3	046
1988	AU1		1988	01	14.97794	08	35	57.49	+21	15	45.0	046
1988	AU1		1988	01	15.92708	08	35	03.31	+21	17	46.5	046
1988	AU1		1988	01	15.94132	08	35	02.55	+21	17	48.8	046
1988	AU1		1988	01	20.94138	08	30	04.34	+21	28	38.5	046
1988	AU1		1988	01	20.95550	08	30	03.54	+21	28	40.3	046

1988	AV1	*	1988	01	14.92918	08	17	03.02	+22	04	48.1	046
1988	AV1		1988	01	14.94330	08	17	02.40	+22	04	56.6	046
1988	AV1		1988	01	15.86076	08	16	15.66	+22	13	29.2	046
1988	AV1		1988	01	15.87500	08	16	14.77	+22	13	37.2	046
1988	AV1		1988	01	16.86840	08	15	23.42	+22	22	54.6	046
1988	AV1		1988	01	16.88247	08	15	22.53	+22	23	00.3	046
1988	AV1		1988	01	20.90671	08	11	49.30	+22	59	53.0	046
1988	AV1		1988	01	20.92083	08	11	48.39	+23	00	00.1	046
1988	AW1	*	1988	01	14.92918	08	17	06.36	+24	18	16.7	16.7 046
1988	AW1		1988	01	14.94330	08	17	05.67	+24	18	16.7	046
1988	AW1		1988	01	15.86076	08	16	04.15	+24	17	56.0	046
1988	AW1		1988	01	15.87500	08	16	03.27	+24	17	55.9	046
1988	AW1		1988	01	16.86840	08	14	56.48	+24	17	31.1	046
1988	AW1		1988	01	16.88247	08	14	55.45	+24	17	33.5	046
1988	AW1		1988	01	20.90671	08	10	22.14	+24	15	11.9	046
1988	AW1		1988	01	20.92083	08	10	21.12	+24	15	12.3	046
1988	AX1	*	1988	01	14.92918	08	19	32.27	+23	21	25.6	046
1988	AX1		1988	01	14.94330	08	19	31.35	+23	21	22.2	046
1988	AX1		1988	01	15.86076	08	18	27.50	+23	17	45.4	046
1988	AX1		1988	01	15.87500	08	18	26.50	+23	17	42.6	046
1988	AX1		1988	01	16.86840	08	17	16.62	+23	13	45.2	046
1988	AX1		1988	01	16.88247	08	17	15.63	+23	13	42.7	046
1988	AX1		1988	01	20.90671	08	12	29.19	+22	56	56.9	046
1988	AX1		1988	01	20.92083	08	12	28.08	+22	56	53.6	046
1988	AY1	*	1988	01	14.92918	08	19	55.20	+23	48	59.8	16.9 046
1988	AY1		1988	01	14.94330	08	19	54.34	+23	49	05.0	046
1988	AZ1	*	1988	01	14.92918	08	20	54.98	+24	31	54.9	17.0 046
1988	AZ1		1988	01	14.94330	08	20	54.02	+24	32	11.1	046
1988	AA2	*	1988	01	14.92918	08	21	29.46	+24	15	35.3	16.6 046
1988	AA2		1988	01	14.94330	08	21	28.42	+24	15	43.0	046
1988	AA2		1988	01	15.86076	08	20	33.49	+24	22	37.9	046
1988	AA2		1988	01	15.87500	08	20	32.50	+24	22	45.6	046
1988	AA2		1988	01	16.86840	08	19	32.12	+24	30	09.4	046
1988	AA2		1988	01	16.88247	08	19	31.17	+24	30	16.3	046
1988	AA2		1988	01	20.90671	08	15	20.43	+24	59	26.2	046
1988	AA2		1988	01	20.92083	08	15	19.48	+24	59	33.2	046
1988	AB2	*	1988	01	14.92918	08	26	40.63	+21	37	17.8	17.0 046
1988	AB2		1988	01	14.94330	08	26	39.67	+21	37	25.6	046
1988	BG		1988	01	13.92418	07	58	07.49	+19	40	54.3	16.8 046
1988	BG		1988	01	13.93836	07	58	06.42	+19	40	51.2	046
1988	BG		1988	01	14.89619	07	57	00.81	+19	37	43.6	046
1988	BG		1988	01	14.91031	07	57	00.03	+19	37	41.8	046
1988	BG		1988	01	15.89358	07	55	52.25	+19	34	30.8	046
1988	BG		1988	01	15.90781	07	55	51.40	+19	34	30.5	046
1988	BP2	*	1988	01	20.83987	07	44	27.48	+22	26	38.6	046
1988	BP2		1988	01	20.85399	07	44	26.66	+22	26	43.1	046
1988	BQ2	*	1988	01	20.83987	07	48	48.73	+19	52	10.0	16.9 046
1988	BQ2		1988	01	20.85399	07	48	47.66	+19	52	15.8	046
1988	BR2	*	1988	01	20.87384	08	00	34.99	+25	18	57.4	16.8 046
1988	BR2		1988	01	20.88796	08	00	34.28	+25	19	00.5	046
1988	BS2	*	1988	01	20.87384	08	06	37.67	+25	10	30.1	16.9 046
1988	BS2		1988	01	20.88796	08	06	36.86	+25	10	32.3	046
1988	BS2		1988	01	20.90671	08	06	36.49	+25	10	36.3	046
1988	BS2		1988	01	20.92083	08	06	35.74	+25	10	40.3	046
1988	BT2	*	1988	01	20.90671	08	07	34.79	+25	10	10.2	16.8 046
1988	BT2		1988	01	20.92083	08	07	33.78	+25	10	21.2	046
1988	BU2	*	1988	01	20.90671	08	08	00.97	+25	01	31.3	17.1 046
1988	BU2		1988	01	20.92083	08	07	59.83	+25	01	34.3	046
1988	BV2	*	1988	01	20.90671	08	10	44.24	+23	40	23.1	16.7 046

1988	BV2		1988	01	20.92083	08	10	43.75	+23	40	33.3		046
1988	BW2	*	1988	01	20.90671	08	15	24.81	+23	09	25.3	17.0	046
1988	BW2		1988	01	20.92083	08	15	23.89	+23	09	30.7		046
1988	CF1		1988	02	15.88539	09	08	30.66	+17	22	58.8	16.5	046
1988	CF1		1988	02	15.90021	09	08	30.08	+17	23	01.1		046
1988	CF1		1988	02	16.88212	09	07	43.78	+17	27	03.9		046
1988	CF1		1988	02	16.89624	09	07	43.10	+17	27	06.3		046
1988	CQ6	*	1988	02	15.84818	08	21	04.65	+17	07	38.0		046
1988	CQ6		1988	02	15.86230	08	21	03.94	+17	07	48.8		046
1988	CR6	*	1988	02	15.84818	08	21	56.56	+13	52	12.8	17.0	046
1988	CR6		1988	02	15.86230	08	21	55.86	+13	52	14.9		046
1988	CR6		1988	02	16.84722	08	21	05.86	+13	55	55.4		046
1988	CR6		1988	02	16.86134	08	21	05.16	+13	55	57.6		046
1988	CS6	*	1988	02	15.88539	09	11	49.34	+16	18	30.4	17.1	046
1988	CS6		1988	02	15.90021	09	11	48.38	+16	18	34.4		046
1988	CT6	*	1988	02	15.88539	09	12	56.55	+14	56	36.2	16.9	046
1988	CT6		1988	02	15.90021	09	12	55.81	+14	56	40.4		046
1988	CT6		1988	02	16.88212	09	12	07.97	+15	00	39.4		046
1988	CT6		1988	02	16.89624	09	12	07.17	+15	00	42.1		046
1988	CU6	*	1988	02	15.88539	09	13	48.14	+17	05	46.4		046
1988	CU6		1988	02	15.90021	09	13	47.52	+17	05	58.2		046
1988	CV6	*	1988	02	15.92162	09	52	52.25	+14	09	01.8	17.1	046
1988	CV6		1988	02	15.93574	09	52	51.32	+14	09	06.1		046
1988	CW6	*	1988	02	15.92162	09	53	18.88	+12	56	06.2	17.2	046
1988	CW6		1988	02	15.93574	09	53	18.00	+12	56	17.0		046
1988	CX6	*	1988	02	15.92162	09	55	46.73	+13	14	50.8	17.3	046
1988	CX6		1988	02	15.93574	09	55	45.97	+13	14	56.8		046
1988	CY6	*	1988	02	15.92162	10	01	28.75	+14	23	32.5	16.5	046
1988	CY6		1988	02	15.93574	10	01	27.95	+14	23	37.5		046
4			1988	01	14.92918	08	23	30.37	+22	38	54.8		046
4			1988	01	14.94330	08	23	29.43	+22	38	59.0		046
4			1988	01	15.86076	08	22	33.40	+22	45	08.8		046
4			1988	01	15.87500	08	22	32.44	+22	45	10.4		046
64			1988	01	13.99791	08	31	59.32	+19	13	33.9		046
64			1988	01	14.96382	08	31	07.26	+19	16	02.8		046
64			1988	01	14.97794	08	31	06.45	+19	16	04.9		046
64			1988	01	15.92708	08	30	14.52	+19	18	30.7		046
64			1988	01	15.94132	08	30	13.69	+19	18	32.8		046
141			1988	02	15.88539	09	07	07.75	+16	36	12.9		046
141			1988	02	15.90021	09	07	06.83	+16	36	13.6		046
141			1988	02	16.88212	09	06	08.65	+16	36	48.4		046
141			1988	02	16.89624	09	06	07.82	+16	36	48.9		046
271			1988	01	14.92918	08	16	35.59	+23	00	07.2		046
271			1988	01	14.94330	08	16	34.89	+23	00	09.6		046
271			1988	01	15.86076	08	15	44.76	+23	02	07.4		046
271			1988	01	15.87500	08	15	43.98	+23	02	09.3		046
271			1988	01	16.86840	08	14	49.05	+23	04	17.7		046
271			1988	01	16.88247	08	14	48.27	+23	04	19.5		046
271			1988	01	20.90671	08	11	03.59	+23	12	30.2		046
271			1988	01	20.92083	08	11	02.76	+23	12	31.9		046
294			1988	02	15.88539	09	07	11.73	+16	45	16.5	16.6	046
294			1988	02	15.90021	09	07	11.07	+16	45	19.8		046
294			1988	02	16.88212	09	06	28.27	+16	49	24.2		046
294			1988	02	16.89624	09	06	27.63	+16	49	28.1		046
412			1988	01	10.89162	08	07	01.59	+23	50	46.1		046
412			1988	01	10.90586	08	07	00.83	+23	50	52.8		046
412			1988	01	12.90741	08	05	10.60	+24	06	28.7		046
412			1988	01	12.92170	08	05	09.82	+24	06	35.4		046
412			1988	01	13.96127	08	04	11.48	+24	14	40.3		046

412	1988	01	13.97667	08	04	10.57	+24	14	47.9	046
412	1988	01	20.87384	07	57	34.17	+25	07	09.2	046
412	1988	01	20.88796	07	57	33.35	+25	07	15.1	046
435	1988	01	20.90671	08	07	39.78	+23	09	52.8	046
435	1988	01	20.92083	08	07	38.96	+23	09	54.3	046
447	1987	11	26.98889	03	13	50.57	+15	48	54.1	046
447	1987	11	27.00312	03	13	49.92	+15	48	54.1	046
465	1988	01	13.92418	07	53	22.81	+21	30	18.8	046
465	1988	01	13.93836	07	53	22.01	+21	30	19.5	046
465	1988	01	14.89619	07	52	29.56	+21	31	31.7	046
465	1988	01	14.91031	07	52	28.72	+21	31	33.5	046
465	1988	01	15.89358	07	51	34.61	+21	32	48.7	046
465	1988	01	15.90781	07	51	33.84	+21	32	49.4	046
465	1988	01	20.83987	07	47	00.45	+21	38	42.9	046
465	1988	01	20.85399	07	46	59.66	+21	38	44.0	046
615	1987	11	11.83993	00	54	46.36	+06	50	46.6	046
615	1987	11	11.85104	00	54	45.91	+06	50	44.9	046
615	1987	11	15.79392	00	52	54.14	+06	41	36.9	046
615	1987	11	15.80538	00	52	53.85	+06	41	34.9	046
710	1988	01	12.83681	07	32	58.00	+20	32	43.6	046
710	1988	01	12.85098	07	32	57.35	+20	32	45.0	046
710	1988	01	13.88940	07	32	03.48	+20	35	06.7	046
710	1988	01	13.90352	07	32	02.74	+20	35	08.5	046
710	1988	01	14.86083	07	31	13.24	+20	37	17.7	046
710	1988	01	14.87499	07	31	12.46	+20	37	18.9	046
761	1988	01	14.92918	08	17	20.20	+22	58	04.5	046
761	1988	01	14.94330	08	17	19.45	+22	58	08.2	046
761	1988	01	15.86076	08	16	29.23	+23	00	53.1	046
761	1988	01	15.87500	08	16	28.41	+23	00	55.9	046
761	1988	01	16.86840	08	15	33.39	+23	03	55.8	046
761	1988	01	16.88247	08	15	32.55	+23	03	58.4	046
761	1988	01	20.90671	08	11	46.69	+23	15	40.4	046
761	1988	01	20.92083	08	11	45.83	+23	15	42.8	046
943	1988	01	14.92918	08	24	40.05	+21	21	41.1	046
943	1988	01	14.94330	08	24	39.43	+21	21	48.1	046
943	1988	01	15.86076	08	23	56.34	+21	29	32.9	046
943	1988	01	15.87500	08	23	55.67	+21	29	40.1	046
943	1988	01	16.86840	08	23	08.13	+21	38	07.1	046
943	1988	01	16.88247	08	23	07.52	+21	38	14.6	046
996	1988	02	15.92162	09	55	02.65	+13	04	53.8	046
996	1988	02	15.93574	09	55	01.90	+13	04	57.8	046
1289	1987	11	15.87622	03	31	52.91	+17	26	06.8	046
1289	1987	11	15.89045	03	31	52.17	+17	26	04.3	046
1289	1987	11	23.92157	03	24	44.15	+16	57	36.5	046
1289	1987	11	23.93569	03	24	43.46	+16	57	34.4	046
1289	1987	11	26.98889	03	22	06.33	+16	47	04.7	046
1289	1987	11	27.00312	03	22	05.61	+16	47	02.8	046
1305	1987	11	15.83142	02	41	19.98	+14	38	40.1	046
1305	1987	11	15.84549	02	41	19.29	+14	38	37.1	046
1305	1987	11	25.90292	02	33	42.77	+14	09	49.1	046
1305	1987	11	25.91744	02	33	42.19	+14	09	46.6	046
1358	1988	01	14.92918	08	20	41.93	+22	51	17.6	16.7 046
1358	1988	01	14.94330	08	20	41.12	+22	51	19.2	046
1358	1988	01	15.86076	08	19	45.10	+22	54	28.0	046
1358	1988	01	15.87500	08	19	44.04	+22	54	31.9	046
1358	1988	01	16.86840	08	18	42.75	+22	57	55.6	046
1358	1988	01	16.88247	08	18	41.67	+22	57	59.2	046
1358	1988	01	20.90671	08	14	28.99	+23	11	18.8	046
1358	1988	01	20.92083	08	14	28.08	+23	11	21.7	046

1382	1988	02	15.92162	09	59	44.46	+13	35	17.9	046
1382	1988	02	15.93574	09	59	43.53	+13	35	21.8	046
1576	1987	11	15.87622	03	33	20.63	+17	43	22.0	046
1576	1987	11	15.89045	03	33	19.81	+17	43	19.2	046
1576	1987	11	23.92157	03	26	34.83	+17	18	15.6	046
1576	1987	11	23.93569	03	26	34.13	+17	18	12.9	046
1576	1987	11	26.00656	03	24	52.80	+17	11	57.8	046
1576	1987	11	26.02103	03	24	52.03	+17	11	55.1	046
1576	1987	11	26.98889	03	24	05.56	+17	09	03.0	046
1576	1987	11	27.00312	03	24	04.83	+17	09	00.6	046
1581	1988	01	13.99791	08	28	29.50	+20	08	54.9	046
1581	1988	01	14.01203	08	28	28.85	+20	08	57.6	046
1581	1988	01	14.96382	08	27	43.28	+20	12	23.9	046
1581	1988	01	14.97794	08	27	42.23	+20	12	27.5	046
1581	1988	01	15.92708	08	26	56.35	+20	15	51.1	046
1581	1988	01	15.94132	08	26	55.59	+20	15	54.9	046
1581	1988	01	20.94138	08	22	45.19	+20	34	05.0	046
1581	1988	01	20.95550	08	22	44.44	+20	34	08.0	046
1590	1987	11	15.87622	03	29	23.16	+17	58	06.2	046
1590	1987	11	15.89045	03	29	22.20	+17	58	01.0	046
1590	1987	11	23.92157	03	20	40.20	+17	11	33.5	046
1590	1987	11	23.93569	03	20	39.35	+17	11	28.4	046
1590	1987	11	26.98889	03	17	30.74	+16	54	19.6	046
1590	1987	11	27.00312	03	17	29.75	+16	54	14.7	046
1601	1988	01	14.92918	08	18	52.63	+25	25	35.1	046
1601	1988	01	14.94330	08	18	51.65	+25	25	39.5	046
1601	1988	01	15.86076	08	17	49.41	+25	30	45.3	046
1601	1988	01	15.87500	08	17	48.46	+25	30	51.2	046
1601	1988	01	16.86840	08	16	40.69	+25	36	14.7	046
1601	1988	01	16.88247	08	16	39.48	+25	36	20.4	046
1601	1988	01	20.90671	08	11	58.50	+25	57	29.9	046
1601	1988	01	20.92083	08	11	57.39	+25	57	35.9	046
1610	1987	11	15.92205	03	13	01.15	+21	53	13.9	046
1610	1987	11	15.93819	03	13	00.00	+21	53	10.8	046
1610	1987	11	23.86278	03	04	56.19	+21	27	04.6	046
1610	1987	11	23.87690	03	04	55.35	+21	27	01.9	046
1610	1987	11	25.95899	03	03	00.37	+21	19	57.1	046
1610	1987	11	25.97288	03	02	59.67	+21	19	53.7	046
1643	1988	01	12.83681	07	31	40.93	+21	26	47.6	046
1643	1988	01	12.85098	07	31	40.07	+21	26	49.7	046
1643	1988	01	13.88940	07	30	30.23	+21	27	41.6	046
1643	1988	01	13.90352	07	30	29.29	+21	27	41.7	046
1643	1988	01	14.86083	07	29	25.21	+21	28	28.6	046
1643	1988	01	14.87499	07	29	24.30	+21	28	28.3	046
1800	1988	01	12.83681	07	30	06.04	+19	45	08.3	046
1800	1988	01	12.85098	07	30	05.21	+19	45	11.5	046
1800	1988	01	13.88940	07	28	56.78	+19	50	02.2	046
1800	1988	01	13.90352	07	28	55.89	+19	50	05.6	046
1800	1988	01	14.86083	07	27	53.20	+19	54	30.8	046
1800	1988	01	14.87499	07	27	52.56	+19	54	34.1	046
1880	1988	01	13.99791	08	28	17.47	+19	36	09.5	046
1880	1988	01	14.01203	08	28	16.94	+19	36	14.2	046
1880	1988	01	14.96382	08	27	25.57	+19	40	41.0	046
1880	1988	01	14.97794	08	27	24.71	+19	40	46.2	046
1880	1988	01	15.92708	08	26	33.09	+19	45	13.2	046
1880	1988	01	15.94132	08	26	32.19	+19	45	17.7	046
1880	1988	01	20.94138	08	21	52.99	+20	08	55.8	046
1880	1988	01	20.95550	08	21	52.24	+20	08	58.4	046
2095	1988	02	15.88539	09	11	15.01	+17	35	55.5	046

2095	1988	02	15.90021	09	11	14.12	+17	35	58.3		046
2140	1988	01	09.82218	07	20	59.19	+19	32	28.8		046
2140	1988	01	09.83641	07	20	58.40	+19	32	29.2		046
2140	1988	01	10.85429	07	20	01.11	+19	32	14.9		046
2140	1988	01	10.86853	07	20	00.24	+19	32	14.5		046
2142	1988	01	12.83681	07	33	32.52	+21	01	47.7		046
2142	1988	01	12.85098	07	33	31.95	+21	01	49.8		046
2175	1987	11	15.87622	03	24	29.85	+17	05	59.6		046
2175	1987	11	15.89045	03	24	28.97	+17	05	53.8		046
2220	1988	01	20.90671	08	10	50.36	+21	41	07.2	16.7	046
2220	1988	01	20.92083	08	10	49.40	+21	41	11.2		046
2252	1988	01	10.89162	08	16	57.17	+25	48	26.3		046
2252	1988	01	10.90586	08	16	56.32	+25	48	28.8		046
2252	1988	01	12.90741	08	14	54.63	+25	54	06.0		046
2252	1988	01	12.92170	08	14	53.63	+25	54	07.8		046
2252	1988	01	13.96127	08	13	49.23	+25	56	57.6		046
2252	1988	01	13.97667	08	13	48.31	+25	56	59.5		046
2252	1988	01	20.87384	08	06	31.25	+26	13	38.3		046
2252	1988	01	20.88796	08	06	30.30	+26	13	40.8		046
2371	1988	01	09.82218	07	14	54.12	+19	55	11.2		046
2371	1988	01	09.83641	07	14	53.02	+19	55	12.8		046
2371	1988	01	10.85429	07	13	47.27	+19	56	43.1		046
2371	1988	01	10.86853	07	13	46.30	+19	56	44.6		046
2444	1988	01	09.82218	07	20	03.87	+20	57	58.5		046
2444	1988	01	09.83641	07	20	02.89	+20	57	54.6		046
2444	1988	01	10.85429	07	18	54.11	+20	52	52.2		046
2444	1988	01	10.86853	07	18	53.16	+20	52	47.6		046
2455	1988	01	13.99791	08	25	20.86	+19	26	40.3		046
2455	1988	01	14.01203	08	25	20.03	+19	26	40.5		046
2455	1988	01	14.97794	08	24	22.72	+19	26	59.8		046
2455	1988	01	15.92708	08	23	25.87	+19	27	18.5		046
2455	1988	01	15.94132	08	23	24.92	+19	27	18.9		046
2465	1988	01	12.83681	07	34	07.46	+21	54	43.8		046
2465	1988	01	12.85098	07	34	06.84	+21	54	44.8		046
2465	1988	01	13.88940	07	33	05.09	+21	55	51.7		046
2465	1988	01	13.90352	07	33	04.38	+21	55	52.3		046
2580	1987	11	15.87622	03	27	21.84	+15	47	58.6		046
2580	1987	11	15.89045	03	27	20.85	+15	47	54.9		046
2580	1987	11	26.98889	03	15	21.67	+15	13	14.1		046
2580	1987	11	27.00312	03	15	20.76	+15	13	12.9		046
2705	1988	01	09.78902	07	05	32.05	+30	20	19.6		046
2705	1988	01	09.80325	07	05	30.89	+30	20	19.8		046
2708	1988	01	13.99791	08	32	49.51	+19	32	12.5		046
2708	1988	01	14.01203	08	32	48.80	+19	32	15.8		046
2708	1988	01	14.96382	08	32	02.21	+19	36	10.1		046
2708	1988	01	14.97794	08	32	01.53	+19	36	12.4		046
2708	1988	01	15.92708	08	31	14.46	+19	40	06.4		046
2708	1988	01	15.94132	08	31	13.63	+19	40	08.9		046
2708	1988	01	20.94138	08	26	57.74	+20	00	51.5		046
2708	1988	01	20.95550	08	26	56.99	+20	00	54.7		046
2714	1988	02	16.88212	09	12	38.55	+17	14	14.6		046
2714	1988	02	16.89624	09	12	37.81	+17	14	20.6		046
2745	1988	02	15.88539	09	14	00.51	+18	38	01.3	N	046
2745	1988	02	15.90021	09	13	59.64	+18	38	21.4		046
2745	1988	02	16.88212	09	13	09.45	+18	57	56.9		046
2745	1988	02	16.89624	09	13	08.62	+18	58	13.6		046
2797	1987	11	26.95208	03	52	16.32	+15	20	19.9		046
2797	1987	11	26.96632	03	52	15.79	+15	20	21.8		046
2866	1988	01	10.89162	08	04	54.96	+24	46	15.3		046

2866	1988 01 10.90586	08 04 54.17	+24 46 15.6			046
2996	1987 11 15.92205	03 05 16.93	+23 06 30.3			046
2996	1987 11 15.93819	03 05 15.98	+23 06 27.2			046
2996	1987 11 23.86278	02 58 01.45	+22 36 24.7			046
2996	1987 11 23.87690	02 58 00.77	+22 36 20.1			046
3047	1988 02 15.88539	09 11 16.97	+16 09 13.8			046
3047	1988 02 15.90021	09 11 16.00	+16 09 20.2			046
3078	1987 11 15.92205	03 06 04.26	+20 43 53.1			046
3078	1987 11 15.93819	03 06 03.56	+20 43 52.5			046
3078	1987 11 23.86278	02 59 18.51	+20 28 38.3			046
3078	1987 11 23.87690	02 59 17.78	+20 28 34.9			046
3078	1987 11 25.95899	02 57 36.05	+20 24 24.2			046
3078	1987 11 25.97288	02 57 35.53	+20 24 25.8			046
3224	1987 11 26.95208	04 01 08.23	+19 00 30.0			046
3224	1987 11 26.96632	04 01 07.21	+19 00 25.7			046
3263	1988 01 09.78902	07 00 44.77	+29 04 20.3			046
3263	1988 01 09.80325	07 00 43.73	+29 04 24.8			046
3263	1988 01 10.81940	06 59 34.64	+29 09 31.3			046
3263	1988 01 10.83363	06 59 33.77	+29 09 33.6			046
3263	1988 01 12.87124	06 57 16.63	+29 19 14.3			046
3263	1988 01 12.88576	06 57 15.57	+29 19 19.5			046
3326	1988 01 09.78902	07 04 25.66	+27 46 15.8			046
3326	1988 01 09.80325	07 04 24.69	+27 46 18.2			046
3409	1987 11 23.92157	03 23 29.81	+17 38 18.5			046
3409	1987 11 23.93569	03 23 29.04	+17 38 15.7			046
3409	1987 11 26.00656	03 21 41.58	+17 30 43.3			046
3409	1987 11 26.02103	03 21 40.86	+17 30 40.3			046
3409	1987 11 26.98889	03 20 51.42	+17 27 10.5			046
3409	1987 11 27.00312	03 20 50.84	+17 27 07.8			046
3545	1988 01 12.90741	08 10 56.49	+23 46 37.2			046
3545	1988 01 12.92170	08 10 55.73	+23 46 36.2			046

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SAOC

10	1986 10 17.14804	06 07 35.51	+25 26 51.5			047
10	1986 11 07.01264	06 06 05.63	+25 24 54.2			047
10	1986 11 29.00196	05 54 12.79	+25 17 41.4			047
10	1986 11 29.96230	05 53 29.50	+25 17 07.7			047
10	1986 12 01.00602	05 52 41.49	+25 16 27.7			047
10	1986 12 29.95153	05 27 49.82	+24 43 50.4			047
10	1987 01 02.94212	05 24 36.91	+24 37 34.2			047
10	1987 01 28.79481	05 10 22.57	+23 57 50.9			047
10	1987 01 29.83412	05 10 05.87	+23 56 30.2			047
10	1987 02 01.79737	05 09 26.75	+23 52 51.6			047
10	1987 02 02.82233	05 09 16.08	+23 51 38.0			047
10	1987 02 23.74348	05 10 51.01	+23 34 37.8			047
10	1987 02 26.77293	05 11 51.75	+23 33 17.1			047
10	1987 03 02.80388	05 13 29.81	+23 31 52.6			047
10	1987 03 03.77975	05 13 56.57	+23 31 36.5			047
11	1986 10 17.10054	06 59 53.71	+19 01 22.8			047
11	1986 10 17.16876	06 59 56.60	+19 01 18.6			047
11	1986 11 07.08863	07 08 50.06	+18 41 11.1			047
11	1986 11 29.01458	07 04 43.24	+18 48 09.7			047
11	1986 11 29.97353	07 04 12.60	+18 49 15.7			047
11	1986 12 01.01580	07 03 37.36	+18 50 32.2			047

11	1986	12	29.96337	06	37	45.87	+19	49	38.6	047
11	1987	01	02.99473	06	33	25.90	+19	59	52.9	047
11	1987	01	28.88082	06	10	36.46	+21	03	15.3	047
11	1987	01	29.90009	06	10	01.13	+21	05	33.1	047
11	1987	02	01.89003	06	08	28.17	+21	12	13.2	047
11	1987	02	02.84891	06	08	01.45	+21	14	19.8	047
11	1987	02	23.75280	06	05	20.92	+21	56	18.8	047
11	1987	02	26.90123	06	06	03.56	+22	01	55.3	047
11	1987	03	03.78767	06	07	42.08	+22	10	11.0	047
11	1987	03	06.79137	06	09	01.44	+22	14	57.3	047
21	1987	02	24.02675	09	56	13.57	+17	12	18.6	047
21	1987	02	25.04102	09	55	15.42	+17	17	23.2	047
21	1987	03	02.91833	09	49	50.16	+17	44	38.7	047
30	1986	11	30.09522	09	11	57.37	+16	58	54.5	047
30	1986	12	01.09236	09	12	22.95	+16	56	28.9	047
30	1986	12	01.11414	09	12	23.52	+16	56	25.8	047
30	1987	01	03.01748	09	08	26.04	+16	49	39.5	047
30	1987	01	28.92953	08	43	58.88	+18	03	42.6	047
30	1987	01	29.91168	08	42	54.54	+18	06	47.6	047
30	1987	01	29.93168	08	42	53.14	+18	06	52.4	047
30	1987	02	01.90611	08	39	39.11	+18	16	01.7	047
30	1987	02	02.94020	08	38	32.07	+18	19	09.5	047
30	1987	02	23.87190	08	19	51.69	+19	05	26.3	047
30	1987	02	26.91397	08	18	03.38	+19	08	58.8	047
30	1987	03	02.89169	08	16	08.51	+19	12	15.8	047
30	1987	03	03.79566	08	15	46.68	+19	12	47.9	047
30	1987	03	06.79888	08	14	45.52	+19	14	03.1	047
30	1987	03	21.96821	08	14	00.87	+19	07	46.2	047
43	1986	12	29.96780	06	53	08.28	+21	19	31.6	047
43	1987	01	03.00049	06	48	18.57	+21	20	19.8	047
79	1987	01	31.00689	10	03	01.61	+04	40	10.5	047
79	1987	02	25.03160	09	39	46.67	+07	08	06.4	047
79	1987	03	02.88762	09	34	52.79	+07	45	58.3	047
230	1986	11	30.10068	09	18	44.63	+05	11	54.0	047
230	1986	12	01.09704	09	19	10.11	+05	04	05.1	047
230	1987	01	29.91542	08	54	56.21	+01	42	04.4	047
230	1987	01	30.99739	08	53	50.59	+01	44	45.3	047
230	1987	02	01.91192	08	51	54.57	+01	50	00.4	047
230	1987	02	02.94917	08	50	51.70	+01	53	07.4	047
230	1987	02	23.89898	08	32	07.02	+03	25	45.3	047
230	1987	02	26.92189	08	30	06.16	+03	41	51.7	047
230	1987	03	02.89635	08	27	49.64	+04	03	15.7	047
230	1987	03	03.88345	08	27	19.82	+04	08	34.1	047
471	1986	10	17.08841	06	37	07.14	+19	54	01.1	047
471	1986	10	17.15863	06	37	10.27	+19	54	18.8	047
471	1986	11	07.08282	06	46	54.73	+21	34	52.4	047
471	1986	11	29.00823	06	41	55.20	+24	07	55.9	047
471	1986	11	29.96779	06	41	20.13	+24	15	34.3	047
471	1986	12	01.01137	06	40	39.98	+24	23	57.5	047
471	1986	12	29.95829	06	12	58.89	+28	12	51.0	047
471	1987	01	02.94706	06	08	45.52	+28	39	22.0	047
471	1987	01	29.83897	05	49	01.92	+30	45	32.9	047
471	1987	02	01.80185	05	48	11.57	+30	54	31.9	047
471	1987	02	23.74848	05	51	03.64	+31	41	34.3	047
471	1987	02	24.94515	05	51	38.51	+31	43	20.1	047
471	1987	02	26.78369	05	52	37.34	+31	45	55.6	047
471	1987	03	02.80104	05	55	04.88	+31	50	59.9	047
471	1987	03	03.78356	05	55	44.89	+31	52	08.0	047
471	1987	03	05.79981	05	57	11.52	+31	54	19.4	047

471		1987	03	06.78703	05	57	56.16	+31	55	18.6	047
704		1986	11	29.10719	08	51	20.51	+12	00	22.1	047
704		1986	11	30.08928	08	51	20.08	+11	54	55.6	047
704		1986	12	01.08727	08	51	18.12	+11	49	27.5	047
704		1987	01	03.01181	08	37	24.96	+09	32	31.0	047
704		1987	01	28.92504	08	14	31.59	+08	52	09.3	047
704		1987	01	29.90759	08	13	37.96	+08	51	41.8	047
704		1987	01	30.98087	08	12	39.62	+08	51	14.2	047
704		1987	02	01.90142	08	10	57.01	+08	50	40.3	047
704		1987	02	02.93097	08	10	02.60	+08	50	26.3	047
704		1987	02	23.86461	07	54	55.90	+08	56	03.5	047
704		1987	02	24.96043	07	54	21.58	+08	56	42.8	047
704		1987	02	26.90698	07	53	25.01	+08	57	51.0	047
704		1987	03	02.80816	07	51	46.69	+09	00	13.4	047
704		1987	03	03.79120	07	51	25.06	+09	00	50.4	047
704		1987	03	06.79513	07	50	27.61	+09	02	41.0	047

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AGK3

1979	SG2	1979	09	19.94107	00	27	02.40	+15	08	32.8			049
1979	SU2	1979	09	22.02252	00	38	48.25	+12	51	15.6			049
1979	SU2	1979	09	22.04018	00	38	47.50	+12	51	10.8			049
1979	SJ12	1979	09	20.01933	01	10	54.49	+13	21	32.4			049
1979	SK12	1979	09	20.01933	01	25	41.97	+12	00	29.0			049
1979	SK12	1979	09	20.05257	01	25	40.89	+12	00	42.1			049
1979	SR12*	1979	09	19.92584	00	32	06.82	+15	02	29.2	17.5		049
1979	SR12	1979	09	19.94107	00	32	05.98	+15	02	27.7			049
1987	DS5 *	1987	02	25.82086	05	55	44.40	+15	52	32.7	16.5		049
1987	DS5	1987	02	25.83540	05	55	44.31	+15	52	33.1			049
1987	DT5 *	1987	02	26.00785	11	13	59.91	+05	08	33.4	16.5	d	049
1987	DT5	1987	02	26.02240	11	13	59.52	+05	08	46.0		d	049
75		1987	02	26.00785	11	15	32.13	+06	45	06.1			049
75		1987	02	26.02240	11	15	31.38	+06	45	11.2			049
84		1987	03	01.93633	09	39	13.85	+13	41	49.0			049
84		1987	03	01.95087	09	39	13.02	+13	41	51.2			049
192		1987	03	01.96576	10	53	40.44	+07	22	52.6			049
192		1987	03	01.98031	10	53	39.55	+07	22	55.8			049
201		1987	03	01.96576	10	44	21.84	+08	28	23.6			049
201		1987	03	01.98031	10	44	21.10	+08	28	29.4			049
544		1979	09	19.85797	00	03	41.92	+13	59	01.0		C	049
544		1979	09	19.87320	00	03	41.02	+13	58	56.9			049
569		1979	09	20.08581	01	41	47.72	+12	40	50.4		C	049
569		1979	09	20.10105	01	41	47.25	+12	40	48.5			049
606		1987	03	01.93633	09	29	24.78	+12	42	09.7			049
606		1987	03	01.95087	09	29	23.94	+12	42	12.1			049
701		1979	09	19.07608	00	44	56.63	+13	56	27.8		C	049
701		1979	09	19.09132	00	44	56.01	+13	56	23.8			049
701		1979	09	22.00833	00	42	56.70	+13	43	36.9		C	049
701		1979	09	22.02252	00	42	56.04	+13	43	32.3			049
701		1979	09	22.04018	00	42	55.42	+13	43	28.8			049
705		1987	01	27.00977	10	03	27.59	+43	39	07.0			049
705		1987	01	27.02362	10	03	26.62	+43	39	08.8			049
705		1987	02	25.87696	09	24	42.00	+42	46	35.9			049
705		1987	02	25.89011	09	24	40.98	+42	46	30.8			049
734		1979	09	20.03733	01	39	21.14	+12	30	27.0		C	049

734		1979 09 20.05257	01	39	20.64	+12	30	26.9				049
822		1987 03 01.96576	10	52	27.28	+06	04	05.5				049
822		1987 03 01.98031	10	52	26.41	+06	04	10.6				049
968		1979 09 19.97017	01	00	08.35	+11	52	42.1			C	049
968		1979 09 19.98540	01	00	07.76	+11	52	36.8				049
1370		1979 09 19.97017	01	02	22.11	+15	28	40.3		16.5	C	049
1370		1979 09 19.98540	01	02	21.33	+15	28	38.6				049
1454		1987 02 26.00785	11	27	01.22	+05	05	41.6				049
1454		1987 02 26.02240	11	27	00.33	+05	05	45.3				049
1657		1985 12 18.04734	07	40	25.93	+17	29	33.7		16.5		049
1657		1985 12 18.06327	07	40	25.50	+17	29	50.0				049
1672		1987 03 01.96576	10	43	07.96	+07	31	20.7				049
1672		1987 03 01.98031	10	43	07.33	+07	31	23.5				049
1677		1987 03 01.96576	10	47	36.70	+06	16	08.9				049
1677		1987 03 01.98031	10	47	35.68	+06	16	09.1				049
1924		1987 03 01.96576	10	50	37.52	+08	17	46.3				049
1924		1987 03 01.98031	10	50	36.49	+08	17	48.7				049
2479		1985 12 17.93169	03	30	34.32	+24	00	58.3				049
2479		1985 12 17.94762	03	30	33.68	+24	00	55.2				049
3018		1979 09 20.08581	01	43	47.90	+15	31	17.0		15.5	C	049
3018		1979 09 20.10105	01	43	47.40	+15	31	13.3				049

054 Brorfelde
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Measurer P. Jensen
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Observations in part in association with INAS

1953	TH	1988 02 13.04539	10	38	01.66	+10	41	30.5		15.8		054
1953	TH	1988 02 13.05755	10	38	00.97	+10	41	31.0				054
1971	OU	1987 12 11.81537	02	30	35.83	+15	20	50.6				054
1977	PE1	1988 01 11.78968	04	55	40.33	+18	32	12.1				054
1979	SL9	1988 02 13.07178	11	40	47.37	+02	23	01.3				054
1979	SL9	1988 02 13.08394	11	40	46.97	+02	23	03.9				054
1981	QJ	1987 11 19.97917	04	01	55.38	+21	35	25.0				054
1981	QJ	1987 11 19.99653	04	01	54.39	+21	35	22.5				054
1983	QA	1987 11 20.04813	05	18	34.42	+38	04	29.5				054
1984	FA	1988 02 13.04539	10	36	45.25	+13	47	17.4		16.2		054
1984	FA	1988 02 13.05755	10	36	44.53	+13	47	22.2				054
1985	RC3	1988 02 13.07178	11	43	53.38	+02	25	44.7				054
1985	RC3	1988 02 13.08394	11	43	52.87	+02	25	47.6				054
1986	GV1	1987 10 26.96766	01	33	06.04	-01	21	16.8		17.5		054
1986	GV1	1987 10 26.98502	01	33	04.91	-01	21	19.9				054
1986	JG	1987 11 19.97917	04	08	34.27	+22	52	36.4				054
1986	JG	1987 11 19.99653	04	08	32.79	+22	52	36.1				054
1986	RL	1987 12 22.88551	05	14	42.18	+21	48	51.6		16.6		054
1986	RL	1988 01 11.78968	05	00	15.32	+20	49	29.0		17.3		054
1986	TK2	1988 02 13.04539	10	41	05.81	+12	36	17.3		17.5		054
1986	TK2	1988 02 13.05755	10	41	05.10	+12	36	22.9				054
1986	VB6	1988 03 13.00616	12	02	45.90	+06	00	06.1				054
1986	VB6	1988 03 13.01831	12	02	45.20	+06	00	11.5				054
1987	UF1	1987 11 14.80773	01	55	52.41	+02	58	43.6		16.8		054
1987	UF1	1987 11 14.82509	01	55	51.68	+02	58	43.0				054
1987	UQ2	1987 10 27.00307	02	11	30.16	+05	20	19.4		18.5	V	054
1987	UQ2	1987 10 27.02043	02	11	28.85	+05	20	14.7				054
1987	UP3 *	1987 10 26.96766	01	33	07.76	-04	17	35.9		17.5		054
1987	UP3	1987 10 26.98502	01	33	06.84	-04	17	35.9				054
1987	UQ3 *	1987 10 26.96766	01	34	25.68	-00	29	38.1		17.0		054

1987	UQ3		1987	10	26.98502	01	34	24.53	-00	29	40.5		054
1987	UR3	*	1987	10	26.96766	01	37	46.88	-04	30	19.0	17.5	054
1987	UR3		1987	10	26.98502	01	37	45.99	-04	30	09.3		054
1987	US3	*	1987	10	26.96766	01	39	33.57	-00	34	39.2	17.0	054
1987	US3		1987	10	26.98502	01	39	32.62	-00	34	51.3		054
1987	UT3	*	1987	10	26.96766	01	39	34.30	-02	51	46.4	18.0	054
1987	UT3		1987	10	26.98502	01	39	33.41	-02	51	50.2		054
1987	UU3	*	1987	10	26.96766	01	40	41.34	-02	35	21.3	17.5	054
1987	UU3		1987	10	26.98502	01	40	40.37	-02	35	22.0		054
1987	UV3	*	1987	10	26.96766	01	46	41.89	-03	27	59.8	18.0	054
1987	UV3		1987	10	26.98502	01	46	40.94	-03	28	06.3		054
1987	WC4		1987	11	19.97917	04	04	02.41	+22	28	44.7	17.2	054
1987	WC4		1987	11	19.99653	04	04	01.48	+22	28	40.4		054
1987	WV4	*	1987	11	19.97917	03	58	37.66	+20	57	03.6	17.5	054
1987	WV4		1987	11	19.99653	03	58	36.62	+20	57	02.8		054
1987	WW4	*	1987	11	19.97917	04	02	33.42	+21	15	44.2	17.2	054
1987	WW4		1987	11	19.99653	04	02	32.28	+21	15	36.9		054
1987	WX4	*	1987	11	19.97917	04	03	36.36	+21	04	08.2	16.5	054
1987	WX4		1987	11	19.99653	04	03	35.07	+21	04	14.1		054
1987	WY4	*	1987	11	19.97917	04	12	25.31	+23	12	32.1	17.3	054
1987	WY4		1987	11	19.99653	04	12	24.10	+23	12	28.3		054
1987	WZ4	*	1987	11	20.04813	05	11	49.44	+41	14	41.3		054
1987	XC1	*	1987	12	12.80111	03	16	23.90	+30	55	27.9	18.0	054
1987	XC1		1987	12	12.81847	03	16	23.25	+30	55	17.0		054
1987	XD1	*	1987	12	12.80111	03	22	53.64	+30	20	48.7	17.0	054
1987	XD1		1987	12	12.81847	03	22	52.70	+30	20	39.6		054
1987	XE1	*	1987	12	12.80111	03	23	28.33	+33	26	53.0	17.8	054
1987	XE1		1987	12	12.81847	03	23	27.46	+33	26	51.0		054
1987	XF1	*	1987	12	12.80111	03	24	50.67	+32	02	51.2	18.0	054
1987	XF1		1987	12	12.81847	03	24	49.78	+32	02	45.5		054
1987	XG1	*	1987	12	12.80111	03	27	43.25	+31	45	50.2	18.0	054
1987	XG1		1987	12	12.81847	03	27	42.27	+31	45	44.6		054
1987	XH1		1987	12	12.80111	03	16	32.23	+31	27	51.6	18.5 V	054
1987	XH1	*	1987	12	12.81847	03	16	31.52	+31	27	43.4		054
1987	XJ1		1987	12	12.80111	03	25	08.41	+32	27	57.4	18.5 V	054
1987	XJ1	*	1987	12	12.81847	03	25	07.61	+32	27	51.8		054
1987	XK1		1987	12	12.80111	03	28	38.60	+30	28	03.2	18.5 V	054
1987	XK1	*	1987	12	12.81847	03	28	37.77	+30	27	57.6		054
1988	AY3	*	1988	01	11.78968	04	53	41.86	+21	05	10.7	17.5	054
1988	BV		1988	02	13.01883	09	36	23.39	+19	14	43.8	17.0	054
1988	BV		1988	02	13.03098	09	36	22.51	+19	14	46.9		054
1988	CF		1988	02	13.01883	09	47	34.48	+19	36	14.8	16.6	054
1988	CF		1988	02	13.03098	09	47	33.79	+19	36	15.0		054
1988	CQ		1988	02	13.01883	09	49	43.33	+19	17	38.9	17.0	054
1988	CQ		1988	02	13.03098	09	49	42.71	+19	17	48.3		054
1988	CV		1988	02	13.04539	10	36	03.93	+11	20	09.3	17.0	054
1988	CV		1988	02	13.05755	10	36	03.45	+11	20	15.2		054
1988	CY		1988	02	13.04539	10	39	18.57	+12	15	55.7	17.5	054
1988	CY		1988	02	13.05755	10	39	18.02	+12	16	02.2		054
1988	CG1	*	1988	02	13.01883	09	41	29.42	+19	51	07.8	17.5	054
1988	CG1		1988	02	13.03098	09	41	28.58	+19	51	06.7		054
1988	CH1	*	1988	02	13.01883	09	48	06.87	+18	09	05.2	17.0	054
1988	CH1		1988	02	13.03098	09	48	06.10	+18	09	08.5		054
1988	CJ1	*	1988	02	13.04539	10	26	14.63	+13	17	55.8	17.0	054
1988	CJ1		1988	02	13.05755	10	26	13.82	+13	17	54.8		054
1988	CK1	*	1988	02	13.04539	10	36	02.04	+11	37	28.9	17.5	054
1988	CK1		1988	02	13.05755	10	36	01.33	+11	37	31.8		054
1988	CZ6	*	1988	02	13.01883	09	41	46.42	+17	20	56.7	18 v	054
1988	CZ6		1988	02	13.03098	09	41	45.46	+17	20	57.6		054

1988	CA7	*	1988	02	13.01883	09	42	21.68	+21	16	37.9	18	v 054
1988	CA7		1988	02	13.03098	09	42	20.82	+21	16	37.8		054
1988	CB7	*	1988	02	13.07178	11	43	14.80	+01	48	59.7	16.5	054
1988	CB7		1988	02	13.08394	11	43	14.26	+01	48	56.8		054
1988	CC7	*	1988	02	13.07178	11	46	06.02	-00	23	57.8	16.2	054
1988	CC7		1988	02	13.08394	11	46	05.65	-00	24	01.3		054
1988	EA	*	1988	03	13.03394	12	38	15.81	-00	53	01.5	17	054
1988	EA		1988	03	13.04609	12	38	14.54	-00	53	08.8		054
1988	EA		1988	03	14.98269	12	34	53.76	-01	13	59.0		054
1988	EA		1988	03	18.96339	12	27	41.94	-01	56	51.7	17	054
1988	EA		1988	03	18.97554	12	27	40.61	-01	57	00.5		054
1988	EP		1988	03	13.00616	12	05	33.78	+04	48	57.8	15.5	054
1988	EP		1988	03	13.01831	12	05	33.28	+04	49	09.5		054
1988	EP		1988	03	14.93204	12	04	31.91	+05	18	47.4		054
1988	EP		1988	03	18.94464	12	02	15.64	+06	20	58.4	15.5	054
1988	EP		1988	03	18.95679	12	02	15.08	+06	21	11.4		054
1988	EQ	*	1988	03	13.00616	11	57	52.72	+04	55	23.8	17	054
1988	EQ		1988	03	13.01831	11	57	52.08	+04	55	27.1		054
1988	ER	*	1988	03	13.00616	11	58	25.04	+06	57	46.9	17	054
1988	ER		1988	03	13.01831	11	58	24.27	+06	57	52.8		054
1988	ES	*	1988	03	13.00616	11	58	48.69	+04	53	25.0	17	054
1988	ES		1988	03	13.01831	11	58	48.09	+04	53	30.0		054
1988	ET	*	1988	03	13.00616	12	00	23.27	+05	24	17.8	16.7	054
1988	ET		1988	03	13.01831	12	00	22.46	+05	24	20.8		054
1988	EU	*	1988	03	13.00616	12	01	09.38	+04	28	31.2	17	054
1988	EU		1988	03	13.01831	12	01	08.69	+04	28	33.9		054
1988	EV	*	1988	03	13.00616	12	01	28.14	+06	22	46.2	17	054
1988	EV		1988	03	13.01831	12	01	27.26	+06	22	47.8		054
1988	EW	*	1988	03	13.00616	12	02	24.81	+04	26	36.2	18	054
1988	EW		1988	03	13.01831	12	02	24.19	+04	26	44.4		054
1988	EX	*	1988	03	13.00616	12	05	50.79	+03	32	06.3	17	054
1988	EX		1988	03	13.01831	12	05	50.10	+03	32	11.4		054
1988	EY	*	1988	03	13.00616	12	06	40.13	+04	50	02.5	17	054
1988	EY		1988	03	13.01831	12	06	39.32	+04	50	03.8		054
1988	EZ	*	1988	03	13.00616	12	06	55.02	+06	02	55.3	18	v 054
1988	EZ		1988	03	13.01831	12	06	54.37	+06	03	01.5		054
1988	EA1	*	1988	03	13.00616	12	10	20.02	+04	05	35.8	18	054
1988	EA1		1988	03	13.01831	12	10	19.43	+04	05	44.3		054
1988	EB1	*	1988	03	13.00616	12	10	22.90	+04	16	06.0	17	054
1988	EB1		1988	03	13.01831	12	10	22.23	+04	16	09.1		054
107			1988	02	13.07699	11	43	32.99	+00	03	11.3		054
232			1987	11	14.80773	01	54	07.86	+03	16	52.1		054
232			1987	11	14.82509	01	54	07.10	+03	16	47.2		054
330			1988	03	13.00616	12	02	16.97	+06	52	53.9		054
330			1988	03	13.01831	12	02	16.28	+06	52	58.8		054
473			1988	02	13.07178	11	29	46.99	-00	30	12.3		054
473			1988	02	13.08394	11	29	46.44	-00	30	14.7		054
561			1987	12	11.81537	02	33	47.57	+12	57	54.1		054
829			1987	12	12.80111	03	14	56.31	+31	35	48.4		054
829			1987	12	12.81847	03	14	55.48	+31	35	43.2		054
910			1987	11	19.97917	04	06	59.13	+23	45	50.6		054
910			1987	11	19.99653	04	06	58.00	+23	45	50.8		054
930			1988	02	13.04539	10	31	34.25	+13	54	43.8		054
930			1988	02	13.05755	10	31	33.42	+13	54	44.4		054
1332			1988	02	13.04539	10	36	08.72	+11	15	50.9		054
1332			1988	02	13.05755	10	36	08.14	+11	15	53.4		054
1397			1988	03	13.00616	11	58	02.23	+06	10	24.9		054
1397			1988	03	13.01831	11	58	01.45	+06	10	29.2		054
1443			1988	01	11.78968	05	01	54.73	+20	03	14.9		054

1659		1988 02 13.04539	10 31 33.45	+12 24 07.1							054
1659		1988 02 13.05755	10 31 32.71	+12 24 07.6							054
1730		1987 10 26.96766	01 32 44.85	-01 08 24.2							054
1730		1987 10 26.98502	01 32 44.00	-01 08 34.0							054
1777		1988 02 13.07699	11 47 07.61	+00 28 27.0							054
1818		1987 12 11.81537	02 25 10.50	+15 33 50.0							054
2030		1988 03 18.96339	12 28 51.30	-01 52 12.4							054
2030		1988 03 18.97554	12 28 50.63	-01 52 07.4							054
2541		1988 02 13.01883	09 38 54.12	+18 39 40.5							054
2541		1988 02 13.03098	09 38 53.33	+18 39 44.0							054
2596		1988 02 13.04539	10 31 36.88	+12 43 23.6							054
2596		1988 02 13.05755	10 31 36.31	+12 43 30.1							054
2989		1988 02 13.01883	09 45 35.83	+19 10 29.2							054
2989		1988 02 13.03098	09 45 35.08	+19 10 32.9							054
3013		1988 02 13.04539	10 35 06.49	+13 20 07.2							054
3013		1988 02 13.05755	10 35 05.76	+13 20 09.6							054
3272		1987 12 22.88551	05 16 31.47	+21 54 18.3							054
3272		1988 01 11.78968	04 59 07.95	+22 28 17.0							054
3272		1988 01 11.78968	04 59 10.22	+22 28 23.4				18.0			054
3374		1987 12 11.81537	02 36 55.72	+13 39 25.0							054
3459		1987 11 14.80773	02 00 16.79	+03 59 34.1							054
3459		1987 11 14.82509	02 00 15.92	+03 59 31.4							054
3486		1988 03 13.00616	12 06 28.86	+03 41 35.5							054
3486		1988 03 13.01831	12 06 28.12	+03 41 39.0							054
3502		1987 11 20.01329	05 35 30.41	+21 29 07.9				17.0			054
3502		1987 11 20.02787	05 35 29.48	+21 29 08.7							054
3502		1988 01 11.78968	04 54 00.28	+21 16 26.2							054
3596		1987 11 21.01155	06 40 15.50	+51 19 50.7							054
3596		1987 12 22.90982	06 16 40.07	+52 37 04.1							054
3621		1988 01 11.78968	04 56 02.28	+18 51 05.9							054

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1987 RC1		1987 09 24.86638	22 17 56.86	-12 12 19.3				17.5			071
1987 RC1		1987 09 24.91701	22 17 55.25	-12 12 27.0							071

092 Piwnice
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Observer M. Antal
Measurer M. Antal
Reductions E. M. Pittich, M. Antal
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SAOC

1981 SW6		1987 10 21.06875	03 54 06.05	+09 05 06.4				17.9			092
1981 SW6		1987 10 21.10347	03 54 05.04	+09 04 55.9							092
1981 SW6		1987 10 22.03958	03 53 38.15	+09 00 02.3							092
1981 SW6		1987 10 22.12083	03 53 35.83	+08 59 37.6							092
1987 UW2	*	1987 10 16.08333	03 55 49.44	+03 18 03.8							092
1987 UW2		1987 10 16.13611	03 55 46.50	+03 17 58.1							092
1987 UX2	*	1987 10 16.08333	03 58 00.10	+03 54 50.0				18.5			092
1987 UX2		1987 10 16.13611	03 57 57.50	+03 54 40.5						p	092
1987 UX2		1987 10 20.97014	03 55 29.01	+03 42 08.6							092
1987 UX2		1987 10 21.02292	03 55 25.88	+03 41 55.5				18.4		M	092
1987 UY2	*	1987 10 16.08333	04 07 51.30	+03 56 07.1				18.1		N	092
1987 UY2		1987 10 16.13611	04 07 45.78	+03 56 05.5						N	092
1987 UZ2	*	1987 10 20.97014	04 06 00.08	+03 47 52.9				18.1		d	092
1987 UZ2		1987 10 21.02292	04 05 58.79	+03 47 44.0						d	092
1987 UZ2		1987 10 28.00625	04 03 45.66	+03 15 19.1				18.3		d	092

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1987 UA3  *  1987 10 21.06875  03 57 11.01  +08 09 05.3        17.4      092
1987 UA3     1987 10 21.10347  03 57 10.04  +08 08 48.4                  092
1987 UA3     1987 10 22.03958  03 56 44.73  +08 01 57.9                  092
1987 UA3     1987 10 22.12083  03 56 42.20  +08 01 19.5                  092
1987 UA3     1987 10 28.08125  03 53 32.53  +07 17 14.5        17.6      092
1987 UA3     1987 10 28.12014  03 53 31.05  +07 16 55.5                  092
1987 UB3  *  1987 10 21.06875  04 06 42.83  +09 04 24.8        17.8    r 092
1987 UB3     1987 10 21.10347  04 06 41.53  +09 04 20.9                r 092
1987 UB3     1987 10 22.03958  04 06 11.71  +09 02 59.0                r 092
1987 UB3     1987 10 22.12083  04 06 09.59  +09 02 48.5                r 092
1987 UC3  *  1987 10 28.08125  03 51 31.18  +06 50 08.1        18.5    N 092
1987 UC3     1987 10 28.12014  03 51 28.51  +06 49 46.7                N 092
1987 UD3  *  1987 10 28.08125  03 52 02.47  +07 00 51.8        18.2      092
1987 UD3     1987 10 28.12014  03 52 00.01  +07 00 53.1                  092
1987 UE3  *  1987 10 28.08125  03 53 38.26  +06 54 53.5        17.8      092
1987 UE3     1987 10 28.12014  03 53 36.24  +06 54 59.7                  092
1987 UF3  *  1987 10 28.08125  03 54 34.26  +07 38 08.5        17.9      092
1987 UF3     1987 10 28.12014  03 54 33.00  +07 38 06.7                  092
1987 UG3  *  1987 10 28.08125  03 55 34.33  +09 20 09.0        18.0      092
1987 UG3     1987 10 28.12014  03 55 33.72  +09 20 33.9                  092
1987 UH3  *  1987 10 28.08125  03 55 42.49  +09 21 33.8        18.3    M 092
1987 UH3     1987 10 28.12014  03 55 40.00  +09 21 43.1                M 092
1987 UJ3  *  1987 10 28.08125  04 01 23.55  +06 30 18.8        17.6    r 092
1987 UJ3     1987 10 28.12014  04 01 23.03  +06 30 01.0                r 092
1987 UK3  *  1987 10 28.08125  04 01 35.50  +07 03 21.5        18.8    M 092
1987 UK3     1987 10 28.12014  04 01 33.69  +07 03 17.2                M 092
1987 UL3  *  1987 10 28.08125  04 01 52.84  +08 45 50.8        18.3    M 092
1987 UL3     1987 10 28.12014  04 01 50.35  +08 45 53.9                M 092
1987 UM3  *  1987 10 28.08125  04 02 27.18  +07 34 40.6        18.5      092
1987 UM3     1987 10 28.12014  04 02 25.07  +07 34 35.2                  092
1987 UN3  *  1987 10 28.08125  04 02 50.41  +07 27 53.1        18.5    p 092
1987 UN3     1987 10 28.12014  04 02 48.20  +07 27 53.4                p 092
1987 UO3  *  1987 10 28.08125  04 06 59.91  +08 24 49.8        17.9    M 092
1987 UO3     1987 10 28.12014  04 06 57.63  +08 24 53.4                M 092
 737         1987 10 28.08125  04 03 59.36  +06 20 56.5        13.5    r 092
 737         1987 10 28.12014  04 03 57.64  +06 20 34.8                r 092
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1988 AE      1988 01 17.83889  06 41 54.8   +13 45 30                   220
1988 AE      1988 01 19.81667  06 40 02.7   +13 41 19                   220
1988 BX   *  1988 01 26.85833  08 25 38.2   +07 20 12        13.3       220
1988 BX      1988 01 26.89236  08 25 35.2   +07 19 53                   220
1988 BA1  *  1988 01 22.68542  08 10 33.2   +06 45 59        15.2       220
1988 BA1     1988 01 22.72153  08 10 31.2   +06 46 07                   220
1988 CA   *  1988 02 07.60903  08 24 06.8   +10 37 05        14.8       220
1988 CA      1988 02 07.65278  08 24 04.3   +10 37 29                   220
1988 DR   *  1988 02 16.69236  09 17 56.9   +05 45 58        15.5    d  220
1988 DR      1988 02 17.63542  09 17 10.4   +05 56 11                   220
1988 DR      1988 02 17.68333  09 17 07.8   +05 56 42                   220
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Peoples Republic of China
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Measurer J.-x. Yang
1-m reflector + CCD

1566	1987 07 30.55216	15 12 28.07	-24 09 07.3		286
1566	1987 07 30.57369	15 12 30.24	-24 09 20.6		286
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1566	1987 07 30.62891	15 12 36.54	-24 10 07.4		286
1566	1987 07 30.64314	15 12 37.96	-24 10 14.2		286
1566	1987 07 31.56142	15 14 23.97	-24 22 03.2		286
1566	1987 07 31.57080	15 14 24.88	-24 22 10.5		286
1566	1987 07 31.57994	15 14 26.01	-24 22 18.0		286
1566	1987 07 31.58932	15 14 27.05	-24 22 24.3		286
1566	1987 07 31.59661	15 14 27.76	-24 22 30.2		286
1566	1987 07 31.60216	15 14 28.39	-24 22 34.2		286
1566	1987 07 31.60876	15 14 29.06	-24 22 39.0		286
1566	1987 07 31.61466	15 14 29.93	-24 22 44.6		286
1566	1987 07 31.61976	15 14 30.42	-24 22 48.3		286
1566	1987 07 31.62647	15 14 30.97	-24 22 52.2		286
1566	1987 07 31.63503	15 14 32.03	-24 22 57.4		286
1566	1987 07 31.64314	15 14 32.91	-24 23 03.9		286

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

1986 TJ1	1988 02 15.16736	08 00 28.92	+14 17 20.9		293
1986 TJ1	1988 02 15.18542	08 00 28.11	+14 17 20.6		293
3773	1987 10 23.35208	02 43 20.05	+14 27 50.4		293
3773	1987 10 23.36806	02 43 19.05	+14 27 45.0		293

303 Merida
M. Geffert, Observatorium Hoher List, D-5568 Daun, Federal Republic of Germany
Observers E. Wildermann, B. Stock, Urbaldo S.
Measurer M. Geffert
1.0-m f/3 Schmidt
AGK3

1979 OK15	1988 01 22.24549	09 39 39.36	+11 26 21.3		303
1979 OK15	1988 01 22.25380	09 39 38.96	+11 26 24.0		303
1979 OK15	1988 01 22.27804	09 39 37.56	+11 26 33.1		303
1979 OK15	1988 01 23.26770	09 38 47.93	+11 32 14.1		303
1979 OK15	1988 01 23.33571	09 38 44.74	+11 32 29.3		303
1979 OK15	1988 01 23.34404	09 38 44.32	+11 32 32.4		303
1988 BJ	1988 01 22.21087	08 26 14.97	+26 06 47.5		303
1988 BJ	1988 01 23.30648	08 24 08.56	+25 52 35.2		303
1988 BK1	1988 01 22.21087	08 24 42.57	+24 42 07.6		303
1988 BK1	1988 01 23.30648	08 23 23.13	+24 46 10.7		303
1988 BZ1	1988 01 22.24549	09 42 52.55	+12 50 33.2		303
1988 BZ1	1988 01 22.25380	09 42 52.19	+12 50 35.5		303
1988 BZ1	1988 01 22.27804	09 42 51.26	+12 50 40.0		303
1988 BZ1	1988 01 23.26770	09 42 13.20	+12 53 56.4		303
1988 BZ1	1988 01 23.33571	09 42 10.83	+12 54 02.1		303
1988 BZ1	1988 01 23.34404	09 42 10.50	+12 54 04.0		303
1988 BA2	1988 01 22.24549	09 44 40.42	+12 32 52.4		303
1988 BA2	1988 01 22.25380	09 44 40.06	+12 32 54.7		303
1988 BA2	1988 01 22.27804	09 44 39.03	+12 33 01.3		303
1988 BA2	1988 01 23.26770	09 43 58.24	+12 37 00.5		303
1988 BA2	1988 01 23.33571	09 43 55.71	+12 37 09.3		303
1988 BA2	1988 01 23.34404	09 43 55.32	+12 37 11.8		303

1988	BB2		1988	01	22.24549	09	29	52.25	+13 38 46.8	303
1988	BB2		1988	01	22.25380	09	29	51.87	+13 38 50.4	303
1988	BB2		1988	01	22.27804	09	29	50.86	+13 38 55.8	303
1988	BB2		1988	01	23.26770	09	29	10.38	+13 42 24.0	303
1988	BB2	*	1988	01	23.33571	09	29	07.81	+13 42 29.9	303
1988	BB2		1988	01	23.34404	09	29	07.46	+13 42 32.4	303
1988	BC2		1988	01	22.24549	09	31	42.44	+12 50 58.8	303
1988	BC2		1988	01	22.25380	09	31	42.06	+12 50 58.5	303
1988	BC2		1988	01	23.26770	09	30	53.82	+12 51 49.5	303
1988	BC2	*	1988	01	23.33571	09	30	50.87	+12 51 43.8	303
1988	BC2		1988	01	23.34404	09	30	50.43	+12 51 45.1	303
1988	BD2		1988	01	22.25380	09	34	27.12	+14 01 05.7	303
1988	BD2		1988	01	22.27804	09	34	25.67	+14 01 19.8	303
1988	BD2		1988	01	23.26770	09	33	38.22	+14 09 19.8	303
1988	BD2	*	1988	01	23.33571	09	33	35.16	+14 09 45.6	303
1988	BD2		1988	01	23.34404	09	33	34.78	+14 09 49.0	303
1988	BE2		1988	01	22.24549	09	34	47.12	+14 16 17.4	303
1988	BE2		1988	01	22.25380	09	34	46.76	+14 16 17.9	303
1988	BE2		1988	01	22.27804	09	34	45.60	+14 16 20.9	303
1988	BE2		1988	01	23.26770	09	34	00.74	+14 18 23.5	303
1988	BE2	*	1988	01	23.33571	09	33	57.86	+14 18 23.9	303
1988	BE2		1988	01	23.34404	09	33	57.54	+14 18 25.5	303
1988	BF2		1988	01	22.24549	09	35	07.97	+11 57 07.8	303
1988	BF2		1988	01	22.25380	09	35	07.53	+11 57 08.3	303
1988	BF2		1988	01	22.27804	09	35	06.43	+11 57 10.5	303
1988	BF2		1988	01	23.26770	09	34	20.81	+11 58 40.5	303
1988	BF2	*	1988	01	23.33571	09	34	17.86	+11 58 37.5	303
1988	BF2		1988	01	23.34404	09	34	17.49	+11 58 38.9	303
1988	BH2		1988	01	22.27804	09	43	31.88	+11 58 42.3	303
1988	BH2		1988	01	23.26770	09	42	50.95	+12 02 28.3	303
1988	BH2	*	1988	01	23.33571	09	42	48.32	+12 02 34.9	303
1988	BH2		1988	01	23.34404	09	42	47.98	+12 02 38.5	303
1988	BJ2		1988	01	22.24549	09	44	27.13	+12 54 58.8	303
1988	BJ2		1988	01	22.25380	09	44	26.69	+12 55 01.2	303
1988	BJ2		1988	01	22.27804	09	44	25.52	+12 55 09.2	303
1988	BJ2		1988	01	23.26770	09	43	32.54	+13 00 11.5	303
1988	BJ2	*	1988	01	23.33571	09	43	28.69	+13 00 25.8	303
1988	BJ2		1988	01	23.34404	09	43	28.26	+13 00 29.5	303
1988	BE3	*	1988	01	22.21087	08	31	22.72	+24 01 24.5	303
1988	BE3		1988	01	23.30648	08	30	12.41	+23 58 32.5	303
1988	BF3	*	1988	01	22.21087	08	35	43.16	+24 27 33.5	303
1988	BF3		1988	01	23.30648	08	34	23.06	+24 24 05.9	303
618			1988	01	22.21087	08	27	40.67	+24 21 38.1	303
618			1988	01	23.30648	08	26	45.90	+24 28 54.2	303
641			1988	01	22.21087	08	31	32.81	+22 13 44.7	303
641			1988	01	23.30648	08	30	17.05	+22 18 18.8	303
1321			1988	01	22.21087	08	26	09.96	+22 47 56.2	303
1321			1988	01	23.30648	08	25	08.82	+22 49 17.5	303
2186			1988	01	22.24549	09	38	36.17	+12 09 44.2	303
2186			1988	01	22.25380	09	38	35.76	+12 09 45.7	303
2186			1988	01	22.27804	09	38	34.58	+12 09 50.0	303
2186			1988	01	23.26770	09	37	47.76	+12 12 35.8	303
2186			1988	01	23.33571	09	37	44.73	+12 12 39.1	303
2186			1988	01	23.33571	09	37	44.33	+12 12 41.0	303
2576			1988	01	22.24549	09	38	26.25	+12 19 42.1	303
2576			1988	01	22.25380	09	38	25.89	+12 19 42.7	303
2576			1988	01	22.27804	09	38	24.78	+12 19 44.2	303
2576			1988	01	23.26770	09	37	40.64	+12 20 40.9	303
2576			1988	01	23.33571	09	37	37.54	+12 20 37.8	303

2576		1988	01	23.33571	09	37	37.89	+12	20	36.3	303
2714		1988	01	22.24549	09	38	13.59	+14	11	55.1	303
2714		1988	01	22.25380	09	38	13.14	+14	11	57.8	303
2714		1988	01	22.27804	09	38	11.91	+14	12	07.8	303
2714		1988	01	23.26770	09	37	22.02	+14	18	33.8	303
2714		1988	01	23.33571	09	37	18.71	+14	18	52.9	303
2714		1988	01	23.33571	09	37	18.28	+14	18	57.1	303
2941		1988	01	22.21087	08	23	39.91	+25	24	54.4	303
2941		1988	01	23.30648	08	22	19.91	+25	28	10.1	303
3383		1988	01	22.24549	09	45	19.18	+12	17	30.3	303
3383		1988	01	22.25380	09	45	18.83	+12	17	34.4	303
3383		1988	01	22.27804	09	45	17.74	+12	17	48.8	303
3383		1988	01	23.26770	09	44	37.92	+12	26	26.9	303
3383		1988	01	23.33571	09	44	35.06	+12	27	00.5	303
3383		1988	01	23.33571	09	44	35.39	+12	26	55.2	303

364 JCPM Kagoshima Station
M. Takeishi, Odori 4, Hamatonbetsu Esashigun, Hokkaido 098-57, Japan
Observer M. Mukai
Measurer M. Takeishi
0.25-m f/4.2 Wright Schmidt

1988	BK	*	1988	01	16.54375	08	04	44.83	+14	47	56.9	16.5	364
1988	BK		1988	01	16.56458	08	04	43.53	+14	48	02.6		364
1988	BK		1988	01	21.57917	08	00	11.02	+15	22	10.1	16.5	364
1988	BK		1988	01	21.60000	08	00	09.67	+15	22	18.4		364
1988	BK		1988	01	21.61771	08	00	08.65	+15	22	26.1		364
1988	BK		1988	01	21.64201	08	00	07.41	+15	22	33.7		364
1988	BK		1988	01	27.55417	07	54	44.23	+16	04	29.6	17	364
1988	BK		1988	01	27.57500	07	54	42.78	+16	04	35.3		364
1988	BL	*	1988	01	16.70972	08	45	55.97	+15	39	13.0	16	364
1988	BL		1988	01	16.73125	08	45	54.80	+15	39	18.8		364
1988	BL		1988	01	27.59444	08	34	57.97	+16	59	42.1	15.0	364
1988	BL		1988	01	27.61528	08	34	56.53	+16	59	50.9		364
1988	BL		1988	01	27.63264	08	34	55.55	+17	00	01.6		364
1988	BL		1988	01	27.65347	08	34	54.08	+17	00	09.2		364
1988	BL		1988	02	10.53333	08	21	16.39	+18	40	20.6		364
1988	BL		1988	02	10.55417	08	21	15.23	+18	40	29.2		364
1988	BL		1988	02	15.59896	08	17	09.48	+19	12	30.4	16.5	364
1988	BL		1988	02	15.62674	08	17	08.05	+19	12	41.3		364
1988	BL		1988	02	18.64167	08	15	01.41	+19	30	11.6	16.5	364
1988	BL		1988	02	18.66250	08	15	00.59	+19	30	16.3		364
148			1988	02	10.65625	10	14	45.97	+12	54	30.0	11	364
148			1988	02	10.67708	10	14	44.94	+12	54	46.1		364
166			1988	01	16.54375	08	08	32.37	+16	32	01.9	13	364
166			1988	01	16.56458	08	08	31.03	+16	32	11.1		364
311			1988	01	13.54792	07	13	40.65	+24	39	53.3	14.5	364
311			1988	01	13.56875	07	13	39.36	+24	39	53.9		364
334			1988	02	10.53333	08	18	32.09	+19	16	28.4	13	364
334			1988	02	10.55417	08	18	31.24	+19	16	32.6		364
996			1988	02	10.61528	09	59	21.39	+12	43	15.9		364
996			1988	02	10.63611	09	59	20.37	+12	43	20.4		364
2330			1988	01	16.70972	08	43	46.20	+14	48	35.7	16	364
2330			1988	01	16.73125	08	43	45.22	+14	48	40.7		364
3436			1988	01	16.70972	08	42	27.8	+15	51	16	17	364
3436			1988	01	16.73125	08	42	26.9	+15	51	16		364

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

1979	SA10		1988	03	10.61354	12	16	37.59	-03	11	53.7	16.5	372
1979	SA10		1988	03	10.62708	12	16	37.04	-03	11	47.1		372
1982	WE		1988	02	17.78437	12	43	46.19	+16	12	16.9	17	372
1982	WE		1988	02	17.79826	12	43	45.80	+16	12	19.0		372
1982	WE		1988	03	12.58958	12	26	21.31	+18	17	59.5	17	372
1982	WE		1988	03	12.60208	12	26	20.91	+18	18	01.3		372
1986	TX		1988	02	21.64340	09	51	07.68	+18	10	28.3	16.5	372
1986	TX		1988	02	21.65590	09	51	07.01	+18	10	33.4		372
1986	WM		1988	01	13.67639	10	52	52.69	+07	02	37.5	19	372
1986	WM		1988	01	13.69028	10	52	52.60	+07	02	39.1		372
1986	WM		1988	01	27.74583	10	47	46.29	+07	39	14.7	18.5	372
1986	WM		1988	01	27.76146	10	47	45.93	+07	39	19.9		372
1986	WM		1988	02	15.70035	10	36	07.90	+08	57	10.9	17.5	372
1986	WM		1988	02	15.71285	10	36	07.35	+08	57	14.0		372
1986	WM		1988	02	17.69410	10	34	42.04	+09	06	28.7	17.5	372
1986	WM		1988	02	17.70590	10	34	41.54	+09	06	32.5		372
1988	BN	*	1988	01	19.73542	10	19	13.67	+12	42	00.7	16.5	372
1988	BN		1988	01	20.68750	10	18	11.62	+12	29	58.9		372
1988	BN		1988	01	23.66458	10	14	44.35	+11	52	14.6	16.5	372
1988	BN		1988	01	25.56319	10	12	21.86	+11	27	49.5		372
1988	BN		1988	01	29.83576	10	06	33.08	+10	32	17.5	16	372
1988	BN		1988	02	08.58333	09	51	27.62	+08	23	00.3	16	372
1988	BN		1988	02	08.59271	09	51	26.66	+08	22	52.7		372
1988	BN		1988	02	21.57708	09	29	42.08	+05	32	14.3	15	372
1988	BN		1988	02	21.58681	09	29	41.16	+05	32	07.9		372
1988	CD	*	1988	02	08.48681	09	00	00.33	+22	10	02.6	18	372
1988	CD		1988	02	08.49757	08	59	59.57	+22	10	04.1		372
1988	CE	*	1988	02	08.48681	09	01	55.67	+22	41	10.0	17.5	372
1988	CE		1988	02	08.49757	09	01	55.01	+22	41	09.0		372
1988	CE		1988	02	15.67708	08	54	54.90	+22	49	55.0	18	372
1988	CE		1988	02	15.68750	08	54	54.28	+22	49	56.9		372
1988	CE		1988	02	17.60521	08	53	07.40	+22	51	24.7	18	372
1988	CE		1988	02	17.61597	08	53	06.80	+22	51	25.2		372
1988	CE		1988	02	19.68819	08	51	14.17	+22	52	33.4	18	372
1988	CE		1988	02	19.69861	08	51	14.02	+22	52	34.8		372
1988	DM1	*	1988	02	19.75347	11	16	38.62	+24	27	45.8	18.5	372
1988	DM1		1988	02	19.76389	11	16	37.92	+24	27	53.6		372
1988	DN1		1988	03	12.61358	11	35	42.84	+19	26	15.6	16	372
1988	DP1	*	1988	02	21.71667	12	26	09.04	-04	10	10.3	16.5	372
1988	DP1		1988	02	21.72708	12	26	08.66	-04	10	07.7		372
996			1988	01	27.72500	10	09	23.78	+11	51	15.7	16	372
996			1988	01	27.73403	10	09	23.48	+11	51	18.3		372
1066			1988	02	17.75382	12	27	38.17	-04	19	27.8	17	372
1066			1988	02	17.77604	12	27	37.77	-04	19	22.6		372
1066			1988	02	21.71667	12	25	29.47	-04	12	26.8	17	372
1066			1988	02	21.72708	12	25	28.98	-04	12	24.5		372
1182			1988	01	11.65729	08	39	49.17	+29	05	22.0	16	372
1182			1988	01	11.66771	08	39	48.18	+29	05	22.6		372
1317			1988	02	13.61736	10	07	53.32	+34	32	43.5	15	372
1317			1988	02	13.62864	10	07	52.63	+34	32	44.7		372
2090			1988	01	11.65729	08	39	47.45	+29	07	54.3	17	372
2090			1988	01	11.66771	08	39	46.66	+29	07	58.1		372

380 Ishiki
T. Seki, Kamimachi 2-9-35, Kochi, Japan
Observer N. Kojima
From Orient. Astron. Assoc. Comet Bull.

1458			1984	09	30.69167	01	24	04.44	+03	29	54.9		380

385 Nihondaira Observatory, Oohira Station
M. Kizawa, 1458-10, Minami Numagami, Shizuoka 420, Japan
Observers W. Kakkei, M. Kizawa, T. Urata
0.13-m hyperboloid astrocamera

1988 EB	*	1988	03	09.52014	11	06	33.67	+15	27	40.0	16.0	385
1988 EB		1988	03	09.55069	11	06	31.92	+15	27	43.9		385
1988 EB		1988	03	09.58611	11	06	30.10	+15	27	52.0		385
1988 EB		1988	03	10.63611	11	05	32.70	+15	30	23.6	16.0	385
1988 EB		1988	03	10.67014	11	05	30.64	+15	30	29.0		385
1988 EB		1988	03	12.50833	11	03	52.15	+15	34	31.7		385
1988 EB		1988	03	12.55625	11	03	49.66	+15	34	37.3		385
1847		1988	03	12.62813	11	39	44.78	+19	34	40.7	16.0	F 385
1847		1988	03	12.67118	11	39	42.71	+19	34	59.9		F 385
2445		1988	03	09.52014	11	12	45.48	+16	32	02.3	15.5	385
2445		1988	03	09.55069	11	12	43.63	+16	32	09.9		385
2445		1988	03	09.58611	11	12	41.20	+16	32	24.6		385

386 Yatsugatake-Kobuchizawa
O. Muramatsu, 119-1, 2-8 Sakurazutsumi, Musashino,
Tokyo 150, Japan
Observers M. Inoue, O. Muramatsu, T. Urata
0.31-m reflector

1988 BA		1988	01	16.67465	09	25	04.13	+24	46	01.3	17.0	C 386
1988 BA		1988	01	20.60595	09	21	30.02	+25	04	20.3		F 386
1988 BA		1988	01	20.62878	09	21	28.73	+25	04	25.0		F 386
1988 BA		1988	01	23.69857	09	18	27.40	+25	18	14.7		F 386
1988 BA		1988	01	23.71316	09	18	26.64	+25	18	17.7		F 386
1988 BA		1988	02	12.62847	08	56	54.35	+26	23	08.4		F 386
1988 BA		1988	02	12.64375	08	56	53.46	+26	23	08.6		F 386
1988 BA		1988	02	24.66840	08	45	32.69	+26	30	57.7	17.0	386
1988 BA		1988	02	24.67951	08	45	32.16	+26	30	57.7		386
1988 DB	*	1988	02	19.61146	10	48	20.91	+09	09	36.0	16.0	F 386
1988 DB		1988	02	19.63264	10	48	19.88	+09	09	45.5		F 386
1988 DB		1988	02	21.54965	10	46	43.98	+09	23	13.0	16.5	F 386
1988 DB		1988	02	21.56563	10	46	43.12	+09	23	19.5		F 386
1988 DB		1988	02	24.62257	10	44	04.87	+09	45	09.6	16.5	386
1988 DB		1988	02	24.63785	10	44	04.06	+09	45	13.2		386
1988 DB		1988	02	24.64896	10	44	03.41	+09	45	16.8		386
1988 DB		1988	03	12.58160	10	29	18.33	+11	41	19.5		386
1988 DB		1988	03	12.59271	10	29	17.96	+11	41	22.2		386
1988 EP	*	1988	03	12.61701	12	05	46.03	+04	43	02.9	16.5	386
1988 EP		1988	03	12.64826	12	05	45.03	+04	43	31.6		386
1988 EP		1988	03	18.63021	12	02	26.22	+06	16	13.2	16.0	386
1988 EP		1988	03	18.64097	12	02	25.84	+06	16	23.1		386
1988 EP		1988	03	18.65174	12	02	25.48	+06	16	33.0		386

391 Sendai Observatory, Ayashi Station
M. Koishikawa, Sendai Municipal Observatory, 1-1 Sakuragaoka-koen,
Sendai 980, Japan
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1987 YA		1988	01	20.57187	04	39	32.25	+18	49	44.4	F 391
1988 BL		1988	02	14.62361	08	17	53.73	+19	06	33.5	16.0	391
1988 BL		1988	02	14.62708	08	17	53.57	+19	06	34.5		391
1988 BL		1988	02	16.53958	08	16	28.18	+19	18	05.0	16	391
1988 BL		1988	02	16.54444	08	16	27.93	+19	18	05.9		391
1988 BL		1988	02	16.62685	08	16	24.25	+19	18	36.3		391
1988 BL		1988	02	16.62835	08	16	24.09	+19	18	36.6		391
1988 BL		1988	02	17.60069	08	15	43.35	+19	24	15.2		391

1988	BL		1988	02	17.60417	08	15	42.99	+19	24	18.9		391
1988	BL		1988	02	17.68750	08	15	39.46	+19	24	46.3		391
1988	BL		1988	02	17.68924	08	15	39.49	+19	24	47.6		391
1248			1988	01	15.69097	07	29	34.33	+29	38	09.4		391
1248			1988	01	16.71910	07	28	30.78	+29	42	49.7		391
2624			1988	01	20.57187	04	39	33.89	+18	49	27.7	F	391
2886			1988	02	17.63056	08	49	34.78	+19	00	49.5	16.0	391
2886			1988	02	17.63403	08	49	34.41	+19	00	51.3		391
3383			1988	02	14.68542	09	26	11.15	+16	03	15.2		391
3383			1988	02	14.68889	09	26	10.78	+16	03	20.3		391
3575			1988	01	15.69097	07	29	17.77	+29	35	37.1	W	391
3575			1988	01	16.71910	07	28	14.23	+29	39	22.0		391

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H. Kaneda, 12-7-2, 1 Chome, Ishiyama 1 Jo, Minami-Ku,
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Observers S. Ueda, M. Matsuyama
Measurers H. Kaneda, K. Watanabe

1987	VA		1987	11	14.49375	01	51	37.0	+13	32	57	16	399
1987	VA		1987	11	14.51001	01	51	36.1	+13	32	57		399
1987	VA		1987	11	14.52708	01	51	35.2	+13	32	59		399
1988	AL	*	1988	01	15.52384	07	35	24.79	+09	59	07.4	16.5	399
1988	AL		1988	01	15.53958	07	35	23.81	+09	59	12.7		399
1988	AL		1988	01	15.55880	07	35	22.71	+09	59	17.7		399
1988	BG		1988	01	20.63056	07	50	28.38	+19	19	21.8	15.5	399
1988	BG		1988	01	20.64237	07	50	27.55	+19	19	18.7		399
1988	BG		1988	01	20.65436	07	50	26.53	+19	19	16.5		399
1988	BG		1988	01	24.58038	07	46	05.76	+19	06	34.1	15.5	399
1988	BG		1988	01	24.60729	07	46	03.99	+19	06	28.0		399
1988	BG		1988	01	24.62031	07	46	02.97	+19	06	26.0		399
1988	BG		1988	01	25.62571	07	44	57.99	+19	03	11.2	15.5	399
1988	BG		1988	01	25.64132	07	44	57.03	+19	03	05.6		399
1988	BG		1988	01	25.65938	07	44	55.77	+19	03	02.3		399
1988	BG		1988	02	07.43715	07	32	52.90	+18	21	40.2	16	399
1988	BG		1988	02	07.45243	07	32	52.17	+18	21	39.0		399
1988	BG		1988	02	08.47277	07	32	04.79	+18	18	22.5	16	399
1988	BG		1988	02	08.48770	07	32	04.23	+18	18	19.4		399
1988	BG		1988	02	08.50625	07	32	03.30	+18	18	16.7		399
1988	BG		1988	02	12.49618	07	29	15.52	+18	05	34.8	16	399
1988	BG		1988	02	12.51302	07	29	14.87	+18	05	31.0		399
1988	BH		1988	01	20.63056	07	50	55.27	+19	30	53.7	15.5	399
1988	BH		1988	01	20.64237	07	50	54.36	+19	30	50.3		399
1988	BH		1988	01	20.65436	07	50	53.52	+19	30	48.6		399
1988	BH		1988	01	24.58038	07	47	00.07	+19	26	12.5	15.5	399
1988	BH		1988	01	24.60729	07	46	58.51	+19	26	09.5		399
1988	BH		1988	01	24.62031	07	46	57.68	+19	26	07.2		399
1988	BH		1988	01	25.62571	07	45	59.39	+19	24	57.4	15.5	399
1988	BH		1988	01	25.64132	07	45	58.32	+19	24	54.3		399
1988	BH		1988	01	25.65938	07	45	57.03	+19	24	52.6		399
1988	BH		1988	02	07.43715	07	35	01.06	+19	07	59.2	16.5	399
1988	BH		1988	02	07.45243	07	35	00.36	+19	07	57.3		399
1988	BH		1988	02	08.47277	07	34	17.33	+19	06	26.6	16.5	399
1988	BH		1988	02	08.48770	07	34	16.59	+19	06	25.5		399
1988	BH		1988	02	08.50625	07	34	15.76	+19	06	24.5		399
1988	BT		1988	02	08.47277	07	34	50.95	+19	16	39.7	16	399
1988	BT		1988	02	08.48770	07	34	49.96	+19	16	40.5		399
1988	BT		1988	02	08.50625	07	34	48.98	+19	16	42.8		399
1988	BV	*	1988	01	24.59537	09	55	05.66	+17	09	43.2	16.5	399
1988	BV		1988	01	24.61060	09	55	04.74	+17	09	48.1		399

1988	BV		1988	01	24.62795	09	55	03.83	+17	09	55.7		399
1988	BV		1988	01	25.70642	09	54	11.15	+17	16	56.0	16.5	399
1988	BV		1988	01	25.72222	09	54	10.25	+17	17	01.7		399
1988	BV		1988	01	25.74097	09	54	09.21	+17	17	07.5		399
1988	BV		1988	02	08.50926	09	41	02.92	+18	47	24.2	16	399
1988	BV		1988	02	08.52616	09	41	01.75	+18	47	32.6		399
1988	BV		1988	02	08.54167	09	41	00.81	+18	47	39.0		399
1988	BV		1988	02	11.49792	09	37	57.60	+19	05	44.9	16.5	399
1988	BV		1988	02	11.51510	09	37	56.75	+19	05	51.4		399
1988	BV		1988	02	11.61921	09	37	49.93	+19	06	30.6		399
1988	BV		1988	02	15.59595	09	33	45.74	+19	29	13.4	16.5	399
1988	BV		1988	02	15.61273	09	33	44.81	+19	29	16.5		399
1988	BV		1988	02	15.64444	09	33	42.72	+19	29	28.3		399
1988	BV		1988	02	21.60891	09	27	54.94	+19	59	04.1	16.5	399
1988	BV		1988	02	21.62558	09	27	53.96	+19	59	08.7		399
1988	BW	*	1988	01	25.70642	09	49	08.30	+15	30	27.5	16.5	399
1988	BW		1988	01	25.72222	09	49	07.33	+15	30	24.9		399
1988	BW		1988	01	25.74097	09	49	06.02	+15	30	23.9		399
1988	BZ1	*	1988	01	25.62378	09	40	38.93	+13	02	00.5	16.5	399
1988	BZ1		1988	01	25.63976	09	40	38.08	+13	02	03.5		399
1988	BZ1		1988	01	25.65793	09	40	37.44	+13	02	07.5		399
1988	BZ1		1988	02	07.43785	09	30	59.43	+13	51	31.0	16	399
1988	BZ1		1988	02	07.45434	09	30	58.38	+13	51	34.8		399
1988	BZ1		1988	02	08.44826	09	30	10.92	+13	55	38.2	16	399
1988	BZ1		1988	02	08.46771	09	30	10.02	+13	55	43.0		399
1988	BZ1		1988	02	08.48559	09	30	09.15	+13	55	45.0		399
1988	BZ1		1988	02	11.55955	09	27	40.99	+14	08	18.1	16.5	399
1988	BZ1		1988	02	11.57645	09	27	40.12	+14	08	22.4		399
1988	BZ1		1988	02	11.59549	09	27	39.21	+14	08	29.4		399
1988	BZ1		1988	02	18.66913	09	22	04.71	+14	36	39.1	16.5	399
1988	BZ1		1988	02	18.68484	09	22	04.02	+14	36	40.5		399
1988	BZ1		1988	02	18.70185	09	22	03.14	+14	36	45.2		399
1988	BA2	*	1988	01	25.62378	09	42	17.22	+12	46	49.8	16.5	399
1988	BA2		1988	01	25.63976	09	42	16.61	+12	46	51.9		399
1988	BA2		1988	01	25.65793	09	42	15.83	+12	46	57.9		399
1988	BA2		1988	01	26.68791	09	41	30.06	+12	51	22.2	16.5	399
1988	BA2		1988	01	26.70322	09	41	29.37	+12	51	26.0		399
1988	BA2		1988	01	26.72206	09	41	28.4	+12	51	31		399
1988	BA2		1988	02	07.43785	09	32	02.10	+13	45	50.0	16.5	399
1988	BA2		1988	02	07.45434	09	32	01.35	+13	45	57.3		399
1988	BA2		1988	02	08.46771	09	31	09.73	+13	50	48.5	16	399
1988	BA2		1988	02	08.48559	09	31	08.76	+13	50	53.8		399
1988	BA2		1988	02	11.55955	09	28	31.92	+14	05	43.1	16.5	399
1988	BA2		1988	02	11.59549	09	28	29.94	+14	05	53.0		399
1988	BA2		1988	02	18.66913	09	22	33.35	+14	39	19.4	16.5	399
1988	BA2		1988	02	18.68484	09	22	32.67	+14	39	26.0		399
1988	BA2		1988	02	18.70185	09	22	31.93	+14	39	27.7		399
1988	BA2		1988	02	19.68155	09	21	43.73	+14	43	59.0	16.5	399
1988	BA2		1988	02	19.69838	09	21	42.67	+14	44	05.0		399
1988	CF	*	1988	02	08.50926	09	51	58.30	+19	30	12.6	16.5	399
1988	CF		1988	02	08.52616	09	51	57.18	+19	30	13.7		399
1988	CF		1988	02	08.54167	09	51	56.27	+19	30	15.1		399
1988	CF		1988	02	11.53403	09	49	02.5	+19	34	28	16.5	399
1988	CF		1988	02	11.61921	09	48	57.2	+19	34	33		399
1988	CF		1988	02	11.63533	09	48	56.4	+19	34	35		399
1988	CF		1988	02	15.59595	09	45	01.83	+19	38	46.0	16	399
1988	CF		1988	02	15.61273	09	45	01.06	+19	38	46.3		399
1988	CF		1988	02	15.64444	09	44	59.02	+19	38	48.0		399
1988	CF		1988	02	18.72488	09	41	57.64	+19	40	39.1		399

1988	CF		1988	02	19.61736	09	41	06.05	+19	41	00.5	16.5	399
1988	CF		1988	02	19.63414	09	41	04.94	+19	40	59.1		399
1988	CF		1988	02	19.65405	09	41	03.90	+19	40	59.0		399
1988	CO		1988	02	11.49792	09	38	19.19	+20	38	27.5	16.5	399
1988	CO		1988	02	11.51510	09	38	18.25	+20	38	31.6		399
1988	CO		1988	02	11.61921	09	38	11.82	+20	38	57.1		399
1988	CO		1988	02	11.63533	09	38	10.84	+20	39	01.6		399
1988	CO	*	1988	02	15.59595	09	34	05.78	+20	54	26.4	16.5	399
1988	CO		1988	02	15.61273	09	34	04.95	+20	54	29.0		399
1988	CO		1988	02	15.64444	09	34	03.06	+20	54	36.3		399
1988	CO		1988	02	19.61736	09	30	01.4	+21	08	16	16.5	399
1988	CO		1988	02	19.63414	09	30	00.31	+21	08	16.2		399
1988	CO		1988	02	19.65405	09	29	59.0	+21	08	18		399
1988	CP	*	1988	02	15.59595	09	46	23.62	+21	14	55.8	16	399
1988	CP		1988	02	15.61273	09	46	22.53	+21	14	52.2		399
1988	CP		1988	02	15.64444	09	46	20.32	+21	14	46.3		399
1988	CP		1988	02	18.72488	09	42	27.81	+21	00	50.3		399
1988	CP		1988	02	19.61736	09	41	21.94	+20	56	34.7	16	399
1988	CP		1988	02	19.63414	09	41	20.50	+20	56	30.5		399
1988	CP		1988	02	19.65405	09	41	19.03	+20	56	23.2		399
1988	CP		1988	02	21.60891	09	38	55.82	+20	46	26.0	16	399
1988	CP		1988	03	09.47292	09	22	01.69	+18	54	55.0	16	399
1988	CP		1988	03	09.49063	09	22	00.85	+18	54	46.6		399
1988	CP		1988	03	09.51042	09	21	59.85	+18	54	37.0		399
1988	CP		1988	03	13.49543	09	19	22.91	+18	22	45.4	16.5	399
1988	CP		1988	03	13.51372	09	19	22.40	+18	22	37.1		399
1988	CP		1988	03	13.54103	09	19	21.25	+18	22	23.1		399
1988	DG		1988	02	19.73374	11	24	47.14	+16	15	13.4	16	399
1988	DG		1988	02	19.74954	11	24	46.39	+16	15	24.5		399
1988	DG		1988	02	19.76678	11	24	45.72	+16	15	35.5		399
1988	DG	*	1988	02	21.68067	11	23	24.93	+16	35	51.1	16	399
1988	DG		1988	02	21.69682	11	23	24.08	+16	36	02.0		399
1988	DG		1988	02	21.71667	11	23	23.15	+16	36	14.7		399
1988	DG		1988	03	12.64450	11	06	35.28	+19	43	12.3	16	399
1988	DG		1988	03	13.56944	11	05	47.69	+19	49	59.4	16	399
1988	DG		1988	03	13.58547	11	05	46.67	+19	50	07.4		399
1988	DG		1988	03	13.61036	11	05	45.25	+19	50	17.5		399
1988	EF1	*	1988	03	13.64861	12	04	15.64	+09	40	54.2	15.5	399
1988	EF1		1988	03	13.66406	12	04	14.88	+09	40	58.3		399
1988	EF1		1988	03	13.68212	12	04	14.14	+09	41	00.7		399
267			1988	03	13.64861	12	02	09.86	+09	45	12.9	14	399
267			1988	03	13.66406	12	02	09.03	+09	45	19.3		399
267			1988	03	13.68212	12	02	08.10	+09	45	24.5		399
1028			1988	03	13.56944	11	05	37.24	+20	15	37.4	14	399
1028			1988	03	13.58547	11	05	36.51	+20	15	40.0		399
1028			1988	03	13.61036	11	05	35.31	+20	15	44.0		399
1764			1988	01	25.62378	09	47	35.44	+12	31	58.2	15	399
1764			1988	01	25.63976	09	47	34.73	+12	32	02.4		399
1764			1988	01	25.65793	09	47	34.06	+12	32	06.7		399
1764			1988	01	26.68791	09	46	52.26	+12	36	11.9	16	399
1764			1988	01	26.70322	09	46	51.68	+12	36	16.8		399
2082			1988	01	24.59537	09	46	47.13	+16	54	18.3	16.5	399
2082			1988	01	24.61060	09	46	46.40	+16	54	23.9		399
2082			1988	01	24.62795	09	46	45.65	+16	54	25.8		399
2265			1988	01	24.59537	09	43	09.88	+14	27	11.1	15.5	399
2265			1988	01	24.61060	09	43	09.30	+14	27	29.2		399
2541			1988	01	24.61060	09	54	30.62	+17	05	55.1	16	399
2541			1988	01	24.62795	09	54	29.76	+17	06	01.3		399
2541			1988	01	25.70642	09	53	44.26	+17	11	08.9	16	399

2541		1988	01	25.72222	09	53	43.55	+17 11 12.6		399
2541		1988	01	25.74097	09	53	42.83	+17 11 18.2		399
2541		1988	02	08.50926	09	42	46.10	+18 18 32.3	15.5	399
2541		1988	02	08.52616	09	42	45.18	+18 18 38.7		399
2541		1988	02	08.54167	09	42	44.38	+18 18 41.5		399
2581		1988	02	07.43715	07	35	59.82	+18 21 47.3	15	399
2581		1988	02	07.45243	07	35	59.06	+18 21 47.5		399
2581		1988	02	08.47277	07	35	13.15	+18 23 15.0	15	399
2581		1988	02	08.48770	07	35	12.34	+18 23 15.7		399
2581		1988	02	08.50625	07	35	11.38	+18 23 18.3		399
2989		1988	02	15.59595	09	42	49.66	+19 25 23.9	16	399
2989		1988	02	15.64444	09	42	46.53	+19 25 41.9		399
2989		1988	02	19.63414	09	38	31.00	+19 47 27.5	16.5	399
2989		1988	02	19.65405	09	38	29.58	+19 47 33.0		399
3383		1988	01	25.62378	09	42	58.51	+12 47 33.3	16	399
3383		1988	01	25.63976	09	42	57.73	+12 47 41.3		399
3383		1988	01	25.65793	09	42	56.90	+12 47 53.2		399
3383		1988	01	26.70322	09	42	10.77	+12 57 28.8	16	399
3383		1988	01	26.72206	09	42	09.86	+12 57 40.0		399
3383		1988	02	07.43785	09	32	34.57	+14 51 15.1	15	399
3383		1988	02	07.45434	09	32	33.71	+14 51 27.3		399

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

1984	HK1	1988	01	19.52222	08	27	01.61	+20 29 28.9	16	400
1984	HK1	1988	01	19.54514	08	27	00.24	+20 29 30.5		400
1984	HK1	1988	01	19.56007	08	26	59.37	+20 29 32.6		400
1987	WR	1988	01	10.50308	04	01	40.15	+19 59 09.5	16	400
1987	WR	1988	01	10.53572	04	01	39.79	+19 59 06.2		400
1987	WR	1988	01	11.49583	04	01	31.17	+19 57 54.4		400
1987	WR	1988	01	12.55000	04	01	23.75	+19 56 40.5	16	400
1987	WR	1988	01	12.58611	04	01	23.53	+19 56 38.1		400
1987	WR	1988	01	12.60625	04	01	23.38	+19 56 36.1		400
1987	XD	1988	01	10.39381	04	37	01.09	+13 53 12.4	16	400
1987	XD	1988	01	10.41667	04	37	00.35	+13 53 15.4		400
1987	XD	1988	01	10.43316	04	36	59.81	+13 53 20.3		400
1988	AF	1988	01	19.53403	08	32	27.73	+15 40 33.6	16	400
1988	AF	1988	01	19.54931	08	32	26.62	+15 40 30.9		400
1988	AF	1988	01	19.56181	08	32	25.69	+15 40 30.1		400
1988	AF	1988	01	20.61704	08	31	14.82	+15 37 08.0	16	400
1988	AF	1988	01	20.62815	08	31	14.08	+15 37 04.2		400
1988	AF	1988	01	20.63891	08	31	13.44	+15 37 03.0		400
1988	AF	1988	01	24.50766	08	26	51.74	+15 24 59.5	15.5	400
1988	AF	1988	01	24.52225	08	26	50.72	+15 24 56.7		400
1988	AF	1988	01	24.53127	08	26	50.20	+15 24 55.1		400
1988	AF	1988	02	16.58058	08	03	48.04	+14 20 58.3	16	400
1988	AF	1988	02	16.59794	08	03	47.36	+14 20 56.8		400
1988	AF	1988	02	16.61044	08	03	46.59	+14 20 53.3		400
1988	BU *	1988	01	19.48068	07	57	42.20	+22 03 16.3	16	400
1988	BU	1988	01	19.49309	07	57	41.59	+22 03 16.5		400
1988	BU	1988	01	19.51111	07	57	40.57	+22 03 21.4		400
1988	BU	1988	01	23.66701	07	54	05.13	+22 17 29.6	16	400
1988	BU	1988	01	23.68507	07	54	04.39	+22 17 31.4		400
1988	BU	1988	01	24.58333	07	53	18.70	+22 20 35.7	16	400
1988	BU	1988	01	24.60002	07	53	17.74	+22 20 37.8		400

1988	DA	*	1988	02	16.69965	11	15	27.54	+09	29	58.9	16.5	400
1988	DA		1988	02	16.72049	11	15	26.50	+09	30	04.2		400
1988	DA		1988	02	16.74236	11	15	25.28	+09	30	06.9		400
1988	DA		1988	02	21.54201	11	11	11.67	+09	45	23.2	16	400
1988	DA		1988	02	21.55938	11	11	10.79	+09	45	26.5		400
1988	DA		1988	02	21.57951	11	11	09.48	+09	45	30.1		400
1988	DA		1988	03	10.56771	10	52	40.37	+10	41	01.7	16.0	400
1988	DA		1988	03	10.58570	10	52	39.27	+10	41	05.3		400
1988	DO1	*	1988	02	21.60104	11	30	44.49	+11	00	09.6	16	400
1988	DO1		1988	02	21.61840	11	30	43.75	+11	00	21.5		400
1988	DO1		1988	02	21.63576	11	30	42.94	+11	00	29.7		400
20			1988	01	10.50308	04	02	55.33	+19	44	33.5	9.5	400
20			1988	01	10.53572	04	02	55.19	+19	44	31.8		400
20			1988	01	12.55000	04	02	52.42	+19	44	41.4	9.5	400
20			1988	01	12.58611	04	02	52.35	+19	44	41.9		400
20			1988	01	12.60625	04	02	52.34	+19	44	41.8		400
1212			1988	02	15.60633	10	12	56.64	+11	07	13.9	13.0	400
1212			1988	02	15.62091	10	12	56.02	+11	07	17.7		400
1212			1988	02	15.63272	10	12	55.57	+11	07	22.5		400
1581			1988	01	19.52222	08	23	57.40	+20	28	57.2	14.5	400
1581			1988	01	19.54514	08	23	56.25	+20	29	03.3		400
1581			1988	01	19.56007	08	23	55.49	+20	29	06.3		400
1674			1988	01	10.50308	04	05	13.88	+19	40	48.9	15	400
1674			1988	01	10.53572	04	05	13.24	+19	40	49.5		400
1674			1988	01	11.49583	04	05	02.19	+19	41	26.2		400
1674			1988	01	12.55000	04	04	51.65	+19	42	12.7	15.5	400
1674			1988	01	12.58611	04	04	51.13	+19	42	15.6		400
1674			1988	01	12.60625	04	04	50.86	+19	42	17.4		400
1880			1988	01	19.52222	08	23	13.07	+20	02	12.5	15.5	400
1880			1988	01	19.54514	08	23	12.07	+20	02	19.8		400
1880			1988	01	19.56007	08	23	11.28	+20	02	24.2		400
2407			1988	02	15.60633	10	13	17.78	+11	50	14.7	15.0	400
2407			1988	02	15.62091	10	13	17.03	+11	50	18.0		400
2407			1988	02	15.63272	10	13	16.49	+11	50	21.2		400
2708			1988	01	19.52222	08	28	11.92	+19	54	54.1	15.5	400
2708			1988	01	19.54514	08	28	10.79	+19	55	01.5		400
2708			1988	01	19.56007	08	28	09.86	+19	55	04.5		400

413 Siding Spring
R. H. McNaught, Siding Spring Observatory, Coonabarabran, N.S.W. 2857, Australia
Observer M. Hartley
Measurer R. H. McNaught
1.2-m U.K. Schmidt telescope

1988	DJ		1988	02	19.58883	10	14	11.80	-02	56	31.1	F	413
1988	DJ		1988	02	19.65133	10	14	09.26	-02	56	18.7	F	413
1988	DJ	*	1988	02	22.50434	10	11	56.30	-02	44	13.8	18	413
1988	DJ		1988	02	22.57219	10	11	53.18	-02	43	58.1		413
1988	DJ		1988	02	23.53975	10	11	08.10	-02	39	38.5		413
1988	DJ		1988	02	23.54669	10	11	07.93	-02	39	36.9		413
1988	DJ		1988	02	25.59934	10	09	32.38	-02	30	06.2		413
1988	DJ		1988	02	25.61323	10	09	31.91	-02	30	03.0		413
1988	DK	*	1988	02	22.50434	10	12	02.25	-03	10	02.2	19	413
1988	DK		1988	02	22.57219	10	11	59.13	-03	09	39.8		413
1988	DK		1988	02	23.53975	10	11	16.10	-03	03	54.4		413
1988	DK		1988	02	23.54669	10	11	15.96	-03	03	52.8		413
1988	DK		1988	02	25.59934	10	09	44.49	-02	51	11.8		413
1988	DK		1988	02	25.61323	10	09	44.02	-02	51	08.4		413
1988	DL	*	1988	02	22.50434	10	12	04.44	-02	39	45.0	19	413

1988	DL		1988	02	22.57219	10	12	00.94	-02	39	28.9		413
1988	DL		1988	02	23.54322	10	11	11.17	-02	35	14.3		413
1988	DL		1988	02	25.60628	10	09	25.60	-02	25	51.8		413
1988	DM	*	1988	02	22.50434	10	13	52.60	-00	06	12.4	19	413
1988	DM		1988	02	22.57219	10	13	49.20	-00	05	55.0	p	413
1988	DM		1988	02	23.54322	10	12	57.69	-00	01	15.7	V	413
1988	DM		1988	02	25.60628	10	11	08.34	+00	08	52.8		413
1988	DN		1988	02	19.58883	10	16	21.31	-00	45	36.6	F	413
1988	DN		1988	02	19.65133	10	16	18.56	-00	45	18.2	F	413
1988	DN	*	1988	02	22.50434	10	13	56.69	-00	28	22.6	18	413
1988	DN		1988	02	22.57219	10	13	53.33	-00	27	59.8		413
1988	DN		1988	02	23.53975	10	13	05.42	-00	22	00.5		413
1988	DN		1988	02	23.54669	10	13	05.23	-00	21	58.7		413
1988	DN		1988	02	25.59934	10	11	24.05	-00	08	59.9		413
1988	DN		1988	02	25.61323	10	11	23.48	-00	08	55.5		413
1988	DO		1988	02	19.58883	10	19	31.32	+00	07	03.2		413
1988	DO		1988	02	19.65133	10	19	27.43	+00	07	02.0		413
1988	DO	*	1988	02	22.50434	10	16	21.60	+00	07	53.9	18	413
1988	DO		1988	02	22.57219	10	16	17.25	+00	07	55.9		413
1988	DO		1988	02	23.53975	10	15	14.15	+00	08	31.2		413
1988	DO		1988	02	23.54669	10	15	13.76	+00	08	32.0		413
1988	DO		1988	02	25.59934	10	13	00.31	+00	10	14.7		413
1988	DO		1988	02	25.61323	10	12	59.53	+00	10	15.5		413
1988	DP		1988	02	19.58883	10	20	31.83	-02	44	37.3	V	413
1988	DP	*	1988	02	22.50434	10	17	35.66	-02	29	29.6	18	413
1988	DP		1988	02	22.57219	10	17	31.52	-02	29	09.2		413
1988	DP		1988	02	23.53975	10	16	32.57	-02	23	47.1		413
1988	DP		1988	02	23.54669	10	16	32.37	-02	23	45.1		413
1988	DP		1988	02	25.59934	10	14	26.78	-02	11	52.6		413
1988	DP		1988	02	25.61323	10	14	26.12	-02	11	48.9		413
1988	DQ		1988	02	19.58883	10	23	47.53	-00	26	06.5		413
1988	DQ		1988	02	19.65133	10	23	43.46	-00	26	09.6		413
1988	DQ	*	1988	02	22.50434	10	20	36.18	-00	27	37.8	16	413
1988	DQ		1988	02	22.57219	10	20	31.80	-00	27	39.5		413
1988	DQ		1988	02	23.53975	10	19	28.04	-00	27	54.0		413
1988	DQ		1988	02	23.54669	10	19	27.66	-00	27	54.0		413
1988	DQ		1988	02	25.59934	10	17	12.69	-00	28	05.8		413
1988	DQ		1988	02	25.61323	10	17	11.85	-00	28	05.6		413
10			1988	03	06.52876	10	12	20.98	+06	13	29.8		413
10			1988	03	06.53042	10	12	20.93	+06	13	30.2		413
10			1988	03	06.53275	10	12	20.80	+06	13	29.8		413
426			1988	02	10.57414	07	53	41.91	+24	28	57.9		413
426			1988	02	10.57660	07	53	41.80	+24	28	57.8		413
426			1988	02	11.57363	07	52	46.28	+24	23	28.8		413
426			1988	02	11.57503	07	52	46.19	+24	23	28.2		413
426			1988	02	11.57641	07	52	46.12	+24	23	28.0		413
1287			1988	02	19.58883	10	12	28.64	-00	58	32.4		413
1287			1988	02	19.65133	10	12	25.85	-00	58	11.2		413
1287			1988	02	22.50434	10	10	17.19	-00	40	21.1	16	413
1287			1988	02	22.57219	10	10	14.13	-00	39	57.5		413
1287			1988	02	23.53975	10	09	30.40	-00	33	38.3		413
1287			1988	02	23.54669	10	09	30.65	-00	33	40.5		413
1287			1988	02	25.59934	10	07	58.19	-00	20	04.6		413
1287			1988	02	25.61323	10	07	57.71	-00	20	00.0		413
3645			1988	02	19.58883	10	15	55.02	-00	15	13.5		413
3645			1988	02	19.65133	10	15	51.95	-00	15	01.0		413
3645			1988	02	22.50434	10	13	22.34	-00	03	37.5	17	413
3645			1988	02	22.57219	10	13	18.85	-00	03	22.5		413
3645			1988	02	23.53975	10	12	28.08	+00	00	42.1		413

3645	1988 02 23.54669	10 12 27.79	+00 00 43.7				413
3645	1988 02 25.59934	10 10 40.23	+00 09 36.0				413
3645	1988 02 25.61323	10 10 39.61	+00 09 39.4				413

474 Mount John
A. C. Gilmore, P.O. Box 57, Lake Tekapo, New Zealand
Observer A. C. Gilmore
Measurer P. M. Kilmartin
0.25-m astrograph (1) and 0.6-m f/14 Cassegrain reflector
AGK3, SAOC, CPZ, field plates from Carter Observatory

1932 EO	1987 06 21.54443	17 32 30.41	-36 17 27.3				474
1932 EO	1987 06 21.56608	17 32 29.18	-36 17 26.5				474
1950 JB	1987 10 19.37921	01 15 57.18	-17 19 08.4			1	474
1950 JB	1987 10 19.43407	01 15 54.39	-17 19 18.4			1	474
1986 AK	1987 08 18.71494	20 58 24.27	-49 01 59.9				474
1986 AK	1987 08 18.73800	20 58 22.50	-49 02 00.9				474
1987 JG	1987 06 20.48899	15 06 47.62	-17 18 18.1				474
1987 JG	1987 06 20.51804	15 06 47.10	-17 18 09.2				474
1987 JG	1987 06 21.46515	15 06 34.59	-17 13 59.5				474
1987 JG	1987 06 21.50172	15 06 34.04	-17 13 49.9				474
1987 QA	1987 11 18.56295	11 15 57.94	-62 10 31.4				474
1987 QA	1987 11 18.58558	11 16 03.08	-62 10 03.3				474
1987 UA	1987 11 18.47209	01 27 33.56	-19 30 01.6				474
1987 UA	1987 11 18.48882	01 27 35.37	-19 30 10.5				474
1987 UA	1987 11 19.49102	01 29 26.31	-19 38 05.0				474
1987 UA	1987 11 19.50722	01 29 28.33	-19 38 12.6				474
1981	1987 09 17.37922	12 13 56.17	-64 30 35.5				474
1981	1987 09 18.36568	13 24 25.00	-68 23 08.3				474
1981	1987 09 19.44381	15 28 27.94	-69 33 47.9				474

503 Cambridge
J. D. Shanklin, 11 City Road, Cambridge, CB1 1DP, England
Observer J. D. Shanklin
0.44-m Schmidt

46	1988 02 13.02281	10 57 46.98	+05 07 36.8				503

511 Haute Provence
E. W. Elst, Royal Observatory, B-1180 Brussels, Belgium
Observers E. W. Elst, G. Sause
Measurer E. W. Elst
Reductions by E. W. Elst and P. Van den Eynde
0.6-m Schmidt

1985 TF3	1988 01 22.91597	07 16 53.63	+28 16 50.8		17		511
1985 TF3	1988 01 22.92986	07 16 53.08	+28 16 52.4				511
1985 TF3	1988 01 22.94444	07 16 52.53	+28 16 53.1				511
1986 PM4	1988 01 21.84201	05 29 37.76	+26 08 21.8				511
1986 PM4	1988 01 21.86510	05 29 37.01	+26 08 17.0		16.8		511
1986 TX	1988 01 23.11389	10 17 48.94	+15 19 50.8		17.5		511
1986 TX	1988 01 23.13889	10 17 48.26	+15 19 59.0				511
1986 UL1	1988 01 21.92292	07 19 23.38	+27 39 19.9		17.2		511
1986 UL1	1988 01 21.93750	07 19 22.91	+27 39 23.7				511
1986 UL1	1988 01 21.95139	07 19 22.37	+27 39 25.9				511
1986 UL1	1988 01 22.91597	07 18 32.96	+27 42 42.9		17		511
1986 UL1	1988 01 22.92986	07 18 32.33	+27 42 45.4				511
1986 UL1	1988 01 22.94444	07 18 31.58	+27 42 49.3				511
1987 YK	1988 01 21.92292	07 18 49.05	+27 52 00.1		17.5		511
1987 YK	1988 01 21.93750	07 18 48.35	+27 52 00.4				511
1987 YK	1988 01 21.95139	07 18 47.80	+27 52 02.0				511
1987 YK	1988 01 22.91597	07 17 48.80	+27 54 09.7		17		511

1987	YK		1988	01	22.92986	07	17	48.03	+27	54	12.6	511
1987	YK		1988	01	22.94444	07	17	47.13	+27	54	13.9	511
1988	AK		1988	01	21.84201	05	24	22.04	+24	35	50.9	511
1988	AK		1988	01	21.86510	05	24	21.48	+24	35	54.0	17 511
1988	BJ	*	1988	01	22.01667	08	26	36.99	+26	09	09.0	17 511
1988	BJ		1988	01	22.03056	08	26	35.70	+26	08	59.8	511
1988	BJ		1988	01	23.01528	08	24	42.25	+25	56	16.5	17 511
1988	BJ		1988	01	23.04375	08	24	38.72	+25	55	53.8	511
1988	BB1	*	1988	01	21.84201	05	34	55.56	+27	24	11.3	17.5 511
1988	BB1		1988	01	21.86510	05	34	55.09	+27	24	09.1	511
1988	BC1	*	1988	01	21.84201	05	37	11.93	+27	26	59.5	17.5 511
1988	BC1		1988	01	21.86510	05	37	11.44	+27	27	03.7	511
1988	BD1	*	1988	01	21.92292	07	18	03.02	+28	08	17.3	17.5 511
1988	BD1		1988	01	21.93750	07	18	02.23	+28	08	15.9	511
1988	BD1		1988	01	21.95139	07	18	01.25	+28	08	17.3	511
1988	BE1	*	1988	01	21.92292	07	18	28.27	+29	05	39.7	17.5 511
1988	BE1		1988	01	21.93750	07	18	27.42	+29	05	39.8	511
1988	BE1		1988	01	21.95139	07	18	26.67	+29	05	41.2	511
1988	BF1	*	1988	01	21.92292	07	20	19.10	+30	27	07.9	17.5 511
1988	BF1		1988	01	21.93750	07	20	18.33	+30	27	10.2	511
1988	BF1		1988	01	21.95139	07	20	17.71	+30	27	11.6	511
1988	BG1	*	1988	01	21.92292	07	31	07.83	+30	06	00.2	17.5 511
1988	BG1		1988	01	21.93750	07	31	07.10	+30	06	06.1	511
1988	BG1		1988	01	21.95139	07	31	06.18	+30	06	08.3	511
1988	BH1	*	1988	01	21.92292	07	31	34.85	+30	14	11.5	17 511
1988	BH1		1988	01	21.93750	07	31	34.19	+30	14	13.4	511
1988	BH1		1988	01	21.95139	07	31	33.41	+30	14	13.5	511
1988	BJ1	*	1988	01	21.92292	07	33	34.43	+31	23	35.8	17 511
1988	BJ1		1988	01	21.93750	07	33	33.61	+31	23	37.4	511
1988	BJ1		1988	01	21.95139	07	33	32.86	+31	23	39.6	511
1988	BK1	*	1988	01	22.01667	08	24	56.82	+24	41	15.1	17.5 511
1988	BK1		1988	01	22.03056	08	24	56.07	+24	41	19.8	511
1988	BK1		1988	01	23.01528	08	23	44.35	+24	45	02.9	17 511
1988	BK1		1988	01	23.04375	08	23	42.43	+24	45	06.7	511
1988	BM1	*	1988	01	22.01667	08	31	35.03	+24	01	48.2	17 511
1988	BM1		1988	01	22.03056	08	31	34.22	+24	01	47.3	511
1988	BM1		1988	01	23.01528	08	30	31.25	+23	59	16.8	17.2 511
1988	BM1		1988	01	23.04375	08	30	29.31	+23	59	08.2	511
1988	BN1	*	1988	01	22.01667	08	33	10.40	+25	45	27.4	16.5 511
1988	BN1		1988	01	22.03056	08	33	09.54	+25	45	30.3	511
1988	BN1		1988	01	23.01528	08	32	00.80	+25	47	56.1	16.8 511
1988	BN1		1988	01	23.04375	08	31	58.73	+25	48	00.9	511
1988	BO1	*	1988	01	22.91597	07	20	29.04	+27	46	18.4	17.5 511
1988	BO1		1988	01	22.92986	07	20	28.39	+27	46	16.1	511
1988	BO1		1988	01	22.94444	07	20	27.67	+27	46	15.6	511
1988	BP1	*	1988	01	22.91597	07	22	32.14	+27	32	48.9	17 511
1988	BP1		1988	01	22.92986	07	22	31.48	+27	32	48.3	511
1988	BP1		1988	01	22.94444	07	22	30.65	+27	32	45.8	511
1988	BR1	*	1988	01	23.11389	10	23	34.10	+13	44	29.7	17 511
1988	BR1		1988	01	23.13889	10	23	33.55	+13	44	43.2	511
1988	BS1	*	1988	01	23.11389	10	30	57.71	+15	57	44.3	17 511
1988	BS1		1988	01	23.13889	10	30	57.51	+15	57	51.9	511
1988	BT1	*	1988	01	22.11667	10	23	39.52	+16	15	05.7	17 511
1988	BT1		1988	01	22.13611	10	23	38.48	+16	15	15.6	511
1988	BU1	*	1988	01	22.11667	10	23	57.73	+17	04	56.8	17.2 511
1988	BU1		1988	01	22.13611	10	23	56.94	+17	05	06.3	511
1988	BV1	*	1988	01	22.11667	10	28	56.66	+17	52	02.7	17 511
1988	BV1		1988	01	22.13611	10	28	56.07	+17	52	04.4	511
29			1988	01	21.92292	07	32	14.84	+30	48	02.4	10 511

29		1988	01	21.93750	07	32	13.95	+30 48 03.6		511
29		1988	01	21.95139	07	32	13.08	+30 48 04.0		511
138		1988	01	22.11667	10	18	36.62	+15 31 23.2	16	511
138		1988	01	22.13611	10	18	35.68	+15 31 29.8		511
138		1988	01	23.11389	10	17	57.16	+15 36 10.6	15	511
138		1988	01	23.13889	10	17	56.36	+15 36 19.2		511
613		1988	01	22.11667	10	19	11.54	+17 08 32.1	16	511
613		1988	01	22.13611	10	19	10.85	+17 08 34.4		511
618		1988	01	22.01667	08	27	50.40	+24 20 14.5		511
618		1988	01	22.03056	08	27	49.73	+24 20 20.8	14	511
618		1988	01	23.01528	08	27	00.70	+24 26 56.0	15	511
618		1988	01	23.04375	08	26	59.28	+24 27 05.1		511
807		1988	01	23.11389	10	19	25.11	+13 30 44.3	16	511
807		1988	01	23.13889	10	19	24.75	+13 30 55.9		511
856		1988	01	22.11667	10	32	05.25	+15 55 32.9	16	511
856		1988	01	22.13611	10	32	04.85	+15 55 44.5		511
856		1988	01	23.11389	10	31	46.97	+16 06 43.3	15	511
856		1988	01	23.13889	10	31	46.69	+16 07 01.5		511
1248		1988	01	21.92292	07	23	14.51	+30 04 35.0	15.5	511
1248		1988	01	21.93750	07	23	13.80	+30 04 40.1		511
1248		1988	01	21.95139	07	23	12.96	+30 04 42.7		511
1321		1988	01	22.01667	08	26	20.89	+22 47 35.8		511
1321		1988	01	22.03056	08	26	20.19	+22 47 37.5	15.5	511
1321		1988	01	23.01528	08	25	25.19	+22 48 56.0	16	511
1321		1988	01	23.04375	08	25	23.54	+22 48 55.0		511
1729		1988	01	21.84201	05	31	32.91	+27 02 51.9		511
1729		1988	01	21.86510	05	31	32.13	+27 02 51.8	17	511
2756		1988	01	21.92292	07	17	06.30	+30 08 40.5	17.3	511
2756		1988	01	21.93750	07	17	05.82	+30 08 40.5		511
2756		1988	01	21.95139	07	17	04.93	+30 08 39.8		511
2762		1988	01	21.84201	05	24	00.87	+26 32 59.6		511
2762		1988	01	21.86510	05	23	59.97	+26 32 54.2	16.8	511
2831		1988	01	22.91597	07	22	18.82	+25 57 10.8	16.8	511
2831		1988	01	22.92986	07	22	17.93	+25 57 15.2		511
2831		1988	01	22.94444	07	22	17.06	+25 57 16.4		511
2941		1988	01	22.01667	08	23	53.78	+25 24 11.5		511
2941		1988	01	22.03056	08	23	52.85	+25 24 14.7	16	511
2941		1988	01	23.01528	08	22	41.45	+25 27 13.4	16.5	511
2941		1988	01	23.04375	08	22	39.15	+25 27 18.2		511
3118		1988	01	22.91597	07	16	37.52	+26 41 57.2	16.5	511
3118		1988	01	22.92986	07	16	36.77	+26 41 55.4		511
3118		1988	01	22.94444	07	16	35.96	+26 41 53.6		511
3575		1988	01	21.92292	07	22	55.17	+29 56 55.5	16.8	511
3575		1988	01	21.93750	07	22	54.47	+29 56 58.3		511
3575		1988	01	21.95139	07	22	53.75	+29 57 00.9		511

552 San Vittore
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Observers C. Vacchi, G. Sassi
Measurers C. Vacchi, V. Goretti, E. Colombini
AGK3, SAOC

1953	TH	1988	02	13.98750	10	37	06.30	+10 43 17.6	16.5	552
1953	TH	1988	02	14.01458	10	37	04.61	+10 43 18.9		552
1953	TH	1988	02	14.95625	10	36	08.81	+10 45 09.4	16.5	552
1953	TH	1988	02	14.97500	10	36	07.62	+10 45 11.2		552
1953	TH	1988	02	15.95417	10	35	08.92	+10 47 05.2		552
1953	TH	1988	02	15.97292	10	35	07.78	+10 47 07.8		552
1981	QJ	1987	11	21.96076	04	00	09.26	+21 31 18.6	16.8	552
1981	QJ	1987	11	21.97257	04	00	08.49	+21 31 17.7		552

1984	FA		1988	02	13.94722	10	36	02.50	+13	54	06.8	17.5	552
1984	FA		1988	02	13.96528	10	36	01.92	+13	54	12.8		552
1984	FA		1988	02	16.89375	10	33	39.69	+14	16	23.0	17.5	552
1984	FA		1988	02	16.91875	10	33	38.38	+14	16	34.2		552
1984	FA		1988	02	21.99306	10	29	22.60	+14	54	27.7	17.5	552
1984	FA		1988	02	22.01181	10	29	21.64	+14	54	35.1		552
1986	JG		1987	11	21.96076	04	06	13.60	+22	46	14.7	16.9	552
1986	JG		1987	11	21.97257	04	06	12.56	+22	46	13.7		552
1988	BB		1988	01	10.86944	06	42	39.96	+26	47	53.1	16.5	552
1988	BB		1988	01	10.89861	06	42	38.17	+26	47	49.7		552
1988	BB		1988	01	23.87639	06	31	06.18	+26	03	59.0	16.5	552
1988	BB		1988	01	23.89861	06	31	05.27	+26	03	54.8		552
1988	BG		1988	01	23.92708	07	46	48.47	+19	08	38.5	16.7	552
1988	BG		1988	01	23.95417	07	46	46.67	+19	08	32.8		552
1988	BH		1988	01	23.92708	07	47	38.69	+19	26	58.3	17.0	552
1988	BH		1988	01	23.95417	07	47	36.89	+19	26	55.8		552
1988	BQ	*	1988	01	23.92708	07	36	02.40	+19	10	01.8	16.8	552
1988	BQ		1988	01	23.95417	07	36	00.65	+19	10	09.9		552
1988	BR	*	1988	01	23.92708	07	43	30.66	+19	08	42.1	17.2	552
1988	BR		1988	01	23.95417	07	43	29.04	+19	08	51.0		552
1988	BS	*	1988	01	23.92708	07	47	54.15	+18	20	33.5	16.5	552
1988	BS		1988	01	23.95417	07	47	52.31	+18	20	32.8		552
1988	BT	*	1988	01	23.92708	07	51	08.15	+18	46	13.5	16.9	552
1988	BT		1988	01	23.95417	07	51	06.22	+18	46	16.5		552
1988	CK	*	1988	02	13.98750	10	28	39.10	+08	57	25.2	16.7	552
1988	CK		1988	02	14.01458	10	28	37.40	+08	57	24.9		552
1988	CK		1988	02	14.92083	10	27	37.94	+08	58	08.7	16.7	552
1988	CK		1988	02	14.93958	10	27	36.57	+08	58	08.8		552
1988	CK		1988	02	15.91597	10	26	31.65	+08	58	55.3		552
1988	CK		1988	02	15.94028	10	26	29.94	+08	58	56.8		552
1988	CK		1988	02	22.02639	10	19	36.06	+09	04	33.9	17.0	552
1988	CK		1988	02	22.04583	10	19	34.67	+09	04	35.1		552
1988	CL	*	1988	02	13.98750	10	30	58.85	+10	03	14.8	17.0	552
1988	CL		1988	02	14.01458	10	30	57.13	+10	03	18.0		552
1988	CL		1988	02	14.99097	10	29	56.73	+10	04	23.8	17.0	552
1988	CL		1988	02	15.00903	10	29	55.68	+10	04	24.7		552
1988	CL		1988	02	15.98611	10	28	54.71	+10	05	31.1		552
1988	CL		1988	02	16.00347	10	28	53.68	+10	05	32.1		552
1988	CL		1988	02	16.93333	10	27	55.07	+10	06	36.8		552
1988	CL		1988	02	16.95486	10	27	53.71	+10	06	38.0		552
1988	CL		1988	02	17.90069	10	26	54.04	+10	07	46.5		552
1988	CL		1988	02	17.92153	10	26	52.89	+10	07	48.5		552
1988	CL		1988	02	21.96111	10	22	35.96	+10	12	38.6	17.2	552
1988	CL		1988	02	21.97917	10	22	34.69	+10	12	39.6		552
1988	CL		1988	02	22.95417	10	21	33.00	+10	13	49.0	V	552
1988	CL		1988	02	22.97639	10	21	31.64	+10	13	48.9	V	552
1988	DD	*	1988	02	17.95139	10	39	30.89	+17	40	26.3	16.0	552
1988	DD		1988	02	17.97778	10	39	29.68	+17	40	50.8		552
1988	DD		1988	02	21.86667	10	36	42.67	+18	40	22.8	16.0	552
1988	DD		1988	02	21.88542	10	36	41.84	+18	40	40.1		552
1988	DD		1988	02	22.91667	10	35	55.89	+18	56	08.9	16.0	552
1988	DD		1988	02	22.93264	10	35	55.11	+18	56	23.6		552
1988	DE	*	1988	02	17.95139	10	44	13.70	+16	24	27.8	16.8	552
1988	DE		1988	02	17.97778	10	44	11.95	+16	24	28.0		552
1988	DE		1988	02	21.91042	10	39	51.63	+16	24	38.6	17.0	552
1988	DE		1988	02	21.92986	10	39	50.18	+16	24	38.1		552
1988	DE		1988	02	22.88403	10	38	46.04	+16	24	29.1		552
1988	DE		1988	02	22.90278	10	38	44.63	+16	24	30.5		552
22			1986	12	02.93403	04	36	51.46	+23	58	21.9	10.5	552

22		1986 12 02.96806	04 36 49.23	+23 58 28.8					552
50		1988 01 23.92708	07 41 45.67	+17 34 54.3			12.6		552
50		1988 01 23.95417	07 41 43.96	+17 34 57.9					552
352		1986 12 02.93403	04 38 28.69	+21 40 52.3			13.0		552
352		1986 12 02.96806	04 38 26.40	+21 40 40.4					552
394		1986 12 02.93403	04 32 58.19	+22 27 32.4			14.1		552
394		1986 12 02.96806	04 32 55.95	+22 27 32.6					552
1092		1988 01 10.86944	06 34 49.58	+26 39 46.7			15.0		552
1092		1988 01 10.89861	06 34 47.87	+26 39 45.0					552
1195		1988 01 23.92708	07 42 12.99	+17 54 25.0			17.0		552
1195		1988 01 23.95417	07 42 10.99	+17 54 25.3					552
1332		1988 02 13.98750	10 35 26.99	+11 19 43.2			15.5		552
1332		1988 02 14.01458	10 35 25.66	+11 19 51.7					552
1434		1988 02 13.98750	10 32 18.69	+09 14 01.1			15.0		552
1434		1988 02 14.01458	10 32 17.71	+09 14 11.5					552
2293		1986 12 02.93403	04 45 40.39	+23 00 26.7			16.0		552
2293		1986 12 02.96806	04 45 38.39	+23 00 23.5					552
2581		1988 01 23.92708	07 49 50.66	+17 58 05.4			15.5		552
2581		1988 01 23.95417	07 49 48.87	+17 58 07.5					552
2717		1988 02 13.98750	10 24 34.52	+08 38 41.5			16.5		552
2717		1988 02 14.01458	10 24 32.94	+08 38 52.0					552

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J. M. Baur, Via Zara 20, I-33083 Chions, Italy
Observers C. R. Baur, G. Carniel
Measurer J. M. Baur
0.6-m f/3 Wright reflector
AGK3, SAOC

1987 WA		1988 02 10.76597	03 24 23.97	+20 21 33.5					567
1987 WA		1988 02 10.77986	03 24 24.79	+20 21 36.3					567
1987 WA		1988 02 14.76388	03 28 25.72	+20 40 26.9					567
1987 WA		1988 02 14.77777	03 28 26.84	+20 40 30.9					567
1987 WA		1988 02 14.82986	03 28 30.12	+20 40 45.8					567
1987 WB		1988 01 23.74028	03 09 54.25	+14 46 55.5					567
1987 WB		1988 01 23.75972	03 09 54.69	+14 46 55.7					567
1987 WB		1988 02 10.79791	03 19 28.92	+15 05 26.1				V	567
1987 WB		1988 02 10.81180	03 19 29.37	+15 05 27.3					567
1987 WB		1988 02 11.78958	03 20 10.44	+15 07 10.6					567
1987 WB		1988 02 11.80347	03 20 11.09	+15 07 11.9					567
1987 WB		1988 02 14.79791	03 22 22.99	+15 12 51.2					567
1987 WB		1988 02 14.81180	03 22 23.62	+15 12 52.9					567

568 Mauna Kea Observatory
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Honolulu, HI 96822, U.S.A.
Observer D. J. Tholen
2.24-m telescope encoders
AGK3, SAOC

1987 QA		1988 03 17.55521	14 51 34.99	+25 16 08.9					568
2212		1988 01 23.66181	18 01 41.79	-14 06 24.7					568

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

412		1988 02 14.76825	07 36 27.27	+27 37 18.0					573
412		1988 02 14.77977	07 36 26.92	+27 37 21.7					573
412		1988 02 14.78515	07 36 26.55	+27 37 22.4					573
416		1988 01 11.74910	06 48 07.53	+36 07 13.6					573

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 416       1988 01 11.75431  06 48 07.29  +36 07 14.1                    573
 416       1988 01 11.76524  06 48 06.52  +36 07 14.5                    573
```

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

```
1929 TK    1988 02 23.39174  09 38 22.84  +14 15 12.6                    657
1929 TK    1988 02 23.42576  09 38 20.57  +14 15 19.9                    657
1987 UG    1987 10 22.30458  02 58 03.03  +16 24 52.0                    657
1987 UG    1987 10 22.35181  02 58 01.07  +16 24 38.7                    657
1987 WF    1987 10 22.30458  02 59 20.16  +16 19 54.0                    657
1987 WF    1987 10 22.35181  02 59 17.38  +16 19 54.4                    657
  39       1987 08 06.38524  00 10 51.70  -00 55 14.3                    657
  57       1987 06 08.41771  19 52 38.57  -00 34 19.9                    657
  76       1987 08 02.42847  00 14 30.35  +03 08 02.7                    657
 144       1987 06 28.26458  14 04 56.96  -09 50 39.8                    657
 146       1987 05 25.41771  16 43 45.53  -16 23 17.5                    657
 175       1987 08 23.37951  23 54 54.59  -03 47 15.0                    657
 183       1987 06 18.30354  15 49 44.54  +14 33 14.5                    657
 183       1987 06 24.29868  15 46 07.37  +14 08 24.3                    657
 240       1987 06 28.26458  14 10 20.68  -10 39 23.3                    657
 302       1987 10 13.18368  23 52 50.50  -00 48 19.6                    657
 358       1987 05 20.35146  16 56 12.81  -17 40 42.9                    657
 397       1987 05 25.41771  16 37 11.16  -15 10 55.7                    657
 490       1987 08 02.42847  00 14 27.41  +03 54 10.9                    657
 627       1987 06 03.30146  14 15 45.40  -03 55 21.7                    657
 796       1987 08 06.46061  04 42 16.49  +25 53 39.8                    657
 796       1987 08 07.44174  04 44 19.62  +26 05 06.4                    657
 796       1987 08 07.45701  04 44 21.58  +26 05 17.6                    657
 796       1987 08 07.46639  04 44 22.66  +26 05 23.6                    657
 918       1987 08 02.46892  23 59 39.75  +03 41 52.7                    657
 920       1987 10 13.18368  23 48 11.12  +01 09 34.0                    657
1305       1987 10 22.30458  03 01 09.66  +15 53 12.4                    657
1618       1987 08 03.35104  20 10 27.07  -21 55 04.2                    657
1692       1987 06 18.38861  20 42 45.42  -14 22 30.6                    657
1692       1987 06 18.41361  20 42 45.26  -14 22 32.3                    657
1692       1987 08 17.30104  20 03 42.11  -16 32 44.9                    657
1906       1987 09 29.41812  04 36 10.21  +29 14 19.2                    657
1906       1987 09 30.34521  04 36 42.12  +29 19 51.4                    657
1906       1987 09 30.43410  04 36 44.97  +29 20 26.0                    657
2180       1987 08 17.32604  23 12 42.20  +09 06 50.2                    657
2180       1987 09 14.22361  22 53 44.25  +07 03 07.1                    657
2213       1987 08 03.42014  22 29 00.83  -12 40 40.2                    657
```

675 Palomar
J. Gibson, ITT/Federal Electric Corporation and Jet Propulsion Laboratory, MS 238-332, Pasadena, CA 91109, U.S.A. (1)
E. Helin, MS 183-501, Jet Propulsion Laboratory, Pasadena, CA 91109, U.S.A. (2)
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Observers J. Alu (2, S), R. Crockett (2, S), J. Gibson (1, L, C), E. Helin (2, L, S), H. Holt (3, S), B. Roman (2, S), D. Schneeberger (2, S), C. Shoemaker (3, S), E. Shoemaker (3, S)
Measurers J. Alu (2), J. Gibson (1), C. Shoemaker (3), B. Roman (2), T. Rodriquez (3)
1.5-m reflector + CCD (C), 1.2-m (L) and 0.46-m (S) Schmidt telescopes

```
1954 RT  * 1954 09 04.40556  00 56 47.88  +01 48 13.7            16    1 675
1954 RT    1954 09 04.43090  00 56 47.07  +01 48 01.5                  1 675
```

1954	RU	*	1954	09	04.40556	00	56	52.97	+01	43	04.2	16	1 675
1954	RU		1954	09	04.43090	00	56	52.76	+01	42	42.6		1 675
1981	UW20	*	1981	10	22.32986	03	24	47.26	+31	38	02.3	16.5	2 675
1981	UW20		1981	10	22.37153	03	24	45.51	+31	38	17.5		2 675
1981	UW20		1981	10	23.29167	03	24	03.08	+31	43	33.1		2 675
1981	UW20		1981	10	23.33333	03	24	01.35	+31	43	47.5		2 675
1981	UX20	*	1981	10	22.32986	03	28	25.00	+31	02	33.4	17.5	2 675
1981	UX20		1981	10	22.37153	03	28	23.01	+31	02	04.6		2 675
1981	UX20		1981	10	23.29167	03	27	32.68	+30	50	08.9		2 675
1981	UX20		1981	10	23.33333	03	27	30.53	+30	49	38.2		2 675
1981	UY20	*	1981	10	22.32986	03	23	50.90	+34	52	01.7	16.5	2 675
1981	UY20		1981	10	22.37153	03	23	48.39	+34	52	17.9		2 675
1981	UY20		1981	10	23.29167	03	22	51.93	+34	58	08.5		2 675
1981	UY20		1981	10	23.33333	03	22	49.38	+34	58	24.6		2 675
1981	UZ20	*	1981	10	22.32986	03	27	25.01	+31	35	43.2	17.5	2 675
1981	UZ20		1981	10	22.37153	03	27	23.64	+31	35	52.6		2 675
1981	UZ20		1981	10	23.29167	03	26	51.97	+31	39	44.6		2 675
1981	UZ20		1981	10	23.33333	03	26	50.42	+31	39	55.5		2 675
1981	UA21	*	1981	10	22.32986	03	08	22.06	+30	41	34.9	17.0	2 675
1981	UA21		1981	10	22.37153	03	08	19.85	+30	41	48.4		2 675
1981	UA21		1981	10	23.29167	03	07	28.30	+30	47	00.7		2 675
1981	UA21		1981	10	23.33333	03	07	25.94	+30	47	14.6		2 675
1981	UB21	*	1981	10	22.32986	03	22	01.51	+33	38	56.6	16.0	2 675
1981	UB21		1981	10	22.37153	03	21	59.95	+33	38	59.6		2 675
1981	UB21		1981	10	23.29167	03	21	23.17	+33	39	56.4		2 675
1981	UB21		1981	10	23.33333	03	21	21.61	+33	39	59.1		2 675
1981	UC21	*	1981	10	22.32986	03	28	22.38	+31	02	32.4	17.0	2 675
1981	UC21		1981	10	22.37153	03	28	20.57	+31	02	06.9		2 675
1981	UC21		1981	10	23.29167	03	27	31.99	+30	50	10.0		2 675
1981	UC21		1981	10	23.33333	03	27	29.90	+30	49	40.4		2 675
1981	UD21	*	1981	10	22.32986	03	17	41.05	+34	45	21.0	16.0	2 675
1981	UD21		1981	10	22.37153	03	17	39.24	+34	45	11.2		2 675
1981	UD21		1981	10	23.29167	03	17	00.49	+34	41	05.6		2 675
1981	UD21		1981	10	23.33333	03	16	58.64	+34	40	55.6		2 675
1981	UE21	*	1981	10	22.32986	03	22	18.95	+32	07	02.4	16.5	2 675
1981	UE21		1981	10	22.37153	03	22	16.97	+32	07	10.9		2 675
1981	UE21		1981	10	23.29167	03	21	28.86	+32	10	33.6		2 675
1981	UE21		1981	10	23.33333	03	21	26.80	+32	10	42.8		2 675
1983	EA		1988	01	19.28559	06	28	40.16	+73	33	43.5		3 675
1983	EA		1988	01	20.22500	06	26	42.99	+73	20	03.5		3 675
1984	AB		1985	12	18.35556	07	05	49.27	+21	44	53.9		2 675
1984	AB		1985	12	18.37639	07	05	47.68	+21	45	17.1		2 675
1984	FS		1988	02	10.36366	08	27	06.03	+13	35	33.1	16.5	2 675
1984	FS		1988	02	14.34757	08	24	07.68	+14	17	47.1		2 675
1984	WK		1988	01	20.30711	06	19	54.86	+17	28	31.0	17.3	3 675
1984	WK		1988	01	20.34496	06	19	52.23	+17	28	12.0		3 675
1985	TF3		1988	01	20.33576	07	18	25.92	+28	16	00.0		3 675
1985	TF3		1988	01	20.37414	07	18	24.55	+28	16	00.2		3 675
1985	TG3		1988	01	19.20642	05	18	16.01	+32	12	54.7		3 675
1985	TG3		1988	01	20.25434	05	17	51.76	+32	10	12.8		3 675
1985	VK2		1988	01	24.41059	09	07	55.75	+43	23	46.5	16	3 675
1985	VK2		1988	01	24.44063	09	07	54.49	+43	23	52.3		3 675
1986	NF1		1988	02	10.29097	08	17	59.41	+23	57	44.5	17.5	2 675
1986	NF1		1988	02	12.37101	08	15	57.89	+24	07	09.2		2 675
1987	SY		1987	12	27.16104	00	04	53.75	+07	25	31.8		1 675
1987	SY		1987	12	27.16764	00	04	54.25	+07	25	33.2		1 675
1987	SY		1987	12	27.17256	00	04	54.58	+07	25	34.1		1 675
1987	SY		1987	12	27.18106	00	04	55.31	+07	25	37.5		1 675
1987	SY		1988	01	08.12188	00	21	09.19	+08	38	11.7		1 675

1987	SY		1988	01	08.12708	00	21	09.61	+08	38	14.2		1 675
1987	SY		1988	01	08.13125	00	21	09.94	+08	38	15.8		1 675
1987	SY		1988	01	09.14635	00	22	35.04	+08	44	52.6		1 675
1987	SY		1988	01	09.15046	00	22	35.38	+08	44	54.2		1 675
1987	SY		1988	01	09.15509	00	22	35.77	+08	44	56.2		1 675
1987	SG3		1987	11	22.23524	00	12	12.36	-10	33	29.1		3 675
1987	SG3		1987	11	23.15260	00	12	54.91	-10	35	22.2		3 675
1987	SH3		1987	11	22.23524	23	55	28.36	-11	49	12.8		3 675
1987	SH3		1987	11	23.15260	23	56	07.57	-11	55	16.9		3 675
1987	UW		1987	12	27.30192	02	09	30.79	-08	20	52.8		1 675
1987	UW		1987	12	27.30861	02	09	30.94	-08	20	53.1		1 675
1987	UW		1988	01	13.26958	02	19	38.93	-08	01	55.3		1 675
1987	UW		1988	01	13.27381	02	19	39.13	-08	01	54.6		1 675
1987	UW		1988	01	13.28208	02	19	39.54	-08	01	53.1		1 675
1987	UW		1988	01	13.28696	02	19	39.77	-08	01	52.2		1 675
1987	UE1		1987	11	22.28715	01	07	56.66	-09	20	53.0	18	3 675
1987	UE1		1987	11	24.22517	01	08	25.61	-09	38	58.1		3 675
1987	UY1		1987	11	23.29219	02	12	46.61	+01	26	25.3	17.5	3 675
1987	UY1		1987	11	24.28003	02	12	31.41	+01	06	36.7		3 675
1987	WC		1988	01	09.31681	03	23	21.34	+52	09	37.1		1 675
1987	WC		1988	01	09.32194	03	23	21.69	+52	09	36.0		1 675
1987	WC		1988	01	09.32688	03	23	21.96	+52	09	34.1		1 675
1987	WC		1988	01	09.33237	03	23	22.39	+52	09	33.7		1 675
1987	WC		1988	01	13.34707	03	28	46.34	+51	58	05.1		1 675
1987	WC		1988	01	13.37743	03	28	48.94	+51	57	56.4		1 675
1987	WC		1988	01	13.38492	03	28	49.56	+51	57	54.1		1 675
1987	WC		1988	01	13.38933	03	28	50.01	+51	57	53.2		1 675
1987	WR3		1988	01	19.24688	04	14	26.26	+01	42	18.9	18	3 675
1987	WR3		1988	01	20.28576	04	14	17.26	+01	44	53.5		3 675
1987	WR3		1988	01	21.16770	04	14	10.37	+01	47	10.8		3 675
1988	AZ3	*	1988	01	08.12188	00	20	58.04	+08	42	12.9	18 R	1 675
1988	AZ3		1988	01	08.12708	00	20	58.45	+08	42	15.2		1 675
1988	AZ3		1988	01	08.13125	00	20	58.72	+08	42	17.7		1 675
1988	AZ3		1988	01	08.14013	00	20	59.40	+08	42	21.5		1 675
1988	BE		1988	02	10.35694	08	40	28.98	+15	58	07.3	15.8	2 675
1988	BE		1988	02	14.32604	08	36	27.49	+15	45	53.8		2 675
1988	BN		1988	02	11.32951	09	46	52.79	+07	46	23.2	15.8	2 675
1988	BN		1988	02	13.36528	09	43	27.46	+07	19	21.3		2 675
1988	BY	*	1988	01	21.31424	06	29	18.06	+25	54	04.4	17.5	3 675
1988	BY		1988	01	23.24115	06	26	57.13	+26	35	07.1		3 675
1988	BY		1988	01	24.26701	06	25	45.20	+26	56	31.8		3 675
1988	BZ	*	1988	01	23.22622	06	11	31.27	+52	45	34.6	16.5	3 675
1988	BZ		1988	01	25.34948	06	09	20.13	+52	04	28.0		3 675
1988	BW1	*	1988	01	21.28715	07	22	44.56	+43	01	18.7	18	3 675
1988	BW1		1988	01	23.34549	07	21	21.45	+43	04	01.3		3 675
1988	BW1		1988	01	24.32639	07	20	42.47	+43	05	09.1		3 675
1988	BW1		1988	02	16.23489	07	08	03.78	+43	05	10.8	18.1	3 675
1988	BW1		1988	02	17.28038	07	07	38.50	+43	04	05.3		3 675
1988	BW1		1988	02	20.23854	07	06	32.31	+43	00	37.5		3 675
1988	BX1	*	1988	01	21.28715	07	28	31.57	+44	19	17.0	17.3	3 675
1988	BX1		1988	01	23.34549	07	26	59.95	+44	25	19.6		3 675
1988	BX1		1988	01	24.32639	07	26	16.77	+44	28	03.1		3 675
1988	BX1		1988	02	16.24392	07	12	09.99	+44	58	39.2	17.5	3 675
1988	BX1		1988	02	17.28958	07	11	41.58	+44	58	41.4		3 675
1988	BX1		1988	02	20.24739	07	10	27.46	+44	58	14.7		3 675
1988	BY1	*	1988	01	23.34549	07	51	38.84	+46	41	42.0	17.5	3 675
1988	BY1		1988	01	24.32639	07	50	53.91	+46	43	00.0		3 675
1988	BY1		1988	02	16.24392	07	35	46.69	+46	35	37.3	17.8	3 675
1988	BY1		1988	02	17.28958	07	35	15.16	+46	33	45.0		3 675

1988	BY1		1988	02	20.24739	07	33	52.23	+46	27	46.3	3 675
1988	BK2	*	1988	01	23.31615	07	06	09.41	+52	04	21.9	17 3 675
1988	BK2		1988	01	24.28229	07	04	55.53	+52	06	09.5	3 675
1988	BL2	*	1988	01	24.34097	08	05	44.72	+49	01	25.8	16.5 3 675
1988	BL2		1988	01	24.37188	08	05	42.33	+49	01	28.0	3 675
1988	BL2		1988	02	16.24392	07	41	42.02	+48	15	52.4	16.8 3 675
1988	BL2		1988	02	17.28958	07	40	54.98	+48	10	54.3	3 675
1988	BL2		1988	02	20.24739	07	38	53.88	+47	55	45.7	3 675
1988	BM2	*	1988	01	24.34097	08	07	15.94	+48	35	47.4	16 3 675
1988	BM2		1988	01	24.37188	08	07	13.73	+48	35	52.8	3 675
1988	BM2		1988	02	16.24392	07	46	32.88	+48	02	45.8	16.5 3 675
1988	BM2		1988	02	17.28958	07	46	00.73	+47	57	09.2	3 675
1988	BM2		1988	02	20.19704	07	44	46.48	+47	40	03.2	3 675
1988	BN2	*	1988	01	24.34965	08	23	06.09	+52	40	11.1	17.5 3 675
1988	BN2		1988	01	24.37188	08	23	03.12	+52	40	28.5	3 675
1988	BN2		1988	01	25.37274	08	21	30.61	+52	49	36.2	3 675
1988	BO2	*	1988	01	24.41059	09	27	54.62	+43	53	32.6	16.5 3 675
1988	BO2		1988	01	24.44063	09	27	51.82	+43	53	36.2	3 675
1988	CM	*	1988	02	11.15694	05	34	22.74	+05	34	17.9	16.5 2 675
1988	CM		1988	02	11.19323	05	34	23.43	+05	34	49.8	2 675
1988	CN	*	1988	02	14.46337	10	43	12.48	-05	04	45.2	16.5 2 675
1988	CN		1988	02	15.37899	10	42	44.03	-04	43	32.9	2 675
1988	CN		1988	03	10.21233	10	28	27.04	+05	48	02.2	16.0 2 675
1988	CN		1988	03	15.29028	10	25	59.06	+08	01	20.5	2 675
1988	CQ	*	1988	02	11.26215	09	51	14.10	+18	54	21.8	17.0 2 675
1988	CQ		1988	02	11.28247	09	51	12.97	+18	54	36.6	2 675
1988	CT	*	1988	02	10.36319	08	27	47.73	+14	17	33.5	16.5 2 675
1988	CT		1988	02	14.34757	08	24	22.67	+14	11	27.4	2 675
1988	CU		1988	02	17.39895	09	56	35.55	+19	05	06.3	16.5 3 675
1988	CU		1988	02	19.32344	09	55	08.68	+19	50	49.1	3 675
1988	CU		1988	02	21.31094	09	53	39.52	+20	37	02.1	3 675
1988	CC1	*	1988	02	11.32951	09	44	51.68	+12	11	17.3	17.5 2 675
1988	CC1		1988	02	14.42622	09	41	58.04	+12	43	27.5	2 675
1988	CD1	*	1988	02	11.32951	09	45	10.32	+11	36	54.5	16.5 2 675
1988	CD1		1988	02	14.42622	09	42	15.00	+12	04	35.7	2 675
1988	CE1	*	1988	02	11.32951	09	48	35.49	+13	29	37.1	17.0 2 675
1988	CE1		1988	02	14.42622	09	45	44.63	+14	06	26.5	2 675
1988	CF1	*	1988	02	13.44253	09	10	26.69	+17	12	47.2	17.0 2 675
1988	CF1		1988	02	14.37795	09	09	41.92	+17	16	43.2	2 675
1988	DR		1988	03	12.14653	09	04	45.75	+09	57	00.8	16.8 2 675
1988	DR		1988	03	15.22049	09	04	24.00	+10	22	58.3	2 675
1988	EF	*	1988	03	10.33628	10	34	06.08	-14	29	21.1	16.0 2 675
1988	EF		1988	03	13.26476	10	32	52.51	-13	11	41.6	2 675
1988	EG	*	1988	03	12.30677	11	11	54.76	-01	17	51.9	16.0 2 675
1988	EG		1988	03	13.30920	11	09	43.74	-00	18	15.9	2 675
1988	EG		1988	03	15.29427	11	06	09.17	+01	20	53.1	2 675
1988	EH		1988	03	11.25382	11	40	15.69	+02	16	27.1	16.0 2 675
1988	EH	*	1988	03	12.33108	11	39	20.02	+02	34	34.6	16.0 2 675
1988	EH		1988	03	14.26424	11	37	40.37	+03	06	52.1	2 675
1988	EH		1988	03	14.32813	11	37	36.89	+03	07	57.0	2 675
1988	EJ	*	1988	03	13.33090	13	01	29.96	-06	58	29.0	16.0 2 675
1988	EJ		1988	03	15.36337	13	00	31.95	-06	33	55.6	2 675
1988	EK	*	1988	03	10.31788	10	50	07.97	+03	12	34.4	16.5 2 675
1988	EK		1988	03	14.25573	10	48	14.44	+04	23	09.8	2 675
1988	EL	*	1988	03	14.31858	12	58	56.93	-18	17	34.8	16.0 2 675
1988	EL		1988	03	15.33646	12	57	27.46	-18	32	32.5	2 675
1988	EO	*	1988	03	12.31458	11	58	34.85	-19	16	46.5	16.5 2 675
1988	EO		1988	03	14.33229	11	55	27.40	-19	33	29.9	2 675
1235			1988	03	12.35642	13	00	29.16	+02	45	46.3	17.2 2 675

1235	1988 03 15.35903	12 55 48.29	+02 31 52.5			2	675
1972	1988 02 14.44253	10 38 16.06	+16 16 52.5		17.0	2	675
1972	1988 02 14.46771	10 38 14.17	+16 17 00.7			2	675
2050	1988 02 19.49895	13 42 41.97	+37 17 43.0		15.5	3	675
2050	1988 02 19.54600	13 42 42.51	+37 18 18.8			3	675
2055	1988 03 11.24427	09 20 37.33	+20 58 21.5		16.0	2	675
2055	1988 03 13.17795	09 18 13.09	+20 32 41.9			2	675
2745	1988 02 12.42569	09 17 02.01	+17 27 03.2		16.0	2	675
2745	1988 02 14.37795	09 15 18.75	+18 07 27.1			2	675

688 Lowell Observatory, Anderson Mesa Station
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road,
Flagstaff, AZ 86001, U.S.A.
Observer B. A. Skiff
Measurer E. Bowell
0.33-m photographic telescope
PDS scanning microdensitometer
AGK3 and Perth 70 secondary nets, global solutions
See also MPC 9533

1987 WS3	1988 02 06.10778	04 10 37.39	+12 36 39.5		17.2		688
1987 WS3	1988 02 06.12925	04 10 38.65	+12 36 39.8				688
52	1988 02 06.10778	04 23 32.30	+15 20 30.3				688
52	1988 02 06.12925	04 23 32.70	+15 20 36.0				688
530	1988 02 06.10778	04 15 40.99	+13 49 59.2				688
530	1988 02 06.12925	04 15 41.31	+13 50 04.4				688
640	1988 02 06.10778	04 00 17.67	+14 32 11.1				688
640	1988 02 06.12925	04 00 17.98	+14 32 12.1				688
745	1988 02 06.10778	04 10 07.10	+09 42 23.5				688
745	1988 02 06.12925	04 10 07.38	+09 42 31.1				688
783	1988 02 06.10778	04 19 50.48	+11 50 11.8				688
783	1988 02 06.12925	04 19 50.79	+11 50 16.9				688
1055	1988 02 06.12925	04 15 15.26	+15 26 21.5			R	688
1281	1988 02 06.10778	04 14 01.47	+14 07 14.6				688
1281	1988 02 06.12925	04 14 01.68	+14 07 17.4				688
2585	1988 02 06.10778	04 13 03.07	+15 21 40.8		16.5		688
2585	1988 02 06.12925	04 13 04.29	+15 21 49.9				688
2920	1988 02 06.10778	04 02 33.12	+11 53 25.6				688
2920	1988 02 06.12925	04 02 33.32	+11 53 26.0				688

690 Lowell Observatory
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road,
Flagstaff, AZ 86001, U.S.A.
Observers C. W. Tombaugh, R. Burnham, C. D. Slaughter
Measurers E. Bowell, B. A. Skiff
0.33-m photographic telescope
PDS scanning microdensitometer
AGK3 and Perth 70 secondary nets, global solutions

1929 XK	1929 11 28.21181	04 33 40.84	+15 01 38.0				690
1929 XK	1929 12 03.18750	04 28 57.74	+15 10 58.2				690
1929 XK	1929 12 04.19792	04 28 00.63	+15 13 03.5			R	690
1930 UE1	1930 10 17.21042	01 35 57.49	+20 23 30.5				690
1930 UE1	1930 10 19.21528	01 33 57.77	+20 15 01.8				690
1930 UF1	1930 10 17.21042	01 36 56.60	+24 21 11.6				690
1930 UF1	1930 10 19.21528	01 35 08.49	+24 11 02.9				690
1930 UG1	1930 10 17.21042	01 40 24.80	+17 23 45.3				690
1930 UG1	1930 10 19.21528	01 38 21.90	+17 25 23.3				690
1931 AE1	1931 01 13.22569	07 08 15.61	+12 15 11.5				690
1931 AE1	1931 01 15.21875	07 06 11.03	+12 11 03.4				690
1931 AE1	1931 01 16.21111	07 05 10.23	+12 09 02.7				690

1931	AF1	1931	01	13.22569	07	08	44.62	+14	27	38.9	690
1931	AF1	1931	01	15.21875	07	06	56.65	+14	26	13.4	690
1931	AF1	1931	01	16.21111	07	06	03.77	+14	25	36.1	690
1931	DM	1931	02	17.27986	09	41	12.99	+00	31	55.0	690
1931	DM	1931	02	19.35208	09	39	39.37	+00	50	03.3	690
1931	DM	1931	02	25.35417	09	35	19.26	+01	45	00.5	690
1931	JM	1931	05	06.22917	14	03	20.73	-21	44	37.1	690
1931	JM	1931	05	09.23438	14	00	56.07	-21	23	35.5	690
1931	JM	1931	05	11.23681	13	59	24.13	-21	09	24.0	690
1959	EJ	1959	02	27.20486	10	16	01.36	+10	00	28.1	690
1959	EJ	1959	03	10.27083	10	05	44.30	+10	43	33.8	690
1959	EJ	1959	03	11.20486	10	04	58.10	+10	46	40.7	690
1959	EJ	1959	03	12.20139	10	04	10.06	+10	49	56.8	690
1959	EJ	1959	03	13.18056	10	03	24.12	+10	53	02.5	690
180		1959	02	27.20486	10	19	39.06	+09	48	42.4	690
180		1959	03	03.24132	10	16	13.28	+10	06	28.3	690
180		1959	03	10.27083	10	10	41.91	+10	34	49.5	690
180		1959	03	11.20486	10	10	01.72	+10	38	16.6	690
180		1959	03	12.20139	10	09	19.74	+10	41	50.3	690
180		1959	03	13.18056	10	08	39.71	+10	45	14.7	690
194		1959	02	27.20486	10	11	29.52	+08	16	33.0	690
194		1959	03	03.24132	10	08	15.84	+08	52	45.2	690
194		1959	03	10.27083	10	02	55.34	+09	54	13.5	690
194		1959	03	11.20486	10	02	15.11	+10	02	09.8	690
194		1959	03	12.20139	10	01	32.84	+10	10	32.5	690
194		1959	03	13.18056	10	00	52.09	+10	18	42.2	690
550		1931	02	17.27986	09	37	16.30	+01	17	27.8	690
550		1931	02	19.35208	09	35	22.89	+01	24	39.0	690
550		1931	02	25.35417	09	30	03.68	+01	47	17.6	R 690
873		1959	02	27.20486	10	14	29.52	+11	27	01.6	690
873		1959	03	03.24132	10	11	00.25	+11	54	45.6	690
873		1959	03	10.27083	10	05	15.09	+12	40	16.1	690
873		1959	03	11.20486	10	04	32.15	+12	45	58.8	690
873		1959	03	12.20139	10	03	47.04	+12	51	56.8	690
873		1959	03	13.18056	10	03	03.74	+12	57	43.1	690
896		1931	02	17.27986	09	27	58.19	+00	55	52.7	690
896		1931	02	19.35208	09	25	47.44	+01	04	31.6	690
896		1931	02	25.35417	09	19	43.03	+01	32	26.7	R 690
3134		1931	02	17.27986	09	43	15.53	+03	17	05.7	690
3134		1931	02	19.35208	09	41	58.17	+03	24	29.6	690

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

1981	EY14	1988	02	13.48438	13	20	11.31	-14	15	08.4	18.6V 691
1981	EY14	1988	02	13.50069	13	20	11.58	-14	15	13.3	691
1981	EY14	1988	02	13.51434	13	20	11.79	-14	15	16.6	691
1984	AB	1988	02	12.32057	06	25	05.00	+38	45	40.4	17.2V 691
1984	AB	1988	02	12.33038	06	25	04.79	+38	45	44.9	691
1984	AB	1988	02	12.33877	06	25	04.62	+38	45	48.0	691
1984	AB	1988	02	13.30233	06	24	50.51	+38	52	37.7	691
1984	AB	1988	02	13.31175	06	24	50.34	+38	52	41.3	691
1984	AB	1988	02	13.32050	06	24	50.22	+38	52	44.6	691
1985	VS	1988	01	15.27552	07	27	14.35	-13	13	25.6	691
1985	VS	1988	01	15.28199	07	27	14.14	-13	13	25.8	691

1985	VS	1988	01	15.29459	07	27	13.76	-13	13	24.6	691
1986	WA	1988	02	12.21034	07	10	50.73	-26	04	57.4	691
1986	WA	1988	02	12.21846	07	10	49.82	-26	04	53.1	691
1986	WA	1988	02	13.18262	07	09	03.86	-25	55	49.2	691
1986	WA	1988	02	13.18992	07	09	03.07	-25	55	44.8	691
1986	WA	1988	02	13.19894	07	09	02.05	-25	55	39.5	691
1987	QA	1988	02	12.45442	14	50	06.80	-12	01	33.2	691
1987	QA	1988	02	12.46417	14	50	07.41	-12	00	57.7	691
1987	QA	1988	02	12.47918	14	50	08.28	-12	00	03.7	17.5V 691
1987	QA	1988	02	13.51898	14	51	13.40	-10	56	40.8	691
1987	QA	1988	02	13.52707	14	51	13.82	-10	56	11.1	691
1987	QA	1988	02	13.53390	14	51	14.19	-10	55	45.8	17.7V 691
1987	QX	1988	02	12.18067	03	00	51.77	+34	34	22.3	20.3V W 691
1987	QX	1988	02	12.20356	03	00	54.54	+34	34	24.8	W 691
1987	SL	1988	01	15.15575	01	17	48.27	+30	39	49.8	19.4V 691
1987	SL	1988	01	15.19182	01	17	51.45	+30	39	54.4	691
1987	SL	1988	01	15.19852	01	17	52.09	+30	39	55.4	691
1987	SS1	1988	01	15.10537	00	48	53.16	+03	20	16.4	18.1V 691
1987	SS1	1988	01	15.11507	00	48	54.01	+03	20	18.8	691
1987	SS1	1988	01	15.12199	00	48	54.58	+03	20	20.2	691
1987	UA	1988	01	21.17497	03	23	22.36	-08	43	19.2	691
1987	UA	1988	01	21.18006	03	23	22.95	-08	43	14.5	691
1987	UA	1988	01	21.19428	03	23	24.40	-08	42	59.9	19.6V 691
3294		1987	12	21.25329	01	47	02.70	+17	36	16.7	18.1V 691
3294		1987	12	21.31300	01	47	02.68	+17	36	14.8	691
3294		1987	12	22.16457	01	47	04.43	+17	35	55.5	691
3752		1988	01	21.54459	16	08	22.85	+18	13	44.4	18.6V 691
3752		1988	01	21.54726	16	08	23.39	+18	13	48.5	691
3757		1988	01	15.39300	12	30	27.28	+15	52	29.8	691
3757		1988	01	15.40218	12	30	27.71	+15	52	30.3	17.5V 691
3757		1988	01	15.40777	12	30	27.98	+15	52	30.8	691
3757		1988	01	21.35801	12	34	44.33	+15	58	31.1	18.1V 691
3757		1988	01	21.37310	12	34	44.53	+15	58	33.5	691
3757		1988	01	21.38374	12	34	44.68	+15	58	35.1	691
3757		1988	02	12.43269	12	24	05.94	+17	19	19.0	17.9V 691
3757		1988	02	12.43444	12	24	05.77	+17	19	19.5	691
3757		1988	02	12.44841	12	24	04.52	+17	19	22.6	691

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AC

1928	UF	1988	01	23.12851	05	39	31.47	+24	05	34.8	801
1929	TK	1988	02	22.23360	09	39	32.94	+14	12	08.3	801
1931	UE	1988	02	17.16922	08	11	33.25	+22	05	39.2	801
1931	UE	1988	02	22.02999	08	08	16.58	+21	41	15.6	801
1937	UE	1987	08	26.20169	22	38	57.24	-08	19	56.0	801
1938	GG	1988	01	16.21627	04	35	24.42	+50	03	10.3	801
1938	GG	1988	02	15.02095	04	31	07.04	+48	16	41.7	801
1967	UR	1988	01	23.01992	03	37	20.30	+19	52	22.2	801
1973	SM	1988	01	16.16803	05	33	55.20	+21	03	54.2	801
1973	SM	1988	01	23.15393	05	31	11.41	+21	03	21.6	801
1979	SL9	1987	01	28.22543	06	29	30.28	+21	51	31.8	801
1980	FH5	1988	01	23.31250	09	38	32.05	+31	15	35.1	16 801
1980	FH5	1988	02	17.27626	09	08	43.42	+30	54	56.8	801
1980	RS2	1987	12	22.13658	03	54	25.62	+20	08	48.2	801
1980	TY14	1988	01	16.31050	07	37	31.66	+32	14	35.5	801

1981	QJ		1988	01	22.04467	03	36	13.16	+20	21	52.7		801
1981	XA		1988	01	22.43664	12	19	35.85	+36	43	25.9		801
1981	XA		1988	01	23.44087	12	20	11.27	+37	00	25.1		801
1981	XA		1988	02	15.36898	12	18	30.92	+43	17	36.6		801
1983	VG7		1988	01	17.37998	10	41	19.85	+17	21	07.3		801
1983	VG7		1988	01	22.41063	10	38	48.53	+17	48	23.8		801
1983	VG7		1988	02	15.31966	10	17	27.00	+20	13	31.4		801
1984	AB		1987	12	22.35236	07	33	51.64	+23	51	28.0		801
1984	AB		1988	01	16.26721	06	55	19.79	+32	53	51.4		801
1984	AB		1988	02	15.07425	06	24	35.00	+39	04	21.2		801
1984	FA		1987	12	22.41980	10	47	10.83	+09	50	43.6		801
1984	FA		1988	01	17.35671	10	50	47.27	+10	53	54.1		801
1984	FA		1988	01	23.41913	10	49	02.99	+11	25	42.0		801
1984	HK1		1988	02	22.14228	07	59	36.05	+21	37	56.2		801
1985	DX		1988	01	16.09385	05	00	25.48	+17	17	24.5		801
1985	DX		1988	01	23.10187	04	57	52.62	+17	05	08.3		801
1985	DX		1988	02	19.05203	05	04	34.37	+17	04	01.7		801
1985	FA		1988	01	16.19737	04	13	48.87	+44	21	34.9		801
1985	FC1		1987	12	24.20069	04	52	25.49	+30	02	52.8		801
1985	FC1		1988	02	21.04028	04	56	18.38	+27	19	34.8		801
1985	TQ		1988	01	16.24518	06	50	27.36	+26	31	13.4		801
1985	TQ		1988	02	15.10537	06	37	11.84	+26	33	37.5		801
1985	TF3		1988	01	16.29388	07	20	53.36	+28	14	09.2		801
1985	TF3		1988	01	23.20349	07	16	44.02	+28	16	54.5		801
1985	TG3		1988	01	16.14192	05	19	31.97	+32	20	41.3		801
1985	VK2		1988	01	23.29356	09	08	41.04	+43	19	40.6		801
1985	VK2		1988	02	17.25626	08	51	24.54	+44	13	52.0		801
1986	JG		1987	11	21.30253	04	07	00.26	+22	48	27.4		801
1986	JA1		1987	10	22.38242	04	55	45.97	+16	34	53.2		801
1986	JA1		1988	01	16.06300	03	50	25.45	+06	05	46.2		801
1986	PM4		1987	12	22.26927	05	55	17.94	+27	41	43.8		801
1986	QL1		1988	01	23.26972	08	25	42.86	+28	40	12.3		801
1986	QL1		1988	02	19.21559	08	01	12.72	+28	31	34.2		801
1986	QL1		1988	02	22.11187	07	59	44.84	+28	23	24.4		801
1986	QM3		1988	01	16.03515	03	46	26.28	+08	48	16.9		801
1986	QM3		1988	02	19.00271	03	55	47.23	+11	37	12.5		801
1986	TE		1987	12	24.28042	07	34	59.66	+19	40	44.3		801
1986	TM		1988	02	15.39265	12	59	26.37	+07	15	58.2	18	801
1986	TM		1988	02	19.34046	12	56	36.67	+07	11	04.8		801
1986	TW1		1988	01	23.32998	09	49	18.72	+22	48	55.0	w	801
1986	TW1		1988	02	17.30284	09	23	13.53	+25	16	25.9		801
1986	TP6		1988	02	17.22500	08	31	41.32	+15	18	52.7		801
1986	UL1		1988	02	19.17257	07	00	51.25	+28	46	57.7		801
1986	VU		1988	02	22.25694	09	50	09.66	+13	46	52.1	W	801
1987	YL		1988	01	23.07813	04	58	05.35	+21	31	26.1		801
1987	YL		1988	02	19.07259	05	03	54.74	+21	49	28.3		801
1988	BF		1988	01	23.26972	08	25	14.46	+28	25	22.7	16	801
1988	DG1	*	1988	02	19.21559	07	59	37.58	+28	23	02.6	17.5	801
1988	EG		1988	03	18.15136	11	02	20.02	+03	10	26.1		801
1988	EG		1988	03	18.32094	11	02	06.65	+03	15	58.5		801
1988	EG		1988	03	19.12868	11	01	19.08	+03	41	02.5		801
1988	EG		1988	03	20.07334	11	00	27.02	+04	07	57.7	S	801
1988	EG		1988	03	20.20554	11	00	18.54	+04	11	32.4		801
160			1988	02	21.04028	04	57	09.15	+27	17	46.3		801
487			1988	02	15.39265	12	59	30.05	+07	08	52.9		801
856			1988	02	19.36520	10	14	12.01	+21	59	07.8		801
1615			1988	01	16.16803	05	34	10.70	+21	10	28.9		801
1615			1988	01	23.15393	05	31	03.87	+21	14	35.3		801
2108			1988	02	15.34297	10	57	16.87	+03	35	03.7		801

2837		1988	02	22.17057	08	23	24.61	+23	28	34.9	801
3169		1988	02	15.05485	05	57	06.92	+40	13	41.0	801
3757		1988	01	17.40781	12	32	16.35	+15	53	13.1	w 801
3757		1988	01	23.36172	12	35	22.08	+16	02	45.9	w 801

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Measurers H. Debehogne, E. W. Elst
Reductions H. Debehogne, E. W. Elst, M. Desruelles, P. Van den Eynde
0.4-m GPO astrograph and 1.0-m Schmidt telescope

1937	UE	1987	09	13.00174	22	25	32.73	-09	36	00.3	3 809
1937	UE	1987	09	13.00660	22	25	32.52	-09	36	02.4	3 809
1970	QA1	1988	02	11.15972	07	36	20.45	+23	28	07.6	18 4 809
1970	QA1	1988	02	11.17014	07	36	19.81	+23	28	08.6	4 809
1970	QA1	1988	02	11.18056	07	36	19.33	+23	28	07.8	4 809
1979	SL9	1988	02	18.32795	11	38	09.89	+02	42	33.1	17.5 4 809
1979	SL9	1988	02	18.33889	11	38	09.51	+02	42	35.8	4 809
1981	EQ12	1988	02	13.23194	10	17	06.88	+00	29	33.3	18.7 4 809
1981	EO34	1987	09	17.21771	00	15	38.15	+00	35	52.7	16.8 3 809
1981	EO34	1987	09	17.22257	00	15	37.96	+00	35	48.8	3 809
1981	JU2	1988	02	13.23194	10	17	39.05	+02	13	40.8	16.8 4 809
1981	QA3	1987	09	17.21771	00	13	09.95	-00	00	24.7	17.2 3 809
1981	QA3	1987	09	17.22257	00	13	09.77	-00	00	26.0	3 809
1982	UV10	1987	09	17.21771	00	10	26.11	-00	08	45.6	16.9 3 809
1982	UV10	1987	09	17.22257	00	10	25.87	-00	08	46.2	3 809
1983	RT3	1987	08	25.23819	21	42	21.33	-15	00	43.0	16.9 4 809
1983	RT3	1987	08	25.24931	21	42	20.56	-15	00	41.7	4 809
1983	RT3	1987	08	26.20417	21	41	18.52	-14	59	15.2	16.8 4 809
1983	RT3	1987	08	26.21458	21	41	17.80	-14	59	13.0	4 809
1983	RT3	1987	08	26.22968	21	41	17.23	-14	59	11.3	4 809
1985	QX	1988	02	13.23194	10	07	55.07	+01	40	27.2	17.5 4 809
1986	TP2	1988	02	11.15694	09	34	57.20	+13	06	02.9	17 4 809
1986	TP2	1988	02	11.16771	09	34	56.49	+13	06	07.0	4 809
1986	TP2	1988	02	11.17847	09	34	55.81	+13	06	11.6	4 809
1986	WC	1988	02	13.23194	10	05	44.23	+02	33	56.3	16.5 4 809
1987	MK	1987	08	25.23819	21	41	16.52	-15	36	57.9	16.5 4 809
1987	MK	1987	08	25.24931	21	41	15.76	-15	36	55.8	4 809
1987	MK	1987	08	26.20417	21	40	16.38	-15	34	27.9	16.7 4 809
1987	MK	1987	08	26.21458	21	40	15.65	-15	34	25.6	4 809
1987	MK	1987	08	26.22968	21	40	14.70	-15	34	22.5	4 809
1987	QC2	1987	08	26.20417	21	37	57.68	-14	33	33.5	17.2 4 809
1987	QC2	1987	08	26.21458	21	37	57.32	-14	33	35.1	4 809
1987	QC2	1987	08	26.22968	21	37	56.64	-14	33	39.1	4 809
1987	QD2	1987	08	25.23819	21	39	39.63	-15	38	18.4	17.6 4 809
1987	QD2	1987	08	25.24931	21	39	39.17	-15	38	22.9	4 809
1987	QD2	1987	08	26.20417	21	38	59.03	-15	46	13.1	16.9 4 809
1987	QD2	1987	08	26.21458	21	38	58.55	-15	46	18.6	4 809
1987	QD2	1987	08	26.22968	21	38	57.90	-15	46	24.9	4 809
1987	QG2	1987	08	25.23819	21	40	48.28	-14	02	13.2	16.8 4 809
1987	QG2	1987	08	25.24931	21	40	47.58	-14	02	13.5	4 809
1987	QG2	1987	08	26.20417	21	39	47.29	-14	03	33.5	16.8 4 809
1987	QG2	1987	08	26.21458	21	39	46.61	-14	03	33.9	4 809
1987	QG2	1987	08	26.22986	21	39	45.71	-14	03	35.5	4 809
1987	QH2	1987	08	25.23819	21	41	43.93	-15	22	09.4	16.7 4 809
1987	QH2	1987	08	25.24931	21	41	43.16	-15	22	09.8	4 809

1987	QH2		1987	08	26.20417	21	40	44.67	-15	23	09.5	16.5	4 809
1987	QH2		1987	08	26.21458	21	40	44.02	-15	23	09.8		4 809
1987	QH2		1987	08	26.22968	21	40	43.05	-15	23	10.0		4 809
1987	QX2		1987	08	26.20417	21	35	58.98	-16	00	13.1	17.5	4 809
1987	QX2		1987	08	26.21458	21	35	58.37	-16	00	15.8		4 809
1987	QX2		1987	08	26.22968	21	35	57.67	-16	00	18.3		4 809
1987	QO5		1987	08	26.20417	21	37	46.42	-15	06	35.6	17.2	4 809
1987	QO5		1987	08	26.21458	21	37	45.78	-15	06	36.2		4 809
1987	QO5		1987	08	26.22968	21	37	44.83	-15	06	37.9		4 809
1987	QQ5		1987	08	26.20417	21	40	04.66	-15	51	23.6	17.4	4 809
1987	QQ5		1987	08	26.21458	21	40	04.07	-15	51	27.6		4 809
1987	QQ5		1987	08	26.22968	21	40	03.30	-15	51	32.6		4 809
1987	QH7		1987	09	17.21771	00	10	44.98	-00	16	55.0	16.5	3 809
1987	QH7		1987	09	17.22257	00	10	44.82	-00	16	53.5		3 809
1987	QS7		1987	09	12.06007	22	45	16.67	-07	43	24.5	17.5	3 809
1987	QS7		1987	09	16.06493	22	42	20.74	-08	03	47.1		3 809
1987	QS7		1987	09	16.06979	22	42	20.59	-08	03	48.5		3 809
1987	QS7		1987	09	16.07465	22	42	20.29	-08	03	50.0		3 809
1987	RR		1987	09	12.07951	22	47	06.61	-10	25	38.5	17.4	3 809
1987	RR		1987	09	12.08438	22	47	06.44	-10	25	40.3		3 809
1987	RR		1987	09	12.08924	22	47	06.28	-10	25	41.7		3 809
1987	RR		1987	09	14.11007	22	45	50.89	-10	45	04.5		3 809
1987	RS		1987	09	16.14514	22	52	00.20	-10	01	08.1	17.6	3 809
1987	RS		1987	09	16.14965	22	51	59.94	-10	01	09.7		3 809
1987	RT	*	1987	09	12.04479	22	41	55.90	-08	56	42.8	16.0	3 809
1987	RT		1987	09	12.04965	22	41	55.71	-08	56	43.7		3 809
1987	RT		1987	09	12.05451	22	41	55.50	-08	56	44.9		3 809
1987	RT		1987	09	16.06493	22	39	10.62	-09	12	02.9		3 809
1987	RT		1987	09	16.06979	22	39	10.50	-09	12	03.6		3 809
1987	RT		1987	09	16.07465	22	39	10.25	-09	12	04.0		3 809
1987	RT		1987	09	16.08021	22	39	09.95	-09	12	04.6		3 809
1987	RT		1987	09	16.08507	22	39	09.75	-09	12	05.5		3 809
1987	RT		1987	09	16.08993	22	39	09.53	-09	12	06.0		3 809
1987	RU	*	1987	09	12.04479	22	44	51.75	-09	12	19.4	17.2	3 809
1987	RU		1987	09	12.04965	22	44	51.52	-09	12	21.2		3 809
1987	RU		1987	09	12.05451	22	44	51.33	-09	12	22.8		3 809
1987	RU		1987	09	16.08021	22	42	03.55	-09	39	44.2		3 809
1987	RU		1987	09	16.08507	22	42	03.37	-09	39	46.0		3 809
1987	RU		1987	09	16.08993	22	42	03.12	-09	39	47.7		3 809
1987	RV	*	1987	09	12.06007	22	40	10.01	-06	29	16.5	17.6	3 809
1987	RW	*	1987	09	12.06007	22	43	30.04	-07	13	29.3	16.8	3 809
1987	RW		1987	09	16.06493	22	39	28.38	-07	18	16.2		3 809
1987	RW		1987	09	16.06979	22	39	28.09	-07	18	16.0		3 809
1987	RW		1987	09	16.07465	22	39	27.82	-07	18	16.0		3 809
1987	RX	*	1987	09	12.11910	22	02	10.29	-12	30	56.7	16.9	3 809
1987	RX		1987	09	12.12396	22	02	10.18	-12	30	58.0		3 809
1987	RY	*	1987	09	12.11910	22	03	01.84	-12	37	00.3	16.9	3 809
1987	RY		1987	09	12.12396	22	03	01.69	-12	37	01.0		3 809
1987	RZ	*	1987	09	12.11910	22	04	16.98	-13	37	48.0	16.9	3 809
1987	RZ		1987	09	12.12396	22	04	16.70	-13	37	49.0		3 809
1987	RA1	*	1987	09	13.00174	22	20	25.46	-08	55	17.2	17.0	3 809
1987	RA1		1987	09	13.00660	22	20	25.28	-08	55	19.3		3 809
1987	RB1	*	1987	09	13.00174	22	21	34.74	-08	58	11.7	17.4	3 809
1987	RB1		1987	09	13.00660	22	21	34.59	-08	58	13.7		3 809
1987	RC1	*	1987	09	13.01701	22	24	59.33	-11	38	20.8	16.9	3 809
1987	RC1		1987	09	13.02186	22	24	59.09	-11	38	21.8		3 809
1987	RC1		1987	09	14.06146	22	24	17.36	-11	41	53.2		3 809
1987	RC1		1987	09	14.06632	22	24	17.13	-11	41	54.3		3 809
1987	RD1	*	1987	09	13.06771	22	51	40.54	-08	43	39.6	17.4	3 809

1987	RD1		1987	09	13.07257	22	51	40.30	-08	43	40.7	3 809
1987	RD1		1987	09	16.14514	22	49	01.33	-08	57	22.6	3 809
1987	RD1		1987	09	16.14965	22	49	01.10	-08	57	23.9	3 809
1987	RE1	*	1987	09	13.08299	22	50	34.49	-06	45	11.5	16.2 3 809
1987	RE1		1987	09	13.08785	22	50	34.21	-06	45	12.4	3 809
1987	RE1		1987	09	16.13021	22	47	42.92	-06	46	38.3	3 809
1987	RE1		1987	09	16.13507	22	47	42.65	-06	46	37.7	3 809
1987	RE1		1987	09	18.15174	22	45	53.26	-06	47	15.4	3 809
1987	RE1		1987	09	18.15660	22	45	52.97	-06	47	15.8	3 809
1987	RF1	*	1987	09	13.08299	22	50	37.59	-06	55	29.0	17.5 3 809
1987	RF1		1987	09	13.08785	22	50	37.33	-06	55	32.1	3 809
1987	RF1		1987	09	16.13021	22	48	02.73	-07	23	09.5	3 809
1987	RF1		1987	09	16.13507	22	48	02.50	-07	23	10.7	3 809
1987	RF1		1987	09	18.15174	22	46	23.10	-07	41	07.1	3 809
1987	RF1		1987	09	18.15660	22	46	22.85	-07	41	09.2	3 809
1987	RG1	*	1987	09	13.10035	23	01	43.30	-06	18	05.5	16.1 3 809
1987	RG1		1987	09	13.10521	23	01	43.03	-06	18	06.7	3 809
1987	RH1	*	1987	09	13.10035	23	03	57.70	-05	21	10.7	16.3 3 809
1987	RH1		1987	09	13.10521	23	03	57.36	-05	21	10.3	3 809
1987	RJ1	*	1987	09	13.10035	23	04	25.74	-05	31	38.6	16.1 3 809
1987	RJ1		1987	09	13.10521	23	04	25.49	-05	31	40.2	3 809
1987	RK1	*	1987	09	13.13264	23	46	37.63	-03	15	41.8	17.1 3 809
1987	RK1		1987	09	24.23993	23	36	11.63	-04	50	08.3	3 809
1987	RL1	*	1987	09	13.13264	23	47	48.33	-03	22	52.5	17.2 3 809
1987	RL1		1987	09	24.23993	23	38	58.27	-04	29	10.9	3 809
1987	RM1	*	1987	09	13.13264	23	48	05.21	-04	21	50.5	17.0 3 809
1987	RM1		1987	09	24.23993	23	37	48.30	-05	46	24.8	3 809
1987	RM1		1987	09	26.10382	23	36	07.86	-05	59	41.5	3 809
1987	RN1	*	1987	09	13.13264	23	48	10.80	-03	22	50.6	17.5 3 809
1987	RN1		1987	09	24.23993	23	40	16.73	-04	33	34.6	3 809
1987	RO1	*	1987	09	14.06146	22	22	47.33	-12	49	08.6	17.3 3 809
1987	RO1		1987	09	14.06632	22	22	47.13	-12	49	09.5	3 809
1987	SB		1987	11	17.12668	23	51	34.38	-05	17	46.2	19.5 4 809
1987	ST		1987	09	13.15035	23	45	05.79	-01	14	42.8	17.5 3 809
1987	SK1		1987	09	17.23229	00	08	50.34	-02	10	34.4	16.6 3 809
1987	SK1		1987	09	17.23715	00	08	49.97	-02	10	34.5	3 809
1987	SL1		1987	09	17.21771	00	08	50.00	+00	54	48.7	17.2 3 809
1987	SL1		1987	09	17.22257	00	08	49.80	+00	54	48.5	3 809
1987	SL3		1987	09	16.02535	22	38	51.02	-01	12	36.4	17.3 3 809
1987	SL3		1987	09	18.05313	22	37	18.74	-01	17	29.3	3 809
1987	SM3		1987	09	18.05313	22	38	24.54	-01	01	58.4	17.4 3 809
1987	SN3		1987	09	12.09479	22	40	44.81	+00	09	44.9	17.1 3 809
1987	SN3		1987	09	12.09965	22	40	44.59	+00	09	43.1	3 809
1987	SN3		1987	09	12.10451	22	40	44.37	+00	09	40.4	3 809
1987	SN3		1987	09	16.02535	22	37	57.35	-00	28	54.7	3 809
1987	SN3		1987	09	18.05313	22	36	36.40	-00	48	56.3	3 809
1987	SS3		1987	09	14.11007	22	46	37.46	-10	34	17.3	16.9 3 809
1987	SV3		1987	09	24.23993	23	36	46.74	-04	56	09.5	16.4 3 809
1987	SA4		1987	09	17.23229	00	13	18.34	-01	05	51.6	16.6 3 809
1987	SA4		1987	09	17.23715	00	13	18.23	-01	05	53.6	3 809
1987	SF6		1987	09	17.21771	00	15	21.95	+00	18	37.0	16.9 3 809
1987	SF6		1987	09	17.22257	00	15	21.79	+00	18	34.1	3 809
1987	SA7		1987	09	18.36146	01	09	11.71	+01	25	38.1	16.8 3 809
1987	SA7		1987	09	23.38993	01	06	16.73	+00	45	35.0	3 809
1987	SL11	*	1987	09	16.06493	22	40	05.78	-07	18	35.0	17.3 3 809
1987	SL11		1987	09	16.06979	22	40	05.61	-07	18	37.5	3 809
1987	SL11		1987	09	16.07465	22	40	05.45	-07	18	40.3	3 809
1987	SM11	*	1987	09	16.13021	22	53	30.10	-05	57	58.1	17.1 3 809
1987	SM11		1987	09	16.13507	22	53	29.90	-05	57	59.6	3 809

1987	SN11*	1987	09	17.21771	00	14	33.10	+00	46	01.9	17.3	3 809
1987	SN11	1987	09	17.22257	00	14	32.85	+00	45	59.7		3 809
1987	SO11*	1987	09	17.23229	00	10	30.71	-01	38	42.7	16.8	3 809
1987	SO11	1987	09	17.23715	00	10	30.45	-01	38	45.3		3 809
1987	SP11*	1987	09	17.23229	00	12	19.66	-02	15	21.9	17.5	3 809
1987	SP11	1987	09	17.23715	00	12	19.33	-02	15	23.2		3 809
1987	SQ11*	1987	09	17.23229	00	14	26.30	-00	49	42.7	17.6	3 809
1987	SQ11	1987	09	17.23715	00	14	26.14	-00	49	43.4		3 809
1987	SR11*	1987	09	18.15174	22	44	43.99	-07	23	37.0	17.1	3 809
1987	SR11	1987	09	18.15660	22	44	43.77	-07	23	39.2		3 809
1987	SS11*	1987	09	18.15174	22	51	30.92	-08	11	55.8	17.6	3 809
1987	SS11	1987	09	18.15660	22	51	30.74	-08	11	58.7		3 809
1987	ST11*	1987	09	23.38993	01	03	44.89	-00	27	04.2	17.3	3 809
1987	SU11*	1987	09	24.23993	23	39	14.01	-04	01	54.9	17.6	3 809
1987	SV11*	1987	09	24.23993	23	40	26.20	-05	34	01.4	17.0	3 809
1987	SW11*	1987	09	26.08854	23	31	42.80	-04	14	06.5	17.2	3 809
1987	SX11*	1987	09	26.10382	23	37	02.34	-07	37	40.4	17.5	3 809
1987	SY11*	1987	09	26.10382	23	38	27.73	-06	58	38.5	16.5	3 809
1987	SZ11*	1988	09	17.33229	00	43	10.76	+02	59	58.1	17.2	3 809
1987	SZ11	1988	09	17.34201	00	43	10.21	+02	59	57.2		3 809
1987	SZ11	1988	09	17.39715	00	43	10.51	+02	59	57.7		3 809
1987	YL1 *	1987	12	17.17778	05	53	15.17	+05	30	09.1	18	4 809
1987	YL1	1987	12	17.23333	05	53	12.47	+05	30	12.6		4 809
1987	YM1 *	1987	12	17.17778	05	53	21.73	+05	47	48.2	18.5	4 809
1987	YM1	1987	12	17.23333	05	53	18.53	+05	48	06.4		4 809
1987	YN1 *	1987	12	17.17778	05	56	19.33	+04	17	42.7	19	4 809
1987	YN1	1987	12	17.23333	05	56	18.15	+04	17	33.0		4 809
1987	YO1 *	1987	12	17.17778	05	56	29.02	+05	32	21.4	17	4 809
1987	YO1	1987	12	17.23333	05	56	25.87	+05	32	15.5		4 809
1987	YP1 *	1987	12	17.17778	05	59	40.05	+05	47	32.7	18.5	4 809
1987	YP1	1987	12	17.23333	05	59	36.75	+05	47	22.8		4 809
1987	YQ1 *	1987	12	17.17778	06	01	22.30	+06	08	58.0	18.5	4 809
1987	YQ1	1987	12	17.23333	06	01	19.38	+06	08	48.8		4 809
1987	YR1 *	1987	12	17.17778	06	01	46.40	+07	01	45.3	17.5	4 809
1987	YR1	1987	12	17.23333	06	01	43.20	+07	01	20.9		4 809
1987	YS1 *	1987	12	17.17778	06	03	54.41	+03	24	09.4	17	4 809
1987	YS1	1987	12	17.23333	06	03	51.27	+03	24	18.1		4 809
1987	YT1 *	1987	12	17.17778	06	04	28.20	+03	16	58.8	17	4 809
1987	YT1	1987	12	17.23333	06	04	26.30	+03	17	01.0		4 809
1987	YU1 *	1987	12	17.17778	06	05	31.03	+04	55	37.7	17	4 809
1987	YU1	1987	12	17.23333	06	05	29.16	+04	55	31.4		4 809
1987	YV1 *	1987	12	17.17778	06	07	49.50	+06	25	43.0	17.5	4 809
1987	YV1	1987	12	17.23333	06	07	46.23	+06	25	59.0		4 809
1987	YW1 *	1987	12	17.17778	06	08	09.87	+04	10	26.5	17.5	4 809
1987	YW1	1987	12	17.23333	06	08	07.14	+04	10	32.2		4 809
1988	AM1	1988	02	11.17014	07	45	26.31	+23	16	25.2	17.4	4 809
1988	AW1	1988	02	11.17014	07	48	27.20	+23	43	39.9	17.6	4 809
1988	AX1	1988	02	11.17014	07	49	53.30	+21	11	28.2	17.5	4 809
1988	BJ	1988	02	11.17014	07	51	16.60	+21	16	00.8	17.5	4 809
1988	BU	1988	02	11.17014	07	40	15.07	+23	08	08.2	17.4	4 809
1988	BZ1	1988	02	14.14444	09	25	37.39	+14	18	48.6	17.4	4 809
1988	BZ1	1988	02	14.15486	09	25	36.89	+14	18	51.9		4 809
1988	BZ1	1988	02	14.16528	09	25	36.33	+14	18	54.3		4 809
1988	BZ1	1988	02	17.14167	09	23	15.75	+14	30	45.0	17.3	4 809
1988	BZ1	1988	02	17.15208	09	23	15.33	+14	30	47.8		4 809
1988	BA2	1988	02	14.14444	09	26	20.31	+14	18	09.2	17.3	4 809
1988	BA2	1988	02	14.15486	09	26	19.78	+14	18	11.7		4 809
1988	BA2	1988	02	14.16528	09	26	19.23	+14	18	14.3		4 809
1988	BA2	1988	02	17.14167	09	23	49.24	+14	32	20.0	17.5	4 809

1988	BA2		1988	02	17.15208	09	23	48.82	+14	32	22.5		4 809
1988	BY2		1988	02	14.21597	10	16	37.89	+10	42	52.4	17.2	4 809
1988	BY2		1988	02	14.22662	10	16	37.21	+10	42	52.9		4 809
1988	BY2		1988	02	14.23681	10	16	36.61	+10	42	53.4		4 809
1988	BY2		1988	02	17.24861	10	13	34.25	+10	45	32.4	17.3	4 809
1988	BY2		1988	02	17.25903	10	13	33.63	+10	45	33.1		4 809
1988	CK		1988	02	16.29653	10	26	05.55	+08	59	23.1	17	4 809
1988	CK		1988	02	16.30729	10	26	04.84	+08	59	24.1		4 809
1988	CL		1988	02	14.29375	10	30	39.96	+10	03	42.3	17.4	4 809
1988	CL		1988	02	14.30486	10	30	39.22	+10	03	43.0		4 809
1988	CL		1988	02	14.31528	10	30	38.60	+10	03	43.5		4 809
1988	CL		1988	02	15.29549	10	29	37.73	+10	04	49.9	17	4 809
1988	CL		1988	02	15.30556	10	29	37.09	+10	04	51.0		4 809
1988	CL		1988	02	16.29653	10	28	34.97	+10	05	59.4	17.2	4 809
1988	CL		1988	02	16.30729	10	28	34.30	+10	05	59.4		4 809
1988	CR	*	1988	02	13.23194	10	19	06.63	-01	56	23.1	17.5	4 809
1988	CS	*	1988	02	15.21875	10	08	45.45	+04	38	20.1	18.5	4 809
1988	CS		1988	02	15.23681	10	08	46.38	+04	38	18.5		4 809
1988	CS		1988	02	15.24722	10	08	46.96	+04	38	17.7		4 809
1988	CL1	*	1988	02	10.29375	10	48	46.61	-03	15	01.9	17.8	4 809
1988	CL1		1988	02	10.30417	10	48	46.15	-03	14	57.7		4 809
1988	CL1		1988	02	10.31875	10	48	45.73	-03	14	53.9		4 809
1988	CM1	*	1988	02	11.15694	09	34	56.80	+11	56	38.8	17.4	4 809
1988	CM1		1988	02	11.16771	09	34	56.06	+11	56	40.6		4 809
1988	CM1		1988	02	11.17847	09	34	55.39	+11	56	43.2		4 809
1988	CN1	*	1988	02	11.15972	07	58	06.59	+19	28	53.6	17	4 809
1988	CN1		1988	02	11.17014	07	58	06.01	+19	28	53.1		4 809
1988	CN1		1988	02	11.18056	07	58	05.41	+19	28	53.0		4 809
1988	CO1	*	1988	02	11.17014	07	36	20.90	+21	31	39.7	17	4 809
1988	CP1	*	1988	02	11.17014	07	37	55.74	+20	34	04.1	18.7	4 809
1988	CQ1	*	1988	02	11.17014	07	38	09.78	+22	12	01.1	18.2	4 809
1988	CR1	*	1988	02	11.17014	07	39	16.93	+21	56	29.1	18	4 809
1988	CT1	*	1988	02	11.17014	07	40	53.01	+23	53	49.3	17.5	4 809
1988	CU1	*	1988	02	11.17014	07	43	07.79	+22	54	08.6	19	4 809
1988	CV1	*	1988	02	11.17014	07	43	18.23	+20	57	46.1	19.5	4 809
1988	CW1	*	1988	02	11.17014	07	43	20.91	+21	23	21.6	19	4 809
1988	CX1	*	1988	02	11.17014	07	43	25.41	+20	29	07.5	18.5	4 809
1988	CY1	*	1988	02	11.17014	07	43	29.61	+21	15	33.1	17.9	4 809
1988	CZ1	*	1988	02	11.17014	07	43	42.71	+21	57	47.6	19	4 809
1988	CA2	*	1988	02	11.17014	07	43	56.79	+21	43	32.8	18	4 809
1988	CB2	*	1988	02	11.17014	07	44	06.46	+19	58	51.0	19	4 809
1988	CC2	*	1988	02	11.17014	07	44	13.69	+22	29	17.7	17.6	4 809
1988	CD2	*	1988	02	11.17014	07	44	16.59	+20	17	24.1	18.9	4 809
1988	CE2	*	1988	02	11.17014	07	44	27.95	+21	41	20.1	18.2	4 809
1988	CF2	*	1988	02	11.17014	07	44	29.51	+22	07	06.1	19	4 809
1988	CG2	*	1988	02	11.17014	07	44	56.92	+21	07	23.7	17.9	4 809
1988	CH2	*	1988	02	11.17014	07	45	49.38	+19	44	50.8	17.5	4 809
1988	CJ2	*	1988	02	11.17014	07	46	33.91	+24	11	36.3	16.9	4 809
1988	CK2	*	1988	02	11.17014	07	46	37.64	+19	25	24.9	17.7	4 809
1988	CL2	*	1988	02	11.17014	07	47	09.62	+21	12	03.5	18.5	4 809
1988	CM2	*	1988	02	11.17014	07	47	26.55	+20	14	25.7	17.7	4 809
1988	CN2	*	1988	02	11.17014	07	47	36.70	+20	07	27.7	17.9	4 809
1988	CO2	*	1988	02	11.17014	07	49	22.73	+21	13	06.2	19	4 809
1988	CP2	*	1988	02	11.17014	07	49	27.18	+20	37	44.4	17.5	4 809
1988	CQ2	*	1988	02	11.17014	07	50	19.66	+20	20	08.8	17.5	4 809
1988	CR2	*	1988	02	11.17014	07	51	31.41	+22	58	09.6	18.5	4 809
1988	CS2	*	1988	02	11.17014	07	51	55.86	+20	53	39.5	17.8	4 809
1988	CT2	*	1988	02	11.17014	07	52	41.88	+21	13	34.8	19	4 809
1988	CU2	*	1988	02	11.17014	07	53	03.08	+21	36	13.9	19.2	4 809

1988	CV2	*	1988	02	11.17014	07	53	27.50	+22	59	59.3	18.5	4	809
1988	CW2	*	1988	02	11.17014	07	53	34.25	+21	57	17.5	17.8	4	809
1988	CX2	*	1988	02	11.17014	07	53	35.48	+23	06	22.4	18.5	4	809
1988	CY2	*	1988	02	11.17014	07	53	44.39	+22	42	36.5	18.8	4	809
1988	CZ2	*	1988	02	11.17014	07	56	31.36	+20	58	33.3	18.5	4	809
1988	CA3	*	1988	02	11.17014	07	56	35.13	+20	11	02.5	18.7	4	809
1988	CB3	*	1988	02	11.17014	07	56	40.06	+20	06	29.5	18.5	4	809
1988	CC3	*	1988	02	11.17014	07	57	02.04	+19	28	29.2	19.2	4	809
1988	CD3	*	1988	02	11.17014	07	58	30.92	+22	48	42.9	17.5	4	809
1988	CE3	*	1988	02	11.17014	07	58	50.18	+21	28	30.3	18.7	4	809
1988	CF3	*	1988	02	11.17014	07	59	02.56	+23	00	06.2	18.6	4	809
1988	CG3	*	1988	02	13.16146	10	10	55.01	-04	25	38.8	17	4	809
1988	CG3		1988	02	13.17431	10	10	54.42	-04	25	34.9		4	809
1988	CG3		1988	02	13.18472	10	10	53.90	-04	25	31.6		4	809
1988	CH3	*	1988	02	13.16146	10	14	49.14	-04	05	31.8	18	4	809
1988	CH3		1988	02	13.17431	10	14	48.54	-04	05	32.4		4	809
1988	CH3		1988	02	13.18472	10	14	47.82	-04	05	33.1		4	809
1988	CJ3	*	1988	02	13.22153	10	03	25.25	+02	26	48.1	18.2	4	809
1988	CJ3		1988	02	13.23194	10	03	24.61	+02	26	49.3		4	809
1988	CJ3		1988	02	13.24236	10	03	23.99	+02	26	50.9		4	809
1988	CK3	*	1988	02	13.22153	10	03	29.09	-02	19	02.3	18	4	809
1988	CK3		1988	02	13.23194	10	03	28.49	-02	19	01.5		4	809
1988	CK3		1988	02	13.24236	10	03	27.96	-02	18	59.4		4	809
1988	CL3	*	1988	02	13.22153	10	03	44.48	+02	31	57.0	17.8	4	809
1988	CL3		1988	02	13.23194	10	03	43.80	+02	31	58.4		4	809
1988	CL3		1988	02	13.24236	10	03	43.12	+02	32	00.3		4	809
1988	CM3	*	1988	02	13.22153	10	04	47.25	-02	15	24.9	18.5	4	809
1988	CM3		1988	02	13.23194	10	04	46.65	-02	15	13.8		4	809
1988	CM3		1988	02	13.24236	10	04	46.03	-02	15	03.9		4	809
1988	CN3	*	1988	02	13.22153	10	23	16.83	+02	21	52.3	17.8	4	809
1988	CN3		1988	02	13.23194	10	23	16.22	+02	21	55.7		4	809
1988	CN3		1988	02	13.24236	10	23	15.66	+02	21	58.2		4	809
1988	CO3	*	1988	02	13.22847	10	10	17.80	+10	47	15.6	17.1	4	809
1988	CO3		1988	02	13.23889	10	10	17.32	+10	47	17.2		4	809
1988	CO3		1988	02	13.24931	10	10	16.83	+10	47	21.1		4	809
1988	CO3		1988	02	17.24861	10	07	10.51	+11	07	10.9	17.2	4	809
1988	CO3		1988	02	17.25903	10	07	09.99	+11	07	14.0		4	809
1988	CP3	*	1988	02	13.22847	10	11	15.00	+10	38	41.5	17.7	4	809
1988	CP3		1988	02	13.23889	10	11	14.35	+10	38	44.0		4	809
1988	CP3		1988	02	13.24931	10	11	13.71	+10	38	45.5		4	809
1988	CQ3	*	1988	02	13.22847	10	12	08.55	+09	43	44.2	17.8	4	809
1988	CQ3		1988	02	13.23889	10	12	08.13	+09	43	49.1		4	809
1988	CQ3		1988	02	13.24931	10	12	07.64	+09	43	52.9		4	809
1988	CQ3		1988	02	17.24861	10	09	07.63	+10	12	59.0	17.7	4	809
1988	CQ3		1988	02	17.25903	10	09	07.21	+10	13	03.5		4	809
1988	CR3	*	1988	02	13.22847	10	12	09.55	+10	47	16.9	17.2	4	809
1988	CR3		1988	02	13.23889	10	12	09.03	+10	47	18.7		4	809
1988	CR3		1988	02	13.24931	10	12	08.33	+10	47	20.9		4	809
1988	CR3		1988	02	14.21597	10	11	07.60	+10	51	35.8	17.2	4	809
1988	CR3		1988	02	14.22662	10	11	06.86	+10	51	39.0		4	809
1988	CR3		1988	02	14.23681	10	11	06.20	+10	51	41.0		4	809
1988	CR3		1988	02	17.24861	10	07	54.52	+11	04	58.0	17.3	4	809
1988	CR3		1988	02	17.25903	10	07	53.84	+11	05	00.8		4	809
1988	CS3	*	1988	02	13.22847	10	12	55.40	+09	08	51.2	16	4	809
1988	CS3		1988	02	13.23889	10	12	54.74	+09	08	52.2		4	809
1988	CS3		1988	02	13.24931	10	12	54.08	+09	08	52.8		4	809
1988	CT3	*	1988	02	13.23194	10	02	36.54	-00	30	30.0	17.2	4	809
1988	CU3	*	1988	02	13.23194	10	03	37.77	+01	28	13.7	16.8	4	809
1988	CV3	*	1988	02	13.23194	10	04	21.40	-01	24	45.0	17.7	4	809

1988	CW3	*	1988	02	13.23194	10	04	53.81	+00	30	19.5	18.7	4 809
1988	CX3	*	1988	02	13.23194	10	05	34.15	+01	35	17.8	16.8	4 809
1988	CY3	*	1988	02	13.23194	10	05	58.83	-01	35	17.7	18.5	4 809
1988	CZ3	*	1988	02	13.23194	10	06	42.24	+01	40	06.3	17.6	4 809
1988	CA4	*	1988	02	13.23194	10	06	51.08	-00	45	38.0	19.2	4 809
1988	CB4	*	1988	02	13.23194	10	06	52.78	+01	31	31.2	17.6	4 809
1988	CC4	*	1988	02	13.23194	10	07	17.65	-00	50	36.7	18.5	4 809
1988	CD4	*	1988	02	13.23194	10	07	25.53	-00	48	46.6	17.5	4 809
1988	CE4	*	1988	02	13.23194	10	07	42.53	+02	37	37.2	17.2	4 809
1988	CF4	*	1988	02	13.23194	10	08	07.38	-02	15	35.1	19	4 809
1988	CG4	*	1988	02	13.23194	10	08	18.47	+00	49	38.8	17.5	4 809
1988	CH4	*	1988	02	13.23194	10	08	43.36	-00	18	07.4	18.5	4 809
1988	CJ4	*	1988	02	13.23194	10	09	29.67	-02	08	52.3	17.2	4 809
1988	CK4	*	1988	02	13.23194	10	09	32.66	-01	13	18.7	17.5	4 809
1988	CL4	*	1988	02	13.23194	10	09	47.96	-02	11	55.9	17.3	4 809
1988	CM4	*	1988	02	13.23194	10	10	00.80	-00	17	14.9	19	4 809
1988	CN4	*	1988	02	13.23194	10	10	16.07	+01	27	08.7	16.8	4 809
1988	CO4	*	1988	02	13.23194	10	10	47.62	-01	23	22.7	17.5	4 809
1988	CP4	*	1988	02	13.23194	10	11	16.19	-01	14	44.7	18.6	4 809
1988	CQ4	*	1988	02	13.23194	10	11	41.99	+01	53	47.9	17.3	4 809
1988	CR4	*	1988	02	13.23194	10	11	44.18	+00	25	13.0	17	4 809
1988	CS4	*	1988	02	13.23194	10	11	53.38	-01	38	44.8	18.5	4 809
1988	CT4	*	1988	02	13.23194	10	11	57.56	+00	23	06.9	17	4 809
1988	CU4	*	1988	02	13.23194	10	12	10.79	+00	17	05.8	17.2	4 809
1988	CV4	*	1988	02	13.23194	10	12	23.27	-02	07	14.8	18.2	4 809
1988	CW4	*	1988	02	13.23194	10	12	34.73	+00	05	00.8	17.4	4 809
1988	CX4	*	1988	02	13.23194	10	13	00.03	+01	17	28.9	18.6	4 809
1988	CY4	*	1988	02	13.23194	10	13	04.95	+00	16	54.9	18.7	4 809
1988	CZ4	*	1988	02	13.23194	10	13	09.25	+00	06	14.3	17.6	4 809
1988	CA5	*	1988	02	13.23194	10	13	11.67	+01	26	23.7	18.5	4 809
1988	CB5	*	1988	02	13.23194	10	13	40.72	-01	15	18.1	19.2	4 809
1988	CC5	*	1988	02	13.23194	10	13	58.12	+02	29	46.5	19	4 809
1988	CD5	*	1988	02	13.23194	10	14	01.68	-02	04	06.6	19	4 809
1988	CE5	*	1988	02	13.23194	10	14	08.62	+01	11	13.8	17.8	4 809
1988	CF5	*	1988	02	13.23194	10	15	55.25	+02	26	20.9	17.2	4 809
1988	CG5	*	1988	02	13.23194	10	16	48.11	-02	01	16.9	19	4 809
1988	CH5	*	1988	02	13.23194	10	16	59.14	+01	43	34.2	17.6	4 809
1988	CJ5	*	1988	02	13.23194	10	17	01.19	+01	00	46.6	16.9	4 809
1988	CK5	*	1988	02	13.23194	10	17	05.28	-00	05	46.4	18.5	4 809
1988	CL5	*	1988	02	13.23194	10	17	05.70	+02	44	24.5	18.5	4 809
1988	CM5	*	1988	02	13.23194	10	17	44.74	-00	52	05.4	17.3	4 809
1988	CN5	*	1988	02	13.23194	10	18	38.50	+00	40	18.4	17.5	4 809
1988	CO5	*	1988	02	13.23194	10	19	03.17	+00	37	36.1	18.3	4 809
1988	CP5	*	1988	02	13.23194	10	19	26.47	-01	04	05.1	17.7	4 809
1988	CQ5	*	1988	02	13.23194	10	20	05.58	-00	21	30.4	17.2	4 809
1988	CR5	*	1988	02	13.23194	10	20	48.37	+01	04	54.4	17.1	4 809
1988	CS5	*	1988	02	13.23194	10	22	05.60	+01	14	29.9	18.2	4 809
1988	CT5	*	1988	02	14.14444	09	26	25.16	+14	24	43.0	17.8	4 809
1988	CT5		1988	02	14.15486	09	26	24.59	+14	24	42.8		4 809
1988	CT5		1988	02	14.16528	09	26	23.88	+14	24	43.5		4 809
1988	CT5		1988	02	17.14167	09	23	21.93	+14	28	19.4	17.4	4 809
1988	CT5		1988	02	17.15208	09	23	21.36	+14	28	20.7		4 809
1988	CU5	*	1988	02	14.21597	10	11	14.04	+09	25	38.7	17.5	4 809
1988	CU5		1988	02	14.22662	10	11	13.31	+09	25	46.8		4 809
1988	CU5		1988	02	14.23681	10	11	12.49	+09	25	56.1		4 809
1988	CV5	*	1988	02	14.21597	10	15	52.08	+10	51	56.2	18.2	4 809
1988	CV5		1988	02	14.22662	10	15	51.34	+10	52	00.2		4 809
1988	CV5		1988	02	14.23681	10	15	50.76	+10	52	04.3		4 809
1988	CW5	*	1988	02	14.21597	10	16	24.02	+11	00	05.4	18	4 809

1988	CW5		1988	02	14.22662	10	16	23.46	+11	00	11.9		4 809
1988	CW5		1988	02	14.23681	10	16	23.00	+11	00	19.3		4 809
1988	CX5	*	1988	02	14.25799	10	16	09.21	+13	45	25.8	16.9	4 809
1988	CX5		1988	02	14.26806	10	16	08.76	+13	45	32.8		4 809
1988	CX5		1988	02	14.28403	10	16	08.13	+13	45	42.6		4 809
1988	CY5	*	1988	02	14.25799	10	17	35.72	+12	44	54.0	18	4 809
1988	CY5		1988	02	14.26806	10	17	35.15	+12	44	58.0		4 809
1988	CY5		1988	02	14.28403	10	17	34.22	+12	45	01.7		4 809
1988	CZ5	*	1988	02	14.29375	10	23	28.13	+10	10	19.4	17.5	4 809
1988	CZ5		1988	02	14.30486	10	23	27.44	+10	10	24.0		4 809
1988	CZ5		1988	02	14.31528	10	23	26.90	+10	10	27.2		4 809
1988	CA6	*	1988	02	14.29375	10	24	59.37	+09	54	31.8	17.5	4 809
1988	CA6		1988	02	14.30486	10	24	59.00	+09	54	34.2		4 809
1988	CA6		1988	02	14.31528	10	24	58.61	+09	54	37.6		4 809
1988	CA6		1988	02	15.29549	10	24	14.68	+09	59	39.3	17.3	4 809
1988	CA6		1988	02	15.30556	10	24	14.21	+09	59	44.4		4 809
1988	CB6	*	1988	02	14.29375	10	29	29.34	+10	39	22.2	18	4 809
1988	CB6		1988	02	14.30486	10	29	28.84	+10	39	25.6		4 809
1988	CB6		1988	02	14.31528	10	29	28.41	+10	39	29.4		4 809
1988	CB6		1988	02	15.29549	10	28	44.74	+10	44	22.0	17.7	4 809
1988	CB6		1988	02	15.30556	10	28	44.20	+10	44	25.2		4 809
1988	CC6	*	1988	02	14.29375	10	30	40.86	+10	06	49.9	17.4	4 809
1988	CC6		1988	02	14.30486	10	30	40.41	+10	06	51.5		4 809
1988	CC6		1988	02	14.31528	10	30	39.88	+10	06	53.3		4 809
1988	CC6		1988	02	15.29549	10	29	53.52	+10	09	56.2	17.4	4 809
1988	CC6		1988	02	15.30556	10	29	53.11	+10	09	58.4		4 809
1988	CC6		1988	02	16.29653	10	29	05.78	+10	13	05.5	17.5	4 809
1988	CC6		1988	02	16.30729	10	29	05.26	+10	13	07.4		4 809
1988	CD6	*	1988	02	14.32639	10	59	08.88	+02	57	07.1	17.5	4 809
1988	CD6		1988	02	14.33715	10	59	08.55	+02	57	12.0		4 809
1988	CE6	*	1988	02	15.19444	10	10	31.22	+00	33	22.6	18	4 809
1988	CE6		1988	02	15.20486	10	10	30.71	+00	33	26.6		4 809
1988	CF6	*	1988	02	15.21875	10	05	01.11	+04	46	59.7	17.5	4 809
1988	CF6		1988	02	15.23681	10	05	00.07	+04	47	04.2		4 809
1988	CF6		1988	02	15.24722	10	04	59.41	+04	47	06.8		4 809
1988	CF6		1988	02	16.23472	10	04	03.29	+04	50	55.1	16.5	4 809
1988	CF6		1988	02	16.24514	10	04	02.69	+04	50	56.6		4 809
1988	CG6	*	1988	02	15.21875	10	05	43.34	+05	53	21.6	18	4 809
1988	CG6		1988	02	15.23681	10	05	42.44	+05	53	25.8		4 809
1988	CG6		1988	02	15.24722	10	05	41.82	+05	53	28.6		4 809
1988	CH6	*	1988	02	15.21875	10	09	29.92	+05	39	32.3	17.9	4 809
1988	CH6		1988	02	15.23681	10	09	29.14	+05	39	38.5		4 809
1988	CH6		1988	02	15.24722	10	09	28.69	+05	39	42.7		4 809
1988	CJ6	*	1988	02	15.21875	10	11	20.85	+06	08	41.3	17	4 809
1988	CJ6		1988	02	15.23681	10	11	20.05	+06	08	47.0		4 809
1988	CJ6		1988	02	15.24722	10	11	19.58	+06	08	50.3		4 809
1988	CK6	*	1988	02	15.21875	10	12	16.81	+06	22	46.1	16.4	4 809
1988	CK6		1988	02	15.23681	10	12	16.02	+06	22	54.7		4 809
1988	CK6		1988	02	15.24722	10	12	15.51	+06	23	00.3		4 809
1988	CL6	*	1988	02	15.29549	10	30	36.88	+10	11	37.5	17.7	4 809
1988	CL6		1988	02	15.30556	10	30	36.30	+10	11	42.1		4 809
1988	CL6		1988	02	16.29653	10	29	42.14	+10	18	17.5	18	4 809
1988	CL6		1988	02	16.30729	10	29	41.57	+10	18	20.8		4 809
1988	DM		1988	02	13.23194	10	21	54.82	-00	45	31.2	17.5	4 809
1988	DN		1988	02	13.23194	10	21	31.84	-01	18	51.6	17.3	4 809
1988	DS	*	1988	02	16.23472	10	02	26.02	+04	20	50.0	17.5	4 809
1988	DS		1988	02	16.24514	10	02	25.36	+04	20	53.3		4 809
1988	DT	*	1988	02	16.29653	10	29	34.94	+09	34	25.9	17.4	4 809
1988	DT		1988	02	16.30729	10	29	34.37	+09	34	29.0		4 809

1988	DU	*	1988	02	16.29653	10	30	41.76	+09	30	28.6	16.7	4 809
1988	DU		1988	02	16.30729	10	30	41.30	+09	30	33.1		4 809
1988	DV	*	1988	02	17.14167	09	28	34.30	+13	48	03.1	17.3	4 809
1988	DV		1988	02	17.15208	09	28	33.63	+13	48	07.4		4 809
1988	DW	*	1988	02	17.24861	10	06	55.22	+10	50	43.1	17.3	4 809
1988	DW		1988	02	17.25903	10	06	54.52	+10	50	44.2		4 809
1988	DY	*	1988	02	17.27083	10	05	33.94	+14	09	38.6	17	4 809
1988	DY		1988	02	17.28125	10	05	33.42	+14	09	41.8		4 809
1988	DZ	*	1988	02	17.27083	10	11	17.56	+14	14	22.4	18	4 809
1988	DZ		1988	02	17.28125	10	11	16.84	+14	14	25.0		4 809
1988	DA1	*	1988	02	17.27083	10	13	31.44	+14	30	27.7	17.6	4 809
1988	DA1		1988	02	17.28125	10	13	30.93	+14	30	30.2		4 809
1988	DB1	*	1988	02	17.36042	11	22	59.36	+03	24	21.4	16	4 809
1988	DB1		1988	02	17.37431	11	22	58.81	+03	24	23.7		4 809
1988	DB1		1988	02	17.38472	11	22	58.35	+03	24	26.1		4 809
1988	DC1	*	1988	02	17.36042	11	24	05.08	+04	36	53.2	17.5	4 809
1988	DC1		1988	02	17.37431	11	24	04.66	+04	36	57.4		4 809
1988	DC1		1988	02	17.38472	11	24	04.35	+04	36	59.6		4 809
1988	DD1	*	1988	02	17.36042	11	28	52.89	+03	05	29.6	18	4 809
1988	DD1		1988	02	17.37431	11	28	52.24	+03	05	34.3		4 809
1988	DD1		1988	02	17.38472	11	28	51.73	+03	05	37.7		4 809
1988	DE1	*	1988	02	17.36042	11	28	59.72	+03	11	48.6	17.3	4 809
1988	DE1		1988	02	17.37431	11	28	59.11	+03	11	53.8		4 809
1988	DE1		1988	02	17.38472	11	28	58.66	+03	11	58.4		4 809
1988	DF1	*	1988	02	18.32795	11	35	28.34	+03	25	16.2	17.8	4 809
1988	DF1		1988	02	18.33889	11	35	27.88	+03	25	18.5		4 809
148			1988	02	14.25799	10	11	53.98	+13	40	14.6	13	4 809
148			1988	02	14.26806	10	11	53.45	+13	40	23.0		4 809
148			1988	02	14.28403	10	11	52.70	+13	40	34.6		4 809
148			1988	02	17.27083	10	09	26.65	+14	18	16.6	14	4 809
148			1988	02	17.28125	10	09	26.08	+14	18	25.7		4 809
166			1988	02	11.17014	07	46	09.62	+19	47	03.6	16.7	4 809
167			1987	09	12.06007	22	42	31.60	-07	56	43.9		3 809
167			1987	09	16.06493	22	39	35.39	-08	17	43.4		3 809
167			1987	09	16.06979	22	39	35.22	-08	17	44.1		3 809
167			1987	09	16.07465	22	39	35.00	-08	17	45.5		3 809
175			1987	09	13.13264	23	41	42.71	-04	50	35.8		3 809
175			1987	09	24.23993	23	33	19.44	-05	26	37.4		3 809
217			1987	09	12.04479	22	45	03.59	-08	21	25.9		3 809
217			1987	09	12.04965	22	45	03.45	-08	21	29.4		3 809
217			1987	09	12.05451	22	45	03.30	-08	21	32.4		3 809
217			1987	09	16.06493	22	43	07.98	-09	07	15.1		3 809
217			1987	09	16.06979	22	43	07.88	-09	07	17.4		3 809
217			1987	09	16.07465	22	43	07.72	-09	07	20.5		3 809
217			1987	09	16.08021	22	43	07.47	-09	07	23.0		3 809
217			1987	09	16.08507	22	43	07.34	-09	07	26.4		3 809
217			1987	09	16.08993	22	43	07.15	-09	07	29.5		3 809
241			1988	02	15.21875	10	06	32.66	+04	28	41.0	15	4 809
241			1988	02	15.23681	10	06	31.83	+04	28	44.3		4 809
241			1988	02	15.24722	10	06	31.17	+04	28	47.2		4 809
241			1988	02	16.23472	10	05	44.84	+04	32	11.3	15	4 809
241			1988	02	16.24514	10	05	44.29	+04	32	13.2		4 809
243			1988	02	18.29514	11	22	21.81	+03	27	55.6	16	4 809
243			1988	02	18.30556	11	22	21.34	+03	27	57.9		4 809
243			1988	02	18.31597	11	22	20.89	+03	28	01.0		4 809
271			1988	02	11.17014	07	52	47.55	+23	39	40.0	16.8	4 809
273			1988	02	15.21875	10	07	19.75	+05	39	25.8	16	4 809
273			1988	02	15.23681	10	07	18.79	+05	39	39.7		4 809
273			1988	02	15.24722	10	07	18.23	+05	39	47.1		4 809

291		1987	09	12.06007	22	44	10.69	-08	08	12.3		3 809
291		1987	09	16.06493	22	40	29.61	-08	33	55.4		3 809
291		1987	09	16.06979	22	40	29.37	-08	33	56.3		3 809
291		1987	09	16.07465	22	40	29.07	-08	33	57.2		3 809
316		1987	09	12.11910	22	05	46.67	-13	33	06.7		3 809
316		1987	09	12.12396	22	05	46.47	-13	33	07.6		3 809
385		1987	09	12.04479	22	39	09.05	-10	04	06.5		3 809
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385		1987	09	12.05451	22	39	08.54	-10	04	07.6		3 809
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385		1987	09	16.08507	22	35	42.42	-10	09	38.0		3 809
385		1987	09	16.08993	22	35	42.18	-10	09	38.0		3 809
435		1988	02	11.17014	07	46	41.69	+23	57	14.3	16.8	4 809
500		1988	02	13.23194	10	12	38.57	+00	43	45.8	15	4 809
500		1988	02	15.19444	10	10	49.73	+00	48	14.1	15.5	4 809
500		1988	02	15.20486	10	10	49.09	+00	48	15.2		4 809
506		1988	02	10.29375	10	53	18.65	-04	36	20.6	15	4 809
506		1988	02	10.30417	10	53	18.06	-04	36	21.8		4 809
506		1988	02	10.31875	10	53	17.31	-04	36	24.5		4 809
555		1987	09	13.13264	23	42	28.13	-04	37	58.4		3 809
555		1987	09	24.23993	23	34	33.79	-05	33	47.4		3 809
609		1987	09	13.00174	22	25	01.70	-09	12	46.3		3 809
609		1987	09	13.00660	22	25	01.50	-09	12	48.0		3 809
708		1987	09	13.06771	22	52	05.33	-08	20	20.5		3 809
708		1987	09	13.07257	22	52	05.05	-08	20	21.4		3 809
761		1988	02	11.17014	07	53	07.04	+24	01	01.7	16.9	4 809
850		1988	02	11.17014	07	50	13.36	+21	51	04.7	16.7	4 809
990		1987	09	13.15035	23	41	34.99	-02	31	05.8		3 809
1062		1987	09	13.10035	23	02	54.94	-05	20	48.8		3 809
1062		1987	09	13.10521	23	02	54.68	-05	20	49.4		3 809
1114		1987	09	12.09479	22	46	19.71	+01	10	50.4		3 809
1114		1987	09	12.09965	22	46	19.53	+01	10	48.6		3 809
1114		1987	09	12.10451	22	46	19.31	+01	10	46.7		3 809
1167		1987	09	12.09479	22	42	58.71	-00	18	48.4		3 809
1167		1987	09	12.09965	22	42	58.57	-00	18	49.8		3 809
1167		1987	09	12.10451	22	42	58.39	-00	18	51.0		3 809
1212		1988	02	14.21597	10	13	49.17	+10	59	11.6	16	4 809
1212		1988	02	14.22662	10	13	48.73	+10	59	15.1		4 809
1212		1988	02	14.23681	10	13	48.32	+10	59	18.7		4 809
1212		1988	02	17.24861	10	11	54.07	+11	16	49.5	16	4 809
1212		1988	02	17.25903	10	11	53.66	+11	16	53.2		4 809
1217		1987	09	12.07951	22	45	53.97	-10	17	51.8		3 809
1217		1987	09	12.08438	22	45	53.75	-10	17	54.1		3 809
1217		1987	09	12.08924	22	45	53.47	-10	17	55.6		3 809
1217		1987	09	14.11007	22	44	11.04	-10	32	32.4		3 809
1269		1988	02	11.17014	07	52	27.03	+20	11	05.2	16.7	4 809
1287		1988	02	13.23194	10	17	10.51	-01	34	25.2	16.7	4 809
1292		1988	02	14.32639	10	57	48.68	+03	07	24.9	16.7	4 809
1292		1988	02	14.33715	10	57	48.15	+03	07	27.4		4 809
1301		1987	09	13.06771	22	48	04.25	-09	34	21.5		3 809
1301		1987	09	13.07257	22	48	03.99	-09	34	26.1		3 809
1349		1987	09	12.09479	22	39	52.31	+01	18	35.1		3 809
1349		1987	09	12.09965	22	39	52.06	+01	18	34.8		3 809
1349		1987	09	12.10451	22	39	51.88	+01	18	34.7		3 809
1358		1988	02	11.17014	07	53	26.38	+24	03	06.8	16.9	4 809
1379		1988	02	13.23194	10	22	59.02	+01	10	08.1	15	4 809
1416		1987	09	13.06771	22	53	07.45	-09	43	32.5		3 809
1416		1987	09	13.07257	22	53	07.20	-09	43	32.5		3 809
1416		1987	09	16.14514	22	50	29.69	-09	48	06.4		3 809

1416	1987	09	16.14965	22	50	29.43	-09	48	06.5		3 809
1465	1987	09	12.06007	22	40	42.31	-06	54	29.5		3 809
1465	1987	09	16.06493	22	38	02.25	-07	21	01.1		3 809
1465	1987	09	16.06979	22	38	02.07	-07	21	01.2		3 809
1465	1987	09	16.07465	22	38	01.82	-07	21	02.3		3 809
1485	1988	02	11.17014	07	53	08.62	+19	32	34.2	17.4	4 809
1486	1987	09	13.15035	23	43	37.19	-01	43	12.0		3 809
1606	1988	02	16.23472	10	03	25.37	+04	32	41.8	17	4 809
1606	1988	02	16.24514	10	03	24.85	+04	32	44.1		4 809
1623	1987	09	12.07951	22	41	49.90	-11	07	25.0		3 809
1623	1987	09	12.08438	22	41	49.65	-11	07	26.4		3 809
1623	1987	09	12.08924	22	41	49.45	-11	07	20.2		3 809
1623	1987	09	14.11007	22	40	21.13	-11	16	54.3		3 809
1624	1987	09	13.06771	22	55	24.91	-08	24	03.1		3 809
1624	1987	09	13.07257	22	55	24.79	-08	24	05.5		3 809
1698	1987	09	12.04479	22	44	24.17	-09	38	26.8		3 809
1698	1987	09	12.04965	22	44	23.98	-09	38	27.5		3 809
1698	1987	09	12.05451	22	44	23.73	-09	38	28.2		3 809
1698	1987	09	16.08021	22	41	34.82	-09	53	54.2		3 809
1698	1987	09	16.08507	22	41	34.59	-09	53	55.6		3 809
1698	1987	09	16.08993	22	41	34.37	-09	53	55.7		3 809
1762	1987	09	17.21771	00	12	10.02	+00	02	45.2		3 809
1762	1987	09	17.22257	00	12	09.81	+00	02	43.6		3 809
1764	1988	02	11.15694	09	35	07.16	+13	44	41.8	16.7	4 809
1764	1988	02	11.16771	09	35	06.64	+13	44	44.9		4 809
1764	1988	02	11.17847	09	35	06.10	+13	44	47.5		4 809
1779	1988	02	14.32639	11	01	22.12	+04	35	28.9	18	4 809
1779	1988	02	14.33715	11	01	21.51	+04	35	31.8		4 809
1799	1987	09	12.04479	22	42	15.74	-10	07	45.4		3 809
1799	1987	09	12.04965	22	42	15.56	-10	07	47.7		3 809
1799	1987	09	12.05451	22	42	15.33	-10	07	49.7		3 809
1799	1987	09	14.11007	22	40	56.30	-10	25	30.6		3 809
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1799	1987	09	16.08507	22	39	42.25	-10	42	09.5		3 809
1799	1987	09	16.08993	22	39	42.07	-10	42	11.0		3 809
1858	1988	02	11.15694	09	34	35.90	+12	22	53.4	16.9	4 809
1858	1988	02	11.16771	09	34	35.29	+12	22	56.2		4 809
1858	1988	02	11.17847	09	34	34.66	+12	22	58.9		4 809
1874	1988	02	13.22847	10	10	09.55	+10	03	05.6	17	4 809
1874	1988	02	13.23889	10	10	09.02	+10	03	08.2		4 809
1874	1988	02	13.24931	10	10	08.63	+10	03	10.9		4 809
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1874	1988	02	17.25903	10	07	14.93	+10	22	11.4		4 809
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2108	1988	02	14.32639	10	58	14.00	+03	34	56.1	16.9	4 809
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2174	1987	09	13.13264	23	49	04.44	-03	39	15.1		3 809
2188	1988	02	14.29375	10	22	30.33	+10	54	11.1	17.5	4 809
2188	1988	02	14.30486	10	22	29.86	+10	54	15.1		4 809
2188	1988	02	14.31528	10	22	29.43	+10	54	18.7		4 809
2209	1987	09	12.11910	22	04	43.53	-12	11	10.0		3 809
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2220	1988	02	11.17014	07	53	43.85	+22	39	15.1	17.9	4 809
2230	1987	09	13.00174	22	25	37.84	-10	17	52.3		3 809

2230	1987	09	13.00660	22	25	37.63	-10	17	54.1		3	809
2251	1988	02	13.23194	10	15	15.52	+02	54	14.4	16	4	809
2309	1987	09	12.04479	22	38	37.86	-09	48	07.1		3	809
2309	1987	09	12.04965	22	38	37.67	-09	48	09.2		3	809
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2309	1987	09	16.08021	22	35	56.06	-10	18	05.4		3	809
2309	1987	09	16.08507	22	35	55.81	-10	18	07.9		3	809
2309	1987	09	16.08993	22	35	55.63	-10	18	09.2		3	809
2311	1987	09	13.00174	22	22	31.57	-10	10	38.4		3	809
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2327	1987	09	13.10035	23	04	25.17	-04	52	56.6		3	809
2327	1987	09	13.10521	23	04	24.86	-04	52	58.5		3	809
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2365	1987	09	12.09965	22	41	24.57	-00	24	33.1		3	809
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2605	1988	02	15.21875	10	10	28.80	+06	01	35.6	17.7	4	809
2605	1988	02	15.23681	10	10	28.03	+06	01	41.9		4	809
2605	1988	02	15.24722	10	10	27.52	+06	01	46.0		4	809
2619	1988	02	18.29514	11	19	07.94	+03	14	07.5	17.8	4	809
2619	1988	02	18.30556	11	19	07.54	+03	14	09.9		4	809
2619	1988	02	18.31597	11	19	07.21	+03	14	12.4		4	809
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3227	1987	09	16.08507	22	42	36.11	-09	17	57.4		3	809
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3321       1987 09 12.04479  22 42 17.57  -08 29 26.4                  3 809
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3626       1988 02 11.17014  07 43 55.06  +19 30 56.7           18.7   4 809
3645       1988 02 13.23194  10 21 22.73  -00 37 06.2           16.7   4 809
3706       1987 08 25.23819  21 39 25.70  -15 06 24.7           17.5   4 809
3706       1987 08 25.24931  21 39 24.92  -15 06 29.4                  4 809
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3725       1987 09 14.06632  22 23 50.53  -11 42 15.1                  3 809

871 Akou
K. Kawanishi, 2045-1, Kariya, Akou, Hyogo-Ken 678-02, Japan
Long. and Parallax 134.40, -351, -242 (see MPC 12000)
0.20-m f/4.8 reflector
1988 BN    1988 02 18.54931  09 34 44.00  +06 11 19.6           16.0    871

875 Yorii
M. Arai, 2695, Tomita, Saitama-Ken 369-12, Japan
Observers M. Arai, H. Mori
Measurer H. Mori
Longitude and Parallax 139.24, -345, -250 (see MPC 12000)
1985 RL    1988 03 12.54027  11 29 09.1   +05 24 00           16.5    875
1985 RL    1988 03 12.56136  11 29 08.4   +05 24 08                   875
1986 TX    1988 02 13.68055  09 59 14.6   +17 25 49           17      875
1986 TX    1988 02 13.70138  09 59 13.5   +17 25 54                   875
1986 TX    1988 02 16.60277  09 56 16.90  +17 42 53.7         17      875
1986 TX    1988 02 16.62048  09 56 15.55  +17 42 59.1                 875
1988 CG  * 1988 02 10.60104  09 22 48.7   +10 45 34           17.5    875
1988 CG    1988 02 10.62187  09 22 47.5   +10 45 43                   875
1988 CG    1988 02 13.60902  09 19 59.51  +11 10 44.7                 875
1988 CG    1988 02 13.63020  09 19 58.21  +11 10 54.3                 875
1988 CG    1988 02 19.58194  09 14 33.20  +12 01 21.1         17      875
1988 CG    1988 02 19.60277  09 14 32.09  +12 01 31.1                 875
1988 CG    1988 02 21.51840  09 12 53.72  +12 17 44.4         17      875
1988 CG    1988 02 21.53680  09 12 52.93  +12 17 48.6                 875
1988 CH  * 1988 02 10.60104  09 25 00.9   +11 01 32           16.0    875
1988 CH    1988 02 10.62187  09 24 59.7   +11 01 41                   875
1988 CH    1988 02 13.60902  09 22 20.02  +11 23 58.3         16      875
1988 CH    1988 02 13.63020  09 22 18.77  +11 24 08.5                 875
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1988	CH		1988	02	19.58194	09	17	17.21	+12	07	57.3	16	875
1988	CH		1988	02	19.60277	09	17	16.13	+12	08	05.6		875
1988	CH		1988	02	21.51840	09	15	45.74	+12	21	46.5	16	875
1988	CH		1988	02	21.53680	09	15	44.82	+12	21	54.3		875
1988	CJ	*	1988	02	10.60104	09	26	23.6	+10	54	53	17.0	875
1988	CJ		1988	02	10.62187	09	26	22.3	+10	54	56		875
1988	CJ		1988	02	13.60902	09	23	40.64	+11	05	59.4	17	875
1988	CJ		1988	02	13.63020	09	23	39.19	+11	06	00.8		875
1988	CJ		1988	02	19.58194	09	18	24.16	+11	28	09.7	17.5	875
1988	CJ		1988	02	19.60277	09	18	23.10	+11	28	16.0		875
1988	CJ		1988	02	21.51840	09	16	45.69	+11	35	19.8	17.5	875
1988	CJ		1988	02	21.53680	09	16	44.78	+11	35	20.5		875
1988	CU	*	1988	02	13.68055	09	59	22.9	+17	34	43	17	875
1988	CU		1988	02	13.70138	09	59	22.1	+17	35	17		875
1988	CU		1988	02	19.53333	09	54	59.69	+19	55	48.4	17	875
1988	CU		1988	02	19.55428	09	54	58.66	+19	56	13.3		875
1988	CU		1988	02	22.56250	09	52	44.31	+21	05	34.8	17	875
1988	CU		1988	02	24.57569	09	51	16.90	+21	50	14.9	17	875
1988	CU		1988	02	24.58333	09	51	16.49	+21	50	22.0	17	875
1988	CU		1988	02	24.60104	09	51	15.53	+21	50	43.3		875
1988	CU		1988	03	10.50798	09	42	42.76	+26	29	06.3	17.5	875
1988	CU		1988	03	10.52847	09	42	42.14	+26	29	27.1		875
1988	EN		1988	03	12.54027	11	28	16.4	+05	42	10	17.5	875
1988	EN		1988	03	12.56136	11	28	15.3	+05	42	21		875
1988	EC1	*	1988	03	10.58576	11	45	39.72	+10	13	08.6	16.5	875
1988	EC1		1988	03	10.60624	11	45	38.75	+10	13	17.4		875
1988	ED1	*	1988	03	12.61145	11	56	34.71	+28	58	45.0	15.5	875
1988	ED1		1988	03	12.62881	11	56	33.62	+28	58	49.7		875
1905			1988	02	13.60902	09	22	01.26	+11	20	12.6	16	875
1905			1988	02	13.63020	09	22	00.00	+11	20	19.0		875
1905			1988	02	15.58333	09	19	54.73	+11	31	39.9	16	875
1905			1988	02	15.60538	09	19	53.12	+11	31	47.5		875

877 Okutama
N. Kawasato, 3-51, Hana-Koganei, Kodaira, Tokyo 187, Japan
Observer T. Hioki
Measurer N. Kawasato
0.30-m f/3.8 hyperboloid astrocamera

1980	TY14		1988	01	11.60104	07	43	33.9	+32	09	14		877
1980	TY14		1988	01	11.63750	07	43	30.7	+32	09	16		877
1986	QL1		1988	01	24.68681	08	24	10.3	+28	42	58		877
1986	QL1		1988	01	24.73194	08	24	07.0	+28	43	02		877
1986	QL1		1988	01	24.74236	08	24	06.3	+28	43	03		877
1986	TP6		1988	01	16.71020	08	59	26.39	+15	02	05.5		877
1986	TP6		1988	01	16.76390	08	59	23.81	+15	02	06.0		877
1988	AG		1988	01	20.61111	07	34	58.57	+32	23	25.1		877
1988	AG		1988	01	20.68889	07	34	53.27	+32	23	16.2		877
1988	AG		1988	01	24.66250	07	30	43.37	+32	14	10.3		877
1988	AG		1988	01	24.67292	07	30	42.66	+32	14	09.0		877
1988	AG		1988	02	10.64589	07	16	52.76	+31	08	23.0		877
1988	AG		1988	02	10.67078	07	16	51.81	+31	08	14.9		877
1988	AG		1988	02	13.58993	07	15	21.86	+30	53	28.9		877
1988	AG		1988	02	13.64999	07	15	20.03	+30	53	08.6		877
1988	BF		1988	01	20.64201	08	27	38.8	+28	09	49	I	877
1988	BF		1988	01	24.68681	08	23	56.3	+28	33	28	17 W	877
1988	BF		1988	01	24.73194	08	23	53.6	+28	33	43	W	877

1988	BF		1988	02	10.65799	08	09	09.47	+29	50	07.8		877
1988	BF		1988	02	10.68438	08	09	08.24	+29	50	12.1		877
1988	BF		1988	02	10.69317	08	09	07.71	+29	50	13.9		877
1988	BF		1988	02	13.60347	08	06	57.15	+29	59	10.9		877
1988	BF		1988	02	19.60417	08	02	59.10	+30	13	43.5		877
1988	BF		1988	02	19.68854	08	02	56.15	+30	13	52.0		877
1988	BG1		1988	02	10.64589	07	16	45.68	+31	08	16.2	17	877
1988	BG1		1988	02	10.67078	07	16	44.58	+31	08	13.4		877
1988	BJ1		1988	02	10.64589	07	15	37.4	+31	18	27	17	877
1988	BJ1		1988	02	10.67078	07	15	36.3	+31	18	22		877
1988	BJ1		1988	02	13.58993	07	13	58.5	+31	12	14		877
1988	BJ1		1988	02	13.64999	07	13	56.4	+31	12	06		877
1988	DC	*	1988	02	19.62384	10	47	23.3	+21	06	55	16.5	877
1988	DC		1988	02	19.69531	10	47	19.1	+21	07	21		877
1988	EE1	*	1988	03	12.62500	07	56	04.0	+30	47	02	16 d	877
1988	EE1		1988	03	12.64601	07	56	04.2	+30	47	00	d	877
3575			1988	01	16.67998	07	28	16.43	+29	39	14.4		877
3575			1988	01	16.73576	07	28	13.07	+29	39	26.0		877

881 Toyota
T. Urata, 6-1-303, 1 Chome, Muramatsuhara, Shimizu, Shizuoka-ken, 424 Japan
Observers K. Suzuki, T. Urata
Measurer M. Kizawa
0.31-m f/5.7 reflector

1986	VG		1988	02	10.56215	09	15	29.10	+25	18	28.2	16.5	881
1986	VG		1988	02	10.59757	09	15	26.90	+25	18	29.9		881
1986	WC		1988	02	10.58229	10	07	40.43	+02	23	28.0	16.5	881
1986	WC		1988	02	10.61285	10	07	38.99	+02	23	34.9		881
1986	WC		1988	02	21.59896	09	59	28.00	+03	11	20.8	16.5	881
1986	WC		1988	02	21.62118	09	59	26.91	+03	11	26.0		881
1988	BK		1988	02	16.51771	07	39	11.01	+18	24	19.1	17.0	881
1988	BK		1988	02	16.54757	07	39	09.91	+18	24	31.8		881
1988	BL		1988	02	15.54444	08	17	11.98	+19	12	11.3	17.0	881
1988	BL		1988	02	15.58125	08	17	10.24	+19	12	24.4		881
334			1988	02	15.54444	08	15	30.55	+19	30	28.1	14.0	881
334			1988	02	15.58125	08	15	29.28	+19	30	33.9		881

887 Ojima
M. Takeishi, Odori 4, Hamatonbetsu Esashigun, Hokkaido 098-57, Japan
Observer T. Niijima
Measurer M. Takeishi
0.30-m f/5.8 reflector

1190			1985	02	23.68086	10	56	07.49	+11	07	10.8	16	887
1190			1985	02	23.69613	10	56	06.55	+11	07	15.6		887
1196			1982	03	21.66007	12	12	30.91	+25	38	27.2	16	887
1196			1982	03	21.67361	12	12	30.17	+25	38	31.1		887
1336			1985	02	23.68086	10	56	50.19	+11	15	37.6	16	887
1336			1985	02	23.69613	10	56	49.49	+11	15	42.8		887
1594			1982	03	21.62569	11	49	36.46	+17	05	28.1	16	887
1594			1982	03	21.64410	11	49	35.09	+17	05	34.0		887

888 Gekko
Y. Oshima, Gekko Observatory, Kan-nami, Shizuoka 419-01, Japan
Observer Y. Oshima
0.5-m f/4 reflector

1985	RL		1988	03	10.60903	11	30	40.66	+05	12	31.1	16	888
1985	RL		1988	03	10.62917	11	30	39.63	+05	12	39.0		888

1987	DM		1987	03	20.51354	09	56	32.42	+16	56	48.5	C 888
1987	DM		1988	02	19.77708	13	20	28.22	-06	55	42.6	18.0 888
1987	DM		1988	02	19.80833	13	20	27.82	-06	55	41.3	888
1987	DM		1988	03	10.61910	13	13	59.47	-06	22	08.5	17.5 888
1987	DM		1988	03	10.63924	13	13	58.94	-06	22	04.8	888
1988	CW5		1988	02	19.61979	10	11	58.69	+12	01	07.4	17.5 888
1988	CW5		1988	02	19.64201	10	11	57.47	+12	01	23.4	888
1988	DF	*	1988	02	18.77396	11	07	43.80	+07	49	39.8	16.0 888
1988	DF		1988	02	18.79618	11	07	42.84	+07	49	51.2	888
1988	DF		1988	02	19.72743	11	07	05.70	+07	56	09.3	888
1988	DF		1988	02	19.75104	11	07	04.75	+07	56	18.0	888
1988	DF		1988	03	07.49792	10	54	52.80	+09	51	24.9	17.0 888
1988	DF		1988	03	07.51458	10	54	52.05	+09	51	30.9	888
1988	DF		1988	03	08.53229	10	54	07.18	+09	58	05.6	888
1988	DF		1988	03	08.55590	10	54	06.19	+09	58	14.4	888
1988	DF		1988	03	10.58403	10	52	38.14	+10	11	02.4	16.5 888
1988	DF		1988	03	10.60069	10	52	37.42	+10	11	10.5	888
1988	DH1	*	1988	02	19.66424	10	15	46.84	+10	47	05.9	17.0 888
1988	DH1		1988	02	19.68646	10	15	45.61	+10	47	18.4	888
1988	DH1		1988	03	07.43819	10	00	54.34	+13	29	07.2	17.5 888
1988	DH1		1988	03	07.47014	10	00	52.76	+13	29	27.3	888
1988	DH1		1988	03	09.56875	09	59	15.72	+13	47	34.1	888
1988	DH1		1988	03	09.59931	09	59	14.32	+13	47	49.0	888
1988	DH1		1988	03	10.51458	09	58	34.25	+13	55	28.1	17.5 888
1988	DH1		1988	03	10.54653	09	58	32.73	+13	55	44.8	888
1988	DJ1	*	1988	02	19.66424	10	16	43.90	+10	59	42.6	17.0 888
1988	DJ1		1988	02	19.68646	10	16	42.70	+10	59	51.7	888
1988	DJ1		1988	03	07.43819	10	02	02.02	+13	03	36.9	17.5 888
1988	DJ1		1988	03	07.45417	10	02	01.35	+13	03	39.9	888
1988	DJ1		1988	03	07.48681	10	01	59.83	+13	03	53.5	888
1988	DJ1		1988	03	08.48715	10	01	13.98	+13	10	19.2	888
1988	DJ1		1988	03	08.50938	10	01	12.87	+13	10	27.4	888
1988	DJ1		1988	03	09.57639	10	00	25.59	+13	17	04.8	888
1988	DJ1		1988	03	09.60694	10	00	24.32	+13	17	17.1	888
1988	DJ1		1988	03	10.57639	09	59	42.50	+13	23	12.2	18.0 888
1988	DJ1		1988	03	10.59236	09	59	41.78	+13	23	18.4	888
1988	DL1	*	1988	02	19.66424	10	16	40.97	+10	37	09.1	17.0 888
1988	DL1		1988	02	19.68646	10	16	39.81	+10	37	38.1	888
1988	EC	*	1988	03	07.42986	09	57	10.23	+15	13	10.6	17.0 888
1988	EC		1988	03	07.46181	09	57	07.39	+15	12	59.9	888
1988	EC		1988	03	07.50625	09	57	03.61	+15	12	45.5	888
1988	EC		1988	03	07.52292	09	57	02.27	+15	12	41.0	888
1988	EC		1988	03	08.47604	09	55	43.96	+15	07	16.8	888
1988	EC		1988	03	08.49826	09	55	42.07	+15	07	07.8	888
1988	EC		1988	03	09.56042	09	54	16.28	+15	00	57.7	888
1988	EC		1988	03	09.59167	09	54	13.75	+15	00	46.2	888
1988	EC		1988	03	10.50694	09	53	02.15	+14	55	22.2	17.5 888
1988	EC		1988	03	10.53819	09	52	59.66	+14	55	11.0	888
1988	ED	*	1988	03	07.43819	10	01	03.33	+12	59	39.0	17.0 888
1988	ED		1988	03	07.45417	10	01	02.49	+12	59	35.0	888
1988	ED		1988	03	07.47014	10	01	01.45	+12	59	35.8	888
1988	ED		1988	03	07.48681	10	01	00.59	+12	59	31.0	888
1988	ED		1988	03	08.48715	10	00	03.43	+12	57	57.0	888
1988	ED		1988	03	08.50938	10	00	02.15	+12	57	56.3	888
1988	ED		1988	03	09.58403	09	59	02.22	+12	56	03.3	888
1988	ED		1988	03	09.61458	09	59	00.47	+12	55	58.6	888
1988	ED		1988	03	10.53056	09	58	11.02	+12	54	20.9	17.0 888
1988	ED		1988	03	10.56181	09	58	09.28	+12	54	17.6	888

1988	EE	*	1988	03	07.44653	10	03	07.08	+16	35	40.4	17.0	888
1988	EE		1988	03	07.47847	10	03	05.49	+16	35	43.5		888
1988	EE		1988	03	08.52049	10	02	16.21	+16	37	00.6		888
1988	EE		1988	03	08.54410	10	02	14.89	+16	37	02.9		888
1988	EE		1988	03	10.52292	10	00	46.05	+16	38	52.2	17.5	888
1988	EE		1988	03	10.55417	10	00	44.55	+16	38	53.2		888
1988	EN	*	1988	03	10.60903	11	30	00.30	+05	25	13.9	16	888
1988	EN		1988	03	10.62917	11	29	59.22	+05	25	24.9		888
479			1988	03	07.44653	10	03	50.57	+16	16	34.5	13.5	888
479			1988	03	07.47847	10	03	49.14	+16	16	46.7		888
479			1988	03	08.52049	10	03	03.62	+16	22	58.3		888
479			1988	03	08.54410	10	03	02.50	+16	23	06.4		888
1212			1988	03	07.43819	10	00	04.43	+13	04	07.1	13.5	888
1212			1988	03	07.47014	10	00	03.33	+13	04	17.1		888
1212			1988	03	08.48715	09	59	29.84	+13	09	22.4		888
1212			1988	03	08.50938	09	59	29.09	+13	09	29.4		888
1212			1988	03	10.51458	09	58	25.54	+13	19	21.7		888
1212			1988	03	10.54653	09	58	24.51	+13	19	31.3		888
2188			1988	02	19.66424	10	18	15.17	+11	22	15.0	16.5	888
2188			1988	02	19.68646	10	18	14.04	+11	22	22.6		888
2188			1988	03	07.45417	10	05	05.82	+12	46	30.6	16.0	888
2188			1988	03	07.48681	10	05	04.41	+12	46	38.8		888
2226			1988	03	10.61910	13	14	37.63	-05	49	25.2	16.0	888
2226			1988	03	10.63924	13	14	36.95	-05	49	20.5		888
2407			1988	02	19.61979	10	10	02.12	+12	06	24.8	16.5	888
2407			1988	02	19.64201	10	10	01.03	+12	06	30.0		888
3536			1988	03	07.43819	09	59	07.02	+13	24	37.3	17.0	888
3536			1988	03	07.47014	09	59	04.77	+13	24	40.6		888

892 YGCO Chiyoda Station
T. Kobayashi, 1717-2, Shimo-Koizumi, Oizumi-Cho, Ora-Gun,
Gunma-ken, 370-05 Japan
Observer T. Kojima
0.25-m f/3.4 Wright-Schmidt

1973	UV5		1988	02	19.62916	09	55	36.15	+04	08	26.5	16.5	892
1973	UV5		1988	02	19.66874	09	55	33.96	+04	08	44.8		892
1984	FS		1988	02	10.54270	08	26	58.06	+13	37	27.8	15.5	892
1984	FS		1988	02	10.58055	08	26	56.31	+13	37	51.8		892
1984	FS		1988	02	15.54236	08	23	17.51	+14	30	17.3		892
1984	FS		1988	02	15.58055	08	23	15.60	+14	30	41.0		892
1986	TP6		1988	01	23.70555	08	53	26.32	+15	04	34.1	17	892
1986	TP6		1988	01	23.74374	08	53	24.15	+15	04	35.0		892
1986	WC		1988	02	19.62916	10	00	56.79	+03	02	02.6	16.5	892
1986	WC		1988	02	19.66874	10	00	54.96	+03	02	13.6		892
1987	YH		1988	01	10.59143	07	08	06.28	+12	30	50.2	16.5	892
1987	YH		1988	01	10.61417	07	08	05.08	+12	30	57.3		892
1988	AE		1988	01	20.50746	06	39	24.54	+13	39	56.0		892
1988	AE		1988	01	20.54484	06	39	22.50	+13	39	52.5		892
1988	AE		1988	01	23.62083	06	36	37.71	+13	33	58.0	16	892
1988	AE		1988	01	23.65798	06	36	35.80	+13	33	54.0		892
1988	AE		1988	02	06.57228	06	26	56.39	+13	15	25.2		892
1988	AE		1988	02	06.60208	06	26	55.48	+13	15	23.7		892
1988	AE		1988	02	10.46956	06	25	09.31	+13	12	23.2	16.5	892
1988	AE		1988	02	10.50729	06	25	08.17	+13	12	17.7		892
1988	AE		1988	02	19.45121	06	22	41.70	+13	08	20.4	17	892
1988	AE		1988	02	19.57071	06	22	40.60	+13	08	20.3		892
1988	BB		1988	01	20.51481	06	33	43.79	+26	16	13.0		892
1988	BB		1988	01	20.55237	06	33	41.92	+26	16	04.9		892

1988	BB		1988	01	23.62806	06	31	17.01	+26	04	56.6	17	892
1988	BB		1988	01	23.66527	06	31	15.34	+26	04	46.7		892
1988	BC		1988	01	20.58784	06	40	55.37	+32	57	59.1		892
1988	BC		1988	01	20.60138	06	40	54.39	+32	58	05.0		892
1988	BC		1988	01	23.63524	06	38	14.13	+33	17	13.1	16	892
1988	BC		1988	01	23.67256	06	38	12.16	+33	17	25.9		892
1988	BC		1988	02	05.55069	06	30	14.02	+34	17	53.6		892
1988	BC		1988	02	06.57951	06	29	51.82	+34	21	22.1		892
1988	BC		1988	02	06.60931	06	29	51.10	+34	21	29.5		892
1988	BC		1988	02	10.45844	06	28	53.33	+34	32	53.9	17	892
1988	BC		1988	02	10.49936	06	28	52.79	+34	33	01.2		892
1988	BC		1988	02	19.45937	06	29	03.88	+34	50	52.5	17	892
1988	BC		1988	02	19.57905	06	29	05.24	+34	51	01.2		892
1988	BD		1988	01	20.58784	06	43	07.57	+33	01	15.6		892
1988	BD		1988	01	20.60138	06	43	06.82	+33	01	16.3		892
1988	BD		1988	01	23.63524	06	40	43.26	+33	01	01.0	16.5	892
1988	BD		1988	01	23.67256	06	40	41.55	+33	00	59.4		892
1988	BE		1988	01	20.72222	09	03	41.32	+17	00	11.7	15.5	892
1988	BE		1988	01	20.76111	09	03	38.76	+17	00	04.2		892
1988	BE		1988	01	23.71319	09	00	22.07	+16	51	11.0	16	892
1988	BE		1988	01	23.75138	09	00	19.36	+16	51	03.2		892
1988	BE		1988	02	06.58773	08	44	33.12	+16	09	30.1		892
1988	BE		1988	02	06.62500	08	44	30.59	+16	09	26.7		892
1988	BE		1988	02	19.55324	08	31	41.41	+15	29	32.6	16	892
1988	BO	*	1988	01	23.52939	04	38	37.73	+03	25	13.9	17.5	892
1988	BO		1988	01	23.57112	04	38	37.49	+03	25	37.8		892
1988	BP	*	1988	01	23.79305	11	58	49.03	+11	52	38.9	17	892
1988	BP		1988	01	23.83333	11	58	47.96	+11	52	45.5		892
1988	CA		1988	02	10.53506	08	21	56.85	+11	05	05.5		892
1988	CA		1988	02	10.57291	08	21	54.95	+11	05	27.3		892
1988	CA		1988	02	15.54236	08	18	36.12	+11	53	12.0	16	892
1988	CA		1988	02	15.58055	08	18	34.49	+11	53	32.7		892
1988	CB	*	1988	02	10.53506	08	27	21.18	+10	00	01.8	17	892
1988	CB		1988	02	10.57291	08	27	18.83	+10	00	19.2		892
1988	CC	*	1988	02	10.63749	09	08	53.18	+08	26	35.9	16.5	892
1988	CC		1988	02	10.67569	09	08	51.79	+08	26	47.4		892
1988	CC		1988	02	15.59751	09	05	05.21	+08	58	27.6	16.5	892
1988	CC		1988	02	15.63587	09	05	03.33	+08	58	39.9		892
1988	CC		1988	02	19.56250	09	02	10.97	+09	24	05.1	16.5	892
1988	CC		1988	02	19.61255	09	02	08.60	+09	24	24.5		892
1988	CC		1988	03	12.46765	08	50	19.30	+11	35	36.6	17	892
1988	CC		1988	03	12.50862	08	50	18.58	+11	35	47.3		892
1988	DH	*	1988	02	19.64444	10	00	50.05	+09	24	55.6	16.5	892
1988	DH		1988	02	19.68402	10	00	47.83	+09	25	07.1		892
1988	DK1	*	1988	02	19.63680	09	52	06.56	+05	37	42.3	16	892
1988	DK1		1988	02	19.67638	09	52	04.08	+05	37	59.7		892
1988	DK1		1988	03	10.58194	09	35	00.45	+07	41	35.9	16.5	892
1988	DK1		1988	03	10.61944	09	34	58.87	+07	41	48.9		892
1988	DK1		1988	03	12.49189	09	33	49.64	+07	52	40.1	16.5	892
1988	DK1		1988	03	12.53564	09	33	47.91	+07	52	54.2		892
1988	DN1	*	1988	02	19.81562	11	50	49.48	+16	51	45.7	16.5	892
1988	DN1		1988	02	19.83958	11	50	48.67	+16	51	57.0		892
1988	DN1		1988	03	10.66180	11	37	13.46	+19	14	22.1	16	892
1988	DN1		1988	03	10.70069	11	37	11.53	+19	14	36.9		892
1988	DN1		1988	03	12.62535	11	35	42.15	+19	26	20.5		892
1988	DN1		1988	03	12.63009	11	35	41.81	+19	26	26.2	16	892
1988	DN1		1988	03	12.66782	11	35	39.96	+19	26	39.4		892
1988	EM	*	1988	03	10.58194	09	33	24.20	+06	52	52.3	15.5	892

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1988 EM    1988 03 10.61944  09 33 23.04  +06 53 09.7                  892
1988 EM    1988 03 12.49189  09 32 32.25  +07 06 57.4           16     892
1988 EM    1988 03 12.53564  09 32 31.20  +07 07 15.8                  892
```

894 Kiyosato
S. Miyasaka, 3-8-501, 4 Chome, Nagayama, Tama, Tokyo 206, Japan
Observers S. Miyasaka, Y. Sakakibara, N. Sasanuma, R. Murohushi, K. Ohgoe
Measurer S. Miyasaka

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1929 TK    1988 02 12.68117  09 49 52.74  +13 41 59.9           15     894
1929 TK    1988 02 12.70860  09 49 50.84  +13 42 03.1                  894
1929 TK    1988 02 13.72847  09 48 42.79  +13 45 31.1           15     894
1929 TK    1988 02 13.75029  09 48 41.07  +13 45 38.9                  894
1929 TK    1988 02 20.62431  09 41 12.80  +14 07 30.2           15     894
1929 TK    1988 02 20.68686  09 41 08.73  +14 07 45.4              D   894
1929 TK    1988 03 12.57100  09 24 48.77  +14 44 04.2           15.5   894
1929 TK    1988 03 12.62480  09 24 47.22  +14 44 04.9                  894
1985 FC1   1987 12 18.56678  04 58 26.88  +30 18 56.4                  894
1985 FC1   1987 12 18.58545  04 58 25.63  +30 18 56.0                  894
1985 FC1   1987 12 20.62569  04 56 10.32  +30 13 25.8                  894
1985 FC1   1987 12 20.64236  04 56 09.36  +30 13 22.4                  894
1986 WC    1988 03 12.55575  09 45 55.21  +04 52 10.5           16     894
1986 WC    1988 03 12.60973  09 45 53.58  +04 52 24.8                  894
1987 YH    1988 01 14.46284  07 04 42.03  +12 52 40.3                  894
1987 YH    1988 01 14.48840  07 04 40.39  +12 52 48.9                  894
1988 AE    1988 02 12.53418  06 24 22.97  +13 11 10.1           17   F 894
1988 AE    1988 02 12.57544  06 24 22.05  +13 11 04.9              F   894
1988 AE    1988 02 13.53212  06 24 02.79  +13 10 33.8           17   F 894
1988 AE    1988 02 13.56850  06 24 01.99  +13 10 31.3              F   894
1988 BC    1988 02 12.56351  06 28 37.14  +34 38 09.7           16.5   894
1988 BC    1988 02 12.63949  06 28 36.43  +34 38 21.7                  894
1988 BE    1988 02 12.66247  08 38 06.27  +15 51 04.0           16     894
1988 BE    1988 02 12.69475  08 38 04.31  +15 50 58.0                  894
1988 BE    1988 02 13.54855  08 37 13.50  +15 48 17.5           16     894
1988 BE    1988 02 13.58183  08 37 11.40  +15 48 15.5                  894
1988 BE    1988 02 19.59653  08 31 39.18  +15 29 24.1           16     894
1988 BE    1988 02 19.62153  08 31 37.86  +15 29 19.9                  894
1988 BE    1988 02 20.59589  08 30 49.20  +15 26 14.1                  894
1988 BE    1988 02 20.65712  08 30 46.31  +15 26 01.9                  894
1988 BN    1988 02 12.72205  09 44 33.06  +07 27 54.2           15.5 r 894
1988 BN    1988 02 12.74398  09 44 30.79  +07 27 38.7              r   894
1988 BN    1988 02 13.71572  09 42 52.26  +07 14 43.9                  894
1988 BN    1988 02 13.73972  09 42 49.96  +07 14 27.3                  894
1988 CH    1988 03 12.58775  09 05 14.96  +14 20 15.4           16     894
1988 CH    1988 03 12.63567  09 05 14.17  +14 20 31.6                  894
1988 EB    1988 03 18.51177  10 58 45.31  +15 43 56.1           16     894
1988 EB    1988 03 18.55102  10 58 43.30  +15 43 56.4                  894
 341       1987 12 18.56678  04 59 06.49  +30 24 14.7                  894
 341       1987 12 18.58545  04 59 04.93  +30 24 15.1                  894
3737       1987 12 18.67541  06 50 44.68  +34 12 18.5                  894
3737       1987 12 18.69848  06 50 42.23  +34 11 58.8                  894
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998 Mill Hill
G. V. Williams, 3 Vandyke Road, Leighton Buzzard, Beds. LU7 8HG, England
Twin 0.61-m/0/45-m astrograph
AGK3

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  20       1983 11 22.74549  01 04 11.48  +06 39 36.4                  998
  20       1983 12 06.94549  01 03 16.54  +06 29 52.2                  998
  20       1983 12 12.78090  01 04 44.10  +06 37 24.6                  998
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ORBITAL ELEMENTS OF ONE-OPPOSITION MINOR PLANETS.

The columns headed Arc and O give the time span in days covered by the observations and the number of observations utilized in the computation (0 = 10 or more). In the note column N, D means that there are double (or other multiple) designations, E means that the value of the eccentricity was assumed, F means both; the designations are listed at the end.

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

Planet	H	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1931 AF1		310119	52.09	133.93	257.12	9.81	0.2530	3.1324	3	3		E
1979 SG2	15.0	790924	5.63	55.32	300.68	5.45	0.2134	2.1902	9	4		B
1979 SU2	13.5	790924	343.12	151.00	237.94	5.34	0.1319	2.3631	11	7		B
1987 JG	14.0	870525	342.22	13.44	245.41	5.83	0.0821	2.3140	47	0		B
1987 QC2	12.5	870813	357.09	191.55	134.90	1.38	0.1319	3.2371	7	9	E	M
1987 QH7	15.0	870902	348.21	9.73	4.48	4.43	0.3312	2.5787	37	0		B
1987 RR	13.0	870902	343.62	208.09	156.09	12.92	0.1818	3.1008	18	8	D	B
1987 RC1	12.0	870902	347.76	314.00	38.98	1.21	0.1368	3.2368	12	6		M
1987 RE1	14.0	870902	337.06	34.34	342.70	5.19	0.2212	2.3371	5	6		B
1987 RF1	13.5	870902	175.12	359.82	166.04	9.07	0.1074	2.2861	5	6		B
1987 RM1	13.5	870922	120.69	81.16	146.61	3.63	0.0726	2.2438	13	3		B
1987 SL1	13.0	870922	295.60	88.01	359.10	3.53	0.2020	2.5977	12	7	E	B
1987 SG3	14.5	871012	33.13	121.17	186.81	22.26	0.3185	2.3401	64	0		B
1987 SH3	15.0	871012	286.39	265.66	189.36	24.24	0.1104	1.8900	58	8		B
1987 SL3	12.5	870922	302.46	93.30	317.88	10.15	0.0751	3.1501	16	9		B
1987 SM3	14.0	870902	74.45	308.87	306.90	5.95	0.1044	2.1963	32	0	D	B
1987 SN3	14.5	870922	1.03	146.05	201.18	6.64	0.1388	2.3077	20	0		B
1987 SA7	12.0	870922	37.80	156.50	168.74	10.47	0.0888	3.0271	13	6		B
1987 UE1	15.0	871012	356.68	188.67	195.60	24.71	0.1929	2.3108	60	9		B
1987 UY1	15.5	871101	9.26	168.38	214.59	25.02	0.2216	2.2990	37	4		B
1987 VA	12.5	871121	347.09	29.69	31.88	5.91	0.1528	2.2165	2	8		N
1987 VQ	14.5	871121	333.32	279.72	183.14	1.24	0.3434	2.5335	10	6		G
1987 VR	12.0	871121	329.44	231.68	212.15	8.93	0.1064	3.0930	10	6	E	G
1987 VT	12.5	871121	59.23	273.28	54.24	17.43	0.1805	2.7766	10	6		G
1987 VU	13.0	871121	21.90	311.73	64.51	9.21	0.1728	2.7345	10	6		G
1987 VC1	13.5	871121	338.99	57.33	25.56	3.77	0.1779	2.5491	10	6		G
1987 WO1	13.5	871121	334.58	213.13	233.85	5.53	0.1108	2.5674	5	7	E	G
1987 WS3	12.6	871231	18.79	163.03	243.23	13.49	0.2405	2.5717	76	6		E
1987 WG4	13.5	871121	316.56	50.48	66.43	10.25	0.1896	2.5261	3	6		G
1987 XD	10.5	871231	290.10	40.50	112.73	11.29	0.0372	3.0203	27	0		N
1987 YA	14.0	871231	24.88	181.80	221.19	2.25	0.2655	2.2544	33	0		N
1987 YK	13.0	871231	80.76	297.61	65.78	4.89	0.2033	2.5748	34	9		G
1988 AF	12.0	880120	23.26	157.84	295.08	12.68	0.1328	2.5954	36	0		N
1988 AE1	14.5	871231	15.19	104.56	337.47	2.71	0.1270	2.1626	3	6		G
1988 AF1	14.0	871231	15.25	22.16	52.18	3.44	0.2896	2.6776	3	6		G
1988 AJ1	12.0	871231	79.79	54.47	318.06	7.85	0.1800	2.7881	10	8		G
1988 AK1	12.5	871231	162.39	320.32	348.16	4.90	0.0721	2.3825	10	8		G
1988 AL1	13.0	871231	1.27	19.67	91.68	6.08	0.1181	2.6570	10	0		G
1988 AN1	14.5	871231	351.79	355.49	122.12	6.62	0.1469	2.3241	2	6	E	G
1988 AO1	13.0	871231	18.89	0.08	91.15	6.19	0.0904	2.6337	8	0		G
1988 AR1	14.0	871231	27.33	330.50	105.00	4.91	0.1079	2.2880	2	6	E	G
1988 AS1	14.0	871231	355.31	4.82	114.49	7.31	0.1629	2.2371	2	6	E	G
1988 AT1	14.5	871231	13.21	146.28	307.38	1.58	0.1694	2.1462	7	8		G
1988 AU1	12.5	871231	301.17	247.56	323.38	4.16	0.3031	2.7984	7	8		G

1988	AV1		871231	9.92	345.36	107.05	5.90	0.2655	2.3591	6	8	G
1988	AW1	12.5	880120	115.91	37.88	311.34	12.73	0.1473	2.5974	27	9	B
1988	AX1	14.0	880120	7.10	162.68	306.98	12.89	0.1538	2.5931	27	9	B
1988	AA2	14.5	871231	16.85	356.16	90.56	4.92	0.1855	2.2612	6	8	G
1988	BC	13.0	880209	347.02	53.42	83.10	12.67	0.2267	2.6778	34	0	N
1988	BG	12.0	880120	44.45	124.93	292.89	12.43	0.1619	2.6278	30	0	N
1988	BH	12.5	880120	353.33	196.47	290.42	6.90	0.1750	2.7964	21	0	N
1988	BJ	15.0	880120	303.17	234.06	309.37	22.35	0.0641	1.9170	20	7	N
1988	BK	12.5	880120	300.79	67.43	135.06	11.82	0.2210	2.8772	31	9	N
1988	BN	12.0	880209	339.35	217.55	319.36	31.75	0.2268	2.6693	33	0	N
1988	BU	13.0	880120	343.03	48.59	97.65	2.38	0.2480	3.2531	23	8	N
1988	BY	15.5	880120	315.88	57.37	106.46	21.93	0.1194	1.9033	3	3	B
1988	BJ1	13.0	880120	326.18	134.69	24.24	5.31	0.1464	2.4688	32	9	B
1988	BW1	10.0	880120	213.34	201.83	58.35	21.89	0.0485	5.2725	30	6	B
1988	BX1	9.5	880120	52.43	336.39	77.66	31.62	0.0753	5.2614	30	6	B
1988	BY1	10.0	880120	44.70	15.50	43.17	21.50	0.1207	5.2199	28	5	B
1988	BZ1	11.5	880120	14.89	292.45	183.12	0.76	0.1381	3.2168	27	0	M
1988	BA2	11.5	880120	126.53	212.32	153.42	2.29	0.0435	2.8637	28	0	M
1988	BM2	12.5	880120	4.89	64.73	43.99	16.67	0.2380	2.9412	27	5	B
1988	BY2	13.5	880209	326.89	216.41	329.07	10.32	0.0689	2.6696	28	9	N
1988	BA3	12.0	880120	358.03	170.11	336.83	17.98	0.0879	3.1217	2	5 E	G
1988	CA	12.5	880209	354.14	342.40	157.46	10.51	0.1903	2.7085	8	6	N
1988	CC	11.0	880229	103.56	216.96	167.86	10.42	0.1184	2.9941	32	8	N
1988	CF	14.0	880209	357.09	150.07	355.77	5.48	0.2295	2.5905	11	0	G
1988	CG	14.5	880209	333.08	10.86	165.33	5.05	0.1575	2.2463	11	8	N
1988	CH	12.0	880229	42.43	276.10	166.17	4.92	0.2259	2.5485	31	0	N
1988	CK	14.0	880209	44.62	122.26	328.08	8.11	0.1481	2.3246	8	0	B
1988	CP	13.5	880229	353.90	177.26	340.47	12.49	0.1933	2.4141	27	0	N
1988	CU	14.0	880229	22.68	336.80	139.31	24.55	0.2139	2.4439	26	0	N
1988	CV	12.0	880209	250.87	128.42	148.19	21.00	0.1512	3.1986	3	8	G
1988	CW	12.5	880209	90.42	250.29	141.22	12.36	0.2847	2.8622	2	6	B
1988	CY	13.0	880209	309.26	79.59	142.08	13.10	0.1899	3.1895	3	6 E	B
1988	CZ	15.5	880209	38.89	77.18	16.95	2.99	0.1926	2.6007	2	4 E	B
1988	CA1	17.0	880209	29.64	340.72	128.27	4.06	0.1543	2.1730	2	5	B
1988	CR3	13.0	880209	162.73	14.84	325.09	3.72	0.1592	2.2466	4	8	B
1988	CC6	12.5	880209	36.34	126.82	337.86	4.36	0.1243	3.1790	2	7 E	B
1988	CF6	14.0	880209	10.19	232.99	259.29	3.59	0.1503	2.3592	5	7	B
1988	DD	13.5	880209	0.27	15.98	131.69	12.22	0.1755	2.3215	5	6	B
1988	DE	12.5	880209	290.43	238.84	349.00	17.30	0.0717	2.6734	5	6	B
1988	DF	12.5	880229	24.76	336.38	141.69	4.24	0.2727	3.0523	21	0	N
1988	DG	12.5	880229	0.32	47.98	113.28	8.91	0.0876	2.3637	23	0	N
1988	DK	14.5	880209	324.80	356.50	211.37	9.97	0.2508	3.2078	3	6	B
1988	DL	14.0	880209	216.40	50.14	248.87	8.47	0.0511	2.7396	3	4	B
1988	DM	13.0	880209	205.29	71.22	245.68	7.13	0.2575	2.5584	12	5	B
1988	DN	13.5	880209	40.56	231.82	220.98	6.99	0.1924	2.8011	12	9	B
1988	DO	15.0	880209	20.81	183.07	299.26	8.90	0.1378	2.3301	6	8	B
1988	DQ	12.0	880209	66.53	122.74	312.29	15.26	0.1009	2.5608	6	8	B
1988	DR	13.5	880229	34.92	281.03	177.64	8.39	0.1790	2.2830	28	5	B
1988	DH1	14.5	880229	320.35	53.40	150.87	6.44	0.1268	2.2452	20	8	N
1988	DJ1	14.0	880229	72.33	272.64	149.30	5.20	0.1689	2.4467	20	0	N
1988	EA	14.5	880229	359.59	172.09	3.32	25.78	0.0393	1.9737	6	5	M
1988	EB	12.0	880320	44.60	60.54	35.32	6.94	0.2634	2.9106	9	9	N
1988	EC	14.5	880229	243.30	295.04	340.55	16.85	0.0554	1.9411	3	0	N
1988	ED	14.0	880229	333.81	217.41	339.87	8.11	0.2474	2.5370	3	0	N
1988	EE	15.0	880229	339.08	172.97	21.98	2.85	0.3149	2.4665	3	6	N
1988	EH	13.0	880229	64.19	261.75	172.51	19.68	0.2700	2.3307	3	4 E	B
1988	EP	14.0	880320	347.46	36.50	163.22	10.74	0.2420	2.3874	6	9	N

1987 RR = 1987 ST3 (C. M. Bardwell)
1987 SM3 = 1987 QR1 (C. M. Bardwell)

ORBITAL ELEMENTS BY S. NAKANO, SMITHSONIAN ASTROPHYSICAL OBSERVATORY.

The identifications are by S. Nakano unless otherwise stated.

(1026) Ingrid
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	86.13511	(1950.0)		P	Q
n	0.29100832	Peri.	212.10256	+0.72059632	+0.68732185
a	2.2552729	Node	104.19058	-0.61454567	+0.69408390
e	0.1814835	Incl.	5.40178	-0.32105226	+0.21409393
P	3.39	H	13.4	G	0.25

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

230814	024	1.1-	0.3-	571020	024	2.3-	2.0-	
230815	024	2.8+	2.3+	630415	760	(0.04-	0.14+)X	
230816	024	2.4+	1.1+	770613	809	0.8-	0.4+	
230911	024	1.8-	1.7-	770616	809	0.5-	0.2+	
230911	024	1.2-	1.0-	770817	809	(8.5+	8.3+)	
530614	675	(19.0+	5.7+)	770905	809	1.2-	0.3-	
530614	675	(18.4+	6.3+)	811125	095	4.8+	0.3-	

860207	675	3.9-	0.3+					
860207	675	0.2+	0.7-					
860306	675	(45.1+	0.0)					
860306	675	(47.0+	0.7+)					
860308	675	(41.8+	0.3-)					
860308	675	(40.9+	1.2+)					
870520	657	2.0+	3.6-					

(3775)* 1931 TC4 = 1931 TB4 = 1973 SA4 = 1973 UC6 = 1986 LW1
Discovered 1931 Oct. 6 by C. W. Tombaugh at the Lowell Observatory.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	95.84293	(1950.0)		P	Q
n	0.21197093	Peri.	313.28268	+0.95526641	+0.28678879
a	2.7858123	Node	30.26477	-0.21236622	+0.83516457
e	0.2313525	Incl.	8.24056	-0.20583166	+0.46931048
P	4.65	H	12.5	G	0.25

Residuals in seconds of arc

311006	690	1.0-	0.4-	730925	095	0.4+	2.2+	
311007	690	1.1-	0.0	731027	095	(1.6+	5.9-)	
311009	690	1.1-	0.7+	860604	809	3.7-	0.6+	
311013	690	(6.0+	0.8+)	860604	809	(25.4-	3.1+)	
311017	690	2.5+	1.7-	860607	809	2.5+	0.6+	
311018	690	2.1+	1.4-	860607	809	2.1+	0.7+	

871115	400	0.3-	1.3+					
871115	400	0.1+	1.1+					
871115	400	1.1-	0.5+					
871224	801	1.5-	1.0-					

(3776)* 1938 GG = 1952 UO = 1952 WD = 1975 TC5 = 1975 VG7
Discovered 1938 Apr. 5 by H. Alikoski at Turku. The identifications 1938 GG = 1952 UO = 1952 WD = 1975 TC5 were found independently by L. D. Schmadel (MPC 11999).
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	290.74381	(1950.0)		P	Q
n	0.17352540	Peri.	164.97524	-0.89301182	+0.34243717
a	3.1834205	Node	39.31168	-0.44559979	-0.58196027
e	0.0560744	Incl.	27.44587	-0.06301360	-0.73760357
P	5.68	H	10.5	G	0.25

Residuals in seconds of arc

380405	062	0.1+	0.9-	380423	062	0.6-	1.7+	
380406	062	1.3-	0.1+	380428	062	2.2-	0.8+	
380408	062	0.5-	1.0+	521023	760	0.8-	0.4-	
380409	062	1.7+	2.6-	521023	760	0.8-	0.4-	
380409	062	0.3+	2.3-	521116	760	1.4+	0.7+	

521116	760	0.5+	0.3-					
751014	095	2.4+	0.7-					
751106	095	0.6+	1.4-					
880116	801	0.8+	0.4+					
880215	801	2.5-	1.0+					

(3777)* 1981 JD2 = 1982 WG

Discovered 1981 May 5 by C. S. Shoemaker at Palomar. The identification is by T. Urata (MPC 7613).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	298.62687	(1950.0)		P	Q
n	0.28687525	Peri.	299.76521	+0.96832403	+0.24406405
a	2.2768827	Node	46.16488	-0.19630607	+0.87462792
e	0.1612891	Incl.	4.19274	-0.15431300	+0.41887797
P	3.44	H	13.6	G 0.25	

Residuals in seconds of arc

810411	675	(3.5-	0.7+)	821124	372	1.6-	0.0	821215	372	1.0-	2.0-
810411	675	1.3-	0.0	821124	372	1.0+	0.1-	821218	372	1.6-	1.2+
810505	675	0.7+	1.3-	821126	372	1.2-	1.1+	840301	801	0.3-	0.6+
810505	675	0.1-	0.9-	821126	372	1.2+	2.2+	840328	801	0.3+	0.7+
810506	675	0.5+	0.8-	821127	372	0.3-	0.5-	850916	675	1.9-	0.5+
810506	675	0.6+	0.4+	821127	372	0.7+	0.8-	850916	675	1.4+	1.1+
810510	675	2.1-	1.8-	821209	372	0.4-	1.3-	870108	010	0.3-	1.9+
821023	095	0.6+	1.5-	821209	372	2.1+	0.6-	870108	010	0.9+	0.2+
821112	675	0.7-	1.6+	821211	372	0.3+	1.5-	870108	010	1.3+	0.1-
821112	675	0.9+	0.3-	821211	372	0.4+	0.8-	870224	801	0.5-	0.4+
821112	095	0.4+	0.4-	821215	372	0.5+	1.1-				

(3778)* 1984 HK1 = 1976 SX1 = 1981 UC11

Discovered 1984 Apr. 26 by W. Ferreri and V. Zappala at the European Southern Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	86.90816	(1950.0)		P	Q
n	0.20261351	Peri.	97.13469	+0.23227624	-0.97261326
a	2.8709378	Node	339.42827	+0.88259624	+0.21440855
e	0.0398902	Incl.	1.37605	+0.40874397	+0.08973532
P	4.86	H	12.4	G 0.25	

Residuals in seconds of arc

760924	095	0.5-	0.1-	840427	809	0.0	0.3-	880119	400	0.2+	1.9+
760928	095	0.5+	0.1-	840427	809	0.1-	0.1+	880119	400	0.9-	0.5-
811022	095	0.8+	0.9+	840430	809	0.2-	0.5-	880119	400	1.2-	1.0-
811024	095	1.1-	0.2-	840430	809	0.9+	0.2-	880120	046	0.6-	0.2+
840426	809	0.7-	0.0	840505	809	0.3+	1.2+	880120	046	1.1+	1.0-
840426	809	0.2+	0.1+	840505	809	0.2-	0.0	880222	801	1.5+	0.9+

(3779)* 1985 JV1 = 1940 WD = 1959 GK = 1978 TH

Discovered 1985 May 13 by C. S. Shoemaker at Palomar.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	0.09878	(1950.0)		P	Q
n	0.23036225	Peri.	72.55324	-0.63645473	-0.74342644
a	2.6354929	Node	58.77473	+0.58441138	-0.63869782
e	0.1095784	Incl.	13.90706	+0.50337730	-0.19844955
P	4.28	H	11.6	G 0.25	

Residuals in seconds of arc

401123	094	(30.9-	5.2-)X	850515	675	1.6-	0.5-	871122	688	2.1+	1.0+
401129	062	1.3-	0.8+	850524	675	1.3-	2.8-	871123	046	0.3+	0.9-
401129	062	2.0-	0.4+	850524	675	1.1-	1.0+	871123	046	0.3-	1.4-
401203	062	0.1-	1.4+	871022	657	0.2+	1.1-	871126	046	0.7+	0.1-
590406	760	0.2+	0.4-	871022	657	(1.6+	3.9-)	871126	046	0.2-	0.1+
590406	760	3.0+	0.3+	871115	046	1.8+	1.2-	871126	046	2.1-	2.5-
590415	760	0.2+	0.3-	871115	046	1.4+	0.8-	871127	046	0.9+	1.8-
590415	760	0.9-	1.4-	871118	567	1.1-	0.9-	871220	801	0.1+	0.1+
781003	095	1.5+	1.6+	871118	567	(0.6+	3.6-)				
850513	675	0.7-	0.5+	871122	688	0.0	2.2+				

(3780)* 1985 RL = 1961 UM = 1975 RK2 = 1980 RL3 = 1981 WW6

Discovered 1985 Sept. 14 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

		(1950.0)	P	Q
M	242.74978			
n	0.20269697	Peri. 182.25440	+0.82455052	+0.56506728
a	2.8701496	Node 143.29127	-0.51832458	+0.77465137
e	0.0630281	Incl. 2.73815	-0.22683931	+0.28392644
P	4.86	H 12.1	G 0.25	

Residuals in seconds of arc

611018	760	2.5-	2.8-	850914	688	0.1+	0.5-	850922	809	0.1+	0.6-
611018	760	2.6+	0.4-	850917	809	0.9-	0.1-	850922	809	0.1+	0.5-
750904	808	0.4+	0.5-	850917	809	0.7-	0.1-	861130	801	0.3-	0.9+
750904	808	0.1-	1.2-	850917	809	0.7-	0.1-	870104	801	0.4+	0.6+
750909	808	1.3+	0.0	850918	688	0.3+	1.1+	880310	888	0.8-	2.7-
750909	808	0.0	0.2-	850918	688	0.2-	1.6+	880310	888	1.7-	1.8-
800904	095	1.7+	0.0	850919	809	0.6-	0.4-	880312	875	(15.3-	15.4+)Y
811124	095	1.6+	0.4-	850919	809	0.6-	0.6-	880312	875	(10.5-	16.0+)Y
850914	688	1.5+	0.5+	850919	809	0.8-	0.6-				

(3781)* 1986 RG1 = 1936 FZ = 1948 TK1 = 1972 TS1 = 1981 OA = 1982 VE1 = 1984 CO

Discovered 1986 Sept. 2 by A. Mrkos at Klet.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

		(1950.0)	P	Q
M	149.47542			
n	0.20566484	Peri. 156.89898	+0.94104608	+0.33827205
a	2.8424709	Node 183.33146	-0.31564669	+0.87586980
e	0.0759123	Incl. 2.04209	-0.12165294	+0.34412806
P	4.79	H 12.1	G 0.25	

Residuals in seconds of arc

360319	024	(4.9-	6.9+)	840128	688	1.6-	0.5-	860905	046	0.8-	1.1+
360320	024	0.8+	2.3+	840205	688	0.8-	1.9-	860908	046	1.9+	0.2-
360324	024	0.1-	1.9+	840205	688	0.1+	0.9-	860908	046	1.8+	0.0
481009	012	(3.0-	93.5+)	860831	010	(10.1-	0.8-)	871121	801	0.1-	0.5-
721006	095	2.2+	0.5+	860831	010	(4.3-	0.3+)	871215	046	2.2+	2.0-
721007	095	1.5-	0.2-	860831	010	1.8+	1.8+	871215	046	0.6+	2.1-
810726	688	3.2+	2.5-	860902	046	3.0-	1.1-	871218	801	0.5+	1.3+
810726	688	1.3+	2.0-	860903	046	2.9-	1.2+	871222	046	1.5-	0.7+
821115	688	1.6-	1.4-	860905	046	1.3-	0.9-	871222	046	1.2-	0.2+
821115	688	1.0+	0.4-	860905	046	2.2-	0.1-	871223	688	1.9+	2.1+
840128	688	0.3-	1.4-	860905	046	0.0	0.8+	871223	688	0.5-	0.1+

(3782)* 1986 TE = 1970 HD = 1972 YP = 1973 AV = 1978 NH2 = 1982 OB = 1985 GR1

Discovered 1986 Oct. 3 by P. Jensen at Brorfelde. The double designation 1972 YP = 1973 AV was found by C. M. Bardwell (MPC 6840).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

		(1950.0)	P	Q
M	290.69511			
n	0.26268840	Peri. 334.97993	-0.40670903	+0.90894350
a	2.4145829	Node 270.90998	-0.82194220	-0.40788790
e	0.0954227	Incl. 5.26226	-0.39874652	-0.08630861
P	3.75	H 12.8	G 0.25	

Residuals in seconds of arc

700428	095	0.8+	2.1-		850415	675	1.9-	0.0		861004	054	2.2+	3.3+
721229	095	0.8+	0.2-		860929	046	2.6-	0.8-		861008	054	1.6-	0.1+
730101	095	3.7-	1.6-		860929	046	1.1-	0.8-		861008	054	1.1-	0.2+
780706	095	1.4+	0.4+		860930	046	2.7+	1.6-		871224	801	1.3+	1.0+
820717	688	1.2-	1.8-		860930	046	3.9+	0.2-		880109	046	1.2+	1.2-
820717	688	0.6-	1.3-		861001	046	(6.6+	1.0-)		880109	046	1.1+	1.2-
820724	688	0.8+	0.3-		861001	046	(4.9+	1.8-)		880110	046	1.7-	0.5-
820724	688	0.4+	1.9-		861003	054	1.2-	0.1-		880110	046	0.3+	0.8-

(3783)* 1986 TW1 = 1948 MF = 1968 HJ = 1978 EQ5 = 1979 SU1 = 1983 XY

Discovered 1986 Oct. 7 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	236.64648		(1950.0)	P	Q
n	0.28793209	Peri.	255.56134	+0.74706779	+0.65775814
a	2.2713078	Node	63.21098	-0.56080977	+0.70128627
e	0.1736247	Incl.	6.18305	-0.35690631	+0.27486687
P	3.42	H	13.1	G 0.25	

Residuals in seconds of arc

480630	078	(45.4+ | 3.6+)X	831208	046	3.1-	0.4-		861027	026	0.6+	0.1-
680422	095	3.8-	2.0-	861002	026	3.1-	0.3-		861030	026	2.1+	0.7+
680426	095	3.2+	1.1-	861004	026	0.3+	0.0		861031	026	0.8-	0.9-
780306	095	1.0-	0.5-	861006	026	0.9-	0.4-		861107	026	0.5+	0.9+
790922	095	0.4-	0.3-	861007	688	2.2+	0.5-		880123	801	0.2-	0.3+
831205	046	1.2+	0.3-	861007	688	1.3+	0.9-		880217	801	0.4+	0.1-
831205	046	1.4+	0.3-	861008	026	2.4-	1.3-					
831208	046	0.1+	0.7+	861011	026	2.3+	0.8+					

(3784)* 1986 UL1 = 1951 KY = 1977 AB2 = 1978 GG2

Discovered 1986 Oct. 31 by E. W. Elst at Haute Provence.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	222.62127		(1950.0)	P	Q
n	0.17878594	Peri.	194.65966	+0.31702928	+0.91919140
a	3.1206649	Node	94.24852	-0.84482055	+0.38564381
e	0.1729278	Incl.	13.54839	-0.43101123	-0.07978730
P	5.51	H	11.1	G 0.25	

Residuals in seconds of arc

510528	711	0.8-	0.6+ Y	861105	511	0.2-	0.4-		880121	511	0.9-	3.3+
770112	675	1.2+	0.4-	861105	511	0.9+	0.1+		880121	511	2.9+	4.0+
770113	675	0.5-	0.1-	861202	688	0.4-	0.6+		880121	511	(5.3+ | 3.3+)
770113	095	0.4+	3.9-	861202	688	1.2+	1.1+		880122	511	3.7-	0.3+
770120	095	2.8+	4.0-	861203	511	(3.5+ | 2.0-)		880122	511	2.6-	0.0
780411	095	2.2+	1.0-	861203	511	1.0+	1.2+		880122	511	2.6-	0.9+
820120	095	0.2+	0.5-	861203	511	0.9-	4.1-		880219	801	0.1-	0.3+
861031	511	0.8-	1.5-	861203	511	1.7+	2.9+					
861101	511	1.0-	0.8+	861203	511	(4.0- | 0.5-)					

1953 TC = 1930 WK = 1949 QC2 = 1974 DR = 1978 EV5 = 1986 EN1 = 1986 EY3

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

M	341.31779		(1950.0)	P	Q
n	0.25419248	Peri.	27.45755	+0.77847571	-0.62744957
a	2.4680945	Node	11.45123	+0.55920232	+0.68113957
e	0.2095935	Incl.	4.85737	+0.28507600	+0.37730084
P	3.88	H	12.0	G 0.25	

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

301126	094	(0.03- 0.01-)X	531010	094	(1.7- 1.7-)X	531030	760	2.7- 0.5-
301129	094	(3.0- 67.5-)X	531012	094	(99.0- 12.8+)X	740216	095	0.4+ 1.0-
490826	094	(2.4- 44.2-)X	531015	760	0.3+ 0.5+	780306	095	0.3- 1.7+
531010	760	3.3+ 2.3-	531015	760	4.0+ 0.8+	860305	688	0.7+ 1.2-
531010	760	2.8- 0.1+	531030	760	2.1- 0.7+	860312	809	1.3- 0.3-

1954 UN2 = 1981 TP4 = 1981 UX10 = 1986 CY1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	340.06109		(1950.0)	P	Q
n	0.29029491	Peri.	197.86188	+0.66606435	-0.74533200
a	2.2589709	Node	210.39363	+0.69110618	+0.63127854
e	0.1875467	Incl.	3.28104	+0.28058960	+0.21440058
P	3.40	H	14.5	G 0.25	

Residuals in seconds of arc

541028	760	1.7+ 1.1-	860212	809	0.0 1.2-	860215	809	0.8- 0.1+
541028	760	1.6+ 0.3+	860212	809	0.1+ 1.4-	860215	809	0.6- 0.1+
541116	760	0.2+ 0.1-	860212	809	0.3+ 1.6-	860215	809	0.6- 0.1+
541116	760	1.0- 0.7-	860213	809	0.2- 0.0	860216	809	0.4+ 0.4+
541117	760	3.9- 1.1+	860213	809	0.0 0.2+	860216	809	0.4+ 0.4+
541117	760	1.3+ 0.4+	860213	809	0.1+ 0.1+	860216	809	0.4+ 0.3+
811005	688	0.6- 2.4-	860214	809	0.1- 0.2+	860217	809	0.2+ 0.4+
811005	688	1.0- 2.4-	860214	809	0.0 0.2+	860217	809	0.2+ 0.3+
811022	095	2.0+ 4.8+	860214	809	0.2- 0.2+	860217	809	0.1+ 0.4+

1973 ST1 = 1978 JB2 = 1979 OD
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	143.25600		(1950.0)	P	Q
n	0.12553587	Peri.	27.73694	-0.99040185	+0.13698702
a	3.9502541	Node	160.11109	-0.13470258	-0.92677773
e	0.1305626	Incl.	3.10122	-0.03097406	-0.34973932
P	7.85	H	12.0	G 0.25	

Residuals in seconds of arc

730919	675	0.0 0.4-	730929	675	1.4+ 0.2+	731005	675	0.8- 0.0
730920	675	0.6- 0.1-	730930	675	0.3- 0.6-	731005	675	0.5+ 0.2+
730924	675	1.3- 0.6+	730930	675	1.6+ 0.5+	780506	095	0.2- 0.9-
730925	675	0.9- 0.5-	731004	675	0.1+ 0.3-	790724	675	1.5+ 0.0
730929	675	0.2+ 0.3+	731004	675	0.5+ 0.7-	790725	675	1.6- 0.6+

1976 QC1 = 1976 SW10 = 1973 SA5

The double designation 1976 QC1 = 1976 SW10 is by C. M. Bardwell (MPC 6464).

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

M	302.40533		(1950.0)	P	Q
n	0.31049525	Peri.	340.18875	+0.67332949	+0.73918694
a	2.1598998	Node	332.12935	-0.67384972	+0.60511337
e	0.1858178	Incl.	1.85936	-0.30422681	+0.29570335
P	3.17	H	15.0	G 0.25	

Residuals in seconds of arc

730927	095	1.7- 0.2-	760826	095	0.6+ 0.6-	760925	095	0.3+ 0.2+
730928	095	1.8+ 0.1-	760924	095	1.6- 1.1+	760928	095	0.6+ 0.5-

1977 DY8 = 1978 NJ5
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	351.48449		(1950.0)	P	Q
n	0.31079525	Peri.	352.64959	+0.92100376	-0.38839947
a	2.1585097	Node	30.26035	+0.36034969	+0.82021195
e	0.0591953	Incl.	3.40901	+0.14798705	+0.41999788
P	3.17	H	14.0	G 0.25	

Residuals in seconds of arc

770219	381	0.9+	0.2-	770312	381	1.1-	0.1+	780710 675	0.1+ 2.4- Y
770219	381	0.8-	0.0	770315	381	1.8+	0.6-	780711 675	0.1- 2.4+ Y
770312	381	0.1-	0.5+	770315	381	0.7-	0.3+	780713 675(13.4-	0.3-)Y

1977 RB7 = 1966 CW = 1988 DH

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

M	83.47252	(1950.0)		P	Q
n	0.22348180	Peri.	199.25768	-0.27272331	-0.96157532
a	2.6893179	Node	266.57850	+0.88675403	-0.23851416
e	0.0292075	Incl.	1.81076	+0.37321480	-0.13595551
P	4.41	H	12.5	G 0.25	

Residuals in seconds of arc

660214	330	0.1-	0.3-	771012	675	1.7-	0.3-	771021 675	1.4+ 0.6-
770911	095	0.7+	0.9+	771016	675	0.1+	1.7-	771022 675	0.3- 0.9+
771007	675	0.1+	0.8-	771016	675	0.2-	1.4-	771022 675	0.1+ 1.4+
771011	675	0.8+	2.5+	771017	675	0.0	0.8-	880219 892	0.3+ 0.2-
771011	675	1.1-	0.9+	771017	675	0.1-	0.0	880219 892	0.1- 0.6+
771012	675	0.9-	0.3+	771021	675	1.1+	1.1-		

1979 MK3 = 1988 CX

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

M	73.19204	(1950.0)		P	Q
n	0.17934857	Peri.	330.59504	-0.24842503	-0.96555986
a	3.1141412	Node	133.66895	+0.90825384	-0.25993881
e	0.1209094	Incl.	6.13663	+0.33668971	-0.01122343
P	5.50	H	13.5	G 0.25	

Residuals in seconds of arc

790623	413	0.9+	0.2+	790724	413	0.2+	0.4-	880215 033	0.4- 0.3+
790624	413	1.0-	0.3-	790725	675	1.1+	0.2-	880215 033	0.6+ 0.3-
790625	413	0.8-	0.2-	790823	675	1.1-	0.6+	880216 033	1.0+ 1.1-
790629	413	1.1+	0.7+	880214	033	1.1-	0.6+		
790724	675	0.4-	0.4-	880214	033	0.0	0.5+		

1979 YO = 1988 BB3

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

M	284.57461	(1950.0)		P	Q
n	0.26481619	Peri.	154.93512	+0.23868899	+0.96456215
a	2.4016362	Node	128.67063	-0.91343839	+0.26231687
e	0.0723652	Incl.	8.28180	-0.32963294	-0.02845567
P	3.72	H	13.0	G 0.25	

Residuals in seconds of arc

791223	809	1.6-	0.5+	791226	809	0.1+	0.0	880120 033	0.4+ 0.6-
791225	809	1.0+	0.0	791228	809	1.3-	0.7+	880120 033	0.4- 0.4+
791225	809	1.0+	0.9-	791228	809	0.2+	0.2+	880121 033	0.5- 0.1-
791226	809	0.3-	0.0	791229	809	0.2+	0.5-	880122 033	0.2+ 0.6+
791226	809	0.8+	0.2+	880119	033	0.3+	0.2-		

1982 UQ6 = 1972 TZ6 = 1987 WY3

The identification 1982 UQ6 = 1972 TZ6 was suggested by W. Landgraf and by B. G. Marsden. The identification 1982 UQ6 = 1987 WY3 was suggested by S. McDonald.

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

M	66.92967	(1950.0)		P	Q
n	0.20093706	Peri.	189.13515	+0.69632980	-0.71759454
a	2.8868899	Node	216.73351	+0.65988468	+0.64751297
e	0.0621561	Incl.	1.29559	+0.28227116	+0.25648592
P	4.91	H	12.5	G 0.25	

Residuals in seconds of arc

721006	095	0.1+	0.3-	821109	095	0.7+	0.4+	871124	688	1.7+	0.3+
821020	095	0.6+	0.7+	821114	095	1.0-	0.0				
821025	095	0.5-	0.3-	871124	688	1.6-	0.8-				

1984 DE1 = 1977 FL3 = 1977 GQ

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

M	188.77614		(1950.0)	P	Q
n	0.13327067	Peri.	235.77687	-0.91781638	+0.39664844
a	3.7958922	Node	327.58268	-0.35312211	-0.83500076
e	0.1539200	Incl.	1.79864	-0.18143283	-0.38137088
P	7.40	H	12.5	G 0.25	

Residuals in seconds of arc

770325	095	0.6+	1.0-	840303	809	0.2-	0.3+	840308	809	0.7-	0.0
770326	095	0.6-	1.0+	840303	809	0.0	0.3-	840308	809	0.6-	0.0
770410	381	(14.5-	16.0-)	840304	809	0.2-	0.3+	840308	809	0.7-	0.0
770410	381	(3.7-	18.8-)	840304	809	0.1+	0.0	840309	809	1.1+	0.8-
840228	809	0.2-	0.2+	840304	809	0.3+	0.4+	840309	809	0.7+	0.6-
840228	809	0.1-	0.2+	840305	809	0.2-	0.2-	840309	809	0.3+	0.5-
840228	809	0.1+	0.0	840305	809	0.0	0.1+	840310	809	0.1-	0.0
840301	809	0.2+	0.6-	840305	809	0.1+	0.1+	840310	809	0.4-	0.4+
840301	809	0.0	0.6-	840306	809	0.1-	0.4+	840310	809	0.0	0.2+
840301	809	0.1+	0.6-	840306	809	0.1+	0.6+				
840303	809	0.2-	0.3+	840306	809	0.3+	0.5+				

1986 QY = 1988 BH1

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

M	78.67996		(1950.0)	P	Q
n	0.21765470	Peri.	58.79809	+0.29725496	-0.95455978
a	2.7371055	Node	13.95762	+0.84311287	+0.25193252
e	0.1460819	Incl.	5.07418	+0.44810733	+0.15920312
P	4.53	H	13.0	G 0.25	

Residuals in seconds of arc

860826	809	1.3-	1.0-	860903	809	0.9+	0.8+	860907	809	0.3-	0.2-
860826	809	1.1-	1.2-	860904	809	0.8+	0.4+	860907	809	0.4-	0.3-
860826	809	1.0-	1.2-	860904	809	1.1+	0.5+	860907	809	0.3-	0.2-
860827	809	0.6-	0.4-	860904	809	1.4+	0.5+	860907	809	0.3-	0.2-
860827	809	0.5-	0.4-	860905	809	0.1-	0.2+	860907	809	0.3-	0.2-
860827	809	0.4-	0.5-	860905	809	0.1+	0.0	860909	809	1.4-	0.9-
860829	809	0.8+	0.8+	860905	809	0.2+	0.2-	860909	809	1.2-	1.0-
860829	809	0.9+	0.6+	860905	809	0.1-	0.2+	860909	809	1.2-	1.1-
860829	809	0.9+	0.4+	860905	809	0.1+	0.1+	880112	033	0.3+	1.2-
860902	809	1.0+	0.3+	860905	809	0.1+	0.1+	880112	033	0.8-	1.0-
860902	809	0.7+	0.5+	860906	809	0.2-	0.6+	880121	511	(3.7-	0.1+)
860902	809	0.9+	0.7+	860906	809	0.1-	0.4+	880121	511	0.4-	1.4+
860903	809	0.9+	0.9+	860906	809	0.2-	0.5+	880121	511	0.8+	0.9+
860903	809	0.8+	0.8+	860907	809	0.4-	0.1-				

1986 TX = 1985 GO1

The identification was found independently by T. Urata (NOC 1563).

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

M	264.26774		(1950.0)	P	Q
n	0.27342380	Peri.	225.88670	+0.46825082	+0.88214585
a	2.3509643	Node	72.09680	-0.79469765	+0.44548063
e	0.0703447	Incl.	3.04784	-0.38626003	+0.15285846
P	3.60	H	13.5	G 0.25	

Residuals in seconds of arc

850415	688	0.9-	0.4+		861011	372	0.9-	0.6+		880123	511 (5.5+ 1.1-)
850415	688	1.0+	0.1-		861013	372	0.6+	0.7+		880213	875 (5.9- 6.6-)Y
850424	675 (8.5-	0.0)			861013	372	0.7-	2.4+		880213	875 (3.0- 8.9-)Y
850425	675(12.3-	2.1-)			861027	010(16.7-	2.7-)			880216	875 1.2+ 0.9+
861003	372	0.9+	2.3-		861027	010(18.1-	0.6-)			880216	875 2.1- 0.3+
861003	372	2.1+	0.7-		861027	010(11.7-	2.1-)			880221	372 (9.8- 2.6-)
861008	372	2.4-	1.9-		861030	372	0.3+	1.3+		880221	372 (8.2- 1.4-)
861008	372	0.4+	1.2-		861030	372	0.6-	0.0			
861011	372	0.1+	1.4+		880123	511	0.9+	1.5-			

1986 VG = 1983 CU2

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

M	74.12653		(1950.0)	P	Q
n	0.18880578	Peri.	101.93942	-0.07226188	-0.99710422
a	3.0092624	Node	352.08901	+0.83488417	-0.04747474
e	0.0666296	Incl.	9.91283	+0.54566166	-0.05940809
P	5.22	H	11.5	G 0.25	

Residuals in seconds of arc

830215	688	0.0	0.1+		861105	010 (4.7+	0.3-)			861229	881 0.4- 0.1-
830215	688	0.7-	1.1-		861105	010(10.4-	1.0+)			861229	881 0.4+ 0.3+
861104	883	0.3+	0.3-		861111	887	1.8-	0.0		880210	881 0.8+ 0.7+
861104	883	1.4+	1.0+		861111	887	1.5-	0.8-		880210	881 0.3- 0.4+
861105	881	0.2+	0.6+		861205	881	1.6+	1.1-			
861105	881	0.1-	0.2-		861205	881	0.2+	0.1+			

1987 QS7 = 1978 XC1

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

M	184.50579		(1950.0)	P	Q
n	0.19896345	Peri.	57.62402	-0.72608544	+0.68754801
a	2.9059494	Node	165.80561	-0.64229626	-0.67361016
e	0.0425382	Incl.	2.05974	-0.24546985	-0.27115880
P	4.95	H	12.5	G 0.25	

Residuals in seconds of arc

781203	675	0.8-	0.4-		781206	675	1.9+	0.4-		870912	809 1.0+ 0.7-
781203	675	0.3-	0.6-		870828	809	0.5-	0.8-		870916	809 0.5- 0.2+
781205	675	0.2-	0.3+		870828	809	0.3+	1.0+		870916	809 0.4+ 0.3+
781206	675	0.6-	1.1+		870828	809	0.0	0.2-		870916	809 0.8- 0.2+

1987 UG = 1953 TA3 = 1953 VG3 = 1983 RS

The double designation 1953 TA3 = 1953 VG3 is by O. Kippes (MPC 1331).

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

M	83.03428		(1950.0)	P	Q
n	0.26128850	Peri.	184.07627	+0.83182195	-0.55482013
a	2.4232044	Node	209.63920	+0.51011094	+0.77533573
e	0.2139279	Incl.	1.82069	+0.21876716	+0.30171036
P	3.77	H	14.0	G 0.25	

Residuals in seconds of arc

531015	760	2.0-	3.1+		830908	046	0.9-	0.2-		871119	688 0.2+ 1.2+
531015	760	1.9-	1.9+		871020	688	1.6-	0.4+		871119	688 0.3- 0.5+
531113	760	1.8+	3.5+		871020	688	1.5-	0.2+		871123	046 1.0+ 4.0-
531113	760	1.6-	3.5+		871022	657	2.9+	0.3-		871123	046 1.2+ 4.3-
830905	046	1.1-	0.1-		871022	657	4.4+	0.5-		871124	688 0.8- 0.6+
830905	046	0.3-	0.2+		871028	675(17.1+	2.2+)			871124	688 0.8- 0.2-
830907	046	3.3+	1.9-		871028	675(16.1+	2.5+)			871125	046 2.0- 2.7-
830907	046	1.3+	0.8-		871115	046 (4.8+	4.3-)			871125	046 0.2+ 1.7-
830908	046	1.3-	0.1-		871115	046 (7.2+	3.1-)				

1987 UF1 = 1974 VR1 = 1982 BO2
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	110.46748	(1950.0)		P	Q
n	0.30239520	Peri.	261.28053	+0.99282081	-0.09238453
a	2.1983001	Node	103.99429	+0.11446236	+0.91817122
e	0.1891587	Incl.	4.49069	-0.03471604	+0.38526186
P	3.26	H	14.0	G 0.25	

Residuals in seconds of arc

741115 095	0.6+	1.8-	820120 046	3.7-	1.1+	871114 054	0.8+	0.9+
820119 046	1.1+	2.2+	871027 054	0.9-	0.4+	871114 054	0.6+	0.9-
820119 046	2.0+	0.4+	871027 054	1.2-	0.1+			
820120 046	0.7+	3.0-	871030 054	0.2+	1.1+			

1987 WR = 1951 CK1 = 1975 EO4
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	38.96231	(1950.0)		P	Q
n	0.28941808	Peri.	219.49153	-0.33455832	-0.94165006
a	2.2635312	Node	250.08225	+0.87421220	-0.29547653
e	0.0190100	Incl.	2.25284	+0.35188601	-0.16121036
P	3.41	H	12.5	G 0.25	

Residuals in seconds of arc

510207 119	3.4-	9.5- X	871210 400	0.2+	1.4-	871223 400	(8.4+	3.7+)
750315 095	3.1+	7.4+	871214 400	0.0	0.4+	880110 400	0.5-	2.3+
871125 400	0.0	0.5+	871214 400	1.0+	0.2-	880110 400	0.0	1.7+
871125 400	0.1+	0.5+	871214 400	1.9+	0.1+	880111 400	0.4-	2.6+
871209 400	1.3-	1.3-	871218 400	1.1+	0.5-	880112 400	1.5-	1.5+
871209 400	0.7-	1.3-	871218 400	1.2+	0.1+	880112 400	0.9-	1.7+
871209 400	1.0-	0.4-	871218 400	0.4+	0.6+	880112 400	1.1-	1.1+
871210 400	1.9-	1.0-	871223 400	1.4+	0.0			
871210 400	0.1+	0.8-	871223 400	0.6+	0.1-			

1988 AG = 1974 DO
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	42.53132	(1950.0)		P	Q
n	0.20933638	Peri.	139.71521	-0.48040113	-0.87532577
a	2.8091425	Node	338.81901	+0.76043742	-0.38449275
e	0.1683394	Incl.	8.74775	+0.43697790	-0.29320662
P	4.71	H	12.5	G 0.25	

Residuals in seconds of arc

740216 095	4.3-	0.3-	880112 033	1.0+	1.3+	880210 877	0.4+	1.2+
740217 095	4.3+	0.2+	880120 877	1.2+	0.7+	880210 877	0.5-	0.8+
880111 877	1.0+	0.6-	880120 877	0.1-	1.2+	880213 877	0.6+	0.1-
880111 877	1.6-	1.9-	880124 877	1.5-	1.4-	880213 877	0.0	1.2-
880112 033	1.6+	1.0+	880124 877	2.1-	1.0-			

1988 BA = 1979 VZ1 = 1979 YD1 = 1985 JD1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	115.29585	(1950.0)		P	Q
n	0.26168997	Peri.	49.75602	+0.38252647	-0.92341935
a	2.4207254	Node	17.82888	+0.81376520	+0.32075376
e	0.0296936	Incl.	5.83897	+0.43756108	+0.21074566
P	3.77	H	13.0	G 0.25	

Residuals in seconds of arc

791114 095	3.0-	1.5-	880116 386	0.5+	0.0	880212 386	0.7+	2.7+
791217 095	3.2+	0.6+	880120 386	1.1-	1.3+	880212 386	2.2+	1.4+
850511 675	1.9+	0.2+	880120 386	0.2-	0.4-	880224 386	0.9+	1.1-
850514 675	2.4-	1.4-	880123 386	3.0-	1.0-	880224 386	1.2+	0.7-
880116 386	0.0	0.0	880123 386	0.9-	1.8-			

1988 BB = 1970 GP2 = 1973 YJ2 = 1984 GA1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	40.02002	(1950.0)	P		Q
n	0.21106819	Peri.	174.19960	-0.43040695	-0.89646958
a	2.7937555	Node	301.25202	+0.82307803	-0.34189391
e	0.1706264	Incl.	7.07658	+0.37052991	-0.28187027
P	4.67	H	13.0	G 0.25	

Residuals in seconds of arc

700410	805	1.5+	0.8+	880110	552	0.0	2.5-	880123	892	0.2+	1.7+
700410	805	1.9+	1.2+	880110	552	0.4+	0.8-	880123	892	1.0+	0.4+
700410	805	1.6+	0.9+	880116	892	0.5-	0.6+	880123	552	0.7-	0.2-
731220	095	2.2-	0.3+	880116	892	(3.7-	2.5+)	880123	552	0.9+	0.5+
840403	095	2.8-	2.0-	880120	892	0.1-	0.2+				
840405	095	2.0-	1.3-	880120	892	1.0+	0.1+				

1988 BF = 1929 XK = 1957 EN = 1979 HU6
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	117.64647	(1950.0)	P		Q
n	0.18881066	Peri.	303.63691	+0.81934565	-0.53993303
a	3.0092105	Node	89.75194	+0.56878919	+0.72349954
e	0.1071039	Incl.	11.11228	+0.07177438	+0.43014037
P	5.22	H	11.5	G 0.25	

Residuals in seconds of arc

291128	690	3.7+	2.1-	880116	877	(1.1+	4.3+)	880210	877	0.8+	0.2+
291203	690	2.0-	2.5-	880116	877	2.0+	2.7+	880210	877	1.2+	0.5-
291204	690	0.2+	0.4-	880120	877	2.4-	0.8+ Y	880210	877	0.3-	0.4-
570305	760	0.4-	1.9-	880123	801	2.7-	1.0+	880213	877	0.5+	1.2-
570305	760	0.8-	1.2-	880124	877	2.2-	0.2+ Y	880219	877	0.8+	1.9+
790430	095	1.1-	3.1-	880124	877	(4.0-	0.2+)Y	880219	877	3.0+	1.0+

1988 BL = 1961 CQ = 1961 EH = 1978 EB6 = 1980 XB1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	107.04361	(1950.0)	P		Q
n	0.29187242	Peri.	295.35480	+0.32048857	-0.94497837
a	2.2508240	Node	135.78364	+0.89935919	+0.28181328
e	0.1152251	Incl.	5.39742	+0.29738883	+0.16612395
P	3.38	H	13.0	G 0.25	

Residuals in seconds of arc

610215	033	0.1-	1.8-	880127	364	0.4-	1.9-	880216	391	0.1+	0.4-
610215	033	0.2-	1.5-	880127	364	1.9+	0.9+	880216	391	0.3-	1.3-
610217	033	3.7-	0.2+	880127	364	0.3+	0.9-	880216	391	0.7+	0.3+
610217	033	2.8+	2.9-	880210	364	1.7-	0.0	880216	391	0.6-	0.0
610309	033	0.3+	0.6-	880210	364	1.9-	0.2+	880217	391	0.8+	0.8-
780306	095	0.0	0.0	880214	391	0.6+	1.0+	880217	391	2.2-	1.7+
801207	330	(10.1-	7.2-)	880214	391	0.7+	0.7+	880217	391	1.2-	1.0+
801210	330	0.1+	0.3-	880215	881	0.6+	1.6+	880217	391	0.3+	1.7+
880116	364	1.2-	2.5+	880215	881	0.7+	1.4+	880218	364	0.5+	0.5+
880116	364	0.3+	0.8-	880215	364	1.2+	0.5+	880218	364	1.2+	1.6-
880127	364	0.8+	1.2-	880215	364	0.4-	1.5+				

1988 BV = 1983 VK7
The identification was found independently by T. Kobayashi.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	100.42633	(1950.0)	P		Q
n	0.27665074	Peri.	350.28536	+0.24518212	-0.96809485
a	2.3326470	Node	85.50864	+0.89288291	+0.20469406
e	0.1995017	Incl.	2.97554	+0.37768483	+0.14454305
P	3.56	H	13.5	G 0.25	

Residuals in seconds of arc

831104 688	0.7+	0.4-	880125 399	0.6-	1.8+	880213 054	0.0	1.0+
831104 688	0.1+	0.6+	880125 399	1.5-	0.4+	880213 054	1.5-	0.1-
831107 688	0.9-	0.6+	880208 399	1.9+	1.8-	880215 399	1.1-	0.7-
831107 688	0.3+	1.5-	880208 399	0.6+	0.2+	880215 399	0.8+	3.1-
880124 399	1.8+	1.3+	880208 399	1.3+	0.6+	880215 399	0.5-	1.6-
880124 399	0.4-	0.3+	880211 399	2.0-	1.5-	880221 399	0.3+	0.3+
880124 399	0.9-	1.1+	880211 399	1.5+	1.3-	880221 399	0.1+	0.5+
880125 399	0.5+	2.2+	880211 399	0.1-	0.3+			

1988 CL = 1970 AZ = 1986 RW1

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

M	97.69779	(1950.0)		P	Q
n	0.22208525	Peri.	97.66671	+0.31985332	-0.94412409
a	2.7005803	Node	333.25430	+0.78458724	+0.31098333
e	0.2363561	Incl.	10.17764	+0.53114660	+0.10917452
P	4.44	H	13.0	G 0.25	

Residuals in seconds of arc

700105 095	0.5+	1.3+	880214 809	1.4+	1.4-	880216 552	2.3-	0.9-
860831 010	1.3+	3.2-	880214 552	0.8-	0.5+	880216 552	1.8-	1.2-
860831 010	(8.2+	2.6-)	880215 552	0.8+	0.2+	880217 552	2.2-	0.4+
860908 046	0.8+	0.1-	880215 809	1.1+	1.2-	880217 552	0.8+	0.9+
860908 046	0.6+	0.9-	880215 809	1.2+	0.7-	880221 552	1.3-	1.7+
880213 552	1.6-	1.3-	880215 552	0.8+	0.5-	880221 552	2.7-	1.5+
880214 552	1.6-	0.1+	880216 552	2.1+	0.7-	880222 552	0.3+	1.9+
880214 809	1.2+	1.2-	880216 809	0.6-	0.8-	880222 552	1.7+	0.2+
880214 809	0.7+	1.2-	880216 809	0.2-	1.5-			

1988 DA = 1978 GD4 = 1978 JG3 = 1986 SL

The identifications were found independently by T. Kobayashi.

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

M	41.05480	(1950.0)		P	Q
n	0.28867164	Peri.	169.33539	-0.99526001	-0.09695397
a	2.2674315	Node	5.11906	+0.08179278	-0.87668427
e	0.0993217	Incl.	4.87272	+0.05260662	-0.47119487
P	3.41	H	13.5	G 0.25	

Residuals in seconds of arc

780411 095	2.6-	0.8+	880216 400	0.2+	1.0-	880221 400	2.3+	0.1-
780505 095	2.2+	1.7-	880216 400	0.8+	0.5+	880221 400	0.3+	0.6-
860930 046	0.9-	2.0-	880216 400	0.5-	0.7-	880310 400	2.3-	0.0
860930 046	1.6+	0.4+	880221 400	0.3+	0.1+	880310 400	1.4-	1.0+

1988 DB = 1978 SS4 = 1986 VH8

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

M	7.77037	(1950.0)		P	Q
n	0.25419032	Peri.	65.87341	-0.89802639	+0.43858725
a	2.4681085	Node	140.11617	-0.42063125	-0.83299198
e	0.1212476	Incl.	3.08360	-0.12891064	-0.33729155
P	3.88	H	12.5	G 0.25	

Residuals in seconds of arc

780927 095	1.0-	1.5+	880219 386	0.1+	2.5+	880224 386	1.0-	3.0-
781003 095	0.7+	0.8-	880221 386	0.3-	0.8+	880312 386	0.6+	0.2-
861104 675	0.2+	0.5-	880221 386	0.5-	0.5+	880312 386	3.4+	1.6-
861104 675	0.1+	0.1-	880224 386	0.9-	1.2+			
880219 386	0.9-	1.9+	880224 386	0.4-	1.8-			

1988 DJ = 1979 OO8
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	64.81022	(1950.0)	P	Q
n	0.18297457	Peri. 240.49331	-0.49867788	-0.85695193
a	3.0728623	Node 239.98727	+0.83817628	-0.43846914
e	0.0572655	Incl. 8.64831	+0.22086396	-0.27088411
P	5.39	H 13.5	G 0.25	

Residuals in seconds of arc

790724	413	1.9+	1.1-	880222	413	1.5-	1.8+	880225	413	1.5-	0.3+
790726	675	1.9-	1.1+	880222	413	0.7+	0.4-	880225	413	1.4+	0.5-
880219	413	3.7-	0.5+	880223	413	0.5-	0.4+				
880219	413	3.2+	2.2-	880223	413	2.0+	0.1+				

4581 P-L = 1987 VZ
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	103.95635	(1950.0)	P	Q
n	0.29450628	Peri. 334.06273	+0.88021673	-0.47288961
a	2.2373841	Node 54.21680	+0.44350629	+0.78974437
e	0.1266550	Incl. 2.82088	+0.16888065	+0.39074191
P	3.35	H 14.5	G 0.25	

Residuals in seconds of arc

600924	675	0.5+	0.5-	601025	675	0.1-	0.5-	871123	046	0.7+	0.6-
600926	675	0.2-	0.1-	601026	675	0.1+	0.4-	871126	046	1.8+	0.2+
600927	675	0.1+	0.6+	871115	046	1.4-	1.4+	871126	046	3.0+	1.9+
600928	675	0.2-	0.3-	871115	046	1.8-	1.1+	871126	046	2.6-	1.8-
601022	675	0.0	1.0+	871123	046	1.5+	0.4-	871127	046	1.2-	1.6-

* * * * *

ORBITAL ELEMENTS BY T. KOBAYASHI, GUNMA, JAPAN.

The identifications are by T. Kobayashi unless otherwise stated.

(3785)* 1986 WM = 1934 TG = 1957 UM = 1979 OO2 = 1980 UU
Discovered 1986 Nov. 30 by T. Seki at Geisei. The key identification 1986 WM = 1979 OO2 is by T. Urata (NOC 1598).
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	143.30424	(1950.0)	P	Q
n	0.17098574	Peri. 233.84967	+0.90413436	-0.42694819
a	3.2148653	Node 151.41436	+0.40193874	+0.83727211
e	0.1898492	Incl. 1.91747	+0.14486653	+0.34160015
P	5.76	H 12.2	G 0.25	

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

341005	094	(0.04+	0.01-)X	861130	372	1.0-	0.5+	880113	372	1.4-	0.2+
571030	024	1.6+	6.1-	861130	372	0.1-	0.0	880127	372	1.6-	3.5-
790724	675	0.1+	1.0-	861201	372	1.2+	1.4+	880127	372	0.1+	1.5-
790724	413	0.7-	0.4-	861201	372	0.9-	1.7+	880215	372	1.1+	0.1-
790725	675	0.0	1.8-	861204	372	2.5-	0.4-	880215	372	1.1+	0.5-
790727	675	0.5+	0.6-	861207	372	0.2-	0.4+	880217	372	0.1+	1.1-
801017	095	1.8+	0.7+	880113	372	3.1-	0.1+	880217	372	0.4+	0.6-

(3786)* 1988 AE = 1931 AE1 = 1954 XJ = 1958 WB = 1973 MA
Discovered 1988 Jan. 10 by T. Kojima at Chiyoda.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	266.84986	(1950.0)	P	Q
n	0.24197008	Peri. 356.69902	-0.20252698	+0.94838678
a	2.5505172	Node 261.51319	-0.89267759	-0.28124495
e	0.0782752	Incl. 14.28355	-0.40262829	+0.14650525
P	4.07	H 11.3	G 0.25	

Residuals in seconds of arc

310113	690	0.5+	2.4-		880110	892	0.9+	0.4+		880206	892	0.5-	0.2+
310115	690	1.2-	0.2+		880116	892	0.2+	0.9+		880210	892	0.4-	0.1+
310116	690	(5.9+ | 2.9-)		880116	892	0.1+	0.5+		880210	892	(2.8- | 3.9-)
541204	760	0.8-	0.1-		880117	220	1.4-	2.5-	Y	880212	894	(1.3+	3.4+)
541204	760	0.8+	0.4-		880119	220	(4.7+	0.4-)	Y	880212	894	1.1+	0.3-
541224	760	1.0-	1.2+		880120	892	(4.1+ | 3.0+)		880213	894	(4.8- | 0.7-)
541224	760	0.5+	0.3+		880120	892	(5.4+ | 3.9+)		880213	894	(5.7- | 2.0-)
581120	760	0.3+	1.1+		880123	892	0.3-	0.6+		880219	892	0.5+	0.7+
730624	380	0.1+	2.0+		880123	892	0.5+	0.7+		880219	892	1.8+	2.6+
730624	380	0.6-	0.7+		880206	892	1.2-	0.0					

1938 DK1 = 1980 EK = 1988 BO

The identification 1938 DK1 = 1980 EK was independently suggested by B. G. Marsden.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	17.59939		(1950.0)	P	Q
n	0.23374023	Peri.	339.12359	-0.65787976	-0.74377356
a	2.6100395	Node	151.61065	+0.72141606	-0.66745786
e	0.1326599	Incl.	14.40730	+0.21622463	-0.03606782
P	4.22	H	13.0	G 0.25	

Residuals in seconds of arc

380222	062	0.6-	2.3+		380330	062	1.1+	0.3+		800315	095	0.0	3.4-
380225	062	0.1-	0.4-		380404	062	2.4+	0.3+		880123	892	0.2+	0.4+
380307	062	1.0+	1.7-		380420	062	3.8-	2.4+		880123	892	0.7-	1.1+

1972 GL = 1972 JR1 = 1952 HX3 = 1955 FO

The double designation 1972 GL = 1972 JR1 is by B. G. Marsden (MPC 6939).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	340.57616		(1950.0)	P	Q
n	0.29434938	Peri.	132.82051	-0.99498756	+0.00475730
a	2.2381746	Node	47.71588	-0.05213664	-0.87704193
e	0.1021667	Incl.	7.75941	+0.08533180	-0.48039029
P	3.35	H	13.5	G 0.25	

Residuals in seconds of arc

520428	711	0.5+	1.1+	Y	550320	760	0.3+	0.5-		720509	095	0.6-	1.3-
550320	760	0.2-	0.7+		720414	095	0.7+	0.3-		720516	095	0.8-	0.4+

1976 SJ = 1987 WM3

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	72.75767		(1950.0)	P	Q
n	0.26766007	Peri.	207.58981	+0.94318917	-0.33220633
a	2.3845897	Node	171.80667	+0.31178403	+0.87895340
e	0.2158222	Incl.	2.31501	+0.11482555	+0.34216935
P	3.68	H	14.0	G 0.25	

Residuals in seconds of arc

760920	049	0.1-	0.0		760925	095	2.3-	0.4+		760930	049	0.1+	1.4+
760920	049	2.2+	0.3+	Y	760928	095	1.4+	0.4-		760930	049	(21.0-	10.2+)
760920	049	0.5-	0.9-		760929	049	0.2+	0.4-		871122	675	0.1+	0.1-
760920	049	0.6-	0.0		760929	049	0.6-	0.2-		871123	675	0.0	0.2-

1978 PW3 = 1986 TU3

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	228.19787		(1950.0)	P	Q
n	0.25517086	Peri.	139.73664	+0.62310264	+0.78183533
a	2.4617767	Node	168.74843	-0.74326298	+0.60059058
e	0.1489974	Incl.	6.42419	-0.24352257	+0.16740509
P	3.86	H	14.0	G 0.25	

Residuals in seconds of arc

780809	095	0.3+	0.1-		861004	046	1.5-	1.4-		861005	046	1.5+	0.1+
780831	095	0.4-	0.5+		861005	046	2.1+	2.8+					
780905	095	0.6+	0.4-		861005	046	1.6-	1.3-					

1978 PT4 = 1986 LL

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	93.42929		(1950.0)		P		Q
n	0.23677302	Peri.	262.41506		+0.91319869		-0.32573406
a	2.5877038	Node	116.32245		+0.38712207		+0.88111850
e	0.1611940	Incl.	15.85516		-0.12729752		+0.34282286
P	4.16	H	12.5	G	0.25		

Residuals in seconds of arc

780710	675	1.4-	1.6+	Y	780806	323	0.1-	0.6+		860604	675	0.2-	2.3+
780711	675	1.8+	1.6-	Y	780809	323	0.2+	0.1+		860606	675	1.9-	1.9-
780713	675	(12.2-	6.4+)	Y	780809	323	0.3+	0.6-		860606	675	2.2+	0.7-
780806	323	0.7-	0.1-		860604	675	0.1-	0.2+					

1978 TO8 = 1983 RU

The identification was found independently by W. Landgraf.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	313.12893		(1950.0)		P		Q
n	0.18364133	Peri.	164.31702		+0.94924513		-0.31442048
a	3.0654137	Node	214.01263		+0.28689532		+0.87667170
e	0.1916551	Incl.	0.87783		+0.12893703		+0.36412427
P	5.37	H	13.0	G	0.25		

Residuals in seconds of arc

781009	095	0.1-	0.0		830904	688	0.4-	0.0		830907	046	0.7-	1.1-
781028	675	0.9+	0.2-		830904	688	1.1+	1.2+		830907	046	1.0+	1.0-
781029	675	0.7+	0.5-		830905	046	0.3-	0.2+		830908	046	0.0	0.7+
781101	095	1.5-	0.7+		830906	046	0.1-	0.8+		830908	046	0.5-	0.7-

1978 UV = 1988 BD

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	82.72046		(1950.0)		P		Q
n	0.22636455	Peri.	7.33180		+0.59972652		-0.79636036
a	2.6664315	Node	45.85707		+0.72848276		+0.50283571
e	0.2640764	Incl.	6.26798		+0.33112078		+0.33610480
P	4.35	H	13.0	G	0.25		

Residuals in seconds of arc

780928	095	0.3+	0.8-		781103	330	1.5-	1.2+		880120	892	0.4-	0.9-
781004	095	0.6-	2.1+		781107	330	0.4+	1.5+		880120	892	0.8-	0.3-
781028	688	1.1+	2.2-	Y	880116	892	0.9+	1.8+		880123	892	0.0	0.2-
781028	330	0.2+	1.7-		880116	892	0.1-	0.2+		880123	892	0.4+	0.7-

1982 WE

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	107.20803		(1950.0)		P		Q
n	0.23181905	Peri.	32.91621		+0.04809958		-0.97956068
a	2.6244399	Node	55.06247		+0.85713120		-0.05991960
e	0.1648040	Incl.	13.78338		+0.51284748		+0.19201695
P	4.25	H	13.0	G	0.25		

Residuals in seconds of arc

821021	095	2.5+	1.8-		821120	372	0.8-	0.7-		821209	372	0.5+	2.8-
821023	095	0.1+	2.9+		821120	372	0.3-	0.5+	Y	821209	372	2.3+	1.3-
821111	046	1.6+	0.9+		821120	046	1.0+	2.0+		821222	372	0.3+	1.2+
821111	046	1.1-	0.9-		821120	046	2.5+	1.1+		821222	372	1.3+	2.1+
821115	046	4.7-	0.4-		821124	372	0.6-	0.6-		830118	372	2.6+	0.4+
821115	046	0.8-	0.9-		821127	372	0.2+	0.6+		880217	372	0.8+	2.3+
821116	046	5.4-	0.3+		821127	372	0.0	1.7-		880217	372	0.7+	0.3-
821116	046	2.9-	1.0+		821207	372	2.8+	1.8-		880312	372	2.8-	0.1+
821120	372	0.9-	1.7+	Y	821207	372	1.3+	0.9-		880312	372	2.1+	1.2-

1985 JG1 = 1978 JK2 = 1979 SO3 = 1988 DK1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	23.69295		(1950.0)	P	Q
n	0.28836882	Peri.	323.01945	-0.99477205	+0.09177414
a	2.2690140	Node	222.31479	-0.07027051	-0.93340966
e	0.0856306	Incl.	3.81479	-0.07409874	-0.34687738
P	3.42	H	13.5	G 0.25	

Residuals in seconds of arc

780509	095	1.4+	4.1+		850524	675	1.1-	0.0		880310	892	1.1+	0.4-
790924	095	0.5-	1.6+		850524	675	1.0-	0.4-		880310	892	0.6+	0.5-
850511	675	0.8+	2.7-		880219	892	2.0-	0.5-		880312	892	2.2+	0.4-
850515	675	0.6+	0.3+		880219	892	2.7-	2.7+		880312	892	1.2+	1.3-

1987 QW1 = 1977 UV = 1982 QV1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	55.97152		(1950.0)	P	Q
n	0.19349803	Peri.	183.83619	+0.96372646	+0.26665053
a	2.9604088	Node	160.68721	-0.24393399	+0.89728431
e	0.1004802	Incl.	1.96651	-0.10829364	+0.35182149
P	5.09	H	13.0	G 0.25	

Residuals in seconds of arc

771016	675	0.4-	0.4-		870821	809	0.1+	1.3+		870831	809	1.4-	0.1-
771017	675	0.4+	0.1-		870826	809	0.4+	0.2-		870831	809	1.0+	0.0
820822	809	0.2+	1.1+		870826	809	0.1+	1.0-		870831	809	0.1+	0.1-
820822	809	0.9-	1.0+		870826	809	0.5+	0.2-		870831	809	1.0-	1.4-
820822	809	0.1-	0.9+		870828	809	0.4+	0.6-		870831	809	0.4-	1.3-
870821	809	0.1+	1.4+		870828	809	1.1+	0.2+		870831	809	1.0-	1.0-
870821	809	0.7-	0.9+		870828	809	1.0+	0.7-					

1987 SD4 = 1950 QC = 1972 OE
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	119.54998		(1950.0)	P	Q
n	0.26709509	Peri.	28.64169	+0.75824639	+0.64078576
a	2.3879512	Node	290.99675	-0.62001379	+0.65168886
e	0.2207754	Incl.	7.39935	-0.20160681	+0.40582661
P	3.69	H	14.0	G 0.25	

Residuals in seconds of arc

500822	024	0.3-	0.6+		870921	010	1.3-	0.3+		871016	688	1.2-	0.4-
720719	095	0.2+	0.5-		870922	010	0.9-	0.5+		871016	688	3.1+	0.9-
870921	688	1.1+	0.2+		870929	688	1.5-	0.4+					
870921	688	0.1-	0.5-		870929	688	0.9+	0.1+					

1987 YH = 1956 ET = 1970 EQ2 = 1982 VN9
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	65.19931	(1950.0)		P	Q
n	0.21259311	Peri.	291.76315	+0.12570067	-0.98960156
a	2.7803743	Node	150.74590	+0.95482661	+0.10155300
e	0.2022083	Incl.	8.22542	+0.26926843	+0.10186142
P	4.64	H	13.5	G 0.25	

Residuals in seconds of arc

560309	760	0.7+	2.5+	821110	095	0.1+	0.3-	880110	892	0.6-	0.7+
700304	805	0.4-	0.7-	871225	892	1.7-	0.9-	880110	892	0.4+	0.3+
700304	805	0.5-	0.6-	871225	892	0.9-	0.4-	880114	894	2.8+	0.2+
700304	805	0.1+	1.6-	871230	892	1.1+	0.5+	880114	894	1.1-	0.3-

1987 YJ = 1980 XX1 = 1986 PF2
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	46.00714	(1950.0)		P	Q
n	0.29383029	Peri.	180.81820	-0.71010728	-0.70132221
a	2.2408099	Node	314.42862	+0.64645691	-0.61428961
e	0.0919367	Incl.	5.01357	+0.27900021	-0.36165652
P	3.35	H	14.0	G 0.25	

Residuals in seconds of arc

801210	095	0.7-	2.3+	871221	372	0.6-	0.5-	871227	372	1.7+	2.4-
860801	675	0.4-	2.0-	871221	372	1.3+	0.4+	880110	372	2.1-	0.8+
860801	675	1.5+	0.3-	871223	372	2.4-	0.3-	880110	372	3.5+	1.1+
860802	675	(41.4-	3.5-)	871223	372	2.3-	1.8+	880116	372	0.6-	1.4-
860802	675	(38.0-	1.7-)	871225	372	1.1-	0.5+	880116	372	2.5+	0.4+
871219	372	2.1-	1.3-	871225	372	2.3-	0.1+				
871219	372	0.7+	0.5-	871227	372	2.3+	2.2-				

1988 BE = A917 BC = 1979 BL
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	84.02603	(1950.0)		P	Q
n	0.22205767	Peri.	128.80092	+0.21018109	-0.95829539
a	2.7007986	Node	307.96089	+0.80343402	+0.28215427
e	0.1899227	Incl.	14.21690	+0.55706165	-0.04537518
P	4.44	H	12.0	G 0.25	

Residuals in seconds of arc

170128	024	0.8+	1.4+	880123	892	1.2+	1.4+	880214	675	0.7-	1.4-
790124	095	0.9+	0.6-	880206	892	(0.9+	5.6-)	880219	892	0.6-	0.4+
790125	330	0.9-	1.2+	880206	892	1.2+	2.2-	880219	894	0.2+	0.2+
880116	892	0.5-	2.5-	880210	675	1.2+	1.1-	880219	894	0.2+	0.8+
880116	892	1.9-	1.0+	880212	894	1.9-	0.6+	880220	894	1.2-	0.7+
880120	892	1.6-	0.8-	880212	894	1.2-	0.7+	880220	894	2.1+	0.4+
880120	892	0.6-	1.0-	880213	894	0.2-	1.9-				
880123	892	2.0+	2.1+	880213	894	0.9-	2.2+				

1988 CE = 1966 CO = 1975 EG2 = 1981 RD3 = 1984 FY1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	219.38661	(1950.0)		P	Q
n	0.22247035	Peri.	338.86508	+0.73997535	+0.67036911
a	2.6974575	Node	338.73485	-0.59322997	+0.61177708
e	0.1141716	Incl.	8.74666	-0.31704051	+0.41992149
P	4.43	H	12.5	G 0.25	

Residuals in seconds of arc

660214	330	0.2+	0.7-	880208	372	0.4-	0.9+	880217	372	0.3-	0.1-
750308	095	0.9-	0.3+	880208	372	0.5-	1.2-	880219	372	(5.2-	0.9-)
810902	095	0.8+	1.4-	880215	372	0.5+	0.9-	880219	372	0.6+	0.3+
840330	095	0.9+	0.6+	880215	372	0.3+	0.5+				
840403	095	0.8-	1.4-	880217	372	0.4-	0.1-				

1988 CJ = 1986 XC2
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	322.09345		(1950.0)		P		Q				
n	0.21552603	Peri.	319.31224		-0.69500938		+0.71692749				
a	2.7550928	Node	266.58222		-0.64464915		-0.65494842				
e	0.0411815	Incl.	3.13326		-0.31841708		-0.23886719				
P	4.57	H	12.5	G	0.25						

Residuals in seconds of arc

861201	010	3.1+	1.4-	861203	010	0.6-	1.5+	880219	875	2.2-	0.3-
861201	010	1.4-	3.3-	880210	875	3.3+	0.5- Y	880219	875	1.4-	1.4+
861201	010	2.1-	1.1-	880210	875	1.3+	2.1- Y	880221	875	1.8+	1.1+
861203	010	2.7-	1.5+	880213	875	0.6-	3.0+	880221	875	2.5+	2.3-
861203	010	3.7+	2.8+	880213	875	4.6-	0.3-				

1988 CO = 1986 TS3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	318.92744		(1950.0)		P		Q				
n	0.25384971	Peri.	209.29903		-0.59734606		+0.80144029				
a	2.4703108	Node	24.05831		-0.72095394		-0.52050804				
e	0.0137614	Incl.	4.15187		-0.35128778		-0.29455873				
P	3.88	H	12.5	G	0.25						

Residuals in seconds of arc

861004	046	3.3+	0.1-	861010	046	4.1-	1.3-	880215	399	2.8-	0.0
861004	046	3.6+	0.9+	861010	046	1.2-	0.3-	880215	399	0.5+	1.1-
861005	046	0.4-	0.6+	880211	399	4.0-	0.3-	880215	399	2.2+	0.7-
861005	046	3.4-	1.9-	880211	399	2.0-	0.5-	880219	399	2.2+	3.9+ Y
861009	046	0.9+	0.5+	880211	399	0.8+	0.9-	880219	399	1.4+	1.0+
861009	046	1.3+	1.7+	880211	399	1.5+	0.3-	880219	399	0.3+	0.9- Y

1988 DN1 = 1947 LF = 1952 KP = 1968 KU = 1982 BF = 1983 HC1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	312.62873		(1950.0)		P		Q				
n	0.18852665	Peri.	152.80555		-0.26413822		+0.94540656				
a	3.0122260	Node	101.36868		-0.91648480		-0.18436911				
e	0.0574996	Incl.	11.22756		-0.30047731		-0.26872751				
P	5.23	H	11.0	G	0.25						

Residuals in seconds of arc

470614	690	5.4+	0.1-	830418	688	1.1+	2.4-	880312	372	2.9+	2.8-
470615	690	2.2-	2.5-	830418	688	1.9-	1.8-	880312	372	1.2+	2.1-
520520	711	1.5-	6.1+ Y	880219	892	1.0-	0.8+	880312	892	0.0	2.1+
680526	095	2.1-	2.5-	880219	892	0.9-	1.2+	880312	892	0.5-	1.8+
820116	688	0.1+	0.8-	880310	892	0.5+	0.4+				
820116	688	0.2-	1.3-	880310	892	0.5-	0.7+				

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

The identifications are by D. W. E. Green.

Comet Shoemaker (1988b)
T 1987 Mar. 19.46112 ET

q	5.0256830		(1950.0)		P		Q
		Peri.	124.12421		-0.37734224		-0.72757807
		Node	324.48771		+0.07604161		+0.59222788
e	1.0	Incl.	80.50820		+0.92294664		-0.34626043

From 20 observations 1988 Jan. 23-Mar. 13.

Periodic Comet Hartley 3 (1988d)
T 1987 July 14.14075 ET

		(1950.0)	P	Q
q 2.4490552				
n 0.14378001	Peri.	167.48313	-0.08807703	-0.97702486
a 3.6085858	Node	287.32139	+0.89544676	+0.00769134
e 0.3213255	Incl.	11.72964	+0.43636858	-0.21298654
P 6.85				

From 20 observations 1988 Feb. 19-Mar. 14.

Comet Maury-Phinney (1988c)
T 1987 Dec. 26.77231 ET

		(1950.0)	P	Q
q 1.9303859				
	Peri.	346.82070	-0.82180101	-0.16144529
	Node	146.82103	+0.56977366	-0.23111344
e 1.0	Incl.	93.16102	-0.00103556	+0.95943837

From 17 observations 1988 Feb. 16-Mar. 14.

Comet Jensen-Shoemaker (1987g1)
Epoch 1987 Dec. 31.0 ET = JDE 2447160.5
T 1988 Jan. 18.74481 ET

		(1950.0)	P	Q
q 3.3329628				
z -0.0014266	Peri.	194.72391	+0.90395988	-0.30953235
+/-0.0000347	Node	197.64618	+0.41843043	+0.49802947
e 1.0047547	Incl.	76.72345	-0.08816182	-0.81003479

From 16 observations 1987 Sept. 24-1988 Jan. 21, mean residual 0".9.

Comet Furuyama (1987f1)
Epoch 1988 Mar. 20.0 ET = JDE 2447240.5
T 1988 Mar. 3.09830 ET

		(1950.0)	P	Q
q 1.6792854				
z +0.0001630	Peri.	233.65211	+0.55502702	-0.01503297
+/-0.0000689	Node	250.05822	+0.67721869	-0.57242330
e 0.9997262	Incl.	117.77970	-0.48303194	-0.81982045

From 50 observations 1987 Nov. 25-1988 Feb. 6, mean residual 0".8.

Comet Liller (1988a)
Epoch 1988 Mar. 20.0 ET = JDE 2447240.5
T 1988 Mar. 31.11403 ET

		(1950.0)	P	Q
q 0.8413850				
z +0.0040489	Peri.	57.37975	+0.33908560	-0.80261653
+/-0.0001355	Node	30.81747	+0.12285433	-0.47940008
e 0.9965934	Incl.	73.31749	+0.93269919	+0.35493982

From 25 observations 1988 Jan. 12-Mar. 15, mean residual 0".7.

(3787)* 1977 RG7 = 1931 DM = 1967 RO = 1987 UA3
Discovered 1977 Sept. 11 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

		(1950.0)	P	Q
M 355.95608				
n 0.20486163	Peri.	305.23752	-0.65110799	-0.75871890
a 2.8498957	Node	185.51876	+0.74640112	-0.63528555
e 0.1317681	Incl.	12.06389	+0.13763633	-0.14407600
P 4.81	H 12.0		G 0.25	

Residuals in seconds of arc

310217 690	2.0-	1.7+	770918 095	0.4+	1.3+	871022 092	0.5+	1.0+
310219 690	0.5+	0.1+	770921 095	0.2-	0.5+	871022 092	2.1-	1.5-
310225 690	1.7+	1.6-	771009 095	0.7-	1.8-	871028 092	1.6+	0.8+
670911 095	0.2+	0.8-	871021 092	0.3-	1.1+	871028 092	0.8+	0.9-
770911 095	0.5+	1.0+	871021 092	0.5-	0.5-			

(3788)* 1986 QM3 = 1975 EZ1 = 1977 TH6 = 1982 UJ1

Discovered 1986 Aug. 29 by H. Debehogne at the European Southern Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	239.63809	(1950.0)	P	Q
n	0.21145261	Peri. 107.17613	-0.46015067	+0.87978024
a	2.7903628	Node 134.80178	-0.86502933	-0.41397729
e	0.1046106	Incl. 9.68476	-0.19996405	-0.23368683
P	4.66	H 11.8	G 0.25	

Residuals in seconds of arc

750308	095	0.4+	2.7+	860901	809	0.8+	0.1-	860907	809	0.7+	0.0
771008	095	1.1-	1.2+	860902	809	0.0	0.6+	860909	809	0.6-	0.5+
821021	688	0.7+	1.2-	860902	809	0.1-	0.6+	860909	809	0.5-	0.6+
821021	688	2.0+	2.4-	860902	809	0.4+	0.4+	860909	809	0.4-	0.4+
860829	809	0.6-	0.4-	860904	809	0.7-	0.4-	860910	809	0.5-	0.4+
860829	809	0.5-	0.4-	860904	809	0.5-	0.3-	860910	809	0.5-	0.3+
860829	809	0.3-	0.6-	860904	809	0.4-	0.4-	860910	809	0.5-	0.0
860831	809	0.2-	0.0	860906	809	0.4+	0.0	860911	809	0.2-	0.8+
860831	809	0.2+	0.2-	860906	809	0.8+	0.0	860911	809	0.2-	0.9+
860831	809	0.3+	0.4-	860906	809	0.6+	0.0	860911	809	0.2-	1.0+
860901	809	0.4+	0.2+	860907	809	0.0	0.0	880116	801	0.4-	0.9+
860901	809	0.7+	0.1+	860907	809	0.5+	0.2+	880219	801	1.3-	1.3+

1983 VC7 = 1927 SG = 1973 SB5 = 1978 ES1 = 1988 BZ2

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

M	189.52903	(1950.0)	P	Q
n	0.29964048	Peri. 324.10427	+0.99918551	-0.02353661
a	2.2117528	Node 37.28560	+0.03550191	+0.89886132
e	0.2193932	Incl. 3.10160	-0.01918154	+0.43760067
P	3.29	H 13.5	G 0.25	

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

270925	094(0.37-	0.18-)X	831101	330	0.0	0.7+	880119	033	1.6+	0.3+	
730927	095	5.0-	3.8-	831101	571	0.9+	1.7+	880120	033	0.6+	1.4+
780305	095	0.9-	1.1+	831101	571	1.0-	0.4+	880120	033	0.7+	1.4+
831028	330	1.8-	0.3-	831105	330	1.1+	1.6+	880121	033	0.9+	0.3-

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

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

(3789)* 1928 UF = 1928 WC = 1975 VH1 = 1981 WY6 = 1986 QK1

Discovered 1928 Oct. 25 by Y. C. Chang at the Yerkes Observatory. The double designation 1928 UF = 1928 WC is by A. Kahrstedt (AN 240, 241). The identification 1928 UF = 1986 QK1 was found independently by S. Nakano (MPC 12142).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	74.07689	(1950.0)	P	Q
n	0.16685030	Peri. 315.83915	+0.73627750	-0.67497568
a	3.2677693	Node 86.67745	+0.63337576	+0.66246004
e	0.1969012	Incl. 2.75546	+0.23818185	+0.32489156
P	5.91	H 12.5	G 0.25	

Residuals in seconds of arc

281025	754	(8.8+	0.0)	860901	809	1.8-	0.9-	860909	809	0.8+	0.6+
281105	754	1.2-	1.3+	860902	809	1.1-	0.1+	860911	809	2.1+	0.8+
281106	754	2.6+	1.6-	860902	809	1.3-	0.3-	860911	809	2.3+	0.7+
281113	754	2.0-	4.9+	860902	809	1.2-	0.2-	860911	809	2.7+	0.9+
281123	754	4.5-	4.6-	860904	809	1.7-	0.6-	860911	809	2.5+	0.1+
281205	754	0.8+	0.6+	860904	809	1.6-	0.5-	860911	809	2.5+	0.1+
281206	754	3.2+	1.7+	860904	809	1.4-	0.6-	860911	809	2.3+	0.2-
281210	754	0.4+	2.8-	860905	809	0.5-	0.7+	871117	801	0.5-	0.2+
751102	095	2.9-	1.9+	860905	809	0.6-	0.6+	871119	801	0.2-	0.1-
811124	095	4.3+	1.0-	860905	809	0.4-	0.6+	871126	033	0.1-	1.3-
860827	809	0.9-	0.0	860907	809	0.1+	0.1+	871126	033	0.0	1.3-
860827	809	0.8-	0.0	860907	809	0.1+	0.1+	871218	801	0.1-	0.0
860827	809	0.6-	0.1-	860907	809	0.2+	0.4+	871222	033	0.2-	0.8-
860828	809	0.8-	0.2-	860908	809	1.1+	0.2+	871223	688	(5.4+	0.5-)
860828	809	0.7-	0.2-	860908	809	1.0+	0.2+	871223	688	1.3-	1.2+
860828	809	0.6-	0.6-	860908	809	1.1+	0.3+	871225	033	0.1+	0.6-
860901	809	1.7-	0.5-	860909	809	0.6+	0.4+	871225	033	0.6+	0.6-
860901	809	1.8-	0.8-	860909	809	0.8+	0.4+	880123	801	1.2-	0.6+

(3790)* 1937 UE = 1976 SV1 = 1982 UC2

Discovered 1937 Oct. 26 by K. Reinmuth at Heidelberg. The identifications 1937 UE = 1976 SV1 and 1937 UE = 1982 UC2 are by E. Bowell and F. N. Bowman, respectively. The identifications were also independently suggested by W. Landgraf (MPC 8900).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	2.80351		(1950.0)	P	Q
n	0.17602267	Peri.	97.72022	+0.53091269	-0.84740932
a	3.1532397	Node	320.21111	+0.77409610	+0.48755395
e	0.1821761	Incl.	0.48341	+0.34482887	+0.21021079
P	5.60	H	12.4	G 0.25	

Residuals in seconds of arc

371026	024	0.6+	2.4-	821016	046	0.6+	1.2+	821114	095	(4.1+	4.5+)
371027	024	1.3+	0.1+	821016	046	0.2+	0.1-	840226	095	0.2+	0.4+
371028	024	2.9-	0.7-	821020	046	0.0	0.5-	870826	801	0.8-	0.8-
371103	024	0.5-	0.0	821021	046	0.2-	0.5-	870913	809	0.7-	0.3+
371107	024	1.8+	0.9+	821021	046	0.9+	0.2-	870913	809	0.6-	0.6-
760924	095	0.5-	1.0+	821021	046	0.0	0.0				
760928	095	2.2+	1.1+	821022	095	1.7-	1.4+				

(3791)* 1981 WV1 = 1973 AM1 = 1976 UL3 = 1976 WZ

Discovered 1981 Nov. 17 by A. Mrkos at Klet. The key identifications 1981 WV1 = 1976 UL3 = 1976 WZ are by T. Urata (MPC 6818).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	215.12318		(1950.0)	P	Q
n	0.20139951	Peri.	352.79927	+0.79386143	+0.60799340
a	2.8824633	Node	329.74708	-0.55676606	+0.71923859
e	0.0673242	Incl.	1.28702	-0.24453136	+0.33621403
P	4.89	H	12.5	G 0.25	

Residuals in seconds of arc

730101	095	0.7+	1.0+	811117	046	0.4+	0.6-	861126	046	(1.1-	7.0+)
730102	095	0.2-	0.8+	811117	046	0.0	1.3-	861128	046	1.0+	0.8+
761024	381	1.2+	1.3+	811123	046	0.2+	1.1+	861128	046	0.9+	0.4+
761024	381	0.6-	0.4-	811123	046	0.4+	1.0-	880215	046	0.7-	0.2-
761026	095	(2.5+	4.7+)	811128	046	0.7-	0.1+	880215	046	1.0-	0.7+
761118	381	0.1-	0.6+	811128	046	1.1-	0.3-	880216	046	0.3+	0.2-
761118	381	0.8-	0.4+	861125	046	0.1+	0.7-	880216	046	1.1+	1.3-
811004	095	0.5+	0.6+	861125	046	1.1-	0.5-				
811023	095	(4.7+	2.4+)	861126	046	0.2-	1.4-				

(3792)* 1985 FA = 1980 YF
Discovered 1985 Mar. 22 by C. S. Shoemaker at Palomar.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	52.11225		(1950.0)		P		Q				
n	0.28396276	Peri.	50.51405		-0.33900946		-0.87003571				
a	2.2924249	Node	62.87687		+0.69129528		-0.48842679				
e	0.2191763	Incl.	23.71266		+0.63810926		+0.06691141				
P	3.47	H	13.4	G	0.25						

Residuals in seconds of arc

801231	688	2.4+	2.5-	850411	675	0.6+	0.6+	871020	675	2.1-	0.6+
801231	688	1.1+	1.7-	850412	675	1.7+	0.1+	871020	675	1.1-	1.0+
810109	688	0.2-	0.5+	850415	675	0.1+	2.0+	871122	675	0.3-	0.8-
810109	688	0.1-	0.8+	850423	675	(2.8-	5.3-)	871122	675	0.1+	1.0-
850322	675	1.2+	2.2+	850424	675	0.4-	1.4-	871222	801	0.5+	1.1+
850322	675	0.9+	1.5-	850424	688	1.1+	0.0	880116	801	0.4-	2.8+
850331	688	0.5-	0.1+	850424	688	1.8-	1.3-				
850331	688	1.1-	0.0	850425	675	2.0-	1.2-				

(3793)* 1985 TE3 = 1951 WT1 = 1961 TB = 1973 UJ3 = 1978 GO = 1980 KX1 = 1986 XO
Discovered 1985 Oct. 11 by C. S. Shoemaker at Palomar.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	14.68812		(1950.0)		P		Q				
n	0.08392363	Peri.	261.46357		-0.17337381		-0.97736217				
a	5.1666994	Node	199.81377		+0.98399701		-0.16676280				
e	0.0921812	Incl.	20.96183		+0.04112668		-0.13020509				
P	11.74	H	8.8	G	0.25						

Residuals in seconds of arc

511129	711	1.6-	4.2- Y	800518	095	0.8-	1.4+	861202	688	(16.2+	0.4+)
611004	760	0.7+	1.6-	850916	675	0.2-	0.8+	861202	688	1.0+	0.5+
611004	760	1.6+	0.2+	850916	675	0.7-	1.2+	871020	675	0.7-	2.1+
611009	760	0.2-	0.2-	851011	675	0.3+	0.2-	871020	675	0.7-	1.9+
611009	760	1.1-	0.2-	851013	675	0.7+	1.0+	871122	675	1.0+	1.3-
731029	095	1.5+	0.2-	851107	675	2.2-	1.7+	871122	675	0.1-	0.7-
780407	095	0.3+	0.9+	851107	675	0.7-	1.5+	871223	801	1.1+	0.7+

(3794)* 1985 TF3 = 1949 SA = 1973 SU2
Discovered 1985 Oct. 12 by C. S. Shoemaker at Palomar.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	94.07887		(1950.0)		P		Q				
n	0.08338973	Peri.	34.28757		+0.95585641		-0.29213226				
a	5.1887292	Node	342.61526		+0.24029124		+0.83900603				
e	0.1457895	Incl.	6.06708		+0.16911134		+0.45905078				
P	11.82	H	9.9	G	0.25						

Residuals in seconds of arc

490923	024	0.9+	1.3-	851116	675	(9.9+	0.7-)	880116	801	0.4-	1.3+
730922	095	0.7-	1.3+	861202	688	1.2+	0.2+	880120	675	0.5-	0.5-
730926	095	0.1+	0.9-	861202	688	1.1+	0.8-	880120	675	0.1+	1.1-
850917	675	0.8+	1.1-	870127	801	2.0-	0.9+	880122	511	(7.3-	1.0+)
850917	675	1.3+	0.3-	870128	801	2.0-	1.0+	880122	511	(8.0-	2.4+)
851012	675	0.8-	0.4+	871122	675	1.2+	0.2-	880122	511	(8.3-	2.8+)
851014	675	0.7-	1.4+	871126	675	0.2+	1.7-	880123	801	0.2-	0.2+

(3795)* 1986 GV1 = 1957 QM = 1975 JD
Discoverd 1986 Apr. 8 by E. Helin at Palomar.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 184.09169		(1950.0)	P	Q
n 0.26657150	Peri.	197.71572	-0.11918745	+0.98065132
a 2.3910771	Node	65.67311	-0.88901932	-0.03576310
e 0.1808634	Incl.	9.81282	-0.44208484	-0.19246814
P 3.70	H	13.2	G 0.25	

Residuals in seconds of arc

570831 839	0.4-	0.5-	860429 675	0.5+	0.5-	871026 054	1.8-	0.7-
750511 095	0.5+	1.7-	860429 675	1.3-	1.8+	871116 675	2.2+	3.5-
860408 675	1.7+	1.3+	860503 675	0.8-	0.5-	871120 675	2.0+	0.6-
860408 675 (4.8+	0.1-)		870924 801	0.3+	1.7+			
860410 675	1.8-	2.3-	871026 054	0.8-	1.0+			

(3796)* 1986 XJ = 1931 JM = 1949 MB = 1972 TM6 = 1988 AW3
Discovered 1986 Dec. 6 by P. Jensen at Brorfelde.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 301.51281		(1950.0)	P	Q
n 0.22241156	Peri.	356.50607	-0.07299601	+0.99086725
a 2.6979329	Node	269.28526	-0.91221818	-0.11228516
e 0.1505489	Incl.	6.51036	-0.40314956	+0.07466014
P 4.43	H	11.9	G 0.25	

Residuals in seconds of arc

310506 690	0.9-	0.8-	861202 688	0.0	0.2+	861209 046	1.2-	0.1+
310509 690	2.0-	0.0	861202 688 (4.1-		0.2+)	861209 046	1.2-	0.4+
310511 690	1.2+	2.9-	861204 046	1.8+	2.0-	880111 033	0.4-	0.2-
490617 078(25.4-	8.5-)Y		861204 046	0.8+	1.4-	880113 033	1.0-	0.4-
721006 095	0.7+	2.4-	861204 010(13.7-		5.5-)	880114 033	0.5-	0.2-
861125 046	2.1+	0.4-	861205 010(10.2-		7.4-)	880210 033	0.8+	0.5+
861125 046	0.2+	1.4-	861206 054	3.3-	0.8-	880211 033	0.7+	0.3+
861129 046	1.0+	2.2+	861207 046 (4.5+		0.7+)			
861129 046	0.1+	0.7+	861207 046 (4.2+		0.3+)			

(3797)* 1987 YL = 1958 TE = 1964 WQ = 1981 UF3 = 1981 WL6
Discovered 1987 Dec. 22 at the Oak Ridge Observatory.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 48.14250		(1950.0)	P	Q
n 0.17194543	Peri.	253.55010	+0.24727066	-0.96894630
a 3.2028920	Node	182.13405	+0.89432972	+0.22844086
e 0.1624019	Incl.	0.82164	+0.37286937	+0.09464587
P 5.73	H	12.4	G 0.25	

Residuals in seconds of arc

581009 024	0.3+	0.9-	811030 381	0.8+	0.4+	871224 801	0.7+	1.1-
641127 330	0.1-	1.2-	811124 095	0.7-	2.0+	880123 801	0.4+	0.3+
641203 330	0.2+	0.8+	871222 801	0.2+	0.3+	880219 801	0.4-	0.3-
811030 381	0.7-	0.4-	871222 801	1.0-	0.1-			

(3798)* 2402 T-3 = 1950 BY = 1982 BO1
Discovered 1977 Oct. 16 by I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 328.40115		(1950.0)	P	Q
n 0.30879889	Peri.	244.95756	-0.94534653	+0.32463873
a 2.1677984	Node	313.96956	-0.28179525	-0.86045594
e 0.0772528	Incl.	2.42801	-0.16404685	-0.39271525
P 3.19	H	13.6	G 0.25	

Residuals in seconds of arc

500128 760	(0.3+	40.4+)	771021 675	1.0+	1.3-	820228 688	0.7-	1.0-
500128 760	0.6-	2.1-	771022 675	0.5+	0.0	820228 688	0.1+	0.8-
771012 675	0.5+	0.7-	771022 675	0.2-	1.1-	871214 046	0.2+	0.8-
771012 675	0.6+	0.1+	820124 688	(4.2-	3.0+)	871214 046	0.3-	2.7+
771016 675	1.3+	0.9-	820124 688	0.2-	0.3+	871215 046	1.9-	2.6+
771016 675	0.4+	2.5-	820130 688	1.2+	0.4-	871215 046	(3.4+	6.0+)
771017 675	1.5-	0.3+	820130 688	1.5-	1.2-	871224 801	1.8+	1.7+
771017 675	1.2-	0.7-	820221 688	0.2+	1.6-			
771021 675	1.6+	0.4-	820221 688	0.8-	0.2-			

1969 QR = 1988 DP
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	288.03865		(1950.0)	P	Q
n	0.29697465	Peri.	55.14017	+0.40411626	+0.90809471
a	2.2249691	Node	239.05876	-0.87542746	+0.34917008
e	0.1420333	Incl.	7.35443	-0.26517318	+0.23118012
P	3.32	H	14.5	G 0.25	

Residuals in seconds of arc

690822 029	0.8+	1.1+	690918 029	1.2+	0.9+	880223 413	1.0-	0.1-
690822 029	0.3-	0.5-	880219 413	1.7-	0.8+	880223 413	2.6+	0.4-
690902 029	0.1-	0.2-	880222 413	1.7-	0.9+	880225 413	1.3-	0.7+
690904 029	0.3-	0.2-	880222 413	0.2+	0.8-	880225 413	1.9+	0.5-

1973 SW = 1979 HA2 = 1987 WR3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	328.67121		(1950.0)	P	Q
n	0.08162173	Peri.	311.84290	-0.63328563	-0.77379185
a	5.2634003	Node	177.33162	+0.76872318	-0.63102170
e	0.0799591	Incl.	17.47677	+0.08952090	-0.05529718
P	12.08	H	9.5	G 0.25	

Residuals in seconds of arc

730919 675	0.4+	0.4-	730930 675	0.4+	0.3+	871128 675	1.0+	0.5+
730920 675	0.1+	0.4-	731004 675	0.8-	0.6+	880119 675	0.6-	0.3+
730924 675	0.2+	0.6-	731005 675	1.0-	0.6+	880120 675	0.4-	0.9-
730925 675	0.4+	0.1-	790420 095	0.1-	0.1-	880121 675	0.5-	0.7+
730929 675	0.2+	0.2-	871128 675	0.2+	0.6-			

1977 BY = 1988 CN
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	65.01913		(1950.0)	P	Q
n	0.27176642	Peri.	327.00628	-0.70427889	-0.70309114
a	2.3605129	Node	166.79683	+0.70803606	-0.70573196
e	0.2082971	Incl.	25.47902	+0.05173180	+0.08720812
P	3.63	H	13.5	G 0.25	

Residuals in seconds of arc

770122 808	0.4-	0.2+	770215 808	0.8+	0.5+	880310 675	4.5-	2.5+
770126 808	0.7-	0.6+	770218 808	0.3-	1.5-	880315 675	(10.3-	2.0+)
770210 808	0.6+	0.5+	880214 675	3.4+	2.1-			
770213 808	0.3+	1.0+	880215 675	1.3+	1.5-			

1978 VK3 = 1988 AX3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	343.54197		(1950.0)	P	Q
n	0.23947203	Peri.	326.80748	-0.76056011	+0.64491598
a	2.5682288	Node	253.53664	-0.57731878	-0.72463096
e	0.0800259	Incl.	4.48815	-0.29707129	-0.24288548
P	4.12	H	14.5	G 0.25	

Residuals in seconds of arc

781105	675	0.6-	0.4+	781129	675	(4.1+	0.8+)	880114	033	1.1+	0.7+
781106	675	0.3-	0.5+	781130	675	0.6+	0.5+	880210	033	0.1-	0.4-
781108	675	0.7-	0.2-	880111	033	0.5+	0.5+	880211	033	1.0-	1.1-
781129	675	1.2+	0.2-	880113	033	0.3+	0.5+				

1980 KR1 = 1980 LS = 1980 MF = 1954 KA = 1978 YV1 = 1986 CP = 1987 RK1

The triple designation 1980 KR1 = 1980 LS = 1980 MF is by B. G. Marsden (MPC 9203). The identification 1980 KR1 = 1978 YV1 was suggested by W. Landgraf.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	198.90913		(1950.0)	P	Q
n	0.30327640	Peri.	82.80603	-0.44005590	+0.89760207
a	2.1940354	Node	161.02204	-0.85189647	-0.40825037
e	0.1418836	Incl.	4.53551	-0.28394227	-0.16625930
P	3.25	H	14.0	G 0.25	

Residuals in seconds of arc

540530	760	0.4-	1.2-	800518	095	0.8-	0.6+	860208	046	0.1+	0.8-
540530	760	0.5-	2.2-	800610	675	1.3+	0.6+	870913	809	1.1-	0.1+
781222	095	1.7+	1.3+	800620	675	0.4+	2.4+	870924	809	0.6-	1.0+
800517	095	0.9+	1.6+	860207	046	0.8-	2.9+				

1983 HJ = 1965 AZ = 1988 CF1

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

M	0.28005		(1950.0)	P	Q
n	0.17429030	Peri.	59.24037	-0.99899834	+0.03140304
a	3.1741060	Node	122.54151	-0.04115301	-0.92450764
e	0.1370776	Incl.	2.16710	+0.01757110	-0.37986770
P	5.65	H	12.0	G 0.25	

Residuals in seconds of arc

650110	330	0.1-	0.0	830515	688	2.5-	0.6-	880215	046	1.0+	0.8-
830418	688	0.0	1.0+	830515	688	1.4+	0.5+	880216	046	0.1+	0.5+
830418	688	0.4+	0.5+	880213	675	(9.7-	3.1+)	880216	046	0.1+	0.6-
830506	688	1.3+	0.1-	880214	675	(7.2-	1.2+)				
830506	688	0.5-	1.2-	880215	046	1.1-	0.6+				

1984 KB

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	117.08596		(1950.0)	P	Q
n	0.29871465	Peri.	336.42550	-0.82668183	-0.56245131
a	2.2163161	Node	169.30687	+0.52872470	-0.78603699
e	0.7640697	Incl.	4.84572	+0.19247686	-0.25650414
P	3.30	H	15.5	G 0.25	

From 30 observations 1984 May 27-July 29, mean residual 1".0.

1986 AK

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	243.59189		(1950.0)	P	Q
n	0.27385051	Peri.	95.84782	-0.82159034	-0.47764744
a	2.3485168	Node	56.02225	+0.24673266	-0.79003903
e	0.3441164	Incl.	22.04103	+0.51391857	-0.38430620
P	3.60	H	12.5	G 0.25	

Residuals in seconds of arc

860112	675	0.3-	0.2+	860206	675	0.4+	0.4-	860604	801	(6.0+	3.4+)
860112	675	0.3-	0.3-	860207	675	0.3-	0.0	860704	801	0.4+	0.0
860204	675	1.0+	0.4+	860303	675	0.9-	0.7-	870818	474	0.2+	0.1+
860205	675	0.1-	0.5+	860304	675	0.3+	0.1-	870818	474	0.1-	0.5-

1986 JA1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5
M 218.05419 (1950.0) P Q
n 0.27558482 Peri. 41.50612 -0.02267436 +0.94803210
a 2.3386533 Node 229.81622 -0.99127614 -0.06254628
e 0.2340711 Incl. 24.54525 -0.12983642 +0.31196651
P 3.58 H 12.5 G 0.25
Residuals in seconds of arc

860504	675	(6.1- 83.4+)	860612	883	0.8+	0.3-	860902 691	0.1+ 0.0
860508	675	0.9+ 0.2-	860612	883	0.1+	0.9-	860902 691	0.2- 0.2+
860509	675	1.1+ 0.4+	860615	883	1.8-	0.5+	861007 801	1.2+ 0.4-
860510	675	1.0- 1.9+	860615	883	1.5-	0.4-	871022 801	0.2- 2.0+
860611	883	0.7+ 0.3+	860902	691	0.0	0.2+	880116 801	0.9+ 0.1+

1986 QX1 = 1988 BK1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)
M 269.14436 (1950.0) P Q
n 0.30761375 Peri. 265.56839 +0.23366178 +0.97216797
a 2.1733671 Node 17.97215 -0.86864825 +0.21660737
e 0.0992386 Incl. 3.17261 -0.43686655 +0.08927871
P 3.20 H 14.0 G 0.25
Residuals in seconds of arc

860827	809	0.7+ 0.4+	860904	809	1.0-	0.2-	860909 809	0.1+ 0.1+
860827	809	0.8+ 0.4+	860904	809	0.8-	0.4-	860909 809	0.1- 0.0
860827	809	1.1+ 0.5+	860904	809	0.2+	0.3-	860909 809	0.1- 0.2-
860829	809	0.1+ 0.4+	860904	809	0.3+	0.4-	860909 809	0.0 0.5-
860829	809	0.4+ 0.5+	860904	809	0.3+	0.5-	860910 809	0.4+ 0.0
860829	809	0.6+ 0.4+	860906	809	0.0	0.8-	860910 809	0.5+ 0.1+
860901	809	0.0 0.9+	860906	809	0.3+	0.9-	860910 809	0.5+ 0.1+
860901	809	0.1- 1.0+	860906	809	0.4+	0.9-	860911 809	0.1+ 0.5+
860901	809	0.0 0.6+	860906	809	0.2-	0.2-	860911 809	0.4+ 0.4+
860902	809	0.6- 0.2-	860906	809	0.2-	0.2-	860911 809	0.3+ 0.2+
860902	809	0.4- 0.1+	860906	809	0.3-	0.3-	860914 809	1.2+ 0.5+
860902	809	0.2- 0.1+	860907	809	0.1-	0.0	860914 809	1.1+ 0.5+
860903	809	0.3- 0.0	860907	809	0.2-	0.0	860914 809	1.1+ 0.5+
860903	809	0.2- 0.0	860907	809	0.2-	0.1+	880122 511	0.9- 2.0-
860903	809	0.2+ 0.0	860909	809	0.9-	0.1-	880122 511	3.0+ 0.4-
860903	809	1.0- 0.5-	860909	809	0.7-	0.0	880122 303	3.9- 2.6+
860903	809	1.0- 0.5-	860909	809	0.5-	0.0	880123 511	1.1- 0.8+
860903	809	0.7- 0.6-	860909	809	0.0	0.2-	880123 511	1.7+ 1.6-
860904	809	0.9- 0.1-	860909	809	0.2-	0.2-	880123 303	1.3+ 0.8+

1986 TM
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5
M 107.29491 (1950.0) P Q
n 0.20259670 Peri. 57.22026 +0.40396173 -0.90943191
a 2.8710966 Node 10.47903 +0.54572081 +0.15295696
e 0.3258380 Incl. 32.87916 +0.73416873 +0.38670114
P 4.86 H 12.5 G 0.25
Residuals in seconds of arc

861006	095	1.4+ 1.1-	861128	801	0.1+	0.1-	880215 801	1.4- 1.1+
861010	095	0.3+ 0.8+	861227	801	0.6-	0.0	880219 801	1.1+ 1.3-
861011	095	0.0 1.0+	870129	801	1.8+	0.1+		
861031	801	1.6- 0.7-	870202	801	1.2-	0.3-		

1987 KF
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	211.82169	(1950.0)	P	Q
n	0.39620028	Peri. 15.43907	-0.53956435	-0.81879698
a	1.8359444	Node 107.58491	+0.74901014	-0.57316379
e	0.6788471	Incl. 11.86914	+0.38451803	-0.03247746
P	2.49	H 15.5	G 0.25	

From 27 observations 1987 May 29-Aug. 18, mean residual 0".9.

1987 QA
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	126.17908	(1950.0)	P	Q
n	0.46627652	Peri. 278.85912	-0.00428943	-0.99179589
a	1.6470509	Node 168.70284	+0.95793901	+0.03258460
e	0.4685197	Incl. 40.70583	-0.28693979	+0.12360885
P	2.11	H 15.5	G 0.25	

From 20 observations 1987 Aug. 23-1988 Mar. 17, mean residual 1".2.

1987 UW
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	93.56882	(1950.0)	P	Q
n	0.23141410	Peri. 158.65289	+0.97293336	-0.01195222
a	2.6275007	Node 205.60010	+0.03723657	+0.99371976
e	0.1665045	Incl. 32.28270	+0.22806602	-0.11125725
P	4.26	H 14.0	G 0.25	

From 17 observations 1987 Oct. 18-1988 Jan. 13, mean residual 1".0.

1987 WA = 1974 VJ1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	102.19059	(1950.0)	P	Q
n	0.22610255	Peri. 303.64724	+0.99036272	-0.10402320
a	2.6684964	Node 62.47454	+0.13387067	+0.88822196
e	0.1294780	Incl. 5.91824	-0.03550118	+0.44748287
P	4.36	H 13.5	G 0.25	

Residuals in seconds of arc

741112 095 0.4- 0.3-	871126 046 (3.7+ 0.6-)	871217 567 1.9- 0.1+
871115 046 1.7+ 1.1-	871126 567 0.1+ 1.1-	871217 567 (5.6- 0.2+)
871115 046 0.4+ 0.6-	871126 567 0.0 1.4-	880108 567 0.1- 0.1-
871118 567 0.3- 1.4+	871126 567 0.8+ 1.8-	880108 567 0.9- 0.2+
871118 567 0.3+ 1.0+	871126 046 (4.6- 3.1-)	880109 567 0.2+ 0.2-
871120 567 2.0- 0.4-	871127 046 1.5- 0.8-	880109 567 0.1+ 0.4+
871120 567 0.3+ 1.2-	871211 567 0.6+ 1.1+	880210 567 0.3- 1.0-
871120 567 (3.0+ 1.9-)	871211 567 0.2+ 0.1+	880210 567 0.0 2.1-
871121 567 0.9- 0.3+	871211 567 0.7- 0.7-	880214 567 2.0- 0.4+
871121 567 0.8+ 0.2-	871212 567 0.8+ 0.7+	880214 567 1.7+ 0.4+
871123 046 1.5+ 1.0-	871212 567 1.0+ 0.3-	880214 567 2.6+ 0.6+
871123 046 1.2- 0.7-	871215 567 0.1+ 0.4-	
871126 046 2.0+ 0.6-	871215 567 1.5+ 0.2+	

1987 WB = 1950 TD1 = 1951 YN2 = 1979 FH
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	278.00416	(1950.0)	P	Q
n	0.18923650	Peri. 321.41613	-0.96336687	+0.23256131
a	3.0046944	Node 232.55345	-0.18468791	-0.93641247
e	0.0410833	Incl. 9.68517	-0.19445989	-0.26276781
P	5.21	H 11.5	G 0.25	

Residuals in seconds of arc

501013	024	0.0	0.4+		871123	046	0.6+	0.8-		871217	567	0.1-	0.6+
511228	711	1.5-	1.0-	Y	871123	046	0.2-	0.3-		880108	567	0.5+	1.4+
511228	711	1.2+	0.3-	Y	871126	046	2.0+	1.5-		880108	567	0.4-	1.1+
790324	688	0.0	0.1+		871126	046	1.3+	1.5-		880109	567	0.5+	0.7+
871115	046	2.4-	1.4-		871126	567	0.5+	1.0-		880109	567	0.7-	0.9+
871115	046	3.0-	1.1-		871126	567	0.9-	2.0-		880123	567	2.1-	0.1+
871118	567	(3.4+	0.6-)		871126	567	1.2+	1.6-		880123	567	1.4-	0.1+
871118	567	(3.1+	2.2-)		871126	046	0.8-	0.9+		880210	567	2.6+	0.5-
871120	567	2.7+	0.6+		871127	046	1.4-	0.6-		880210	567	0.9+	0.7-
871120	567	1.8+	0.2+		871211	567	0.1-	0.9+		880211	567	0.3-	0.2-
871120	567	2.6+	0.2+		871212	567	(3.8+	1.6+)		880211	567	0.7+	0.4-
871121	567	1.0-	0.0		871212	567	0.4-	0.5+		880214	567	0.6+	1.7+
871121	567	2.9-	1.2-		871215	567	0.8-	0.6+		880214	567	0.7+	1.8+
871122	688	0.9-	2.2+		871215	567	0.2-	0.4+					
871122	688	2.6+	2.1+		871217	567	1.2-	0.2-					

1987 WC
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	212.95479		(1950.0)	P	Q
n	0.62014923	Peri.	308.07391	+0.97662840	+0.02905240
a	1.3618792	Node	51.30789	+0.09269292	+0.83701688
e	0.2336589	Incl.	15.83380	-0.19392005	+0.54640525
P	1.59	H	19.5	G 0.25	

From 17 observations 1987 Nov. 21-1988 Jan. 13, mean residual 1".8.

1988 BL2 = 1971 SJ3 = 1986 TB6
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	149.82170		(1950.0)	P	Q
n	0.19615532	Peri.	330.68539	+0.98667523	+0.03903653
a	2.9336178	Node	28.42530	+0.07278143	+0.76234991
e	0.0931475	Incl.	19.37919	-0.14551584	+0.64598666
P	5.02	H	11.5	G 0.25	

Residuals in seconds of arc

710926	805	0.2+	0.2+		861010	046	0.7+	0.0		880216	675	0.7+	1.4+
710927	805	0.0	0.2+		880124	675	0.3-	1.2+		880217	675	0.1+	1.6+
861010	046	1.1-	0.1+		880124	675	0.6-	1.6+		880220	675	0.6-	0.6+

1988 EG
Epoch 1988 Mar. 20.0 ET = JDE 2447240.5

M	51.50280		(1950.0)	P	Q
n	0.66589774	Peri.	241.49570	+0.44408321	-0.89598236
a	1.2987663	Node	182.14389	+0.84271912	+0.41858628
e	0.5183505	Incl.	3.66027	+0.30432643	+0.14832778
P	1.48	H	19.0	G 0.25	

From 8 observations 1988 Mar. 12-Mar. 20.

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

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

(3799)* 1979 SL9 = 1977 FX2 = 1978 NH8
Discovered 1979 Sept. 22 by N. S. Chernykh at the Crimean Astrophysical Observatory. The identification 1979 SL9 = 1977 FX2 is by C. M.

Bardwell, T. Furuta and L. D. Schmadel, and the identification 1979 SL9 = 1978 NH8 is by S. J. Bus (MPC 11154).
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	323.21568	(1950.0)		P	Q
n	0.17672711	Peri.	97.20409	-0.28092404	+0.95968375
a	3.1448548	Node	156.47396	-0.88954738	-0.25668293
e	0.1523916	Incl.	1.35258	-0.36025983	-0.11454678
P	5.58	H	11.6	G 0.25	

Residuals in seconds of arc

770326 095	0.2+	0.9+	790928 095	1.5-	0.9-	880213 054	1.0-	1.1-
780707 675	0.3+	0.5-	791016 095	0.6+	0.4+	880213 054	1.9-	1.0-
780708 675	0.1+	0.3-	791111 095	0.6+	0.3-	880218 809	0.7+	0.3-
780709 675	0.2+	0.2-	791116 095	1.4+	1.3-	880218 809	0.6+	0.2-
790922 095	1.1-	0.5+	870128 801	0.9+	0.3+			

(3800)* 1984 AB = 1975 XL4

Discovered 1984 Jan. 4 by E. Helin at Palomar. The identification is by C. M. Bardwell (MPC 8679).
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	19.84914	(1950.0)		P	Q
n	0.49724332	Peri.	115.40365	-0.83316403	+0.49056143
a	1.5779385	Node	94.91667	-0.55288386	-0.74933252
e	0.0757212	Incl.	14.84830	+0.01253525	-0.44480363
P	1.98	H	15.4	G 0.25	

Residuals in seconds of arc

751203 095	0.2+	0.0	840210 675	0.3+	0.5-	860315 691	0.2+	1.2-
840104 675	(3.3-	2.8+)	840302 801	0.5-	1.4+	860315 691	0.0	1.1-
840104 675	0.4-	1.2-	840321 675	0.0	0.4+	860315 691	0.2+	1.9-
840105 688	1.0+	0.7-	840402 801	0.2-	0.7+	860316 691	0.2+	2.7-
840105 675	(3.1-	1.8+)	840430 801	(0.9+	3.5+)	860316 691	0.1+	2.4-
840105 688	2.2+	0.8-	840519 675	0.5+	0.5+	860316 691	0.3+	2.2-
840105 675	0.8+	0.7-	851214 675	0.8-	0.3-	871222 801	0.4-	1.4+
840107 675	2.5-	0.8+	851214 675	(6.6+	7.3-)	880116 801	0.5+	0.3+
840107 675	2.2+	1.4-	851215 801	1.2-	0.6-	880212 691	0.8+	0.4+
840108 688	(4.4+	1.1-)	851218 688	0.2+	0.5+	880212 691	0.6+	0.9+
840108 688	1.8+	0.0	851218 675	2.3+	0.4+	880212 691	0.6+	0.6+
840125 707	2.2-	0.2-	851218 675	(3.5+	0.8-)	880213 691	0.3+	0.4+
840125 707	1.3-	0.9+	860106 675	2.2-	1.9+	880213 691	0.1+	0.4+
840125 675	(4.6+	4.1-)	860106 675	1.8-	1.4-	880213 691	0.4+	0.3+
840130 675	(12.7-	1.9+)	860110 801	1.1-	0.8+	880215 801	0.8-	1.3+
840130 675	(11.0-	0.6+)	860111 688	1.0+	0.4+			
840209 801	0.0	0.0	860213 801	1.1-	1.3+			

(3801)* 1985 VS

Discovered 1985 Nov. 6 by SPACEWATCH at Kitt Peak.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	75.15800	(1950.0)		P	Q
n	0.08141938	Peri.	208.00494	+0.57589898	-0.78451020
a	5.2721069	Node	208.73767	+0.81052522	+0.58463651
e	0.0244426	Incl.	28.57427	+0.10672040	-0.20674595
P	12.11	H	11.3	G 0.25	

Residuals in seconds of arc

851106	691	0.8-	0.8+		851205	691	0.1+	0.1+		870201	691	0.3-	0.2+
851106	691	0.7-	1.2+		851205	691	0.1-	0.1+		870201	691	0.0	0.3+
851106	691	0.2+	1.2+		851205	691	0.3+	0.1+		870201	691	0.5-	0.7+
851115	691	0.6-	0.6-		860113	691	1.4+	0.9+		871124	691	0.7+	1.1-
851115	691	0.6-	0.7-		860113	691	0.3-	0.6+		871124	691	0.3+	1.0-
851115	691	0.9-	0.1-		860113	691	1.6+	0.5+		871124	691	0.7+	1.0-
851116	691	0.7-	0.6-		861230	691	1.0+	0.4-		871221	691	0.3-	0.9+
851116	691	0.0	0.6-		861230	691	0.2+	0.2+		871221	691	0.3-	0.6+
851116	691	0.4-	0.5-		861230	691	0.6+	1.1-		871221	691	0.2-	0.6+
851119	691	0.7+	1.2-		870129	691	0.0	0.8+		880115	691	0.5-	0.1-
851119	691	0.4+	0.8-		870129	691	0.4-	0.8+		880115	691	0.5-	0.7-
851119	691	0.6+	1.3-		870129	691	0.1-	1.2+		880115	691	0.0	0.2-

1980 PA
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	340.49818		(1950.0)	P	Q
n	0.36873345	Peri.	125.20301	+0.89171729	-0.45104927
a	1.9260210	Node	261.63411	+0.40198720	+0.82722663
e	0.4586948	Incl.	2.16337	+0.20795808	+0.33503829
P	2.67	H	18.0	G 0.25	

From 15 observations 1980 Aug. 6-1981 Jan. 6, mean residual 0".7.

1983 AC = 1949 QH2 = 1976 UY3 = 1987 YX
The key identification 1983 AC = 1987 YX is by A. Lowe.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	175.54652		(1950.0)	P	Q
n	0.18845318	Peri.	226.48210	+0.62120070	+0.75765077
a	3.0130148	Node	83.01149	-0.64812699	+0.64031847
e	0.1112605	Incl.	11.63556	-0.44050095	+0.12632323
P	5.23	H	11.5	G 0.25	

Residuals in seconds of arc

490822	078	0.2-	0.7+		830109	688	1.3-	0.4+		871223	688	1.3-	0.9+
761027	095	0.6+	1.0-		830116	688	0.9+	0.2+		880115	688	0.2+	1.0-
830109	688	0.4+	0.4-		871223	688	1.6-	1.8+		880115	688	2.6+	0.6-

1983 CK1 = 1978 GA2 = 1981 UY7 = 1987 YG1
The key identification 1983 CK1 = 1987 YG1 is by A. Lowe.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	347.38347		(1950.0)	P	Q
n	0.17811217	Peri.	50.31457	-0.92879408	-0.36850037
a	3.1285362	Node	108.03019	+0.32606702	-0.86304623
e	0.1064945	Incl.	2.37217	+0.17613024	-0.34548325
P	5.53	H	13.0	G 0.25	

Residuals in seconds of arc

780407	095	0.2+	0.5+		830211	688	0.3-	1.8-		871225	033	0.2+	0.8+
811030	381	0.8-	0.6+		830219	688	1.1+	0.5-		871225	033	0.1+	0.1+
811030	381	0.8+	0.4-		830219	688	1.3-	1.1+					
830211	688	0.3+	0.7+		871222	033	0.3-	0.5-					

1983 RM3 = 1988 AM1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	90.30631		(1950.0)	P	Q
n	0.29638439	Peri.	129.06238	+0.07846550	-0.99360744
a	2.2279223	Node	316.22403	+0.87453935	+0.10768725
e	0.1448742	Incl.	6.73715	+0.47856462	-0.03387804
P	3.33	H	14.0	G 0.25	

Residuals in seconds of arc

830901	809	1.5+	2.2-	830907	809	0.8-	0.4+	880110	046	1.1+	1.3+
830901	809	1.6+	2.3-	830907	809	0.7-	3.4+	880112	046	2.6+	0.7+
830901	809	1.6+	2.1-	830908	809	0.4+	0.2+	880112	046	1.8+	0.1+
830902	809	0.1-	1.1+	830908	809	0.6+	0.1+	880113	046	0.5-	0.0
830902	809	0.2+	0.8+	830908	809	0.4+	0.0	880113	046	0.0	1.8-
830902	809	0.5+	0.8+	830909	809	1.7-	0.5-	880114	046	1.7-	0.4-
830903	809	1.5-	0.3+	830909	809	0.9-	1.2+	880114	046	0.3-	0.5-
830903	809	1.8+	1.5+	830909	809	0.3-	0.2+	880115	046	0.7+	1.0-
830903	809	1.1-	0.4+	830912	809	0.2+	1.3-	880115	046	0.2+	0.4-
830904	809	0.4-	0.7+	830912	809	0.3+	1.4-	880116	046	1.9+	0.7+
830904	809	0.3-	0.7+	830912	809	0.1+	1.4-	880116	046	0.7-	0.8+
830904	809	0.0	0.5+	830914	809	0.1+	0.8-	880120	046	1.5-	0.5+
830906	809	0.2-	0.8+	830914	809	0.8+	0.7-	880120	046	0.9-	1.7+
830906	809	0.1-	0.5+	830916	809	0.2-	0.7-	880120	046	1.4-	1.6-
830906	809	0.0	0.3+	830916	809	0.4+	1.3-	880120	046	1.8-	1.4-
830907	809	1.9-	0.5+	880110	046	0.6+	1.3+				

1984 FS = 1928 DH = 1965 WM

The identifications were found independently by T. Kobayashi.

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

M	45.52075		(1950.0)	P	Q
n	0.22957323	Peri.	346.87266	-0.66733840	-0.73150753
a	2.6415332	Node	144.68997	+0.70326641	-0.68075073
e	0.1126131	Incl.	14.00128	+0.24510370	-0.03840801
P	4.29	H	12.5	G 0.25	

Residuals in seconds of arc

280224	024	(17.0-	31.9-)X	840322	046	3.2-	1.5-	880210	892	1.2+	1.1+
651128	760	0.2+	0.7- X	840324	046	3.4-	1.1-	880214	675	3.1+	0.1-
840226	095	1.5+	3.2-	840324	046	0.6-	1.7-	880215	892	1.4+	0.6+
840320	046	1.1+	3.0-	840329	095	0.5+	3.0+	880215	892	2.2-	0.5+
840320	046	0.1-	3.1-	840403	095	1.3+	4.1+	880215	046	0.7-	0.5+
840321	046	3.2+	2.2+	840405	095	0.7+	3.6+	880215	046	0.4-	0.9-
840321	046	1.7+	0.3+	880210	675	2.5-	1.4+	880216	046	0.8+	1.5-
840322	046	3.3-	1.1-	880210	892	0.2-	1.4+	880216	046	0.3-	1.0-

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

(3802)* 1986 PJ4 = 1986 RK4 = 1975 GJ = 1978 EH1 = 1979 OY13

Discovered 1986 Aug. 7 by F. Borngen at Tautenburg. The double designation 1986 PJ4 = 1986 RK4 and the identifications 1986 PJ4 = 1975 GJ = 1978 EH1 = 1979 OY13 are by C. M. Bardwell and S. Nakano, respectively.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	241.12338		(1950.0)	P	Q
n	0.28554885	Peri.	145.94513	+0.25461223	+0.96569594
a	2.2839281	Node	138.73989	-0.90355057	+0.25636903
e	0.1649927	Incl.	4.43787	-0.34462876	+0.04130710
P	3.45	H	13.5	G 0.25	

Residuals in seconds of arc

750415	805	0.6+	0.2+	860906	809	0.5+	0.7-	860910	809	0.4+	0.0
750418	805	0.5-	0.1-	860906	071	(1.0-	5.1-)	860912	809	0.1-	0.5+
780305	095	0.2+	0.1+	860906	071	(3.0-	5.8-)	860912	809	0.0	0.4+
790719	095	0.2-	0.0	860908	809	0.1-	0.3-	860912	809	0.1+	0.4+
860807	033	0.6-	1.1+	860908	809	0.1+	0.3-	871126	033	0.2+	0.0
860808	033	1.2-	1.6+	860908	809	0.4+	0.6-	871126	033	0.8+	0.2+
860906	809	0.1+	0.5-	860910	809	0.1+	0.2-	880111	033	0.5-	0.5+
860906	809	0.2+	0.4-	860910	809	0.2+	0.3-	880111	033	0.6-	0.3+

ORBITAL ELEMENTS BY J. E. ROGERS, CAMARILLO, CALIFORNIA.

(3803)* 1981 TP1 = 1981 WB4 = 1952 HF4 = 1976 YA1 = 1980 RU3 = 1984 JV

Discovered 1981 Oct. 2 by L. V. Zhuravleva at the Crimean Astrophysical Observatory. The identifications were found independently by K. Hurukawa and W. Landgraf, and the double designation 1981 TP1 = 1981 WB4 and the identification 1981 TP1 = 1980 RU3 were also found by L. D. Schmadel and by A. Lowe, respectively (MPC 10041).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	335.29491		(1950.0)		P		Q
n	0.18514566	Peri.	283.71840		-0.97054229		-0.11414731
a	3.0487866	Node	250.05882		+0.17884412		-0.93141374
e	0.0461667	Incl.	13.04447		-0.16143865		-0.34559924
P	5.32	H	11.4	G	0.25		

Residuals in seconds of arc

520426	711	0.3-	0.6-	Y	811022	095	(0.0	2.4+)	861007	801	(2.3+	0.6-)
761216	095	(4.4-	2.3-)		811024	095	(1.0+	1.9+)	861011	054	0.3-	0.7-
761218	095	0.3+	0.8-		811130	511	0.0	0.1-	861012	054	0.2	0.2-
761220	095	(2.1+	2.4-)		811130	511	0.7+	0.2-	861030	801	0.5-	0.2+
800906	095	0.4+	0.2-		811130	511	0.1-	0.3-	861201	801	(1.2-	1.8-)
800911	095	0.3+	0.1+		840503	688	0.1-	0.8-	861228	801	(1.6+	2.3+)
811002	095	0.3+	0.7-		840503	688	0.2-	0.7-				
811008	095	0.0	0.2-		861004	054	0.7-	0.2-				

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ORBITAL ELEMENTS BY K. HURUKAWA, TOKYO ASTRONOMICAL OBSERVATORY.

The identifications are by K. Hurukawa unless otherwise stated.

(3804)* 1969 TB2 = 1979 WW6 = 1982 GH

Discovered 1969 Oct. 8 by L. I. Chernykh at the Crimean Astrophysical Observatory. The key identification 1969 TB2 = 1982 GH is by T. Furuta (JAM 1507).

Epoch 1988 Aug. 27.O ET = JDE 2447400.5

M	14.18816		(1950.0)		P		Q
n	0.19988689	Peri.	281.74550		+0.54980863		+0.83517506
a	2.8969867	Node	21.62599		-0.75088999		+0.50147283
e	0.0618476	Incl.	2.16082		-0.36588891		+0.22584866
P	4.93	H	12.6	G	0.25		

Residuals in seconds of arc

691008	095	1.2+	0.4-		791117	095	1.7-	0.4-	841127	801	0.9+	1.1+
691016	095	1.1+	0.1-		820415	046	0.4-	0.9+	870502	801	1.7+	1.1+
691104	095	(6.3-	1.0+)		820415	046	2.1-	0.4+	870531	801	0.9-	1.3+
691111	095	1.4-	0.4-		820423	046	1.0+	1.8-				
691113	095	(4.9+	0.8-)		820423	046	0.6+	2.1-				

(3805)* 1981 DK3 = 1978 NK7

Discovered 1981 Feb. 28 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey. The identification was found independently by L. D. Schmadel (MPC 10514).

Epoch 1988 Aug. 27.O ET = JDE 2447400.5

M	54.45853		(1950.0)		P		Q
n	0.22429569	Peri.	64.02772		+0.94647291		-0.28478537
a	2.6828029	Node	312.10710		+0.16997433		+0.83990287
e	0.1908864	Incl.	11.81797		+0.27440436		+0.46201781
P	4.39	H	12.5	G	0.25		

Residuals in seconds of arc

780710	675	(5.4+	3.7-)Y	810306	413	2.6-	1.3+	810502	413	1.9+	0.3+
780711	675	0.0	2.6- Y	810306	413	0.1-	0.7-	870730	801	2.8+	0.4+
780713	675	0.2+	2.1+ Y	810308	413	0.4+	0.6-	870821	801	0.4-	0.7-
810204	413	0.7-	0.2-	810308	413	1.8-	0.3-	870831	054	2.1-	0.4+
810208	413	0.2+	1.0+	810312	413	0.5-	0.4-	871019	801	(1.5-	2.3-)
810228	413	1.8+	0.3-	810312	413	1.5+	0.0				
810228	413	1.7-	0.2+	810501	413	1.8+	0.2-				

(3806)* 1981 EW32 = 1975 TY5 = 1979 SC11 = 1979 TL2

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

Epoch 1988 Aug. 27.O ET = JDE 2447400.5

M	66.52915		(1950.0)	P	Q
n	0.24343654	Peri.	187.14979	+0.89804881	-0.43619720
a	2.5402641	Node	199.02851	+0.41173011	+0.87904077
e	0.3137185	Incl.	10.05496	+0.15487625	+0.19240410
P	4.05	H	14.7	G 0.25	

Residuals in seconds of arc

751014	095	0.9-	0.3-	810301	413	(4.1+	3.5-)	810430	413	1.7-	1.3+
790924	095	1.1+	2.2+	810311	413	0.2+	0.3+	870826	801	0.2+	0.2+
791014	095	(7.1+	5.4-)	810311	413	0.4+	1.3-	870926	801	0.8+	0.3-
810202	413	0.6+	0.5+	810315	413	1.3-	0.7+	871022	801	1.0-	2.4-
810301	413	0.1-	0.1-	810315	413	1.6+	2.1-				

(3807)* 1981 SE1 = 1974 QM

Discovered 1981 Sept. 26 by B. A. Skiff and N. G. Thomas at the Anderson Mesa Station of the Lowell Observatory. The identification was found independently by L. D. Schmadel (MPC 10026).

Epoch 1988 Aug. 27.O ET = JDE 2447400.5

M	77.47038		(1950.0)	P	Q
n	0.29121083	Peri.	128.57467	+0.32943373	+0.94385117
a	2.2542273	Node	160.61549	-0.88786142	+0.31863655
e	0.1665926	Incl.	4.29675	-0.32120946	+0.08726804
P	3.38	H	13.5	G 0.25	

Residuals in seconds of arc

740818	095	1.0+	0.3+	811004	688	1.2-	1.8-	870327	801	2.1+	1.2-
740820	095	1.3-	0.9+	811007	095	(5.2-	4.7-)	870425	054	0.9+	1.0-
810903	095	1.9-	1.6+	811022	095	0.1-	2.2+	870426	801	(4.6+	0.7-)
810926	688	0.7+	1.1-	811024	095	1.1+	1.3-	870430	675	(4.0-	0.4-)
810926	688	(1.7-	5.6-)	851215	801	0.1+	1.4+	870502	675	3.3-	0.9+
811004	688	2.2+	1.8-	860112	801	0.4-	0.2-				

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ORBITAL ELEMENTS BY H. OISHI, NIIZA, JAPAN.

The identifications are by H. Oishi unless otherwise stated.

1985 RH = 3546 P-L

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

M	340.02513		(1950.0)	P	Q
n	0.23426831	Peri.	257.04998	-0.37794400	+0.92496827
a	2.6061208	Node	350.44965	-0.72847124	-0.32369999
e	0.1530961	Incl.	13.91529	-0.57139127	-0.19912814
P	4.21	H	13.0	G 0.25	

Residuals in seconds of arc

601022	675	0.6+	0.5+	850910	809	0.6-	0.1-	850917	809	0.8+	0.5+
601025	675	0.3-	0.3-	850910	809	0.4-	0.2-	850917	809	1.0+	0.7+
601026	675	0.3-	0.2-	850914	809	0.8-	0.0	850917	809	1.1+	0.6+
850906	809	0.3+	0.1-	850914	809	0.4-	0.0	850918	688	0.3+	0.8+
850906	809	0.6+	0.1-	850914	809	0.5-	0.1+	850918	688	1.4+	0.1+
850906	809	1.1+	0.2-	850914	688	0.6+	0.2-	850919	809	0.8-	0.0
850908	809	0.7-	0.4-	850914	688	(2.5-	1.3-)	850919	809	0.7-	0.0
850908	809	0.3-	0.4-	850915	809	0.4-	0.7+	850919	809	0.6-	0.1-
850908	809	0.1-	0.4-	850915	809	0.1-	0.7+	850922	809	0.0	1.3-
850910	809	0.8-	0.1-	850915	809	0.2+	0.7+	850922	809	0.2-	1.4-

1987 SB5 = 1956 XQ = 1977 TC4 = 1977 TM7 = 1977 VG2

The double designation 1977 TC4 = 1977 TM7 was found by T. Urata (MPC 6840).

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

M	142.57233	(1950.0)		P	Q
n	0.18731107	Peri.	35.17420	+0.04687525	+0.98915498
a	3.0252501	Node	237.89308	-0.94996867	+0.00106505
e	0.0662560	Incl.	9.45815	-0.30880776	+0.14687169
P	5.26	H	11.2	G 0.25	

Residuals in seconds of arc

561204	760	0.2-	0.3-	771106	095	0.5-	0.4-	870930	054	0.1-	0.6-
561204	760	0.1+	0.6+	870929	054	0.4-	0.2-	871001	054	0.6+	0.1+
771010	095	1.4-	2.5+	870929	054	0.6-	0.7+				
771013	330	1.9+	2.3-	870930	054	0.4+	0.0				

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NEW NAMES OF MINOR PLANETS.

(1946) Walraven = 1931 PH

Discovered 1931 Aug. 8 by H. van Gent at Johannesburg.

Named in honor of Th. Walraven, retired professor of astronomy at the University of Leiden and for many years resident astronomer at the former Leiden Southern Station near Hartbeespoortdam, South Africa. He constructed special photometers for the telescopes at the station, including the 5-color photometer for which he developed the Walraven photometric system. Name proposed by the Leiden Observatory, following a suggestion by C. J. van Houten.

(2580) Smilevskia = 1977 QP4

Discovered 1977 Aug. 18 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Moisej Vasil’evich Smilevskij (1913-1944), a journalist from the city of Cherson in the Ukraine.

(2775) Odishaw = 1953 TX2

Discovered 1953 Oct. 14 at the Goethe Link Observatory, Indiana University.

Named in memory of Hugh Odishaw (1916-1984), an organizer in international geophysical research during a time of revolution in earth and space sciences. He served as executive director of the U.S. committee for the International Geophysical Year, director of the IGY World Data Center, executive director of the Space Science Board, executive secretary of the U.S. National Academy of Sciences’ division of physical sciences and dean of the University of Arizona’s college of earth and space sciences. His excitement and enthusiasm about the recent flood of discoveries in geophysics led to a television film series, "Planet Earth", premiered not long after his death. Name proposed by F. K. Edmondson. Citation prepared by E. Roemer.

(2842) Unsold = 1950 OD

Discovered 1950 July 25 at the Goethe Link Observatory, Indiana University.

Named in honor of Albrecht Unsold, author of "Physik der Sternatmospharen", long-term professor and director of the Institute for Theoretical Physics at the Christian Albrecht University at Kiel. A student of Sommerfeld's, he pioneered the use of physics in understanding the structure of stellar atmospheres through the analysis of the strengths and profiles of spectral lines, and he sowed the seeds for the new science of laboratory astrophysics as a source of information about the properties of atoms and for the simulation of physical conditions in astronomical objects. Unsold is respected as much for his vision for the future of astronomy as for his deep sense of appreciation for its history. Name proposed by F. K. Edmondson. Citation written by G. K. Oertel.

(2893) Mateo = 1975 QP

Discovered 1975 Aug. 30 at the El Leoncito Station of the Felix Aguilar Observatory.

Named in memory of Jose Mateo (1914-1978), a geophysicist who was for many years in charge of the Gravimetry and Tide Department of the La Plata Observatory. Later, as Director of the Observatory, he started the final phase of construction of the astronomical complex at El Leoncito.

(2928) Epstein = 1976 GN8

Discovered 1976 Apr. 5 at the El Leoncito Station of the Felix Aguilar Observatory.

Named in honor of Isadore Epstein, professor emeritus of astronomy at Columbia University and formerly director of Harriman Observatory. He conducted extensive site testing for a southern observatory in Australia, Chile and Argentina during 1957-1962. This resulted in the inauguration of the Yale-Columbia Southern Observatory at El Leoncito on 1965 Mar. 30.

(2935) Naerum = 1976 UU

Discovered 1976 Oct. 24 by R. M. West at the European Southern Observatory.

Named after the small town of Naerum, some 15 km north of Copenhagen, where the discoverer spent his early years in the parental home. Archaeological finds from the stone age and bronze age tumuli bear witness to habitation during several millennia, as does the present name, which is derived from "Njarthar-heim", i.e. the home of Njord, god of the sea and its riches in Norse mythology.

(2966) Korsunia = 1977 EB2

Discovered 1977 Mar. 13 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named for the ancient Crimean town of Chersonesus, known in medieval Russia as Korsun'.

(2967) Vladisvyat = 1977 SS1

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

Named for Vladimir Svyatoslavich (ca. 950-1015), Kiev Grand Prince who worked for the consolidation of Kiev and introduced Christianity into Russia in 988-989.

(2968) Iliya = 1978 QJ

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

Named for the Russian epic hero Il'ya Muromets, defender of the Russian land.

(2969) Mikula = 1978 RU1
Discovered 1978 Sept. 5 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named for the Russian epic hero Mikula Selyaninovich, the grain grower.

(3005) Pervictoralex = 1979 QK2
Discovered 1979 Aug. 22 by C.-I. Lagerkvist at the European Southern Observatory.
Named by the discoverer in honor of his son, Per Victor Alexander Lagerkvist, born on 1987 Apr. 9.

(3038) Bernes = 1978 QB3
Discovered 1978 Aug. 31 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of Mark Naumovich Bernes (1911-1969), popular Soviet film actor and singer.

(3084) Kondratyuk = 1977 QB1
Discovered 1977 Aug. 19 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of Yurij Vasil'evich Kondratyuk (1897-1942), one of the Soviet pioneers in rocket technology and cosmonautics, known also for his work in electrical engineering.

(3100) Zimmerman = 1977 EQ1
Discovered 1977 Mar. 13 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of Nikolaj Vladimirovich Zimmerman (1890-1942), head of the astrometric department of Pulkovo Observatory from 1938, and professor at Leningrad University from 1937, known for his work on astrometry and star catalogues.

(3112) Velimir = 1977 QC5
Discovered 1977 Aug. 22 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named for Velimir (Viktor Vladimirovich) Khlebnikov (1885-1922), Russian poet known for his experiments in poesy, who also applied mathematical analysis to history and discovered some cycles among historical events.

(3113) Chizhevskij = 1978 RO
Discovered 1978 Sept. 1 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of Aleksandr Leonidovich Chizhevskij (1897-1964), Soviet biologist and one of the founders of heliobiology, who discovered the dependence of many phenomena of the biosphere and atmosphere upon the solar cycle.

(3120) Dangrania = 1979 RZ
Discovered 1979 Sept. 14 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of Daniil Aleksandrovich Granin, Soviet writer whose work is mainly about scientists and researchers.

(3148) Grechko = 1979 SA12
Discovered 1979 Sept. 24 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of Georgij Mikhajlovich Grechko, Soviet cosmonaut and scientist who made three space flights involving astronomical and geophysical observations and research.

(3170) Dzhanibekov = 1979 SS11
Discovered 1979 Sept. 24 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of Vladimir Aleksandrovich Dzhanibekov, famous Soviet cosmonaut who flew into outer space five times and made a valuable contribution to outer space research.

(3189) Penza = 1978 RF6
Discovered 1978 Sept. 13 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named for a Russian city, the center of the region where Lermontov, Belinskij, Davydov, Kuprin and some other Russian writers lived.

(3191) Svanetia = 1979 SX9
Discovered 1979 Sept. 22 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named for Svanetia, a historical region in Georgia by the Caucasus Mountains.

(3195) Fedchenko = 1978 PT2
Discovered 1978 Aug. 8 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named for the family of scientists, including Aleksej Pavlovich Fedchenko (1844-1873), outstanding Russian naturalist and geographer known for his exploration of central Asia; his wife Ol'ga Aleksandrovna Fedchenko (1845-1921), prominent Russian botanist and plant collector, pioneer in the study of Turkestan flora; and their son Boris Alekseevich Fedchenko (1872-1947), distinguished botanist and geographer, prolific writer, and one of the initiators and most active contributors to the multi-volume "Flora of the U.S.S.R." Name proposed by the discoverer, following a suggestion by C. E. Spratt.

(3196) Maklaj = 1978 RY
Discovered 1978 Sept. 1 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of Nikolaj Nikolaevich Miklukho-Maklaj (1846-1888), a prominent Russian anthropologist and ethnographer who studied the native populations of southeast Asia, Australia and Oceania and who lived for about three years among the Papuans in New Guinea.

(3204) Lindgren = 1978 RH
Discovered 1978 Sept. 1 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of Astrid Anna Emilia Lindgren, renowned Swedish writer, author of many fascinating stories for children and recipient of the international H. C. Andersen gold medal.

(3213) Smolensk = 1977 NQ
Discovered 1977 July 14 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named for the one of the oldest towns in Russia.

(3230) Vampilov = 1972 LE
Discovered 1972 June 8 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of Aleksandr Valentinovich Vampilov (1937-1972), talented Soviet dramatist.

(3238) Timresovia = 1975 VB9
Discovered 1975 Nov. 8 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of Nikolaj Vladimirovich Timofeev-Resovskij (1900-1981), famous Soviet biologist, one of the founders of radiation genetics and molecular biology.

(3250) Martebo = 1979 EB
Discovered 1979 Mar. 6 by C.-I. Lagerkvist at the Uppsala Southern Station.
Named for a small village on the island of Gotland, where the discoverer spends his summer vacations.

(3261) Tvardovskij = 1979 SF9
Discovered 1979 Sept. 22 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of Aleksandr Trifonovich Tvardovskij (1910-1971), famous Soviet poet.

(3306) Byron = 1979 SM11
Discovered 1979 Sept. 24 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named for the great English poet Lord George Noel Gordon Byron (1788-1824).

(3331) Kvistaberg = 1979 QS
Discovered 1979 Aug. 22 by C.-I. Lagerkvist at the European Southern Observatory.
Named for the location of the Uppsala Observatory’s observing station. Several minor planets have been discovered with the Schmidt telescope there.

(3348) Pokryshkin = 1978 EA3
Discovered 1978 Mar. 6 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of Aleksandr Ivanovich Pokryshkin (1913-1985), a Soviet pilot known also as a writer, the author of four popular books on Soviet aviation. His contribution to the theory and practice of flying and maneuvering small, high-speed aircraft allowed Soviet pilots to win some world aviation records. He was also involved in the selection of the first cosmonauts and the realization of the first Soviet space flights.

(3473) Sapporo = A924 EG
Discovered 1924 Mar. 7 by K. Reinmuth at Heidelberg.
Named for the capital of Hokkaido, location of the Winter Olympic games in 1972. One of the many cultural institutions in Sapporo, the Sapporo Science Center, has an active program for astrometric observations of comets and minor planets. Name suggested by K. Watanabe and proposed by S. Nakano, who found the identifications involving this planet.

(3500) Kobayashi = A919 SD
Discovered 1919 Sept. 18 by K. Reinmuth at Heidelberg.
Named in honor of Takao Kobayashi, an active computer of cometary orbits and identifier of minor planets. He is also a vice-director of

Computing Section of Oriental Astronomical Association and is currently collecting and verifying almost all the observations of minor planets made by Japanese amateur astronomers. Name proposed by S. Nakano, who found the identifications involving this planet.

(3537) Jurgen = 1982 VT

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

Named in honor of Jurgen Rahe, planetary scientist. Rahe is director of the Dr. Remeis Sternwarte and the Astronomisches Institut der Universitat Erlangen-Nurnberg, as well as discipline scientist in the planetary science branch of NASA's Solar System Exploration Division. He is co-leader of the International Halley Watch and has been for a long time associated with the work of IAU Commission 15. While he has worked in a number of fields of astrophysics, Rahe is especially noted for his work on comets, both from the ground and with the International Ultraviolet Explorer, as well as for his two atlases of cometary morphology. His diplomatic leadership in the IAU and the IHW has been particularly important in projects requiring international cooperation. Citation prepared by R. L. Newburn and S. J. Edberg at the request of the discoverer.

(3568) ASCII = 1936 UB

Discovered 1936 Oct. 17 by M. Laugier at Nice.

Named for the computer character code, which is also the name of the principal magazine on microcomputers in Japan. Name proposed by S. Nakano, who found the identifications involving this planet and whose stay at the Smithsonian Astrophysical Observatory has partly been supported by articles written for this magazine.

(3569) Kumon = 1938 DN1

Discovered 1938 Feb. 20 by K. Reinmuth at Heidelberg.

Named in honor of Toru Kumon, a pioneer in the education of children in Japan and founder of the Kumon Education Research Center in Osaka. Name proposed by S. Nakano, who found the identification involving this planet, and whose stay at the Smithsonian Astrophysical Observatory has been partly supported by the Kumon Center.

(3573) Holmberg = 1982 QO1

Discovered 1982 Aug. 16 by C.-I. Lagerkvist at the European Southern Observatory.

Named in honor of the Swedish astronomer Erik Holmberg on the occasion of his eightieth birthday. Internationally renowned for his pioneering work on galaxies, particularly multiple galaxies, Holmberg served as an assistant and associate professors at Lund during 1937-1951 and as professor at Uppsala and director of the Uppsala Observatory during 1959-1975. Holmberg was an inspiring teacher, and the discoverer is very grateful to him for allowing a young student to start work on minor planets, until then an almost unknown topic for research in Uppsala.

(3626) Ohsaki = 1929 PA

Discovered 1929 Aug. 4 by M. Wolf at Heidelberg.

Named in honor of Shoji Ohsaki (1912-) on the occasion of the publication of his life work of historical research on the Chinese constellations. An amateur astronomer and historian, Ohsaki is well known for his work on the astronomical histories of the far-eastern countries and as a collaborator in S. Kanda's 1935 publication of astronomical phenomena in Japanese historical records before the year 1600. Name proposed by H. Oishi, who found the identifications involving this minor planet.

(3658) Feldman = 1982 TR
Discovered 1982 Oct. 13 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Named in honor of Paul D. Feldman, professor of physics and astronomy at the Johns Hopkins University, Baltimore, for his numerous contributions in ultraviolet spectroscopy, particularly of the earth's atmosphere, Venus, the outer planets and comets. His design and supervision of a number of spacecraft instruments have led to many advances in our understanding of physical processes in the solar system. The minor planet also honors Paul A. Feldman, a radioastronomer at the Herzberg Institute of Astrophysics, Ottawa, who is currently involved in making submillimeter observations of minor planets. Name suggested and citation provided by M. F. A'Hearn and B. G. Marsden.

(3663) Tisserand = 1985 GK1
Discovered 1985 Apr. 15 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Named for Francois Tisserand (1845-1896), contributor to the theory of general perturbations (Tisserand's criterion) and lunar theory, and author of the four-volume compendium "Traite de Mecanique Celeste". Name suggested and citation provided by G. Reaves.

(3667) Anne-Marie = 1981 EF
Discovered 1981 Mar. 9 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Named for Anne-Marie Malotki, a friend of the discoverer.

(3670) Northcott = 1983 BN
Discovered 1983 Jan. 22 by E. Bowell at the Anderson Mesa Station of Lowell Observatory.
Named for the Canadian astronomer Ruth Josephine Northcott (1913-1969), an associate professor at the University of Toronto and a staff member of the David Dunlap Observatory from its inception in 1935. A specialist in stellar radial velocities, Northcott served on IAU Commissions 26 (double stars), 30 (radial velocities) and 41 (history of astronomy). In 1956 she succeeded C. A. Chant as editor of the Observer's Handbook of the Royal Astronomical Society of Canada, a position she held until her untimely death. Name suggested and citation provided by C. E. Spratt.

(3672) Stevedberg = 1985 QQ
Discovered 1985 Aug. 22 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Named in honor of Stephen J. Edberg, planetary scientist at the Jet Propulsion Laboratory, for his long commitment to bringing amateur and professional astronomers together. Although his most noted activity has been his work with the Amateur Observations Net of the International Halley Watch, he has also been a leader in the program for amateur use of the Hubble Space Telescope, in the Mars project of the Planetary Society, and as President of the Western Amateur Astronomers. Citation prepared by D. H. Levy at the request of the discoverer.

(3673) Levy = 1985 QS
Discovered 1985 Aug. 22 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Named in honor of David H. Levy, comet discoverer and observer, recognized for his perseverance in observing comets using both the oldest visual and the newest electronic techniques. Author of several books and articles, he is known for his biographies of astronomers. As an educator Levy has concentrated on bringing observational astronomy to both amateur astronomers and

to children, and he has initiated school and camp programs for this purpose. Citation prepared by S. J. Edberg at the request of the discoverer.

(3676) Hahn = 1984 GA

Discovered 1984 Apr. 3 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in honor of Gerhard Hahn, a planetary astronomer at Uppsala Observatory and a member of the research group studying minor planets and comets. Hahn has undertaken extensive photometry and astrometry of minor planets and has been studying the long-term orbital evolution and physical properties of these objects. Citation prepared by C.-I. Lagerkvist at the request of the discoverer.

(3677) Magnusson = 1984 QJ1

Discovered 1984 Aug. 31 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in honor of Per Magnusson, a planetary astronomer at Uppsala Observatory and a member of the research group studying minor planets and comets. Well known for his method of determining the spin characteristics of minor planets, Magnusson has estimated pole directions for more than thirty objects. Citation prepared by C.-I. Lagerkvist at the request of the discoverer.

(3688) Navajo = 1981 FD

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

This 2:1 Jupiter librator is named for the indigenous North American people, inhabitants of a 60 000-square kilometer area of Arizona, New Mexico and Utah. The Navajo people probably migrated to the southwest United States in the fifteenth century. Today their flourishing culture is particularly renowned for its artistic achievement, including weaving and silver work. P. E. Roques contributed to the citation.

(3690) Larson = 1981 PM

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

Named in honor of Stephen M. Larson, planetary scientist at the Lunar and Planetary Laboratory. Well known for his work on comets, Larson has recently digitized many 1910 images of Comet Halley to bring out fresh details of jet structure and has been active in organizing the Near Nucleus Studies Net of the International Halley Watch. His program of monitoring comets by means of spectroscopy and imaging continues to reveal interesting aspects of cometary phenomena. With J. Fountain, he correctly demonstrated the existence of and specified the revolution period of Saturn’s eleventh satellite before the extensive 1980 data completely clarified the confusing situation presented at the 1966 ring-plane passage. Name suggested and citation prepared by D. H. Levy.

(3692) Rickman = 1982 HF1

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

Named in honor of Hans Rickman, a planetary astronomer at Uppsala Observatory and a member of the research group studying minor planets and comets. Rickman is widely known for his theoretical modelling of cometary nuclei, and he is also interested in the relationships between comets and planet-crossing asteroids. He has for a long time favored the popularization of astronomy, and to this end he has written a large number of articles in popular magazines and has lectured to general audiences. Rickman is a co-organizer of the "Asteroids, Comets, Meteors" meetings that

are held regularly in Uppsala. Citation prepared by C.-I. Lagerkvist at the request of the discoverer.

(3693) Barringer = 1982 RU

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

Named for Daniel Moreau Barringer (1860-1929), pioneer investigator of terrestrial meteorite craters. From intensive field studies, including much subsurface exploration, Barringer demonstrated the impact origin of Meteor Crater, Arizona, now widely known as the Barringer Crater, the first recognized impact crater on the earth. On the basis of his studies, Barringer strongly supported the hypothesis of impact origin for the craters on the moon. Name proposed jointly with E. M. and C. S. Shoemaker.

(3709) Polypoites = 1985 TL3

Discovered 1985 Oct. 14 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named after the victor in a contest among the Greeks to see who would win an iron meteorite by throwing it the farthest. Polypoites flung the meteorite "as far as a herdsman throws a cattle staff, rifling it clear across a herd." When it landed it probably made a small impact crater. Name proposed by Dorothy and Jerome Preston, who suggested that, had the discoverers been present at the Trojan War, they might have studied with some interest the result of Polypoites' throw.

(3718) Dunbar = 1978 VS10

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

Named in honor of Roy Scott Dunbar, physicist and planetary scientist at the Jet Propulsion Laboratory. The discoverers wish to acknowledge his dedicated commitment and participation in the Palomar planet-crossing asteroid search, which included his own discovery of the Aten-type asteroid (3362) Khufu. His dissertation on the stability of Trojan-type librations in the earth-sun system led to an earth-Trojan search program at Palomar.

(3720) Hokkaido = 1987 UR1

Discovered 1987 Oct. 28 by S. Ueda and H. Kaneda at Kushiro.

Named for the northern island of Japan, which has a population of 5.5 million. This planet is the first to be discovered in Hokkaido. In addition to Kushiro, there are active programs in Sapporo and Kitami concerned with the astrometric observations of minor planets and comets.

(3736) Rokoske = 1987 SY3

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

Named for Thomas Leo Rokoske, professor of physics and astronomy at Appalachian State University in Boone, North Carolina. A specialist in solid-state physics, he is known for his exceptional teaching skills and has been active in developing and expanding ASU's astronomical instrumentation and teaching staff. He has played an instrumental role in the publication of the International Comet Quarterly (and its predecessors) since its inception in 1973, and his unselfish work has helped to create this very useful archive of cometary photometric data. Name suggested by D. W. E. Green, ICQ editor and one of his former students, who found the identifications involving this minor planet.

(3751) Kiang = 1983 NK

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

Named in honor of Tao Kiang, an astronomer at the Dunsink Observatory, near Dublin. A teacher of the discoverer, Kiang has carried out a wide range of astronomical research, including contributions to the study of minor planets, comets, quasars and cosmology. In particular, he has worked on the structure of the asteroid belt and the stability of Kirkwood gaps. He has served as editor of "Chinese Astronomy and Astrophysics" since its inception in 1977 and has published several papers on astronomical research in China, both ancient and modern.

(3758) Karttunen = 1983 WP

Discovered 1983 Nov. 28 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named for Hannu Karttunen, Finnish astronomer and mathematician. Karttunen has developed a rather general method to model the lightcurves of minor planets and, in collaboration with the discoverer and other colleagues, has sought to understand lightcurves and phase curves in terms of body morphology and large-scale albedo features. He has recently served as an editor of a comprehensive college-level text on fundamental astronomy, which has been published in Finnish and English. Name endorsed by B. A. Skiff, who took the discovery plates.

(3759) Piironen = 1984 AP

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

Named in honor of Jukka Piironen, astronomer at the Finnish Meteorological Institute, Helsinki. Working with the discoverer, Piironen made accurate lightcurve observations of a number of brighter minor planets. Subsequently, he was involved in the physical interpretation of such lightcurves by studying the behavior of rotating models in the laboratory. In Turku he participated in the grinding and figuring of the 2.5-m mirror for the Nordic Optical Telescope, and he is currently working on aspects of the Soviet Phobos mission. Name endorsed by B. A. Skiff, who took the discovery plates.

(3760) Poutanen = 1984 AQ

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

Named in honor of Markku Poutanen, Finnish astronomer. Poutanen has been active in the observation of asteroid lightcurves and, with the discoverer, obtained the most extensive phase curve of a minor planet then observed, especially at small phase angles. Like his colleague Karttunen, Poutanen recently served as coeditor of a textbook on astronomy. In addition, he has enthusiastically sought to bring amateur and professional astronomers together, by means of both teaching and writing. Name endorsed by B. A. Skiff, who took the discovery plates.

(3774) Megumi = 1987 YC

Discovered 1987 Dec. 20 by T. Kojima at Chiyoda.

Named in honor of the discoverer’s wife and observing partner.

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EPHEMERIDES.

Comet Liller (1988a) Elements MPC 12953

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1988	03 20	00 34.02	+23 08.4	1.657	0.867	25.2	29.3	7.0
1988	03 25	00 39.39	+27 38.3					
1988	03 30	00 45.50	+32 19.0	1.564	0.842	28.9	35.0	6.7

1988 04 04	00 52.68	+37 11.5						
1988 04 09	01 01.47	+42 17.2	1.458	0.858	35.0	42.0	6.7	
1988 04 14	01 12.70	+47 36.8						
1988 04 19	01 27.71	+53 10.2	1.353	0.912	42.4	47.9	6.8	
1988 04 24	01 48.84	+58 54.1						
1988 04 29	02 20.52	+64 38.7	1.267	0.996	50.4	51.2	7.0	
1988 05 04	03 11.27	+69 59.8						
1988 05 09	04 34.5	+74 01.5	1.220	1.100	58.2	51.3	7.3	
1988 05 14	06 30.5	+75 09.6						
1988 05 19	08 17.5	+72 41.1	1.228	1.218	65.1	48.9	7.8	
1988 05 24	09 28.00	+67 53.7						
1988 05 29	10 11.42	+62 13.1	1.298	1.344	69.8	45.1	8.3	
1988 06 03	10 39.84	+56 24.2						
1988 06 08	10 59.96	+50 48.0	1.425	1.473	72.1	41.0	9.0	
1988 06 13	11 15.22	+45 33.6						
1988 06 18	11 27.47	+40 44.7	1.597	1.605	71.9	37.0	9.6	
1988 06 23	11 37.75	+36 21.6						
1988 06 28	11 46.69	+32 23.1	1.802	1.737	69.8	33.3	10.2	
1988 07 03	11 54.68	+28 46.9						
1988 07 08	12 01.99	+25 30.7	2.026	1.869	66.4	29.9	10.7	
1988 07 13	12 08.79	+22 32.3						
1988 07 18	12 15.21	+19 49.5	2.263	2.000	62.1	26.7	11.3	
1988 07 23	12 21.34	+17 20.3						
1988 07 28	12 27.23	+15 03.1	2.503	2.130	57.1	23.6	11.8	
1988 08 02	12 32.94	+12 56.4						
1988 08 07	12 38.50	+10 58.9	2.743	2.258	51.6	20.6	12.2	
1988 08 12	12 43.94	+09 09.4						
1988 08 17	12 49.28	+07 27.0	2.978	2.386	45.8	17.7	12.6	
1988 08 22	12 54.53	+05 51.0						
1988 08 27	12 59.71	+04 20.7	3.204	2.511	39.7	14.9	13.0	

Comet Maury-Phinney (1988c) Elements MPC 12953

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1988 03 20	08 58.99	+57 23.3	1.598	2.188	113.0	24.8	18.4	
1988 03 30	08 40.75	+59 33.3						
1988 04 09	08 30.17	+60 48.1	2.028	2.310	93.1	25.7	19.2	
1988 04 19	08 26.47	+61 32.0						
1988 04 29	08 28.52	+61 58.9	2.450	2.447	77.9	23.7	19.8	
1988 05 09	08 35.16	+62 16.5						
1988 05 19	08 45.51	+62 28.4	2.833	2.595	66.2	20.9	20.4	
1988 05 29	08 58.85	+62 36.7						
1988 06 08	09 14.64	+62 42.5	3.160	2.752	57.5	18.1	20.9	
1988 06 18	09 32.49	+62 45.9						
1988 06 28	09 52.08	+62 47.3	3.425	2.915	52.2	16.0	21.3	

Comet Shoemaker (1988b) Elements MPC 12952

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1988 03 20	09 31.79	+31 59.6	5.012	5.743	133.5	7.2	16.6	
1988 03 30	09 25.08	+30 57.2						
1988 04 09	09 19.99	+29 50.1	5.342	5.816	113.6	9.1	16.8	
1988 04 19	09 16.50	+28 40.0						
1988 04 29	09 14.51	+27 28.3	5.730	5.891	94.3	9.8	17.0	
1988 05 09	09 13.87	+26 16.2						
1988 05 19	09 14.42	+25 04.1	6.135	5.969	75.9	9.5	17.2	
1988 05 29	09 15.99	+23 52.6						
1988 06 08	09 18.41	+22 41.7	6.520	6.050	58.4	8.2	17.4	
1988 06 18	09 21.53	+21 31.6						
1988 06 28	09 25.20	+20 22.1	6.856	6.132	41.5	6.3	17.6	

Periodic Comet Hartley 3 (1988d) Elements MPC 12953

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1988	03 20	09 51.78	-01 42.8	1.965	2.864	148.7	10.4	17.0
1988	03 30	09 48.30	-01 12.0					
1988	04 09	09 47.13	-00 46.3	2.183	2.921	129.1	15.4	17.4
1988	04 19	09 48.21	-00 28.4					
1988	04 29	09 51.40	-00 19.9	2.463	2.979	111.2	18.4	17.7
1988	05 09	09 56.41	-00 21.3					
1988	05 19	10 03.00	-00 32.7	2.776	3.039	95.2	19.4	18.0
1988	05 29	10 10.91	-00 53.8					
1988	06 08	10 19.90	-01 23.9	3.099	3.100	80.6	18.9	18.4
1988	06 18	10 29.77	-02 02.3					
1988	06 28	10 40.35	-02 48.2	3.414	3.161	67.1	17.2	18.7
1988	07 08	10 51.50	-03 40.9					
1988	07 18	11 03.10	-04 39.6	3.708	3.222	54.3	14.8	18.9
1988	07 28	11 15.07	-05 43.4					
1988	08 07	11 27.31	-06 51.7	3.967	3.284	42.0	11.9	19.2

1988 EG a,e,i = 1.30, 0.52, 4 Elements MPC 12962

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 20	11 00.50	+04 06.4	0.201	1.191	165.5	12.1	16.5
1988	03 25	10 57.36	+05 55.0					
1988	03 30	10 56.17	+07 02.8	0.299	1.273	153.6	20.4	17.8
1988	04 04	10 56.36	+07 44.1					
1988	04 09	10 57.60	+08 07.2	0.407	1.351	143.7	26.1	18.7
1988	04 14	10 59.71	+08 16.9					
1988	04 19	11 02.55	+08 16.2	0.524	1.423	134.9	30.0	19.5
1988	04 24	11 06.03	+08 07.2					
1988	04 29	11 10.04	+07 51.5	0.649	1.491	127.1	32.6	20.1
1988	05 04	11 14.49	+07 30.6					
1988	05 09	11 19.34	+07 05.2	0.782	1.554	119.8	34.3	20.7

1987 QA a,e,i = 1.65, 0.47, 41 Elements MPC 12961

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 20	14 48.83	+27 33.8	0.629	1.484	130.6	30.6	16.5
1988	03 30	14 34.30	+35 26.0					
1988	04 09	14 16.44	+40 45.0	0.783	1.616	129.5	28.6	17.1
1988	04 19	13 58.31	+43 43.7					
1988	04 29	13 42.78	+44 50.5	1.000	1.739	120.1	30.1	17.9
1988	05 09	13 31.53	+44 37.3					
1988	05 19	13 24.93	+43 30.1	1.250	1.852	109.5	31.0	18.5
1988	05 29	13 22.67	+41 47.8					
1988	06 08	13 24.06	+39 44.0	1.514	1.955	99.3	30.8	19.0
1988	06 18	13 28.39	+37 26.9					
1988	06 28	13 35.10	+35 02.4	1.780	2.046	89.8	29.8	19.4
1988	07 08	13 43.66	+32 34.5					
1988	07 18	13 53.73	+30 05.8	2.040	2.128	80.8	28.1	19.8

Periodic Comet du Toit Elements MPC 11519

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		m2
1988	04 29	10 41.34	+21 12.8	2.492	3.055	-0.78	+4.9	22.8
1988	05 09	10 38.75	+20 16.6					
1988	05 19	10 38.56	+19 07.3	2.593	2.884	-0.70	+5.0	22.7
1988	05 29	10 40.68	+17 46.7					
1988	06 08	10 44.92	+16 16.0	2.700	2.709	-0.66	+5.5	22.5
1988	06 18	10 51.09	+14 36.2					
1988	06 28	10 59.02	+12 47.6	2.785	2.532	-0.64	+6.1	22.3
1988	07 08	11 08.52	+10 50.4					
1988	07 18	11 19.49	+08 44.6	2.833	2.353	-0.62	+7.0	22.0

Periodic Comet Smirnova-Chernykh Elements NK 445

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1988 04 29	23 48.73	-07 34.0	5.437	4.768	44.3	8.5	20.5
1988 05 09	23 56.34	-06 52.8					
1988 05 19	00 03.39	-06 16.4	5.199	4.768	59.6	10.5	20.4
1988 05 29	00 09.79	-05 45.4					
1988 06 08	00 15.44	-05 20.4	4.918	4.768	75.6	11.9	20.2
1988 06 18	00 20.24	-05 02.2					
1988 06 28	00 24.06	-04 51.3	4.615	4.767	92.4	12.3	20.1
1988 07 08	00 26.81	-04 48.1					
1988 07 18	00 28.37	-04 53.0	4.316	4.765	110.3	11.5	20.0
1988 07 28	00 28.68	-05 06.0					
1988 08 07	00 27.68	-05 26.6	4.052	4.762	129.5	9.5	19.8
1988 08 17	00 25.40	-05 54.1					
1988 08 27	00 21.93	-06 26.9	3.857	4.759	149.9	6.1	19.7
1988 09 06	00 17.45	-07 02.9					
1988 09 16	00 12.25	-07 39.7	3.763	4.755	169.2	2.3	19.6
1988 09 26	00 06.69	-08 14.4					
1988 10 06	00 01.17	-08 44.3	3.787	4.750	162.4	3.6	19.7
1988 10 16	23 56.10	-09 07.2					
1988 10 26	23 51.83	-09 21.5	3.926	4.744	141.5	7.5	19.7
1988 11 05	23 48.64	-09 26.3					
1988 11 15	23 46.72	-09 21.4	4.157	4.738	120.6	10.3	19.8
1988 11 25	23 46.15	-09 07.1					
1988 12 05	23 46.92	-08 44.2	4.444	4.731	100.9	11.8	20.0
1988 12 15	23 49.00	-08 13.4					
1988 12 25	23 52.28	-07 35.8	4.752	4.723	82.4	11.9	20.1
1989 01 04	23 56.65	-06 52.3					
1989 01 14	00 01.98	-06 03.7	5.047	4.714	64.9	10.9	20.2
1989 01 24	00 08.14	-05 11.2					
1989 02 03	00 15.02	-04 15.3	5.302	4.705	48.4	9.0	20.3
1989 02 13	00 22.50	-03 17.0					
1989 02 23	00 30.47	-02 16.9	5.498	4.695	32.6	6.5	20.4

1982 WE a,e,i = 2.62, 0.16, 14 Elements MPC 12949

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988 03 20	12 18.98	+18 43.1	1.583	2.545	160.8	7.4	16.5
1988 03 30	12 08.94	+18 57.6					
1988 04 09	11 59.85	+18 47.7	1.671	2.580	148.7	11.6	16.8
1988 04 19	11 52.62	+18 14.3					
1988 04 29	11 47.83	+17 20.1	1.850	2.616	130.2	17.1	17.2
1988 05 09	11 45.64	+16 09.6					
1988 05 19	11 45.96	+14 46.7	2.092	2.650	112.6	20.6	17.6
1988 05 29	11 48.57	+13 14.5					
1988 06 08	11 53.16	+11 35.8	2.368	2.685	96.8	22.1	18.0

1976 QC1 a,e,i = 2.16, 0.19, 2 Elements MPC 12940

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988 03 20	12 40.08	-06 16.4	1.359	2.341	167.3	5.4	17.9
1988 03 30	12 29.78	-05 20.8					
1988 04 09	12 19.26	-04 20.5	1.316	2.304	167.1	5.6	17.8
1988 04 19	12 09.83	-03 23.8					
1988 04 29	12 02.63	-02 38.7	1.376	2.265	143.2	15.4	18.2
1988 05 09	11 58.31	-02 09.9					
1988 05 19	11 57.13	-01 59.8	1.511	2.224	122.4	22.6	18.6
1988 05 29	11 59.01	-02 08.7					
1988 06 08	12 03.67	-02 35.2	1.686	2.181	105.0	26.7	18.9
1988 06 18	12 10.82	-03 17.6					
1988 06 28	12 20.12	-04 13.8	1.875	2.138	90.3	28.4	19.1

(3777) 1981 JD2 a,e,i = 2.28, 0.16, 4 Elements MPC 12937

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	03 20	16 08.22	-20 34.5	1.840	2.436	115.1	21.7	17.8
1988	03 30	16 10.88	-20 55.7					
1988	04 09	16 10.53	-21 11.2	1.596	2.404	134.2	17.4	17.3
1988	04 19	16 06.96	-21 20.4					
1988	04 29	16 00.26	-21 22.7	1.414	2.370	156.0	9.9	16.8
1988	05 09	15 50.96	-21 17.3					
1988	05 19	15 40.04	-21 04.9	1.324	2.336	178.5	0.6	16.2
1988	05 29	15 28.86	-20 47.6					
1988	06 08	15 18.87	-20 29.5	1.336	2.300	155.7	10.5	16.6
1988	06 18	15 11.22	-20 15.3					
1988	06 28	15 06.65	-20 09.1	1.437	2.263	133.8	18.9	17.0
1988	07 08	15 05.43	-20 13.0					
1988	07 18	15 07.51	-20 27.7	1.596	2.226	115.0	24.4	17.4
1988	07 28	15 12.69	-20 52.6					
1988	08 07	15 20.65	-21 25.8	1.785	2.189	99.2	27.2	17.6
1988	08 17	15 31.09	-22 05.2					
1988	08 27	15 43.76	-22 48.6	1.981	2.152	85.5	27.9	17.8

1987 DD a,e,i = 2.63, 0.10, 30 Elements MPC 11981

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1988	03 20	17 34.27	-10 00.7	2.602	2.872	-0.80	+7.3	17.8
1988	03 30	17 38.68	-10 20.9					
1988	04 09	17 40.86	-10 44.0	2.337	2.881	-0.91	+8.0	17.5
1988	04 19	17 40.56	-11 12.2					
1988	04 29	17 37.61	-11 47.4	2.107	2.888	-1.06	+8.8	17.1
1988	05 09	17 32.01	-12 31.1					
1988	05 19	17 23.95	-13 23.7	1.946	2.893	-1.21	+9.5	16.8
1988	05 29	17 13.95	-14 24.8					
1988	06 08	17 02.82	-15 32.5	1.888	2.897	-1.33	+10.0	16.4
1988	06 18	16 51.56	-16 44.2					
1988	06 28	16 41.22	-17 57.7	1.947	2.900	-1.36	+10.1	16.8
1988	07 08	16 32.67	-19 11.0					
1988	07 18	16 26.49	-20 23.1	2.111	2.902	-1.31	+9.6	17.2
1988	07 28	16 22.98	-21 33.6					
1988	08 07	16 22.17	-22 42.4	2.346	2.902	-1.23	+8.8	17.5
1988	08 17	16 23.94	-23 49.5					
1988	08 27	16 28.12	-24 54.8	2.618	2.900	-1.14	+7.9	17.8

1987 CG a,e,i = 2.88, 0.03, 2 Elements MPC 11981

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1988	03 20	17 24.51	-24 39.1	2.497	2.801	-1.03	+0.9	16.6
1988	03 30	17 31.43	-24 51.5					
1988	04 09	17 36.13	-25 02.0	2.234	2.798	-1.15	+0.7	16.3
1988	04 19	17 38.32	-25 11.1					
1988	04 29	17 37.83	-25 18.9	2.008	2.797	-1.31	+0.7	16.0
1988	05 09	17 34.63	-25 24.7					
1988	05 19	17 28.90	-25 27.6	1.847	2.795	-1.48	+1.1	15.6
1988	05 29	17 21.17	-25 26.5					
1988	06 08	17 12.23	-25 20.7	1.781	2.795	-1.58	+1.8	15.1
1988	06 18	17 03.08	-25 10.3					
1988	06 28	16 54.80	-24 57.1	1.821	2.794	-1.56	+2.4	15.5
1988	07 08	16 48.25	-24 43.2					
1988	07 18	16 44.01	-24 31.1	1.958	2.794	-1.44	+2.5	15.9
1988	07 28	16 42.40	-24 22.4					
1988	08 07	16 43.43	-24 18.1	2.166	2.795	-1.27	+2.3	16.2
1988	08 17	16 46.97	-24 18.1					
1988	08 27	16 52.84	-24 21.7	2.416	2.796	-1.11	+1.8	16.5

7633 P-L a,e,i = 2.84, 0.06, 3 Elements MPC 7374

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	19 34.34	-20 28.3	2.251	2.712	106.3	20.9	18.3
1988	05 09	19 39.22	-20 22.5					
1988	05 19	19 41.68	-20 23.2	2.006	2.705	124.0	18.1	18.0
1988	05 29	19 41.57	-20 31.3					
1988	06 08	19 38.83	-20 47.1	1.811	2.698	143.9	12.8	17.6
1988	06 18	19 33.60	-21 09.8					
1988	06 28	19 26.33	-21 37.3	1.695	2.692	166.0	5.2	17.2
1988	07 08	19 17.76	-22 06.7					
1988	07 18	19 08.88	-22 35.1	1.679	2.687	170.8	3.5	17.1
1988	07 28	19 00.76	-23 00.1					
1988	08 07	18 54.35	-23 20.4	1.767	2.683	148.3	11.5	17.5
1988	08 17	18 50.29	-23 35.8					
1988	08 27	18 48.94	-23 46.4	1.939	2.680	127.8	17.3	17.9
1988	09 06	18 50.36	-23 52.4					
1988	09 16	18 54.41	-23 53.9	2.167	2.677	109.6	20.7	18.2
1988	09 26	19 00.88	-23 50.7					
1988	10 06	19 09.44	-23 42.2	2.423	2.676	93.4	21.9	18.5

1981 EJ5 a,e,i = 2.20, 0.22, 5 Elements MPC 9683

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	19 12.73	-26 30.4	1.144	1.785	112.0	31.5	17.3
1988	05 09	19 25.83	-25 52.4					
1988	05 19	19 35.86	-25 11.2	0.956	1.753	126.0	27.8	16.8
1988	05 29	19 42.31	-24 28.7					
1988	06 08	19 44.79	-23 46.1	0.807	1.729	143.0	20.7	16.2
1988	06 18	19 43.08	-23 03.9					
1988	06 28	19 37.60	-22 21.6	0.713	1.712	163.5	9.7	15.6
1988	07 08	19 29.46	-21 38.1					
1988	07 18	19 20.39	-20 53.6	0.691	1.705	173.6	3.8	15.3
1988	07 28	19 12.52	-20 09.3					
1988	08 07	19 07.53	-19 27.2	0.744	1.706	151.6	16.4	15.9
1988	08 17	19 06.38	-18 48.7					
1988	08 27	19 09.38	-18 13.5	0.861	1.717	132.9	25.5	16.5
1988	09 06	19 16.22	-17 40.0					
1988	09 16	19 26.40	-17 05.6	1.022	1.736	117.8	30.8	17.0
1988	09 26	19 39.35	-16 27.8					
1988	10 06	19 54.48	-15 44.2	1.215	1.763	105.1	33.2	17.5

(3607) Naniwa a,e,i = 2.25, 0.07, 3 Elements MPC 11848

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	19 49.47	-24 37.9	1.915	2.364	103.6	24.5	18.8
1988	05 09	19 56.05	-24 34.8					
1988	05 19	19 59.84	-24 38.9	1.693	2.373	120.6	21.5	18.4
1988	05 29	20 00.54	-24 51.2					
1988	06 08	19 57.97	-25 11.3	1.512	2.381	140.1	15.9	18.0
1988	06 18	19 52.15	-25 37.3					
1988	06 28	19 43.47	-26 05.2	1.400	2.388	162.2	7.5	17.6
1988	07 08	19 32.83	-26 30.3					
1988	07 18	19 21.48	-26 48.2	1.384	2.394	171.7	3.5	17.4
1988	07 28	19 10.90	-26 56.3					
1988	08 07	19 02.36	-26 54.7	1.468	2.398	149.5	12.4	17.9
1988	08 17	18 56.72	-26 44.9					
1988	08 27	18 54.40	-26 29.2	1.636	2.401	128.7	19.2	18.3
1988	09 06	18 55.38	-26 09.3					
1988	09 16	18 59.42	-25 46.0	1.857	2.402	110.5	23.1	18.7
1988	09 26	19 06.19	-25 19.4					
1988	10 06	19 15.27	-24 49.0	2.105	2.402	94.6	24.5	19.0

1975 YE a,e,i = 2.88, 0.23, 14 Elements MPC 11346

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	19 53.06	-05 34.3	3.178	3.478	98.8	16.6	18.5
1988	05 09	19 55.68	-04 46.2					
1988	05 19	19 56.48	-04 02.5	2.892	3.459	116.1	15.2	18.2
1988	05 29	19 55.39	-03 25.3					
1988	06 08	19 52.39	-02 56.7	2.649	3.438	134.5	12.2	17.9
1988	06 18	19 47.59	-02 38.9					
1988	06 28	19 41.25	-02 33.7	2.481	3.414	152.4	7.9	17.6
1988	07 08	19 33.83	-02 42.2					
1988	07 18	19 25.89	-03 04.1	2.411	3.389	161.2	5.6	17.5
1988	07 28	19 18.14	-03 38.3					
1988	08 07	19 11.25	-04 22.2	2.450	3.361	149.2	8.9	17.6
1988	08 17	19 05.76	-05 12.8					
1988	08 27	19 02.11	-06 06.9	2.585	3.332	130.6	13.3	17.9
1988	09 06	19 00.49	-07 01.3					
1988	09 16	19 00.99	-07 53.6	2.789	3.300	112.0	16.4	18.1
1988	09 26	19 03.56	-08 41.7					
1988	10 06	19 08.05	-09 24.1	3.029	3.267	94.7	17.8	18.3

1978 QC a,e,i = 3.00, 0.27, 2 Elements MPC 9754

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	19 52.77	-19 08.2	2.877	3.237	101.8	17.7	19.2
1988	05 09	19 56.70	-18 51.9					
1988	05 19	19 58.65	-18 40.5	2.564	3.189	119.7	16.0	18.8
1988	05 29	19 58.48	-18 35.2					
1988	06 08	19 56.09	-18 36.5	2.299	3.140	139.5	12.1	18.4
1988	06 18	19 51.50	-18 44.2					
1988	06 28	19 44.97	-18 57.7	2.110	3.089	161.1	6.1	18.0
1988	07 08	19 36.96	-19 15.2					
1988	07 18	19 28.18	-19 34.8	2.024	3.037	175.1	1.6	17.6
1988	07 28	19 19.50	-19 54.5					
1988	08 07	19 11.80	-20 12.5	2.048	2.984	152.6	9.0	18.0
1988	08 17	19 05.83	-20 27.9					
1988	08 27	19 02.11	-20 40.1	2.166	2.931	131.1	15.1	18.2
1988	09 06	19 00.90	-20 48.9					
1988	09 16	19 02.27	-20 54.0	2.349	2.876	111.7	18.9	18.5
1988	09 26	19 06.11	-20 55.0					
1988	10 06	19 12.24	-20 51.5	2.562	2.821	94.4	20.7	18.7

1983 DE a,e,i = 2.39, 0.19, 3 Elements MPC 11151

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	19 56.34	-20 53.8	2.429	2.807	101.4	20.6	18.6
1988	05 09	20 01.15	-20 49.1					
1988	05 19	20 03.66	-20 51.7	2.158	2.793	119.0	18.5	18.2
1988	05 29	20 03.64	-21 02.7					
1988	06 08	20 00.97	-21 22.3	1.930	2.776	138.9	13.9	17.8
1988	06 18	19 55.62	-21 49.8					
1988	06 28	19 47.87	-22 23.0	1.775	2.757	161.1	6.8	17.4
1988	07 08	19 38.35	-22 58.4					
1988	07 18	19 27.93	-23 32.4	1.722	2.735	174.8	1.9	17.1
1988	07 28	19 17.77	-24 01.6					
1988	08 07	19 08.95	-24 24.2	1.776	2.711	151.4	10.3	17.5
1988	08 17	19 02.34	-24 39.7					
1988	08 27	18 58.48	-24 48.8	1.922	2.684	129.8	16.8	17.8
1988	09 06	18 57.56	-24 52.2					
1988	09 16	18 59.53	-24 50.6	2.128	2.655	110.7	20.8	18.2
1988	09 26	19 04.21	-24 44.2					
1988	10 06	19 11.28	-24 33.0	2.361	2.623	93.8	22.3	18.4

1941 WA a,e,i = 3.05, 0.29, 3 Elements MPC 9464

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	19 55.61	-21 32.7	2.925	3.280	101.6	17.5	17.7
1988	05 09	19 59.71	-21 29.9					
1988	05 19	20 01.87	-21 33.1	2.606	3.228	119.6	15.8	17.4
1988	05 29	20 01.90	-21 43.2					
1988	06 08	19 59.70	-22 00.3	2.334	3.173	139.3	12.0	17.0
1988	06 18	19 55.26	-22 23.7					
1988	06 28	19 48.79	-22 51.7	2.139	3.117	161.0	6.1	16.5
1988	07 08	19 40.75	-23 21.9					
1988	07 18	19 31.81	-23 51.1	2.046	3.060	175.4	1.5	16.2
1988	07 28	19 22.88	-24 16.8					
1988	08 07	19 14.87	-24 37.1	2.064	3.002	152.7	8.9	16.5
1988	08 17	19 08.56	-24 51.2					
1988	08 27	19 04.54	-24 59.4	2.178	2.943	131.2	15.0	16.8
1988	09 06	19 03.08	-25 02.1					
1988	09 16	19 04.27	-25 00.0	2.355	2.883	111.7	18.9	17.0
1988	09 26	19 08.01	-24 53.3					
1988	10 06	19 14.11	-24 41.8	2.564	2.822	94.4	20.7	17.2

(3519) 1984 DO a,e,i = 2.17, 0.18, 1 Elements MPC 11422

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	19 27.74	-22 19.8	1.257	1.839	108.2	31.4	16.6
1988	05 09	19 40.51	-21 56.7					
1988	05 19	19 50.50	-21 37.8	1.064	1.817	122.2	28.1	16.1
1988	05 29	19 57.25	-21 26.3					
1988	06 08	20 00.36	-21 24.7	0.907	1.801	139.1	21.7	15.6
1988	06 18	19 59.53	-21 34.2					
1988	06 28	19 54.93	-21 53.5	0.803	1.791	159.5	11.5	15.0
1988	07 08	19 47.31	-22 18.8					
1988	07 18	19 38.10	-22 44.5	0.771	1.787	177.2	1.6	14.5
1988	07 28	19 29.26	-23 05.2					
1988	08 07	19 22.60	-23 17.6	0.820	1.790	154.7	14.0	15.1
1988	08 17	19 19.39	-23 20.9					
1988	08 27	19 20.23	-23 15.5	0.937	1.799	135.0	23.4	15.7
1988	09 06	19 25.01	-23 01.7					
1988	09 16	19 33.34	-22 39.5	1.103	1.814	118.6	29.1	16.2
1988	09 26	19 44.69	-22 08.3					
1988	10 06	19 58.45	-21 27.7	1.302	1.835	105.0	31.8	16.7

(3641) A922 WC a,e,i = 2.99, 0.12, 16 Elements MPC 11998

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	19 58.96	-37 55.0	2.313	2.731	103.6	21.0	16.7
1988	05 09	20 07.17	-38 54.1					
1988	05 19	20 12.93	-40 02.4	2.071	2.713	119.3	19.0	16.4
1988	05 29	20 15.87	-41 19.0					
1988	06 08	20 15.67	-42 41.2	1.875	2.696	135.6	15.3	16.1
1988	06 18	20 12.13	-44 03.8					
1988	06 28	20 05.39	-45 19.4	1.750	2.680	150.2	10.9	15.8
1988	07 08	19 56.05	-46 19.4					
1988	07 18	19 45.17	-46 56.3	1.714	2.666	154.2	9.6	15.7
1988	07 28	19 34.29	-47 05.7					
1988	08 07	19 24.90	-46 47.8	1.771	2.654	143.2	13.2	15.8
1988	08 17	19 18.18	-46 06.7					
1988	08 27	19 14.83	-45 08.0	1.908	2.643	127.1	17.8	16.1
1988	09 06	19 14.97	-43 57.5					
1988	09 16	19 18.43	-42 39.6	2.102	2.635	111.0	20.9	16.4
1988	09 26	19 24.85	-41 17.1					
1988	10 06	19 33.75	-39 51.5	2.328	2.628	96.0	22.2	16.7

1949 PL a,e,i = 2.49, 0.04, 2 Elements MPC 8212

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	19 58.70	-18 21.9	2.007	2.401	100.3	24.4	16.9
1988	05 09	20 06.19	-17 54.6					
1988	05 19	20 11.23	-17 33.9	1.779	2.408	116.5	22.1	16.6
1988	05 29	20 13.56	-17 21.9					
1988	06 08	20 13.02	-17 19.9	1.586	2.415	135.2	17.2	16.2
1988	06 18	20 09.54	-17 28.8					
1988	06 28	20 03.36	-17 47.8	1.455	2.422	156.6	9.6	15.8
1988	07 08	19 55.07	-18 14.7					
1988	07 18	19 45.62	-18 46.0	1.414	2.430	177.6	1.0	15.3
1988	07 28	19 36.23	-19 17.9					
1988	08 07	19 28.10	-19 47.3	1.475	2.438	156.4	9.6	15.8
1988	08 17	19 22.17	-20 12.0					
1988	08 27	19 19.06	-20 31.0	1.626	2.447	135.0	17.0	16.3
1988	09 06	19 18.95	-20 43.9					
1988	09 16	19 21.76	-20 50.4	1.840	2.456	116.2	21.5	16.7
1988	09 26	19 27.28	-20 50.1					
1988	10 06	19 35.14	-20 42.9	2.091	2.466	99.7	23.6	17.0

1981 EQ40 a,e,i = 2.15, 0.21, 2 Elements MPC 10167

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	19 29.85	-19 23.7	1.338	1.898	107.2	30.5	18.7
1988	05 09	19 42.29	-18 41.5					
1988	05 19	19 52.34	-18 01.3	1.115	1.852	121.0	27.9	18.2
1988	05 29	19 59.56	-17 26.4					
1988	06 08	20 03.56	-17 00.3	0.928	1.810	137.3	22.3	17.6
1988	06 18	20 03.96	-16 46.2					
1988	06 28	20 00.73	-16 46.2	0.793	1.773	156.9	13.0	16.9
1988	07 08	19 54.33	-17 00.1					
1988	07 18	19 45.87	-17 25.3	0.727	1.742	176.3	2.2	16.2
1988	07 28	19 37.13	-17 57.1					
1988	08 07	19 30.02	-18 30.1	0.739	1.718	156.9	13.4	16.7
1988	08 17	19 26.10	-18 59.7					
1988	08 27	19 26.31	-19 22.6	0.818	1.702	136.9	24.0	17.2
1988	09 06	19 30.80	-19 36.5					
1988	09 16	19 39.28	-19 39.5	0.946	1.694	120.5	30.8	17.7
1988	09 26	19 51.27	-19 29.8					
1988	10 06	20 06.09	-19 06.5	1.105	1.695	107.2	34.3	18.1

(3647) Dermott a,e,i = 2.80, 0.10, 8 Elements MPC 12003

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	19 59.40	-15 59.1	2.310	2.670	99.7	21.8	16.4
1988	05 09	20 06.16	-15 44.0					
1988	05 19	20 10.83	-15 36.4	2.045	2.652	116.2	20.0	16.1
1988	05 29	20 13.17	-15 38.6					
1988	06 08	20 13.03	-15 52.3	1.818	2.634	134.8	15.9	15.7
1988	06 18	20 10.31	-16 18.4					
1988	06 28	20 05.19	-16 56.5	1.656	2.617	155.9	9.1	15.2
1988	07 08	19 58.11	-17 44.4					
1988	07 18	19 49.79	-18 38.6	1.586	2.602	177.5	1.0	14.7
1988	07 28	19 41.27	-19 34.5					
1988	08 07	19 33.61	-20 27.8	1.620	2.587	157.6	8.6	15.1
1988	08 17	19 27.74	-21 15.2					
1988	08 27	19 24.35	-21 54.8	1.748	2.574	136.1	15.8	15.5
1988	09 06	19 23.75	-22 25.7					
1988	09 16	19 25.99	-22 47.8	1.944	2.562	116.9	20.5	15.9
1988	09 26	19 30.93	-23 00.9					
1988	10 06	19 38.30	-23 05.0	2.179	2.551	100.1	22.7	16.2

1985 RD3 a,e,i = 2.19, 0.12, 2 Elements MPC 11743

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	19 58.12	-19 24.7	1.872	2.283	100.7	25.7	19.2
1988	05 09	20 06.80	-19 02.8					
1988	05 19	20 13.12	-18 47.7	1.618	2.258	116.4	23.7	18.8
1988	05 29	20 16.74	-18 41.9					
1988	06 08	20 17.36	-18 47.3	1.398	2.231	134.6	18.9	18.3
1988	06 18	20 14.73	-19 05.1					
1988	06 28	20 08.90	-19 34.7	1.236	2.203	155.8	10.9	17.8
1988	07 08	20 00.32	-20 13.2					
1988	07 18	19 49.92	-20 56.1	1.159	2.175	179.5	0.2	17.1
1988	07 28	19 39.12	-21 37.9					
1988	08 07	19 29.49	-22 13.9	1.179	2.147	156.5	10.9	17.6
1988	08 17	19 22.34	-22 41.6					
1988	08 27	19 18.58	-23 00.2	1.283	2.119	134.6	19.8	18.0
1988	09 06	19 18.50	-23 10.0					
1988	09 16	19 22.05	-23 11.2	1.445	2.091	116.0	25.6	18.4
1988	09 26	19 28.93	-23 03.8					
1988	10 06	19 38.69	-22 47.5	1.638	2.064	100.2	28.5	18.8

1982 BS a,e,i = 2.59, 0.17, 13 Elements MPC 10529

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 18.43	-23 26.3	2.554	2.855	96.9	20.5	18.2
1988	05 09	20 24.20	-22 50.2					
1988	05 19	20 27.80	-22 17.8	2.264	2.828	113.8	19.1	17.9
1988	05 29	20 28.99	-21 49.9					
1988	06 08	20 27.58	-21 26.6	2.008	2.799	132.8	15.4	17.5
1988	06 18	20 23.47	-21 07.7					
1988	06 28	20 16.79	-20 52.1	1.818	2.769	154.3	9.2	17.0
1988	07 08	20 07.97	-20 38.0					
1988	07 18	19 57.74	-20 23.6	1.721	2.737	177.6	0.9	16.5
1988	07 28	19 47.15	-20 07.2					
1988	08 07	19 37.32	-19 48.0	1.735	2.704	158.6	7.9	16.8
1988	08 17	19 29.24	-19 26.2					
1988	08 27	19 23.63	-19 02.4	1.847	2.670	136.3	15.2	17.2
1988	09 06	19 20.84	-18 37.1					
1988	09 16	19 20.93	-18 10.6	2.030	2.635	116.4	20.0	17.5
1988	09 26	19 23.80	-17 42.3					
1988	10 06	19 29.16	-17 11.7	2.250	2.599	98.9	22.3	17.8

1977 RR6 a,e,i = 2.44, 0.17, 5 Elements MPC 12123

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 03.68	-26 09.3	1.992	2.393	100.7	24.4	18.4
1988	05 09	20 12.88	-26 02.3					
1988	05 19	20 19.80	-26 01.6	1.724	2.354	116.3	22.7	18.0
1988	05 29	20 24.08	-26 08.9					
1988	06 08	20 25.39	-26 24.7	1.491	2.316	134.1	18.3	17.5
1988	06 18	20 23.46	-26 48.5					
1988	06 28	20 18.25	-27 17.4	1.318	2.278	154.4	11.1	17.0
1988	07 08	20 10.14	-27 46.7					
1988	07 18	19 59.98	-28 10.3	1.229	2.240	172.4	3.4	16.5
1988	07 28	19 49.16	-28 22.8					
1988	08 07	19 39.26	-28 21.1	1.236	2.204	156.7	10.5	16.8
1988	08 17	19 31.66	-28 05.4					
1988	08 27	19 27.34	-27 38.0	1.329	2.170	135.6	19.0	17.2
1988	09 06	19 26.68	-27 01.8					
1988	09 16	19 29.65	-26 19.0	1.483	2.138	117.1	24.7	17.5
1988	09 26	19 35.96	-25 30.5					
1988	10 06	19 45.15	-24 36.5	1.670	2.109	101.4	27.7	17.8

1985 FC a,e,i = 1.86, 0.04, 24 Elements MPC 11435

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 10.24	-51 35.2	1.369	1.876	103.3	31.5	18.2
1988	05 09	20 29.65	-53 51.0					
1988	05 19	20 45.97	-56 15.6	1.234	1.886	113.9	29.4	18.0
1988	05 29	20 58.06	-58 48.0					
1988	06 08	21 04.44	-61 24.0	1.131	1.896	123.9	26.4	17.7
1988	06 18	21 03.25	-63 54.8					
1988	06 28	20 52.84	-66 04.4	1.073	1.904	131.3	23.6	17.5
1988	07 08	20 33.03	-67 32.0					
1988	07 18	20 06.76	-67 56.8	1.068	1.912	133.1	22.8	17.5
1988	07 28	19 40.48	-67 09.2					
1988	08 07	19 20.30	-65 17.1	1.119	1.919	128.1	24.6	17.7
1988	08 17	19 08.87	-62 38.6					
1988	08 27	19 05.83	-59 32.9	1.223	1.925	118.8	27.4	17.9
1988	09 06	19 09.39	-56 14.5					
1988	09 16	19 17.82	-52 51.7	1.370	1.930	107.7	29.7	18.3
1988	09 26	19 29.69	-49 29.6					
1988	10 06	19 43.91	-46 10.1	1.547	1.934	96.4	30.9	18.6

1978 PR4 a,e,i = 2.24, 0.10, 5 Elements MPC 9424

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 12.82	-24 59.0	1.732	2.128	98.5	27.9	17.4
1988	05 09	20 23.28	-24 57.4					
1988	05 19	20 31.06	-25 04.9	1.534	2.150	113.7	25.5	17.1
1988	05 29	20 35.81	-25 23.5					
1988	06 08	20 37.20	-25 54.0	1.364	2.173	131.5	20.5	16.8
1988	06 18	20 34.97	-26 35.5					
1988	06 28	20 29.19	-27 24.0	1.247	2.197	152.0	12.6	16.3
1988	07 08	20 20.38	-28 13.2					
1988	07 18	20 09.54	-28 55.7	1.211	2.220	170.8	4.2	16.0
1988	07 28	19 58.21	-29 24.6					
1988	08 07	19 48.01	-29 36.7	1.272	2.244	157.8	9.8	16.3
1988	08 17	19 40.26	-29 32.4					
1988	08 27	19 35.79	-29 14.4	1.421	2.267	137.0	17.7	16.9
1988	09 06	19 34.83	-28 46.2					
1988	09 16	19 37.25	-28 10.3	1.634	2.290	118.4	22.7	17.3
1988	09 26	19 42.70	-27 28.3					
1988	10 06	19 50.72	-26 41.0	1.885	2.312	102.2	25.0	17.7

1987 BJ a,e,i = 2.22, 0.17, 5 Elements MPC 11744

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 23.57	-15 00.8	2.259	2.532	93.8	23.4	17.3
1988	05 09	20 30.48	-14 29.3					
1988	05 19	20 35.16	-14 05.3	2.020	2.551	110.1	21.9	17.0
1988	05 29	20 37.37	-13 50.8					
1988	06 08	20 36.91	-13 47.8	1.807	2.567	128.7	18.0	16.7
1988	06 18	20 33.65	-13 57.6					
1988	06 28	20 27.69	-14 20.4	1.649	2.580	149.9	11.4	16.3
1988	07 08	20 19.44	-14 54.7					
1988	07 18	20 09.59	-15 37.7	1.579	2.590	172.5	2.9	15.8
1988	07 28	19 59.21	-16 25.0					
1988	08 07	19 49.45	-17 12.3	1.615	2.597	161.6	7.1	16.1
1988	08 17	19 41.35	-17 56.0					
1988	08 27	19 35.71	-18 33.6	1.752	2.601	139.1	14.7	16.5
1988	09 06	19 32.88	-19 03.8					
1988	09 16	19 32.97	-19 26.3	1.961	2.602	119.0	19.7	16.9
1988	09 26	19 35.84	-19 40.7					
1988	10 06	19 41.22	-19 47.1	2.213	2.600	101.3	22.1	17.2

1984 FO a,e,i = 2.39, 0.25, 22 Elements MPC 10530

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	19 41.94	+09 04.8	1.356	1.795	97.8	33.8	16.2
1988	05 09	19 55.06	+11 39.9					
1988	05 19	20 05.74	+14 08.1	1.214	1.791	106.8	32.7	15.9
1988	05 29	20 13.67	+16 22.1					
1988	06 08	20 18.60	+18 14.0	1.091	1.797	117.0	30.2	15.6
1988	06 18	20 20.31	+19 34.3					
1988	06 28	20 18.89	+20 12.5	0.994	1.811	128.5	26.0	15.3
1988	07 08	20 14.77	+19 59.0					
1988	07 18	20 08.78	+18 46.7	0.936	1.834	139.8	21.0	15.1
1988	07 28	20 02.22	+16 34.9					
1988	08 07	19 56.48	+13 32.2	0.939	1.865	145.3	18.1	15.0
1988	08 17	19 52.78	+09 54.4					
1988	08 27	19 51.97	+06 02.2	1.018	1.902	139.4	20.2	15.3
1988	09 06	19 54.34	+02 14.8					
1988	09 16	19 59.86	-01 13.3	1.171	1.946	126.6	24.5	15.8
1988	09 26	20 08.25	-04 13.4					
1988	10 06	20 19.06	-06 41.9	1.385	1.994	112.5	27.6	16.3

6575 P-L a,e,i = 3.22, 0.13, 5 Elements MPC 12583

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 27.35	-24 54.6	3.408	3.640	95.2	16.0	18.2
1988	05 09	20 31.67	-24 56.0					
1988	05 19	20 34.22	-25 03.9	3.123	3.639	113.0	14.8	18.0
1988	05 29	20 34.85	-25 18.6					
1988	06 08	20 33.47	-25 39.6	2.876	3.636	132.2	11.9	17.7
1988	06 18	20 30.09	-26 05.7					
1988	06 28	20 24.84	-26 35.1	2.698	3.633	152.9	7.3	17.4
1988	07 08	20 18.06	-27 04.7					
1988	07 18	20 10.23	-27 31.7	2.619	3.628	171.8	2.3	17.1
1988	07 28	20 02.03	-27 53.1					
1988	08 07	19 54.18	-28 07.0	2.654	3.622	159.7	5.6	17.3
1988	08 17	19 47.36	-28 12.8					
1988	08 27	19 42.14	-28 10.6	2.795	3.615	138.6	10.6	17.6
1988	09 06	19 38.86	-28 01.3					
1988	09 16	19 37.67	-27 46.0	3.016	3.607	118.6	14.2	17.9
1988	09 26	19 38.60	-27 25.8					
1988	10 06	19 41.52	-27 01.5	3.285	3.598	100.1	15.9	18.1

2672 T-3 a,e,i = 3.20, 0.27, 13 Elements MPC 12574

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 03.00	-05 40.8	2.137	2.463	96.5	24.0	17.6
1988	05 09	20 11.83	-04 08.5					
1988	05 19	20 18.75	-02 37.1	1.883	2.428	110.4	23.0	17.3
1988	05 29	20 23.52	-01 09.9					
1988	06 08	20 25.97	+00 09.3	1.660	2.398	125.6	20.1	16.9
1988	06 18	20 25.96	+01 16.1					
1988	06 28	20 23.53	+02 05.3	1.489	2.372	141.8	15.4	16.5
1988	07 08	20 18.97	+02 32.5					
1988	07 18	20 12.84	+02 34.0	1.389	2.352	155.5	10.3	16.1
1988	07 28	20 06.01	+02 09.0					
1988	08 07	19 59.52	+01 19.9	1.376	2.337	155.6	10.3	16.1
1988	08 17	19 54.35	+00 11.9					
1988	08 27	19 51.35	-01 07.4	1.450	2.328	141.6	15.6	16.4
1988	09 06	19 50.96	-02 30.6					
1988	09 16	19 53.38	-03 51.1	1.597	2.325	125.0	20.7	16.7
1988	09 26	19 58.56	-05 03.7					
1988	10 06	20 06.24	-06 05.0	1.797	2.328	109.4	23.9	17.1

(3717) 1964 CG a,e,i = 3.15, 0.18, 3 Elements MPC 12577

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 29.60	-19 20.6	3.204	3.415	93.4	17.1	18.2
1988	05 09	20 34.15	-19 09.7					
1988	05 19	20 36.89	-19 05.6	2.948	3.443	111.0	15.9	18.0
1988	05 29	20 37.68	-19 08.9					
1988	06 08	20 36.46	-19 20.0	2.725	3.469	130.3	12.9	17.7
1988	06 18	20 33.23	-19 38.5					
1988	06 28	20 28.16	-20 03.2	2.567	3.494	151.5	8.0	17.5
1988	07 08	20 21.57	-20 32.0					
1988	07 18	20 13.97	-21 02.4	2.506	3.518	173.9	1.7	17.1
1988	07 28	20 06.02	-21 31.7					
1988	08 07	19 58.42	-21 57.5	2.559	3.541	163.1	4.8	17.3
1988	08 17	19 51.84	-22 18.2					
1988	08 27	19 46.80	-22 33.2	2.719	3.563	141.1	10.3	17.7
1988	09 06	19 43.64	-22 42.2					
1988	09 16	19 42.50	-22 45.5	2.964	3.583	120.7	14.0	18.0
1988	09 26	19 43.40	-22 43.3					
1988	10 06	19 46.22	-22 36.2	3.259	3.602	102.0	15.8	18.3

1977 EK1 a,e,i = 2.29, 0.15, 5 Elements MPC 12004

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 20.68	-13 17.6	1.853	2.170	94.0	27.6	18.6
1988	05 09	20 29.99	-12 18.3					
1988	05 19	20 36.82	-11 25.0	1.658	2.205	108.9	25.7	18.4
1988	05 29	20 40.91	-10 40.9					
1988	06 08	20 42.05	-10 08.8	1.485	2.240	126.3	21.4	18.0
1988	06 18	20 40.07	-09 51.3					
1988	06 28	20 35.08	-09 50.4	1.358	2.275	146.4	14.3	17.7
1988	07 08	20 27.51	-10 06.2					
1988	07 18	20 18.14	-10 37.3	1.308	2.310	167.2	5.6	17.3
1988	07 28	20 08.15	-11 19.9					
1988	08 07	19 58.83	-12 08.8	1.356	2.344	163.0	7.3	17.5
1988	08 17	19 51.31	-12 59.0					
1988	08 27	19 46.40	-13 46.1	1.499	2.378	142.0	15.2	18.0
1988	09 06	19 44.46	-14 27.0					
1988	09 16	19 45.50	-14 59.9	1.715	2.410	122.5	20.6	18.5
1988	09 26	19 49.35	-15 23.7					
1988	10 06	19 55.67	-15 37.7	1.976	2.440	105.4	23.3	18.9

(3661) 1979 UY3 a,e,i = 2.93, 0.06, 2 Elements MPC 12129

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 30.59	-21 08.0	2.787	3.022	93.6	19.4	17.4
1988	05 09	20 36.81	-20 52.6					
1988	05 19	20 41.09	-20 44.1	2.526	3.031	110.5	18.2	17.1
1988	05 29	20 43.22	-20 43.4					
1988	06 08	20 43.08	-20 51.1	2.295	3.040	129.2	15.0	16.8
1988	06 18	20 40.60	-21 07.0					
1988	06 28	20 35.86	-21 29.7	2.125	3.048	150.0	9.6	16.5
1988	07 08	20 29.20	-21 56.9					
1988	07 18	20 21.15	-22 25.4	2.046	3.056	172.2	2.6	16.1
1988	07 28	20 12.50	-22 51.7					
1988	08 07	20 04.13	-23 13.1	2.076	3.063	163.9	5.3	16.3
1988	08 17	19 56.89	-23 27.6					
1988	08 27	19 51.46	-23 34.7	2.210	3.070	141.9	11.7	16.7
1988	09 06	19 48.25	-23 34.6					
1988	09 16	19 47.44	-23 27.9	2.426	3.075	121.7	16.2	17.0
1988	09 26	19 49.00	-23 15.3					
1988	10 06	19 52.78	-22 57.0	2.692	3.081	103.4	18.4	17.3

1981 EB1 a,e,i = 3.16, 0.08, 3 Elements MPC 12790

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 29.06	-17 42.5	2.798	3.025	93.1	19.4	18.5
1988	05 09	20 35.35	-17 21.0					
1988	05 19	20 39.76	-17 06.1	2.544	3.040	109.8	18.2	18.3
1988	05 29	20 42.10	-16 59.2					
1988	06 08	20 42.26	-17 01.3	2.318	3.055	128.4	15.1	18.0
1988	06 18	20 40.19	-17 12.7					
1988	06 28	20 36.00	-17 32.9	2.153	3.070	149.1	9.8	17.7
1988	07 08	20 29.99	-18 00.2					
1988	07 18	20 22.66	-18 32.1	2.076	3.085	171.5	2.8	17.3
1988	07 28	20 14.76	-19 05.4					
1988	08 07	20 07.11	-19 37.0	2.108	3.101	165.6	4.7	17.4
1988	08 17	20 00.47	-20 04.5					
1988	08 27	19 55.50	-20 26.2	2.246	3.117	143.5	11.1	17.8
1988	09 06	19 52.61	-20 41.4					
1988	09 16	19 51.97	-20 49.9	2.467	3.132	123.2	15.6	18.2
1988	09 26	19 53.59	-20 51.7					
1988	10 06	19 57.32	-20 47.1	2.740	3.148	104.8	17.9	18.5

(3649) 1976 HQ a,e,i = 3.14, 0.06, 7 Elements MPC 12006

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 29.34	-17 23.3	2.866	3.087	93.0	19.0	17.3
1988	05 09	20 35.48	-17 11.7					
1988	05 19	20 39.78	-17 07.6	2.606	3.100	109.8	17.9	17.1
1988	05 29	20 42.07	-17 12.4					
1988	06 08	20 42.23	-17 27.0	2.376	3.112	128.5	14.8	16.8
1988	06 18	20 40.19	-17 51.6					
1988	06 28	20 36.07	-18 25.4	2.207	3.124	149.3	9.6	16.4
1988	07 08	20 30.14	-19 06.4					
1988	07 18	20 22.89	-19 51.7	2.127	3.137	171.7	2.7	16.1
1988	07 28	20 15.04	-20 37.4					
1988	08 07	20 07.40	-21 20.0	2.158	3.149	165.2	4.7	16.2
1988	08 17	20 00.73	-21 56.9					
1988	08 27	19 55.70	-22 26.2	2.294	3.161	143.1	11.1	16.6
1988	09 06	19 52.72	-22 47.4					
1988	09 16	19 51.98	-23 00.5	2.514	3.173	122.8	15.4	17.0
1988	09 26	19 53.50	-23 05.8					
1988	10 06	19 57.16	-23 03.9	2.787	3.185	104.3	17.7	17.3

1984 SU3 a,e,i = 2.64, 0.31, 6 Elements MPC 9415

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 06.14	-25 45.3	1.930	2.328	100.1	25.2	18.3
1988	05 09	20 17.52	-25 47.3					
1988	05 19	20 27.05	-25 56.9	1.641	2.260	114.7	24.0	17.8
1988	05 29	20 34.39	-26 16.3					
1988	06 08	20 39.15	-26 47.3	1.387	2.193	131.1	20.4	17.3
1988	06 18	20 40.91	-27 30.7					
1988	06 28	20 39.42	-28 24.7	1.188	2.128	149.7	14.0	16.7
1988	07 08	20 34.66	-29 25.0					
1988	07 18	20 27.05	-30 24.1	1.064	2.067	167.2	6.2	16.1
1988	07 28	20 17.66	-31 12.7					
1988	08 07	20 08.09	-31 42.8	1.027	2.010	159.9	10.0	16.1
1988	08 17	20 00.06	-31 50.3					
1988	08 27	19 55.09	-31 35.3	1.073	1.959	140.1	19.3	16.5
1988	09 06	19 53.99	-31 00.9					
1988	09 16	19 57.00	-30 10.9	1.180	1.914	122.1	26.4	16.8
1988	09 26	20 03.91	-29 07.8					
1988	10 06	20 14.22	-27 53.5	1.324	1.877	107.0	30.6	17.1

(3636) 1982 UJ2 a,e,i = 2.28, 0.18, 4 Elements MPC 11993

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 39.42	-22 57.5	2.421	2.655	92.1	22.3	19.0
1988	05 09	20 47.04	-22 47.0					
1988	05 19	20 52.55	-22 45.1	2.167	2.665	108.4	21.1	18.7
1988	05 29	20 55.66	-22 53.0					
1988	06 08	20 56.15	-23 11.6	1.938	2.672	126.7	17.7	18.4
1988	06 18	20 53.79	-23 40.6					
1988	06 28	20 48.58	-24 18.1	1.763	2.676	147.5	11.8	18.0
1988	07 08	20 40.75	-25 00.4					
1988	07 18	20 30.89	-25 42.3	1.672	2.677	169.2	4.1	17.6
1988	07 28	20 19.98	-26 18.4					
1988	08 07	20 09.21	-26 44.1	1.688	2.675	163.3	6.3	17.7
1988	08 17	19 59.76	-26 57.5					
1988	08 27	19 52.59	-26 58.5	1.807	2.671	141.2	13.7	18.1
1988	09 06	19 48.23	-26 48.8					
1988	09 16	19 46.88	-26 30.4	2.004	2.663	120.9	18.9	18.5
1988	09 26	19 48.47	-26 04.9					
1988	10 06	19 52.71	-25 33.3	2.245	2.653	102.8	21.6	18.8

(3633) 1980 EE2 a,e,i = 2.31, 0.10, 3 Elements MPC 11992

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 33.60	-15 46.7	2.157	2.406	91.6	24.7	17.3
1988	05 09	20 42.12	-14 57.0					
1988	05 19	20 48.45	-14 13.0	1.928	2.426	107.0	23.5	17.0
1988	05 29	20 52.32	-13 37.0					
1988	06 08	20 53.51	-13 11.0	1.720	2.445	124.7	20.0	16.7
1988	06 18	20 51.85	-12 56.8					
1988	06 28	20 47.33	-12 55.4	1.560	2.462	145.0	13.7	16.3
1988	07 08	20 40.24	-13 06.6					
1988	07 18	20 31.19	-13 28.6	1.477	2.479	167.2	5.2	15.9
1988	07 28	20 21.15	-13 58.3					
1988	08 07	20 11.31	-14 31.5	1.496	2.493	166.5	5.4	15.9
1988	08 17	20 02.81	-15 04.6					
1988	08 27	19 56.56	-15 34.2	1.615	2.506	144.4	13.6	16.4
1988	09 06	19 53.07	-15 58.3					
1988	09 16	19 52.51	-16 15.7	1.813	2.518	124.1	19.3	16.9
1988	09 26	19 54.80	-16 25.5					
1988	10 06	19 59.67	-16 27.4	2.059	2.528	106.2	22.3	17.2

1986 EE5 a,e,i = 3.13, 0.16, 1 Elements MPC 12455

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 42.88	-17 21.7	3.490	3.630	89.9	16.1	18.8
1988	05 09	20 47.53	-17 02.8					
1988	05 19	20 50.55	-16 49.9	3.205	3.636	107.3	15.4	18.6
1988	05 29	20 51.82	-16 44.0					
1988	06 08	20 51.24	-16 45.8	2.947	3.641	126.3	13.0	18.3
1988	06 18	20 48.78	-16 55.3					
1988	06 28	20 44.52	-17 12.2	2.749	3.644	147.0	8.7	18.0
1988	07 08	20 38.70	-17 35.0					
1988	07 18	20 31.69	-18 01.9	2.642	3.646	169.3	3.0	17.7
1988	07 28	20 24.06	-18 30.4					
1988	08 07	20 16.44	-18 58.1	2.648	3.646	167.8	3.4	17.7
1988	08 17	20 09.48	-19 22.9					
1988	08 27	20 03.77	-19 43.2	2.766	3.645	145.5	9.0	18.0
1988	09 06	19 59.71	-19 58.3					
1988	09 16	19 57.55	-20 07.7	2.975	3.642	124.6	13.1	18.3
1988	09 26	19 57.38	-20 11.3					
1988	10 06	19 59.15	-20 09.4	3.243	3.638	105.4	15.4	18.6

1978 TV8 a,e,i = 3.16, 0.18, 2 Elements MPC 12695

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 41.43	-19 57.0	3.438	3.597	90.9	16.3	18.7
1988	05 09	20 46.45	-19 42.9					
1988	05 19	20 49.85	-19 35.0	3.130	3.577	108.2	15.6	18.5
1988	05 29	20 51.48	-19 34.1					
1988	06 08	20 51.21	-19 40.7	2.852	3.557	127.1	13.2	18.2
1988	06 18	20 48.99	-19 54.8					
1988	06 28	20 44.85	-20 15.5	2.634	3.535	147.7	8.8	17.9
1988	07 08	20 39.02	-20 41.2					
1988	07 18	20 31.86	-21 09.5	2.507	3.512	169.8	2.9	17.5
1988	07 28	20 23.97	-21 37.5					
1988	08 07	20 16.02	-22 02.6	2.492	3.487	166.9	3.8	17.5
1988	08 17	20 08.73	-22 22.7					
1988	08 27	20 02.76	-22 36.6	2.588	3.462	144.7	9.7	17.8
1988	09 06	19 58.56	-22 43.7					
1988	09 16	19 56.40	-22 44.3	2.772	3.435	123.8	14.1	18.1
1988	09 26	19 56.41	-22 38.8					
1988	10 06	19 58.51	-22 27.4	3.013	3.407	104.8	16.5	18.3

1980 RU a,e,i = 2.58, 0.14, 15 Elements MPC 7601

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 36.14	-34 57.3	2.265	2.569	95.7	23.0	18.3
1988	05 09	20 46.22	-35 00.6					
1988	05 19	20 54.04	-35 11.3	1.997	2.538	110.7	21.9	18.0
1988	05 29	20 59.24	-35 30.0					
1988	06 08	21 01.46	-35 56.2	1.758	2.506	127.2	18.8	17.6
1988	06 18	21 00.32	-36 28.1					
1988	06 28	20 55.66	-37 01.1	1.572	2.475	145.2	13.6	17.1
1988	07 08	20 47.63	-37 28.6					
1988	07 18	20 36.85	-37 42.4	1.463	2.444	160.3	8.0	16.8
1988	07 28	20 24.55	-37 35.2					
1988	08 07	20 12.34	-37 03.3	1.451	2.414	156.3	9.7	16.8
1988	08 17	20 01.78	-36 07.5					
1988	08 27	19 54.11	-34 52.6	1.533	2.385	138.4	16.3	17.1
1988	09 06	19 49.95	-33 24.9					
1988	09 16	19 49.41	-31 49.8	1.687	2.357	120.0	21.7	17.4
1988	09 26	19 52.27	-30 11.1					
1988	10 06	19 58.10	-28 30.8	1.886	2.330	103.4	24.7	17.7

1984 SC2 a,e,i = 2.97, 0.11, 5 Elements MPC 11425

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 42.91	-20 46.6	3.103	3.275	90.7	17.9	17.9
1988	05 09	20 48.56	-20 24.7					
1988	05 19	20 52.42	-20 08.9	2.826	3.279	107.7	17.1	17.6
1988	05 29	20 54.31	-20 00.1					
1988	06 08	20 54.12	-19 58.8	2.575	3.282	126.5	14.4	17.3
1988	06 18	20 51.76	-20 05.0					
1988	06 28	20 47.30	-20 17.6	2.383	3.284	147.2	9.7	17.0
1988	07 08	20 40.99	-20 35.0					
1988	07 18	20 33.26	-20 54.7	2.280	3.284	169.4	3.3	16.7
1988	07 28	20 24.79	-21 13.7					
1988	08 07	20 16.35	-21 29.6	2.287	3.284	167.2	3.9	16.7
1988	08 17	20 08.72	-21 40.4					
1988	08 27	20 02.59	-21 45.3	2.404	3.282	144.8	10.2	17.1
1988	09 06	19 58.40	-21 44.0					
1988	09 16	19 56.42	-21 37.0	2.609	3.279	124.1	14.7	17.4
1988	09 26	19 56.69	-21 24.5					
1988	10 06	19 59.11	-21 06.8	2.868	3.275	105.2	17.1	17.7

1986 AL a,e,i = 3.21, 0.08, 16 Elements MPC 10523

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	04 29	20 41.71	-20 05.8	2.774	2.965	90.8	19.9	17.0
1988	05 09	20 48.19	-19 09.0					
1988	05 19	20 52.72	-18 15.4	2.509	2.969	107.2	19.0	16.7
1988	05 29	20 55.11	-17 26.0					
1988	06 08	20 55.23	-16 41.7	2.269	2.974	125.4	16.2	16.4
1988	06 18	20 52.98	-16 03.0					
1988	06 28	20 48.44	-15 30.2	2.085	2.980	145.6	11.1	16.1
1988	07 08	20 41.89	-15 02.8					
1988	07 18	20 33.82	-14 40.5	1.987	2.987	167.3	4.3	15.7
1988	07 28	20 24.98	-14 22.0					
1988	08 07	20 16.25	-14 06.2	1.997	2.995	167.6	4.2	15.7
1988	08 17	20 08.48	-13 52.3					
1988	08 27	20 02.38	-13 39.1	2.114	3.004	145.9	10.9	16.1
1988	09 06	19 58.40	-13 25.6					
1988	09 16	19 56.76	-13 11.2	2.317	3.014	125.5	15.8	16.5
1988	09 26	19 57.49	-12 54.7					
1988	10 06	20 00.44	-12 35.4	2.576	3.024	107.0	18.4	16.8

4153 P-L a,e,i = 2.33, 0.12, 8 Elements MPC 12585

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	05 19	20 59.25	-25 55.7	2.118	2.609	107.7	21.7	18.6
1988	05 29	21 03.24	-26 00.1					
1988	06 08	21 04.55	-26 14.3	1.886	2.609	125.4	18.5	18.3
1988	06 18	21 02.90	-26 37.6					
1988	06 28	20 58.22	-27 07.9	1.705	2.607	145.5	12.8	17.9
1988	07 08	20 50.70	-27 41.0					
1988	07 18	20 40.87	-28 11.4	1.605	2.603	166.1	5.4	17.5
1988	07 28	20 29.71	-28 33.2					
1988	08 07	20 18.50	-28 42.1	1.609	2.597	163.6	6.3	17.5
1988	08 17	20 08.50	-28 36.4					
1988	08 27	20 00.79	-28 17.0	1.714	2.589	142.5	13.7	17.9
1988	09 06	19 55.98	-27 46.5					
1988	09 16	19 54.31	-27 07.7	1.898	2.579	122.3	19.2	18.3
1988	09 26	19 55.70	-26 22.5					
1988	10 06	19 59.86	-25 32.5	2.129	2.567	104.4	22.2	18.6
1988	10 16	20 06.45	-24 38.1					
1988	10 26	20 15.13	-23 39.2	2.379	2.554	88.4	22.9	18.9

1987 DE a,e,i = 2.35, 0.18, 24 Elements MPC 11997

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	05 19	20 54.47	+01 27.6	2.201	2.586	100.6	22.6	17.7
1988	05 29	20 57.76	+01 53.1					
1988	06 08	20 58.72	+02 03.8	1.987	2.616	117.5	20.1	17.5
1988	06 18	20 57.18	+01 55.8					
1988	06 28	20 53.17	+01 25.6	1.812	2.644	136.5	15.3	17.1
1988	07 08	20 46.89	+00 31.0					
1988	07 18	20 38.81	-00 48.2	1.707	2.669	156.2	8.8	16.8
1988	07 28	20 29.71	-02 29.1					
1988	08 07	20 20.54	-04 25.5	1.704	2.692	163.4	6.2	16.7
1988	08 17	20 12.28	-06 29.4					
1988	08 27	20 05.78	-08 32.4	1.812	2.712	146.5	11.9	17.1
1988	09 06	20 01.59	-10 27.7					
1988	09 16	19 59.99	-12 10.8	2.011	2.730	126.3	17.3	17.5
1988	09 26	20 01.02	-13 39.0					
1988	10 06	20 04.51	-14 51.6	2.272	2.745	107.6	20.3	17.9
1988	10 16	20 10.22	-15 48.7					
1988	10 26	20 17.90	-16 31.0	2.561	2.758	90.7	21.1	18.2

1981 EP13 a,e,i = 2.15, 0.12, 5 Elements MPC 10159

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	05 19	20 43.91	-21 51.2	1.375	1.967	110.1	28.9	18.3
1988	05 29	20 52.68	-21 07.3					
1988	06 08	20 58.43	-20 29.9	1.173	1.948	125.6	25.1	17.8
1988	06 18	21 00.74	-20 01.0					
1988	06 28	20 59.32	-19 41.4	1.012	1.931	144.3	17.9	17.3
1988	07 08	20 54.18	-19 30.0					
1988	07 18	20 45.79	-19 24.4	0.914	1.917	166.3	7.2	16.7
1988	07 28	20 35.35	-19 20.2					
1988	08 07	20 24.55	-19 13.2	0.900	1.906	169.7	5.5	16.6
1988	08 17	20 15.22	-19 00.8					
1988	08 27	20 08.87	-18 41.9	0.971	1.899	146.9	16.9	17.1
1988	09 06	20 06.28	-18 16.8					
1988	09 16	20 07.64	-17 45.6	1.109	1.896	127.4	24.9	17.6
1988	09 26	20 12.72	-17 08.2					
1988	10 06	20 21.02	-16 24.1	1.290	1.897	111.2	29.4	18.1
1988	10 16	20 32.03	-15 32.3					
1988	10 26	20 45.25	-14 32.2	1.496	1.901	97.5	31.2	18.4

1978 TP6 a,e,i = 3.12, 0.20, 4 Elements MPC 12325

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	05 19	21 05.63	-19 38.6	3.303	3.690	104.6	15.4	18.9
1988	05 29	21 07.50	-19 32.6					
1988	06 08	21 07.56	-19 33.9	3.020	3.677	123.3	13.3	18.6
1988	06 18	21 05.71	-19 42.5					
1988	06 28	21 01.98	-19 57.7	2.792	3.662	143.7	9.5	18.3
1988	07 08	20 56.53	-20 18.0					
1988	07 18	20 49.65	-20 41.3	2.652	3.645	165.6	4.0	17.9
1988	07 28	20 41.87	-21 04.9					
1988	08 07	20 33.81	-21 26.1	2.622	3.627	170.9	2.5	17.8
1988	08 17	20 26.15	-21 42.7					
1988	08 27	20 19.55	-21 53.4	2.706	3.607	148.6	8.4	18.2
1988	09 06	20 14.50	-21 57.6					
1988	09 16	20 11.35	-21 55.2	2.885	3.585	127.4	12.9	18.4
1988	09 26	20 10.24	-21 46.7					
1988	10 06	20 11.17	-21 32.3	3.127	3.563	107.8	15.5	18.7
1988	10 16	20 14.05	-21 12.5					
1988	10 26	20 18.71	-20 47.5	3.398	3.538	89.9	16.3	18.9

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

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	05 19	20 55.60	-23 20.6	2.296	2.778	107.8	20.3	16.4
1988	05 29	21 00.70	-23 51.6					
1988	06 08	21 03.53	-24 35.0	2.061	2.774	125.4	17.4	16.1
1988	06 18	21 03.88	-25 30.8					
1988	06 28	21 01.67	-26 37.0	1.879	2.772	144.7	12.2	15.7
1988	07 08	20 57.01	-27 49.8					
1988	07 18	20 50.26	-29 03.5	1.780	2.771	163.8	5.9	15.4
1988	07 28	20 42.16	-30 11.1					
1988	08 07	20 33.66	-31 06.7	1.783	2.771	163.7	5.9	15.4
1988	08 17	20 25.82	-31 46.1					
1988	08 27	20 19.63	-32 07.8	1.888	2.773	144.4	12.2	15.7
1988	09 06	20 15.75	-32 12.7					
1988	09 16	20 14.55	-32 02.9	2.074	2.776	125.0	17.3	16.1
1988	09 26	20 16.10	-31 40.9					
1988	10 06	20 20.22	-31 08.9	2.313	2.780	107.3	20.1	16.4
1988	10 16	20 26.66	-30 28.3					
1988	10 26	20 35.12	-29 40.1	2.578	2.785	91.3	20.9	16.7