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

ERRATA.

13175	-13	For Visbor read Vizbor
13176	-14	For (3624) Mirovnov read (3624) Mironov
13238	-17 & -16	For Ziegler read Zeigler
13298	3	Add (MPC 10941)
13307	26	Add (or two decimals in units of degrees)
13307	27 to 31	The residuals marked X should be in parentheses
13309	2	Add The identifications 1986 TG = 1985 DZ3 and 1986 TG = 1973 TB are by S. J. Bus and D. W. E. Green, respectively (MPC 11843).

* * * * *

CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Mag.	N Obs.
1983 XC1 *	1983 12	09.36767	06 08 31.60	+16 06 24.5	MPC 8522		1 704
1983 XC1	1983 12	09.40877	06 08 29.63	+16 06 18.6	MPC 8522		1 704
1986 PM4 *	1986 08	08.98102	22 00 37.90	-03 36 05.3	MPC11217	16	071
1986 PM4	1986 08	08.99919	22 00 37.08	-03 36 05.7	MPC11217	16	071
1986 PM4	1986 08	09.01759	22 00 36.09	-03 36 04.8	MPC11217	16	071
1986 RS *	1986 09	05.95564	21 37 15.98	-04 09 06.9	MPC11217		2 071
1986 RS	1986 09	05.97340	21 37 15.19	-04 09 07.9	MPC11217		071
1986 RS	1986 09	07.88705	21 35 55.25	-04 13 10.7	MPC11701	17	2 071
1986 RS	1986 09	07.94697	21 35 52.71	-04 13 18.3	MPC11701		071
1986 WQ2 *	1986 11	21.41837	00 47 57.32	-31 37 36.9	MPC11485	17	3 413
1986 WQ2	1986 11	21.50170	00 47 56.91	-31 35 50.8	MPC11485		3 413
1986 WQ2	1986 11	23.42156	00 48 00.00	-30 53 16.1	MPC11485		3 413
1986 WQ2	1986 11	23.50490	00 47 59.98	-30 51 25.2	MPC11485		3 413
1986 WQ2	1986 12	03.43120	00 50 23.78	-27 02 19.2	MPC11485		3 413
1986 WQ2	1986 12	05.43890	00 51 17.03	-26 14 36.2	MPC11485		3 413
1986 WQ2	1986 12	05.49265	00 51 18.34	-26 13 20.5	MPC11485		3 413
1986 WQ2	1986 12	05.50920	00 51 18.71	-26 12 58.6	MPC11485		3 413
1986 XL1 *	1986 12	05.43890	00 42 58.53	-26 24 24.0	MPC11486	18	3 413
1986 XL1	1986 12	05.49265	00 42 58.39	-26 24 54.3	MPC11486		3 413
1986 XL1	1986 12	05.50920	00 42 57.90	-26 25 02.9	MPC11486		3 413
1986 XM1 *	1986 12	05.43890	00 43 20.15	-30 47 28.0	MPC11486	17	3 413
1986 XM1	1986 12	05.49265	00 43 23.34	-30 46 10.7	MPC11486		3 413
1986 XM1	1986 12	05.50920	00 43 24.22	-30 45 49.8	MPC11486		3 413
1987 SG4	1987 09	20.98781	00 35 23.74	+00 36 25.6	MPC12664		071
1987 SG4	1987 09	21.00596	00 35 22.79	+00 36 20.7	MPC12664	17.5	071
1987 SO9 *	1987 09	20.98781	00 29 21.18	+00 05 37.2	MPC12664		071
1987 SO9	1987 09	21.00596	00 29 20.36	+00 05 31.8	MPC12664	18.0	071
1987 SP9 *	1987 09	20.98781	00 32 51.33	+01 18 21.5	MPC12664		071

1987 SP9		1987	09	21.00596	00	32	50.67	+01	17	41.5	MPC12664	18.5		071
1987 SQ9	*	1987	09	20.98781	00	33	59.46	-00	21	42.1	MPC12664			071
1987 SQ9		1987	09	21.00596	00	33	58.67	-00	21	47.7	MPC12664	18.5		071
1987 SR9	*	1987	09	20.98781	00	38	56.82	-01	39	16.4	MPC12664			071
1987 SR9		1987	09	21.00596	00	38	55.94	-01	39	17.4	MPC12664	18.0		071
1987 SS9	*	1987	09	20.98781	00	43	22.16	+00	19	47.9	MPC12664			071
1987 SS9		1987	09	21.00596	00	43	21.35	+00	19	46.6	MPC12664	18.0		071
1987 SZ11	*	1987	09	17.33229	00	43	10.76	+02	59	58.1	MPC12918	17.2		809
1987 SZ11		1987	09	17.34201	00	43	10.21	+02	59	57.2	MPC12918			809
1987 SZ11		1987	09	17.39715	00	43	10.51	+02	59	57.7	MPC12918			809
1988 EN1	*	1988	03	11.39306	11	40	14.18	-06	05	17.1	MPC13020	17.0	4	675
1988 EN1		1988	03	14.26007	11	38	04.26	-05	34	06.4	MPC13020			675
1988 HG	*	1988	04	16.57465	13	52	30.39	-02	12	40.3	MPC13123	16		400
1988 HG		1988	04	16.59549	13	52	29.12	-02	12	37.1	MPC13123			400
1988 HG		1988	04	16.60833	13	52	28.19	-02	12	33.9	MPC13123			400
1988 JV	*	1988	05	09.38924	15	57	37.64	-07	02	31.1	MPC13237	16.5		675
502		1986	12	03.43120	00	43	19.23	-26	53	28.5	MPC11486	15	3	413
502		1986	12	03.49371	00	43	19.39	-26	52	57.2	MPC11486		3	413
502		1986	12	05.43890	00	43	33.68	-26	35	32.7	MPC11486		3	413
502		1986	12	05.49265	00	43	33.99	-26	35	04.8	MPC11486		3	413
502		1986	12	05.50920	00	43	34.13	-26	34	54.8	MPC11486		3	413
2035		1986	11	21.41837	00	57	34.30	-30	43	17.3	MPC11486	15	3	413
2035		1986	11	21.50170	00	57	32.10	-30	41	15.0	MPC11486		3	413
2035		1986	11	23.42156	00	56	53.85	-29	53	12.9	MPC11486		3	413
2035		1986	11	23.50490	00	56	52.12	-29	51	10.5	MPC11486		3	413
2035		1986	12	03.43120	00	55	54.21	-25	38	16.2	MPC11486		3	413
2035		1986	12	03.49371	00	55	54.29	-25	36	41.2	MPC11486		3	413

Note 1: time originally erroneously given as 1 day earlier. 2: time originally slightly different. 3: originally erroneously given as 2 hours later. 4: time originally given as 1988 03 11.39653.

* * * * *

DELETED OBSERVATIONS.

The following observations are to be deleted.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Obs.
1986 WQ2	1986	12 03.57704	00 50 24.98	-27 00 55.5	MPC11485	413
1986 WQ2	1986	12 05.64433	00 51 19.81	-26 11 53.1	MPC11485	413
1986 XL1	1986	12 05.64433	00 42 57.50	-26 25 34.9	MPC11486	413
502	1986	12 05.64433	00 43 34.41	-26 34 30.2	MPC11486	413

* * * * *

IDENTIFICATION CHANGES.

Continuation to MPC 13221.

Object	Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
1953 XQ1 *	1953	12 08.90139	03 37 28.75	+18 10 27.0	1953 VY2	15	024
1977 FP3 *	1977	03 25.94244	12 50 13.86	-07 57 07.4	1977 EZ1	18.0	095
1978 JT3 *	1978	05 05.87200	13 45 50.54	-08 37 50.6	1978 GO4	16.8	095
1981 UF21*	1981	10 24.04488	03 48 19.75	+26 49 13.5	1981 UG9	17.5	095
1981 UG21*	1981	10 24.04488	03 48 45.33	+26 50 28.8	1981 UC9	17.5	095
1984 EH2 *	1984	03 05.81100	09 40 11.38	+23 30 06.6	1984 DJ1	17.0	095
1988 DG3 *	1988	02 23.17708	10 12 35.00	+01 18 45.6	1988 DB2	20.0	809
1988 DG3	1988	02 23.18750	10 12 34.46	+01 18 48.3	1988 DB2		809
1988 DG3	1988	02 23.19792	10 12 34.00	+01 18 50.9	1988 DB2		809

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.
033 Tautenburg. 1.3-m Schmidt. Observer F. Borngen.
046 Klet. Observer A. Mrkos.
071 Rozhen. Observers V. Ivanova, V. Umlensky, V. Shkodrov and T. Bonev.
293 Burlington remote site. Observer T. Handley.
372 Geisei. Observer T. Seki.
400 Kitami. Observers K. Endate and Y. Yanai. Measured by K. Watanabe.
413 Siding Spring. 1.2-m U.K. Schmidt and Uppsala Southern Schmidt. Observers M. Hartley, R. H. McNaught, Q. A. Parker and A. Savage. Measured by R. H. McNaught and A. J. Noymer.
415 Kambah, near Canberra. Observer D. Herald.
474 Mount John University Observatory. 0.6-m reflector. Observer A. C. Gilmore. Measurer P. M. Kilmartin.
491 Yebes. Observers M. de Pascual, J. Martin-Pintado and J. Garcia.
494 Stakenbridge. Observer B. Manning.
503 Cambridge. Observer J. D. Shanklin.
568 Mauna Kea. 2.2-m telescope + CCD. Observers K. Meech, M. Belton, E. Alvarez and J. Piscitelli.
657 Victoria. Observers J. B. Tatum and D. D. Balam.
675 Palomar. Observers J. Alu, J. Gibson, E. Helin, H. E. Holt, H. R. Holt, E. Majkowski, T. A. Rodriquez and B. Roman. Measured by R. Coker, J. Gibson, T. A. Rodriquez, B. Roman and C. S. Shoemaker.
688 Lowell Observatory, Anderson Mesa Station. Observers S. J. Bus, B. A. Skiff and K. W. Zeigler. Measured by S. J. Bus and B. A. Skiff.
693 Lunar and Planetary Laboratory, Catalina Station. 1.5-m reflector + IHW-CCD camera. Observers E. S. Bus, D. Levy, M. Nolan, P. Geissler and W. Farrand. Measured by E. S. Bus and S. J. Bus.
801 Oak Ridge Observatory. Observers R. E. McCrosky, G. Schwartz and C.-Y. Shao.
807 Cerro Tololo. 1.5-m telescope + CCD and Schmidt telescope. Observer K. J. Meech.
809 European Southern Observatory. GPO astrograph. Observer H. Debehogne. Reductions by H. Debehogne, J. Dumoulin and G. Peeters.
897 YGCO Chiyoda Station. 0.25-m f/3.4 Wright-Schmidt. Observer T. Kojima. Long. and Parallax 139.49, -344, -250. Earlier observations given as code 892 (referring to a nearby location) are being changed in the MPC files.

Object	Date	UT	R. A. (1950)	Decl.	Mag.		N Obs.
		Periodic Comet Schwassmann-Wachmann 1					
/1957 IV	1964	03 15.87500	07 25 40.99	+26 21 44.3			033
/1957 IV	1964	03 16.79722	07 25 38.00	+26 20 52.5			033
/1957 IV	1964	03 16.82639	07 25 37.90	+26 20 51.9			033
/1957 IV	1964	03 17.81042	07 25 35.07	+26 19 57.5			033
/1957 IV	1964	03 17.85347	07 25 35.00	+26 19 53.1			033
/1974 II	1983	05 12.48267	12 50 59.44	-16 37 22.7	14	T	413
/1974 II	1983	05 12.52434	12 50 58.72	-16 37 16.3	14	T	413
/1974 II	1987	08 24.96049	20 10 44.09	-21 25 35.5			491
/1974 II	1987	08 25.96399	20 10 20.92	-21 25 49.4			491
/1974 II	1988	04 15.61714	22 05 13.13	-10 14 39.4	17	T	568
/1974 II	1988	05 18.56924	22 20 02.14	-08 19 56.9			568
/1974 II	1988	05 19.58851	22 20 21.32	-08 16 58.6			568

/1974 II	1988	08	11.59492	22	11	53.36	-07	26	09.5	14	T 413
/1974 II	1988	08	11.65395	22	11	51.85	-07	26	14.1		413
/1974 II	1988	08	13.65556	22	10	58.32	-07	29	13.9	13	T 413
/1974 II	1988	08	14.69306	22	10	30.30	-07	30	50.3	13	T 413
/1974 II	1988	08	16.74517	22	09	34.43	-07	34	05.9		413
			Periodic Comet Gunn								
/1982 X	1988	05	19.40345	09	47	23.77	+24	24	15.2		568
			Comet Cernis (1983 XII)								
/1983 XII	1988	03	23.30118	16	45	13.66	-58	30	35.7	19	T 1 807
/1983 XII	1988	03	23.31352	16	45	13.31	-58	30	36.5		1 807
/1983 XII	1988	03	23.32589	16	45	13.12	-58	30	38.2		1 807
/1983 XII	1988	03	23.33965	16	45	13.19	-58	30	39.0		1 807
/1983 XII	1988	03	24.33033	16	44	55:48	-58	32	29.4		1 807
/1983 XII	1988	03	24.33891	16	44	55.26	-58	32	29.4		1 807
/1983 XII	1988	03	24.34724	16	44	55.12	-58	32	30.2		1 807
/1983 XII	1988	03	24.35981	16	44	54.86	-58	32	31.8		1 807
			Periodic Comet Encke								
/1984 VI	1988	05	17.59851	22	55	36.27	-08	49	05.8		568
/1984 VI	1988	05	18.57964	22	56	00.38	-08	46	16.4		568
			Periodic Comet Neujmin 1								
/1984 XIX	1988	05	17.32314	08	22	57.24	+28	18	55.3	22	N 568
			Periodic Comet Arend-Rigaux								
/1984 XXI	1988	05	17.51937	18	37	14.76	-12	48	53.1		1 568
/1984 XXI	1988	05	17.52345	18	37	14.63	-12	48	52.3		1 568
			Comet Shoemaker (1985 XII)								
/1985 XII	1988	03	24.01701	03	20	49.31	+07	33	45.6	18	T 807
			Comet Hartley (1985 XIV)								
/1985 XIV	1988	03	24.23238	16	52	58.21	-36	38	21.0		1 807
/1985 XIV	1988	03	24.24501	16	52	58.07	-36	38	19.9		1 807
/1985 XIV	1988	05	18.47852	16	29	14.98	-34	36	17.3		1 568
/1985 XIV	1988	05	18.48789	16	29	14.80	-34	36	15.9		1 568
/1985 XIV	1988	05	18.49200	16	29	14.58	-34	36	15.2		1 568
			Periodic Comet Halley								
/1986 III	1988	03	23.07885	09	40	56.32	-07	00	19.9	19.4T	807
/1986 III	1988	03	24.15801	09	40	27.62	-06	55	55.3		807
/1986 III	1988	03	25.05974	09	40	03.86	-06	52	13.7		807
/1986 III	1988	03	25.13413	09	40	01.92	-06	51	55.9		807
/1986 III	1988	04	15.30576	09	32	43.28	-05	29	47.8		568
/1986 III	1988	04	15.43350	09	32	41.35	-05	29	17.8		568
/1986 III	1988	04	16.35491	09	32	27.61	-05	26	03.5		568
/1986 III	1988	04	17.36347	09	32	12.93	-05	22	25.8		568
/1986 III	1988	05	18.31689	09	28	56.25	-03	53	38.9		568
			Comet Churyumov-Solodovnikov (1986 IX)								
/1986 IX	1988	03	23.19523	12	21	05.83	-87	07	20.2		807
/1986 IX	1988	03	23.26666	12	20	06.04	-87	07	11.8		807
/1986 IX	1988	03	23.29017	12	19	47.50	-87	07	08.2		807
/1986 IX	1988	03	25.24166	11	54	07.42	-87	01	24.5		807
/1986 IX	1988	03	25.24942	11	54	00.26	-87	01	22.4		807
/1986 IX	1988	03	25.25734	11	53	52.95	-87	01	20.6		807

Comet Shoemaker (1986 XIV)

/1986 XIV	1988	03	20.31718	15	33	55.78	+29	22	06.1			2	807
/1986 XIV	1988	03	20.33280	15	33	55.28	+29	22	12.3			3	807
/1986 XIV	1988	03	20.34843	15	33	54.72	+29	22	18.5			2	807
/1986 XIV	1988	03	21.34652	15	33	14.31	+29	33	22.5			2	807
/1986 XIV	1988	03	21.36214	15	33	13.71	+29	33	29.5			3	807
/1986 XIV	1988	03	21.37778	15	33	13.13	+29	33	36.3			2	807
/1986 XIV	1988	03	22.32007	15	32	34.37	+29	43	55.6			3	807
/1986 XIV	1988	03	22.34076	15	32	33.46	+29	44	09.5			2	807
/1986 XIV	1988	03	22.35117	15	32	33.05	+29	44	17.4			3	807
/1986 XIV	1988	03	22.36159	15	32	32.64	+29	44	23.8			2	807
/1986 XIV	1988	03	23.39377	15	31	49.15	+29	55	37.1				807
/1986 XIV	1988	05	17.45568	14	39	30.34	+36	47	23.1				568
/1986 XIV	1988	05	19.48602	14	37	27.64	+36	53	08.9				568

Periodic Comet Schwassmann-Wachmann 2

/1986h	1988	03	18.28626	13	24	58.68	-03	01	27.1			2	807
/1986h	1988	03	18.30189	13	24	58.03	-03	01	19.6			3	807
/1986h	1988	03	18.31751	13	24	57.43	-03	01	13.5			2	807
/1986h	1988	03	19.16388	13	24	25.78	-02	56	41.4			3	807
/1986h	1988	03	20.20080	13	23	45.62	-02	51	05.9			3	807
/1986h	1988	03	22.25897	13	22	23.06	-02	39	49.9			3	807
/1986h	1988	04	10.60208	13	07	47.71	-00	57	06.1	14	T		897
/1986h	1988	04	10.64097	13	07	45.89	-00	56	55.1				897
/1986h	1988	04	15.52708	13	04	07.28	-00	35	02.1	14	T		897
/1986h	1988	04	15.56910	13	04	05.45	-00	34	49.3				897
/1986h	1988	05	19.46403	12	49	13.10	+00	21	14.9				568

Periodic Comet Comas Sola

/1986j	1988	03	20.22123	13	15	01.46	+09	36	21.5			3	807
/1986j	1988	03	21.21718	13	14	09.73	+09	39	16.8			2	807
/1986j	1988	03	21.23280	13	14	08.76	+09	39	20.7			3	807
/1986j	1988	03	21.24842	13	14	08.06	+09	39	24.3			2	807
/1986j	1988	03	22.22490	13	13	16.56	+09	42	09.6			2	807
/1986j	1988	03	22.23531	13	13	15.98	+09	42	11.4			3	807
/1986j	1988	03	22.24573	13	13	15.42	+09	42	13.7			2	807
/1986j	1988	05	19.43931	12	35	40.86	+08	04	15.4				568

Periodic Comet Kohoutek

/1986k	1988	05	19.32605	09	27	52.48	+08	37	59.6			4	568

Comet Wilson (1986l)

/1986l	1986	09	04.11572	21	22	32.57	+19	44	07.3				491
/1986l	1986	09	04.98417	21	20	40.90	+19	29	02.0				491
/1986l	1986	10	03.82291	20	26	12.37	+09	24	36.9				491
/1986l	1986	10	07.82307	20	20	29.46	+07	56	12.2				491
/1986l	1986	10	29.89976	19	58	24.73	+00	30	10.8				491
/1986l	1986	10	30.90084	19	57	46.20	+00	12	09.3				491
/1986l	1986	11	28.80610	19	50	01.88	-07	00	33.6				491
/1986l	1987	11	20.16756	09	33	38.46	+03	45	02.5				491
/1986l	1987	11	27.07781	09	27	26.09	+04	25	17.0				491
/1986l	1988	01	10.13854	08	19	44.88	+11	15	33.9				809
/1986l	1988	01	10.14340	08	19	44.31	+11	15	37.2				809
/1986l	1988	01	10.14826	08	19	43.76	+11	15	40.4				809
/1986l	1988	01	11.13993	08	17	51.52	+11	26	34.6				809
/1986l	1988	01	11.14479	08	17	50.97	+11	26	38.0				809
/1986l	1988	01	11.14965	08	17	50.42	+11	26	41.3				809
/1986l	1988	01	12.19132	08	15	52.37	+11	38	09.5				809
/1986l	1988	01	12.19479	08	15	51.99	+11	38	11.6				809

/1986l	1988	01	12.19826	08	15	51.60	+11	38	13.9		809
/1986l	1988	01	13.24479	08	13	53.05	+11	49	43.2		809
/1986l	1988	01	13.24826	08	13	52.66	+11	49	45.6		809
/1986l	1988	01	13.25174	08	13	52.26	+11	49	47.8		809
/1986l	1988	01	14.27812	08	11	56.17	+12	01	01.0		809
/1986l	1988	01	14.28299	08	11	55.63	+12	01	04.3		809
/1986l	1988	01	14.28785	08	11	55.10	+12	01	07.5		809
/1986l	1988	01	15.34062	08	09	56.22	+12	12	36.2		809
/1986l	1988	01	15.34410	08	09	55.84	+12	12	38.5		809
/1986l	1988	01	15.34757	08	09	55.45	+12	12	41.0		809
/1986l	1988	03	18.04583	06	52	23.11	+20	04	29.5	3	807
/1986l	1988	03	19.01583	06	51	58.54	+20	08	29.4	3	807
/1986l	1988	03	19.04410	06	51	57.83	+20	08	36.3	3	807
/1986l	1988	03	20.03168	06	51	34.18	+20	12	34.8	3	807
/1986l	1988	03	21.05561	06	51	10.94	+20	16	36.8	3	807
/1986l	1988	03	22.00781	06	50	50.55	+20	20	20.3	3	807
/1986l	1988	03	23.05502	06	50	29.34	+20	24	18.5	15.5T	807
/1986l	1988	03	25.02791	06	49	53.46	+20	31	37.3		807
/1986l	1988	04	16.29271	06	48	00.88	+21	37	38.6		568
/1986l	1988	04	17.27383	06	48	06.34	+21	39	59.7		568
/1986l	1988	04	20.04276	06	48	26.39	+21	46	15.6		801
/1986l	1988	05	18.28183	06	56	18.63	+22	34	51.0		568
/1986l	1988	05	19.26958	06	56	41.84	+22	35	58.7	5	568

Periodic Comet Grigg-Skjellerup

/1986m	1987	08	13.36911	14	44	44.85	+08	38	49.9		474
/1986m	1987	08	13.38266	14	44	48.70	+08	38	39.9		474
/1986m	1987	09	26.36141	17	24	48.38	+00	04	37.7		474
/1986m	1987	09	26.39197	17	24	53.73	+00	04	18.1		474

Comet Sorrells (1986n)

/1986n	1986	12	29.82880	00	33	23.48	+16	49	37.2		491
/1986n	1986	12	30.82433	00	30	49.39	+16	32	06.7		491
/1986n	1987	08	24.90370	17	52	50.24	-09	05	57.1		491
/1986n	1987	08	25.88400	17	51	13.33	-09	18	48.2		491

Periodic Comet Bus

/1987f	1988	06	14.56424	17	34	47.75	-19	01	53.1		474
/1987f	1988	06	14.60660	17	34	45.47	-19	01	51.1		474
/1987f	1988	06	19.56331	17	30	44.88	-18	59	47.6		474
/1987f	1988	06	19.59201	17	30	43.47	-18	59	46.3		474
/1987f	1988	07	15.26454	17	15	23.96	-19	04	57.3		688
/1987f	1988	07	16.26176	17	15	04.98	-19	05	43.7		688

Periodic Comet Tempel 2

/1987g	1988	03	25.35416	16	05	54.10	-02	14	05.4	18 T	807
/1987g	1988	04	14.54722	16	13	04.40	+00	04	18.2	5	568
/1987g	1988	04	14.61255	16	13	04.58	+00	04	47.2	5	568
/1987g	1988	04	15.40051	16	13	07.94	+00	10	43.7		568
/1987g	1988	04	15.53207	16	13	08.04	+00	11	43.6		568
/1987g	1988	04	15.58303	16	13	08.07	+00	12	07.0		568
/1987g	1988	04	16.37940	16	13	09.77	+00	18	13.1		568
/1987g	1988	04	16.44935	16	13	09.77	+00	18	45.1		568
/1987g	1988	04	16.52389	16	13	09.70	+00	19	20.3		568
/1987g	1988	04	16.60983	16	13	09.64	+00	19	58.8		568
/1987g	1988	04	17.40168	16	13	09.73	+00	26	04.8		568
/1987g	1988	04	17.47565	16	13	09.58	+00	26	38.9		568
/1987g	1988	04	17.54172	16	13	09.26	+00	27	07.4		568
/1987g	1988	04	17.60696	16	13	09.06	+00	27	37.5		568

/1987g	1988	05	15.91389	16	00	11.25	+03	34	34.0		071
/1987g	1988	05	15.95382	16	00	09.17	+03	34	44.4		071
/1987g	1988	05	17.46361	15	58	50.78	+03	40	35.9		568
/1987g	1988	05	18.42540	15	57	59.40	+03	43	51.8		568
/1987g	1988	05	18.44533	15	57	58.31	+03	43	56.8		568
/1987g	1988	05	19.49432	15	57	00.63	+03	47	10.9		568
/1987g	1988	06	02.94641	15	42	48.48	+03	48	19.8		503
/1987g	1988	06	03.90793	15	41	51.47	+03	45	11.2		046
/1987g	1988	06	03.91927	15	41	50.86	+03	45	08.7		046
/1987g	1988	06	04.58229	15	41	11.72	+03	42	49.1	16 T	372
/1987g	1988	06	04.59410	15	41	11.00	+03	42	45.9		372
/1987g	1988	06	06.95159	15	38	54.79	+03	32	31.1		503
/1987g	1988	06	07.90365	15	38	00.99	+03	27	37.7		046
/1987g	1988	06	07.91142	15	38	00.25	+03	27	30.3		046
/1987g	1988	06	08.95347	15	37	02.64	+03	21	47.1		046
/1987g	1988	06	08.96389	15	37	01.98	+03	21	42.5		046
/1987g	1988	06	09.90880	15	36	10.51	+03	15	57.9		046
/1987g	1988	06	09.91875	15	36	09.96	+03	15	53.9		046
/1987g	1988	06	10.13630	15	35	58.45	+03	14	34.7		801
/1987g	1988	06	11.90241	15	34	25.18	+03	02	31.4		071
/1987g	1988	06	11.94184	15	34	23.03	+03	02	12.9		071
/1987g	1988	06	12.98759	15	33	30.17	+02	54	20.4	16 N	494
/1987g	1988	06	13.90764	15	32	44.89	+02	47	00.4		046
/1987g	1988	06	13.91875	15	32	44.42	+02	46	54.7		046
/1987g	1988	06	13.95559	15	32	42.61	+02	46	38.0	14 T	503
/1987g	1988	06	14.89676	15	31	57.68	+02	38	39.9		046
/1987g	1988	06	14.90394	15	31	57.39	+02	38	33.5		046
/1987g	1988	06	15.21181	15	31	43.04	+02	35	56.6	14.0T	675
/1987g	1988	06	18.89236	15	29	03.76	+02	00	17.1		046
/1987g	1988	06	18.90000	15	29	03.48	+02	00	11.6		046
/1987g	1988	07	05.97601	15	23	26.45	-01	58	25.9		503
/1987g	1988	07	06.53894	15	23	28.27	-02	08	02.8	13.5T	400
/1987g	1988	07	06.54796	15	23	28.27	-02	08	12.4		400
/1987g	1988	07	06.90521	15	23	29.78	-02	14	26.5		046
/1987g	1988	07	06.91632	15	23	29.91	-02	14	33.7		046
/1987g	1988	07	09.46348	15	23	51.60	-02	59	29.8		415
/1987g	1988	07	10.44461	15	24	04.86	-03	17	21.4		415
/1987g	1988	07	11.12219	15	24	15.58	-03	30	07.8		801
/1987g	1988	07	14.56944	15	25	30.57	-04	35	37.2	12.5T	400
/1987g	1988	07	14.58264	15	25	30.97	-04	35	53.0		400
/1987g	1988	07	14.87465	15	25	39.11	-04	41	31.7		046
/1987g	1988	07	14.88194	15	25	39.24	-04	41	42.5		046
/1987g	1988	07	18.88339	15	27	53.69	-06	01	29.4		046
/1987g	1988	08	01.41486	15	41	13.69	-10	50	51.9		415
/1987g	1988	08	01.42372	15	41	14.32	-10	51	02.3		415
/1987g	1988	08	04.36819	15	45	18.02	-11	56	38.9		413
/1987g	1988	08	04.42028	15	45	22.44	-11	57	49.3		413
/1987g	1988	08	08.49709	15	51	39.81	-13	29	13.5		415
			Periodic Comet Howell								
/1987h	1987	09	28.99235	00	59	21.85	-03	43	18.1		491
			Periodic Comet Klemola								
/1987i	1987	08	26.12639	00	24	25.50	+05	40	41.4		491
/1987i	1987	09	20.98781	00	26	23.32	+00	23	10.7	16.0T	071
/1987i	1987	09	19.92089	00	26	33.75	+00	37	39.7	16.0T	071
/1987i	1987	09	21.00596	00	26	22.99	+00	22	55.7	16.0T	071
/1987i	1987	09	21.99537	00	26	12.90	+00	09	37.4	16.0T	071

/1987i	1987	09	22.01597	00	26	12.61	+00	09	21.2		071
/1987i	1987	09	28.97261	00	24	51.77	-01	21	58.0		491
			Comet Torres (1987j)								
/1987j	1988	03	18.24270	12	40	34.40	+25	36	52.3	2	807
/1987j	1988	03	18.27395	12	40	32.52	+25	37	18.7	2	807
/1987j	1988	03	19.19829	12	39	27.59	+25	51	22.9	3	807
/1987j	1988	03	20.17910	12	38	18.31	+26	06	07.9	3	807
/1987j	1988	03	21.18726	12	37	06.89	+26	21	08.5	2	807
/1987j	1988	03	21.19767	12	37	06.09	+26	21	16.9	3	807
/1987j	1988	03	21.20809	12	37	05.44	+26	21	23.4	2	807
/1987j	1988	03	22.20476	12	35	54.62	+26	36	01.4	3	807
/1987j	1988	03	22.28391	12	35	48.99	+26	37	10.2	3	807
/1987j	1988	03	24.17680	12	33	34.25	+27	04	16.4		807
/1987j	1988	05	17.37495	11	41	20.90	+34	00	50.8		568
			Periodic Comet d’Arrest								
/1987k	1988	03	24.30663	13	22	42.38	+14	59	03.6		807
/1987k	1988	03	25.27958	13	21	59.89	+15	08	46.2		807
/1987k	1988	04	15.50162	13	04	04.13	+18	14	16.3	20 N	4 568
/1987k	1988	04	17.33889	13	02	25.75	+18	26	47.1		4 568
/1987k	1988	04	17.42053	13	02	21.26	+18	27	20.6		4 568
			Periodic Comet Brooks 2								
/1987m	1987	09	28.97261	00	29	55.41	+01	00	59.6		491
/1987m	1987	11	18.90089	00	32	56.56	-02	22	03.4		491
/1987m	1987	11	19.94837	00	33	39.56	-02	19	05.4		491
			Periodic Comet Borrelly								
/1987p	1987	11	20.07372	02	54	19.09	-26	14	08.2		491
/1987p	1987	11	26.02548	02	44	51.51	-20	59	33.0		491
/1987p	1987	11	26.99712	02	43	24.37	-20	02	33.5		491
/1987p	1987	12	28.77851	02	22	52.97	+16	20	31.1		491
/1987p	1987	12	28.80518	02	22	53.36	+16	22	13.1		491
/1987p	1988	05	19.28656	08	59	00.70	+46	02	21.2		568
			Comet Bradfield (1987s)								
/1987s	1987	09	28.84691	15	43	34.10	-11	58	06.7		491
/1987s	1987	11	18.80670	18	43	46.49	+08	34	53.9		491
/1987s	1987	11	18.81363	18	43	48.65	+08	35	09.3		491
/1987s	1987	11	18.82055	18	43	51.21	+08	35	24.2		491
/1987s	1987	12	28.76986	23	05	24.18	+25	44	32.4		491
/1987s	1987	12	28.78613	23	05	31.15	+25	44	35.9		491
			Comet Rudenko (1987u)								
/1987u	1988	01	14.49394	02	13	46.41	-57	22	36.5	6	474
/1987u	1988	01	14.51251	02	13	44.37	-57	22	09.0	6	474
/1987u	1988	01	25.47060	02	06	32.46	-52	32	14.1		474
/1987u	1988	01	25.49549	02	06	32.11	-52	31	39.0		474
			Comet McNaught (1987b1)								
/1987b1	1988	04	10.07431	02	13	17.32	+64	50	55.8		293
/1987b1	1988	04	10.08056	02	13	19.07	+64	50	52.0		293
			Periodic Comet Longmore								
/1987c1	1988	05	19.42443	10	13	15.17	+23	23	18.6		568

Comet Furuyama (1987f1)

/1987f1	1988	01	10.04722	02	08	32.16	-12	55	56.8	809
/1987f1	1988	01	10.05278	02	08	31.53	-12	56	05.6	809
/1987f1	1988	01	10.05833	02	08	30.91	-12	56	13.9	809
/1987f1	1988	01	11.10903	02	06	35.07	-13	22	30.8	809
/1987f1	1988	01	11.11736	02	06	34.16	-13	22	43.0	809
/1987f1	1988	01	11.12569	02	06	33.25	-13	22	55.2	809
/1987f1	1988	01	12.07882	02	04	52.90	-13	45	52.6	809
/1987f1	1988	01	12.08102	02	04	52.67	-13	45	55.9	809
/1987f1	1988	01	13.05069	02	03	14.76	-14	08	28.3	809
/1987f1	1988	01	13.05625	02	03	14.20	-14	08	36.0	809
/1987f1	1988	01	13.06181	02	03	13.63	-14	08	43.4	809
/1987f1	1988	01	15.04271	02	00	06.30	-14	52	18.1	809
/1987f1	1988	01	15.04479	02	00	06.12	-14	52	20.7	809
/1987f1	1988	01	15.04688	02	00	05.93	-14	52	23.3	809
/1987f1	1988	01	16.03368	01	58	38.73	-15	12	56.2	809
/1987f1	1988	01	16.03576	01	58	38.54	-15	12	58.8	809
/1987f1	1988	01	16.03785	01	58	38.35	-15	13	01.4	809
/1987f1	1988	01	17.03160	01	57	14.49	-15	32	59.8	809
/1987f1	1988	01	17.03368	01	57	14.32	-15	33	02.3	809
/1987f1	1988	01	17.03576	01	57	14.14	-15	33	04.8	809
/1987f1	1988	01	18.03715	01	55	53.54	-15	52	30.1	809
/1987f1	1988	01	18.03924	01	55	53.38	-15	52	32.5	809
/1987f1	1988	01	18.04132	01	55	53.19	-15	52	34.9	809
/1987f1	1988	01	19.03160	01	54	37.33	-16	11	06.6	809
/1987f1	1988	01	19.03368	01	54	37.17	-16	11	09.0	809
/1987f1	1988	01	19.03576	01	54	37.01	-16	11	11.3	809
/1987f1	1988	01	20.03507	01	53	24.03	-16	29	14.7	809
/1987f1	1988	01	20.03715	01	53	23.88	-16	29	16.9	809
/1987f1	1988	01	20.03924	01	53	23.73	-16	29	19.2	809
/1987f1	1988	01	21.02743	01	52	15.14	-16	46	34.9	809
/1987f1	1988	01	21.02951	01	52	14.99	-16	46	37.1	809
/1987f1	1988	01	21.03160	01	52	14.84	-16	46	39.4	809
/1987f1	1988	01	24.02396	01	49	06.92	-17	35	35.1	809
/1987f1	1988	01	24.02604	01	49	06.79	-17	35	37.1	809
/1987f1	1988	01	24.02812	01	49	06.67	-17	35	39.1	809
/1987f1	1988	01	26.02743	01	47	16.84	-18	05	47.7	809
/1987f1	1988	01	26.02951	01	47	16.73	-18	05	49.6	809
/1987f1	1988	01	26.03160	01	47	16.61	-18	05	51.4	809
/1987f1	1988	01	27.02951	01	46	26.22	-18	20	12.6	809
/1987f1	1988	01	27.03160	01	46	26.12	-18	20	14.4	809
/1987f1	1988	01	27.03437	01	46	25.97	-18	20	16.8	809
/1987f1	1988	01	28.02674	01	45	38.66	-18	34	08.3	809
/1987f1	1988	01	28.02882	01	45	38.56	-18	34	10.0	809
/1987f1	1988	01	28.03090	01	45	38.46	-18	34	11.8	809
/1987f1	1988	01	29.02674	01	44	53.65	-18	47	42.6	809
/1987f1	1988	01	29.02882	01	44	53.56	-18	47	44.4	809
/1987f1	1988	01	29.03090	01	44	53.47	-18	47	46.2	809
/1987f1	1988	01	30.03715	01	44	10.80	-19	01	01.6	809
/1987f1	1988	01	30.03924	01	44	10.71	-19	01	03.2	809
/1987f1	1988	01	30.04132	01	44	10.62	-19	01	04.8	809
/1987f1	1988	04	20.31566	02	01	34.22	-32	37	52.9	474
/1987f1	1988	04	20.32162	02	01	34.48	-32	37	59.1	474
/1987f1	1988	07	09.49691	03	48	27.94	-77	00	22.7	7 415

Comet Liller (1988a)

/1988a	1988	01	21.43229	23	53	07.72	-21	15	29.5	474
/1988a	1988	01	21.44028	23	53	07.89	-21	15	10.9	474
/1988a	1988	01	25.43391	23	54	39.91	-18	30	21.1	474

/1988a	1988	01	25.44196	23	54	40.28	-18	30	00.9		474
/1988a	1988	04	20.82465	01	34	32.03	+55	14	52.6		006
/1988a	1988	04	20.83542	01	34	34.69	+55	15	37.0		006
/1988a	1988	04	28.83021	02	19	11.72	+64	27	17.6		006
/1988a	1988	04	28.84306	02	19	17.76	+64	28	09.9		006
/1988a	1988	05	05.85972	03	37	44.56	+71	43	27.9		006
/1988a	1988	05	05.86632	03	37	50.83	+71	43	48.0		006
/1988a	1988	05	09.84725	04	52	32.36	+74	28	00.9		046
/1988a	1988	05	11.01096	05	18	48.26	+74	55	03.9		046
/1988a	1988	05	13.12326	06	09	21.01	+75	13	54.3		293
/1988a	1988	05	13.12604	06	09	25.12	+75	13	53.4		293
/1988a	1988	05	14.86042	06	51	05.40	+74	58	22.1		006
/1988a	1988	05	17.85069	07	56	05.86	+73	31	12.4		006
/1988a	1988	05	17.86354	07	56	21.38	+73	30	41.6		006
/1988a	1988	05	24.88160	09	37	13.40	+66	55	29.6		006
/1988a	1988	05	24.89861	09	37	23.61	+66	54	21.9		006
/1988a	1988	05	28.90208	10	10	45.86	+62	19	35.2		006
/1988a	1988	05	28.91076	10	10	49.20	+62	18	57.4		006
/1988a	1988	05	31.88264	10	29	07.14	+58	50	55.8		006
/1988a	1988	05	31.88854	10	29	09.09	+58	50	30.6		006
/1988a	1988	06	03.88704	10	43	53.77	+55	22	49.8		046
/1988a	1988	06	03.88912	10	43	54.22	+55	22	40.6		046
/1988a	1988	06	05.93493	10	52	23.44	+53	04	04.4		503
/1988a	1988	06	07.88409	10	59	33.61	+50	55	03.8		046
/1988a	1988	06	07.88634	10	59	33.95	+50	54	53.8		046
/1988a	1988	06	08.93542	11	03	07.30	+49	46	47.5		046
/1988a	1988	06	08.93750	11	03	07.36	+49	46	41.8		046
/1988a	1988	06	09.89167	11	06	10.95	+48	45	42.9		046
/1988a	1988	06	09.89375	11	06	11.36	+48	45	34.4		046
/1988a	1988	06	12.11114	11	12	46.35	+46	27	14.5		801
/1988a	1988	06	12.96026	11	15	06.85	+45	35	33.4		494
/1988a	1988	06	13.88958	11	17	35.05	+44	39	51.9		046
/1988a	1988	06	13.89167	11	17	35.44	+44	39	43.4		046
/1988a	1988	06	13.94309	11	17	43.39	+44	36	41.0		503
/1988a	1988	06	14.33028	11	18	43.42	+44	13	44.3		657
/1988a	1988	06	14.88374	11	20	07.40	+43	41	16.7		046
/1988a	1988	06	14.88542	11	20	07.61	+43	41	09.7		046
/1988a	1988	06	15.10797	11	20	40.84	+43	28	11.6		801
/1988a	1988	07	05.96559	11	59	04.89	+26	47	45.7		503
/1988a	1988	07	06.55873	11	59	56.27	+26	24	53.0	10 T	400
/1988a	1988	07	06.56289	11	59	56.62	+26	24	42.2		400
/1988a	1988	07	11.09981	12	06	15.10	+23	37	44.3		801
/1988a	1988	07	14.53958	12	10	47.69	+21	40	07.3	10.5T	400
/1988a	1988	07	14.54722	12	10	48.53	+21	39	54.6		400

Comet Shoemaker (1988b)

/1988b	1988	03	20.13183	09	31	41.24	+31	58	54.6	2	807
/1988b	1988	03	20.14745	09	31	40.63	+31	58	47.8	3	807
/1988b	1988	03	20.16307	09	31	40.20	+31	58	42.6	2	807
/1988b	1988	03	21.15583	09	30	55.71	+31	52	46.6	2	807
/1988b	1988	03	21.16625	09	30	55.37	+31	52	43.3	3	807
/1988b	1988	03	21.17667	09	30	54.86	+31	52	38.3	2	807
/1988b	1988	03	22.13773	09	30	13.20	+31	46	49.8	3	807
/1988b	1988	03	23.13681	09	29	30.51	+31	40	45.0		807
/1988b	1988	03	25.11018	09	28	09.52	+31	28	30.0		807
/1988b	1988	05	18.35185	09	14	20.13	+25	08	48.9		568
/1988b	1988	05	19.30476	09	14	26.29	+25	02	02.3		568

Periodic Comet Hartley 3

/1988d	1988	05	19.37353	10	03	21.67	-00	33	22.7				568

Comet Levy (1988e)

/1988e	1988	06	12.34149	22	37	06.30	+52	58	27.3				675
/1988e	1988	06	12.37986	22	37	05.85	+52	59	16.8				675
/1988e	1988	07	07.47935	22	20	54.62	+60	48	24.4				675
/1988e	1988	07	07.48237	22	20	54.38	+60	48	27.2				675
/1988e	1988	07	12.36735	22	14	39.36	+62	00	09.4				693
/1988e	1988	07	12.37427	22	14	38.70	+62	00	15.1				693
/1988e	1988	07	18.29149	22	05	41.12	+63	16	18.3	17	T		675
/1988e	1988	07	18.32916	22	05	37.11	+63	16	47.5				675

Comet Shoemaker-Holt (1988g)

/1988g	1988	05	18.52143	22	19	06.40	+27	21	34.2				568
/1988g	1988	05	19.55068	22	19	23.51	+28	02	02.4				568
/1988g	1988	06	06.65417	22	19	03.43	+39	16	51.5	16	T		372
/1988g	1988	06	08.98542	22	18	09.03	+40	37	33.2			8	046
/1988g	1988	06	08.99444	22	18	09.03	+40	37	51.1			8	046
/1988g	1988	06	09.93646	22	17	43.01	+41	09	49.2			8	046
/1988g	1988	06	09.94502	22	17	42.68	+41	10	09.9			8	046
/1988g	1988	06	11.46979	22	16	55.82	+42	01	31.9				675
/1988g	1988	06	12.38906	22	16	25.08	+42	32	04.3				675
/1988g	1988	06	14.39312	22	15	09.09	+43	37	36.9				657
/1988g	1988	06	14.41465	22	15	08.10	+43	38	19.6				657
/1988g	1988	06	14.95920	22	14	45.97	+43	55	37.4			8	046
/1988g	1988	06	14.96794	22	14	45.64	+43	56	01.9			8	046
/1988g	1988	06	16.37785	22	13	43.36	+44	40	57.3				657
/1988g	1988	06	16.42472	22	13	41.66	+44	42	34.0				657
/1988g	1988	06	16.47049	22	13	39.31	+44	44	01.5	14.5			675
/1988g	1988	06	16.99236	22	13	14.95	+45	00	22.7			8	046
/1988g	1988	06	17.00139	22	13	14.51	+45	00	45.9			8	046
/1988g	1988	06	17.45625	22	12	52.40	+45	14	52.8				675
/1988g	1988	06	18.29886	22	12	10.01	+45	40	57.4			9	675
/1988g	1988	07	06.64792	21	47	58.01	+53	47	00.5	17	T		372
/1988g	1988	07	14.14356	21	33	14.04	+56	12	21.9				801
/1988g	1988	07	14.43196	21	32	36.69	+56	17	17.7				693
/1988g	1988	07	14.43781	21	32	35.90	+56	17	23.8				693
/1988g	1988	07	16.39946	21	28	18.75	+56	49	18.2				693
/1988g	1988	07	16.40101	21	28	18.52	+56	49	19.5				693
/1988g	1988	07	18.32013	21	23	59.06	+57	18	06.8	15	T		675
/1988g	1988	07	20.42656	21	19	05.21	+57	46	54.6				675

Comet Shoemaker-Holt-Rodriquez (1988h)

/1988h	1988	06	11.40156	20	14	34.75	+18	21	47.2	13	T		675
/1988h	1988	06	11.43385	20	14	33.41	+18	21	42.7				675
/1988h	1988	06	12.33090	20	13	55.98	+18	19	30.3				675
/1988h	1988	06	12.37083	20	13	54.12	+18	19	24.5				675
/1988h	1988	06	25.28883	20	03	19.83	+17	29	51.1	15	T		675
/1988h	1988	06	25.29206	20	03	19.66	+17	29	50.0				675
/1988h	1988	06	25.30603	20	03	18.87	+17	29	45.6				675
/1988h	1988	06	25.48286	20	03	08.92	+17	28	50.3				675
/1988h	1988	06	25.48499	20	03	08.81	+17	28	49.6				675
/1988h	1988	06	25.48706	20	03	08.69	+17	28	48.9				675
/1988h	1988	07	05.99858	19	52	38.12	+16	20	07.6				503
/1988h	1988	07	06.63090	19	51	57.32	+16	15	09.8	15.5	T		372
/1988h	1988	07	06.65990	19	51	55.54	+16	14	55.8				372
/1988h	1988	07	08.30354	19	50	08.79	+16	01	17.5				657
/1988h	1988	07	08.33896	19	50	06.52	+16	01	02.5				657

/1988h	1988	07	10.59410	19	47	37.48	+15	41	21.9	15	T	372
/1988h	1988	07	10.59826	19	47	37.23	+15	41	20.3			372
/1988h	1988	07	11.16911	19	46	59.03	+15	36	09.0	16	T A	801
/1988h	1988	07	11.38663	19	46	44.27	+15	34	05.6	15.0	T	675
/1988h	1988	07	11.42083	19	46	41.79	+15	33	48.5			675
/1988h	1988	07	13.59028	19	44	15.03	+15	13	09.6	14	T	400
/1988h	1988	07	13.60694	19	44	13.81	+15	12	58.9			400
/1988h	1988	07	13.9576	19	43	50.08	+15	09	30.4			494
/1988h	1988	07	16.23819	19	41	13.30	+14	46	14.8			688
/1988h	1988	07	16.25351	19	41	12.26	+14	46	05.2			688
/1988h	1988	07	17.41420	19	39	51.55	+14	33	41.8	14	T	675
/1988h	1988	07	20.33594	19	36	27.53	+14	01	03.2			675
/1988h	1988	07	24.60972	19	31	26.67	+13	09	25.1	14	T	400
/1988h	1988	07	24.62778	19	31	25.28	+13	09	11.7			400

Periodic Comet Churyumov-Gerasimenko

/1988i	1988	07	06.35462	20	09	51.96	-29	17	04.7	20	N	675
/1988i	1988	07	06.35988	20	09	51.67	-29	17	06.5			675
/1988i	1988	07	06.36514	20	09	51.39	-29	17	07.1			675
/1988i	1988	07	07.36233	20	08	58.12	-29	21	25.8	20	N	675
/1988i	1988	07	07.36635	20	08	57.93	-29	21	26.7			675
/1988i	1988	07	07.37039	20	08	57.69	-29	21	27.8			675
/1988i	1988	07	10.14792	20	06	24.55	-29	33	12.1	18.2	N	809

Comet Machholz (1988j)

/1988j	1988	08	07.46348	04	46	49.38	+00	33	00.3			688
/1988j	1988	08	07.47803	04	46	54.48	+00	32	57.6			688
/1988j	1988	08	08.42500	04	52	41.56	+00	28	51.5			675
/1988j	1988	08	08.46253	04	52	54.74	+00	28	45.7			688
/1988j	1988	08	09.35080	04	58	30.41	+00	24	48.5	13	N	801
/1988j	1988	08	09.35829	04	58	33.30	+00	24	47.0			801
/1988j	1988	08	09.44479	04	59	06.42	+00	24	22.9			688
/1988j	1988	08	09.46076	04	59	12.45	+00	24	17.4			688
/1988j	1988	08	09.74939	05	01	04.32	+00	23	06.3			413
/1988j	1988	08	09.75082	05	01	04.84	+00	23	08.0			413
/1988j	1988	08	09.75264	05	01	05.47	+00	23	06.7			413
/1988j	1988	08	09.82911	05	01	35.24	+00	22	43.8		B	413
/1988j	1988	08	10.45590	05	05	42.15	+00	19	34.7			688
/1988j	1988	08	10.46840	05	05	47.16	+00	19	31.1		C	688
/1988j	1988	08	10.81742	05	08	06.97	+00	17	59.8			413
/1988j	1988	08	10.82153	05	08	08.67	+00	17	56.9			413
/1988j	1988	08	10.82233	05	08	08.96	+00	17	55.4			413
/1988j	1988	08	11.45840	05	12	28.20	+00	14	34.4			657
/1988j	1988	08	12.74647	05	21	30.76	+00	08	01.7			474
/1988j	1988	08	12.74994	05	21	32.14	+00	08	00.3			474
/1988j	1988	08	12.75550	05	21	34.55	+00	07	59.2			474
/1988j	1988	08	12.81987	05	22	02.38	+00	07	35.7			413
/1988j	1988	08	12.82064	05	22	02.73	+00	07	36.7			413
/1988j	1988	08	12.82126	05	22	03.14	+00	07	36.3			413
/1988j	1988	08	13.82536	05	29	23.39	+00	02	00.5		D	413
/1988j	1988	08	17.44216	05	57	55.02	-00	19	42.6		E	688
/1988j	1988	08	17.46367	05	58	05.85	-00	19	51.4			688

Note 1: difficult to measure because of field crowding. 2: measurement of endpoint of trailed comet image. 3: measurement of midpoint of trailed comet image. 4: stars trailed appreciably. 5: only one reference star. 6: involved with star. 7: poor seeing. 8: position very uncertain; image extremely diffuse. 9: poor star images; comet image involved with

star. A: comet very highly condensed. B: very poor focus. C: partially merged with star. D: very dark plate. E: affected by flaw.

* * * * *

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						
1987 YY1 *	1987 12 20.09097		07 34 52.03	+14 02 02.0		010
1987 YY1	1987 12 20.11181		07 34 50.89	+14 01 55.6		010
1987 YY1	1987 12 20.12407		07 34 50.18	+14 01 52.3		010
1987 YZ1 *	1987 12 20.09097		07 36 40.01	+11 05 48.4		010
1987 YZ1	1987 12 20.12407		07 36 38.45	+11 05 52.3		010
1987 YA2 *	1987 12 20.09097		07 38 02.08	+11 24 17.4		010
1987 YA2	1987 12 20.11181		07 38 01.25	+11 24 20.5		010

1987	YA2		1987	12	20.12407	07	38	00.80	+11	24	21.1	010
1987	YB2	*	1987	12	20.09097	07	38	06.83	+11	54	16.0	010
1987	YB2		1987	12	20.11181	07	38	06.00	+11	54	13.7	010
1987	YB2		1987	12	20.12407	07	38	05.46	+11	54	12.4	010
1987	YC2	*	1987	12	20.09097	07	40	38.37	+14	32	18.7	010
1987	YC2		1987	12	20.11181	07	40	37.23	+14	32	19.4	010
1987	YD2	*	1987	12	20.09097	07	43	23.00	+13	23	10.9	010
1987	YD2		1987	12	20.11181	07	43	22.04	+13	23	38.8	010
1987	YD2		1987	12	20.12060	07	43	21.62	+13	23	52.3	010
1987	YD2		1987	12	20.12755	07	43	21.33	+13	24	00.1	010
1987	YE2	*	1987	12	20.09097	07	44	44.97	+15	08	54.1	010
1987	YE2		1987	12	20.12407	07	44	43.31	+15	08	55.8	010
1987	YF2	*	1987	12	20.09097	07	46	31.04	+11	32	17.3	010
1987	YF2		1987	12	20.11181	07	46	30.11	+11	32	23.1	010
1987	YF2		1987	12	20.12407	07	46	29.63	+11	32	26.0	010
1987	YG2	*	1987	12	20.09097	07	46	45.03	+10	36	37.7	010
1987	YG2		1987	12	20.11181	07	46	44.36	+10	36	48.5	010
1987	YG2		1987	12	20.12407	07	46	44.01	+10	36	53.6	010
1987	YH2	*	1987	12	20.09097	07	46	52.25	+12	20	40.7	010
1987	YH2		1987	12	20.12755	07	46	50.39	+12	20	31.9	010
1987	YJ2	*	1987	12	20.09097	07	47	21.69	+15	28	35.5	010
1987	YJ2		1987	12	20.12407	07	47	20.33	+15	28	42.6	010
1987	YK2	*	1987	12	20.09097	07	47	49.34	+12	35	20.3	010
1987	YK2		1987	12	20.11181	07	47	48.33	+12	35	20.8	010
1987	YK2		1987	12	20.12407	07	47	47.83	+12	35	20.5	010
1987	YK2		1987	12	29.05903	07	40	26.43	+12	33	30.9	010
1987	YK2		1987	12	29.10069	07	40	23.74	+12	33	30.9	010
1987	YL2	*	1987	12	20.09097	07	49	10.10	+13	30	47.3	010
1987	YL2		1987	12	20.11181	07	49	09.10	+13	30	44.8	010
1987	YL2		1987	12	20.12407	07	49	08.55	+13	30	43.1	010
1987	YM2	*	1987	12	20.09097	07	49	34.05	+13	46	41.0	010
1987	YM2		1987	12	20.12407	07	49	32.49	+13	46	39.9	010
1987	YN2	*	1987	12	20.09097	07	49	36.31	+13	38	26.2	010
1987	YN2		1987	12	20.12407	07	49	34.93	+13	38	29.0	010
1987	YO2	*	1987	12	20.09097	07	49	51.73	+14	01	33.6	010
1987	YO2		1987	12	20.11181	07	49	50.59	+14	01	31.5	010
1987	YO2		1987	12	20.12407	07	49	49.99	+14	01	29.9	010
1987	YP2	*	1987	12	20.09097	07	50	51.36	+11	59	39.3	010
1987	YP2		1987	12	20.11181	07	50	50.54	+11	59	44.2	010
1987	YP2		1987	12	20.12407	07	50	50.06	+11	59	47.7	010
1987	YQ2	*	1987	12	20.09097	07	50	52.04	+11	17	01.9	010
1987	YQ2		1987	12	20.11181	07	50	51.30	+11	17	03.7	010
1987	YQ2		1987	12	20.12407	07	50	50.85	+11	17	04.4	010
1987	YR2	*	1987	12	20.10139	07	52	35.10	+14	10	58.8	010
1987	YR2		1987	12	20.12407	07	52	34.07	+14	11	01.0	010
1987	YS2	*	1987	12	20.14236	09	38	49.25	+08	21	30.6	010
1987	YS2		1987	12	20.17361	09	38	49.18	+08	21	24.1	010
1987	YT2	*	1987	12	20.91181	04	11	37.92	+34	56	05.9	010
1987	YT2		1987	12	20.93264	04	11	36.78	+34	56	00.9	010
1987	YT2		1987	12	20.94306	04	11	36.07	+34	55	58.9	010
1987	YU2	*	1987	12	20.91181	04	12	42.92	+34	38	04.8	010
1987	YU2		1987	12	20.93264	04	12	42.01	+34	37	58.9	010
1987	YU2		1987	12	20.94306	04	12	41.40	+34	37	55.3	010
1987	YV2	*	1987	12	20.91181	04	13	00.42	+31	28	00.3	010
1987	YV2		1987	12	20.94306	04	12	59.72	+31	28	03.5	010
1987	YW2	*	1987	12	20.91181	04	13	32.13	+35	24	32.4	010
1987	YW2		1987	12	20.93264	04	13	30.92	+35	24	23.8	010
1987	YW2		1987	12	20.94306	04	13	30.14	+35	24	19.2	010
1987	YX2	*	1987	12	20.91181	04	14	26.24	+33	33	29.9	010

1987	YX2		1987	12	20.93264	04	14	25.19	+33	33 29.3	010
1987	YX2		1987	12	20.94306	04	14	24.46	+33	33 28.9	010
1987	YY2	*	1987	12	20.91181	04	16	04.45	+31	52 24.8	010
1987	YY2		1987	12	20.93264	04	16	03.51	+31	52 20.9	010
1987	YY2		1987	12	20.94306	04	16	02.76	+31	52 19.1	010
1987	YZ2	*	1987	12	20.91181	04	18	30.13	+36	09 03.3	010
1987	YZ2		1987	12	20.93264	04	18	29.15	+36	08 58.4	010
1987	YZ2		1987	12	20.94306	04	18	28.46	+36	08 55.4	010
1987	YA3	*	1987	12	20.91181	04	20	24.56	+35	53 05.6	010
1987	YA3		1987	12	20.94306	04	20	23.23	+35	53 03.7	010
1987	YB3	*	1987	12	20.91181	04	22	20.39	+35	21 24.0	010
1987	YB3		1987	12	20.93264	04	22	18.24	+35	21 40.7	010
1987	YC3	*	1987	12	20.91181	04	24	13.00	+32	00 30.6	010
1987	YC3		1987	12	20.94306	04	24	11.36	+32	00 14.6	010
1987	YD3	*	1987	12	20.91181	04	25	13.90	+33	37 41.6	010
1987	YD3		1987	12	20.93264	04	25	12.66	+33	37 47.9	010
1987	YD3		1987	12	20.94306	04	25	11.93	+33	37 51.8	010
1987	YE3	*	1987	12	20.91181	04	25	28.35	+36	14 25.3	010
1987	YE3		1987	12	20.93264	04	25	27.31	+36	14 20.2	010
1987	YE3		1987	12	20.94306	04	25	26.54	+36	14 16.0	010
1987	YF3	*	1987	12	20.91181	04	25	39.03	+35	00 54.2	010
1987	YF3		1987	12	20.93264	04	25	37.91	+35	00 42.4	010
1987	YF3		1987	12	20.94306	04	25	37.17	+35	00 35.9	010
1987	YG3	*	1987	12	20.91181	04	28	10.15	+33	38 29.1	010
1987	YG3		1987	12	20.93264	04	28	09.24	+33	38 30.9	010
1987	YG3		1987	12	20.94306	04	28	08.60	+33	38 21.3	010
1987	YH3	*	1987	12	20.91181	04	28	47.62	+33	54 04.2	010
1987	YH3		1987	12	20.94653	04	28	45.66	+33	53 51.1	010
1987	YJ3	*	1987	12	20.91181	04	29	18.85	+32	42 01.9	010
1987	YJ3		1987	12	20.93264	04	29	17.80	+32	41 54.7	010
1987	YJ3		1987	12	20.94306	04	29	17.04	+32	41 50.1	010
1987	YK3	*	1987	12	20.91181	04	29	58.57	+36	01 15.2	010
1987	YK3		1987	12	20.93264	04	29	57.36	+36	01 18.1	010
1987	YK3		1987	12	20.94306	04	29	56.56	+36	01 19.8	010
1987	YL3	*	1987	12	20.91181	04	30	22.67	+32	49 40.7	010
1987	YL3		1987	12	20.94306	04	30	20.74	+32	49 44.8	010
1987	YM3	*	1987	12	20.91181	04	32	32.20	+35	14 05.0	010
1987	YM3		1987	12	20.94306	04	32	31.01	+35	14 06.2	010
1987	YN3	*	1987	12	20.91181	04	33	26.82	+34	44 55.2	010
1987	YN3		1987	12	20.93264	04	33	25.68	+34	44 52.8	010
1987	YN3		1987	12	20.94653	04	33	25.14	+34	44 52.5	010
1987	YO3	*	1987	12	20.91181	04	34	10.06	+32	00 09.3	010
1987	YO3		1987	12	20.94306	04	34	08.66	+32	00 07.3	010
1987	YP3	*	1987	12	20.91181	04	34	40.57	+35	01 09.7	010
1987	YP3		1987	12	20.94306	04	34	38.60	+35	01 04.7	010
1987	YQ3	*	1987	12	20.91181	04	35	20.78	+31	53 30.6	010
1987	YQ3		1987	12	20.94306	04	35	19.36	+31	53 24.0	010
1987	YR3	*	1987	12	20.93264	04	18	22.39	+31	19 03.6	010
1987	YR3		1987	12	20.94306	04	18	21.66	+31	19 04.5	010
1987	YS3	*	1987	12	23.88125	02	39	46.21	+19	26 19.3	010
1987	YS3		1987	12	23.91250	02	39	45.97	+19	26 10.1	010
1987	YT3	*	1987	12	23.88125	02	42	39.11	+17	55 43.4	010
1987	YT3		1987	12	23.91250	02	42	38.33	+17	55 26.9	010
1987	YU3	*	1987	12	23.88125	02	46	56.40	+20	32 34.1	010
1987	YU3		1987	12	23.91250	02	46	56.28	+20	32 21.0	010
1987	YV3	*	1987	12	23.88125	02	49	11.87	+18	57 33.8	010
1987	YV3		1987	12	23.91250	02	49	11.38	+18	57 29.6	010
1987	YW3	*	1987	12	23.88125	02	50	16.27	+20	38 46.9	010
1987	YW3		1987	12	23.91250	02	50	16.43	+20	38 56.6	010

1987	YX3	*	1987	12	23.88125	02	51	37.09	+20	14	39.7	010
1987	YX3		1987	12	23.91250	02	51	36.73	+20	14	31.1	010
1987	YY3	*	1987	12	23.88125	02	53	28.13	+20	46	51.6	010
1987	YY3		1987	12	23.91250	02	53	27.55	+20	47	00.4	010
1987	YZ3	*	1987	12	23.88125	02	53	53.48	+18	27	29.2	010
1987	YZ3		1987	12	23.91250	02	53	53.04	+18	27	21.6	010
1987	YA4	*	1987	12	23.88125	02	56	46.10	+18	30	28.1	010
1987	YA4		1987	12	23.91250	02	56	46.35	+18	30	21.2	010
1987	YB4	*	1987	12	23.88125	02	56	49.02	+19	09	56.0	010
1987	YB4		1987	12	23.91250	02	56	48.62	+19	09	55.9	010
1987	YC4	*	1987	12	23.88125	02	57	41.92	+18	36	23.8	010
1987	YC4		1987	12	23.91250	02	57	42.02	+18	36	22.0	010
1987	YD4	*	1987	12	23.94306	04	35	55.66	+33	18	20.4	E 010
1987	YD4		1987	12	23.97431	04	35	53.57	+33	18	16.5	E 010
1987	YE4	*	1987	12	23.94306	04	36	15.58	+33	04	23.1	E 010
1987	YE4		1987	12	23.97431	04	36	14.04	+33	04	20.9	E 010
1987	YF4	*	1987	12	23.94306	04	36	54.81	+34	43	21.4	E 010
1987	YF4		1987	12	23.96389	04	36	53.56	+34	43	22.0	E 010
1987	YF4		1987	12	23.97431	04	36	52.70	+34	43	23.3	E 010
1987	YG4	*	1987	12	23.94306	04	37	42.01	+31	33	47.0	E 010
1987	YG4		1987	12	23.96389	04	37	41.08	+31	33	40.3	E 010
1987	YG4		1987	12	23.97431	04	37	40.64	+31	33	37.1	E 010
1987	YH4	*	1987	12	23.94306	04	38	45.56	+34	53	42.9	010
1987	YH4		1987	12	23.96389	04	38	44.16	+34	53	45.2	010
1987	YH4		1987	12	23.97431	04	38	43.54	+34	53	46.7	010
1987	YJ4	*	1987	12	23.94306	04	38	58.43	+31	44	19.2	010
1987	YJ4		1987	12	23.97431	04	38	56.70	+31	44	17.1	010
1987	YK4	*	1987	12	23.94306	04	40	32.72	+34	27	07.4	010
1987	YK4		1987	12	23.97431	04	40	30.76	+34	27	01.2	010
1987	YL4	*	1987	12	23.94306	04	40	39.65	+36	08	54.1	010
1987	YL4		1987	12	23.96389	04	40	38.42	+36	08	54.5	010
1987	YL4		1987	12	23.97431	04	40	37.71	+36	08	55.4	010
1987	YM4	*	1987	12	23.94306	04	42	54.30	+35	26	11.2	010
1987	YM4		1987	12	23.97778	04	42	52.06	+35	26	01.7	010
1987	YN4	*	1987	12	23.94306	04	43	45.37	+34	30	17.4	010
1987	YN4		1987	12	23.97778	04	43	43.50	+34	30	03.5	010
1987	YO4	*	1987	12	23.94306	04	46	00.52	+32	38	44.4	010
1987	YO4		1987	12	23.96389	04	45	59.48	+32	38	40.2	010
1987	YO4		1987	12	23.97431	04	45	58.86	+32	38	38.8	010
1987	YP4	*	1987	12	23.94306	04	53	29.09	+34	05	09.9	010
1987	YP4		1987	12	23.97778	04	53	27.27	+34	05	17.7	010
1987	YQ4	*	1987	12	23.94306	04	53	36.35	+34	43	02.0	010
1987	YQ4		1987	12	23.96389	04	53	35.11	+34	42	57.4	010
1987	YQ4		1987	12	23.97431	04	53	34.45	+34	42	55.9	010
1987	YR4	*	1987	12	23.94306	04	53	40.50	+34	12	16.4	010
1987	YR4		1987	12	23.97431	04	53	38.83	+34	12	10.0	010
1987	YS4	*	1987	12	23.94306	04	55	03.93	+34	29	36.0	010
1987	YS4		1987	12	23.97778	04	55	02.10	+34	29	39.7	010
1987	YT4	*	1987	12	23.94306	04	55	09.95	+34	16	20.3	010
1987	YT4		1987	12	23.97431	04	55	08.17	+34	16	16.6	010
1987	YU4	*	1987	12	23.94306	04	56	59.26	+35	08	12.4	010
1987	YU4		1987	12	23.97431	04	56	57.58	+35	08	11.2	010
1987	YV4	*	1987	12	23.94306	04	57	01.34	+32	33	32.3	010
1987	YV4		1987	12	23.96389	04	57	00.30	+32	33	34.1	010
1987	YV4		1987	12	23.97431	04	56	59.71	+32	33	37.0	010
1987	YW4	*	1987	12	23.94306	04	58	13.71	+36	04	03.6	010
1987	YW4		1987	12	23.97431	04	58	11.58	+36	04	01.6	010
1987	YX4	*	1987	12	23.94306	04	59	22.40	+34	09	06.8	010

1987	YX4		1987	12	23.96389	04	59	21.23	+34	09	08.0	010
1987	YX4		1987	12	23.97431	04	59	20.56	+34	09	08.7	010
1987	YY4	*	1987	12	23.96389	04	36	18.90	+33	02	39.2	E 010
1987	YY4		1987	12	23.97431	04	36	17.35	+33	02	34.0	E 010
1987	YZ4	*	1987	12	24.07361	08	26	09.59	+27	19	39.7	E 010
1987	YZ4		1987	12	24.10486	08	26	08.64	+27	19	39.5	E 010
1987	YA5	*	1987	12	24.07361	08	28	57.67	+26	16	23.0	010
1987	YA5		1987	12	24.10486	08	28	56.48	+26	16	31.9	010
1987	YB5	*	1987	12	24.07361	08	30	19.99	+26	26	43.0	010
1987	YB5		1987	12	24.10486	08	30	18.91	+26	26	54.2	010
1987	YC5	*	1987	12	24.07361	08	31	00.63	+26	09	07.4	010
1987	YC5		1987	12	24.10486	08	30	59.45	+26	09	14.3	010
1987	YD5	*	1987	12	24.07361	08	31	12.58	+26	33	10.7	010
1987	YD5		1987	12	24.09444	08	31	12.10	+26	33	23.7	010
1987	YD5		1987	12	24.10486	08	31	11.74	+26	33	30.1	010
1987	YE5	*	1987	12	24.07361	08	32	36.07	+26	15	10.2	010
1987	YE5		1987	12	24.10486	08	32	34.72	+26	15	16.2	010
1987	YF5	*	1987	12	24.07361	08	34	28.89	+27	42	48.2	010
1987	YF5		1987	12	24.09444	08	34	28.34	+27	42	55.0	010
1987	YF5		1987	12	24.10486	08	34	27.89	+27	43	01.2	010
1987	YG5	*	1987	12	24.07361	08	35	16.20	+27	26	00.6	010
1987	YG5		1987	12	24.09444	08	35	15.29	+27	26	07.9	010
1987	YG5		1987	12	24.10486	08	35	14.78	+27	26	10.7	010
1987	YH5	*	1987	12	24.07361	08	35	41.30	+24	43	12.6	010
1987	YH5		1987	12	24.09444	08	35	40.58	+24	43	15.7	010
1987	YH5		1987	12	24.10486	08	35	40.22	+24	43	17.6	010
1987	YJ5	*	1987	12	24.07361	08	35	57.34	+26	13	45.4	010
1987	YJ5		1987	12	24.09444	08	35	56.80	+26	13	52.4	010
1987	YJ5		1987	12	24.10486	08	35	56.45	+26	13	56.8	010
1987	YK5	*	1987	12	24.07361	08	36	01.36	+27	54	20.2	010
1987	YK5		1987	12	24.09444	08	36	00.75	+27	54	24.2	010
1987	YK5		1987	12	24.10486	08	36	00.30	+27	54	26.7	010
1987	YL5	*	1987	12	24.07361	08	37	44.15	+28	29	01.6	010
1987	YL5		1987	12	24.09444	08	37	43.30	+28	29	07.4	010
1987	YL5		1987	12	24.10486	08	37	42.67	+28	29	11.1	010
1987	YM5	*	1987	12	24.07361	08	38	08.17	+28	16	10.3	010
1987	YM5		1987	12	24.10486	08	38	07.05	+28	16	17.2	010
1987	YN5	*	1987	12	24.07361	08	38	35.30	+25	18	58.3	010
1987	YN5		1987	12	24.09444	08	38	34.71	+25	19	03.1	010
1987	YN5		1987	12	24.10486	08	38	34.35	+25	19	07.1	010
1987	YO5	*	1987	12	24.07361	08	39	03.95	+26	51	54.3	010
1987	YO5		1987	12	24.09444	08	39	03.28	+26	52	02.5	010
1987	YO5		1987	12	24.10486	08	39	02.83	+26	52	07.9	010
1987	YP5	*	1987	12	24.07361	08	41	07.05	+25	59	43.5	010
1987	YP5		1987	12	24.10486	08	41	06.30	+25	59	51.6	010
1987	YQ5	*	1987	12	24.07361	08	41	57.50	+25	32	24.6	010
1987	YQ5		1987	12	24.10486	08	41	56.36	+25	32	34.3	010
1987	YR5	*	1987	12	24.07361	08	42	03.06	+25	22	04.6	010
1987	YR5		1987	12	24.09444	08	42	02.67	+25	22	19.2	010
1987	YR5		1987	12	24.10486	08	42	02.46	+25	22	25.7	010
1987	YS5	*	1987	12	24.07361	08	43	09.01	+27	12	07.6	010
1987	YS5		1987	12	24.10486	08	43	07.94	+27	12	19.0	010
1987	YT5	*	1987	12	24.07361	08	43	17.66	+26	53	02.2	010
1987	YT5		1987	12	24.09444	08	43	17.17	+26	53	07.8	010
1987	YT5		1987	12	24.10486	08	43	16.79	+26	53	11.5	010
1987	YU5	*	1987	12	24.07361	08	43	52.99	+27	00	34.2	010
1987	YU5		1987	12	24.09444	08	43	52.34	+27	00	39.2	010
1987	YU5		1987	12	24.10486	08	43	51.89	+27	00	42.4	010
1987	YV5	*	1987	12	24.07361	08	44	17.10	+23	52	12.7	010

1987	YV5		1987	12	24.09444	08	44	17.03	+23	52	23.3	010
1987	YV5		1987	12	24.10486	08	44	16.93	+23	52	29.7	010
1987	YW5	*	1987	12	24.07361	08	44	43.81	+25	27	26.4	010
1987	YW5		1987	12	24.09444	08	44	43.40	+25	27	31.2	010
1987	YW5		1987	12	24.10486	08	44	43.14	+25	27	34.1	010
1987	YX5	*	1987	12	24.07361	08	44	56.53	+27	03	23.4	010
1987	YX5		1987	12	24.09444	08	44	55.96	+27	03	30.0	010
1987	YX5		1987	12	24.10486	08	44	55.54	+27	03	33.8	010
1987	YY5	*	1987	12	24.07361	08	45	08.02	+24	24	21.3	010
1987	YY5		1987	12	24.10486	08	45	06.70	+24	24	10.0	010
1987	YZ5	*	1987	12	24.07361	08	45	17.54	+25	34	51.7	010
1987	YZ5		1987	12	24.09444	08	45	16.92	+25	34	59.8	010
1987	YZ5		1987	12	24.10486	08	45	16.50	+25	35	03.3	010
1987	YA6	*	1987	12	24.07361	08	45	21.02	+25	58	53.6	010
1987	YA6		1987	12	24.09444	08	45	20.42	+25	59	05.4	010
1987	YA6		1987	12	24.10486	08	45	20.02	+25	59	13.5	010
1987	YB6	*	1987	12	24.07361	08	46	12.30	+26	55	30.6	010
1987	YB6		1987	12	24.09444	08	46	11.81	+26	55	41.0	010
1987	YB6		1987	12	24.10486	08	46	11.49	+26	55	47.6	010
1987	YC6	*	1987	12	24.07361	08	46	21.55	+26	12	23.3	010
1987	YC6		1987	12	24.10486	08	46	20.58	+26	12	31.2	010
1987	YD6	*	1987	12	24.07361	08	47	55.63	+26	14	58.6	010
1987	YD6		1987	12	24.09444	08	47	55.77	+26	15	06.8	010
1987	YD6		1987	12	24.10486	08	47	55.55	+26	15	10.3	010
1987	YE6	*	1987	12	24.07361	08	48	29.77	+25	53	30.8	010
1987	YE6		1987	12	24.09444	08	48	29.17	+25	53	38.6	010
1987	YE6		1987	12	24.10486	08	48	28.74	+25	53	44.3	010
1987	YF6	*	1987	12	29.05903	07	42	52.80	+17	26	15.8	010
1987	YF6		1987	12	29.10069	07	42	50.57	+17	26	29.2	010
1987	YG6	*	1987	12	29.05903	07	47	06.89	+16	37	25.9	010
1987	YG6		1987	12	29.10069	07	47	04.34	+16	37	40.8	010
1987	YH6	*	1987	12	29.05903	07	51	19.78	+16	29	55.8	010
1987	YH6		1987	12	29.10069	07	51	17.75	+16	30	07.3	010
1987	YJ6	*	1987	12	29.05903	07	54	42.56	+13	04	48.5	010
1987	YJ6		1987	12	29.10069	07	54	40.88	+13	04	50.3	010
1987	YK6	*	1987	12	29.05903	07	57	36.46	+14	35	03.5	010
1987	YK6		1987	12	29.10069	07	57	33.91	+14	35	02.6	010

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Observers F. Borngen, K.-H. Mau and C. Hogner
Measurer F. Borngen
1.3-m Schmidt telescope
SAOC

1961	CX		1988	07	23.01910	23	54	40.83	-01	51	50.1	033
1961	CX		1988	07	24.00556	23	54	53.12	-01	51	58.0	033
1961	CX		1988	07	24.04514	23	54	53.55	-01	51	57.8	19.0 033
1988	AK5	*	1988	01	11.81667	05	40	24.40	+22	31	58.3	20.3 033
1988	AK5		1988	01	11.86250	05	40	23.01	+22	32	01.6	033
1988	AL5	*	1988	01	11.81667	05	41	45.27	+23	15	10.6	20.1 033
1988	AL5		1988	01	11.86250	05	41	43.37	+23	15	07.5	033
1988	AM5	*	1988	01	11.81667	05	42	20.24	+24	06	36.3	19.7 033
1988	AM5		1988	01	11.86250	05	42	17.60	+24	06	36.4	033
1988	AN5	*	1988	01	11.81667	05	44	12.58	+23	10	17.3	20.2 033
1988	AN5		1988	01	11.86250	05	44	09.96	+23	10	19.6	033
1988	AO5	*	1988	01	11.81667	05	44	38.04	+23	17	49.3	18.8 033
1988	AO5		1988	01	11.86250	05	44	35.63	+23	18	01.6	033
1988	AP5	*	1988	01	11.81667	05	47	29.23	+24	31	58.4	19.3 033

1988	AP5		1988	01	11.86250	05	47	27.12	+24	31	46.4		033
1988	AQ5	*	1988	01	11.81667	05	47	33.08	+24	01	38.3	18.0	033
1988	AQ5		1988	01	11.86250	05	47	30.31	+24	01	46.4		033
1988	AR5	*	1988	01	11.81667	05	47	58.09	+23	32	39.9	18.7	033
1988	AR5		1988	01	11.86250	05	47	55.95	+23	32	23.7		033
1988	AS5	*	1988	01	11.81667	05	48	17.52	+24	45	27.0	18.2	033
1988	AS5		1988	01	11.86250	05	48	15.36	+24	45	18.3		033
1988	AT5	*	1988	01	11.81667	05	51	10.11	+22	42	17.4	19.0	033
1988	AT5		1988	01	11.86250	05	51	08.08	+22	42	20.1		033
1988	AU5	*	1988	01	11.81667	05	53	39.93	+22	26	05.4	18.1	033
1988	AU5		1988	01	11.86250	05	53	37.19	+22	26	10.3		033
1988	EC2	*	1988	03	14.86806	09	33	00.22	+05	45	41.1	17.8	033
1988	EC2		1988	03	14.91528	09	32	58.82	+05	45	57.8		033
1988	ED2	*	1988	03	14.86806	09	35	25.32	+06	10	32.7	17.6	033
1988	ED2		1988	03	14.91528	09	35	23.47	+06	10	32.8		033
1988	EE2	*	1988	03	14.89375	10	53	03.09	+51	16	58.4	17.6	033
1988	EE2		1988	03	14.94097	10	52	58.88	+51	16	43.4		033
1988	FE1	*	1988	03	17.80625	08	34	02.56	+19	38	29.8		033
1988	FE1		1988	03	17.85417	08	34	02.61	+19	38	37.4	18.5	033
1988	FF1	*	1988	03	17.80625	08	34	52.30	+20	03	52.7		033
1988	FF1		1988	03	17.85417	08	34	51.42	+20	03	39.3	18.2	033
1988	FG1	*	1988	03	17.80625	08	38	03.17	+18	41	31.6		033
1988	FG1		1988	03	17.85417	08	38	02.85	+18	41	34.5	19.2	033
1988	FH1	*	1988	03	17.80625	08	38	27.60	+18	24	14.6		033
1988	FH1		1988	03	17.85417	08	38	26.92	+18	24	18.3	18.1	033
1988	FJ1	*	1988	03	17.80625	08	39	15.39	+18	29	45.2		033
1988	FJ1		1988	03	17.85417	08	39	14.62	+18	29	47.0	17.9	033
1988	FK1	*	1988	03	17.80625	08	40	15.98	+20	21	13.3		033
1988	FK1		1988	03	17.85417	08	40	15.85	+20	21	10.6	18.4	033
1988	FL1	*	1988	03	17.82917	08	17	28.96	+02	24	37.2	18.4	033
1988	FL1		1988	03	17.87986	08	17	28.97	+02	24	58.0		033
1988	FM1	*	1988	03	17.91250	10	54	17.25	+01	19	32.7	18.1	033
1988	FM1		1988	03	17.96667	10	54	14.68	+01	19	41.7		033
1988	FN1	*	1988	03	17.99167	12	47	14.50	+12	19	38.0	20.0	033
1988	FN1		1988	03	18.04028	12	47	12.00	+12	19	51.8		033
1988	FO1	*	1988	03	17.99167	12	55	47.68	+11	35	42.3	19.7	033
1988	FO1		1988	03	18.04028	12	55	45.70	+11	36	14.3		033
1988	FP1	*	1988	03	18.00694	12	33	10.71	+12	27	53.0	17.1	033
1988	FP1		1988	03	18.02431	12	33	08.76	+12	27	44.2		033
1988	FP1		1988	03	18.05417	12	33	04.79	+12	27	28.4		033
1988	FP1		1988	03	18.07153	12	33	03.05	+12	27	19.9		033
1988	FQ1	*	1988	03	18.01563	12	32	19.50	+11	50	11.9	18.3	033
1988	FQ1		1988	03	18.06285	12	32	17.48	+11	50	30.1		033
1988	FR1	*	1988	03	18.01563	12	36	03.19	+12	46	35.4	18.0	033
1988	FR1		1988	03	18.06285	12	36	00.73	+12	46	54.6		033
1988	FS1	*	1988	03	18.01563	12	37	08.63	+12	57	07.4	18.6	033
1988	FS1		1988	03	18.06285	12	37	06.49	+12	57	19.8		033
1988	FT1	*	1988	03	18.01563	12	37	25.68	+13	34	50.8	17.8	033
1988	FT1		1988	03	18.06285	12	37	23.17	+13	35	10.2		033
1988	FU1	*	1988	03	18.89132	10	39	29.02	+13	35	56.3	19.2	033
1988	FU1		1988	03	18.92847	10	39	27.16	+13	36	05.1		033
1988	FV1	*	1988	03	18.89132	10	44	03.28	+11	33	21.8	19.1	033
1988	FV1		1988	03	18.92847	10	44	01.00	+11	33	23.6		033
1988	FW1	*	1988	03	18.98472	12	41	27.67	+09	03	32.5	19.2 N	033
1988	FW1		1988	03	19.03333	12	41	23.43	+09	04	58.6		033
1988	FX1	*	1988	03	18.98472	12	41	35.16	+11	39	30.2	19.5	033
1988	FX1		1988	03	19.03333	12	41	32.72	+11	39	43.0		033
1988	FY1	*	1988	03	18.98472	12	42	08.16	+10	55	03.9	18.7	033
1988	FY1		1988	03	19.03333	12	42	05.99	+10	55	33.0		033

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1988 FA2   1988 03 19.03333  12 49 23.08  +08 58 47.9                  033
1988 OH  * 1988 07 22.99792  21 44 13.56  +06 40 39.1                  033
1988 OH    1988 07 23.03854  21 44 12.26  +06 40 42.3                  033
1988 OH    1988 07 23.97153  21 43 42.40  +06 41 30.7          18.5    033
1988 OH    1988 07 24.02639  21 43 40.51  +06 41 33.0                  033
1988 OJ  * 1988 07 22.99792  21 45 38.85  +06 52 03.0                  033
1988 OJ    1988 07 23.03854  21 45 37.34  +06 52 07.0                  033
1988 OJ    1988 07 23.97153  21 45 03.16  +06 53 40.4          16.6    033
1988 OJ    1988 07 24.02639  21 45 01.05  +06 53 45.8                  033
1988 OK  * 1988 07 22.99792  21 51 16.27  +06 41 52.3                  033
1988 OK    1988 07 23.03854  21 51 14.65  +06 41 59.2                  033
1988 OK    1988 07 23.97153  21 50 37.40  +06 44 33.5          18.7    033
1988 OK    1988 07 24.02639  21 50 35.17  +06 44 41.7                  033
1988 OL  * 1988 07 23.01910  23 49 12.53  -00 23 20.0                  033
1988 OL    1988 07 23.05556  23 49 14.36  -00 23 23.4                  033
1988 OL    1988 07 24.00556  23 49 59.76  -00 24 44.5                  033
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1988 OM  * 1988 07 23.01910  23 49 16.10  -01 20 42.0                  033
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 560       1964 03 16.79722  07 21 51.70  +27 05 22.2                  033
 560       1964 03 16.82639  07 21 52.80  +27 05 22.3          14.5    033
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 560       1964 03 17.83264  07 22 32.58  +27 05 18.5                  033
 560       1964 03 17.87431  07 22 33.90  +27 05 17.4                  033
2214       1988 07 22.99792  21 40 42.78  +05 21 12.8                  033
2214       1988 07 23.03854  21 40 41.71  +05 21 06.6                  033
2214       1988 07 23.97153  21 40 18.68  +05 18 46.9          15.4    033
2214       1988 07 24.02639  21 40 17.20  +05 18 38.3                  033
2238       1988 07 23.01910  23 53 34.70  -02 19 26.3                  033
2238       1988 07 23.05556  23 53 35.07  -02 19 22.5                  033
2238       1988 07 24.00556  23 53 45.69  -02 18 27.7                  033
2238       1988 07 24.04514  23 53 46.04  -02 18 25.5          17.5    033
2351       1988 07 23.01910  23 51 22.01  -00 43 01.4                  033
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2351       1988 07 24.04514  23 51 41.58  -00 38 46.8          18.2    033
3577       1988 03 17.91250  10 57 05.18  +01 31 15.5          17.2    033
3577       1988 03 17.96667  10 57 03.14  +01 31 28.1                  033
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1988 FO2 * 1988 03 17.90706  11 55 00.69  +00 40 59.4          16.6    046
1988 FO2   1988 03 17.93194  11 54 59.51  +00 41 05.0                  046
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  43       1988 06 14.93634  16 00 52.26  -22 00 48.8                  046
 183       1988 07 10.95000  20 06 06.46  -02 19 16.0                  046
 183       1988 07 10.96493  20 06 05.74  -02 19 23.8                  046
 523       1988 07 14.92529  19 50 47.20  -17 28 51.1                  046
 523       1988 07 14.93941  19 50 46.51  -17 28 51.6                  046
1031       1988 06 18.96458  18 28 25.23  -01 48 27.8                  046
1031       1988 06 18.97917  18 28 24.33  -01 48 25.3                  046
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1149		1988	07	11.02014	20	16	58.58	-08	21	04.8	046
1199		1988	07	06.96875	19	44	32.78	-10	14	33.2	046
1199		1988	07	06.98333	19	44	32.16	-10	14	34.2	046
1199		1988	07	10.91285	19	41	23.79	-10	14	55.7	046
1199		1988	07	10.92776	19	41	23.13	-10	14	55.5	046
1201		1988	07	06.96875	19	50	09.28	-09	41	40.4	046
1201		1988	07	06.98333	19	50	08.71	-09	41	40.9	046
1201		1988	07	10.91285	19	46	51.49	-09	46	48.7	046
1201		1988	07	10.92778	19	46	50.78	-09	46	50.1	046
1255		1988	07	06.96875	19	47	00.53	-10	29	22.6	046
1255		1988	07	06.98333	19	46	59.80	-10	29	24.7	046
1255		1988	07	10.91285	19	43	56.09	-10	28	11.2	046
1255		1988	07	10.92770	19	43	55.48	-10	28	10.7	046
1275		1988	06	18.96458	18	27	46.01	-03	22	07.4	046
1275		1988	06	18.97917	18	27	44.80	-03	22	05.2	046
1337		1988	07	10.95000	20	05	53.64	-00	51	07.9	046
1337		1988	07	10.96493	20	05	52.91	-00	51	12.2	046
1609		1988	05	11.89435	15	56	13.77	+04	21	26.5	046
1609		1988	06	07.90365	15	29	30.11	+03	13	00.9	046
1609		1988	06	07.91142	15	29	29.57	+03	12	59.1	046
1609		1988	06	08.95347	15	28	35.03	+03	06	38.4	046
1609		1988	06	08.96389	15	28	34.47	+03	06	33.5	046
1609		1988	06	09.90880	15	27	45.97	+03	00	35.5	046
1609		1988	06	09.91875	15	27	45.46	+03	00	32.0	046
1609		1988	06	13.90764	15	24	31.86	+02	32	59.5	046
1609		1988	06	13.91875	15	24	31.45	+02	32	55.7	046
1609		1988	06	14.89676	15	23	46.99	+02	25	37.8	046
1609		1988	06	14.90394	15	23	46.72	+02	25	34.1	046
1609		1988	06	17.89028	15	21	39.43	+02	02	02.3	046
1609		1988	06	17.89792	15	21	39.09	+02	01	58.2	046
1609		1988	06	17.89792	15	21	39.09	+02	01	58.2	046
1609		1988	06	18.89236	15	20	59.25	+01	53	40.8	046
1609		1988	06	18.90000	15	20	59.02	+01	53	36.9	046
1636		1988	07	14.95990	20	04	04.23	-14	05	01.0	046
1636		1988	07	14.97399	20	04	03.45	-14	05	03.8	046
1940		1988	07	14.95990	20	03	21.19	-15	01	24.5	046
1940		1988	07	14.97399	20	03	20.72	-15	01	24.5	046
2711		1988	07	11.00556	20	20	04.85	-09	32	14.5	046
2711		1988	07	11.02014	20	20	04.26	-09	32	18.3	046
2780		1988	07	14.92529	19	55	50.89	-16	59	20.5	046
2780		1988	07	14.93941	19	55	50.11	-16	59	21.3	046
2979		1988	06	18.92639	18	07	53.35	-08	43	50.3	046
2979		1988	06	18.94097	18	07	52.44	-08	43	47.3	046
3647		1988	07	14.92529	19	52	25.02	-18	21	39.0	046
3647		1988	07	14.93941	19	52	24.36	-18	21	43.8	046

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Measurer P. Jensen
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1980	DA1		1988	04	15.91537	11	43	11.15	+10	28	52.2	16.5	054
1986	VB6		1988	04	15.91537	11	33	59.06	+09	19	34.2		054
1988	EK1		1988	04	15.88881	10	47	09.74	+04	47	29.0	16.5	054
1988	EF2	*	1988	03	12.91484	09	09	46.72	+20	45	51.7	17.5	054
1988	EF2		1988	03	12.93220	09	09	45.96	+20	45	47.5		054

1988	EG2	*	1988	03	12.91484	09	09	58.20	+21	26	30.1	17.5	054
1988	EG2		1988	03	12.93220	09	09	57.44	+21	26	28.9		054
1988	EH2	*	1988	03	12.91484	09	12	17.70	+22	25	39.7	17.5	054
1988	EH2		1988	03	12.93220	09	12	17.03	+22	25	39.3		054
1988	EJ2	*	1988	03	12.91484	09	15	01.45	+20	00	18.0	17.5	054
1988	EJ2		1988	03	12.93220	09	15	00.79	+20	00	13.2		054
1988	EK2	*	1988	03	12.91484	09	15	18.59	+19	01	56.3	18 V	054
1988	EK2		1988	03	12.93220	09	15	17.97	+19	01	52.2		054
1988	EL2	*	1988	03	12.91484	09	17	38.22	+20	30	12.1	17.5	054
1988	EL2		1988	03	12.93220	09	17	37.45	+20	30	18.2		054
1988	EM2	*	1988	03	13.00616	12	03	52.57	+08	14	57.6	18 V	054
1988	EM2		1988	03	13.01831	12	03	51.80	+08	15	03.1		054
1988	FB2	*	1988	03	18.94638	11	56	59.78	+05	16	20.5	17.5	054
1988	FC2	*	1988	03	18.94638	11	58	08.10	+05	29	27.9	18 V	054
1988	FD2	*	1988	03	18.94638	12	02	51.81	+05	17	31.4	18 V	054
1988	FE2	*	1988	03	18.94638	12	04	48.68	+04	58	48.2	18 V	054
1988	FF2	*	1988	03	18.96860	12	17	38.34	-01	07	55.2	16.5	054
1988	FG2	*	1988	03	18.96860	12	24	26.79	-01	12	32.4	17.5	054
1988	FH2	*	1988	03	18.96860	12	28	21.59	-02	02	37.7	18 V	054
1988	FJ2	*	1988	03	18.96860	12	28	43.59	-01	24	45.0	18 V	054
1988	GE1	*	1988	04	13.91086	11	59	54.97	+04	44	06.3	17.0	054
1988	GE1		1988	04	14.85634	11	59	14.46	+04	50	53.8		054
330			1988	04	15.91537	11	35	42.55	+10	06	31.6		054
721			1988	04	15.91537	11	40	00.25	+09	32	25.6		054
1397			1988	04	15.91537	11	30	19.93	+08	44	32.2		054
3587			1988	04	15.91537	11	34	01.84	+09	06	58.7		054

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72 Lenin Boulevard, BG-1784 Sofia, Bulgaria
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1982	TL1		1987	09	21.02454	00	55	43.43	+05	31	33.2	17.5	071
1982	TL1		1987	09	21.04514	00	55	42.60	+05	31	30.4		071
1983	BE		1988	01	19.93026	08	05	40.67	+21	37	58.0		071
1986	PM4		1986	09	08.88706	21	35	15.55	-04	15	21.2		071
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1987	OQ		1987	09	18.82083	21	14	13.52	+04	49	08.8	17.5	071
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1987	RG		1987	09	20.98781	00	38	04.56	-01	23	53.3		071
1987	RG		1987	09	21.00596	00	38	03.78	-01	23	57.4	16.5	071
1987	RG		1987	09	21.99537	00	37	22.10	-01	29	27.6	16.7	071
1987	RG		1987	09	22.01597	00	37	21.22	-01	29	34.8		071
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1987	RJ		1987	09	20.98781	00	40	00.65	-01	37	58.3		071
1987	RJ		1987	09	21.00596	00	39	59.72	-01	38	02.7	16.4	071
1987	RJ		1987	09	21.99537	00	39	08.39	-01	43	17.2	17.9	071
1987	RJ		1987	09	22.01597	00	39	07.31	-01	43	26.1		071
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1987	SB1		1987	09	20.98781	00	34	06.76	-02	15	25.5		071
1987	SB1		1987	09	21.00596	00	34	06.06	-02	15	38.4	16.6	071
1987	SB1		1987	09	21.99537	00	33	26.60	-02	27	59.1	16.9	071
1987	SB1		1987	09	22.01597	00	33	25.73	-02	28	16.7		071
1987	SG2		1987	09	19.92089	00	29	13.50	-00	14	05.2	18.5	071
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1987	SG2		1987	09	21.99537	00	27	39.90	-00	31	48.2	18.5	071
1987	SG2		1987	09	22.01597	00	27	39.02	-00	32	00.3		071
1987	SH2		1987	09	19.92089	00	31	05.74	+00	10	58.7	17.5	071

1987	SH2	1987	09	20.98781	00	30	17.84	-00	01	03.2		071
1987	SH2	1987	09	21.00596	00	30	17.06	-00	01	14.6	17.0	071
1987	SH2	1987	09	21.99537	00	29	32.22	-00	12	22.3	17.0	071
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1987	SJ2	1987	09	19.92089	00	36	52.16	+00	09	45.3	18.0	071
1987	SJ2	1987	09	20.98781	00	35	59.08	+00	02	15.6		071
1987	SJ2	1987	09	21.00596	00	35	58.31	+00	02	10.0	17.7	071
1987	SJ2	1987	09	21.99537	00	35	08.93	-00	04	46.3	18.0	071
1987	SJ2	1987	09	22.01597	00	35	07.79	-00	04	55.2		071
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1987	SK2	1987	09	20.98781	00	38	21.76	-00	33	42.9		071
1987	SK2	1987	09	21.00596	00	38	21.02	-00	33	47.0	16.8	071
1987	SK2	1987	09	21.99537	00	37	38.65	-00	38	31.4	19.0 M	071
1987	SK2	1987	09	22.01597	00	37	37.99	-00	38	34.4	M	071
1987	SL2	1987	09	19.92089	00	39	20.24	+01	06	27.9	16.5	071
1987	SL2	1987	09	20.98781	00	38	28.06	+01	04	33.3		071
1987	SL2	1987	09	21.00596	00	38	27.04	+01	04	31.1	16.5	071
1987	SL2	1987	09	21.99537	00	37	37.80	+01	02	37.8	17.0	071
1987	SL2	1987	09	22.01597	00	37	36.77	+01	02	36.7		071
1987	SM2	1987	09	19.92089	00	39	56.34	+00	27	29.2	18.0	071
1987	SM2	1987	09	20.98781	00	39	13.58	+00	22	08.6		071
1987	SM2	1987	09	21.00596	00	39	12.84	+00	22	04.0	17.0	071
1987	SM2	1987	09	21.99537	00	38	32.33	+00	17	00.0	18.5	071
1987	SM2	1987	09	22.01597	00	38	31.78	+00	16	52.5		071
1987	SP2	1987	09	23.97601	00	48	28.67	-05	03	04.5		071
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1987	SQ2	1987	09	23.97601	00	51	10.17	-06	05	15.9		071
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1987	SS2	1987	09	23.97601	00	54	42.58	-04	28	55.5		071
1987	SS2	1987	09	23.99537	00	54	42.02	-04	29	06.6	17	071
1987	SX2	1987	09	21.02454	00	55	26.59	+04	09	31.8	18	071
1987	SX2	1987	09	21.04514	00	55	25.66	+04	09	31.0		071
1987	SY2	1987	09	21.02454	01	01	21.23	+05	56	28.0	17	071
1987	SY2	1987	09	21.04514	01	01	20.29	+05	56	21.0		071
1987	SJ3	1987	09	23.97601	00	48	21.18	-06	45	56.6	16	071
1987	SJ3	1987	09	23.99537	00	48	18.82	-06	45	31.7		071
1987	SG4	1987	09	21.99537	00	34	32.08	+00	32	27.6	17.8	071
1987	SG4	1987	09	22.01597	00	34	30.97	+00	32	23.9		071
1987	SK4	1987	09	23.97601	00	49	55.68	-04	15	35.6		071
1987	SK4	1987	09	23.99537	00	49	55.04	-04	15	40.4	17	071
1987	SJ6	1987	09	19.92089	00	32	50.64	-00	04	04.8	17.0	071
1987	SJ6	1987	09	20.98781	00	31	57.70	-00	07	45.3		071
1987	SJ6	1987	09	21.00596	00	31	56.72	-00	07	48.9	16.8	071
1987	SJ6	1987	09	21.99537	00	31	06.94	-00	11	12.1	17.2	071
1987	SJ6	1987	09	22.01597	00	31	05.89	-00	11	17.6		071
1987	SO9	1987	09	19.92089	00	30	19.24	+00	13	17.2	19.0 M	071
1987	SO9	1987	09	19.94149	00	30	18.21	+00	13	09.7		071
1987	SO9	1987	09	19.98449	00	30	15.65	+00	12	50.5		071
1987	SO9	1987	09	21.99537	00	28	26.11	-00	01	34.7	18.0	071
1987	SO9	1987	09	22.01597	00	28	24.98	-00	01	43.9		071
1987	SP9	1987	09	21.99537	00	32	13.51	+01	07	36.3	18.0	071
1987	SP9	1987	09	22.01597	00	32	12.45	+01	07	32.3		071
1987	SQ9	1987	09	19.94149	00	34	46.37	-00	16	24.8		071
1987	SQ9	1987	09	19.98449	00	34	44.31	-00	16	37.8		071
1987	SR9	1987	09	19.92089	00	39	56.94	-01	36	11.6	19.0 M	071
1987	SR9	1987	09	19.94149	00	39	55.78	-01	36	14.0		071
1987	SR9	1987	09	19.98449	00	39	53.21	-01	36	24.3		071
1987	SR9	1987	09	21.99537	00	37	59.72	-01	42	05.0	19.0	071
1987	SR9	1987	09	22.01597	00	37	58.49	-01	42	09.5		071

1987	SS9		1987	09	19.94149	00	44	03.20	+00	25	01.7		071
1987	SS9		1987	09	19.98449	00	44	01.54	+00	24	55.0		071
1987	SW9		1987	09	21.02454	00	54	42.53	+02	53	23.1	18	071
1987	SW9		1987	09	21.04514	00	54	41.62	+02	53	18.0		071
1987	SA12	*	1987	09	18.82083	21	14	32.36	+05	01	03.0	17.5	071
1987	SA12		1987	09	18.84219	21	14	32.86	+05	00	40.5		071
1987	SB12	*	1987	09	19.92089	00	33	21.43	+01	25	14.9	19.0 M	071
1987	SB12		1987	09	19.94149	00	33	19.23	+01	25	44.4	M	071
1987	SB12		1987	09	19.98449	00	33	16.56	+01	25	24.5	M	071
1987	SC12	*	1987	09	19.92089	00	36	20.02	+00	34	20.6	18.5	071
1987	SC12		1987	09	19.94149	00	36	16.20	+00	34	05.8		071
1987	SC12		1987	09	19.98449	00	36	15.05	+00	33	51.8		071
1987	SD12	*	1987	09	19.92089	00	44	05.97	+00	26	07.3	18.5	071
1987	SE12	*	1987	09	21.02454	00	53	47.64	+03	43	00.4	18.5	071
1987	SE12		1987	09	21.04514	00	53	46.28	+03	42	57.1		071
1987	SF12	*	1987	09	21.02454	00	55	24.92	+04	02	11.2	18	071
1987	SF12		1987	09	21.04514	00	55	24.08	+04	01	59.8		071
1987	SG12	*	1987	09	21.02454	01	02	48.71	+05	20	11.0	18	071
1987	SG12		1987	09	21.04514	01	02	47.59	+05	20	04.8		071
1987	SH12	*	1987	09	21.02454	01	08	49.03	+05	10	47.1	18	071
1987	SH12		1987	09	21.04514	01	08	48.25	+05	10	39.2		071
1987	SJ12	*	1987	09	21.99537	00	21	12.73	+00	49	47.3	15.0	071
1987	SJ12		1987	09	22.01597	00	21	11.91	+00	49	34.8		071
1988	BG		1988	01	19.91169	07	51	17.30	+19	21	36.0		071
1988	BH		1988	01	19.91169	07	51	38.93	+19	31	36.0		071
1988	BS		1988	01	19.91169	07	52	14.14	+18	22	49.8		071
1988	BU		1988	01	19.91169	07	57	19.74	+22	04	45.7		071
1988	BS4	*	1988	01	18.88009	07	56	55.56	+20	37	05.3		071
1988	BS4		1988	01	18.93495	07	56	51.78	+20	37	08.3		071
1988	BS4		1988	01	18.96337	07	56	49.70	+20	37	10.4		071
1988	BS4		1988	01	19.91169	07	55	44.09	+20	38	14.0		071
1988	BT4	*	1988	01	19.00058	08	02	52.90	+18	37	30.8		071
1988	BT4		1988	01	19.02245	08	02	50.97	+18	37	28.6		071
1988	BU4	*	1988	01	19.91114	07	56	17.01	+19	38	44.4		071
1988	CX1		1988	01	19.93026	08	07	04.00	+19	49	02.9		071
1988	CM2		1988	01	19.93026	08	05	56.64	+18	59	06.8		071
1988	CN2		1988	01	19.93026	08	05	10.39	+19	11	55.0		071
1988	CP2		1988	01	19.93026	08	08	15.84	+19	24	15.0		071
1988	FQ2	*	1988	03	21.89150	11	52	01.38	+00	59	47.9		071
1988	FQ2		1988	03	21.92970	11	51	59.55	+01	00	00.6		071
1988	FR2	*	1988	03	21.89150	11	57	21.56	+01	06	24.1		071
1988	FR2		1988	03	21.92970	11	57	19.04	+01	06	25.0		071
1988	FS2	*	1988	03	21.89150	12	03	59.29	+00	10	24.3		071
1988	FS2		1988	03	21.92970	12	03	57.23	+00	10	32.5		071
1988	FT2	*	1988	03	21.96164	09	57	22.94	-06	57	13.6		071
1988	FT2		1988	03	22.00713	09	57	23.32	-06	57	35.3		071
1988	JC1		1988	06	14.01219	17	09	07.14	+21	49	33.7		071
1988	JC1		1988	06	14.03498	17	09	06.12	+21	49	36.8		071
1988	JC1		1988	06	14.05394	17	09	05.19	+21	49	40.0		071
1988	JC1		1988	06	14.93806	17	08	25.06	+21	51	43.9		071
1988	JC1		1988	06	14.97810	17	08	23.15	+21	51	49.6		071
208			1987	09	21.02454	00	57	32.33	+06	23	39.7	16	071
208			1987	09	21.04514	00	57	31.49	+06	23	35.8		071
423			1988	01	18.77905	01	24	52.49	+02	41	41.8		071
423			1988	01	18.81435	01	24	53.83	+02	41	57.6		071
500			1988	03	21.78456	09	41	50.35	+02	49	57.7		071
500			1988	03	21.83317	09	41	48.81	+02	50	07.6		071
536			1988	03	22.06592	12	43	01.09	+19	42	06.7		071
536			1988	03	22.11720	12	42	58.81	+19	42	15.0		071

553		1988	01	18.77905	01	26	30.12	+06	54 43.6	071
553		1988	01	18.81435	01	26	33.11	+06	55 10.0	071
716		1987	09	23.97601	00	51	43.72	-03	26 50.7	071
716		1987	09	23.99537	00	51	43.04	-03	27 01.7	16 071
850		1988	01	19.93026	08	08	27.10	+19	35 49.2	071
1023		1988	01	18.77905	01	26	24.86	+03	51 15.3	071
1023		1988	01	18.81435	01	26	26.79	+03	51 25.7	071
1172		1987	09	18.82083	21	20	44.50	+06	00 20.6	16 071
1172		1987	09	18.84219	21	20	44.22	+06	00 09.0	071
1269		1988	01	19.93026	08	07	38.70	+19	13 11.0	071
1350		1987	09	21.02454	01	06	10.11	+03	10 40.9	16 071
1350		1987	09	21.04514	01	06	09.29	+03	10 35.1	071
1372		1988	03	21.98248	10	52	36.22	-03	54 57.3	071
1372		1988	03	22.02935	10	52	33.69	-03	54 50.8	071
1379		1988	03	21.80921	09	56	59.49	+08	44 48.2	071
1379		1988	03	21.85262	09	56	58.37	+08	45 17.4	071
1485		1988	01	19.93026	08	12	09.53	+19	22 01.7	071
1597		1988	06	14.89361	16	33	06.39	-03	03 46.8	071
1597		1988	06	14.91447	16	33	05.51	-03	03 49.0	071
1659		1988	03	21.87171	09	57	44.21	+13	02 53.3	071
1659		1988	03	21.91009	09	57	42.49	+13	02 54.5	071
1990		1988	03	21.80921	10	10	05.73	+08	28 16.8	071
1990		1988	03	21.85262	10	10	04.20	+08	28 30.1	071
2326		1988	06	11.88296	16	25	46.82	-00	00 16.7	071
2326		1988	06	11.92310	16	25	45.09	-00	00 15.6	071
2581		1988	01	19.91169	07	54	18.10	+17	51 02.0	071
2848		1987	09	21.02454	00	54	43.33	+06	38 57.0	16.5 071
2848		1987	09	21.04514	00	54	42.56	+06	38 53.3	071
3714		1987	09	23.97601	00	54	17.01	-05	43 18.9	071
3714		1987	09	23.99537	00	54	15.79	-05	43 17.5	16.5 071

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

1984	EN	1988	04	10.18542	13	24	17.07	-14	39 50.1	293
1984	EN	1988	04	10.19931	13	24	16.11	-14	39 44.7	293
1984	UG	1988	06	11.15347	15	56	04.87	-20	54 54.6	293
1985	PB1	1988	06	11.20382	15	57	43.25	-10	36 00.1	293
1985	PB1	1988	06	11.22257	15	57	42.66	-10	36 00.4	293
3846		1988	04	10.22431	13	32	20.29	-14	39 00.3	293
3846		1988	04	10.23958	13	32	19.47	-14	38 55.3	293

399 Kushiro
H. Kaneda, 12-7-2, 1 Chome, Ishiyama 1 Jo, Minami-Ku,
Sapporo 005, Japan
Observer S. Ueda
Measurer H. Kaneda

1987	UW3 *	1987	10	21.50556	01	33	26.71	+10	10 12.1	15.5 399
1987	UW3	1987	10	21.52222	01	33	25.96	+10	10 07.7	399
1987	UW3	1987	10	21.53889	01	33	25.07	+10	10 02.0	399
1988	FK2 *	1988	03	16.56667	12	00	12.63	+09	48 52.3	16.5 399
1988	FK2	1988	03	16.58183	12	00	11.75	+09	48 56.5	399
1988	FK2	1988	03	16.59931	12	00	10.83	+09	48 59.6	399

400 Kitami
H. Kaneda, 12-7-2, 1 Chome, Ishiyama 1 Jo, Minami-Ku,
Sapporo 005, Japan

Observers K. Endate, M. Yanai
Measurer K. Watanabe

1988	EN2	*	1988	03	10.60451	11	16	38.84	+14	07	36.2	16.0	400
1988	FL2	*	1988	03	16.60350	12	59	24.75	+04	00	22.0	16.5	400
1988	FL2		1988	03	16.61947	12	59	24.06	+04	00	21.8		400
1988	FM2	*	1988	03	21.58924	11	05	07.49	+15	07	53.6	16	400
1988	FM2		1988	03	21.60660	11	05	06.52	+15	07	58.9		400
1988	HF		1988	05	14.54618	13	16	59.12	+01	48	13.3	16.5	400
1988	HF		1988	05	14.57326	13	16	58.28	+01	48	17.3		400
1988	HF		1988	05	14.58889	13	16	57.94	+01	48	18.4		400
1988	HG		1988	05	14.60764	13	28	16.13	-01	26	43.1	16	400
1988	HG		1988	05	14.62847	13	28	15.47	-01	26	47.6		400
1988	HG		1988	05	14.64444	13	28	14.65	-01	26	47.1		400
1988	PV	*	1988	08	08.59242	21	47	34.63	-01	07	28.0	16.0	400
1988	PV		1988	08	08.62106	21	47	33.09	-01	07	32.9		400
1988	PV		1988	08	08.63791	21	47	32.79	-01	07	33.9		400
1988	PV		1988	08	15.53891	21	42	26.10	-01	31	57.7	15.0	400
1988	PV		1988	08	15.55419	21	42	25.31	-01	31	59.6		400
1988	PV		1988	08	15.56738	21	42	24.69	-01	32	05.9		400
238			1988	08	08.59103	21	45	09.45	-00	20	56.5	13	400
238			1988	08	08.59242	21	45	09.51	-00	20	56.4	13.0	400
238			1988	08	08.60631	21	45	08.80	-00	21	02.4		400
238			1988	08	08.62106	21	45	08.09	-00	21	07.5		400
238			1988	08	08.63791	21	45	07.55	-00	21	12.1		400
238			1988	08	15.53891	21	40	09.20	-01	05	44.0	13.0	400
238			1988	08	15.55419	21	40	08.40	-01	05	49.8		400
238			1988	08	15.56738	21	40	07.89	-01	05	54.4		400

413 Siding Spring
R. H. McNaught, Siding Spring Observatory, Coonabarabran, N.S.W. 2357, Australia
Observers M. Hartley, R. H. McNaught, K. S. Russell, Q. A. Parker
Measurers R. H. McNaught, A. J. Noymer
1.2-m Schmidt and (1) Uppsala Southern Schmidt

1951	JQ		1988	01	29.68691	11	38	29.84	-09	08	19.1	17	413
1951	JQ		1988	01	29.75288	11	38	28.89	-09	08	27.1		413
1977	QW2		1988	08	11.59492	22	21	23.41	-02	13	11.6		413
1977	QW2		1988	08	11.65395	22	21	20.91	-02	13	33.4		413
1978	TB2		1988	08	11.59492	22	22	08.32	-04	39	19.7		413
1978	TB2		1988	08	11.65395	22	22	05.51	-04	39	37.8		413
1981	PK		1988	04	19.47545	11	27	32.81	-14	15	01.1	18 V	413
1981	PK		1988	04	19.54490	11	27	30.51	-14	14	34.6	F	413
1981	WM4		1988	07	11.36240	10	57	22.99	-03	07	22.8		413
1982	DV2		1988	08	13.65556	22	08	08.42	-09	03	55.6	1	413
1982	DV2		1988	08	14.69306	22	07	16.32	-09	09	30.2	1	413
1982	DV2		1988	08	16.74517	22	05	31.52	-09	20	43.9	1	413
1985	RA5	*	1985	09	07.42918	20	23	52.45	-08	05	06.9	18.5 F	413
1985	RA5		1985	09	07.48126	20	23	51.61	-08	05	16.3	F	413
1985	RB5	*	1985	09	07.42918	20	26	49.79	-05	40	03.6	17.5	413
1985	RB5		1985	09	07.48126	20	26	48.92	-05	40	34.9		413
1985	RC5	*	1985	09	07.42918	20	26	56.22	-07	48	22.8	16	413
1985	RC5		1985	09	07.48126	20	26	55.14	-07	48	40.2		413
1986	RB		1988	07	11.36240	10	46	42.13	-03	39	59.1		413
1986	VA		1986	11	08.68325	01	40	56.54	+22	20	15.2	1	413
1986	VA		1986	11	09.66768	01	40	16.18	+22	13	22.5	1	413
1986	VA		1986	12	02.46962	01	29	59.18	+19	43	18.4	1	413
1986	VA		1986	12	03.47905	01	29	48.46	+19	37	37.3	1	413
1986	VC		1986	11	09.66768	01	43	09.79	+21	23	36.5	1	413
1986	VC		1986	12	02.46962	01	28	36.77	+20	41	47.5	1	413

1986	VC		1986	12	03.47905	01	28	19.61	+20	40	30.6		1 413
1986	VD		1986	11	08.68325	01	45	33.89	+21	10	03.1		1 413
1986	VD		1986	11	09.66768	01	44	52.24	+21	03	09.2		1 413
1986	VD		1986	12	02.46962	01	33	40.65	+18	31	55.2		1 413
1986	VD		1986	12	02.49306	01	33	40.34	+18	31	47.1		1 413
1986	VD		1986	12	03.47905	01	33	26.35	+18	26	08.5		1 413
1986	VD		1986	12	03.49561	01	33	26.11	+18	26	03.3		1 413
1986	VE		1986	11	08.68325	01	49	15.02	+22	19	30.2		1 413
1986	VE		1986	11	09.66768	01	48	38.09	+22	06	15.1		1 413
1986	VE		1986	12	02.49306	01	41	45.46	+17	26	03.3		1 413
1986	VE		1986	12	03.49561	01	41	49.40	+17	15	58.2		1 413
1986	VG		1986	11	04.61456	01	51	49.27	+22	48	06.3		1 413
1986	VG		1986	11	05.51162	01	51	01.52	+22	45	28.7		1 413
1986	VG		1986	11	05.52685	01	51	00.80	+22	45	24.9		1 413
1986	VG		1986	11	08.68325	01	48	16.63	+22	35	37.0		1 413
1986	VG		1986	11	09.66768	01	47	27.10	+22	32	26.1		1 413
1986	VG		1986	12	03.47905	01	33	05.13	+21	14	00.1		1 413
1986	XU5	*	1986	12	02.46962	01	22	36.21	+18	49	43.3	17.5	1 413
1986	XU5		1986	12	03.47905	01	22	24.68	+18	47	06.6		1 413
1988	BV4	*	1988	01	26.61753	09	11	42.95	-02	17	34.4	18	I 413
1988	BV4		1988	01	26.68698	09	11	39.50	-02	17	18.9		b 413
1988	BV4		1988	01	27.59333	09	10	54.23	-02	13	46.8		F 413
1988	BV4		1988	01	27.66278	09	10	50.37	-02	13	29.0		V 413
1988	BW4	*	1988	01	26.61753	09	19	38.52	-02	44	21.2	17.5	F 413
1988	BW4		1988	01	26.68698	09	19	34.42	-02	43	09.9		b 413
1988	BW4		1988	01	27.59333	09	18	44.39	-02	27	19.5		413
1988	BW4		1988	01	27.66278	09	18	40.33	-02	26	08.0		413
1988	BX4	*	1988	01	26.61753	09	23	16.70	-02	45	09.0	19	E 413
1988	BX4		1988	01	26.68698	09	23	13.30	-02	44	57.2		E 413
1988	BX4		1988	01	27.59333	09	22	32.74	-02	42	34.0		I 413
1988	BX4		1988	01	27.66278	09	22	30.25	-02	42	23.4		E 413
1988	BY4	*	1988	01	26.61753	09	24	13.80	-03	02	46.8	18	413
1988	BY4		1988	01	26.68698	09	24	09.95	-03	02	36.6		b 413
1988	BY4		1988	01	27.59333	09	23	23.11	-03	00	35.2		F 413
1988	BY4		1988	01	27.66278	09	23	19.78	-03	00	26.4		F 413
1988	BZ4	*	1988	01	26.68698	09	21	55.08	-02	13	09.9	19	V 413
1988	BZ4		1988	01	27.59333	09	21	13.12	-02	11	27.4		F 413
1988	BZ4		1988	01	27.66278	09	21	10.55	-02	11	20.4		V 413
1988	BA5	*	1988	01	29.68691	11	39	47.42	-09	20	24.6	17	413
1988	BA5		1988	01	29.75288	11	39	46.55	-09	20	19.2		413
1988	BB5	*	1988	01	29.68691	11	46	10.47	-09	00	44.8		413
1988	BB5		1988	01	29.75288	11	46	09.50	-09	01	12.4		413
1988	CG3		1988	02	23.53975	10	02	14.50	-03	18	05.2	16.5	413
1988	CG3		1988	02	23.54669	10	02	14.18	-03	18	01.8		413
1988	CG3		1988	02	25.59934	10	00	30.11	-03	02	32.9		413
1988	CG3		1988	02	25.61323	10	00	29.46	-03	02	26.6		413
1988	CG3		1988	03	10.53479	09	49	35.22	-01	05	47.8		413
1988	CG3		1988	03	10.54660	09	49	34.72	-01	05	42.1		413
1988	CH3		1988	02	23.53975	10	04	24.57	-04	07	09.9	17.5	P 413
1988	CH3		1988	02	23.54669	10	04	24.19	-04	07	09.7		413
1988	CH3		1988	02	25.59934	10	02	18.56	-04	05	14.9		413
1988	CH3		1988	02	25.61323	10	02	17.83	-04	05	14.5		413
1988	CH3		1988	03	10.53479	09	49	03.59	-03	37	08.7		413
1988	CH3		1988	03	10.54660	09	49	02.94	-03	37	06.9		413
1988	CH3		1988	04	20.39527	09	36	47.43	-01	47	58.6		I 413
1988	CH3		1988	04	20.47166	09	36	48.46	-01	47	52.8		F 413
1988	CH3		1988	07	11.36240	11	05	59.59	-06	37	57.3	18	413
1988	CD4		1988	02	23.54322	09	59	22.04	-00	12	50.9	17.5	413
1988	CD4		1988	02	25.59934	09	57	46.39	-00	04	37.7		413

1988	CD4		1988	02	25.61323	09	57	45.85	-00	04	34.4		413
1988	CJ4		1988	02	23.53975	09	58	55.52	-02	23	23.3	17.5	413
1988	CJ4		1988	02	23.54669	09	58	55.14	-02	23	23.3		413
1988	CJ4		1988	02	25.59934	09	56	49.29	-02	24	09.2		413
1988	CJ4		1988	02	25.61323	09	56	48.48	-02	24	09.1		413
1988	CK4		1988	02	23.53975	09	59	47.43	-00	55	59.9	18 F	413
1988	CK4		1988	02	23.54669	09	59	47.07	-00	55	57.4	F	413
1988	CK4		1988	02	25.59934	09	57	49.90	-00	51	03.4		413
1988	CK4		1988	02	25.61323	09	57	49.20	-00	51	02.0		413
1988	CL4		1988	02	23.53975	10	01	12.40	-01	25	13.1	17.5 F	413
1988	CL4		1988	02	23.54669	10	01	12.04	-01	25	10.3		413
1988	CL4		1988	02	25.59934	09	59	30.63	-01	13	58.8		413
1988	CL4		1988	02	25.61323	09	59	29.99	-01	13	54.2		413
1988	CL4		1988	03	10.53479	09	49	22.14	+00	11	05.5		413
1988	CL4		1988	03	10.54660	09	49	21.74	+00	11	09.6		413
1988	CW4		1988	03	10.53479	09	52	30.12	+02	00	14.8	18	413
1988	CW4		1988	03	10.54660	09	52	29.73	+02	00	18.2		413
1988	CP5		1988	02	22.57219	10	11	59.29	-00	24	08.5	18 p	413
1988	CP5		1988	02	23.54322	10	11	12.65	-00	19	26.1	p	413
1988	CP5		1988	02	25.59934	10	09	33.88	-00	09	13.5		413
1988	CP5		1988	02	25.61323	10	09	33.40	-00	09	09.6		413
1988	CP5		1988	03	10.53479	09	59	17.51	+01	05	51.2	C	413
1988	CP5		1988	03	10.54660	09	59	17.22	+01	05	54.1	C	413
1988	CQ5		1988	03	10.53479	09	55	58.93	+02	20	29.1	18.5 F	413
1988	CQ5		1988	03	10.54660	09	55	58.56	+02	20	33.0	F	413
1988	CR5		1988	03	10.53479	09	51	44.58	+02	01	58.8	17.5	413
1988	CR5		1988	03	10.54660	09	51	43.94	+02	02	00.2		413
1988	DQ		1988	07	11.36240	11	00	57.57	-05	48	58.7	17	413
1988	DD3	*	1988	02	22.50434	10	16	38.78	-02	29	22.8		413
1988	DD3		1988	02	22.57219	10	16	35.39	-02	29	11.8	18 p	413
1988	DD3		1988	02	23.54322	10	15	47.06	-02	26	11.1	p	413
1988	DD3		1988	02	25.59934	10	14	04.54	-02	19	30.9		413
1988	DD3		1988	02	25.61323	10	14	03.83	-02	19	28.6		413
1988	DD3		1988	03	10.53479	10	03	09.53	-01	24	22.8	F	413
1988	DD3		1988	03	10.54660	10	03	09.07	-01	24	19.1	F	413
1988	DD3		1988	07	11.36240	10	59	39.82	-02	04	56.8	19 E	413
1988	DE3	*	1988	02	22.50434	10	17	22.04	-00	57	02.9	18	413
1988	DE3		1988	02	22.57219	10	17	18.05	-00	56	56.1		413
1988	DE3		1988	02	23.53975	10	16	21.09	-00	55	04.0	F	413
1988	DE3		1988	02	23.54669	10	16	20.65	-00	55	04.0	F	413
1988	DE3		1988	02	25.59934	10	14	20.04	-00	50	43.2		413
1988	DE3		1988	02	25.61323	10	14	19.39	-00	50	42.1		413
1988	DE3		1988	03	10.53479	10	01	45.75	-00	11	46.6		413
1988	DE3		1988	03	10.54660	10	01	45.24	-00	11	44.1		413
1988	DF3	*	1988	02	22.50434	10	18	52.25	-00	42	49.9	18	413
1988	DF3		1988	02	22.57219	10	18	48.06	-00	42	31.7		413
1988	DF3		1988	02	23.53975	10	17	47.47	-00	37	54.0	F	413
1988	DF3		1988	02	23.54669	10	17	47.14	-00	37	51.6	F	413
1988	DF3		1988	02	25.59934	10	15	38.94	-00	27	42.2		413
1988	DF3		1988	02	25.61323	10	15	38.16	-00	27	36.8		413
1988	DF3		1988	03	10.53479	10	02	11.85	+00	50	08.5		413
1988	DF3		1988	03	10.54660	10	02	11.34	+00	50	12.7		413
1988	DR4	*	1988	02	23.53975	10	01	28.83	-02	14	22.3	17	413
1988	DR4		1988	02	23.54669	10	01	28.53	-02	14	20.4		413
1988	DR4		1988	02	25.59934	09	59	51.40	-02	08	34.5		413
1988	DR4		1988	02	25.61323	09	59	50.80	-02	08	32.2		413
1988	DR4		1988	03	10.53479	09	49	41.13	-01	22	18.0		413
1988	DR4		1988	03	10.54660	09	49	40.64	-01	22	15.2		413
1988	DR4		1988	04	20.39527	09	37	33.63	+00	44	33.5	F	413

1988	DR4		1988	04	20.47166	09	37	33.94	+00	44	42.4		413
1988	DS4	*	1988	02	23.54322	10	00	19.68	-02	40	48.8	17.5	413
1988	DS4		1988	02	25.59934	09	58	46.07	-02	30	09.2		413
1988	DS4		1988	02	25.61323	09	58	45.47	-02	30	04.7		413
1988	DS4		1988	03	10.53479	09	48	58.94	-01	09	44.7		413
1988	DS4		1988	03	10.54660	09	48	58.50	-01	09	40.2		413
1988	DS4		1988	04	20.39527	09	38	46.99	+02	24	43.5	F	413
1988	DS4		1988	04	20.47166	09	38	47.75	+02	24	59.7	V	413
1988	DT4		1988	02	23.53975	09	57	25.35	-01	31	58.4	17.5	413
1988	DT4		1988	02	23.54669	09	57	25.03	-01	31	53.9		413
1988	DT4	*	1988	02	25.59934	09	55	48.29	-01	09	12.9		413
1988	DT4		1988	02	25.61323	09	55	47.66	-01	09	03.6		413
1988	DU4	*	1988	02	25.59934	09	57	12.16	-02	32	23.8	18 F	413
1988	DU4		1988	02	25.61323	09	57	11.49	-02	32	18.8	F	413
1988	DV4		1988	02	23.53975	09	59	12.69	-02	21	08.6	17.5	413
1988	DV4		1988	02	23.54669	09	59	12.30	-02	21	05.9		413
1988	DV4	*	1988	02	25.59934	09	57	16.81	-02	14	42.8		413
1988	DV4		1988	02	25.61323	09	57	16.14	-02	14	40.4		413
1988	DW4		1988	02	23.54322	09	58	47.89	-05	57	02.1	18 p	413
1988	DW4	*	1988	02	25.59934	09	57	20.85	-05	43	19.3		413
1988	DW4		1988	02	25.61323	09	57	20.34	-05	43	13.5		413
1988	DX4		1988	02	23.54322	09	59	44.08	-01	36	40.3	18 V	413
1988	DX4	*	1988	02	25.59934	09	58	19.27	-01	11	47.9	F	413
1988	DX4		1988	02	25.61323	09	58	18.74	-01	11	39.8	V	413
1988	DX4		1988	03	10.53479	09	50	11.41	+01	49	07.9		413
1988	DX4		1988	03	10.54660	09	50	10.99	+01	49	17.4		413
1988	DY4		1988	02	23.54322	10	00	54.97	-05	44	43.8	18 V	413
1988	DY4	*	1988	02	25.59934	09	59	03.71	-05	36	29.8		413
1988	DY4		1988	02	25.61323	09	59	03.03	-05	36	26.5		413
1988	DZ4		1988	02	23.53975	10	05	59.01	-03	20	25.2	17.5 F	413
1988	DZ4		1988	02	23.54669	10	05	58.57	-03	20	18.7		413
1988	DZ4	*	1988	02	25.59934	10	03	51.83	-02	44	19.3		413
1988	DZ4		1988	02	25.61323	10	03	51.00	-02	44	05.4		413
1988	DZ4		1988	03	10.53479	09	50	42.36	+01	37	57.1		413
1988	DZ4		1988	03	10.54660	09	50	41.78	+01	38	09.1		413
1988	DA5		1988	02	23.54322	10	05	19.66	-05	07	08.4	18	413
1988	DA5	*	1988	02	25.59934	10	03	53.99	-04	48	43.5	p	413
1988	DA5		1988	02	25.61323	10	03	53.46	-04	48	36.8		413
1988	DA5		1988	03	10.53479	09	54	56.29	-02	34	30.7		413
1988	DA5		1988	03	10.54660	09	54	55.93	-02	34	24.3		413
1988	DB5		1988	02	23.54322	10	08	29.25	-05	00	05.1	18 V	413
1988	DB5	*	1988	02	25.59934	10	06	48.06	-04	42	03.0		413
1988	DB5		1988	02	25.61323	10	06	47.38	-04	41	54.7		413
1988	DB5		1988	03	10.53479	09	56	16.83	-02	23	51.4		413
1988	DB5		1988	03	10.54660	09	56	16.29	-02	23	44.5		413
1988	DC5		1988	02	23.54322	10	08	35.91	-05	31	37.5	18 F	413
1988	DC5	*	1988	02	25.59934	10	06	54.93	-05	26	18.0	p	413
1988	DC5		1988	02	25.61323	10	06	54.43	-05	26	17.3		413
1988	DD5		1988	02	23.54322	10	19	08.33	-04	18	55.8	17.5 F	413
1988	DD5	*	1988	02	25.59934	10	16	55.43	-04	14	50.4		413
1988	DD5		1988	02	25.61323	10	16	54.56	-04	14	48.6		413
1988	DD5		1988	03	10.53479	10	02	19.45	-03	29	14.5		413
1988	DD5		1988	03	10.54660	10	02	18.77	-03	29	11.5		413
1988	DD5		1988	04	20.39527	09	46	02.36	-00	44	52.9		413
1988	DD5		1988	04	20.47166	09	46	03.37	-00	44	40.2		413
1988	EC		1988	07	11.36240	11	00	40.49	-03	44	51.2	18.5	413
1988	GA		1988	04	20.49211	11	50	32.29	-00	51	18.8	16.5	413
1988	GA		1988	04	20.55808	11	50	30.77	-00	50	55.9		413
1988	PK		1988	08	11.59492	22	13	21.56	-07	59	46.5		413

1988	PK		1988	08	11.65395	22	13	19.39	-08	00	09.6		413
1988	PK	*	1988	08	13.65556	22	12	08.44	-08	14	12.0	16.5	1 413
1988	PK		1988	08	14.69306	22	11	30.15	-08	21	42.1		1 413
1988	PK		1988	08	16.74517	22	10	11.96	-08	36	58.0		1 413
1988	PL		1988	08	11.59492	22	15	36.23	-06	56	05.6		413
1988	PL		1988	08	11.65395	22	15	33.32	-06	56	22.2		I 413
1988	PL	*	1988	08	13.65556	22	13	58.61	-07	06	02.8	17	1 413
1988	PL		1988	08	14.68611	22	13	08.14	-07	11	14.7		1 413
1988	PL		1988	08	14.70001	22	13	07.47	-07	11	20.5		1 413
1988	PL		1988	08	16.74517	22	11	25.00	-07	22	06.1		1 413
1988	PM	*	1988	08	13.65556	22	16	18.84	-08	24	45.8	17	1 413
1988	PM		1988	08	14.69306	22	15	29.25	-08	26	43.5		1 413
1988	PM		1988	08	16.74517	22	13	49.83	-08	30	43.4		1 413
1988	PN	*	1988	08	13.65556	22	16	43.27	-08	49	41.0	18	1 413
1988	PN		1988	08	14.69306	22	15	47.63	-08	56	27.8		1 413
1988	PN		1988	08	16.74517	22	13	54.16	-09	10	34.5		1 413
1988	PQ	*	1988	08	11.59492	22	11	26.07	-07	34	09.4	18.5	413
1988	PQ		1988	08	11.65395	22	11	22.76	-07	34	15.2		413
1988	PQ		1988	08	13.65556	22	09	35.95	-07	38	02.6		1 413
1988	PQ		1988	08	14.69306	22	08	38.96	-07	40	11.0		1 413
1988	PQ		1988	08	16.74517	22	06	45.41	-07	44	40.7		1 413
1988	PR	*	1988	08	11.59492	22	11	53.35	-05	56	47.4	18	413
1988	PR		1988	08	11.65395	22	11	50.43	-05	57	13.4		413
1988	PR		1988	08	13.65556	22	10	13.86	-06	12	23.2		1 413
1988	PR		1988	08	14.69306	22	09	22.64	-06	20	29.0		1 413
1988	PS	*	1988	08	11.59492	22	20	58.19	-06	32	06.4	18.5	F 413
1988	PS		1988	08	11.65395	22	20	55.66	-06	32	14.1		V 413
1988	PS		1988	08	13.65556	22	19	27.76	-06	37	01.5		1 413
12			1988	02	23.53975	10	18	45.13	-03	16	05.2		E 413
12			1988	02	23.54669	10	18	44.70	-03	16	02.6		E 413
12			1988	02	25.59934	10	16	45.59	-03	04	30.1		413
12			1988	02	25.61323	10	16	44.80	-03	04	25.1		413
102			1988	04	20.49211	11	59	14.90	-02	43	57.4		413
102			1988	04	20.55808	11	59	12.44	-02	43	35.9		413
201			1988	08	04.36819	15	38	55.01	-12	28	15.8		413
201			1988	08	04.42028	15	38	57.05	-12	28	34.2		413
485			1988	02	23.53975	10	09	04.63	-04	31	09.0		413
485			1988	02	23.54669	10	09	04.33	-04	31	04.9		413
485			1988	02	25.59934	10	07	32.21	-04	09	45.9		413
485			1988	02	25.61323	10	07	31.62	-04	09	37.8		413
500			1988	03	10.53479	09	49	10.85	+02	08	59.8		413
500			1988	03	10.54660	09	49	10.35	+02	09	02.1		413
514			1988	08	11.59492	22	25	48.55	-04	21	00.1		413
514			1988	08	11.65395	22	25	46.17	-04	21	08.3		413
539			1986	11	04.59720	01	45	11.56	+22	03	43.3		1 413
539			1986	11	04.61456	01	45	10.70	+22	03	32.6		1 413
539			1986	11	05.51162	01	44	31.42	+21	56	34.2		1 413
539			1986	11	05.52685	01	44	30.76	+21	56	25.8		1 413
539			1986	11	08.68325	01	42	18.82	+21	31	31.4		1 413
539			1986	11	09.66768	01	41	40.31	+21	23	43.2		1 413
539			1986	12	02.46962	01	34	07.68	+18	40	52.8		1 413
539			1986	12	02.49306	01	34	07.69	+18	40	44.2		1 413
539			1986	12	03.47905	01	34	09.33	+18	35	12.9		1 413
539			1986	12	03.49561	01	34	09.33	+18	35	07.1		1 413
673			1988	08	11.59492	22	20	19.78	-05	44	28.5		413
673			1988	08	11.65395	22	20	17.19	-05	44	41.7		413
673			1988	08	13.65556	22	18	48.28	-05	52	43.4		1 413
673			1988	08	14.69306	22	18	01.18	-05	57	01.2		1 413
714			1988	08	04.36819	15	50	55.91	-12	11	25.4		413

714	1988	08	04.42028	15	50	57.62	-12	11	28.0			413
723	1988	08	11.59492	22	25	13.00	-07	59	22.6			413
723	1988	08	11.65395	22	25	10.66	-07	59	40.0			413
759	1988	07	11.36240	10	56	22.98	-07	56	04.2			413
778	1988	07	11.36240	11	03	53.82	-02	40	12.1			413
837	1988	04	20.49211	12	00	32.77	-01	31	44.1			413
837	1988	04	20.55808	12	00	30.41	-01	31	15.8			413
879	1988	07	11.36240	10	56	21.71	-06	16	50.2			413
1036	1988	04	19.47545	11	25	03.96	-15	37	57.5			413
1036	1988	04	19.54490	11	25	01.69	-15	37	20.5			413
1109	1988	08	11.59492	22	28	54.18	-03	40	01.1			413
1109	1988	08	11.65395	22	28	51.85	-03	40	10.2			413
1189	1988	07	11.36240	11	05	44.85	-03	46	29.7			413
1222	1988	08	13.63545	18	08	28.27	+00	42	54.6		1	413
1222	1988	08	14.46072	18	08	32.52	+00	42	13.0		1	413
1234	1988	08	11.59492	22	20	07.58	-04	28	08.4			413
1234	1988	08	11.65395	22	20	04.84	-04	28	11.1			413
1235	1988	04	20.49211	11	57	26.00	-00	52	07.8			413
1235	1988	04	20.55808	11	57	21.10	-00	52	33.6			413
1339	1986	12	02.46962	01	24	14.54	+21	00	26.6	15.5	1	413
1339	1986	12	03.47905	01	24	02.24	+20	55	05.2		1	413
1390	1984	04	21.61619	15	55	33.12	-32	26	48.0	15.5		413
1390	1984	04	21.67869	15	55	30.55	-32	27	02.0			413
1390	1984	04	21.69481	15	55	29.86	-32	27	06.4			413
1463	1986	12	02.46962	01	23	34.02	+19	48	30.3		1	413
1463	1986	12	03.47905	01	23	28.08	+19	45	32.6		1	413
1467	1988	08	11.59492	22	25	21.00	-07	52	46.3			413
1467	1988	08	11.65395	22	25	17.79	-07	52	37.2			413
1749	1986	12	02.49306	01	34	47.83	+16	16	39.4		1	413
1749	1986	12	03.49561	01	34	32.34	+16	14	37.6		1	413
1829	1988	08	11.59492	22	13	00.87	-04	22	02.8			413
1829	1988	08	11.65395	22	12	57.48	-04	22	07.8			413
2028	1988	03	10.53479	09	48	13.99	-00	47	50.4			413
2028	1988	03	10.54660	09	48	13.48	-00	47	45.4			413
2393	1988	08	04.36819	15	50	13.91	-13	34	06.5			413
2393	1988	08	04.42028	15	50	15.13	-13	34	10.2			413
2557	1988	08	11.59492	22	18	03.71	-02	31	29.3			413
2557	1988	08	11.65395	22	18	01.15	-02	31	48.8			413
2572	1988	08	11.59492	22	14	43.28	-03	05	33.8			413
2572	1988	08	11.65395	22	14	40.33	-03	05	53.1			413
2636	1988	08	04.36819	15	43	37.00	-15	10	52.2			413
2636	1988	08	04.42028	15	43	38.43	-15	11	11.9			413
2763	1986	12	02.49306	01	44	29.88	+17	08	07.7		1	413
2920	1986	12	02.49306	01	38	18.81	+17	03	10.6		1	413
2920	1986	12	03.49561	01	38	05.21	+16	58	33.9		1	413
2968	1988	03	10.53479	10	00	52.81	-01	01	25.2		V	413
2968	1988	03	10.54660	10	00	52.23	-01	01	20.6		V	413
3073	1988	08	04.36819	15	50	13.39	-14	43	38.3			413
3073	1988	08	04.42028	15	50	14.76	-14	43	47.8			413
3498	1988	03	10.53479	09	57	30.10	+02	26	01.6			413
3498	1988	03	10.54660	09	57	29.58	+02	26	06.2			413
3578	1988	01	26.61753	09	28	08.74	-02	56	10.1			413
3578	1988	01	26.68698	09	28	05.54	-02	56	13.4		b	413
3578	1988	01	27.59333	09	27	24.25	-02	56	52.0			413
3578	1988	01	27.66278	09	27	21.19	-02	56	53.9			413
3580	1988	04	20.49211	11	57	53.58	-02	31	23.5			413
3580	1988	04	20.55808	11	57	51.75	-02	31	17.0			413
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3640		1988	08	11.59492	22	17	00.28	-05	36	36.8	413
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3640		1988	08	13.65556	22	15	03.79	-05	42	26.0	1 413
3640		1988	08	14.69306	22	14	03.70	-05	45	30.9	1 413

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

1940	YE	1988	05	21.46487	14	10	46.84	-38	00	50.7	474
1940	YE	1988	05	21.47830	14	10	46.17	-38	00	46.2	474
1942	DB	1988	03	23.50208	12	30	46.55	-19	43	52.3	1 474
1942	DB	1988	03	23.53866	12	30	44.11	-19	43	54.3	1 474
1958	GQ	1988	04	15.64597	16	55	29.32	-38	02	54.6	474
1958	GQ	1988	04	15.65813	16	55	29.66	-38	03	04.0	474
1958	GQ	1988	05	21.54936	16	46	25.15	-45	16	41.3	474
1958	GQ	1988	05	21.56233	16	46	24.37	-45	16	47.7	474
1980	FO3	1988	05	24.70892	17	48	32.75	-37	14	03.5	474
1980	FO3	1988	05	24.72709	17	48	31.87	-37	14	05.7	474
1980	SD	1988	06	14.65775	21	29	38.51	-35	59	45.9	474
1980	SD	1988	06	14.67824	21	29	39.02	-35	59	53.1	474
1982	DR2	1988	03	18.64704	13	55	14.61	-32	35	24.1	474
1982	DR2	1988	03	18.66839	13	55	13.93	-32	35	25.1	474
1982	DR2	1988	04	15.59134	13	35	56.65	-31	35	40.6	474
1982	DR2	1988	04	15.61252	13	35	55.60	-31	35	33.8	474
1982	DR2	1988	04	16.45501	13	35	15.36	-31	31	13.0	474
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1984	FM	1988	05	24.64781	18	30	53.35	-54	45	52.7	474
1984	FM	1988	05	24.67281	18	30	51.69	-54	46	14.9	474
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1984	FM	1988	06	15.60718	17	56	32.74	-58	43	53.7	474
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1985	KC	1988	04	11.56808	12	16	31.31	-07	27	44.8	474
1985	KC	1988	04	11.58313	12	16	30.43	-07	27	40.9	474
1987	QA	1988	01	21.61725	14	15	45.35	-30	40	55.7	474
1987	QA	1988	01	21.63409	14	15	47.50	-30	40	13.3	474
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1987	QA	1988	01	25.64352	14	23	33.57	-27	43	32.9	474
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1988	EG	1988	03	23.44219	10	58	06.30	+05	27	05.0	474
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1988	GB	1988	05	21.38397	11	56	51.42	-28	25	30.3	474
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1988 LH     1988 06 19.59201  17 29 52.92  -18 50 22.0                    474
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481 Moorwarfen
K. Wiese, Meisenweg 9, D-2942 Jever, Federal Republic of Germany
Long. and Parallax 7.93, -254, -341 (see MPC 11200).

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```

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

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   1        1987 05 01.09922  18 22 24.38  -22 49 58.8                    491
   1        1987 05 01.10337  18 22 24.36  -22 49 59.8                    491
   2        1987 03 31.10423  16 23 37.91  +16 13 39.3                    491
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4	1986	11	27.89488	00	23	50.61	-07 36 36.0	491
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148	1986	09	05.09706	01	46	39.42	-16	48	34.8	491
148	1986	10	30.06598	01	21	38.49	-28	55	30.2	491
148	1986	10	30.07325	01	21	38.08	-28	55	31.9	491
148	1986	10	30.08053	01	21	37.91	-28	55	32.6	491
148	1986	10	31.02308	01	21	04.17	-28	58	16.5	491
148	1986	10	31.02931	01	21	03.99	-28	58	17.3	491
148	1986	10	31.03554	01	21	03.69	-28	58	18.4	491
148	1986	11	27.94353	01	13	13.67	-27	32	42.1	491
148	1986	11	27.95046	01	13	13.76	-27	32	36.7	491
148	1986	11	27.95738	01	13	13.74	-27	32	32.5	491
161	1987	09	28.97261	00	26	07.89	-01	23	16.9	491
313	1986	09	03.96232	21	26	18.23	-06	14	49.1	491
313	1986	09	04.95474	21	25	34.21	-06	23	05.0	491
332	1986	10	03.95345	23	00	00.03	-09	25	55.8	491
339	1986	10	31.06498	23	33	27.14	-06	18	56.7	491
374	1986	10	30.09472	01	55	20.13	+13	17	11.9	491
382	1986	10	30.16362	05	34	04.09	+31	27	16.9	491
382	1986	10	31.17094	05	33	43.82	+31	28	21.6	491
382	1986	11	28.02560	05	16	01.02	+31	34	43.0	491
382	1986	11	28.97543	05	15	11.05	+31	33	54.0	491
389	1987	03	01.06530	12	36	19.12	-17	26	44.3	491
389	1987	03	01.07223	12	36	18.95	-17	26	45.8	491
389	1987	03	01.99158	12	35	49.76	-17	27	56.4	491
389	1987	03	01.99851	12	35	49.51	-17	27	56.0	491
433	1986	07	10.04278	21	43	57.48	-13	38	52.6	491
433	1986	09	04.92011	20	16	08.97	-11	29	56.6	491
433	1986	09	04.93206	20	16	08.23	-11	29	55.0	491
433	1986	10	03.84576	20	10	59.67	-10	23	41.1	491
433	1986	10	07.80299	20	13	15.85	-10	11	25.0	491
433	1986	10	30.92698	20	36	54.79	-08	33	41.7	491
433	1986	11	28.86289	21	24	12.92	-05	10	56.7	491
433	1986	12	29.80006	22	28	28.49	+00	17	30.9	491
487	1986	11	27.99582	05	36	53.42	+13	05	51.6	491
506	1986	10	30.13696	02	47	26.44	+43	08	56.3	491
506	1986	10	31.14877	02	46	24.22	+43	07	57.3	491
532	1987	03	01.08954	13	25	02.34	+18	13	30.2	491
532	1987	03	01.09612	13	25	02.31	+18	13	34.5	491
532	1987	03	01.10547	13	25	02.32	+18	13	40.6	491
532	1987	03	02.00924	13	24	56.00	+18	23	36.1	491
532	1987	03	02.01409	13	24	55.89	+18	23	40.1	491

532	1987	03	02.02032	13	24	55.87	+18	23	44.9	491
532	1987	03	27.08088	13	13	07.16	+22	31	28.7	491
532	1987	03	27.08850	13	13	06.80	+22	31	32.4	491
532	1987	03	27.09611	13	13	06.43	+22	31	35.8	491
532	1987	03	31.06233	13	10	05.25	+22	58	51.4	491
532	1987	03	31.07064	13	10	04.88	+22	58	54.2	491
532	1987	03	31.07618	13	10	04.54	+22	58	56.2	491
532	1987	04	01.09319	13	09	16.54	+23	05	06.7	491
532	1987	04	01.10012	13	09	16.23	+23	05	09.1	491
532	1987	04	01.10704	13	09	15.93	+23	05	11.5	491
532	1987	04	29.93228	12	48	31.53	+23	23	11.6	491
532	1987	04	29.93851	12	48	31.40	+23	23	09.4	491
532	1987	04	29.94474	12	48	31.18	+23	23	08.0	491
532	1987	04	30.91258	12	48	02.78	+23	18	32.2	491
532	1987	04	30.91950	12	48	02.54	+23	18	29.8	491
532	1987	04	30.92643	12	48	02.32	+23	18	27.3	491
537	1986	11	27.99582	05	34	57.07	+14	11	07.5	491
565	1986	09	04.01807	21	41	57.87	+03	25	45.4	491
698	1986	10	30.16362	05	35	16.21	+30	56	16.3	491
698	1986	10	31.17094	05	35	04.01	+31	01	49.3	491
698	1986	11	28.02560	05	17	22.15	+33	20	58.5	491
698	1986	11	28.97543	05	16	24.95	+33	24	39.0	491
698	1986	12	29.88801	04	43	36.78	+34	15	49.3	491
698	1986	12	30.87905	04	42	44.60	+34	15	26.3	491
704	1987	02	28.93787	07	52	31.22	+08	59	05.7	491
704	1987	02	28.94480	07	52	31.03	+08	59	06.4	491
704	1987	02	28.95172	07	52	30.87	+08	59	06.1	491
704	1987	03	01.83922	07	52	09.19	+08	59	39.6	491
704	1987	03	01.84580	07	52	09.02	+08	59	38.9	491
704	1987	03	30.94218	07	50	08.83	+09	11	17.9	491
704	1987	03	30.94910	07	50	08.93	+09	11	17.6	491
704	1987	03	30.95603	07	50	09.02	+09	11	17.3	491
715	1986	10	30.01438	00	40	41.07	-06	49	02.8	491
715	1986	10	31.09822	00	39	54.01	-06	45	20.2	491
761	1986	10	30.09472	01	54	55.34	+12	20	52.5	491
789	1986	11	27.99582	05	45	10.21	+16	13	28.8	491
804	1987	03	27.05872	12	26	15.91	-12	03	53.4	491
804	1987	03	31.04398	12	22	31.42	-11	57	13.4	491
804	1987	04	01.07449	12	21	33.02	-11	55	16.9	491
879	1986	10	31.20954	02	57	31.35	+34	50	33.8	491
932	1986	10	30.16362	05	34	55.49	+33	00	07.9	491
932	1986	10	31.17094	05	34	49.95	+33	06	20.5	491
932	1986	11	28.02560	05	16	38.57	+35	27	31.0	491
932	1986	11	28.97543	05	15	34.53	+35	30	25.3	491
932	1986	12	29.88801	04	40	02.57	+35	22	36.1	491
932	1986	12	30.87905	04	39	11.91	+35	19	36.3	491
983	1986	12	29.91952	06	24	09.52	+14	03	02.6	491
1011	1987	02	28.97388	06	20	55.86	+22	54	57.8	491
1036	1987	03	30.92001	09	00	12.97	-13	22	27.3	491
1036	1987	03	31.98931	08	59	58.77	-13	13	04.5	491
1066	1986	11	29.00902	05	35	36.50	+31	53	41.7	491
1089	1986	10	03.95345	23	12	22.99	-12	16	33.0	491
1139	1986	10	30.09472	01	47	47.30	+10	36	34.6	491
1139	1986	10	31.12384	01	47	28.36	+10	07	19.8	491
1139	1986	11	27.97123	01	49	32.51	-00	23	10.4	491
1139	1986	11	28.91864	01	50	05.24	-00	36	11.4	491
1139	1986	12	30.84719	02	26	13.65	-02	40	25.8	491
1372	1986	10	30.13696	02	37	35.96	+43	36	13.8	491
1372	1986	10	31.14877	02	36	26.59	+43	36	44.8	491

1385		1986	10	30.01438	00	53	23.95	-06	20	29.0	491
1385		1986	10	31.09822	00	52	43.95	-06	21	50.5	491
1416		1987	08	25.06714	23	09	21.55	-09	07	40.9	491
1453		1986	10	31.14877	02	34	31.13	+45	49	52.0	491
1631		1986	09	05.06209	23	36	34.90	-12	22	23.5	491
1631		1986	10	03.95345	23	09	32.57	-10	53	06.5	491
1883		1987	11	26.07049	03	59	29.08	+06	29	45.1	491
1883		1987	11	27.01409	03	58	02.07	+06	50	31.0	491
1914		1986	09	04.05270	23	38	05.04	-10	28	22.9	491
1914		1986	09	05.06209	23	37	14.18	-10	36	41.5	491
2179		1987	09	28.97261	00	31	39.77	+00	49	37.1	491
2246		1986	11	27.99582	05	33	02.01	+15	01	11.3	491
2645		1987	08	25.06714	23	05	35.11	-11	02	04.6	491
3018		1986	09	04.95474	21	32	14.09	-05	00	36.7	491
3036		1987	04	29.99322	14	16	24.91	-23	19	03.6	491
3036		1987	04	30.97664	14	15	25.87	-23	19	53.0	491
3060		1986	11	28.05919	05	33	53.73	+34	52	45.3	491
3060		1986	11	29.00902	05	32	45.02	+34	52	21.6	491
3080		1986	11	28.05919	05	29	38.93	+34	10	01.8	491
3080		1986	11	29.00902	05	28	33.71	+34	15	37.1	491
3500		1986	10	03.88939	22	45	29.87	-01	31	24.5	491
3502		1986	10	29.98391	23	05	30.30	-09	54	43.4	491

511 Haute Provence
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0.6-m Schmidt

1261		1988	01	22.86148	05	38	33.60	+25	02	55.4	17.5	511
1261		1988	01	22.89514	05	38	32.56	+25	02	55.7		511

552 San Vittore
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1931	TR1		1988	06	11.87569	13	46	42.80	-03	05	33.0	17.5	552
1931	TR1		1988	06	11.90347	13	46	43.05	-03	05	29.1		552
1986	WG		1988	06	11.92708	17	43	09.25	-09	26	08.4	18.0	552
1986	WG		1988	06	11.95208	17	43	07.51	-09	25	58.8		552
1986	WG		1988	06	19.91875	17	34	37.13	-08	31	14.2	18.0	552
1986	WG		1988	06	19.94236	17	34	35.54	-08	31	06.7		552
1986	WG		1988	06	20.94097	17	33	32.90	-08	25	01.6	18.0	552
1988	EO2	*	1988	03	10.95694	10	02	33.54	+14	06	00.8	17.5	552
1988	EO2		1988	03	10.98056	10	02	32.46	+14	06	07.6		552
1988	QA	*	1988	08	17.92917	21	44	24.61	-12	46	22.0	15.6	552
1988	QA		1988	08	17.95556	21	44	23.37	-12	46	30.1	15.6	552
1988	QA		1988	08	18.89514	21	43	38.20	-12	52	00.6	15.6	552
1988	QA		1988	08	18.91181	21	43	37.37	-12	52	06.1	15.6	552
1988	QB	*	1988	08	17.92917	21	45	31.22	-11	04	24.5	15.8	552
1988	QB		1988	08	17.95556	21	45	29.94	-11	04	39.4	15.8	552
1988	QB		1988	08	18.92708	21	44	42.40	-11	14	01.4	15.8	552
1988	QB		1988	08	18.94306	21	44	41.57	-11	14	10.5	15.8	552

568 Mauna Kea Observatory
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2060		1988	04	16.24385	05	35	14.81	+17	34	24.6	568

657 Victoria, Climenhaga Observatory
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1985 RF	1988 06 14.29035	16 36 40.12	-16 53 13.0	657
1985 RF	1988 06 14.32299	16 36 38.23	-16 53 08.6	657
1988 KA	1988 07 19.34451	21 17 16.81	-21 36 39.9	657
1988 KA	1988 07 19.39113	21 17 15.32	-21 36 59.3	657
4575 P-L	1988 06 14.34104	18 17 34.68	-09 13 45.1	657
4575 P-L	1988 06 14.38340	18 17 32.25	-09 13 42.2	657
4575 P-L	1988 06 16.39868	18 15 40.19	-09 12 17.1	657
211	1988 05 07.36632	15 17 21.33	-21 16 19.0	657
211	1988 05 08.34514	15 16 34.16	-21 12 47.2	657
230	1988 06 14.29035	16 33 13.22	-17 36 51.2	657
230	1988 06 14.32299	16 33 11.38	-17 36 41.2	657
270	1988 06 12.42396	23 42 45.96	+00 50 26.6	657
270	1988 06 25.42917	00 02 53.54	+03 19 47.5	657
270	1988 07 16.42361	00 30 09.17	+06 48 49.3	657
270	1988 07 17.43646	00 31 15.63	+06 57 34.9	657
354	1988 06 12.37778	19 01 46.44	-04 09 10.2	657
451	1988 06 14.29035	16 40 53.81	-16 36 11.4	657
451	1988 06 14.32299	16 40 52.12	-16 36 17.3	657
526	1988 07 08.28896	18 57 39.47	-21 05 25.2	657
526	1988 07 08.32854	18 57 37.41	-21 05 27.8	657
1680	1988 07 19.34451	21 14 28.66	-21 11 14.5	657
1680	1988 07 19.39113	21 14 26.44	-21 11 28.7	657
1680	1988 07 20.31396	21 13 43.89	-21 16 33.2	657
1680	1988 07 20.36257	21 13 41.59	-21 16 47.8	657
1685	1988 06 16.38965	21 34 55.52	-09 48 43.5	657
1685	1988 06 16.40771	21 34 57.30	-09 48 12.4	657
1685	1988 07 08.37021	22 20 02.47	+05 32 32.2	657
1685	1988 07 08.39660	22 20 06.29	+05 34 11.2	657
1685	1988 07 16.32326	22 43 59.95	+15 27 40.1	657
1685	1988 07 16.36389	22 44 08.40	+15 31 17.0	657
1685	1988 07 19.37646	22 55 49.68	+20 16 18.7	657
1685	1988 07 20.32368	22 59 56.58	+21 53 26.4	657
1685	1988 08 05.29799	01 20 07.35	+54 35 35.2	657
1685	1988 08 11.34937	03 19 40.65	+62 00 00.7	657
3237	1988 07 08.28896	19 00 51.76	-21 37 11.1	657
3237	1988 07 08.32854	19 00 49.52	-21 37 06.7	657

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Measurers J. Alu (2), R. Coker (2), J. Gibson (1), E. Majkowski (2), A. Maury (7), C. Mikolajczak (2), T. Rodriquez (3), B. Roman (2), C.

Shoemaker (3), K. Tarusawa (8), C. J. van Houten (4), I. van Houten-Groeneveld (4)
1.5-m reflector + CCD (C), 1.2-m (L) and 0.46-m (S) Schmidt telescopes

1948	WF		1988	07	12.21632	16	43	58.92	-14	56	58.2	15.5	2 675
1948	WF		1988	07	15.27309	16	42	12.58	-15	16	12.0		2 675
1951	RD2	*	1951	09	10.3264	00	02	29.42	+50	47	23.7	16	8 675
1951	RD2		1951	09	10.3549	00	02	26.83	+50	47	44.0	16	8 675
1952	QL1	*	1952	08	20.2868	21	01	02.88	+15	11	06.6	15	8 675
1952	QL1		1952	08	20.3118	21	01	01.88	+15	10	41.5	15	8 675
1953	CU	*	1953	02	14.2716	08	42	08.19	+44	38	28.5	17	8 675
1953	CU		1953	02	14.2931	08	42	06.60	+44	38	29.7	17	8 675
1953	UD1	*	1953	10	31.1962	23	13	40.55	+41	15	38.8	18	8 675
1953	UD1		1953	10	31.2361	23	13	41.09	+41	15	07.1	18	8 675
1953	XR1	*	1953	12	07.1108	23	16	39.85	+28	39	09.6	18	8 675
1953	XR1		1953	12	07.1348	23	16	42.93	+28	39	03.8	18	8 675
1954	QU	*	1954	08	29.3639	22	52	26.31	+32	58	12.6	16	8 675
1954	QU		1954	08	29.3899	22	52	24.16	+32	58	36.4	16	8 675
1954	QV	*	1954	08	29.3639	23	12	56.06	+31	56	13.4	15	8 675
1954	QV		1954	08	29.3899	23	12	54.98	+31	55	54.0	15	8 675
1954	TW	*	1954	10	04.2966	00	17	15.85	+28	47	28.1	12	8 675
1954	TW		1954	10	04.3230	00	17	14.38	+28	47	26.3	12	8 675
1954	TX	*	1954	10	04.2966	00	22	10.23	+29	08	44.0	19	8 675
1954	TX		1954	10	04.3230	00	22	08.65	+29	08	37.7	19	8 675
1954	TY	*	1954	10	04.2966	00	28	53.74	+30	01	02.0	16	8 675
1954	TY		1954	10	04.3230	00	28	51.19	+30	01	05.2	16	8 675
1954	TZ	*	1954	10	04.2966	00	30	29.22	+29	14	30.3	17	8 675
1954	TZ		1954	10	04.3230	00	30	27.99	+29	14	21.9	17	8 675
1954	TA1	*	1954	10	04.2966	00	39	45.77	+28	38	54.2	16	8 675
1954	TA1		1954	10	04.3230	00	39	44.49	+28	38	48.8	16	8 675
1954	TB1	*	1954	10	04.2966	00	41	53.51	+29	26	17.9	17	8 675
1954	TB1		1954	10	04.3230	00	41	51.96	+29	26	11.4	17	8 675
1954	TC1	*	1954	10	04.2966	00	43	19.20	+28	29	10.4	17	8 675
1954	TC1		1954	10	04.3230	00	43	17.91	+28	29	03.4	17	8 675
1955	BF1	*	1955	01	29.4382	10	04	40.38	+54	42	42.9	17	8 675
1955	BF1		1955	01	29.4681	10	04	37.17	+54	42	48.0	17	8 675
1955	BG1	*	1955	01	29.4382	10	31	20.78	+55	33	58.1	16	8 675
1955	BG1		1955	01	29.4681	10	31	17.22	+55	34	02.9	16	8 675
1955	BH1	*	1955	01	29.4382	10	32	40.01	+54	51	49.2	19	8 675
1955	BH1		1955	01	29.4681	10	32	39.36	+54	52	26.5	19	8 675
1955	ER	*	1955	03	12.2417	14	19	12.68	+14	49	26.0	16	8 675
1955	ER		1955	03	12.2667	14	19	11.26	+14	49	39.3	16	8 675
1980	PA		1988	07	06.43484	21	39	41.53	-10	26	41.9	18.5V	1 675
1980	PA		1988	07	06.43891	21	39	41.71	-10	26	39.5		1 675
1980	PA		1988	07	07.42399	21	40	29.84	-10	16	53.1		1 675
1980	PA		1988	07	07.42822	21	40	30.02	-10	16	50.7		1 675
1980	PA		1988	07	08.44556	21	41	18.42	-10	06	41.7		1 675
1980	PA		1988	07	08.44984	21	41	18.60	-10	06	39.4		1 675
1980	PA		1988	07	08.45516	21	41	18.82	-10	06	36.1		1 675
1981	OH		1988	07	12.40382	19	52	21.30	-07	05	27.3	16.0	2 675
1981	OH		1988	07	14.32118	19	50	51.06	-07	28	58.8		2 675
1984	FO		1988	06	11.43385	20	19	27.78	+18	45	46.1	16.3	3 675
1984	FO		1988	06	12.37084	20	19	39.57	+18	53	43.3		3 675
1985	DD		1988	05	13.32256	15	32	17.12	+13	35	22.6	17	3 675
1985	DD		1988	05	13.36215	15	32	13.45	+13	34	54.2		3 675
1985	DD		1988	06	09.34826	14	58	50.89	+05	52	35.9		3 675
1985	DD		1988	06	12.22639	14	56	37.83	+04	52	41.0		3 675
1985	DD		1988	06	14.23785	14	55	16.36	+04	10	18.8		3 675
1985	RF		1988	06	15.35538	16	35	39.58	-16	50	37.7	16.5	2 675
1985	RF		1988	06	17.26962	16	33	54.18	-16	46	17.4		2 675

1987	DE		1988	06	12.32083	20	58	20.75	+02	02	41.9	17.8	3 675
1987	DE		1988	06	12.35659	20	58	20.37	+02	02	40.8		3 675
1987	DE		1988	07	18.39826	20	38	25.63	-00	52	05.5	17.7	3 675
1987	DE		1988	07	20.36753	20	36	40.77	-01	10	32.2		3 675
1987	HA		1987	05	30.19732	12	53	59.83	+18	37	59.0	18.3	3 675
1987	HA		1987	05	31.23159	12	54	18.73	+18	10	50.8		3 675
1987	HA		1987	06	01.21666	12	54	38.57	+17	45	05.0		3 675
1987	HE		1987	05	29.27656	14	12	12.33	+23	22	45.1	18.2	3 675
1987	HE		1987	05	30.24496	14	12	06.89	+23	18	57.3		3 675
1987	HE		1987	06	01.24149	14	12	00.48	+23	09	53.8		3 675
1987	HK		1987	05	29.33888	15	19	55.52	-20	08	50.9	18.1	3 675
1987	HK		1987	05	30.35486	15	19	02.74	-20	05	12.8		3 675
1987	HK		1987	06	01.31840	15	17	23.68	-19	58	13.0		3 675
1987	HS		1987	05	29.23164	14	03	12.97	+26	53	16.7	18.2	3 675
1987	HS		1987	05	30.28402	14	02	44.87	+26	45	17.8		3 675
1987	HS		1987	05	31.20329	14	02	22.19	+26	38	02.7		3 675
1987	HS		1987	06	01.22743	14	01	58.11	+26	29	34.4		3 675
1987	KG5	*	1987	05	29.32673	16	34	07.30	+04	09	52.7	17.8	3 675
1987	KG5		1987	05	30.39583	16	33	11.59	+04	10	29.8		3 675
1987	KG5		1987	06	01.41267	16	31	26.30	+04	10	43.2		3 675
1987	KH5	*	1987	05	29.29184	15	13	33.11	+07	11	59.6	18.1	3 675
1987	KH5		1987	05	30.26684	15	12	51.62	+07	09	43.1		3 675
1987	KH5		1987	06	01.33784	15	11	26.33	+07	03	53.4		3 675
1987	KJ5	*	1987	05	29.29184	15	14	57.22	+07	23	28.1	18.1	3 675
1987	KJ5		1987	05	30.26684	15	14	14.83	+07	22	46.6		3 675
1987	KJ5		1987	06	01.33784	15	12	47.45	+07	20	17.4		3 675
1988	CC1		1988	03	13.15399	09	21	10.96	+16	57	35.4	17.5	2 675
1988	CC1		1988	03	13.17795	09	21	10.28	+16	57	46.1		2 675
1988	EN1		1988	03	11.37292	11	40	15.21	-06	05	32.8		2 675
1988	EN1		1988	03	13.29184	11	38	48.41	-05	44	44.9	17.0	2 675
1988	EN1		1988	03	13.31372	11	38	47.21	-05	44	29.7		2 675
1988	EN1		1988	03	14.23733	11	38	05.35	-05	34	24.9		2 675
1988	EN1		1988	04	10.23906	11	20	22.82	-00	28	39.3	17.5	2 675
1988	EN1		1988	04	10.25868	11	20	22.21	-00	28	26.8		2 675
1988	EP2	*	1988	03	15.18698	06	03	34.50	+12	55	02.0	16.5	2 675
1988	EP2		1988	03	15.20816	06	03	36.13	+12	55	25.5		2 675
1988	FP2	*	1988	03	23.40278	14	28	04.28	+04	17	10.7	17.5	2 675
1988	FP2		1988	03	23.45139	14	28	03.34	+04	18	23.4		2 675
1988	GD		1988	03	12.35642	13	08	17.60	+02	29	46.4	17.0	2 675
1988	GD		1988	03	12.38056	13	08	16.65	+02	29	59.2		2 675
1988	GL		1988	05	09.19305	11	24	46.43	+24	16	40.9	18	2 675
1988	GL		1988	05	10.18506	11	25	05.93	+24	01	51.8		2 675
1988	GL		1988	05	13.20920	11	26	15.82	+23	15	49.8		2 675
1988	JJ		1988	06	09.31476	15	11	34.31	+01	05	07.3		3 675
1988	JJ		1988	06	14.23785	15	08	12.81	+02	07	55.8		3 675
1988	JK		1988	06	12.22639	14	51	14.34	+00	31	38.2		3 675
1988	JK		1988	06	14.23785	14	50	24.97	+00	46	19.2		3 675
1988	JL		1988	06	08.26563	14	37	04.93	+03	57	08.4	17.7	3 675
1988	JL		1988	06	11.20590	14	34	39.09	+03	05	35.5		3 675
1988	JL		1988	06	12.21822	14	33	53.38	+02	47	31.8		3 675
1988	JN		1988	06	08.31441	15	05	08.96	+16	05	20.6		3 675
1988	JN		1988	06	09.23837	15	04	43.44	+16	01	31.0		3 675
1988	JN		1988	06	11.26944	15	03	51.14	+15	52	25.2		3 675
1988	JN		1988	07	17.23177	15	02	24.13	+11	07	21.1	17.8	3 675
1988	JN		1988	07	18.18663	15	02	43.87	+10	57	38.0		3 675
1988	JO		1988	06	08.32847	16	03	14.31	+02	11	02.5	16	3 675
1988	JO		1988	06	09.22135	16	02	12.06	+02	00	17.2		3 675
1988	JO		1988	06	11.36197	15	59	44.57	+01	33	34.0		3 675
1988	JP		1988	06	08.22326	13	54	31.37	+16	23	39.9	17.9	3 675

1988	JP		1988	06	10.20313	13	53	29.76	+16	01	53.4		3 675
1988	JP		1988	06	11.19166	13	53	01.14	+15	50	46.4		3 675
1988	JQ		1988	06	08.39219	17	29	22.54	+17	42	30.5		3 675
1988	JQ		1988	06	10.41111	17	27	35.17	+17	24	36.7		3 675
1988	JQ		1988	06	12.30000	17	25	54.00	+17	05	38.5	15	3 675
1988	JU		1988	06	08.24947	13	06	36.28	+11	02	08.7	17	3 675
1988	JU		1988	06	11.19895	13	08	16.30	+11	03	27.7		3 675
1988	JU		1988	06	13.21371	13	09	32.37	+11	02	54.4		3 675
1988	JU		1988	07	17.18385	13	44	31.34	+08	38	37.5	17.8	3 675
1988	JU		1988	07	18.18056	13	45	52.30	+08	31	30.3		3 675
1988	JV		1988	06	09.28490	15	29	35.44	-07	28	16.7		3 675
1988	JV		1988	06	11.32083	15	28	01.86	-07	33	32.2		3 675
1988	JV		1988	06	13.20017	15	26	39.44	-07	38	45.9		3 675
1988	JW		1988	04	14.23559	11	17	09.76	+27	30	20.6	17.3	3 675
1988	JW		1988	04	14.26094	11	17	09.09	+27	30	18.7		3 675
1988	JA1		1988	07	17.28264	16	51	13.24	+00	07	59.3	15.7	3 675
1988	JA1		1988	07	18.34288	16	51	06.68	-00	18	36.1		3 675
1988	JB1	*	1988	05	12.42292	17	27	50.44	+15	02	26.4	17.2	3 675
1988	JB1		1988	05	12.47014	17	27	49.80	+15	02	46.6		3 675
1988	JB1		1988	06	08.35069	17	15	32.43	+15	25	54.6	17.5	3 675
1988	JB1		1988	06	09.39531	17	14	53.42	+15	19	38.4		3 675
1988	JB1		1988	06	11.40920	17	13	38.60	+15	05	54.3		3 675
1988	JB1		1988	06	16.26181	17	10	43.13	+14	24	44.3	17.0	2 675
1988	JB1		1988	06	19.35764	17	08	57.21	+13	52	42.4		2 675
1988	JC1	*	1988	05	12.42292	17	28	57.11	+15	31	30.3	17.5	3 675
1988	JC1		1988	05	12.44063	17	28	56.78	+15	31	49.5		3 675
1988	JC1		1988	05	12.47014	17	28	56.19	+15	32	23.4		3 675
1988	JC1		1988	06	08.34131	17	13	29.36	+21	24	59.5	17.2	3 675
1988	JC1		1988	06	11.33958	17	11	10.35	+21	40	25.2		3 675
1988	JC1		1988	07	17.28906	16	54	15.57	+18	21	42.2	17.3	3 675
1988	JC1		1988	07	18.25139	16	54	17.62	+18	08	44.6		3 675
1988	KB		1988	06	17.35503	17	25	52.09	-18	33	53.7	16.0	2 675
1988	KB		1988	06	20.28385	17	21	56.12	-19	44	48.9		2 675
1988	KB		1988	07	14.20660	16	57	18.50	-28	15	26.2	16.0	2 675
1988	KB		1988	07	15.30017	16	56	40.80	-28	34	43.9		2 675
1988	KC		1988	06	15.32240	16	17	46.35	-12	45	56.3	16.5	2 675
1988	KC		1988	06	17.20799	16	16	14.06	-12	32	22.8		2 675
1988	KD		1988	06	15.35538	16	49	08.63	-18	27	26.6	16.5	2 675
1988	KD		1988	06	16.20833	16	48	15.09	-18	32	39.4	15.0	2 675
1988	KD		1988	06	17.26962	16	47	08.45	-18	39	11.8		2 675
1988	KD		1988	06	19.31406	16	45	03.78	-18	51	51.5		2 675
1988	KE		1988	06	15.22639	15	03	23.09	-06	39	42.0	16.3	2 675
1988	KE		1988	06	17.19774	15	02	25.15	-06	44	55.5		2 675
1988	KF		1988	06	15.27205	15	31	46.72	-08	25	26.8	17.5	2 675
1988	KF		1988	06	15.30955	15	31	45.15	-08	25	35.9		2 675
1988	KG		1988	06	15.30955	15	36	51.59	-07	41	54.7	16.5	2 675
1988	KG		1988	06	17.20295	15	35	45.36	-07	37	49.8		2 675
1988	KH		1988	06	15.27205	15	42	23.49	-09	06	38.9	16.0	2 675
1988	KH		1988	06	17.20295	15	41	25.98	-09	02	44.0		2 675
1988	KJ		1988	06	16.19670	15	52	29.80	-10	30	18.8	16.5	2 675
1988	KJ		1988	06	19.30747	15	50	29.60	-10	39	18.4		2 675
1988	LA		1988	05	10.32691	15	24	49.69	+03	16	48.1		3 675
1988	LA		1988	05	11.33854	15	23	48.71	+03	16	21.3		3 675
1988	LA		1988	05	12.29792	15	22	50.48	+03	15	33.6		3 675
1988	LA		1988	05	14.32344	15	20	45.97	+03	13	00.6		3 675
1988	LA	*	1988	06	08.27326	14	57	50.66	+00	49	34.4	16.5	3 675
1988	LA		1988	06	10.43872	14	56	27.69	+00	28	01.2		3 675
1988	LA		1988	06	12.22639	14	55	26.71	+00	09	14.8		3 675
1988	LA		1988	06	14.23785	14	54	24.88	-00	12	50.4		3 675

1988	LB	*	1988	06	15.39566	16	46	31.31	-28	50	56.1	17.0	2 675
1988	LB		1988	06	17.26458	16	44	46.96	-28	33	50.9		2 675
1988	LB		1988	07	13.20017	16	29	40.98	-24	41	31.5	17.0	2 675
1988	LB		1988	07	15.26406	16	29	22.67	-24	25	27.8		2 675
1988	LC	*	1988	06	15.42917	17	18	43.77	+00	19	10.7	16.0	2 675
1988	LC		1988	06	17.33941	17	17	07.19	+00	14	58.9		2 675
1988	LC		1988	07	14.21163	17	00	38.45	-02	13	39.8	16.5	2 675
1988	LC		1988	07	14.23576	17	00	38.13	-02	13	50.2		2 675
1988	LD	*	1988	06	10.29166	13	41	58.24	+18	51	48.9	18.1	3 675
1988	LD		1988	06	11.18385	13	42	16.25	+18	44	25.4		3 675
1988	LE		1988	05	12.16024	12	59	31.26	+16	06	54.6	17.4	3 675
1988	LE		1988	05	12.19409	12	59	30.35	+16	06	42.0		3 675
1988	LE	*	1988	06	08.24947	12	57	59.24	+12	05	29.8	18	3 675
1988	LE		1988	06	11.19895	12	58	57.46	+11	32	22.6		3 675
1988	LE		1988	06	13.21371	12	59	44.14	+11	09	13.8		3 675
1988	LF		1988	05	12.17447	13	34	35.74	+15	31	33.4	16.8	3 675
1988	LF		1988	05	12.20763	13	34	34.33	+15	31	24.0		3 675
1988	LF	*	1988	06	08.24947	13	25	25.44	+12	30	37.5	17.5	3 675
1988	LF		1988	06	11.19895	13	25	29.19	+12	03	32.5		3 675
1988	LF		1988	06	13.21371	13	25	38.53	+11	44	26.8		3 675
1988	LF		1988	07	17.18385	13	40	51.50	+05	36	31.5	17.5	3 675
1988	LF		1988	07	18.18056	13	41	36.84	+05	25	00.4		3 675
1988	LG		1988	05	19.36528	17	23	49.19	-23	06	30.5	16.5	2 675
1988	LG		1988	05	19.38160	17	23	48.40	-23	06	35.8		2 675
1988	LG	*	1988	06	15.29253	16	54	25.31	-26	20	56.7	17.0	2 675
1988	LG		1988	06	17.21863	16	52	08.18	-26	33	37.3		2 675
1988	LJ	*	1988	06	15.34892	16	49	06.38	-07	40	29.0	16.5	2 675
1988	LJ		1988	06	17.27483	16	47	37.53	-07	34	30.0		2 675
1988	LK	*	1988	06	15.34913	16	42	58.12	-05	24	58.5	17.0	2 675
1988	LK		1988	06	17.27483	16	41	31.47	-05	27	46.5		2 675
1988	LK		1988	07	13.20660	16	27	45.72	-06	54	30.5	16.5	2 675
1988	LK		1988	07	13.23455	16	27	45.10	-06	54	37.6		2 675
1988	LM		1988	05	14.41997	18	01	25.97	-12	03	02.0	17.0	3 675
1988	LM		1988	05	14.45399	18	01	25.14	-12	02	48.1		3 675
1988	LM	*	1988	06	13.32257	17	38	25.69	-09	17	10.6	16.7	3 675
1988	LM		1988	06	13.35191	17	38	23.87	-09	17	03.4		3 675
1988	LN		1988	05	19.36094	17	12	31.34	-13	13	23.0	16.5	2 675
1988	LN		1988	05	19.37726	17	12	30.44	-13	13	23.7		2 675
1988	LN	*	1988	06	15.35538	16	47	00.41	-14	59	50.8	17.0	2 675
1988	LN		1988	06	17.26962	16	45	09.70	-15	10	07.8		2 675
1988	LO	*	1988	06	15.35538	16	51	48.45	-15	18	14.1	17.0	2 675
1988	LO		1988	06	17.26962	16	50	21.35	-15	09	28.3		2 675
1988	MA		1988	05	19.36094	17	22	20.22	-08	27	52.2	16.5	2 675
1988	MA		1988	05	19.37760	17	22	19.38	-08	27	31.1		2 675
1988	MA	*	1988	06	16.28594	16	55	43.68	-00	53	47.1	17.0	2 675
1988	MA		1988	06	19.26580	16	53	05.19	-00	20	18.9		2 675
1988	MB	*	1988	06	19.40226	21	04	32.54	-11	01	17.1	17.0	2 675
1988	MB		1988	06	20.36927	21	04	13.60	-10	48	52.0		2 675
1988	MB		1988	07	14.37986	20	45	59.99	-05	36	24.7	16.0	2 675
1988	MB		1988	07	15.31719	20	44	55.18	-05	24	27.1		2 675
1988	MC	*	1988	06	16.25608	17	01	53.63	-01	16	02.2	17.5	2 675
1988	MC		1988	06	19.26580	16	59	23.52	-01	33	32.7		2 675
1988	MD	*	1988	06	16.28021	16	48	32.45	-10	10	36.5	17.0	2 675
1988	MD		1988	06	19.23767	16	46	03.01	-10	20	42.8		2 675
1988	ME		1988	05	20.41788	18	59	45.97	-14	38	46.7	16.5	2 675
1988	ME		1988	05	21.46910	18	59	44.34	-14	33	27.5		2 675
1988	ME	*	1988	06	16.43472	18	48	12.98	-12	49	40.7	16.5	2 675
1988	ME		1988	06	20.30226	18	45	00.67	-12	40	17.3		2 675
1988	ME		1988	07	15.28351	18	22	25.24	-12	27	46.8	16.5	2 675

1988	ME		1988	07	15.30556	18	22	24.02	-12	27	48.4	2 675
1988	MF	*	1988	06	16.32413	18	01	42.47	-02	22	32.5	17.0 2 675
1988	MF		1988	06	16.34740	18	01	40.42	-02	22	54.3	2 675
1988	MF		1988	06	20.26375	17	56	11.49	-03	28	24.0	16.8 2 675
1988	MF		1988	06	20.28837	17	56	09.24	-03	28	49.2	2 675
1988	MF		1988	07	12.25313	17	27	31.66	-10	43	55.1	16.5 2 675
1988	MF		1988	07	12.27587	17	27	30.08	-10	44	21.7	2 675
1988	MG	*	1988	06	16.30660	17	51	22.45	-23	49	00.2	16.5 2 675
1988	MG		1988	06	20.29323	17	47	15.13	-23	39	47.4	2 675
1988	MG		1988	07	12.24757	17	27	38.62	-22	44	37.1	16.5 2 675
1988	MG		1988	07	14.24045	17	26	26.82	-22	39	58.3	2 675
1988	MH	*	1988	06	16.20260	15	46	13.61	-34	33	53.4	16.0 2 675
1988	MH		1988	06	19.30104	15	43	52.93	-34	04	44.3	2 675
1988	MH		1988	07	12.20573	15	36	17.20	-30	32	39.7	16.0 2 675
1988	MH		1988	07	15.21632	15	36	37.18	-30	07	51.9	2 675
1988	MJ	*	1988	06	16.19670	16	05	11.45	-09	41	40.8	17.0 2 675
1988	MJ		1988	06	19.30747	16	02	57.44	-09	46	05.7	2 675
1988	MJ		1988	07	12.21094	15	54	23.07	-11	02	04.9	16.5 2 675
1988	MJ		1988	07	15.23021	15	54	24.72	-11	16	59.4	2 675
1988	NA	*	1988	07	06.20833	17	25	47.53	+34	39	04.9	17 7 675
1988	NA		1988	07	06.25000	17	25	47.17	+34	38	24.1	7 675
1988	NA		1988	07	07.20139	17	25	39.76	+34	21	42.8	7 675
1988	NA		1988	07	07.24306	17	25	39.22	+34	21	03.8	7 675
1988	NB	*	1988	07	12.25903	17	24	44.91	+03	34	37.7	16.5 2 675
1988	NB		1988	07	14.26649	17	24	07.95	+03	12	00.7	2 675
1988	NC	*	1988	07	12.34479	19	51	54.40	-22	41	28.4	16.8 2 675
1988	NC		1988	07	13.32847	19	50	36.12	-23	04	05.4	2 675
1988	NC		1988	07	15.28351	19	47	58.00	-23	49	05.1	16.5 2 675
1988	NC		1988	07	15.31111	19	47	56.16	-23	49	35.8	2 675
1988	NC		1988	07	17.35243	19	45	08.69	-24	36	06.4	17.3 3 675
1988	NC		1988	07	17.38628	19	45	05.69	-24	36	51.1	3 675
1988	ND	*	1988	07	14.40243	20	50	47.21	-05	33	22.1	15.2 2 675
1988	ND		1988	07	15.34878	20	50	00.65	-05	51	38.0	2 675
1988	NE	*	1988	07	09.23958	18	30	52.55	+00	06	21.5	18 7 675
1988	NE		1988	07	09.27083	18	30	53.59	+00	06	50.9	7 675
1988	NE		1988	07	10.24167	18	31	32.63	+00	20	30.0	7 675
1988	NE		1988	07	10.27986	18	31	33.81	+00	21	02.1	7 675
1988	NE		1988	07	12.23611	18	32	52.44	+00	45	26.7	7 675
1988	NE		1988	07	12.26389	18	32	53.26	+00	45	46.6	7 675
1988	NF	*	1988	07	12.40625	22	53	21.15	+33	57	09.5	14.5 7 675
1988	NF		1988	07	12.46528	22	53	25.99	+33	59	23.4	7 675
1988	NF		1988	07	13.44531	22	54	51.40	+34	36	36.5	7 675
1988	NF		1988	07	13.46840	22	54	53.30	+34	37	31.0	7 675
1988	NF		1988	07	19.41840	23	03	16.82	+38	19	58.5	3 675
1988	NF		1988	07	20.39323	23	04	37.19	+38	55	36.1	3 675
1988	NF		1988	07	20.42014	23	04	39.28	+38	56	38.7	7 675
1988	NF		1988	07	20.43281	23	04	40.10	+38	57	03.0	3 675
1988	NF		1988	07	20.45486	23	04	41.95	+38	57	53.2	7 675
1988	NF		1988	07	24.42778	23	10	01.88	+41	20	11.0	7 675
1988	NF		1988	07	24.49028	23	10	06.35	+41	22	21.0	7 675
1988	NF		1988	08	20.32986	23	39	32.35	+54	27	42.6	7 675
1988	NF		1988	08	20.39326	23	39	34.79	+54	29	04.3	7 675
1988	NG	*	1988	07	12.35156	19	37	25.93	-06	34	47.6	16.0 2 675
1988	NG		1988	07	14.37274	19	36	26.32	-06	32	27.1	2 675
1988	NH	*	1988	07	11.34358	19	18	48.24	-05	44	57.9	16.0 2 675
1988	NH		1988	07	13.37813	19	17	03.96	-05	58	55.2	2 675
1988	NJ	*	1988	07	11.33767	19	13	35.62	-13	25	42.5	17.0 2 675
1988	NJ		1988	07	13.38767	19	11	51.43	-13	37	29.0	2 675
1988	NK	*	1988	07	12.29861	19	16	25.11	-18	44	01.1	16.0 2 675

1988	NK		1988	07	14.25642	19	14	38.99	-18	50	12.8	2 675
1988	NL	*	1988	07	14.40243	21	12	17.67	-04	47	26.0	15.8 2 675
1988	NL		1988	07	15.34878	21	11	40.81	-04	39	38.1	2 675
1988	NM	*	1988	07	14.40243	21	12	32.68	-04	52	12.0	15.8 2 675
1988	NM		1988	07	15.34878	21	11	55.56	-04	50	03.8	2 675
1988	NN	*	1988	07	11.41424	20	05	14.48	+08	04	55.6	16.0 2 675
1988	NN		1988	07	14.36458	20	03	01.80	+08	15	41.8	2 675
1988	NN		1988	07	15.33924	20	02	15.02	+08	18	20.9	16.0 2 675
1988	NN		1988	08	08.31476	19	44	11.17	+07	34	18.9	14.5 2 675
1988	NN		1988	08	08.33837	19	44	10.21	+07	34	10.4	2 675
1988	NO	*	1988	07	12.29861	19	12	44.95	-18	02	19.3	16.0 2 675
1988	NO		1988	07	14.25642	19	11	01.07	-18	25	17.2	2 675
1988	NP	*	1988	07	11.40712	20	06	08.12	+00	57	49.0	16.5 2 675
1988	NP		1988	07	13.42587	20	04	39.21	+00	50	12.5	2 675
1988	NP		1988	08	09.30399	19	45	13.30	-02	40	50.9	16.0 2 675
1988	NP		1988	08	09.32517	19	45	12.51	-02	41	06.5	2 675
1988	NQ	*	1988	07	14.40243	21	06	48.96	-04	24	04.8	17.0 2 675
1988	NQ		1988	07	15.34878	21	06	04.78	-04	17	29.0	2 675
1988	NR	*	1988	07	12.40382	19	56	35.26	-06	20	26.2	16.5 2 675
1988	NR		1988	07	14.32118	19	54	46.28	-06	11	47.4	2 675
1988	NR		1988	08	08.28872	19	31	54.93	-05	13	26.6	16.5 2 675
1988	NR		1988	08	08.30972	19	31	54.01	-05	13	26.4	2 675
1988	NS	*	1988	07	11.39965	20	31	09.24	-13	35	54.7	16.5 2 675
1988	NS		1988	07	14.37326	20	28	51.39	-13	33	50.3	2 675
1988	NT	*	1988	07	12.40382	19	51	09.32	-07	40	45.0	16.0 2 675
1988	NT		1988	07	14.32118	19	49	28.25	-07	44	37.1	2 675
1988	NT		1988	08	08.21910	19	29	49.36	-09	33	18.4	16.0 2 675
1988	NT		1988	08	08.24358	19	29	48.43	-09	33	24.3	2 675
1988	NU	*	1988	07	11.39965	20	29	18.49	-10	35	27.5	17.5 2 675
1988	NU		1988	07	14.37326	20	27	11.43	-10	35	17.4	2 675
1988	NV	*	1988	07	12.29861	19	07	35.26	-17	44	47.2	16.0 2 675
1988	NV		1988	07	14.27587	19	05	49.16	-17	38	27.5	2 675
1988	NW	*	1988	07	10.30139	20	15	20.31	-23	50	26.7	16.0 2 675
1988	NW		1988	07	12.39705	20	13	11.04	-23	39	52.6	2 675
1988	NX	*	1988	07	14.44045	21	28	01.77	-10	59	22.0	16.0 2 675
1988	NX		1988	07	15.40851	21	27	20.42	-10	59	53.2	2 675
1988	OA	*	1988	07	18.35608	19	30	39.77	-16	33	43.7	15.5 3 675
1988	OA		1988	07	19.28646	19	29	52.49	-16	43	05.7	3 675
1988	OB	*	1988	07	18.41615	22	46	40.15	-07	52	49.3	17.0 3 675
1988	OB		1988	07	19.35608	22	46	48.75	-08	10	50.0	3 675
1988	OB		1988	07	20.44063	22	46	56.00	-08	32	07.4	3 675
1988	OC		1988	07	10.30139	20	15	06.34	-16	31	22.8	16.0 2 675
1988	OC		1988	07	12.42691	20	13	28.12	-16	49	54.1	2 675
1988	OC	*	1988	07	16.37674	20	10	16.15	-17	25	34.6	16.0 3 675
1988	OC		1988	07	17.40000	20	09	24.11	-17	35	05.9	3 675
1988	OD	*	1988	07	17.35851	19	54	54.94	-09	40	06.3	17.0 3 675
1988	OD		1988	07	18.36215	19	54	14.91	-09	56	42.7	3 675
1988	OE		1988	06	13.31615	17	35	36.88	-05	40	20.6	16.8 3 675
1988	OE		1988	06	13.34583	17	35	35.19	-05	40	25.3	3 675
1988	OE	*	1988	07	17.33819	17	08	38.63	-08	32	52.0	16.8 3 675
1988	OE		1988	07	18.35000	17	08	09.72	-08	40	25.6	3 675
1988	OF	*	1988	07	19.41840	22	32	27.93	+38	03	21.0	17.5 3 675
1988	OF		1988	07	20.39323	22	32	30.28	+38	03	09.7	3 675
1988	OG	*	1988	07	20.39323	22	34	05.52	+37	55	15.7	16 3 675
1988	OG		1988	07	20.43281	22	34	11.20	+37	54	49.7	3 675
1988	PA	*	1988	08	09.32014	20	28	14.72	-01	34	43.0	16.0 2 675
1988	PA		1988	08	09.34028	20	28	15.90	-01	35	12.2	2 675
1988	PA		1988	08	10.28906	20	29	28.97	-02	01	55.5	16.0 2 675
1988	PA		1988	08	11.19358	20	30	39.69	-02	27	27.6	16.8 2 675

1988	PA		1988	08	11.21493	20	30	41.25	-02	28	05.1	2 675
1988	PA		1988	08	12.21736	20	31	59.18	-02	56	26.4	2 675
1988	PA		1988	08	12.23785	20	32	00.50	-02	57	01.7	2 675
1988	PB	*	1988	08	07.23403	20	26	28.17	-21	17	50.0	16.5 2 675
1988	PB		1988	08	09.37691	20	24	10.24	-21	53	59.7	2 675
1988	PC	*	1988	08	08.28316	19	02	07.76	-28	45	45.1	17.0 2 675
1988	PC		1988	08	10.25000	19	01	00.76	-28	28	19.6	2 675
1988	PD	*	1988	08	08.32569	20	50	07.89	-05	19	03.3	16.0 2 675
1988	PD		1988	08	10.29462	20	48	15.92	-05	08	34.1	2 675
1988	PE	*	1988	08	09.39757	21	02	27.76	-26	20	04.8	15.5 2 675
1988	PE		1988	08	11.25590	21	00	34.01	-26	05	18.0	2 675
1988	PF	*	1988	08	09.39757	21	17	42.73	-19	40	31.5	16.0 2 675
1988	PF		1988	08	11.25590	21	16	11.45	-20	01	41.9	2 675
1988	PG	*	1988	08	08.23802	19	43	56.86	-17	18	28.4	17.0 2 675
1988	PG		1988	08	10.25556	19	42	20.86	-17	46	01.5	2 675
1988	PH	*	1988	08	08.27205	18	59	10.62	-07	34	01.7	17.0 2 675
1988	PH		1988	08	11.18333	18	58	15.17	-08	45	08.9	2 675
1988	PJ	*	1988	08	09.36632	21	14	04.85	-19	21	56.9	16.5 2 675
1988	PJ		1988	08	11.30990	21	12	02.71	-19	54	42.3	2 675
1988	PO	*	1988	08	11.37743	22	53	32.92	+12	53	00.6	16.0 2 675
1988	PO		1988	08	12.29618	22	53	02.36	+12	57	40.3	2 675
1988	PP	*	1988	08	09.40260	21	46	31.56	-17	04	32.6	16.0 2 675
1988	PP		1988	08	11.31528	21	44	58.12	-17	22	08.0	2 675
1988	PT	*	1988	08	11.40191	22	22	20.90	+05	42	21.8	16.5 2 675
1988	PT		1988	08	12.28594	22	21	41.44	+05	36	35.6	2 675
1988	PU	*	1988	08	10.36910	21	24	16.19	+04	22	22.7	16.0 2 675
1988	PU		1988	08	12.22760	21	22	39.62	+04	18	38.1	2 675
3006	T-3	*	1977	10	16.27309	01	27	16.70	+06	39	52.5	16.0 4 675
3006	T-3		1977	10	16.33872	01	27	12.24	+06	39	49.4	4 675
3006	T-3		1977	10	17.27552	01	26	10.36	+06	39	05.5	4 675
3006	T-3		1977	10	17.34236	01	26	05.80	+06	39	03.3	4 675
3006	T-3		1977	10	21.39792	01	21	39.47	+06	36	09.0	4 675
3006	T-3		1977	10	21.45799	01	21	35.46	+06	36	07.4	4 675
3006	T-3		1977	10	22.39844	01	20	34.68	+06	35	35.8	4 675
3006	T-3		1977	10	22.45920	01	20	30.67	+06	35	34.1	4 675
310			1988	06	19.40226	21	02	57.14	-12	31	11.8	16.0 2 675
310			1988	06	20.36927	21	02	41.10	-12	30	53.3	2 675
398			1988	06	19.40226	20	55	35.66	-12	47	54.3	16.0 2 675
398			1988	06	20.36927	20	55	14.55	-12	46	08.3	2 675
466			1954	10	31.1663	00	01	51.13	+28	09	06.2	14 8 675
466			1954	10	31.1917	00	01	50.43	+28	08	55.2	14 8 675
1037			1988	07	14.40243	21	13	14.57	-04	43	52.0	16.5 2 675
1037			1988	07	15.34878	21	12	44.55	-04	43	54.9	2 675
1522			1988	07	12.29306	18	58	51.85	-29	08	54.5	16.0 2 675
1522			1988	07	14.28038	18	56	42.48	-29	13	56.6	2 675
2035			1954	01	28.2570	06	55	18.51	+52	48	10.3	15 8 675
2035			1954	01	28.2792	06	55	16.29	+52	48	14.5	15 8 675
2053			1988	05	14.41997	18	01	58.82	-12	46	03.6	17.5 3 675
2053			1988	05	14.45399	18	01	57.79	-12	45	56.9	3 675
2860			1953	12	07.1108	23	19	58.98	+27	32	36.5	15 8 675
2860			1953	12	07.1348	23	20	00.66	+27	32	39.7	15 8 675
3652			1988	07	14.45052	21	42	20.84	-09	36	29.4	16.0 2 675
3652			1988	07	15.46267	21	41	59.95	-09	36	01.5	2 675

688 Lowell Observatory, Anderson Mesa Station
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road,
Flagstaff, AZ 86001, U.S.A.
Observers A. Cummings, N. G. Thomas, K. W. Zeigler
Measurer K. W. Zeigler

0.33-m photographic telescope
PDS scanning microdensitometer
AGK3 and Perth 70 secondary nets, global solutions
See also MPC 9533

A910 FA	1988	05	12.35000	16	19	07.18	-14	42	02.4	15.8	688
A910 FA	1988	05	12.40417	16	19	04.45	-14	41	45.8		688
1972 KM	1988	05	15.22361	14	22	44.77	+01	30	13.5	16.2	688
1972 KM	1988	05	15.33333	14	22	38.76	+01	30	10.9		688
1978 SJ3	1988	05	14.25556	15	14	11.38	-03	32	18.3	16.8	688
1978 SJ3	1988	05	14.38958	15	14	03.97	-03	31	25.1		688
1985 PB1	1988	05	12.35000	16	22	41.49	-13	37	08.6	16.8	688
1985 PB1	1988	05	12.40417	16	22	38.48	-13	36	43.2		688
1985 RF	1988	05	14.33264	17	04	36.44	-18	31	48.8	16.8	688
1988 JQ	1988	06	21.36458	17	17	54.20	+15	05	39.5	15.2	688
1988 JQ	1988	06	21.41944	17	17	51.27	+15	04	48.5		688
1988 JA1	1988	06	21.41944	17	05	14.69	+10	14	08.5	16.2	688
1988 OG	1988	08	09.29375	23	24	29.94	+29	17	03.7	15.7	688
1988 OG	1988	08	09.34306	23	24	36.61	+29	14	53.9	15.2	688
1988 OG	1988	08	10.37847	23	27	04.31	+28	27	17.1		688
1988 OG	1988	08	10.43819	23	27	12.08	+28	24	30.9		688
16	1988	05	12.32361	14	59	41.36	-12	27	37.5		688
16	1988	06	09.19245	14	40	44.67	-11	13	41.0		688
16	1988	06	09.24684	14	40	43.10	-11	13	36.5		688
21	1988	05	14.33264	16	51	46.93	-21	08	11.2		688
21	1988	05	14.41806	16	51	42.61	-21	08	11.3		688
27	1988	05	12.37917	14	21	39.31	-11	58	21.2		688
110	1988	05	12.32361	15	16	33.73	-17	15	15.2		688
182	1988	05	14.33264	17	03	25.61	-20	56	25.7		688
182	1988	05	14.41806	17	03	21.23	-20	56	19.8		688
185	1988	06	21.36458	17	05	55.69	+10	38	26.5		688
185	1988	06	21.41944	17	05	52.96	+10	38	15.7		688
189	1988	05	12.21528	13	50	58.93	-09	10	24.0		688
189	1988	05	12.29444	13	50	55.36	-09	09	56.7		688
201	1988	05	12.35000	16	11	04.08	-11	50	27.1		688
201	1988	05	12.40417	16	11	01.32	-11	50	15.1		688
216	1988	05	12.32361	15	14	15.13	-12	57	60.0		688
229	1988	05	12.32361	15	03	16.01	-18	24	20.8		688
230	1988	05	14.33264	17	02	37.98	-20	39	07.2		688
230	1988	05	14.41806	17	02	33.86	-20	38	38.8		688
343	1988	05	12.32361	15	10	29.63	-18	52	09.6		688
352	1988	05	14.19132	13	42	38.39	-13	26	18.1		688
352	1988	05	14.29097	13	42	33.62	-13	25	42.0		688
429	1988	05	15.19792	14	09	07.71	-12	39	48.6		688
429	1988	05	15.30764	14	09	02.87	-12	39	05.0		688
451	1988	05	14.33264	17	06	32.54	-15	40	08.5		688
451	1988	05	14.41806	17	06	28.71	-15	40	14.4		688
494	1988	05	12.32361	15	01	12.17	-19	24	06.3		688
541	1988	05	14.19132	13	40	55.39	-18	00	30.5		688
541	1988	05	14.29097	13	40	51.54	-17	59	53.3		688
567	1988	05	14.22361	14	31	07.51	-11	13	19.2		688
567	1988	05	14.35903	14	31	00.82	-11	13	16.4		688
655	1988	05	14.33264	16	56	42.31	-14	26	40.1		688
655	1988	05	14.41806	16	56	38.87	-14	26	32.6		688
734	1988	05	12.37917	14	20	09.23	-19	33	42.3		688
834	1988	05	15.19792	14	04	57.65	-08	41	00.1		688
847	1988	05	15.19792	14	06	51.77	-15	47	56.1		688
847	1988	05	15.30764	14	06	47.00	-15	47	26.6		688
924	1988	05	13.21603	14	42	39.57	-02	52	31.7		688
924	1988	05	13.33194	14	42	34.30	-02	52	07.0		688

932	1988	05	14.19132	13	30	45.09	-14	33	13.1	688
932	1988	05	14.29097	13	30	40.43	-14	32	58.1	688
941	1988	05	15.19792	14	02	00.13	-10	03	29.3	688
946	1988	05	15.19792	14	02	41.82	-11	23	01.2	688
946	1988	05	15.30764	14	02	37.49	-11	22	44.1	688
971	1988	05	14.33264	16	46	53.78	-16	12	17.1	688
971	1988	05	14.41806	16	46	49.25	-16	12	22.4	688
1003	1988	05	12.32361	15	07	36.23	-14	51	42.9	688
1039	1988	05	12.32361	15	05	36.92	-16	19	47.8	688
1074	1988	05	15.19792	14	13	34.07	-13	29	13.3	688
1074	1988	05	15.30764	14	13	29.62	-13	28	52.3	688
1085	1988	05	14.33264	17	01	05.00	-13	26	55.0	688
1085	1988	05	14.41806	17	01	01.62	-13	26	47.5	688
1088	1988	05	12.21528	13	37	22.28	-05	49	51.2	688
1088	1988	05	12.29444	13	37	17.96	-05	49	44.0	688
1302	1988	05	12.32361	15	15	48.78	-15	44	26.7	688
1328	1988	05	12.32361	15	14	01.72	-16	56	53.9	688
1334	1988	05	15.22361	14	37	51.29	+03	22	09.9	688
1334	1988	05	15.33333	14	37	46.29	+03	22	19.0	688
1353	1988	05	12.21528	13	46	08.60	-09	57	32.1	688
1353	1988	05	12.29444	13	46	05.62	-09	57	02.8	688
1355	1988	05	12.32361	15	17	58.58	-12	04	43.1	688
1432	1988	05	14.25556	15	27	08.05	-05	06	57.1	688
1432	1988	05	14.38958	15	26	59.84	-05	06	31.9	688
1442	1988	05	12.21528	13	39	01.70	-10	30	08.2	688
1442	1988	05	12.29444	13	38	58.54	-10	29	49.0	688
1484	1988	05	12.35000	16	11	41.62	-12	57	34.5	688
1484	1988	05	12.40417	16	11	38.15	-12	57	54.0	688
1637	1988	05	14.19132	13	30	06.14	-14	57	17.5	688
1637	1988	05	14.29097	13	30	01.84	-14	57	14.2	688
1648	1988	05	13.21603	14	40	22.29	-05	12	14.6	688
1648	1988	05	13.33194	14	40	15.95	-05	11	55.2	688
1669	1988	05	12.32361	15	00	03.90	-17	49	57.4	688
1684	1988	06	09.19245	14	32	53.61	-10	30	57.4	688
1690	1988	05	15.19792	13	53	28.56	-15	42	12.0	688
1690	1988	05	15.30764	13	53	24.57	-15	41	29.6	688
1691	1988	05	12.37917	14	21	11.13	-12	56	43.1	688
1726	1988	05	12.32361	15	06	13.43	-17	35	04.2	688
1748	1988	05	14.33264	16	54	39.52	-18	46	38.4	688
1755	1988	05	15.22361	14	41	53.09	-00	37	31.9	688
1755	1988	05	15.33333	14	41	48.53	-00	37	12.2	688
1822	1988	05	12.32361	15	06	20.01	-17	07	58.1	688
1835	1988	05	15.19792	13	53	34.49	-13	09	35.1	688
1835	1988	05	15.30764	13	53	29.79	-13	09	10.6	688
1855	1988	05	15.19792	13	59	57.46	-09	04	19.3	688
2004	1988	05	12.37917	14	28	01.88	-17	39	07.4	688
2019	1988	05	14.19132	13	29	32.31	-13	51	55.4	688
2019	1988	05	14.29097	13	29	28.44	-13	51	12.5	688
2081	1988	05	12.37917	14	30	51.53	-12	07	26.2	688
2091	1988	05	15.22361	14	29	44.85	+01	49	23.6	688
2091	1988	05	15.33333	14	29	40.04	+01	49	28.2	688
2093	1988	05	14.25556	15	10	41.90	-05	14	27.8	688
2093	1988	05	14.38958	15	10	34.20	-05	13	48.8	688
2122	1988	05	13.21603	14	25	03.69	-01	56	08.6	688
2122	1988	05	13.33194	14	24	57.40	-01	56	01.8	688
2224	1988	05	12.32361	15	16	16.25	-18	10	29.8	688
2235	1988	05	12.21528	13	30	23.83	-05	48	34.2	688
2235	1988	05	12.29444	13	30	21.53	-05	48	00.3	688
2248	1988	05	15.19792	14	06	39.87	-13	11	06.2	688

2248		1988	05	15.30764	14	06	35.47	-13	10	47.6	688
2297		1988	05	14.33264	16	46	04.14	-19	55	37.2	688
2297		1988	05	14.41806	16	46	00.55	-19	55	29.5	688
2356		1988	05	13.21603	14	27	20.85	-01	40	14.2	688
2356		1988	05	13.33194	14	27	16.38	-01	39	35.5	688
2480		1988	05	12.32361	15	16	12.73	-19	36	55.8	688
2569		1988	05	14.33264	16	52	01.08	-19	45	21.4	688
2636		1988	05	12.35000	16	15	39.82	-10	45	42.7	688
2636		1988	05	12.40417	16	15	37.13	-10	45	41.0	688
2655		1988	05	15.22361	14	38	23.15	+02	42	05.1	688
2740		1988	05	12.35000	16	04	00.54	-11	21	26.9	688
2740		1988	05	12.40417	16	03	58.03	-11	21	08.7	688
2779		1988	05	12.32361	15	10	55.99	-13	55	08.6	688
2795		1988	05	14.33264	16	48	02.44	-16	55	27.9	688
2851		1988	05	12.21528	13	50	41.37	-08	04	59.6	688
2851		1988	05	12.29444	13	50	37.37	-08	04	55.0	688
2904		1988	05	14.33264	16	46	34.45	-16	53	01.1	688
2904		1988	05	14.41806	16	46	30.02	-16	53	09.2	688
3091		1988	05	15.19792	14	10	24.34	-13	25	05.0	688
3091		1988	05	15.30764	14	10	19.75	-13	24	31.3	688
3403		1988	05	12.35000	16	12	37.05	-16	13	37.9	688
3403		1988	05	12.40417	16	12	34.38	-16	13	20.0	688
3541		1988	05	12.32361	15	06	47.80	-12	06	36.0	688
3591		1988	05	15.19792	14	05	41.23	-13	10	18.7	688
3591		1988	05	15.30764	14	05	36.45	-13	09	58.5	688
3598		1988	05	12.21528	13	43	05.61	-09	39	28.0	688
3598		1988	05	12.29444	13	43	02.74	-09	39	11.5	688
3599		1988	05	12.32361	15	21	09.36	-15	58	32.0	688
3687		1988	05	15.19792	14	02	49.76	-14	21	59.5	688
3687		1988	05	15.30764	14	02	45.27	-14	21	01.7	688
3815		1988	05	14.25556	15	08	19.01	-09	01	57.2	688
3815		1988	05	14.38958	15	08	12.10	-09	01	01.1	688

690 Lowell Observatory
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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	WZ	1929	11	28.21181	04	38	31.70	+08	37	06.1	690
1929	WZ	1929	12	04.19792	04	33	04.81	+08	11	48.3	690
1959	EP	1959	03	06.30903	10	48	17.70	+08	10	39.7	690
1959	EP	1959	03	06.32639	10	48	16.95	+08	10	46.2	690
1959	EP	1959	03	07.30556	10	47	31.33	+08	17	45.8	690
1959	EP	1959	03	08.25694	10	46	49.72	+08	24	48.7	P 690
1959	EP	1959	03	08.29236	10	46	45.82	+08	24	45.5	690
1959	EP	1959	03	09.28472	10	46	00.41	+08	31	44.2	690
1959	EP	1959	03	09.31944	10	45	59.25	+08	31	51.7	690
1959	EP	1959	03	10.30556	10	45	13.96	+08	38	48.8	690
317		1959	03	08.25694	10	34	54.60	+09	28	11.1	R 690
733		1959	03	06.30903	10	45	45.69	+08	21	58.4	690
733		1959	03	08.25694	10	43	58.11	+08	21	00.0	R 690
733		1959	03	08.29236	10	43	55.83	+08	20	59.9	690
733		1959	03	09.28472	10	43	01.26	+08	20	29.0	690
825		1959	03	06.30903	10	48	26.76	+13	34	44.3	690
825		1959	03	08.25694	10	46	33.16	+13	47	47.9	R 690
825		1959	03	08.29236	10	46	30.15	+13	48	04.0	690

825		1959	03	09.28472	10	45	32.35	+13 54 29.5		690
1003		1959	03	08.25694	10	37	23.40	+09 43 10.2	R	690
1263		1959	03	06.30903	10	49	01.73	+10 45 17.3		690
1263		1959	03	08.25694	10	47	32.36	+11 20 21.0		690
1263		1959	03	08.29236	10	47	30.73	+11 20 56.1		690
1263		1959	03	09.28472	10	46	45.73	+11 38 31.7		690
2506		1959	03	08.25694	10	34	19.57	+08 42 40.5	P	690

801 Oak Ridge
R. E. McCrosky, Harvard-Smithsonian Center for Astrophysics,
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Observers R. E. McCrosky, G. Schwartz, C.-Y. Shao, F. Tong
1.5-m reflector
AC

A910	FA	1988	04	20.31074	16	32	24.25	-16 36 40.0		801
A910	FA	1988	06	10.15922	15	54	18.41	-12 40 37.9		801
1948	WF	1988	06	14.16654	17	11	30.40	-12 48 26.5		801
1971	OH	1988	06	12.20823	18	22	57.50	-05 38 46.6		801
1971	OH	1988	07	14.22102	17	53	55.88	-06 52 04.0		801
1972	KM	1988	06	14.12064	14	07	40.61	-00 33 00.5		801
1979	HG5	1988	04	19.25883	14	07	51.04	-04 46 08.6		801
1979	HG5	1988	05	15.21031	13	48	09.62	-02 54 24.8		801
1980	FG12	1988	05	15.26580	19	25	45.24	+12 42 40.9		801
1980	FG12	1988	06	11.29234	19	34	47.51	+21 25 10.0		801
1980	FG12	1988	06	15.26347	19	34	15.33	+22 26 38.9		801
1982	UP6	1988	06	12.12607	14	08	14.34	-02 39 53.6	w	801
1982	UP6	1988	07	16.08318	14	30	47.02	+00 02 58.0		801
1984	EN	1988	04	19.20883	13	15	29.51	-13 57 42.6	U	801
1984	FO	1988	06	12.30848	20	19	38.69	+18 53 13.1		801
1985	PB1	1988	06	10.18833	15	58	27.73	-10 39 51.4		801
1985	RF	1988	06	15.19580	16	35	48.67	-16 50 58.5	w	801
1988	DE2	1988	02	19.19590	07	40	47.73	+24 42 06.9	17	801
1988	JB1	1988	07	11.14682	17	01	36.97	+08 29 42.8	W	801
1988	PA	1988	08	16.26060	20	37	19.56	-04 50 43.2		801
1988	PA	1988	08	16.28420	20	37	21.17	-04 51 21.6		801
4575	P-L	1987	05	02.05016	09	55	28.59	+12 13 50.4		801
4575	P-L	1988	06	14.24992	18	17	39.61	-09 13 46.6		801
1685		1988	07	11.29086	22	27	57.31	+08 47 35.2		801
1980		1988	06	11.27143	17	07	19.27	-05 47 57.2		801
1980		1988	07	14.10779	16	16	33.07	+12 47 23.3		801

807 Cerro Tololo
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Honolulu, HI 96822, U.S.A.
1.5-m telescope

2060		1988	03	24.02772	05	30	46.03	+17 23 23.3		807
2060		1988	03	24.06731	05	30	46.34	+17 23 22.6		807

809 European Southern Observatory
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Observers H. Debehogne, E. W. Elst, W. Landgraf, G. Pizarro, O. Pizarro
Measurers H. Debehogne, J. Dumoulin, E. W. Elst, W. Landgraf, G. Peeters
0.4-m GPO astrograph and 1.0-m Schmidt telescope

1962	RN	1988	05	23.21197	14	44	39.63	-10	19	06.3	15.0	2 809
1962	RN	1988	05	25.29826	14	43	11.08	-10	08	47.0	14.7	2 809
1976	YU5	1988	01	19.09167	08	15	25.48	+14	05	35.9	16.6	3 809
1976	YU5	1988	01	19.10139	08	15	24.87	+14	05	37.0		3 809
1976	YU5	1988	01	19.11111	08	15	24.25	+14	05	38.3		3 809
1976	YU5	1988	01	21.10833	08	13	13.73	+14	09	34.8		3 809
1976	YU5	1988	01	21.11805	08	13	13.14	+14	09	36.0		3 809
1976	YU5	1988	01	23.09444	08	11	03.85	+14	13	41.1		3 809
1976	YU5	1988	01	23.10417	08	11	03.20	+14	13	42.1		3 809
1976	YU5	1988	01	25.11805	08	08	51.80	+14	18	01.3		3 809
1976	YU5	1988	01	25.12778	08	08	51.16	+14	18	02.4		3 809
1976	YU5	1988	01	26.15764	08	07	44.23	+14	20	17.9		3 809
1976	YU5	1988	01	26.16736	08	07	43.62	+14	20	19.4		3 809
1976	YU5	1988	01	27.11736	08	06	42.35	+14	22	26.2		3 809
1976	YU5	1988	01	28.12361	08	05	37.73	+14	24	40.9		3 809
1976	YU5	1988	01	28.13056	08	05	37.31	+14	24	41.6		3 809
1978	GR3	1988	01	18.30556	09	35	09.13	+13	04	12.0		3 809
1978	GR3	1988	01	18.31528	09	35	08.71	+13	04	13.7		3 809
1978	GR3	1988	01	20.31319	09	33	52.69	+13	10	39.9		3 809
1978	GR3	1988	01	20.32292	09	33	52.29	+13	10	41.7		3 809
1978	GR3	1988	01	22.24236	09	32	35.45	+13	17	12.6		3 809
1978	GR3	1988	01	22.25208	09	32	35.04	+13	17	14.6		3 809
1978	GR3	1988	01	24.26042	09	31	10.66	+13	24	24.2		3 809
1978	GR3	1988	01	24.27014	09	31	10.26	+13	24	26.3		3 809
1978	GR3	1988	01	26.29375	09	29	41.57	+13	31	56.6		3 809
1978	GR3	1988	01	26.30347	09	29	41.15	+13	31	58.9		3 809
1978	GR3	1988	01	28.30764	09	28	10.30	+13	39	40.2		3 809
1978	GR3	1988	01	28.31736	09	28	09.87	+13	39	42.7		3 809
1978	GR3	1988	01	30.30625	09	26	36.98	+13	47	34.2		3 809
1978	GR3	1988	01	30.31597	09	26	36.55	+13	47	36.5		3 809
1981	RU3	1988	01	18.22639	09	15	57.54	+09	43	54.8	16.8	3 809
1981	RU3	1988	01	18.23611	09	15	57.11	+09	43	56.6		3 809
1981	RU3	1988	01	18.24583	09	15	56.68	+09	43	58.4		3 809
1981	RU3	1988	01	19.24653	09	15	12.25	+09	47	22.0		3 809
1981	RU3	1988	01	19.25625	09	15	11.81	+09	47	24.0		3 809
1981	RU3	1988	01	20.22917	09	14	27.86	+09	50	46.5		3 809
1981	RU3	1988	01	20.23889	09	14	27.43	+09	50	48.7		3 809
1981	RU3	1988	01	22.21806	09	12	55.72	+09	57	58.6		3 809
1981	RU3	1988	01	22.22778	09	12	55.32	+09	58	00.6		3 809
1981	RU3	1988	01	24.16667	09	11	22.90	+10	05	25.1		3 809
1981	RU3	1988	01	24.17639	09	11	22.45	+10	05	27.3		3 809
1981	RU3	1988	01	26.22431	09	09	42.33	+10	13	37.1		3 809
1981	RU3	1988	01	26.23403	09	09	41.87	+10	13	39.6		3 809
1981	RU3	1988	01	28.23958	09	08	01.82	+10	21	58.9		3 809
1981	RU3	1988	01	28.24931	09	08	01.34	+10	22	01.5		3 809
1981	RU3	1988	01	30.16111	09	06	24.72	+10	30	13.6		3 809
1986	TJ1	1988	01	23.12986	08	21	34.96	+13	54	00.1	16.5	3 809
1986	TJ1	1988	01	23.13958	08	21	34.37	+13	54	00.4		3 809
1986	TJ1	1988	01	24.19028	08	20	31.73	+13	54	48.4		3 809
1986	TJ1	1988	01	24.19861	08	20	31.23	+13	54	49.0		3 809
1986	TJ1	1988	01	24.20694	08	20	30.72	+13	54	49.3		3 809
1986	TJ1	1988	01	26.17778	08	18	33.40	+13	56	26.4		3 809
1986	TJ1	1988	01	26.18750	08	18	32.81	+13	56	27.4		3 809
1986	TJ1	1988	01	27.16597	08	17	34.68	+13	57	19.2		3 809
1986	TJ1	1988	01	27.17569	08	17	34.11	+13	57	19.6		3 809
1986	TJ1	1988	01	28.14028	08	16	36.99	+13	58	12.4		3 809
1986	TJ1	1988	01	29.11250	08	15	39.59	+13	59	07.4		3 809
1986	TJ1	1988	01	30.12951	08	14	39.78	+14	00	07.1		3 809
1987	BO1	1987	01	23.04514	06	42	13.21	+10	37	01.9	16	4 809

1987	BO1		1987	01	23.05556	06	42	12.59	+10	36	53.5	4 809
1987	BO1		1987	01	25.05729	06	40	16.19	+10	10	18.1	16 4 809
1987	BO1		1987	01	25.06806	06	40	15.55	+10	10	09.8	4 809
1987	BO1		1987	02	01.13194	06	34	43.58	+08	47	02.0	17 4 809
1987	BO1		1987	02	05.14514	06	32	32.44	+08	06	57.4	17 4 809
1987	BO1		1987	02	06.05764	06	32	08.81	+07	58	30.5	17.5 4 809
1987	BO1		1987	02	06.06806	06	32	08.51	+07	58	25.3	4 809
1987	YT1		1988	01	15.06528	05	48	53.14	+03	55	23.3	15.2 3 809
1987	YT1		1988	01	15.07500	05	48	52.87	+03	55	24.9	3 809
1987	YT1		1988	01	15.08472	05	48	52.61	+03	55	26.7	3 809
1987	YT1		1988	01	16.16458	05	48	23.50	+03	58	20.5	3 809
1987	YT1		1988	01	16.17847	05	48	23.15	+03	58	23.0	3 809
1987	YT1		1988	01	16.19236	05	48	22.78	+03	58	25.7	3 809
1987	YT1		1988	01	21.07361	05	46	21.19	+04	12	38.3	3 809
1987	YT1		1988	01	21.08333	05	46	20.94	+04	12	40.1	3 809
1987	YT1		1988	01	21.09305	05	46	20.70	+04	12	42.0	3 809
1987	YT1		1988	01	23.07014	05	45	36.20	+04	18	56.2	3 809
1987	YT1		1988	01	23.07986	05	45	35.97	+04	18	58.0	3 809
1987	YT1		1988	01	25.06458	05	44	54.34	+04	25	30.0	3 809
1987	YT1		1988	01	27.06319	05	44	15.47	+04	32	17.4	3 809
1987	YT1		1988	01	28.07431	05	43	57.02	+04	35	49.9	3 809
1987	YT1		1988	01	29.05486	05	43	39.97	+04	39	18.2	3 809
1987	YT1		1988	01	30.05764	05	43	23.34	+04	42	55.8	3 809
1987	YL6	*	1987	12	20.15694	05	51	12.35	+05	45	39.4	4 809
1987	YL6		1987	12	20.28333	05	51	07.19	+05	45	48.2	4 809
1987	YM6	*	1987	12	20.28333	05	57	02.41	+05	40	59.7	4 809
1988	AL		1988	01	17.17083	07	33	55.00	+10	06	32.3	15.8 3 809
1988	AL		1988	01	17.18056	07	33	54.47	+10	06	34.7	3 809
1988	AL		1988	01	17.19028	07	33	53.94	+10	06	37.4	3 809
1988	AL		1988	01	18.14375	07	33	02.19	+10	11	00.2	3 809
1988	AL		1988	01	18.15347	07	33	01.62	+10	11	02.8	3 809
1988	AL		1988	01	20.13958	07	31	14.23	+10	20	31.0	3 809
1988	AL		1988	01	20.14931	07	31	13.70	+10	20	34.0	3 809
1988	AL		1988	01	22.09410	07	29	29.79	+10	30	14.8	3 809
1988	AL		1988	01	22.09896	07	29	29.53	+10	30	16.0	3 809
1988	AL		1988	01	22.10382	07	29	29.27	+10	30	17.2	3 809
1988	AL		1988	01	24.09305	07	27	44.75	+10	40	36.4	3 809
1988	AL		1988	01	24.09722	07	27	44.54	+10	40	38.0	3 809
1988	AL		1988	01	24.10139	07	27	44.32	+10	40	39.3	3 809
1988	AL		1988	01	26.10486	07	26	01.58	+10	51	22.5	3 809
1988	AL		1988	01	26.10903	07	26	01.37	+10	51	23.9	3 809
1988	AL		1988	01	26.11319	07	26	01.15	+10	51	25.0	3 809
1988	AL		1988	01	27.09792	07	25	11.72	+10	56	48.5	3 809
1988	AL		1988	01	27.10208	07	25	11.50	+10	56	50.0	3 809
1988	AL		1988	01	27.10625	07	25	11.27	+10	56	51.4	3 809
1988	AL		1988	01	28.10625	07	24	21.86	+11	02	25.4	3 809
1988	AL		1988	01	28.11042	07	24	21.65	+11	02	26.7	3 809
1988	AL		1988	01	28.11458	07	24	21.45	+11	02	28.1	3 809
1988	AL		1988	01	29.07292	07	23	35.11	+11	07	51.0	3 809
1988	AL		1988	01	29.07708	07	23	34.91	+11	07	52.4	3 809
1988	AL		1988	01	30.08368	07	22	47.03	+11	13	35.8	3 809
1988	AW4	*	1988	01	11.16076	08	19	02.91	+13	14	23.6	16.2 3 809
1988	AW4		1988	01	11.16563	08	19	02.67	+13	14	24.5	3 809
1988	AW4		1988	01	11.17049	08	19	02.42	+13	14	25.4	3 809
1988	AW4		1988	01	13.15938	08	17	24.01	+13	22	33.4	3 809
1988	AW4		1988	01	13.16424	08	17	23.76	+13	22	34.6	3 809
1988	AW4		1988	01	13.16910	08	17	23.50	+13	22	35.8	3 809
1988	AW4		1988	01	14.13264	08	16	34.83	+13	26	39.8	3 809
1988	AW4		1988	01	14.14236	08	16	34.32	+13	26	42.5	3 809

1988	AW4		1988	01	14.15208	08	16	33.81	+13	26	45.1	3 809
1988	AW4		1988	01	14.18264	08	16	32.15	+13	26	52.3	3 809
1988	AW4		1988	01	14.19236	08	16	31.67	+13	26	54.7	3 809
1988	AW4		1988	01	14.20208	08	16	31.15	+13	26	57.5	3 809
1988	AW4		1988	01	15.12778	08	15	43.86	+13	30	57.7	3 809
1988	AW4		1988	01	15.13750	08	15	43.34	+13	31	00.3	3 809
1988	AW4		1988	01	15.14722	08	15	42.83	+13	31	02.5	3 809
1988	AW4		1988	01	15.17014	08	15	41.60	+13	31	09.0	3 809
1988	AW4		1988	01	15.17986	08	15	41.08	+13	31	11.7	3 809
1988	AW4		1988	01	15.18958	08	15	40.56	+13	31	14.4	3 809
1988	AW4		1988	01	17.20417	08	13	55.55	+13	40	15.7	3 809
1988	AW4		1988	01	17.21389	08	13	55.02	+13	40	18.1	3 809
1988	AW4		1988	01	17.22361	08	13	54.46	+13	40	20.8	3 809
1988	AW4		1988	01	17.23472	08	13	53.90	+13	40	23.9	3 809
1988	AW4		1988	01	17.24444	08	13	53.35	+13	40	26.7	3 809
1988	AW4		1988	01	17.25417	08	13	52.82	+13	40	29.5	3 809
1988	AW4		1988	01	19.09167	08	12	15.79	+13	49	00.3	3 809
1988	AW4		1988	01	19.10139	08	12	15.26	+13	49	03.0	3 809
1988	AW4		1988	01	19.11111	08	12	14.72	+13	49	05.8	3 809
1988	AW4		1988	01	21.10833	08	10	27.77	+13	58	38.6	3 809
1988	AW4		1988	01	21.11805	08	10	27.26	+13	58	41.7	3 809
1988	AW4		1988	01	23.09444	08	08	40.90	+14	08	24.0	3 809
1988	AW4		1988	01	23.10417	08	08	40.36	+14	08	26.4	3 809
1988	AW4		1988	01	25.11805	08	06	51.95	+14	18	33.5	3 809
1988	AW4		1988	01	25.12778	08	06	51.44	+14	18	36.1	3 809
1988	AW4		1988	01	26.15764	08	05	56.18	+14	23	50.6	3 809
1988	AW4		1988	01	26.16736	08	05	55.65	+14	23	53.6	3 809
1988	AW4		1988	01	27.11736	08	05	05.04	+14	28	45.0	3 809
1988	AW4		1988	01	28.12361	08	04	11.63	+14	33	56.3	3 809
1988	AW4		1988	01	28.13056	08	04	11.25	+14	33	58.7	3 809
1988	AW4		1988	01	29.10000	08	03	20.23	+14	38	59.8	3 809
1988	AW4		1988	01	30.11840	08	02	26.99	+14	44	18.2	3 809
1988	AX4	*	1988	01	13.09792	05	21	44.05	+13	36	56.1	17.0 3 809
1988	AX4		1988	01	13.10764	05	21	43.69	+13	36	57.4	3 809
1988	AX4		1988	01	13.11736	05	21	43.32	+13	36	58.9	3 809
1988	AX4		1988	01	14.08958	05	21	06.88	+13	39	12.1	3 809
1988	AX4		1988	01	14.09931	05	21	06.52	+13	39	13.8	3 809
1988	AX4		1988	01	14.10903	05	21	06.13	+13	39	15.2	3 809
1988	AX4		1988	01	16.11632	05	19	55.85	+13	44	05.6	3 809
1988	AX4		1988	01	16.13090	05	19	55.35	+13	44	07.4	3 809
1988	AX4		1988	01	16.14549	05	19	54.86	+13	44	09.7	3 809
1988	AX4		1988	01	18.07431	05	18	54.26	+13	49	05.3	3 809
1988	AX4		1988	01	18.08403	05	18	53.96	+13	49	07.0	3 809
1988	AX4		1988	01	20.07222	05	17	58.30	+13	54	28.3	3 809
1988	AX4		1988	01	20.08194	05	17	58.03	+13	54	30.0	3 809
1988	AX4		1988	01	22.05000	05	17	10.10	+14	00	03.2	3 809
1988	AX4		1988	01	22.05972	05	17	09.84	+14	00	05.6	3 809
1988	AX4		1988	01	24.04583	05	16	28.67	+14	05	56.3	3 809
1988	AX4		1988	01	24.05555	05	16	28.47	+14	05	58.6	3 809
1988	AX4		1988	01	26.06181	05	15	54.30	+14	12	06.4	3 809
1988	AX4		1988	01	28.05000	05	15	27.84	+14	18	23.0	3 809
1988	AY4	*	1988	01	13.09792	05	23	06.96	+14	37	27.7	16.6 3 809
1988	AY4		1988	01	13.10764	05	23	06.55	+14	37	28.0	3 809
1988	AY4		1988	01	13.11736	05	23	06.14	+14	37	28.2	3 809
1988	AY4		1988	01	14.08958	05	22	25.27	+14	37	36.1	3 809
1988	AY4		1988	01	14.09931	05	22	24.86	+14	37	36.4	3 809
1988	AY4		1988	01	14.10903	05	22	24.46	+14	37	36.6	3 809
1988	AY4		1988	01	16.11632	05	21	04.72	+14	38	08.1	3 809
1988	AY4		1988	01	16.13090	05	21	04.14	+14	38	08.4	3 809

1988	AY4		1988	01	16.14549	05	21	03.59	+14	38	08.8	3 809
1988	AY4		1988	01	18.07431	05	19	53.49	+14	38	59.0	3 809
1988	AY4		1988	01	18.08403	05	19	53.11	+14	38	59.3	3 809
1988	AY4		1988	01	20.07222	05	18	47.44	+14	40	10.9	3 809
1988	AY4		1988	01	20.08194	05	18	47.09	+14	40	10.9	3 809
1988	AY4		1988	01	22.05000	05	17	49.01	+14	41	41.0	3 809
1988	AY4		1988	01	22.05972	05	17	48.72	+14	41	41.1	3 809
1988	AY4		1988	01	24.04583	05	16	57.11	+14	43	30.2	3 809
1988	AY4		1988	01	24.05555	05	16	56.86	+14	43	30.3	3 809
1988	AY4		1988	01	26.06181	05	16	12.04	+14	45	38.7	3 809
1988	AY4		1988	01	28.05000	05	15	34.93	+14	48	01.7	3 809
1988	AZ4	*	1988	01	13.09792	05	26	04.35	+12	54	08.2	17.2 3 809
1988	AZ4		1988	01	13.10764	05	26	03.98	+12	54	09.1	3 809
1988	AZ4		1988	01	13.11736	05	26	03.62	+12	54	10.1	3 809
1988	AZ4		1988	01	13.12778	05	26	03.19	+12	54	10.2	3 809
1988	AZ4		1988	01	13.13750	05	26	02.81	+12	54	11.2	3 809
1988	AZ4		1988	01	13.14722	05	26	02.42	+12	54	12.2	3 809
1988	AZ4		1988	01	14.05972	05	25	28.21	+12	55	39.1	3 809
1988	AZ4		1988	01	14.06944	05	25	27.84	+12	55	40.2	3 809
1988	AZ4		1988	01	14.07917	05	25	27.50	+12	55	41.5	3 809
1988	AZ4		1988	01	14.08958	05	25	27.09	+12	55	41.7	3 809
1988	AZ4		1988	01	14.09931	05	25	26.71	+12	55	42.6	3 809
1988	AZ4		1988	01	14.10903	05	25	26.33	+12	55	43.5	3 809
1988	AZ4		1988	01	16.06424	05	24	16.97	+12	59	02.6	3 809
1988	AZ4		1988	01	16.07882	05	24	16.45	+12	59	04.1	3 809
1988	AZ4		1988	01	16.09340	05	24	15.97	+12	59	05.7	3 809
1988	AZ4		1988	01	18.05417	05	23	12.09	+13	02	42.0	3 809
1988	AZ4		1988	01	18.06389	05	23	11.77	+13	02	42.6	3 809
1988	AZ4		1988	01	20.05069	05	22	12.87	+13	06	39.3	3 809
1988	AZ4		1988	01	20.06042	05	22	12.58	+13	06	40.4	3 809
1988	AZ4		1988	01	21.05069	05	21	45.52	+13	08	44.7	3 809
1988	AZ4		1988	01	21.06042	05	21	45.22	+13	08	46.2	3 809
1988	AZ4		1988	01	23.04792	05	20	55.52	+13	13	06.5	3 809
1988	AZ4		1988	01	23.05764	05	20	55.27	+13	13	07.7	3 809
1988	AZ4		1988	01	26.08090	05	19	51.65	+13	20	11.6	3 809
1988	AZ4		1988	01	28.06181	05	19	17.97	+13	25	06.8	3 809
1988	AA5	*	1988	01	13.12778	05	22	31.23	+12	06	17.8	16.8 3 809
1988	AA5		1988	01	13.13750	05	22	31.02	+12	06	19.3	3 809
1988	AA5		1988	01	13.14722	05	22	30.78	+12	06	20.9	3 809
1988	AA5		1988	01	14.05972	05	22	08.60	+12	08	44.1	3 809
1988	AA5		1988	01	14.06944	05	22	08.36	+12	08	45.8	3 809
1988	AA5		1988	01	14.07917	05	22	08.12	+12	08	47.1	3 809
1988	AA5		1988	01	16.06424	05	21	25.04	+12	14	18.9	3 809
1988	AA5		1988	01	16.07882	05	21	24.71	+12	14	21.5	3 809
1988	AA5		1988	01	16.09340	05	21	24.40	+12	14	23.6	3 809
1988	AA5		1988	01	18.05417	05	20	49.20	+12	20	13.8	3 809
1988	AA5		1988	01	18.06389	05	20	49.02	+12	20	16.0	3 809
1988	AA5		1988	01	20.05069	05	20	20.84	+12	26	32.9	3 809
1988	AA5		1988	01	20.06042	05	20	20.71	+12	26	34.8	3 809
1988	AA5		1988	01	21.05069	05	20	09.57	+12	29	50.7	3 809
1988	AA5		1988	01	21.06042	05	20	09.45	+12	29	52.8	3 809
1988	AA5		1988	01	23.04792	05	19	52.84	+12	36	40.0	3 809
1988	AA5		1988	01	23.05764	05	19	52.71	+12	36	42.2	3 809
1988	AA5		1988	01	25.05208	05	19	43.80	+12	43	49.0	3 809
1988	AA5		1988	01	26.08090	05	19	42.15	+12	47	34.6	3 809
1988	AA5		1988	01	28.06181	05	19	44.88	+12	55	01.3	3 809
1988	AB5	*	1988	01	13.21111	08	20	34.69	+11	54	11.7	16.3 3 809
1988	AB5		1988	01	13.21528	08	20	34.49	+11	54	14.1	3 809
1988	AB5		1988	01	13.21944	08	20	34.27	+11	54	16.5	3 809

1988	AB5		1988	01	14.18264	08	19	43.64	+12	03	17.8		3 809
1988	AB5		1988	01	14.19236	08	19	43.12	+12	03	23.2		3 809
1988	AB5		1988	01	14.20208	08	19	42.60	+12	03	28.6		3 809
1988	AB5		1988	01	15.17014	08	18	51.04	+12	12	40.3		3 809
1988	AB5		1988	01	15.17986	08	18	50.53	+12	12	46.0		3 809
1988	AB5		1988	01	15.18958	08	18	49.95	+12	12	51.5		3 809
1988	AB5		1988	01	17.23472	08	16	58.92	+12	32	40.6		3 809
1988	AB5		1988	01	17.24444	08	16	58.37	+12	32	46.3		3 809
1988	AB5		1988	01	17.25417	08	16	57.82	+12	32	52.0		3 809
1988	AB5		1988	01	19.09167	08	15	16.72	+12	51	03.3		3 809
1988	AB5		1988	01	19.10139	08	15	16.18	+12	51	09.1		3 809
1988	AB5		1988	01	19.11111	08	15	15.65	+12	51	14.8		3 809
1988	AB5		1988	01	21.10833	08	13	24.21	+13	11	23.3		3 809
1988	AB5		1988	01	21.11805	08	13	23.68	+13	11	29.6		3 809
1988	AB5		1988	01	23.09444	08	11	32.82	+13	31	42.3		3 809
1988	AB5		1988	01	23.10417	08	11	32.25	+13	31	48.2		3 809
1988	AB5		1988	01	25.11805	08	09	39.31	+13	52	37.7		3 809
1988	AB5		1988	01	25.12778	08	09	38.77	+13	52	43.7		3 809
1988	AB5		1988	01	26.15764	08	08	41.18	+14	03	26.8		3 809
1988	AB5		1988	01	26.16736	08	08	40.60	+14	03	32.7		3 809
1988	AB5		1988	01	27.11736	08	07	47.91	+14	13	26.8		3 809
1988	AB5		1988	01	28.12361	08	06	52.31	+14	23	58.6		3 809
1988	AB5		1988	01	28.13056	08	06	51.91	+14	24	02.4		3 809
1988	AB5		1988	01	29.10000	08	05	58.82	+14	34	10.3		3 809
1988	AB5		1988	01	30.11840	08	05	03.43	+14	44	49.9		3 809
1988	AC5	*	1988	01	13.21111	08	26	10.12	+11	27	59.6	16.1	3 809
1988	AC5		1988	01	13.21528	08	26	09.91	+11	28	01.3		3 809
1988	AC5		1988	01	13.21944	08	26	09.70	+11	28	02.6		3 809
1988	AC5		1988	01	22.12778	08	18	44.56	+12	27	46.4		3 809
1988	AC5		1988	01	22.13750	08	18	44.06	+12	27	50.6		3 809
1988	AC5		1988	01	22.14722	08	18	43.55	+12	27	54.9		3 809
1988	AC5		1988	01	23.12986	08	17	51.53	+12	35	15.1		3 809
1988	AC5		1988	01	23.13958	08	17	51.01	+12	35	19.8		3 809
1988	AC5		1988	01	24.19028	08	16	54.97	+12	43	18.3		3 809
1988	AC5		1988	01	24.19861	08	16	54.54	+12	43	22.2		3 809
1988	AC5		1988	01	24.20694	08	16	54.09	+12	43	26.0		3 809
1988	AC5		1988	01	26.17778	08	15	09.01	+12	58	41.8		3 809
1988	AC5		1988	01	26.18750	08	15	08.48	+12	58	46.7		3 809
1988	AC5		1988	01	27.16597	08	14	16.38	+13	06	30.9		3 809
1988	AC5		1988	01	27.17569	08	14	15.83	+13	06	34.9		3 809
1988	AC5		1988	01	28.14028	08	13	24.71	+13	14	16.8		3 809
1988	AC5		1988	01	29.11250	08	12	33.38	+13	22	06.9		3 809
1988	AC5		1988	01	30.12951	08	11	39.91	+13	30	23.4		3 809
1988	AD5	*	1988	01	14.13264	08	16	34.79	+12	56	12.4	17.2	3 809
1988	AD5		1988	01	14.14236	08	16	34.32	+12	56	15.2		3 809
1988	AD5		1988	01	14.15208	08	16	33.85	+12	56	18.0		3 809
1988	AD5		1988	01	14.18264	08	16	32.24	+12	56	26.7		3 809
1988	AD5		1988	01	14.19236	08	16	31.74	+12	56	29.6		3 809
1988	AD5		1988	01	14.20208	08	16	31.23	+12	56	32.7		3 809
1988	AD5		1988	01	15.12778	08	15	45.71	+13	01	02.4		3 809
1988	AD5		1988	01	15.13750	08	15	45.20	+13	01	05.3		3 809
1988	AD5		1988	01	15.14722	08	15	44.69	+13	01	08.0		3 809
1988	AD5		1988	01	15.17014	08	15	43.48	+13	01	15.3		3 809
1988	AD5		1988	01	15.17986	08	15	42.97	+13	01	18.2		3 809
1988	AD5		1988	01	15.18958	08	15	42.45	+13	01	21.1		3 809
1988	AD5		1988	01	17.20417	08	14	00.32	+13	11	38.2		3 809
1988	AD5		1988	01	17.21389	08	13	59.78	+13	11	41.1		3 809
1988	AD5		1988	01	17.22361	08	13	59.26	+13	11	43.8		3 809
1988	AD5		1988	01	17.23472	08	13	58.67	+13	11	47.0		3 809

1988	AD5		1988	01	17.24444	08	13	58.12	+13	11	50.2		3 809
1988	AD5		1988	01	17.25417	08	13	57.59	+13	11	53.5		3 809
1988	AD5		1988	01	19.09167	08	12	22.52	+13	21	46.1		3 809
1988	AD5		1988	01	19.10139	08	12	21.98	+13	21	49.3		3 809
1988	AD5		1988	01	19.11111	08	12	21.45	+13	21	52.5		3 809
1988	AD5		1988	01	21.10833	08	10	35.74	+13	33	07.2		3 809
1988	AD5		1988	01	21.11805	08	10	35.26	+13	33	10.7		3 809
1988	AD5		1988	01	23.09444	08	08	49.63	+13	44	44.1		3 809
1988	AD5		1988	01	23.10417	08	08	49.13	+13	44	47.6		3 809
1988	AD5		1988	01	25.11805	08	07	01.18	+13	56	58.1		3 809
1988	AD5		1988	01	25.12778	08	07	00.63	+13	57	01.7		3 809
1988	AD5		1988	01	26.15764	08	06	05.58	+14	03	23.1		3 809
1988	AD5		1988	01	26.16736	08	06	05.07	+14	03	26.8		3 809
1988	AD5		1988	01	27.11736	08	05	14.71	+14	09	22.1		3 809
1988	AD5		1988	01	28.12361	08	04	21.59	+14	15	43.3		3 809
1988	AD5		1988	01	28.13056	08	04	21.20	+14	15	46.2		3 809
1988	AD5		1988	01	29.10000	08	03	30.56	+14	21	56.2		3 809
1988	AD5		1988	01	30.11840	08	02	37.76	+14	28	28.7		3 809
1988	AE5	*	1988	01	14.13264	08	16	55.96	+13	01	02.2	16.8	3 809
1988	AE5		1988	01	14.14236	08	16	55.50	+13	01	04.9		3 809
1988	AE5		1988	01	14.15208	08	16	55.03	+13	01	07.6		3 809
1988	AE5		1988	01	14.18264	08	16	53.52	+13	01	16.2		3 809
1988	AE5		1988	01	14.19236	08	16	53.05	+13	01	18.9		3 809
1988	AE5		1988	01	14.20208	08	16	52.59	+13	01	21.7		3 809
1988	AE5		1988	01	15.12778	08	16	08.52	+13	05	45.0		3 809
1988	AE5		1988	01	15.13750	08	16	08.04	+13	05	47.7		3 809
1988	AE5		1988	01	15.14722	08	16	07.57	+13	05	50.5		3 809
1988	AE5		1988	01	15.17014	08	16	06.41	+13	05	57.6		3 809
1988	AE5		1988	01	15.17986	08	16	05.96	+13	06	00.4		3 809
1988	AE5		1988	01	15.18958	08	16	05.48	+13	06	03.1		3 809
1988	AE5		1988	01	17.20417	08	14	28.09	+13	15	50.3		3 809
1988	AE5		1988	01	17.21389	08	14	27.61	+13	15	52.7		3 809
1988	AE5		1988	01	17.22361	08	14	27.12	+13	15	55.4		3 809
1988	AE5		1988	01	17.23472	08	14	26.58	+13	15	58.5		3 809
1988	AE5		1988	01	17.24444	08	14	26.08	+13	16	01.1		3 809
1988	AE5		1988	01	17.25417	08	14	25.59	+13	16	03.9		3 809
1988	AE5		1988	01	19.09167	08	12	55.85	+13	25	14.1		3 809
1988	AE5		1988	01	19.10139	08	12	55.37	+13	25	17.4		3 809
1988	AE5		1988	01	19.11111	08	12	54.89	+13	25	20.1		3 809
1988	AE5		1988	01	21.10833	08	11	16.24	+13	35	31.1		3 809
1988	AE5		1988	01	21.11805	08	11	15.76	+13	35	34.0		3 809
1988	AE5		1988	01	23.09444	08	09	37.76	+13	45	50.2		3 809
1988	AE5		1988	01	23.10417	08	09	37.31	+13	45	53.2		3 809
1988	AE5		1988	01	25.11805	08	07	57.41	+13	56	31.6		3 809
1988	AE5		1988	01	25.12778	08	07	56.95	+13	56	34.0		3 809
1988	AE5		1988	01	26.15764	08	07	06.04	+14	02	03.9		3 809
1988	AE5		1988	01	26.16736	08	07	05.54	+14	02	07.0		3 809
1988	AE5		1988	01	27.11736	08	06	18.85	+14	07	12.3		3 809
1988	AE5		1988	01	28.12361	08	05	29.54	+14	12	37.6		3 809
1988	AE5		1988	01	28.13056	08	05	29.19	+14	12	39.5		3 809
1988	AE5		1988	01	29.10000	08	04	42.00	+14	17	53.7		3 809
1988	AE5		1988	01	30.11840	08	03	52.70	+14	23	24.6		3 809
1988	AF5	*	1988	01	14.18264	08	17	03.89	+12	26	05.8	17.2	3 809
1988	AF5		1988	01	14.19236	08	17	03.31	+12	26	07.8		3 809
1988	AF5		1988	01	14.20208	08	17	02.72	+12	26	09.9		3 809
1988	AF5		1988	01	15.17014	08	16	04.10	+12	28	51.2		3 809
1988	AF5		1988	01	15.17986	08	16	03.49	+12	28	53.3		3 809
1988	AF5		1988	01	15.18958	08	16	02.90	+12	28	55.0		3 809
1988	AF5		1988	01	17.23472	08	13	56.98	+12	34	56.8		3 809

1988	AF5		1988	01	17.24444	08	13	56.36	+12	34	58.5		3 809
1988	AF5		1988	01	17.25417	08	13	55.77	+12	35	00.1		3 809
1988	AF5		1988	01	19.09167	08	12	01.07	+12	40	44.8		3 809
1988	AF5		1988	01	19.10139	08	12	00.49	+12	40	46.6		3 809
1988	AF5		1988	01	19.11111	08	11	59.88	+12	40	48.5		3 809
1988	AF5		1988	01	21.10833	08	09	53.47	+12	47	22.1		3 809
1988	AF5		1988	01	21.11805	08	09	52.83	+12	47	24.0		3 809
1988	AF5		1988	01	23.09444	08	07	47.10	+12	54	10.9		3 809
1988	AF5		1988	01	23.10417	08	07	46.49	+12	54	12.3		3 809
1988	AF5		1988	01	26.15764	08	04	31.74	+13	05	10.2		3 809
1988	AF5		1988	01	26.16736	08	04	31.12	+13	05	12.0		3 809
1988	AG5	*	1988	01	14.18264	08	21	52.22	+12	50	48.9	16.8	3 809
1988	AG5		1988	01	14.19236	08	21	51.62	+12	50	50.4		3 809
1988	AG5		1988	01	14.20208	08	21	51.02	+12	50	51.9		3 809
1988	AG5		1988	01	15.17014	08	20	50.86	+12	53	02.7		3 809
1988	AG5		1988	01	15.17986	08	20	50.25	+12	53	04.0		3 809
1988	AG5		1988	01	15.18958	08	20	49.64	+12	53	05.3		3 809
1988	AG5		1988	01	17.23472	08	18	40.74	+12	57	59.1		3 809
1988	AG5		1988	01	17.24444	08	18	40.11	+12	58	00.6		3 809
1988	AG5		1988	01	17.25417	08	18	39.47	+12	58	02.0		3 809
1988	AG5		1988	01	19.09167	08	16	42.76	+13	02	42.5		3 809
1988	AG5		1988	01	19.10139	08	16	42.10	+13	02	44.0		3 809
1988	AG5		1988	01	19.11111	08	16	41.47	+13	02	45.5		3 809
1988	AG5		1988	01	21.10833	08	14	33.50	+13	08	05.9		3 809
1988	AG5		1988	01	21.11805	08	14	32.87	+13	08	07.6		3 809
1988	AG5		1988	01	23.09444	08	12	26.16	+13	13	38.2		3 809
1988	AG5		1988	01	23.10417	08	12	25.53	+13	13	39.7		3 809
1988	AG5		1988	01	25.11805	08	10	16.71	+13	19	28.7		3 809
1988	AG5		1988	01	25.12778	08	10	16.11	+13	19	30.4		3 809
1988	AG5		1988	01	26.15764	08	09	10.65	+13	22	32.3		3 809
1988	AG5		1988	01	26.16736	08	09	10.04	+13	22	34.4		3 809
1988	AG5		1988	01	27.11736	08	08	10.08	+13	25	24.7		3 809
1988	AG5		1988	01	28.12361	08	07	06.93	+13	28	27.1		3 809
1988	AG5		1988	01	28.13056	08	07	06.48	+13	28	28.6		3 809
1988	AG5		1988	01	29.10000	08	06	06.19	+13	31	25.4		3 809
1988	AG5		1988	01	30.11840	08	05	03.34	+13	34	33.6		3 809
1988	AH5	*	1988	01	14.21528	09	59	55.78	+03	40	22.9	17.0	3 809
1988	AH5		1988	01	14.22500	09	59	55.50	+03	40	21.0		3 809
1988	AH5		1988	01	14.23472	09	59	55.26	+03	40	19.2		3 809
1988	AH5		1988	01	15.26736	09	59	25.60	+03	37	26.3		3 809
1988	AH5		1988	01	15.27708	09	59	25.30	+03	37	24.7		3 809
1988	AH5		1988	01	15.28681	09	59	25.01	+03	37	23.1		3 809
1988	AH5		1988	01	23.32014	09	54	32.14	+03	21	49.8		3 809
1988	AH5		1988	01	23.32847	09	54	31.76	+03	21	49.0		3 809
1988	AH5		1988	01	23.33681	09	54	31.38	+03	21	48.2		3 809
1988	AH5		1988	01	25.34028	09	53	02.25	+03	19	51.5		3 809
1988	AH5		1988	01	25.35000	09	53	01.81	+03	19	51.0		3 809
1988	AH5		1988	01	27.34375	09	51	27.46	+03	18	39.8		3 809
1988	AH5		1988	01	27.35347	09	51	26.99	+03	18	39.4		3 809
1988	AH5		1988	01	29.35347	09	49	47.11	+03	18	13.9		3 809
1988	AH5		1988	01	29.36319	09	49	46.59	+03	18	13.8		3 809
1988	AJ5	*	1988	01	14.24583	10	01	01.83	+11	18	34.8	16.3	3 809
1988	AJ5		1988	01	14.25556	10	01	01.57	+11	18	36.4		3 809
1988	AJ5		1988	01	14.26528	10	01	01.32	+11	18	38.0		3 809
1988	AJ5		1988	01	16.30972	10	00	06.83	+11	23	41.8		3 809
1988	AJ5		1988	01	16.32361	10	00	06.45	+11	23	43.6		3 809
1988	AJ5		1988	01	16.33750	10	00	06.08	+11	23	45.4		3 809
1988	AJ5		1988	01	19.32187	09	58	37.77	+11	31	59.4		3 809
1988	AJ5		1988	01	19.33646	09	58	37.27	+11	32	01.9		3 809

1988	AJ5	1988	01	19.35104	09	58	36.81	+11	32	04.3		3 809
1988	AJ5	1988	01	21.32778	09	57	32.72	+11	38	00.9		3 809
1988	AJ5	1988	01	21.33750	09	57	32.40	+11	38	02.7		3 809
1988	AJ5	1988	01	23.29861	09	56	24.77	+11	44	19.7		3 809
1988	AJ5	1988	01	23.30833	09	56	24.44	+11	44	21.7		3 809
1988	AJ5	1988	01	25.31458	09	55	11.07	+11	51	09.7		3 809
1988	AJ5	1988	01	25.32431	09	55	10.74	+11	51	11.7		3 809
1988	AJ5	1988	01	27.32292	09	53	53.89	+11	58	17.1		3 809
1988	AJ5	1988	01	27.33264	09	53	53.57	+11	58	19.0		3 809
1988	AJ5	1988	01	29.33264	09	52	33.16	+12	05	43.5		3 809
1988	AJ5	1988	01	29.34236	09	52	32.81	+12	05	45.4		3 809
1988	BX	1988	01	17.26944	08	41	20.52	+09	07	19.1	15.4	3 809
1988	BX	1988	01	17.27917	08	41	19.56	+09	07	12.2		3 809
1988	BX	1988	01	17.28889	08	41	18.60	+09	07	05.2		3 809
1988	BX	1988	01	18.20069	08	39	51.52	+08	56	14.5		3 809
1988	BX	1988	01	18.21042	08	39	50.54	+08	56	07.5		3 809
1988	BX	1988	01	20.16250	08	36	40.97	+08	33	21.6		3 809
1988	BX	1988	01	20.17222	08	36	40.00	+08	33	14.8		3 809
1988	BX	1988	01	22.15972	08	33	24.27	+08	10	43.1		3 809
1988	BX	1988	01	22.16944	08	33	23.31	+08	10	36.5		3 809
1988	BX	1988	01	24.12257	08	30	09.83	+07	49	09.3		3 809
1988	BX	1988	01	24.12743	08	30	09.34	+07	49	06.0		3 809
1988	BX	1988	01	24.13229	08	30	08.86	+07	49	02.9		3 809
1988	BX	1988	01	26.14028	08	26	49.67	+07	27	46.3		3 809
1988	BX	1988	01	26.14444	08	26	49.26	+07	27	43.3		3 809
1988	BX	1988	01	26.14861	08	26	48.84	+07	27	40.6		3 809
1988	BX	1988	01	27.12778	08	25	12.21	+07	17	34.7		3 809
1988	BX	1988	01	27.13299	08	25	11.69	+07	17	31.6		3 809
1988	BX	1988	01	27.13750	08	25	11.22	+07	17	28.8		3 809
1988	BX	1988	01	28.14826	08	23	31.74	+07	07	15.8		3 809
1988	BX	1988	01	28.15174	08	23	31.39	+07	07	13.6		3 809
1988	BX	1988	01	28.15521	08	23	31.04	+07	07	11.4		3 809
1988	BX	1988	01	29.12569	08	21	56.30	+06	57	35.7		3 809
1988	BX	1988	01	29.12847	08	21	56.02	+06	57	34.0		3 809
1988	BX	1988	01	29.13125	08	21	55.75	+06	57	32.3		3 809
1988	BX	1988	01	30.13819	08	20	18.02	+06	47	47.6		3 809
1988	BX	1988	01	30.14097	08	20	17.79	+06	47	46.4		3 809
1988	BZ1	1988	01	20.33403	09	44	02.98	+12	44	29.6	16.8	3 809
1988	BZ1	1988	01	20.34375	09	44	02.63	+12	44	31.4		3 809
1988	BZ1	1988	01	20.35347	09	44	02.29	+12	44	33.5		3 809
1988	BZ1	1988	01	21.30694	09	43	27.59	+12	47	31.7		3 809
1988	BZ1	1988	01	21.31667	09	43	27.20	+12	47	34.5		3 809
1988	BZ1	1988	01	23.27431	09	42	12.80	+12	53	58.3		3 809
1988	BZ1	1988	01	23.28403	09	42	12.44	+12	54	00.0		3 809
1988	BZ1	1988	01	25.29028	09	40	52.28	+13	00	53.4		3 809
1988	BZ1	1988	01	25.30000	09	40	51.89	+13	00	55.4		3 809
1988	BZ1	1988	01	27.30069	09	39	28.50	+13	08	05.6		3 809
1988	BZ1	1988	01	27.31042	09	39	28.08	+13	08	07.1		3 809
1988	BZ1	1988	01	29.31111	09	38	01.59	+13	15	33.1		3 809
1988	BZ1	1988	01	29.32083	09	38	01.20	+13	15	34.8		3 809
1988	BZ1	1988	02	16.10417	09	24	04.50	+14	26	41.1	17.5	4 809
1988	BZ1	1988	02	16.11458	09	24	04.03	+14	26	43.3		4 809
1988	BA2	1988	02	16.10417	09	24	41.29	+14	27	28.2	17.5	4 809
1988	BA2	1988	02	16.11458	09	24	40.77	+14	27	31.3		4 809
1988	BD2	1988	01	17.33611	09	38	03.31	+13	23	11.7	17.1	3 809
1988	BD2	1988	01	17.34583	09	38	02.88	+13	23	16.1		3 809
1988	BD2	1988	01	17.35556	09	38	02.49	+13	23	20.4		3 809
1988	BD2	1988	01	18.30556	09	37	23.54	+13	30	25.0		3 809
1988	BD2	1988	01	18.31528	09	37	23.16	+13	30	28.7		3 809

1988	BD2		1988	01	20.31319	09	35	56.47	+13	45	47.4	3 809
1988	BD2		1988	01	20.32292	09	35	56.00	+13	45	51.3	3 809
1988	BD2		1988	01	22.24236	09	34	27.61	+14	01	04.4	3 809
1988	BD2		1988	01	22.25208	09	34	27.15	+14	01	08.4	3 809
1988	BD2		1988	01	24.26042	09	32	49.23	+14	17	32.5	3 809
1988	BD2		1988	01	24.27014	09	32	48.76	+14	17	37.3	3 809
1988	BD2		1988	01	26.29375	09	31	05.28	+14	34	32.6	3 809
1988	BD2		1988	01	26.30347	09	31	04.75	+14	34	37.9	3 809
1988	BD2		1988	01	28.30764	09	29	18.27	+14	51	42.2	3 809
1988	BD2		1988	01	28.31736	09	29	17.73	+14	51	46.8	3 809
1988	BD2		1988	01	30.30625	09	27	28.68	+15	09	00.9	3 809
1988	BD2		1988	01	30.31597	09	27	28.12	+15	09	03.9	3 809
1988	BH2		1988	01	20.33403	09	44	49.63	+11	51	34.0	17.2 3 809
1988	BH2		1988	01	20.34375	09	44	49.24	+11	51	36.0	3 809
1988	BH2		1988	01	20.35347	09	44	48.86	+11	51	38.0	3 809
1988	BH2		1988	01	21.30694	09	44	11.11	+11	55	06.9	3 809
1988	BH2		1988	01	21.31667	09	44	10.67	+11	55	08.7	3 809
1988	BH2		1988	01	23.27431	09	42	50.53	+12	02	30.4	3 809
1988	BH2		1988	01	23.28403	09	42	50.15	+12	02	33.1	3 809
1988	BH2		1988	01	27.30069	09	39	57.05	+12	18	29.7	3 809
1988	BH2		1988	01	27.31042	09	39	56.60	+12	18	32.1	3 809
1988	BK3	*	1988	01	16.26458	09	35	16.84	+06	06	59.1	16.8 3 809
1988	BK3		1988	01	16.27847	09	35	16.28	+06	07	00.8	3 809
1988	BK3		1988	01	16.29236	09	35	15.69	+06	07	02.3	3 809
1988	BK3		1988	01	17.30625	09	34	33.36	+06	08	46.5	3 809
1988	BK3		1988	01	17.31597	09	34	32.92	+06	08	47.8	3 809
1988	BK3		1988	01	17.32569	09	34	32.49	+06	08	48.8	3 809
1988	BK3		1988	01	19.29375	09	33	05.76	+06	12	48.6	3 809
1988	BK3		1988	01	19.30347	09	33	05.34	+06	12	49.9	3 809
1988	BK3		1988	01	21.24444	09	31	34.18	+06	17	31.9	3 809
1988	BK3		1988	01	21.25417	09	31	33.73	+06	17	33.1	3 809
1988	BK3		1988	01	23.25347	09	29	54.13	+06	23	08.3	3 809
1988	BK3		1988	01	23.26319	09	29	53.65	+06	23	10.1	3 809
1988	BK3		1988	01	25.26875	09	28	08.54	+06	29	31.2	3 809
1988	BK3		1988	01	25.27847	09	28	08.03	+06	29	33.4	3 809
1988	BK3		1988	01	27.28055	09	26	18.43	+06	36	38.3	3 809
1988	BK3		1988	01	27.29028	09	26	17.86	+06	36	40.5	3 809
1988	BK3		1988	01	29.28889	09	24	24.34	+06	44	26.0	3 809
1988	BK3		1988	01	29.29861	09	24	23.76	+06	44	28.2	3 809
1988	BL3	*	1988	01	16.26458	09	37	04.44	+06	45	36.1	17.1 3 809
1988	BL3		1988	01	16.27847	09	37	03.76	+06	45	37.4	3 809
1988	BL3		1988	01	16.29236	09	37	03.07	+06	45	38.8	3 809
1988	BL3		1988	01	17.30625	09	36	12.43	+06	46	50.8	3 809
1988	BL3		1988	01	17.31597	09	36	11.94	+06	46	51.8	3 809
1988	BL3		1988	01	17.32569	09	36	11.45	+06	46	52.1	3 809
1988	BL3		1988	01	19.29375	09	34	29.64	+06	49	39.9	3 809
1988	BL3		1988	01	19.30347	09	34	29.13	+06	49	40.7	3 809
1988	BL3		1988	01	21.24444	09	32	44.20	+06	53	01.0	3 809
1988	BL3		1988	01	21.25417	09	32	43.67	+06	53	02.1	3 809
1988	BL3		1988	01	23.25347	09	30	51.12	+06	57	01.9	3 809
1988	BL3		1988	01	23.26319	09	30	50.57	+06	57	03.1	3 809
1988	BL3		1988	01	25.26875	09	28	53.88	+07	01	37.2	3 809
1988	BL3		1988	01	25.27847	09	28	53.31	+07	01	38.5	3 809
1988	BL3		1988	01	27.28055	09	26	53.32	+07	06	43.2	3 809
1988	BL3		1988	01	27.29028	09	26	52.74	+07	06	44.8	3 809
1988	BL3		1988	01	29.28889	09	24	50.22	+07	12	18.8	3 809
1988	BL3		1988	01	29.29861	09	24	49.63	+07	12	20.0	3 809
1988	BM3	*	1988	01	17.33611	09	35	14.51	+13	41	36.8	16.7 3 809
1988	BM3		1988	01	17.34583	09	35	14.15	+13	41	38.1	3 809

1988	BM3		1988	01	17.35556	09	35	13.81	+13	41	39.4	3 809
1988	BM3		1988	01	18.30556	09	34	37.67	+13	43	17.1	3 809
1988	BM3		1988	01	18.31528	09	34	37.25	+13	43	18.3	3 809
1988	BM3		1988	01	20.31319	09	33	15.43	+13	47	08.3	3 809
1988	BM3		1988	01	20.32292	09	33	15.04	+13	47	09.6	3 809
1988	BM3		1988	01	22.24236	09	31	50.02	+13	51	20.9	3 809
1988	BM3		1988	01	22.25208	09	31	49.54	+13	51	22.1	3 809
1988	BM3		1988	01	24.26042	09	30	13.79	+13	56	13.6	3 809
1988	BM3		1988	01	24.27014	09	30	13.30	+13	56	15.1	3 809
1988	BM3		1988	01	26.29375	09	28	30.58	+14	01	35.1	3 809
1988	BM3		1988	01	26.30347	09	28	30.09	+14	01	36.6	3 809
1988	BM3		1988	01	28.30764	09	26	42.95	+14	07	16.9	3 809
1988	BM3		1988	01	28.31736	09	26	42.45	+14	07	18.3	3 809
1988	BM3		1988	01	30.30625	09	24	51.45	+14	13	15.4	3 809
1988	BM3		1988	01	30.31597	09	24	50.86	+14	13	17.4	3 809
1988	BN3	*	1988	01	17.33611	09	39	35.96	+14	29	19.1	17.3 3 809
1988	BN3		1988	01	17.34583	09	39	35.61	+14	29	20.7	3 809
1988	BN3		1988	01	17.35556	09	39	35.26	+14	29	22.4	3 809
1988	BN3		1988	01	26.29375	09	31	59.56	+15	12	37.4	3 809
1988	BN3		1988	01	26.30347	09	31	59.03	+15	12	42.3	3 809
1988	BO3	*	1988	01	18.09792	07	07	25.27	+08	00	31.7	16.8 3 809
1988	BO3		1988	01	18.10764	07	07	24.77	+08	00	33.8	3 809
1988	BO3		1988	01	18.11736	07	07	24.23	+08	00	35.6	3 809
1988	BO3		1988	01	19.05694	07	06	34.15	+08	03	58.6	3 809
1988	BO3		1988	01	19.06667	07	06	33.63	+08	04	00.8	3 809
1988	BO3		1988	01	19.07639	07	06	33.12	+08	04	03.0	3 809
1988	BO3		1988	01	20.09514	07	05	39.53	+08	07	51.4	3 809
1988	BO3		1988	01	20.10486	07	05	39.02	+08	07	53.7	3 809
1988	BO3		1988	01	20.11458	07	05	38.52	+08	07	56.1	3 809
1988	BO3		1988	01	22.07361	07	03	58.33	+08	15	39.6	3 809
1988	BO3		1988	01	22.08333	07	03	57.85	+08	15	42.6	3 809
1988	BO3		1988	01	25.07778	07	01	32.79	+08	28	26.1	3 809
1988	BO3		1988	01	25.08750	07	01	32.34	+08	28	28.8	3 809
1988	BO3		1988	01	27.07708	07	00	02.12	+08	37	31.8	3 809
1988	BO3		1988	01	28.09792	06	59	17.86	+08	42	18.0	3 809
1988	BO3		1988	01	29.06528	06	58	37.39	+08	46	55.1	3 809
1988	BO3		1988	01	30.07257	06	57	56.67	+08	51	50.4	3 809
1988	BP3	*	1988	01	18.22639	09	14	20.20	+10	08	26.0	17.2 3 809
1988	BP3		1988	01	18.23611	09	14	19.77	+10	08	28.5	3 809
1988	BP3		1988	01	18.24583	09	14	19.35	+10	08	31.2	3 809
1988	BP3		1988	01	19.24653	09	13	34.57	+10	12	57.9	3 809
1988	BP3		1988	01	19.25625	09	13	34.12	+10	13	00.5	3 809
1988	BP3		1988	01	21.16875	09	12	06.37	+10	21	47.4	3 809
1988	BP3		1988	01	21.17847	09	12	05.92	+10	21	50.1	3 809
1988	BP3		1988	01	21.18819	09	12	05.47	+10	21	53.0	3 809
1988	BP3		1988	01	23.17639	09	10	31.12	+10	31	24.6	3 809
1988	BP3		1988	01	23.18611	09	10	30.65	+10	31	27.4	3 809
1988	BP3		1988	01	25.16389	09	08	54.31	+10	41	20.0	3 809
1988	BP3		1988	01	25.17361	09	08	53.84	+10	41	22.9	3 809
1988	BP3		1988	01	25.18333	09	08	53.36	+10	41	25.8	3 809
1988	BP3		1988	01	27.25903	09	07	09.56	+10	52	07.8	3 809
1988	BP3		1988	01	27.26875	09	07	09.09	+10	52	10.4	3 809
1988	BP3		1988	01	29.26528	09	05	27.63	+11	02	46.8	3 809
1988	BP3		1988	01	29.27500	09	05	27.08	+11	02	49.5	3 809
1988	BP3		1988	01	30.26285	09	04	36.38	+11	08	11.0	3 809
1988	BQ3	*	1988	01	18.22639	09	14	33.87	+10	33	34.9	17.1 3 809
1988	BQ3		1988	01	18.23611	09	14	33.42	+10	33	38.0	3 809
1988	BQ3		1988	01	18.24583	09	14	32.95	+10	33	40.5	3 809
1988	BQ3		1988	01	19.24653	09	13	43.69	+10	38	23.9	3 809

1988	BQ3		1988	01	19.25625	09	13	43.22	+10	38	26.9	3 809
1988	BQ3		1988	01	21.16875	09	12	05.73	+10	47	56.3	3 809
1988	BQ3		1988	01	21.17847	09	12	05.22	+10	47	59.3	3 809
1988	BQ3		1988	01	21.18819	09	12	04.71	+10	48	02.0	3 809
1988	BQ3		1988	01	23.17639	09	10	18.38	+10	58	33.0	3 809
1988	BQ3		1988	01	23.18611	09	10	17.86	+10	58	36.3	3 809
1988	BQ3		1988	01	25.16389	09	08	27.99	+11	09	39.6	3 809
1988	BQ3		1988	01	25.17361	09	08	27.45	+11	09	42.8	3 809
1988	BQ3		1988	01	25.18333	09	08	26.90	+11	09	46.2	3 809
1988	BQ3		1988	01	27.25903	09	06	27.67	+11	21	54.9	3 809
1988	BQ3		1988	01	27.26875	09	06	27.12	+11	21	58.3	3 809
1988	BQ3		1988	01	29.26528	09	04	29.85	+11	34	06.5	3 809
1988	BQ3		1988	01	29.27500	09	04	29.28	+11	34	10.5	3 809
1988	BQ3		1988	01	30.26285	09	03	30.57	+11	40	20.4	3 809
1988	BR3	*	1988	01	18.22639	09	18	21.47	+09	36	15.9	16.9 3 809
1988	BR3		1988	01	18.23611	09	18	21.03	+09	36	16.2	3 809
1988	BR3		1988	01	18.24583	09	18	20.58	+09	36	16.2	3 809
1988	BR3		1988	01	19.24653	09	17	35.04	+09	36	46.7	3 809
1988	BR3		1988	01	19.25625	09	17	34.59	+09	36	47.3	3 809
1988	BR3		1988	01	20.22917	09	16	49.52	+09	37	21.4	3 809
1988	BR3		1988	01	20.23889	09	16	49.06	+09	37	21.9	3 809
1988	BR3		1988	01	22.21806	09	15	15.30	+09	38	45.3	3 809
1988	BR3		1988	01	22.22778	09	15	14.85	+09	38	45.9	3 809
1988	BR3		1988	01	24.16667	09	13	40.48	+09	40	28.4	3 809
1988	BR3		1988	01	24.17639	09	13	40.02	+09	40	28.9	3 809
1988	BR3		1988	01	26.22431	09	11	57.90	+09	42	35.7	3 809
1988	BR3		1988	01	26.23403	09	11	57.39	+09	42	36.5	3 809
1988	BR3		1988	01	28.23958	09	10	15.56	+09	44	57.3	3 809
1988	BR3		1988	01	28.24931	09	10	15.07	+09	44	57.6	3 809
1988	BR3		1988	01	30.16111	09	08	36.76	+09	47	26.1	3 809
1988	BS3	*	1988	01	18.22639	09	18	58.73	+10	59	40.5	17.0 3 809
1988	BS3		1988	01	18.23611	09	18	58.24	+10	59	43.3	3 809
1988	BS3		1988	01	18.24583	09	18	57.75	+10	59	46.2	3 809
1988	BS3		1988	01	19.24653	09	18	07.38	+11	04	42.9	3 809
1988	BS3		1988	01	19.25625	09	18	06.88	+11	04	46.0	3 809
1988	BS3		1988	01	21.16875	09	16	26.87	+11	14	37.8	3 809
1988	BS3		1988	01	21.17847	09	16	26.38	+11	14	40.9	3 809
1988	BS3		1988	01	21.18819	09	16	25.86	+11	14	44.1	3 809
1988	BS3		1988	01	23.17639	09	14	36.83	+11	25	35.9	3 809
1988	BS3		1988	01	23.18611	09	14	36.32	+11	25	39.0	3 809
1988	BS3		1988	01	25.16389	09	12	43.48	+11	36	58.5	3 809
1988	BS3		1988	01	25.17361	09	12	42.92	+11	37	01.9	3 809
1988	BS3		1988	01	25.18333	09	12	42.36	+11	37	05.3	3 809
1988	BS3		1988	01	27.25903	09	10	39.48	+11	49	29.4	3 809
1988	BS3		1988	01	27.26875	09	10	38.90	+11	49	33.2	3 809
1988	BS3		1988	01	29.26528	09	08	37.40	+12	01	56.8	3 809
1988	BS3		1988	01	29.27500	09	08	36.85	+12	01	59.7	3 809
1988	BS3		1988	01	30.26285	09	07	35.70	+12	08	16.9	3 809
1988	BT3	*	1988	01	18.25972	09	26	10.78	+11	07	09.9	17.1 3 809
1988	BT3		1988	01	18.26944	09	26	10.31	+11	07	13.5	3 809
1988	BT3		1988	01	18.27917	09	26	09.86	+11	07	17.2	3 809
1988	BT3		1988	01	19.26944	09	25	24.41	+11	13	23.0	3 809
1988	BT3		1988	01	19.27917	09	25	23.96	+11	13	27.4	3 809
1988	BT3		1988	01	20.29167	09	24	35.92	+11	19	52.1	3 809
1988	BT3		1988	01	20.30139	09	24	35.47	+11	19	55.8	3 809
1988	BT3		1988	01	21.22361	09	23	50.74	+11	25	56.1	3 809
1988	BT3		1988	01	21.23333	09	23	50.27	+11	25	59.9	3 809
1988	BT3		1988	01	24.21875	09	21	17.77	+11	46	17.6	3 809
1988	BT3		1988	01	24.22708	09	21	17.31	+11	46	20.8	3 809

1988	BT3		1988	01	24.23542	09	21	16.85	+11	46	23.9	3 809
1988	BT3		1988	01	26.24514	09	19	28.70	+12	00	43.5	3 809
1988	BT3		1988	01	26.25486	09	19	28.14	+12	00	47.7	3 809
1988	BT3		1988	01	28.26667	09	17	36.23	+12	15	35.6	3 809
1988	BT3		1988	01	28.27639	09	17	35.65	+12	15	40.4	3 809
1988	BT3		1988	01	30.19028	09	15	46.71	+12	30	07.8	3 809
1988	BU3	*	1988	01	18.25972	09	26	57.89	+11	21	10.3	17.1 3 809
1988	BU3		1988	01	18.26944	09	26	57.46	+11	21	16.1	3 809
1988	BU3		1988	01	18.27917	09	26	57.03	+11	21	21.9	3 809
1988	BU3		1988	01	19.26944	09	26	13.52	+11	31	14.2	3 809
1988	BU3		1988	01	19.27917	09	26	13.10	+11	31	20.0	3 809
1988	BU3		1988	01	21.22361	09	24	44.58	+11	51	07.6	3 809
1988	BU3		1988	01	21.23333	09	24	44.10	+11	51	13.5	3 809
1988	BU3		1988	01	23.21875	09	23	09.63	+12	11	54.5	3 809
1988	BU3		1988	01	23.22847	09	23	09.12	+12	12	00.8	3 809
1988	BU3		1988	01	24.21875	09	22	20.68	+12	22	30.2	3 809
1988	BU3		1988	01	24.22708	09	22	20.29	+12	22	35.1	3 809
1988	BU3		1988	01	24.23542	09	22	19.84	+12	22	40.3	3 809
1988	BU3		1988	01	26.24514	09	20	39.04	+12	44	14.2	3 809
1988	BU3		1988	01	26.25486	09	20	38.53	+12	44	20.5	3 809
1988	BU3		1988	01	28.26667	09	18	54.82	+13	06	14.6	3 809
1988	BU3		1988	01	28.27639	09	18	54.31	+13	06	21.1	3 809
1988	BU3		1988	01	30.19028	09	17	13.82	+13	27	25.2	3 809
1988	BV3	*	1988	01	18.25972	09	31	58.10	+11	40	44.1	16.9 3 809
1988	BV3		1988	01	18.26944	09	31	57.77	+11	40	47.9	3 809
1988	BV3		1988	01	18.27917	09	31	57.41	+11	40	51.9	3 809
1988	BV3		1988	01	19.26944	09	31	21.46	+11	47	26.3	3 809
1988	BV3		1988	01	19.27917	09	31	21.11	+11	47	30.6	3 809
1988	BV3		1988	01	21.22361	09	30	08.09	+12	00	40.6	3 809
1988	BV3		1988	01	21.23333	09	30	07.75	+12	00	44.5	3 809
1988	BV3		1988	01	23.21875	09	28	50.08	+12	14	33.6	3 809
1988	BV3		1988	01	23.22847	09	28	49.70	+12	14	37.7	3 809
1988	BV3		1988	01	25.23056	09	27	28.59	+12	28	53.3	3 809
1988	BV3		1988	01	25.23889	09	27	28.27	+12	28	56.5	3 809
1988	BV3		1988	01	25.24722	09	27	27.94	+12	28	59.8	3 809
1988	BV3		1988	01	26.24514	09	26	46.52	+12	36	13.1	3 809
1988	BV3		1988	01	26.25486	09	26	46.10	+12	36	17.2	3 809
1988	BV3		1988	01	28.18715	09	25	24.49	+12	50	26.3	3 809
1988	BV3		1988	01	28.19340	09	25	24.19	+12	50	29.1	3 809
1988	BV3		1988	01	29.15278	09	24	42.91	+12	57	35.5	3 809
1988	BW3	*	1988	01	19.05694	07	04	06.34	+08	33	46.2	15.8 3 809
1988	BW3		1988	01	19.06667	07	04	05.81	+08	33	48.6	3 809
1988	BW3		1988	01	19.07639	07	04	05.27	+08	33	50.9	3 809
1988	BW3		1988	01	20.09514	07	03	09.41	+08	37	55.2	3 809
1988	BW3		1988	01	20.10486	07	03	08.86	+08	37	57.7	3 809
1988	BW3		1988	01	20.11458	07	03	08.29	+08	38	00.1	3 809
1988	BW3		1988	01	22.07361	07	01	24.94	+08	46	13.6	3 809
1988	BW3		1988	01	22.08333	07	01	24.45	+08	46	16.3	3 809
1988	BW3		1988	01	24.07083	06	59	45.17	+08	55	04.9	3 809
1988	BW3		1988	01	24.08056	06	59	44.66	+08	55	07.6	3 809
1988	BW3		1988	01	25.07778	06	58	57.18	+08	59	42.7	3 809
1988	BW3		1988	01	25.08750	06	58	56.68	+08	59	45.4	3 809
1988	BW3		1988	01	27.07708	06	57	26.84	+09	09	12.6	3 809
1988	BW3		1988	01	28.09792	06	56	43.26	+09	14	12.2	3 809
1988	BW3		1988	01	29.06528	06	56	03.82	+09	19	00.2	3 809
1988	BW3		1988	01	30.07257	06	55	24.48	+09	24	04.5	3 809
1988	BX3	*	1988	01	19.12639	08	52	51.48	+07	53	56.4	17.2 3 809
1988	BX3		1988	01	19.13611	08	52	50.94	+07	53	57.6	3 809
1988	BX3		1988	01	19.14583	08	52	50.38	+07	53	58.6	3 809

1988	BX3		1988	01	20.18542	08	51	51.19	+07	55	51.6	3 809
1988	BX3		1988	01	20.19514	08	51	50.61	+07	55	53.0	3 809
1988	BX3		1988	01	22.18403	08	49	55.02	+07	59	55.6	3 809
1988	BX3		1988	01	22.19375	08	49	54.43	+07	59	56.7	3 809
1988	BX3		1988	01	22.20347	08	49	53.84	+07	59	57.9	3 809
1988	BX3		1988	01	24.14167	08	47	58.56	+08	04	28.6	3 809
1988	BX3		1988	01	24.15139	08	47	57.96	+08	04	29.7	3 809
1988	BX3		1988	01	26.20000	08	45	53.59	+08	09	49.3	3 809
1988	BX3		1988	01	26.20972	08	45	52.97	+08	09	50.9	3 809
1988	BX3		1988	01	28.21597	08	43	49.66	+08	15	36.1	3 809
1988	BX3		1988	01	28.22569	08	43	49.04	+08	15	37.9	3 809
1988	BY3	*	1988	01	19.12639	08	54	11.61	+09	47	10.3	17.1 3 809
1988	BY3		1988	01	19.13611	08	54	11.13	+09	47	13.5	3 809
1988	BY3		1988	01	19.14583	08	54	10.66	+09	47	16.8	3 809
1988	BY3		1988	01	19.16875	08	54	09.44	+09	47	24.9	3 809
1988	BY3		1988	01	19.17847	08	54	08.94	+09	47	28.4	3 809
1988	BY3		1988	01	19.18819	08	54	08.43	+09	47	32.0	3 809
1988	BY3		1988	01	20.20555	08	53	17.28	+09	53	21.6	3 809
1988	BY3		1988	01	20.21528	08	53	16.78	+09	53	25.3	3 809
1988	BY3		1988	01	21.14444	08	52	29.54	+09	58	52.1	3 809
1988	BY3		1988	01	21.15417	08	52	29.05	+09	58	55.2	3 809
1988	BY3		1988	01	23.15417	08	50	44.81	+10	11	06.0	3 809
1988	BY3		1988	01	23.16389	08	50	44.27	+10	11	09.9	3 809
1988	BY3		1988	01	25.14305	08	48	58.82	+10	23	43.3	3 809
1988	BY3		1988	01	25.15278	08	48	58.30	+10	23	47.4	3 809
1988	BY3		1988	01	27.23819	08	47	05.01	+10	37	32.9	3 809
1988	BY3		1988	01	27.24792	08	47	04.48	+10	37	36.7	3 809
1988	BY3		1988	01	29.24306	08	45	15.27	+10	51	10.5	3 809
1988	BY3		1988	01	29.25278	08	45	14.74	+10	51	14.4	3 809
1988	BZ3	*	1988	01	19.16875	08	54	00.23	+10	54	51.9	17.2 3 809
1988	BZ3		1988	01	19.17847	08	53	59.65	+10	54	53.3	3 809
1988	BZ3		1988	01	19.18819	08	53	59.06	+10	54	54.5	3 809
1988	BZ3		1988	01	20.20555	08	52	57.91	+10	57	08.0	3 809
1988	BZ3		1988	01	20.21528	08	52	57.34	+10	57	09.7	3 809
1988	BZ3		1988	01	21.14444	08	52	00.97	+10	59	16.5	3 809
1988	BZ3		1988	01	21.15417	08	52	00.34	+10	59	17.9	3 809
1988	BZ3		1988	01	23.15417	08	49	56.79	+11	04	08.1	3 809
1988	BZ3		1988	01	23.16389	08	49	56.15	+11	04	09.5	3 809
1988	BZ3		1988	01	25.14305	08	47	51.85	+11	09	16.6	3 809
1988	BZ3		1988	01	25.15278	08	47	51.22	+11	09	18.0	3 809
1988	BZ3		1988	01	27.23819	08	45	38.32	+11	15	01.2	3 809
1988	BZ3		1988	01	27.24792	08	45	37.66	+11	15	02.9	3 809
1988	BZ3		1988	01	29.24306	08	43	29.67	+11	20	47.6	3 809
1988	BZ3		1988	01	29.25278	08	43	29.00	+11	20	48.5	3 809
1988	BA4	*	1988	01	19.16875	08	54	37.49	+11	28	28.7	17.2 3 809
1988	BA4		1988	01	19.17847	08	54	36.91	+11	28	29.1	3 809
1988	BA4		1988	01	19.18819	08	54	36.32	+11	28	29.5	3 809
1988	BA4		1988	01	20.20555	08	53	34.58	+11	28	50.3	3 809
1988	BA4		1988	01	20.21528	08	53	33.96	+11	28	51.0	3 809
1988	BA4		1988	01	21.14444	08	52	37.02	+11	29	16.5	3 809
1988	BA4		1988	01	21.15417	08	52	36.39	+11	29	16.9	3 809
1988	BA4		1988	01	23.15417	08	50	30.80	+11	30	32.0	3 809
1988	BA4		1988	01	23.16389	08	50	30.18	+11	30	32.0	3 809
1988	BA4		1988	01	25.14305	08	48	23.42	+11	32	10.4	3 809
1988	BA4		1988	01	25.15278	08	48	22.76	+11	32	10.4	3 809
1988	BA4		1988	01	27.23819	08	46	06.95	+11	34	19.1	3 809
1988	BA4		1988	01	27.24792	08	46	06.31	+11	34	19.4	3 809
1988	BA4		1988	01	29.24306	08	43	55.47	+11	36	42.2	3 809
1988	BA4		1988	01	29.25278	08	43	54.83	+11	36	43.5	3 809

1988	BB4	*	1988	01	19.20382	09	14	58.37	+08	35	36.9	16.2	3 809
1988	BB4		1988	01	19.21840	09	14	57.56	+08	35	36.6		3 809
1988	BB4		1988	01	19.23299	09	14	56.76	+08	35	36.3		3 809
1988	BB4		1988	01	20.22917	09	14	03.45	+08	35	17.5		3 809
1988	BB4		1988	01	20.23889	09	14	02.90	+08	35	17.4		3 809
1988	BB4		1988	01	22.21806	09	12	13.25	+08	35	07.9		3 809
1988	BB4		1988	01	22.22778	09	12	12.68	+08	35	07.5		3 809
1988	BB4		1988	01	24.16667	09	10	21.10	+08	35	32.7		3 809
1988	BB4		1988	01	24.17639	09	10	20.50	+08	35	32.9		3 809
1988	BB4		1988	01	26.22431	09	08	18.39	+08	36	34.3		3 809
1988	BB4		1988	01	26.23403	09	08	17.81	+08	36	34.8		3 809
1988	BB4		1988	01	28.23958	09	06	15.11	+08	38	08.3		3 809
1988	BB4		1988	01	28.24931	09	06	14.48	+08	38	08.5		3 809
1988	BB4		1988	01	30.16111	09	04	15.51	+08	40	05.9		3 809
1988	BC4	*	1988	01	19.26944	09	27	11.69	+12	10	44.2	17.0	3 809
1988	BC4		1988	01	19.27917	09	27	11.28	+12	10	46.2		3 809
1988	BC4		1988	01	21.22361	09	25	40.43	+12	18	56.0		3 809
1988	BC4		1988	01	21.23333	09	25	39.98	+12	18	59.0		3 809
1988	BC4		1988	01	23.21875	09	24	03.00	+12	27	45.3		3 809
1988	BC4		1988	01	23.22847	09	24	02.52	+12	27	47.3		3 809
1988	BC4		1988	01	24.21875	09	23	12.81	+12	32	19.0		3 809
1988	BC4		1988	01	24.22708	09	23	12.36	+12	32	20.7		3 809
1988	BC4		1988	01	24.23542	09	23	11.95	+12	32	23.0		3 809
1988	BC4		1988	01	26.24514	09	21	28.33	+12	41	48.4		3 809
1988	BC4		1988	01	26.25486	09	21	27.80	+12	41	51.9		3 809
1988	BC4		1988	01	28.26667	09	19	41.16	+12	51	36.5		3 809
1988	BC4		1988	01	28.27639	09	19	40.65	+12	51	39.8		3 809
1988	BC4		1988	01	30.19028	09	17	57.29	+13	01	10.8		3 809
1988	BD4	*	1988	01	20.18542	08	52	05.14	+07	41	49.5	17.2	3 809
1988	BD4		1988	01	20.19514	08	52	04.58	+07	41	53.4		3 809
1988	BD4		1988	01	22.18403	08	50	18.24	+07	55	22.3		3 809
1988	BD4		1988	01	22.19375	08	50	17.73	+07	55	26.6		3 809
1988	BD4		1988	01	22.20347	08	50	17.20	+07	55	30.5		3 809
1988	BD4		1988	01	24.14167	08	48	30.65	+08	09	21.7		3 809
1988	BD4		1988	01	24.15139	08	48	30.13	+08	09	26.0		3 809
1988	BD4		1988	01	26.20000	08	46	34.72	+08	24	46.5		3 809
1988	BD4		1988	01	26.20972	08	46	34.12	+08	24	51.0		3 809
1988	BD4		1988	01	28.21597	08	44	39.36	+08	40	30.7		3 809
1988	BD4		1988	01	28.22569	08	44	38.80	+08	40	34.7		3 809
1988	BD4		1988	01	29.17708	08	43	44.03	+08	48	12.4		3 809
1988	BE4	*	1988	01	20.20555	08	49	55.86	+10	44	40.6	17.1	3 809
1988	BE4		1988	01	20.21528	08	49	55.38	+10	44	44.3		3 809
1988	BE4		1988	01	21.14444	08	49	11.89	+10	50	10.1		3 809
1988	BE4		1988	01	21.15417	08	49	11.40	+10	50	13.3		3 809
1988	BE4		1988	01	23.15417	08	47	36.05	+11	02	12.0		3 809
1988	BE4		1988	01	23.16389	08	47	35.57	+11	02	15.4		3 809
1988	BF4	*	1988	01	20.26181	09	26	12.41	+09	44	52.7	17.2	3 809
1988	BF4		1988	01	20.27153	09	26	12.01	+09	44	55.9		3 809
1988	BF4		1988	01	20.28125	09	26	11.62	+09	44	59.0		3 809
1988	BF4		1988	01	20.29167	09	26	11.20	+09	45	02.6		3 809
1988	BF4		1988	01	20.30139	09	26	10.80	+09	45	06.4		3 809
1988	BF4		1988	01	21.20278	09	25	34.30	+09	50	33.9		3 809
1988	BF4		1988	01	21.21250	09	25	33.89	+09	50	37.4		3 809
1988	BG4	*	1988	01	20.26181	09	26	49.99	+08	49	34.1	17.1	3 809
1988	BG4		1988	01	20.27153	09	26	49.43	+08	49	33.3		3 809
1988	BG4		1988	01	20.28125	09	26	48.89	+08	49	32.4		3 809
1988	BG4		1988	01	21.20278	09	25	57.14	+08	48	27.3		3 809
1988	BG4		1988	01	21.21250	09	25	56.57	+08	48	26.6		3 809
1988	BG4		1988	01	23.19931	09	24	02.04	+08	46	25.4		3 809

1988	BG4		1988	01	23.20903	09	24	01.45	+08	46	25.0		3 809
1988	BG4		1988	01	25.19514	09	22	03.74	+08	44	49.5		3 809
1988	BG4		1988	01	25.20486	09	22	03.14	+08	44	49.1		3 809
1988	BG4		1988	01	25.21458	09	22	02.54	+08	44	48.8		3 809
1988	BG4		1988	01	26.27292	09	20	58.51	+08	44	08.9		3 809
1988	BG4		1988	01	26.28264	09	20	57.94	+08	44	08.6		3 809
1988	BG4		1988	01	28.28750	09	18	55.12	+08	43	10.2		3 809
1988	BG4		1988	01	28.29722	09	18	54.50	+08	43	09.8		3 809
1988	BG4		1988	01	30.28403	09	16	51.06	+08	42	34.3		3 809
1988	BG4		1988	01	30.29375	09	16	50.41	+08	42	34.1		3 809
1988	BH4	*	1988	01	20.26181	09	30	29.73	+09	39	30.4	16.8	3 809
1988	BH4		1988	01	20.27153	09	30	29.36	+09	39	31.9		3 809
1988	BH4		1988	01	20.28125	09	30	28.98	+09	39	33.5		3 809
1988	BH4		1988	01	21.20278	09	29	52.05	+09	42	02.9		3 809
1988	BH4		1988	01	21.21250	09	29	51.65	+09	42	04.5		3 809
1988	BH4		1988	01	23.19931	09	28	30.02	+09	47	40.8		3 809
1988	BH4		1988	01	23.20903	09	28	29.63	+09	47	42.2		3 809
1988	BH4		1988	01	25.19514	09	27	05.63	+09	53	36.5		3 809
1988	BH4		1988	01	25.20486	09	27	05.23	+09	53	38.2		3 809
1988	BH4		1988	01	25.21458	09	27	04.82	+09	53	40.3		3 809
1988	BH4		1988	01	26.27292	09	26	19.12	+09	56	55.1		3 809
1988	BH4		1988	01	26.28264	09	26	18.69	+09	56	56.8		3 809
1988	BJ4	*	1988	01	20.33403	09	41	11.53	+11	15	47.2	17.0	3 809
1988	BJ4		1988	01	20.34375	09	41	11.06	+11	15	50.1		3 809
1988	BJ4		1988	01	20.35347	09	41	10.61	+11	15	53.0		3 809
1988	BJ4		1988	01	21.30694	09	40	25.22	+11	21	06.9		3 809
1988	BJ4		1988	01	21.31667	09	40	24.73	+11	21	10.6		3 809
1988	BJ4		1988	01	23.27431	09	38	47.57	+11	32	19.9		3 809
1988	BJ4		1988	01	23.28403	09	38	47.05	+11	32	23.2		3 809
1988	BJ4		1988	01	25.29028	09	37	02.49	+11	44	20.2		3 809
1988	BJ4		1988	01	25.30000	09	37	01.95	+11	44	23.8		3 809
1988	BJ4		1988	01	27.30069	09	35	13.14	+11	56	47.0		3 809
1988	BJ4		1988	01	27.31042	09	35	12.60	+11	56	50.3		3 809
1988	BJ4		1988	01	29.31111	09	33	19.86	+12	09	37.5		3 809
1988	BJ4		1988	01	29.32083	09	33	19.30	+12	09	41.3		3 809
1988	BK4	*	1988	01	21.27708	09	43	38.31	+09	43	01.0	17.1	3 809
1988	BK4		1988	01	21.28681	09	43	37.95	+09	43	05.7		3 809
1988	BK4		1988	01	21.29653	09	43	37.60	+09	43	11.0		3 809
1988	BK4		1988	01	22.27708	09	43	02.81	+09	51	38.8		3 809
1988	BK4		1988	01	22.28681	09	43	02.49	+09	51	44.5		3 809
1988	BK4		1988	01	24.28055	09	41	49.09	+10	09	22.2		3 809
1988	BK4		1988	01	24.28889	09	41	48.77	+10	09	26.7		3 809
1988	BK4		1988	01	24.29722	09	41	48.47	+10	09	31.2		3 809
1988	BK4		1988	01	26.31597	09	40	30.51	+10	27	51.4		3 809
1988	BK4		1988	01	26.32569	09	40	30.12	+10	27	56.4		3 809
1988	BK4		1988	01	28.33125	09	39	09.64	+10	46	34.3		3 809
1988	BK4		1988	01	28.34097	09	39	09.21	+10	46	39.7		3 809
1988	BK4		1988	01	30.33055	09	37	46.70	+11	05	31.9		3 809
1988	BK4		1988	01	30.34028	09	37	46.31	+11	05	37.1		3 809
1988	BK4		1988	02	16.10417	09	25	18.62	+13	51	36.4	17.5	4 809
1988	BK4		1988	02	16.11458	09	25	18.14	+13	51	42.0		4 809
1988	BL4	*	1988	01	21.27708	09	44	23.73	+09	14	34.5	17.0	3 809
1988	BL4		1988	01	21.28681	09	44	23.32	+09	14	35.7		3 809
1988	BL4		1988	01	21.29653	09	44	22.94	+09	14	36.9		3 809
1988	BL4		1988	01	22.27708	09	43	44.42	+09	16	31.2		3 809
1988	BL4		1988	01	22.28681	09	43	44.05	+09	16	32.6		3 809
1988	BL4		1988	01	24.28055	09	42	23.02	+09	20	45.0		3 809
1988	BL4		1988	01	24.28889	09	42	22.68	+09	20	46.1		3 809
1988	BL4		1988	01	24.29722	09	42	22.33	+09	20	47.2		3 809

1988	BL4		1988	01	26.31597	09	40	56.96	+09	25	25.0	3 809
1988	BL4		1988	01	26.32569	09	40	56.55	+09	25	26.3	3 809
1988	BL4		1988	01	28.33125	09	39	28.68	+09	30	23.3	3 809
1988	BL4		1988	01	28.34097	09	39	28.27	+09	30	24.7	3 809
1988	BL4		1988	01	30.33055	09	37	58.62	+09	35	38.5	3 809
1988	BL4		1988	01	30.34028	09	37	58.18	+09	35	40.0	3 809
1988	BM4	*	1988	01	22.12778	08	16	28.57	+13	44	27.9	16.7 3 809
1988	BM4		1988	01	22.13750	08	16	27.98	+13	44	29.0	3 809
1988	BM4		1988	01	22.14722	08	16	27.41	+13	44	30.0	3 809
1988	BM4		1988	01	23.12986	08	15	28.91	+13	46	24.2	3 809
1988	BM4		1988	01	23.13958	08	15	28.31	+13	46	25.4	3 809
1988	BM4		1988	01	24.19028	08	14	25.80	+13	48	31.6	3 809
1988	BM4		1988	01	24.19861	08	14	25.28	+13	48	32.5	3 809
1988	BM4		1988	01	24.20694	08	14	24.76	+13	48	33.6	3 809
1988	BM4		1988	01	26.17778	08	12	28.52	+13	52	40.1	3 809
1988	BM4		1988	01	26.18750	08	12	27.91	+13	52	41.3	3 809
1988	BM4		1988	01	27.16597	08	11	30.78	+13	54	47.2	3 809
1988	BM4		1988	01	27.17569	08	11	30.23	+13	54	48.5	3 809
1988	BM4		1988	01	28.12361	08	10	35.37	+13	56	52.9	3 809
1988	BM4		1988	01	28.13056	08	10	34.95	+13	56	53.8	3 809
1988	BM4		1988	01	28.14028	08	10	34.41	+13	56	55.1	3 809
1988	BM4		1988	01	30.12951	08	08	40.79	+14	01	22.6	3 809
1988	BN4	*	1988	01	22.12778	08	18	12.90	+13	01	10.1	16.3 3 809
1988	BN4		1988	01	22.13750	08	18	12.39	+13	01	10.5	3 809
1988	BN4		1988	01	22.14722	08	18	11.90	+13	01	11.0	3 809
1988	BN4		1988	01	23.12986	08	17	18.68	+13	01	41.5	3 809
1988	BN4		1988	01	23.13958	08	17	18.16	+13	01	41.9	3 809
1988	BN4		1988	01	24.19028	08	16	21.12	+13	02	18.2	3 809
1988	BN4		1988	01	24.19861	08	16	20.66	+13	02	18.3	3 809
1988	BN4		1988	01	24.20694	08	16	20.20	+13	02	18.3	3 809
1988	BN4		1988	01	26.17778	08	14	33.51	+13	03	34.6	3 809
1988	BN4		1988	01	26.18750	08	14	33.01	+13	03	34.9	3 809
1988	BN4		1988	01	27.16597	08	13	40.27	+13	04	16.2	3 809
1988	BN4		1988	01	27.17569	08	13	39.71	+13	04	16.7	3 809
1988	BN4		1988	01	29.11250	08	11	56.04	+13	05	45.2	3 809
1988	BN4		1988	01	30.12951	08	11	01.98	+13	06	34.9	3 809
1988	BO4	*	1988	01	22.30069	10	00	35.98	+02	26	54.6	17.0 3 809
1988	BO4		1988	01	22.31042	10	00	35.61	+02	26	54.4	3 809
1988	BO4		1988	01	22.32014	10	00	35.23	+02	26	54.2	3 809
1988	BO4		1988	01	23.32014	09	59	57.77	+02	26	39.3	3 809
1988	BO4		1988	01	23.32847	09	59	57.43	+02	26	39.1	3 809
1988	BO4		1988	01	23.33681	09	59	57.12	+02	26	39.2	3 809
1988	BO4		1988	01	24.30764	09	59	19.81	+02	26	32.7	3 809
1988	BO4		1988	01	24.31597	09	59	19.48	+02	26	32.6	3 809
1988	BO4		1988	01	24.32431	09	59	19.14	+02	26	32.6	3 809
1988	BO4		1988	01	25.34028	09	58	39.05	+02	26	34.6	3 809
1988	BO4		1988	01	25.35000	09	58	38.67	+02	26	34.6	3 809
1988	BO4		1988	01	27.34375	09	57	17.19	+02	27	01.1	3 809
1988	BO4		1988	01	27.35347	09	57	16.77	+02	27	01.2	3 809
1988	BO4		1988	01	29.35347	09	55	51.55	+02	27	59.1	3 809
1988	BO4		1988	01	29.36319	09	55	51.10	+02	27	59.3	3 809
1988	BP4	*	1988	01	22.33576	10	10	19.42	+04	43	00.3	16.6 3 809
1988	BP4		1988	01	22.34757	10	10	18.96	+04	43	01.2	3 809
1988	BP4		1988	01	22.35938	10	10	18.51	+04	43	02.5	3 809
1988	BP4		1988	01	24.34861	10	08	58.74	+04	46	42.3	3 809
1988	BP4		1988	01	24.35694	10	08	58.38	+04	46	43.2	3 809
1988	BP4		1988	01	24.36528	10	08	58.04	+04	46	44.3	3 809
1988	BP4		1988	01	26.33715	10	07	34.01	+04	50	57.6	3 809
1988	BP4		1988	01	26.34757	10	07	33.59	+04	50	59.3	3 809

1988	BP4		1988	01	28.35208	10	06	03.48	+04	55	52.5	3 809
1988	BP4		1988	01	28.36180	10	06	03.00	+04	55	53.9	3 809
1988	BP4		1988	01	30.35139	10	04	29.35	+05	01	20.7	3 809
1988	BP4		1988	01	30.36111	10	04	28.88	+05	01	23.0	3 809
1988	BQ4	*	1988	01	23.12986	08	16	36.93	+13	55	06.4	16.8 3 809
1988	BQ4		1988	01	23.13958	08	16	36.38	+13	55	08.2	3 809
1988	BQ4		1988	01	24.19028	08	15	36.94	+13	57	35.2	3 809
1988	BQ4		1988	01	24.19861	08	15	36.45	+13	57	36.6	3 809
1988	BQ4		1988	01	24.20694	08	15	35.98	+13	57	38.0	3 809
1988	BQ4		1988	01	26.17778	08	13	44.59	+14	02	26.9	3 809
1988	BQ4		1988	01	26.18750	08	13	44.07	+14	02	28.1	3 809
1988	BQ4		1988	01	27.16597	08	12	48.83	+14	04	54.9	3 809
1988	BQ4		1988	01	27.17569	08	12	48.29	+14	04	56.3	3 809
1988	BQ4		1988	01	28.14028	08	11	54.02	+14	07	26.0	3 809
1988	BQ4		1988	01	30.12951	08	10	02.80	+14	12	40.1	3 809
1988	BR4	*	1988	01	23.12986	08	18	48.85	+14	22	42.7	16.8 3 809
1988	BR4		1988	01	23.13958	08	18	48.42	+14	22	45.8	3 809
1988	BR4		1988	01	24.19028	08	17	57.19	+14	27	08.4	3 809
1988	BR4		1988	01	24.19861	08	17	56.76	+14	27	10.9	3 809
1988	BR4		1988	01	24.20694	08	17	56.35	+14	27	13.4	3 809
1988	BR4		1988	01	26.17778	08	16	20.51	+14	35	32.6	3 809
1988	BR4		1988	01	26.18750	08	16	20.06	+14	35	35.7	3 809
1988	BR4		1988	01	27.16597	08	15	32.57	+14	39	47.2	3 809
1988	BR4		1988	01	27.17569	08	15	32.06	+14	39	49.1	3 809
1988	BR4		1988	01	28.14028	08	14	45.34	+14	43	57.3	3 809
1988	BR4		1988	01	29.11250	08	13	58.35	+14	48	08.7	3 809
1988	BR4		1988	01	30.12951	08	13	09.45	+14	52	32.5	3 809
1988	CA		1988	01	17.26944	08	41	00.17	+07	37	40.4	16.0 3 809
1988	CA		1988	01	17.27917	08	40	59.73	+07	37	44.4	3 809
1988	CA		1988	01	17.28889	08	40	59.29	+07	37	48.3	3 809
1988	CA		1988	01	18.20069	08	40	19.28	+07	43	58.5	3 809
1988	CA		1988	01	18.21042	08	40	18.84	+07	44	03.6	3 809
1988	CA		1988	01	20.16250	08	38	50.63	+07	57	50.5	3 809
1988	CA		1988	01	20.17222	08	38	50.16	+07	57	55.4	3 809
1988	CA		1988	01	22.15972	08	37	17.50	+08	12	43.5	3 809
1988	CA		1988	01	22.16944	08	37	16.99	+08	12	48.5	3 809
1988	CA		1988	01	24.12257	08	35	43.85	+08	28	04.4	3 809
1988	CA		1988	01	24.12743	08	35	43.63	+08	28	06.6	3 809
1988	CA		1988	01	24.13229	08	35	43.40	+08	28	09.1	3 809
1988	CA		1988	01	26.14028	08	34	05.98	+08	44	31.4	3 809
1988	CA		1988	01	26.14444	08	34	05.77	+08	44	33.4	3 809
1988	CA		1988	01	26.14861	08	34	05.56	+08	44	36.3	3 809
1988	CA		1988	01	27.14653	08	33	16.77	+08	52	58.3	3 809
1988	CA		1988	01	27.15069	08	33	16.51	+08	53	00.5	3 809
1988	CA		1988	01	27.15486	08	33	16.32	+08	53	02.6	3 809
1988	CA		1988	01	28.17118	08	32	26.42	+09	01	42.3	3 809
1988	CA		1988	01	28.17465	08	32	26.24	+09	01	44.0	3 809
1988	CA		1988	01	28.17812	08	32	26.07	+09	01	45.9	3 809
1988	CA		1988	01	29.13924	08	31	38.95	+09	10	06.3	3 809
1988	CA		1988	01	29.14271	08	31	38.76	+09	10	08.4	3 809
1988	CA		1988	01	30.14826	08	30	49.42	+09	18	57.9	3 809
1988	CF4		1988	02	21.21250	10	02	05.18	-01	40	17.2	19.2 4 809
1988	CF4		1988	02	21.22118	10	02	04.73	-01	40	15.6	4 809
1988	CF4		1988	02	21.22812	10	02	04.42	-01	40	12.6	4 809
1988	CJ4		1988	02	15.14931	10	07	33.92	-02	12	59.5	17.1 4 809
1988	CT5		1988	02	16.10417	09	24	25.16	+14	27	08.2	17.7 4 809
1988	CT5		1988	02	16.11458	09	24	24.55	+14	27	08.9	4 809
1988	CK7		1988	02	21.21250	10	02	11.73	-00	01	05.9	20.0 4 809
1988	CK7		1988	02	21.22118	10	02	11.36	-00	01	02.3	4 809

1988	CK7		1988	02	21.22812	10	02	11.05	-00	00	59.4		4 809
1988	CT7	*	1988	02	15.14931	10	08	12.16	+02	38	53.6	19.5	4 809
1988	DH3	*	1988	02	16.16181	07	31	37.87	+20	54	35.3	18.7	4 809
1988	DH3		1988	02	16.17222	07	31	37.47	+20	54	36.7		4 809
1988	DH3		1988	02	16.18264	07	31	37.03	+20	54	38.2		4 809
1988	DJ3	*	1988	02	16.16181	07	33	19.32	+20	50	48.4	20.5	4 809
1988	DJ3		1988	02	16.17222	07	33	18.75	+20	50	49.0		4 809
1988	DJ3		1988	02	16.18264	07	33	18.24	+20	50	49.8		4 809
1988	DK3	*	1988	02	16.16181	07	33	48.72	+24	01	29.1	19.5	4 809
1988	DK3		1988	02	16.17222	07	33	48.45	+24	01	29.2		4 809
1988	DK3		1988	02	16.18264	07	33	48.11	+24	01	29.7		4 809
1988	DL3	*	1988	02	16.16181	07	34	00.69	+23	25	03.7	18.2	4 809
1988	DL3		1988	02	16.17222	07	34	00.40	+23	25	04.4		4 809
1988	DL3		1988	02	16.18264	07	34	00.08	+23	25	05.6		4 809
1988	DM3	*	1988	02	16.16181	07	34	04.12	+24	10	08.5	19.2	4 809
1988	DM3		1988	02	16.17222	07	34	03.78	+24	10	07.5		4 809
1988	DM3		1988	02	16.18264	07	34	03.45	+24	10	07.4		4 809
1988	DN3	*	1988	02	16.16181	07	40	17.03	+22	45	30.3	20.0	4 809
1988	DN3		1988	02	16.17222	07	40	16.65	+22	45	31.1		4 809
1988	DN3		1988	02	16.18264	07	40	16.26	+22	45	31.9		4 809
1988	DO3	*	1988	02	16.16181	07	40	41.77	+19	45	17.6	19.0	4 809
1988	DO3		1988	02	16.17222	07	40	41.36	+19	45	19.9		4 809
1988	DO3		1988	02	16.18264	07	40	40.89	+19	45	23.1		4 809
1988	DP3	*	1988	02	16.16181	07	41	23.51	+23	07	57.1	20.0	4 809
1988	DP3		1988	02	16.17222	07	41	23.06	+23	07	57.5		4 809
1988	DP3		1988	02	16.18264	07	41	22.59	+23	07	57.9		4 809
1988	DQ3	*	1988	02	16.16181	07	47	08.71	+20	24	16.4	19.8	4 809
1988	DQ3		1988	02	16.17222	07	47	08.35	+20	24	18.9		4 809
1988	DQ3		1988	02	16.18264	07	47	07.94	+20	24	20.2		4 809
1988	DR3	*	1988	02	16.16181	07	47	20.34	+20	57	20.9	19.6	4 809
1988	DR3		1988	02	16.17222	07	47	19.79	+20	57	24.2		4 809
1988	DR3		1988	02	16.18264	07	47	19.31	+20	57	26.7		4 809
1988	DS3	*	1988	02	16.16181	07	47	44.17	+24	34	27.1	18.5	4 809
1988	DS3		1988	02	16.17222	07	47	43.65	+24	34	27.0		4 809
1988	DS3		1988	02	16.18264	07	47	43.16	+24	34	28.8		4 809
1988	DT3	*	1988	02	16.16181	07	49	54.19	+21	35	40.9	19.5	4 809
1988	DT3		1988	02	16.17222	07	49	53.83	+21	35	41.6		4 809
1988	DT3		1988	02	16.18264	07	49	53.37	+21	35	42.0		4 809
1988	DU3	*	1988	02	16.16181	07	51	46.54	+23	43	36.4	19.6	4 809
1988	DU3		1988	02	16.17222	07	51	46.14	+23	43	37.4		4 809
1988	DU3		1988	02	16.18264	07	51	45.69	+23	43	37.1		4 809
1988	DV3	*	1988	02	16.20278	10	00	08.53	+00	56	21.2	19.0	4 809
1988	DV3		1988	02	16.21319	10	00	07.99	+00	56	25.7		4 809
1988	DV3		1988	02	16.22361	10	00	07.41	+00	56	31.1		4 809
1988	DW3	*	1988	02	16.20278	10	08	52.87	+02	39	48.3	18.5	4 809
1988	DW3		1988	02	16.21319	10	08	52.39	+02	39	59.5		4 809
1988	DW3		1988	02	16.22361	10	08	51.96	+02	40	10.1		4 809
1988	DX3	*	1988	02	16.20278	10	12	01.99	+01	46	26.3	19.0	4 809
1988	DX3		1988	02	16.21319	10	12	01.40	+01	46	29.2		4 809
1988	DX3		1988	02	16.22361	10	12	00.84	+01	46	31.6		4 809
1988	DY3	*	1988	02	16.20278	10	19	42.28	+01	52	26.4	19.5	4 809
1988	DY3		1988	02	16.21319	10	19	41.76	+01	52	30.2		4 809
1988	DY3		1988	02	16.22361	10	19	41.35	+01	52	33.7		4 809
1988	DZ3	*	1988	02	21.12535	07	37	55.31	+20	42	35.7	20.0	4 809
1988	DZ3		1988	02	21.14271	07	37	54.71	+20	42	39.0		4 809
1988	DZ3		1988	02	21.16007	07	37	54.05	+20	42	42.2		4 809
1988	DA4	*	1988	02	21.12535	07	50	10.88	+21	35	24.5	19.7	4 809
1988	DA4		1988	02	21.14271	07	50	10.44	+21	35	28.1		4 809
1988	DA4		1988	02	21.16007	07	50	09.97	+21	35	31.4		4 809

1988	DB4	*	1988	02	21.21250	09	55	51.72	+00	23	30.1	18.0	4 809
1988	DB4		1988	02	21.22118	09	55	51.05	+00	23	38.6		4 809
1988	DB4		1988	02	21.22812	09	55	50.73	+00	23	43.8		4 809
1988	DC4	*	1988	02	21.21250	10	10	41.98	+02	16	14.4	20.0	4 809
1988	DC4		1988	02	21.22118	10	10	41.52	+02	16	15.4		4 809
1988	DC4		1988	02	21.22812	10	10	41.04	+02	16	14.5		4 809
1988	DD4	*	1988	02	21.21250	10	11	04.62	-01	00	48.1	21.0	4 809
1988	DD4		1988	02	21.22118	10	11	04.25	-01	00	44.3		4 809
1988	DD4		1988	02	21.22812	10	11	03.86	-01	00	40.9		4 809
1988	DE4	*	1988	02	21.21250	10	14	09.01	+01	11	23.5	20.0	4 809
1988	DE4		1988	02	21.22118	10	14	08.66	+01	11	25.7		4 809
1988	DE4		1988	02	21.22812	10	14	08.31	+01	11	27.5		4 809
1988	DF4	*	1988	02	21.21250	10	14	56.05	+01	27	51.8	19.0	4 809
1988	DF4		1988	02	21.22118	10	14	55.59	+01	27	54.0		4 809
1988	DF4		1988	02	21.22812	10	14	55.19	+01	27	56.2		4 809
1988	DG4	*	1988	02	21.21250	10	15	27.62	+02	48	31.3	19.5	4 809
1988	DG4		1988	02	21.22118	10	15	27.06	+02	48	31.3		4 809
1988	DG4		1988	02	21.22812	10	15	26.65	+02	48	31.0		4 809
1988	DH4	*	1988	02	21.21250	10	15	55.73	-00	30	28.4	20.0	4 809
1988	DH4		1988	02	21.22118	10	15	55.15	-00	30	29.5		4 809
1988	DH4		1988	02	21.22812	10	15	54.69	-00	30	29.9		4 809
1988	DJ4	*	1988	02	23.11493	07	30	22.79	+22	08	57.4	20.0	4 809
1988	DJ4		1988	02	23.13229	07	30	22.42	+22	08	57.1		4 809
1988	DJ4		1988	02	23.14965	07	30	22.05	+22	08	58.2		4 809
1988	DK4	*	1988	02	23.11493	07	51	15.32	+23	44	41.6	19.7	4 809
1988	DK4		1988	02	23.13229	07	51	14.71	+23	44	41.4		4 809
1988	DK4		1988	02	23.14965	07	51	14.13	+23	44	42.0		4 809
1988	DL4	*	1988	02	23.17708	09	54	26.89	-00	32	26.9	17.5	4 809
1988	DL4		1988	02	23.18750	09	54	26.51	-00	32	19.2		4 809
1988	DL4		1988	02	23.19792	09	54	26.01	-00	32	11.5		4 809
1988	DM4	*	1988	02	23.17708	09	56	46.73	-00	29	18.9	20.0	4 809
1988	DM4		1988	02	23.18750	09	56	46.21	-00	29	15.0		4 809
1988	DM4		1988	02	23.19792	09	56	45.69	-00	29	10.7		4 809
1988	DN4	*	1988	02	23.17708	10	03	12.71	-01	05	00.7	17.7	4 809
1988	DN4		1988	02	23.18750	10	03	12.17	-01	04	47.9		4 809
1988	DN4		1988	02	23.19792	10	03	11.51	-01	04	33.0		4 809
1988	DO4	*	1988	02	23.17708	10	04	15.88	-00	57	21.5	19.8	4 809
1988	DO4		1988	02	23.18750	10	04	15.42	-00	57	15.3		4 809
1988	DO4		1988	02	23.19792	10	04	14.96	-00	57	11.3		4 809
1988	DP4	*	1988	02	23.17708	10	08	28.07	-00	26	10.2	19.5	4 809
1988	DP4		1988	02	23.18750	10	08	27.51	-00	26	05.1		4 809
1988	DP4		1988	02	23.19792	10	08	27.03	-00	25	59.9		4 809
1988	DQ4	*	1988	02	23.17708	10	11	10.98	+01	31	09.7	18.0	4 809
1988	DQ4		1988	02	23.18750	10	11	10.45	+01	31	17.9		4 809
1988	DQ4		1988	02	23.19792	10	11	09.85	+01	31	23.9		4 809
1988	JE		1988	05	16.25660	14	38	20.63	-09	47	08.7	15.6	2 809
1988	JE		1988	05	17.13750	14	37	41.62	-09	44	42.8	16.1	2 809
1988	JE		1988	05	23.16701	14	33	26.70	-09	29	55.4	16.4	2 809
1988	JF		1988	05	25.39948	20	42	46.03	-19	45	18.7		2 809
1988	JF		1988	05	25.41128	20	42	46.36	-19	45	21.4		2 809
1988	KA		1988	05	25.37363	20	53	27.79	-18	56	40.6		2 809
1988	KA		1988	05	25.38475	20	53	28.65	-18	56	39.2		2 809
1988	KN	*	1988	05	16.25660	14	35	26.09	-09	47	19.9	17.6	2 809
1988	KN		1988	05	17.13750	14	34	48.53	-09	45	17.1	17.6	2 809
1988	KO	*	1988	05	16.25660	14	35	33.44	-09	38	04.8	16.8	2 809
1988	KO		1988	05	17.13750	14	34	51.91	-09	35	42.9		2 809
1988	KP	*	1988	05	16.25660	14	36	40.19	-10	20	05.2	17.4	2 809
1988	KP		1988	05	17.13750	14	35	45.82	-10	13	34.0	17.7	2 809
1988	KQ	*	1988	05	16.25660	14	38	17.40	-09	33	48.2	15.7	2 809

1988	KQ		1988	05	17.13750	14	37	38.82	-09	31	03.2	2 809
1988	KR	*	1988	05	16.25660	14	38	35.56	-09	54	03.7	16.2 2 809
1988	KR		1988	05	17.13750	14	37	56.66	-09	52	15.4	2 809
1988	KS		1988	05	16.25660	14	41	46.91	-09	39	37.5	16.6 2 809
1988	KS	*	1988	05	17.13750	14	41	13.23	-09	36	41.9	2 809
1988	KT	*	1988	05	23.18889	14	29	55.08	-10	52	21.5	16.3 2 809
1988	KT		1988	05	25.28438	14	29	31.07	-11	00	33.9	2 809
28			1988	01	18.25972	09	25	07.06	+11	21	09.3	3 809
28			1988	01	18.26944	09	25	06.72	+11	21	12.8	3 809
28			1988	01	18.27917	09	25	06.37	+11	21	16.8	3 809
28			1988	01	19.26944	09	24	29.88	+11	28	12.3	3 809
28			1988	01	19.27917	09	24	29.50	+11	28	16.4	3 809
28			1988	01	20.29167	09	23	50.93	+11	35	31.6	3 809
28			1988	01	20.30139	09	23	50.50	+11	35	35.6	3 809
28			1988	01	21.22361	09	23	14.56	+11	42	20.2	3 809
28			1988	01	21.23333	09	23	14.17	+11	42	24.4	3 809
28			1988	01	24.21875	09	21	10.78	+12	05	03.2	3 809
28			1988	01	24.22708	09	21	10.45	+12	05	07.1	3 809
28			1988	01	24.23542	09	21	10.06	+12	05	11.0	3 809
28			1988	01	26.24514	09	19	42.09	+12	21	03.6	3 809
28			1988	01	26.25486	09	19	41.67	+12	21	08.7	3 809
28			1988	01	28.26667	09	18	10.41	+12	37	29.2	3 809
28			1988	01	28.27639	09	18	09.94	+12	37	34.1	3 809
28			1988	01	30.19028	09	16	40.81	+12	53	27.6	3 809
125			1988	01	24.19028	08	13	41.10	+14	42	15.3	3 809
125			1988	01	24.19861	08	13	40.64	+14	42	17.1	3 809
125			1988	01	24.20694	08	13	40.18	+14	42	19.1	3 809
125			1988	01	26.17778	08	11	52.62	+14	50	09.1	3 809
125			1988	01	26.18750	08	11	52.08	+14	50	11.4	3 809
125			1988	01	27.16597	08	10	58.90	+14	54	06.5	3 809
125			1988	01	27.17569	08	10	58.34	+14	54	08.3	3 809
142			1988	01	14.24583	10	04	33.62	+10	16	16.4	3 809
142			1988	01	14.25556	10	04	33.36	+10	16	16.6	3 809
142			1988	01	14.26528	10	04	33.09	+10	16	16.8	3 809
142			1988	01	15.32257	10	04	04.59	+10	17	18.7	3 809
142			1988	01	15.32743	10	04	04.43	+10	17	19.0	3 809
142			1988	01	15.33229	10	04	04.30	+10	17	19.3	3 809
142			1988	01	16.30972	10	03	36.32	+10	18	25.4	3 809
142			1988	01	16.32361	10	03	35.87	+10	18	26.5	3 809
142			1988	01	16.33750	10	03	35.46	+10	18	27.8	3 809
142			1988	01	18.33055	10	02	33.02	+10	21	11.0	3 809
142			1988	01	18.34028	10	02	32.72	+10	21	11.4	3 809
142			1988	01	19.32187	10	01	59.36	+10	22	46.4	3 809
142			1988	01	19.33646	10	01	58.83	+10	22	47.5	3 809
142			1988	01	19.35104	10	01	58.30	+10	22	48.8	3 809
220			1988	01	22.30069	09	59	27.39	+01	50	07.0	3 809
220			1988	01	22.31042	09	59	26.93	+01	50	07.9	3 809
220			1988	01	22.32014	09	59	26.47	+01	50	08.8	3 809
220			1988	01	24.30764	09	57	53.55	+01	52	41.8	3 809
220			1988	01	24.31597	09	57	53.14	+01	52	42.3	3 809
220			1988	01	24.32431	09	57	52.74	+01	52	42.9	3 809
220			1988	01	27.34375	09	55	23.49	+01	57	49.4	3 809
220			1988	01	27.35347	09	55	23.01	+01	57	50.8	3 809
220			1988	01	29.35347	09	53	39.34	+02	02	00.3	3 809
220			1988	01	29.36319	09	53	38.87	+02	02	01.2	3 809
234			1988	01	18.09792	07	07	19.02	+09	01	55.5	3 809
234			1988	01	18.10764	07	07	18.44	+09	01	59.7	3 809
234			1988	01	18.11736	07	07	17.83	+09	02	03.8	3 809
234			1988	01	20.09514	07	05	21.52	+09	16	38.9	3 809

234	1988	01	20.10486	07	05	21.01	+09	16	43.2		3	809
234	1988	01	20.11458	07	05	20.42	+09	16	47.7		3	809
234	1988	01	24.07083	07	01	38.15	+09	46	38.1		3	809
234	1988	01	24.08056	07	01	37.64	+09	46	42.5		3	809
306	1988	01	13.09792	05	23	13.56	+14	46	31.5		3	809
306	1988	01	13.10764	05	23	13.15	+14	46	33.2		3	809
306	1988	01	13.11736	05	23	12.76	+14	46	35.3		3	809
306	1988	01	14.08958	05	22	31.64	+14	49	35.4		3	809
306	1988	01	14.09931	05	22	31.26	+14	49	37.3		3	809
306	1988	01	14.10903	05	22	30.87	+14	49	39.1		3	809
306	1988	01	16.11632	05	21	10.71	+14	56	00.4		3	809
306	1988	01	16.13090	05	21	10.13	+14	56	03.5		3	809
306	1988	01	16.14549	05	21	09.57	+14	56	06.4		3	809
306	1988	01	18.07431	05	19	59.11	+15	02	24.1		3	809
306	1988	01	18.08403	05	19	58.72	+15	02	26.4		3	809
306	1988	01	20.07222	05	18	52.57	+15	09	08.2		3	809
306	1988	01	20.08194	05	18	52.31	+15	09	09.9		3	809
306	1988	01	22.05000	05	17	53.62	+15	15	58.7		3	809
306	1988	01	22.05972	05	17	53.37	+15	16	01.1		3	809
315	1987	02	23.14687	09	34	16.33	+13	22	12.2		3	809
315	1987	02	23.15174	09	34	16.01	+13	22	13.5		3	809
315	1987	02	23.15660	09	34	15.72	+13	22	15.3		3	809
315	1987	03	08.01389	09	22	54.33	+14	30	07.8		3	809
315	1987	03	08.01806	09	22	54.14	+14	30	09.2		3	809
315	1987	03	08.02222	09	22	53.93	+14	30	10.2		3	809
320	1987	01	23.04514	06	41	30.33	+10	36	18.4	16.5	4	809
320	1987	01	23.05556	06	41	29.87	+10	36	19.1		4	809
320	1987	01	25.05729	06	40	06.71	+10	39	51.7	16.5	4	809
320	1987	01	25.06806	06	40	06.24	+10	39	52.7		4	809
368	1988	01	17.26944	08	41	14.73	+07	35	57.8		3	809
368	1988	01	17.27917	08	41	14.30	+07	35	58.9		3	809
368	1988	01	17.28889	08	41	13.88	+07	36	00.0		3	809
368	1988	01	18.20069	08	40	32.77	+07	37	44.9		3	809
368	1988	01	18.21042	08	40	32.32	+07	37	45.9		3	809
368	1988	01	20.16250	08	39	03.17	+07	41	43.5		3	809
368	1988	01	20.17222	08	39	02.72	+07	41	44.6		3	809
368	1988	01	22.15972	08	37	30.65	+07	46	06.4		3	809
368	1988	01	22.16944	08	37	30.20	+07	46	07.8		3	809
368	1988	01	24.12257	08	35	58.75	+07	50	42.4		3	809
368	1988	01	24.12743	08	35	58.52	+07	50	42.9		3	809
368	1988	01	24.13229	08	35	58.30	+07	50	43.7		3	809
539	1988	01	22.33576	10	08	50.89	+03	46	45.1		3	809
539	1988	01	22.34757	10	08	50.38	+03	46	45.7		3	809
539	1988	01	22.35938	10	08	49.88	+03	46	46.2		3	809
539	1988	01	24.34861	10	07	28.44	+03	49	09.3		3	809
539	1988	01	24.35694	10	07	28.07	+03	49	09.5		3	809
539	1988	01	24.36528	10	07	27.71	+03	49	10.5		3	809
539	1988	01	26.33715	10	06	03.05	+03	52	00.5		3	809
539	1988	01	26.34757	10	06	02.61	+03	52	01.5		3	809
539	1988	01	28.35208	10	04	32.83	+03	55	27.3		3	809
539	1988	01	28.36180	10	04	32.41	+03	55	28.1		3	809
539	1988	01	30.35139	10	02	59.91	+03	59	21.7		3	809
539	1988	01	30.36111	10	02	59.39	+03	59	23.0		3	809
606	1987	02	23.14687	09	35	35.31	+12	28	03.9		3	809
606	1987	02	23.15174	09	35	35.03	+12	28	04.5		3	809
606	1987	02	23.15660	09	35	34.74	+12	28	05.2		3	809
606	1987	03	08.01389	09	24	32.93	+12	52	34.9		3	809
606	1987	03	08.01806	09	24	32.74	+12	52	34.9		3	809
606	1987	03	08.02222	09	24	32.58	+12	52	35.4		3	809

779	1988	01	19.12639	08	51	38.10	+08	23	47.5	3	809
779	1988	01	19.13611	08	51	37.58	+08	23	47.2	3	809
779	1988	01	19.14583	08	51	37.07	+08	23	46.9	3	809
779	1988	01	20.18542	08	50	38.90	+08	23	43.2	3	809
779	1988	01	20.19514	08	50	38.33	+08	23	43.3	3	809
779	1988	01	24.14167	08	46	53.54	+08	24	19.9	3	809
779	1988	01	24.15139	08	46	52.98	+08	24	20.1	3	809
779	1988	01	26.20000	08	44	54.35	+08	25	08.6	3	809
779	1988	01	26.20972	08	44	53.77	+08	25	09.0	3	809
779	1988	01	28.21597	08	42	57.09	+08	26	15.9	3	809
779	1988	01	28.22569	08	42	56.51	+08	26	16.0	3	809
779	1988	01	29.17708	08	42	01.15	+08	26	53.8	3	809
864	1988	01	13.09792	05	27	28.02	+14	36	44.2	3	809
864	1988	01	13.10764	05	27	27.66	+14	36	46.0	3	809
864	1988	01	13.11736	05	27	27.28	+14	36	48.2	3	809
864	1988	01	14.08958	05	26	48.96	+14	40	02.1	3	809
864	1988	01	14.09931	05	26	48.59	+14	40	04.4	3	809
864	1988	01	14.10903	05	26	48.17	+14	40	06.1	3	809
864	1988	01	16.11632	05	25	35.02	+14	47	00.5	3	809
864	1988	01	16.13090	05	25	34.48	+14	47	03.8	3	809
864	1988	01	16.14549	05	25	33.94	+14	47	06.7	3	809
864	1988	01	18.07431	05	24	31.78	+14	53	57.8	3	809
864	1988	01	18.08403	05	24	31.42	+14	54	00.1	3	809
876	1988	01	10.13854	08	14	09.48	+10	52	53.8	3	809
876	1988	01	10.14340	08	14	09.24	+10	52	54.9	3	809
876	1988	01	10.14826	08	14	09.01	+10	52	56.3	3	809
876	1988	01	11.13993	08	13	22.46	+10	57	15.0	3	809
876	1988	01	11.14479	08	13	22.24	+10	57	16.3	3	809
876	1988	01	11.14965	08	13	22.01	+10	57	17.5	3	809
876	1988	01	12.19132	08	12	32.54	+11	01	53.7	3	809
876	1988	01	12.19479	08	12	32.35	+11	01	54.8	3	809
876	1988	01	12.19826	08	12	32.16	+11	01	56.0	3	809
876	1988	01	13.24479	08	11	41.94	+11	06	39.4	3	809
876	1988	01	13.24826	08	11	41.78	+11	06	40.4	3	809
876	1988	01	13.25174	08	11	41.60	+11	06	41.5	3	809
876	1988	01	14.27812	08	10	51.91	+11	11	26.6	3	809
876	1988	01	14.28299	08	10	51.67	+11	11	27.8	3	809
876	1988	01	14.28785	08	10	51.44	+11	11	28.9	3	809
876	1988	01	15.34062	08	10	00.05	+11	16	25.5	3	809
876	1988	01	15.34410	08	09	59.86	+11	16	26.9	3	809
876	1988	01	15.34757	08	09	59.67	+11	16	28.0	3	809
970	1988	01	17.33611	09	34	55.58	+14	27	03.0	3	809
970	1988	01	17.34583	09	34	55.05	+14	27	03.9	3	809
970	1988	01	17.35556	09	34	54.52	+14	27	04.8	3	809
970	1988	01	18.30556	09	34	03.95	+14	28	48.3	3	809
970	1988	01	18.31528	09	34	03.41	+14	28	49.2	3	809
970	1988	01	20.31319	09	32	12.95	+14	32	40.9	3	809
970	1988	01	20.32292	09	32	12.41	+14	32	42.0	3	809
970	1988	01	22.24236	09	30	22.13	+14	36	42.7	3	809
970	1988	01	22.25208	09	30	21.53	+14	36	43.6	3	809
970	1988	01	30.30625	09	22	03.35	+14	55	32.0	3	809
970	1988	01	30.31597	09	22	02.72	+14	55	33.4	3	809
1144	1988	01	18.22639	09	16	05.36	+10	22	20.9	3	809
1144	1988	01	18.23611	09	16	05.05	+10	22	22.9	3	809
1144	1988	01	18.24583	09	16	04.74	+10	22	25.2	3	809
1144	1988	01	19.24653	09	15	29.79	+10	26	09.3	3	809
1144	1988	01	19.25625	09	15	29.45	+10	26	12.1	3	809
1144	1988	01	21.16875	09	14	21.31	+10	33	33.2	3	809
1144	1988	01	21.17847	09	14	20.95	+10	33	35.3	3	809

1144	1988	01	21.18819	09	14	20.60	+10	33	37.4	3	809
1144	1988	01	23.17639	09	13	07.66	+10	41	32.1	3	809
1144	1988	01	23.18611	09	13	07.29	+10	41	34.5	3	809
1144	1988	01	25.16389	09	11	53.09	+10	49	41.2	3	809
1144	1988	01	25.17361	09	11	52.71	+10	49	43.5	3	809
1144	1988	01	25.18333	09	11	52.33	+10	49	46.1	3	809
1144	1988	01	27.25903	09	10	32.73	+10	58	31.6	3	809
1144	1988	01	27.26875	09	10	32.35	+10	58	34.4	3	809
1144	1988	01	29.26528	09	09	14.67	+11	07	12.4	3	809
1144	1988	01	29.27500	09	09	14.30	+11	07	14.1	3	809
1144	1988	01	30.26285	09	08	35.55	+11	11	34.6	3	809
1181	1988	01	14.21528	10	01	31.11	+04	36	20.9	3	809
1181	1988	01	14.22500	10	01	30.79	+04	36	20.6	3	809
1181	1988	01	14.23472	10	01	30.48	+04	36	20.4	3	809
1181	1988	01	15.26736	10	00	56.50	+04	36	01.3	3	809
1181	1988	01	15.27708	10	00	56.18	+04	36	01.2	3	809
1181	1988	01	15.28681	10	00	55.86	+04	36	01.0	3	809
1224	1988	01	10.13854	08	13	55.61	+10	52	30.4	3	809
1224	1988	01	10.14340	08	13	55.28	+10	52	30.4	3	809
1224	1988	01	10.14826	08	13	54.95	+10	52	30.4	3	809
1224	1988	01	11.13993	08	12	48.85	+10	51	54.8	3	809
1224	1988	01	11.14479	08	12	48.52	+10	51	54.6	3	809
1224	1988	01	11.14965	08	12	48.18	+10	51	54.4	3	809
1224	1988	01	12.19132	08	11	37.91	+10	51	25.5	3	809
1224	1988	01	12.19479	08	11	37.65	+10	51	25.5	3	809
1224	1988	01	12.19826	08	11	37.41	+10	51	25.4	3	809
1224	1988	01	13.24479	08	10	26.21	+10	51	05.5	3	809
1224	1988	01	13.24826	08	10	25.98	+10	51	05.5	3	809
1224	1988	01	13.25174	08	10	25.74	+10	51	05.4	3	809
1224	1988	01	14.27812	08	09	15.45	+10	50	54.7	3	809
1224	1988	01	14.28299	08	09	15.13	+10	50	54.6	3	809
1224	1988	01	14.28785	08	09	14.80	+10	50	54.6	3	809
1224	1988	01	15.34062	08	08	02.20	+10	50	51.1	3	809
1224	1988	01	15.34410	08	08	01.96	+10	50	50.9	3	809
1224	1988	01	15.34757	08	08	01.72	+10	50	50.8	3	809
1286	1988	01	18.09792	07	10	06.73	+08	34	56.9	3	809
1286	1988	01	18.10764	07	10	06.26	+08	34	58.0	3	809
1286	1988	01	18.11736	07	10	05.78	+08	34	59.2	3	809
1315	1988	01	22.30069	09	57	06.04	+02	15	48.2	3	809
1315	1988	01	22.31042	09	57	05.68	+02	15	49.0	3	809
1315	1988	01	22.32014	09	57	05.30	+02	15	49.6	3	809
1315	1988	01	23.32014	09	56	30.97	+02	17	02.2	3	809
1315	1988	01	23.32847	09	56	30.66	+02	17	03.2	3	809
1315	1988	01	23.33681	09	56	30.37	+02	17	04.1	3	809
1315	1988	01	24.30764	09	55	56.20	+02	18	21.8	3	809
1315	1988	01	24.31597	09	55	55.90	+02	18	22.3	3	809
1315	1988	01	24.32431	09	55	55.59	+02	18	23.2	3	809
1315	1988	01	25.34028	09	55	18.88	+02	19	53.4	3	809
1315	1988	01	25.35000	09	55	18.51	+02	19	54.2	3	809
1315	1988	01	27.34375	09	54	03.98	+02	23	14.5	3	809
1315	1988	01	27.35347	09	54	03.62	+02	23	15.5	3	809
1315	1988	01	29.35347	09	52	45.87	+02	27	08.4	3	809
1315	1988	01	29.36319	09	52	45.51	+02	27	09.6	3	809
1420	1988	01	18.25972	09	27	10.01	+10	47	51.2	3	809
1420	1988	01	18.26944	09	27	09.62	+10	47	52.5	3	809
1420	1988	01	18.27917	09	27	09.22	+10	47	53.9	3	809
1420	1988	01	19.26944	09	26	25.04	+10	50	07.9	3	809
1420	1988	01	19.27917	09	26	24.61	+10	50	09.0	3	809
1420	1988	01	20.29167	09	25	38.45	+10	52	32.5	3	809

1420	1988	01	20.30139	09	25	37.98	+10	52	33.4		3 809
1420	1988	01	21.22361	09	24	55.38	+10	54	49.0		3 809
1420	1988	01	21.23333	09	24	54.91	+10	54	50.2		3 809
1420	1988	01	23.21875	09	23	20.27	+10	59	57.2		3 809
1420	1988	01	23.22847	09	23	19.78	+10	59	59.0		3 809
1673	1988	01	18.22639	09	20	03.78	+10	11	53.3		3 809
1673	1988	01	18.23611	09	20	03.35	+10	11	54.8		3 809
1673	1988	01	18.24583	09	20	02.92	+10	11	56.3		3 809
1673	1988	01	19.24653	09	19	20.04	+10	14	50.0		3 809
1673	1988	01	19.25625	09	19	19.66	+10	14	52.2		3 809
1673	1988	01	23.17639	09	16	24.22	+10	27	08.5		3 809
1673	1988	01	23.18611	09	16	23.81	+10	27	10.3		3 809
1673	1988	01	25.16389	09	14	51.46	+10	33	53.5		3 809
1673	1988	01	25.17361	09	14	51.01	+10	33	55.2		3 809
1673	1988	01	25.18333	09	14	50.53	+10	33	57.3		3 809
1673	1988	01	27.25903	09	13	11.26	+10	41	18.0		3 809
1673	1988	01	27.26875	09	13	10.80	+10	41	20.5		3 809
1723	1988	01	10.13854	08	14	29.62	+11	08	21.5		3 809
1723	1988	01	10.14340	08	14	29.41	+11	08	22.8		3 809
1723	1988	01	10.14826	08	14	29.17	+11	08	24.0		3 809
1723	1988	01	11.13993	08	13	43.32	+11	12	58.4		3 809
1723	1988	01	11.14479	08	13	43.11	+11	12	59.9		3 809
1723	1988	01	11.14965	08	13	42.90	+11	13	01.3		3 809
1723	1988	01	12.19132	08	12	54.12	+11	17	56.4		3 809
1723	1988	01	12.19479	08	12	53.92	+11	17	57.3		3 809
1723	1988	01	12.19826	08	12	53.73	+11	17	58.4		3 809
1723	1988	01	13.24479	08	12	04.05	+11	23	01.3		3 809
1723	1988	01	13.24826	08	12	03.88	+11	23	02.4		3 809
1723	1988	01	13.25174	08	12	03.71	+11	23	03.2		3 809
1723	1988	01	14.27812	08	11	14.46	+11	28	07.6		3 809
1723	1988	01	14.28299	08	11	14.22	+11	28	09.3		3 809
1723	1988	01	14.28785	08	11	13.97	+11	28	10.4		3 809
1723	1988	01	15.34062	08	10	22.90	+11	33	28.0		3 809
1723	1988	01	15.34410	08	10	22.71	+11	33	29.5		3 809
1723	1988	01	15.34757	08	10	22.54	+11	33	30.4		3 809
1764	1988	02	09.24583	09	36	39.59	+13	35	50.4	16.8	4 809
1764	1988	02	09.27014	09	36	38.46	+13	35	58.4		4 809
1764	1988	02	16.10417	09	31	06.22	+14	07	36.1	16.5	4 809
1764	1988	02	16.11458	09	31	05.71	+14	07	39.1		4 809
1764	1988	02	17.10799	09	30	17.70	+14	12	13.7	16.5	4 809
1764	1988	02	17.11806	09	30	17.20	+14	12	16.3		4 809
1791	1988	01	19.12639	08	57	28.30	+09	33	55.5		3 809
1791	1988	01	19.13611	08	57	27.85	+09	33	57.0		3 809
1791	1988	01	19.14583	08	57	27.39	+09	33	58.6		3 809
1792	1988	05	23.21197	14	40	03.46	-09	52	05.9	16.6	2 809
1792	1988	05	24.18542	14	39	20.46	-09	50	59.6	16.2	2 809
1792	1988	05	25.29340	14	38	30.96	-09	49	34.3	16.7	2 809
1836	1988	01	19.16875	08	58	56.02	+10	56	53.9		3 809
1836	1988	01	19.17847	08	58	55.58	+10	56	54.6		3 809
1836	1988	01	19.18819	08	58	55.14	+10	56	55.3		3 809
1858	1988	02	09.24583	09	36	19.39	+12	15	04.6	17.0	4 809
1858	1988	02	09.27014	09	36	18.08	+12	15	11.3		4 809
1858	1988	02	16.10417	09	30	07.09	+12	43	12.2	17.0	4 809
1858	1988	02	16.11458	09	30	06.51	+12	43	14.9		4 809
1858	1988	02	17.10799	09	29	12.94	+12	47	21.4	17.0	4 809
1858	1988	02	17.11806	09	29	12.31	+12	47	24.0		4 809
1905	1988	01	21.27708	09	44	48.99	+09	26	31.8		3 809
1905	1988	01	21.28681	09	44	48.49	+09	26	33.9		3 809
1905	1988	01	21.29653	09	44	47.98	+09	26	35.9		3 809

1905	1988	01	22.27708	09	44	01.84	+09	30	03.2	3 809
1905	1988	01	22.28681	09	44	01.32	+09	30	05.5	3 809
1905	1988	01	24.28055	09	42	23.10	+09	37	33.8	3 809
1905	1988	01	24.28889	09	42	22.68	+09	37	36.2	3 809
1905	1988	01	24.29722	09	42	22.23	+09	37	38.1	3 809
1905	1988	01	26.31597	09	40	37.07	+09	45	51.7	3 809
1905	1988	01	26.32569	09	40	36.57	+09	45	54.1	3 809
1905	1988	01	28.33125	09	38	47.08	+09	54	36.9	3 809
1905	1988	01	28.34097	09	38	46.55	+09	54	39.8	3 809
1905	1988	01	30.33055	09	36	53.61	+10	03	48.5	3 809
1905	1988	01	30.34028	09	36	53.01	+10	03	51.8	3 809
2103	1988	01	18.25972	09	31	16.42	+10	11	28.4	3 809
2103	1988	01	18.26944	09	31	16.01	+10	11	28.1	3 809
2103	1988	01	18.27917	09	31	15.60	+10	11	27.5	3 809
2103	1988	01	20.26181	09	29	54.70	+10	10	25.5	3 809
2103	1988	01	20.27153	09	29	54.27	+10	10	25.6	3 809
2103	1988	01	20.28125	09	29	53.85	+10	10	25.7	3 809
2103	1988	01	20.29167	09	29	53.36	+10	10	25.7	3 809
2103	1988	01	20.30139	09	29	52.97	+10	10	25.1	3 809
2103	1988	01	21.20278	09	29	14.81	+10	10	04.0	3 809
2103	1988	01	21.21250	09	29	14.36	+10	10	04.0	3 809
2103	1988	01	23.19931	09	27	46.95	+10	09	37.2	3 809
2103	1988	01	23.20903	09	27	46.52	+10	09	37.3	3 809
2103	1988	01	25.19514	09	26	15.14	+10	09	33.1	3 809
2103	1988	01	25.20486	09	26	14.71	+10	09	33.3	3 809
2103	1988	01	25.21458	09	26	14.29	+10	09	33.4	3 809
2103	1988	01	26.27292	09	25	24.06	+10	09	39.5	3 809
2103	1988	01	26.28264	09	25	23.55	+10	09	39.8	3 809
2103	1988	01	28.28750	09	23	46.18	+10	10	07.3	3 809
2103	1988	01	28.29722	09	23	45.67	+10	10	07.6	3 809
2103	1988	01	30.28403	09	22	06.43	+10	10	54.3	3 809
2103	1988	01	30.29375	09	22	05.96	+10	10	55.1	3 809
2111	1988	01	16.26458	09	34	32.02	+05	58	16.4	3 809
2111	1988	01	16.27847	09	34	31.58	+05	58	19.5	3 809
2111	1988	01	16.29236	09	34	31.10	+05	58	22.6	3 809
2111	1988	01	17.30625	09	33	55.58	+06	02	23.8	3 809
2111	1988	01	17.31597	09	33	55.24	+06	02	26.3	3 809
2111	1988	01	17.32569	09	33	54.85	+06	02	28.4	3 809
2111	1988	01	19.29375	09	32	43.11	+06	10	43.5	3 809
2111	1988	01	19.30347	09	32	42.79	+06	10	46.0	3 809
2111	1988	01	21.24444	09	31	28.65	+06	19	25.8	3 809
2111	1988	01	21.25417	09	31	28.25	+06	19	28.0	3 809
2111	1988	01	23.25347	09	30	08.42	+06	28	55.3	3 809
2111	1988	01	23.26319	09	30	08.05	+06	28	58.2	3 809
2111	1988	01	25.26875	09	28	45.00	+06	38	59.1	3 809
2111	1988	01	25.27847	09	28	44.59	+06	39	01.7	3 809
2111	1988	01	27.28055	09	27	19.01	+06	49	30.0	3 809
2111	1988	01	27.29028	09	27	18.60	+06	49	33.3	3 809
2111	1988	01	29.28889	09	25	50.91	+07	00	29.0	3 809
2111	1988	01	29.29861	09	25	50.50	+07	00	31.9	3 809
2173	1988	01	22.30069	09	59	33.46	+01	25	43.5	3 809
2173	1988	01	22.31042	09	59	33.13	+01	25	45.8	3 809
2173	1988	01	22.32014	09	59	32.80	+01	25	48.1	3 809
2186	1988	01	20.33403	09	40	03.39	+12	04	40.7	3 809
2186	1988	01	20.34375	09	40	02.93	+12	04	42.4	3 809
2186	1988	01	20.35347	09	40	02.46	+12	04	44.0	3 809
2186	1988	01	21.30694	09	39	19.46	+12	07	12.4	3 809
2186	1988	01	21.31667	09	39	18.99	+12	07	14.4	3 809
2186	1988	01	23.27431	09	37	47.33	+12	12	37.9	3 809

2186	1988	01	23.28403	09	37	46.88	+12	12	39.9	3 809
2186	1988	01	25.29028	09	36	08.82	+12	18	32.9	3 809
2186	1988	01	25.30000	09	36	08.28	+12	18	34.7	3 809
2186	1988	01	29.31111	09	32	41.63	+12	31	15.6	3 809
2186	1988	01	29.32083	09	32	41.12	+12	31	17.3	3 809
2203	1987	03	05.31285	10	58	37.00	+08	50	24.1	3 809
2203	1987	03	05.31771	10	58	36.79	+08	50	25.5	3 809
2203	1987	03	05.32257	10	58	36.58	+08	50	27.0	3 809
2246	1988	01	18.25972	09	27	17.04	+11	42	58.8	3 809
2246	1988	01	18.26944	09	27	16.73	+11	43	00.9	3 809
2246	1988	01	18.27917	09	27	16.45	+11	43	03.0	3 809
2246	1988	01	19.26944	09	26	44.47	+11	46	27.6	3 809
2246	1988	01	19.27917	09	26	44.17	+11	46	29.7	3 809
2246	1988	01	21.22361	09	25	39.54	+11	53	25.1	3 809
2246	1988	01	21.23333	09	25	39.21	+11	53	27.2	3 809
2246	1988	01	23.21875	09	24	30.63	+12	00	48.5	3 809
2246	1988	01	23.22847	09	24	30.29	+12	00	50.3	3 809
2246	1988	01	24.21875	09	23	55.20	+12	04	36.2	3 809
2246	1988	01	24.22708	09	23	54.89	+12	04	37.8	3 809
2246	1988	01	24.23542	09	23	54.58	+12	04	40.2	3 809
2246	1988	01	26.24514	09	22	41.82	+12	12	28.0	3 809
2246	1988	01	26.25486	09	22	41.44	+12	12	30.9	3 809
2246	1988	01	28.26667	09	21	26.72	+12	20	32.4	3 809
2246	1988	01	28.27639	09	21	26.31	+12	20	35.3	3 809
2246	1988	01	30.19028	09	20	13.91	+12	28	24.6	3 809
2501	1987	03	05.31285	11	04	23.39	+08	57	11.2	3 809
2501	1987	03	05.31771	11	04	23.10	+08	57	12.4	3 809
2501	1987	03	05.32257	11	04	22.83	+08	57	13.4	3 809
2576	1988	01	20.33403	09	39	49.27	+12	18	02.0	3 809
2576	1988	01	20.34375	09	39	48.84	+12	18	02.2	3 809
2576	1988	01	20.35347	09	39	48.38	+12	18	02.7	3 809
2576	1988	01	21.30694	09	39	07.33	+12	18	51.3	3 809
2576	1988	01	21.31667	09	39	06.88	+12	18	51.6	3 809
2576	1988	01	23.27431	09	37	40.24	+12	20	40.9	3 809
2576	1988	01	23.28403	09	37	39.83	+12	20	41.5	3 809
2576	1988	01	25.29028	09	36	08.12	+12	22	46.5	3 809
2576	1988	01	25.30000	09	36	07.65	+12	22	47.4	3 809
2576	1988	01	27.30069	09	34	33.57	+12	25	03.4	3 809
2576	1988	01	27.31042	09	34	33.14	+12	25	04.0	3 809
2576	1988	01	29.31111	09	32	56.78	+12	27	29.4	3 809
2576	1988	01	29.32083	09	32	56.31	+12	27	30.0	3 809
2714	1988	01	24.26042	09	36	30.61	+14	25	10.2	3 809
2714	1988	01	24.27014	09	36	30.08	+14	25	14.1	3 809
2714	1988	01	26.29375	09	34	41.63	+14	38	58.5	3 809
2714	1988	01	26.30347	09	34	41.09	+14	39	01.7	3 809
2714	1988	01	28.30764	09	32	49.53	+14	52	55.5	3 809
2714	1988	01	28.31736	09	32	48.97	+14	52	58.7	3 809
2736	1988	01	10.13854	08	17	24.59	+11	10	36.1	3 809
2736	1988	01	10.14340	08	17	24.29	+11	10	36.3	3 809
2736	1988	01	10.14826	08	17	23.98	+11	10	36.5	3 809
2736	1988	01	11.13993	08	16	22.58	+11	10	40.3	3 809
2736	1988	01	11.14479	08	16	22.26	+11	10	40.8	3 809
2736	1988	01	11.14965	08	16	21.95	+11	10	41.1	3 809
2736	1988	01	12.19132	08	15	16.51	+11	10	54.8	3 809
2736	1988	01	12.19479	08	15	16.28	+11	10	54.9	3 809
2736	1988	01	12.19826	08	15	16.04	+11	10	55.0	3 809
2736	1988	01	13.24479	08	14	09.43	+11	11	14.4	3 809
2736	1988	01	13.24826	08	14	09.20	+11	11	14.5	3 809
2736	1988	01	13.25174	08	14	08.97	+11	11	14.6	3 809

2796	1988	01	15.06528	05	48	10.90	+04	55	17.8		3	809
2796	1988	01	15.07500	05	48	10.48	+04	55	21.2		3	809
2796	1988	01	15.08472	05	48	10.06	+04	55	24.3		3	809
2796	1988	01	16.16458	05	47	23.04	+05	01	11.2		3	809
2796	1988	01	16.17847	05	47	22.43	+05	01	15.5		3	809
2796	1988	01	16.19236	05	47	21.82	+05	01	20.0		3	809
2796	1988	01	23.07014	05	42	59.11	+05	41	20.3		3	809
2796	1988	01	23.07986	05	42	58.75	+05	41	23.7		3	809
2796	1988	01	25.06458	05	41	55.35	+05	53	49.4		3	809
2796	1988	01	27.06319	05	40	57.46	+06	06	41.7		3	809
2796	1988	01	28.07431	05	40	30.46	+06	13	19.0		3	809
2796	1988	01	29.05486	05	40	05.88	+06	19	47.6		3	809
2823	1988	01	19.16875	08	58	11.39	+11	35	07.3		3	809
2823	1988	01	19.17847	08	58	10.88	+11	35	08.5		3	809
2823	1988	01	19.18819	08	58	10.36	+11	35	09.7		3	809
2846	1988	01	11.16076	08	16	34.77	+12	39	36.4		3	809
2846	1988	01	11.16563	08	16	34.55	+12	39	37.7		3	809
2846	1988	01	11.17049	08	16	34.32	+12	39	39.1		3	809
2846	1988	01	13.15938	08	15	05.82	+12	48	28.2		3	809
2846	1988	01	13.16424	08	15	05.60	+12	48	29.6		3	809
2846	1988	01	13.16910	08	15	05.39	+12	48	30.8		3	809
2846	1988	01	14.13264	08	14	21.83	+12	52	53.6		3	809
2846	1988	01	14.14236	08	14	21.37	+12	52	56.2		3	809
2846	1988	01	14.15208	08	14	20.92	+12	52	58.7		3	809
2846	1988	01	15.12778	08	13	36.38	+12	57	28.7		3	809
2846	1988	01	15.13750	08	13	35.94	+12	57	31.3		3	809
2846	1988	01	15.14722	08	13	35.47	+12	57	33.9		3	809
2846	1988	01	17.20417	08	12	00.27	+13	07	17.9		3	809
2846	1988	01	17.21389	08	11	59.80	+13	07	20.5		3	809
2846	1988	01	17.22361	08	11	59.33	+13	07	22.9		3	809
2846	1988	01	19.09167	08	10	32.09	+13	16	27.0		3	809
2846	1988	01	19.10139	08	10	31.63	+13	16	29.7		3	809
2846	1988	01	19.11111	08	10	31.16	+13	16	32.3		3	809
2846	1988	01	21.10833	08	08	56.97	+13	26	26.9		3	809
2846	1988	01	21.11805	08	08	56.49	+13	26	30.0		3	809
2846	1988	01	23.09444	08	07	22.96	+13	36	29.2		3	809
2846	1988	01	23.10417	08	07	22.51	+13	36	32.2		3	809
2846	1988	01	25.11805	08	05	47.14	+13	46	53.0		3	809
2846	1988	01	25.12778	08	05	46.70	+13	46	55.9		3	809
2846	1988	01	26.15764	08	04	58.13	+13	52	16.6		3	809
2846	1988	01	26.16736	08	04	57.70	+13	52	19.7		3	809
2846	1988	01	27.11736	08	04	13.16	+13	57	17.2		3	809
2846	1988	01	28.12361	08	03	26.07	+14	02	34.2		3	809
2846	1988	01	28.13056	08	03	25.74	+14	02	36.4		3	809
2846	1988	01	29.10000	08	02	40.81	+14	07	42.9		3	809
2846	1988	01	30.11840	08	01	53.72	+14	13	05.4		3	809
2929	1987	01	23.04514	06	42	01.13	+10	33	43.0	17	4	809
2929	1987	01	23.05556	06	42	00.68	+10	33	46.5		4	809
2929	1987	01	25.05729	06	40	37.81	+10	45	49.0	17	4	809
2929	1987	01	25.06806	06	40	37.35	+10	45	52.3		4	809
3047	1988	01	17.33611	09	37	26.83	+14	24	02.2		3	809
3047	1988	01	17.34583	09	37	26.46	+14	24	04.0		3	809
3047	1988	01	17.35556	09	37	26.04	+14	24	05.6		3	809
3047	1988	01	18.30556	09	36	45.47	+14	26	54.0		3	809
3047	1988	01	18.31528	09	36	45.09	+14	26	55.2		3	809
3047	1988	01	20.31319	09	35	16.02	+14	33	04.1		3	809
3047	1988	01	20.32292	09	35	15.58	+14	33	06.0		3	809
3047	1988	01	22.24236	09	33	45.77	+14	39	18.5		3	809
3047	1988	01	22.25208	09	33	45.28	+14	39	20.3		3	809

3047	1988	01	24.26042	09	32	06.98	+14	46	06.6	3 809
3047	1988	01	24.27014	09	32	06.48	+14	46	08.6	3 809
3047	1988	01	26.29375	09	30	23.55	+14	53	12.0	3 809
3047	1988	01	26.30347	09	30	23.02	+14	53	14.0	3 809
3047	1988	01	28.30764	09	28	37.71	+15	00	25.8	3 809
3047	1988	01	28.31736	09	28	37.25	+15	00	27.9	3 809
3047	1988	01	30.30625	09	26	49.98	+15	07	43.8	3 809
3047	1988	01	30.31597	09	26	49.47	+15	07	46.0	3 809
3107	1987	02	24.30174	10	45	35.18	+05	19	41.0	3 809
3107	1987	02	24.30660	10	45	34.88	+05	19	42.6	3 809
3107	1987	02	24.31146	10	45	34.58	+05	19	44.4	3 809
3132	1987	03	03.31632	11	00	45.34	+11	25	53.7	3 809
3132	1987	03	03.32118	11	00	45.14	+11	25	55.0	3 809
3132	1987	03	03.32604	11	00	44.92	+11	25	56.5	3 809
3267	1988	01	13.12778	05	20	04.17	+11	17	47.7	3 809
3267	1988	01	13.13750	05	20	03.88	+11	18	04.2	3 809
3267	1988	01	13.14722	05	20	03.59	+11	18	20.9	3 809
3267	1988	01	14.05972	05	19	35.74	+11	44	35.8	3 809
3267	1988	01	14.06944	05	19	35.42	+11	44	52.4	3 809
3267	1988	01	14.07917	05	19	35.09	+11	45	08.9	3 809
3267	1988	01	16.06424	05	18	41.57	+12	41	30.7	3 809
3267	1988	01	16.07882	05	18	41.19	+12	41	55.5	3 809
3267	1988	01	16.09340	05	18	40.81	+12	42	20.1	3 809
3267	1988	01	18.07431	05	17	58.11	+13	37	26.5	3 809
3267	1988	01	18.08403	05	17	57.85	+13	37	43.1	3 809
3267	1988	01	20.07222	05	17	25.84	+14	31	48.4	3 809
3267	1988	01	20.08194	05	17	25.65	+14	32	03.7	3 809
3301	1988	01	14.24583	10	03	52.41	+11	36	25.5	3 809
3301	1988	01	14.25556	10	03	52.16	+11	36	28.0	3 809
3301	1988	01	14.26528	10	03	51.90	+11	36	30.7	3 809
3301	1988	01	15.32257	10	03	23.05	+11	41	31.5	3 809
3301	1988	01	15.32743	10	03	22.90	+11	41	32.9	3 809
3301	1988	01	15.33229	10	03	22.75	+11	41	34.3	3 809
3301	1988	01	16.30972	10	02	54.45	+11	46	22.4	3 809
3301	1988	01	16.32361	10	02	54.00	+11	46	26.4	3 809
3301	1988	01	16.33750	10	02	53.63	+11	46	30.5	3 809
3301	1988	01	18.33055	10	01	50.40	+11	56	52.8	3 809
3301	1988	01	18.34028	10	01	50.08	+11	56	55.8	3 809
3301	1988	01	19.32187	10	01	16.35	+12	02	18.0	3 809
3301	1988	01	19.33646	10	01	15.82	+12	02	22.9	3 809
3301	1988	01	19.35104	10	01	15.29	+12	02	27.2	3 809
3301	1988	01	21.32778	10	00	02.42	+12	13	47.2	3 809
3301	1988	01	21.33750	10	00	02.03	+12	13	50.4	3 809
3302	1987	02	24.35104	11	05	23.64	+06	32	53.0	3 809
3302	1987	02	24.35590	11	05	23.39	+06	32	55.1	3 809
3302	1987	02	24.36076	11	05	23.10	+06	32	57.1	3 809
3333	1988	01	20.09514	07	00	15.30	+09	03	48.1	3 809
3333	1988	01	20.10486	07	00	14.87	+09	03	49.2	3 809
3333	1988	01	20.11458	07	00	14.42	+09	03	50.3	3 809
3333	1988	01	22.07361	06	58	47.55	+09	06	16.2	3 809
3333	1988	01	22.08333	06	58	47.12	+09	06	17.0	3 809
3333	1988	01	24.07083	06	57	21.13	+09	08	59.7	3 809
3333	1988	01	24.08056	06	57	20.71	+09	09	01.0	3 809
3333	1988	01	25.07778	06	56	38.41	+09	10	27.1	3 809
3333	1988	01	25.08750	06	56	37.98	+09	10	28.0	3 809
3333	1988	01	28.09792	06	54	34.54	+09	15	11.6	3 809
3522	1988	01	13.12778	05	22	38.09	+12	04	52.6	3 809
3522	1988	01	13.13750	05	22	37.77	+12	04	53.2	3 809

3522	1988	01	13.14722	05	22	37.46	+12	04	53.5		3	809
3522	1988	01	14.05972	05	22	07.76	+12	05	59.5		3	809
3522	1988	01	14.06944	05	22	07.44	+12	06	00.3		3	809
3522	1988	01	14.07917	05	22	07.13	+12	06	01.1		3	809
3522	1988	01	16.06424	05	21	06.11	+12	08	37.8		3	809
3522	1988	01	16.07882	05	21	05.67	+12	08	38.9		3	809
3522	1988	01	16.09340	05	21	05.23	+12	08	40.2		3	809
3522	1988	01	18.05417	05	20	10.18	+12	11	32.3		3	809
3522	1988	01	18.06389	05	20	09.93	+12	11	33.2		3	809
3522	1988	01	20.05069	05	19	19.60	+12	14	44.7		3	809
3522	1988	01	20.06042	05	19	19.35	+12	14	45.4		3	809
3522	1988	01	21.05069	05	18	56.38	+12	16	26.6		3	809
3522	1988	01	21.06042	05	18	56.12	+12	16	27.6		3	809
3522	1988	01	23.04792	05	18	14.18	+12	20	03.6		3	809
3522	1988	01	23.05764	05	18	13.94	+12	20	04.9		3	809
3522	1988	01	25.05208	05	17	37.59	+12	23	55.7		3	809
3522	1988	01	26.08090	05	17	21.01	+12	26	00.5		3	809
3522	1988	01	28.06181	05	16	53.51	+12	30	10.6		3	809
3614	1988	01	15.17014	08	23	45.29	+12	57	38.5		3	809
3614	1988	01	15.17986	08	23	44.74	+12	57	37.6		3	809
3614	1988	01	15.18958	08	23	44.20	+12	57	36.7		3	809
3614	1988	01	22.12778	08	17	07.40	+12	47	01.0		3	809
3614	1988	01	22.13750	08	17	06.86	+12	47	00.3		3	809
3614	1988	01	22.14722	08	17	06.31	+12	46	59.5		3	809
3614	1988	01	23.12986	08	16	09.10	+12	45	41.0		3	809
3614	1988	01	23.13958	08	16	08.52	+12	45	40.3		3	809
3614	1988	01	24.19028	08	15	07.26	+12	44	18.5		3	809
3614	1988	01	24.19861	08	15	06.77	+12	44	17.8		3	809
3614	1988	01	24.20694	08	15	06.26	+12	44	17.1		3	809
3768	1988	01	17.17083	07	34	36.47	+10	02	05.3	15.4	3	809
3768	1988	01	17.18056	07	34	35.99	+10	02	08.3		3	809
3768	1988	01	17.19028	07	34	35.50	+10	02	11.5		3	809
3768	1988	01	18.14375	07	33	47.59	+10	07	28.5		3	809
3768	1988	01	18.15347	07	33	47.05	+10	07	31.8		3	809
3768	1988	01	20.13958	07	32	07.97	+10	18	44.3		3	809
3768	1988	01	20.14931	07	32	07.50	+10	18	47.9		3	809
3768	1988	01	22.09410	07	30	31.92	+10	29	58.8		3	809
3768	1988	01	22.09896	07	30	31.68	+10	30	00.3		3	809
3768	1988	01	22.10382	07	30	31.44	+10	30	01.9		3	809
3768	1988	01	24.09305	07	28	55.55	+10	41	41.3		3	809
3768	1988	01	24.09722	07	28	55.33	+10	41	43.0		3	809
3768	1988	01	24.10139	07	28	55.12	+10	41	44.2		3	809
3768	1988	01	26.10486	07	27	20.83	+10	53	37.8		3	809
3768	1988	01	26.10903	07	27	20.64	+10	53	39.3		3	809
3768	1988	01	26.11319	07	27	20.45	+10	53	40.8		3	809
3768	1988	01	27.09792	07	26	35.07	+10	59	34.7		3	809
3768	1988	01	27.10208	07	26	34.88	+10	59	36.2		3	809
3768	1988	01	27.10625	07	26	34.70	+10	59	37.7		3	809
3768	1988	01	28.10625	07	25	49.28	+11	05	38.7		3	809
3768	1988	01	28.11042	07	25	49.08	+11	05	40.1		3	809
3768	1988	01	28.11458	07	25	48.89	+11	05	41.6		3	809
3768	1988	01	29.07292	07	25	06.20	+11	11	29.0		3	809
3768	1988	01	29.07708	07	25	06.01	+11	11	30.8		3	809
3768	1988	01	30.08368	07	24	21.85	+11	17	37.1		3	809
3791	1988	01	17.33611	09	38	50.20	+14	35	34.8	16.9	3	809
3791	1988	01	17.34583	09	38	49.77	+14	35	36.5		3	809
3791	1988	01	17.35556	09	38	49.36	+14	35	38.9		3	809
3791	1988	01	18.30556	09	38	11.49	+14	38	32.8		3	809

3791		1988 01 18.31528	09	38	11.06	+14	38	35.1		3 809
3791		1988 01 20.31319	09	36	48.16	+14	44	54.1		3 809
3791		1988 01 20.32292	09	36	47.76	+14	44	55.9		3 809
3791		1988 01 22.24236	09	35	24.57	+14	51	15.4		3 809
3791		1988 01 22.25208	09	35	24.15	+14	51	16.9		3 809
3791		1988 01 24.26042	09	33	53.51	+14	58	07.6		3 809
3791		1988 01 24.27014	09	33	53.05	+14	58	09.5		3 809
3791		1988 01 26.29375	09	32	18.53	+15	05	14.0		3 809
3791		1988 01 26.30347	09	32	18.04	+15	05	16.0		3 809
3791		1988 01 28.30764	09	30	41.63	+15	12	26.0		3 809
3791		1988 01 28.31736	09	30	41.14	+15	12	28.1		3 809
3791		1988 01 30.30625	09	29	03.12	+15	19	41.9		3 809
3791		1988 01 30.31597	09	29	02.58	+15	19	44.0		3 809
3831		1988 01 14.24583	09	59	24.78	+10	19	39.5	16.9	3 809
3831		1988 01 14.25556	09	59	24.43	+10	19	41.9		3 809
3831		1988 01 14.26528	09	59	24.07	+10	19	44.4		3 809
3831		1988 01 15.32257	09	58	46.62	+10	24	12.4		3 809
3831		1988 01 15.32743	09	58	46.44	+10	24	13.7		3 809
3831		1988 01 15.33229	09	58	46.25	+10	24	14.9		3 809
3831		1988 01 16.30972	09	58	10.22	+10	28	32.6		3 809
3831		1988 01 16.32361	09	58	09.67	+10	28	36.3		3 809
3831		1988 01 16.33750	09	58	09.12	+10	28	40.0		3 809
3831		1988 01 18.33055	09	56	50.64	+10	37	55.6		3 809
3831		1988 01 18.34028	09	56	50.25	+10	37	58.4		3 809
3831		1988 01 19.32187	09	56	09.34	+10	42	46.4		3 809
3831		1988 01 19.33646	09	56	08.69	+10	42	50.7		3 809
3831		1988 01 19.35104	09	56	08.04	+10	42	55.0		3 809
3831		1988 01 21.32778	09	54	41.13	+10	53	02.2		3 809
3831		1988 01 21.33750	09	54	40.66	+10	53	05.1		3 809
3831		1988 01 23.29861	09	53	08.86	+11	03	40.7		3 809
3831		1988 01 23.30833	09	53	08.39	+11	03	44.4		3 809
3831		1988 01 25.31458	09	51	28.84	+11	15	09.1		3 809
3831		1988 01 25.32431	09	51	28.35	+11	15	11.9		3 809
3831		1988 01 27.32292	09	49	44.17	+11	27	04.5		3 809
3831		1988 01 27.33264	09	49	43.68	+11	27	07.4		3 809
3831		1988 01 29.33264	09	47	54.71	+11	39	28.4		3 809
3831		1988 01 29.34236	09	47	54.18	+11	39	32.0		3 809
3831		1988 02 09.24583	09	36	58.61	+12	52	38.2	17.2	4 809
3831		1988 02 09.27014	09	36	57.21	+12	52	48.7		4 809
3831		1988 02 16.10417	09	29	40.40	+13	40	48.0	17.0	4 809
3831		1988 02 16.11458	09	29	39.78	+13	40	52.3		4 809
3831		1988 02 17.10799	09	28	36.45	+13	47	48.1	17.5	4 809
3831		1988 02 17.11806	09	28	35.93	+13	47	52.3		4 809

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

1988 FN2	*	1988 03 22.65486	10	45	18.66	+10	47	47.9	17.0	888
1988 FN2		1988 03 22.68819	10	45	16.79	+10	47	53.1		888

897 YGCO Chiyoda Station
T. Kojima, 45 Shimonakamori, Chiyoda-cyo, Ora-Gun,
Gunma-ken, 370-07 Japan
Observer T. Kojima
0.25-m f/3.4 Wright-Schmidt camera

1986 RC2		1988 04 10.61736	13	06	55.11	+06	10	46.5	16	897
1986 RC2		1988 04 10.65625	13	06	52.91	+06	11	37.9		897

975 Valencia
A. Lopez, Observatorio Astronomico de Valencia, Avda. Blasco Ibanez 13,
E-46010 Valencia, Spain
Observers A. Lopez G., J. A. Lopez O., R. Lopez M., J. Artes P.
0.25-m f/15 refractor
SAOC

1	1986 03 03.84657	11 03 31.54	+24 23 52.3			975
1	1986 03 03.85031	11 03 31.33	+24 23 52.8			975
1	1986 03 04.85425	11 02 38.20	+24 29 22.3			975
1	1986 03 04.85775	11 02 37.94	+24 29 22.7			975
1	1986 03 11.87221	10 56 29.20	+25 01 17.3			975
1	1986 03 11.87516	10 56 29.07	+25 01 18.3			975
1	1986 03 14.84440	10 53 58.66	+25 11 08.9			975
1	1986 03 14.84808	10 53 58.54	+25 11 09.6			975
1	1986 05 01.87238	10 39 12.64	+23 03 31.7			975
1	1986 05 01.87620	10 39 12.66	+23 03 30.1			975
1	1986 05 01.87985	10 39 12.80	+23 03 28.9			975
1	1986 05 02.87660	10 39 31.46	+22 56 22.2			975
1	1986 05 03.89461	10 39 52.02	+22 49 01.2			975
1	1986 05 03.89826	10 39 52.03	+22 49 00.1			975
1	1986 05 06.89051	10 41 01.48	+22 26 47.8			975
1	1986 05 06.89416	10 41 01.19	+22 26 44.9			975
1	1986 05 06.89792	10 41 00.93	+22 26 41.3			975
1	1986 05 11.85785	10 43 21.13	+21 47 37.2			975
1	1986 05 11.86234	10 43 21.32	+21 47 35.2			975
1	1986 05 11.86616	10 43 21.43	+21 47 33.6			975
1	1986 05 12.86050	10 43 53.40	+21 39 25.5			975
1	1986 05 12.86406	10 43 53.42	+21 39 24.0			975
1	1986 05 12.86794	10 43 53.58	+21 39 22.5			975
2	1986 02 20.80898	05 43 06.83	-18 39 55.0			975
2	1986 02 20.81302	05 43 07.01	-18 39 48.9			975
2	1986 03 03.80593	05 51 33.41	-14 41 12.6			975
2	1986 03 03.80946	05 51 33.56	-14 41 08.4			975
2	1986 03 04.82230	05 52 30.13	-14 19 23.0			975
2	1986 03 04.82574	05 52 30.31	-14 19 17.4			975
2	1986 03 11.83934	05 59 43.93	-11 50 58.4			975
2	1986 03 11.84281	05 59 44.16	-11 50 53.5			975
2	1986 03 14.81361	06 03 08.82	-10 49 38.1			975
2	1986 03 14.81753	06 03 09.11	-10 49 34.1			975
2	1986 04 09.84041	06 40 17.41	-02 52 48.8			975
2	1986 04 09.84426	06 40 17.80	-02 52 44.8			975
2	1986 04 15.82887	06 50 18.99	-01 21 24.8			975
2	1986 04 15.83545	06 50 19.59	-01 21 19.4			975
6	1986 04 30.89381	12 56 35.79	+14 03 38.6			975
6	1986 04 30.89861	12 56 35.52	+14 03 40.2			975
6	1986 05 11.88097	12 50 19.27	+14 14 11.3			975
6	1986 05 11.88511	12 50 19.16	+14 14 12.0			975
6	1986 05 12.88177	12 49 52.13	+14 13 47.6			975
6	1986 05 12.88354	12 49 52.02	+14 13 46.6			975
7	1986 04 28.92441	13 25 22.39	-15 49 50.3			975
7	1986 04 28.92798	13 25 22.12	-15 49 48.0			975
7	1986 04 28.93112	13 25 22.02	-15 49 47.8			975
7	1986 04 30.91221	13 23 41.05	-15 36 31.5			975
7	1986 04 30.91597	13 23 40.85	-15 36 29.5			975
7	1986 04 30.92008	13 23 40.62	-15 36 27.9			975
7	1986 05 01.92221	13 22 50.76	-15 29 47.2			975
7	1986 05 01.92672	13 22 50.50	-15 29 44.9			975
7	1986 05 11.89532	13 15 27.85	-14 25 13.7			975
7	1986 05 11.89950	13 15 27.59	-14 25 11.7			975

18	1986	02	20.82731	06	23	05.42	+15	12	16.8	975
18	1986	02	20.83115	06	23	05.37	+15	12	15.0	975
18	1986	03	03.82486	06	27	23.84	+16	22	43.0	975
18	1986	03	03.82887	06	27	23.98	+16	22	44.8	975
18	1986	03	03.83243	06	27	24.11	+16	22	46.3	975
18	1986	03	11.85619	06	32	39.13	+17	06	59.9	975
18	1986	03	11.85968	06	32	39.35	+17	07	01.2	975
18	1986	03	14.82863	06	35	00.11	+17	21	45.1	975
18	1986	03	14.83223	06	35	00.33	+17	21	46.7	975
18	1986	04	09.81143	07	02	50.93	+18	50	57.1	975
18	1986	04	09.81641	07	02	51.37	+18	50	57.7	975
18	1986	04	15.85282	07	10	53.68	+19	02	09.1	975
18	1986	04	15.85728	07	10	53.65	+19	02	08.9	975
40	1986	04	28.95112	15	38	33.45	-14	05	48.8	975
40	1986	04	28.95482	15	38	33.50	-14	05	48.9	975
40	1986	05	11.91347	15	25	52.25	-13	32	20.9	975
40	1986	05	11.91720	15	25	51.99	-13	32	20.3	975
532	1986	03	03.78760	04	07	40.23	+13	58	41.6	975
532	1986	03	04.80911	04	08	34.58	+14	06	35.1	975
532	1986	03	04.81304	04	08	34.74	+14	06	35.9	975
532	1986	03	11.81764	04	15	18.27	+15	00	53.9	975
532	1986	03	11.82218	04	15	18.58	+15	00	56.0	975
532	1986	03	14.79536	04	18	24.13	+15	23	34.1	975
532	1986	03	14.80001	04	18	24.35	+15	23	35.6	975

* * * * *

ORBITAL ELEMENTS OF ONE-OPPOSITION MINOR PLANETS.

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

The orbit computers (column C) are B = C. M. Bardwell, G = D. W. E. Green, g = A. C. Gilmore, k = T. Kobayashi, l = W. Landgraf, M = B. G. Marsden, m = R. H. McNaught, N = S. Nakano.

Planet	H	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1975 SJ	13.0	751015	323.77	30.46	30.01	3.91	0.0964	2.7659	33	4	D	k
1986 VA	13.5	861116	62.35	49.76	272.09	8.86	0.1228	3.0201	29	0		m
1986 VC	12.0	861126	12.18	22.30	5.69	11.24	0.0895	2.6635	29	9		m
1987 BO1	13.5	870125	27.23	154.23	276.76	23.15	0.2241	2.3301	15	0		G
1987 HA	14.5	870505	32.90	71.31	70.82	23.18	0.3040	2.2789	39	5		M
1987 HE	15.0	870505	22.40	14.44	169.33	23.40	0.1997	2.2903	39	5		M
1987 HK	14.0	870505	309.38	338.04	312.71	1.05	0.0839	2.5583	41	7		M
1987 KG5	14.0	870525	328.14	145.73	142.43	15.08	0.1606	2.6146	3	3		M
1987 KH5	14.0	870525	335.76	133.67	135.31	14.21	0.2005	2.7292	3	3		M
1987 KJ5	14.0	870525	325.81	140.47	144.62	14.29	0.2188	2.7122	3	3		M
1987 SG2	15.5	870902	36.36	128.04	166.56	6.71	0.2846	2.8480	2	7		M
1987 SJ2	12.0	870902	151.62	34.90	162.75	6.47	0.3202	2.4220	2	9		M
1987 SK2	15.5	870902	355.10	277.33	84.28	1.94	0.2397	2.3541	2	7	E	M
1987 SL2	14.0	870902	355.73	340.07	21.83	4.21	0.2151	2.4559	2	7	E	M
1987 SM2	13.5	870902	322.88	308.09	110.61	2.29	0.2450	3.1701	2	7		M
1987 SP2	14.5	870922	17.49	298.51	33.14	8.40	0.2714	2.3472	9	6		M
1987 SX2	13.5	870902	174.99	169.53	17.40	5.37	0.0026	2.3685	2	6	E	M
1987 SG4	15.5	870922	337.92	356.99	36.66	2.44	0.1678	2.1940	8	6	E	M
1987 SJ6	15.5	870902	11.85	291.45	41.24	2.25	0.2428	2.2841	2	9	E	M

1987	SO9	16.0	870902	31.93	161.97	137.13	1.89	0.2732	2.2813	2	7	E	M
1987	SR9	17.0	870922	27.75	263.62	44.19	3.49	0.3329	2.3759	21	0	D	N
1988	AX4	12.5	880120	91.67	168.27	176.05	6.15	0.1609	2.4324	15	0		B
1988	AZ4	12.0	880120	103.14	148.00	188.25	7.07	0.1298	2.6897	15	0		B
1988	AA5	13.0	880120	32.80	206.51	192.58	6.60	0.2862	2.7876	15	0		B
1988	AB5	12.5	880120	39.16	299.14	135.73	15.40	0.0840	2.5688	17	0		B
1988	AD5	14.5	880120	341.21	352.70	158.47	5.35	0.2385	2.5849	16	0		B
1988	AE5	11.5	880120	225.82	111.50	145.75	10.27	0.0292	3.0352	16	0		B
1988	AH5	13.0	880120	315.50	280.13	269.36	6.97	0.0903	2.4084	15	0		B
1988	BX	13.0	880120	67.93	118.62	290.34	19.06	0.0680	1.8713	24	0	D	B
1988	BH2	11.5	880120	156.96	169.87	163.11	2.73	0.2050	2.8981	7	0	E	B
1988	BL3	12.5	880120	128.55	86.76	263.62	6.01	0.2036	2.2649	13	0		B
1988	BM3	13.5	880120	325.36	242.23	297.25	1.63	0.1832	2.3212	13	0		B
1988	BO3	13.0	880120	13.70	259.55	194.64	8.31	0.1254	2.5720	12	0		B
1988	BP3	12.0	880120	209.83	127.75	160.65	7.84	0.1414	2.6964	12	0		B
1988	BS3	13.0	880120	258.76	90.96	160.68	5.25	0.1920	2.2309	12	0		B
1988	BT3	13.5	880120	48.83	283.49	151.26	5.92	0.0746	2.2846	12	0		B
1988	BY3	13.5	880120	17.14	303.27	162.68	7.26	0.0939	2.5203	10	0		B
1988	BZ3	12.5	880120	190.81	42.28	257.56	5.28	0.1706	2.2862	10	0		B
1988	BA4	14.0	880120	6.71	205.94	273.04	5.83	0.0550	2.3004	10	0		B
1988	BB4	12.5	880120	332.50	251.91	269.57	6.21	0.0739	2.3314	11	0		B
1988	BC4	13.0	880120	47.83	253.63	172.93	2.47	0.1742	2.6580	11	0		B
1988	BD4	13.5	880120	288.90	46.93	160.16	10.08	0.0836	2.3490	9	0		B
1988	BE4	12.5	880120	50.36	275.33	152.86	10.16	0.0888	2.9530	3	6		B
1988	BG4	12.5	880120	63.99	110.19	294.91	12.02	0.2124	2.6918	10	0		B
1988	BJ4	12.5	880120	234.73	130.74	149.88	6.20	0.2690	2.2352	9	0		B
1988	BM4	13.5	880120	35.64	181.34	249.15	4.15	0.1895	2.6244	8	0		B
1988	BN4	11.5	880120	340.62	230.86	272.68	8.50	0.0386	3.0188	8	0		B
1988	BO4	11.5	880120	254.35	343.32	277.73	9.32	0.1261	3.0017	7	0		B
1988	BQ4	13.5	880120	327.48	302.85	228.93	3.40	0.2226	2.7786	7	0		B
1988	CA	12.5	880120	344.83	350.92	156.71	10.88	0.2013	2.7698	29	0		B
1988	CC1	14.5	880209	327.15	36.06	148.24	6.73	0.1331	2.1850	31	4		B
1988	CD4	12.0	880209	145.68	98.49	258.62	8.67	0.1367	3.0247	12	0		M
1988	CF4	12.5	880209	143.42	134.98	224.33	9.57	0.1295	3.0167	8	8		G
1988	CJ4	13.5	880209	348.05	228.10	297.46	13.48	0.1430	2.6915	12	5		M
1988	CK4	14.0	880209	248.98	346.27	291.01	12.11	0.1582	2.6853	12	0		m
1988	CL4	14.5	880209	23.59	240.30	236.73	7.57	0.1525	2.7740	26	0		m
1988	CW4	13.0	880209	47.04	210.02	249.21	6.92	0.0455	2.9932	26	0		M
1988	CQ5	14.5	880209	40.70	227.56	235.32	5.53	0.0716	2.2676	26	0		M
1988	CR5	13.5	880209	274.56	325.13	300.02	9.92	0.2599	2.3352	26	0		M
1988	CT5	14.0	880209	358.00	184.35	318.09	5.96	0.1165	2.5246	3	7	E	G
1988	DE3	15.0	880229	60.73	142.78	295.87	10.37	0.1622	2.6786	17	8		m
1988	DF3	15.0	880229	116.74	123.37	265.30	6.53	0.1202	2.2405	17	8		m
1988	DX4	16.0	880229	349.54	345.82	186.21	12.04	0.2383	2.6093	16	5		m
1988	DZ4	14.5	880229	248.48	103.77	175.73	19.16	0.1318	1.9056	16	6		M
1988	DA5	13.0	880229	160.90	168.56	181.95	23.26	0.0629	3.1192	16	5		m
1988	DB5	14.0	880229	314.27	10.56	200.10	12.79	0.1023	2.5725	16	5		M
1988	DD5	14.0	880320	299.47	328.32	281.85	9.70	0.2290	2.3954	57	7		M
1988	EN1	13.0	880320	326.11	19.88	192.98	14.51	0.0361	2.5808	30	8		B
1988	GA	13.5	880409	354.39	350.09	207.19	3.96	0.1488	2.2608	12	4		m
1988	GD	13.5	880320	325.48	129.58	99.82	5.22	0.1089	2.4304	29	4		B
1988	GL	14.0	880409	333.54	149.42	67.40	15.25	0.1907	2.4446	31	5		B
1988	HE	14.0	880429	291.79	345.37	318.79	12.79	0.1901	2.5468	51	0		B
1988	JE	11.5	880608	296.66	191.40	119.30	3.78	0.1616	3.1542	13	7		l
1988	JN	12.0	880608	342.69	105.24	149.78	22.94	0.1211	3.2286	68	8		B
1988	JP	12.5	880519	275.94	256.03	78.96	29.46	0.3597	2.6379	30	5		B
1988	JV	11.5	880519	185.93	320.66	90.92	14.92	0.1509	2.6191	35	5		B
1988	JA1	12.5	880608	6.51	121.26	122.69	23.86	0.2250	2.3645	67	8		B
1988	JB1	14.0	880608	8.86	84.10	149.27	20.08	0.4010	3.1376	60	8		B

1988 JC1	14.0	880608	354.28	82.78	183.18	22.81	0.1933	2.3054	67	0		B
1988 KB	13.5	880608	15.81	144.84	88.42	25.62	0.2405	2.3580	62	8		B
1988 KF	13.0	880519	18.52	118.61	99.55	11.56	0.0191	2.6692	27	4		B
1988 LC	12.5	880628	37.36	50.51	161.68	13.25	0.1820	2.6072	29	4		M
1988 LE	13.0	880519	340.28	134.80	96.84	14.17	0.1243	2.6702	32	5		B
1988 LG	13.0	880519	301.36	254.16	71.73	15.64	0.1479	2.4524	29	4		B
1988 LH	12.5	880618	36.21	334.32	234.83	5.23	0.2250	2.9638	5	3		g
1988 LK	11.5	880628	1.67	108.56	147.00	11.39	0.0652	3.0017	28	4		B
1988 LN	13.5	880519	326.75	194.27	98.57	11.00	0.1492	2.5048	29	4		B
1988 MA	13.5	880519	30.21	337.39	231.22	23.49	0.1710	2.3645	31	4		M
1988 MF	14.0	880628	170.92	348.53	109.64	25.34	0.0300	1.8674	26	6		B
1988 MH	12.0	880628	306.27	35.65	292.30	12.98	0.1911	2.5884	29	4		M
1988 MJ	13.0	880628	322.59	164.63	139.97	6.78	0.1513	2.5464	29	4		B
1988 NC	14.0	880628	144.86	28.45	111.24	30.35	0.0609	1.9648	5	5		B
1988 NE	18.5	880628	9.90	354.67	253.60	9.95	0.4442	2.1796	3	6		M
1988 NR	12.5	880718	325.57	84.26	259.26	13.44	0.1483	2.6042	27	4		B
1988 NT	13.5	880718	11.38	80.06	200.23	6.23	0.1537	2.2551	27	4		B
1988 OB	14.0	880718	30.27	145.51	137.59	24.77	0.0672	1.9868	2	3	E	B
1988 PK	15.5	880827	2.08	163.96	164.25	3.64	0.2321	2.3087	5	5		m
1988 PL	15.5	880827	351.28	138.03	205.21	2.00	0.1370	2.2041	5	6		m
1988 PM	12.5	880807	358.34	13.58	315.29	6.05	0.0998	2.9971	3	3	E	M
1988 PN	15.0	880807	357.94	160.79	166.25	2.83	0.0121	2.1646	3	3	E	M
1988 PQ	16.5	880827	21.36	3.20	298.71	3.82	0.1532	2.3653	5	5		m
1988 PR	15.5	880807	30.18	97.90	179.19	3.97	0.2137	2.2101	3	4	E	M

1975 SJ = 1975 VH2 (T. Kobayashi)
1987 SR9 = 1987 RL (S. Nakano)
1988 BX = 1988 CE7 (R. Rajamohan)

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ORBITAL ELEMENTS BY L. L. FILENKO, INSTITUTE FOR THEORETICAL ASTRONOMY.

The elements are for Epoch 1988 Aug. 27.0 ET, equinox 1950.0.

(662) Newtonia	Obs. 71	M 182.72544	Peri.	165.84764
H 10.46 G 0.15	Opp. 24	n 0.24139776	Node	133.45695
rms res. 2".21 (M-P)	1909-1986	e 0.2140913	Incl.	4.12207
(806) Gyldenia	Obs. 33	M 317.92526	Peri.	102.94899
H 10.81 G 0.15	Opp. 13	n 0.17093056	Node	44.53078
rms res. 1".72 (M-P)	1915-1984	e 0.0694817	Incl.	14.20237
(1151) Ithaka	Obs. 19	M 292.85834	Peri.	122.35357
H 13.7 G 0.25	Opp. 5	n 0.26390647	Node	225.06782
rms res. 1".96 (M-P)	1929-1981	e 0.2753804	Incl.	6.56549
(1316) Kasan	Obs. 26	M 236.22336	Peri.	148.27112
H 13.7 G 0.25	Opp. 4	n 0.26317593	Node	237.75595
rms res. 2".23 (M-P)	1933-1983	e 0.3192307	Incl.	23.96116
(1468) Zomba	Obs. 43	M 125.10522	Peri.	22.52871
H 13.49 G 0.25	Opp. 7	n 0.30306737	Node	308.50066
rms res. 1".38 (M-P)	1938-1987	e 0.2713153	Incl.	9.95345
(1810) Epimetheus	Obs. 34	M 69.28849	Peri.	203.18837
H 12.8 G 0.25	Opp. 12	n 0.29718517	Node	253.68492
rms res. 1".20 (M-P)	1957-1988	e 0.0917790	Incl.	4.03307

(1882) Rauma	Obs. 28	M 50.70140	Peri.	128.41739
H 11.0 G 0.25	Opp. 8	n 0.18882572	Node	201.16539
rms res. 1".95 (M-P)	1941-1987	e 0.0932645	Incl.	9.48981
(1895) Larink	Obs. 20	M 306.77190	Peri.	55.14765
H 12.34 G 0.15	Opp. 8	n 0.17429093	Node	45.26086
rms res. 1".16 (M-P)	1937-1984	e 0.1685079	Incl.	1.82941
(2017) Wesson	Obs. 40	M 78.90449	Peri.	136.03703
H 12.71 G 0.25	Opp. 7	n 0.29142489	Node	170.93781
rms res. 1".65 (M-P)	1903-1986	e 0.1851930	Incl.	4.85873
(2020) Ukko	Obs. 44	M 43.82433	Peri.	332.86223
H 11.49 G 0.25	Opp. 8	n 0.18751736	Node	148.61063
rms res. 1".49 (M-P)	1936-1986	e 0.0618153	Incl.	11.13184
(2044) Wirt	Obs. 73	M 91.17029	Peri.	49.47185
H 13.2 G 0.25	Opp. 5	n 0.26819674	Node	53.40705
rms res. 1".20 (M-P)	1950-1984	e 0.3422383	Incl.	24.06339
(2080) Jihlava	Obs. 36	M 35.96538	Peri.	50.56064
H 13.6 G 0.25	Opp. 10	n 0.30696091	Node	23.44261
rms res. 1".38 (M-P)	1955-1987	e 0.0609510	Incl.	3.84910
(2361) Gogol	Obs. 27	M 132.00475	Peri.	89.02508
H 11.91 G 0.15	Opp. 6	n 0.17714684	Node	42.66776
rms res. 1".46 (M-P)	1968-1987	e 0.1399658	Incl.	1.62249
(2379) Heiskanen	Obs. 44	M 79.34262	Peri.	178.87929
H 10.93 G 0.15	Opp. 10	n 0.17398527	Node	150.58504
rms res. 0".98 (M-P)	1941-1987	e 0.2707378	Incl.	0.47140
(2384) Schulhof	Obs. 32	M 252.45180	Peri.	204.68621
H 12.40 G 0.30	Opp. 6	n 0.23389938	Node	7.66038
rms res. 1".48 (M-P)	1943-1985	e 0.1228927	Incl.	13.56909
(2392) Jonathan Murray	Obs. 17	M 57.06054	Peri.	301.44872
H 13.39 G 0.25	Opp. 6	n 0.27462793	Node	140.81840
rms res. 1".17 (M-P)	1969-1987	e 0.1537925	Incl.	3.36542
(2459) Spellmann	Obs. 29	M 30.85327	Peri.	213.29348
H 12.1 G 0.25	Opp. 8	n 0.18782229	Node	216.15079
rms res. 1".55 (M-P)	1931-1987	e 0.0703342	Incl.	9.69544
(2528) Mohler	Obs. 24	M 108.95594	Peri.	184.53491
H 11.6 G 0.25	Opp. 8	n 0.17750090	Node	162.32890
rms res. 2".03 (M-P)	1933-1987	e 0.1828286	Incl.	0.51021
(2541) 1973 DE	Obs. 33	M 127.72595	Peri.	326.62392
H 12.1 G 0.25	Opp. 7	n 0.19591856	Node	76.74180
rms res. 1".73 (M-P)	1951-1988	e 0.0780427	Incl.	3.19947
(2579) Spartacus	Obs. 14	M 199.21203	Peri.	333.91582
H 13.1 G 0.25	Opp. 4	n 0.29990994	Node	280.50162
rms res. 1".37 (M-P)	1974-1987	e 0.0746486	Incl.	5.77733
(2597) Arthur	Obs. 25	M 151.65474	Peri.	272.32335
H 11.74 G 0.15	Opp. 6	n 0.18899332	Node	119.89594
rms res. 1".94 (M-P)	1975-1986	e 0.1511874	Incl.	1.09267

(2609) Kiril-Metodi	Obs. 16	M 146.00641	Peri.	244.38999
H 13.27 G 0.25	Opp. 5	n 0.29779799	Node	303.48821
rms res. 2".51 (M-P)	1947-1984	e 0.0885325	Incl.	5.71509
(2645) Daphne Plane	Obs. 18	M 19.26970	Peri.	79.30755
H 12.3 G 0.25	Opp. 5	n 0.26656239	Node	349.33690
rms res. 2".56 (M-P)	1965-1987	e 0.1069277	Incl.	13.78321
(2652) Yabuuti	Obs. 20	M 301.23615	Peri.	293.53425
H 11.8 G 0.25	Opp. 5	n 0.23030336	Node	64.29942
rms res. 0".80 (M-P)	1953-1983	e 0.0825287	Incl.	6.99746
(2663) 6561 P-L	Obs. 26	M 35.31750	Peri.	81.49752
H 13.86 G 0.25	Opp. 5	n 0.29526035	Node	28.13484
rms res. 1".25 (M-P)	1960-1987	e 0.1384795	Incl.	6.22003
(2667) 1967 UO	Obs. 36	M 271.09740	Peri.	294.81617
H 11.9 G 0.25	Opp. 8	n 0.16983719	Node	60.87937
rms res. 1".61 (M-P)	1955-1987	e 0.1844203	Incl.	2.23266
(2669) Shostakovich	Obs. 20	M 227.64788	Peri.	94.86193
H 12.77 G 0.15	Opp. 4	n 0.21245652	Node	292.35326
rms res. 1".04 (M-P)	1976-1985	e 0.2178822	Incl.	7.78457
(2674) Pandarus	Obs. 37	M 128.43242	Peri.	37.01547
H 9.05 G 0.15	Opp. 9	n 0.08363394	Node	179.19900
rms res. 1".64 (M-P)	1972-1987	e 0.0665931	Incl.	1.85878
(2698) Azerbajdzhan	Obs. 20	M 254.70099	Peri.	240.83029
H 12.15 G 0.15	Opp. 7	n 0.22702493	Node	206.32130
rms res. 1".49 (M-P)	1952-1984	e 0.0547197	Incl.	6.88463
(2702) 1978 SZ2	Obs. 12	M 355.92581	Peri.	311.40507
H 11.5 G 0.25	Opp. 7	n 0.15484489	Node	246.13991
rms res. 2".15 (M-P)	1971-1988	e 0.0740336	Incl.	1.58637
(2737) Kotka	Obs. 39	M 95.61551	Peri.	104.02580
H 11.8 G 0.25	Opp. 6	n 0.21631826	Node	339.43230
rms res. 1".15 (M-P)	1938-1986	e 0.1933019	Incl.	8.80708
(2787) Tovarishch	Obs. 14	M 252.67011	Peri.	62.64500
H 11.4 G 0.25	Opp. 6	n 0.18809483	Node	30.23249
rms res. 0".63 (M-P)	1957-1986	e 0.0640986	Incl.	10.33495
(2797) Teucer	Obs. 20	M 335.29258	Peri.	46.35333
H 8.51 G 0.15	Opp. 5	n 0.08393069	Node	69.41270
rms res. 1".81 (M-P)	1975-1987	e 0.0945435	Incl.	22.34206
(2831) 1930 SZ	Obs. 28	M 163.48480	Peri.	272.27607
H 12.15 G 0.25	Opp. 5	n 0.29695100	Node	81.58974
rms res. 1".09 (M-P)	1930-1983	e 0.1976500	Incl.	4.22226
(2837) Griboedov	Obs. 32	M 104.35219	Peri.	357.52744
H 11.94 G 0.25	Opp. 8	n 0.19925052	Node	61.59501
rms res. 1".92 (M-P)	1971-1986	e 0.0577914	Incl.	2.88876
(2882) Tedesco	Obs. 36	M 77.13231	Peri.	8.69292
H 12.03 G 0.22	Opp. 8	n 0.17440900	Node	315.44887
rms res. 1".51 (M-P)	1936-1986	e 0.1833491	Incl.	0.28526

(2899) 1964 TR2	Obs. 26	M 46.68733	Peri.	303.57568
H 13.57 G 0.25	Opp. 5	n 0.28959119	Node	19.38964
rms res. 2".11 (M-P)	1964-1987	e 0.1552433	Incl.	3.22400
(2904) Millman	Obs. 34	M 223.14496	Peri.	331.88076
H 11.70 G 0.15	Opp. 4	n 0.23465112	Node	79.30583
rms res. 1".79 (M-P)	1960-1985	e 0.1387386	Incl.	15.40346
(2907) Nekrasov	Obs. 22	M 176.26382	Peri.	195.09058
H 11.6 G 0.25	Opp. 8	n 0.18809469	Node	172.33307
rms res. 2".08 (M-P)	1952-1986	e 0.0921678	Incl.	10.21033
(2912) 1942 DM	Obs. 24	M 122.41266	Peri.	75.40906
H 12.8 G 0.25	Opp. 6	n 0.28464163	Node	107.74839
rms res. 1".74 (M-P)	1942-1985	e 0.0717189	Incl.	7.27925
(2914) 1965 SB	Obs. 16	M 239.78557	Peri.	222.27179
H 13.95 G 0.25	Opp. 5	n 0.28974257	Node	166.34104
rms res. 1".66 (M-P)	1965-1987	e 0.1290841	Incl.	2.95941
(2923) Schuyler	Obs. 39	M 349.66987	Peri.	170.45401
H 13.3 G 0.25	Opp. 6	n 0.25627360	Node	350.20942
rms res. 0".93 (M-P)	1958-1987	e 0.1300510	Incl.	2.87217
(2930) Euripides	Obs. 32	M 270.56641	Peri.	99.86792
H 12.52 G 0.15	Opp. 6	n 0.21269505	Node	359.27385
rms res. 1".30 (M-P)	1960-1986	e 0.0248664	Incl.	4.06546
(2935) Naerum	Obs. 20	M 138.55606	Peri.	135.62300
H 13.03 G 0.15	Opp. 4	n 0.23493828	Node	135.41847
rms res. 1".62 (M-P)	1976-1986	e 0.1259191	Incl.	13.00679
(2959) Scholl	Obs. 52	M 184.61093	Peri.	285.91741
H 11.09 G 0.15	Opp. 5	n 0.12600360	Node	120.95025
rms res. 1".16 (M-P)	1968-1986	e 0.2773132	Incl.	5.23382
(3001) Michelangelo	Obs. 16	M 351.08392	Peri.	135.91432
H 12.40 G 0.25	Opp. 5	n 0.27238964	Node	297.27678
rms res. 1".86 (M-P)	1971-1984	e 0.0706362	Incl.	18.36890

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ORBITAL ELEMENTS BY N. K. SUMZINA, INSTITUTE FOR THEORETICAL ASTRONOMY

The elements are for Epoch 1988 Aug. 27.0 ET, equinox 1950.0.

(737) Arequipa	Obs. 185	M 135.98390	Peri.	134.06509
H 8.84 G 0.25	Opp. 24	n 0.23624402	Node	184.46650
rms res. 1".17 (M-P)	1915-1987	e 0.2421124	Incl.	12.37613
(1323) Tugela	Obs. 52	M 241.33350	Peri.	126.55732
H 10.26 G 0.15	Opp. 14	n 0.17074868	Node	45.72341
rms res. 1".79 (M-P)	1908-1985	e 0.1697568	Incl.	18.68645
(1328) Devota	Obs. 97	M 221.09296	Peri.	168.95871
H 10.35 G 0.15	Opp. 17	n 0.15132684	Node	223.31627
rms res. 1".40 (M-P)	1934-1987	e 0.1553391	Incl.	5.77767

(1331) Solvejg		Obs. 65	M 42.05553	Peri.	182.23482
H 10.35	G 0.25	Opp. 22	n 0.17949936	Node	121.31815
rms res. 1".69	(M-P)	1926-1986	e 0.1739418	Incl.	3.07659
(1334) Lundmarka		Obs. 43	M 348.45403	Peri.	128.17459
H 10.01	G 0.15	Opp. 17	n 0.19803786	Node	133.05550
rms res. 1".86	(M-P)	1934-1987	e 0.0939483	Incl.	11.43989
(1337) Gerarda		Obs. 63	M 314.92784	Peri.	200.56622
H 11.00	G 0.15	Opp. 17	n 0.19846992	Node	160.02814
rms res. 1".17	(M-P)	1934-1987	e 0.0977085	Incl.	17.96993
(1342) Brabantia		Obs. 28	M 145.40869	Peri.	229.07245
H 11.45	G 0.25	Opp. 10	n 0.28476005	Node	312.56824
rms res. 1".26	(M-P)	1935-1984	e 0.2032628	Incl.	20.93892
(1346) Gotha		Obs. 37	M 77.31889	Peri.	248.64869
H 11.29	G 0.15	Opp. 12	n 0.23138949	Node	165.92183
rms res. 2".15	(M-P)	1929-1980	e 0.1764911	Incl.	13.87914
(1381) Danubia		Obs. 182	M 247.93708	Peri.	29.23070
H 11.96	G 0.25	Opp. 18	n 0.25099217	Node	351.58988
rms res. 1".46	(M-P)	1928-1987	e 0.1803910	Incl.	4.68117
(1393) Sofala		Obs. 62	M 273.82510	Peri.	184.50421
H 12.28	G 0.25	Opp. 13	n 0.25964249	Node	56.42176
rms res. 1".54	(M-P)	1936-1985	e 0.1091686	Incl.	5.84682
(1394) Algoa		Obs. 68	M 231.67667	Peri.	113.77683
H 11.89	G 0.25	Opp. 16	n 0.25892112	Node	178.42679
rms res. 1".51	(M-P)	1936-1986	e 0.0788661	Incl.	2.66639
(1664) Felix		Obs. 28	M 231.77297	Peri.	106.51258
H 12.6	G 0.25	Opp. 10	n 0.27577214	Node	43.82069
rms res. 1".64	(M-P)	1929-1981	e 0.2257530	Incl.	6.11347
(1667) Pels		Obs. 61	M 10.65580	Peri.	195.20703
H 11.95	G 0.25	Opp. 17	n 0.30413280	Node	80.45220
rms res. 1".59	(M-P)	1930-1987	e 0.1557099	Incl.	4.61935
(1691) Oort		Obs. 70	M 196.64586	Peri.	228.68531
H 10.95	G 0.15	Opp. 21	n 0.17385214	Node	173.82162
rms res. 1".90	(M-P)	1945-1987	e 0.1576847	Incl.	1.05969
(1711) Sandrine		Obs. 47	M 173.33456	Peri.	248.26470
H 11.04	G 0.25	Opp. 14	n 0.18815996	Node	134.71516
rms res. 1".62	(M-P)	1909-1985	e 0.1086969	Incl.	11.09731
(1738) Oosterhoff		Obs. 60	M 359.09215	Peri.	283.75225
H 12.6	G 0.25	Opp. 13	n 0.30547447	Node	43.77166
rms res. 1".49	(M-P)	1927-1987	e 0.2022228	Incl.	4.87708
(1755) Lorbach		Obs. 30	M 105.82638	Peri.	334.87844
H 10.81	G 0.25	Opp. 12	n 0.18119441	Node	156.83052
rms res. 2".10	(M-P)	1936-1980	e 0.0443047	Incl.	10.69796
(1771) Makover		Obs. 28	M 319.02260	Peri.	320.00103
H 10.1	G 0.25	Opp. 14	n 0.17893867	Node	85.97395
rms res. 2".47	(M-P)	1938-1985	e 0.1777250	Incl.	11.25700

(1773) Rumpelstilz	Obs. 61	M 94.26341	Peri.	166.64749
H 11.42 G 0.25	Opp. 15	n 0.25933342	Node	74.32328
rms res. 1".50 (M-P)	1949-1985	e 0.1283434	Incl.	5.40062
(1782) Schneller	Obs. 41	M 198.61124	Peri.	110.28363
H 10.85 G 0.15	Opp. 11	n 0.17917968	Node	156.95873
rms res. 2".08 (M-P)	1931-1986	e 0.1525300	Incl.	1.54486
(1795) Woltjer	Obs. 24	M 78.18126	Peri.	76.20340
H 11.9 G 0.25	Opp. 11	n 0.21210417	Node	192.61227
rms res. 1".60 (M-P)	1955-1983	e 0.1894843	Incl.	7.55170
(1853) McElroy	Obs. 22	M 307.46646	Peri.	100.67541
H 10.5 G 0.25	Opp. 8	n 0.18394186	Node	298.53543
rms res. 1".24 (M-P)	1950-1983	e 0.0505861	Incl.	15.76970
(1867) Deiphobus	Obs. 48	M 51.64484	Peri.	359.82821
H 8.60 G 0.15	Opp. 8	n 0.08401343	Node	282.96287
rms res. 0".92 (M-P)	1971-1984	e 0.0438027	Incl.	26.86692
(1909) Alekhin	Obs. 35	M 168.81194	Peri.	4.06431
H 12.3 G 0.25	Opp. 15	n 0.26052304	Node	227.07785
rms res. 1".68 (M-P)	1926-1987	e 0.2209716	Incl.	1.77720
(1913) Sekanina	Obs. 80	M 78.43328	Peri.	33.21875
H 11.2 G 0.25	Opp. 10	n 0.20187431	Node	358.49124
rms res. 0".89 (M-P)	1928-1986	e 0.0780318	Incl.	1.57197
(1936) Lugano	Obs. 35	M 64.15563	Peri.	254.42130
H 11.2 G 0.25	Opp. 8	n 0.22530149	Node	265.02155
rms res. 1".03 (M-P)	1951-1986	e 0.1396317	Incl.	10.24048
(1939) Loretta	Obs. 49	M 285.66099	Peri.	193.99684
H 10.7 G 0.25	Opp. 14	n 0.17878948	Node	40.11409
rms res. 1".80 (M-P)	1939-1985	e 0.1266824	Incl.	0.90908
(1943) Anteros	Obs. 100	M 344.39275	Peri.	338.16644
H 15.83 G 0.25	Opp. 6	n 0.57626661	Node	245.76394
rms res. 1".36 (M-P)	1973-1985	e 0.2560868	Incl.	8.70553
(1946) Walraven	Obs. 24	M 115.30213	Peri.	339.33861
H 12.7 G 0.25	Opp. 9	n 0.28388734	Node	16.86021
rms res. 1".76 (M-P)	1931-1985	e 0.2355068	Incl.	8.15855
(1953) Rupertwildt	Obs. 56	M 243.29060	Peri.	328.03854
H 11.8 G 0.25	Opp. 12	n 0.17882109	Node	74.08949
rms res. 1".62 (M-P)	1929-1986	e 0.1709376	Incl.	2.46099
(1987) Kaplan	Obs. 30	M 277.14394	Peri.	37.99039
H 11.8 G 0.25	Opp. 5	n 0.26790172	Node	313.82990
rms res. 1".86 (M-P)	1952-1985	e 0.2263145	Incl.	23.63427
(2814) Vieira	Obs. 38	M 346.41647	Peri.	175.85731
H 12.44 G 0.25	Opp. 7	n 0.20293985	Node	153.75132
rms res. 1".42 (M-P)	1969-1986	e 0.0697480	Incl.	2.45216
(2830) Greenwich	Obs. 22	M 113.71301	Peri.	140.53073
H 12.55 G 0.25	Opp. 5	n 0.26904747	Node	48.53853
rms res. 1".21 (M-P)	1969-1982	e 0.2085452	Incl.	25.35079

(2910) Yoshkar-Ola	Obs. 16	M 165.73422	Peri.	325.70536
H 13.91 G 0.25	Opp. 4	n 0.30157010	Node	43.87513
rms res. 1".29 (M-P)	1979-1983	e 0.1559093	Incl.	2.94182
(2956) Yeomans	Obs. 80	M 121.84433	Peri.	120.67724
H 12.40 G 0.15	Opp. 6	n 0.21452664	Node	111.96490
rms res. 0".97 (M-P)	1974-1986	e 0.0914284	Incl.	2.86486
(2994) 1975 PA	Obs. 22	M 169.38353	Peri.	320.76516
H 14.2 G 0.25	Opp. 4	n 0.26244464	Node	357.87738
rms res. 1".58 (M-P)	1975-1983	e 0.2306156	Incl.	2.48480
(3102) 1981 QA	Obs. 75	M 79.64025	Peri.	154.27898
H 16.04 G 0.25	Opp. 3	n 0.31231534	Node	171.75169
rms res. 1".09 (M-P)	1981-1987	e 0.4488506	Incl.	8.41353
(3128) Obruchev	Obs. 28	M 164.48289	Peri.	191.29487
H 11.34 G 0.15	Opp. 6	n 0.17969874	Node	101.96725
rms res. 1".47 (M-P)	1976-1986	e 0.1620106	Incl.	2.93980
(3179) 1962 FA	Obs. 29	M 27.63448	Peri.	269.81211
H 11.9 G 0.25	Opp. 6	n 0.18110323	Node	180.17386
rms res. 1".15 (M-P)	1956-1987	e 0.1560691	Incl.	1.74576
(3274) 1981 QO2	Obs. 57	M 148.63878	Peri.	233.02838
H 12.2 G 0.25	Opp. 5	n 0.17471880	Node	28.24920
rms res. 0".89 (M-P)	1981-1987	e 0.1035962	Incl.	1.25393

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

The elements are for Epoch 1988 Aug. 27.0 ET, equinox 1950.0.

(235) Carolina	Obs. 94	M 284.64798	Peri.	208.06646
H 8.76 G 0.25	Opp. 24	n 0.20150230	Node	65.83215
rms res. 0".9 (M-N)	1910-1986	e 0.0629229	Incl.	9.03911
(245) Vera	Obs. 74	M 76.63040	Peri.	327.39455
H 7.92 G 0.39	Opp. 28	n 0.18188082	Node	61.11376
rms res. 0".9 (M-N)	1916-1985	e 0.2075667	Incl.	5.18939
(273) Atropos	Obs. 48	M 297.12441	Peri.	119.90291
H 10.35 G 0.15	Opp. 18	n 0.26594541	Node	158.61950
rms res. 1".0 (M-N)	1910-1988	e 0.1621043	Incl.	20.41024
(345) Tercidina	Obs. 77	M 334.01332	Peri.	229.75985
H 8.75 G 0.15	Opp. 31	n 0.27781128	Node	212.23836
rms res. 1".0 (M-N)	1901-1987	e 0.0620813	Incl.	9.74340
(346) Hermentaria	Obs. 104	M 201.12589	Peri.	289.75833
H 7.42 G 0.25	Opp. 28	n 0.21066684	Node	91.79469
rms res. 0".8 (M-N)	1904-1985	e 0.0999548	Incl.	8.75613
(359) Georgia	Obs. 72	M 256.16929	Peri.	336.76003
H 9.29 G 0.25	Opp. 20	n 0.21853275	Node	5.89203
rms res. 0".8 (M-N)	1906-1987	e 0.1552556	Incl.	6.76826

(397) Vienna	Obs. 125	M 13.09316	Peri.	139.66081
H 9.36 G 0.22	Opp. 21	n 0.23030900	Node	227.80333
rms res. 0".9 (M-N)	1906-1987	e 0.2460151	Incl.	12.85338
(405) Thia	Obs. 60	M 226.13232	Peri.	308.56384
H 8.43 G 0.12	Opp. 17	n 0.23722679	Node	254.72776
rms res. 0".9 (M-N)	1913-1983	e 0.2480325	Incl.	11.93464
(498) Tokio	Obs. 93	M 9.31003	Peri.	240.37228
H 8.95 G 0.15	Opp. 27	n 0.22831862	Node	97.11569
rms res. 0".9 (M-N)	1904-1984	e 0.2214351	Incl.	9.52529
(696) Leonora	Obs. 48	M 322.72001	Peri.	106.11171
H 9.32 G 0.15	Opp. 18	n 0.17458799	Node	299.02458
rms res. 0".9 (M-N)	1942-1982	e 0.2502234	Incl.	13.02284
(846) Lipperta	Obs. 67	M 1.67901	Peri.	131.73268
H 10.47 G 0.15	Opp. 23	n 0.17860546	Node	261.51364
rms res. 0".9 (M-N)	1916-1987	e 0.1883449	Incl.	0.26409
(852) Wladilena	Obs. 34	M 260.21981	Peri.	281.63880
H 10.16 G 0.25	Opp. 15	n 0.27140732	Node	27.05730
rms res. 1".0 (M-N)	1923-1985	e 0.2738464	Incl.	23.02001
(911) Agamemnon	Obs. 104	M 68.84413	Peri.	80.93361
H 7.88 G 0.15	Opp. 21	n 0.08285958	Node	337.29722
rms res. 0".9 (M-N)	1919-1985	e 0.0683632	Incl.	21.83552
(1143) Odysseus	Obs. 127	M 19.82925	Peri.	234.99105
H 8.43 G 0.15	Opp. 25	n 0.08200768	Node	220.58294
rms res. 0".7 (M-N)	1930-1987	e 0.0935163	Incl.	3.13898
(1437) Diomedes	Obs. 118	M 45.25106	Peri.	128.81944
H 8.30 G 0.15	Opp. 20	n 0.08540944	Node	315.13401
rms res. 0".7 (M-N)	1937-1983	e 0.0462777	Incl.	20.58207

The identifications are by E. Goffin unless otherwise stated.

(3860)* 1986 PM4 = 1986 RS = 1930 UF1 = 1934 NK = 1957 JC1 = 1972 QP = 1979 BQ1

Discovered 1986 Aug. 8 by E. W. Elst and V. Ivanova at the Bulgarian National Observatory. The double designation 1986 PM4 = 1986 RS is by F. N. Bowman, E. W. Elst and B. G. Marsden, who found it independently (MPC 11723).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 151.21009	(1950.0)	P	Q
n 0.20988518	Peri. 43.72669	+0.88473830	+0.44656051
a 2.8042380	Node 289.31010	-0.45699514	+0.77483256
e 0.1557199	Incl. 8.13213	-0.09161647	+0.44745750
P 4.70	H 11.9	G 0.25	

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

301017	690	0.7+	2.1-	860808	071	0.7-	0.6-	860908	071	1.7+	0.7+
301019	690	0.8-	0.4-	860808	071	0.7+	1.4-	860908	071	0.5-	0.2+
340709	078	(0.7+	20.8-)X	860809	071	0.2-	0.8-	871222	801	0.5-	0.2-
570505	076	(0.03+	0.06+)X	860905	071	0.5+	0.9-	880121	511	0.3-	1.7+
720819	095	1.1+	0.9+	860905	071	0.5+	0.4+	880121	511	0.7-	0.0
720905	095	1.7+	1.0-	860907	071	2.6-	2.4+	880122	511	0.4+	1.0+
790124	095	0.4+	0.9-	860907	071	2.5-	2.4+	880122	511	0.7+	0.1+

1988 JM = 1948 VA = 1953 TG = 1958 TO = 1961 FA = 1969 XE = 1980 XF3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 268.10920	(1950.0)	P	Q	
n 0.18873019	Peri. 82.79864	+0.97745100	+0.13695002	
a 3.0100658	Node 269.23568	-0.19043326	+0.90058733	
e 0.1023176	Incl. 9.25012	+0.09123983	+0.41253744	
P 5.22	H 12.0	G 0.25		

Residuals in seconds of arc

481101	020	(38.0-	2.5+)X	610319 839	0.5-	1.2+	880512 372	1.5+ 1.1-
481103	020	(42.5+	29.6+)X	610319 839	0.3-	1.3+	880512 372	1.0+ 1.3-
531013	062	1.0+	2.1+	691201 095	1.4-	2.8-	880518 372	0.7- 0.1-
531013	062	0.9+	0.8+	801210 095	1.1+	1.7+	880518 372	0.9+ 0.1+
531013	062	0.5+	1.1+	880507 372	(3.8-	0.8-)	880522 372	1.6+ 0.4+
531013	062	0.1+	1.4+	880507 372	(5.5-	2.0+)	880522 372	0.4- 1.1+
581013	760	1.8-	0.7-	880508 372	0.0	1.1+		
581013	760	2.7-	0.6-	880508 372	1.9-	1.4+		

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ORBITAL ELEMENTS BY S. NAKANO, SMITHSONIAN ASTROPHYSICAL OBSERVATORY.

The elements are for Epoch 1988 Aug. 27.0 ET, equinox 1950.0.

(2035) Stearns	Obs. 48	M 338.46226	Peri.	200.16825	
H 12.78 G 0.40	Opp. 9	n 0.38110232	Node	76.50404	
rms res. 1".1 (M-P)	1954-1986	e 0.1313380	Incl.	27.75709	

The identifications are by S. Nakano unless otherwise stated.

(3861)* A910 FA = 1951 GM = 1963 DK = 1971 CD = 1981 SP4 = 1986 WL
Discovered 1910 Mar. 30 by J. Helffrich at Heidelberg.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 68.46019	(1950.0)	P	Q	
n 0.24099907	Peri. 341.54377	-0.99948795	-0.01050778	
a 2.5573636	Node 197.93497	+0.01937491	-0.95044359	
e 0.1853212	Incl. 5.63243	-0.02546467	-0.31071943	
P 4.09	H 12.3	G 0.25		

Residuals in seconds of arc

100330	024	1.7-	1.6-	861130 881	0.8+	0.7+	861208 399	0.7+ 0.6+
100405	045	3.1-	0.0	861130 881	0.2+	0.0	861209 888	1.0+ 1.0+
100410	045	1.9+	0.3+	861206 399	1.9-	0.9-	861209 888	0.0 1.9+
100412	045	(1.8+	9.8+)	861206 399	1.8+	2.4-	870101 881	(6.1- 3.9+)
100416	045	2.3+	0.9+	861206 399	0.1-	2.1-	870101 881	1.8- 0.1+
100416	045	(13.4-	18.5+)	861207 881	1.8-	0.8-	870130 801	0.4- 1.3+
510411	094	(20.9-	18.7-)X	861207 881	1.5-	0.4-	880420 801	0.5- 1.4-
630227	760	1.1+	0.1-	861208 883	1.4-	0.5-	880512 688	1.1- 0.0
630227	760	0.9+	1.2+	861208 881	2.8+	0.2-	880512 688	0.9+ 0.6-
710201	029	0.3+	0.2-	861208 883	0.0	0.2-	880513 385	0.0 1.6+
710202	029	0.1-	0.3+	861208 881	0.1+	0.6+	880513 385	(5.1- 4.6+)
810925	095	0.9+	1.8+	861208 399	0.4-	0.0	880610 801	0.2- 0.2-

(3862)* 1972 KM = 1980 KC1 = 1980 KB2 = 1984 KX
Discovered 1972 May 18 by T. M. Smirnova at the Crimean Astrophysical Observatory. The identification and double designation 1972 KM = 1980 KC1 = 1980 KB2 are by T. Furuta (JAM 1238).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	346.33551		(1950.0)		P		Q				
n	0.24389255	Peri.	178.98452		+0.26258550		+0.95305267				
a	2.5370967	Node	106.22647		-0.88634669		+0.30000935				
e	0.2551216	Incl.	9.03584		-0.38136387		-0.04104868				
P	4.04	H	13.2	G	0.25						

Residuals in seconds of arc

720518	095	1.4-	0.9+	840519	095	(1.8-	6.1-)	880515	801	0.3+	0.2+
720609	095	1.0+	0.7+	840530	095	1.9-	0.3+	880515	688	0.2-	0.3+
720613	095	0.4-	1.6-	880513	376	0.2-	2.2-	880614	801	0.3+	0.5+
800517	095	0.6-	3.4-	880513	376	1.0-	0.1-				
800518	095	3.2+	3.5+	880515	688	0.7+	1.0+				

(3863)* 1978 SJ3 = 1971 SM1 = 1981 KF

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

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	314.77172		(1950.0)		P		Q				
n	0.27798092	Peri.	145.10812		+0.78324583		+0.62162166				
a	2.3251951	Node	176.40303		-0.60191577		+0.76246619				
e	0.1483573	Incl.	9.73266		-0.15563862		+0.17953223				
P	3.55	H	13.2	G	0.25						

Residuals in seconds of arc

710916	095	0.3+	0.4-	810531	046	2.0+	1.5-	880413	801	1.0+	0.2-
710923	095	(2.8-	7.0-)	810531	046	2.7+	0.8-	880513	801	0.2-	0.6+
780926	095	1.0+	2.6-	810601	046	1.1-	0.3-	880514	688	2.6-	3.5+
781002	095	0.0	0.5+	810601	046	1.6-	1.1-	880514	688	3.0+	1.3+
781005	095	1.1-	2.7+	810602	046	1.5-	0.8-				
781008	095	0.4-	1.4+	810602	046	1.2-	0.5+				

(3864)* 1986 XF = 1969 UF2 = 1973 SS3 = 1973 SM6

Discovered 1986 Dec. 6 by P. Jensen at Brorfelde.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	170.43706		(1950.0)		P		Q				
n	0.23440526	Peri.	15.29053		+0.76521085		-0.64339402				
a	2.6051005	Node	24.79761		+0.58491304		+0.68036507				
e	0.1552043	Incl.	3.04537		+0.26894068		+0.35092380				
P	4.20	H	13.3	G	0.25						

Residuals in seconds of arc

691018	095	1.4-	2.0-	861202	688	(2.3+	6.2+)	861206	054	2.0+	0.2-
691105	095	3.0+	2.1-	861202	688	3.5+	0.5+	861207	046	3.5-	1.0+
730925	095	0.1-	0.9+	861202	688	3.0+	3.1+	861207	046	3.5-	0.4+
730928	095	0.3+	1.1-	861202	688	2.0-	1.3+	861209	046	2.4-	0.0
861125	046	0.1-	0.9-	861204	046	1.5+	1.3-	861209	046	0.9-	0.6+
861125	046	1.6-	1.5-	861204	046	1.9+	1.5-	880313	054	0.2+	2.0-
861129	046	1.2-	1.2+	861204	010	3.0+	0.0	880314	054	1.1-	0.4-
861129	046	0.3-	0.1+	861205	010	(6.0+	1.9-)	880413	054	0.7-	1.0-

(3865)* 1988 AY4 = 1971 QC1 = 1978 JC3 = 1979 VP = 1985 FH1 = 1986 PG

Discovered 1988 Jan. 13 by H. Debehogne at the European Southern Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	268.96858		(1950.0)		P		Q				
n	0.26556268	Peri.	33.60557		-0.37983466		+0.92282666				
a	2.3971287	Node	214.19689		-0.87183643		-0.38030676				
e	0.0806865	Incl.	6.55501		-0.30923596		-0.06130032				
P	3.71	H	12.7	G	0.25						

Residuals in seconds of arc

710819	095	1.8+	4.8-		880113	809	0.5-	0.3+		880118	809	0.4-	0.2-
780509	095	1.5-	0.8+		880113	809	0.1-	0.5+		880120	809	0.1-	0.1-
791111	095	0.3-	2.2+		880114	809	0.2-	0.3+		880120	809	0.5-	0.5-
850322	688	1.0+	0.4-		880114	809	0.0	0.5+		880122	809	0.2+	0.2-
850322	688	0.6+	0.4+		880114	809	0.3+	0.6+		880122	809	0.1+	0.6-
860804	675	0.4+	0.9+		880116	809	0.5-	0.0		880124	809	0.3+	0.8-
860804	675	1.1-	1.7+		880116	809	0.4-	0.0		880124	809	0.4+	1.3-
860806	675	0.1+	0.3+		880116	809	0.1+	0.1+		880126	809	1.1+	1.5-
880113	809	0.9-	0.1+		880118	809	0.1-	0.2-		880128	809	(2.0+	3.1-)

(3866)* 1988 BH4 = 1941 SD2 = 1964 XK = 1975 XC7 = 1975 YN = 1977 CO1 = 1980 TU9 = 1983 AL2 = 1985 OJ = 1986 XZ

Discovered 1988 Jan. 20 by H. Debehogne at the European Southern Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

			(1950.0)	P	Q
M	176.62715				
n	0.17771770	Peri.	122.68678	+0.96531428	+0.25760659
a	3.1331578	Node	222.42805	-0.25564148	+0.89946285
e	0.2028311	Incl.	3.61265	-0.05306394	+0.35299494
P	5.55	H	11.6	G 0.25	

Residuals in seconds of arc

410923	024	0.6+	1.8-		850718	046	0.5+	0.1-		880121	809	0.5+	0.0
641203	330	1.1-	2.6+		850719	046	0.1-	1.3+		880123	809	0.4+	0.5-
751211	330	0.3-	1.8+		850719	046	1.9-	1.3+		880123	809	0.7+	0.8-
751224	330	1.0+	0.3+		861202	688	1.1-	0.1+		880125	809	0.7-	0.3-
770211	675	0.2-	0.9-		861202	688	1.2-	0.3-		880125	809	0.3-	0.3-
770212	675	0.2+	1.1-		880120	809	0.1+	0.6+		880125	809	0.0	0.0
801013	095	2.7+	1.1-		880120	809	0.5+	0.5+		880126	809	0.9-	0.3-
830113	033	(5.2+	26.3-)		880120	809	0.8+	0.6+		880126	809	0.8-	0.4-
850718	046	0.0	0.6-		880121	809	0.4+	0.0					

(3867)* 1988 HG = 1941 EB = 1973 AS3 = 1979 XM = 1984 DJ1 = 1986 VA6

Discovered 1988 Apr. 16 by M. Yanai and K. Watanabe at Kitami. The identifications are by T. Kobayashi and S. Nakano.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

			(1950.0)	P	Q
M	118.05112				
n	0.27332568	Peri.	33.00030	-0.37917503	-0.91905973
a	2.3515222	Node	79.48121	+0.82347460	-0.38814008
e	0.1057653	Incl.	6.27692	+0.42203777	-0.06838488
P	3.61	H	12.9	G 0.25	

Residuals in seconds of arc

410319	024	4.5+	1.9+		861106	688	1.1-	1.5+		880509	400	1.5+	1.1-
410416	024	1.6-	1.4+		861106	688	0.6+	2.1+		880509	400	1.6+	1.6+
730102	095	1.8-	0.9-		861204	688	0.3+	1.5+		880509	400	(4.3+	1.1-)
730104	095	2.6-	1.2-		861204	688	0.4-	1.2+		880514	400	2.1-	2.7+
791214	330	1.9-	0.4+		880416	400	(4.5-	10.2+)		880514	400	0.2-	0.9-
791214	095	1.3+	0.7-		880416	400	(4.2-	8.9+)		880514	400	3.5-	0.3+
840226	095	4.8+	1.8-		880416	400	(6.3-	9.3+)					

(3868)* 4575 P-L = 1935 SA1 = 1952 HV3 = 1953 TD2 = 1977 KD1

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

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5
M 304.21185 (1950.0) P Q
n 0.27638926 Peri. 185.45040 +0.99809870 +0.05769290
a 2.3341133 Node 171.15435 -0.04986381 +0.96267512
e 0.0980902 Incl. 8.10929 -0.03622971 +0.26443932
P 3.57 H 13.1 G 0.25
Residuals in seconds of arc

350921	078	(70.2+	64.9-)X	600928	675	0.5+	0.2+	770609	808	2.2+	1.7-
350929	078	(29.5+	18.2-)X	601017	675	0.7-	0.4+	770609	808	(5.2+	2.6-)
520428	711	1.1-	3.5+ Y	601022	675	0.4-	1.0-	870502	801	0.8-	0.8+
531009	760	0.3+	0.8+	601025	675	0.0	0.8-	880614	801	0.8-	1.1+
531009	760	0.5-	2.4+	601026	675	0.3-	0.7-	880614	657	1.3-	1.7-
600924	675	0.2-	0.2+	770521	808	1.6+	2.0+	880614	657	1.7-	1.0-
600926	675	0.3+	0.3+	770521	808	(4.2+	6.4-)	880616	657	2.2+	0.1-
600927	675	0.5+	1.2+	770526	808	(1.0+	7.9-)				

1975 VZ = 1978 LW = 1988 FG1

The identification 1975 VZ = 1978 LW is by E. Bowell (MPC 10829).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)
M 130.51105 (1950.0) P Q
n 0.25626259 Peri. 247.83954 +0.87248956 -0.48780006
a 2.4547849 Node 141.34043 +0.46342888 +0.80757629
e 0.2348052 Incl. 2.61621 +0.15490528 +0.33146890
P 3.85 H 14.0 G 0.25
Residuals in seconds of arc

751101	095	1.4+	0.3+	780610	675	1.1+	0.5-	880317	033	0.3+	0.6-
751107	095	1.0-	0.9-	780611	675	1.1-	0.4-				
751202	095	0.3-	0.1+	880317	033	0.4-	0.1+				

1979 KG = 1986 CJ2 = 1986 EW2 = 1988 OC

The double designation 1986 CJ2 = 1986 EW2 was suggested by S. Singer-Brewster.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)
M 321.31805 (1950.0) P Q
n 0.22478773 Peri. 239.80006 +0.97712103 -0.07739072
a 2.6788918 Node 123.94504 +0.12923400 +0.95581654
e 0.1830036 Incl. 13.81585 -0.16891733 +0.28359375
P 4.38 H 12.5 G 0.25
Residuals in seconds of arc

790519	809	0.8-	0.3+	860306	675	(91.0+	1.1-)	880712	675	1.1-	0.9-
790520	809	1.0-	0.2+	860306	675	(92.6+	0.9-)	880716	675	4.3+	3.4+
790524	809	1.8+	0.2+	860308	675	(83.0+	0.7-)	880717	675	0.6-	0.6+
860207	675	0.8-	0.2-	860308	675	(85.7+	1.1-)				
860207	675	0.8+	0.4-	880710	675	2.7-	4.2-				

1981 JS1 = 1981 KD = 1977 CX = 1988 KM

The double designation and identification 1981 JS1 = 1981 KD = 1977 CX are by T. Furuta (JAM 2054).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)
M 79.20495 (1950.0) P Q
n 0.28053579 Peri. 207.99545 -0.98630851 -0.15459858
a 2.3110609 Node 322.97061 +0.16342215 -0.86962629
e 0.1199154 Incl. 5.46939 +0.02210732 -0.46888100
P 3.51 H 14.0 G 0.25

Residuals in seconds of arc

770213	675	0.6-	0.4+	810529	805	(8.5-	0.0)	880524	474	0.5-	1.4+
770214	675	0.5+	0.6-	810529	805	2.9+	1.5-	880605	474	0.5-	0.4-
810509	808	0.9-	1.2-	880521	474	1.0+	2.2+	880605	474	0.8-	0.3-
810509	808	0.7-	1.0-	880521	474	2.3+	1.3+	880611	474	0.1-	0.6-
810528	809	1.9-	0.5+	880524	474	0.2-	0.1-	880611	474	0.5-	0.6-

1982 RM1 = 1974 DK2 = 1976 YJ6 = 1979 WT5 = 1986 YU

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

M	59.10497		(1950.0)	P	Q
n	0.30438105	Peri.	277.80526	-0.62775889	+0.77562203
a	2.1887282	Node	313.09283	-0.67391075	-0.58384388
e	0.0950846	Incl.	5.16949	-0.38956782	-0.23986828
P	3.24	H	13.0	G 0.25	

Residuals in seconds of arc

740216	033	0.2-	1.9+	820915	046	0.0	0.2-	820929	675	0.7+	1.9+
761220	095	2.4+	6.1-	820915	046	1.6-	0.1+	861230	675	0.4+	1.7+
791117	095	1.0-	0.3-	820916	046	1.4+	1.5+	861230	675	0.1+	2.2+
820914	046	2.4-	2.0-	820916	046	0.7+	0.3+	870101	675	(43.1-	3.4+)
820914	046	0.3+	0.4+	820928	675	0.1-	1.1+	870101	675	(42.8-	2.9+)

1982 TG1 = 1969 UL2 = 1988 FL1

The identification 1982 TG1 = 1969 UL2 is by T. Kobayashi (MPC 10939).

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

M	114.38402		(1950.0)	P	Q
n	0.22680704	Peri.	190.59870	+0.69431533	-0.70813164
a	2.6629677	Node	215.63786	+0.67532710	+0.70272653
e	0.1673549	Incl.	12.72646	+0.24871574	+0.06873864
P	4.35	H	13.0	G 0.25	

Residuals in seconds of arc

691018	095	1.5-	2.6+	821024	095	0.0	0.4-	880317	033	0.0	1.1-
691105	095	1.0+	1.5+	860804	801	0.5+	0.1+	880317	033	0.6-	0.9-
821014	095	1.4+	3.1-	860902	801	0.3-	0.6-				
821020	095	0.6-	0.1-	861006	801	0.0	0.9-				

1983 RY3 = 1973 UZ2 = 1976 GR4 = 1978 RS2 = 1978 TV = 1978 TG3

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

M	85.01316		(1950.0)	P	Q
n	0.18659710	Peri.	223.97499	-0.63011868	+0.77616336
a	3.0329621	Node	7.07532	-0.65135325	-0.51233566
e	0.0589674	Incl.	10.67801	-0.42271669	-0.36753586
P	5.28	H	12.0	G 0.25	

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

731027	095	(0.16-	0.22-)	781004	095	1.2+	1.3-	830906	688	0.8-	2.1+
731029	095	0.2-	0.5-	781009	095	0.8-	0.2+	830906	688	0.9-	0.5-
760402	095	0.1+	0.1+	830902	688	0.7+	2.5-	830910	688	0.2+	2.2+
780912	095	0.1-	2.2+	830902	688	1.2+	2.3-	830910	688	0.4-	0.4+

1984 EN1 = 1978 QN3 = 1988 JY

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

M	25.10978		(1950.0)	P	Q
n	0.27693229	Peri.	86.40571	-0.54259538	+0.83984324
a	2.3310657	Node	150.71614	-0.78299285	-0.49881993
e	0.1208118	Incl.	1.86564	-0.30415859	-0.21410747
P	3.56	H	14.0	G 0.25	

Residuals in seconds of arc

780826	414	0.7+	0.2+	840306	809	0.3+	0.5-	840310	809	0.2+	0.9-
780826	414	0.5-	0.6-	840306	809	0.2+	0.5-	840310	809	0.1-	0.7-
840226	095	1.9+	1.0-	840306	809	0.2+	0.0	840310	809	0.2-	0.4-
840302	809	1.1-	1.2+	840307	809	0.2-	0.7-	840311	809	0.1+	0.8+
840302	809	0.9-	1.1+	840307	809	0.5+	0.4-	840311	809	0.3+	0.7+
840302	809	1.1-	1.1+	840307	809	1.2+	0.1-	840311	809	0.5+	0.5+
840303	809	0.8-	1.0+	840308	809	0.8-	0.5-	880509	046	0.4-	0.9-
840303	809	0.3-	0.6+	840308	809	0.4-	0.1-	880509	046	0.0	1.7+
840303	809	0.3+	0.5+	840308	809	0.3-	0.5-	880512	046	0.8-	0.5-
840305	809	0.2+	0.7-	840309	809	0.2-	0.1-	880512	046	1.2+	0.3-
840305	809	0.5+	0.5-	840309	809	0.1-	0.2-				
840305	809	0.1+	0.1-	840309	809	0.2+	0.1-				

1985 JJ = 1981 SV2

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

M	135.19481		(1950.0)	P	Q
n	0.18994764	Peri.	148.32685	+0.91093934	+0.41180006
a	2.9971903	Node	187.48166	-0.40691502	+0.88705092
e	0.1131514	Incl.	10.93622	-0.06789462	+0.20871363
P	5.19	H	12.0	G 0.25	

Residuals in seconds of arc

810928	095	1.3+	0.2-	810929	511	0.1-	0.1+	850518	688	0.3+	0.6-
810929	511	0.4-	0.1+	850515	688	0.2-	1.0+	850518	688	0.9+	0.2+
810929	511	0.8-	0.0	850515	688	0.1+	0.4-	850521	688	1.0-	0.1-

1985 PL1 = 1985 QH2 = 1985 QY3 = 1988 CK7

The triple designation 1985 PL1 = 1985 QH2 = 1985 QY3 is by H. Oishi (JAM 2074).

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

M	216.20741		(1950.0)	P	Q
n	0.20133527	Peri.	141.09882	+0.88811054	+0.45766423
a	2.8830820	Node	191.88636	-0.45611947	+0.86616207
e	0.0603467	Incl.	11.89742	-0.05669828	+0.20076531
P	4.90	H	14.0	G 0.25	

Residuals in seconds of arc

850813	801	2.6+	0.4-	880215	809	1.6-	0.8-	880221	809	0.8+	0.3-
850816	675	3.0-	0.2-	880216	809	0.1+	0.0	880223	809	0.1+	0.1-
850816	675	0.1+	2.3+	880216	809	0.3-	0.5+	880223	809	0.6-	0.8+
850817	675	1.1-	1.9-	880216	809	0.6+	0.8+	880223	809	0.5+	0.0
850817	675	1.3+	0.3+	880221	809	0.1-	0.4-				
850823	675	(32.8-	1.4-)	880221	809	0.5+	0.4-				

1985 RS4 = 1988 BR4

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

M	306.98454		(1950.0)	P	Q
n	0.17564205	Peri.	68.92651	-0.72238054	+0.68966383
a	3.1577997	Node	154.59288	-0.66994141	-0.67998922
e	0.0837699	Incl.	6.73272	-0.17130344	-0.24895474
P	5.61	H	12.0	G 0.25	

Residuals in seconds of arc

850914	809	0.2-	0.5-	850921	809	0.0	0.1+	880126	809	0.4-	0.6-
850914	809	0.1+	0.3-	850921	809	0.0	0.2+	880126	809	0.2+	0.0
850914	809	0.2+	0.2-	880123	809	0.4+	0.2+	880127	809	0.4+	0.7+
850919	809	0.1-	0.1+	880123	809	1.2+	0.9+	880127	809	0.0	0.1+
850919	809	0.0	0.1+	880124	809	0.2-	0.2-	880128	809	0.1-	0.3-
850919	809	0.1+	0.2+	880124	809	0.3-	0.2+	880129	809	0.9-	0.5-
850921	809	0.0	0.2+	880124	809	0.2-	0.6+	880130	809	0.1-	1.0-

1988 AL = 1951 EC
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	8.80682		(1950.0)	P	Q
n	0.21164618	Peri.	359.08858	-0.97349673	-0.22648021
a	2.7886668	Node	167.68133	+0.21075055	-0.94236541
e	0.1694325	Incl.	8.57022	+0.08881619	-0.24628063
P	4.66	H	12.0	G 0.25	

Residuals in seconds of arc

510306	024	1.0+	0.3+	880120	809	0.1+	0.4+	880126	809	0.7+	0.3-
510313	024	1.0-	0.4-	880120	809	0.3+	0.5+	880127	809	0.2+	0.5-
880115	399	1.0+	1.1-	880122	809	0.2-	0.2+	880127	809	0.1+	0.4-
880115	399	0.4-	0.1+	880122	809	0.1-	0.1-	880127	809	0.1-	0.4-
880115	399	0.7-	0.1+	880122	809	0.0	0.4-	880128	809	0.8-	0.4+
880117	809	0.0	0.3-	880124	809	0.4-	0.7+	880128	809	0.8-	0.3+
880117	809	0.3+	0.5-	880124	809	0.1-	1.0+	880128	809	0.6-	0.3+
880117	809	0.6+	0.5-	880124	809	0.1-	0.9+	880129	809	0.1-	0.0
880118	809	0.3+	0.1-	880126	809	0.6+	0.0	880129	809	0.0	0.0
880118	809	0.0	0.3-	880126	809	0.7+	0.0	880130	809	0.4-	0.0

1988 AJ5 = 1977 EA7 = 1982 BZ11
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	322.94780		(1950.0)	P	Q
n	0.17366433	Peri.	65.35840	-0.60160689	+0.79878078
a	3.1817288	Node	167.65372	-0.73990768	-0.55522602
e	0.1644567	Incl.	1.14983	-0.30100793	-0.23167504
P	5.68	H	13.0	G 0.25	

Residuals in seconds of arc

770312	381	1.0-	0.8+	880114	809	0.5+	0.0	880123	809	0.2+	0.2-
770312	381	0.6+	0.0	880116	809	0.6-	0.2+	880123	809	0.6+	0.1-
770314	381	0.2-	0.4+	880116	809	0.2-	0.2-	880125	809	0.4-	0.5+
770314	381	1.6+	0.8-	880116	809	0.4+	0.5-	880125	809	0.3+	0.5+
770315	381	0.5-	0.2+	880119	809	0.0	0.6+	880127	809	0.6-	0.0
770315	381	0.4-	0.5-	880119	809	0.3-	0.6+	880127	809	0.5+	0.2-
820120	095	0.0	0.2+	880119	809	0.1-	0.4+	880129	809	0.6-	0.3-
880114	809	0.4+	0.4-	880121	809	0.6-	0.2-	880129	809	0.3+	0.5-
880114	809	0.4+	0.2-	880121	809	0.3-	0.2-				

1988 BZ1 = 1982 BU10
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	51.54165		(1950.0)	P	Q
n	0.17091018	Peri.	293.97566	-0.45284175	-0.89159065
a	3.2158192	Node	182.95076	+0.82273902	-0.41757556
e	0.1357162	Incl.	0.76227	+0.34356201	-0.17520495
P	5.77	H	12.0	G 0.25	

Residuals in seconds of arc

820119	095	3.4+	0.5+	880123	303	(7.1+	6.2-)	880208	399	0.7+	1.0-
820120	095	3.5-	0.9-	880125	809	0.9-	0.9-	880211	399	2.4-	0.8+
880120	809	0.9-	0.4-	880125	809	0.5-	0.9-	880211	399	2.9-	0.9+
880120	809	0.7-	0.4-	880125	399	2.2+	1.3+	880211	399	(2.4-	3.3+)
880120	809	0.3-	0.0	880125	399	0.3-	0.9+	880214	809	0.9+	1.8-
880121	809	0.0	1.5-	880125	399	1.7+	1.0+	880214	809	1.1+	1.0-
880121	809	0.2-	0.5-	880127	809	0.2-	0.5-	880214	809	0.4+	1.2-
880122	303	0.4+	1.2+	880127	809	0.0	1.1-	880216	809	0.3+	0.9+
880122	303	0.0	1.9+	880129	809	0.6+	0.4-	880216	809	0.9+	0.6+
880122	303	0.6+	1.6+	880129	809	1.3+	0.8-	880217	809	0.1+	1.2-
880123	303	0.9+	1.4+	880207	399	0.7+	0.9+	880217	809	1.3+	0.8-
880123	809	1.0-	0.8-	880207	399	2.9-	0.6+	880218	399	0.4-	1.1+
880123	809	0.5-	1.1-	880208	399	0.1-	1.4+	880218	399	0.3+	1.0-
880123	303	(7.0+	6.4-)	880208	399	0.6+	1.4+	880218	399	0.8-	0.2-

1988 BK4 = 1977 DK
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M 90.83893		(1950.0)	P	Q
n 0.17836343	Peri.	286.18436	+0.30831470	-0.93148729
a 3.1255974	Node	143.96288	+0.94885219	+0.28662298
e 0.1421409	Incl.	19.15753	+0.06798203	+0.22400604
P 5.53	H	12.5	G 0.25	

Residuals in seconds of arc

770218 381	0.1+	1.1-	880122 809	0.5-	0.7-	880128 809	0.8-	0.3-
770218 381	0.0	0.6+	880122 809	0.2+	0.1-	880128 809	1.1-	0.4-
770219 381	0.3+	0.2+	880124 809	0.1+	0.5+	880130 809	0.9-	0.5-
770219 381	0.3-	0.2+	880124 809	0.2+	0.5+	880130 809	0.4-	0.9-
880121 809	0.8+	0.0	880124 809	0.6+	0.5+	880216 809	0.7+	0.5+
880121 809	0.7+	0.3-	880126 809	0.7-	0.9+	880216 809	0.7+	0.1-
880121 809	0.8+	0.0	880126 809	0.6-	0.5+			

1988 HF = 1980 JF
The identification is by T. Kobayashi and S. Nakano.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M 64.26935		(1950.0)	P	Q
n 0.24049554	Peri.	356.18771	-0.95529702	-0.29389957
a 2.5609370	Node	166.58716	+0.27476799	-0.92266377
e 0.1270111	Incl.	7.95515	+0.10913364	-0.24962896
P 4.10	H	12.5	G 0.25	

Residuals in seconds of arc

800511 046	1.8+	1.4+	800513 046	2.2-	3.5-	880509 400	2.9-	0.2+
800511 046	1.4+	2.2+	880416 400	2.5+	1.7-	880509 400	1.1-	0.3+
800512 046	0.4-	0.8-	880416 400	2.6-	0.1-	880514 400	3.3+	0.3+
800512 046	0.8-	0.2-	880416 400	1.9+	1.1-	880514 400	0.2-	1.0+
800513 046	(5.6-	1.2-)	880509 400	0.8-	2.1+	880514 400	0.1-	0.2+

1988 JJ = 1971 GF = 1980 VE1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M 334.44105		(1950.0)	P	Q
n 0.23450047	Peri.	109.18453	+0.78517873	+0.54422232
a 2.6044005	Node	219.46456	-0.57533935	+0.81759172
e 0.3844509	Incl.	27.70403	+0.22908295	+0.18805809
P 4.20	H	12.5	G 0.25	

Residuals in seconds of arc

710402 805	0.3+	2.3-	880511 400	1.3+	2.0-	880514 400	1.9-	1.1+
801107 675	0.0	1.6-	880511 400	0.8+	0.9-	880517 675	(0.6-	16.7-)
801107 675	0.0	0.2+	880511 400	3.0-	1.7+	880517 675	(3.9-	5.3-)
880509 675	0.4-	0.9+	880513 675	2.4+	1.8+	880609 675	0.8+	1.9+
880509 675	0.5+	1.5+	880514 400	0.5+	3.5-	880614 675	1.1-	2.2-
880511 675	1.1+	1.0+	880514 400	1.0-	0.7-			

1988 JW = 1984 HW
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M 355.36664		(1950.0)	P	Q
n 0.23295239	Peri.	134.34685	-0.43685970	+0.87165004
a 2.6159261	Node	108.54023	-0.87749788	-0.35861219
e 0.2960032	Incl.	13.55507	-0.19786630	-0.33410103
P 4.23	H	13.5	G 0.25	

Residuals in seconds of arc

840429 675	0.5-	0.8-	880414 675	0.0	0.2-	880510 675	0.5+	0.9-
840501 675	0.8+	0.0	880414 675	0.1+	0.3+	880513 675	0.1+	0.7+
840501 675	0.2-	0.8+	880509 675	0.6-	0.0			

1988 KC = 1972 XU1 = 1976 UX2
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	338.24812		(1950.0)	P		Q
n	0.23524034	Peri.	94.43789	+0.77931716		+0.61246705
a	2.5989367	Node	227.86088	-0.62204875		+0.73061962
e	0.3023770	Incl.	10.29114	-0.07563148		+0.30179310
P	4.19	H	13.5	G	0.25	

Residuals in seconds of arc

721201 095	0.2+	0.2+	880519 675	(1.9-	7.7-)	880615 675	1.4+	0.6-
761024 381	0.5+	0.4+	880519 675	1.0+	5.0-	880617 675	0.9-	2.3+
761024 381	0.6-	1.0-	880520 675	0.3-	2.1+			
761026 095	(1.2+	8.7+)	880520 675	1.1-	0.9+			

1988 KG = 1950 YB = 1961 AH = 1977 GB1 = 1978 JX2 = 1982 FD1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	253.06047		(1950.0)	P		Q
n	0.19760601	Peri.	180.10199	+0.93496936		-0.34693634
a	2.9192423	Node	200.67706	+0.32558916		+0.92205144
e	0.1853953	Incl.	12.08772	+0.14079771		+0.17162843
P	4.99	H	11.0	G	0.25	

Residuals in seconds of arc

501231 711	0.2-	1.1+	Y	820323 046	0.5-	1.2-	880519 675	0.3+	0.4-
610110 690	(13.8+	5.5-)	Y	820323 046	1.3-	0.8-	880521 675	0.9-	0.1-
610110 690	0.2+	2.4-	Y	820326 046	0.3-	1.0+	880615 675	0.3+	1.0-
770410 381	0.3+	0.2+		820326 046	0.4-	1.0+	880617 675	0.4+	1.3+
770410 381	0.6+	1.0+		820327 046	1.5+	0.2-			
780509 095	0.0	1.5-		820327 046	0.2+	0.3+			

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

Comet Levy (1988e)
Epoch 1987 Nov. 21.0 ET = JDE 2447120.5
T 1987 Nov. 29.94809 ET

q	1.1741485		(1950.0)	P	Q
z	+0.0018617	Peri.	326.52067	+0.01893349	+0.53345215
	+/-0.0000480	Node	288.06306	-0.60400102	-0.66789262
e	0.9978141	Incl.	62.80476	-0.79675861	+0.51898772

From 26 observations 1988 Mar. 22-July 18, mean residual 0".7.

Comet Shoemaker-Holt (1988g)
Epoch 1988 Feb. 9.0 ET = JDE 2447200.5
T 1988 Feb. 14.21968 ET

q	1.1744997		(1950.0)	P	Q
z	+0.0018497	Peri.	326.52229	+0.01898097	+0.53346158
	+/-0.0000962	Node	288.06502	-0.60401798	-0.66786082
e	0.9978275	Incl.	62.80508	-0.79674463	+0.51901895

From 37 observations 1988 May 13-July 18, mean residual 0".8.

Comet Machholz (1988j)
T 1988 Sept. 17.58901 ET

q	0.1651742		(1950.0)	P	Q
		Peri.	348.97117	-0.92348440	-0.35512192
		Node	166.99857	+0.38235682	-0.88286393
e	1.0	Incl.	40.17525	+0.03130219	+0.30731045

From 26 observations 1988 Aug. 7-17.

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

(3869)* 1981 JE = 1955 SX2 = 1974 QK = 1978 TC1 = 1988 BP4

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

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 243.82181		(1950.0)	P	Q
n 0.25671087	Peri.	67.06817	+0.71478156	+0.69572917
a 2.4519214	Node	248.76213	-0.66629926	+0.64661770
e 0.1279682	Incl.	4.37178	-0.21244437	+0.31280421
P 3.84	H 12.9	G 0.25		

Residuals in seconds of arc

550917	760	0.1+	1.5-	810503	688	0.9+	0.1-	880124	809	0.8+	0.4+
550917	760	1.9+	2.7-	810505	675	0.3+	0.9-	880126	809	0.0	0.6-
740817	095	0.4-	0.9+	810506	675	0.1-	0.5-	880126	809	0.8+	0.3-
740825	095	1.5-	3.0-	880122	809	1.4-	0.8+	880128	809	0.2-	1.2-
780930	049	0.6+	0.5+	880122	809	1.1-	0.5+	880128	809	0.5-	1.3-
780930	049	1.3+	2.0+	880122	809	0.7-	0.6+	880130	809	0.5-	0.8-
781002	095	1.2-	1.6+	880124	809	0.6+	0.3+	880130	809	0.3-	0.2-
810503	688	0.0	0.2+	880124	809	0.5+	0.3+				

(3870)* 1988 CG3 = 1968 QG = 1973 US4 = 1977 VO1 = 1981 UZ15 = 1984 FJ2 = 1986 XL4

Discovered 1988 Feb. 13 by E. W. Elst at the European Southern Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 306.57262		(1950.0)	P	Q
n 0.23185719	Peri.	65.73213	-0.05402415	+0.99542727
a 2.6241521	Node	201.61667	-0.97603390	-0.06929737
e 0.1628653	Incl.	12.34751	-0.21080612	+0.06574509
P 4.25	H 12.2	G 0.25		

Residuals in seconds of arc

680825	095	0.5+	0.3-	840404	095	3.0+	0.2-	880223	413	0.6-	0.5+
731021	688	0.8-	2.3-	861205	010	(8.9+	2.5+)	880223	413	0.1+	0.8+
731023	688	0.5-	3.0-	861205	010	2.8+	1.2+	880225	413	1.3-	0.3+
771103	330	0.1+	0.8-	861205	010	4.3+	0.7+	880225	413	0.2-	0.2+
771112	330	1.8-	0.2+	880213	809	1.4-	0.8+	880310	413	1.7-	0.2+
811024	095	2.6-	4.8+	880213	809	0.6-	0.5+	880310	413	1.5-	0.4-
840330	095	2.4+	0.7-	880213	809	0.5-	0.4+				

1969 TX5 = 1981 UE21 = 1981 WP7 = 1986 TT1

The identification 1969 TX5 = 1986 TT1 is by A. Lowe.

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

M 209.67500		(1950.0)	P	Q
n 0.17179728	Peri.	240.39005	-0.12782678	+0.97985074
a 3.2047395	Node	23.78725	-0.72618377	+0.01292633
e 0.0702496	Incl.	22.36432	-0.67551272	-0.19931239
P 5.74	H 11.5	G 0.25		

Residuals in seconds of arc

691015	095	1.4-	1.2+	811023	675	2.6-	0.1-	861007	688	0.8+	0.5+
691017	095	1.4+	1.2-	811023	675	0.3-	0.1-	861007	688	0.4+	0.4-
811022	675	0.0	0.6+	811125	095	(13.1+	7.7-)				
811022	675	2.9+	0.4-	861006	688	1.1-	0.2-				

1976 DK = 1951 WM2 = 1978 NG3 = 1980 XA1

The identification 1976 DK = 1978 NG3 is by A. Lowe.

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

M	53.33193	(1950.0)	P	Q
n	0.17083994	Peri. 275.87119	-0.82375673	-0.50428032
a	3.2167006	Node 234.13347	+0.55712922	-0.80468741
e	0.0554108	Incl. 18.64534	-0.10503276	-0.31333613
P	5.77	H 11.5	G 0.25	

Residuals in seconds of arc

511129	711	0.2+	1.2+	Y	780710	095	0.0	0.2+	801210	330	2.0- 0.2-
760222	808	1.7+	1.3+		780712	095	0.4-	1.1+			
760227	808	1.2-	0.3-		801207	330	1.8+	0.4-			

1976 GS3 = 1980 KD1 = 1988 NP

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

M	18.63863	(1950.0)	P	Q
n	0.25662806	Peri. 106.11881	+0.27740136	+0.96075412
a	2.4524537	Node 179.98606	-0.94126586	+0.27178491
e	0.1767135	Incl. 11.88669	-0.19252809	+0.05553809
P	3.84	H 13.5	G 0.25	

Residuals in seconds of arc

760401	095	0.6-	0.6-		760423	095	0.4+	1.9+	880809	675	0.5- 2.3+
760402	095	0.4-	3.4-		800517	095	0.5-	1.3+	880809	675	1.0- 0.1+
760404	095	1.0+	1.2+		880711	675	0.9+	1.4-			
760405	095	(1.0-	79.5+)		880713	675	0.8+	1.7-			

1976 YD2 = 1988 BR3

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

M	180.92471	(1950.0)	P	Q
n	0.19001619	Peri. 64.21502	+0.97313117	+0.17354381
a	2.9964694	Node 285.48837	-0.22297932	+0.87416298
e	0.0549817	Incl. 9.03421	+0.05741041	+0.45356547
P	5.19	H 12.0	G 0.25	

Residuals in seconds of arc

761216	095	1.1+	0.8-		880119	809	0.5+	0.4+	880126	809	0.1- 0.7+
761218	095	0.9-	0.2-		880120	809	0.5-	0.4+	880126	809	0.2- 0.9+
761220	095	0.2-	1.0+		880120	809	0.4-	0.6+	880128	809	0.3- 0.3+
880118	809	0.2+	0.5-		880122	809	0.2-	0.5-	880128	809	0.0 0.1-
880118	809	0.4+	0.5-		880122	809	0.3+	0.4-	880130	809	0.2- 1.4-
880118	809	0.4+	0.8-		880124	809	0.4-	0.5+			
880119	809	0.3+	0.1+		880124	809	0.1+	0.4+			

1977 DR1 = 1973 GE1 = 1974 RC = 1981 CG = 1987 QU3

The identifications 1977 DR1 = 1974 RC = 1981 CG is by B. M. Knudsen.

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

M	160.46404	(1950.0)	P	Q
n	0.23502089	Peri. 300.71370	+0.06175226	+0.99361993
a	2.6005544	Node 332.34827	-0.83197129	-0.00098953
e	0.1637199	Incl. 11.73270	-0.55137140	+0.11277614
P	4.19	H 13.0	G 0.25	

Residuals in seconds of arc

730402	095	1.9-	0.7+		770219	381	2.3+	0.1-	870830	010	1.0- 1.6+
740911	095	0.2+	0.4-		810202	046	2.7-	0.1+	870830	010	0.5+ 3.8-
770218	381	2.1+	0.0		810202	046	0.4-	1.6-	870830	010	0.2+ 3.1+
770218	381	0.4+	0.4+		810209	046	6.8-	0.1+			
770219	381	0.8+	0.1-		810209	046	6.2+	0.5+			

1979 MJ5 = 1988 BQ3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	77.69367	(1950.0)	P	Q
n	0.29218592	Peri. 302.50429	-0.39446366	-0.91883543
a	2.2492137	Node 170.70544	+0.86570917	-0.37591040
e	0.0693397	Incl. 4.19939	+0.30813317	-0.12013672
P	3.37	H 14.0	G 0.25	

Residuals in seconds of arc

790623	413	0.1+	0.0	880118	809	0.2+	0.1-	880125	809	0.3+	0.6+
790624	413	1.6+	0.3-	880119	809	0.9-	0.2+	880125	809	0.6+	0.6+
790625	413	0.3-	0.3-	880119	809	0.3-	0.4+	880127	809	0.1-	0.5+
790629	413	1.6-	0.1+	880121	809	0.1-	0.2-	880127	809	0.6+	0.4+
790726	675	1.3-	0.5+	880121	809	0.3+	0.3-	880129	809	0.6-	0.7-
790727	675	0.1+	0.5+	880121	809	0.6+	0.6-	880129	809	0.1-	0.3-
790728	413	1.4+	0.3-	880123	809	0.1+	0.3-	880130	809	0.2+	0.3-
880118	809	1.0-	0.3-	880123	809	0.7+	0.2-				
880118	809	0.3-	0.1+	880125	809	0.3-	0.8+				

1980 PA
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	340.59438	(1950.0)	P	Q
n	0.36876740	Peri. 125.20389	+0.89171782	-0.45104838
a	1.9259028	Node 261.63318	+0.40198709	+0.82722681
e	0.4586635	Incl. 2.16327	+0.20795601	+0.33503903
P	2.67	H 18.0	G 0.25	

Residuals in seconds of arc

800806	809	0.5+	0.3-	800818	801	1.4-	0.4-	810103	801	0.3+	1.1-
800807	809	1.4+	0.2-	800902	046	0.7-	0.6-	810106	801	0.4+	1.3+
800808	801	0.8-	1.3+	800902	046	0.7-	1.2-	880706	675	0.2-	0.3-
800808	688	1.1-	2.2-	800903	046	(3.1-	3.6-)	880706	675	0.2-	0.3-
800809	809	2.7-	1.3-	800903	046	(3.7-	3.9-)	880707	675	0.4-	0.9+
800810	801	(2.7-	6.4+)Y	800904	801	0.2+	0.6+	880707	675	0.4-	0.7+
800810	809	0.5+	0.1-	800907	801	0.5-	0.3-	880708	675	0.1-	1.1+
800813	801	0.4-	0.6-	800907	688	2.2+	2.2+	880708	675	0.0	0.8+
800814	801	1.4+	2.2+	800918	688	0.5-	0.2-	880708	675	0.0	0.9+
800814	809	2.8+	1.3+	801106	801	0.1+	1.1+				
800817	688	0.7+	2.6-	801205	801	0.5-	0.4-				

1981 OH
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	342.86817	(1950.0)	P	Q
n	0.27778694	Peri. 201.34777	+0.93331730	+0.31694301
a	2.3262820	Node 138.92974	-0.28085091	+0.93718167
e	0.2324342	Incl. 14.88072	-0.22369975	+0.14573140
P	3.55	H 14.0	G 0.25	

Residuals in seconds of arc

810726	688	0.2+	0.2+	810830	688	0.1+	0.0	880712	675	0.6+	0.4-
810726	688	0.5+	0.6+	810830	688	0.7-	0.4+	880714	675	0.6-	0.1+
810826	688	0.1-	0.1-	810925	688	0.9+	0.5-				
810826	688	0.2-	1.0-	810925	688	0.6-	0.7+				

1984 HL = 1970 JD = 1988 AW4
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	19.11932	(1950.0)	P	Q
n	0.21101311	Peri. 356.35689	-0.90023278	-0.43357796
a	2.7942416	Node 157.81413	+0.40208340	-0.86298500
e	0.1067930	Incl. 6.06367	+0.16706251	-0.25935891
P	4.67	H 12.0	G 0.25	

Residuals in seconds of arc

700508	095	0.7+	2.2+	880114	809	0.7-	0.4-	880119	809	0.1+	0.4+
840419	046	2.6+	0.1+	880114	809	0.2-	0.5-	880119	809	0.0	0.4+
840419	046	0.2+	0.3-	880114	809	0.2-	0.3-	880121	809	0.1-	0.0
840425	046	1.8+	0.4-	880115	809	0.1-	0.4-	880121	809	0.3+	0.2+
840425	046	0.5+	2.5-	880115	809	0.2-	0.4-	880123	809	0.2+	0.2+
840428	046	2.3-	1.0+	880115	809	0.0	0.7-	880123	809	0.2+	0.4-
840428	046	3.5-	0.2-	880115	809	0.1-	0.3-	880125	809	0.0	0.3+
880111	809	0.0	0.4-	880115	809	0.1-	0.2-	880125	809	0.4+	0.1-
880111	809	0.1+	0.7-	880115	809	0.1-	0.1-	880126	809	0.4+	0.0
880111	809	0.0	1.0-	880117	809	0.1-	0.7+	880126	809	0.6+	0.0
880113	809	0.1-	0.6+	880117	809	0.1-	0.4+	880127	809	0.3+	0.5-
880113	809	0.1-	0.6+	880117	809	0.5-	0.5+	880128	809	0.2+	0.5-
880113	809	0.1-	0.5+	880117	809	0.2+	0.5+	880128	809	0.2+	0.3-
880114	809	0.1-	0.1+	880117	809	0.1-	0.7+	880129	809	0.0	0.5-
880114	809	0.1-	0.2+	880117	809	0.0	0.8+	880130	809	0.1-	0.1-
880114	809	0.0	0.3+	880119	809	0.0	0.5+				

1986 QQ2 = 1988 BD2

The identification is by S. Nakano.

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

M	123.72216	(1950.0)	P	Q	
n	0.27561970	Peri.	284.93779	+0.50521256	-0.85780192
a	2.3384607	Node	134.31358	+0.83382368	+0.45695858
e	0.0895790	Incl.	7.59177	+0.22248221	+0.23529710
P	3.58	H	13.5	G 0.25	

Residuals in seconds of arc

860828	809	1.4-	0.2-	860908	809	0.4+	0.3-	880122	809	0.8+	0.6-
860828	809	1.2-	0.1-	860908	809	0.4+	0.4-	880122	303	1.5+	0.2-
860828	809	0.9-	0.1-	860909	809	0.0	0.3-	880122	303	1.8-	2.2+
860901	809	0.3-	0.3+	860909	809	0.1+	0.4-	880123	303	0.4+	1.0+
860901	809	0.1-	0.2+	860909	809	0.1+	0.4-	880123	303	(6.8+	6.3-)
860901	809	0.2-	0.1+	860912	809	0.2+	0.0	880123	303	(7.5+	6.9-)
860903	809	0.6+	0.3+	860912	809	0.2+	0.1-	880124	809	0.0	0.6+
860903	809	0.7+	0.2+	860912	809	0.0	0.2-	880124	809	0.6+	0.6+
860903	809	0.9+	0.1+	880117	809	0.0	1.4-	880126	809	0.6-	0.7+
860905	809	0.0	0.6+	880117	809	0.2-	1.2-	880126	809	0.6-	1.1+
860905	809	0.0	0.4+	880117	809	0.2+	1.2-	880128	809	0.7-	0.2+
860905	809	0.1+	0.4+	880118	809	0.2+	0.4-	880128	809	0.6-	0.2-
860907	809	0.1+	0.2+	880118	809	0.9+	1.1-	880130	809	0.2-	1.4+
860907	809	0.1+	0.2+	880120	809	0.2+	0.1+	880130	809	0.2-	0.6-
860907	809	0.1+	0.1+	880120	809	0.1+	0.6-				
860908	809	0.2+	0.2-	880122	809	0.4+	0.1+				

1986 WQ2

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	311.46968	(1950.0)	P	Q	
n	0.39341262	Peri.	227.56163	+0.75479602	+0.53706328
a	1.8446070	Node	96.48709	-0.43302924	+0.83923195
e	0.0442377	Incl.	22.27494	-0.49271559	+0.08516323
P	2.51	H	13.5	G 0.25	

From 10 observations 1986 July 27-Dec. 5, mean residual 1".2.

1987 HS = 1987 FK1 = 1983 DO = 1984 OD
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M 65.67534		(1950.0)	P	Q
n 0.27906409	Peri.	163.15448	+0.52423079	+0.80565726
a 2.3191791	Node	137.32488	-0.82066350	+0.56444788
e 0.1669186	Incl.	24.01452	-0.22736205	-0.17976366
P 3.53	H	13.5	G 0.25	

Residuals in seconds of arc

830219	688	0.3-	2.3-	840802	046	0.3+	0.3-	870425	675	0.5-	0.1+
830219	688	0.5+	2.4-	840802	046	0.3-	1.7+	870425	675	0.7-	0.7-
840731	046	0.1+	1.2-	840803	046	1.2-	4.3-	870529	675	0.0	0.8+
840731	046	2.1+	4.3+	840803	046	1.2-	3.6-	870530	675	0.5+	0.2-
840801	046	0.5-	4.1-	870331	675	(18.4-	1.0+)	870531	675	1.6+	1.2+
840801	046	0.3+	4.1+	870331	675	(18.0-	1.2-)	870601	675	0.7-	0.0

1987 SA7 = 1951 YZ = 1953 EF1 = 1954 JB = 1982 UH1
The identifications are by E. Goffin.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M 100.01105		(1950.0)	P	Q
n 0.18795058	Peri.	158.86339	+0.84375040	+0.53553430
a 3.0183838	Node	168.54920	-0.51471447	+0.82627995
e 0.0857520	Incl.	10.41603	-0.15216525	+0.17454070
P 5.24	H	12.0	G 0.25	

Residuals in seconds of arc

511223	711	0.3-	2.3+	Y	821021	688	0.7-	1.8-	870929	033	0.6+	0.4+
530314	760	(40.0- | 23.6+)		821021	688	1.6+	2.6-	870930	033	0.1-	0.6+
540504	760	0.2+	1.1+		870918	809	0.1+	0.9+	870930	033	0.6+	0.8+
540504	760	0.0	0.7-		870923	809	1.2-	0.1+	871001	033	0.8-	0.7+

1988 AF5 = 1974 FC = 1978 LK = 1985 JS = 1986 UO2
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M 306.30231		(1950.0)	P	Q
n 0.27258306	Peri.	48.56408	-0.32906734	+0.94384521
a 2.3557959	Node	202.27607	-0.88790761	-0.31990118
e 0.1722643	Incl.	4.46508	-0.32145725	-0.08258001
P 3.62	H	14.0	G 0.25	

Residuals in seconds of arc

740322	805	0.6-	1.9-	880114	809	1.4+	0.7+	880119	809	0.0	0.2+
740323	805	0.0	1.8-	880115	809	0.1+	0.6-	880121	809	1.3-	0.4+
780609	095	1.0-	0.8-	880115	809	0.1+	0.2-	880121	809	1.4-	0.3+
850511	675	(2.6-	6.3+)	880115	809	0.4+	0.1-	880123	809	0.4-	0.5+
850513	675	0.3+	1.9-	880117	809	0.0	0.0	880123	809	0.0	0.2-
861027	010	(4.7+	8.5-)	880117	809	0.0	0.1-	880126	809	0.8-	0.1-
861027	010	2.9+	6.0-	880117	809	0.5+	0.3-	880126	809	0.5-	0.5-
880114	809	0.8+	0.1-	880119	809	0.9-	0.3+				
880114	809	1.1+	0.3+	880119	809	0.2-	0.2+				

1988 DR4 = 1975 XP5 = 1979 OT12
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M 163.58707		(1950.0)	P	Q
n 0.17531148	Peri.	91.01573	+0.94774737	-0.24133716
a 3.1617681	Node	282.97339	+0.13182800	+0.89182207
e 0.1138279	Incl.	12.36313	+0.29051042	+0.38263529
P 5.62	H	12.0	G 0.25	

Residuals in seconds of arc

751204	095	0.3+	0.8+	880223	413	0.5+	0.0	880310	413	0.5-	0.2+
790726	675	0.7-	0.5+	880225	413	0.8-	0.3+	880420	413	1.2+	0.1+
790727	675	0.2+	0.5+	880225	413	0.2+	0.2+	880420	413	0.3+	0.6+
880223	413	0.1-	0.8-	880310	413	0.3-	0.0				

1988 DS4 = 1975 VW7 = 1985 TG
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	260.70340	(1950.0)		P	Q
n	0.18817791	Peri.	69.70100	+0.39984510	+0.90806192
a	3.0159524	Node	224.52433	-0.89322673	+0.35551986
e	0.0926241	Incl.	10.24280	-0.20559645	+0.22142535
P	5.24	H	12.5	G 0.25	

Residuals in seconds of arc

751106	095	0.0	0.3+	880225	413	0.0	0.3+	880420 413 0.7- 1.4-
851015	688	0.5+	0.7+	880225	413	0.7+	0.4+	880420 413 0.2+ 1.3-
851015	688	0.2-	1.7-	880310	413	0.3-	0.0	
880223	413	0.1-	0.7+	880310	413	0.0	0.2+	

1988 MB = 1985 YB = 1986 AT
The double designation 1985 YB = 1986 AT is by S. Nakano (MPC 12360).
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	316.16306	(1950.0)		P	Q
n	0.27751138	Peri.	100.55595	+0.80770828	-0.45294265
a	2.3278217	Node	287.29603	+0.25215538	+0.84404216
e	0.2541238	Incl.	23.28474	+0.53293995	+0.28711632
P	3.55	H	13.5	G 0.25	

Residuals in seconds of arc

851218	688	1.1-	3.0+	860111	688	0.0	0.9+	880714 675 0.3- 0.2-
851218	688	4.8-	0.6-	860111	688	1.2-	6.1-	880715 675 0.6+ 1.6+
860111	688	3.5+	0.7-	880619	675	0.7-	0.8-	
860111	688	3.8+	4.2+	880620	675	0.1+	0.7-	

1988 MG = 1978 QN1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	351.25826	(1950.0)		P	Q
n	0.28574850	Peri.	35.14125	+0.58174016	+0.81208697
a	2.2828688	Node	270.47425	-0.75630691	+0.51937030
e	0.1502461	Incl.	2.62234	-0.29929625	+0.26602489
P	3.45	H	14.0	G 0.25	

Residuals in seconds of arc

780831	095	0.6-	0.8-	880616	675	0.0	0.3+	880712 675 0.9+ 0.2-
780905	095	0.5+	1.1+	880620	675	0.7-	1.3+	880714 675 0.2- 1.6-

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

Comet Shoemaker (1986 XIV)
Epoch 1986 Nov. 26.0 ET = JDE 2446760.5
T 1986 Nov. 17.11790 ET

q	5.4575466	(1950.0)		P	Q
z	-0.0004973	Peri.	17.00690	-0.23682011	-0.63310527
	+/-0.0000093	Node	267.63365	-0.95492307	+0.01193487
e	1.0027138	Incl.	132.47449	-0.17899210	+0.77397369

From 68 observations 1987 Apr. 25-1988 May 19, mean residual 0".8.

Comet Shoemaker (1988b)
Epoch 1987 Mar. 26.0 ET = JDE 2446880.5
T 1987 Mar. 19.90581 ET

q	5.0295018	(1950.0)		P	Q
z	-0.0004608	Peri.	124.18984	-0.37853353	-0.72659202
	+/-0.0000610	Node	324.46242	+0.07610227	+0.59295846
e	1.0023178	Incl.	80.57479	+0.92245369	-0.34707968

From 44 observations 1988 Jan. 23-May 19, mean residual 0".9.

Comet Torres (1987j)
Epoch 1987 Mar. 26.0 ET = JDE 2446880.5
T 1987 Apr. 10.27144 ET

		(1950.0)	P	Q
q	3.6245893			
z	-0.0002925	Peri.	329.09102	-0.76462740	-0.61348968
	+/-0.0000116	Node	193.79066	-0.27486801	+0.03336399
e	1.0010602	Incl.	124.08596	-0.58291725	+0.78899763

From 39 observations 1987 Mar. 28-1988 May 17, mean residual 1".1.

Periodic Comet Hartley 3 (1988d)
Epoch 1987 July 24.0 ET = JDE 2447000.5
T 1987 July 15.92931 ET

		(1950.0)	P	Q
q	2.4542897			
n	0.14441765	Peri.	168.18753	-0.09805538	-0.97614671
a	3.5979562	Node	287.20581	+0.89570452	-0.00173861
e	0.3178656	Incl.	11.69973	+0.43370330	-0.21710499
P	6.82				

From 26 observations 1988 Feb. 19-May 19, mean residual 0".8.

Periodic Comet Helin (1987w)
Epoch 1987 July 24.0 ET = JDE 2447000.5
T 1987 Aug. 12.14403 ET

		(1950.0)	P	Q
q	2.5712615			
n	0.06818540	Peri.	216.21610	+0.99873430	+0.01070966
a	5.9339214	Node	143.07719	+0.00646268	+0.94164404
e	0.5666843	Incl.	4.69234	-0.04988010	+0.33643989
P	14.45				

From 29 observations 1987 Aug. 24-1988 Feb. 13, mean residual 1".2.

Periodic Comet Mueller (1987a1)
Epoch 1987 Nov. 21.0 ET = JDE 2447120.5
T 1987 Dec. 4.14270 ET

		(1950.0)	P	Q
q	2.7466611			
n	0.11669465	Peri.	30.29152	+0.82707430	-0.56199391
a	4.1473314	Node	3.95073	+0.48012842	+0.69660284
e	0.3377281	Incl.	8.79356	+0.29227520	+0.44599027
P	8.45				

From 28 observations 1987 Oct. 18-1988 Feb. 13, mean residual 0".8.

Comet Furuyama (1987f1)
Epoch 1988 Mar. 20.0 ET = JDE 2447240.5
T 1988 Mar. 3.06868 ET

		(1950.0)	P	Q
q	1.6795175			
z	-0.0001152	Peri.	233.63473	+0.55509026	-0.01481498
	+/-0.0000066	Node	250.05853	+0.67736116	-0.57224289
e	1.0001935	Incl.	117.78493	-0.48275942	-0.81995036

From 93 observations 1987 Nov. 25-1988 July 9, mean residual 0".8.

Comet Liller (1988a)
Epoch 1988 Mar. 20.0 ET = JDE 2447240.5
T 1988 Mar. 31.11442 ET

		(1950.0)	P	Q
q	0.8413332			
z	+0.0040832	Peri.	57.38362	+0.33902430	-0.80263836
	+/-0.0000067	Node	30.81800	+0.12282952	-0.47941216
e	0.9965647	Incl.	73.31712	+0.93272473	+0.35487413

From 100 observations 1988 Jan. 12-July 14, mean residual 0".8.

Periodic Comet Shoemaker-Holt (1987z)
Epoch 1988 June 8.0 ET = JDE 2447320.5
T 1988 May 21.41868 ET

		(1950.0)	P	Q
q 3.0528328				
n 0.10314579	Peri.	210.42954	+0.43517985	-0.89934472
a 4.5029977	Node	213.82582	+0.84059820	+0.42271953
e 0.3220443	Incl.	4.36805	+0.32251071	+0.11174646
P 9.56				

From 42 observations 1987 Sept. 24-1988 Feb. 19, mean residual 0".8.

Comet Shoemaker-Holt-Rodriquez (1988h)
T 1989 June 12.44135 ET

		(1950.0)	P	Q
q 2.4714388				
	Peri.	232.21510	+0.15913622	-0.40288015
	Node	114.57635	-0.23968559	+0.86986582
e 1.0	Incl.	97.65093	-0.95771942	-0.28464196

From 24 observations 1988 June 11-July 24.

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

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

(3871)* 1982 DR2 = 1979 SE12 = 1986 XY1

Discovered 1982 Feb. 18 by R. M. West at the European Southern Observatory. The identification 1982 DR2 = 1979 SE12 is by B. G. Marsden (MPC 11630).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5
M 103.10288

		(1950.0)	P	Q
n 0.17239059	Peri.	207.40424	-0.49729680	-0.82508573
a 3.1973757	Node	273.53925	+0.83703027	-0.37497341
e 0.0812638	Incl.	15.58747	+0.22820212	-0.42264463
P 5.72	H 12.4		G 0.25	

Residuals in seconds of arc

790919	033	0.2-	0.1-	820305	809	0.5+	0.7-	880318	474	1.9-	0.8+
790919	033	0.2+	0.2+	861201	010	1.6+	0.2-	880415	474	0.4-	0.2+
820218	809	1.1-	1.0-	861201	010	1.4+	0.5+	880415	474	0.5-	0.5+
820224	809	0.9-	0.9-	861201	010	1.3+	0.5+	880416	474	1.9+	0.8+
820228	809	0.2-	0.4-	870227	801	3.1-	0.7+	880416	474	3.0+	0.4+
820304	809	0.4+	0.6-	880318	474	1.5-	0.8+				

(3872)* 1983 AV = 1931 AY

Discovered 1983 Jan. 12 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5
M 76.42567

		(1950.0)	P	Q
n 0.22734376	Peri.	64.65919	-0.91277905	-0.34078971
a 2.6587695	Node	94.74221	+0.24329936	-0.89641910
e 0.2077378	Incl.	13.05774	+0.32808510	-0.28336404
P 4.34	H 12.9		G 0.25	

Residuals in seconds of arc

310112	690	1.2+	0.4+	830121	688	0.1+	0.2+	861228	801	0.2+	0.3-
310113	690	2.1+	0.2-	830211	688	0.2-	0.7+	880414	801	0.5-	2.0+
310115	690	2.8-	0.8-	830211	688	0.3-	1.1+	880513	688	0.8+	0.4-
830112	688	0.6+	0.6+	830309	688	0.1-	0.3+	880513	688	0.6-	2.0-
830112	688	0.2+	0.3+	830309	688	0.3-	0.2-				
830121	688	0.4-	0.1+	861130	801	0.1+	0.4-				

(3873)* 1984 WB = 1953 XK1

Discovered 1984 Nov. 21 by C. S. Shoemaker at Palomar. The identification is by L. D. Schmadel (MPC 9590).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	86.60760		(1950.0)		P		Q				
n	0.37866492	Peri.	267.55043		-0.84429425		-0.38626253				
a	1.8921955	Node	249.52343		+0.48871428		-0.83934826				
e	0.1337657	Incl.	23.35915		-0.21983079		-0.38248628				
P	2.60	H	13.1	G	0.25						

Residuals in seconds of arc

531207	675	0.6-	0.6-	841215	675	1.3-	1.3-	860807	026	2.1+	0.3-
531207	675	0.2+	0.9+	841217	675	1.2+	0.7-	860903	801	0.0	0.2-
531207	675	0.1+	1.0-	841217	675	(5.2+	1.6+)	880114	474	0.3-	0.7-
841119	675	1.1-	1.6-	850122	801	0.8-	2.0+	880114	474	0.4-	0.8-
841119	675	1.7+	1.6+	850217	801	0.1+	0.3+	880321	474	0.1+	0.5-
841121	675	0.3-	0.3-	850223	801	0.7+	0.9+	880321	474	0.4-	0.5-
841124	675	0.5+	0.2-	850317	801	0.6+	0.1+	880411	474	0.2+	0.2-
841129	675	(15.4-	0.5-)	860605	801	0.7-	0.2+	880411	474	0.3+	0.1+
841130	675	(12.0-	3.4-)	860708	801	0.2+	0.7-				
841202	675	0.2-	0.1+	860805	801	1.6-	0.8-				

(3874)* 1986 TJ1 = 1986 WB5 = 1972 NO = 1978 YH = 1980 KB

Discovered 1986 Oct. 4 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory. The double designation 1986 TJ1 = 1986 WB5 is by F. N. Bowman (MPC 11732). The identifications and double designation were found independently by T. Furuta (JAM 2061).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	307.80730		(1950.0)		P		Q				
n	0.22451359	Peri.	313.54357		-0.63243461		+0.76320108				
a	2.6810668	Node	276.74893		-0.66662633		-0.62335160				
e	0.0518735	Incl.	7.66628		-0.39450704		-0.17016726				
P	4.39	H	12.3	G	0.25						

Residuals in seconds of arc

720713	095	(1.6-	5.4-)	861105	688	1.6-	1.6-	880126	809	0.2-	0.1-
781223	330	0.1-	0.5-	861126	010	(2.0-	3.9-)	880127	809	0.4-	0.0
800518	805	0.3+	0.7-	861126	010	(1.5-	6.4-)	880127	809	0.0	0.1-
800523	805	0.3-	0.6+	880123	809	0.6+	0.4+	880128	809	0.0	0.1-
800523	805	0.1+	0.1-	880123	809	0.6+	0.2+	880129	809	0.3-	0.0
800523	805	0.2-	0.1+	880124	809	0.0	0.1-	880130	809	0.3-	0.4+
861004	688	2.3+	1.2+	880124	809	0.2+	0.1+	880215	293	(0.6+	3.0-)
861004	688	(4.4+	2.3+)	880124	809	0.2+	0.0	880215	293	(1.1+	4.5-)
861105	688	0.5-	0.3+	880126	809	0.3-	0.6-	880322	801	(0.0	5.7+)

(3875)* 1988 KE = 1935 MK = 1952 UG = 1978 JY = 1979 YW5 = 1985 OL

Discovered 1988 May 17 by E. Helin at Palomar.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	326.83057		(1950.0)		P		Q				
n	0.29691977	Peri.	187.29082		+0.74942340		+0.65709645				
a	2.2252389	Node	131.29795		-0.60184107		+0.72718583				
e	0.1927168	Incl.	6.20253		-0.27595633		+0.19855733				
P	3.32	H	13.1	G	0.25						

Residuals in seconds of arc

350625	078	2.1+	2.8+	791218	095	2.2+	1.2-	850725	046	2.1+	1.1-
521022	760	0.2+	0.3-	850719	046	1.2-	0.6-	880517	675	1.4-	0.3+
521022	760	0.8-	0.1+	850719	046	1.0-	0.7-	880520	675	1.0-	1.3-
521025	760	0.2+	0.3+	850721	046	0.1-	0.4-	880615	675	0.2+	0.5-
521025	760	2.9-	1.1+	850722	046	1.8-	0.2+	880617	675	0.6-	0.4+
780505	095	0.1-	0.6+	850724	046	3.9+	0.0				

(3876)* 1988 KJ = 1978 NF8 = 1980 XZ2 = 1984 UP1 = 1987 DH1
Discovered 1988 May 19 by E. Helin at Palomar.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	337.09570		(1950.0)	P	Q
n	0.18783269	Peri.	187.97500	+0.32957781	+0.92455247
a	3.0196407	Node	101.42687	-0.85505049	+0.37819268
e	0.0814340	Incl.	11.25231	-0.40033378	-0.04661574
P	5.25	H	11.6	G 0.25	

Residuals in seconds of arc

780707	675	0.7-	0.5-	841029	688	2.1+	2.6-	880521	675	0.7-	0.3-
780708	675	0.1+	0.5-	870225	801	1.2+	3.0-	880616	675	1.0-	0.9-
780709	675	0.9+	0.2+	870303	688	0.2+	0.1+	880619	675	0.8-	1.3-
801210	095	0.7-	3.6-	870303	688	1.3-	0.5+				
841029	688	0.2-	1.7-	880519	675	0.4+	1.8-				

(3877)* 3108 P-L = 1976 NE = 1059 T-3 = 1986 XK5
Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels. The key identification 3108 P-L = 1059 T-3 is by C. J. van Houten (MPC 12571).
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	341.81184		(1950.0)	P	Q
n	0.23355672	Peri.	0.51632	-0.57805870	+0.79157818
a	2.6114065	Node	234.18511	-0.74949740	-0.61106655
e	0.1258297	Incl.	14.14161	-0.32264807	+0.00128355
P	4.22	H	12.3	G 0.25	

Residuals in seconds of arc

600924	675	0.2+	0.3-	771011	675	0.1-	0.3+	861205	046	0.9+	1.1+
600924	675	0.1-	1.4+	771012	675	0.5-	0.2+	861207	046	0.8+	0.7+
600925	675	0.3-	0.3+	771012	675	0.8-	1.0+	861207	046	0.7-	0.7+
600925	675	0.4+	0.2-	771016	675	0.0	0.6-	880312	293	0.5-	1.2+
600926	675	0.4+	0.5-	771016	675	0.7-	0.2-	880312	293	2.5-	0.3-
600926	675	0.3+	0.5+	771017	675	0.2-	1.7+	880312	413	1.7+	0.6-
600927	675	0.8-	0.3-	771017	675	0.1-	1.3+	880312	413	0.1+	0.9-
600928	675	0.0	0.6-	771022	675	1.4-	1.4-	880321	474	0.2-	0.9+
600928	675	0.2-	0.2-	771022	675	0.9+	2.3-	880321	474	0.8+	0.7+
760701	095	0.9+	1.7-	861204	046	1.3-	3.0-	880515	801	(2.3+	4.5+)
771007	675	0.0	0.1+	861204	046	0.3-	1.3-				
771011	675	1.4+	1.3+	861205	046	1.9+	1.0-				

1974 XT = 1988 PB
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	305.45744		(1950.0)	P	Q
n	0.27225600	Peri.	277.50067	+0.66080403	-0.68072663
a	2.3576822	Node	126.06070	+0.74386376	+0.65011085
e	0.3033175	Incl.	23.02179	-0.10002363	+0.33759019
P	3.62	H	14.0	G 0.25	

Residuals in seconds of arc

741214	808	0.8+	0.7-	741220	808	0.3-	0.5-	750119	808	0.0	0.7+
741215	808	0.6-	1.0+	750108	808	0.8+	0.7+	750119	808	0.6-	0.1+
741215	808	0.3+	0.2+	750108	808	0.2+	0.9-	880807	675	0.1-	2.4+
741218	808	0.5-	0.4+	750110	808	0.0	0.5+	880809	675	0.0	3.0-
741218	808	0.8-	0.4-	750113	808	0.2-	1.2-				
741220	808	0.4-	0.7+	750113	808	0.3-	0.2-				

1975 TH6 = 1988 KD
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	358.82519		(1950.0)	P	Q
n	0.29362007	Peri.	197.86919	+0.30924861	+0.93665227
a	2.2418838	Node	90.39668	-0.85115667	+0.34974833
e	0.1384084	Incl.	9.46622	-0.42414339	-0.01893748
P	3.36	H	13.0	G 0.25	

Residuals in seconds of arc

751001 808	0.2+	1.9+	751008 808	0.6-	1.1-	880616 675	0.0	0.3-
751004 808	0.7+	0.2+	880519 675	0.5-	0.9-	880617 675	1.4-	1.1-
751004 808	0.2-	0.8-	880520 675	0.8-	0.3+	880619 675	2.2+	0.9+
751008 808	0.5-	0.9-	880615 675	0.3+	0.3+			

1977 DS2 = 1988 BV3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	141.72310		(1950.0)	P	Q
n	0.17654482	Peri.	241.01564	+0.90452446	-0.38900686
a	3.1470255	Node	141.13172	+0.41804836	+0.88973234
e	0.0845168	Incl.	16.16129	-0.08408961	+0.23885149
P	5.58	H	12.0	G 0.25	

Residuals in seconds of arc

770218 381	0.3-	0.9-	770315 381	0.2+	0.3+	880123 809	0.6-	0.3+
770218 381	1.4-	0.2+	770315 381	0.0	0.7+	880125 809	0.5-	0.6+
770218 381	0.8-	1.6+	880118 809	0.0	0.3-	880125 809	0.0	0.2+
770218 381	1.7+	0.1-	880118 809	0.5+	0.3-	880125 809	0.4+	0.1-
770219 381	0.1+	0.3-	880118 809	0.5+	0.2-	880126 809	0.1-	0.2+
770219 381	0.1-	0.4+	880119 809	0.2+	0.3+	880126 809	0.1-	0.1+
770219 381	0.1-	0.1+	880119 809	0.5+	0.7+	880128 809	0.8+	0.1-
770219 381	0.7+	0.3-	880121 809	0.7-	0.1+	880128 809	0.4+	0.1-
770312 381	0.1+	0.3-	880121 809	0.0	0.0	880129 809	0.0	0.1-
770312 381	0.4-	0.3-	880123 809	0.9-	0.3+			

1977 FT = 1988 JK
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	279.73739		(1950.0)	P	Q
n	0.36838878	Peri.	146.06222	+0.98059914	+0.02805115
a	1.9272260	Node	213.98240	-0.04998244	+0.99277439
e	0.1023689	Incl.	20.30992	+0.18954443	+0.11667106
P	2.68	H	14.5	G 0.25	

Residuals in seconds of arc

770316 809	0.1+	0.4+	880509 675	1.2-	0.5+	880612 675	0.8+	1.6+
770320 809	0.2+	0.2+	880511 675	2.1+	1.0-	880614 675	0.4-	1.5-
770321 809	0.3-	0.2-	880513 675	1.1-	0.8+			

1978 SS2 = 1982 HA1 = 1988 KH
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	358.19286		(1950.0)	P	Q
n	0.17904260	Peri.	68.86710	-0.04723411	+0.99764506
a	3.1176881	Node	198.63390	-0.96444586	-0.05850956
e	0.1681882	Incl.	8.95425	-0.26002523	+0.03579048
P	5.50	H	12.0	G 0.25	

Residuals in seconds of arc

780901 675	1.1+	0.2-	781008 095	1.4+	1.0-	880521 675	(7.8-	73.4+)
780902 675	0.9+	0.3-	820425 688	2.3-	0.3+	880615 675	0.2-	0.6+
780926 095	3.1-	1.8+	820425 688	1.4+	3.6-	880617 675	0.6+	0.4-
781002 095	0.5+	3.1-	880519 675	0.4-	0.6+			

1979 SX2 = 1988 AG5
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	174.50607	(1950.0)		P	Q
n	0.27096668	Peri.	114.85004	+0.98693083	+0.14738068
a	2.3651553	Node	236.73670	-0.16098052	+0.91995189
e	0.1582899	Incl.	4.46980	+0.00726670	+0.36327326
P	3.64	H	13.0	G 0.25	

Residuals in seconds of arc

790918	675	0.6+	1.8+	880115	809	0.8+	0.2-	880125	809	0.5-	1.0+
790919	675	0.3+	1.6+	880117	809	0.0	0.0	880125	809	0.0	0.9+
790922	095	1.0+	0.5+	880117	809	0.1+	0.0	880126	809	0.5+	0.3+
790928	095	1.3+	1.0-	880117	809	0.0	0.0	880126	809	0.9+	0.6+
791110	095	0.7+	0.2-	880119	809	0.3-	0.7+	880127	809	0.3+	0.6+
791111	095	2.8-	0.3+	880119	809	0.6-	0.6+	880128	809	0.6+	0.5+
880114	809	0.1-	0.5+	880119	809	0.5-	0.6+	880128	809	0.5+	0.8+
880114	809	0.2+	0.7+	880121	809	0.7-	0.9+	880129	809	0.7+	0.2+
880114	809	0.5+	0.9+	880121	809	0.6-	1.0+	880130	809	0.8+	0.4+
880115	809	0.3+	0.0	880123	809	0.2+	1.1+				
880115	809	0.6+	0.1-	880123	809	0.4+	0.9+				

1980 TW5 = 1988 BL4
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	233.46670	(1950.0)		P	Q
n	0.18306386	Peri.	35.29700	+0.57269226	+0.81688596
a	3.0718629	Node	269.73668	-0.76700164	+0.50435736
e	0.0319035	Incl.	3.93987	-0.28936493	+0.27985887
P	5.38	H	12.0	G 0.25	

Residuals in seconds of arc

801007	675	0.4+	0.8-	880121	809	0.0	0.8+	880124	809	0.3+	0.9-
801008	675	2.3-	1.9-	880121	809	0.3-	0.8+	880126	809	0.1+	1.1-
801009	675	1.8-	1.3-	880121	809	0.1-	0.9+	880126	809	0.4+	1.2-
801010	675	0.3-	2.0-	880122	809	0.0	0.8-	880128	809	1.5-	0.7-
801010	095	1.0+	1.7+	880122	809	0.5+	0.5-	880128	809	1.0-	0.8-
801015	095	2.3+	3.4+	880124	809	0.1-	0.9-	880130	809	1.7-	0.2+
801107	675	1.2+	2.4-	880124	809	0.2+	0.9-	880130	809	1.5-	0.1+

1984 DN = 1988 AC5
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	32.21879	(1950.0)		P	Q
n	0.24131943	Peri.	2.73819	-0.89888608	-0.43362805
a	2.5551048	Node	151.29979	+0.39946953	-0.87005136
e	0.2162391	Incl.	7.53970	+0.18007749	-0.23447248
P	4.08	H	14.0	G 0.25	

Residuals in seconds of arc

840223	809	0.5+	0.6-	840302	809	0.0	0.4-	840305	809	0.2+	0.6+
840223	809	0.1+	0.7-	840302	809	0.3+	0.4-	840306	809	1.0-	0.3+
840223	809	0.9+	0.7-	840302	809	0.3+	0.1-	840306	809	0.6-	0.0
840225	809	0.4-	0.5-	840304	809	0.7+	0.0	840306	809	0.2-	0.0
840225	809	0.1-	0.7-	840304	809	0.5+	0.5-	840306	809	0.2+	0.0
840225	809	0.1-	0.3-	840304	809	0.2+	0.3-	840306	809	0.1+	0.4+
840227	809	0.1+	0.5+	840304	809	0.7+	0.4-	840306	809	0.0	0.2+
840227	809	0.7+	0.3+	840304	809	0.4+	0.1-	840307	809	0.1-	0.1-
840227	809	0.5+	0.4+	840304	809	0.6+	0.1-	840307	809	0.5+	0.1+
840229	809	0.2-	0.1+	840305	809	0.4-	0.0	840307	809	0.2+	0.0
840229	809	0.6-	0.4-	840305	809	0.9-	0.1-	840308	809	0.2+	0.2+
840229	809	0.5-	0.1-	840305	095	1.6+	4.5-	840308	809	0.1-	0.0
840301	809	0.1-	0.3-	840305	809	0.8-	0.1-	840308	809	0.5+	0.2-
840301	809	0.4+	0.5-	840305	809	0.1+	0.4+	840308	809	0.2-	0.0
840301	809	0.1+	0.5-	840305	809	0.1+	0.3+	840308	809	0.4+	0.5+

840308	809	0.1-	0.1+	840311	809	0.1+	0.3+	880124	809	0.1+	0.5+
840309	809	0.8+	0.3-	840311	809	0.2+	0.2-	880124	809	0.7+	0.6+
840309	809	0.1+	0.2-	880113	809	0.2-	1.1-	880126	809	0.1-	0.4-
840309	809	0.2+	0.1-	880113	809	0.1-	1.0-	880126	809	0.2+	0.1-
840309	809	0.4+	0.5+	880113	809	0.0	1.2-	880127	809	0.4-	0.4+
840309	809	0.6+	0.0	880122	809	0.1-	0.1-	880127	809	0.4-	0.2-
840309	809	0.1+	0.7-	880122	809	0.4+	0.3-	880128	809	0.3-	0.3-
840311	809	0.1-	0.2-	880122	809	0.9+	0.3-	880129	809	0.4-	0.0
840311	809	0.1+	0.0	880123	809	0.1+	0.1+	880130	809	0.5-	0.7+
840311	809	0.0	0.1-	880123	809	0.4+	0.4+				
840311	809	0.2+	0.1+	880124	809	1.0+	0.6+				

1984 DQ = 1980 FU9 = 1988 FF1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	347.20707		(1950.0)	P	Q
n	0.24166842	Peri.	251.15056	-0.74210525	+0.66344793
a	2.5526443	Node	330.18426	-0.51959991	-0.65939744
e	0.2247931	Incl.	11.07144	-0.42343328	-0.35359843
P	4.08	H	14.0	G 0.25	

Residuals in seconds of arc

800316	095	0.5+	0.3-	840229	809	0.1+	0.5+	840306	809	0.3+	0.1+
840223	809	0.5+	0.3+	840229	809	0.1+	0.7+	840306	809	0.1+	0.0
840223	809	0.9+	0.0	840229	809	0.3+	0.4+	840306	809	0.2+	0.1+
840223	809	1.6+	0.4-	840229	809	0.0	0.2+	840307	809	0.5-	0.4-
840226	809	1.1-	0.3-	840229	809	0.3+	0.2+	840307	809	0.4-	0.2-
840226	809	0.8-	0.2-	840301	809	0.4-	0.5+	840307	809	0.1-	0.1-
840226	809	0.4-	0.5-	840301	809	0.7-	0.7+	840308	809	0.6+	0.1-
840227	809	0.8-	0.5-	840301	809	0.6-	0.7+	840308	809	0.6+	0.2-
840227	809	1.0-	0.5-	840302	809	0.8-	0.3-	840308	809	0.7+	0.1+
840227	809	0.8-	0.8-	840302	809	0.3-	0.6-	840309	809	0.6+	0.2-
840227	809	0.7-	0.0	840302	809	0.3-	0.5-	840309	809	0.3+	0.0
840227	809	0.7-	0.1-	840304	809	0.3+	0.6-	840309	809	0.2+	0.1-
840227	809	0.8-	0.1-	840304	809	0.7+	0.4-	840311	809	0.4+	0.3-
840228	809	0.7+	0.0	840304	809	1.0+	0.2-	840311	809	0.5+	0.1-
840228	809	0.8+	0.2-	840305	809	0.3-	0.9-	840311	809	0.8+	0.1-
840228	809	1.2+	0.3-	840305	809	0.3-	0.8-	880317	033	0.8+	0.1+
840229	809	0.1+	0.3+	840305	809	0.2-	0.4-	880317	033	0.4+	0.1+

1984 QF = 1988 OE
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	317.88258		(1950.0)	P	Q
n	0.22470527	Peri.	207.75194	+0.94000959	+0.29681324
a	2.6795472	Node	133.92154	-0.25340392	+0.93755161
e	0.1887062	Incl.	13.50242	-0.22840406	+0.18138050
P	4.39	H	12.5	G 0.25	

Residuals in seconds of arc

840821	046	0.6+	2.3+	840823	046	1.1-	0.2-	880613	675	0.0	0.4+
840821	046	0.2-	0.5-	840823	046	0.7-	0.3-	880613	675	0.0	0.4-
840822	046	0.8-	0.8-	840828	046	1.0+	0.5+	880717	675	0.8+	0.8+
840822	046	1.3-	1.3-	840828	046	3.7+	2.8+	880718	675	0.2-	0.3-

1985 DD
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	97.97506		(1950.0)	P	Q
n	0.36052131	Peri.	67.41469	-0.82838180	-0.38887205
a	1.9551629	Node	87.65585	+0.23551279	-0.89484535
e	0.1165559	Incl.	23.79889	+0.50824926	-0.21915821
P	2.73	H	14.5	G 0.25	

Residuals in seconds of arc

850216	675	0.8-	0.1-		880513	675	0.6+	0.0		880612	675	1.9-	0.5+
850226	675	0.3+	0.3+		880513	675	0.4+	0.2-		880614	675	0.5+	1.2-
850313	675	0.7+	0.5-		880609	675	0.4+	0.8+					

1985 DO2 = 1988 OG

The identification is by R. W. Sinnott.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	10.17393		(1950.0)	P	Q
n	0.40128103	Peri.	154.03738	+0.75714365	+0.64451443
a	1.8204145	Node	164.34227	-0.64670447	+0.76254801
e	0.3263095	Incl.	23.23309	-0.09223241	-0.05587195
P	2.46	H	15.0	G 0.25	

Residuals in seconds of arc

850121	413	2.5+	1.3-		850227	675	0.1-	0.8+		880809	688	0.3-	0.0
850224	675	1.5-	2.0+		850227	675	2.6+	2.0-		880810	688	1.5+	1.6-
850224	675	(3.4+	0.7-)		880720	675	0.0	0.7+		880810	688	0.6+	1.5+
850226	675	(6.9-	3.4+)		880720	675	0.9-	0.0					
850226	675	2.9-	1.2-		880809	688	0.8-	0.9-					

1986 CB = 1988 PJ

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

M	300.81927		(1950.0)	P	Q
n	0.27439597	Peri.	289.50129	+0.43224216	-0.85504471
a	2.3454081	Node	131.42962	+0.90175634	+0.41037586
e	0.3514521	Incl.	22.46247	-0.00149104	+0.31700189
P	3.59	H	14.0	G 0.25	

Residuals in seconds of arc

860205	675	0.6+	0.4-		860210	675	(4.6+	0.3+)		880809	675	0.3+	0.3+
860205	675	1.9+	0.3+		860303	675	1.3+	0.5+		880811	675	0.3-	0.4-
860207	675	1.9-	1.5-		860304	675	1.1+	1.8-					
860207	675	1.2-	1.3+		860307	675	1.7-	1.2+					

1986 PD1 = 1988 BU3

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

M	114.30051		(1950.0)	P	Q
n	0.23364957	Peri.	266.60132	+0.67552042	-0.71539725
a	2.6107197	Node	138.95430	+0.73695833	+0.64727259
e	0.2043433	Incl.	15.77742	+0.02376079	+0.26314439
P	4.22	H	13.5	G 0.25	

Residuals in seconds of arc

860801	675	(8.6+	15.5+)		860904	809	0.6-	0.6-		880118	809	0.7+	0.8-
860801	675	(5.9+	17.4+)		860904	809	0.6-	0.6-		880119	809	0.0	0.5-
860802	675	(39.8-	12.1+)		860906	809	0.4-	0.0		880119	809	0.5+	0.5-
860802	675	(34.2-	18.7+)		860906	809	0.3-	0.0		880121	809	0.2-	0.5+
860804	675	(12.3-	10.7+)		860906	809	0.5-	0.1-		880121	809	0.3-	0.4+
860804	675	(11.6-	12.3+)		860908	809	0.1-	0.1-		880123	809	0.9-	0.1+
860826	809	0.3-	0.5+		860908	809	0.3+	0.1-		880123	809	1.2-	0.3+
860826	809	0.3-	0.2+		860908	809	0.4+	0.1-		880124	809	1.0-	0.7+
860826	809	0.1-	0.1-		860910	809	0.1+	0.5+		880124	809	0.5-	0.3+
860827	809	0.5-	0.4-		860910	809	0.3+	0.1-		880124	809	0.8-	0.2+
860827	809	0.1-	0.0		860910	809	0.3+	0.2+		880126	809	0.2-	0.3+
860827	809	0.1+	0.0		860912	809	0.7+	0.1+		880126	809	0.1-	0.3+
860829	809	0.1-	0.4+		860912	809	0.8+	0.1-		880128	809	0.5+	0.1+
860829	809	0.1+	0.5+		860912	809	0.8+	0.3-		880128	809	0.8+	0.3+
860829	809	0.1+	0.6+		880118	809	0.4+	0.8-		880130	809	2.1+	0.8+
860904	809	0.5-	0.6-		880118	809	0.5+	0.8-					

1986 VD = 1981 UG9 = 1981 UG21
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	47.13011	(1950.0)	P	Q
n	0.18804317	Peri. 215.40815	-0.42418817	-0.89133199
a	3.0173929	Node 260.17133	+0.86374085	-0.34515770
e	0.0262845	Incl. 9.34373	+0.27205907	-0.29392762
P	5.24	H 12.0	G 0.25	

Residuals in seconds of arc

811024	095	1.9+	3.4+	861104	413	1.0+	2.4+	861108	413	0.5+	0.4-
811030	381	0.7-	1.7-	861104	413	0.6+	1.6-	861109	413	0.8-	0.8-
811030	381	1.1-	1.9-	861105	413	1.3-	0.1-	861202	413	0.7-	0.5+
861104	010	1.5-	0.0	861105	413	0.6+	2.1-	861202	413	0.3+	0.5+
861104	010	0.3+	0.8+	861105	010	(18.0-	1.6-)	861203	413	0.4-	0.3-
861104	010	1.8+	0.5+	861105	010	(8.5-	0.9-)	861203	413	0.3-	0.1+

1986 VE = 1978 WC3 = 1982 XO
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	166.78293	(1950.0)	P	Q
n	0.24151455	Peri. 142.17615	+0.87967876	-0.43248065
a	2.5537284	Node 244.55494	+0.36508980	+0.88067101
e	0.1837489	Incl. 12.65329	+0.30475354	+0.19333668
P	4.08	H 14.0	G 0.25	

Residuals in seconds of arc

781129	675	1.0-	1.1-	861104	413	1.1-	1.1-	861108	413	1.9+	0.8+
781130	675	0.3+	0.5+	861104	413	(3.5+	4.9+)	861109	413	0.9+	0.8-
821213	381	0.4-	0.4-	861105	413	0.5-	2.8-	861202	413	0.3-	0.7+
821213	381	0.6+	0.3+	861105	413	1.7+	1.0-	861203	413	0.0	1.1+
821214	381	1.6+	1.3-	861105	010	(8.9-	0.4-)				
821214	381	0.9+	0.5-	861105	010	2.3-	1.7+				

1987 YT1 = 1942 ET = 1950 UJ = 1951 YP1 = 1966 FN
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	3.91992	(1950.0)	P	Q
n	0.08199311	Peri. 304.86128	-0.38911549	-0.91924868
a	5.2474945	Node 167.60577	+0.90962785	-0.39366789
e	0.1578756	Incl. 16.16556	+0.14548642	+0.00273139
P	12.02	H 9.0	G 0.25	

Residuals in seconds of arc

420312	062	0.2+	2.9+	871220	809	0.0	0.7-	880121	809	0.5-	0.2+
420312	062	1.2+	2.3-	871220	809	0.2+	0.3-	880121	809	0.6-	0.3+
420313	062	1.9+	1.3+	871223	809	0.1+	2.7-	880123	809	1.0-	0.1+
420314	062	1.5+	0.3-	871223	809	0.6+	1.7-	880123	809	1.1-	0.0
501020	760	(12.4+	16.0+)	880115	809	0.2-	0.7-	880125	809	0.5-	0.7+
501020	760	(22.8+	24.4+)	880115	809	0.1-	0.6-	880127	809	0.7-	0.7-
511227	711	0.8+	9.1+ Y	880115	809	0.1+	0.4-	880128	809	0.7-	0.2-
660316	330	3.5+	0.4-	880116	809	0.3-	0.4-	880129	809	0.5-	0.8-
660326	330	2.5-	0.5-	880116	809	0.2+	0.2-	880130	809	0.3-	0.0
871217	809	2.2+	3.5-	880116	809	0.3+	0.3+				
871217	809	2.6+	1.0-	880121	809	0.2-	0.3+				

1988 BK3 = 1955 MJ = 1979 SX4 = 1985 FM2 = 1986 UC2
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	327.82361	(1950.0)	P	Q
n	0.29261470	Peri. 36.48966	-0.41303126	+0.90976252
a	2.2470159	Node 209.18171	-0.85444951	-0.40294450
e	0.1453244	Incl. 4.90398	-0.31515269	-0.09983934
P	3.37	H 14.0	G 0.25	

Residuals in seconds of arc

550622	760	0.9-	2.6-	880116	809	0.0	0.1+	880123	809	0.1+	0.2-
550622	760	1.2+	1.3-	880117	809	0.2-	0.9-	880125	809	0.3-	0.7-
790923	095	(10.4+	8.4+)	880117	809	0.3-	0.6-	880125	809	0.2+	0.5-
850324	688	0.3+	0.5-	880117	809	0.2-	0.7-	880127	809	0.2+	0.0
850324	688	0.3-	0.8+	880119	809	0.9-	0.5-	880127	809	0.1+	0.0
861027	010	1.8+	2.4-	880119	809	0.2-	0.5-	880129	809	0.8+	0.5+
861027	010	0.8-	0.1-	880121	809	0.5-	0.2+	880129	809	0.9+	0.3+
880116	809	0.7-	0.4-	880121	809	0.1+	0.1-				
880116	809	0.1-	0.1-	880123	809	0.5-	0.3-				

1988 BW3 = 1954 SG = 1978 GO4 = 1983 TD
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	105.12905	(1950.0)	P	Q
n	0.27163821	Peri. 202.29961	+0.70676336	-0.70565988
a	2.3612556	Node 202.82873	+0.66704187	+0.68839171
e	0.2193957	Incl. 7.44856	+0.23567071	+0.16781234
P	3.63	H 12.5	G 0.25	

Residuals in seconds of arc

540922	760	1.0-	0.2-	880119	809	0.1+	0.3-	880124	809	0.1-	0.2+
540922	760	1.2-	1.0+	880119	809	0.4+	0.3-	880125	809	0.4+	0.1-
541022	760	0.1-	2.0+	880120	809	0.0	0.2-	880125	809	0.2+	0.1-
541022	760	1.0+	1.4+	880120	809	0.0	0.1-	880127	809	0.6+	0.0
780411	095	0.8+	3.4+	880120	809	0.2-	0.0	880128	809	0.1+	0.2+
831011	882	(66.4+	7.9+)	880122	809	0.5-	0.5+	880129	809	0.3-	0.0
831011	882	0.5+	1.7-	880122	809	0.0	0.6+	880130	809	0.3-	0.3-
880119	809	0.4-	0.3-	880124	809	0.1+	0.2+				

1988 BX3 = 1974 HW
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	321.87306	(1950.0)	P	Q
n	0.27387360	Peri. 1.26728	-0.59554119	+0.79942024
a	2.3483895	Node 232.18776	-0.73787817	-0.58329595
e	0.0699048	Incl. 5.74682	-0.31759485	-0.14385099
P	3.60	H 13.5	G 0.25	

Residuals in seconds of arc

740422	805	0.1-	0.4+	880120	809	0.2-	1.0+	880126	809	0.2+	0.8-
740424	805	0.1-	0.3-	880122	809	0.2-	0.4+	880126	809	0.2+	0.8-
880119	809	0.4-	0.4+	880122	809	0.2-	0.2+	880128	809	0.7+	0.9-
880119	809	0.0	0.5+	880122	809	0.1-	0.1+	880128	809	0.7+	0.8-
880119	809	0.1+	0.5+	880124	809	0.0	0.2+				
880120	809	0.2-	0.8+	880124	809	0.0	0.2-				

1988 CH3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	344.96032	(1950.0)	P	Q
n	0.23023334	Peri. 297.81045	-0.63927866	+0.73963561
a	2.6364765	Node 290.85171	-0.60219368	-0.65166726
e	0.1501461	Incl. 13.01053	-0.47821080	-0.16813372
P	4.28	H 13.5	G 0.25	

From 12 observations 1988 Feb. 13-July 11, mean residual 0".7.

1988 DD3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	23.70283	(1950.0)	P	Q
n	0.19117718	Peri. 257.56717	-0.96843190	-0.19446879
a	2.9843198	Node 271.06520	+0.24164027	-0.88603278
e	0.0388883	Incl. 8.97367	-0.06123432	-0.42086555
P	5.16	H 13.0	G 0.25	

From 8 observations 1988 Feb. 22-July 11, mean residual 0".5.

1988 EC
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	198.67767	(1950.0)	P	Q
n	0.36656387	Peri. 33.04451	+0.96482879	-0.23650975
a	1.9336132	Node 339.67402	+0.10397048	+0.74425419
e	0.0997606	Incl. 19.29066	+0.24144472	+0.62461895
P	2.69	H 13.5	G 0.25	

From 15 observations 1988 Mar. 7-July 11, mean residual 1".2.

1988 EK1 = 1988 KL = 1950 TF4 = 1952 HN = 1968 QL1 = 1972 XQ1 = 1979 SL6 = 1983 XC1

The key identification 1988 EK1 = 1950 TF4 is by S. Nakano. The identifications 1988 EK1 = 1952 HN = 1968 QL1 = 1972 XQ1 = 1979 SL6 = 1983 XC1 were found independently by B. G. Marsden. The double designation 1988 EK1 = 1988 KL was suggested by E. Helin.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	116.83975	(1950.0)	P	Q
n	0.27071260	Peri. 216.74930	+0.44880829	-0.89314734
a	2.3666302	Node 206.62025	+0.83463188	+0.43067196
e	0.2972769	Incl. 3.75030	+0.31931293	+0.12965145
P	3.64	H 12.0	G 0.25	

Residuals in seconds of arc

501008	711	3.2+	2.5-	Y	790923	095	0.0	0.4+	880410	675	(28.2+ 23.4-)
501009	711	2.3-	1.5+	Y	831209	704	1.2+	0.3+	880410	675	(26.5+ 22.6-)
520416	078	(18.4- 13.6+)		Y	831209	704	1.7+	3.0+	880415	054	0.5- 0.7-
680828	095	0.5-	0.1+		880313	675	1.1-	0.7+	880517	675	1.1- 1.7-
721201	095	2.8-	3.6-		880315	675	0.4+	0.9-	880520	675	(26.6- 14.5+)

1988 JL = 1986 XA
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	306.47265	(1950.0)	P	Q
n	0.36222399	Peri. 247.46478	+0.77086857	+0.50070540
a	1.9490311	Node 80.38440	-0.32966194	+0.84253680
e	0.0973512	Incl. 23.53957	-0.54505472	+0.19855941
P	2.72	H 14.5	G 0.25	

Residuals in seconds of arc

861202	010	2.7-	0.4+		880511	675	0.2+	1.0+	880611	675	0.6- 0.1-
861202	010	0.7+	2.5-		880513	675	1.2-	0.2+	880612	675	1.1- 0.6+
861203	010	1.0+	1.0+		880514	675	0.4-	0.3-			
861203	010	(12.4+	5.6-)		880608	675	0.7+	0.2+			

1988 JO = 1982 YX

The identification was found independently by E. Goffin.

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

M	327.89444	(1950.0)	P	Q
n	0.26840975	Peri. 223.03422	+0.67957426	+0.59748155
a	2.3801522	Node 95.10550	-0.50152340	+0.80184980
e	0.1902583	Incl. 25.30046	-0.53539995	+0.00725933
P	3.67	H 12.5	G 0.25	

Residuals in seconds of arc

821222	511	1.0+	1.0-	880512	675	0.6+	0.1+	880609	675	0.1+	0.0
821223	511	0.9-	1.1+	880514	675	1.8-	0.4-	880611	675	0.9+	0.0
880511	675	1.3+	0.3+	880608	675	1.2-	0.0				

1988 JU = 1977 EZ1 = 1977 FK1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	352.22637	(1950.0)		P	Q
n	0.26989731	Peri.	73.27387	-0.13171597	+0.98908931
a	2.3713985	Node	189.88651	-0.99087501	-0.13328912
e	0.1851171	Incl.	22.59876	-0.02859408	+0.06274023
P	3.65	H	13.0	G 0.25	

Residuals in seconds of arc

770313	095	3.1-	1.8-	880511	675	0.6+	0.5+	880613	675	1.8-	1.8-
770325	095	3.2+	1.8+	880608	675	0.7-	0.8+	880717	675	1.3+	1.2+
880509	675	0.1-	0.3-	880611	675	1.2-	1.0-	880718	675	0.7-	0.3-

1988 LA = 1930 QN = 1949 HT = 1949 JG
The double designation 1949 HT = 1949 JG is by O. Kippes (MPC 1278).
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	350.46431	(1950.0)		P	Q
n	0.25286775	Peri.	190.99842	+0.36288504	+0.90282970
a	2.4767020	Node	100.60144	-0.83609683	+0.42476344
e	0.2886443	Incl.	13.57307	-0.41140800	-0.06689216
P	3.90	H	13.0	G 0.25	

Residuals in seconds of arc

300821	078	0.4+	1.6+	490503	760	2.0+	0.2-	880608	675	0.5+	0.5-
300821	078	1.3+	0.0	490503	760	3.5+	0.5-	880610	675	0.9-	1.5+
300822	078	0.9+	0.8+	880510	675	0.3-	2.1-	880612	675	0.6+	0.7+
300822	078	0.4-	1.8+	880511	675	0.1+	0.7+	880614	675	0.3+	0.1+
490424	760	2.6-	0.7+	880512	675	0.0	1.4-				
490424	760	1.0-	0.9+	880514	675	0.1-	0.5-				

1988 LB = 1984 MA
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	359.33563	(1950.0)		P	Q
n	0.24170828	Peri.	6.94479	+0.20277772	+0.95597622
a	2.5523637	Node	274.91628	-0.90830863	+0.10269549
e	0.1316081	Incl.	12.29196	-0.36586422	+0.27488743
P	4.08	H	13.0	G 0.25	

Residuals in seconds of arc

840627	675	0.9+	0.3-	840629	675	0.4-	0.1-	880713	675	1.4+	1.7+
840627	675	1.1-	0.4-	880615	675	0.2+	1.2-	880715	675	1.6-	2.0-
840629	675	0.4+	0.4-	880617	675	0.4-	0.5+				

1988 LF = 1959 CX = 1972 LF = 1981 PE
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	140.82395	(1950.0)		P	Q
n	0.24201672	Peri.	343.69501	+0.02771889	-0.96207382
a	2.5501947	Node	104.09312	+0.94550337	-0.06287700
e	0.0576296	Incl.	16.24820	+0.32443032	+0.26544385
P	4.07	H	12.0	G 0.25	

Residuals in seconds of arc

590212	760	1.4+	2.2-	720610	095	0.3+	0.2+	880608	675	0.5+	0.8+
590212	760	1.7-	0.7-	810805	688	0.2+	2.4-	880611	675	0.8+	1.1+
590308	760	(6.3-	0.4-)	810805	688	0.1+	1.8-	880613	675	1.3-	1.6+
590308	760	0.3-	1.5-	880512	675	0.0	1.0+	880717	675	0.3-	2.4-
720606	095	(8.7+	10.7+)	880512	675	0.9-	1.0-	880718	675	1.9+	1.6-

1988 ME = 1978 YU = 1984 JR2
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	359.24913		(1950.0)		P		Q
n	0.26852302	Peri.	90.30852		+0.49278836		+0.86866614
a	2.3794828	Node	209.38912		-0.83381422		+0.45471780
e	0.1270698	Incl.	5.93960		-0.24882420		+0.19659820
P	3.67	H	13.5	G	0.25		

Residuals in seconds of arc

781222	095	0.1-	1.2-	880521	675	2.2-	0.2+	880715	675	2.6+	0.4-
840505	095	0.0	0.6-	880616	675	0.5-	1.3-	880715	675	1.1+	0.5-
880520	675	0.4-	1.1-	880620	675	0.8-	1.1+				

1988 NF
Epoch 1988 July 18.0 ET = JDE 2447360.5

M	347.77764		(1950.0)		P		Q
n	0.30459309	Peri.	94.12334		+0.90944591		+0.20276994
a	2.1877080	Node	254.47626		-0.31282047		+0.90881389
e	0.3600737	Incl.	22.13421		+0.27395527		+0.36461167
P	3.24	H	12.0	G	0.25		

From 13 observations 1988 July 12-Aug. 20.

1988 NN = 1955 HK
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	5.78301		(1950.0)		P		Q
n	0.24192018	Peri.	86.35059		+0.56371592		+0.80945867
a	2.5508731	Node	219.47193		-0.82250771		+0.53193991
e	0.2003141	Incl.	14.98028		-0.07553434		+0.24862945
P	4.07	H	13.5	G	0.25		

Residuals in seconds of arc

550427	760	0.9+	0.0	550520	760	0.5+	0.5-	880715	675	0.1-	0.7-
550427	760	(0.7-	38.3+)	880711	675	0.1-	0.9+	880808	675	0.3+	0.0
550520	760	0.6-	1.0+	880714	675	(19.8+	7.4+)	880808	675	0.3-	0.0

1988 PA
Epoch 1988 Aug. 7.0 ET = JDE 2447380.5

M	6.53077		(1950.0)		P		Q
n	0.35955424	Peri.	135.29028		+0.47189386		+0.88082270
a	1.9586632	Node	162.75345		-0.84072038		+0.46264510
e	0.3610293	Incl.	7.42393		-0.26552858		+0.10055287
P	2.74	H	17.5	G	0.25		

From 8 observations 1988 Aug. 9-16.

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ORBITAL ELEMENTS BY K. HURUKAWA, TOKYO ASTRONOMICAL OBSERVATORY.

The elements are for Epoch 1988 Aug. 27.0 ET, equinox 1950.0.

(2860) Pasacentennium		Obs.	55	M	264.46696	Peri.	70.49030
H	13.02	G	0.25	Opp.	5	n	0.27669099	Node	334.10381
rms res.	1".1	(M-P)		1953-1985		e	0.2149473	Incl.	22.69791

The identifications are by K. Hurukawa unless otherwise stated.

(3878)* 1982 VR4 = 1976 SA1
Discovered 1982 Nov. 14 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	61.12827	(1950.0)	P	Q	
n	0.18020421	Peri.	199.14675	+0.99830879	+0.05618007
a	3.1042695	Node	157.61677	-0.04688860	+0.93010793
e	0.1853412	Incl.	2.24925	-0.03436593	+0.36296423
P	5.47	H	12.7	G	0.25

Residuals in seconds of arc

760924 095	2.1-	0.2+	821213 381	0.6+	0.1+	870919 688	2.4+	0.4+
760925 095	1.5+	1.3+	821214 381	0.0	0.1-	870919 688	0.3-	0.2-
821112 095	0.0	1.3-	821214 381	0.0	0.3-	871024 801	2.1-	0.4+
821114 381	0.1-	0.0	840209 801	0.4+	1.8+	871120 801	1.0-	0.5+
821114 381	0.2+	0.4-	840303 801	0.2+	0.9+			

(3879)* 1983 QA = 1947 UG = 1976 UJ1

Discovered 1983 Aug. 16 by Z. Vavrova at Klet. The identifications were found independently by W. Landgraf (MPC 8385).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	126.35636	(1950.0)	P	Q	
n	0.27283700	Peri.	31.14063	+0.98844780	+0.11924677
a	2.3543293	Node	321.66021	-0.15025744	+0.85180479
e	0.2570403	Incl.	8.67355	+0.01984055	+0.51010666
P	3.61	H	13.3	G	0.25

Residuals in seconds of arc

471021 062	0.6-	1.0-	830816 046	1.1+	0.4+	830904 046	0.2+	2.1+
471021 062	0.7+	0.5+	830820 046	0.1-	1.0+	830905 046	0.2-	1.5-
761022 026	1.3-	2.8+	830830 046	0.8+	1.6-	830905 046	0.9+	1.6-
761024 026	0.0	3.7+	830830 046	0.9+	0.3-	871119 801	0.1-	1.0+
830717 688	1.4-	1.6+	830901 046	0.3+	1.4-	871120 054	0.1+	1.6-
830717 688	1.7-	1.2+	830901 046	0.3-	1.9-	871214 046	0.6-	2.7-
830816 046	0.3+	0.1-	830904 046	(2.5-	4.7+)	871214 046	0.2+	1.5-

(3880)* 1984 WK = 1978 NX

Discovered 1984 Nov. 21 by C. S. Shoemaker and E. M. Shoemaker at Palomar. The identification was found independently by W. Landgraf (MPC 9418).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	204.25524	(1950.0)	P	Q	
n	0.36294992	Peri.	58.77646	+0.86488265	+0.40235663
a	1.9464276	Node	275.98457	-0.49768763	+0.76529892
e	0.0825999	Incl.	17.56514	+0.06546014	+0.50242085
P	2.72	H	13.6	G	0.25

Residuals in seconds of arc

780709 809	0.1+	0.7-	841121 675	0.2-	0.2-	871126 675	0.1+	0.2-
780710 809	0.0	2.3-	841121 675	0.6-	0.1-	880111 033	1.4-	0.8+
780711 809	0.6+	1.6-	860512 474	0.1+	0.3-	880111 033	1.0-	0.9+
841025 675	0.4-	1.8-	860512 474	0.4-	0.2+	880120 675	0.5+	2.2-
841026 675	1.1+	0.6+	871122 675	0.9+	2.2-	880120 675	0.3-	1.6-

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ORBITAL ELEMENTS BY T. KOBAYASHI, GUNMA, JAPAN.

The identifications are by T. Kobayashi.

(3881)* 1925 VF = 1980 BC1 = 1982 SE = 1986 TP3

Discovered 1925 Nov. 15 by B. Jekhowsky at Algiers.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 132.40636	(1950.0)		P	Q
n 0.25728628	Peri. 38.94523		+0.24256315	-0.96939121
a 2.4482643	Node 37.06141		+0.87352704	+0.20120182
e 0.1523147	Incl. 3.61479		+0.42203511	+0.14070716
P 3.83	H 12.9	G 0.25		

Residuals in seconds of arc

251115 008 0.9- 0.7+	861004 046 2.7- 3.2-	861010 046 1.8- 0.4+
251120 008 0.7+ 0.2-	861005 046 2.0- 3.2-	880313 054 0.3- 0.9+
251123 008 0.7- 1.5+	861005 046 (4.7- 5.4+)	880314 054 1.1- 0.5+
800123 095 0.4+ 1.0-	861005 046 (5.2- 5.7+)	880318 801 0.6+ 0.9-
800220 095 0.5+ 3.3-	861005 046 3.2- 0.9-	880409 054 0.8- 0.2-
820922 688 0.9+ 1.2-	861005 046 3.4- 1.1-	880413 801 2.0+ 2.1+
820922 688 3.2+ 0.1-	861009 046 2.7+ 1.9+	880413 054 1.4- 0.3+
861004 046 3.0+ 2.6+	861009 046 3.1+ 1.3+	
861004 046 2.4+ 1.8+	861010 046 1.1- 0.2-	

(3882)* 1962 RN = 1978 YV = 1980 FJ7 = 1981 SU3 = 1984 FT1

Discovered 1962 Sept. 7 at the Goethe Link Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 355.91760	(1950.0)		P	Q
n 0.25690136	Peri. 73.58174		-0.02127860	+0.99950964
a 2.4507092	Node 195.25423		-0.94732834	-0.02750120
e 0.1389028	Incl. 5.00896		-0.31955632	+0.01497232
P 3.84	H 12.8	G 0.25		

Residuals in seconds of arc

620907 760 2.0+ 0.8-	781222 095 0.6- 1.0-	880514 688 0.2+ 0.6-
620907 760 2.5+ 1.4-	800323 809 2.1- 0.5-	880514 688 2.2+ 0.3-
620924 760 1.4- 0.1-	810925 095 1.3+ 0.7+	880523 809 4.1- 0.4+
620924 760 1.5- 0.3+	840329 095 2.8+ 4.4-	880525 809 2.3- 0.2+
620929 760 0.2- 1.3-	840404 095 0.9+ 1.3-	
620929 760 0.1- 2.3-	880414 801 0.4+ 1.0+	

(3883)* 1972 RQ = 1972 TG5 = 1934 RC1 = 1954 HF = 1966 CX = 1979 HW1 = 1979 JD = 1983 ET

Discovered 1972 Sept. 7 by N. S. Chernykh at the Crimean Astrophysical Observatory. The double designations 1972 RQ = 1972 TG5 and 1979 HW1 = 1979 JD are by B. G. Marsden (MPC 9064) and by O. Kippes (MPC 6630), respectively.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 283.11877	(1950.0)		P	Q
n 0.23353806	Peri. 180.95281		+0.98383943	+0.17374248
a 2.6115455	Node 168.75851		-0.16276589	+0.96855809
e 0.1225708	Incl. 12.82853		-0.07461402	+0.17806958
P 4.22	H 12.1	G 0.25		

Residuals in seconds of arc

340907 008(23.1+ 74.0-)X	790420 095 1.2- 1.8+	830316 688 0.1- 2.7-
540426 760(33.6- 24.9-)X	790425 095 0.1+ 0.4-	880414 801 2.7+ 2.0+
660214 330 1.5+ 1.3+	790501 095 1.3- 1.2+	880513 688 0.9- 1.7-
720907 095 0.0 0.9-	830310 688 0.4+ 0.3+	880513 801 1.4+ 1.2+
720909 095 0.3+ 1.9+	830310 688 0.3- 1.8-	880513 688 2.0- 2.6-
721006 095 0.2- 3.5-	830316 688 0.6- 1.5-	

(3884)* 1977 EM1 = 1969 VL3 = 1971 DY = 1979 QD4 = 1980 TJ12

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

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	75.46026		(1950.0)		P		Q				
n	0.17888878	Peri.	114.96302		-0.56481180		-0.82521302				
a	3.1194688	Node	9.42834		+0.74955870		-0.51471178				
e	0.1281336	Incl.	1.16585		+0.34518023		-0.23258389				
P	5.51	H	12.4	G	0.25						

Residuals in seconds of arc

691105	095	0.1+	0.3+	790822	809	2.5+	1.6+	801017	095	0.3-	0.6-
710218	095	1.2+	3.7+	790822	809	1.3-	1.0+	880313	054	0.1+	0.0
770313	095	0.5+	1.6+	790823	809	1.3-	1.0+	880413	054(12.0-		0.2-)
770322	095	0.2-	1.2+	790823	809	1.9-	1.5+				
770325	095	0.5+	1.0-	801010	095	0.2-	1.6+				

(3885)* 1979 HG5 = 1978 EU = 1987 BE2

Discovered 1979 Apr. 25 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	311.91249		(1950.0)		P		Q				
n	0.21559635	Peri.	150.08444		+0.42043316		+0.90574034				
a	2.7544937	Node	144.69913		-0.84972777		+0.41376056				
e	0.0717940	Incl.	5.31970		-0.31811738		+0.09185111				
P	4.57	H	12.2	G	0.25						

Residuals in seconds of arc

780305	095	0.0	0.3-	870129	809	0.9+	1.0+	870203	809	2.9+	0.3+
790425	095	0.3-	0.4-	870129	809	0.5+	0.3+	870203	809	1.1+	0.3+
790428	095	1.0-	0.2+	870130	809	1.3-	1.0-	870203	809	0.4+	0.1+
790430	095	1.4+	0.5+	870130	809	0.6-	1.6-	870203	809	0.1-	0.1+
870128	809	1.1-	0.9-	870131	809	0.8-	1.0+	870203	809	1.2-	0.3+
870128	809	0.4-	1.2-	870131	809	0.1-	0.7-	870205	809	1.1-	1.0-
870128	809	0.0	0.7+	870202	809	0.5-	1.0+	880419	801	0.5+	0.3-
870128	809	0.8-	0.8+	870202	809	0.3+	0.0	880515	801	0.6-	0.0
870128	809	0.3-	0.4+	870203	809	2.1+	0.5+				

1973 SO4 = 1973 UG4 = 1932 WK = 1987 YG

The double designation 1973 SO4 = 1973 UG4 is by B. G. Marsden (MPC 9064).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	109.25551		(1950.0)		P		Q				
n	0.28809446	Peri.	88.18211		+0.65268284		-0.75646788				
a	2.2704543	Node	320.96779		+0.66588412		+0.59918775				
e	0.1954725	Incl.	3.82127		+0.36139100		+0.26216480				
P	3.42	H	14.0	G	0.25						

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

321122	754	0.1+	0.3-	730928	095	0.1-	2.0+	871222	385	2.9-	1.7- Y
321124	754(0.03-		0.04-)	731029	095	0.6+	1.1-	880111	033	0.7+	1.3+
730927	095	0.8-	0.3-	871222	385	1.8+	0.2- Y	880111	033	0.3+	1.1+

1975 SV = 1975 VJ2 = 1977 DY4 = 1987 HZ

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	67.22198		(1950.0)		P		Q				
n	0.31086834	Peri.	284.08301		+0.71603199		+0.69700406				
a	2.1581670	Node	31.75729		-0.60887150		+0.65057606				
e	0.1742746	Incl.	4.19668		-0.34142888		+0.30155618				
P	3.17	H	13.5	G	0.25						

Residuals in seconds of arc

750930	675	0.5-	0.4-		770218	381	0.3+	0.6-		870424	046	0.3-	2.2+
751001	675	0.6+	0.1+		770219	381	0.1+	0.5+		870424	046	0.8-	1.8+
751002	675	0.7+	0.5+		770219	381	0.3-	0.6+		870427	046	5.1+	0.2+
751102	095	0.4-	0.7+		870423	046	2.9-	0.1+		870427	046	2.6+	0.8+
751107	095	3.2-	4.4+		870423	046	1.3-	0.0					

1984 DX = 1988 DO2

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	79.57106		(1950.0)	P	Q
n	0.23822037	Peri.	290.97565	+0.26161738	-0.96432586
a	2.5772118	Node	143.78165	+0.90894573	+0.23208385
e	0.2433874	Incl.	3.92040	+0.32461363	+0.12732917
P	4.14	H	14.0	G 0.25	

Residuals in seconds of arc

840226	809	0.3+	0.7+		840302	809	0.2+	0.3-		840305	809	0.5-	0.1+
840226	809	0.6+	0.7+		840302	809	0.3+	0.2-		840306	809	0.0	0.4-
840226	809	0.6+	0.7+		840303	809	0.4-	0.6+		840306	809	0.1-	0.4-
840227	809	1.2-	0.4-		840303	809	0.7-	0.8+		840306	809	0.5+	0.6-
840227	809	1.0-	0.5-		840303	809	0.9-	0.9+		880216	809	1.2+	0.6-
840227	809	1.1-	0.5-		840304	809	0.6-	0.1+		880216	809	0.3+	0.4-
840228	809	0.8+	0.8+		840304	809	0.2-	0.0		880216	809	0.7-	0.5+
840228	809	0.9+	0.7+		840304	809	0.4+	0.2+		880221	809	0.0	0.2+
840228	809	1.5+	0.4+		840304	809	2.1+	1.0-		880221	809	0.9-	0.2+
840302	809	1.4-	0.2-		840304	809	2.0+	1.2-		880221	809	2.2-	1.0+
840302	809	1.3-	0.1-		840304	809	2.2+	1.1-		880223	809	2.3+	0.6-
840302	809	1.4-	0.1-		840305	809	1.2-	0.8+		880223	809	0.8+	0.9-
840302	809	0.3+	0.5-		840305	809	0.7-	0.4+		880223	809	0.9-	0.4+

1985 RC4 = 1986 WF7 = 1988 FO

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	249.40818		(1950.0)	P	Q
n	0.19950807	Peri.	169.90921	+0.64844127	+0.76064128
a	2.9006527	Node	140.50513	-0.70174513	+0.61293747
e	0.0676282	Incl.	2.77593	-0.29508929	+0.21385159
P	4.94	H	13.0	G 0.25	

Residuals in seconds of arc

850910	809	0.9-	0.5-		850914	809	0.4+	0.5-		850921	809	0.7-	0.4+
850910	809	1.0-	0.4-		850917	809	0.6+	0.7-		850921	809	0.8-	0.3+
850910	809	0.8-	0.5-		850917	809	0.8+	0.6-		861128	010	0.2+	0.7-
850912	809	0.7+	0.8+		850917	809	1.0+	0.7-		861128	010	0.2-	0.1+
850912	809	0.9+	0.8+		850919	809	0.2-	0.4+		861128	010	0.1-	0.5+
850912	809	1.0+	0.7+		850919	809	0.4-	0.4+		880317	033	0.2-	0.2+
850914	809	0.1+	0.3-		850919	809	0.4-	0.4+		880318	033	0.4+	0.2-
850914	809	0.4+	0.4-		850921	809	0.7-	0.5+		880318	033	0.1-	0.2+

1985 UJ3 = 1978 UO3

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	327.26180		(1950.0)	P	Q
n	0.27924037	Peri.	221.95099	+0.86004972	+0.50977029
a	2.3181983	Node	107.38883	-0.46198353	+0.79570390
e	0.2388761	Incl.	1.27194	-0.21653104	+0.32709258
P	3.53	H	14.0	G 0.25	

Residuals in seconds of arc

781028	675	0.1+	0.0		851017	049	0.3+	1.0+		851024	049	0.0	1.6-
781029	675	0.1-	0.0		851020	049	0.4-	0.4+		851024	049	0.4+	0.4+
851017	049	0.0	1.8-		851020	049	0.3-	1.6+					

1988 CW2 = 1978 WC1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	83.13996		(1950.0)		P		Q	
n	0.22852578	Peri.	343.91099		+0.20446912		-0.97864296	
a	2.6495935	Node	94.28692		+0.90038448		+0.17952437	
e	0.1253340	Incl.	1.21938		+0.38405751		+0.10014467	
P	4.31	H	14.5	G	0.25			

Residuals in seconds of arc

781129	675	0.5-	0.3-	880217	809	0.3-	0.3-	880223	809	0.6+	0.5-
781130	675	0.2+	0.3+	880217	809	0.3-	0.6-	880223	809	0.1-	0.0
880211	809	1.9-	0.2+	880217	809	0.3+	0.1+	880223	809	0.4+	0.1-
880215	809	0.2-	0.1-	880221	809	0.5+	0.2+	880223	809	0.9-	1.1+
880216	809	1.5+	0.4-	880221	809	0.3-	0.6-	880223	809	0.9-	1.5+
880216	809	0.9+	0.5-	880221	809	1.1-	0.0				
880216	809	0.1+	0.4+	880223	809	0.2-	0.2-				

3006 T-3 = 1987 VA
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	98.39626		(1950.0)		P		Q	
n	0.29744004	Peri.	351.92742		+0.91209853		-0.40522477	
a	2.2226432	Node	32.20401		+0.38234327		+0.78602968	
e	0.1154126	Incl.	6.70266		+0.14795234		+0.46685141	
P	3.31	H	13.0	G	0.25			

Residuals in seconds of arc

771016	675	0.9-	1.3-	771022	675	1.3-	0.6+	871114	399	0.4-	1.6-	Y
771016	675	0.4+	1.2-	771022	675	0.9-	1.2+	871114	399	0.3+	0.4+	Y
771017	675	0.8-	0.3+	871113	399	1.1+	0.8- Y	871115	400	2.4-	0.2-	
771017	675	0.3+	1.3+	871113	399	1.1+	1.2+ Y	871115	400	1.6-	1.1+	
771021	675	1.5+	0.7-	871113	399	2.3+	1.2+ Y					
771021	675	1.7+	0.1+	871114	399	0.4-	1.5- Y					

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ORBITAL ELEMENTS BY H. OISHI, NIIZA, JAPAN.

The identifications are by H. Oishi unless otherwise stated.

(3886)* 1981 RU3 = 1953 PY = 1953 RR = 1958 TF
Discovered 1981 Sept. 3 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	231.36021		(1950.0)		P		Q	
n	0.21342360	Peri.	123.06462		+0.61753668		+0.78650308	
a	2.7731567	Node	185.09299		-0.74782825		+0.58402641	
e	0.1018613	Incl.	5.06205		-0.24372393		+0.20081350	
P	4.62	H	12.3	G	0.25			

Residuals in seconds of arc

530811	024	1.4-	1.6-	880118	809	0.0	0.7-	880122	809	0.3+	0.8-
530909	760	0.7-	1.4-	880118	809	0.2+	0.8-	880124	809	0.7-	0.2+
530909	760	3.2+	0.9-	880118	809	0.3+	0.9-	880124	809	0.2-	0.1+
581009	024	0.4+	0.7-	880119	809	0.2-	0.3+	880126	809	0.0	0.1-
810903	095	0.7-	0.1-	880119	809	0.0	0.3+	880126	809	0.5+	0.0
811007	095	(6.7-	3.6-)	880120	809	0.4-	0.1-	880128	809	0.2-	0.0
811022	095	0.8-	2.7+	880120	809	0.0	0.0	880128	809	0.1+	0.2+
811024	095	0.5+	0.2+	880122	809	0.8-	0.6-	880130	809	0.4+	0.3+

(3887)* 1985 QX = 1975 TW2 = 1980 TM6
Discovered 1985 Aug. 22 by A. Mrkos at Klet. The identifications are by T. Furuta (MPC 10403).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 217.88483		(1950.0)	P	Q
n 0.19013202	Peri.	138.28732	+0.85862679	+0.51152922
a 2.9952463	Node	191.08996	-0.50397731	+0.83060879
e 0.1083548	Incl.	9.91932	-0.09363176	+0.22006111
P 5.18	H	12.2	G 0.25	

Residuals in seconds of arc

751003	095	0.4-	0.9+	850911	046	0.7-	0.6-	880216	809	0.5+	2.1-
751013	095	0.7-	0.4+	850912	046	0.4-	1.2+	880216	809	0.5+	2.8-
801008	095	2.0+	1.6-	850912	046	(3.8-	0.9+)	880221	809	0.5+	1.7+
850822	046	2.0+	0.7-	850913	046	2.2-	1.2-	880221	809	0.8+	1.4+
850822	046	0.9-	0.3-	850913	046	0.9-	0.3+	880221	809	1.0+	1.9+
850910	046	1.5+	1.4+	880213	809	0.2+	0.4-	880223	809	1.3-	1.2+
850910	046	1.3+	0.6+	880215	809	0.0	1.1-	880223	809	1.4-	1.1+
850911	046	0.5-	0.6-	880216	809	0.3+	2.2-	880223	809	1.1-	1.1+

1933 FE1 = 1964 DH = 1985 FD1

The key identification 1933 FE1 = 1985 FD1 is by T. Furuta (JAM 1912) and E. Bowell (MPC 9765), who found it independently.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 338.66870		(1950.0)	P	Q
n 0.28468708	Peri.	311.33046	-0.83975605	+0.54163154
a 2.2885349	Node	261.49722	-0.48594705	-0.78096010
e 0.2203580	Incl.	2.20279	-0.24220910	-0.31102508
P 3.46	H	14.6	G 0.25	

Residuals in seconds of arc

330324	024	0.8+	0.5-	640217	760	1.4+	0.7+	850324	688	0.4+	0.7-
330328	024	0.3-	1.7+	850321	688	0.5-	0.2-	850519	801	0.4-	0.8+
330417	024	(6.5+	4.6+)	850321	688	1.2-	0.8-	850521	801	0.3+	0.6+
640217	760	1.3-	0.1-	850324	688	0.8+	0.9-				

1976 QZ1 = 1976 SN10 = 1953 VY2 = 1973 SK5

The double designation 1976 QZ1 = 1976 SN10 is by T. Urata and P. Herget, who found it independently (MPC 6464).

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

M 199.39833		(1950.0)	P	Q
n 0.29255038	Peri.	263.70171	+0.82080443	+0.56163659
a 2.2473453	Node	62.08245	-0.46630251	+0.76412418
e 0.0625338	Incl.	6.76815	-0.32991219	+0.31729888
P 3.37	H	13.8	G 0.25	

Residuals in seconds of arc

531109	024	0.5+	1.4-	760823	808	1.2+	0.0	760916	808	0.2-	0.0
730927	095	0.4-	0.9+	760828	808	0.3-	0.0	760916	808	3.3-	0.7+
760820	808	0.1+	0.5-	760828	808	0.0	0.1+	760919	808	(1.8+	8.4+)
760820	808	0.2-	1.3-	760830	808	0.8+	1.0-	760919	808	0.6-	3.7+
760823	808	1.1+	0.5-	760830	808	1.2+	1.4-				

1988 CH2 = 1969 VN2 = 1976 UZ3

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

M 155.79048		(1950.0)	P	Q
n 0.28035551	Peri.	238.26424	+0.97782813	-0.18790684
a 2.3120516	Node	132.38831	+0.20780267	+0.92525918
e 0.1315070	Incl.	7.18897	-0.02588801	+0.32952461
P 3.52	H	13.4	G 0.25	

Residuals in seconds of arc

691115	095	0.5+	1.6-	880216	809	1.4-	1.0+	880221	809	1.0-	0.7-
761027	095	0.5-	1.5+	880217	809	1.1+	0.0	880223	809	0.2+	0.0
880211	809	0.0	0.6+	880217	809	0.8+	0.1+	880223	809	1.3-	0.1-
880215	809	1.4+	0.6-	880217	809	0.3-	0.4-	880223	809	2.4-	0.6+
880216	809	1.3+	0.6+	880221	809	0.8+	0.4-				
880216	809	0.5+	0.4+	880221	809	0.1-	0.7-				

1988 CS2 = 1973 SL4 = 1973 UB4 = 1980 XQ

The double designation 1973 SL4 = 1973 UB4 was found by B. G. Marsden (MPC 9064).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	155.32723		(1950.0)	P	Q
n	0.29182145	Peri.	64.91802	+0.98121291	-0.18458529
a	2.2510816	Node	305.67097	+0.14253870	+0.88962001
e	0.1659667	Incl.	3.96123	+0.13001516	+0.41773738
P	3.38	H	13.9	G 0.25	

Residuals in seconds of arc

730927	095	2.7-	2.0+	880211	809	0.8-	0.4-	880217	809	0.3-	1.3+
730928	095	(39.3-	5.1+)	880215	809	0.9+	0.8+	880221	809	1.2+	0.1-
731029	095	1.8+	0.5+	880216	809	0.7+	0.5-	880221	809	0.0	0.1+
801208	046	0.4+	2.7-	880216	809	0.4+	0.5+	880221	809	0.9-	0.1-
801208	046	0.3+	0.5-	880216	809	0.5-	0.0	880223	809	0.8+	0.2-
801212	046	0.7-	0.1+	880217	809	1.1+	0.8+	880223	809	0.4-	0.0
801212	046	0.5-	0.4-	880217	809	0.3+	1.1+	880223	809	1.3-	0.4+

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ORBITAL ELEMENTS BY C. L. TOWNSEND, OXNARD, CALIFORNIA.

(3888)* 1984 FO

Discovered 1984 Mar. 28 by C. S. Shoemaker at Palomar.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	26.95607		(1950.0)	P	Q
n	0.26614063	Peri.	96.10119	+0.03059242	+0.99905422
a	2.3936571	Node	175.30661	-0.99924201	+0.03131346
e	0.2515757	Incl.	22.18716	-0.02407294	-0.03016837
P	3.70	H	13.1	G 0.25	

Residuals in seconds of arc

840328	675	0.5+	2.1-	840527	675	1.0+	1.1+	851214	691	0.9+	0.1+
840329	675	0.2-	0.6-	840529	675	0.6-	0.0	851214	691	0.8+	0.0
840331	675	1.4+	0.4-	840731	801	2.3+	0.3+	870225	801	0.3+	0.9-
840331	675	1.7+	0.6+	840828	801	0.2-	0.7+	880512	675	0.2-	0.7-
840427	675	0.5-	0.2+	840926	801	1.1+	1.7+	880513	675	0.6-	0.0
840429	675	0.9-	0.2+	851018	474	0.9-	0.6-	880611	675	0.3-	2.3-
840429	675	0.2-	0.1-	851018	474	1.1-	0.9-	880612	801	0.3+	0.4+
840508	675	0.2-	0.3+	851209	474	0.9+	0.2+	880612	675	0.1-	1.6-
840509	675	0.1+	0.1-	851209	474	0.2+	0.1+				
840526	675	0.5+	0.6+	851214	691	0.6+	0.7-				

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

(3889)* 1972 RT3 = 1981 TN2 = 1981 WW3 = 1985 PU

Discovered 1972 Sept. 6 by L. V. Zhuravleva at the Crimean Astrophysical Observatory. The key identification 1972 RT3 = 1985 PU is by E. Bowell. The identifications 1972 RT3 = 1981 TN2 = 1981 WW3 are by B. G. Marsden (MPC 10032).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	236.31785	(1950.0)		P	Q
n	0.22519548	Peri.	235.47272	+0.98803503	+0.14412283
a	2.6756518	Node.	116.18560	-0.11366431	+0.92110103
e	0.2184034	Incl.	3.50829	-0.10424593	+0.36166490
P	4.38	H	12.9	G 0.25	

Residuals in seconds of arc

720906	095	(0.3-	3.3+)	811124	033	0.2-	0.3-	850914	688	0.3-	0.5-
720909	095	1.9+	2.2+	850814	688	0.1-	0.2+	851017	801	1.2-	1.2-
721007	095	1.9-	0.7+	850814	688	0.4+	0.4-	880409	054	0.3+	0.4-
811004	095	0.3+	1.7-	850820	688	0.5+	0.2-	880413	054	0.9-	0.4+
811124	095	0.3-	0.8-	850820	688	0.5+	0.2-	880414	054	0.3+	0.8-
811124	033	0.8+	0.1-	850914	688	0.2+	0.5-				

(3890)* 1976 YU5 = 1983 WX

Discovered 1976 Dec. 18 by L. I. Chernykh at the Crimean Astrophysical Observatory. The identification is by A. Lowe (MPC 10032).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	203.63406	(1950.0)		P	Q
n	0.27712649	Peri.	70.85592	+0.86254862	+0.49803666
a	2.3299719	Node.	259.18576	-0.49162901	+0.78323186
e	0.1403756	Incl.	5.21454	-0.11962771	+0.37216574
P	3.56	H	13.3	G 0.25	

Residuals in seconds of arc

761218	095	1.4+	2.4-	861006	801	0.2-	0.0	880125	809	0.5+	0.4+
761220	095	2.0+	2.7-	880119	809	0.4-	0.2+	880125	809	0.6+	0.2+
831129	688	1.5-	0.8+	880119	809	0.2+	0.1+	880126	809	0.1-	0.2+
831129	688	1.6+	1.1-	880119	809	0.6+	0.3+	880126	809	0.5+	0.4+
831201	688	1.3+	0.1-	880121	809	0.7-	0.2+	880127	809	0.2-	0.8+
831201	688	2.3-	0.2-	880121	809	0.3+	0.2+	880128	809	1.1-	0.1+
860805	801	2.0+	0.3+	880123	809	0.3+	0.4+	880128	809	0.5-	0.1-
860901	801	1.6-	1.2+	880123	809	0.3+	0.2+				

(3891)* 1981 EY31 = 1974 MF

Discovered 1981 Mar. 3 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey. The identification is by W. Landgraf (MPC 8382).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	297.74637	(1950.0)		P	Q
n	0.26447934	Peri.	346.39338	-0.25306266	+0.96704561
a	2.4036702	Node.	268.94235	-0.88493562	-0.24306358
e	0.1814156	Incl.	1.60280	-0.39095811	-0.07578181
P	3.73	H	15.0	G 0.25	

Residuals in seconds of arc

740620	808	1.3+	0.3+	810303	413	(2.6-	0.9+)	880216	809	1.2-	0.0
740620	808	0.0	1.0+	810307	413	(2.8-	0.6+)	880221	809	1.5+	0.4+
740622	808	0.3-	0.9+	810307	413	1.1+	1.9-	880221	809	1.2+	0.7+
740622	808	0.1+	1.0+	810311	413	(3.0-	0.7+)	880221	809	1.5+	1.4+
770211	675	0.4+	1.2-	810311	413	0.7-	1.0-	880223	809	0.6+	2.7+
770212	675	0.4-	0.5-	810430	413	1.5-	0.9+	880223	809	0.4-	1.7+
770214	675	0.7-	0.6-	880216	809	0.2+	0.7-	880223	809	(1.8-	3.2+)
810209	413	1.4-	1.7+	880216	809	0.8-	0.2-				

ORBITAL ELEMENTS BY A. LOWE, CALGARY.

The identifications are by A. Lowe.

1949 QQ1 = 1980 RE4
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 143.41957		(1950.0)	P	Q
n 0.19023158	Peri.	83.76244	+0.82590569	-0.55204236
a 2.9942012	Node	309.68078	+0.44023219	+0.75839349
e 0.0968072	Incl.	8.56216	+0.35224339	+0.34653795
P 5.18	H 11.8		G 0.25	

Residuals in seconds of arc

490824 760	1.7-	0.8-	490921 760	0.8-	0.2-	800907 095	0.8+	0.0
490824 760	1.3+	0.4+	490921 760	1.3+	0.5+	800909 095	1.0-	0.1+

1964 YJ = 1972 LP
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 112.07528		(1950.0)	P	Q
n 0.18866800	Peri.	63.89011	-0.98408936	+0.01491212
a 3.0107212	Node	116.51822	-0.06995876	-0.94849664
e 0.0416992	Incl.	11.41209	+0.16332146	-0.31643603
P 5.22	H 11.6		G 0.25	

Residuals in seconds of arc

641231 330	0.1-	0.5-	720606 095	1.5+	2.1+			
650108 330	0.1+	0.4+	720610 095	1.5-	2.2-			

1972 JJ = 1979 UH1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 322.25898		(1950.0)	P	Q
n 0.18616380	Peri.	219.21637	+0.46208115	+0.87262326
a 3.0376605	Node	78.83046	-0.76767597	+0.48286464
e 0.0353148	Incl.	9.27643	-0.44402097	+0.07328297
P 5.29	H 12.2		G 0.25	

Residuals in seconds of arc

720509 095	1.5+	0.1+	791021 805	1.4-	0.6-			
720512 095	1.5-	0.1-	791023 805	1.4+	0.6+			

1976 UB2 = 1986 VL6
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 242.96998		(1950.0)	P	Q
n 0.19956619	Peri.	359.76934	+0.14383150	+0.98945902
a 2.9000896	Node	278.50025	-0.90787035	+0.12516423
e 0.1028726	Incl.	0.97523	-0.39380696	+0.07283384
P 4.94	H 12.5		G 0.25	

Residuals in seconds of arc

761024 381	0.8+	0.8+	861106 688	0.4-	0.4+	861107 046	0.4+	0.4+
761024 381	1.0-	0.2-	861106 688	(0.1+	2.0-)			
761026 095	0.1+	0.6-	861107 046	(7.1-	1.0-)			

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NEW NAMES OF MINOR PLANETS.

(3205) Boksenberg = 1979 MO6

Discovered 1979 June 25 by E. F. Helin and S. J. Bus at Siding Spring.

Named in honor of Alexander Boksenberg, director of the Royal Greenwich Observatory, in recognition of his invention of the image-photon counting system and its application to a wide variety of astronomical problems. The first discoverer acknowledges the role he played in introducing her to the

U.K. 1.2-m Schmidt facility in New South Wales, where she conducted the program in which (3205) was discovered. Name endorsed by W. L. W. Sargent.

(3269) Vibert-Douglas = 1981 EX16

Discovered 1981 Mar. 6 by S. J. Bus at Siding Spring in the course of the U.K. Schmidt-Caltech Asteroid Survey.

Named in memory of Alice Vibert Douglas (1894-1988), the pioneer in the teaching of astronomy at McGill University and later dean of women at Queen's University. Her research interests included spectroscopic absolute magnitudes of stars and the Stark effect in stellar atmospheres. An authority on historical astronomy, she was the biographer of Eddington, as well as an early advocate of an increased role for women in science. She was made an Officer of the Order of Canada. Name suggested and citation prepared by C. J. Cunningham, endorsed by P. M. Millman.

(3304) Pearce = 1981 EQ21

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

Named in honor of Joseph A. Pearce, who joined the staff of the Dominion Astrophysical Observatory in 1924 and served as its director from 1940 to 1951. Together with J. S. Plaskett, he conducted studies of the motions of distant early-type stars that established the reality of galactic rotation. An active promoter of both science and culture, he served as president of the Royal Society of Canada in 1949-50. Name suggested and citation prepared by C. J. Cunningham, endorsed by P. M. Millman.

(3441) Pochaina = 1969 TS1

Discovered 1969 Oct. 8 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named for the small river in the old town of Kiev. According to some historians, the inhabitants of Kiev were baptized here in 988 when Christianity was accepted by Russia.

(3483) Svetlov = 1976 YP2

Discovered 1976 Dec. 16 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of the Soviet poet and dramatist Mikhail Arkad'evich Svetlov (1903-1964).

(3523) Arina = 1975 TV2

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

Named for Arina Rodionovna Yakoleva (1758-1828), the nurse of A. S. Pushkin.

(3588) Kirik = 1981 TH4

Discovered 1981 Oct. 8 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named for Kirik Novgorodets, a twelfth-century chronicler from the town of Novgorod, author of the first Russian treatise on the luni-solar calendar. "The First Novgorod Chronicle" contains many of his remarks about the various astronomical events he observed.

(3651) Friedman = 1978 VB5

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

Named in honor of Louis and Connie Friedman on the occasion of their 25th wedding anniversary. As executive director of the Planetary Society, Louis D. Friedman is a leader in promoting the exploration of the solar system. At the Jet Propulsion Laboratory, he originated the International

Halley Watch. Connie Friedman has shared her husband's excitement for planetary exploration. Name proposed by the first discoverer, endorsed by R. L. Staehle.

(3777) McCauley = 1981 JD2

Discovered 1981 May 5 by C. S. Shoemaker at Palomar.

Named in honor of John Francis McCauley, geologist with the U.S. Geological Survey and chief of the Branch of Astrogeologic Studies from 1970 to 1974. McCauley is specially recognized for his pioneering research on the geology of the moon, Mars, and Mercury and for his leading role in using Space Shuttle imaging radar data to describe an ancient trans-African river system that crossed the now hyperarid Sahara Desert. Citation provided by G. G. Schaber at the request of the discoverer.

(3779) Kieffer = 1985 JV1

Discovered 1985 May 13 by C. S. and E. M. Shoemaker at Palomar.

Named in honor of Hugh Hartman Kieffer, geophysicist with the U.S. Geological Survey and chief of the Branch of Astrogeology since 1986. Kieffer is specially recognized for his work on the geology of Mars and his participation in spacecraft missions. His laboratory studies of the spectra of water and carbon-dioxide ices, his leadership in the design of the Viking Infrared Thermal Mapper, and his analysis of its data with colleagues, many of whom are his former students, defined the thermal properties of Mars and the seasonal behavior of water and carbon dioxide in the polar caps.

(3785) Kitami = 1986 WM

Discovered 1986 Nov. 30 by T. Seki at Geisei.

Named for a city in Hokkaido that has been since 1983 a "friendship city" of the discoverer's own city of Kochi. Several amateur astronomers there have been conducting an active program of astrometric observations of minor planets and comets.

(3792) Preston = 1985 FA

Discovered 1985 Mar. 22 by C. S. and E. M. Shoemaker at Palomar.

Named for Richard Preston, American author and teacher of English literature. Preston's prize-winning book, "First Light", describes the history of Palomar Observatory, including the personalities and the research of many astronomers who have observed at Palomar.

(3793) Leonteus = 1985 TE3

Discovered 1985 Oct. 11 by C. S. and E. M. Shoemaker at Palomar.

Named for a good fighter who strove in a contest among his fellow Greeks to win a valuable piece of loot--an iron meteorite--by throwing it the farthest. Leonteus threw mightily, but lost. Name proposed by Dorothy and Jerome Preston.

(3794) Sthenelos = 1985 TF3

Discovered 1985 Oct. 12 by C. S. and E. M. Shoemaker at Palomar.

Named for the fighting companion who accompanied Diomedes during his great rush against the Trojans. Sthenelos pulled an arrow from Diomedes' shoulder and then stole Aeneas' chariot horses and drove them back among the Greeks. Name proposed by Anna McCann Taggart and Robert Taggart.

(3802) Dornburg = 1986 PJ4

Discovered 1986 Aug. 7 by F. Borngen at Tautenburg.

Named for a small town, more than 1050 years old, a few kilometers distant from the Tautenburg Observatory. Situated on a limestock rock above the mean Saale river valley, it is known for its ceramics and for the

ensemble of three "Dornburg castles" from three architectural epochs. Goethe spent some time in this attractive place.

(3808) Tempel = 1982 FQ2
Discovered 1982 Mar. 24 by F. Borngen at Tautenburg.
Named in memory of Wilhelm Ernst Tempel (1821-1889), discoverer of sixteen comets, five minor planets and several diffuse nebulae. Born in the German district of Upper Lusatia, Tempel was an uncommonly successful and enthusiastic observer. His minor planets were discovered while he was in Marseilles. Name suggested by M. Gressmann on the 100th anniversary of Tempel's death in Florence.

(3809) Amici = 1984 FA
Discovered 1984 Mar. 26 at the Osservatorio San Vittore.
Named in memory of Giovanni Battista Amici (1786-1863), professor of mathematics at the University of Modena and astronomer at the Museum of Physics and Natural History in Florence. Well known for his construction of optical instruments, his famous 0.28-m achromatic objective, one of the largest in the world when it was made, is still in use at the Arcetri Astrophysical Observatory. In Italian the name of this minor planet also means "friends".

(3815) Konig = 1959 GG
Discovered 1959 Apr. 15 by A. Konig, G. Jackisch and W. Wenzel at Heidelberg.
Named by the second and third discoverers in memory of the first, Arthur Konig (1895-1969), who succeeded Reinmuth in 1957 as the leader of the long-standing Heidelberg observing program on minor planets. An astrometrist known also for his work on stellar positions and proper motions, Konig also held a leading position in the astronomical department of the Zeiss company and was an authority on coordinate measuring engines.

(3817) Lencarter = 1979 MK1
Discovered 1979 June 25 by E. F. Helin and S. J. Bus at Siding Spring.
Named in honor of Leonard J. Carter, executive secretary of the British Interplanetary Society. For more than 50 years, his efforts have been the basis for the constructive role of the BIS in space advocacy, education and international communications. Name proposed by the first discoverer following a suggestion by W. I. McLaughlin and endorsed by R. L. Staehle.

(3823) Yorii = 1988 EC1
Discovered 1988 Mar. 10 by M. Arai and H. Mori at Yorii.
Named for the small town in central Japan where this minor planet was discovered. Known for the attractions of Hachigata Castle and Five Hundred Rakans (small stone statues), Yorii is situated close to the Tokyo Astronomical Observatory's Dodaira Station.

(3826) Handel = 1973 UV5
Discovered 1973 Oct. 27 by F. Borngen at Tautenburg.
Named for the illustrious composer Georg Friedrich Handel (1685-1759). Although his greatest works were composed after he moved to England, Handel was born in Halle, only some 60 km from Tautenburg.

(3837) Carr = 1981 JU2
Discovered 1981 May 6 by C. S. Shoemaker at Palomar.
Named for Michael Harold Carr, geologist with the U.S. Geological Survey and chief of the Branch of Astrogeologic Studies from 1974 to 1978. As leader of the Viking Orbiter Imaging Team, Carr is widely recognized for

his role in planetary exploration. He is best known for his comprehensive investigations of the geology and climatic history of Mars.

(3855) Pasasymphonia = 1986 NF1

Discovered 1986 July 4 by E. F. Helin at Palomar.

Named in honor of the Pasadena Symphony, now celebrating its 60th anniversary. The orchestra has brought artistic recognition to honor the community. Under the brilliant musical direction of Maestro Jorge Mester, the symphony has won nationwide acclaim as an ensemble of outstanding musicians dedicated to the performance of a richly diverse repertoire. Name suggested by Edith Roberts and endorsed by the discoverer.

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EPHEMERIDES.

1988 PA a,e,i = 1.96, 0.36, 7 Elements MPC 13471

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	08 07	20 25.33	-00 29.9	0.260	1.263	161.0	15.2	15.8
1988	08 17	20 38.35	-05 11.0					
1988	08 27	20 52.68	-09 32.8	0.306	1.299	158.2	16.8	16.3
1988	09 06	21 08.16	-13 02.2					
1988	09 16	21 24.56	-15 26.1	0.403	1.358	145.8	24.6	17.2
1988	09 26	21 41.71	-16 45.8					
1988	10 06	21 59.26	-17 11.3	0.548	1.433	133.4	30.5	18.1
1988	10 16	22 17.06	-16 53.2					
1988	10 26	22 35.01	-16 01.8	0.737	1.518	121.9	33.8	19.0
1988	11 05	22 52.97	-14 45.7					
1988	11 15	23 10.93	-13 11.5	0.964	1.610	111.1	35.0	19.7
1988	11 25	23 28.87	-11 24.3					
1988	12 05	23 46.76	-09 28.4	1.223	1.705	100.6	34.6	20.4

1980 PA a,e,i = 1.93, 0.46, 2 Elements MPC 13455

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	08 07	21 56.04	-04 21.0	0.304	1.307	162.8	13.3	16.7
1988	08 12	21 57.04	-03 05.9					
1988	08 17	21 57.83	-01 42.2	0.241	1.249	167.6	10.0	16.0
1988	08 22	21 58.65	-00 07.2					
1988	08 27	21 59.80	+01 42.6	0.189	1.195	166.9	11.1	15.4
1988	09 01	22 01.63	+03 51.9					
1988	09 06	22 04.65	+06 26.6	0.145	1.147	161.4	16.3	14.9
1988	09 11	22 09.59	+09 34.7					
1988	09 16	22 17.55	+13 27.9	0.110	1.106	155.1	22.5	14.4
1988	09 21	22 30.21	+18 21.0					
1988	09 26	22 50.16	+24 29.2	0.082	1.074	149.7	28.1	13.8
1988	10 01	23 21.50	+31 55.7					
1988	10 06	00 10.32	+40 00.2	0.064	1.052	144.0	33.9	13.4
1988	10 11	01 21.53	+46 42.8					
1988	10 16	02 46.99	+49 30.8	0.063	1.043	135.5	42.0	13.6
1988	10 21	04 03.34	+48 05.8					
1988	10 26	04 57.40	+44 30.9	0.078	1.046	130.4	46.4	14.1
1988	10 31	05 32.00	+40 33.2					
1988	11 05	05 53.37	+36 57.2	0.100	1.061	132.1	43.9	14.6
1988	11 10	06 06.10	+33 53.4					
1988	11 15	06 13.08	+31 20.1	0.127	1.088	138.9	36.8	15.0
1988	11 20	06 16.14	+29 12.8					
1988	11 25	06 16.49	+27 27.1	0.157	1.124	148.5	27.3	15.3

1988 11 30	06 14.92	+25 59.2						
1988 12 05	06 12.07	+24 46.2	0.193	1.169	159.7	17.0	15.6	
1988 12 10	06 08.53	+23 45.8						
1988 12 15	06 04.83	+22 56.4	0.238	1.220	171.6	6.8	15.8	
1988 12 20	06 01.40	+22 16.4						
1988 12 25	05 58.51	+21 44.7	0.293	1.276	176.4	2.8	16.1	
1988 12 30	05 56.36	+21 20.1						
1989 01 04	05 55.05	+21 01.6	0.361	1.336	165.6	10.6	17.0	
1989 01 09	05 54.67	+20 48.3						
1989 01 14	05 55.26	+20 39.1	0.442	1.398	155.5	17.0	17.7	
1989 01 19	05 56.79	+20 33.2						
1989 01 24	05 59.19	+20 29.8	0.536	1.461	146.3	22.0	18.4	
1989 01 29	06 02.39	+20 28.2						
1989 02 03	06 06.31	+20 27.7	0.644	1.525	137.8	25.7	19.0	
1989 02 08	06 10.90	+20 27.8						
1989 02 13	06 16.09	+20 27.9	0.763	1.589	130.0	28.4	19.5	
1989 02 18	06 21.82	+20 27.7						
1989 02 23	06 28.00	+20 26.8	0.893	1.652	122.7	30.3	20.0	
1989 02 28	06 34.58	+20 24.9						
1989 03 05	06 41.50	+20 21.8	1.032	1.715	115.9	31.4	20.4	

1985 DO2 a,e,i = 1.82, 0.33, 23 Elements MPC 13466

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988 08 07	23 18.93	+30 53.9	0.333	1.227	122.9	44.0	14.6
1988 08 17	23 42.10	+22 24.3					
1988 08 27	00 01.78	+10 10.3	0.270	1.247	147.7	25.6	13.7
1988 09 06	00 16.82	-04 10.1					
1988 09 16	00 26.94	-17 18.1	0.297	1.289	160.5	15.1	13.6
1988 09 26	00 33.19	-26 50.8					
1988 10 06	00 37.20	-32 38.1	0.412	1.350	142.4	26.9	14.8
1988 10 16	00 40.66	-35 28.2					
1988 10 26	00 44.96	-36 12.8	0.575	1.424	128.4	33.2	15.8
1988 11 05	00 50.73	-35 32.3					
1988 11 15	00 58.23	-33 53.9	0.765	1.507	117.8	35.5	16.6
1988 11 25	01 07.45	-31 36.8					
1988 12 05	01 18.16	-28 55.0	0.976	1.594	108.7	35.9	17.3
1988 12 15	01 30.20	-25 57.7					
1988 12 25	01 43.37	-22 52.5	1.206	1.682	99.9	35.2	17.8
1989 01 04	01 57.48	-19 44.6					
1989 01 14	02 12.42	-16 37.9	1.450	1.768	91.1	33.8	18.3
1989 01 24	02 28.07	-13 35.9					
1989 02 03	02 44.32	-10 40.8	1.707	1.852	82.2	31.8	18.7
1989 02 13	03 01.12	-07 54.5					
1989 02 23	03 18.40	-05 18.4	1.968	1.931	73.2	29.4	19.0
1989 03 05	03 36.10	-02 53.7					
1989 03 15	03 54.18	-00 41.0	2.228	2.006	64.2	26.5	19.3
1989 03 25	04 12.57	+01 18.8					
1989 04 04	04 31.23	+03 05.6	2.477	2.075	55.1	23.3	19.5
1989 04 14	04 50.11	+04 39.1					
1989 04 24	05 09.15	+05 59.2	2.709	2.138	46.1	19.8	19.7
1989 05 04	05 28.30	+07 06.0					

1988 NF a,e,i = 2.19, 0.36, 22 Elements MPC 13471

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988 08 07	23 26.59	+48 42.1	0.720	1.411	107.7	43.2	13.5
1988 08 17	23 36.66	+53 11.0					
1988 08 27	23 44.51	+56 39.4	0.674	1.400	110.9	42.4	13.3
1988 09 06	23 49.98	+58 58.0					
1988 09 16	23 53.34	+59 56.4	0.633	1.411	117.1	39.4	13.1

1988 09 26	23 55.84	+59 25.7					
1988 10 06	23 59.10	+57 20.5	0.601	1.442	126.8	33.7	12.9
1988 10 16	00 04.54	+53 41.7					
1988 10 26	00 12.94	+48 43.8	0.600	1.491	137.3	26.9	12.8
1988 11 05	00 24.10	+42 55.8					
1988 11 15	00 37.47	+36 55.8	0.662	1.556	140.0	24.1	13.1
1988 11 25	00 52.50	+31 21.4					
1988 12 05	01 08.59	+26 36.8	0.804	1.631	131.1	27.1	13.7
1988 12 15	01 25.41	+22 51.0					
1988 12 25	01 42.76	+20 02.0	1.017	1.713	117.8	30.5	14.4
1989 01 04	02 00.43	+18 01.5					
1989 01 14	02 18.37	+16 40.0	1.281	1.801	104.6	31.9	15.0
1989 01 24	02 36.53	+15 48.2					
1989 02 03	02 54.85	+15 17.9	1.575	1.890	92.2	31.4	15.6
1989 02 13	03 13.33	+15 02.9					
1989 02 23	03 31.94	+14 57.6	1.885	1.980	80.6	29.5	16.0
1989 03 05	03 50.65	+14 57.8					
1989 03 15	04 09.44	+15 00.4	2.195	2.068	69.5	26.8	16.3
1989 03 25	04 28.27	+15 02.5					
1989 04 04	04 47.11	+15 02.2	2.493	2.154	58.9	23.4	16.6
1989 04 14	05 05.94	+14 57.9					
1989 04 24	05 24.68	+14 48.4	2.771	2.238	48.7	19.7	16.8
1989 05 04	05 43.32	+14 32.7					

Comet Machholz (1988j) Elements MPC 13452

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1988 08 07	04 44.06	+00 34.9	1.127	1.178	66.5	52.2	9.0
1988 08 12	05 16.22	+00 11.9					
1988 08 17	05 54.24	-00 16.9	0.948	0.962	58.6	64.0	7.7
1988 08 22	06 38.47	-00 48.3					
1988 08 27	07 28.16	-01 16.0	0.864	0.724	44.6	78.5	6.3
1988 09 01	08 21.22	-01 30.6					
1988 09 06	09 15.06	-01 21.0	0.922	0.455	26.8	87.1	4.4
1988 09 26	13 14.61	+04 31.0	1.165	0.362	17.2	55.0	3.9
1988 10 01	14 05.12	+04 20.0					
1988 10 06	14 49.80	+03 40.4	1.206	0.642	32.2	56.0	6.5
1988 10 11	15 29.13	+02 48.5					
1988 10 16	16 03.50	+01 53.9	1.341	0.888	41.5	48.0	8.1
1988 10 21	16 33.43	+01 02.5					
1988 10 26	16 59.53	+00 16.7	1.536	1.111	46.2	40.2	9.4
1988 10 31	17 22.42	-00 22.4					
1988 11 05	17 42.67	-00 54.7	1.764	1.316	47.5	33.8	10.4
1988 11 10	18 00.73	-01 20.6					
1988 11 15	18 17.00	-01 40.6	2.007	1.508	46.6	28.4	11.3

(3838) 1986 WA a,e,i = 1.50, 0.70, 29 Elements MPC 13168

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988 08 27	07 15.41	+39 52.5	0.792	0.796	50.6	79.1	17.0
1988 09 06	07 08.14	+36 31.4					
1988 09 16	07 04.10	+33 12.1	0.840	1.062	69.6	62.6	17.3
1988 09 26	06 59.14	+29 55.9					
1988 10 06	06 50.88	+26 37.5	0.813	1.300	91.0	50.3	17.3
1988 10 16	06 37.55	+23 09.7					
1988 10 26	06 18.16	+19 26.9	0.762	1.509	117.9	35.6	17.1
1988 11 05	05 52.88	+15 28.9					
1988 11 15	05 23.56	+11 28.2	0.765	1.693	149.3	17.3	16.9
1988 11 25	04 53.79	+07 49.7					
1988 12 05	04 27.28	+04 57.3	0.891	1.854	162.2	9.4	17.1

1988 12 15	04 06.41	+03 01.4					
1988 12 25	03 51.89	+01 57.8	1.140	1.995	139.8	18.6	18.1
1989 01 04	03 43.18	+01 34.6					
1989 01 14	03 39.34	+01 40.2	1.468	2.118	118.2	24.2	19.0
1989 01 24	03 39.41	+02 04.7					
1989 02 03	03 42.54	+02 40.9	1.830	2.223	99.9	25.9	19.6
1989 02 13	03 48.09	+03 23.8					
1989 02 23	03 55.56	+04 09.6	2.196	2.313	84.0	25.2	20.0

Comet Shoemaker (1986 XIV) Elements MPC 13458

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1988 08 27	13 54.36	+33 21.3	7.725	7.175	53.9	6.5	18.5
1988 09 06	13 55.81	+32 50.4					
1988 09 16	13 57.91	+32 23.8	7.942	7.265	44.9	5.6	18.6
1988 09 26	14 00.51	+32 02.6					
1988 10 06	14 03.51	+31 47.5	8.080	7.356	41.1	5.1	18.7
1988 10 16	14 06.78	+31 39.4					
1988 10 26	14 10.22	+31 39.0	8.131	7.448	44.0	5.3	18.8
1988 11 05	14 13.69	+31 47.0					
1988 11 15	14 17.09	+32 03.9	8.100	7.540	52.6	6.0	18.8
1988 11 25	14 20.29	+32 30.4					
1988 12 05	14 23.15	+33 06.6	8.001	7.634	64.8	6.7	18.8
1988 12 15	14 25.53	+33 52.9					
1988 12 25	14 27.30	+34 49.0	7.856	7.729	79.0	7.2	18.9
1989 01 04	14 28.31	+35 54.4					
1989 01 14	14 28.40	+37 08.3	7.697	7.824	93.8	7.2	18.9
1989 01 24	14 27.42	+38 29.3					
1989 02 03	14 25.27	+39 55.4	7.560	7.920	108.0	6.8	18.9
1989 02 13	14 21.81	+41 24.2					
1989 02 23	14 17.01	+42 52.6	7.480	8.017	119.7	6.2	18.9
1989 03 05	14 10.87	+44 17.5					
1989 03 15	14 03.48	+45 35.5	7.486	8.115	126.3	5.7	19.0
1989 03 25	13 55.04	+46 43.4					
1989 04 04	13 45.82	+47 38.8	7.591	8.213	125.6	5.7	19.0
1989 04 14	13 36.19	+48 20.0					
1989 04 24	13 26.54	+48 46.2	7.791	8.312	118.1	6.1	19.2
1989 05 04	13 17.28	+48 57.9					
1989 05 14	13 08.74	+48 56.0	8.068	8.411	106.5	6.6	19.3
1989 05 24	13 01.19	+48 42.4					
1989 06 03	12 54.80	+48 19.1	8.393	8.511	93.2	6.8	19.4
1989 06 13	12 49.65	+47 48.5					
1989 06 23	12 45.75	+47 12.6	8.735	8.611	79.7	6.7	19.6
1989 07 03	12 43.05	+46 33.3					
1989 07 13	12 41.47	+45 52.5	9.063	8.712	66.7	6.2	19.7
1989 07 23	12 40.89	+45 11.7					
1989 08 02	12 41.20	+44 32.1	9.350	8.813	55.4	5.4	19.8
1989 08 12	12 42.27	+43 54.9					
1989 08 22	12 44.00	+43 21.0	9.576	8.915	46.8	4.7	19.9

Comet Shoemaker-Holt-Rodriquez (1988h) Elements MPC 13460

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1988 08 27	18 56.17	+04 27.2	3.208	3.899	126.9	12.0	13.4
1988 09 06	18 48.77	+01 31.4					
1988 09 16	18 43.37	-01 22.2	3.324	3.751	107.5	14.8	13.3
1988 09 26	18 40.04	-04 09.0					
1988 10 06	18 38.74	-06 46.4	3.504	3.605	87.7	16.1	13.3
1988 10 16	18 39.36	-09 13.1					
1988 10 26	18 41.73	-11 28.8	3.699	3.464	68.6	15.5	13.2

1988 11 05	18 45.69	-13 34.0						
1988 11 15	18 51.07	-15 29.4	3.866	3.326	50.5	13.3	13.2	
1988 11 25	18 57.72	-17 16.3						
1988 12 05	19 05.47	-18 55.8	3.973	3.193	33.1	9.7	13.0	

Comet Shoemaker (1988b) Elements MPC 13458

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1988 10 06		10 08.03	+09 27.2	7.286	6.575	41.8	5.8	18.0
1988 10 16		10 10.82	+08 27.6					
1988 10 26		10 12.96	+07 30.1	7.112	6.668	59.8	7.4	18.0
1988 11 05		10 14.35	+06 34.9					
1988 11 15		10 14.89	+05 42.6	6.885	6.762	78.8	8.2	18.0
1988 11 25		10 14.51	+04 53.5					
1988 12 05		10 13.14	+04 08.2	6.638	6.858	98.8	8.2	18.0
1988 12 15		10 10.75	+03 27.1					
1988 12 25		10 07.33	+02 50.6	6.414	6.954	119.7	7.1	18.0
1989 01 04		10 02.94	+02 19.1					
1989 01 14		09 57.71	+01 52.8	6.258	7.052	141.3	5.0	18.0
1989 01 24		09 51.79	+01 31.7					
1989 02 03		09 45.43	+01 15.5	6.209	7.151	161.5	2.5	18.0
1989 02 13		09 38.90	+01 03.9					
1989 02 23		09 32.48	+00 55.9	6.292	7.251	164.5	2.1	18.1
1989 03 05		09 26.44	+00 50.6					
1989 03 15		09 21.02	+00 47.1	6.507	7.351	145.9	4.4	18.2
1989 03 25		09 16.40	+00 44.1					
1989 04 04		09 12.68	+00 40.7	6.829	7.453	125.3	6.3	18.4
1989 04 14		09 09.94	+00 36.1					
1989 04 24		09 08.18	+00 29.4	7.223	7.555	105.5	7.4	18.6
1989 05 04		09 07.35	+00 20.1					
1989 05 14		09 07.40	+00 07.8	7.648	7.657	86.8	7.6	18.8
1989 05 24		09 08.25	-00 07.8					
1989 06 03		09 09.79	-00 26.9	8.065	7.761	69.1	7.0	18.9
1989 06 13		09 11.94	-00 49.6					
1989 06 23		09 14.59	-01 16.0	8.443	7.865	52.4	5.9	19.1
1989 07 03		09 17.65	-01 45.9					
1989 07 13		09 21.02	-02 19.4	8.758	7.970	37.0	4.4	19.2

Comet Jensen-Shoemaker (1987g1) Elements MPC 12953

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1988 10 26		05 29.38	-54 46.0	3.940	4.225	99.9	13.4	18.2
1988 11 05		05 25.45	-56 56.6					
1988 11 15		05 19.15	-58 43.5	4.068	4.336	99.1	13.0	18.4
1988 11 25		05 10.96	-60 03.6					
1988 12 05		05 01.59	-60 55.4	4.227	4.451	96.7	12.7	18.6
1988 12 15		04 52.00	-61 19.0					
1988 12 25		04 43.17	-61 16.2	4.402	4.568	93.4	12.4	18.8
1989 01 04		04 35.92	-60 50.1					
1989 01 14		04 30.82	-60 04.7	4.586	4.688	89.9	12.1	19.0
1989 01 24		04 28.16	-59 04.6					
1989 02 03		04 27.95	-57 53.8	4.770	4.810	86.4	11.8	19.2
1989 02 13		04 30.07	-56 36.2					
1989 02 23		04 34.30	-55 15.0	4.950	4.934	83.3	11.5	19.4
1989 03 05		04 40.37	-53 52.9					
1989 03 15		04 48.04	-52 32.3	5.127	5.060	80.6	11.2	19.6
1989 03 25		04 57.05	-51 15.0					
1989 04 04		05 07.17	-50 02.6	5.301	5.188	78.1	10.9	19.8
1989 04 14		05 18.21	-48 56.2					
1989 04 24		05 29.99	-47 57.0	5.473	5.316	75.8	10.6	19.9

Comet Torres (1987j) Elements MPC 13459

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1988 10 26	12 26.39	+34 33.3	6.597	6.034	51.8	7.4	19.9
1988 11 05	12 31.40	+35 19.7					
1988 11 15	12 35.95	+36 17.2	6.480	6.160	66.9	8.5	20.0
1988 11 25	12 39.89	+37 26.3					
1988 12 05	12 43.04	+38 47.2	6.327	6.286	83.1	9.0	20.0
1988 12 15	12 45.24	+40 19.6					
1988 12 25	12 46.29	+42 02.5	6.175	6.412	99.6	8.7	20.0
1989 01 04	12 45.99	+43 54.3					
1989 01 14	12 44.14	+45 52.5	6.065	6.539	114.8	7.8	20.1
1989 01 24	12 40.57	+47 53.3					
1989 02 03	12 35.18	+49 52.8	6.034	6.666	126.4	6.8	20.1
1989 02 13	12 27.94	+51 46.2					
1989 02 23	12 18.98	+53 28.8	6.106	6.794	130.8	6.3	20.3
1989 03 05	12 08.60	+54 56.6					
1989 03 15	11 57.27	+56 06.6	6.288	6.922	126.2	6.7	20.4
1989 03 25	11 45.60	+56 57.3					
1989 04 04	11 34.24	+57 28.8	6.564	7.049	115.3	7.4	20.6
1989 04 14	11 23.79	+57 42.8					
1989 04 24	11 14.72	+57 41.6	6.907	7.177	101.6	7.9	20.8

1983 RY3 a,e,i = 3.03, 0.06, 11 Elements MPC 13448

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988 08 07	21 55.64	-25 14.3	2.023	3.016	165.6	4.8	16.3
1988 08 17	21 46.71	-25 36.5					
1988 08 27	21 37.84	-25 46.6	2.053	3.028	161.4	6.1	16.4
1988 09 06	21 29.94	-25 42.8					
1988 09 16	21 23.75	-25 25.0	2.188	3.040	141.5	11.9	16.7
1988 09 26	21 19.76	-24 54.5					
1988 10 06	21 18.15	-24 13.4	2.405	3.051	121.7	16.2	17.1
1988 10 16	21 18.92	-23 23.4					
1988 10 26	21 21.91	-22 26.2	2.674	3.063	103.5	18.4	17.4
1988 11 05	21 26.85	-21 22.9					
1988 11 15	21 33.51	-20 14.3	2.965	3.074	86.9	18.7	17.6
1988 11 25	21 41.60	-19 00.8					
1988 12 05	21 50.87	-17 42.9	3.255	3.085	71.4	17.6	17.8
1988 12 15	22 01.12	-16 20.9					
1988 12 25	22 12.15	-14 55.0	3.522	3.096	56.8	15.4	17.9

1987 HS a,e,i = 2.32, 0.17, 24 Elements MPC 13457

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988 08 27	03 45.22	-08 29.7	1.802	2.218	100.3	26.6	17.6
1988 09 06	03 53.57	-10 17.5					
1988 09 16	03 59.19	-12 17.8	1.657	2.257	113.7	24.1	17.4
1988 09 26	04 01.75	-14 25.5					
1988 10 06	04 01.04	-16 33.1	1.548	2.295	127.2	20.3	17.1
1988 10 16	03 57.01	-18 31.1					
1988 10 26	03 50.02	-20 07.8	1.498	2.333	137.8	16.6	17.0
1988 11 05	03 40.83	-21 12.7					
1988 11 15	03 30.55	-21 37.6	1.525	2.370	139.9	15.6	17.0
1988 11 25	03 20.52	-21 19.8					
1988 12 05	03 11.93	-20 22.1	1.634	2.406	131.7	17.8	17.3
1988 12 15	03 05.65	-18 51.2					
1988 12 25	03 02.12	-16 55.6	1.814	2.440	118.4	20.8	17.6
1989 01 04	03 01.41	-14 43.9					
1989 01 14	03 03.38	-12 23.0	2.043	2.474	104.1	22.7	18.0
1989 01 24	03 07.77	-09 58.5					
1989 02 03	03 14.27	-07 34.6	2.300	2.505	90.2	23.2	18.3

1975 SV a,e,i = 2.16, 0.17, 4 Elements MPC 13474

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	09 16	05 04.96	+24 21.4	1.769	2.115	95.3	28.3	17.5
1988	09 26	05 14.14	+24 55.3					
1988	10 06	05 20.41	+25 26.7	1.581	2.156	111.3	25.6	17.2
1988	10 16	05 23.27	+25 56.4					
1988	10 26	05 22.34	+26 24.4	1.415	2.196	130.6	20.1	16.8
1988	11 05	05 17.43	+26 48.9					
1988	11 15	05 08.75	+27 07.3	1.307	2.235	153.4	11.4	16.4
1988	11 25	04 57.19	+27 16.1					
1988	12 05	04 44.22	+27 13.3	1.290	2.273	175.1	2.1	16.1
1988	12 15	04 31.63	+27 00.1					
1988	12 25	04 21.13	+26 40.7	1.382	2.309	154.6	10.5	16.6
1989	01 04	04 13.80	+26 20.6					
1989	01 14	04 10.14	+26 04.3	1.568	2.343	132.0	18.2	17.2
1989	01 24	04 10.13	+25 54.7					
1989	02 03	04 13.45	+25 52.2	1.816	2.375	112.5	22.6	17.6
1989	02 13	04 19.68	+25 56.1					
1989	02 23	04 28.39	+26 04.9	2.095	2.404	95.7	24.2	18.0

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

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	10 06	06 37.60	+33 16.9	2.275	2.554	94.4	23.0	18.3
1988	10 16	06 47.85	+34 16.4					
1988	10 26	06 55.98	+35 23.4	1.994	2.515	110.1	21.8	17.9
1988	11 05	07 01.54	+36 39.2					
1988	11 15	07 03.99	+38 03.9	1.746	2.477	127.7	18.4	17.5
1988	11 25	07 02.86	+39 35.2					
1988	12 05	06 57.86	+41 07.9	1.558	2.440	146.2	13.0	17.1
1988	12 15	06 49.09	+42 33.6					
1988	12 25	06 37.38	+43 41.8	1.459	2.403	159.1	8.4	16.7
1989	01 04	06 24.28	+44 24.1					
1989	01 14	06 11.80	+44 36.8	1.462	2.368	150.5	11.8	16.8
1989	01 24	06 01.90	+44 22.6					
1989	02 03	05 55.86	+43 48.3	1.557	2.335	132.1	18.3	17.1
1989	02 13	05 54.21	+43 01.8					
1989	02 23	05 56.90	+42 09.1	1.714	2.303	114.1	23.1	17.4
1989	03 05	06 03.46	+41 13.6					
1989	03 15	06 13.36	+40 16.8	1.905	2.275	98.4	25.6	17.7

1987 SA7 a,e,i = 3.02, 0.09, 10 Elements MPC 13457

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	10 06	06 52.61	+11 56.4	2.963	3.116	89.3	18.7	17.7
1988	10 16	06 58.39	+11 17.9					
1988	10 26	07 02.26	+10 40.2	2.704	3.131	106.3	17.7	17.5
1988	11 05	07 04.02	+10 04.9					
1988	11 15	07 03.53	+09 34.2	2.470	3.145	125.2	14.9	17.2
1988	11 25	07 00.74	+09 10.2					
1988	12 05	06 55.80	+08 54.8	2.296	3.159	145.7	10.1	16.9
1988	12 15	06 49.04	+08 49.7					
1988	12 25	06 41.05	+08 55.6	2.215	3.172	164.0	4.9	16.6
1989	01 04	06 32.61	+09 12.5					
1989	01 14	06 24.58	+09 39.0	2.250	3.185	158.3	6.6	16.7
1989	01 24	06 17.76	+10 13.3					
1989	02 03	06 12.73	+10 52.9	2.395	3.197	138.0	11.9	17.1
1989	02 13	06 09.86	+11 35.4					
1989	02 23	06 09.29	+12 18.6	2.623	3.208	117.9	15.8	17.4
1989	03 05	06 10.96	+13 00.5					
1989	03 15	06 14.72	+13 39.8	2.899	3.219	99.6	17.7	17.7