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EDITORIAL NOTICE.

The next MPCs will be published on or about 1991 Aug. 25. No MPCs will be issued in July.

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ERRATA.

MPC	Line		
16568	22	Add	by N. S. Chernykh
17452	-26	For	N. S. Chernykh (d) read L. V. Zhuravleva (d)
17880	-23	Add	C. M. Olmstead (6), B. A. Skiff (6)
18011	24	For	Austin read Levy
18092	-14	For	A. Warnsch read A. Warnock
18144	15	For	brother of Polydoros and a son of Priam read brother of Lykaon and the youngest son of Priam
18144	-23	For	Sonneberg read Tautenburg
18278	13	Add	Id. H. Kaneda, A. Lowe
18285	15	For	H. E. Holt read E. Bowell
18305	-13	For	Earl read Earle
18307	14	For	Sonneberg read Bloemfontein

* * * * *

CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object		Date	UT	R. A. (1950)	Decl.	Reference	Mag.	N Obs.
1955 MB		1955 06	16.14551	15 44 42.22	-14 10 26.1	MPC 3597		760
1955 MB		1955 06	16.19134	15 44 39.83	-14 11 03.2	MPC 3597		760
1955 MB		1955 06	22.16903	15 40 20.36	-15 14 51.6	MPC 3524	16	760
1955 MB		1955 06	22.22046	15 40 18.18	-15 15 26.3	MPC 3524		760
1963 VE		1963 11	11.20524	03 15 30.34	+12 20 36.2	MPC 5889		1 760
1963 VJ		1963 11	11.16080	03 09 29.33	+10 54 36.9	MPC 7576		2 760
1963 VJ		1963 11	11.20524	03 09 26.25	+10 54 37.2	MPC 7576		3 760
1963 VL		1963 11	11.20524	03 05 39.94	+12 04 53.8	MPC 6456		5 760
1963 VM		1963 11	11.20524	02 59 25.22	+11 07 26.3	MPC 2869		7 760
1963 VN		1963 11	11.20524	02 55 57.70	+13 19 38.3	MPC 2869		9 760
1964 PQ	*	1964 08	12.21389	20 51 00.77	-15 30 33.7	MPC 7983	16.0	A 760
1964 PQ		1964 08	12.25764	20 50 58.56	-15 30 40.1	MPC 7983		A 760
1974 SD3		1986 09	08.94442	23 29 55.57	+11 50 23.2	MPC14680		095
1989 LJ		1990 09	22.31840	23 56 05.38	-24 13 27.4	MPC17109		675
1991 EJ		1991 03	06.57616	11 11 29.75	-23 41 36.7	MPC18030		413

374	1963 11 11.20524	02 54 53.04	+14 54 33.1	MPC 3897	13.3	1	760
1245	1963 11 11.20524	03 05 27.47	+12 52 07.3	MPC 2640	14.1	1	760
1553	1963 11 11.20524	03 07 41.83	+13 00 20.4	MPC 4140		1	760
1601	1963 11 11.20524	03 18 31.00	+14 41 10.7	MPC 2972	16.1	1	760
1651	1963 11 11.20524	03 03 58.19	+11 14 35.1	MPC 3030	15.8	1	760

Note 1: time originally in error. 2: 1963 VJ = (2971). 3 = 1 + 2. 4: 1963 VL = (2870). 5 = 1 + 4. 6: 1963 VM = (2717). 7 = 1 + 6. 8: 1963 VN = (1762). 9 = 1 + 8. A: 1964 PQ = (993); time slightly changed.

* * * * *

DELETED OBSERVATIONS.

The following observations are to be deleted.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Obs.
22	1934 05	05.88750	14 39 08.7	-06 16 03	RI 1044	053
92	1934 04	12.93792	13 28 50.9	+05 48 00	RI 1044	053
92	1934 04	13.02785	13 28 46.2	+05 48 05	RI 1044	053
211	1934 03	25.86528	11 04 37.9	-00 12 14	RI 1044	053
211	1934 03	25.91820	11 04 37.5	-00 12 03	RI 1044	053
335	1934 04	16.97348	13 42 37.0	-02 52 43	RI 1044	053
451	1934 05	09.92660	15 07 04.4	-01 30 39	RI 1044	053
451	1934 05	10.00820	15 07 00.3	-01 30 32	RI 1044	053

* * * * *

IDENTIFICATION CHANGES.

Continuation to MPC 18163.

Object	Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
1973 CN *	1973 02	03.91065	09 08 12.20	+20 55 59.8	1973 AQ4	16.5	095
1973 JD *	1973 05	11.97951	14 32 25.79	+12 35 12.8	1973 JB		029
1973 JD	1973 05	11.98854	14 32 25.30	+12 35 22.6	1973 JB		029
1976 UX20*	1976 10	24.65222	01 38 09.61	+03 47 22.2	1976 UD1	18.8	381
1984 HU2 *	1984 04	25.98212	13 49 42.82	-03 49 45.2	1984 HQ		046
1984 HU2	1984 04	25.99659	13 49 41.85	-03 49 39.7	1984 HQ		046
1985 VG6 *	1985 11	11.86382	03 20 16.98	+14 43 32.2	1985 VV2	17.0	095
1990 KH2 *	1990 05	29.68263	23 03 03.49	-10 53 29.5	1978 VG8	18 V	413
1990 KH2	1990 05	29.72429	23 03 07.80	-10 53 15.8	1978 VG8		413
1990 QO10*	1990 08	16.27222	23 27 20.50	-03 44 02.6	1981 EG2	19.3	809
1990 QO10	1990 08	16.28542	23 27 20.11	-03 44 08.9	1981 EG2		809
1990 QO10	1990 08	16.29861	23 27 19.66	-03 44 13.5	1981 EG2		809

* * * * *

OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

071 Bulgarian National Observatory. Observers V. G. Shkodrov, V. G. Ivanova, Ch. Dinev and V. I. Umlenski.
095 Crimean Astrophysical Observatory. 0.4-m f/4 double astrograph. Observer S. Zhuiko. Measured by N. Evstigneeva.
413 Siding Spring. Uppsala Southern Schmidt. Observer R. H. McNaught.
494 Stakenbridge. Observer B. Manning.
503 Cambridge. Observer J. D. Shanklin.
540 Linz. 0.3-m f/5.2 Schmidt Cassegrain. Observers E. Meyer, E. Obermair

and H. Raab.
657 Victoria. 0.25-m Schmidt and 0.5-m reflector + CCD. Observers J. B. Tatum and D. D. Balam.
675 Palomar. 0.46-m Schmidt. Observers E. Helin, K. Lawrence, D. H. Levy, P. Rose, C. S. Shoemaker and E. M. Shoemaker. Measured by K. A. Lawler, K. Lawrence and P. Rose.
801 Oak Ridge Observatory. 1.5-m reflector + CCD. Observers R. E. McCrosky and C.-Y. Shao.
984 Eastfield. Observer H. B. Ridley.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
		Periodic Comet Wild 2					
/1989t	1991	05 11.29168	17 49 13.91	-18 18 09.2			801
/1989t	1991	05 11.31549	17 49 13.02	-18 18 09.1			801
/1989t	1991	05 13.25569	17 48 04.68	-18 17 16.5			801
/1989t	1991	05 13.28054	17 48 03.70	-18 17 15.1			801
		Comet Levy (1990c)					
/1990c	1990	07 23.97318	23 46 01.50	+29 06 49.5			071
/1990c	1990	07 23.98290	23 46 00.40	+29 06 44.9			071
/1990c	1990	07 23.99269	23 45 59.30	+29 06 41.7			071
/1990c	1990	07 24.99953	23 43 59.50	+28 59 48.3			071
/1990c	1990	07 25.01480	23 43 57.50	+28 59 41.5			071
/1990c	1991	04 03.93681	08 19 28.88	+09 22 03.0			984
/1990c	1991	05 09.91047	08 18 28.11	+16 13 39.0			503
/1990c	1991	05 11.03919	08 18 52.23	+16 20 41.6			801
/1990c	1991	05 11.05559	08 18 52.57	+16 20 48.1			801
/1990c	1991	05 14.04071	08 20 00.86	+16 38 20.4			801
/1990c	1991	05 14.04801	08 20 01.03	+16 38 23.1			801
		Comet McNaught-Hughes (1990g)					
/1990g	1991	05 11.12174	13 31 41.17	+33 30 38.1			801
/1990g	1991	05 11.12462	13 31 40.68	+33 30 41.2			801
/1990g	1991	05 12.17002	13 28 46.66	+33 47 55.5			801
/1990g	1991	05 12.17416	13 28 45.98	+33 47 59.6			801
/1990g	1991	05 17.10495	13 15 42.88	+34 57 45.1			801
		Comet Tsuchiya-Kiuchi (1990i)					
/1990i	1990	11 21.14167	09 23 36.92	-27 04 07.5			095
/1990i	1990	11 21.14653	09 23 35.19	-27 04 23.3			095
		Comet Shoemaker-Levy (1991d)					
/1991d	1991	04 14.19045	08 42 55.88	+16 46 55.9	13.6T		675
/1991d	1991	04 16.17900	08 42 41.21	+17 10 12.3			675
/1991d	1991	05 11.04176	08 46 14.90	+21 16 48.4			801
/1991d	1991	05 11.05405	08 46 15.19	+21 16 54.2			801
/1991d	1991	05 12.04425	08 46 38.19	+21 25 08.0			801
/1991d	1991	05 12.06608	08 46 38.70	+21 25 18.7			801
		Periodic Comet Shoemaker-Levy 4					
/1991f	1991	04 14.22934	11 31 25.14	+09 46 21.6	17.9T		675
/1991f	1991	04 14.26559	11 31 24.10	+09 46 29.1			675
/1991f	1991	04 16.26559	11 30 42.09	+09 52 27.3			675
		Comet McNaught-Russell (1991g)					
/1991g	1991	05 11.07103	10 08 14.15	-01 57 07.0			801
/1991g	1991	05 11.10421	10 08 13.87	-01 56 44.8			801
/1991g	1991	05 12.05363	10 08 06.68	-01 46 03.4			801

/1991g	1991	05	12.07087	10	08	06.51	-01	45	52.0	801
/1991g	1991	05	16.42106	10	07	43.08	-00	58	41.8	1 413

Periodic Comet Takamizawa

/1991h	1991	04	11.39097	14	17	03.97	+05	28	45.2	657
/1991h	1991	04	11.41352	14	17	03.27	+05	28	56.7	657
/1991h	1991	05	11.16620	13	57	31.26	+08	31	01.9	801
/1991h	1991	05	11.20253	13	57	29.82	+08	31	05.1	801
/1991h	1991	05	12.18199	13	56	52.96	+08	32	27.8	801
/1991h	1991	05	12.19850	13	56	52.30	+08	32	28.8	801
/1991h	1991	05	14.95155	13	55	14.35	+08	34	17.6	494
/1991h	1991	05	17.17597	13	54	01.59	+08	33	29.2	801
/1991h	1991	05	17.18267	13	54	01.36	+08	33	29.2	801

Periodic Comet Hartley 1

/1991j	1991	04	14.37326	13	44	20.87	+06	26	04.4	16.1T 675
/1991j	1991	04	16.37413	13	41	25.32	+05	50	06.1	675
/1991j	1991	04	20.30087	13	35	37.52	+04	35	26.5	675
/1991j	1991	05	11.11769	13	08	31.58	-03	00	57.1	801
/1991j	1991	05	11.12949	13	08	30.84	-03	01	13.6	801
/1991j	1991	05	12.09052	13	07	34.28	-03	23	24.8	801
/1991j	1991	05	12.09749	13	07	33.89	-03	23	34.3	801

Periodic Comet Mrkos

/1991k	1991	05	16.47431	10	57	25.05	-40	42	12.8	413
/1991k	1991	05	18.47546	10	58	20.53	-41	04	40.6	2 413

Comet Helin-Lawrence (1991l)

/1991l	1991	05	08.19566	12	13	34.17	+08	22	49.2	13 T 675
/1991l	1991	05	08.22396	12	13	31.74	+08	22	41.3	675
/1991l	1991	05	09.89936	12	11	08.75	+08	15	28.3	503
/1991l	1991	05	11.11126	12	09	27.47	+08	09	56.9	801
/1991l	1991	05	11.11488	12	09	27.20	+08	09	56.0	801
/1991l	1991	05	12.07675	12	08	07.98	+08	05	25.2	801
/1991l	1991	05	12.08859	12	08	07.00	+08	05	22.0	801
/1991l	1991	05	12.23472	12	07	54.93	+08	04	39.6	675
/1991l	1991	05	29.87918	11	47	22.08	+06	19	43.9	540
/1991l	1991	05	29.90139	11	47	20.97	+06	19	35.5	3 540
/1991l	1991	05	31.90729	11	45	28.60	+06	05	20.3	540
/1991l	1991	05	31.92535	11	45	27.56	+06	05	12.7	540
/1991l	1991	06	02.87951	11	43	43.97	+05	50	55.3	540
/1991l	1991	06	02.89792	11	43	43.13	+05	50	47.6	540

Note 1: comet image faint. 2: very dark film. 3: dark film in bright moonlight.

* * * * *

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
f involved with emulsion or plate flaw
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 poor distribution of reference stars
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.
031 Sonneberg							
T. Lehmann, Sternwarte Sonneberg, O-6400 Sonneberg, Federal Republic of Germany							
Observer C. Hoffmeister							
Measurer T. Lehmann							
0.40-m f/4 astrograph							
993	1943	03 04.0260	11 34 51.59	+01 58 05.7			031
993	1943	03 05.0140	11 34 06.64	+02 03 25.7			031
033 Tautenburg							
F. Borngen, Karl Schwarzschild Observatorium, O-6901 Tautenburg, Federal Republic of Germany							
1.3-m Schmidt telescope							
PPM							
1984 FN	1991	04 10.02014	14 41 02.51	+01 38 03.9			033
1984 FN	1991	04 10.07917	14 40 57.11	+01 37 35.3			033
1984 FN	1991	04 11.05139	14 39 31.04	+01 29 41.9	16.7		033
1984 FN	1991	04 12.06736	14 37 59.58	+01 21 17.4			033
1984 FN	1991	04 12.99861	14 36 34.71	+01 13 26.6			033
1989 YH7	1991	04 10.02014	14 42 14.29	+01 19 05.8			033
1989 YH7	1991	04 10.07917	14 42 11.74	+01 19 24.5			033
1989 YH7	1991	04 11.05139	14 41 31.04	+01 24 25.4	18.4		033
1989 YH7	1991	04 12.06736	14 40 47.47	+01 29 36.0			033
1989 YH7	1991	04 12.99861	14 40 06.75	+01 34 17.5			033
1989 YH7	1991	05 07.96806	14 19 30.79	+03 00 12.0			033
1989 YH7	1991	05 13.88056	14 14 51.92	+03 05 22.9			033
1989 YH7	1991	05 13.93472	14 14 49.43	+03 05 23.7	18.3		033
1989 YH7	1991	05 14.92083	14 14 05.45	+03 05 35.9			033

1991	GS9	*	1991	04	10.02014	14	38	29.52	+00	25	00.1	033
1991	GS9		1991	04	10.07917	14	38	27.16	+00	25	29.3	033
1991	GS9		1991	04	11.05139	14	37	49.94	+00	33	16.4	19.1 033
1991	GS9		1991	04	12.06736	14	37	10.21	+00	41	21.3	033
1991	GS9		1991	04	12.99861	14	36	33.10	+00	48	41.8	033
1991	GS9		1991	05	07.96806	14	18	20.56	+03	21	05.0	033
1991	GS9		1991	05	13.88056	14	14	26.33	+03	40	12.7	033
1991	GS9		1991	05	13.93472	14	14	24.25	+03	40	21.8	19.2 033
1991	GS9		1991	05	14.92083	14	13	47.99	+03	42	48.7	033
1991	GT9	*	1991	04	10.02014	14	38	43.37	+01	29	14.4	033
1991	GT9		1991	04	10.07917	14	38	40.04	+01	29	24.1	033
1991	GT9		1991	04	11.05139	14	37	47.37	+01	31	54.8	18.2 033
1991	GT9		1991	04	12.06736	14	36	51.05	+01	34	25.0	033
1991	GT9		1991	04	12.99861	14	35	58.49	+01	36	37.6	033
1991	GU9	*	1991	04	10.02014	14	40	48.77	+01	57	19.5	033
1991	GU9		1991	04	10.07917	14	40	45.94	+01	57	37.0	033
1991	GU9		1991	04	11.05139	14	40	01.12	+02	02	14.1	18.1 033
1991	GU9		1991	04	12.06736	14	39	13.16	+02	06	58.9	033
1991	GU9		1991	04	12.99861	14	38	28.33	+02	11	16.8	033
1991	GU9		1991	05	07.96806	14	15	41.23	+03	24	42.5	033
1991	GU9		1991	05	13.88056	14	10	29.70	+03	26	14.9	033
1991	GU9		1991	05	13.93472	14	10	26.85	+03	26	13.8	17.5 033
1991	GU9		1991	05	14.92083	14	09	37.56	+03	25	46.8	033
1991	JV1	*	1991	05	13.88056	14	09	20.81	+03	25	37.1	033
1991	JV1		1991	05	13.93472	14	09	18.24	+03	25	37.8	19.8 033
1991	JV1		1991	05	14.92083	14	08	35.12	+03	25	34.5	033
2290			1991	05	07.96806	14	24	29.96	+01	27	29.7	033
2290			1991	05	13.88056	14	19	50.85	+01	49	28.6	033
2290			1991	05	13.93472	14	19	48.32	+01	49	38.9	17.8 033
2290			1991	05	14.92083	14	19	03.87	+01	52	44.6	033
4060			1991	05	07.96806	14	15	45.63	+01	46	42.3	033
4060			1991	05	13.88056	14	13	09.33	+02	01	45.1	033
4060			1991	05	13.93472	14	13	07.83	+02	01	52.3	17.2 033
4060			1991	05	14.92083	14	12	42.83	+02	04	05.9	033
4202			1991	05	07.96806	14	14	53.42	+02	03	42.9	033
4202			1991	05	13.88056	14	10	48.09	+02	21	16.4	033
4202			1991	05	13.93472	14	10	45.88	+02	21	24.0	16.5 033
4202			1991	05	14.92083	14	10	07.21	+02	23	42.6	033

071 Bulgarian National Observatory
V. G. Shkodrov, Department of Astronomy, Bulgarian Academy of Sciences,
72 Lenin Boulevard, BG-1784 Sofia, Bulgaria
Observers V. G. Shkodrov, V. G. Ivanova, Ch. Dinev, V. I. Umlenski
Measurer V. I. Umlenski

1967	HA		1991	03	05.77083	09	09	24.65	+18	35	48.2	071
1967	HA		1991	03	05.79653	09	09	23.12	+18	35	42.3	071
1974	VS		1991	03	05.87292	11	14	16.80	+08	48	14.4	071
1974	VS		1991	03	05.89462	11	14	15.80	+08	48	20.3	071
1991	BY		1991	03	05.82153	10	08	50.90	+12	31	21.6	071
1991	BY		1991	03	05.84861	10	08	49.50	+12	31	21.8	071
1991	CA2		1991	03	05.77083	09	00	21.72	+17	53	20.5	071
1991	CA2		1991	03	05.79653	09	00	20.80	+17	53	28.3	071
1991	DV		1991	03	05.87292	11	27	39.40	+08	06	15.6	071
1991	DV		1991	03	05.89462	11	27	38.20	+08	06	27.6	071
1991	ES1		1991	03	05.87292	11	11	45.60	+05	32	11.6	071
1991	ES1		1991	03	05.89462	11	11	44.60	+05	32	25.3	071
4600	P-L		1991	03	05.87292	11	26	11.60	+05	19	29.0	071
4600	P-L		1991	03	05.89462	11	26	10.70	+05	19	34.8	071
7618	P-L		1991	03	05.82153	10	16	07.70	+13	49	31.5	071

7618	P-L	1991	03	05.84861	10	16	06.50	+13	49	40.5	071
9546	P-L	1991	03	05.87292	11	08	25.70	+09	41	16.4	071
135		1991	03	05.77083	09	10	19.00	+17	26	39.1	071
135		1991	03	05.79653	09	10	17.75	+17	26	43.2	071
146		1991	04	16.94792	12	57	30.50	+15	03	27.7	071
146		1991	04	16.97303	12	57	29.00	+15	03	26.5	071
146		1991	04	16.99630	12	57	27.90	+15	03	29.2	071
301		1991	03	05.77083	09	07	31.20	+16	49	30.3	071
301		1991	03	05.79653	09	07	30.19	+16	49	37.2	071
315		1991	04	17.02257	14	09	09.40	-09	42	17.0	071
315		1991	04	17.04757	14	09	08.00	-09	42	08.2	071
542		1991	03	05.87292	11	19	47.50	+08	51	00.6	071
542		1991	03	05.89462	11	19	46.50	+08	51	10.2	071
609		1991	04	17.02257	14	09	06.00	-08	19	52.4	071
609		1991	04	17.04757	14	09	04.90	-08	19	46.2	071
652		1991	04	16.94792	13	07	37.20	+17	08	47.6	071
652		1991	04	16.97303	13	07	35.90	+17	08	50.1	071
652		1991	04	16.99630	13	07	34.50	+17	08	52.3	071
936		1991	04	17.02257	14	07	07.10	-10	59	56.0	071
936		1991	04	17.04757	14	07	05.90	-10	59	50.9	071
954		1991	03	05.77083	09	05	21.43	+16	05	36.9	071
954		1991	03	05.79653	09	05	20.52	+16	05	41.2	071
1002		1991	03	05.82153	10	16	11.40	+13	09	47.6	071
1002		1991	03	05.84861	10	16	10.00	+13	09	50.3	071
1077		1991	03	05.87292	11	09	38.60	+05	26	43.2	071
1077		1991	03	05.89462	11	09	37.30	+05	26	49.3	071
1186		1991	04	17.02257	14	01	55.30	-08	37	09.1	071
1186		1991	04	17.04757	14	01	54.10	-08	37	05.6	071
1381		1991	03	05.82153	10	17	08.40	+12	43	55.5	071
1381		1991	03	05.84861	10	17	06.90	+12	44	01.8	071
1522		1991	04	17.02257	13	58	25.80	-06	58	58.8	071
1522		1991	04	17.04757	13	58	24.10	-06	58	53.4	071
1625		1991	03	05.77083	09	02	55.77	+16	59	56.4	071
1625		1991	03	05.79653	09	02	54.64	+16	59	55.4	071
1656		1991	04	16.94792	13	01	13.10	+16	01	05.1	071
1656		1991	04	16.97303	13	01	11.90	+16	01	34.6	071
1656		1991	04	16.99630	13	01	10.70	+16	02	04.6	071
1731		1991	03	05.82153	10	08	10.80	+11	43	48.0	071
1731		1991	03	05.84861	10	08	09.80	+11	43	55.7	071
1802		1991	04	17.02257	14	13	23.60	-09	21	53.8	071
1802		1991	04	17.04757	14	13	22.40	-09	21	47.2	071
1886		1991	04	16.94792	13	02	08.40	+16	45	03.9	071
1886		1991	04	16.97303	13	02	07.10	+16	45	06.4	071
1886		1991	04	16.99630	13	02	05.90	+16	45	07.8	071
2067		1991	03	05.87292	11	14	31.10	+06	10	25.6	071
2067		1991	03	05.89462	11	14	30.20	+06	10	32.1	071
2217		1991	03	05.77083	09	04	40.16	+17	28	03.4	071
2217		1991	03	05.79653	09	04	39.35	+17	28	07.6	071
2260		1991	04	16.94792	13	03	35.50	+15	51	27.2	071
2260		1991	04	16.97303	13	03	34.80	+15	51	28.4	071
2260		1991	04	16.99630	13	03	34.10	+15	51	30.8	071
2542		1991	03	05.82153	10	21	55.60	+11	37	51.3	071
2542		1991	03	05.84861	10	21	54.40	+11	38	01.3	071
2724		1991	03	05.87292	11	16	43.50	+06	06	53.7	071
2724		1991	03	05.89462	11	16	42.50	+06	07	02.3	071
2747		1991	03	05.82153	10	15	11.10	+12	21	23.0	071
2747		1991	03	05.84861	10	15	09.90	+12	21	28.1	071
2768		1991	04	17.02257	14	02	10.20	-08	04	55.7	071
2768		1991	04	17.04757	14	02	08.40	-08	04	50.2	071

2931 1991 03 05.87292 11 26 47.90 +05 43 59.7 071
2931 1991 03 05.89462 11 26 46.90 +05 44 05.2 071
3161 1991 03 05.87292 11 12 45.80 +07 53 48.7 071
3161 1991 03 05.89462 11 12 44.00 +07 53 49.9 071
3164 1991 04 17.02257 14 09 31.60 -11 04 07.0 071
3164 1991 04 17.04757 14 09 30.50 -11 04 03.2 071
3379 1991 04 17.02257 14 08 21.10 -08 25 16.7 071
3379 1991 04 17.04757 14 08 19.70 -08 25 07.1 071
3495 1991 03 05.82153 10 21 48.60 +12 23 36.4 071
3495 1991 03 05.84861 10 21 47.40 +12 23 44.3 071
3615 1991 03 05.87292 11 20 58.00 +06 00 32.3 071
3615 1991 03 05.89462 11 20 57.00 +06 00 39.2 071
3937 1991 03 05.82153 10 24 27.10 +15 06 24.4 071
3937 1991 03 05.84861 10 24 25.90 +15 06 25.8 071
4404 1991 03 05.77083 09 10 31.73 +19 26 49.5 071
4404 1991 03 05.79653 09 10 30.77 +19 27 22.0 071
4793 1991 03 05.82153 10 07 03.00 +11 35 51.7 071
4793 1991 03 05.84861 10 07 01.80 +11 36 02.9 071
4822 1991 03 05.82153 10 07 36.20 +13 24 39.4 071
4822 1991 03 05.84861 10 07 34.50 +13 24 54.1 071

104 San Marcello Pistoiese
L. Tesi, Osservatorio di Pian dei Termini, Viale Panoramico 45, I-51028 San Marcello Pistoiese (PT), Italy
Observers L. Tesi, P. Gigli
Measurer L. Melani
Long. and Parallax 10.80, -307, -295 (see MPC 16637)
1656 1991 04 07.86007 13 08 59.83 +12 43 49.2 104
1656 1991 04 07.87280 13 08 59.14 +12 44 05.7 104
1656 1991 04 07.88542 13 08 58.44 +12 44 28.1 104
1656 1991 04 07.90394 13 08 57.49 +12 44 53.9 104
1656 1991 04 11.84433 13 05 29.23 +14 16 19.9 104
1656 1991 04 11.85329 13 05 28.92 +14 16 29.4 104
1656 1991 04 16.83804 13 01 14.29 +16 00 29.8 15 104
1656 1991 04 16.84916 13 01 13.74 +16 00 40.8 104
1656 1991 05 13.89156 12 48 34.83 +20 46 53.3 15.8 104
3913 1991 05 13.99339 17 06 52.83 +22 25 36.0 14.7 104
3913 1991 05 14.00228 17 06 52.46 +22 25 40.8 104
3913 1991 05 14.91697 17 06 17.10 +22 32 55.8 14.7 104
3913 1991 05 14.93490 17 06 15.88 +22 32 58.7 104

293 Burlington remote site
T. Handley, 13 Linden Avenue, Burlington, NJ 08016, U.S.A.
0.20-m f/4.0 astrograph
SAOC
1976 US1 1991 04 12.31736 13 36 40.12 -08 39 58.8 293
1976 US1 1991 04 12.32847 13 36 39.43 -08 40 00.1 293
2951 1991 04 12.31736 13 29 16.31 -08 31 30.9 293
2951 1991 04 12.32847 13 29 15.59 -08 31 29.5 293

372 Geisei
T. Seki, Kamimachi 2-9-35, Kochi, Japan
0.60-m reflector
1987 KB 1991 05 17.71688 22 00 55.02 -01 41 30.1 17.5 372
1987 KB 1991 05 17.72777 22 00 55.94 -01 41 19.5 372
1988 UH 1991 04 19.71875 15 16 48.34 -16 09 00.5 17.5 372
1988 UH 1991 04 19.72917 15 16 47.96 -16 09 00.5 372
1988 UH 1991 05 13.56840 14 59 06.90 -14 25 51.8 17 372
1988 UH 1991 05 13.57882 14 59 06.29 -14 25 48.0 372

1988	UH		1991 05 16.63333	14 56 46.39	-14 12 43.2			17		372
1988	UH		1991 05 16.64514	14 56 45.93	-14 12 40.4					372
1988	UH		1991 05 17.63958	14 56 01.19	-14 08 29.4			17		372
1988	UJ		1991 04 16.70052	14 53 24.17	-15 29 56.0			17		372
1988	UJ		1991 04 16.71285	14 53 23.47	-15 29 55.8					372
1988	UJ		1991 05 04.62847	14 38 26.33	-15 12 04.6			17		372
1988	UJ		1991 05 10.58577	14 33 18.30	-15 04 53.1			17.5		372
1988	UJ		1991 05 10.60798	14 33 17.76	-15 04 50.9					372
1989	AH		1991 05 17.68715	17 34 33.91	-10 01 30.1			18		372
1989	AH		1991 05 17.70021	17 34 33.66	-10 01 31.0					372
1989	AH		1991 06 04.66788	17 20 53.21	-10 59 31.4			18		372
1989	AH		1991 06 04.67958	17 20 52.50	-10 59 33.6					372
1989	CW1		1991 05 10.57326	13 22 08.87	-19 45 04.9			18.5		372
1990	UC1		1990 11 10.53708	00 49 20.87	+12 12 40.9			18		372
1990	UC1		1990 11 10.55041	00 49 20.33	+12 12 40.5					372
1990	VP2		1990 12 12.55023	02 28 44.11	+16 08 38.9			19		372
1990	VP2		1990 12 12.56208	02 28 43.76	+16 08 41.4					372
1990	VS6		1990 12 12.57360	02 29 09.17	+14 36 17.3			17.5		372
1990	VS6		1990 12 12.58860	02 29 08.76	+14 36 17.2					372
1991	JU		1991 05 13.60937	14 56 49.78	-15 23 13.0			16.5		372
1991	JU		1991 05 17.66146	14 52 19.23	-15 26 09.1			16.5		372
1991	JU		1991 05 17.67563	14 52 18.41	-15 26 08.5					372
1991	JU		1991 05 18.66250	14 51 14.15	-15 26 58.5			16.5		372
1991	JX1	*	1991 05 13.58889	15 00 53.33	-15 23 24.0			18		372
1991	JX1		1991 05 13.59931	15 00 52.51	-15 23 25.6					372
1991	JX1		1991 05 16.60840	14 57 32.46	-15 32 36.5			18		372
1991	JX1		1991 05 16.62229	14 57 31.48	-15 32 36.8					372
874			1991 05 17.71688	22 04 36.37	-01 44 35.6			17		372
874			1991 05 17.72777	22 04 36.86	-01 44 31.1					372
874			1991 05 18.71167	22 05 18.12	-01 39 12.3			17		372
874			1991 05 18.73750	22 05 19.48	-01 39 02.1					372
2635			1990 11 10.53708	00 49 02.34	+11 59 49.1			17		372
2635			1990 11 10.55041	00 49 01.90	+11 59 45.3					372

374 Minami-Oda
T. Nomura, 1-1-8, Yamate, Tarumi-Ku, Kobe 655, Japan
Observer M. Sugano
Measurer K. Kawanishi
0.25-m f/3.4 Schmidt camera
SAOC

1991	JP		1991 05 10.59358	14 04 58.92	-08 23 37.2			16.0		374
1991	JP		1991 05 10.61441	14 04 58.18	-08 23 23.1			16.0		374
1991	JQ		1991 05 10.59358	14 12 01.57	-08 14 48.8			16.0		374
1991	JQ		1991 05 10.61441	14 12 00.82	-08 14 30.7			16.0		374

376 Uenohara
N. Kawasato, 3-51, Hana-Koganei, Kodaira, Tokyo 187, Japan
SAOC

1984	FN		1991 05 14.52014	13 49 48.4	-04 14 17			17		376
1984	FN		1991 05 14.55139	13 49 46.1	-04 14 40					376
1989	AU		1991 05 14.57118	15 28 10.31	-10 59 49.3					376
1989	AU		1991 05 14.59132	15 28 08.94	-10 59 46.1					376
1989	WD		1991 05 14.52014	13 51 29.0	-05 37 20			16.5	N	376
1989	WD		1991 05 14.55139	13 51 27.4	-05 37 21				N	376
1991	GY1		1991 05 14.60521	15 39 33.5	-06 37 13			16.5		376
1991	GY1		1991 05 14.62465	15 39 32.5	-06 37 08					376
1991	HC		1991 05 14.52014	13 52 17.02	-04 30 20.2					376
1991	HC		1991 05 14.55139	13 52 15.50	-04 30 18.8					376
1991	JE1	*	1991 05 07.63368	14 46 24.3	-02 58 33			16.5	N	376

1991 JE1 1991 05 07.65938 14 46 24.7 -02 58 32 N 376
1991 JE1 1991 05 14.50451 14 41 38.47 -02 19 33.8 16.5 376
1991 JE1 1991 05 14.53576 14 41 37.05 -02 19 25.1 376
1991 JE1 1991 05 18.57326 14 38 57.35 -01 59 52.9 376
1991 JE1 1991 05 18.60174 14 38 56.28 -01 59 45.1 376

385 Nihondaira Observatory Oohira station
T. Urata, 6-1, Muramatsuhara 1 Chome, Shimizu, Shizuoka-Ken 424, Japan
0.30-m f/3.8 hyperboloid astrocamera
GSC
1990 UZ1 1990 11 16.61111 02 17 59.94 +04 06 18.4 17 385
1991 JA 1991 05 17.53750 14 29 36.36 -11 40 57.1 17 385
1991 JC 1991 05 17.53125 14 22 35.91 -11 15 53.6 17 385
1991 JC 1991 05 17.54375 14 22 35.28 -11 15 47.9 385
1991 JD 1991 05 17.55000 14 26 12.34 -15 25 43.3 17 385
1991 JD 1991 05 17.56875 14 26 11.43 -15 25 41.0 385
1991 JF 1991 05 17.55625 14 34 57.21 -17 23 30.2 16.5 385
1991 JF 1991 05 17.57500 14 34 56.13 -17 23 23.6 385

391 Sendai Observatory, Ayashi Station
M. Koishikawa, Sendai Municipal Observatory, 1-1 Sakuragaoka-koen,
Sendai 980, Japan
Observer M. Koishikawa
0.30-m f/3.8 astrocamera
1989 WH1 1991 04 14.64931 14 02 48.05 -16 34 46.6 17.5 391
1989 WH1 1991 04 14.67014 14 02 46.97 -16 34 40.6 391
1989 WH1 1991 04 16.62500 14 00 51.97 -16 23 48.3 17.5 391
1989 WH1 1991 04 16.64583 14 00 50.75 -16 23 42.5 391

392 JCPM Sapporo Station
K. Watanabe, 3-8-B203, Ashibetsu Chuo 3 Jo 4 Chome, Shiroishi-Ku,
Sapporo 005, Japan
0.30-m f/2.7 Schmidt camera
SAOC
1991 JS1 * 1991 05 13.68958 17 11 23.51 -15 40 15.5 16 392
1991 JS1 1991 05 13.71111 17 11 22.80 -15 40 10.9 392
1991 JS1 1991 05 21.67083 17 06 16.29 -15 33 02.0 16 392
1991 JS1 1991 05 21.67674 17 06 16.01 -15 33 00.7 392
1991 JS1 1991 05 21.68380 17 06 15.73 -15 33 01.2 392
1991 JS1 1991 05 21.68958 17 06 15.51 -15 33 01.3 392

399 Kushiro
H. Kaneda, Taiyo MS 2-H, 2 chome 2-15, kawazoe 8 jo, Minami-ku,
Sapporo 005, Japan
Observer S. Ueda
Measurer H. Kaneda
0.16-m f/3.8 Wright-Schmidt camera
SAOC
1987 VH1 * 1987 11 13.51995 02 02 39.44 +13 18 36.5 16.5 399
1987 VH1 1987 11 13.53576 02 02 38.99 +13 18 29.4 399
1987 VH1 1987 11 14.49375 02 01 55.18 +13 15 12.2 16.5 399
1987 VH1 1987 11 14.51001 02 01 54.52 +13 15 10.4 399
1987 VJ1 * 1987 11 14.56465 01 56 07.23 +17 40 51.9 16.5 399
1987 VJ1 1987 11 14.58073 01 56 06.32 +17 40 48.6 399
1987 VJ1 1987 11 14.59821 01 56 05.77 +17 40 49.1 399
1988 XW1 1991 05 11.55787 15 03 44.26 -11 26 48.1 15.5 399
1988 XW1 1991 05 11.57384 15 03 43.39 -11 26 47.6 399
1988 XW1 1991 05 11.59097 15 03 42.78 -11 26 46.8 399
1988 XW1 1991 05 14.56458 15 01 12.57 -11 23 36.8 16 399

1988 XW1	1991 05 14.58194	15 01 11.71	-11 23 35.4				399
1989 AU	1991 05 11.60903	15 30 56.11	-11 06 30.9			16	399
1989 AU	1991 05 11.62488	15 30 55.23	-11 06 30.1				399
1989 AU	1991 05 11.64201	15 30 54.24	-11 06 28.7				399
1989 AU	1991 05 14.60694	15 28 07.90	-10 59 43.8			16.5	399
1989 AU	1991 05 14.62292	15 28 06.95	-10 59 41.7				399
1989 WD	1991 04 16.58056	14 18 35.73	-05 55 05.6			15.5	399
1989 WD	1991 04 16.59514	14 18 34.77	-05 55 05.1				399
1989 WD	1991 05 04.60972	14 00 17.92	-05 33 24.7			16	399
1989 WD	1991 05 04.62569	14 00 17.00	-05 33 23.6				399
1989 WD	1991 05 05.55764	13 59 23.03	-05 33 12.6			16	399
1989 WD	1991 05 05.57257	13 59 22.09	-05 33 11.2				399
1991 FO	1991 04 18.54722	13 17 17.34	-04 31 07.8			16	399
1991 FO	1991 04 18.56181	13 17 16.50	-04 30 59.6				399
1991 GG1	1991 05 14.50903	12 41 05.94	-16 53 42.4			16.5	399
1991 GG1	1991 05 14.52465	12 41 05.57	-16 53 37.3				399
1991 GG1	1991 05 14.54097	12 41 05.05	-16 53 34.7				399
1991 JO1	1991 05 11.60903	15 31 08.20	-10 23 34.7			16.5	399
1991 JO1	1991 05 11.62488	15 31 07.52	-10 23 27.3				399
1991 JO1	1991 05 11.64201	15 31 06.59	-10 23 16.4				399

400 Kitami
K. Watanabe, 3-8 Mason Hashimoto B-203, atsubetsu cyuo 3 jo 4 chome, Atsubetsu-ku, Sapporo 004, Japan
Observers K. Endate, T. Fujii, A. Takahashi
Measurer K. Watanabe
0.20-m f/4.0 reflector, 0.25-m f/3.5 reflector
AGK3, SAOC

1987 VH1	1989 01 30.49653	08 32 39.08	+22 10 54.9			16.5	400
1987 VH1	1989 01 30.52049	08 32 37.62	+22 11 00.6				400
1990 QT2	1987 12 23.60431	05 02 30.36	+24 11 08.5			16.5	400
1990 QT2	1987 12 23.61958	05 02 29.44	+24 11 08.0				400
1991 GG1	1991 04 16.59618	12 59 23.45	-18 40 54.2			16.5	400
1991 GG1	1991 04 16.61007	12 59 22.97	-18 40 53.8				400
1991 GG1	1991 05 14.52222	12 41 05.70	-16 53 38.4			16.5	400
1991 GG1	1991 05 14.54375	12 41 05.08	-16 53 35.7				400
1991 GP5	1991 04 14.57118	13 19 53.79	-09 14 37.1			16.5	400
1991 GP5	1991 04 14.58715	13 19 52.76	-09 14 33.8				400
1991 JM1 *	1991 05 15.57465	16 19 29.63	-08 17 00.0			16.5	400
1991 JM1	1991 05 15.59201	16 19 28.73	-08 16 50.1				400
1991 JM1	1991 05 20.57187	16 15 16.40	-07 46 12.1			16.5	400
1991 JM1	1991 05 20.58924	16 15 15.28	-07 46 04.2				400
283	1991 05 14.52222	12 43 33.20	-16 11 52.7			13.5	400
283	1991 05 14.54375	12 43 32.68	-16 11 48.0				400

403 Kani
T. Furuta, Mitsuike 17-2, Kakiya-Cho, Tokai, Aichi-Ken 477, Japan
Observers Y. Mizuno, T. Furuta
Measurer T. Furuta
0.25-m f/4.2 Wright-Schmidt camera
SAOC

1991 JJ	1991 05 18.55938	15 15 50.4	-13 53 59			15.5	403
1991 JJ	1991 05 18.58194	15 15 48.97	-13 54 07.0				403

413 Siding Spring
R. H. McNaught, Siding Spring Observatory, Coonabarabran, N.S.W. 2357, Australia
Observers B. W. Brook, M. Hartley, M. R. S. Hawkins, S. M. Hughes, R. H. McNaught, K. S. Russell, D. I. Steel

Measurer R. H. McNaught
1.2-m U.K. Schmidt, Uppsala Southern Schmidt

1981	ED6	1990	10	12.51282	23	43	17.91	+09	35	14.8			V	413
1981	ED6	1990	10	12.56838	23	43	16.19	+09	34	40.3			V	413
1991	BB	1991	05	05.37650	05	24	24.74	-35	16	21.4				413
1991	BB	1991	05	13.39282	05	23	12.18	-36	10	25.8				413
1991	CO3	1991	05	04.44722	10	45	55.04	-31	48	33.7				413
1991	CO3	1991	05	15.42025	10	50	45.67	-29	49	13.9				413
1991	DA	1991	05	04.41875	06	48	34.27	-65	59	39.9				413
1991	DA	1991	05	05.40625	06	50	00.68	-65	56	05.4				413
1991	DA	1991	05	13.41285	07	03	03.61	-65	34	25.6				413
1991	EN	1991	04	05.52127	11	17	30.62	-20	41	31.1			F	413
1991	EN	1991	05	13.43113	11	07	52.46	-18	10	02.8				413
1991	FE	1985	03	23.65381	14	25	31.19	-11	14	47.1			F	413
1991	FE	1985	03	23.71631	14	25	28.04	-11	14	25.0			V	413
1991	FE	1986	07	13.52942	17	56	45.95	-17	06	59.8			I	413
1991	FE	1986	07	13.56414	17	56	43.33	-17	07	01.2			I	413
1991	FK1	1991	05	06.41854	10	34	35.44	-07	31	08.7	16.5V			413
1991	FK1	1991	05	06.46021	10	34	38.28	-07	30	37.0				413
1991	FK1	1991	05	12.42326	10	42	18.31	-06	21	39.4			I	413
1991	GD	1975	04	07.57214	14	20	42.19	-37	51	08.2				413
1991	GD	1975	04	07.65547	14	20	37.53	-37	50	31.9				413
1991	GD	1988	02	09.45154	06	41	38.88	-06	43	58.0	15.5V			413
1991	GD	1988	02	09.52098	06	41	36.95	-06	43	48.3				413
1991	GD	1991	05	15.45278	11	32	49.76	-21	06	02.8				413
1991	GD	1991	05	18.49549	11	34	49.74	-20	21	22.7				413
1991	JW	1991	05	15.51111	12	22	44.89	+04	42	49.7			V	413
1991	JW	1991	05	16.40590	12	19	49.52	+04	00	59.8			V	413
1991	JX	1991	05	16.39444	13	52	40.55	-05	08	39.1			F	413
1991	JX	1991	05	18.52002	13	54	30.03	-04	05	18.7				413
1991	JX	1991	05	31.36387	14	29	06.35	+07	51	34.8				413
1991	JX	1991	05	31.39657	14	29	16.54	+07	54	52.5				413
1991	JX	1991	06	01.40243	14	35	32.53	+09	42	01.0				413
1991	JX	1991	06	01.57049	14	36	33.10	+10	01	17.7				413
1991	JX	1991	06	03.41962	14	51	38.45	+14	02	59.5			F	413
1991	JX	1991	06	03.42101	14	51	39.18	+14	03	12.8			F	413
1991	JY	1991	05	16.48351	16	37	13.69	+03	19	44.0				413
1991	JY	1991	05	16.48490	16	37	12.05	+03	19	21.7				413
1991	JY	1991	05	16.48628	16	37	10.45	+03	18	59.0				413
1991	JY	1991	05	16.70078	16	32	56.47	+02	20	31.0				413
1991	JY	1991	05	16.70217	16	32	54.83	+02	20	08.4				413
1991	JY	1991	05	16.70356	16	32	53.16	+02	19	45.3				413
1991	JY	1991	05	16.82581	16	30	28.37	+01	46	06.6				413
1991	JY	1991	05	16.82648	16	30	27.58	+01	45	56.1				413
1991	JY	1991	05	17.49179	16	17	28.84	-01	19	49.5				413
1991	JY	1991	05	17.49317	16	17	27.14	-01	20	13.1				413
1991	JY	1991	05	17.49456	16	17	25.43	-01	20	37.1				413
1991	JY	1991	05	18.75839	15	51	53.22	-07	17	54.7				413
1991	JY	1991	05	18.75978	15	51	51.50	-07	18	18.3				413
1991	JY	1991	05	18.76117	15	51	49.76	-07	18	41.6				413
1991	JY	1991	05	30.37418	12	51	02.09	-37	25	56.7				413
1991	JY	1991	05	30.37556	12	51	01.30	-37	26	01.2				413
1991	JY	1991	05	31.36780	12	42	16.43	-38	14	24.0				413
1991	JY	1991	05	31.36919	12	42	15.74	-38	14	27.7				413
1991	JY	1991	06	01.37955	12	34	12.43	-38	56	24.2				413
1991	JY	1991	06	03.42569	12	20	11.69	-40	03	58.0				413
322		1991	03	21.65719	12	06	24.45	-12	02	16.6				413
878		1984	04	25.59836	14	48	21.71	-13	40	08.7	19	V	F	413
878		1984	04	25.64002	14	48	19.33	-13	39	55.6			F	413

4460	1991 06 01.35031	12 42 32.74	-43 09 32.4	16.5V	413
4460	1991 06 01.38850	12 42 32.04	-43 09 14.9		413
4460	1991 06 03.40966	12 42 02.74	-42 53 22.0		413

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

1991 JX	1991 05 30.52550	14 24 26.59	+06 32 28.9		474
1991 JX	1991 05 30.53071	14 24 28.00	+06 32 55.8		474
1991 JX	1991 06 01.37480	14 35 19.45	+09 39 17.3		474
1991 JX	1991 06 01.38244	14 35 22.05	+09 40 09.9		474
1991 JX	1991 06 01.42862	14 35 38.89	+09 45 24.8		474
1991 JX	1991 06 02.33438	14 42 18.57	+11 34 29.9		474
1991 JX	1991 06 02.33889	14 42 20.55	+11 35 03.8		474
1991 JX	1991 06 02.52778	14 43 42.36	+11 59 31.7		474
1991 JX	1991 06 02.53299	14 43 44.74	+12 00 13.1		474

493 Calar Alto
J. M. Baur, Via Zara 20, I-33083 Chions, Italy
Observer K. Birkle
Measurers K. Birkle, J. M. Baur
0.8-m f/3 Schmidt

1991 GB1	1991 02 23.17616	13 56 10.07	+02 30 11.8	17.0	493
1991 GB1	1991 02 23.19282	13 56 09.90	+02 30 05.0		493
1991 GB1	1991 02 23.20949	13 56 09.72	+02 29 58.7		493

553 Chorzow
I. Wlodarczyk, Planetarium and Astronomical Observatory,
PL-41501 Chorzow 1 s.p.10, Poland
Observers I. Wlodarczyk, S. Janta
Measurers I. Wlodarczyk, B. Osiejuk
0.2-m f/5 astrograph

1	1991 04 15.88579	13 59 52.14	+02 30 31.0		553
1	1991 04 15.89546	13 59 51.57	+02 30 33.0		553
1	1991 04 15.90699	13 59 51.00	+02 30 34.1		553
2	1991 04 12.88130	10 34 14.15	+11 03 10.8		553
2	1991 04 12.90144	10 34 14.27	+11 03 29.8		553
2	1991 04 12.92234	10 34 14.30	+11 03 49.6		553

568 Mauna Kea Observatory
D. J. Tholen, Institute for Astronomy, 2680 Woodlawn Drive,
Honolulu, HI 96822, U.S.A.
Observers D. J. Tholen, W. Golisch, T. Herbst, C. Kaminski
2.24-m telescope encoders, IRTF encoders
SAOC, Lick Gaspra catalog

1991 JW	1991 05 15.32404	12 23 23.41	+04 50 39.8	17.2V	568
1991 JW	1991 05 16.31752	12 20 05.33	+04 04 15.0	17.2V	568
1991 JW	1991 05 18.31931	12 13 46.15	+02 29 59.5	17.3V	568
1991 JX	1991 05 16.36711	13 52 36.73	-05 10 19.1	16.0V	568
1991 JX	1991 05 17.35705	13 53 24.67	-04 41 56.4	15.8V	568
1991 JX	1991 05 18.36753	13 54 20.84	-04 11 06.8	15.7V	568
1991 JX	1991 05 30.38472	14 23 45.49	+06 17 50.4		568
1991 JY	1991 05 17.41063	16 19 03.94	-00 58 06.0	13.3V	568
1991 JY	1991 05 17.60774	16 15 03.35	-01 53 40.9		568
1991 JY	1991 05 18.49890	15 57 10.50	-06 06 00.7	12.9V	568
739	1991 05 18.61326	19 22 57.95	-02 25 16.6	13.2V	568

951	1991 05 15.55610	16 01 32.58	-22 18 35.3	14.9V	568
951	1991 05 16.50894	16 00 31.74	-22 14 21.0	15.0V	568
951	1991 05 18.43600	15 58 27.05	-22 05 31.5	14.9V	568
951	1991 05 18.44931	15 58 26.06	-22 05 27.8		568
951	1991 05 18.48056	15 58 23.98	-22 05 18.9		568

591 Resse Observatory
N. Ehring, Detmoldstrasse 8, W-3000 Hannover 1, Federal Republic of Germany

154	1991 03 18.82899	10 15 50.62	+39 26 08.2	591
154	1991 03 18.83657	10 15 50.22	+39 26 05.5	591
199	1991 03 13.97854	11 34 09.35	+26 15 43.4	591
199	1991 03 13.98287	11 34 09.05	+26 15 45.1	591
579	1991 03 18.85608	10 46 06.31	+24 13 02.4	591
579	1991 03 18.86015	10 46 06.19	+24 13 03.3	591

592 Solingen
B. Koch, Fliederweg 10, W-5650 Solingen 11, Federal Republic of Germany
Observer B. Koch
0.20-m f/5 reflector

1990 PA	1990 12 05.74965	02 29 12.37	+02 23 24.8	592
1990 PA	1990 12 05.76076	02 29 12.04	+02 23 28.6	592
1990 PA	1990 12 06.82951	02 28 44.48	+02 31 33.3	592
1990 PA	1990 12 06.84201	02 28 44.07	+02 31 36.3	592
1990 PA	1991 01 14.75590	02 35 06.49	+08 40 51.0	592
1990 PA	1991 01 14.76840	02 35 06.94	+08 40 59.4	592
1990 PA	1991 01 15.75521	02 35 47.85	+08 51 16.6	592
1990 PA	1991 01 15.76719	02 35 48.30	+08 51 24.5	592

595 Farra d'Isonzo
L. Bittesini, Via dei Conventi 10, I-34070 Farra D'Isonzo (GO), Italy
Observers G. Lombardi, E. Pettarin, F. Piani
Measurers L. Bittesini, F. Piani, G. Lombardi, F. Bressan, G. Jerman
0.4-m f/4.5 reflector
SAOC

1990 SQ	1991 02 14.86806	04 41 13.70	+53 06 54.0	595
1990 SQ	1991 02 14.87778	04 41 16.75	+53 06 39.9	595
1990 SQ	1991 02 14.88889	04 41 20.15	+53 06 26.1	595
1990 SQ	1991 02 14.89861	04 41 23.56	+53 06 13.0	595
1990 SQ	1991 04 08.87708	07 43 28.71	+33 03 45.0	595
1990 SQ	1991 04 08.88819	07 43 30.28	+33 03 31.3	595
1990 SQ	1991 04 09.82031	07 45 41.45	+32 45 17.4	595

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

1991 JX	1991 06 05.43183	15 14 20.12	+19 38 01.6	657
1991 JX	1991 06 05.43470	15 14 22.39	+19 38 33.9	657
1991 JX	1991 06 06.27681	15 27 03.07	+22 28 38.9	657
1991 JX	1991 06 06.28236	15 27 08.19	+22 29 49.1	657
1	1991 04 21.32222	13 55 02.30	+02 43 05.0	657
307	1991 04 17.33403	14 15 41.24	-04 48 42.1	657
307	1991 04 17.39861	14 15 38.11	-04 48 26.6	657
458	1991 04 12.44660	14 13 00.32	+04 14 23.4	657
458	1991 04 12.47993	14 12 58.99	+04 14 34.7	657
840	1991 02 21.43976	09 01 07.99	+06 10 46.7	657
2812	1991 04 17.33403	14 21 36.59	-05 43 10.9	657
2812	1991 04 17.39907	14 21 32.59	-05 43 05.9	657
3210	1991 04 12.44660	14 23 03.85	+06 43 12.7	657

3210	1991 04 12.47993	14 23 02.55	+06 43 23.6				657
3210	1991 05 02.23896	14 08 43.85	+08 10 01.0				657
3973	1991 04 17.30694	13 46 22.64	-08 39 38.4				657
3973	1991 04 17.37153	13 46 18.78	-08 39 19.7				657

674 Ford Observatory, Wrightwood
J. B. Child, World Space Foundation, P.O. Box Y, South Pasadena CA 91031, U.S.A.

1991 JY	1991 05 19.29063	15 41 10.46	-09 47 27.6				674
1991 JY	1991 05 19.31840	15 40 36.34	-09 55 02.3				674
694	1991 05 19.24271	14 31 09.81	-16 28 35.1				674
694	1991 05 19.26563	14 31 08.54	-16 28 19.4				674

675 Palomar
E. Helin, MS 183-501, Jet Propulsion Laboratory, Pasadena, CA 91109, U.S.A. (2)
C. Shoemaker, P.O. Box 984, Flagstaff, AZ 86002, U.S.A. (3)
C. J. van Houten, Sterrewacht Leiden, Postbus 9513, NL-2300 RA Leiden, The Netherlands (4)
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001, U.S.A. (6)
9 = 3 + 6
Observers T. Gehrels (4, L), E. Helin (2, S), H. E. Holt (3, S), C. T. Kowal (6, L), K. Lawrence (2, S), D. H. Levy (3, S), C. M. Olmstead (3, S), P. Rose (2, S), C. S. Shoemaker (3, S), E. M. Shoemaker (3, S)
Measurers T. M. King (9), K. A. Lawler (3), K. Lawrence (2), P. Rose (2), B. A. Skiff (9), C. J. van Houten (4), I. van Houten-Groeneveld (4), A. Wisse (2)
1.2-m (L) and 0.46-m (S) Schmidt telescopes

1936 QV	1990 02 22.51006	12 40 54.16	-05 30 05.7			9	675
1936 QV	1990 02 22.53489	12 40 53.62	-05 29 58.1		18.5	9	675
1936 QV	1990 03 27.33767	12 15 49.05	-02 13 12.7		17.0	9	675
1936 QV	1990 03 27.37135	12 15 47.11	-02 12 59.0		17.8	9	675
1957 VA	1991 04 20.41927	15 32 00.25	-11 07 23.0		17.6	3	675
1957 VA	1991 04 20.45764	15 31 56.61	-11 07 54.4			3	675
1973 SH1	1991 04 19.26059	12 09 33.07	+03 37 22.6		18.1	3	675
1973 SH1	1991 04 19.30938	12 09 32.05	+03 37 30.7			3	675
1973 SQ1	1991 04 14.29323	12 02 59.73	-03 58 44.7		17.9	3	675
1973 SQ1	1991 04 19.30087	12 01 03.07	-03 41 30.7			3	675
1974 SX1	1990 03 27.33767	12 20 47.60	-01 20 52.2		17.5	9	675
1974 SX1	1990 03 27.37135	12 20 45.40	-01 20 44.8			9	675
1978 VL11	1991 05 08.17587	10 59 43.03	+14 40 17.7		16	2	675
1978 VL11	1991 05 08.20365	10 59 43.81	+14 40 05.0			2	675
1981 EK12	1979 10 18.24931	01 18 24.97	+10 58 29.2			6	675
1981 EK12	1979 10 18.30139	01 18 22.09	+10 58 04.0			6	675
1981 EM13	1979 10 18.24931	01 16 08.88	+12 37 47.4			6	675
1981 EM13	1979 10 18.30139	01 16 05.91	+12 37 24.1			6	675
1982 UW3	1990 03 27.33767	12 10 05.76	-02 03 16.8		16.5	9	675
1982 UW3	1990 03 27.37135	12 10 04.30	-02 02 58.4			9	675
1983 QG	1989 01 11.45138	09 31 09.64	+30 49 32.6		18.8	9	675
1983 QG	1989 01 11.49201	09 31 07.46	+30 49 51.6			9	675
1983 QG	1989 02 02.29704	09 09 32.28	+33 35 10.2		17.8	9	675
1983 QG	1989 02 02.32986	09 09 30.18	+33 35 22.7			9	675
1984 ER1	1990 03 27.33767	12 28 37.43	-00 55 29.2			9	675
1984 ER1	1990 03 27.37135	12 28 35.82	-00 55 19.4			9	675
1984 FN	1991 05 10.32847	13 54 53.21	-03 26 11.1		16.0	2	675
1984 FN	1991 05 10.35260	13 54 51.32	-03 26 28.6			2	675
1984 FN	1991 05 12.30990	13 52 24.56	-03 48 52.7			2	675
1984 FN	1991 05 12.33472	13 52 22.71	-03 49 09.2			2	675

1985	DX2	1991	05	08.39740	15	31	15.34	-03	44	13.4		16.0	2 675
1985	DX2	1991	05	08.42361	15	31	13.98	-03	44	05.4			2 675
1985	DX2	1991	05	10.39288	15	29	45.21	-03	34	24.2			2 675
1985	DX2	1991	05	10.41719	15	29	44.14	-03	34	17.0			2 675
1985	JL	1989	02	02.29704	09	16	33.72	+29	56	13.4		16.8	9 675
1985	JL	1989	02	02.32986	09	16	31.73	+29	56	29.2			9 675
1985	JL	1989	03	07.27048	08	48	29.88	+31	57	56.4		17.5	9 675
1985	JL	1989	03	07.30486	08	48	28.65	+31	57	56.1			9 675
1985	JL	1989	03	08.23524	08	48	02.21	+31	57	35.1		17.5	9 675
1985	JL	1989	03	08.27319	08	48	00.99	+31	57	33.1			9 675
1986	JQ	1991	05	07.18715	10	10	05.69	-06	28	41.0		16	2 675
1986	JQ	1991	05	07.20972	10	10	06.95	-06	28	25.6			2 675
1986	JQ	1991	05	10.17292	10	13	03.74	-05	55	47.6			2 675
1986	JQ	1991	05	10.19497	10	13	05.11	-05	55	35.4			2 675
1986	PW4	1990	03	27.33767	12	19	20.31	-02	15	23.7		17.8	9 675
1986	PW4	1990	03	27.37135	12	19	18.75	-02	15	14.0		18.0	9 675
1987	QD6	1991	05	09.24028	13	19	16.58	-02	19	22.3		16	2 675
1987	QD6	1991	05	09.26389	13	19	15.78	-02	19	14.5			2 675
1987	QD6	1991	05	12.25868	13	17	44.70	-02	03	52.2			2 675
1987	QD6	1991	05	12.28628	13	17	43.85	-02	03	45.0			2 675
1988	BW1	1991	04	14.42830	14	04	13.06	+03	00	52.6		17.7	3 675
1988	BW1	1991	04	14.46597	14	04	11.90	+03	00	56.5			3 675
1988	BW1	1991	04	16.42830	14	03	07.20	+03	03	18.1			3 675
1988	BW1	1991	04	16.47118	14	03	05.73	+03	03	20.0			3 675
1989	AQ	1990	03	27.33767	12	21	45.85	+00	34	07.1		17.5	9 675
1989	AQ	1990	03	27.37135	12	21	44.40	+00	34	15.6		17.8	9 675
1989	AV2	1991	04	14.23871	11	12	46.10	-19	10	47.2		18.3	3 675
1989	AV2	1991	04	14.27448	11	12	45.30	-19	10	38.6			3 675
1989	AV2	1991	04	16.26837	11	12	04.40	-19	02	49.9			3 675
1989	AV2	1991	04	17.21215	11	11	45.91	-18	59	02.9			3 675
1989	AL5	1990	03	27.33767	12	23	50.48	-01	51	12.5		17.5	9 675
1989	AL5	1990	03	27.37135	12	23	48.96	-01	51	05.8		17.8	9 675
1989	AA10*	1989	01	11.45138	09	16	14.44	+36	28	40.7		17.2	9 675
1989	AA10	1989	01	11.49201	09	16	11.99	+36	28	49.4			9 675
1989	AB10*	1989	01	11.45138	09	40	30.08	+35	10	10.1		17.0	9 675
1989	AB10	1989	01	11.49201	09	40	28.41	+35	10	25.5			9 675
1989	AB10	1989	02	02.29704	09	21	24.26	+37	02	54.5		16.2	9 675
1989	AB10	1989	02	02.32986	09	21	22.20	+37	03	00.7			9 675
1989	AB10	1989	03	07.27048	08	51	46.87	+36	53	46.4			9 675
1989	AB10	1989	03	07.30486	08	51	45.64	+36	53	40.2		16.8	9 675
1989	AB10	1989	03	08.23524	08	51	13.85	+36	50	00.5			9 675
1989	AB10	1989	03	08.27319	08	51	12.56	+36	49	52.6			9 675
1989	BL	1991	05	14.23264	13	30	16.36	-00	53	15.9		18.0	3 675
1989	BL	1991	05	16.27899	13	29	30.01	-00	51	49.0			3 675
1989	BL	1991	05	18.20417	13	28	48.35	-00	50	43.2			3 675
1989	BW	1991	04	14.37326	13	42	58.61	+06	39	40.2		17.7	3 675
1989	BW	1991	04	14.40451	13	42	57.62	+06	39	42.0			3 675
1989	BW	1991	04	16.37413	13	41	58.37	+06	43	15.2			3 675
1989	CB9 *	1989	02	02.29704	09	12	59.50	+31	09	32.1		17.5	9 675
1989	CB9	1989	02	02.32986	09	12	57.51	+31	09	42.3			9 675
1989	CC9 *	1989	02	02.29704	09	22	11.67	+33	08	22.7		17.8	9 675
1989	CC9	1989	02	02.32986	09	22	09.67	+33	08	34.6			9 675
1989	CD9 *	1989	02	02.29704	09	33	15.12	+35	21	11.3		17.5	9 675
1989	CD9	1989	02	02.32986	09	33	12.86	+35	21	14.7			9 675
1989	CE9 *	1989	02	02.29704	09	33	21.10	+29	47	38.8		18.2	9 675
1989	CE9	1989	02	02.32986	09	33	19.45	+29	47	54.6			9 675
1989	CF9 *	1989	02	02.29704	09	35	18.44	+36	36	08.8		16.5	9 675
1989	CF9	1989	02	02.32986	09	35	16.28	+36	36	22.6			9 675
1989	CG9 *	1989	02	02.29704	09	39	04.87	+34	41	22.3		17.8	9 675

1989	CG9		1989	02	02.32986	09	39	02.93	+34	41	33.8		9 675
1989	CH9	*	1989	02	02.29704	09	43	21.35	+31	55	44.6	16.5	9 675
1989	CH9		1989	02	02.32986	09	43	19.60	+31	56	04.8		9 675
1989	EO11		1991	04	15.29861	13	47	44.02	+16	53	15.7	17.9	3 675
1989	EO11		1991	04	17.30747	13	46	46.69	+17	00	52.8		3 675
1989	EO11		1991	04	17.34826	13	46	45.48	+17	01	01.1		3 675
1989	RO2		1991	04	14.29323	11	57	52.17	-10	32	02.0	18.3	3 675
1989	RO2		1991	04	19.30087	11	53	15.08	-10	21	58.8		3 675
1989	UH2		1991	05	08.29896	14	28	54.39	-09	10	33.6	15	2 675
1989	UH2		1991	05	08.32344	14	28	51.86	-09	10	47.2		2 675
1989	UH2		1991	05	10.27431	14	25	36.66	-09	28	43.4		2 675
1989	UH2		1991	05	10.30347	14	25	33.66	-09	28	59.6		2 675
1989	UN2		1991	05	09.28750	14	08	25.26	+11	58	19.2	16	2 675
1989	UN2		1991	05	09.30920	14	08	23.91	+11	58	39.1		2 675
1990	DK		1991	04	16.31545	12	49	56.01	-13	33	26.9	18.1	3 675
1990	DK		1991	04	16.35729	12	49	54.77	-13	33	17.6		3 675
1990	DK		1991	04	17.33281	12	49	27.41	-13	29	41.1		3 675
1990	FW		1990	03	27.33767	12	19	51.33	-00	02	57.7	16.5	9 675
1990	FW		1990	03	27.37135	12	19	49.43	-00	02	57.4		9 675
1990	FM4	*	1990	03	27.33767	12	10	33.60	-01	48	29.3	18.2	9 675
1990	FM4		1990	03	27.37135	12	10	31.97	-01	48	18.0	18.5	9 675
1990	FN4	*	1990	03	27.33767	12	10	55.91	-01	50	39.9	18.2	9 675
1990	FN4		1990	03	27.37135	12	10	53.80	-01	50	29.4	18.0	9 675
1990	FO4	*	1990	03	27.33767	12	11	59.99	-03	32	41.9	17.0	9 675
1990	FO4		1990	03	27.37135	12	11	58.46	-03	32	18.6		9 675
1990	FP4	*	1990	03	27.33767	12	12	12.93	-01	55	03.7	18.0	9 675
1990	FP4		1990	03	27.37135	12	12	10.63	-01	54	58.9	17.5	9 675
1990	FQ4	*	1990	03	27.33767	12	13	30.56	-01	55	28.9	16.8	9 675
1990	FQ4		1990	03	27.37135	12	13	28.97	-01	54	43.4		9 675
1990	FR4	*	1990	03	27.33767	12	17	44.14	-03	45	26.8	18.2	9 675
1990	FR4		1990	03	27.37135	12	17	42.25	-03	45	11.8	18.5	9 675
1990	FS4	*	1990	03	27.33767	12	17	48.13	-05	34	13.5	17.5	9 675
1990	FS4		1990	03	27.37135	12	17	46.16	-05	33	32.5	17.2	9 675
1990	FT4	*	1990	03	27.33767	12	17	55.57	+01	13	04.0	17.2	9 675
1990	FT4		1990	03	27.37135	12	17	53.87	+01	13	19.0		9 675
1990	FU4	*	1990	03	27.33767	12	19	29.04	+01	21	47.0	18.8	9 675
1990	FU4		1990	03	27.37135	12	19	27.51	+01	21	57.0	18.0	9 675
1990	FV4	*	1990	03	27.33767	12	21	43.59	-04	50	38.3	16.8	9 675
1990	FV4		1990	03	27.37135	12	21	41.76	-04	50	22.6		9 675
1990	FW4	*	1990	03	27.33767	12	22	31.32	+01	24	15.6		9 675
1990	FW4		1990	03	27.37135	12	22	29.66	+01	24	24.7		9 675
1990	FX4	*	1990	03	27.33767	12	22	38.83	-01	53	33.4	17.2	9 675
1990	FX4		1990	03	27.37135	12	22	37.15	-01	53	25.4		9 675
1990	FY4	*	1990	03	27.33767	12	25	20.68	-01	06	28.4	18.0	9 675
1990	FY4		1990	03	27.37135	12	25	19.15	-01	06	19.1		9 675
1990	FZ4	*	1990	03	27.33767	12	40	15.92	-01	36	22.6	16.8	9 675
1990	FZ4		1990	03	27.37135	12	40	13.67	-01	36	22.5		9 675
1990	SQ		1991	05	09.19392	08	47	39.88	+24	04	26.2	16	2 675
1990	SQ		1991	05	09.21528	08	47	42.37	+24	04	02.0		2 675
1991	AW		1989	08	09.42587	23	54	51.07	-13	40	32.2	16	2 675
1991	AW		1989	08	09.44410	23	54	50.81	-13	40	41.6		2 675
1991	AW		1989	08	10.40417	23	54	37.77	-13	49	48.3		2 675
1991	AW		1989	09	06.32188	23	40	26.65	-18	30	58.5	15	2 675
1991	AW		1989	09	06.34583	23	40	25.49	-18	31	13.6		2 675
1991	AW		1989	10	05.25139	23	18	10.87	-22	11	39.3	16	2 675
1991	AW		1989	10	05.27500	23	18	09.90	-22	11	44.0		2 675
1991	AW		1989	10	06.19913	23	17	34.99	-22	15	27.4		2 675
1991	AW		1989	10	06.22135	23	17	34.08	-22	15	32.7		2 675
1991	FC		1991	05	08.18247	11	01	30.22	+09	00	30.9	16	2 675

1991	FC	1991	05	08.20972	11	01	31.32	+09	00	45.6		2 675
1991	FN	1991	05	07.23490	12	19	06.37	-18	23	51.6	17.0	2 675
1991	FN	1991	05	07.26510	12	19	04.35	-18	23	58.9		2 675
1991	FN	1991	05	10.22882	12	16	38.11	-18	36	52.6		2 675
1991	FN	1991	05	10.25486	12	16	36.87	-18	36	56.1		2 675
1991	FO	1991	05	09.24028	13	03	41.44	-02	01	43.2	16	2 675
1991	FO	1991	05	09.26389	13	03	40.67	-02	01	35.6		2 675
1991	FO	1991	05	12.25868	13	02	31.28	-01	47	34.9		2 675
1991	FO	1991	05	12.28628	13	02	30.60	-01	47	27.2		2 675
1991	FP	1991	05	08.27882	13	14	02.23	+00	52	48.8	16	2 675
1991	FP	1991	05	08.30521	13	14	01.59	+00	53	00.2		2 675
1991	FP	1991	05	12.26389	13	12	37.37	+01	17	41.2		2 675
1991	FP	1991	05	12.29149	13	12	36.79	+01	17	51.9		2 675
1991	FU	1991	05	07.19861	10	37	51.68	-06	53	45.6	16	2 675
1991	FU	1991	05	07.22101	10	37	52.15	-06	53	44.5		2 675
1991	FV	1991	04	10.19253	10	42	59.55	-06	10	21.3	16.0	2 675
1991	FV	1991	04	10.21684	10	42	58.90	-06	10	11.8		2 675
1991	FV	1991	04	12.22257	10	42	12.33	-05	59	29.2		2 675
1991	FV	1991	04	12.24583	10	42	11.81	-05	59	20.6		2 675
1991	FK1	1991	05	07.19861	10	35	33.55	-07	21	32.2	17	2 675
1991	FK1	1991	05	07.22101	10	35	35.09	-07	21	15.3		2 675
1991	FK1	1991	05	10.18403	10	39	21.62	-06	46	10.6		2 675
1991	FK1	1991	05	10.20538	10	39	23.46	-06	45	57.3		2 675
1991	GC	1991	05	07.25729	13	08	40.13	+17	20	33.1	17	2 675
1991	GC	1991	05	07.27934	13	08	40.10	+17	20	50.6		2 675
1991	GC	1991	05	10.24149	13	08	29.32	+17	59	45.6		2 675
1991	GC	1991	05	10.26771	13	08	29.13	+18	00	04.3		2 675
1991	GN	1991	05	09.23403	12	40	40.69	-04	08	03.3	16	2 675
1991	GN	1991	05	09.25799	12	40	40.11	-04	07	39.8		2 675
1991	GQ	1991	05	08.28507	13	32	53.15	-12	23	47.3	17	2 675
1991	GQ	1991	05	08.31128	13	32	52.21	-12	23	34.2		2 675
1991	GQ	1991	05	09.27083	13	32	21.05	-12	15	39.4		2 675
1991	GQ	1991	05	09.29288	13	32	20.31	-12	15	28.8		2 675
1991	GR	1991	05	08.28507	13	27	45.00	-15	37	36.3	16	2 675
1991	GR	1991	05	08.31128	13	27	43.48	-15	37	32.8		2 675
1991	GA1	1991	05	10.23576	12	43	38.62	+09	48	19.2	15.5	2 675
1991	GA1	1991	05	10.26146	12	43	38.08	+09	48	39.7		2 675
1991	GA1	1991	05	12.24635	12	43	07.75	+10	11	56.6		2 675
1991	GA1	1991	05	12.27500	12	43	07.36	+10	12	16.0		2 675
1991	GB1	1991	05	07.24340	12	29	19.99	-06	33	31.5	16	2 675
1991	GB1	1991	05	09.22188	12	27	28.07	-06	52	49.7		2 675
1991	GB1	1991	05	09.24618	12	27	26.67	-06	53	03.1		2 675
1991	GC1	1991	05	08.24236	12	39	31.17	-11	24	14.5	16	2 675
1991	GC1	1991	05	08.26493	12	39	30.17	-11	24	19.5		2 675
1991	GC1	1991	05	12.24097	12	37	06.32	-11	39	57.0		2 675
1991	GC1	1991	05	12.26927	12	37	05.29	-11	40	03.2		2 675
1991	GO1	1991	05	08.27882	13	19	43.20	+03	05	05.7	16	2 675
1991	GO1	1991	05	08.30521	13	19	42.18	+03	05	18.1		2 675
1991	GO1	1991	05	12.26389	13	17	27.91	+03	36	51.5		2 675
1991	GO1	1991	05	12.29149	13	17	27.03	+03	37	03.0		2 675
1991	GP1	1991	05	07.25729	13	06	27.50	+17	26	09.1	16	2 675
1991	GP1	1991	05	07.27934	13	06	26.99	+17	26	07.7		2 675
1991	GP1	1991	05	10.24149	13	05	17.04	+17	21	59.9		2 675
1991	GP1	1991	05	10.26771	13	05	16.38	+17	21	57.2		2 675
1991	GQ1	1991	05	08.39115	15	15	27.86	-05	09	39.6	16	2 675
1991	GQ1	1991	05	08.41736	15	15	26.46	-05	09	36.8		2 675
1991	GQ1	1991	05	10.38681	15	13	44.45	-05	07	55.9		2 675
1991	GQ1	1991	05	10.41111	15	13	43.17	-05	07	55.3		2 675
1991	GR1	1991	05	08.39115	15	22	24.53	-04	49	58.0	16	2 675

1991	GR1		1991	05	08.41736	15	22	23.05	-04	49	50.5	2 675
1991	GR1		1991	05	10.38681	15	20	36.30	-04	41	10.3	2 675
1991	GR1		1991	05	10.41111	15	20	34.92	-04	41	04.0	2 675
1991	GU1		1991	05	08.39740	15	34	43.97	-03	07	56.5	15.8 2 675
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1991	GU1		1991	05	10.41719	15	33	02.73	-02	51	53.8	2 675
1991	GV1		1991	05	09.22795	12	31	54.41	+10	32	17.2	16 2 675
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1991	GX1		1991	05	14.28274	13	04	56.73	-19	22	47.8	18.4 3 675
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1991	GZ1		1991	05	09.22795	12	54	27.04	+11	22	09.2	17 2 675
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1991	GZ1		1991	05	12.27500	12	51	33.20	+10	23	59.3	2 675
1991	GB2	*	1991	04	15.43247	15	31	56.22	+03	43	15.1	16.2 3 675
1991	GB2		1991	04	17.43316	15	30	57.44	+03	58	25.8	3 675
1991	GB2		1991	04	19.45313	15	29	52.26	+04	13	32.2	3 675
1991	GB2		1991	05	13.41458	15	12	05.46	+06	14	48.8	9 675
1991	GB2		1991	05	13.44878	15	12	03.58	+06	14	53.7	9 675
1991	GB2		1991	05	15.34844	15	10	30.02	+06	18	29.0	16.6 3 675
1991	GB2		1991	05	15.38003	15	10	28.30	+06	18	31.5	3 675
1991	GC2	*	1991	04	15.43247	15	34	30.37	+02	43	09.4	16.9 3 675
1991	GC2		1991	04	17.43316	15	33	30.57	+02	54	14.4	3 675
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1991	GC2		1991	05	13.44878	15	13	47.68	+04	10	25.9	9 675
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1991	GC2		1991	05	15.38003	15	12	08.80	+04	09	17.7	3 675
1991	GD2	*	1991	04	15.43247	15	36	35.48	+04	04	53.3	17.0 3 675
1991	GD2		1991	04	17.43316	15	35	26.65	+04	10	03.3	3 675
1991	GD2		1991	04	19.45313	15	34	12.25	+04	14	52.7	3 675
1991	GE2	*	1991	04	15.43247	15	37	36.19	+03	12	47.0	16.2 3 675
1991	GE2		1991	04	17.47847	15	36	31.83	+03	21	50.3	3 675
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1991	GE2		1991	05	13.41458	15	14	31.36	+04	08	35.1	9 675
1991	GE2		1991	05	13.44878	15	14	29.07	+04	08	32.3	9 675
1991	GE2		1991	05	15.34844	15	12	32.96	+04	05	04.3	17.5 3 675
1991	GE2		1991	05	15.38003	15	12	30.96	+04	05	00.1	3 675
1991	GF2	*	1991	04	15.43247	15	51	26.04	+06	26	20.3	15.2 3 675
1991	GF2		1991	04	17.43316	15	50	41.80	+06	40	54.6	3 675
1991	GF2		1991	04	19.45313	15	49	49.94	+06	55	02.5	3 675
1991	HH		1991	05	09.27083	13	34	54.85	-13	07	51.1	16.2 2 675
1991	HH		1991	05	09.29288	13	34	53.76	-13	07	41.4	2 675
1991	HH		1991	05	12.30399	13	32	36.87	-12	44	50.4	2 675
1991	HH		1991	05	12.32882	13	32	35.73	-12	44	38.7	2 675
1991	HK		1991	05	16.31024	14	15	26.80	-03	46	30.5	17.6 3 675
1991	HK		1991	05	16.34635	14	15	25.30	-03	46	22.1	3 675
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1991	HK		1991	05	17.34965	14	14	48.84	-03	42	39.2	3 675
1991	HN		1991	05	14.23264	13	15	11.21	+01	54	05.4	18.9 3 675
1991	HN		1991	05	16.27899	13	14	28.56	+01	55	11.7	3 675
1991	HN		1991	05	18.20417	13	13	50.69	+01	55	54.1	3 675
1991	HO	*	1991	04	19.28438	13	10	42.60	+22	10	22.0	16.6 3 675
1991	HO		1991	04	19.31701	13	10	40.67	+22	10	19.0	3 675

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1991 HO    1991 05 16.19271  12 51 08.34  +19 16 41.4              3 675
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1991 JO    1991 05 10.31563  14 49 49.56  -09 09 42.5              2 675
1991 JX    1991 05 09.27083  13 49 32.33  -07 55 17.2       16.0   2 675
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1991 JG1   1991 05 19.19514  14 30 05.89  +16 06 37.0              3 675
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1991	JK1		1991	05	08.42361	15	45	42.61	+01	17	13.3		2 675
1991	JK1		1991	05	10.39288	15	43	49.65	+01	11	54.5		2 675
1991	JK1		1991	05	10.41719	15	43	48.07	+01	11	50.1		2 675
1991	JL1	*	1991	05	07.33003	14	42	47.63	+11	41	29.1	15.5	2 675
1991	JL1		1991	05	07.35434	14	42	46.49	+11	41	41.4		2 675
1991	JL1		1991	05	09.38351	14	41	11.05	+11	57	41.8		2 675
1991	JL1		1991	05	09.40573	14	41	09.97	+11	57	52.2		2 675
1991	JN1	*	1991	05	09.40000	15	22	55.64	-09	39	07.5	16	2 675
1991	JN1		1991	05	09.42205	15	22	54.31	-09	38	59.7		2 675
1991	JN1		1991	05	11.38889	15	20	59.03	-09	28	32.4		2 675
1991	JO1	*	1991	05	09.40000	15	32	55.32	-10	45	29.5	17	2 675
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1991	JO1		1991	05	11.38889	15	31	18.90	-10	25	46.1		2 675
1991	JP1	*	1991	05	09.40000	15	45	56.65	-10	21	24.0	17	2 675
1991	JP1		1991	05	09.42205	15	45	55.63	-10	21	11.8		2 675
1991	JP1		1991	05	10.39896	15	45	15.80	-10	10	40.0		2 675
1991	JP1		1991	05	10.42326	15	45	14.76	-10	10	23.9		2 675
1991	JP1		1991	05	11.38889	15	44	34.66	-10	00	03.8		2 675
1991	JQ1	*	1991	05	08.28507	13	32	59.01	-12	07	05.7	17	2 675
1991	JQ1		1991	05	08.31128	13	32	57.79	-12	06	51.2		2 675
1991	JQ1		1991	05	09.27083	13	32	18.78	-11	58	20.4		2 675
1991	JQ1		1991	05	09.29288	13	32	17.78	-11	58	06.7		2 675
1991	JR1	*	1991	05	11.46007	17	02	02.24	-03	43	37.2	16	2 675
1991	JR1		1991	05	11.48125	17	02	01.50	-03	43	31.9		2 675
1991	JR1		1991	05	12.46146	17	01	29.55	-03	39	40.1		2 675
1991	JT1		1991	04	20.43837	15	32	49.03	-00	15	46.3	16.2	3 675
1991	JT1		1991	04	20.47726	15	32	47.86	-00	15	16.3		3 675
1991	JT1	*	1991	05	13.41458	15	17	20.73	+04	06	16.0	16.5	9 675
1991	JT1		1991	05	13.44878	15	17	19.04	+04	06	35.7		9 675
1991	JT1		1991	05	15.34844	15	15	50.53	+04	23	10.8	16.5	3 675
1991	JT1		1991	05	15.38003	15	15	49.02	+04	23	27.8		3 675
1991	JW1	*	1991	05	13.45712	15	38	27.62	+15	04	56.4	17.8	3 675
1991	JW1		1991	05	15.39444	15	37	00.06	+15	11	30.0		3 675
1991	JW1		1991	05	15.42118	15	36	58.78	+15	11	35.2		3 675
1991	JW1		1991	05	19.27743	15	34	04.14	+15	21	45.5		3 675
1991	JW1		1991	05	19.31319	15	34	02.41	+15	21	51.1		3 675
1991	JY1	*	1991	05	11.43594	16	42	21.73	-01	20	40.8	16	2 675
1991	JY1		1991	05	11.45382	16	42	20.97	-01	20	24.2		2 675
1991	JY1		1991	05	12.44514	16	41	40.02	-01	04	42.0		2 675
1991	KC	*	1991	05	17.22256	13	59	20.34	+30	10	03.7	17.7	3 675
1991	KC		1991	05	18.21701	13	58	54.27	+30	07	53.9		3 675
1991	KC		1991	05	19.22569	13	58	28.21	+30	05	32.2		3 675
1991	KD	*	1991	05	18.40313	15	51	25.07	+21	14	22.6	17.8	3 675
1991	KD		1991	05	18.45625	15	51	21.36	+21	13	35.4		3 675
1991	KD		1991	05	19.33524	15	50	25.31	+21	00	40.9		3 675
1991	KD		1991	05	19.36527	15	50	23.18	+21	00	13.0		3 675
1991	KE	*	1991	05	17.44653	17	23	38.16	+19	26	22.2	17.5	3 675
1991	KE		1991	05	19.40851	17	22	16.86	+19	22	44.6		3 675
1991	KE		1991	05	19.45035	17	22	14.96	+19	22	38.3		3 675
4047	P-L	*	1960	09	24.37573	00	25	18.38	+04	14	37.3	18.6	4 675
4047	P-L		1960	09	25.42780	00	24	26.27	+04	09	49.9		4 675
4047	P-L		1960	09	26.30558	00	23	43.00	+04	05	48.9		4 675
4047	P-L		1960	09	28.36808	00	22	00.14	+03	56	17.2		4 675
4047	P-L		1960	09	28.39725	00	21	58.70	+03	56	10.7		4 675
4047	P-L		1960	10	17.27085	00	07	19.00	+02	31	23.2		4 675
4047	P-L		1960	10	22.22293	00	04	11.98	+02	12	45.6		4 675
4047	P-L		1960	10	24.35836	00	02	59.58	+02	05	29.0		4 675

4047	P-L		1960	10	26.32573	00	01	58.13	+01	59	17.4		4 675
1045	T-2	*	1973	09	29.25330	23	58	37.88	+04	36	13.6	16.7	4 675
1045	T-2		1973	09	29.31806	23	58	34.88	+04	35	27.3		4 675
1045	T-2		1973	09	30.21007	23	57	56.35	+04	24	52.1		4 675
1045	T-2		1973	09	30.27431	23	57	53.39	+04	24	05.8		4 675
1045	T-2		1973	10	04.28958	23	55	05.52	+03	36	32.8		4 675
1045	T-2		1973	10	04.35208	23	55	02.84	+03	35	49.1		4 675
1045	T-2		1973	10	05.31684	23	54	24.43	+03	24	33.0		4 675
1045	T-2		1973	10	05.37917	23	54	21.83	+03	23	50.0		4 675
5493	T-2		1991	04	17.28229	12	49	56.02	-20	22	30.4	18.4	3 675
5493	T-2		1991	04	17.32188	12	49	54.74	-20	22	23.2		3 675
2268	T-3		1977	10	07.25868	01	13	12.55	+15	09	07.1		4 675
2268	T-3		1977	10	11.27743	01	10	21.03	+14	38	08.6		4 675
2268	T-3		1977	10	11.34375	01	10	18.00	+14	37	36.0		4 675
2268	T-3		1977	10	12.27587	01	09	38.09	+14	30	09.4		4 675
2268	T-3		1977	10	12.34271	01	09	35.02	+14	29	38.2		4 675
2268	T-3	*	1977	10	16.26233	01	06	47.47	+13	57	35.6	17.8	4 675
2268	T-3		1977	10	16.32795	01	06	44.51	+13	57	03.6		4 675
2268	T-3		1977	10	17.26458	01	06	04.93	+13	49	18.3		4 675
2268	T-3		1977	10	17.33177	01	06	01.97	+13	48	44.1		4 675
2268	T-3		1977	10	21.40868	01	03	13.12	+13	14	22.1		4 675
2268	T-3		1977	10	21.46910	01	03	10.54	+13	13	51.2		4 675
2268	T-3		1977	10	22.41528	01	02	32.65	+13	05	51.1		4 675
2268	T-3		1977	10	22.46962	01	02	30.48	+13	05	23.7		4 675
74			1990	02	22.51006	12	51	38.79	-06	52	46.5		9 675
74			1990	02	22.53489	12	51	38.19	-06	52	42.9		9 675
74			1990	03	27.33767	12	31	01.08	-04	19	54.6		9 675
74			1990	03	27.37135	12	30	59.49	-04	19	43.2		9 675
183			1991	05	19.17430	13	51	27.27	+22	09	31.2	15.5	3 675
183			1991	05	19.21563	13	51	25.84	+22	09	27.9		3 675
256			1990	02	22.51006	13	03	11.38	-06	31	46.8	15.5	9 675
256			1990	02	22.53489	13	03	11.13	-06	31	38.6		9 675
279			1990	02	22.51006	12	53	09.23	-02	46	39.8	15.5	9 675
279			1990	02	22.53489	12	53	08.79	-02	46	36.4		9 675
279			1990	03	27.33767	12	37	52.20	-01	04	16.9	15.2	9 675
279			1990	03	27.37135	12	37	51.03	-01	04	09.7	15.0	9 675
373			1989	01	11.45138	09	32	13.24	+33	13	00.7	15.0	9 675
373			1989	01	11.49201	09	32	11.31	+33	13	10.8		9 675
373			1989	02	02.29704	09	12	20.87	+34	17	40.4	14.8	9 675
373			1989	02	02.32986	09	12	18.89	+34	17	42.8		9 675
373			1989	03	07.27048	08	44	25.02	+33	41	21.3	15.0	9 675
373			1989	03	07.30486	08	44	23.78	+33	41	14.2		9 675
373			1989	03	08.23524	08	43	53.03	+33	37	52.9	15.0	9 675
373			1989	03	08.27319	08	43	51.72	+33	37	44.4		9 675
373			1990	02	22.51006	12	49	40.78	-05	10	05.9		9 675
373			1990	02	22.53489	12	49	40.07	-05	10	07.3		9 675
373			1990	03	27.33767	12	26	54.88	-04	31	38.0		9 675
373			1990	03	27.37135	12	26	53.19	-04	31	34.2		9 675
428			1990	02	22.51006	12	51	17.24	-02	22	03.0	16.8	9 675
428			1990	02	22.53489	12	51	16.41	-02	21	59.2		9 675
428			1990	03	27.33767	12	23	39.29	-00	23	50.8	15.8	9 675
428			1990	03	27.37135	12	23	37.17	-00	23	42.3		9 675
513			1990	02	22.51006	13	12	04.75	-07	08	10.1		9 675
513			1990	02	22.53489	13	12	04.42	-07	08	01.5		9 675
555			1990	02	22.51006	13	00	07.61	-03	17	19.3	16.0	9 675
555			1990	02	22.53489	13	00	07.19	-03	17	14.6		9 675
555			1990	03	27.33767	12	41	54.68	-00	47	26.0		9 675
555			1990	03	27.37135	12	41	53.14	-00	47	15.1		9 675
578			1990	02	22.51006	13	02	58.55	-02	21	58.4		9 675

578	1990	02	22.53489	13	02	58.02	-02	21	56.6		9 675
578	1990	03	27.33767	12	42	02.35	-00	47	08.6		9 675
578	1990	03	27.37135	12	42	00.52	-00	47	00.8		9 675
650	1990	02	22.51006	12	53	41.27	-07	52	43.5	17.8	9 675
650	1990	02	22.53489	12	53	40.70	-07	52	40.9		9 675
650	1990	03	27.33767	12	30	25.69	-05	13	46.3	16.8	9 675
650	1990	03	27.37135	12	30	23.83	-05	13	33.8		9 675
708	1990	02	22.51006	12	47	59.17	-05	28	29.8		9 675
708	1990	02	22.53489	12	47	58.66	-05	28	30.6		9 675
708	1990	03	27.33767	12	25	53.85	-04	07	56.4		9 675
708	1990	03	27.37135	12	25	52.02	-04	07	49.3		9 675
806	1989	01	11.45138	09	31	14.81	+36	02	01.1	15.8	9 675
806	1989	01	11.49201	09	31	13.15	+36	02	17.8		9 675
806	1989	03	07.27048	08	46	06.14	+38	03	01.9		9 675
806	1989	03	07.30486	08	46	05.12	+38	02	55.3	16.0	9 675
806	1989	03	08.23524	08	45	38.62	+37	59	42.1		9 675
806	1989	03	08.27319	08	45	37.53	+37	59	34.8		9 675
848	1990	02	22.51006	12	58	50.32	-06	50	30.4	18.0	9 675
848	1990	02	22.53489	12	58	49.87	-06	50	27.3		9 675
848	1990	03	27.33767	12	40	29.79	-04	51	00.2		9 675
848	1990	03	27.37135	12	40	28.16	-04	50	52.0		9 675
906	1989	01	11.45138	09	24	12.94	+32	52	06.4	15.0	9 675
906	1989	01	11.49201	09	24	11.02	+32	52	21.4		9 675
906	1989	03	07.27048	08	37	07.97	+34	47	56.3	14.8	9 675
906	1989	03	07.30486	08	37	06.87	+34	47	51.1		9 675
906	1989	03	08.23524	08	36	39.71	+34	45	22.5	15.0	9 675
906	1989	03	08.27319	08	36	38.55	+34	45	16.7		9 675
1023	1990	02	22.51006	12	40	17.67	-07	26	43.0		9 675
1023	1990	02	22.53489	12	40	17.07	-07	26	37.6		9 675
1023	1990	03	27.33767	12	21	35.64	-04	24	55.7	15.0	9 675
1023	1990	03	27.37135	12	21	34.26	-04	24	43.0		9 675
1312	1991	05	15.18559	12	57	49.86	+21	29	47.1	17.5	3 675
1312	1991	05	15.22118	12	57	48.96	+21	29	43.2		3 675
1312	1991	05	16.15972	12	57	27.25	+21	27	48.6		3 675
1312	1991	05	16.19271	12	57	26.39	+21	27	43.3		3 675
1413	1990	03	27.33767	12	17	37.00	-00	07	42.1	16.0	9 675
1413	1990	03	27.37135	12	17	35.53	-00	07	26.2	15.5	9 675
1489	1990	02	22.51006	12	44	44.01	-03	16	24.1	16.8	9 675
1489	1990	02	22.53489	12	44	43.51	-03	16	19.8		9 675
1489	1990	03	27.33767	12	26	21.26	-00	42	58.9	15.8	9 675
1489	1990	03	27.37135	12	26	19.75	-00	42	48.1		9 675
1493	1990	02	22.51006	12	41	34.74	-06	25	05.9		9 675
1493	1990	02	22.53489	12	41	33.98	-06	25	04.7		9 675
1493	1990	03	27.33767	12	16	21.37	-04	18	30.4	16.2	9 675
1493	1990	03	27.37135	12	16	19.44	-04	18	20.0	16.0	9 675
1557	1990	02	22.51006	13	02	57.67	-09	29	54.9		9 675
1557	1990	02	22.53489	13	02	57.10	-09	29	54.3	17.5	9 675
1623	1990	03	27.33767	12	23	22.10	+01	08	42.6	16.5	9 675
1623	1990	03	27.37135	12	23	20.53	+01	08	52.7		9 675
1848	1990	02	22.51006	13	05	02.08	-08	04	05.3		9 675
1848	1990	02	22.53489	13	05	01.73	-08	04	03.8		9 675
2002	1991	05	10.39896	15	33	06.96	-06	34	24.9	16	2 675
2002	1991	05	10.42326	15	33	05.66	-06	34	14.5		2 675
2002	1991	05	12.48507	15	31	17.66	-06	20	23.1		2 675
2032	1990	03	27.33767	12	13	26.09	-00	26	11.9	16.8	9 675
2159	1990	02	22.51006	12	50	36.76	-06	09	04.9		9 675
2159	1990	02	22.53489	12	50	36.21	-06	09	05.6		9 675
2159	1990	03	27.33767	12	26	52.76	-04	35	20.2		9 675
2159	1990	03	27.37135	12	26	50.83	-04	35	12.0		9 675

2181	1989	02	02.29704	09	32	02.32	+36	08	48.6	15.5	9 675
2181	1989	02	02.32986	09	31	59.95	+36	08	52.3		9 675
2181	1989	03	07.27048	08	58	41.22	+34	39	28.2		9 675
2181	1989	03	07.30486	08	58	39.95	+34	39	13.6	16.2	9 675
2181	1989	03	08.23524	08	58	08.12	+34	32	33.3	16.5	9 675
2181	1989	03	08.27319	08	58	06.76	+34	32	17.4		9 675
2384	1989	01	11.45138	09	21	56.06	+35	38	06.0	16.2	9 675
2384	1989	01	11.49201	09	21	53.80	+35	38	18.8	16.8	9 675
2424	1989	02	02.29704	09	23	26.72	+32	50	19.3	16.0	9 675
2424	1989	02	02.32986	09	23	24.38	+32	50	25.4		9 675
2424	1989	03	07.27048	08	52	53.23	+32	01	11.2	16.5	9 675
2424	1989	03	07.30486	08	52	52.20	+32	00	58.6		9 675
2424	1989	03	08.23524	08	52	29.29	+31	55	22.4	16.8	9 675
2424	1989	03	08.27319	08	52	28.23	+31	55	07.5		9 675
2505	1990	02	22.51006	12	52	51.84	-03	02	39.9	17.0	9 675
2505	1990	02	22.53489	12	52	51.42	-03	02	36.7		9 675
2505	1990	03	27.33767	12	34	03.36	-01	00	50.7	16.2	9 675
2505	1990	03	27.37135	12	34	01.75	-01	00	42.4		9 675
2526	1990	03	27.33767	12	17	13.42	-00	48	03.4	17.0	9 675
2526	1990	03	27.37135	12	17	11.79	-00	47	55.1	16.8	9 675
2528	1990	03	27.33767	12	39	03.03	-03	51	44.5	17.5	9 675
2528	1990	03	27.37135	12	39	01.53	-03	51	35.8	17.2	9 675
2543	1989	01	11.45138	09	47	10.46	+34	04	34.8		9 675
2543	1989	02	02.29704	09	29	47.59	+35	53	07.2	17.0	9 675
2543	1989	02	02.32986	09	29	45.82	+35	53	13.5		9 675
2543	1989	03	07.27048	09	02	18.03	+36	34	02.8	17.5	9 675
2543	1989	03	07.30486	09	02	16.74	+36	34	00.3		9 675
2543	1989	03	08.23524	09	01	41.73	+36	32	40.9	17.5	9 675
2543	1989	03	08.27319	09	01	40.34	+36	32	38.6		9 675
2707	1990	02	22.51006	12	59	32.75	-02	38	39.1	17.8	9 675
2707	1990	02	22.53489	12	59	32.18	-02	38	35.1		9 675
2707	1990	03	27.33767	12	40	35.59	-00	27	49.2	16.8	9 675
2707	1990	03	27.37135	12	40	34.04	-00	27	38.9		9 675
2748	1990	02	22.51006	12	54	25.32	-07	12	30.3	18.5	9 675
2748	1990	02	22.53489	12	54	24.90	-07	12	29.2		9 675
2748	1990	03	27.33767	12	32	59.63	-05	42	05.7	17.5	9 675
2748	1990	03	27.37135	12	32	57.92	-05	41	57.3		9 675
2848	1990	02	22.51006	12	46	58.07	-05	34	51.4		9 675
2848	1990	02	22.53489	12	46	57.25	-05	34	45.8		9 675
2848	1990	03	27.33767	12	27	18.10	-03	36	39.1		9 675
2848	1990	03	27.37135	12	27	16.65	-03	36	30.8		9 675
2857	1991	05	12.48507	15	44	03.91	-09	54	26.8		2 675
2881	1990	03	27.33767	12	13	34.22	+00	36	21.1	15.8	9 675
2881	1990	03	27.37135	12	13	32.45	+00	36	38.5	15.2	9 675
3049	1990	02	22.51006	12	57	04.69	-02	23	31.8	17.8	9 675
3049	1990	02	22.53489	12	57	04.26	-02	23	28.0		9 675
3049	1990	03	27.33767	12	38	58.55	-00	07	17.7	16.5	9 675
3049	1990	03	27.37135	12	38	57.02	-00	07	07.5		9 675
3242	1990	02	22.51006	12	51	14.59	-08	50	05.0	18.0	9 675
3242	1990	03	27.33767	12	31	14.11	-04	35	03.6		9 675
3242	1990	03	27.37135	12	31	12.45	-04	34	45.9		9 675
3522	1990	03	27.33767	12	22	39.53	-05	27	59.9	18.5	9 675
3522	1990	03	27.37135	12	22	38.17	-05	27	48.7		9 675
3543	1990	02	22.51006	12	56	42.46	-05	31	33.5	17.2	9 675
3543	1990	02	22.53489	12	56	42.09	-05	31	29.8		9 675
3543	1990	03	27.33767	12	38	58.79	-03	26	50.0	16.8	9 675
3543	1990	03	27.37135	12	38	57.25	-03	26	40.2		9 675
3596	1989	02	02.29704	09	28	36.75	+36	46	52.6	16.5	9 675

3596	1989	02	02.32986	09	28	35.34	+36	46	53.4		9 675
3596	1989	03	07.27048	09	06	37.92	+36	18	54.0	16.8	9 675
3596	1989	03	07.30486	09	06	36.81	+36	18	49.4		9 675
3596	1989	03	08.23524	09	06	08.10	+36	16	16.8	17.2	9 675
3596	1989	03	08.27319	09	06	06.95	+36	16	10.4		9 675
3996	1990	02	22.51006	12	52	59.49	-01	35	09.3		9 675
3996	1990	02	22.53489	12	52	59.15	-01	35	06.1		9 675
3996	1990	03	27.33767	12	31	29.58	+01	15	28.6	15.8	9 675
3996	1990	03	27.37135	12	31	27.57	+01	15	41.4		9 675
4143	1990	03	27.33767	12	15	46.36	+01	18	08.8	18.0	9 675
4143	1990	03	27.37135	12	15	44.86	+01	18	16.7		9 675
4161	1990	03	27.33767	12	40	32.17	-02	55	08.3	18.8	9 675
4161	1990	03	27.37135	12	40	30.71	-02	54	57.2		9 675
4233	1991	05	09.24028	13	11	16.34	-04	27	41.4	16	2 675
4233	1991	05	09.26389	13	11	15.27	-04	27	34.2		2 675
4233	1991	05	12.25868	13	09	26.60	-04	13	00.8		2 675
4233	1991	05	12.28628	13	09	25.54	-04	12	52.8		2 675
4365	1990	03	27.33767	12	23	23.39	-03	59	18.7	17.0	9 675
4479	1990	02	22.51006	13	06	02.39	-03	34	57.2		9 675
4479	1990	02	22.53489	13	06	02.10	-03	34	51.0		9 675
4483	1991	05	17.44653	17	31	24.77	+20	39	59.3	17.5	3 675
4483	1991	05	19.40851	17	30	05.16	+21	13	34.6		3 675
4483	1991	05	19.45035	17	30	03.21	+21	14	17.2		3 675
4507	1990	03	27.33767	12	17	05.83	+01	11	53.2	16.5	9 675
4507	1990	03	27.37135	12	17	04.11	+01	12	00.3		9 675
4511	1990	02	22.51006	13	02	23.61	-08	00	00.7	17.0	9 675
4511	1990	02	22.53489	13	02	22.78	-08	00	08.6		9 675
4517	1990	02	22.51006	12	53	18.35	-01	46	31.0	18.0	9 675
4517	1990	02	22.53489	12	53	17.69	-01	46	26.8		9 675
4517	1990	03	27.33767	12	26	45.17	+00	33	48.6	16.8	9 675
4517	1990	03	27.37135	12	26	42.87	+00	33	59.0		9 675
4518	1990	02	22.51006	12	57	02.66	-03	54	49.9	18.5	9 675
4518	1990	02	22.53489	12	57	02.41	-03	54	42.7		9 675
4518	1990	03	27.33767	12	38	40.45	+00	31	08.3	16.8	9 675
4518	1990	03	27.37135	12	38	38.67	+00	31	28.3		9 675
4521	1989	01	11.45138	09	14	22.71	+36	24	56.3	17.8	9 675
4521	1989	01	11.49201	09	14	20.75	+36	25	09.8		9 675
4601	1990	02	22.51006	12	56	09.69	-05	18	12.8	16.8	9 675
4601	1990	02	22.53489	12	56	09.52	-05	18	02.9		9 675
4601	1990	03	27.37135	12	40	49.05	+00	11	36.1		9 675
4833	1989	01	11.45138	09	19	02.87	+36	52	27.1	17.2	9 675
4833	1989	01	11.49201	09	19	01.68	+36	52	42.7		9 675
4833	1991	04	14.32587	13	39	34.33	+34	25	40.8	17.6	3 675
4833	1991	04	16.30590	13	38	29.16	+34	28	33.7		3 675
4833	1991	04	16.34931	13	38	27.64	+34	28	37.6		3 675
4835	1991	04	17.43316	15	27	32.77	+05	34	00.0	18.2	3 675
4835	1991	04	19.45313	15	26	40.64	+05	40	35.6		3 675
4835	1991	05	13.41458	15	14	51.30	+06	35	29.1		9 675
4835	1991	05	13.44878	15	14	50.30	+06	35	31.7		9 675
4836	1989	03	07.27048	09	03	50.49	+36	59	22.2	17.0	9 675
4836	1989	03	08.27319	09	03	25.00	+36	59	31.8	16.8	9 675
4836	1991	04	14.43542	14	30	58.22	+04	45	40.0	17.3	3 675
4836	1991	04	14.47292	14	30	57.01	+04	45	44.1		3 675
4836	1991	04	16.43576	14	29	57.10	+04	49	40.1		3 675
4836	1991	05	13.33733	14	15	47.38	+05	14	45.8	17.5	3 675
4836	1991	05	13.37587	14	15	46.19	+05	14	47.5		3 675
4836	1991	05	15.25642	14	14	50.85	+05	14	13.2		3 675
4836	1991	05	15.34045	14	14	48.24	+05	14	09.9		3 675

688 Lowell Observatory, Anderson Mesa Station
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff AZ 86001, U.S.A.
Observers S. J. Bus, A. Sadun, L. M. Sauter
Measurers E. Bowell, S. J. Bus
1.1-m f/8 Hall reflector + CCD, 1.8-m reflector + CCD

1981 EC13	1991 05 12.19399	11 41 14.64	-06 41 36.6		19.8V	688
1981 EC13	1991 05 12.28127	11 41 14.21	-06 41 26.2			688
1981 EC13	1991 05 13.14635	11 41 12.60	-06 39 47.8		19.4V	688
1981 EC13	1991 05 13.20953	11 41 12.34	-06 39 41.0			688
1981 EZ14	1991 05 12.20573	11 45 39.43	-05 10 49.2		19.7V	688
1981 EZ14	1991 05 12.29626	11 45 38.95	-05 10 37.2			688
1981 EZ14	1991 05 13.15928	11 45 35.56	-05 08 47.5		19.7V	688
1981 EZ14	1991 05 13.21963	11 45 35.27	-05 08 40.2			688
1981 EL24	1991 05 12.21156	11 46 58.14	+00 01 41.5		18.6V	688
1981 EL24	1991 05 13.16581	11 46 53.71	+00 02 23.5		18.8V	688
1981 EL24	1991 05 13.22449	11 46 53.38	+00 02 25.8			688
1981 EW24	1991 05 12.24797	12 26 46.95	-00 45 23.8		18.4V	688
1981 EW24	1991 05 12.32630	12 26 45.44	-00 45 14.7			688
1981 EW24	1991 05 13.18332	12 26 30.45	-00 43 39.1		18.7V	688
1981 EW24	1991 05 13.23951	12 26 29.44	-00 43 33.0			688
1981 EC25	1991 05 13.31866	14 41 07.82	-20 14 40.9			688
1981 EC25	1991 05 13.33391	14 41 06.74	-20 14 37.3			688
1981 EC25	1991 05 13.35230	14 41 05.44	-20 14 33.1		17.3V	688
1981 EV26	1991 05 12.20067	11 45 17.48	+00 10 10.6		18.8V	688
1981 EV26	1991 05 12.28696	11 45 17.07	+00 10 14.6			688
1981 EV26	1991 05 13.15311	11 45 14.50	+00 10 51.9		18.9V	688
1981 EV26	1991 05 13.21473	11 45 14.26	+00 10 54.1			688
1981 EP28	1991 05 12.21733	11 53 00.01	-00 22 54.6		19.0V	688
1981 EP28	1991 05 12.30648	11 52 59.28	-00 22 47.9			688
1981 EP28	1991 05 13.17179	11 52 53.58	-00 21 47.4		19.3V	688
1981 EP28	1991 05 13.22960	11 52 53.14	-00 21 43.6			688
1981 EV46	1991 05 13.31316	14 06 03.24	-15 05 28.9		18.3V	688
1981 EV46	1991 05 13.34494	14 06 01.26	-15 05 18.4			688
1981 EF47	1991 05 12.22241	11 56 58.17	-00 24 51.5		20.7V	688
1981 EF47	1991 05 12.31664	11 56 57.56	-00 24 53.7			688
1981 EF47	1991 05 13.17736	11 56 53.07	-00 25 04.0		20.2V	688
1981 EF47	1991 05 13.23433	11 56 52.68	-00 25 04.6			688
1991 JX	1991 05 26.23591	14 08 10.95	+01 21 17.4			688
1991 JX	1991 05 26.28039	14 08 17.02	+01 23 50.3			688
1991 JX	1991 05 31.15373	14 27 52.54	+07 28 37.2			688
1991 JX	1991 05 31.15709	14 27 53.56	+07 28 57.5			688
1991 JX	1991 06 04.18279	14 59 18.75	+15 58 14.9			688
1991 JX	1991 06 04.18796	14 59 21.81	+15 59 05.7			688
1991 JY	1991 05 18.37667	15 59 39.08	-05 31 46.4			688
1991 JY	1991 05 18.37832	15 59 37.07	-05 32 13.8			688
1991 JY	1991 05 19.40740	15 38 45.70	-10 19 23.7			688
1991 JY	1991 05 20.39203	15 18 58.11	-14 40 25.2			688
1991 JY	1991 05 20.39321	15 18 56.70	-14 40 43.7			688

690 Lowell Observatory
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001, U.S.A.
Observer C. W. Tombaugh
Measurers C. M. Olmstead, L. A. Zimmerman
0.33-m photographic telescope

1929 TC	1929 10 01.40417	01 49 59.41	+08 05 27.8		690
1929 TC	1929 10 09.40417	01 44 38.67	+07 13 08.8		690
1930 FR	1930 03 26.24583	12 03 34.41	+00 10 05.6		690

53		1930	03	22.25556	11	40	15.91	+07	06	15.9	690
53		1930	03	26.24583	11	37	05.52	+07	32	50.2	690
79		1930	03	22.25556	11	55	27.96	-03	02	58.9	690
79		1930	03	26.24583	11	51	57.59	-02	33	34.6	f 690
94		1929	10	01.40417	01	43	15.76	+14	38	49.5	690
94		1929	10	09.40417	01	37	02.02	+14	29	12.9	690
151		1929	10	01.40417	01	38	19.96	+06	22	47.9	690
151		1929	10	09.40417	01	31	15.66	+05	57	54.7	690
177		1930	03	22.25556	11	50	30.56	+00	39	54.8	690
177		1930	03	26.24583	11	47	18.90	+00	59	24.4	690
206		1929	10	01.40417	01	53	34.58	+06	30	06.8	690
206		1929	10	09.40417	01	47	45.40	+05	45	34.6	690
243		1930	03	22.25556	11	40	06.97	+01	09	49.4	690
243		1930	03	26.24583	11	36	59.09	+01	29	00.0	690
272		1930	03	22.25556	11	54	57.10	+05	24	29.0	690
272		1930	03	26.24583	11	51	33.94	+05	40	14.8	690
277		1929	10	01.40417	01	49	07.08	+12	14	42.7	690
277		1929	10	09.40417	01	43	17.80	+11	39	48.1	690
303		1930	03	22.25556	11	37	18.39	+00	18	56.9	690
303		1930	03	26.24583	11	34	14.57	+00	31	59.0	690
309		1930	03	22.25556	11	53	13.44	+00	31	01.0	690
309		1930	03	26.24583	11	49	42.67	+00	48	35.9	690
342		1929	10	09.40417	01	52	44.93	+17	43	46.3	690
356		1930	03	22.25556	11	50	33.15	+00	22	16.5	690
356		1930	03	26.24583	11	46	53.04	+00	34	37.8	690
538		1930	03	22.25556	11	39	46.29	+07	21	36.0	690
538		1930	03	26.24583	11	37	04.69	+07	42	02.7	690
799		1929	10	01.40417	01	51	08.90	+06	11	19.7	690
799		1929	10	09.40417	01	45	06.18	+05	15	42.3	690
824		1930	03	22.25556	11	52	43.22	+08	33	56.2	690
975		1929	10	09.40417	02	06	43.98	+11	57	09.9	690
1043		1930	03	22.25556	11	50	54.96	+05	10	27.4	690
1043		1930	03	26.24583	11	48	09.05	+05	37	06.0	690
1183		1930	03	22.25556	11	58	17.10	+01	43	06.4	690
1183		1930	03	26.24583	11	54	27.81	+02	00	10.0	690
1296		1929	10	09.40417	02	09	01.54	+15	40	03.1	690
1527		1929	10	09.40417	02	04	13.91	+14	12	45.1	690
1579		1929	10	09.40417	02	03	22.72	+08	14	26.2	690
2463		1930	03	22.25556	11	49	42.87	+00	49	46.5	690
2463		1930	03	26.24583	11	46	41.36	+01	32	23.4	I 690
2487		1929	10	01.40417	01	50	35.55	+14	28	14.0	690
2487		1929	10	09.40417	01	44	18.64	+14	14	56.3	690
2697		1929	10	09.40417	01	27	28.78	+14	27	45.5	690
2884		1929	10	01.40417	01	59	14.91	+11	03	33.7	690
2884		1929	10	09.40417	01	53	54.82	+10	39	51.7	690

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

1988 TJ1		1991	05	13.37876	17	01	59.44	-05	11	14.9	691
1988 TJ1		1991	05	13.38310	17	01	59.13	-05	11	07.6	691
1988 TJ1		1991	05	13.40921	17	01	57.20	-05	10	28.7	19.9V 691
1991 EE		1991	05	19.13976	10	09	04.17	+20	10	22.3	691
1991 EE		1991	05	19.15043	10	09	04.63	+20	10	25.0	691
1991 EE		1991	05	19.18381	10	09	05.92	+20	10	31.8	19.5V 691

1991	EE		1991	06	05.18148	10	27	40.33	+20	38	37.1	691
1991	EE		1991	06	05.18642	10	27	40.75	+20	38	36.7	20.3V 691
1991	EE		1991	06	05.20382	10	27	42.17	+20	38	36.5	691
1991	FA		1991	05	19.20492	11	10	32.26	+02	38	27.3	691
1991	FA		1991	05	19.22552	11	10	33.02	+02	38	24.5	21.3V 691
1991	FA		1991	05	19.24610	11	10	33.92	+02	38	19.3	691
1991	FE		1991	04	22.17355	11	16	48.39	+05	42	00.6	691
1991	FE		1991	04	22.18021	11	16	48.23	+05	42	01.8	19.4V 691
1991	FE		1991	04	22.19275	11	16	47.93	+05	42	04.4	691
1991	FE		1991	06	04.16559	11	22	46.14	+05	25	44.4	691
1991	FE		1991	06	04.17701	11	22	46.44	+05	25	41.4	691
1991	FE		1991	06	04.18964	11	22	46.91	+05	25	39.3	20.6V 691
1991	JR		1991	05	13.36034	16	21	38.57	-01	44	15.3	18.1V 691
1991	JR		1991	05	13.36488	16	21	39.27	-01	44	47.7	691
1991	JR		1991	05	13.37317	16	21	40.54	-01	45	46.6	691
1991	JR		1991	05	16.27742	16	32	32.09	-08	20	54.5	691
1991	JR		1991	05	16.28772	16	32	34.22	-08	22	31.1	691
1991	JR		1991	05	19.28998	16	47	16.18	-17	16	33.4	691
1991	LA	*	1991	06	03.17068	14	54	29.45	-15	52	55.9	691
1991	LA		1991	06	03.20109	14	54	27.77	-15	52	50.3	691
1991	LA		1991	06	03.22581	14	54	26.39	-15	52	46.3	20.8V 691
1991	LA		1991	06	04.28338	14	53	31.77	-15	49	37.6	691
1991	LA		1991	06	04.28795	14	53	31.56	-15	49	36.7	20.6V 691
1991	LA		1991	06	04.29897	14	53	30.95	-15	49	35.0	691
1991	LA		1991	06	05.21432	14	52	45.56	-15	46	58.8	691
1991	LA		1991	06	05.21917	14	52	45.34	-15	46	57.6	20.7V 691
1991	LA		1991	06	05.24002	14	52	44.30	-15	46	54.1	691
1991	LB	*	1991	06	05.26231	15	16	50.66	-14	42	34.8	17.7V 691
1991	LB		1991	06	05.28597	15	16	49.35	-14	42	27.4	691
1991	LB		1991	06	05.30889	15	16	48.09	-14	42	19.7	691
1991	LB		1991	06	06.15346	15	16	04.78	-14	37	49.9	691
1991	LB		1991	06	06.15795	15	16	04.52	-14	37	48.6	17.9V 691
1991	LB		1991	06	06.17870	15	16	03.40	-14	37	42.2	691
1991	LB		1991	06	07.15972	15	15	13.92	-14	32	35.7	17.9V 691
1991	LB		1991	06	07.16422	15	15	13.69	-14	32	34.2	691
1991	LB		1991	06	07.18552	15	15	12.56	-14	32	27.8	691
878			1991	06	08.15931	12	45	07.43	-03	05	08.4	20.3V 691
878			1991	06	08.20846	12	45	07.59	-03	05	09.9	691
878			1991	06	08.22278	12	45	07.67	-03	05	10.2	691
878			1991	06	09.21953	12	45	13.50	-03	05	55.6	691
878			1991	06	09.23046	12	45	13.53	-03	05	55.9	691
878			1991	06	09.26363	12	45	13.71	-03	05	57.5	691

760 Goethe Link
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road,
Flagstaff, AZ 86001, U.S.A.
Observers D. M. Bubeck, J. E. Michlovic, C. L. Perry, S. F. Stother,
A. Young, H. S. Yun
Measurers C. J. Cunningham, C. M. Olmstead, L. A. Zimmerman
0.25-m refractor
PDS scanning microdensitometer
AGK3 and Perth 70 secondary nets, global solutions

1950	TO3		1950	10	13.26189	02	21	29.45	-01	25	31.2	760
1950	TP3		1950	10	13.26189	02	26	27.67	+01	24	59.5	760
1962	SO		1962	09	30.30617	01	36	44.25	+18	12	16.4	760
1962	SO		1962	09	30.35201	01	36	42.16	+18	12	02.7	760
1963	SE1		1963	09	22.15208	23	31	11.12	+00	42	32.1	760
1963	SE1		1963	09	22.19514	23	31	08.45	+00	42	17.6	760
1963	VD		1963	11	11.16080	03	16	44.50	+11	12	30.8	760

1963	VD	1963	11	11.20524	03	16	42.35	+11	12	04.1		760
1963	VF	1963	11	11.16080	03	13	36.66	+12	39	25.1		760
1963	VF	1963	11	11.20524	03	13	33.70	+12	39	34.6		760
1963	VH	1963	11	11.16080	03	09	52.66	+13	30	22.3		760
1963	VH	1963	11	11.20524	03	09	50.28	+13	30	22.1		760
1963	VK	1963	11	11.16080	03	07	33.22	+14	39	52.5		760
1963	VK	1963	11	11.20524	03	07	30.56	+14	39	45.5		760
6		1963	03	23.10493	11	13	30.20	+17	25	53.2	10.0 G	760
6		1963	03	23.15632	11	13	27.23	+17	26	17.7	G	760
93		1963	09	22.15208	23	30	50.96	-05	58	31.5	11.9	760
93		1963	09	22.19514	23	30	48.51	-05	58	36.8		760
119		1963	03	28.26973	11	43	37.23	-02	05	03.1	13.1	760
119		1963	03	28.31660	11	43	34.93	-02	04	42.8		760
167		1963	09	22.15208	23	22	35.31	-04	26	41.7	13.7	760
167		1963	09	22.19514	23	22	33.34	-04	26	56.8		760
193		1963	03	28.26973	11	41	12.79	-01	46	32.5	13.8	760
193		1963	03	28.31660	11	41	09.89	-01	46	26.6		760
203		1963	03	28.26973	11	30	17.12	+02	21	29.8	13.8	760
203		1963	03	28.31660	11	30	14.83	+02	21	41.2		760
234		1963	03	23.10493	11	23	14.31	+15	19	55.4	G	760
234		1963	03	23.15632	11	23	11.79	+15	20	19.9	G	760
243		1955	06	22.16903	15	49	22.87	-21	41	42.6	15.0	760
243		1955	06	22.22046	15	49	21.00	-21	41	35.3		760
255		1963	03	23.10493	11	05	43.94	+12	32	54.4	14.6 G	760
255		1963	03	23.15632	11	05	41.05	+12	32	57.6	G	760
278		1963	11	11.16080	03	03	53.05	+14	20	35.7	14.2	760
278		1963	11	11.20524	03	03	50.48	+14	20	30.4		760
369		1950	10	13.26189	02	35	29.00	-05	13	16.4	12.2	760
486		1950	10	13.26189	02	22	17.94	-02	34	31.0	14.7	760
514		1955	06	22.16903	15	41	29.83	-21	42	23.3	15.0	760
514		1955	06	22.22046	15	41	28.26	-21	42	12.7		760
638		1963	11	11.16080	03	20	40.23	+09	04	30.2	15.3	760
638		1963	11	11.20524	03	20	37.66	+09	04	24.1		760
855		1963	03	23.10493	11	06	56.68	+15	08	39.7	15.5 G	760
855		1963	03	23.15632	11	06	53.01	+15	08	37.4	G	760
1028		1963	03	23.10493	11	06	57.34	+19	41	48.0	15.3 G	760
1114		1963	03	28.26973	11	38	16.92	-02	29	35.3	15.8	760
1114		1963	03	28.31660	11	38	14.99	-02	29	15.2		760
1200		1963	09	22.15208	23	31	06.97	+00	37	01.1	15.7	760
1200		1963	09	22.19514	23	31	05.03	+00	36	44.1		760
1319		1955	06	16.14551	15	51	31.15	-20	45	56.1	15.7	760
1319		1955	06	16.19134	15	51	29.61	-20	45	47.8		760
1319		1955	06	22.16903	15	48	32.33	-20	28	09.5	16.0 A	760
1319		1955	06	22.22046	15	48	31.03	-20	28	00.3	A	760
1553		1963	11	11.16080	03	07	44.26	+13	00	29.4	16.2	760
2821		1963	11	11.16080	03	10	43.33	+15	17	45.6		760
2821		1963	11	11.20524	03	10	40.35	+15	17	50.0		760
4806		1963	11	19.10415	02	41	40.52	+06	56	51.1	E	760

776 Foggy Bottom Observatory
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0.40-m f/13 Cassegrain reflector + CCD

1991	GZ4	1991	05	19.22569	12	53	42.5	-05	34	04	16.1R	776
1991	GZ4	1991	05	20.17986	12	53	30.9	-05	34	05		776
1991	GZ4	1991	05	20.22083	12	53	30.4	-05	34	04		776
1991	GZ4	1991	05	20.26181	12	53	29.9	-05	34	05		776
1991	GZ4	1991	05	21.12361	12	53	21.5	-05	34	10		776
1991	HA	1991	05	19.22153	12	37	46.2	-03	25	47		776

1991 HA 1991 05 20.11181 12 37 42.5 -03 24 48 776
1991 HA 1991 05 21.09028 12 37 40.1 -03 23 59 776

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60 Garden Street, Cambridge, MA 02138, U.S.A.
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1.5-m reflector + CCD

1973 UJ5 1991 05 11.24075 15 31 40.60 -17 03 11.2 801
1973 UJ5 1991 05 14.18231 15 29 12.56 -16 53 02.5 801
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1980 BB 1991 05 13.20639 15 25 23.06 -16 25 35.0 801
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1981 ED27 1991 05 12.15522 10 02 44.40 +10 48 04.4 801
1982 DQ6 1986 04 13.28107 13 45 25.94 -12 36 05.6 801
1982 DQ6 1987 08 26.18362 22 06 26.20 -20 26 57.0 801
1982 SC2 1991 05 12.12904 09 48 21.22 +18 06 51.6 801
1982 SC2 1991 05 12.13542 09 48 21.57 +18 06 49.0 801
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1982 UW3 1991 05 13.26053 17 01 37.39 -06 02 04.2 801
1982 VE4 1991 05 11.26637 16 40 34.01 -17 28 09.1 801

1982	VE4	1991	05	11.28811	16	40	33.04	-17	28	08.6	801
1982	VE4	1991	05	12.25331	16	39	51.86	-17	27	42.8	801
1982	VE4	1991	05	12.27416	16	39	50.88	-17	27	42.4	801
1982	VM5	1991	05	11.13550	13	20	58.07	-10	44	37.4	801
1982	VM5	1991	05	11.15439	13	20	57.32	-10	44	28.5	801
1982	VM5	1991	05	17.08742	13	17	44.60	-10	01	05.1	801
1982	VM5	1991	05	17.10807	13	17	43.97	-10	00	56.9	801
1982	XQ1	1991	05	11.21155	15	17	02.77	-15	27	37.0	801
1982	XQ1	1991	05	11.22694	15	17	02.01	-15	27	34.1	801
1982	XQ1	1991	05	13.20366	15	15	29.21	-15	21	18.2	801
1982	XQ1	1991	05	13.21955	15	15	28.41	-15	21	15.2	801
1983	QE	1991	05	12.32260	20	18	00.37	-01	45	07.1	801
1983	QE	1991	05	12.33505	20	18	01.12	-01	45	00.6	801
1984	FM	1991	05	12.11322	09	58	48.66	+31	27	48.0	801
1984	FM	1991	05	12.11875	09	58	49.10	+31	27	39.5	801
1984	FM	1991	05	16.10047	10	04	30.22	+29	45	43.1	801
1984	FM	1991	05	16.10954	10	04	31.01	+29	45	29.0	801
1985	TV2	1991	05	13.23425	16	29	24.68	-14	17	57.8	801
1985	TV2	1991	05	13.24669	16	29	24.01	-14	17	52.6	801
1985	TV2	1991	05	16.20561	16	26	45.86	-13	57	11.8	801
1985	TV2	1991	05	16.21994	16	26	45.04	-13	57	05.9	801
1985	TV2	1991	05	17.21617	16	25	50.12	-13	50	11.9	801
1985	TV2	1991	05	17.22925	16	25	49.37	-13	50	06.5	801
1986	JT	1991	05	16.16686	14	40	25.37	-11	03	57.0	801
1986	JT	1991	05	16.17853	14	40	24.84	-11	03	51.9	801
1986	JT	1991	05	17.21990	14	39	40.05	-10	56	14.0	801
1986	JT	1991	05	17.23630	14	39	39.31	-10	56	06.9	801
1986	PT4	1991	05	13.28284	18	26	48.43	-05	41	54.9	801
1986	PT4	1991	05	13.31606	18	26	48.00	-05	41	49.0	801
1986	PT4	1991	05	16.32049	18	26	05.96	-05	32	55.7	801
1986	PT4	1991	05	16.33998	18	26	05.62	-05	32	52.5	801
1986	PB5	1991	05	13.30747	19	41	56.06	-18	58	56.2	801
1986	PB5	1991	05	13.32883	19	41	56.53	-18	58	53.2	801
1987	EP	1991	05	13.05535	09	21	01.81	+15	36	29.7	801
1987	EP	1991	05	13.07056	09	21	02.41	+15	36	24.3	801
1987	EP	1991	05	16.05714	09	23	07.01	+15	18	05.8	801
1987	EP	1991	05	16.07242	09	23	07.64	+15	18	00.4	801
1987	HS	1991	05	13.33784	20	23	31.70	+02	33	46.0	801
1987	HS	1991	05	13.34468	20	23	32.13	+02	33	47.4	801
1987	QU10	1991	05	12.21905	14	41	34.88	-11	13	44.8	801
1987	QU10	1991	05	12.23287	14	41	34.04	-11	13	41.7	801
1987	QU10	1991	05	14.17616	14	39	54.70	-11	07	38.9	801
1987	QU10	1991	05	14.20358	14	39	53.26	-11	07	33.8	801
1987	QY10	1991	05	11.26337	16	41	58.15	-06	40	00.2	801
1987	QY10	1991	05	11.28617	16	41	57.24	-06	39	56.4	801
1987	QY10	1991	05	12.25556	16	41	18.54	-06	37	10.8	801
1987	QY10	1991	05	12.27682	16	41	17.65	-06	37	07.3	801
1987	SJ5	1991	05	12.22226	14	36	46.58	-09	18	57.4	801
1987	SJ5	1991	05	12.23531	14	36	45.95	-09	18	51.9	801
1987	SJ5	1991	05	16.13694	14	33	46.81	-08	52	24.3	801
1987	SJ5	1991	05	16.15314	14	33	46.05	-08	52	17.6	801
1988	BW1	1991	05	13.11277	13	48	43.99	+03	10	19.8	801
1988	BW1	1991	05	13.13123	13	48	43.44	+03	10	18.9	801
1988	BW1	1991	05	14.16579	13	48	13.54	+03	09	29.1	801
1988	BW1	1991	05	14.20074	13	48	12.50	+03	09	27.3	801
1988	RA5	1991	05	12.08622	12	54	03.42	-00	25	37.6	801
1988	RA5	1991	05	12.10112	12	54	02.88	-00	25	36.1	S 801
1988	RA5	1991	05	17.08472	12	51	36.67	-00	19	28.9	801
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1988	TJ1	1991	05	11.28227	17	04	18.14	-06	03	55.9	801
1988	TJ1	1991	05	16.23387	16	58	31.74	-03	59	24.7	801
1988	TJ1	1991	05	16.24260	16	58	31.01	-03	59	11.1	801
1988	TQ4	1991	05	13.20104	15	13	01.94	-15	52	27.2	801
1988	TQ4	1991	05	13.21762	15	13	01.06	-15	52	24.0	801
1988	TQ4	1991	05	14.17987	15	12	10.95	-15	49	10.3	801
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1988	UJ	1991	05	13.14856	14	31	09.09	-15	01	49.9	801
1988	UJ	1991	05	13.16626	14	31	08.19	-15	01	48.4	801
1988	UJ	1991	05	14.16855	14	30	18.50	-15	00	38.8	801
1988	UJ	1991	05	14.19785	14	30	17.02	-15	00	37.0	801
1988	VJ	1991	05	13.31046	20	01	24.44	-15	42	39.5	801
1988	VJ	1991	05	13.32368	20	01	25.21	-15	42	33.6	801
1988	VL	1991	05	12.22833	14	57	12.33	-06	19	28.3	801
1988	VL	1991	05	12.24278	14	57	11.59	-06	19	22.5	801
1988	VL	1991	05	13.15934	14	56	24.93	-06	13	20.2	801
1988	VL	1991	05	13.19831	14	56	22.89	-06	13	04.9	801
1988	VO1	1991	05	17.34010	20	08	50.87	-13	48	06.5	801
1988	VO1	1991	05	17.34675	20	08	51.14	-13	48	03.7	801
1988	VB3	1991	05	14.14373	13	08	11.50	-08	22	01.8	801
1988	VB3	1991	05	14.16263	13	08	11.00	-08	21	55.6	801
1988	VB3	1991	05	16.12341	13	07	21.68	-08	11	30.7	801
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1988	VB5	1991	05	11.23191	15	52	04.63	-14	06	44.5	801
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1988	VB5	1991	05	11.24523	15	52	03.90	-14	06	38.4	801
1988	VB5	1991	05	14.22076	15	49	25.93	-13	43	59.8	801
1989	AH	1991	05	16.26336	17	35	26.87	-09	58	07.6	801
1989	AH	1991	05	16.29281	17	35	25.76	-09	58	11.6	801
1989	AH	1991	05	17.25407	17	34	50.51	-10	00	27.0	801
1989	AH	1991	05	17.28567	17	34	49.20	-10	00	30.9	801
1989	AQ	1991	05	13.21366	15	59	50.76	-19	35	54.1	801
1989	AQ	1991	05	13.23102	15	59	49.95	-19	35	51.9	801
1989	AQ	1991	05	16.19155	15	57	34.69	-19	30	10.4	801
1989	AQ	1991	05	16.20868	15	57	33.88	-19	30	07.9	801
1989	AU	1991	05	11.22145	15	31	17.61	-11	07	26.9	801
1989	AU	1991	05	11.23812	15	31	16.70	-11	07	24.0	801
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1989	AU	1991	05	12.25775	15	30	19.91	-11	05	02.2	801
1989	EO11	1991	05	12.17846	13	35	37.95	+17	54	42.8	801
1989	EO11	1991	05	12.20421	13	35	37.26	+17	54	42.9	801
1989	EO11	1991	05	13.10869	13	35	16.50	+17	55	12.1	801
1989	EO11	1991	05	13.14105	13	35	15.75	+17	55	13.2	801
1989	UN2	1991	05	11.17753	14	06	59.81	+12	25	26.3	801
1989	UN2	1991	05	11.20510	14	06	58.50	+12	25	49.2	801
1989	UN2	1991	05	12.18420	14	06	16.13	+12	39	04.3	801
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1989	WZ	1991	05	14.21538	15	31	02.74	-17	22	13.0	801
1989	WZ	1991	05	14.23227	15	31	01.73	-17	22	04.6	801
1989	WZ	1991	05	16.13916	15	29	12.01	-17	06	10.3	801
1989	WZ	1991	05	16.15509	15	29	11.06	-17	06	02.3	801
1989	WH1	1991	05	11.14229	13	37	45.41	-13	52	09.7	801
1989	WH1	1991	05	11.16007	13	37	44.55	-13	52	04.1	801
1989	WH1	1991	05	13.10523	13	36	15.29	-13	40	35.6	801
1989	WH1	1991	05	13.12814	13	36	14.23	-13	40	27.7	801
1989	WL2	1991	05	16.27845	18	07	07.08	+12	11	09.2	I 801
1989	WL2	1991	05	16.30103	18	07	06.41	+12	11	17.9	801
1989	WL2	1991	05	17.33334	18	06	33.62	+12	17	39.6	801
1989	YF	1991	05	12.31933	20	10	47.85	-13	35	59.6	801

1989	YF	1991	05	12.33204	20	10	48.72	-13	35	57.8	801
1989	YF	1991	05	13.34215	20	11	58.34	-13	33	45.2	801
1989	YF	1991	05	13.34716	20	11	58.64	-13	33	44.1	801
1990	BC1	1991	05	12.22543	14	40	18.87	+00	31	59.1	801
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1990	BC1	1991	05	13.17634	14	39	37.49	+00	34	50.9	801
1990	BR1	1991	05	16.14424	15	39	57.47	-01	08	39.2	801
1990	BR1	1991	05	16.15737	15	39	56.75	-01	08	36.7	801
1990	BR1	1991	05	17.18936	15	39	03.81	-01	05	29.4	801
1990	BR1	1991	05	17.19559	15	39	03.49	-01	05	28.4	801
1990	BT1	1991	05	16.11433	13	13	25.49	+08	50	13.8	801
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1990	BT1	1991	05	17.07281	13	12	56.35	+08	50	03.3	801
1990	BT1	1991	05	17.09839	13	12	55.51	+08	50	03.3	801
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1990	EC	1991	05	12.28725	17	10	48.66	-07	13	31.5	801
1990	EC	1991	05	12.30346	17	10	48.12	-07	13	28.3	801
1990	FU	1991	05	11.30753	17	51	56.59	-12	20	46.3	801
1990	FU	1991	05	11.33601	17	51	55.85	-12	20	39.9	801
1990	FU	1991	05	16.27494	17	49	42.38	-12	02	06.7	801
1990	FU	1991	05	17.27584	17	49	11.85	-11	58	26.5	801
1990	FU	1991	05	17.29258	17	49	11.29	-11	58	22.8	801
1990	SP	1991	05	12.20802	14	20	04.82	-14	23	23.0	801
1990	SP	1991	05	12.21271	14	20	04.19	-14	23	24.5	801
1990	SQ	1991	05	11.04642	08	51	14.11	+23	34	25.7	801
1990	SQ	1991	05	11.05241	08	51	14.73	+23	34	20.8	801
1990	SQ	1991	05	13.05166	08	55	03.78	+23	02	16.5	801
1990	SQ	1991	05	13.06152	08	55	04.88	+23	02	07.1	801
1990	YM	1991	05	12.12260	09	46	58.17	+40	50	46.0	801
1990	YM	1991	05	12.12571	09	46	58.61	+40	50	42.6	801
1990	YM	1991	05	16.08954	09	55	19.13	+39	56	51.6	801
1990	YM	1991	05	16.09703	09	55	20.06	+39	56	45.4	801
1991	AS1	1991	05	11.04994	08	47	56.38	+04	30	45.5	801
1991	AS1	1991	05	11.05792	08	47	56.90	+04	30	40.9	801
1991	BV	1991	05	12.13229	09	40	17.14	+19	40	42.7	r 801
1991	BV	1991	05	12.13897	09	40	17.59	+19	40	41.3	801
1991	BV	1991	05	13.07422	09	41	17.99	+19	37	27.2	801
1991	BV	1991	05	13.08980	09	41	18.98	+19	37	23.1	801
1991	CZ	1991	05	12.05104	09	51	12.90	+24	42	34.5	801
1991	CZ	1991	05	12.06159	09	51	13.84	+24	42	33.6	801
1991	CZ	1991	05	17.04617	09	58	56.25	+24	33	42.5	801
1991	CZ	1991	05	17.05557	09	58	57.13	+24	33	40.8	801
1991	DB	1991	05	13.27031	19	10	02.98	+45	59	58.4	801
1991	DB	1991	05	17.31064	19	13	44.20	+44	09	09.8	801
1991	DB	1991	05	17.31541	19	13	44.61	+44	08	59.4	801
1991	EM1	1991	05	11.08294	12	09	09.67	+06	23	13.7	801
1991	EM1	1991	05	11.13238	12	09	08.95	+06	23	18.5	801
1991	EO1	1991	05	11.07497	12	04	38.77	+04	53	37.0	801
1991	EO1	1991	05	11.10767	12	04	38.33	+04	53	37.0	801
1991	JW	1991	05	14.10470	12	27	35.87	+05	46	43.9	801
1991	JW	1991	05	14.10813	12	27	35.02	+05	46	33.3	801
1991	JW	1991	05	17.06178	12	17	41.82	+03	28	54.7	801
1991	JW	1991	05	17.06500	12	17	41.08	+03	28	45.7	801
1991	JX	1991	05	16.10659	13	52	25.84	-05	17	53.2	801
1991	JX	1991	05	16.13064	13	52	26.41	-05	17	13.5	801
1991	JX	1991	06	03.05917	14	48	18.81	+13	08	06.3	801
1991	JX	1991	06	03.06070	14	48	19.54	+13	08	19.0	801

1991	JX	1991	06	03.06537	14	48	21.81	+13 08 58.6		801
1991	JX	1991	06	03.06625	14	48	22.25	+13 09 06.1		801
1991	JY	1991	05	17.13939	16	24	26.16	+00 17 31.6		801
1991	JY	1991	05	17.14069	16	24	24.58	+00 17 09.8		801
1991	JY	1991	05	17.16915	16	23	50.35	+00 09 12.7		801
1991	JY	1991	05	17.16976	16	23	49.62	+00 09 02.4		801
348		1991	05	11.06090	09	27	08.80	+24 59 26.9		801
348		1991	05	11.06830	09	27	09.19	+24 59 24.1		801
348		1991	05	12.04880	09	28	02.00	+24 53 25.2		801
348		1991	05	12.06821	09	28	03.03	+24 53 17.9		801
951		1991	05	11.22922	16	06	01.49	-22 36 59.4		801
951		1991	05	11.24300	16	06	00.61	-22 36 55.9		801
951		1991	05	12.23755	16	05	00.26	-22 32 51.9		801
951		1991	05	12.25153	16	04	59.37	-22 32 48.5		801
951		1991	05	13.21575	16	04	00.03	-22 28 46.4		801
951		1991	05	13.22885	16	03	59.18	-22 28 43.1		801
951		1991	05	14.22378	16	02	57.10	-22 24 27.9		801
951		1991	05	14.26251	16	02	54.59	-22 24 17.8		801
951		1991	05	16.19791	16	00	51.79	-22 15 47.2		801
951		1991	05	16.21419	16	00	50.72	-22 15 42.6		801
3103		1991	05	13.31356	20	03	36.74	+06 53 55.3		801
3103		1991	05	13.32624	20	03	37.98	+06 54 03.2		801
4830		1991	05	16.17656	15	21	44.17	-07 24 44.5		801
4830		1991	05	16.18682	15	21	43.56	-07 24 43.4		801
4830		1991	05	17.17998	15	20	46.53	-07 22 53.6		801
4830		1991	05	17.19262	15	20	45.78	-07 22 52.2		801

808 El Leoncito
J. G. Sanguin, Felix Aguilar Observatory, Benavidez 8175 (Oeste), AR-5413 Chimbas, San Juan, Argentina
Observers M. R. Cesco, C. E. Lopez, H. S. Lopez, H. Mira, J. G. Sanguin, J. E. Torres, J. A. Vicentela

1990	VF2	1990	10	14.20930	02	13	25.47	+10 46 38.0		808
1990	VF2	1990	10	14.23354	02	13	24.42	+10 46 31.0		808

809 European Southern Observatory
E. W. Elst, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180 Brussels, Belgium
Observers E. W. Elst, G. Pizarro, O. Pizarro, H.-E. Schuster
Measurers E. W. Elst, R. M. West
1.0-m Schmidt
SAOC

1971	QR1	1991	04	10.16736	13	35	45.83	-12 19 34.3	19.1	809
1971	QR1	1991	04	10.18056	13	35	45.16	-12 19 29.8		809
1971	QR1	1991	04	10.19375	13	35	44.42	-12 19 25.8		809
1973	SM1	1991	04	19.14792	13	25	09.88	-06 18 27.1	20.0	809
1973	SM1	1991	04	19.16111	13	25	09.41	-06 18 23.8		809
1973	SM1	1991	04	19.17431	13	25	09.00	-06 18 20.7		809
1973	SW1	1991	04	19.14792	13	18	24.96	-06 28 46.3	18.6	809
1973	SW1	1991	04	19.16111	13	18	24.58	-06 28 44.7		809
1973	SW1	1991	04	19.17431	13	18	24.15	-06 28 43.3		809
1976	US1	1991	04	19.14792	13	29	17.30	-08 42 21.8	18.0	809
1976	US1	1991	04	19.16111	13	29	16.38	-08 42 21.8		809
1976	US1	1991	04	19.17431	13	29	15.53	-08 42 22.4		809
1977	RR6	1991	04	08.15278	13	41	01.68	-14 19 38.4		809
1977	RR6	1991	04	08.16597	13	41	00.85	-14 19 37.2		809
1977	RR6	1991	04	08.17917	13	41	00.08	-14 19 33.9		809
1977	RR6	1991	04	10.24722	13	39	03.29	-14 12 10.5	18.7	809
1977	RR6	1991	04	10.26042	13	39	02.49	-14 12 07.9		809

1977	RR6	1991	04	10.27361	13	39	01.63	-14	12	03.5	809
1977	RR6	1991	04	19.19028	13	30	24.16	-13	36	17.5	18.9 809
1977	RR6	1991	04	19.20347	13	30	23.39	-13	36	14.5	809
1977	RR6	1991	04	19.21667	13	30	22.58	-13	36	10.9	809
1978	RR	1991	04	08.15278	13	47	40.18	-16	08	38.3	809
1978	RR	1991	04	08.16597	13	47	39.44	-16	08	37.5	809
1978	RR	1991	04	08.17917	13	47	38.64	-16	08	37.0	809
1978	RR	1991	04	10.24722	13	45	47.70	-16	06	06.8	18.6 809
1978	RR	1991	04	10.26042	13	45	46.93	-16	06	05.7	809
1978	RR	1991	04	10.27361	13	45	46.19	-16	06	04.9	809
1978	RZ	1991	04	19.05347	12	44	23.23	-00	12	35.2	18.7 809
1978	RZ	1991	04	19.06667	12	44	22.65	-00	12	30.9	809
1978	RZ	1991	04	19.07986	12	44	21.99	-00	12	27.6	809
1981	EO26	1991	04	10.12153	13	12	32.98	-09	09	01.0	19.2 809
1981	EO26	1991	04	10.13472	13	12	32.24	-09	08	56.2	809
1981	EO26	1991	04	10.14792	13	12	31.58	-09	08	51.4	809
1981	EO26	1991	04	19.09653	13	05	26.58	-08	25	25.2	19.5 809
1981	EO26	1991	04	19.10972	13	05	25.73	-08	25	21.7	809
1981	EO26	1991	04	19.13194	13	05	24.88	-08	25	16.6	809
1981	QE1	1991	04	08.10903	13	35	27.00	-12	06	58.5	809
1981	QE1	1991	04	08.12222	13	35	26.36	-12	06	55.3	809
1981	QE1	1991	04	08.13542	13	35	25.71	-12	06	51.0	809
1981	QE1	1991	04	10.16736	13	33	34.51	-11	56	01.2	18.7 809
1981	QE1	1991	04	10.18056	13	33	33.68	-11	55	57.1	809
1981	QE1	1991	04	10.19375	13	33	32.96	-11	55	53.6	809
1981	QE1	1991	04	19.14792	13	25	17.67	-11	05	53.2	20.0 809
1981	QE1	1991	04	19.16111	13	25	16.70	-11	05	46.7	809
1981	QE1	1991	04	19.17431	13	25	15.97	-11	05	42.9	809
1982	SM7	1991	04	08.10903	13	27	10.11	-08	59	07.4	809
1982	SM7	1991	04	08.12222	13	27	09.47	-08	59	04.5	809
1982	SM7	1991	04	08.13542	13	27	08.85	-08	59	01.5	809
1982	SM7	1991	04	10.16736	13	25	35.35	-08	51	11.8	18.4 809
1982	SM7	1991	04	10.18056	13	25	34.66	-08	51	08.4	809
1982	SM7	1991	04	10.19375	13	25	34.02	-08	51	05.7	809
1982	SM7	1991	04	19.14792	13	18	38.80	-08	16	01.9	18.6 809
1982	SM7	1991	04	19.16111	13	18	38.18	-08	15	59.2	809
1982	SM7	1991	04	19.17431	13	18	37.52	-08	15	56.3	809
1982	VM5	1991	04	08.15278	13	49	24.18	-15	18	05.0	809
1982	VM5	1991	04	08.16597	13	49	23.49	-15	17	59.9	809
1982	VM5	1991	04	08.17917	13	49	22.76	-15	17	54.0	809
1982	VM5	1991	04	10.24722	13	47	37.37	-15	03	25.3	18.4 809
1982	VM5	1991	04	10.26042	13	47	36.59	-15	03	20.1	809
1982	VM5	1991	04	10.27361	13	47	35.85	-15	03	14.8	809
1982	VM5	1991	04	19.19028	13	39	26.01	-13	52	55.5	18.0 809
1982	VM5	1991	04	19.20347	13	39	25.19	-13	52	49.2	809
1982	VM5	1991	04	19.21667	13	39	24.41	-13	52	42.8	809
1987	MM1	1991	04	19.14792	13	22	55.57	-06	23	24.5	18.3 809
1987	MM1	1991	04	19.16111	13	22	54.89	-06	23	18.2	809
1987	MM1	1991	04	19.17431	13	22	54.24	-06	23	11.2	809
1988	RU3	1991	04	19.09653	13	12	21.17	-03	41	38.0	19.0 809
1988	RU3	1991	04	19.10972	13	12	20.39	-03	41	32.7	809
1988	RU3	1991	04	19.13194	13	12	19.32	-03	41	26.6	809
1988	VB3	1991	04	08.10903	13	31	31.59	-12	17	27.7	809
1988	VB3	1991	04	08.12222	13	31	30.93	-12	17	21.3	809
1988	VB3	1991	04	08.13542	13	31	30.41	-12	17	17.5	809
1988	VB3	1991	04	10.16736	13	30	02.46	-12	03	55.5	18.3 809
1988	VB3	1991	04	10.18056	13	30	01.86	-12	03	50.6	809
1988	VB3	1991	04	10.19375	13	30	01.28	-12	03	45.2	809
1988	VB3	1991	04	19.14792	13	23	28.40	-11	02	41.5	18.3 809

1988	VB3		1991	04	19.16111	13	23	27.80	-11	02	35.5		809
1988	VB3		1991	04	19.17431	13	23	27.14	-11	02	30.4		809
1989	UT		1991	04	08.02361	13	06	13.00	-03	39	54.3		809
1989	UT		1991	04	08.03681	13	06	12.27	-03	39	50.8		809
1989	UT		1991	04	08.05000	13	06	11.43	-03	39	46.8		809
1989	UT		1991	04	10.07569	13	04	03.15	-03	31	52.4	18.6	809
1989	UT		1991	04	10.08889	13	04	02.28	-03	31	50.0		809
1989	UT		1991	04	10.10208	13	04	01.51	-03	31	45.8		809
1989	UT		1991	04	19.05347	12	54	51.13	-02	59	34.8	19.0	809
1989	UT		1991	04	19.06667	12	54	50.37	-02	59	32.4		809
1989	UT		1991	04	19.07986	12	54	49.64	-02	59	28.7		809
1989	YZ1		1991	04	08.06667	13	15	43.31	-06	52	28.9		809
1989	YZ1		1991	04	08.07986	13	15	42.74	-06	52	24.9		809
1989	YZ1		1991	04	08.09306	13	15	42.13	-06	52	22.3		809
1989	YZ1		1991	04	10.12153	13	14	12.00	-06	43	55.9	18.8	809
1989	YZ1		1991	04	10.13472	13	14	11.42	-06	43	53.1		809
1989	YZ1		1991	04	10.14792	13	14	10.83	-06	43	50.3		809
1989	YZ1		1991	04	19.09653	13	07	38.66	-06	07	12.9	18.6	809
1989	YZ1		1991	04	19.10972	13	07	37.90	-06	07	09.8		809
1989	YZ1		1991	04	19.13194	13	07	37.10	-06	07	05.4		809
1991	GY		1991	04	08.15278	13	41	10.17	-13	35	02.8		809
1991	GY		1991	04	08.16597	13	41	09.37	-13	35	03.8		809
1991	GY		1991	04	08.17917	13	41	08.55	-13	35	04.9		809
1991	GY		1991	04	10.24722	13	39	04.84	-13	38	13.2	18.0	809
1991	GY		1991	04	10.26042	13	39	04.01	-13	38	13.9		809
1991	GY		1991	04	10.27361	13	39	03.18	-13	38	15.1		809
1991	GY		1991	04	19.19028	13	29	40.65	-13	47	51.5	18.0	809
1991	GY		1991	04	19.20347	13	29	39.77	-13	47	52.1		809
1991	GY		1991	04	19.21667	13	29	38.86	-13	47	52.7		809
1991	GZ		1991	04	08.15278	13	41	42.49	-14	10	02.9		809
1991	GZ		1991	04	08.16597	13	41	41.77	-14	09	58.1		809
1991	GZ		1991	04	08.17917	13	41	40.98	-14	09	52.4		809
1991	GZ		1991	04	10.24722	13	39	51.51	-13	55	40.1	18.5	809
1991	GZ		1991	04	10.26042	13	39	50.80	-13	55	34.2		809
1991	GZ		1991	04	10.27361	13	39	49.95	-13	55	28.7		809
1991	GZ		1991	04	19.19028	13	31	39.14	-12	48	50.7	18.5	809
1991	GZ		1991	04	19.20347	13	31	38.34	-12	48	44.6		809
1991	GZ		1991	04	19.21667	13	31	37.58	-12	48	38.5		809
1991	GB1		1991	04	19.05347	12	53	34.91	-03	44	06.6	18.0	809
1991	GB1		1991	04	19.06667	12	53	33.54	-03	44	13.6		809
1991	GB1		1991	04	19.07986	12	53	32.23	-03	44	20.7		809
1991	GC1		1991	04	08.06667	13	10	34.67	-09	40	30.6		809
1991	GC1		1991	04	08.07986	13	10	33.69	-09	40	32.8		809
1991	GC1		1991	04	08.09306	13	10	32.67	-09	40	36.8		809
1991	GC1		1991	04	10.12153	13	08	09.19	-09	47	47.9	18.5	809
1991	GC1		1991	04	10.13472	13	08	08.21	-09	47	50.6		809
1991	GC1		1991	04	10.14792	13	08	07.19	-09	47	52.5		809
1991	GG2	*	1991	04	08.02361	12	48	23.42	-05	36	40.9	19.0	809
1991	GG2		1991	04	08.03681	12	48	22.87	-05	36	39.7		809
1991	GG2		1991	04	08.05000	12	48	22.05	-05	36	37.5		809
1991	GG2		1991	04	10.07569	12	46	24.34	-05	31	47.0	19.6	809
1991	GG2		1991	04	10.08889	12	46	23.56	-05	31	41.3		809
1991	GG2		1991	04	10.10208	12	46	22.90	-05	31	37.8		809
1991	GH2	*	1991	04	08.02361	12	49	04.93	-04	37	05.8		809
1991	GH2		1991	04	08.03681	12	49	04.11	-04	37	03.1		809
1991	GH2		1991	04	08.05000	12	49	03.28	-04	37	00.0		809
1991	GH2		1991	04	10.07569	12	47	09.15	-04	26	54.5	19.6	809
1991	GH2		1991	04	10.08889	12	47	08.29	-04	26	49.8		809
1991	GH2		1991	04	10.10208	12	47	07.58	-04	26	47.7		809

1991	GJ2	*	1991	04	08.02361	12	49	07.36	-05	03	05.2		809
1991	GJ2		1991	04	08.03681	12	49	06.33	-05	03	05.7		809
1991	GJ2		1991	04	08.05000	12	49	05.45	-05	03	04.7		809
1991	GJ2		1991	04	10.07569	12	46	57.26	-04	58	00.2	18.7	809
1991	GJ2		1991	04	10.08889	12	46	56.39	-04	57	57.7		809
1991	GJ2		1991	04	10.10208	12	46	55.36	-04	57	57.0		809
1991	GK2	*	1991	04	08.02361	12	49	25.11	-04	36	17.1		809
1991	GK2		1991	04	08.03681	12	49	24.41	-04	36	14.3		809
1991	GK2		1991	04	08.05000	12	49	23.61	-04	36	10.2		809
1991	GK2		1991	04	10.07569	12	47	55.39	-04	26	32.8	18.6	809
1991	GK2		1991	04	10.08889	12	47	54.73	-04	26	30.3		809
1991	GK2		1991	04	10.10208	12	47	54.07	-04	26	26.0		809
1991	GK2		1991	04	19.05347	12	41	44.54	-03	46	07.1	18.6	809
1991	GK2		1991	04	19.06667	12	41	43.98	-03	46	03.8		809
1991	GK2		1991	04	19.07986	12	41	43.42	-03	46	01.4		809
1991	GL2	*	1991	04	08.02361	12	49	26.02	-04	00	12.6		809
1991	GL2		1991	04	08.03681	12	49	24.99	-04	00	12.2		809
1991	GL2		1991	04	08.05000	12	49	24.08	-04	00	11.6		809
1991	GL2		1991	04	10.07569	12	47	27.19	-03	55	37.1	18.7	809
1991	GL2		1991	04	10.08889	12	47	26.32	-03	55	35.7		809
1991	GL2		1991	04	10.10208	12	47	25.46	-03	55	34.2		809
1991	GM2	*	1991	04	08.02361	12	49	36.67	-05	36	16.2		809
1991	GM2		1991	04	08.03681	12	49	35.75	-05	36	12.6		809
1991	GM2		1991	04	08.05000	12	49	34.84	-05	36	10.4		809
1991	GM2		1991	04	10.07569	12	47	50.28	-05	28	16.6	18.7	809
1991	GM2		1991	04	10.08889	12	47	49.49	-05	28	13.1		809
1991	GM2		1991	04	10.10208	12	47	48.61	-05	28	10.2		809
1991	GN2	*	1991	04	08.02361	12	49	51.91	-05	53	31.9		809
1991	GN2		1991	04	08.03681	12	49	50.99	-05	53	30.7		809
1991	GN2		1991	04	08.05000	12	49	49.94	-05	53	30.4		809
1991	GN2		1991	04	10.07569	12	47	47.50	-05	46	44.3	18.8	809
1991	GN2		1991	04	10.08889	12	47	46.58	-05	46	42.0		809
1991	GN2		1991	04	10.10208	12	47	45.72	-05	46	40.1		809
1991	GO2	*	1991	04	08.02361	12	49	52.46	-05	13	56.8		809
1991	GO2		1991	04	08.03681	12	49	51.74	-05	13	54.0		809
1991	GO2		1991	04	08.05000	12	49	51.10	-05	13	50.9		809
1991	GO2		1991	04	10.07569	12	48	19.20	-05	03	23.8	19.0	809
1991	GO2		1991	04	10.08889	12	48	18.41	-05	03	19.5		809
1991	GO2		1991	04	10.10208	12	48	17.73	-05	03	15.6		809
1991	GP2	*	1991	04	08.02361	12	51	19.47	-04	31	48.6		809
1991	GP2		1991	04	08.03681	12	51	18.90	-04	31	45.2		809
1991	GP2		1991	04	08.05000	12	51	18.22	-04	31	42.8		809
1991	GP2		1991	04	10.07569	12	49	49.63	-04	21	59.0	18.7	809
1991	GP2		1991	04	10.08889	12	49	49.02	-04	21	55.6		809
1991	GP2		1991	04	10.10208	12	49	48.43	-04	21	52.5		809
1991	GP2		1991	04	19.05347	12	43	29.91	-03	40	13.0	18.7	809
1991	GP2		1991	04	19.06667	12	43	29.21	-03	40	09.5		809
1991	GP2		1991	04	19.07986	12	43	28.54	-03	40	05.6		809
1991	GQ2	*	1991	04	08.02361	12	52	37.33	-04	40	54.9		809
1991	GQ2		1991	04	08.03681	12	52	36.61	-04	40	53.0		809
1991	GQ2		1991	04	08.05000	12	52	35.85	-04	40	49.0		809
1991	GQ2		1991	04	10.07569	12	51	05.98	-04	29	51.1	18.6	809
1991	GQ2		1991	04	10.08889	12	51	05.31	-04	29	47.0		809
1991	GQ2		1991	04	10.10208	12	51	04.61	-04	29	43.6		809
1991	GQ2		1991	04	19.05347	12	44	46.73	-03	43	37.0	18.4	809
1991	GQ2		1991	04	19.06667	12	44	46.15	-03	43	33.5		809
1991	GQ2		1991	04	19.07986	12	44	45.51	-03	43	30.0		809
1991	GR2	*	1991	04	08.02361	12	56	58.00	-05	57	26.5		809
1991	GR2		1991	04	08.03681	12	56	57.04	-05	57	24.1		809

1991	GR2		1991	04	08.05000	12	56	56.10	-05	57	20.5		809
1991	GR2		1991	04	10.07569	12	54	52.40	-05	46	36.3	18.7	809
1991	GR2		1991	04	10.08889	12	54	51.65	-05	46	32.9		809
1991	GR2		1991	04	10.10208	12	54	50.76	-05	46	28.7		809
1991	GR2		1991	04	19.05347	12	45	56.90	-05	00	06.1	18.7	809
1991	GR2		1991	04	19.06667	12	45	56.12	-05	00	02.8		809
1991	GR2		1991	04	19.07986	12	45	55.22	-04	59	58.4		809
1991	GS2	*	1991	04	08.02361	12	59	11.68	-03	07	28.5		809
1991	GS2		1991	04	08.03681	12	59	11.00	-03	07	25.2		809
1991	GS2		1991	04	08.05000	12	59	10.30	-03	07	22.3		809
1991	GS2		1991	04	10.07569	12	57	28.11	-02	59	43.5	18.7	809
1991	GS2		1991	04	10.08889	12	57	27.40	-02	59	41.4		809
1991	GS2		1991	04	10.10208	12	57	26.74	-02	59	38.1		809
1991	GS2		1991	04	19.05347	12	50	08.02	-02	28	07.1	18.5	809
1991	GS2		1991	04	19.06667	12	50	07.35	-02	28	04.5		809
1991	GS2		1991	04	19.07986	12	50	06.74	-02	28	02.2		809
1991	GT2	*	1991	04	08.02361	12	59	46.53	-07	17	01.5		809
1991	GT2		1991	04	08.03681	12	59	45.76	-07	16	54.7		809
1991	GT2		1991	04	08.05000	12	59	45.02	-07	16	44.1		809
1991	GT2		1991	04	10.07569	12	58	04.26	-06	52	03.7	18.5	809
1991	GT2		1991	04	10.08889	12	58	03.46	-06	51	54.8		809
1991	GT2		1991	04	10.10208	12	58	02.77	-06	51	44.3		809
1991	GT2		1991	04	19.05347	12	50	47.42	-05	02	13.7	18.5	809
1991	GT2		1991	04	19.06667	12	50	46.76	-05	02	03.7		809
1991	GT2		1991	04	19.07986	12	50	46.06	-05	01	54.1		809
1991	GU2	*	1991	04	08.02361	13	00	18.41	-05	55	47.5		809
1991	GU2		1991	04	08.03681	13	00	17.57	-05	55	46.4		809
1991	GU2		1991	04	08.05000	13	00	16.58	-05	55	47.3		809
1991	GU2		1991	04	10.07569	12	58	08.38	-05	54	04.7	19.5	809
1991	GU2		1991	04	10.08889	12	58	07.43	-05	54	04.0		809
1991	GU2		1991	04	10.10208	12	58	06.59	-05	54	02.5		809
1991	GV2	*	1991	04	08.02361	13	01	28.70	-06	24	31.0		809
1991	GV2		1991	04	08.03681	13	01	27.99	-06	24	27.7		809
1991	GV2		1991	04	08.05000	13	01	27.39	-06	24	23.2		809
1991	GV2		1991	04	10.07569	13	00	01.32	-06	11	41.3	19.0	809
1991	GV2		1991	04	10.08889	13	00	00.72	-06	11	37.9		809
1991	GV2		1991	04	10.10208	13	00	00.19	-06	11	34.1		809
1991	GV2		1991	04	19.09653	12	53	50.66	-05	16	44.1	18.8	809
1991	GV2		1991	04	19.10972	12	53	49.98	-05	16	38.9		809
1991	GV2		1991	04	19.13194	12	53	49.15	-05	16	33.2		809
1991	GW2	*	1991	04	08.02361	13	01	52.52	-04	19	31.5		809
1991	GW2		1991	04	08.03681	13	01	51.89	-04	19	27.6		809
1991	GW2		1991	04	08.05000	13	01	51.37	-04	19	24.4		809
1991	GW2		1991	04	10.07569	13	00	19.78	-04	10	54.6	19.4	809
1991	GW2		1991	04	10.08889	13	00	19.11	-04	10	51.7		809
1991	GW2		1991	04	10.10208	13	00	18.51	-04	10	48.1		809
1991	GX2	*	1991	04	08.02361	13	02	31.35	-05	26	14.9		809
1991	GX2		1991	04	08.03681	13	02	30.63	-05	26	04.6		809
1991	GX2		1991	04	08.05000	13	02	29.92	-05	25	51.8		809
1991	GX2		1991	04	10.07569	13	00	56.36	-04	56	26.5	19.2	809
1991	GX2		1991	04	10.08889	13	00	55.64	-04	56	15.0		809
1991	GX2		1991	04	10.10208	13	00	54.91	-04	56	06.7		809
1991	GY2	*	1991	04	08.02361	13	02	53.00	-06	34	13.7		809
1991	GY2		1991	04	08.03681	13	02	52.32	-06	34	08.4		809
1991	GY2		1991	04	08.05000	13	02	51.61	-06	34	04.6		809
1991	GY2		1991	04	10.07569	13	01	09.43	-06	15	52.8	19.0	809
1991	GY2		1991	04	10.08889	13	01	08.73	-06	15	46.2		809
1991	GY2		1991	04	10.10208	13	01	08.00	-06	15	40.2		809
1991	GY2		1991	04	19.09653	12	53	54.19	-04	57	34.3	19.4	809

1991	GY2		1991	04	19.10972	12	53	53.25	-04	57	23.8	809
1991	GY2		1991	04	19.13194	12	53	52.28	-04	57	15.6	809
1991	GZ2	*	1991	04	08.02361	13	03	29.27	-06	08	23.7	809
1991	GZ2		1991	04	08.03681	13	03	28.50	-06	08	18.9	809
1991	GZ2		1991	04	08.05000	13	03	27.70	-06	08	15.3	809
1991	GZ2		1991	04	08.06667	13	03	26.89	-06	08	08.2	809
1991	GZ2		1991	04	08.07986	13	03	26.11	-06	08	05.1	809
1991	GZ2		1991	04	08.09306	13	03	25.33	-06	08	00.3	809
1991	GZ2		1991	04	10.07569	13	01	36.30	-05	56	28.1	18.5 809
1991	GZ2		1991	04	10.08889	13	01	35.50	-05	56	24.2	809
1991	GZ2		1991	04	10.10208	13	01	34.75	-05	56	19.5	809
1991	GZ2		1991	04	10.12153	13	01	33.65	-05	56	12.3	18.6 809
1991	GZ2		1991	04	10.13472	13	01	32.88	-05	56	07.7	809
1991	GZ2		1991	04	10.14792	13	01	32.13	-05	56	03.7	809
1991	GZ2		1991	04	19.09653	12	53	44.88	-05	06	44.8	18.6 809
1991	GZ2		1991	04	19.10972	12	53	44.10	-05	06	39.8	809
1991	GZ2		1991	04	19.13194	12	53	42.98	-05	06	34.3	809
1991	GA3	*	1991	04	08.02361	13	03	37.61	-05	41	07.5	809
1991	GA3		1991	04	08.03681	13	03	36.86	-05	41	00.4	809
1991	GA3		1991	04	08.05000	13	03	36.09	-05	40	53.3	809
1991	GA3		1991	04	08.06667	13	03	35.40	-05	40	44.2	809
1991	GA3		1991	04	08.07986	13	03	34.74	-05	40	37.8	809
1991	GA3		1991	04	08.09306	13	03	34.10	-05	40	31.6	809
1991	GA3		1991	04	10.07569	13	01	57.78	-05	23	09.8	18.7 809
1991	GA3		1991	04	10.08889	13	01	57.10	-05	23	02.3	809
1991	GA3		1991	04	10.10208	13	01	56.49	-05	22	57.0	809
1991	GA3		1991	04	10.12153	13	01	55.51	-05	22	47.0	18.6 809
1991	GA3		1991	04	10.13472	13	01	54.82	-05	22	40.4	809
1991	GA3		1991	04	10.14792	13	01	54.11	-05	22	33.5	809
1991	GA3		1991	04	19.05347	12	55	00.13	-04	07	33.7	19.0 809
1991	GA3		1991	04	19.06667	12	54	59.48	-04	07	26.7	809
1991	GA3		1991	04	19.07986	12	54	58.86	-04	07	21.0	809
1991	GA3		1991	04	19.09653	12	54	58.16	-04	07	15.7	18.6 809
1991	GA3		1991	04	19.10972	12	54	57.42	-04	07	07.3	809
1991	GA3		1991	04	19.13194	12	54	56.50	-04	06	57.8	809
1991	GB3	*	1991	04	08.02361	13	03	43.71	-06	44	22.9	809
1991	GB3		1991	04	08.03681	13	03	43.07	-06	44	20.2	809
1991	GB3		1991	04	08.05000	13	03	42.44	-06	44	17.2	809
1991	GB3		1991	04	08.06667	13	03	41.65	-06	44	11.4	809
1991	GB3		1991	04	08.07986	13	03	41.03	-06	44	08.0	809
1991	GB3		1991	04	08.09306	13	03	40.42	-06	44	05.2	809
1991	GB3		1991	04	10.07569	13	02	11.52	-06	35	29.2	18.8 809
1991	GB3		1991	04	10.08889	13	02	10.76	-06	35	25.6	809
1991	GB3		1991	04	10.10208	13	02	10.12	-06	35	23.7	809
1991	GB3		1991	04	10.12153	13	02	09.24	-06	35	18.6	18.7 809
1991	GB3		1991	04	10.13472	13	02	08.55	-06	35	14.9	809
1991	GB3		1991	04	10.14792	13	02	07.94	-06	35	11.7	809
1991	GB3		1991	04	19.09653	12	55	37.79	-05	57	29.8	18.5 809
1991	GB3		1991	04	19.10972	12	55	37.00	-05	57	26.2	809
1991	GB3		1991	04	19.13194	12	55	36.17	-05	57	21.3	809
1991	GC3	*	1991	04	08.02361	13	04	26.43	-05	29	01.7	809
1991	GC3		1991	04	08.03681	13	04	25.65	-05	29	00.6	809
1991	GC3		1991	04	08.05000	13	04	24.71	-05	28	58.9	809
1991	GC3		1991	04	08.06667	13	04	23.58	-05	28	57.4	809
1991	GC3		1991	04	08.07986	13	04	22.64	-05	28	53.9	809
1991	GC3		1991	04	08.09306	13	04	21.77	-05	28	53.0	809
1991	GC3		1991	04	10.12153	13	02	11.60	-05	22	30.8	18.7 809
1991	GC3		1991	04	10.13472	13	02	10.75	-05	22	29.4	809
1991	GC3		1991	04	10.14792	13	02	09.89	-05	22	27.1	809

1991	GD3	*	1991	04	08.02361	13	06	04.46	-05	06	29.6		809
1991	GD3		1991	04	08.03681	13	06	04.13	-05	06	27.0		809
1991	GD3		1991	04	08.05000	13	06	03.75	-05	06	25.1		809
1991	GD3		1991	04	10.07569	13	05	05.51	-05	01	23.0	19.3	809
1991	GD3		1991	04	10.08889	13	05	04.99	-05	01	19.8		809
1991	GD3		1991	04	10.10208	13	05	04.66	-05	01	18.9		809
1991	GD3		1991	04	10.12153	13	05	04.19	-05	01	15.9	18.5	809
1991	GD3		1991	04	10.13472	13	05	03.76	-05	01	13.7		809
1991	GD3		1991	04	10.14792	13	05	03.33	-05	01	12.8		809
1991	GE3	*	1991	04	08.02361	13	06	40.85	-03	01	02.8		809
1991	GE3		1991	04	08.03681	13	06	40.22	-03	00	56.0		809
1991	GE3		1991	04	08.05000	13	06	39.54	-03	00	50.6		809
1991	GE3		1991	04	10.07569	13	04	58.55	-02	47	27.3	18.7	809
1991	GE3		1991	04	10.08889	13	04	57.77	-02	47	21.1		809
1991	GE3		1991	04	10.10208	13	04	57.05	-02	47	17.0		809
1991	GE3		1991	04	19.05347	12	57	46.48	-01	52	20.4	19.0	809
1991	GE3		1991	04	19.06667	12	57	45.81	-01	52	15.6		809
1991	GE3		1991	04	19.07986	12	57	45.17	-01	52	11.1		809
1991	GF3	*	1991	04	08.02361	13	08	03.25	-06	30	29.9	18.8	809
1991	GF3		1991	04	08.03681	13	08	02.73	-06	30	25.1		809
1991	GF3		1991	04	08.05000	13	08	02.09	-06	30	20.2		809
1991	GF3		1991	04	08.06667	13	08	01.44	-06	30	12.8		809
1991	GF3		1991	04	08.07986	13	08	00.88	-06	30	08.3		809
1991	GF3		1991	04	08.09306	13	08	00.23	-06	30	02.5		809
1991	GF3		1991	04	10.12153	13	06	28.42	-06	17	15.9	18.7	809
1991	GF3		1991	04	10.13472	13	06	27.81	-06	17	11.5		809
1991	GF3		1991	04	10.14792	13	06	27.16	-06	17	06.7		809
1991	GG3	*	1991	04	08.06667	13	04	18.27	-07	48	40.9		809
1991	GG3		1991	04	08.07986	13	04	17.53	-07	48	35.1		809
1991	GG3		1991	04	08.09306	13	04	16.82	-07	48	31.5		809
1991	GG3		1991	04	10.12153	13	02	30.05	-07	36	35.4	19.6	809
1991	GG3		1991	04	10.13472	13	02	29.25	-07	36	30.6		809
1991	GG3		1991	04	10.14792	13	02	28.51	-07	36	26.3		809
1991	GH3	*	1991	04	08.06667	13	04	59.05	-08	17	29.5		809
1991	GH3		1991	04	08.07986	13	04	58.23	-08	17	26.3		809
1991	GH3		1991	04	08.09306	13	04	57.55	-08	17	21.4		809
1991	GH3		1991	04	10.12153	13	03	09.49	-08	05	48.4	18.7	809
1991	GH3		1991	04	10.13472	13	03	08.82	-08	05	44.4		809
1991	GH3		1991	04	10.14792	13	03	08.05	-08	05	40.2		809
1991	GH3		1991	04	19.09653	12	55	28.31	-07	15	29.7	18.7	809
1991	GH3		1991	04	19.10972	12	55	27.38	-07	15	23.9		809
1991	GH3		1991	04	19.13194	12	55	26.46	-07	15	19.3		809
1991	GJ3	*	1991	04	08.06667	13	06	52.28	-08	33	27.1		809
1991	GJ3		1991	04	08.07986	13	06	51.39	-08	33	25.8		809
1991	GJ3		1991	04	08.09306	13	06	50.53	-08	33	21.9		809
1991	GJ3		1991	04	10.12153	13	04	41.47	-08	27	14.1	19.2	809
1991	GJ3		1991	04	10.13472	13	04	40.62	-08	27	12.8		809
1991	GJ3		1991	04	10.14792	13	04	39.66	-08	27	10.3		809
1991	GK3	*	1991	04	08.06667	13	06	53.42	-08	18	51.4		809
1991	GK3		1991	04	08.07986	13	06	52.40	-08	18	47.5		809
1991	GK3		1991	04	08.09306	13	06	51.52	-08	18	44.6		809
1991	GK3		1991	04	10.12153	13	04	53.24	-08	09	50.7	19.2	809
1991	GK3		1991	04	10.13472	13	04	52.42	-08	09	47.9		809
1991	GK3		1991	04	10.14792	13	04	51.64	-08	09	43.2		809
1991	GL3	*	1991	04	08.06667	13	07	27.44	-09	47	02.3		809
1991	GL3		1991	04	08.07986	13	07	26.60	-09	46	56.7		809
1991	GL3		1991	04	08.09306	13	07	25.79	-09	46	51.4		809
1991	GL3		1991	04	10.12153	13	05	29.66	-09	31	21.0	18.6	809
1991	GL3		1991	04	10.13472	13	05	28.83	-09	31	15.6		809

1991	GL3		1991	04	10.14792	13	05	28.10	-09	31	10.1		809
1991	GL3		1991	04	19.09653	12	57	01.09	-08	20	55.0	18.6	809
1991	GL3		1991	04	19.10972	12	57	00.08	-08	20	47.7		809
1991	GL3		1991	04	19.13194	12	56	58.95	-08	20	38.2		809
1991	GM3	*	1991	04	08.06667	13	07	41.04	-06	08	10.9		809
1991	GM3		1991	04	08.07986	13	07	40.20	-06	08	05.6		809
1991	GM3		1991	04	08.09306	13	07	39.44	-06	08	01.1		809
1991	GM3		1991	04	10.07569	13	05	57.63	-05	54	54.3	20.0	809
1991	GM3		1991	04	10.08889	13	05	56.94	-05	54	48.2		809
1991	GM3		1991	04	10.10208	13	05	56.23	-05	54	43.2		809
1991	GM3		1991	04	10.12153	13	05	55.26	-05	54	35.5	17.8	809
1991	GM3		1991	04	10.13472	13	05	54.51	-05	54	31.4		809
1991	GM3		1991	04	10.14792	13	05	53.82	-05	54	27.9		809
1991	GN3	*	1991	04	08.06667	13	07	43.94	-07	09	39.7		809
1991	GN3		1991	04	08.07986	13	07	43.16	-07	09	34.4		809
1991	GN3		1991	04	08.09306	13	07	42.33	-07	09	29.2		809
1991	GN3		1991	04	10.12153	13	05	47.94	-06	55	24.5	19.1	809
1991	GN3		1991	04	10.13472	13	05	47.12	-06	55	20.5		809
1991	GN3		1991	04	10.14792	13	05	46.34	-06	55	15.0		809
1991	GO3	*	1991	04	08.06667	13	08	19.19	-09	37	17.5		809
1991	GO3		1991	04	08.07986	13	08	18.29	-09	37	18.3		809
1991	GO3		1991	04	08.09306	13	08	17.44	-09	37	19.2		809
1991	GO3		1991	04	10.12153	13	06	18.57	-09	38	07.3	18.9	809
1991	GO3		1991	04	10.13472	13	06	17.74	-09	38	08.4		809
1991	GO3		1991	04	10.14792	13	06	16.87	-09	38	09.5		809
1991	GP3	*	1991	04	08.06667	13	08	24.93	-08	19	20.3		809
1991	GP3		1991	04	08.07986	13	08	24.27	-08	19	16.6		809
1991	GP3		1991	04	08.09306	13	08	23.55	-08	19	12.1		809
1991	GP3		1991	04	10.12153	13	06	49.39	-08	07	53.6	18.6	809
1991	GP3		1991	04	10.13472	13	06	48.74	-08	07	49.9		809
1991	GP3		1991	04	10.14792	13	06	48.10	-08	07	45.9		809
1991	GP3		1991	04	19.09653	12	59	56.60	-07	17	30.4	18.5	809
1991	GP3		1991	04	19.10972	12	59	55.88	-07	17	25.0		809
1991	GP3		1991	04	19.13194	12	59	54.94	-07	17	18.9		809
1991	GQ3	*	1991	04	08.06667	13	09	31.35	-07	51	10.9		809
1991	GQ3		1991	04	08.07986	13	09	30.67	-07	51	04.6		809
1991	GQ3		1991	04	08.09306	13	09	29.88	-07	50	57.4		809
1991	GQ3		1991	04	10.12153	13	07	51.99	-07	32	05.9	18.6	809
1991	GQ3		1991	04	10.13472	13	07	51.30	-07	31	59.4		809
1991	GQ3		1991	04	10.14792	13	07	50.70	-07	31	52.0		809
1991	GQ3		1991	04	19.09653	13	00	51.35	-06	10	05.1	18.5	809
1991	GQ3		1991	04	19.10972	13	00	50.60	-06	09	56.7		809
1991	GQ3		1991	04	19.13194	13	00	49.68	-06	09	47.4		809
1991	GR3	*	1991	04	08.06667	13	09	36.43	-08	06	20.0		809
1991	GR3		1991	04	08.07986	13	09	35.93	-08	06	18.0		809
1991	GR3		1991	04	08.09306	13	09	35.36	-08	06	16.4		809
1991	GR3		1991	04	10.12153	13	08	16.61	-08	00	28.9	18.5	809
1991	GR3		1991	04	10.13472	13	08	15.98	-08	00	26.2		809
1991	GR3		1991	04	10.14792	13	08	15.43	-08	00	24.2		809
1991	GR3		1991	04	19.09653	13	02	30.82	-07	34	45.5	18.6	809
1991	GR3		1991	04	19.10972	13	02	30.10	-07	34	42.8		809
1991	GR3		1991	04	19.13194	13	02	29.34	-07	34	39.7		809
1991	GS3	*	1991	04	08.06667	13	10	01.59	-06	00	33.3	18.7	809
1991	GS3		1991	04	08.07986	13	10	00.94	-06	00	29.6		809
1991	GS3		1991	04	08.09306	13	10	00.23	-06	00	26.6		809
1991	GS3		1991	04	10.12153	13	08	23.06	-05	51	48.2	18.6	809
1991	GS3		1991	04	10.13472	13	08	22.44	-05	51	45.2		809
1991	GS3		1991	04	10.14792	13	08	21.77	-05	51	42.8		809
1991	GS3		1991	04	19.09653	13	01	19.02	-05	14	35.9	19.0	809

1991	GS3		1991	04	19.10972	13	01	18.21	-05	14	32.1		809
1991	GS3		1991	04	19.13194	13	01	17.18	-05	14	28.3		809
1991	GT3	*	1991	04	08.06667	13	11	11.32	-09	02	42.5	19.4	809
1991	GT3		1991	04	08.07986	13	11	10.67	-09	02	36.7		809
1991	GT3		1991	04	08.09306	13	11	09.99	-09	02	30.2		809
1991	GT3		1991	04	10.12153	13	09	41.71	-08	47	41.4	19.4	809
1991	GT3		1991	04	10.13472	13	09	41.09	-08	47	35.3		809
1991	GT3		1991	04	10.14792	13	09	40.55	-08	47	30.2		809
1991	GU3	*	1991	04	08.06667	13	11	14.28	-07	02	22.0		809
1991	GU3		1991	04	08.07986	13	11	13.64	-07	02	14.7		809
1991	GU3		1991	04	08.09306	13	11	12.83	-07	02	07.7		809
1991	GU3		1991	04	10.12153	13	09	25.40	-06	44	29.9	18.6	809
1991	GU3		1991	04	10.13472	13	09	24.73	-06	44	23.5		809
1991	GU3		1991	04	10.14792	13	09	24.07	-06	44	17.3		809
1991	GU3		1991	04	19.09653	13	01	36.74	-05	27	01.4	18.5	809
1991	GU3		1991	04	19.10972	13	01	35.95	-05	26	53.8		809
1991	GU3		1991	04	19.13194	13	01	34.96	-05	26	44.1		809
1991	GV3	*	1991	04	08.06667	13	12	08.26	-05	04	53.9		809
1991	GV3		1991	04	08.07986	13	12	07.50	-05	04	51.1		809
1991	GV3		1991	04	08.09306	13	12	06.72	-05	04	47.1		809
1991	GV3		1991	04	10.12153	13	09	56.46	-04	57	21.2	18.6	809
1991	GV3		1991	04	10.13472	13	09	55.63	-04	57	19.8		809
1991	GV3		1991	04	10.14792	13	09	54.65	-04	57	16.3		809
1991	GV3		1991	04	19.09653	13	00	21.42	-04	26	03.2	18.6	809
1991	GV3		1991	04	19.10972	13	00	20.30	-04	25	59.6		809
1991	GV3		1991	04	19.13194	13	00	19.02	-04	25	56.1		809
1991	GW3	*	1991	04	08.06667	13	12	18.79	-05	24	24.9		809
1991	GW3		1991	04	08.07986	13	12	18.03	-05	24	20.8		809
1991	GW3		1991	04	08.09306	13	12	17.20	-05	24	16.6		809
1991	GW3		1991	04	10.12153	13	10	19.81	-05	13	32.3	18.5	809
1991	GW3		1991	04	10.13472	13	10	19.00	-05	13	29.3		809
1991	GW3		1991	04	10.14792	13	10	18.21	-05	13	24.6		809
1991	GW3		1991	04	19.09653	13	01	57.03	-04	29	04.6	19.0	809
1991	GW3		1991	04	19.10972	13	01	56.10	-04	29	00.9		809
1991	GX3	*	1991	04	08.06667	13	12	18.96	-08	48	09.2		809
1991	GX3		1991	04	08.07986	13	12	18.28	-08	48	04.8		809
1991	GX3		1991	04	08.09306	13	12	17.69	-08	48	00.0		809
1991	GX3		1991	04	10.12153	13	10	51.80	-08	34	08.7	18.7	809
1991	GX3		1991	04	10.13472	13	10	51.19	-08	34	03.7		809
1991	GX3		1991	04	10.14792	13	10	50.65	-08	33	59.5		809
1991	GX3		1991	04	19.09653	13	04	37.50	-07	32	59.5	18.6	809
1991	GX3		1991	04	19.10972	13	04	36.87	-07	32	52.7		809
1991	GX3		1991	04	19.13194	13	04	36.04	-07	32	45.3		809
1991	GY3	*	1991	04	08.06667	13	13	31.22	-07	50	24.7		809
1991	GY3		1991	04	08.07986	13	13	30.45	-07	50	22.1		809
1991	GY3		1991	04	08.09306	13	13	29.72	-07	50	19.5		809
1991	GY3		1991	04	10.12153	13	11	33.24	-07	42	38.3	18.7	809
1991	GY3		1991	04	10.13472	13	11	32.49	-07	42	35.3		809
1991	GY3		1991	04	10.14792	13	11	31.70	-07	42	32.8		809
1991	GY3		1991	04	19.09653	13	03	10.23	-07	09	04.7	19.0	809
1991	GY3		1991	04	19.10972	13	03	09.27	-07	09	00.6		809
1991	GY3		1991	04	19.13194	13	03	08.21	-07	08	57.0		809
1991	GZ3	*	1991	04	08.06667	13	14	28.93	-09	24	36.8		809
1991	GZ3		1991	04	08.07986	13	14	28.10	-09	24	37.3		809
1991	GZ3		1991	04	08.09306	13	14	27.34	-09	24	36.8		809
1991	GZ3		1991	04	10.12153	13	12	36.62	-09	23	14.1	18.7	809
1991	GZ3		1991	04	10.13472	13	12	35.86	-09	23	14.2		809
1991	GZ3		1991	04	10.14792	13	12	35.13	-09	23	14.2		809
1991	GA4	*	1991	04	08.06667	13	14	49.37	-08	13	25.6		809

1991	GA4		1991	04	08.07986	13	14	48.79	-08	13	20.0		809
1991	GA4		1991	04	08.09306	13	14	48.09	-08	13	13.8		809
1991	GA4		1991	04	10.12153	13	13	06.08	-07	55	47.4	18.7	809
1991	GA4		1991	04	10.13472	13	13	05.33	-07	55	40.8		809
1991	GA4		1991	04	10.14792	13	13	04.65	-07	55	33.9		809
1991	GA4		1991	04	19.09653	13	05	40.00	-06	38	26.9	18.7	809
1991	GA4		1991	04	19.10972	13	05	39.18	-06	38	19.1		809
1991	GA4		1991	04	19.13194	13	05	38.08	-06	38	08.7		809
1991	GB4	*	1991	04	08.06667	13	15	03.44	-07	52	52.2		809
1991	GB4		1991	04	08.07986	13	15	02.68	-07	52	44.5		809
1991	GB4		1991	04	08.09306	13	15	01.92	-07	52	38.2		809
1991	GB4		1991	04	10.12153	13	13	06.01	-07	34	07.7	18.6	809
1991	GB4		1991	04	10.13472	13	13	05.27	-07	34	00.8		809
1991	GB4		1991	04	10.14792	13	13	04.40	-07	33	53.1		809
1991	GC4	*	1991	04	08.06667	13	15	30.12	-09	37	32.0		809
1991	GC4		1991	04	08.07986	13	15	29.42	-09	37	26.9		809
1991	GC4		1991	04	08.09306	13	15	28.54	-09	37	23.9		809
1991	GC4		1991	04	10.12153	13	13	50.20	-09	27	37.8	19.3	809
1991	GC4		1991	04	10.13472	13	13	49.48	-09	27	35.4		809
1991	GC4		1991	04	10.14792	13	13	48.86	-09	27	31.1		809
1991	GD4	*	1991	04	08.06667	13	15	59.47	-06	33	15.6		809
1991	GD4		1991	04	08.07986	13	15	58.86	-06	33	12.3		809
1991	GD4		1991	04	08.09306	13	15	58.21	-06	33	10.1		809
1991	GD4		1991	04	10.12153	13	14	24.64	-06	26	14.3	19.8	809
1991	GD4		1991	04	10.13472	13	14	24.07	-06	26	12.9		809
1991	GD4		1991	04	10.14792	13	14	23.48	-06	26	09.8		809
1991	GE4	*	1991	04	08.06667	13	16	09.09	-09	53	29.2		809
1991	GE4		1991	04	08.07986	13	16	08.42	-09	53	25.0		809
1991	GE4		1991	04	08.09306	13	16	07.48	-09	53	20.9		809
1991	GE4		1991	04	10.12153	13	14	14.34	-09	36	53.9	19.6	809
1991	GE4		1991	04	10.13472	13	14	13.73	-09	36	46.9		809
1991	GE4		1991	04	10.14792	13	14	12.98	-09	36	42.1		809
1991	GF4	*	1991	04	08.06667	13	16	32.42	-06	59	13.8		809
1991	GF4		1991	04	08.07986	13	16	31.74	-06	59	07.5		809
1991	GF4		1991	04	08.09306	13	16	31.08	-06	59	02.7		809
1991	GF4		1991	04	10.12153	13	14	58.63	-06	48	10.5	18.8	809
1991	GF4		1991	04	10.13472	13	14	58.04	-06	48	07.5		809
1991	GF4		1991	04	10.14792	13	14	57.40	-06	48	03.1		809
1991	GG4	*	1991	04	08.06667	13	17	26.64	-09	42	56.5		809
1991	GG4		1991	04	08.07986	13	17	25.92	-09	42	53.2		809
1991	GG4		1991	04	08.09306	13	17	25.07	-09	42	51.8		809
1991	GG4		1991	04	08.10903	13	17	24.35	-09	42	48.8		809
1991	GG4		1991	04	08.12222	13	17	23.49	-09	42	46.6		809
1991	GG4		1991	04	08.13542	13	17	22.69	-09	42	44.5		809
1991	GG4		1991	04	10.12153	13	15	27.04	-09	35	44.4	18.6	809
1991	GG4		1991	04	10.13472	13	15	26.19	-09	35	42.5		809
1991	GG4		1991	04	10.14792	13	15	25.43	-09	35	40.2		809
1991	GG4		1991	04	10.16736	13	15	24.32	-09	35	35.8	18.1	809
1991	GG4		1991	04	10.18056	13	15	23.51	-09	35	33.0		809
1991	GG4		1991	04	10.19375	13	15	22.64	-09	35	30.5		809
1991	GH4	*	1991	04	08.06667	13	17	31.39	-09	23	29.9	18.7	809
1991	GH4		1991	04	08.07986	13	17	30.54	-09	23	24.2		809
1991	GH4		1991	04	08.09306	13	17	29.82	-09	23	17.3		809
1991	GH4		1991	04	08.10903	13	17	29.07	-09	23	10.4		809
1991	GH4		1991	04	08.12222	13	17	28.24	-09	23	04.3		809
1991	GH4		1991	04	08.13542	13	17	27.47	-09	22	58.9		809
1991	GH4		1991	04	10.12153	13	15	34.38	-09	06	52.6	19.2	809
1991	GH4		1991	04	10.13472	13	15	33.64	-09	06	45.9		809
1991	GH4		1991	04	10.14792	13	15	32.91	-09	06	40.0		809

1991	GH4		1991	04	10.16736	13	15	31.84	-09	06	28.4	18.6	809
1991	GH4		1991	04	10.18056	13	15	31.01	-09	06	21.3		809
1991	GH4		1991	04	10.19375	13	15	30.23	-09	06	16.3		809
1991	GH4		1991	04	19.09653	13	07	12.50	-07	54	00.8	18.8	809
1991	GH4		1991	04	19.10972	13	07	11.63	-07	53	53.4		809
1991	GH4		1991	04	19.13194	13	07	10.49	-07	53	45.5		809
1991	GJ4	*	1991	04	08.06667	13	17	44.57	-08	53	55.3		809
1991	GJ4		1991	04	08.07986	13	17	43.91	-08	53	52.1		809
1991	GJ4		1991	04	08.09306	13	17	43.19	-08	53	48.5		809
1991	GJ4		1991	04	10.12153	13	16	05.99	-08	43	20.1	19.1	809
1991	GJ4		1991	04	10.13472	13	16	05.30	-08	43	16.1		809
1991	GJ4		1991	04	10.14792	13	16	04.61	-08	43	12.2		809
1991	GJ4		1991	04	19.09653	13	08	57.40	-07	56	30.4	18.7	809
1991	GJ4		1991	04	19.10972	13	08	56.52	-07	56	25.4		809
1991	GJ4		1991	04	19.13194	13	08	55.57	-07	56	18.9		809
1991	GJ4		1991	04	19.14792	13	08	54.76	-07	56	15.5	18.7	809
1991	GJ4		1991	04	19.16111	13	08	54.14	-07	56	11.5		809
1991	GJ4		1991	04	19.17431	13	08	53.50	-07	56	07.5		809
1991	GK4	*	1991	04	08.06667	13	18	11.00	-09	10	33.5		809
1991	GK4		1991	04	08.07986	13	18	10.35	-09	10	30.4		809
1991	GK4		1991	04	08.09306	13	18	09.59	-09	10	26.5		809
1991	GK4		1991	04	08.10903	13	18	08.95	-09	10	21.2		809
1991	GK4		1991	04	08.12222	13	18	08.27	-09	10	17.9		809
1991	GK4		1991	04	08.13542	13	18	07.60	-09	10	13.9		809
1991	GK4		1991	04	10.12153	13	16	32.07	-09	00	08.0	19.0	809
1991	GK4		1991	04	10.13472	13	16	31.37	-09	00	04.1		809
1991	GK4		1991	04	10.14792	13	16	30.75	-09	00	00.4		809
1991	GK4		1991	04	10.16736	13	16	29.84	-08	59	52.7	18.6	809
1991	GK4		1991	04	10.18056	13	16	29.18	-08	59	49.4		809
1991	GK4		1991	04	10.19375	13	16	28.53	-08	59	45.2		809
1991	GK4		1991	04	19.09653	13	09	24.06	-08	14	07.7	19.0	809
1991	GK4		1991	04	19.10972	13	09	23.23	-08	14	03.3		809
1991	GK4		1991	04	19.13194	13	09	22.29	-08	13	57.7		809
1991	GK4		1991	04	19.14792	13	09	21.58	-08	13	55.0	18.6	809
1991	GK4		1991	04	19.16111	13	09	20.88	-08	13	51.0		809
1991	GK4		1991	04	19.17431	13	09	20.26	-08	13	46.9		809
1991	GL4	*	1991	04	08.06667	13	18	18.63	-07	14	55.6	19.7	809
1991	GL4		1991	04	08.07986	13	18	17.85	-07	14	49.4		809
1991	GL4		1991	04	08.09306	13	18	17.07	-07	14	43.9		809
1991	GL4		1991	04	10.12153	13	16	21.06	-07	00	28.0	19.7	809
1991	GL4		1991	04	10.13472	13	16	20.20	-07	00	22.8		809
1991	GL4		1991	04	10.14792	13	16	19.47	-07	00	15.9		809
1991	GM4	*	1991	04	08.06667	13	18	29.03	-09	15	49.5		809
1991	GM4		1991	04	08.07986	13	18	28.22	-09	15	47.2		809
1991	GM4		1991	04	08.09306	13	18	27.33	-09	15	45.3		809
1991	GM4		1991	04	08.10903	13	18	26.46	-09	15	43.2		809
1991	GM4		1991	04	08.12222	13	18	25.51	-09	15	40.7		809
1991	GM4		1991	04	08.13542	13	18	24.64	-09	15	38.0		809
1991	GM4		1991	04	10.12153	13	16	18.79	-09	09	55.6	18.7	809
1991	GM4		1991	04	10.13472	13	16	17.96	-09	09	53.3		809
1991	GM4		1991	04	10.14792	13	16	17.03	-09	09	51.1		809
1991	GM4		1991	04	10.16736	13	16	15.85	-09	09	46.1	18.5	809
1991	GM4		1991	04	10.18056	13	16	14.93	-09	09	43.9		809
1991	GM4		1991	04	10.19375	13	16	14.00	-09	09	42.1		809
1991	GN4	*	1991	04	08.06667	13	19	20.49	-06	45	38.8		809
1991	GN4		1991	04	08.07986	13	19	19.78	-06	45	35.8		809
1991	GN4		1991	04	08.09306	13	19	19.16	-06	45	33.6		809
1991	GN4		1991	04	10.12153	13	17	42.69	-06	37	31.0	19.0	809
1991	GN4		1991	04	10.13472	13	17	42.03	-06	37	28.5		809

1991	GN4		1991	04	10.14792	13	17	41.39	-06	37	26.1		809
1991	GO4	*	1991	04	08.06667	13	19	22.48	-05	53	58.3		809
1991	GO4		1991	04	08.07986	13	19	21.69	-05	53	56.2		809
1991	GO4		1991	04	08.09306	13	19	20.96	-05	53	54.4		809
1991	GO4		1991	04	10.12153	13	17	22.57	-05	49	26.2	18.7	809
1991	GO4		1991	04	10.13472	13	17	21.78	-05	49	25.6		809
1991	GO4		1991	04	10.14792	13	17	21.02	-05	49	24.4		809
1991	GO4		1991	04	19.09653	13	08	36.23	-05	30	39.1	18.8	809
1991	GO4		1991	04	19.10972	13	08	35.24	-05	30	37.4		809
1991	GO4		1991	04	19.13194	13	08	33.91	-05	30	36.6		809
1991	GP4	*	1991	04	08.06667	13	19	33.79	-05	08	57.8		809
1991	GP4		1991	04	08.07986	13	19	33.23	-05	08	51.5		809
1991	GP4		1991	04	08.09306	13	19	32.60	-05	08	46.3		809
1991	GP4		1991	04	10.12153	13	18	05.89	-04	53	44.2	18.5	809
1991	GP4		1991	04	10.13472	13	18	05.29	-04	53	38.5		809
1991	GP4		1991	04	10.14792	13	18	04.76	-04	53	33.4		809
1991	GP4		1991	04	19.09653	13	11	45.92	-03	49	08.5	18.4	809
1991	GP4		1991	04	19.10972	13	11	45.21	-03	49	01.1		809
1991	GP4		1991	04	19.13194	13	11	44.44	-03	48	53.7		809
1991	GQ4	*	1991	04	08.06667	13	20	24.49	-09	46	02.3		809
1991	GQ4		1991	04	08.07986	13	20	23.74	-09	45	58.2		809
1991	GQ4		1991	04	08.09306	13	20	23.38	-09	45	54.9		809
1991	GQ4		1991	04	08.10903	13	20	22.02	-09	45	46.6		809
1991	GQ4		1991	04	08.12222	13	20	21.30	-09	45	42.0		809
1991	GQ4		1991	04	08.13542	13	20	20.45	-09	45	36.1		809
1991	GQ4		1991	04	10.12153	13	18	34.10	-09	32	05.0	19.0	809
1991	GQ4		1991	04	10.13472	13	18	33.42	-09	32	01.9		809
1991	GQ4		1991	04	10.14792	13	18	32.64	-09	31	55.7		809
1991	GQ4		1991	04	19.14792	13	10	29.36	-08	29	12.8	18.8	809
1991	GQ4		1991	04	19.16111	13	10	28.62	-08	29	07.3		809
1991	GQ4		1991	04	19.17431	13	10	27.90	-08	29	02.9		809
1991	GR4	*	1991	04	08.06667	13	20	32.97	-10	06	08.3		809
1991	GR4		1991	04	08.07986	13	20	32.37	-10	06	02.1		809
1991	GR4		1991	04	08.09306	13	20	31.69	-10	05	55.2		809
1991	GR4		1991	04	10.16736	13	18	41.94	-09	46	43.6	18.6	809
1991	GR4		1991	04	10.18056	13	18	41.25	-09	46	37.6		809
1991	GR4		1991	04	10.19375	13	18	40.47	-09	46	29.1		809
1991	GR4		1991	04	19.09653	13	10	58.84	-08	23	21.9	18.8	809
1991	GR4		1991	04	19.10972	13	10	58.03	-08	23	12.1		809
1991	GR4		1991	04	19.13194	13	10	56.87	-08	23	02.6		809
1991	GR4		1991	04	19.14792	13	10	56.11	-08	22	56.8	18.7	809
1991	GR4		1991	04	19.16111	13	10	55.44	-08	22	49.5		809
1991	GR4		1991	04	19.17431	13	10	54.77	-08	22	43.4		809
1991	GS4	*	1991	04	08.06667	13	20	38.57	-06	13	55.4	19.6	809
1991	GS4		1991	04	08.07986	13	20	37.84	-06	13	56.1		809
1991	GS4		1991	04	08.09306	13	20	37.08	-06	13	56.6		809
1991	GS4		1991	04	10.12153	13	18	31.79	-06	14	49.4	19.7	809
1991	GS4		1991	04	10.13472	13	18	30.82	-06	14	51.0		809
1991	GS4		1991	04	10.14792	13	18	29.94	-06	14	50.8		809
1991	GS4		1991	04	19.09653	13	09	17.57	-06	19	45.3	19.3	809
1991	GS4		1991	04	19.10972	13	09	16.54	-06	19	45.8		809
1991	GS4		1991	04	19.13194	13	09	15.33	-06	19	46.9		809
1991	GT4	*	1991	04	08.06667	13	20	39.76	-07	00	02.1	18.7	809
1991	GT4		1991	04	08.07986	13	20	39.05	-06	59	56.6		809
1991	GT4		1991	04	08.09306	13	20	38.30	-06	59	53.6		809
1991	GT4		1991	04	10.12153	13	18	43.90	-06	43	40.6	19.1	809
1991	GT4		1991	04	10.13472	13	18	43.11	-06	43	33.3		809
1991	GT4		1991	04	10.14792	13	18	42.42	-06	43	27.8		809
1991	GT4		1991	04	19.09653	13	10	13.69	-05	32	01.9	18.7	809

1991	GT4		1991	04	19.10972	13	10	12.78	-05	31	53.8	809
1991	GT4		1991	04	19.13194	13	10	11.67	-05	31	45.2	809
1991	GU4	*	1991	04	08.06667	13	20	50.21	-09	44	11.5	809
1991	GU4		1991	04	08.07986	13	20	49.42	-09	44	10.0	809
1991	GU4		1991	04	08.09306	13	20	48.66	-09	44	08.0	809
1991	GU4		1991	04	08.10903	13	20	47.88	-09	44	07.9	809
1991	GU4		1991	04	08.12222	13	20	47.17	-09	44	07.6	809
1991	GU4		1991	04	08.13542	13	20	46.42	-09	44	05.8	809
1991	GU4		1991	04	10.12153	13	19	03.98	-09	40	09.2	18.6 809
1991	GU4		1991	04	10.13472	13	19	03.18	-09	40	07.9	809
1991	GU4		1991	04	10.14792	13	19	02.46	-09	40	06.5	809
1991	GU4		1991	04	10.16736	13	19	01.35	-09	40	05.2	18.5 809
1991	GU4		1991	04	10.18056	13	19	00.64	-09	40	04.3	809
1991	GU4		1991	04	10.19375	13	18	59.92	-09	40	03.0	809
1991	GU4		1991	04	19.14792	13	11	19.56	-09	21	38.8	18.3 809
1991	GU4		1991	04	19.16111	13	11	18.84	-09	21	36.9	809
1991	GU4		1991	04	19.17431	13	11	18.14	-09	21	35.5	809
1991	GV4	*	1991	04	08.06667	13	22	44.40	-07	35	01.4	809
1991	GV4		1991	04	08.07986	13	22	43.64	-07	34	56.0	809
1991	GV4		1991	04	08.09306	13	22	42.97	-07	34	49.8	809
1991	GV4		1991	04	10.12153	13	20	54.60	-07	21	05.5	19.0 809
1991	GV4		1991	04	10.13472	13	20	53.92	-07	21	00.3	809
1991	GV4		1991	04	10.14792	13	20	53.25	-07	20	56.0	809
1991	GV4		1991	04	19.09653	13	12	49.41	-06	19	48.7	18.7 809
1991	GV4		1991	04	19.10972	13	12	48.39	-06	19	42.3	809
1991	GV4		1991	04	19.13194	13	12	47.40	-06	19	35.7	809
1991	GV4		1991	04	19.14792	13	12	46.32	-06	19	27.0	19.0 809
1991	GV4		1991	04	19.16111	13	12	45.65	-06	19	22.1	809
1991	GV4		1991	04	19.17431	13	12	44.89	-06	19	17.9	809
1991	GW4	*	1991	04	08.06667	13	22	44.70	-08	21	51.3	809
1991	GW4		1991	04	08.07986	13	22	43.82	-08	21	48.2	809
1991	GW4		1991	04	08.09306	13	22	43.14	-08	21	44.5	809
1991	GW4		1991	04	10.12153	13	20	46.27	-08	10	48.9	19.6 809
1991	GW4		1991	04	10.13472	13	20	45.63	-08	10	45.0	809
1991	GW4		1991	04	10.14792	13	20	44.74	-08	10	39.9	809
1991	GX4	*	1991	04	08.06667	13	22	45.36	-08	28	49.7	809
1991	GX4		1991	04	08.07986	13	22	44.68	-08	28	43.1	809
1991	GX4		1991	04	08.09306	13	22	43.92	-08	28	36.7	809
1991	GX4		1991	04	08.10903	13	22	43.13	-08	28	30.0	809
1991	GX4		1991	04	08.12222	13	22	42.40	-08	28	24.1	809
1991	GX4		1991	04	08.13542	13	22	41.68	-08	28	17.3	809
1991	GX4		1991	04	10.12153	13	20	53.35	-08	10	53.6	18.5 809
1991	GX4		1991	04	10.13472	13	20	52.62	-08	10	46.7	809
1991	GX4		1991	04	10.14792	13	20	51.89	-08	10	40.2	809
1991	GX4		1991	04	10.16736	13	20	50.73	-08	10	28.3	18.3 809
1991	GX4		1991	04	10.18056	13	20	49.98	-08	10	22.0	809
1991	GX4		1991	04	10.19375	13	20	49.22	-08	10	14.9	809
1991	GX4		1991	04	19.09653	13	12	35.13	-06	50	33.3	18.5 809
1991	GX4		1991	04	19.10972	13	12	34.18	-06	50	24.6	809
1991	GX4		1991	04	19.13194	13	12	33.06	-06	50	14.7	809
1991	GX4		1991	04	19.14792	13	12	32.17	-06	50	06.7	18.6 809
1991	GX4		1991	04	19.16111	13	12	31.43	-06	49	59.6	809
1991	GX4		1991	04	19.17431	13	12	30.64	-06	49	52.9	809
1991	GY4	*	1991	04	08.06667	13	22	52.68	-06	05	21.2	809
1991	GY4		1991	04	08.07986	13	22	51.96	-06	05	16.2	809
1991	GY4		1991	04	08.09306	13	22	51.14	-06	05	13.0	809
1991	GY4		1991	04	10.12153	13	20	51.06	-05	55	03.6	18.6 809
1991	GY4		1991	04	10.13472	13	20	50.29	-05	55	00.5	809
1991	GY4		1991	04	10.14792	13	20	49.54	-05	54	57.0	809

1991	GY4		1991	04	19.09653	13	11	58.08	-05	11	31.2	18.6	809
1991	GY4		1991	04	19.10972	13	11	57.13	-05	11	26.0		809
1991	GY4		1991	04	19.13194	13	11	55.92	-05	11	20.5		809
1991	GZ4	*	1991	04	08.06667	13	23	10.39	-07	44	27.6		809
1991	GZ4		1991	04	08.07986	13	23	09.76	-07	44	24.3		809
1991	GZ4		1991	04	08.09306	13	23	08.99	-07	44	20.9		809
1991	GZ4		1991	04	10.12153	13	21	16.07	-07	35	12.9	18.7	809
1991	GZ4		1991	04	10.13472	13	21	15.32	-07	35	10.1		809
1991	GZ4		1991	04	10.14792	13	21	14.52	-07	35	06.4		809
1991	GZ4		1991	04	19.09653	13	12	49.69	-06	54	29.1	18.4	809
1991	GZ4		1991	04	19.10972	13	12	48.77	-06	54	25.5		809
1991	GZ4		1991	04	19.13194	13	12	47.62	-06	54	20.7		809
1991	GZ4		1991	04	19.14792	13	12	46.74	-06	54	16.3	18.4	809
1991	GZ4		1991	04	19.16111	13	12	45.98	-06	54	12.6		809
1991	GZ4		1991	04	19.17431	13	12	45.21	-06	54	09.1		809
1991	GA5	*	1991	04	08.10903	13	17	09.97	-10	38	02.6		809
1991	GA5		1991	04	08.12222	13	17	09.59	-10	38	01.2		809
1991	GA5		1991	04	08.13542	13	17	09.12	-10	37	59.5		809
1991	GA5		1991	04	10.16736	13	16	08.27	-10	33	20.4	18.7	809
1991	GA5		1991	04	10.18056	13	16	07.84	-10	33	18.7		809
1991	GA5		1991	04	10.19375	13	16	07.42	-10	33	16.4		809
1991	GA5		1991	04	19.14792	13	11	40.54	-10	12	18.7	19.0	809
1991	GA5		1991	04	19.16111	13	11	40.17	-10	12	17.4		809
1991	GA5		1991	04	19.17431	13	11	39.75	-10	12	15.1		809
1991	GB5	*	1991	04	08.10903	13	17	56.25	-11	19	55.4		809
1991	GB5		1991	04	08.12222	13	17	55.64	-11	19	46.5		809
1991	GB5		1991	04	08.13542	13	17	54.94	-11	19	38.2		809
1991	GB5		1991	04	10.16736	13	16	21.51	-10	57	39.4	18.7	809
1991	GB5		1991	04	10.18056	13	16	20.84	-10	57	31.5		809
1991	GB5		1991	04	10.19375	13	16	20.19	-10	57	22.6		809
1991	GB5		1991	04	19.14792	13	09	38.58	-09	20	00.9	18.6	809
1991	GB5		1991	04	19.16111	13	09	38.00	-09	19	52.0		809
1991	GB5		1991	04	19.17431	13	09	37.40	-09	19	44.2		809
1991	GC5	*	1991	04	08.10903	13	18	33.67	-11	43	52.4		809
1991	GC5		1991	04	08.12222	13	18	32.82	-11	43	50.1		809
1991	GC5		1991	04	08.13542	13	18	32.19	-11	43	47.5		809
1991	GC5		1991	04	10.16736	13	16	40.34	-11	36	45.3	19.6	809
1991	GC5		1991	04	10.18056	13	16	39.59	-11	36	42.8		809
1991	GC5		1991	04	10.19375	13	16	38.86	-11	36	40.7		809
1991	GD5	*	1991	04	08.10903	13	18	34.38	-11	00	23.0		809
1991	GD5		1991	04	08.12222	13	18	33.87	-11	00	19.9		809
1991	GD5		1991	04	08.13542	13	18	33.26	-11	00	15.8		809
1991	GD5		1991	04	10.16736	13	17	06.76	-10	50	33.0	19.0	809
1991	GD5		1991	04	10.18056	13	17	05.88	-10	50	27.2		809
1991	GD5		1991	04	10.19375	13	17	05.26	-10	50	23.1		809
1991	GE5	*	1991	04	08.10903	13	19	11.94	-12	00	41.8		809
1991	GE5		1991	04	08.12222	13	19	10.88	-12	00	46.3		809
1991	GE5		1991	04	08.13542	13	19	09.35	-12	00	51.2		809
1991	GE5		1991	04	10.16736	13	15	58.06	-12	10	20.5	18.6	809
1991	GE5		1991	04	10.18056	13	15	56.75	-12	10	24.7		809
1991	GE5		1991	04	10.19375	13	15	55.38	-12	10	28.6		809
1991	GG5	*	1991	04	08.10903	13	20	04.66	-09	02	29.2		809
1991	GG5		1991	04	08.12222	13	20	03.82	-09	02	24.3		809
1991	GG5		1991	04	08.13542	13	20	02.96	-09	02	20.4		809
1991	GG5		1991	04	10.12153	13	18	03.98	-08	49	39.1	19.5	809
1991	GG5		1991	04	10.13472	13	18	03.25	-08	49	35.4		809
1991	GG5		1991	04	10.14792	13	18	02.49	-08	49	30.7		809
1991	GG5		1991	04	10.16736	13	18	01.23	-08	49	20.3	19.2	809
1991	GG5		1991	04	10.18056	13	18	00.30	-08	49	15.4		809

1991	GG5		1991	04	10.19375	13	17	59.60	-08	49	11.6		809
1991	GG5		1991	04	19.09653	13	09	04.94	-07	51	21.3	19.5	809
1991	GG5		1991	04	19.10972	13	09	04.13	-07	51	15.5		809
1991	GG5		1991	04	19.13194	13	09	02.88	-07	51	08.9		809
1991	GG5		1991	04	19.14792	13	09	01.96	-07	51	04.0	19.0	809
1991	GG5		1991	04	19.16111	13	09	01.09	-07	50	57.9		809
1991	GG5		1991	04	19.17431	13	09	00.34	-07	50	53.7		809
1991	GH5	*	1991	04	08.10903	13	20	40.64	-09	56	05.6		809
1991	GH5		1991	04	08.12222	13	20	39.89	-09	56	00.4		809
1991	GH5		1991	04	08.13542	13	20	39.28	-09	55	57.8		809
1991	GH5		1991	04	10.16736	13	19	11.94	-09	44	50.2	19.0	809
1991	GH5		1991	04	10.18056	13	19	11.39	-09	44	46.2		809
1991	GH5		1991	04	10.19375	13	19	10.82	-09	44	42.3		809
1991	GH5		1991	04	19.14792	13	12	45.20	-08	54	43.1	19.5	809
1991	GH5		1991	04	19.16111	13	12	44.54	-08	54	38.8		809
1991	GH5		1991	04	19.17431	13	12	43.99	-08	54	34.9		809
1991	GJ5	*	1991	04	08.10903	13	20	58.48	-08	26	44.2		809
1991	GJ5		1991	04	08.12222	13	20	57.69	-08	26	41.4		809
1991	GJ5		1991	04	08.13542	13	20	56.89	-08	26	39.1		809
1991	GJ5		1991	04	10.16736	13	19	02.46	-08	19	16.8	19.2	809
1991	GJ5		1991	04	10.18056	13	19	01.43	-08	19	14.6		809
1991	GJ5		1991	04	10.19375	13	19	00.65	-08	19	10.0		809
1991	GK5	*	1991	04	08.10903	13	21	13.20	-08	22	28.0		809
1991	GK5		1991	04	08.12222	13	21	12.47	-08	22	25.4		809
1991	GK5		1991	04	08.13542	13	21	11.53	-08	22	20.9		809
1991	GK5		1991	04	10.16736	13	19	11.78	-08	12	41.9	18.5	809
1991	GK5		1991	04	10.18056	13	19	11.00	-08	12	38.2		809
1991	GK5		1991	04	10.19375	13	19	10.10	-08	12	34.1		809
1991	GK5		1991	04	19.14792	13	10	30.44	-07	30	19.8	19.7	809
1991	GK5		1991	04	19.16111	13	10	29.59	-07	30	16.3		809
1991	GK5		1991	04	19.17431	13	10	28.81	-07	30	13.6		809
1991	GL5	*	1991	04	08.10903	13	21	21.79	-12	04	47.6		809
1991	GL5		1991	04	08.12222	13	21	20.80	-12	04	48.0		809
1991	GL5		1991	04	08.13542	13	21	20.05	-12	04	48.9		809
1991	GL5		1991	04	10.16736	13	19	04.46	-12	01	42.3	20.0	809
1991	GL5		1991	04	10.18056	13	19	03.49	-12	01	41.7		809
1991	GL5		1991	04	10.19375	13	19	02.49	-12	01	40.6		809
1991	GM5	*	1991	04	08.10903	13	21	25.11	-11	30	28.9		809
1991	GM5		1991	04	08.12222	13	21	24.40	-11	30	23.8		809
1991	GM5		1991	04	08.13542	13	21	23.55	-11	30	19.4		809
1991	GM5		1991	04	10.16736	13	19	37.22	-11	17	53.8	18.1	809
1991	GM5		1991	04	10.18056	13	19	36.48	-11	17	49.4		809
1991	GM5		1991	04	10.19375	13	19	35.72	-11	17	44.6		809
1991	GN5	*	1991	04	08.10903	13	22	44.43	-08	46	42.2		809
1991	GN5		1991	04	08.12222	13	22	43.46	-08	46	41.7		809
1991	GN5		1991	04	08.13542	13	22	42.55	-08	46	41.4		809
1991	GN5		1991	04	10.16736	13	20	35.64	-08	44	40.9	19.8	809
1991	GN5		1991	04	10.18056	13	20	34.89	-08	44	40.6		809
1991	GN5		1991	04	10.19375	13	20	33.95	-08	44	39.8		809
1991	GN5		1991	04	19.14792	13	11	04.16	-08	34	58.0	19.5	809
1991	GN5		1991	04	19.16111	13	11	03.28	-08	34	57.4		809
1991	GN5		1991	04	19.17431	13	11	02.39	-08	34	55.3		809
1991	GO5	*	1991	04	08.10903	13	23	51.71	-10	06	20.4		809
1991	GO5		1991	04	08.12222	13	23	50.87	-10	06	17.5		809
1991	GO5		1991	04	08.13542	13	23	50.06	-10	06	14.5		809
1991	GO5		1991	04	10.16736	13	22	26.88	-09	47	00.4	19.5	809
1991	GO5		1991	04	10.18056	13	22	26.10	-09	46	53.4		809
1991	GO5		1991	04	10.19375	13	22	25.49	-09	46	49.6		809
1991	GP5	*	1991	04	08.10903	13	24	57.96	-09	42	29.2		809

1991	GP5		1991	04	08.12222	13	24	57.31	-09	42	26.2		809
1991	GP5		1991	04	08.13542	13	24	56.60	-09	42	22.7		809
1991	GP5		1991	04	10.16736	13	23	21.24	-09	33	40.3	18.5	809
1991	GP5		1991	04	10.18056	13	23	20.60	-09	33	37.4		809
1991	GP5		1991	04	10.19375	13	23	19.94	-09	33	34.7		809
1991	GP5		1991	04	19.14792	13	16	19.50	-08	54	29.7	18.6	809
1991	GP5		1991	04	19.16111	13	16	18.88	-08	54	25.8		809
1991	GP5		1991	04	19.17431	13	16	18.21	-08	54	22.3		809
1991	GQ5	*	1991	04	08.10903	13	25	08.19	-10	35	07.3		809
1991	GQ5		1991	04	08.12222	13	25	07.50	-10	35	02.4		809
1991	GQ5		1991	04	08.13542	13	25	06.88	-10	34	54.9		809
1991	GQ5		1991	04	10.16736	13	23	21.15	-10	17	19.9	19.2	809
1991	GQ5		1991	04	10.18056	13	23	20.52	-10	17	12.6		809
1991	GQ5		1991	04	10.19375	13	23	19.77	-10	17	06.3		809
1991	GQ5		1991	04	19.14792	13	15	29.76	-08	57	28.0	19.0	809
1991	GQ5		1991	04	19.16111	13	15	29.03	-08	57	21.1		809
1991	GQ5		1991	04	19.17431	13	15	28.40	-08	57	14.4		809
1991	GR5	*	1991	04	08.10903	13	25	37.66	-12	51	10.7		809
1991	GR5		1991	04	08.12222	13	25	36.96	-12	51	08.6		809
1991	GR5		1991	04	08.13542	13	25	36.29	-12	51	07.1		809
1991	GR5		1991	04	10.16736	13	23	53.03	-12	45	55.5	18.5	809
1991	GR5		1991	04	10.18056	13	23	52.15	-12	45	53.2		809
1991	GR5		1991	04	10.19375	13	23	51.45	-12	45	51.3		809
1991	GS5	*	1991	04	08.10903	13	25	41.38	-12	51	07.5		809
1991	GS5		1991	04	08.12222	13	25	40.69	-12	51	01.5		809
1991	GS5		1991	04	08.13542	13	25	40.02	-12	50	56.1		809
1991	GS5		1991	04	10.16736	13	24	00.58	-12	35	23.4	18.6	809
1991	GS5		1991	04	10.18056	13	23	59.85	-12	35	16.9		809
1991	GS5		1991	04	10.19375	13	23	59.24	-12	35	10.9		809
1991	GS5		1991	04	19.14792	13	16	33.96	-11	22	26.5	19.0	809
1991	GS5		1991	04	19.16111	13	16	33.29	-11	22	20.1		809
1991	GS5		1991	04	19.17431	13	16	32.53	-11	22	13.3		809
1991	GT5	*	1991	04	08.10903	13	26	26.37	-08	11	46.3		809
1991	GT5		1991	04	08.12222	13	26	25.83	-08	11	42.8		809
1991	GT5		1991	04	08.13542	13	26	25.19	-08	11	39.4		809
1991	GT5		1991	04	10.16736	13	24	55.21	-08	02	09.0	18.7	809
1991	GT5		1991	04	10.18056	13	24	54.59	-08	02	05.5		809
1991	GT5		1991	04	10.19375	13	24	53.94	-08	02	01.9		809
1991	GT5		1991	04	19.14792	13	18	14.87	-07	20	01.4	18.5	809
1991	GT5		1991	04	19.16111	13	18	14.23	-07	19	57.7		809
1991	GT5		1991	04	19.17431	13	18	13.63	-07	19	54.1		809
1991	GU5	*	1991	04	08.10903	13	26	55.20	-13	10	53.3		809
1991	GU5		1991	04	08.12222	13	26	54.41	-13	10	48.5		809
1991	GU5		1991	04	08.13542	13	26	53.55	-13	10	43.8		809
1991	GU5		1991	04	10.16736	13	24	58.10	-12	57	31.0	18.5	809
1991	GU5		1991	04	10.18056	13	24	57.23	-12	57	25.6		809
1991	GU5		1991	04	10.19375	13	24	56.45	-12	57	21.3		809
1991	GV5	*	1991	04	08.10903	13	27	05.92	-09	07	17.0		809
1991	GV5		1991	04	08.12222	13	27	05.25	-09	07	12.6		809
1991	GV5		1991	04	08.13542	13	27	04.57	-09	07	08.4		809
1991	GV5		1991	04	10.16736	13	25	25.94	-08	53	40.7	18.5	809
1991	GV5		1991	04	10.18056	13	25	25.24	-08	53	35.2		809
1991	GV5		1991	04	10.19375	13	25	24.55	-08	53	29.9		809
1991	GV5		1991	04	19.14792	13	18	02.79	-07	52	54.1	18.6	809
1991	GV5		1991	04	19.16111	13	18	02.18	-07	52	48.9		809
1991	GV5		1991	04	19.17431	13	18	01.53	-07	52	44.0		809
1991	GW5	*	1991	04	08.10903	13	27	09.50	-08	19	48.0		809
1991	GW5		1991	04	08.12222	13	27	08.55	-08	19	45.4		809
1991	GW5		1991	04	08.13542	13	27	07.89	-08	19	44.4		809

1991	GW5		1991	04	10.16736	13	25	23.74	-08	15	40.6	18.9	809
1991	GW5		1991	04	10.18056	13	25	23.09	-08	15	39.6		809
1991	GW5		1991	04	10.19375	13	25	22.33	-08	15	37.5		809
1991	GW5		1991	04	19.14792	13	17	42.02	-07	57	40.0	19.3	809
1991	GW5		1991	04	19.16111	13	17	41.27	-07	57	38.5		809
1991	GW5		1991	04	19.17431	13	17	40.63	-07	57	36.9		809
1991	GX5	*	1991	04	08.10903	13	28	14.08	-09	45	01.0		809
1991	GX5		1991	04	08.12222	13	28	13.31	-09	44	56.0		809
1991	GX5		1991	04	08.13542	13	28	12.49	-09	44	49.4		809
1991	GX5		1991	04	10.16736	13	26	13.23	-09	30	19.3	18.5	809
1991	GX5		1991	04	10.18056	13	26	12.38	-09	30	12.2		809
1991	GX5		1991	04	10.19375	13	26	11.57	-09	30	07.5		809
1991	GX5		1991	04	19.14792	13	17	29.46	-08	25	44.2	19.0	809
1991	GX5		1991	04	19.16111	13	17	28.64	-08	25	38.3		809
1991	GX5		1991	04	19.17431	13	17	27.88	-08	25	33.2		809
1991	GY5	*	1991	04	08.10903	13	28	17.28	-09	45	49.9		809
1991	GY5		1991	04	08.12222	13	28	16.61	-09	45	42.7		809
1991	GY5		1991	04	08.13542	13	28	15.88	-09	45	36.4		809
1991	GY5		1991	04	10.16736	13	26	39.88	-09	24	26.2	18.6	809
1991	GY5		1991	04	10.18056	13	26	39.13	-09	24	17.0		809
1991	GY5		1991	04	10.19375	13	26	38.51	-09	24	10.4		809
1991	GY5		1991	04	19.14792	13	19	30.63	-07	49	45.3	19.0	809
1991	GY5		1991	04	19.16111	13	19	30.03	-07	49	38.1		809
1991	GY5		1991	04	19.17431	13	19	29.35	-07	49	29.0		809
1991	GZ5	*	1991	04	08.10903	13	28	30.08	-11	36	58.0		809
1991	GZ5		1991	04	08.12222	13	28	29.16	-11	36	52.8		809
1991	GZ5		1991	04	08.13542	13	28	28.32	-11	36	49.7		809
1991	GZ5		1991	04	10.16736	13	26	42.32	-11	26	27.8	19.5	809
1991	GZ5		1991	04	10.18056	13	26	41.66	-11	26	24.1		809
1991	GZ5		1991	04	10.19375	13	26	40.97	-11	26	20.1		809
1991	GZ5		1991	04	19.14792	13	18	52.72	-10	38	52.2	20.0	809
1991	GZ5		1991	04	19.16111	13	18	51.99	-10	38	49.8		809
1991	GZ5		1991	04	19.17431	13	18	51.06	-10	38	45.4		809
1991	GA6	*	1991	04	08.10903	13	28	39.12	-10	47	30.3		809
1991	GA6		1991	04	08.12222	13	28	38.48	-10	47	26.1		809
1991	GA6		1991	04	08.13542	13	28	37.74	-10	47	22.1		809
1991	GA6		1991	04	10.16736	13	27	01.28	-10	38	04.6	18.6	809
1991	GA6		1991	04	10.18056	13	27	00.65	-10	38	01.4		809
1991	GA6		1991	04	10.19375	13	26	59.95	-10	37	57.7		809
1991	GA6		1991	04	19.14792	13	19	49.61	-09	55	17.8	18.7	809
1991	GA6		1991	04	19.16111	13	19	48.94	-09	55	13.8		809
1991	GA6		1991	04	19.17431	13	19	48.34	-09	55	10.6		809
1991	GB6	*	1991	04	08.10903	13	29	08.61	-11	48	57.1		809
1991	GB6		1991	04	08.12222	13	29	07.68	-11	48	52.4		809
1991	GB6		1991	04	08.13542	13	29	07.02	-11	48	49.5		809
1991	GB6		1991	04	10.16736	13	27	22.44	-11	37	58.3	19.0	809
1991	GB6		1991	04	10.18056	13	27	21.70	-11	37	53.5		809
1991	GB6		1991	04	10.19375	13	27	20.93	-11	37	50.2		809
1991	GB6		1991	04	19.14792	13	19	34.91	-10	47	05.4	19.8	809
1991	GB6		1991	04	19.16111	13	19	34.28	-10	47	01.4		809
1991	GB6		1991	04	19.17431	13	19	33.51	-10	46	57.6		809
1991	GC6	*	1991	04	08.10903	13	29	43.79	-08	15	37.6		809
1991	GC6		1991	04	08.12222	13	29	42.86	-08	15	35.9		809
1991	GC6		1991	04	08.13542	13	29	42.02	-08	15	34.2		809
1991	GC6		1991	04	10.16736	13	27	27.35	-08	09	44.1	18.5	809
1991	GC6		1991	04	10.18056	13	27	26.41	-08	09	41.6		809
1991	GC6		1991	04	10.19375	13	27	25.57	-08	09	39.7		809
1991	GC6		1991	04	19.14792	13	17	31.51	-07	43	44.0	18.4	809
1991	GC6		1991	04	19.16111	13	17	30.61	-07	43	42.2		809

1991	GC6		1991	04	19.17431	13	17	29.75	-07	43	40.0		809
1991	GD6	*	1991	04	08.10903	13	29	48.81	-10	31	28.1		809
1991	GD6		1991	04	08.12222	13	29	48.05	-10	31	28.9		809
1991	GD6		1991	04	08.13542	13	29	47.06	-10	31	27.5		809
1991	GD6		1991	04	10.16736	13	27	47.07	-10	28	11.2	19.3	809
1991	GD6		1991	04	10.18056	13	27	46.13	-10	28	10.1		809
1991	GD6		1991	04	10.19375	13	27	45.34	-10	28	08.4		809
1991	GE6	*	1991	04	08.10903	13	29	55.20	-12	59	36.9		809
1991	GE6		1991	04	08.12222	13	29	54.67	-12	59	36.4		809
1991	GE6		1991	04	08.13542	13	29	54.25	-12	59	35.8		809
1991	GE6		1991	04	10.16736	13	28	47.13	-12	56	09.8	18.6	809
1991	GE6		1991	04	10.18056	13	28	46.65	-12	56	08.7		809
1991	GE6		1991	04	10.19375	13	28	46.15	-12	56	07.5		809
1991	GF6	*	1991	04	08.10903	13	30	44.96	-11	12	52.9		809
1991	GF6		1991	04	08.12222	13	30	44.24	-11	12	54.8		809
1991	GF6		1991	04	08.13542	13	30	43.43	-11	12	56.4		809
1991	GF6		1991	04	10.16736	13	28	32.34	-11	15	26.6	19.4	809
1991	GF6		1991	04	10.18056	13	28	31.42	-11	15	28.2		809
1991	GF6		1991	04	10.19375	13	28	30.46	-11	15	29.8		809
1991	GG6	*	1991	04	08.10903	13	31	06.07	-08	56	59.7		809
1991	GG6		1991	04	08.12222	13	31	05.17	-08	56	56.4		809
1991	GG6		1991	04	08.13542	13	31	04.38	-08	56	52.8		809
1991	GG6		1991	04	10.16736	13	29	02.86	-08	47	56.2	18.6	809
1991	GG6		1991	04	10.18056	13	29	02.00	-08	47	53.2		809
1991	GG6		1991	04	10.19375	13	29	01.16	-08	47	50.3		809
1991	GG6		1991	04	19.14792	13	19	59.50	-08	07	36.0	18.7	809
1991	GG6		1991	04	19.16111	13	19	58.67	-08	07	32.6		809
1991	GG6		1991	04	19.17431	13	19	57.89	-08	07	28.7		809
1991	GH6	*	1991	04	08.10903	13	31	11.65	-12	32	56.0		809
1991	GH6		1991	04	08.12222	13	31	10.94	-12	32	49.9		809
1991	GH6		1991	04	08.13542	13	31	10.15	-12	32	43.3		809
1991	GH6		1991	04	10.16736	13	29	19.44	-12	15	34.9	18.6	809
1991	GH6		1991	04	10.18056	13	29	18.73	-12	15	29.5		809
1991	GH6		1991	04	10.19375	13	29	17.97	-12	15	22.3		809
1991	GH6		1991	04	19.14792	13	21	04.36	-10	56	18.2	18.8	809
1991	GH6		1991	04	19.16111	13	21	03.60	-10	56	10.6		809
1991	GH6		1991	04	19.17431	13	21	02.84	-10	56	04.2		809
1991	GJ6	*	1991	04	08.10903	13	31	33.90	-12	35	23.2		809
1991	GJ6		1991	04	08.12222	13	31	33.24	-12	35	20.5		809
1991	GJ6		1991	04	08.13542	13	31	32.46	-12	35	17.3		809
1991	GJ6		1991	04	10.16736	13	29	45.13	-12	26	24.2	18.4	809
1991	GJ6		1991	04	10.18056	13	29	44.42	-12	26	20.7		809
1991	GJ6		1991	04	10.19375	13	29	43.64	-12	26	16.9		809
1991	GK6	*	1991	04	08.10903	13	31	37.11	-12	00	18.8		809
1991	GK6		1991	04	08.12222	13	31	36.17	-12	00	19.9		809
1991	GK6		1991	04	08.13542	13	31	35.31	-12	00	21.1		809
1991	GK6		1991	04	10.16736	13	29	27.59	-12	01	57.7	18.6	809
1991	GK6		1991	04	10.18056	13	29	26.70	-12	01	57.6		809
1991	GK6		1991	04	10.19375	13	29	25.82	-12	01	59.3		809
1991	GL6	*	1991	04	08.10903	13	31	45.75	-11	01	27.9		809
1991	GL6		1991	04	08.12222	13	31	45.02	-11	01	27.9		809
1991	GL6		1991	04	08.13542	13	31	44.29	-11	01	29.0		809
1991	GL6		1991	04	10.16736	13	29	51.27	-11	02	27.9	18.5	809
1991	GL6		1991	04	10.18056	13	29	50.45	-11	02	28.2		809
1991	GL6		1991	04	10.19375	13	29	49.66	-11	02	28.8		809
1991	GM6	*	1991	04	08.10903	13	32	03.21	-13	03	41.7		809
1991	GM6		1991	04	08.12222	13	32	02.43	-13	03	41.7		809
1991	GM6		1991	04	08.13542	13	32	01.66	-13	03	39.2		809
1991	GM6		1991	04	10.16736	13	30	07.66	-12	59	16.9	18.5	809

1991	GM6		1991	04	10.18056	13	30	06.89	-12	59	15.5		809
1991	GM6		1991	04	10.19375	13	30	06.09	-12	59	14.6		809
1991	GM6		1991	04	10.24722	13	30	03.09	-12	59	07.4	18.6	809
1991	GM6		1991	04	10.26042	13	30	02.28	-12	59	06.6		809
1991	GM6		1991	04	10.27361	13	30	01.40	-12	59	04.0		809
1991	GN6	*	1991	04	08.10903	13	32	07.38	-08	17	36.9		809
1991	GN6		1991	04	08.12222	13	32	06.77	-08	17	35.8		809
1991	GN6		1991	04	08.13542	13	32	06.09	-08	17	34.6		809
1991	GN6		1991	04	10.16736	13	30	30.90	-08	14	14.0	18.0	809
1991	GN6		1991	04	10.18056	13	30	30.28	-08	14	13.1		809
1991	GN6		1991	04	10.19375	13	30	29.62	-08	14	12.5		809
1991	GN6		1991	04	19.14792	13	23	24.06	-07	59	14.3	18.0	809
1991	GN6		1991	04	19.16111	13	23	23.38	-07	59	13.0		809
1991	GN6		1991	04	19.17431	13	23	22.73	-07	59	11.8		809
1991	GO6	*	1991	04	08.10903	13	32	08.47	-08	39	57.0		809
1991	GO6		1991	04	08.12222	13	32	07.86	-08	39	49.8		809
1991	GO6		1991	04	08.13542	13	32	07.34	-08	39	44.0		809
1991	GO6		1991	04	10.16736	13	30	32.17	-08	21	15.7	18.8	809
1991	GO6		1991	04	10.18056	13	30	31.51	-08	21	08.5		809
1991	GO6		1991	04	10.19375	13	30	30.96	-08	21	02.3		809
1991	GO6		1991	04	19.14792	13	23	28.38	-06	59	12.4	19.7	809
1991	GO6		1991	04	19.16111	13	23	27.59	-06	59	05.2		809
1991	GO6		1991	04	19.17431	13	23	27.03	-06	58	58.8		809
1991	GP6	*	1991	04	08.10903	13	32	15.82	-09	03	08.6		809
1991	GP6		1991	04	08.12222	13	32	15.13	-09	03	03.9		809
1991	GP6		1991	04	08.13542	13	32	14.48	-09	02	58.2		809
1991	GP6		1991	04	10.16736	13	30	35.29	-08	49	55.8	18.6	809
1991	GP6		1991	04	10.18056	13	30	34.58	-08	49	51.0		809
1991	GP6		1991	04	10.19375	13	30	33.91	-08	49	46.0		809
1991	GP6		1991	04	19.14792	13	23	04.40	-07	50	58.0	18.5	809
1991	GP6		1991	04	19.16111	13	23	03.77	-07	50	53.0		809
1991	GP6		1991	04	19.17431	13	23	03.05	-07	50	48.2		809
1991	GQ6	*	1991	04	08.10903	13	32	19.95	-09	35	37.4		809
1991	GQ6		1991	04	08.12222	13	32	19.36	-09	35	34.2		809
1991	GQ6		1991	04	08.13542	13	32	18.81	-09	35	31.0		809
1991	GQ6		1991	04	10.16736	13	30	45.26	-09	25	51.8	18.7	809
1991	GQ6		1991	04	10.18056	13	30	44.54	-09	25	47.8		809
1991	GQ6		1991	04	10.19375	13	30	43.91	-09	25	43.8		809
1991	GQ6		1991	04	19.14792	13	23	48.09	-08	42	25.1	18.7	809
1991	GQ6		1991	04	19.16111	13	23	47.45	-08	42	21.8		809
1991	GQ6		1991	04	19.17431	13	23	46.79	-08	42	17.9		809
1991	GR6	*	1991	04	08.10903	13	32	23.68	-10	58	09.7		809
1991	GR6		1991	04	08.12222	13	32	23.09	-10	58	05.7		809
1991	GR6		1991	04	08.13542	13	32	22.55	-10	58	02.5		809
1991	GR6		1991	04	10.16736	13	30	24.20	-10	39	15.0	19.0	809
1991	GR6		1991	04	10.18056	13	30	23.58	-10	39	07.5		809
1991	GR6		1991	04	10.19375	13	30	22.92	-10	39	02.7		809
1991	GS6	*	1991	04	08.10903	13	32	26.26	-09	14	16.6		809
1991	GS6		1991	04	08.12222	13	32	25.41	-09	14	15.2		809
1991	GS6		1991	04	08.13542	13	32	24.40	-09	14	14.8		809
1991	GS6		1991	04	10.16736	13	30	08.64	-09	10	47.5	18.6	809
1991	GS6		1991	04	10.18056	13	30	07.67	-09	10	45.4		809
1991	GS6		1991	04	10.19375	13	30	06.79	-09	10	44.6		809
1991	GS6		1991	04	19.14792	13	20	03.69	-08	54	28.2	19.0	809
1991	GS6		1991	04	19.16111	13	20	02.72	-08	54	26.6		809
1991	GS6		1991	04	19.17431	13	20	01.82	-08	54	25.0		809
1991	GT6	*	1991	04	08.10903	13	32	49.65	-10	36	40.2		809
1991	GT6		1991	04	08.12222	13	32	48.80	-10	36	38.9		809
1991	GT6		1991	04	08.13542	13	32	47.98	-10	36	38.0		809

1991	GT6		1991	04	10.16736	13	30	44.21	-10	31	38.6	18.7	809
1991	GT6		1991	04	10.18056	13	30	43.31	-10	31	37.1		809
1991	GT6		1991	04	10.19375	13	30	42.47	-10	31	35.3		809
1991	GU6	*	1991	04	08.10903	13	33	24.45	-10	30	50.3		809
1991	GU6		1991	04	08.12222	13	33	23.61	-10	30	49.1		809
1991	GU6		1991	04	08.13542	13	33	22.70	-10	30	49.0		809
1991	GU6		1991	04	10.16736	13	31	19.62	-10	29	34.7	18.7	809
1991	GU6		1991	04	10.18056	13	31	18.73	-10	29	34.3		809
1991	GU6		1991	04	10.19375	13	31	17.75	-10	29	33.4		809
1991	GU6		1991	04	19.14792	13	22	04.49	-10	22	17.1	19.6	809
1991	GU6		1991	04	19.16111	13	22	03.70	-10	22	16.0		809
1991	GU6		1991	04	19.17431	13	22	02.88	-10	22	15.9		809
1991	GV6	*	1991	04	08.10903	13	34	08.32	-09	37	23.0		809
1991	GV6		1991	04	08.12222	13	34	07.62	-09	37	16.0		809
1991	GV6		1991	04	08.13542	13	34	06.95	-09	37	11.8		809
1991	GV6		1991	04	10.16736	13	32	26.74	-09	25	12.5	18.8	809
1991	GV6		1991	04	10.18056	13	32	26.10	-09	25	08.2		809
1991	GV6		1991	04	10.19375	13	32	25.41	-09	25	03.8		809
1991	GV6		1991	04	19.14792	13	24	53.59	-08	30	40.2	19.2	809
1991	GV6		1991	04	19.16111	13	24	52.94	-08	30	35.7		809
1991	GV6		1991	04	19.17431	13	24	52.19	-08	30	31.1		809
1991	GW6	*	1991	04	08.10903	13	34	10.37	-08	14	06.7		809
1991	GW6		1991	04	08.12222	13	34	09.69	-08	14	03.3		809
1991	GW6		1991	04	08.13542	13	34	09.09	-08	14	00.6		809
1991	GW6		1991	04	10.16736	13	32	16.33	-07	54	40.4	18.6	809
1991	GW6		1991	04	10.18056	13	32	15.56	-07	54	36.0		809
1991	GW6		1991	04	10.19375	13	32	14.72	-07	54	31.3		809
1991	GX6	*	1991	04	08.10903	13	34	16.46	-08	07	02.2		809
1991	GX6		1991	04	08.12222	13	34	15.70	-08	06	56.7		809
1991	GX6		1991	04	08.13542	13	34	14.84	-08	06	51.7		809
1991	GX6		1991	04	10.16736	13	32	03.20	-07	48	55.0	19.0	809
1991	GX6		1991	04	10.18056	13	32	02.38	-07	48	49.1		809
1991	GX6		1991	04	10.19375	13	32	01.62	-07	48	43.8		809
1991	GY6	*	1991	04	08.10903	13	34	42.39	-08	56	42.7		809
1991	GY6		1991	04	08.12222	13	34	41.39	-08	56	45.2		809
1991	GY6		1991	04	08.13542	13	34	40.30	-08	56	46.4		809
1991	GY6		1991	04	10.16736	13	32	10.20	-09	00	37.0	18.5	809
1991	GY6		1991	04	10.18056	13	32	09.13	-09	00	38.8		809
1991	GY6		1991	04	10.19375	13	32	07.99	-09	00	40.1		809
1991	GZ6	*	1991	04	08.10903	13	34	54.24	-12	51	07.4		809
1991	GZ6		1991	04	08.12222	13	34	53.38	-12	51	01.5		809
1991	GZ6		1991	04	08.13542	13	34	52.62	-12	50	58.0		809
1991	GZ6		1991	04	08.15278	13	34	51.70	-12	50	53.7		809
1991	GZ6		1991	04	08.16597	13	34	50.81	-12	50	44.3		809
1991	GZ6		1991	04	08.17917	13	34	50.13	-12	50	42.6		809
1991	GZ6		1991	04	10.16736	13	32	55.11	-12	38	13.3	18.7	809
1991	GZ6		1991	04	10.18056	13	32	54.28	-12	38	08.8		809
1991	GZ6		1991	04	10.19375	13	32	53.45	-12	38	03.5		809
1991	GZ6		1991	04	10.24722	13	32	50.24	-12	37	43.7	19.0	809
1991	GZ6		1991	04	10.26042	13	32	49.43	-12	37	39.4		809
1991	GZ6		1991	04	10.27361	13	32	48.60	-12	37	33.7		809
1991	GA7	*	1991	04	08.10903	13	35	16.41	-08	53	47.5		809
1991	GA7		1991	04	08.12222	13	35	15.74	-08	53	41.8		809
1991	GA7		1991	04	08.13542	13	35	15.00	-08	53	36.4		809
1991	GA7		1991	04	10.16736	13	33	29.47	-08	38	25.3	18.5	809
1991	GA7		1991	04	10.18056	13	33	28.69	-08	38	20.1		809
1991	GA7		1991	04	10.19375	13	33	28.01	-08	38	14.4		809
1991	GA7		1991	04	19.14792	13	25	38.67	-07	31	16.0	18.5	809
1991	GA7		1991	04	19.16111	13	25	37.89	-07	31	09.9		809

1991	GA7		1991	04	19.17431	13	25	37.26	-07	31	04.9		809
1991	GB7	*	1991	04	08.10903	13	35	57.11	-08	45	31.2		809
1991	GB7		1991	04	08.12222	13	35	56.40	-08	45	29.2		809
1991	GB7		1991	04	08.13542	13	35	55.75	-08	45	27.2		809
1991	GB7		1991	04	10.16736	13	34	16.97	-08	41	05.0	18.8	809
1991	GB7		1991	04	10.18056	13	34	16.31	-08	41	03.4		809
1991	GB7		1991	04	10.19375	13	34	15.63	-08	41	02.0		809
1991	GB7		1991	04	19.14792	13	26	55.00	-08	21	14.3	18.8	809
1991	GB7		1991	04	19.16111	13	26	54.30	-08	21	11.1		809
1991	GB7		1991	04	19.17431	13	26	53.68	-08	21	09.7		809
1991	GC7	*	1991	04	08.10903	13	36	18.63	-08	50	35.0		809
1991	GC7		1991	04	08.12222	13	36	17.83	-08	50	34.1		809
1991	GC7		1991	04	08.13542	13	36	17.03	-08	50	32.6		809
1991	GC7		1991	04	10.16736	13	34	11.57	-08	46	11.4	18.4	809
1991	GC7		1991	04	10.18056	13	34	10.68	-08	46	09.7		809
1991	GC7		1991	04	10.19375	13	34	09.84	-08	46	07.8		809
1991	GC7		1991	04	19.14792	13	24	47.98	-08	26	10.8	18.6	809
1991	GC7		1991	04	19.16111	13	24	47.07	-08	26	09.3		809
1991	GC7		1991	04	19.17431	13	24	46.24	-08	26	07.5		809
1991	GD7	*	1991	04	08.10903	13	36	20.50	-12	38	33.9		809
1991	GD7		1991	04	08.12222	13	36	19.90	-12	38	28.2		809
1991	GD7		1991	04	08.13542	13	36	19.33	-12	38	23.6		809
1991	GD7		1991	04	08.15278	13	36	18.79	-12	38	17.2		809
1991	GD7		1991	04	08.16597	13	36	18.14	-12	38	13.2		809
1991	GD7		1991	04	08.17917	13	36	17.42	-12	38	08.4		809
1991	GD7		1991	04	10.16736	13	34	46.38	-12	24	32.6	18.7	809
1991	GD7		1991	04	10.18056	13	34	45.66	-12	24	28.4		809
1991	GD7		1991	04	10.19375	13	34	45.01	-12	24	23.0		809
1991	GD7		1991	04	10.24722	13	34	42.53	-12	24	02.7	19.2	809
1991	GD7		1991	04	10.26042	13	34	41.93	-12	23	56.9		809
1991	GD7		1991	04	10.27361	13	34	41.21	-12	23	51.6		809
1991	GE7	*	1991	04	08.10903	13	37	33.96	-11	16	23.4		809
1991	GE7		1991	04	08.12222	13	37	33.34	-11	16	20.8		809
1991	GE7		1991	04	08.13542	13	37	32.76	-11	16	20.0		809
1991	GE7		1991	04	10.16736	13	35	58.53	-11	10	09.8	19.3	809
1991	GE7		1991	04	10.18056	13	35	58.00	-11	10	08.1		809
1991	GE7		1991	04	10.19375	13	35	57.30	-11	10	05.9		809
1991	GF7	*	1991	04	08.10903	13	37	46.46	-10	30	43.6		809
1991	GF7		1991	04	08.12222	13	37	45.66	-10	30	41.6		809
1991	GF7		1991	04	08.13542	13	37	44.97	-10	30	39.5		809
1991	GF7		1991	04	10.16736	13	35	52.15	-10	26	00.5	18.7	809
1991	GF7		1991	04	10.18056	13	35	51.44	-10	25	59.8		809
1991	GF7		1991	04	10.19375	13	35	50.63	-10	25	58.3		809
1991	GG7	*	1991	04	08.10903	13	37	52.04	-10	45	54.2		809
1991	GG7		1991	04	08.12222	13	37	51.20	-10	45	51.4		809
1991	GG7		1991	04	08.13542	13	37	50.42	-10	45	48.1		809
1991	GG7		1991	04	10.16736	13	35	48.21	-10	38	46.4	18.8	809
1991	GG7		1991	04	10.18056	13	35	47.38	-10	38	43.5		809
1991	GG7		1991	04	10.19375	13	35	46.50	-10	38	41.4		809
1991	GG7		1991	04	19.14792	13	26	43.16	-10	05	52.4	19.5	809
1991	GG7		1991	04	19.16111	13	26	42.35	-10	05	50.0		809
1991	GG7		1991	04	19.17431	13	26	41.52	-10	05	46.8		809
1991	GH7	*	1991	04	08.10903	13	38	22.15	-11	23	53.5		809
1991	GH7		1991	04	08.12222	13	38	21.39	-11	23	50.9		809
1991	GH7		1991	04	08.13542	13	38	20.48	-11	23	49.3		809
1991	GH7		1991	04	10.16736	13	36	26.29	-11	16	08.9	19.5	809
1991	GH7		1991	04	10.18056	13	36	25.43	-11	16	05.8		809
1991	GH7		1991	04	10.19375	13	36	24.64	-11	16	02.6		809
1991	GH7		1991	04	19.14792	13	27	35.25	-10	38	42.9	20.0	809

1991	GH7		1991	04	19.16111	13	27	34.26	-10	38	39.4		809
1991	GH7		1991	04	19.17431	13	27	33.37	-10	38	35.8		809
1991	GJ7	*	1991	04	08.15278	13	33	08.03	-16	14	34.3		809
1991	GJ7		1991	04	08.16597	13	33	07.20	-16	14	31.8		809
1991	GJ7		1991	04	08.17917	13	33	06.41	-16	14	27.1		809
1991	GJ7		1991	04	10.24722	13	31	07.47	-16	03	19.2	19.4	809
1991	GJ7		1991	04	10.26042	13	31	06.63	-16	03	15.0		809
1991	GJ7		1991	04	10.27361	13	31	05.77	-16	03	10.1		809
1991	GK7	*	1991	04	08.15278	13	33	17.01	-15	05	00.4		809
1991	GK7		1991	04	08.16597	13	33	16.23	-15	04	56.3		809
1991	GK7		1991	04	08.17917	13	33	15.51	-15	04	51.1		809
1991	GK7		1991	04	10.24722	13	31	32.33	-14	52	28.7	18.8	809
1991	GK7		1991	04	10.26042	13	31	31.67	-14	52	24.5		809
1991	GK7		1991	04	10.27361	13	31	30.98	-14	52	19.5		809
1991	GK7		1991	04	19.19028	13	24	04.33	-13	55	22.5	18.7	809
1991	GK7		1991	04	19.20347	13	24	03.62	-13	55	17.4		809
1991	GK7		1991	04	19.21667	13	24	02.99	-13	55	12.8		809
1991	GL7	*	1991	04	08.15278	13	33	54.77	-15	10	03.2		809
1991	GL7		1991	04	08.16597	13	33	53.96	-15	09	58.4		809
1991	GL7		1991	04	08.17917	13	33	53.11	-15	09	54.9		809
1991	GL7		1991	04	10.24722	13	31	57.24	-14	57	06.6	18.9	809
1991	GL7		1991	04	10.26042	13	31	56.38	-14	57	01.9		809
1991	GL7		1991	04	10.27361	13	31	55.68	-14	56	58.5		809
1991	GL7		1991	04	19.19028	13	23	28.90	-13	57	02.6	19.3	809
1991	GL7		1991	04	19.20347	13	23	28.13	-13	56	57.2		809
1991	GL7		1991	04	19.21667	13	23	27.37	-13	56	51.2		809
1991	GM7	*	1991	04	08.15278	13	34	49.01	-13	30	13.5		809
1991	GM7		1991	04	08.16597	13	34	48.37	-13	30	04.3		809
1991	GM7		1991	04	08.17917	13	34	47.82	-13	29	56.3		809
1991	GM7		1991	04	10.24722	13	33	18.53	-13	06	39.1	18.8	809
1991	GM7		1991	04	10.26042	13	33	17.92	-13	06	31.0		809
1991	GM7		1991	04	10.27361	13	33	17.31	-13	06	22.8		809
1991	GM7		1991	04	19.19028	13	26	45.47	-11	22	10.0	19.0	809
1991	GM7		1991	04	19.20347	13	26	44.80	-11	21	59.9		809
1991	GM7		1991	04	19.21667	13	26	44.23	-11	21	51.9		809
1991	GN7	*	1991	04	08.15278	13	34	57.19	-15	12	14.1		809
1991	GN7		1991	04	08.16597	13	34	56.61	-15	12	10.1		809
1991	GN7		1991	04	08.17917	13	34	55.88	-15	12	05.2		809
1991	GN7		1991	04	10.24722	13	33	24.16	-14	59	11.6	19.7	809
1991	GN7		1991	04	10.26042	13	33	23.53	-14	59	07.8		809
1991	GN7		1991	04	10.27361	13	33	22.90	-14	59	02.5		809
1991	GO7	*	1991	04	08.15278	13	35	04.97	-15	35	28.6		809
1991	GO7		1991	04	08.16597	13	35	04.39	-15	35	24.0		809
1991	GO7		1991	04	08.17917	13	35	03.73	-15	35	17.8		809
1991	GO7		1991	04	10.24722	13	33	29.26	-15	18	32.4	19.7	809
1991	GO7		1991	04	10.26042	13	33	28.62	-15	18	25.7		809
1991	GO7		1991	04	10.27361	13	33	28.05	-15	18	20.5		809
1991	GO7		1991	04	19.19028	13	26	29.10	-14	00	15.3	18.9	809
1991	GO7		1991	04	19.20347	13	26	28.40	-14	00	07.5		809
1991	GO7		1991	04	19.21667	13	26	27.70	-14	00	01.2		809
1991	GP7	*	1991	04	08.15278	13	36	31.11	-13	37	43.0		809
1991	GP7		1991	04	08.16597	13	36	30.24	-13	37	39.2		809
1991	GP7		1991	04	08.17917	13	36	29.34	-13	37	36.1		809
1991	GP7		1991	04	10.24722	13	34	24.04	-13	27	39.6	18.6	809
1991	GP7		1991	04	10.26042	13	34	23.29	-13	27	37.0		809
1991	GP7		1991	04	10.27361	13	34	22.38	-13	27	32.6		809
1991	GP7		1991	04	19.19028	13	25	13.54	-12	40	55.2	18.6	809
1991	GP7		1991	04	19.20347	13	25	12.67	-12	40	50.9		809
1991	GP7		1991	04	19.21667	13	25	11.82	-12	40	46.3		809

1991	GQ7	*	1991	04	08.15278	13	36	58.58	-14	39	52.0	809
1991	GQ7		1991	04	08.16597	13	36	57.98	-14	39	50.6	809
1991	GQ7		1991	04	08.17917	13	36	57.33	-14	39	49.2	809
1991	GQ7		1991	04	10.24722	13	35	26.60	-14	34	20.0	19.0 809
1991	GQ7		1991	04	10.26042	13	35	25.97	-14	34	18.0	809
1991	GQ7		1991	04	10.27361	13	35	25.44	-14	34	16.1	809
1991	GQ7		1991	04	19.19028	13	28	47.31	-14	07	56.2	19.0 809
1991	GQ7		1991	04	19.20347	13	28	46.76	-14	07	53.9	809
1991	GQ7		1991	04	19.21667	13	28	46.30	-14	07	51.7	809
1991	GR7	*	1991	04	08.15278	13	37	29.90	-14	44	09.8	809
1991	GR7		1991	04	08.16597	13	37	29.13	-14	44	03.4	809
1991	GR7		1991	04	08.17917	13	37	28.37	-14	43	57.3	809
1991	GR7		1991	04	10.24722	13	35	36.64	-14	28	10.8	18.5 809
1991	GR7		1991	04	10.26042	13	35	35.89	-14	28	04.6	809
1991	GR7		1991	04	10.27361	13	35	35.09	-14	27	58.5	809
1991	GR7		1991	04	19.19028	13	27	23.89	-13	14	56.7	18.5 809
1991	GR7		1991	04	19.20347	13	27	23.09	-13	14	49.6	809
1991	GR7		1991	04	19.21667	13	27	22.36	-13	14	43.2	809
1991	GS7	*	1991	04	08.15278	13	39	38.80	-12	50	34.1	809
1991	GS7		1991	04	08.16597	13	39	38.11	-12	50	28.8	809
1991	GS7		1991	04	08.17917	13	39	37.46	-12	50	22.3	809
1991	GS7		1991	04	10.24722	13	37	48.82	-12	34	24.4	19.6 809
1991	GS7		1991	04	10.26042	13	37	48.15	-12	34	17.0	809
1991	GS7		1991	04	10.27361	13	37	47.48	-12	34	11.7	809
1991	GT7	*	1991	04	08.15278	13	39	45.20	-16	22	31.6	809
1991	GT7		1991	04	08.16597	13	39	44.36	-16	22	29.7	809
1991	GT7		1991	04	08.17917	13	39	43.51	-16	22	27.9	809
1991	GT7		1991	04	10.24722	13	37	44.71	-16	16	56.3	19.8 809
1991	GT7		1991	04	10.26042	13	37	43.91	-16	16	54.4	809
1991	GT7		1991	04	10.27361	13	37	43.19	-16	16	52.9	809
1991	GU7	*	1991	04	08.15278	13	39	53.80	-15	13	50.5	809
1991	GU7		1991	04	08.16597	13	39	53.09	-15	13	46.9	809
1991	GU7		1991	04	08.17917	13	39	52.38	-15	13	42.8	809
1991	GU7		1991	04	10.24722	13	38	11.70	-15	03	08.4	19.5 809
1991	GU7		1991	04	10.26042	13	38	10.94	-15	03	03.9	809
1991	GU7		1991	04	10.27361	13	38	10.25	-15	03	00.5	809
1991	GU7		1991	04	19.19028	13	30	45.08	-14	13	21.2	19.3 809
1991	GU7		1991	04	19.20347	13	30	44.35	-14	13	15.9	809
1991	GU7		1991	04	19.21667	13	30	43.63	-14	13	11.8	809
1991	GV7	*	1991	04	08.15278	13	40	45.10	-15	17	26.7	809
1991	GV7		1991	04	08.16597	13	40	44.34	-15	17	22.5	809
1991	GV7		1991	04	08.17917	13	40	43.43	-15	17	19.9	809
1991	GV7		1991	04	10.24722	13	38	42.65	-15	06	01.2	19.2 809
1991	GV7		1991	04	10.26042	13	38	41.80	-15	05	56.2	809
1991	GV7		1991	04	10.27361	13	38	40.97	-15	05	52.5	809
1991	GV7		1991	04	19.19028	13	29	38.22	-14	10	31.2	18.8 809
1991	GV7		1991	04	19.20347	13	29	37.32	-14	10	25.7	809
1991	GV7		1991	04	19.21667	13	29	36.38	-14	10	20.6	809
1991	GW7	*	1991	04	08.15278	13	41	24.36	-16	03	05.6	809
1991	GW7		1991	04	08.16597	13	41	23.69	-16	03	03.8	809
1991	GW7		1991	04	08.17917	13	41	23.04	-16	03	02.2	809
1991	GW7		1991	04	10.24722	13	39	40.45	-15	55	45.7	20.0 809
1991	GW7		1991	04	10.26042	13	39	39.78	-15	55	44.8	809
1991	GW7		1991	04	10.27361	13	39	39.21	-15	55	41.6	809
1991	GX7	*	1991	04	08.15278	13	41	51.07	-15	59	15.0	809
1991	GX7		1991	04	08.16597	13	41	50.30	-15	59	13.0	809
1991	GX7		1991	04	08.17917	13	41	49.46	-15	59	11.1	809
1991	GX7		1991	04	10.24722	13	39	59.21	-15	54	42.5	19.4 809
1991	GX7		1991	04	10.26042	13	39	58.46	-15	54	40.1	809

1991	GX7		1991	04	10.27361	13	39	57.75	-15	54	39.0		809
1991	GX7		1991	04	19.19028	13	31	51.36	-15	31	25.1	19.4	809
1991	GX7		1991	04	19.20347	13	31	50.66	-15	31	22.4		809
1991	GX7		1991	04	19.21667	13	31	49.86	-15	31	20.9		809
1991	GY7	*	1991	04	08.15278	13	42	03.84	-13	40	11.6		809
1991	GY7		1991	04	08.16597	13	42	03.01	-13	40	08.5		809
1991	GY7		1991	04	08.17917	13	42	02.24	-13	40	06.1		809
1991	GY7		1991	04	10.24722	13	40	12.16	-13	31	43.3	18.7	809
1991	GY7		1991	04	10.26042	13	40	11.36	-13	31	39.4		809
1991	GY7		1991	04	10.27361	13	40	10.63	-13	31	36.2		809
1991	GY7		1991	04	19.19028	13	31	52.02	-12	50	39.2	18.7	809
1991	GY7		1991	04	19.20347	13	31	51.35	-12	50	34.4		809
1991	GY7		1991	04	19.21667	13	31	50.41	-12	50	31.4		809
1991	GZ7	*	1991	04	08.15278	13	42	58.47	-14	51	45.0		809
1991	GZ7		1991	04	08.16597	13	42	57.72	-14	51	44.5		809
1991	GZ7		1991	04	08.17917	13	42	56.90	-14	51	43.8		809
1991	GZ7		1991	04	10.24722	13	41	02.02	-14	47	31.2	19.2	809
1991	GZ7		1991	04	10.26042	13	41	01.27	-14	47	29.4		809
1991	GZ7		1991	04	10.27361	13	41	00.38	-14	47	26.6		809
1991	GZ7		1991	04	19.19028	13	32	36.95	-14	25	49.6	18.6	809
1991	GZ7		1991	04	19.20347	13	32	36.20	-14	25	48.3		809
1991	GZ7		1991	04	19.21667	13	32	35.39	-14	25	46.4		809
1991	GA8	*	1991	04	08.15278	13	43	28.78	-12	17	36.8		809
1991	GA8		1991	04	08.16597	13	43	28.11	-12	17	34.1		809
1991	GA8		1991	04	08.17917	13	43	27.40	-12	17	31.5		809
1991	GA8		1991	04	10.24722	13	41	48.47	-12	09	00.8	18.7	809
1991	GA8		1991	04	10.26042	13	41	47.88	-12	08	57.4		809
1991	GA8		1991	04	10.27361	13	41	47.00	-12	08	53.9		809
1991	GB8	*	1991	04	08.15278	13	43	40.92	-15	27	48.3		809
1991	GB8		1991	04	08.16597	13	43	40.35	-15	27	44.7		809
1991	GB8		1991	04	08.17917	13	43	39.68	-15	27	41.1		809
1991	GB8		1991	04	10.24722	13	42	12.48	-15	15	55.6	19.5	809
1991	GB8		1991	04	10.26042	13	42	11.97	-15	15	50.6		809
1991	GB8		1991	04	10.27361	13	42	11.42	-15	15	46.1		809
1991	GB8		1991	04	19.19028	13	35	46.03	-14	21	56.4	19.4	809
1991	GB8		1991	04	19.20347	13	35	45.48	-14	21	51.4		809
1991	GB8		1991	04	19.21667	13	35	44.93	-14	21	46.8		809
1991	GC8	*	1991	04	08.15278	13	44	22.60	-16	26	27.5		809
1991	GC8		1991	04	08.16597	13	44	21.84	-16	26	26.4		809
1991	GC8		1991	04	08.17917	13	44	21.07	-16	26	26.0		809
1991	GC8		1991	04	10.24722	13	42	23.80	-16	23	52.8	19.5	809
1991	GC8		1991	04	10.26042	13	42	23.02	-16	23	52.4		809
1991	GC8		1991	04	10.27361	13	42	22.25	-16	23	51.5		809
1991	GD8	*	1991	04	08.15278	13	44	33.53	-14	04	56.2		809
1991	GD8		1991	04	08.16597	13	44	32.85	-14	04	51.8		809
1991	GD8		1991	04	08.17917	13	44	32.29	-14	04	47.7		809
1991	GD8		1991	04	10.24722	13	43	04.56	-13	51	53.3	19.1	809
1991	GD8		1991	04	10.26042	13	43	03.91	-13	51	48.2		809
1991	GD8		1991	04	10.27361	13	43	03.33	-13	51	43.6		809
1991	GD8		1991	04	19.19028	13	36	35.12	-12	53	13.7	18.8	809
1991	GD8		1991	04	19.20347	13	36	34.51	-12	53	07.7		809
1991	GD8		1991	04	19.21667	13	36	33.89	-12	53	03.0		809
1991	GE8	*	1991	04	08.15278	13	45	24.66	-12	30	09.9		809
1991	GE8		1991	04	08.16597	13	45	23.77	-12	30	08.3		809
1991	GE8		1991	04	08.17917	13	45	22.89	-12	30	07.9		809
1991	GE8		1991	04	10.24722	13	43	13.90	-12	24	49.6	18.6	809
1991	GE8		1991	04	10.26042	13	43	12.96	-12	24	48.1		809
1991	GE8		1991	04	10.27361	13	43	12.14	-12	24	46.4		809
1991	GE8		1991	04	19.19028	13	33	41.72	-11	58	53.9	18.5	809

1991	GE8		1991	04	19.20347	13	33	40.79	-11	58	50.9		809
1991	GE8		1991	04	19.21667	13	33	39.96	-11	58	49.1		809
1991	GF8	*	1991	04	08.15278	13	45	37.74	-15	34	59.0		809
1991	GF8		1991	04	08.16597	13	45	37.04	-15	34	58.4		809
1991	GF8		1991	04	08.17917	13	45	36.18	-15	34	57.1		809
1991	GF8		1991	04	10.24722	13	43	41.72	-15	31	52.4	19.2	809
1991	GF8		1991	04	10.26042	13	43	40.86	-15	31	50.5		809
1991	GF8		1991	04	10.27361	13	43	40.16	-15	31	49.7		809
1991	GF8		1991	04	19.19028	13	35	14.25	-15	14	28.8	18.9	809
1991	GF8		1991	04	19.20347	13	35	13.48	-15	14	27.4		809
1991	GF8		1991	04	19.21667	13	35	12.66	-15	14	25.5		809
1991	GG8	*	1991	04	08.15278	13	45	46.97	-14	19	03.9		809
1991	GG8		1991	04	08.16597	13	45	46.21	-14	19	03.5		809
1991	GG8		1991	04	08.17917	13	45	45.54	-14	19	03.7		809
1991	GG8		1991	04	10.24722	13	44	15.30	-14	11	06.7	19.5	809
1991	GG8		1991	04	10.26042	13	44	14.59	-14	11	02.3		809
1991	GG8		1991	04	10.27361	13	44	13.80	-14	11	00.5		809
1991	GH8	*	1991	04	08.15278	13	46	07.88	-13	44	57.7		809
1991	GH8		1991	04	08.16597	13	46	07.09	-13	44	58.7		809
1991	GH8		1991	04	08.17917	13	46	06.38	-13	44	58.2		809
1991	GH8		1991	04	10.24722	13	44	05.62	-13	44	37.7	18.8	809
1991	GH8		1991	04	10.26042	13	44	04.80	-13	44	37.9		809
1991	GH8		1991	04	10.27361	13	44	03.96	-13	44	37.9		809
1991	GH8		1991	04	19.19028	13	34	57.68	-13	39	33.7	18.5	809
1991	GH8		1991	04	19.20347	13	34	56.84	-13	39	33.6		809
1991	GH8		1991	04	19.21667	13	34	55.89	-13	39	33.2		809
1991	GJ8	*	1991	04	08.15278	13	46	23.42	-12	43	49.0		809
1991	GJ8		1991	04	08.16597	13	46	22.59	-12	43	48.5		809
1991	GJ8		1991	04	08.17917	13	46	21.69	-12	43	47.9		809
1991	GJ8		1991	04	10.24722	13	44	10.36	-12	41	55.3	19.4	809
1991	GJ8		1991	04	10.26042	13	44	09.48	-12	41	54.5		809
1991	GJ8		1991	04	10.27361	13	44	08.58	-12	41	55.9		809
1991	GJ8		1991	04	19.19028	13	34	21.68	-12	30	22.2	18.7	809
1991	GJ8		1991	04	19.20347	13	34	20.83	-12	30	21.1		809
1991	GJ8		1991	04	19.21667	13	34	19.87	-12	30	20.9		809
1991	GK8	*	1991	04	08.15278	13	47	17.50	-12	22	10.0		809
1991	GK8		1991	04	08.16597	13	47	16.66	-12	22	11.0		809
1991	GK8		1991	04	08.17917	13	47	15.85	-12	22	09.4		809
1991	GK8		1991	04	10.24722	13	45	06.93	-12	19	45.0	19.5	809
1991	GK8		1991	04	10.26042	13	45	06.01	-12	19	44.0		809
1991	GK8		1991	04	10.27361	13	45	05.14	-12	19	44.1		809
1991	GK8		1991	04	19.19028	13	35	19.16	-12	05	52.2	18.8	809
1991	GK8		1991	04	19.20347	13	35	18.27	-12	05	50.6		809
1991	GK8		1991	04	19.21667	13	35	17.41	-12	05	49.6		809
1991	GL8	*	1991	04	08.15278	13	47	27.35	-13	07	28.7		809
1991	GL8		1991	04	08.16597	13	47	26.68	-13	07	25.1		809
1991	GL8		1991	04	08.17917	13	47	25.97	-13	07	22.5		809
1991	GL8		1991	04	10.24722	13	45	41.62	-13	00	40.1	20.0	809
1991	GL8		1991	04	10.26042	13	45	40.88	-13	00	38.4		809
1991	GL8		1991	04	10.27361	13	45	40.10	-13	00	35.6		809
1991	GL8		1991	04	19.19028	13	37	48.82	-12	28	20.1	19.0	809
1991	GL8		1991	04	19.20347	13	37	48.13	-12	28	17.3		809
1991	GL8		1991	04	19.21667	13	37	47.31	-12	28	13.3		809
1991	GM8	*	1991	04	08.15278	13	47	30.04	-15	10	11.9		809
1991	GM8		1991	04	08.16597	13	47	29.39	-15	10	08.7		809
1991	GM8		1991	04	08.17917	13	47	28.72	-15	10	05.3		809
1991	GM8		1991	04	10.24722	13	45	49.98	-15	00	46.4	19.0	809
1991	GM8		1991	04	10.26042	13	45	49.19	-15	00	42.2		809
1991	GM8		1991	04	10.27361	13	45	48.59	-15	00	39.6		809

1991	GM8		1991	04	19.19028	13	38	25.79	-14	16	14.2	19.2	809
1991	GM8		1991	04	19.20347	13	38	25.17	-14	16	09.5		809
1991	GM8		1991	04	19.21667	13	38	24.42	-14	16	06.0		809
1991	GN8	*	1991	04	08.15278	13	47	58.21	-16	01	24.0		809
1991	GN8		1991	04	08.16597	13	47	57.48	-16	01	18.3		809
1991	GN8		1991	04	08.17917	13	47	56.71	-16	01	12.7		809
1991	GN8		1991	04	10.24722	13	46	09.34	-15	45	49.7	18.8	809
1991	GN8		1991	04	10.26042	13	46	08.60	-15	45	45.6		809
1991	GN8		1991	04	10.27361	13	46	07.83	-15	45	38.5		809
1991	GN8		1991	04	19.19028	13	38	02.76	-14	32	27.4	19.0	809
1991	GN8		1991	04	19.20347	13	38	02.00	-14	32	21.5		809
1991	GN8		1991	04	19.21667	13	38	01.21	-14	32	14.9		809
1991	GO8	*	1991	04	08.15278	13	48	19.19	-15	29	16.7		809
1991	GO8		1991	04	08.16597	13	48	18.60	-15	29	14.5		809
1991	GO8		1991	04	08.17917	13	48	17.87	-15	29	11.6		809
1991	GO8		1991	04	10.24722	13	46	31.74	-15	22	07.3	19.4	809
1991	GO8		1991	04	10.26042	13	46	31.06	-15	22	05.1		809
1991	GO8		1991	04	10.27361	13	46	30.32	-15	22	02.7		809
1991	GO8		1991	04	19.19028	13	38	30.63	-14	46	07.7	19.0	809
1991	GO8		1991	04	19.20347	13	38	29.97	-14	46	05.6		809
1991	GO8		1991	04	19.21667	13	38	29.15	-14	46	01.3		809
1991	GP8	*	1991	04	08.15278	13	49	14.02	-14	29	48.0		809
1991	GP8		1991	04	08.16597	13	49	13.30	-14	29	43.5		809
1991	GP8		1991	04	08.17917	13	49	12.62	-14	29	37.9		809
1991	GP8		1991	04	10.24722	13	47	37.00	-14	16	54.3	18.9	809
1991	GP8		1991	04	10.26042	13	47	36.34	-14	16	49.6		809
1991	GP8		1991	04	10.27361	13	47	35.72	-14	16	46.1		809
1991	GP8		1991	04	19.19028	13	40	18.65	-13	16	26.0	18.6	809
1991	GP8		1991	04	19.20347	13	40	17.97	-13	16	20.4		809
1991	GP8		1991	04	19.21667	13	40	17.25	-13	16	15.4		809
1991	GQ8	*	1991	04	08.15278	13	49	47.26	-13	09	36.5		809
1991	GQ8		1991	04	08.16597	13	49	46.70	-13	09	28.5		809
1991	GQ8		1991	04	08.17917	13	49	46.05	-13	09	20.1		809
1991	GQ8		1991	04	10.24722	13	48	19.71	-12	46	43.6	18.5	809
1991	GQ8		1991	04	10.26042	13	48	19.08	-12	46	34.9		809
1991	GQ8		1991	04	10.27361	13	48	18.46	-12	46	25.7		809
1991	GQ8		1991	04	19.19028	13	41	47.15	-11	04	37.7	18.0	809
1991	GQ8		1991	04	19.20347	13	41	46.55	-11	04	28.3		809
1991	GQ8		1991	04	19.21667	13	41	45.92	-11	04	19.0		809
1991	GR8	*	1991	04	08.15278	13	50	47.23	-13	52	48.1		809
1991	GR8		1991	04	08.16597	13	50	46.58	-13	52	45.9		809
1991	GR8		1991	04	08.17917	13	50	45.85	-13	52	43.4		809
1991	GR8		1991	04	10.24722	13	49	05.39	-13	45	08.1	19.2	809
1991	GR8		1991	04	10.26042	13	49	04.66	-13	45	05.8		809
1991	GR8		1991	04	10.27361	13	49	03.88	-13	45	02.8		809
1991	GS8	*	1991	04	08.15278	13	51	45.67	-14	15	11.7		809
1991	GS8		1991	04	08.16597	13	51	44.91	-14	15	06.6		809
1991	GS8		1991	04	08.17917	13	51	44.08	-14	15	02.6		809
1991	GS8		1991	04	10.24722	13	49	47.53	-14	00	03.4	19.0	809
1991	GS8		1991	04	10.26042	13	49	46.74	-13	59	57.2		809
1991	GS8		1991	04	10.27361	13	49	46.03	-13	59	52.5		809
1991	GS8		1991	04	19.19028	13	41	05.67	-12	50	59.4	19.3	809
1991	GS8		1991	04	19.20347	13	41	04.86	-12	50	52.5		809
1991	GS8		1991	04	19.21667	13	41	03.97	-12	50	46.3		809
1991	GT8	*	1991	04	08.15278	13	52	02.37	-15	43	37.5		809
1991	GT8		1991	04	08.16597	13	52	01.69	-15	43	34.6		809
1991	GT8		1991	04	08.17917	13	52	00.83	-15	43	34.7		809
1991	GT8		1991	04	10.24722	13	50	11.11	-15	36	53.1	19.4	809
1991	GT8		1991	04	10.26042	13	50	10.37	-15	36	49.3		809

1991	GT8		1991	04	10.27361	13	50	09.69	-15	36	47.5		809
1991	GT8		1991	04	19.19028	13	41	47.64	-15	02	33.3	19.3	809
1991	GT8		1991	04	19.20347	13	41	46.74	-15	02	29.9		809
1991	GT8		1991	04	19.21667	13	41	45.92	-15	02	27.0		809
1991	GU8	*	1991	04	08.15278	13	52	15.57	-15	37	04.0		809
1991	GU8		1991	04	08.16597	13	52	14.88	-15	37	03.4		809
1991	GU8		1991	04	08.17917	13	52	14.30	-15	37	01.1		809
1991	GU8		1991	04	10.24722	13	50	16.87	-15	28	30.3	20.0	809
1991	GU8		1991	04	10.26042	13	50	15.98	-15	28	26.6		809
1991	GU8		1991	04	10.27361	13	50	15.24	-15	28	24.1		809
1991	GU8		1991	04	19.19028	13	41	20.60	-14	46	05.4	19.5	809
1991	GU8		1991	04	19.20347	13	41	19.68	-14	46	00.1		809
1991	GU8		1991	04	19.21667	13	41	18.80	-14	45	56.3		809
1991	GV8	*	1991	04	08.15278	13	52	24.96	-15	25	09.0		809
1991	GV8		1991	04	08.16597	13	52	24.19	-15	25	06.0		809
1991	GV8		1991	04	08.17917	13	52	23.41	-15	25	03.4		809
1991	GV8		1991	04	10.24722	13	50	34.41	-15	16	17.0	19.0	809
1991	GV8		1991	04	10.26042	13	50	33.66	-15	16	13.9		809
1991	GV8		1991	04	10.27361	13	50	32.86	-15	16	10.5		809
1991	GV8		1991	04	19.19028	13	42	20.44	-14	33	07.0	18.5	809
1991	GV8		1991	04	19.20347	13	42	19.57	-14	33	02.7		809
1991	GV8		1991	04	19.21667	13	42	18.92	-14	32	58.9		809
1991	GW8	*	1991	04	08.15278	13	52	42.88	-14	30	36.3		809
1991	GW8		1991	04	08.16597	13	52	42.25	-14	30	34.3		809
1991	GW8		1991	04	08.17917	13	52	41.69	-14	30	33.4		809
1991	GW8		1991	04	10.24722	13	51	03.51	-14	23	28.3	19.3	809
1991	GW8		1991	04	10.26042	13	51	02.78	-14	23	23.8		809
1991	GW8		1991	04	10.27361	13	51	02.11	-14	23	21.6		809
1991	GW8		1991	04	19.19028	13	43	21.60	-13	46	31.6	19.0	809
1991	GW8		1991	04	19.20347	13	43	20.90	-13	46	29.0		809
1991	GW8		1991	04	19.21667	13	43	20.13	-13	46	25.0		809
1991	GX8	*	1991	04	08.15278	13	52	53.27	-14	43	04.5		809
1991	GX8		1991	04	08.16597	13	52	52.58	-14	43	00.4		809
1991	GX8		1991	04	08.17917	13	52	52.07	-14	42	56.0		809
1991	GX8		1991	04	10.24722	13	51	22.11	-14	32	31.4	18.7	809
1991	GX8		1991	04	10.26042	13	51	21.47	-14	32	28.1		809
1991	GX8		1991	04	10.27361	13	51	20.85	-14	32	24.6		809
1991	GX8		1991	04	19.19028	13	44	37.36	-13	43	56.7	18.6	809
1991	GX8		1991	04	19.20347	13	44	36.73	-13	43	51.8		809
1991	GX8		1991	04	19.21667	13	44	36.01	-13	43	48.7		809
1991	GY8	*	1991	04	08.15278	13	54	05.70	-14	41	56.9		809
1991	GY8		1991	04	08.16597	13	54	04.95	-14	42	00.2		809
1991	GY8		1991	04	08.17917	13	54	04.03	-14	42	04.3		809
1991	GY8		1991	04	10.24722	13	51	44.55	-14	51	44.9	18.5	809
1991	GY8		1991	04	10.26042	13	51	43.64	-14	51	48.4		809
1991	GY8		1991	04	10.27361	13	51	42.69	-14	51	52.3		809
1991	GY8		1991	04	19.19028	13	41	09.00	-15	28	33.5	18.4	809
1991	GY8		1991	04	19.20347	13	41	08.04	-15	28	36.4		809
1991	GY8		1991	04	19.21667	13	41	06.99	-15	28	40.0		809
1991	GZ8	*	1991	04	10.12153	13	17	02.00	-06	33	06.9	19.3	809
1991	GZ8		1991	04	10.13472	13	17	01.11	-06	33	01.2		809
1991	GZ8		1991	04	10.14792	13	17	00.42	-06	32	57.0		809
1991	GA9	*	1991	04	08.06667	13	15	29.78	-09	15	22.9		809
1991	GA9		1991	04	08.07986	13	15	29.01	-09	15	16.4		809
1991	GA9		1991	04	08.09306	13	15	28.29	-09	15	11.3		809
1991	GA9		1991	04	19.09653	13	05	57.20	-07	41	52.4	18.6	809
1991	GA9		1991	04	19.10972	13	05	56.37	-07	41	44.7		809
1991	GA9		1991	04	19.13194	13	05	55.37	-07	41	35.1		809
1991	GB9	*	1991	04	08.10903	13	30	50.92	-09	38	50.3		809

1991	GB9		1991	04	08.12222	13	30	50.33	-09	38	44.1		809
1991	GB9		1991	04	08.13542	13	30	49.51	-09	38	38.9		809
1991	GB9		1991	04	19.14792	13	20	59.54	-08	08	50.8	20.0	809
1991	GB9		1991	04	19.16111	13	20	58.89	-08	08	46.2		809
1991	GB9		1991	04	19.17431	13	20	58.23	-08	08	42.0		809
1991	GC9	*	1991	04	08.10903	13	34	54.48	-10	06	30.9		809
1991	GC9		1991	04	08.12222	13	34	53.55	-10	06	31.3		809
1991	GC9		1991	04	08.13542	13	34	52.81	-10	06	32.4		809
1991	GC9		1991	04	19.14792	13	23	06.66	-10	08	12.7	19.6	809
1991	GC9		1991	04	19.16111	13	23	05.69	-10	08	13.6		809
1991	GC9		1991	04	19.17431	13	23	04.84	-10	08	14.1		809
1991	GD9	*	1991	04	10.07569	12	50	48.40	-04	55	31.2	19.2	809
1991	GD9		1991	04	10.08889	12	50	47.50	-04	55	27.5		809
1991	GD9		1991	04	10.10208	12	50	46.58	-04	55	25.1		809
1991	GD9		1991	04	19.05347	12	42	01.25	-04	22	18.4	18.7	809
1991	GD9		1991	04	19.06667	12	42	00.35	-04	22	15.7		809
1991	GD9		1991	04	19.07986	12	41	59.37	-04	22	14.1		809
1991	GE9	*	1991	04	10.07569	12	52	39.42	-02	23	05.3	18.8	809
1991	GE9		1991	04	10.08889	12	52	38.71	-02	23	02.1		809
1991	GE9		1991	04	10.10208	12	52	38.10	-02	22	58.5		809
1991	GE9		1991	04	19.05347	12	46	19.28	-01	44	09.8	18.6	809
1991	GE9		1991	04	19.06667	12	46	18.68	-01	44	07.0		809
1991	GE9		1991	04	19.07986	12	46	18.13	-01	44	04.3		809
1991	GF9	*	1991	04	10.07569	12	55	41.35	-02	14	12.9	19.0	809
1991	GF9		1991	04	10.08889	12	55	40.64	-02	14	07.4		809
1991	GF9		1991	04	10.10208	12	55	39.80	-02	13	59.4		809
1991	GF9		1991	04	19.05347	12	47	59.01	-01	03	32.5	19.0	809
1991	GF9		1991	04	19.06667	12	47	58.38	-01	03	26.4		809
1991	GF9		1991	04	19.07986	12	47	57.73	-01	03	20.9		809
1991	GG9	*	1991	04	10.07569	12	57	23.85	-03	37	44.8	19.4	809
1991	GG9		1991	04	10.08889	12	57	23.31	-03	37	41.6		809
1991	GG9		1991	04	10.10208	12	57	22.75	-03	37	37.9		809
1991	GG9		1991	04	19.05347	12	51	06.35	-02	53	09.1	19.5	809
1991	GG9		1991	04	19.06667	12	51	05.80	-02	53	04.8		809
1991	GG9		1991	04	19.07986	12	51	05.29	-02	53	00.6		809
1991	GH9	*	1991	04	10.07569	13	01	45.30	-05	20	06.3	18.8	809
1991	GH9		1991	04	10.08889	13	01	44.64	-05	20	01.4		809
1991	GH9		1991	04	10.10208	13	01	44.03	-05	19	57.1		809
1991	GH9		1991	04	19.09653	12	55	17.71	-04	38	26.6	19.4	809
1991	GH9		1991	04	19.10972	12	55	17.01	-04	38	21.7		809
1991	GH9		1991	04	19.13194	12	55	16.24	-04	38	17.4		809
1991	GJ9	*	1991	04	10.07569	13	05	02.48	-02	34	40.0	19.2	809
1991	GJ9		1991	04	10.08889	13	05	01.70	-02	34	32.4		809
1991	GJ9		1991	04	10.10208	13	05	01.01	-02	34	27.6		809
1991	GJ9		1991	04	19.05347	12	57	19.64	-01	20	08.8	19.5	809
1991	GJ9		1991	04	19.06667	12	57	19.00	-01	20	00.4		809
1991	GJ9		1991	04	19.07986	12	57	18.27	-01	19	54.7		809
1991	GK9	*	1991	04	10.12153	13	05	36.79	-06	41	48.5	19.2	809
1991	GK9		1991	04	10.13472	13	05	35.98	-06	41	44.0		809
1991	GK9		1991	04	10.14792	13	05	35.21	-06	41	40.2		809
1991	GK9		1991	04	19.09653	12	57	18.35	-05	45	58.1	19.5	809
1991	GK9		1991	04	19.10972	12	57	17.41	-05	45	51.4		809
1991	GK9		1991	04	19.13194	12	57	16.36	-05	45	44.5		809
1991	GL9	*	1991	04	10.12153	13	10	22.98	-08	30	42.8	19.1	809
1991	GL9		1991	04	10.13472	13	10	22.21	-08	30	38.4		809
1991	GL9		1991	04	10.14792	13	10	21.40	-08	30	32.9		809
1991	GL9		1991	04	19.09653	13	01	56.30	-07	27	16.8	19.2	809
1991	GL9		1991	04	19.10972	13	01	55.34	-07	27	11.6		809
1991	GL9		1991	04	19.13194	13	01	54.24	-07	27	03.1		809

1991	GM9	*	1991	04	10.12153	13	18	44.29	-05	00	53.7	18.7	809
1991	GM9		1991	04	10.13472	13	18	43.68	-05	00	50.9		809
1991	GM9		1991	04	10.14792	13	18	43.16	-05	00	47.3		809
1991	GM9		1991	04	19.09653	13	10	31.89	-04	16	39.1	20.0	809
1991	GM9		1991	04	19.10972	13	10	30.93	-04	16	34.2		809
1991	GM9		1991	04	19.13194	13	10	29.89	-04	16	29.1		809
1991	GN9	*	1991	04	10.12153	13	19	08.41	-05	03	18.0	19.1	809
1991	GN9		1991	04	10.13472	13	19	07.57	-05	03	13.9		809
1991	GN9		1991	04	10.14792	13	19	06.76	-05	03	10.3		809
1991	GN9		1991	04	19.09653	13	12	11.54	-04	19	38.1	18.6	809
1991	GN9		1991	04	19.10972	13	12	10.89	-04	19	34.0		809
1991	GN9		1991	04	19.13194	13	12	09.91	-04	19	28.2		809
1991	GO9	*	1991	04	10.12153	13	20	56.06	-07	50	59.5	19.4	809
1991	GO9		1991	04	10.13472	13	20	55.36	-07	50	54.2		809
1991	GO9		1991	04	10.14792	13	20	54.73	-07	50	51.7		809
1991	GO9		1991	04	19.14792	13	12	43.63	-06	59	22.7	19.6	809
1991	GO9		1991	04	19.16111	13	12	42.85	-06	59	18.5		809
1991	GO9		1991	04	19.17431	13	12	42.05	-06	59	13.5		809
1991	GP9	*	1991	04	10.16736	13	16	59.02	-10	40	31.1	18.7	809
1991	GP9		1991	04	10.18056	13	16	58.36	-10	40	26.9		809
1991	GP9		1991	04	10.19375	13	16	57.62	-10	40	23.5		809
1991	GP9		1991	04	19.14792	13	09	33.56	-09	54	08.3	19.6	809
1991	GP9		1991	04	19.16111	13	09	32.88	-09	54	04.0		809
1991	GP9		1991	04	19.17431	13	09	32.16	-09	54	00.9		809
1991	GQ9	*	1991	04	10.16736	13	19	37.27	-08	29	07.8	18.7	809
1991	GQ9		1991	04	10.18056	13	19	36.58	-08	29	02.4		809
1991	GQ9		1991	04	10.19375	13	19	35.98	-08	28	59.3		809
1991	GQ9		1991	04	19.09653	13	12	24.90	-07	33	59.4	19.5	809
1991	GQ9		1991	04	19.10972	13	12	24.08	-07	33	53.0		809
1991	GQ9		1991	04	19.13194	13	12	23.12	-07	33	46.7		809
1991	GQ9		1991	04	19.14792	13	12	22.32	-07	33	40.5	19.2	809
1991	GQ9		1991	04	19.16111	13	12	21.73	-07	33	35.6		809
1991	GQ9		1991	04	19.17431	13	12	21.06	-07	33	30.2		809
1991	GR9	*	1991	04	10.16736	13	29	01.08	-10	52	28.9	18.7	809
1991	GR9		1991	04	10.18056	13	29	00.33	-10	52	24.5		809
1991	GR9		1991	04	10.19375	13	28	59.58	-10	52	20.4		809
1991	GR9		1991	04	19.14792	13	23	04.27	-09	34	02.7	19.7	809
1991	GR9		1991	04	19.16111	13	23	03.65	-09	33	58.5		809
1991	GR9		1991	04	19.17431	13	23	03.15	-09	33	52.4		809
1991	GV9	*	1991	04	10.24722	13	38	21.83	-12	03	30.3	18.4	809
1991	GV9		1991	04	10.26042	13	38	21.24	-12	03	26.0		809
1991	GV9		1991	04	10.27361	13	38	20.55	-12	03	24.2		809
1991	GV9		1991	04	19.19028	13	31	06.46	-11	22	44.8	18.6	809
1991	GV9		1991	04	19.20347	13	31	05.77	-11	22	40.7		809
1991	GV9		1991	04	19.21667	13	31	05.04	-11	22	37.3		809
1991	GW9	*	1991	04	08.15278	13	45	03.54	-14	57	36.1		809
1991	GW9		1991	04	08.16597	13	45	02.74	-14	57	30.7		809
1991	GW9		1991	04	08.17917	13	45	01.99	-14	57	26.9		809
1991	GW9		1991	04	19.19028	13	34	22.91	-13	42	21.1	19.7	809
1991	GW9		1991	04	19.20347	13	34	22.13	-13	42	15.7		809
1991	GW9		1991	04	19.21667	13	34	21.22	-13	42	09.0		809
1991	GX9	*	1991	04	10.24722	13	39	01.04	-15	14	12.9	19.3	809
1991	GX9		1991	04	10.26042	13	38	59.93	-15	14	10.9		809
1991	GX9		1991	04	10.27361	13	38	59.08	-15	14	08.9		809
1991	GX9		1991	04	19.19028	13	29	39.77	-14	47	50.6	19.6	809
1991	GX9		1991	04	19.20347	13	29	38.95	-14	47	48.3		809
1991	GX9		1991	04	19.21667	13	29	38.06	-14	47	45.7		809
1991	HA		1991	04	08.02361	13	01	45.95	-06	31	51.8		809
1991	HA		1991	04	08.03681	13	01	45.19	-06	31	46.3		809

1991	HA	1991	04	08.05000	13	01	44.41	-06	31	42.7	809
1991	HA	1991	04	10.07569	12	59	57.19	-06	18	36.0	18.4 809
1991	HA	1991	04	10.08889	12	59	56.38	-06	18	31.2	809
1991	HA	1991	04	10.10208	12	59	55.58	-06	18	25.5	809
2023	P-L	1991	04	19.19028	13	30	16.69	-10	18	39.7	18.7 809
2023	P-L	1991	04	19.20347	13	30	15.99	-10	18	35.8	809
2023	P-L	1991	04	19.21667	13	30	15.30	-10	18	32.4	809
4018	P-L	1991	04	08.10903	13	20	17.78	-12	21	51.4	809
4018	P-L	1991	04	08.12222	13	20	17.06	-12	21	48.7	809
4018	P-L	1991	04	08.13542	13	20	16.16	-12	21	45.5	809
4018	P-L	1991	04	10.16736	13	18	21.04	-12	13	24.0	20.0 809
4018	P-L	1991	04	10.18056	13	18	20.28	-12	13	21.4	809
4018	P-L	1991	04	10.19375	13	18	19.41	-12	13	17.1	809
5557	P-L	1991	04	19.09653	12	53	32.39	-06	46	46.9	18.6 809
5557	P-L	1991	04	19.10972	12	53	31.63	-06	46	41.9	809
5557	P-L	1991	04	19.13194	12	53	30.72	-06	46	38.2	809
1133	T-2	1991	04	08.06667	13	22	48.01	-09	13	53.7	18.6 809
1133	T-2	1991	04	08.07986	13	22	47.37	-09	13	48.7	809
1133	T-2	1991	04	08.09306	13	22	46.75	-09	13	45.2	809
1133	T-2	1991	04	08.10903	13	22	46.09	-09	13	41.2	809
1133	T-2	1991	04	08.12222	13	22	45.39	-09	13	37.0	809
1133	T-2	1991	04	08.13542	13	22	44.74	-09	13	33.4	809
1133	T-2	1991	04	10.12153	13	21	11.21	-09	03	29.2	18.7 809
1133	T-2	1991	04	10.13472	13	21	10.54	-09	03	26.1	809
1133	T-2	1991	04	10.14792	13	21	09.92	-09	03	22.0	809
1133	T-2	1991	04	10.16736	13	21	09.11	-09	03	15.9	18.6 809
1133	T-2	1991	04	10.18056	13	21	08.52	-09	03	11.9	809
1133	T-2	1991	04	10.19375	13	21	07.82	-09	03	07.9	809
1133	T-2	1991	04	19.14792	13	14	07.19	-08	17	18.8	18.4 809
1133	T-2	1991	04	19.16111	13	14	06.50	-08	17	14.1	809
1133	T-2	1991	04	19.17431	13	14	05.88	-08	17	10.1	809
57		1991	04	08.02361	12	51	14.42	-06	56	52.0	809
57		1991	04	08.03681	12	51	13.56	-06	56	47.0	809
57		1991	04	08.05000	12	51	12.73	-06	56	41.4	809
57		1991	04	10.07569	12	49	51.76	-06	40	51.9	14.8 809
57		1991	04	10.08889	12	49	51.09	-06	40	45.3	809
57		1991	04	10.10208	12	49	50.40	-06	40	39.0	809
77		1991	04	08.06667	13	21	42.84	-09	57	29.9	809
77		1991	04	08.07986	13	21	42.30	-09	57	25.9	809
77		1991	04	08.09306	13	21	41.46	-09	57	23.2	809
77		1991	04	08.10903	13	21	40.81	-09	57	24.1	809
77		1991	04	08.12222	13	21	40.07	-09	57	21.0	809
77		1991	04	08.13542	13	21	39.24	-09	57	16.1	809
77		1991	04	10.16736	13	19	52.89	-09	48	18.1	15.0 809
77		1991	04	10.18056	13	19	52.05	-09	48	14.5	809
77		1991	04	10.19375	13	19	51.28	-09	48	11.4	809
77		1991	04	19.14792	13	12	05.36	-09	07	47.4	15.0 809
77		1991	04	19.16111	13	12	04.58	-09	07	43.4	809
77		1991	04	19.17431	13	12	03.80	-09	07	39.9	809
175		1991	04	08.02361	13	03	09.10	-06	24	47.3	809
175		1991	04	08.03681	13	03	08.47	-06	24	45.7	809
175		1991	04	08.05000	13	03	07.72	-06	24	41.8	809
175		1991	04	08.06667	13	03	07.18	-06	24	37.0	809
175		1991	04	08.07986	13	03	06.48	-06	24	33.9	809
175		1991	04	08.09306	13	03	05.82	-06	24	31.2	809
175		1991	04	10.07569	13	01	38.99	-06	16	45.6	16.0 809
175		1991	04	10.08889	13	01	38.27	-06	16	41.4	809
175		1991	04	10.10208	13	01	37.59	-06	16	38.2	809
175		1991	04	10.12153	13	01	36.90	-06	16	34.3	15.5 809

175	1991	04	10.13472	13	01	36.26	-06	16	31.3	809
175	1991	04	10.14792	13	01	35.55	-06	16	28.4	809
175	1991	04	19.09653	12	55	09.01	-05	41	57.1	16.0 809
175	1991	04	19.10972	12	55	08.28	-05	41	53.2	809
175	1991	04	19.13194	12	55	07.39	-05	41	49.3	809
219	1991	04	08.06667	13	19	58.30	-08	32	31.9	809
219	1991	04	08.07986	13	19	57.60	-08	32	23.7	809
219	1991	04	08.09306	13	19	56.76	-08	32	16.2	809
219	1991	04	08.10903	13	19	56.16	-08	32	11.3	809
219	1991	04	08.12222	13	19	55.31	-08	32	04.7	809
219	1991	04	08.13542	13	19	54.58	-08	31	56.7	809
219	1991	04	10.12153	13	18	08.87	-08	13	45.2	15.0 809
219	1991	04	10.13472	13	18	08.07	-08	13	37.3	809
219	1991	04	10.14792	13	18	07.33	-08	13	29.7	809
219	1991	04	10.16736	13	18	06.40	-08	13	19.3	15.0 809
219	1991	04	10.18056	13	18	05.61	-08	13	12.2	809
219	1991	04	10.19375	13	18	04.86	-08	13	04.7	809
219	1991	04	19.09653	13	10	09.27	-06	50	33.6	14.0 809
219	1991	04	19.10972	13	10	08.33	-06	50	24.4	809
219	1991	04	19.13194	13	10	07.30	-06	50	14.2	809
219	1991	04	19.14792	13	10	06.46	-06	50	06.2	14.0 809
219	1991	04	19.16111	13	10	05.66	-06	49	58.7	809
219	1991	04	19.17431	13	10	04.91	-06	49	50.6	809
223	1991	04	08.02361	13	08	08.09	-05	39	50.8	809
223	1991	04	08.03681	13	08	07.46	-05	39	48.7	809
223	1991	04	08.05000	13	08	06.82	-05	39	44.2	809
223	1991	04	08.06667	13	08	06.10	-05	39	38.7	809
223	1991	04	08.07986	13	08	05.40	-05	39	35.8	809
223	1991	04	08.09306	13	08	04.70	-05	39	32.5	809
223	1991	04	10.07569	13	06	32.26	-05	31	08.6	17.0 809
223	1991	04	10.08889	13	06	31.48	-05	31	04.7	809
223	1991	04	10.10208	13	06	30.81	-05	31	01.5	809
223	1991	04	10.12153	13	06	30.14	-05	30	55.3	16.0 809
223	1991	04	10.13472	13	06	29.44	-05	30	52.2	809
223	1991	04	10.14792	13	06	28.77	-05	30	49.1	809
223	1991	04	19.09653	12	59	42.08	-04	54	19.5	15.0 809
223	1991	04	19.10972	12	59	41.27	-04	54	15.6	809
223	1991	04	19.13194	12	59	40.36	-04	54	11.6	809
240	1991	04	08.02361	13	08	00.14	-03	51	52.3	809
240	1991	04	08.03681	13	07	59.45	-03	51	47.3	809
240	1991	04	08.05000	13	07	58.80	-03	51	42.4	809
240	1991	04	10.07569	13	06	16.05	-03	41	06.8	15.0 809
240	1991	04	10.08889	13	06	15.26	-03	41	02.7	809
240	1991	04	10.10208	13	06	14.52	-03	40	57.6	809
240	1991	04	19.05347	12	58	52.61	-02	56	21.7	16.0 809
240	1991	04	19.06667	12	58	51.92	-02	56	17.0	809
240	1991	04	19.07986	12	58	51.22	-02	56	13.3	809
450	1991	04	08.02361	12	49	45.74	-05	28	30.6	809
450	1991	04	08.03681	12	49	44.90	-05	28	29.2	809
450	1991	04	08.05000	12	49	44.07	-05	28	28.5	809
450	1991	04	10.07569	12	48	04.39	-05	23	04.9	17.0 809
450	1991	04	10.08889	12	48	03.59	-05	23	02.7	809
450	1991	04	10.10208	12	48	02.78	-05	23	01.4	809
450	1991	04	19.05347	12	40	57.71	-05	00	15.8	18.0 809
450	1991	04	19.06667	12	40	56.99	-05	00	14.2	809
450	1991	04	19.07986	12	40	56.31	-05	00	13.0	809
604	1991	04	19.19028	13	31	19.59	-11	09	53.0	17.0 809
604	1991	04	19.20347	13	31	18.96	-11	09	50.0	809
604	1991	04	19.21667	13	31	18.35	-11	09	47.2	809

621	1991	04	19.14792	13	25	14.83	-06	28	03.4	17.8	809
621	1991	04	19.16111	13	25	14.15	-06	28	00.2		809
621	1991	04	19.17431	13	25	13.52	-06	27	56.9		809
658	1991	04	08.15278	13	45	16.71	-12	14	01.5		809
658	1991	04	08.16597	13	45	15.96	-12	13	59.2		809
658	1991	04	08.17917	13	45	15.30	-12	13	56.0		809
658	1991	04	10.24722	13	43	36.39	-12	05	40.0	18.0	809
658	1991	04	10.26042	13	43	35.71	-12	05	37.0		809
658	1991	04	10.27361	13	43	34.99	-12	05	34.0		809
658	1991	04	19.19028	13	36	17.06	-11	27	48.9	17.0	809
658	1991	04	19.20347	13	36	16.37	-11	27	45.0		809
658	1991	04	19.21667	13	36	15.65	-11	27	41.5		809
843	1991	04	08.10903	13	20	22.38	-12	48	53.3		809
843	1991	04	08.12222	13	20	21.41	-12	48	51.5		809
843	1991	04	08.13542	13	20	20.53	-12	48	50.3		809
843	1991	04	10.16736	13	18	05.24	-12	43	38.8	18.6	809
843	1991	04	10.18056	13	18	04.32	-12	43	37.8		809
843	1991	04	10.19375	13	18	03.33	-12	43	35.3		809
878	1977	05	15.21919	16	45	46.85	-19	05	40.2	18.7 S	809
878	1977	05	15.26074	16	45	44.50	-19	05	33.4	S	809
878	1977	05	17.12785	16	44	05.20	-19	00	51.3	S	809
878	1977	05	17.14863	16	44	03.93	-19	00	45.8	P	809
878	1977	06	11.11846	16	18	20.60	-17	54	52.1	S	809
878	1977	06	11.16001	16	18	18.00	-17	54	45.7	S	809
1143	1991	04	08.10903	13	33	33.75	-10	56	42.2		809
1143	1991	04	08.12222	13	33	33.38	-10	56	39.4		809
1143	1991	04	08.13542	13	33	33.01	-10	56	37.9		809
1143	1991	04	10.16736	13	32	35.05	-10	50	27.1	17.8	809
1143	1991	04	10.18056	13	32	34.66	-10	50	25.0		809
1143	1991	04	10.19375	13	32	34.22	-10	50	23.1		809
1143	1991	04	19.14792	13	28	15.68	-10	22	26.8	18.0	809
1143	1991	04	19.16111	13	28	15.21	-10	22	23.6		809
1143	1991	04	19.17431	13	28	14.80	-10	22	21.1		809
1143	1991	04	19.19028	13	28	14.41	-10	22	21.4	18.0	809
1143	1991	04	19.20347	13	28	14.05	-10	22	19.1		809
1143	1991	04	19.21667	13	28	13.60	-10	22	16.7		809
1378	1991	04	10.07569	12	50	19.78	-01	58	47.7	16.5	809
1378	1991	04	10.08889	12	50	18.92	-01	58	43.9		809
1378	1991	04	10.10208	12	50	18.05	-01	58	41.5		809
1378	1991	04	19.05347	12	42	00.97	-01	29	14.4	18.0	809
1378	1991	04	19.06667	12	42	00.19	-01	29	12.5		809
1378	1991	04	19.07986	12	41	59.42	-01	29	10.4		809
1447	1991	04	19.05347	12	39	38.89	-01	35	30.3	18.0	809
1447	1991	04	19.06667	12	39	38.22	-01	35	28.4		809
1447	1991	04	19.07986	12	39	37.47	-01	35	26.5		809
1479	1991	04	08.06667	13	10	48.55	-07	37	55.8		809
1479	1991	04	08.07986	13	10	47.83	-07	37	54.1		809
1479	1991	04	08.09306	13	10	46.92	-07	37	51.9		809
1479	1991	04	10.12153	13	08	50.37	-07	31	52.4	18.0	809
1479	1991	04	10.13472	13	08	49.59	-07	31	51.2		809
1479	1991	04	10.14792	13	08	48.79	-07	31	48.3		809
1611	1991	04	08.15278	13	53	23.01	-14	53	27.2		809
1611	1991	04	08.16597	13	53	22.42	-14	53	24.0		809
1611	1991	04	08.17917	13	53	21.84	-14	53	20.4		809
1611	1991	04	10.24722	13	51	55.02	-14	44	12.0	18.5	809
1611	1991	04	10.26042	13	51	54.45	-14	44	08.7		809
1611	1991	04	10.27361	13	51	53.87	-14	44	05.1		809
1734	1991	04	08.02361	12	51	54.82	-02	46	25.6		809
1734	1991	04	08.03681	12	51	54.18	-02	46	21.2		809

1734	1991	04	08.05000	12	51	53.34	-02	46	16.2	809
1734	1991	04	10.07569	12	50	21.89	-02	33	10.1	18.5 809
1734	1991	04	10.08889	12	50	21.29	-02	33	04.5	809
1734	1991	04	10.10208	12	50	20.60	-02	32	59.6	809
1734	1991	04	19.05347	12	43	50.86	-01	37	36.6	18.5 809
1734	1991	04	19.06667	12	43	50.24	-01	37	31.8	809
1734	1991	04	19.07986	12	43	49.68	-01	37	27.9	809
1824	1991	04	08.02361	12	49	27.87	-05	18	04.3	809
1824	1991	04	08.03681	12	49	26.99	-05	18	02.0	809
1824	1991	04	08.05000	12	49	26.19	-05	17	59.2	809
1824	1991	04	10.07569	12	47	48.65	-05	09	01.9	18.0 809
1824	1991	04	10.08889	12	47	47.93	-05	08	58.2	809
1824	1991	04	10.10208	12	47	47.24	-05	08	54.9	809
1824	1991	04	19.05347	12	40	55.76	-04	31	08.5	18.2 809
1824	1991	04	19.06667	12	40	55.05	-04	31	04.7	809
1824	1991	04	19.07986	12	40	54.43	-04	31	02.3	809
2004	1991	04	08.02361	12	52	12.23	-06	33	31.2	809
2004	1991	04	08.03681	12	52	11.19	-06	33	29.2	809
2004	1991	04	08.05000	12	52	10.19	-06	33	27.2	809
2004	1991	04	10.07569	12	50	03.96	-06	22	54.3	17.8 809
2004	1991	04	10.08889	12	50	03.04	-06	22	49.9	809
2004	1991	04	10.10208	12	50	02.12	-06	22	46.2	809
2148	1991	04	19.05347	12	56	08.57	-01	45	51.3	18.8 809
2148	1991	04	19.06667	12	56	08.23	-01	45	48.8	809
2148	1991	04	19.07986	12	56	07.77	-01	45	45.6	809
2339	1991	04	08.15278	13	43	36.31	-12	30	32.0	809
2339	1991	04	08.16597	13	43	35.54	-12	30	29.2	809
2339	1991	04	08.17917	13	43	34.77	-12	30	27.0	809
2339	1991	04	10.24722	13	41	42.04	-12	23	12.6	18.6 809
2339	1991	04	10.26042	13	41	41.26	-12	23	11.0	809
2339	1991	04	10.27361	13	41	40.46	-12	23	07.6	809
2339	1991	04	19.19028	13	33	18.63	-11	49	16.1	18.5 809
2339	1991	04	19.20347	13	33	17.83	-11	49	13.0	809
2339	1991	04	19.21667	13	33	17.05	-11	49	09.9	809
2377	1991	04	08.15278	13	45	31.24	-12	15	42.5	809
2377	1991	04	08.16597	13	45	30.57	-12	15	39.0	809
2377	1991	04	08.17917	13	45	29.91	-12	15	35.8	809
2377	1991	04	10.24722	13	43	53.10	-12	06	24.5	18.5 809
2377	1991	04	10.26042	13	43	52.40	-12	06	20.7	809
2377	1991	04	10.27361	13	43	51.76	-12	06	16.8	809
2377	1991	04	19.19028	13	36	42.86	-11	24	31.3	18.0 809
2377	1991	04	19.20347	13	36	42.17	-11	24	27.6	809
2377	1991	04	19.21667	13	36	41.51	-11	24	23.4	809
2439	1991	04	08.02361	12	50	23.78	-04	57	47.1	809
2439	1991	04	08.03681	12	50	22.96	-04	57	45.2	809
2439	1991	04	08.05000	12	50	22.35	-04	57	42.1	809
2439	1991	04	10.07569	12	48	51.64	-04	48	11.9	18.5 809
2439	1991	04	10.08889	12	48	50.90	-04	48	07.5	809
2439	1991	04	10.10208	12	48	50.25	-04	48	04.0	809
2439	1991	04	19.05347	12	42	28.57	-04	07	58.5	18.5 809
2439	1991	04	19.06667	12	42	27.95	-04	07	55.4	809
2439	1991	04	19.07986	12	42	27.33	-04	07	52.1	809
2454	1991	04	08.15278	13	46	19.89	-16	45	53.9	809
2454	1991	04	08.16597	13	46	19.09	-16	45	49.9	809
2454	1991	04	08.17917	13	46	18.33	-16	45	44.9	809
2454	1991	04	10.24722	13	44	21.28	-16	33	24.9	18.5 809
2454	1991	04	10.26042	13	44	20.47	-16	33	20.2	809
2454	1991	04	10.27361	13	44	19.68	-16	33	16.0	809
2454	1991	04	19.19028	13	35	27.71	-15	32	48.8	18.3 809

2454	1991	04	19.20347	13	35	26.86	-15	32	43.1	809
2454	1991	04	19.21667	13	35	26.01	-15	32	37.2	809
2480	1991	04	08.02361	12	55	04.84	-04	07	08.5	809
2480	1991	04	08.03681	12	55	03.90	-04	07	05.3	809
2480	1991	04	08.05000	12	55	03.09	-04	07	02.6	809
2480	1991	04	10.07569	12	52	59.13	-03	56	51.7	18.4 809
2480	1991	04	10.08889	12	52	58.29	-03	56	47.5	809
2480	1991	04	10.10208	12	52	57.47	-03	56	43.0	809
2480	1991	04	19.05347	12	44	15.53	-03	14	48.5	18.3 809
2480	1991	04	19.06667	12	44	14.75	-03	14	45.1	809
2480	1991	04	19.07986	12	44	13.96	-03	14	42.3	809
2572	1991	04	08.02361	13	02	27.97	-07	10	39.5	809
2572	1991	04	08.03681	13	02	27.24	-07	10	33.6	809
2572	1991	04	08.05000	13	02	26.51	-07	10	27.5	809
2572	1991	04	08.06667	13	02	25.72	-07	10	18.5	809
2572	1991	04	08.07986	13	02	24.98	-07	10	12.3	809
2572	1991	04	08.09306	13	02	24.26	-07	10	05.8	809
2572	1991	04	10.07569	13	00	43.87	-06	52	43.4	18.0 809
2572	1991	04	10.08889	13	00	43.09	-06	52	36.5	809
2572	1991	04	10.10208	13	00	42.30	-06	52	30.1	809
2572	1991	04	10.12153	13	00	41.36	-06	52	21.3	18.0 809
2572	1991	04	10.13472	13	00	40.64	-06	52	13.7	809
2572	1991	04	10.14792	13	00	39.92	-06	52	07.6	809
2572	1991	04	19.09653	12	53	19.04	-05	34	29.4	18.2 809
2572	1991	04	19.10972	12	53	18.20	-05	34	20.8	809
2572	1991	04	19.13194	12	53	17.20	-05	34	12.2	809
2607	1991	04	19.19028	13	29	17.53	-10	59	28.9	18.5 809
2607	1991	04	19.20347	13	29	16.76	-10	59	24.4	809
2607	1991	04	19.21667	13	29	15.87	-10	59	20.4	809
2626	1991	04	19.19028	13	31	17.57	-10	48	23.1	17.8 809
2626	1991	04	19.20347	13	31	16.86	-10	48	19.4	809
2626	1991	04	19.21667	13	31	16.18	-10	48	16.4	809
2757	1991	04	08.10903	13	29	13.19	-09	34	03.4	809
2757	1991	04	08.12222	13	29	12.55	-09	34	00.1	809
2757	1991	04	08.13542	13	29	11.99	-09	33	57.4	809
2757	1991	04	10.16736	13	27	42.63	-09	25	30.2	18.4 809
2757	1991	04	10.18056	13	27	42.02	-09	25	26.7	809
2757	1991	04	10.19375	13	27	41.37	-09	25	24.0	809
2757	1991	04	19.14792	13	21	06.66	-08	47	42.6	18.4 809
2757	1991	04	19.16111	13	21	06.05	-08	47	38.7	809
2757	1991	04	19.17431	13	21	05.45	-08	47	35.5	809
2819	1991	04	08.10903	13	25	23.09	-09	11	29.8	809
2819	1991	04	08.12222	13	25	22.40	-09	11	27.1	809
2819	1991	04	08.13542	13	25	21.74	-09	11	23.4	809
2819	1991	04	10.16736	13	23	41.33	-09	02	41.8	18.5 809
2819	1991	04	10.18056	13	23	40.62	-09	02	38.7	809
2819	1991	04	10.19375	13	23	39.96	-09	02	35.1	809
2819	1991	04	19.14792	13	16	14.35	-08	23	33.0	18.2 809
2819	1991	04	19.16111	13	16	13.71	-08	23	29.9	809
2819	1991	04	19.17431	13	16	13.04	-08	23	26.7	809
2820	1991	04	19.19028	13	41	14.99	-11	16	16.3	17.9 809
2820	1991	04	19.20347	13	41	14.21	-11	16	10.9	809
2820	1991	04	19.21667	13	41	13.37	-11	16	05.7	809
2951	1991	04	08.10903	13	33	08.03	-08	32	43.9	809
2951	1991	04	08.12222	13	33	07.26	-08	32	43.8	809
2951	1991	04	08.13542	13	33	06.51	-08	32	43.6	809
2951	1991	04	10.16736	13	31	15.16	-08	32	07.8	16.5 809
2951	1991	04	10.18056	13	31	14.40	-08	32	07.6	809
2951	1991	04	10.19375	13	31	13.58	-08	32	07.5	809

2951	1991	04	19.14792	13	22	59.55	-08	29	07.7	16.0	809
2951	1991	04	19.16111	13	22	58.76	-08	29	07.8		809
2951	1991	04	19.17431	13	22	58.00	-08	29	07.8		809
3053	1991	04	08.10903	13	31	43.96	-11	49	53.6		809
3053	1991	04	08.12222	13	31	43.18	-11	49	50.4		809
3053	1991	04	08.13542	13	31	42.36	-11	49	47.9		809
3053	1991	04	10.16736	13	29	40.54	-11	42	21.4	18.4	809
3053	1991	04	10.18056	13	29	39.72	-11	42	18.4		809
3053	1991	04	10.19375	13	29	38.90	-11	42	16.0		809
3053	1991	04	19.14792	13	20	27.31	-11	06	19.0	18.3	809
3053	1991	04	19.16111	13	20	26.38	-11	06	15.4		809
3053	1991	04	19.17431	13	20	25.54	-11	06	12.1		809
3070	1991	04	08.02361	13	00	45.62	-04	03	56.2		809
3070	1991	04	08.03681	13	00	44.84	-04	03	50.1		809
3070	1991	04	08.05000	13	00	44.19	-04	03	44.3		809
3070	1991	04	10.07569	12	59	05.14	-03	49	07.0	17.8	809
3070	1991	04	10.08889	12	59	04.42	-03	49	00.8		809
3070	1991	04	10.10208	12	59	03.70	-03	48	55.4		809
3070	1991	04	19.05347	12	52	04.44	-02	48	05.3	18.4	809
3070	1991	04	19.06667	12	52	03.77	-02	48	00.5		809
3070	1991	04	19.07986	12	52	03.12	-02	47	55.1		809
3073	1991	04	08.10903	13	38	50.17	-10	25	20.7		809
3073	1991	04	08.12222	13	38	49.37	-10	25	14.3		809
3073	1991	04	08.13542	13	38	48.69	-10	25	09.0		809
3073	1991	04	10.16736	13	36	53.63	-10	09	11.8	18.4	809
3073	1991	04	10.18056	13	36	52.83	-10	09	06.1		809
3073	1991	04	10.19375	13	36	52.06	-10	09	00.0		809
3073	1991	04	19.14792	13	28	18.90	-08	57	24.8	18.5	809
3073	1991	04	19.16111	13	28	18.15	-08	57	18.6		809
3073	1991	04	19.17431	13	28	17.36	-08	57	12.7		809
3077	1991	04	08.10903	13	35	05.04	-12	38	56.9		809
3077	1991	04	08.12222	13	35	04.24	-12	38	52.2		809
3077	1991	04	08.13542	13	35	03.42	-12	38	49.4		809
3077	1991	04	08.15278	13	35	02.48	-12	38	44.0		809
3077	1991	04	08.16597	13	35	01.68	-12	38	40.0		809
3077	1991	04	08.17917	13	35	00.82	-12	38	36.3		809
3077	1991	04	10.16736	13	33	03.31	-12	27	54.0	18.0	809
3077	1991	04	10.18056	13	33	02.46	-12	27	50.1		809
3077	1991	04	10.19375	13	33	01.65	-12	27	46.3		809
3077	1991	04	10.24722	13	32	58.35	-12	27	29.2	18.2	809
3077	1991	04	10.26042	13	32	57.56	-12	27	25.0		809
3077	1991	04	10.27361	13	32	56.78	-12	27	20.6		809
3077	1991	04	19.19028	13	24	01.45	-11	36	10.3	17.7	809
3077	1991	04	19.20347	13	24	00.61	-11	36	05.5		809
3077	1991	04	19.21667	13	23	59.81	-11	36	01.3		809
3092	1991	04	08.15278	13	44	43.96	-15	41	38.5		809
3092	1991	04	08.16597	13	44	43.38	-15	41	37.6		809
3092	1991	04	08.17917	13	44	42.80	-15	41	36.2		809
3092	1991	04	10.24722	13	43	14.70	-15	38	00.9	18.6	809
3092	1991	04	10.26042	13	43	14.10	-15	37	59.4		809
3092	1991	04	10.27361	13	43	13.54	-15	37	58.7		809
3092	1991	04	19.19028	13	36	43.77	-15	19	44.5	18.4	809
3092	1991	04	19.20347	13	36	43.14	-15	19	42.6		809
3092	1991	04	19.21667	13	36	42.50	-15	19	41.4		809
3172	1991	04	19.05347	12	57	41.08	-00	45	57.6	18.7	809
3172	1991	04	19.06667	12	57	40.39	-00	45	53.0		809
3172	1991	04	19.07986	12	57	39.69	-00	45	50.0		809
3181	1991	04	08.15278	13	41	16.56	-12	56	04.8		809
3181	1991	04	08.16597	13	41	15.77	-12	55	58.7		809

3181	1991	04	08.17917	13	41	15.01	-12	55	53.0	809
3181	1991	04	10.24722	13	39	23.46	-12	40	27.3	17.8 809
3181	1991	04	10.26042	13	39	22.75	-12	40	22.7	809
3181	1991	04	10.27361	13	39	21.97	-12	40	15.9	809
3181	1991	04	19.19028	13	31	07.69	-11	29	52.1	17.5 809
3181	1991	04	19.20347	13	31	06.93	-11	29	45.5	809
3181	1991	04	19.21667	13	31	06.12	-11	29	38.8	809
3251	1991	04	08.10903	13	35	25.42	-09	00	44.2	809
3251	1991	04	08.12222	13	35	24.86	-09	00	40.2	809
3251	1991	04	08.13542	13	35	24.33	-09	00	36.6	809
3251	1991	04	10.16736	13	33	56.65	-08	51	55.8	18.6 809
3251	1991	04	10.18056	13	33	56.08	-08	51	53.1	809
3251	1991	04	10.19375	13	33	55.48	-08	51	49.4	809
3251	1991	04	19.14792	13	27	24.18	-08	12	56.1	18.6 809
3251	1991	04	19.16111	13	27	23.56	-08	12	52.7	809
3251	1991	04	19.17431	13	27	22.93	-08	12	49.2	809
3429	1991	04	19.14792	13	28	53.71	-08	19	47.7	18.4 809
3429	1991	04	19.16111	13	28	52.86	-08	19	42.2	809
3429	1991	04	19.17431	13	28	52.09	-08	19	37.3	809
3514	1991	04	19.09653	13	09	40.49	-07	05	54.6	19.4 809
3514	1991	04	19.10972	13	09	39.88	-07	05	52.6	809
3514	1991	04	19.13194	13	09	39.08	-07	05	47.8	809
3514	1991	04	19.14792	13	09	38.50	-07	05	44.9	18.6 809
3514	1991	04	19.16111	13	09	38.05	-07	05	42.2	809
3514	1991	04	19.17431	13	09	37.67	-07	05	40.0	809
3592	1991	04	08.06667	13	17	03.41	-07	52	25.3	809
3592	1991	04	08.07986	13	17	02.58	-07	52	24.1	809
3592	1991	04	08.09306	13	17	01.76	-07	52	23.1	809
3592	1991	04	10.12153	13	14	47.22	-07	47	49.3	18.6 809
3592	1991	04	10.13472	13	14	46.28	-07	47	47.7	809
3592	1991	04	10.14792	13	14	45.39	-07	47	46.3	809
3592	1991	04	19.09653	13	05	05.16	-07	27	55.5	18.5 809
3592	1991	04	19.10972	13	05	04.15	-07	27	54.1	809
3592	1991	04	19.13194	13	05	02.90	-07	27	51.4	809
3639	1991	04	08.10903	13	23	18.26	-10	09	06.2	809
3639	1991	04	08.12222	13	23	17.38	-10	09	01.8	809
3639	1991	04	08.13542	13	23	16.66	-10	08	58.4	809
3639	1991	04	10.16736	13	21	25.15	-09	56	20.5	18.4 809
3639	1991	04	10.18056	13	21	24.41	-09	56	16.2	809
3639	1991	04	10.19375	13	21	23.62	-09	56	10.8	809
3639	1991	04	19.14792	13	13	13.57	-08	59	36.2	18.4 809
3639	1991	04	19.16111	13	13	12.85	-08	59	30.7	809
3639	1991	04	19.17431	13	13	12.12	-08	59	26.3	809
3709	1991	04	08.02361	13	00	50.18	-02	20	10.4	809
3709	1991	04	08.03681	13	00	49.83	-02	20	07.1	809
3709	1991	04	08.05000	13	00	49.48	-02	20	02.9	809
3709	1991	04	10.07569	12	59	55.24	-02	10	22.7	18.0 809
3709	1991	04	10.08889	12	59	54.82	-02	10	19.1	809
3709	1991	04	10.10208	12	59	54.46	-02	10	14.5	809
3709	1991	04	19.05347	12	56	00.27	-01	28	59.0	18.4 809
3709	1991	04	19.06667	12	55	59.89	-01	28	55.0	809
3709	1991	04	19.07986	12	55	59.53	-01	28	51.7	809
3919	1991	04	19.05347	12	57	58.86	-00	55	20.3	18.3 809
3919	1991	04	19.06667	12	57	58.07	-00	55	14.1	809
3919	1991	04	19.07986	12	57	57.25	-00	55	07.9	809
3930	1991	04	08.02361	12	59	17.62	-05	37	14.3	809
3930	1991	04	08.03681	12	59	16.91	-05	37	12.0	809
3930	1991	04	08.05000	12	59	16.29	-05	37	10.3	809
3930	1991	04	10.07569	12	57	43.11	-05	28	11.1	18.6 809

3930	1991	04	10.08889	12	57	42.37	-05	28	07.3	809
3930	1991	04	10.10208	12	57	41.71	-05	28	04.0	809
3930	1991	04	19.05347	12	50	58.73	-04	49	25.1	18.6 809
3930	1991	04	19.06667	12	50	58.12	-04	49	21.9	809
3930	1991	04	19.07986	12	50	57.49	-04	49	19.5	809
3977	1991	04	08.15278	13	40	26.08	-15	38	16.3	809
3977	1991	04	08.16597	13	40	25.39	-15	38	10.0	809
3977	1991	04	08.17917	13	40	24.76	-15	38	02.8	809
3977	1991	04	10.24722	13	38	49.54	-15	19	16.5	18.2 809
3977	1991	04	10.26042	13	38	48.89	-15	19	09.1	809
3977	1991	04	10.27361	13	38	48.23	-15	19	01.0	809
3977	1991	04	19.19028	13	31	40.91	-13	51	53.3	17.8 809
3977	1991	04	19.20347	13	31	40.23	-13	51	45.1	809
3977	1991	04	19.21667	13	31	39.51	-13	51	37.7	809
4035	1991	04	08.15278	13	37	49.69	-17	17	25.3	809
4035	1991	04	08.16597	13	37	49.26	-17	17	22.5	809
4035	1991	04	08.17917	13	37	48.82	-17	17	20.2	809
4211	1991	04	10.07569	12	45	39.60	-04	45	19.1	18.6 809
4211	1991	04	10.08889	12	45	38.92	-04	45	15.2	809
4211	1991	04	10.10208	12	45	38.36	-04	45	12.8	809
4211	1991	04	19.05347	12	39	30.88	-04	07	20.3	18.7 809
4211	1991	04	19.06667	12	39	30.28	-04	07	17.4	809
4211	1991	04	19.07986	12	39	29.69	-04	07	14.7	809
4233	1991	04	19.14792	13	27	37.67	-06	38	20.0	18.5 809
4233	1991	04	19.16111	13	27	36.88	-06	38	13.7	809
4233	1991	04	19.17431	13	27	36.14	-06	38	07.7	809
4259	1991	04	08.02361	13	03	32.47	-03	30	34.0	809
4259	1991	04	08.03681	13	03	31.87	-03	30	30.3	809
4259	1991	04	08.05000	13	03	31.16	-03	30	26.9	809
4259	1991	04	10.07569	13	01	52.90	-03	21	46.2	18.4 809
4259	1991	04	10.08889	13	01	52.21	-03	21	42.4	809
4259	1991	04	10.10208	13	01	51.55	-03	21	39.1	809
4259	1991	04	19.05347	12	54	49.94	-02	45	42.8	18.5 809
4259	1991	04	19.06667	12	54	49.30	-02	45	39.1	809
4259	1991	04	19.07986	12	54	48.66	-02	45	36.8	809
4296	1991	04	08.02361	12	49	30.96	-05	45	11.7	809
4296	1991	04	08.03681	12	49	29.91	-05	45	08.7	809
4296	1991	04	08.05000	12	49	28.92	-05	45	07.0	809
4296	1991	04	10.07569	12	47	22.44	-05	36	49.6	18.5 809
4296	1991	04	10.08889	12	47	21.54	-05	36	46.4	809
4296	1991	04	10.10208	12	47	20.70	-05	36	43.8	809
4303	1991	04	08.10903	13	32	09.75	-08	49	50.6	809
4303	1991	04	08.12222	13	32	08.91	-08	49	47.0	809
4303	1991	04	08.13542	13	32	08.08	-08	49	43.1	809
4303	1991	04	10.16736	13	30	00.90	-08	39	30.0	18.3 809
4303	1991	04	10.18056	13	30	00.05	-08	39	26.2	809
4303	1991	04	10.19375	13	29	59.14	-08	39	22.6	809
4303	1991	04	19.14792	13	20	35.29	-07	53	46.4	18.6 809
4303	1991	04	19.16111	13	20	34.47	-07	53	42.8	809
4303	1991	04	19.17431	13	20	33.49	-07	53	38.9	809
4330	1991	04	08.06667	13	17	18.64	-08	08	53.4	809
4330	1991	04	08.07986	13	17	17.81	-08	08	47.2	809
4330	1991	04	08.09306	13	17	17.06	-08	08	41.8	809
4330	1991	04	10.12153	13	15	21.01	-07	54	05.8	18.6 809
4330	1991	04	10.13472	13	15	20.21	-07	53	59.8	809
4330	1991	04	10.14792	13	15	19.39	-07	53	53.8	809
4330	1991	04	19.09653	13	06	53.93	-06	49	39.9	18.4 809
4330	1991	04	19.10972	13	06	53.03	-06	49	33.3	809
4330	1991	04	19.13194	13	06	51.89	-06	49	24.6	809

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4359       1991 04 08.10903  13 36 41.98  -09 03 33.2                    809
4359       1991 04 08.12222  13 36 41.16  -09 03 27.6                    809
4359       1991 04 08.13542  13 36 40.27  -09 03 22.8                    809
4359       1991 04 10.16736  13 34 38.38  -08 50 32.8           18.4     809
4359       1991 04 10.18056  13 34 37.49  -08 50 27.7                    809
4359       1991 04 10.19375  13 34 36.65  -08 50 22.6                    809
4359       1991 04 19.14792  13 25 26.27  -07 52 23.0           18.5     809
4359       1991 04 19.16111  13 25 25.44  -07 52 17.7                    809
4359       1991 04 19.17431  13 25 24.66  -07 52 12.9                    809
4392       1991 04 08.06667  13 12 10.71  -05 09 37.8                    809
4392       1991 04 08.07986  13 12 09.88  -05 09 34.8                    809
4392       1991 04 08.09306  13 12 09.12  -05 09 33.0                    809
4392       1991 04 10.12153  13 10 02.68  -05 01 54.6           18.4     809
4392       1991 04 10.13472  13 10 01.82  -05 01 52.1                    809
4392       1991 04 10.14792  13 10 01.01  -05 01 49.1                    809
4392       1991 04 19.09653  13 00 48.20  -04 29 52.6           18.5     809
4392       1991 04 19.10972  13 00 47.26  -04 29 50.1                    809
4392       1991 04 19.13194  13 00 46.00  -04 29 45.0                    809
4454       1991 04 19.14792  13 18 38.04  -09 19 36.9           19.2     809
4454       1991 04 19.16111  13 18 37.48  -09 19 33.0                    809
4454       1991 04 19.17431  13 18 36.81  -09 19 28.9                    809
4463       1991 04 19.09653  13 00 46.22  -04 39 48.6           19.0     809
4463       1991 04 19.10972  13 00 45.52  -04 39 42.4                    809
4463       1991 04 19.13194  13 00 44.80  -04 39 37.4                    809
4825       1990 11 14.26389  03 30 28.82  +26 50 19.5           17.0     809
4825       1990 11 14.27431  03 30 28.09  +26 50 15.7                    809
4825       1990 11 14.28472  03 30 27.38  +26 50 12.8                    809
4847       1991 04 08.02361  12 48 54.41  -03 29 51.0                    809
4847       1991 04 08.03681  12 48 53.47  -03 29 47.7                    809
4847       1991 04 08.05000  12 48 52.50  -03 29 42.4                    809
4847       1991 04 10.07569  12 46 56.30  -03 17 07.0           18.6     809
4847       1991 04 10.08889  12 46 55.40  -03 17 02.5                    809
4847       1991 04 10.10208  12 46 54.58  -03 16 58.4                    809
4847       1991 04 19.05347  12 38 52.19  -02 25 35.6           18.5     809
4847       1991 04 19.06667  12 38 51.44  -02 25 31.6                    809
4847       1991 04 19.07986  12 38 50.67  -02 25 27.9                    809

881 Toyota
T. Urata, 6-1, Muramatsuhara 1 Chome, Shimizu, Shizuoka-Ken 424, Japan
Observer K. Suzuki
Measurer T. Urata
0.31-m f/5.7 reflector
SAOC
1991 JH1   1991 05 04.57257  15 54 17.5   -14 39 34           16    W 881
1991 JH1   1991 05 04.59340  15 54 16.72  -14 39 31.5                  881

886 Susono
T. Furuta, 17-2 Mitsuike, Kagiya, Tokai 477, Japan
Observers M. Akiyama, T. Furuta
Measurer T. Furuta
0.25-m f/4.2 Wright-Schmidt camera
SAOC
1986 JT    1991 05 02.52604  14 50 43.0   -12 50 04           15.5    886
1986 JT    1991 05 02.53681  14 50 42.6   -12 50 01                   886
1986 JT    1991 05 03.55938  14 49 56.4   -12 41 57                   886
1986 JT    1991 05 03.57188  14 49 55.6   -12 41 49                   886

894 Otomo
O. Muramatsu, 119-1, 2-8 Sakurazutsumi, Murashino, Tokyo 180, Japan
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Observers S. Otomo, O. Muramatsu
Measurer O. Muramatsu
0.25-m reflector

1991 HM		1991 05 05.54375	13 56 35.3	-04 10 43			W	894
1991 HM		1991 05 05.55764	13 56 34.25	-04 10 45.2				894
1991 HM		1991 05 10.61256	13 51 41.2	-04 21 16			W	894
1991 HM		1991 05 10.62431	13 51 40.4	-04 21 17			W	894
1991 HM		1991 05 17.59583	13 45 46.39	-04 42 03.3				894
1991 HM		1991 05 17.60972	13 45 45.8	-04 42 09			W	894
1991 JJ		1991 05 10.72847	15 24 21.71	-13 22 32.0		16.5		894
1991 JJ		1991 05 10.74236	15 24 20.81	-13 22 34.7				894
1991 JL		1991 05 10.64028	14 36 06.24	-08 26 16.2				894
1991 JL		1991 05 10.65278	14 36 05.56	-08 26 10.0				894
1991 JL		1991 05 17.62569	14 30 59.7	-07 38 18			W	894
1991 JL		1991 05 17.63958	14 30 59.1	-07 38 13			W	894
1991 JB1	*	1991 05 05.60243	14 53 19.23	-11 46 50.7		16.5		894
1991 JB1		1991 05 05.61771	14 53 18.54	-11 46 49.3				894
1991 JB1		1991 05 10.66771	14 49 15.84	-11 36 50.7			D	894
1991 JB1		1991 05 10.68299	14 49 15.04	-11 36 46.8			D	894
1991 JB1		1991 05 14.57743	14 46 11.27	-11 29 51.6				894
1991 JB1		1991 05 14.59132	14 46 10.69	-11 29 49.7				894
1991 JH1	*	1991 05 14.66875	15 46 18.66	-14 04 35.3		17		894
1991 JH1		1991 05 14.68542	15 46 17.68	-14 04 33.8				894
1991 JH1		1991 05 17.65625	15 43 42.9	-13 55 03			W	894
1991 JJ1	*	1991 05 14.70347	15 44 44.88	-11 46 07.7		16		894
1991 JJ1		1991 05 14.71944	15 44 43.79	-11 46 11.8				894
1991 JJ1		1991 05 17.65625	15 41 39.92	-11 56 17.9				894
1991 JJ1		1991 05 17.67292	15 41 38.92	-11 56 21.8				894
1991 KA	*	1991 05 18.71250	15 58 49.49	-13 28 53.0		16.5		894
1991 KA		1991 05 18.73056	15 58 48.29	-13 28 52.0				894
1991 KA		1991 05 19.67778	15 57 51.08	-13 27 57.5				894
1991 KA		1991 05 19.69375	15 57 50.2	-13 27 57			W	894
1991 KB	*	1991 05 18.71250	16 01 23.31	-13 16 56.6		16.5		894
1991 KB		1991 05 18.73056	16 01 22.31	-13 16 49.0				894
1991 KB		1991 05 19.67778	16 00 35.7	-13 11 03				894
1991 KB		1991 05 19.69375	16 00 34.9	-13 10 57				894

896 Yatsugatake South Base Observatory
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Observers Y. Kushida, R. Kushida
Measurer O. Muramatsu
0.20-m f/4.0 reflector
SAOC

1990 DM		1991 06 04.56528	16 41 30.24	-09 48 31.3				896
1990 DM		1991 06 04.59583	16 41 28.71	-09 48 32.3				896

984 Eastfield
H. B. Ridley, Eastfield Lodge, Eastfield Lane, East Chinnock, Somerset BA22 9EP, England

1991 JX		1991 06 03.98229	14 57 05.54	+15 25 24.9				984

* * * * *

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The name of the orbit computer is shown on the line giving T for a comet and Epoch for a displayed minor-planet orbit; for many of the minor planets (O-C) residuals are shown in full (in R.A. and Decl.); observations are identified by date and observatory code, X referring to an approximate and Y to a semiaccurate position. For displayed minor planets "Id." shows those involved in establishing the identifications (generally with the principal contributors first), "k" indicating key identifications and "d" (only) double (or multiple) designations; no identifier is shown if only the orbit computer is involved and the results were not previously published. J-P indicates that only the perturbations by the outer planets were considered, and a and n are then related by a gravitational constant augmented by the masses of the inner planets. For the one-opposition orbits, equinox 1950.0 is used, and the columns headed Arc and O show 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 multiple) designations, E means that the value of the eccentricity was assumed, F means both; the double designations are listed at the end; the codes for the orbit computers (column C) are as listed above.

Comet Helin-Lawrence (1991l)
Epoch 1992 Jan. 19.0 ET = JDE 2448640.5
T 1992 Jan. 20.00973 ET Marsden

q	1.5178084	(1950.0)	P	Q
z	-0.0003826	Peri. 271.15039	+0.00134875	+0.98134320
	+/-0.0000436	Node 11.13571	+0.48508447	+0.16748266
e	1.0005808	Incl. 95.45312	-0.87446626	+0.09441968

From 51 observations 1991 Feb. 23-June 2, mean residual 0".6.

One-opposition minor planets

Planet	H	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1990 SU15	13.7	900926	15.56	141.75	178.46	12.57	0.2222	2.7060	33	0	D	N
1990 UC1	14.1	901016	50.03	300.33	8.51	10.35	0.2216	2.4011	30	0		N
1991 CA2	12.0	910213	126.73	223.93	138.83	14.22	0.1019	3.1563	19	4		W
1991 EN	10.5	910325	254.84	0.94	288.74	19.65	0.0225	5.1195	68	6		W
1991 EM1	12.5	910325	190.39	193.08	165.00	11.09	0.1207	2.9791	59	0		B
1991 EO1	13.0	910325	144.78	278.52	117.01	3.73	0.0886	2.6360	59	0		B
1991 ES1	12.0	910305	87.46	255.52	165.03	15.08	0.1551	2.6260	8	8	E	W
1991 FC	13.5	910325	12.16	333.91	188.33	23.73	0.0254	1.9081	52	0		W
1991 FN	14.0	910325	21.79	161.03	8.10	20.32	0.0580	1.9662	54	0		W
1991 FO	13.0	910414	0.10	15.08	186.65	6.29	0.0788	2.3188	56	0		W
1991 FP	12.0	910414	353.84	23.76	187.70	14.78	0.1852	3.1910	56	0		W

1991	FK1	13.0	910414	29.60	270.40	217.45	21.20	0.2872	2.3951	55	0		W
1991	GC	14.5	910414	342.45	47.23	182.54	23.34	0.2430	2.2885	32	0		W
1991	GD	13.5	910414	88.86	206.23	249.31	19.11	0.0830	1.9337	39	7		W
1991	GN	13.0	910414	186.98	166.62	207.38	22.59	0.0885	1.9253	29	6		W
1991	GQ	12.0	910414	47.81	295.77	218.75	15.84	0.0623	3.1810	31	8		W
1991	GR	11.5	910414	188.39	3.67	18.76	15.45	0.1184	2.5607	30	6		W
1991	GC1	13.0	910414	336.50	222.36	14.33	13.82	0.2082	2.5331	32	0		W
1991	GO1	12.5	910414	86.67	251.04	191.60	22.86	0.3187	2.3475	33	8		W
1991	GP1	12.0	910414	334.02	104.53	134.10	14.43	0.2242	2.7608	31	8		W
1991	GQ1	11.0	910414	280.16	233.84	87.25	12.78	0.1662	3.0134	30	8		W
1991	GR1	13.0	910414	342.96	98.70	142.17	7.08	0.0956	2.3653	30	8		W
1991	GW1	15.0	910414	14.40	335.10	218.92	24.57	0.1937	2.2726	26	8	D	W
1991	GZ1	14.5	910414	38.15	106.82	47.72	23.79	0.0541	1.9283	27	7		W
1991	GC2	13.5	910414	14.25	76.14	120.12	12.27	0.1973	2.6581	30	6		W
1991	GD2	12.0	910414	312.14	192.34	91.39	19.82	0.1696	3.1426	4	3	E	W
1991	GE2	13.5	910414	313.33	183.02	100.50	14.21	0.1962	2.4306	30	6		W
1991	GQ2	13.0	910414	77.98	260.11	183.79	3.16	0.2973	3.1921	11	9		M
1991	GR2	14.0	910414	230.60	327.23	17.51	2.99	0.2492	2.2623	11	9	E	M
1991	GS2	13.0	910414	164.68	352.18	34.59	6.26	0.1997	2.7495	11	9		M
1991	GT2	16.0	910414	313.18	69.46	199.42	9.44	0.2301	2.3442	11	9		M
1991	GV2	15.0	910414	350.45	18.57	195.43	3.30	0.2257	3.0941	11	9		M
1991	GY2	16.0	910414	11.02	349.26	196.35	5.12	0.0986	2.3269	11	9		M
1991	GZ2	14.5	910414	62.56	321.67	149.75	0.45	0.2191	2.5148	11	0		M
1991	GA3	15.5	910414	4.65	2.14	190.86	4.89	0.1304	2.3810	11	0		M
1991	GB3	15.0	910414	352.32	192.02	20.28	0.48	0.2521	3.0768	11	0	E	M
1991	GE3	15.5	910414	7.43	34.97	154.04	2.97	0.1336	2.4847	11	9		M
1991	GH3	14.0	910414	105.72	179.37	249.51	1.06	0.2458	2.5951	11	9		M
1991	GL3	15.0	910414	287.95	69.48	220.77	3.47	0.1590	2.2660	11	9		M
1991	GP3	14.0	910414	302.35	63.14	213.35	2.42	0.1789	3.0206	11	9		M
1991	GQ3	14.0	910414	83.83	264.11	199.81	9.88	0.1040	2.5707	11	9		M
1991	GU3	14.5	910414	271.90	102.26	195.76	6.25	0.0877	2.3488	11	9		M
1991	GV3	15.0	910414	288.19	259.58	32.55	5.18	0.1806	2.2744	11	9		M
1991	GW3	16.0	910414	36.10	80.53	73.59	1.27	0.1278	2.2299	11	8		M
1991	GY3	15.0	910414	71.68	98.22	18.38	4.05	0.1069	2.5084	11	9	E	M
1991	GA4	16.5	910414	344.44	21.91	200.81	3.35	0.1590	2.1548	11	9		M
1991	GJ4	14.5	910414	338.54	2.82	224.89	0.92	0.1065	2.8528	11	0		M
1991	GK4	14.0	910414	150.88	175.03	228.87	1.21	0.1295	2.8132	11	0	E	M
1991	GO4	15.0	910414	305.13	241.57	29.35	7.60	0.1487	2.6049	11	9		M
1991	GP4	13.5	910414	42.15	324.93	186.05	8.51	0.0893	3.0315	11	9		M
1991	GQ4	15.5	910414	335.17	15.74	215.83	2.31	0.0922	2.3242	11	0		M
1991	GR4	16.0	910414	29.14	316.16	208.67	4.62	0.1239	2.1680	11	0	E	M
1991	GS4	15.5	910414	348.59	190.80	25.20	11.49	0.1341	2.6570	11	9		M
1991	GT4	15.5	910414	286.45	102.99	187.15	3.57	0.1348	2.2246	11	9		M
1991	GU4	12.5	910414	141.02	31.04	17.72	14.50	0.2000	2.9760	11	0		M
1991	GV4	15.5	910414	312.80	80.03	184.17	2.09	0.1598	2.3698	11	0		M
1991	GY4	16.0	910414	332.56	172.18	61.67	1.84	0.0859	2.1853	11	9		M
1991	GZ4	13.0	910414	321.71	215.94	37.25	1.66	0.1582	2.3947	43	0		M
1991	GB5	15.0	910414	43.14	293.38	208.50	11.02	0.1801	2.6216	11	9		M
1991	GG5	14.5	910414	209.89	147.47	215.51	1.32	0.2627	2.1934	11	0	E	M
1991	GH5	14.0	910414	290.79	66.65	212.84	4.28	0.0774	3.1824	11	9		M
1991	GK5	15.5	910414	59.99	106.57	22.76	1.80	0.1154	2.3271	11	9	E	M
1991	GN5	16.0	910414	303.44	261.08	19.99	9.78	0.2089	2.5666	11	9		M
1991	GP5	12.5	910414	19.34	187.83	349.86	0.88	0.1214	3.0306	11	0		M
1991	GQ5	14.0	910414	235.86	143.02	205.88	12.82	0.2924	2.4309	11	9		M
1991	GS5	15.5	910414	325.06	26.77	222.28	5.50	0.1450	2.4955	11	9		M
1991	GT5	14.5	910414	357.04	47.98	158.65	0.75	0.1814	3.1392	11	9		M
1991	GV5	14.5	910414	287.39	91.52	201.00	4.46	0.1526	2.7014	11	9	E	M
1991	GW5	17.0	910414	9.84	158.98	27.13	2.61	0.2399	2.3244	11	9	E	M
1991	GY5	16.5	910414	6.22	351.86	202.53	5.80	0.1443	2.1786	11	9	E	M

1991	GZ5	15.0	910414	112.96	160.02	278.23	1.44	0.1218	2.6238	11	9		M
1991	GA6	14.0	910414	283.21	2.73	284.69	0.92	0.0660	2.9122	11	9		M
1991	GB6	17.0	910414	10.17	287.96	261.48	1.38	0.1491	2.4306	11	9		M
1991	GC6	15.0	910414	90.11	76.83	26.38	5.86	0.0808	2.1718	11	9		M
1991	GG6	15.0	910414	183.10	352.94	27.27	3.16	0.0718	2.2888	11	9		M
1991	GN6	14.5	910414	4.81	164.87	29.49	5.04	0.2736	3.2379	11	9	E	M
1991	GO6	13.5	910414	185.26	179.45	200.33	18.13	0.2208	2.6097	11	9		M
1991	GP6	16.5	910414	352.60	22.26	191.57	1.62	0.1747	2.2590	11	9		M
1991	GQ6	14.5	910414	25.27	330.33	199.00	0.63	0.1503	3.0198	11	9	E	M
1991	GS6	14.5	910414	156.73	16.99	23.00	12.72	0.1695	2.2759	11	9		M
1991	GU6	14.5	910414	292.14	256.30	20.16	11.69	0.0450	2.5968	11	9		M
1991	GV6	16.0	910414	359.10	7.02	197.71	1.52	0.1489	2.4649	11	9		M
1991	GA7	15.0	910414	65.01	291.09	194.62	4.41	0.1166	2.4388	11	9		M
1991	GB7	13.5	910414	71.62	94.50	27.93	8.66	0.0869	3.1674	11	9	E	M
1991	GC7	15.0	910414	70.96	101.32	27.02	7.17	0.0388	2.3589	11	9	E	M
1991	GG7	15.5	910414	69.64	99.40	18.12	4.01	0.1505	2.3861	11	9		M
1991	GH7	16.5	910414	309.23	268.59	6.70	2.16	0.1965	2.3584	11	9		M
1991	GK7	14.5	910414	60.38	241.28	244.77	4.61	0.1666	2.7434	11	9		M
1991	GL7	15.0	910414	110.80	196.56	252.29	3.82	0.0468	2.3196	11	9		M
1991	GM7	15.5	910414	11.17	337.94	211.45	12.00	0.1377	2.5906	11	9		M
1991	GO7	15.5	910414	334.76	13.03	224.75	8.16	0.1360	2.6161	11	9		M
1991	GP7	15.0	910414	151.66	81.88	327.06	2.35	0.0809	2.2280	11	9		M
1991	GQ7	13.5	910414	47.93	161.49	351.84	5.51	0.0504	3.4454	11	9		M
1991	GR7	15.0	910414	54.62	275.52	229.33	5.31	0.0547	2.2728	11	9		M
1991	GU7	15.0	910414	197.90	117.04	251.78	3.99	0.0289	2.7242	11	9		M
1991	GV7	16.0	910414	278.13	29.80	268.53	2.70	0.0973	2.1637	11	9	E	M
1991	GX7	14.0	910414	164.25	35.38	3.51	9.17	0.1337	2.7445	11	9		M
1991	GY7	15.5	910414	310.42	310.18	320.24	1.81	0.1571	2.4526	11	9		M
1991	GZ7	14.0	910414	85.71	93.97	7.47	8.38	0.1685	2.7666	11	9		M
1991	GD8	14.0	910414	53.52	281.82	220.24	7.77	0.1072	3.1146	11	9		M
1991	GE8	15.0	910414	97.79	80.87	15.74	6.04	0.1009	2.2976	11	9		M
1991	GF8	14.5	910414	89.10	96.42	8.12	9.37	0.1169	2.7667	11	9		M
1991	GH8	14.5	910414	296.90	274.15	16.53	11.02	0.1901	2.6803	11	9		M
1991	GJ8	15.0	910414	213.83	335.15	18.51	9.47	0.0263	2.3264	11	9		M
1991	GK8	15.5	910414	285.11	278.03	19.04	7.83	0.1435	2.3060	11	9		M
1991	GL8	14.5	910414	280.26	305.42	5.27	3.62	0.2132	2.7928	11	9		M
1991	GM8	15.0	910414	324.95	338.16	265.94	2.78	0.0328	2.7706	11	9		M
1991	GO8	16.0	910414	353.36	252.58	322.27	2.58	0.1056	2.5455	11	9		M
1991	GP8	15.0	910414	338.21	6.45	228.53	4.19	0.1353	2.5495	11	9		M
1991	GQ8	14.0	910414	323.34	41.54	208.81	15.91	0.0962	2.7260	11	9		M
1991	GS8	15.5	910414	103.85	226.95	223.52	4.66	0.1151	2.2144	11	9		M
1991	GT8	15.5	910414	283.45	327.74	336.75	3.18	0.1784	2.5350	11	9		M
1991	GU8	16.0	910414	256.09	10.23	316.28	2.43	0.1462	2.2914	11	9		M
1991	GV8	15.0	910414	36.39	225.08	298.29	2.05	0.0967	2.4403	11	9		M
1991	GW8	16.5	910414	338.25	291.05	307.96	1.40	0.1982	2.3653	11	9		M
1991	GX8	14.0	910414	37.76	284.35	234.27	4.02	0.1387	3.0712	11	9		M
1991	GY8	15.5	910414	7.12	178.26	19.03	14.38	0.1527	2.4825	11	9		M
1991	GT9	13.5	910325	176.54	320.12	68.26	16.60	0.1436	2.3689	3	5	E	W
1991	HA	13.5	910414	343.34	21.50	195.92	1.71	0.0600	2.4375	43	0		M
1991	HC	13.6	910504	315.76	185.06	88.27	4.66	0.1443	2.2692	30	0		N
1991	HK	15.0	910414	352.41	54.03	167.65	5.26	0.1634	2.2216	31	8		W
1991	HM	13.0	910504	330.88	193.19	56.66	11.08	0.0971	2.4217	31	0		N
1991	HN	11.0	910504	241.17	233.24	89.98	8.28	0.0223	5.0947	29	7		W
1991	JC	14.0	910504	331.36	193.19	69.99	3.44	0.1927	2.3420	15	7		U
1991	JD	14.5	910504	325.52	236.75	38.28	2.48	0.2199	2.2617	14	5		N
1991	JF	13.5	910504	330.51	21.13	238.97	6.02	0.1073	2.3632	14	8		U
1991	JP	14.2	910504	330.60	61.70	208.35	7.29	0.2791	2.2095	7	6		N
1991	JQ	13.2	910504	342.74	38.25	209.86	11.66	0.2484	2.5614	7	9		N
1991	JZ	12.0	910504	277.89	87.89	228.87	27.98	0.0662	2.9269	3	4	E	W

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1991 JP1  14.0  910504  345.68   49.02 204.39  9.86  0.2258 2.5373   2 5   W
1991 JT1  13.0  910414  327.97   83.71 179.62 15.63  0.1535 2.5516  25 6   W
1991 JW1  12.0  910504  186.27  253.00 149.45 23.56  0.0279 3.0387   6 5   W
1991 KC    9.5  910504  100.85  342.15 116.19 33.68  0.0302 5.2796   2 3 E W
1991 LA   18.5  910524  298.73  239.28  83.02  0.94  0.2320 2.1946   2 9 E M
1991 LB   15.0  910524  298.91  110.26 215.97  4.13  0.2433 2.2680   2 9   M
   1990 SU15 = 1990 QD1 (S. Nakano)
   1991 GW1 = 1991 JO (G. V. Williams)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5  ** J2000.0 **  Bowell
 (373) Melusina            Obs.   75    M 311.10341      Peri.  349.52954
H    9.13      G   0.15    Opp.   21    n   0.17954741   Node     4.17910
rms res.  0".77   (M-P)    1913-1990    e   0.1494508    Incl.   15.44279

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5  ** J2000.0 **  Bowell
 (708) Raphaela            Obs.   70    M 134.77985      Peri.  198.85777
H   10.61      G   0.15    Opp.   21    n   0.22574192   Node   355.57384
rms res.  0".90   (M-P)    1924-1990    e   0.0842300    Incl.    3.49011

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5  ** J2000.0 **  Bowell
(1483) Hakoila             Obs.   23    M   6.94735      Peri.   86.49714
H   11.5       G   0.15    Opp.   13    n   0.22014003   Node    72.40957
rms res.  1".05   (M-P)    1938-1990    e   0.1813539    Incl.    4.49402

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5  ** J2000.0 **  Bowell
(2505) Hebei               Obs.   34    M  47.42796      Peri.  210.16910
H   11.3       G   0.15    Opp.   10    n   0.17663573   Node    59.41143
rms res.  1".08   (M-P)    1968-1990    e   0.1710883    Incl.    2.08288

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5  ** J2000.0 **  Bowell
(2526) Alisary             Obs.   29    M 196.30717      Peri.   61.59500
H   11.9       G   0.15    Opp.    7    n   0.17792698   Node    17.22414
rms res.  0".95   (M-P)    1971-1990    e   0.1855485    Incl.    3.28543

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5  ** J2000.0 **  Bowell
(2543) Machado             Obs.   47    M 344.66763      Peri.  286.79081
H   11.7       G   0.15    Opp.    7    n   0.18198764   Node    41.18843
rms res.  0".75   (M-P)    1959-1989    e   0.2925769    Incl.   15.06251

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5  ** J2000.0 **  Bowell
(2670) Chuvashia           Obs.   21    M  74.73880      Peri.  177.55251
H   10.5       G   0.15    Opp.    8    n   0.17468762   Node   285.26583
rms res.  1".01   (M-P)    1938-1989    e   0.0768148    Incl.    9.83854

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5  ** J2000.0 **  Bowell
(2697) Albina              Obs.   54    M  82.77725      Peri.  121.66812
H   10.2       G   0.15    Opp.   13    n   0.14682313   Node   273.26309
rms res.  1".05   (M-P)    1929-1990    e   0.0895558    Incl.    3.58685

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5  ** J2000.0 **  Bowell
(2748) Patrick Gene        Obs.   21    M 350.74525      Peri.  347.18529
H   12.7       G   0.15    Opp.    8    n   0.20973642   Node   350.81103
rms res.  0".82   (M-P)    1949-1990    e   0.1361775    Incl.    4.23129

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5  ** J2000.0 **  Bowell
(2848) ASP                 Obs.  108    M 250.87322      Peri.   54.12086
H   11.1       G   0.15    Opp.    9    n   0.17293813   Node   339.08996
rms res.  0".82   (M-P)    1959-1990    e   0.2030032    Incl.    0.92457
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Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 ** J2000.0 ** Bowell
(2881) 1983 AA1 Obs. 32 M 215.95475 Peri. 326.29833
H 13.4 G 0.15 Opp. 7 n 0.29243898 Node 173.23348
rms res. 0".92 (M-P) 1936-1990 e 0.1547186 Incl. 4.60910

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 ** J2000.0 ** Bowell
(2915) Moskvina Obs. 18 M 174.45359 Peri. 356.50287
H 13.3 G 0.15 Opp. 5 n 0.24000159 Node 352.97862
rms res. 0".85 (M-P) 1977-1989 e 0.1849911 Incl. 13.21548

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 ** J2000.0 ** Bowell
(2939) Coconino Obs. 41 M 139.77301 Peri. 235.82786
H 12.6 G 0.15 Opp. 5 n 0.25835405 Node 350.37954
rms res. 0".67 (M-P) 1952-1987 e 0.1608279 Incl. 3.97334

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 ** J2000.0 ** Bowell
(3049) Kuzbass Obs. 38 M 48.03468 Peri. 171.81083
H 11.6 G 0.15 Opp. 10 n 0.17889699 Node 95.15313
rms res. 0".94 (M-P) 1952-1990 e 0.1366943 Incl. 2.49917

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 ** J2000.0 ** Bowell
(3242) Bakhchisaraj Obs. 28 M 236.85041 Peri. 242.12493
H 12.4 G 0.15 Opp. 5 n 0.22464493 Node 191.81254
rms res. 0".69 (M-P) 1979-1990 e 0.1606866 Incl. 12.37441

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 ** J2000.0 ** Bowell
(3427) 1938 AD Obs. 18 M 312.52996 Peri. 75.51922
H 13.5 G 0.15 Opp. 6 n 0.28613240 Node 310.49366
rms res. 0".86 (M-P) 1957-1988 e 0.1348431 Incl. 2.60592

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 ** J2000.0 ** Bowell
(3522) 1941 SW Obs. 30 M 314.12412 Peri. 150.94706
H 12.2 G 0.15 Opp. 6 n 0.17479953 Node 202.01996
rms res. 0".40 (M-P) 1941-1990 e 0.2936089 Incl. 8.36563

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 ** J2000.0 ** Bowell
(3543) 1964 VA3 Obs. 18 M 40.52148 Peri. 112.98019
H 11.4 G 0.15 Opp. 6 n 0.17348434 Node 162.91031
rms res. 0".83 (M-P) 1964-1990 e 0.1669095 Incl. 1.03919

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 ** J2000.0 ** Bowell
(3996) 1988 XG1 Obs. 20 M 130.59863 Peri. 156.08901
H 12.8 G 0.15 Opp. 4 n 0.29022530 Node 90.86850
rms res. 0".90 (M-P) 1939-1990 e 0.1036376 Incl. 2.28480

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 ** J2000.0 ** Bowell
(4161) 6627 P-L Obs. 24 M 262.10453 Peri. 223.31041
H 12.9 G 0.15 Opp. 5 n 0.18362898 Node 173.14625
rms res. 0".84 (M-P) 1960-1990 e 0.1011426 Incl. 3.25571

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 ** J2000.0 ** Bowell
(4365) 1978 VH8 Obs. 18 M 20.23911 Peri. 54.82730
H 12.6 G 0.15 Opp. 7 n 0.20476188 Node 245.43977
rms res. 0".55 (M-P) 1963-1990 e 0.0537791 Incl. 1.03452

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 ** J2000.0 ** Williams
(4460) Bihoro Obs. 13 M 282.39284 Peri. 30.06780
H 10.8 G 0.15 Opp. 5 n 0.19736980 Node 326.68686
rms res. 1".15 (M-C) 1970-1991 e 0.1827467 Incl. 27.05578

(878) Mildred = 1985 VG6 = 1991 GZ8
Id. G. V. Williams (IAUC 5275), R. H. McNaught (1984 obs.)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	273.95307	(1950.0)		P	Q
n	0.27188738	Peri.	189.55967	+0.99945645	-0.03261144
a	2.3598081	Node	172.30424	+0.03212355	+0.93050931
e	0.2278943	Incl.	2.06534	+0.00740777	+0.36481354
P	3.63	H	14.9	G 0.15	

Residuals in seconds of arc

160907	672	0.9+	0.7-	161019	672	(2.4-	1.1-)	851111	095	0.2-	0.9+
160907	672	0.1-	0.8-	161019	672	0.1-	0.0	910410	809	0.9+	0.5+
160907	672	1.1+	0.1-	770515	809	0.5+	0.0	910410	809	1.1-	1.3+
160907	672	0.2+	0.4-	770515	809	0.8-	0.6+	910410	809	0.2-	0.6+
160907	672	1.2-	0.6-	770517	809	0.9-	0.2-	910608	691	0.2+	1.7-
160923	672	0.1-	0.7+	770517	809	(2.3-	2.3+)	910608	691	0.2-	1.2-
160923	672	1.0+	0.6-	770611	809	0.5+	0.9+	910608	691	0.1+	1.0-
160924	672	0.2-	0.2+	770611	809	1.2+	1.2+	910609	691	0.3+	0.9-
160924	672	0.0	0.3+	840425	413	0.8-	0.5-	910609	691	0.2-	0.7-
160925	672	0.8-	0.1-	840425	413	0.0	0.1+	910609	691	0.2-	0.7-

(4849)* 1936 QV = 1981 SM5
Discovered 1936 Aug. 17 by K. Reinmuth at Heidelberg.
Id. T. Furuta (JAM 1942)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Oishi

M	2.99134	(1950.0)		P	Q
n	0.28649012	Peri.	170.90428	+0.99970359	-0.02244474
a	2.2789228	Node	190.39578	+0.01772234	+0.93651876
e	0.1115755	Incl.	2.99626	+0.01669279	+0.34989833
P	3.44	H	13.9	G 0.15	

Residuals in seconds of arc

360817	024	0.1-	2.1-	881106	888	0.3-	0.7-	881207	054	0.8+	0.1+
360823	024	1.6+	1.0-	881110	897	0.9+	1.2-	881207	054	0.3-	0.8-
360824	024	0.3+	0.5-	881110	897	0.9-	0.2-	881210	888	0.6+	0.3-
360828	024	(0.0	3.2-)	881112	046	(4.5+	1.4+)	881210	888	0.8+	0.4-
360911	024	0.2-	1.1-	881112	046	(5.5+	0.5+)	900222	675	(1.5-	3.3-)
810925	095	0.2-	1.6+	881115	897	(3.1+	0.6+)	900222	675	0.7+	1.1-
811007	095	(4.6+	2.5+)	881115	897	0.2-	0.5-	900327	675	1.2-	0.8-
811024	095	1.0-	2.9+	881202	888	0.5-	0.8-	900327	675	0.9-	2.0-
881106	888	0.7+	0.3-	881202	888	0.3-	0.6-				

(4850)* 1973 UJ5 = 1988 XZ1
Discovered 1973 Oct. 27 by F. Borngen at Tautenburg.
Id. S. Nakano (MPC 14184)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	257.98567	(1950.0)		P	Q
n	0.20183975	Peri.	194.58880	+0.92266961	-0.38556387
a	2.8782704	Node	188.09450	+0.35695935	+0.85862122
e	0.0768021	Incl.	1.87815	+0.14581088	+0.33780187
P	4.88	H	12.4	G 0.15	

Residuals in seconds of arc

731027	033	0.6-	0.2-	881211	877	0.7-	1.1-	891227	033	0.6-	0.3-
731027	033	0.4-	0.7-	881211	877	0.3-	0.2-	900224	033	1.9-	0.3-
731028	033	0.6+	0.0	881214	877	1.0+	1.9- Y	900318	033	0.5-	0.3-
731031	033	0.4-	0.8+	881214	877	0.3+	1.3+ Y	900326	801	0.1-	0.3-
731101	033	0.1+	0.1+	891225	033	1.8+	1.7+	900326	801	0.0	0.5-
731102	033	0.6+	0.8+	891225	033	1.4+	2.1+	900327	801	0.1+	0.4-
731103	033	0.4-	0.4+	891226	033	0.2+	0.4-	900327	801	0.4+	0.2-

910414 801 0.1- 0.8+ 910419 801 0.3+ 0.5+ 910514 801 0.6+ 0.2-
910414 801 0.1- 0.5+ 910511 801 0.2- 1.0-
910419 801 0.1- 0.4+ 910514 801 0.4- 0.9-

(4851)* 1976 US1 = 1949 GF = 1949 HN = 1974 FS1

Discovered 1976 Oct. 26 by T. M. Smirnova at the Crimean Astrophysical Observatory.

Id. H. Kaneda (MPC 16227), O. Kippes (d, MPC 1330)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	138.30895	(1950.0)	P	Q
n	0.23495103	Peri. 88.57166	-0.41226631	-0.90306435
a	2.6010647	Node 26.80998	+0.69291013	-0.39664555
e	0.0603895	Incl. 15.49070	+0.59153364	-0.16476372
P	4.19	H 12.9	G 0.15	

Residuals in seconds of arc

490404 760 1.4- 0.6+ 761022 381 0.2- 0.1- 910412 293 (0.8+ 6.9+)
490404 760 1.7+ 0.8+ 761024 381 0.5- 0.7- 910419 809 0.8+ 0.0
490425 760 0.2- 1.2- 761026 095 0.2- 0.6+ 910419 809 0.2+ 0.3+
490425 760 (4.6+ 6.5-) 761118 381 0.3- 0.1+ 910419 809 0.6+ 0.0
740321 095 0.3- 0.5- 761118 381 0.3+ 0.3+ 910514 801 0.8- 0.0
761022 381 0.9+ 0.3- 910412 293 (0.2+ 8.0+) 910514 801 0.8- 0.1-

(4852)* 1977 JD = 1978 TU2 = 1980 BE1 = 1980 DZ1

Discovered 1977 May 15 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. S. Nakano (MPC 10940)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	11.17747	(1950.0)	P	Q
n	0.28182452	Peri. 232.19031	+0.08068367	+0.99353059
a	2.3040056	Node 42.65240	-0.87336212	+0.10910913
e	0.1023863	Incl. 6.77402	-0.48034233	-0.03149855
P	3.50	H 13.7	G 0.15	

Residuals in seconds of arc

770424 675 0.3+ 1.1+ 800123 095 0.3+ 1.1+ 910415 046 1.4+ 1.0-
770425 675 0.4- 0.7+ 800220 095 0.1- 0.4- 910511 801 0.0 1.1+
770515 095 0.3+ 0.7- 851018 095 1.5- 1.2+ 910511 801 0.1- 1.1+
781003 095 0.6+ 0.4+ 870228 801 (5.1- 0.7+) 910513 801 0.2+ 0.6+
781007 095 0.0 0.2+ 910415 046 1.3- 2.1- 910513 801 0.5+ 0.9+

(4853)* 1979 ML = 1971 OS = 1971 QN2 = 1975 PU = 1987 MP

Discovered 1979 June 28 by C. Torres at Cerro El Roble.

Id. B. G. Marsden (d, MPC 9064; MPC 12202)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Marsden

M	29.94898	(1950.0)	P	Q
n	0.24402634	Peri. 135.75858	+0.19998026	+0.97637630
a	2.5361693	Node 145.53463	-0.93426955	+0.21518636
e	0.2535608	Incl. 8.31476	-0.29520890	-0.01959994
P	4.04	H 13.0	G 0.15	

Residuals in seconds of arc

710726 095 0.3+ 0.8+ 790629 805 0.2- 0.9- 870728 675 0.5- 3.0+
710727 095 0.4- 1.4- 790702 805 0.1- 0.3+ 910412 801 0.4- 0.2+
710819 808 1.1+ 0.1- 790702 805 1.5- 0.5- 910412 801 0.4- 0.3-
750811 808 1.3- 0.8- 790702 805 1.0+ 0.5- 910511 801 0.2- 0.8-
750811 808 0.0 0.4- 870626 675(32.6+ 2.8-) 910511 801 0.1- 0.7-
790628 805 0.2+ 0.7- 870628 675(82.5+ 4.1-)
790629 805 0.7+ 0.2- 870726 675 2.2+ 2.8+

(4854)* 1981 ED27 = 1976 GX6

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

Id. W. Landgraf (MPC 15409), L. D. Schmadel (ibid.)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Marsden

M	339.57769	(1950.0)	P	Q
n	0.19123944	Peri. 61.35633	-0.56335330	+0.82600707
a	2.9836720	Node 174.24976	-0.80791324	-0.54602580
e	0.0554623	Incl. 10.68969	-0.17294293	-0.13988622
P	5.15	H 12.9	G 0.15	

Residuals in seconds of arc

760404	095	(2.0-	5.0+)	810405	413	0.2+	0.6+	881005	807	0.1+	0.9-
810209	413	0.4+	0.6-	810405	413	2.2+	0.9-	881008	807	0.1+	1.2-
810212	413	0.9-	2.2-	810406	413	0.6-	0.1+	881103	807	0.9+	0.7-
810212	413	0.3+	0.6-	810406	413	0.6+	1.3-	881106	807	0.1-	0.6-
810212	413	1.9-	0.9+	810407	413	0.9-	0.1+	881108	807	0.1-	0.2+
810213	413	0.3-	0.5+	810407	413	0.4+	1.1-	891130	688	0.1-	0.3-
810302	413	1.0-	0.4+	810410	413	0.9-	0.4+	891130	688	0.0	0.4-
810302	413	0.4+	1.2-	810410	413	0.6+	0.4-	891201	688	0.1+	0.2+
810306	413	0.8-	0.2-	810501	413	0.6-	0.4-	891201	688	0.0	0.3+
810306	413	1.2+	0.8-	880914	807	0.2+	0.8-	910317	801	0.1-	0.4-
810311	413	0.5-	0.1+	880915	807	0.2+	1.8-	910512	801	0.6-	0.2+
810311	413	0.2+	0.6-	880916	807	0.9+	2.6-	910512	801	0.7+	0.3+
810315	413	0.3-	1.3-	881004	807	0.2-	0.3-				

(4855)* 1982 VM5 = 1975 TU1 = 1985 SL2

Discovered 1982 Nov. 14 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Id. D. W. E. Green (MPC 14188), S. Nakano (ibid.)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	15.94094	(1950.0)	P	Q
n	0.29539820	Peri. 51.85652	+0.18270258	+0.98119288
a	2.2328737	Node 228.78912	-0.92592484	+0.15041570
e	0.1839430	Incl. 4.74972	-0.33057973	+0.12097791
P	3.34	H 14.3	G 0.15	

Residuals in seconds of arc

751003	095	0.3-	1.1+	850919	095	0.8-	0.7-	910419	809	0.2+	0.3+
821114	381	0.4-	0.2-	850921	095	1.0+	0.2+	910419	809	0.3-	0.1-
821114	381	0.0	0.6+	910408	809	1.1+	0.7-	910419	809	0.1-	0.4-
821213	381	0.7-	0.6-	910408	809	1.1+	0.9-	910511	801	1.8-	0.6+
821214	381	0.8-	1.4+	910408	809	0.6+	0.3-	910511	801	1.6-	0.6+
821214	381	0.5+	1.2-	910410	809	1.7+	0.7+	910517	801	1.0-	0.8+
821214	381	0.7+	1.4+	910410	809	0.9+	0.2+	910517	801	1.3-	0.6+
821214	381	0.2+	0.9-	910410	809	0.7+	0.3-				

(4856)* 1983 LJ = 1931 TT3 = 1972 TY7 = 1980 RX2 = 1980 TV6 = 1984 SD3 = 1991 GU1

Discovered 1983 June 11 by C. S. Shoemaker at Palomar.

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	180.74422	(1950.0)	P	Q
n	0.24057469	Peri. 266.71563	-0.10684971	-0.99330789
a	2.5603701	Node 189.75043	+0.98366533	-0.09918145
e	0.0672836	Incl. 15.00500	+0.14486426	-0.05918165
P	4.10	H 12.0	G 0.15	

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

311012	690(49.4-	68.8-)X		801008	095	2.0-	2.4+	830614	675	0.6-	0.2-
311014	690(0.02-	0.03-)X		830611	675	0.7+	0.4+	840928	688	0.4+	2.3-
721006	095	0.1+	1.7+	830611	675	0.7+	2.0+	840928	688	(1.9-	4.0-)
800908	095	1.4+	0.3-	830613	675	1.0-	0.9+	841026	688	0.5+	1.9-

841026	688	0.2-	0.6-		910412	675	0.9-	0.9-		910508	675	0.4+	0.5+
910410	675	0.5-	0.3-		910412	675	0.3+	0.3-		910510	675	0.2-	0.6-
910410	675	0.3+	0.5-		910508	675	0.9+	0.3+		910510	675	0.3-	1.0-

(4857)* 1984 FM = 1986 UB1

Discovered 1984 Mar. 29 by C. S. Shoemaker at Palomar.

Id. D. W. E. Green (MPC 11623)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Green

M	59.77342	(1950.0)	P	Q	
n	0.27272949	Peri.	138.89947	-0.95443746	-0.20732157
a	2.3549480	Node	31.18357	+0.00316259	-0.72623684
e	0.2309861	Incl.	24.48924	+0.29839427	-0.65543712
P	3.61	H	13.2	G 0.15	

Residuals in seconds of arc

840329	675	0.4+	1.0+		840427	675	0.2-	0.6-		861107	033	0.2+	0.0
840329	675	0.6-	1.1+		840427	046	0.6-	0.7+		880524	474	0.6+	0.3+
840331	675	(3.0+	0.0)		840427	046	0.8-	1.0-		880524	474	0.4+	0.0
840331	675	1.8+	0.4+		840429	675	0.7+	0.2+		880615	474	0.6-	1.2+
840408	688	1.2+	1.2-		840504	688	2.6-	1.5-		880615	474	0.4-	0.8+
840408	688	2.4+	0.8-		840504	688	1.0-	0.6-		910217	046	0.4+	1.1+
840419	046	(0.2+ | 3.2-)		840508	675	0.6-	0.4-		910217	046	(34.5+ | 0.5+)
840419	046	(0.0	4.3-)		840509	675	0.1-	1.0-		910218	046	0.1-	0.1+
840422	046	0.5+	0.5-		840526	675	1.1-	0.6+		910512	801	0.5+	0.0
840424	046	(5.5-	7.1-)		840527	675	0.8-	0.8+		910512	801	0.2+	0.0
840424	046	(2.7-	3.6-)		861027	033	0.6+	0.2-		910516	801	0.1-	0.2+
840425	046	1.2-	1.6+		861027	033	0.3+	0.3-		910516	801	0.1+	0.1+
840425	046	(1.4-	3.3+)		861107	033	0.2+	0.6-					

(4858)* 1985 UA = 1988 RV6

Discovered 1985 Oct. 23 by J. Gibson at Palomar.

Id. D. W. E. Green (MPC 14195)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Green

M	265.88159	(1950.0)	P	Q	
n	0.30571743	Peri.	124.86354	-0.07731387	-0.99658588
a	2.1823408	Node	329.53159	+0.89502853	-0.05657562
e	0.1093948	Incl.	3.27504	+0.43925675	-0.06013140
P	3.22	H	13.8	G 0.15	

Residuals in seconds of arc

851020	688	0.1+	0.0		880909	809	0.2-	0.5+		881007	807	0.1+	0.8-
851020	688	1.3-	0.5-		880909	809	0.1-	0.4+		900224	809	0.1-	0.2+
851023	675	0.5-	0.1-		880912	809	1.0+	0.3-		900224	809	0.2+	0.1+
851023	675	0.5-	0.0		880912	809	1.0+	0.1-		900224	809	0.3+	0.3+
851105	675	0.6+	0.1+		880912	809	1.3+	0.1-		900226	809	1.6-	1.0+
851105	675	0.6+	0.0		880914	809	0.1-	0.2-		900226	809	1.0-	0.5+
851106	675	0.9+	0.3+		880914	809	0.0	0.2-		900226	809	0.4-	0.5+
851106	675	0.8+	0.4+		880914	809	0.0	0.2-		900301	809	0.8+	0.4-
851219	675	0.4+	0.6-		880915	809	0.5-	0.1+		900301	809	1.3+	0.9-
851219	675	0.3+	0.6-		880915	809	0.5-	0.1+		900301	809	2.1+	1.5-
851220	675	0.3+	0.7-		880915	809	0.7-	0.1+		900326	801	0.1-	0.1+
851220	675	0.3+	0.6-		880918	809	0.9-	0.1+		900326	801	0.2-	0.0
860102	675	0.3-	0.8+		880918	809	0.8-	0.0		900328	801	0.5-	0.2-
860102	675	0.4-	0.7+		880918	809	0.6-	0.1-		900328	801	0.6-	0.3-
880908	809	0.1+	0.3+		880920	809	0.2+	0.0		900424	801	1.2-	0.5-
880908	809	0.2+	0.3+		880920	809	0.3+	0.1-		900424	801	0.6-	0.4-
880908	809	0.5+	0.3+		880920	809	0.3+	0.5-					
880909	809	0.4-	0.6+		881006	807	1.1+	0.6-					

(4859)* 1986 TJ2 = 1979 SM1 = 1984 AP1

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

Id. D. W. E. Green (MPC 15557), S. Nakano (ibid.)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Green

M	139.86846	(1950.0)	P	Q	
n	0.28780984	Peri.	313.53342	+0.24915266	-0.96380182
a	2.2719510	Node	121.81102	+0.91761193	+0.20359309
e	0.1357133	Incl.	6.41292	+0.30969549	+0.17215083
P	3.42	H	13.2	G 0.15	

Residuals in seconds of arc

790921	808	0.7+	0.9+	880410	675	0.6-	1.1-	910118	033	0.7-	0.0
790921	808	1.2-	1.0+	880410	675	1.0-	0.4-	910119	801	0.4-	0.4+
840103	330	(4.3+	1.7-)	890810	675	0.2+	0.0	910119	801	0.3-	0.4+
840109	330	0.3+	1.0-	890810	675	1.3+	1.3+	910207	400	0.8+	0.4+
860901	675	(12.3-	1.9-)	890811	675	0.6-	1.5-	910207	400	2.5+	1.1-
860901	675	(3.0-	0.8-)	890811	675	0.3+	1.3-	910209	801	0.2+	0.0
860905	675	0.7+	2.3-	910112	675	1.7+	1.4-	910209	801	0.3+	0.1+
860905	675	2.1-	0.5+	910112	675	0.4+	0.3+	910214	400	2.2-	1.9-
861007	688	0.6-	0.4+	910114	675	0.8-	0.1-	910214	400	(2.5-	3.7-)
861007	688	1.9+	1.2+	910114	675	0.1+	0.5-	910216	801	0.0	0.9+
861105	688	0.9-	0.4-	910116	801	0.3-	0.6+	910216	801	0.3-	0.0
861105	688	0.4+	1.0-	910116	801	0.2-	0.7+	910317	675	0.4+	0.6+
861202	688	0.3+	0.6-	910117	033	0.2-	0.6-	910317	675	0.1+	0.9+
861202	688	0.0	0.5-	910117	033	1.0-	0.1+	910319	675	0.3+	1.3+

(4860)* 1987 EP = 1980 RB4 = 1980 RG5

Discovered 1987 Mar. 3 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. S. Nakano (MPC 13302), A. Lowe (d, MPC 9824)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	208.52672	(1950.0)	P	Q	
n	0.23090938	Peri.	14.84281	+0.98873772	+0.11577492
a	2.6313281	Node	337.83298	-0.14956419	+0.78691500
e	0.1465261	Incl.	14.55739	+0.00531804	+0.60610308
P	4.27	H	11.8	G 0.15	

Residuals in seconds of arc

800904	323	(2.7+	5.7-)	870302	809	0.6+	0.6-	890827	801	1.1-	0.0
800907	095	0.8-	0.3-	870303	688	(13.5-	19.3-)	901214	801	0.4+	1.2-
800908	323	0.2-	0.8+	870303	809	0.4+	0.6-	901214	801	0.0	0.7-
800908	323	1.2+	0.2+	870303	809	0.5+	0.5-	901217	801	0.4-	0.6-
870224	809	1.4-	0.7+	870303	809	0.6+	0.2-	901217	801	0.6-	0.6-
870224	809	1.3-	0.6+	870303	688	(1.7-	3.8+)	910116	801	0.6-	0.7-
870224	809	1.3-	0.7+	870305	809	0.2-	0.3-	910116	801	0.5+	1.8-
870225	809	0.0	0.4+	870305	809	0.0	0.3-	910204	400	1.8-	2.4+
870225	809	0.1+	0.4+	870305	809	0.2+	0.3-	910204	400	(3.5-	2.1+)
870225	809	0.1+	0.4+	870306	809	0.2-	0.1+	910207	400	1.0+	2.3+
870227	809	0.3+	0.2-	870306	809	0.2-	0.0	910207	400	(3.9+	1.8+)
870227	809	0.5+	0.2-	870306	809	0.4-	0.0	910214	400	1.7+	0.6+
870227	809	0.6+	0.2-	870307	809	0.5-	0.5-	910214	400	2.0+	0.1+
870228	809	0.1+	0.1-	870307	809	0.2-	0.2+	910513	801	0.0	1.1-
870228	809	0.1+	0.1+	870307	809	0.3+	0.2+	910513	801	0.0	0.9-
870228	809	0.1-	0.1+	870310	809	0.2-	1.5+	910516	801	0.2-	0.6-
870302	809	0.6+	0.7-	870310	809	0.5-	1.1+	910516	801	0.4-	0.3-
870302	809	0.5+	0.5-	870310	809	0.2-	1.1+				

(4861)* 1987 QU10 = 1977 QB5 = 1982 QF2 = 1982 RB3

Discovered 1987 Aug. 27 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Id. S. Nakano (MPC 15247)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M 323.45504	(1950.0)	P	Q	
n 0.20071710	Peri. 232.92003	+0.86025812	+0.50614341	
a 2.8889929	Node 96.59648	-0.44593509	+0.80534010	
e 0.2259260	Incl. 3.54594	-0.24717980	+0.30861977	
P 4.91	H 12.6	G 0.15		

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

770822 095	1.7-	1.9+	870827 095	0.8+	0.9-	910419 801	0.3-	0.4-
770907 095	0.1+	3.1+	870902 095	0.3-	1.4-	910512 801	0.4+	0.3-
770912 095	(0.17+	0.00+)	870920 095	1.1+	2.3-	910512 801	1.2-	0.2+
820816 095	2.0+	1.0-	870922 095	0.2-	1.0+	910514 801	0.4+	0.3-
820913 095	0.9-	0.9-	910419 801	0.2-	0.5-	910514 801	0.3+	0.3-

(4862)* 1987 SJ5 = 1976 GW3 = 1981 JZ1 = 1982 SN6
Discovered 1987 Sept. 30 by P. Jensen at Brorfelde.
Id. B. G. Marsden (MPC 15415)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Marsden

M 352.60723	(1950.0)	P	Q	
n 0.19833528	Peri. 98.48211	+0.47540029	+0.87824498	
a 2.9120762	Node 200.15556	-0.85466290	+0.44707489	
e 0.2401798	Incl. 8.64142	-0.20867651	+0.16973448	
P 4.97	H 12.7	G 0.15		

Residuals in seconds of arc

760402 095	0.3+	0.3+	870929 054	0.4-	0.0	910419 801	0.1-	0.1+
810505 675	0.4-	0.3+	870930 054	0.2-	0.2+	910512 801	0.3+	0.1-
810506 675	0.2+	0.1+	870930 054	0.4-	0.3+	910512 801	0.4+	0.1-
820916 095	0.0	0.8-	871002 054	1.0+	1.0+	910516 801	0.0	0.3-
870903 095	0.0	0.4-	910419 801	0.5-	0.1+	910516 801	0.1-	0.0

(4863)* 1987 VH1 = 1987 SX15 = 1987 UN6 = 1987 WC5 = 1951 EU2 = 1958 TC
= 1972 RC3 = 1973 YW1 = 1975 ET4 = 1982 SA12 = 1989 AG3
Discovered 1987 Nov. 13 by S. Ueda and H. Kaneda at Kushiro.
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M 82.88887	(1950.0)	P	Q	
n 0.20488902	Peri. 234.40865	-0.18463612	+0.98267472	
a 2.8496417	Node 24.96603	-0.88885477	-0.15996417	
e 0.0209939	Incl. 2.18897	-0.41934080	-0.09360484	
P 4.81	H 11.5	G 0.15		

Residuals in seconds of arc

510313 711	0.7-	0.9- Y	871027 095	0.9-	2.6-	881229 413	1.5+	0.3-
581009 024	0.9-	0.8+	871113 399	1.4-	1.3+	890104 413	2.3-	0.0
720904 095	2.0+	2.5-	871113 399	(2.9+	2.5-)	890104 413	0.1-	0.1-
731220 095	1.2+	0.2+	871114 399	0.7-	1.4-	890130 400	(2.8+	2.0-)
750315 095	0.6-	0.1+	871114 399	0.7+	0.1+	890130 400	1.5+	0.7-
820928 095	1.1+	2.1+	871121 095	2.0-	0.1-			
870925 095	2.1+	0.1+	881229 413	(5.4-	1.2+)			

(4864)* 1988 RA5 = 1957 SA = 1968 KD = 1969 VD1 = 1976 MG = 1985 XZ1
Discovered 1988 Sept. 2 by H. Debehogne at the European Southern Observatory.
Id. S. Nakano (MPC 14953)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M 300.79078	(1950.0)	P	Q	
n 0.25404853	Peri. 242.05561	+0.90977842	+0.41029194	
a 2.4690218	Node 93.66268	-0.35520029	+0.84798356	
e 0.1760896	Incl. 3.61703	-0.21479289	+0.33553600	
P 3.88	H 13.2	G 0.15		

Residuals in seconds of arc

570918	760	1.0-	0.0		880905	809	0.4+	0.6-	880916	809	0.2+	0.7-
570918	760	0.9-	1.7+		880907	809	0.8+	0.1-	880916	809	0.1+	0.5-
680522	095	2.0+	2.8+		880907	809	0.5+	0.7+	880916	809	0.1+	0.6-
691111	095	1.2+	0.8-		880907	809	0.5+	0.5+	880917	809	0.5-	0.3-
691113	095	0.0	0.0		880909	809	0.3-	0.7-	880917	809	0.4-	0.4-
760620	095	1.3+	1.8+		880909	809	0.2-	0.7-	880917	809	0.2-	0.2-
851214	675	(11.9- | 0.2+)		880909	809	0.1+	0.8-	880918	809	0.4-	0.7-
851214	675	(6.9- | 0.2+)		880910	809	0.6+	0.6+	880918	809	0.1-	1.0-
880902	809	0.9-	0.1+		880910	809	0.7+	0.5+	880918	809	0.3+	0.8-
880902	809	0.4-	0.1+		880910	809	0.8+	0.4-	880919	809	0.0	0.3-
880902	809	0.5-	0.2+		880911	809	0.6+	0.2+	880919	809	0.2+	0.1-
880903	809	0.8-	1.1+		880911	809	0.7+	0.1+	880919	809	0.5-	0.4-
880903	809	0.8-	1.1+		880911	809	0.7+	0.1-	910419	801	1.7-	1.4-
880903	809	0.7-	1.0+		880913	809	0.9+	0.5-	910419	801	1.8-	1.4-
880904	809	1.1-	0.1+		880913	809	1.2+	0.5-	910512	801	0.4-	1.4-
880904	809	0.9-	0.1-		880913	809	1.2+	0.9-	910512	801	0.9-	1.4-
880904	809	0.7-	0.0		880914	809	0.4+	0.7-	910517	801	0.1-	1.4-
880905	809	0.2+	0.2-		880914	809	0.2-	0.4-	910517	801	0.4-	1.2-
880905	809	0.3+	0.3-		880914	809	0.1+	0.5-				

(4865)* 1988 UJ = 1977 TZ5 = 1990 BB1

Discovered 1988 Oct. 18 by T. Seki at Geisei.

Id. S. Nakano (MPC 16234), T. Kobayashi (ibid.)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	154.19798	(1950.0)	P	Q
n	0.18527720	Peri. 59.00414	-0.20332049	-0.97170440
a	3.0473434	Node 43.26060	+0.82779049	-0.23616704
e	0.0639541	Incl. 10.10270	+0.52289930	-0.00395982
P	5.32	H 12.0	G 0.15	

Residuals in seconds of arc

771008	095	0.6+	1.1-		881104	046	0.9+	1.9-	900125	372	0.6+	0.9+
881013	372	(3.1+ | 2.9+)		881104	046	0.2+	0.9-	900125	372	2.1+	1.7+
881013	372	(4.0- | 0.1-)		881105	046	0.3-	1.5-	900201	372	0.1+	1.8-
881018	372	0.4+	0.8+		881105	046	0.5-	0.9-	900201	372	1.4-	2.4-
881018	372	0.7+	0.6-		881110	046	0.6-	2.2-	900217	372	1.5+	1.5+
881019	402	0.3-	1.6+		881110	046	0.5+	1.5-	900217	372	0.3+	0.7+
881019	372	0.7+	2.7-		881111	399	0.5-	1.5+	910416	372	1.5-	0.4-
881019	402	0.4-	1.8+		881111	399	0.6+	0.3-	910416	372	(3.3- | 0.7-)
881021	372	1.0-	0.0		881111	399	0.3+	0.0	910504	372	0.4+	0.4-
881022	402	(1.3+ | 3.8+)		881111	399	1.9-	0.8-	910505	385	0.3+	0.5-
881022	372	0.7-	0.3-		881111	046	0.6+	1.2-	910505	385	1.2-	0.5- Y
881022	402	0.3-	2.6+		881111	046	0.1-	0.5-	910510	372	0.2-	2.3-
881022	372	0.3-	0.8+		881114	399	0.7+	1.0+	910510	372	(8.8+ | 1.7-)
881101	372	0.1+	0.5- Y		881114	399	1.4-	1.9-	910513	801	0.5-	0.9-
881102	399	2.1+	1.1+		881114	399	1.5-	0.5-	910513	801	0.4-	0.6-
881102	399	2.4+	0.3-		900121	372	1.7-	1.7-	910514	801	0.3-	0.4-
881102	399	2.5+	1.7+		900121	372	1.8-	0.6+	910514	801	0.3-	0.7-

(4866)* 1988 VB3 = 1972 TX3 = 1978 XF = 1987 QT9

Discovered 1988 Nov. 10 by T. Kojima at the YGCO Chiyoda Station.

Id. H. Kaneda (MPC 15561)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	280.35958	(1950.0)	P	Q
n	0.18968197	Peri. 122.88815	+0.91077224	+0.40297527
a	2.9999823	Node 213.59792	-0.41183969	+0.87087691
e	0.0845161	Incl. 9.36313	-0.02969829	+0.28139713
P	5.20	H 12.1	G 0.15	

Residuals in seconds of arc

721005	095	0.1-	0.3+	881129	897	0.3+	0.1+	910408	809	0.7+	2.1-
781207	801	0.1-	0.1-	881207	054	0.2-	0.0	910410	809	0.8+	0.8-
870826	095	0.3+	1.2-	881207	054	0.1-	2.0-	910410	809	0.7+	1.2-
881110	897	0.6+	1.8+	881212	054	0.9+	0.8+	910410	809	0.9+	1.0-
881110	897	0.4-	0.5-	881212	054	0.4-	0.5-	910419	809	0.5-	0.3+
881115	897	0.4-	1.0-	910317	801	0.2+	0.7+	910419	809	0.6-	0.8+
881115	897	1.2-	0.3+	910317	801	0.1+	0.9+	910419	809	1.5-	0.5+
881115	875	(3.0+	2.2-)	910320	801	0.1+	0.9+	910514	801	0.5-	0.3+
881115	875	1.4+	1.9-	910320	801	0.5-	0.8+	910514	801	0.2-	0.3+
881115	875	(1.7+	3.2-)	910408	809	0.9+	2.1-	910516	801	0.3-	0.6+
881129	897	0.2-	1.1+	910408	809	0.2-	0.8-	910516	801	0.6-	0.5+

(4867)* 1989 SZ = 1988 RN1

Discovered 1989 Sept. 27 by C. S. Shoemaker at Palomar.

Id. B. G. Marsden (MPC 15895)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Marsden

M	195.47138	(1950.0)	P	Q
n	0.08396778	Peri. 274.08460	-0.31759214	+0.92768388
a	5.1648884	Node 334.51602	-0.58211629	-0.35417103
e	0.0162606	Incl. 27.14615	-0.74851577	-0.11817571
P	11.74	H 9.4	G 0.15	

Residuals in seconds of arc

880910	675	0.7-	0.2-	890927	675	0.3+	0.7-	901113	675	1.3-	0.1-
880912	675	0.8-	0.9+	890930	675	0.5+	0.8-	901115	675	0.6-	1.2+
881008	675	0.9+	0.0	891101	675	1.1+	2.9-	901116	801	0.6+	0.4+
881010	675	0.0	0.8-	891102	675	0.7+	1.4-	901116	801	0.4+	0.5+
881106	675	0.4-	0.8+	891124	675	0.0	2.5+	901220	801	0.5-	0.0
881106	675	0.9-	0.8+	891125	675	1.2+	0.2-	901220	801	0.7-	0.6+
890831	675	0.6-	0.8+	901020	675	0.5+	0.5+				
890901	675	0.2-	0.2+	901022	675	0.4+	1.3-				

(4868)* 1989 UN2 = 1988 DE5

Discovered 1989 Oct. 27 by E. F. Helin at Palomar.

Id. B. G. Marsden (MPC 15719)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Marsden

M	21.66545	(1950.0)	P	Q
n	0.35902679	Peri. 94.42753	+0.18868344	+0.98097563
a	1.9605811	Node 186.96794	-0.98189499	+0.18765844
e	0.0680539	Incl. 22.11258	-0.01675660	+0.04971047
P	2.75	H 13.9	G 0.15	

Residuals in seconds of arc

830711	675	1.4-	0.8-	891029	675	0.7+	1.1-	910412	801	0.4-	0.0
830711	675	1.6+	1.8+	891029	807	1.7+	0.7-	910414	801	0.5-	0.2-
880223	413	0.1-	0.8+	891030	807	1.7+	0.9-	910414	801	0.3-	0.3-
880223	413	0.3-	0.6+	891129	675	(4.1+ | 0.2+)	910509	675	(3.6+ | 1.9-)
880312	413	0.5-	0.3+	891201	675	1.3-	0.7+	910509	675	0.5-	1.3-
880312	413	0.1+	0.6-	910409	675	1.3+	1.0-	910511	801	0.1+	0.1-
891027	675	1.5-	1.7-	910411	675	0.3+	1.6-	910511	801	0.2-	0.0
891027	675	1.4-	1.1-	910411	675	0.5+	1.2-	910512	801	0.6+	0.1-
891029	675	0.1-	0.6-	910412	801	0.4-	0.1+	910512	801	0.0	0.4-

(4869)* 1989 UE8 = 1989 VS = 1935 ME = 1955 KP = 1978 EM3 = 1984 BM = 1988 GC

Discovered 1989 Oct. 26 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Id. G. V. Williams (MPC 16585)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M 297.44280	(1950.0)		P	Q
n 0.29507447	Peri.	217.34494	+0.68301792	+0.72780282
a 2.2345065	Node	95.82578	-0.65427685	+0.64711826
e 0.1739308	Incl.	3.54767	-0.32466647	+0.22702646
P 3.34	H 13.3		G 0.15	

Residuals in seconds of arc

350622	078	(7.5- 1.7+)X	880410	675	1.3- 0.1+	891201	071	0.3+ 0.2+
550527	076	0.5+ 1.3-	891026	095	0.3- 0.3-	891202	808	0.8+ 0.9+
780306	095	0.8- 0.9+	891026	095	(2.6- 0.5-)	891202	808	0.7+ 0.6+
840126	046	(4.0- 2.4-)	891030	095	0.1- 0.7+	910209	801	1.2+ 0.1+
840126	046	1.1- 1.2-	891030	095	0.6+ 1.5-	910209	801	1.4+ 0.2+
840127	046	(6.3- 0.4-)	891102	400	1.5- 0.1+	910211	801	0.1+ 0.6+
840127	046	(6.5- 2.2+)	891102	400	(2.8+ 0.8+)	910211	801	(3.5+ 0.6+)
840129	046	0.3- 0.4-	891121	095	1.4+ 0.4+	910321	801	1.5+ 0.5+
840129	046	1.9- 1.9-	891121	095	1.8- 0.7-	910321	801	1.4+ 0.4+
880407	675	0.6- 0.6-	891201	071	(3.5+ 0.6+)			

(4870)* 1989 UK8 = 1931 UL = 1933 BL = 1956 AB = 1980 EF1

Discovered 1989 Oct. 25 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Id. G. V. Williams (MPC 16878)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M 99.83313	(1950.0)		P	Q
n 0.17096272	Peri.	354.34562	+0.21582911	-0.96185169
a 3.2151540	Node	83.10731	+0.90232130	+0.13067857
e 0.0742168	Incl.	9.74877	+0.37314081	+0.24034234
P 5.77	H 11.3		G 0.15	

Residuals in seconds of arc

311017	690	0.0 2.7-	891025	095	0.2+ 1.6+	901121	801	0.3- 0.1+
311018	690	(8.3- 3.9-)	891103	809	(3.3- 0.3-)	901121	801	0.3- 0.1+
330127	024	1.9+ 0.4+	891103	809	(4.0- 0.1-)	901220	801	0.1- 0.1+
560113	760	(2.4- 3.5-)	891103	809	(5.5- 0.2-)	901220	801	0.1- 0.2+
560113	760	1.0- 1.5-	891120	095	0.8- 1.5+	910216	801	0.0 0.3-
800315	095	0.1+ 0.4-	891124	095	0.8+ 0.1-	910216	801	0.5- 0.5+

(4871)* 1989 WH1 = 1980 BN3 = 1982 UF = 1987 DU5

Discovered 1989 Nov. 24 by M. Koishikawa at the Ayashi Station of the Sendai Observatory.

Id. S. Nakano (MPC 15724)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M 231.39627	(1950.0)		P	Q
n 0.29054139	Peri.	141.51419	+0.70982592	-0.70259605
a 2.2576886	Node	263.20110	+0.63309729	+0.66753458
e 0.1083124	Incl.	2.88973	+0.30876365	+0.24648807
P 3.39	H 13.1		G 0.15	

Residuals in seconds of arc

800122	095	1.6- 1.0-	870222	809	1.0+ 1.4-	891124	391	(1.6+ 3.7+)
821017	688	(2.9+ 4.8-)	870222	809	1.1+ 1.4-	891125	391	0.5+ 0.6+
821017	688	(1.4+ 3.7-)	870223	809	1.2+ 1.1+	891125	391	0.9- 0.6+
821024	688	1.7+ 1.5-	870223	809	1.2+ 0.8+	891126	391	0.1- 1.8+
821024	688	(1.3+ 2.8-)	870223	809	1.2+ 0.8+	891126	391	0.8+ 1.5+
870219	809	1.8- 1.6+	891121	399	(3.2- 1.7-)	891127	391	(2.8- 1.3+)
870219	809	1.6- 1.3+	891121	399	0.4+ 2.1-	891128	391	0.9+ 1.5+
870219	809	1.6- 1.4+	891121	399	0.1- 1.3-	891202	391	(0.2+ 3.2+)
870220	809	0.0 1.4-	891122	399	0.0 1.3-	891202	391	(0.4+ 3.3+)
870220	809	0.1+ 1.4-	891122	399	(0.3+ 3.0-)	891203	391	0.1+ 2.2+
870220	809	0.1+ 1.4-	891122	399	(0.5- 5.6-)	891203	391	(0.5+ 3.5+)
870222	809	1.3+ 1.5-	891124	391	(0.6+ 3.0+)	891204	391	0.2+ 0.1+

891204 391 0.1+ 0.6+ 891219 391 1.0- 1.0- 910420 391 (6.5+ 1.5+)
891205 391 (3.6- 0.4-) 891223 391 0.4+ 1.3+ 910420 391(10.5+ 0.9+)
891205 391 1.4- 0.8- 891223 391 0.0 0.8+ 910511 801 0.0 0.8+
891206 399 0.3- 0.2- 910414 391 (3.3- 0.0) 910511 801 0.2+ 0.0
891206 399 1.7- 2.3- 910414 391 0.7- 0.9- 910513 801 0.1- 0.4+
891218 391 0.1+ 0.6+ 910416 391 0.6- 0.2+ 910513 801 0.1- 0.3+
891218 391 (2.1+ 2.9+) 910416 391 0.2+ 1.1-
891219 391 1.1+ 0.5- 910420 391 (5.5+ 1.1-)

(4872)* 1989 YH7 = 1975 XL6 = 1986 EV1
Discovered 1989 Dec. 25 by F. Borngen at Tautenburg.
Id. D. W. E. Green (MPC 16238)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Schmadel

M	141.09053	(1950.0)	P	Q
n	0.21885953	Peri. 5.51434	-0.44268375	-0.87970094
a	2.7270456	Node 110.86090	+0.81537669	-0.47550517
e	0.0577782	Incl. 10.71017	+0.37308439	-0.00459276
P	4.50	H 14.0	G 0.15	

Residuals in seconds of arc
751206 809 0.0 0.2+ 891226 033 0.6+ 0.2- 910411 033 0.0 0.2-
751206 809 0.7+ 0.1- 900103 511 0.2+ 0.3- 910412 033 0.3+ 0.4-
751207 809 0.1+ 0.3- 900103 511 0.0 0.9- 910412 033 0.1- 0.0
751207 809 0.3- 0.6- 900124 033 0.4- 0.4- 910507 033 0.5- 0.5-
860306 688 0.1- 1.4+ 900124 033 0.7- 0.7- 910513 033 0.7- 0.7-
860306 688 0.5+ 1.1+ 910410 033 0.2+ 0.1- 910513 033 0.4- 0.9-
891225 033 0.1- 0.2+ 910410 033 0.2- 0.2+ 910514 033 0.3+ 0.5-
891226 033 0.7+ 0.1+

(4873)* 1990 EC = 1955 RO = 1971 SF = 1982 UM1
Discovered 1990 Mar. 4 by A. Sugie at the Dynic Astronomical Observatory.
Id. S. Nakano (MPC 16241)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	353.03578	(1950.0)	P	Q
n	0.18759620	Peri. 157.48311	+0.54922491	+0.82892992
a	3.0221779	Node 145.56814	-0.79240018	+0.55685373
e	0.0957568	Incl. 10.80084	-0.26543165	+0.05281195
P	5.25	H 12.2	G 0.15	

Residuals in seconds of arc
550913 760 0.5- 1.1+ 900304 402 0.1- 1.0- 900325 413 1.4+ 0.3-
550913 760 1.1- 0.9+ 900304 402 0.9- 0.0 910414 801 0.6- 0.3-
710925 808 1.1+ 0.1+ 900305 402 0.5+ 0.5- 910414 801 0.8- 0.6-
710925 808 0.5+ 1.1- 900305 402 0.2- 0.0 910511 801 0.0 0.5-
710925 808 1.0+ 0.5- 900321 402 0.3+ 0.5+ 910511 801 0.1+ 0.5-
710926 805 0.6+ 0.8+ 900321 402 0.6- 1.9- 910512 801 0.0 0.9-
710926 805 0.3+ 1.0- 900322 402 1.3- 0.7+ 910512 801 0.2+ 0.7-
821024 688 1.0- 2.3- 900322 402 0.2+ 1.1+
821024 688 0.1- 1.2- 900325 413 0.6+ 0.1-

(4874)* 1991 AW = 1928 BB = 1970 EC = 1987 EM
Discovered 1991 Jan. 12 by E. F. Helin at Palomar.
Id. G. V. Williams (MPC 17967)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	103.18553	(1950.0)	P	Q
n	0.23505297	Peri. 324.79660	-0.04845139	-0.97815056
a	2.6003125	Node 127.11919	+0.96465085	-0.09831897
e	0.1269521	Incl. 14.68745	+0.25903900	+0.18317987
P	4.19	H 11.8	G 0.15	

Residuals in seconds of arc

280125	029(97.7+	13.7+)X	910112	675	0.5-	0.7-	910117	896	2.2+	1.6-	
700307	095	0.1-	1.4-	910114	675	0.2-	0.6+	910118	403	1.9-	0.5-
870303	688	0.0	0.2-	910114	675	0.8+	0.9+	910118	403	2.2-	0.3-
870303	688	0.6+	0.3+	910114	399	0.2+	0.9+	910120	403	0.8-	0.1- Y
890809	675	1.1-	0.5-	910114	399	0.7+	0.1-	910120	403	1.5-	1.5- Y
890809	675	1.0-	0.4+	910114	399	(5.7+	2.1+)	910209	675	0.9+	1.2-
890810	675	2.2-	0.5+	910115	033	0.4+	0.7+	910209	675	0.3+	1.2-
890906	675	1.7+	0.4-	910115	033	0.1-	0.2+	910214	675	1.2-	0.3-
890906	675	1.3+	0.7-	910115	896	1.1+	1.5+	910214	675	1.1-	0.4+
891005	675	0.4+	0.3-	910115	896	0.7+	2.5+	910218	675	(4.8+	1.7-)
891005	675	0.1+	0.8+	910115	033	0.0	0.6+	910218	675	0.8+	0.3-
891006	675	0.5+	0.2-	910115	033	0.1-	0.1+	910220	675	0.3+	0.5+
891006	675	0.1-	0.3-	910116	033	0.4-	0.4+				
910112	675	0.7-	0.3-	910117	896	2.0+	0.6- Y				

(4875)* 1991 DJ = 1931 KH = 1948 NG = 1948 OD = 1975 RZ1 = 1978 JY2
= 1979 YX3 = 1985 MG = 1988 JJ2

Discovered 1991 Feb. 19 by Y. Kushida and R. Kushida at the Yatsugatake South Base Observatory.

Id. H. Kaneda (MPC 17972)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	340.72591	(1950.0)	P	Q	
n	0.29332338	Peri.	159.01992	+0.21640320	+0.97330591
a	2.2433908	Node	123.40423	-0.90823892	+0.22942540
e	0.1784308	Incl.	5.25469	-0.35815042	+0.00629187
P	3.36	H	12.6	G 0.15	

Residuals in seconds of arc

310521	690	(5.5-	1.1+)	880513	688	(2.4-	3.5+)	910223	896	0.9+	0.5+
310522	690	1.6-	0.6+	880513	688	1.9-	0.1+	910306	896	(3.7+	2.7-)
310523	690	1.4-	0.4+	910209	898	(4.8-	1.7-)	910323	896	0.2+	1.9-
480710	094(16.4+	4.7-)X	910209	898	(3.1-	0.8-)	910323	896	0.6+	1.4-	
480730	078 (2.0-	13.7+)X	910219	896	2.1+	1.5-	910403	896	1.3-	2.1+	
750906	095 (4.3+	8.2+)	910219	896	0.1+	2.2+	910409	896	0.1-	1.2-	
780509	095	0.6+	0.4-	910220	898	0.3-	0.6+	910415	896	1.0-	0.7+
791218	095	0.8-	0.5+	910220	896	(0.8+	2.7+)	910415	896	(0.1-	3.0+)Y
850622	688	0.2-	0.8+	910220	898	1.0-	0.8+				
850622	688	0.0	0.6+	910220	896	0.6+	0.1+				

(4876)* 1133 T-2 = 1976 GS5 = 1984 YL5 = 1986 GY1 = 1988 TF4

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Id. S. Nakano (MPC 15076)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	171.75373	(1950.0)	P	Q	
n	0.19897007	Peri.	220.46846	+0.25320004	-0.96732743
a	2.9058791	Node	214.87021	+0.89328279	+0.23891106
e	0.0272815	Incl.	1.29669	+0.37139683	+0.08484779
P	4.95	H	13.2	G 0.15	

Residuals in seconds of arc

730919	675	0.5-	2.5-	730930	675	0.1-	0.9+	860308	809	0.5-	0.3-
730919	675	0.8-	0.6-	730930	675	0.4+	0.3+	860309	809	0.7+	1.2-
730920	675	0.8-	0.9-	731004	675	1.7+	0.4-	860309	809	0.1-	0.5-
730924	675	0.3+	0.6-	731004	675	0.4+	0.0	860312	809	1.4+	1.9-
730924	675	0.7+	1.0-	731005	675	0.0	1.3+	860312	809	1.0+	0.6+
730925	675	0.8-	1.8-	731005	675	0.1+	0.1+	860316	809	0.9+	0.8-
730925	675	1.1-	0.7+	760402	095	0.1+	0.5-	860316	809	1.2+	0.2+
730929	675	1.0+	0.7-	841228	095	1.3-	1.4-	860408	071	2.1-	0.2-
730929	675	0.9+	1.1-	860308	809	0.4+	1.9-	860408	071	0.3-	0.1+

860408 071 1.4- 0.3- 910317 801 1.5+ 0.4- 910410 809 2.1- 0.3+
860408 071 (3.1- 1.2+) 910408 809 1.4- 0.0 910410 809 0.0 0.5+
860409 071 0.2- 0.3- 910408 809 1.5- 1.1+ 910410 809 0.8+ 0.5+
860409 071 1.2+ 0.4- 910408 809 1.3- 0.7+ 910410 809 0.0 0.5+
881014 046 2.2+ 0.1- 910408 809 0.3+ 0.1- 910419 809 1.3+ 1.7-
881014 046 0.0 0.6- 910408 809 0.6- 0.1+ 910419 809 0.4+ 1.0-
910313 801 1.3+ 0.5- 910408 809 0.8- 0.2- 910419 809 0.6+ 1.0-
910313 801 1.0+ 0.2- 910410 809 2.0- 1.1+
910317 801 1.3+ 0.4- 910410 809 2.4- 0.2+

(4877)* 5066 T-2 = 1982 YF2 = 1986 TU15 = 1986 UF1
Discovered 1973 Sept. 25 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.
Id. K. Ichikawa (MPC 15259)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Ichikawa

M	42.23420	(1950.0)	P	Q
n	0.23063803	Peri. 202.19229	+0.33855856	-0.92719759
a	2.6333916	Node 228.41762	+0.89225803	+0.37042600
e	0.1327003	Incl. 12.37144	+0.29875359	-0.05558055
P	4.27	H 12.9	G 0.15	

Residuals in seconds of arc
730919 675 (4.3+ 2.4+) 730930 675 0.2+ 0.4+ 861029 054 0.7+ 0.5+
730920 675 0.6- 0.6+ 730930 675 0.2- 1.1+ 900921 801 0.4- 0.8+
730920 675 0.1- 1.4+ 731004 675 0.6- 0.5- 900921 801 0.5- 0.7+
730924 675 0.7+ 0.5+ 731004 675 0.2+ 1.1- 900922 801 0.6- 0.9+
730924 675 0.3- 0.8+ 731005 675 0.6+ 1.8- 900922 801 0.6- 1.2+
730925 675 0.2- 1.4- 731005 675 1.1+ 1.4- 901016 801 0.2+ 0.6+
730925 675 1.0- 1.3- 821221 095 0.6+ 2.0+ 901016 801 0.2- 0.5+
730929 675 0.6+ 0.3- 861007 095 0.2+ 1.9- 901017 801 0.4+ 0.7+
730929 675 0.6+ 0.5- 861029 054 1.2- 1.2- 901017 801 0.2+ 0.6+

1965 SO = 1988 TT2
Id. C. M. Bardwell (MPC 14182)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Bardwell

M	342.34856	(1950.0)	P	Q
n	0.25805802	Peri. 277.85753	+0.75470925	+0.65512089
a	2.4433856	Node 41.22334	-0.57896478	+0.69021804
e	0.1887799	Incl. 3.05139	-0.30856722	+0.30727133
P	3.82	H 13.0	G 0.15	

Residuals in seconds of arc
650920 330 2.7+ 1.6- 881014 046 1.3- 0.4- 881104 033 0.2- 1.0+
650923 330 0.3+ 0.1+ 881014 046 0.6- 0.2+ 900127 675 1.0+ 1.1-
651018 330 0.5- 0.3- 881016 046 1.0- 0.2+ 900127 675 0.0 0.3+
651021 330 1.4- 1.8- 881016 046 0.9+ 0.4- 900223 675 0.3+ 2.5-
881011 046 0.8+ 1.5- 881103 033 0.4- 0.9+ 900223 675 1.1- 0.6-
881012 046 1.4+ 0.4- 881103 033 0.4- 0.5+

1969 GD = 1988 XF2
Id. S. Nakano (MPC 14183)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	262.71331	(1950.0)	P	Q
n	0.23167694	Peri. 150.92670	+0.68475767	-0.69789234
a	2.6255130	Node 254.96840	+0.61952642	+0.70911636
e	0.1598231	Incl. 12.55195	+0.38378893	+0.10050007
P	4.25	H 11.8	G 0.15	

Residuals in seconds of arc
690409 808 0.4- 1.7- 690413 808 0.1- 1.3- 690508 808 0.3+ 2.6+
690410 808 0.0 0.4- 690419 808 0.7- 1.2+ 881214 888 (3.9- 2.8-)
690412 808 0.6+ 0.5+ 690424 808 0.6+ 0.3+ 881214 888 2.2- 1.8-

881215 888 0.3+ 1.7+ 890101 888 0.5+ 0.6- 900325 474 0.3- 0.4+
881215 888 0.3+ 1.2+ 890101 888 0.5- 0.9- 900325 474 0.2- 1.1-
881228 888 1.3+ 0.0 890103 888 0.6- 0.5+ 900329 801 0.2+ 0.1+
881228 888 2.0+ 0.3+ 890103 888 0.9- 0.1+ 900329 801 0.1+ 0.1+

1969 UP1 = 1969 VO = 1984 HV1
Id. C. M. Bardwell (d, MPC 4717), E. Goffin (MPC 11728), W. Landgraf (ibid.)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 232.24868 (1950.0) P Q
n 0.30418984 Peri. 60.37443 -0.16559944 -0.98430695
a 2.1896410 Node 39.30616 +0.86822248 -0.17482981
e 0.0330208 Incl. 5.52268 +0.46772487 -0.02396604
P 3.24 H 14.0 G 0.15
Residuals in seconds of arc
691016 095 1.9+ 1.5- 840430 809 0.1+ 0.3- 900227 801 0.2- 0.2+
691111 095 0.3- 1.8- 840506 809 0.7- 0.3- 900227 801 0.2+ 0.3+
691113 095 (3.3+ 3.9-) 840506 809 1.4- 0.1- 900327 801 0.2- 0.2+
840429 809 0.5+ 0.7- 840507 809 0.4+ 0.4- 900327 801 0.1+ 0.5-
840429 809 0.5- 0.3- 840507 809 1.0+ 0.4- 900328 801 0.0 0.1-
840430 809 0.8- 0.5- 840507 809 0.3- 0.3- 900328 801 0.0 0.3-

1970 JB = 1991 CP3
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nagata
M 60.72046 (1950.0) P Q
n 0.27951410 Peri. 281.26866 -0.80817692 +0.48490506
a 2.3166845 Node 288.51973 -0.29988979 -0.82727391
e 0.2817284 Incl. 20.64002 -0.50686900 -0.28369870
P 3.53 H 14.4 G 0.15
Residuals in seconds of arc
700510 808 0.8+ 0.2+ 700527 808 2.2+ 2.0- 910211 413 0.9+ 0.2+
700515 808 1.6- 0.5+ 700527 808 1.9- 2.1+
700516 808 0.6+ 0.8- 910210 413 0.8- 0.3-

1973 SD1 = 1991 GA5
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden
M 179.10230 (1950.0) P Q
n 0.08470667 Peri. 33.64218 +0.77430762 -0.63269217
a 5.1348195 Node 5.65341 +0.54989942 +0.66321010
e 0.0922634 Incl. 7.10190 +0.31314269 +0.39981620
P 11.64 H 11.0 G 0.15
Residuals in seconds of arc
730919 675 0.9+ 1.2- 730929 675 0.3- 0.6+ 910408 809 0.6+ 2.2-
730919 675 0.2+ 0.5+ 730930 675 0.3+ 0.5- 910408 809 0.4- 2.3-
730920 675 0.8- 0.8+ 730930 675 0.4- 1.1+ 910410 809 0.3- 0.5-
730924 675 1.3- 0.2- 731004 675 0.6+ 1.1- 910410 809 0.6- 0.6-
730924 675 0.6- 1.1+ 731004 675 0.6- 0.5+ 910410 809 0.8- 0.1-
730925 675 1.3+ 3.0- 731005 675 1.6+ 1.5- 910419 809 0.2+ 2.6+
730925 675 0.1+ 0.7+ 731005 675 1.0- 1.2+ 910419 809 0.6+ 2.1+
730929 675 0.3+ 0.7+ 910408 809 0.2+ 1.8- 910419 809 0.3+ 2.5+

1974 SR1 = 1933 UG1 = 1981 SM7
Id. T. Kobayashi (MPC 12004)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano
M 37.81354 (1950.0) P Q
n 0.28818434 Peri. 326.81704 +0.72644509 +0.68704838
a 2.2699823 Node 349.74110 -0.60993434 +0.63414808
e 0.2433469 Incl. 5.01151 -0.31663484 +0.35471217
P 3.42 H 13.7 G 0.15

Residuals in seconds of arc

331019	024	1.6+	3.1-		811002	095	0.6+	0.1-		900302	809	0.4+	0.2-
740919	095	2.7-	1.1+		881103	033	0.1-	0.6+		900303	809	0.3-	0.3+
740921	095	0.5+	1.1+		881104	033	0.3+	0.8+		900303	809	0.2-	0.4+
740923	095	0.9+	0.9+		881104	033	0.3-	1.0+		900303	809	0.2+	0.3+
741009	095	0.1-	0.4-		900302	809	0.1-	0.2-					
810929	095	0.6-	1.0-		900302	809	0.2+	0.2-					

1976 QN = 1988 FC3
Id. T. Kobayashi (MPC 14471)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M 324.85493	(1950.0)	P	Q	
n 0.31141121	Peri. 284.40801	+0.45427244	+0.89086264	
a 2.1556581	Node 12.61017	-0.81631766	+0.41651199	
e 0.1468162	Incl. 0.14714	-0.35673805	+0.18133264	
P 3.16	H 14.3	G 0.15		

Residuals in seconds of arc

730920	675	1.3+	0.3+		731005	675	0.9-	1.4-		880320	809	1.0-	0.2+
730924	675	0.2-	0.3-		731005	675	0.5+	1.4-		880325	809	0.1+	0.7-
730924	675	0.5+	0.2+		760826	095	0.3-	1.7+		880325	809	0.6-	0.4-
730929	675	0.5-	0.5-		760827	675	1.2-	0.2+		880326	809	0.8+	1.5-
730929	675	0.0	1.3+		760828	675	0.9+	0.9-		880326	809	0.2+	0.3-
730930	675	0.8+	1.2-		760830	675	0.8+	1.8-		880420	413	0.1-	0.1+
730930	675	0.6+	0.6-		880319	809	0.5-	0.2-		880420	413	0.2+	0.3-
731004	675	0.2-	0.0		880319	809	0.6-	0.3-					
731004	675	0.5-	0.4+		880320	809	0.4-	0.8-					

1976 YA6 = 1991 JJ1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M 49.21608	(1950.0)	P	Q	
n 0.23154898	Peri. 160.45587	-0.58464540	+0.77660280	
a 2.6264802	Node 73.07250	-0.77314119	-0.44567248	
e 0.1042664	Incl. 14.20046	-0.24585048	-0.44526861	
P 4.26	H 12.1	G 0.15		

Residuals in seconds of arc

761216	095	(5.5-	3.5+)		770113	095	0.5+	0.3+		910517	894	1.2-	0.2-
761218	095	0.2-	0.2-		910514	894	1.0+	0.9+		910517	894	0.1+	0.6-
761220	095	0.4-	0.1-		910514	894	0.0	0.1-					

1977 AW2 = 1970 PB1 = 1980 VK3
Id. A. Lowe (k), G. V. Williams
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M 173.63357	(1950.0)	P	Q	
n 0.21052931	Peri. 5.60263	+0.98879619	+0.14856163	
a 2.7985152	Node 345.82886	-0.13915178	+0.88210906	
e 0.1068540	Incl. 3.40582	-0.05402658	+0.44700454	
P 4.68	H 13.0	G 0.15		

Residuals in seconds of arc

700811	095	0.0	0.0		770113	675	0.1+	0.1+		801102	675	0.1-	0.2-
770112	675	0.1-	0.1-		801101	675	0.1+	0.2+					

1977 NK = 1984 OL = 1991 GY1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M 21.73837	(1950.0)	P	Q	
n 0.27555949	Peri. 154.44659	+0.27148567	+0.95875502	
a 2.3387967	Node 131.18490	-0.90106492	+0.28392903	
e 0.1971597	Incl. 6.42132	-0.33819750	+0.01315727	
P 3.58	H 13.4	G 0.15		

Residuals in seconds of arc

770714	095	3.2-	0.4+	840723	033	0.7+	0.2+	910415	675	1.9+	2.6+
770719	095	0.3-	0.3+	840723	033	0.3+	0.2-	910419	675	3.3+	1.5+
770722	095	(2.6-	9.9-)	840724	033	(89.5-	20.6-)	910514	376	3.7-	2.7- Y
770818	095	2.8+	0.1-	910415	675	0.4+	0.5+	910514	376	1.7-	1.6- Y

1977 PE1 = 1982 UR5 = 1982 VC6
Id. C. M. Bardwell (MPC 8786), K. Hurukawa (d, MPC 9476)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Bardwell

M	11.75572	(1950.0)		P	Q
n	0.21261700	Peri.	127.96024	+0.99770669	+0.02643568
a	2.7801715	Node	230.61362	-0.04663010	+0.93571827
e	0.1808377	Incl.	4.62420	+0.04906118	+0.35175627
P	4.64	H	13.5	G 0.15	

Residuals in seconds of arc

770814	095	1.2+	0.3-	821021	095	0.5+	0.7-	860708	801	0.0	0.1+
770821	095	0.5+	0.2-	821108	095	0.8-	0.5+	880111	054	0.0	0.6-
770909	095	1.5-	0.0	860707	010	(13.1-	1.7-)				
821020	095	0.1+	0.7+	860708	010	(4.4-	1.4-)				

1977 QY3 = 1963 KC = 1990 KW1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Oishi

M	108.06882	(1950.0)		P	Q
n	0.29060172	Peri.	200.77366	+0.44386847	+0.88924372
a	2.2573761	Node	95.71715	-0.80563025	+0.45003783
e	0.1812429	Incl.	6.38022	-0.39235274	+0.08192413
P	3.39	H	13.6	G 0.15	

Residuals in seconds of arc

630519	760	0.5+	1.8-	770907	095	0.5-	1.5-	900526	385	1.6+	0.6+
630519	760	1.2-	0.6-	771006	095	0.8+	0.4-				
770824	095	0.5-	2.5+	900526	385	0.5-	2.1+				

1977 RD2 = 1982 SP5 = 1987 RS2
Id. I. A. Filippova (k, MPC 15240), S. Nakano (ibid.)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	274.40745	(1950.0)		P	Q
n	0.19530080	Peri.	337.99024	+0.88300832	-0.46740044
a	2.9421628	Node	49.94747	+0.43851657	+0.78902633
e	0.1905746	Incl.	3.20648	+0.16733060	+0.39871579
P	5.05	H	12.7	G 0.15	

Residuals in seconds of arc

770908	095	0.5+	0.2-	800409	675	0.7-	0.1+	870924	413	0.6-	0.2-
770910	095	0.7-	0.1-	820916	095	0.2-	1.6+	870924	413	0.0	0.8+
770918	095	0.4+	0.7-	870901	095	0.4-	0.2-	870925	095	1.1+	1.1-
800408	675	0.6+	0.3-	870922	095	(3.8+	0.7+)				

1978 SO4 = 1981 AS3 = 1986 TS12 = 1991 GR3
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M	295.15138	(1950.0)		P	Q
n	0.12595442	Peri.	298.60641	+0.67769180	+0.73484503
a	3.9414979	Node	14.16052	-0.62993679	+0.59919230
e	0.1663711	Incl.	6.36955	-0.37935928	+0.31775993
P	7.83	H	11.5	G 0.15	

Residuals in seconds of arc

780926	095	1.3-	0.2+	781001	049	0.9+	0.6-	781005	675	0.4+	0.4-
780927	095	0.1-	0.2+	781002	095	(5.0-	0.8+)	810108	381	0.2+	0.1+
780930	049	0.4+	0.6-	781003	095	0.5+	1.6-	810108	381	0.2-	0.0
780930	049	0.3+	1.0-	781004	675	0.9+	0.2-	861005	095	0.5+	1.1-

910408 809 0.2- 0.5+ 910410 809 0.4+ 0.2- 910419 809 1.6+ 2.0-
910408 809 0.1+ 0.3+ 910410 809 1.1- 0.2+ 910419 809 1.5- 1.5-
910408 809 0.6- 0.3- 910410 809 1.5- 0.0 910419 809 0.0 2.2-

1978 VK5 = 1980 GR1 = 1982 YM4 = 1989 SU10
Id. A. Lowe (k), G. V. Williams
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 164.98281 (1950.0) P Q
n 0.25695030 Peri. 59.80251 +0.73211539 -0.68110775
a 2.4503980 Node 343.12103 +0.61254632 +0.66467743
e 0.0629498 Incl. 1.96662 +0.29798333 +0.30707678
P 3.84 H 13.5 G 0.15
Residuals in seconds of arc
781105 675 0.2+ 0.0 800409 675 1.0+ 0.1- 890929 809 1.0- 0.2+
781106 675 0.3+ 0.7- 821223 095 0.0 1.3+ 890929 809 0.7- 0.1+
781107 675 0.1+ 0.2+ 890928 809 0.1- 0.5+ 890929 809 0.2- 0.1-
781108 675 0.4- 0.7- 890928 809 0.4+ 0.3+
800408 675 0.6- 0.9+ 890928 809 0.9+ 0.3+

1979 OB
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 260.54949 (1950.0) P Q
n 0.29709010 Peri. 140.03475 +0.77232695 +0.63522457
a 2.2243883 Node 180.53114 -0.60494727 +0.73507725
e 0.2830230 Incl. 5.62137 -0.19377789 +0.23696240
P 3.32 H 14.0 G 0.15
Residuals in seconds of arc
790726 688 0.7- 0.5+ 790913 801 1.2+ 1.3+ 890929 801 0.1- 0.1+
790726 688 0.2- 0.5- 790918 801 0.5- 0.7+ 890929 801 0.2- 0.6+
790730 688 0.5+ 2.6- 791017 688 0.7+ 2.1- 890929 801 0.1+ 0.1+
790730 688 0.5+ 0.1+ 791022 801 1.1- 0.3- 910318 688 0.1- 0.2+
790801 688 0.1- 0.1- 791119 801 0.5+ 1.2- 910318 688 0.0 0.0
790816 801 1.9- 1.4+ 820612 675 0.4+ 0.0
790817 801 1.3+ 0.4+ 820613 675 0.4- 0.4-

1979 SP13 = 1979 SW3 = 1969 AP = 1973 AO4 = 1973 CN = 1983 UX
Id. G. V. Williams (d, MPC 18264), H. Kaneda
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda
M 32.63361 (1950.0) P Q
n 0.25673006 Peri. 310.27883 +0.69439656 -0.71620716
a 2.4517992 Node 95.59331 +0.67962166 +0.62089858
e 0.1974630 Incl. 4.01699 +0.23649061 +0.31864126
P 3.84 H 12.7 G 0.15
Residuals in seconds of arc
690115 095 0.2- 2.2- 790920 675 1.2+ 0.5- 831030 675 0.9- 2.2+
730103 095 0.4+ 0.2- 790921 675 1.5+ 0.1- 831104 675 (4.1+ 6.6+)
730203 095 0.1- 0.9+ 790924 095 1.7- 1.6-

1979 XQ = 1982 PP
Id. C. M. Bardwell (MPC 13589)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Bardwell
M 242.10527 (1950.0) P Q
n 0.29015744 Peri. 326.88965 +0.99857848 -0.03877651
a 2.2596843 Node 35.38816 +0.05100376 +0.89441575
e 0.1309044 Incl. 3.62059 -0.01548005 +0.44555229
P 3.40 H 14.0 G 0.15
Residuals in seconds of arc
791114 095 2.3- 0.3- 791124 675 1.2+ 0.1+ 791211 049 0.6- 0.5-
791122 675 0.3+ 0.5+ 791125 675 1.1+ 0.7- 791211 049 0.6+ 1.2-

791223	095	0.2+	0.9+	891008	403	0.7-	1.0+	891023	403	(4.4+	1.9-)
820814	095	2.3+	2.2-	891008	403	0.4-	0.5+	891023	403	0.4-	1.0+
820816	095	1.2+	0.5-	891011	809	1.0-	0.8+	891025	046	0.2+	1.4-
820913	095	2.5-	0.7+	891011	809	0.4-	0.8+	891025	046	2.5+	1.2-
890925	801	0.8-	0.2+	891011	809	0.0	0.8+	891025	095	(3.3-	0.2-)
890926	809	(1.7+	3.3-)	891011	809	0.5+	0.7+	891025	095	1.6-	0.4-
890926	809	(1.5+	3.7-)	891012	809	0.6-	0.5-	891026	046	1.0+	1.5-
890926	809	(1.2+	3.7-)	891012	809	0.2-	0.6-	891026	046	1.5+	0.6-
891002	071	0.9+	0.9+	891012	809	0.5+	0.7-	891027	046	1.9+	0.9+
891003	071	0.6-	0.1-	891012	809	0.9+	0.6-	891027	046	1.7+	0.5+
891003	071	0.3-	0.8+	891017	403	0.7-	0.1-	891102	046	0.8-	0.6+
891007	403	1.1-	1.3+	891017	403	2.5-	0.9-	891102	046	1.9+	0.2+
891007	403	1.4-	0.4+	891021	095	0.8-	0.3-				

1980 RC1 = 1986 CA2
Id. C. M. Bardwell (MPC 10952)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5		(J-P)		Bardwell	
M 311.46429		(1950.0)		P	Q
n 0.25586087	Peri.	77.06187		+0.99805051	+0.03283208
a 2.4573537	Node	281.03822		-0.05163726	+0.91205751
e 0.2033214	Incl.	3.09996		+0.03505377	+0.40874582
P 3.85	H	13.0	G	0.15	

Residuals in seconds of arc

800804	675	0.9-	0.4-	860212	809	1.0-	0.3-	860216	809	0.3+	0.0
800805	675	0.7-	0.2-	860213	809	0.7-	0.4-	860216	809	0.5+	0.0
800902	046	0.7+	0.8-	860213	809	0.6-	0.4-	860216	809	0.5+	0.0
800902	046	1.1+	0.1+	860213	809	0.3-	0.2-	860217	809	0.9+	0.3+
800903	046	0.2-	0.3-	860214	809	0.2-	1.0-	860217	809	1.0+	0.3+
800903	046	0.2-	0.5+	860214	809	0.2-	0.9-	860217	809	0.8+	0.4+
800916	046	1.2+	0.2+	860214	809	0.0	0.6-	880915	095	0.3-	0.1+
800916	046	1.7+	0.6+	860215	809	0.1-	0.7-	880915	095	0.6+	1.9-
860212	809	0.9-	0.6-	860215	809	0.0	0.7-	881012	801	0.3-	1.1+
860212	809	0.9-	0.4-	860215	809	0.2+	0.7-	881108	801	0.1-	0.2+

1980 RL7 = 1980 RR3 = 1943 UE = 1972 TO4 = 1972 VR
Id. G. V. Williams (d, MPC 18264), H. Kaneda

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Kaneda	
M 235.58036		(1950.0)		P	Q
n 0.23866842	Peri.	143.08352		+0.86007016	-0.49071671
a 2.5739854	Node	246.86572		+0.42425313	+0.83986875
e 0.0977946	Incl.	8.72903		+0.28335244	+0.23198619
P 4.13	H	12.1	G	0.15	

Residuals in seconds of arc

431030	024	0.7+	5.5-	721108	095	0.4-	0.7+	800914	675	0.7-	1.2+
431103	024	0.8+	1.2-	800904	095	1.3+	2.0-				
721005	095	0.4-	5.7+	800913	675	0.8-	1.6+				

1981 EH4

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Williams	
M 355.84562		(1950.0)		P	Q
n 0.23219560	Peri.	138.05202		+0.98686430	-0.12051076
a 2.6216018	Node	229.19957		+0.08207109	+0.94763246
e 0.2313679	Incl.	8.17119		+0.13915169	+0.29575305
P 4.24	H	14.0	G	0.15	

Residuals in seconds of arc

780705	675	0.7-	0.2+	810302	413	(5.1-	2.4+)	810310	413	1.1-	1.4+
780706	675	0.6+	0.5+	810302	413	2.1+	0.9-	810310	413	1.3+	0.5+
810202	413	0.3+	1.1-	810307	413	1.2-	1.7+	810312	413	1.9-	1.5+
810214	413	0.1+	0.6-	810307	413	0.5+	0.6+	810312	413	1.0+	1.2-

810409	413	1.7-	0.7+	870921	688	2.1-	0.5-	870929	688	0.5+	0.3+
810409	413	0.5+	0.8-	870921	010	0.7+	1.6-	870929	688	0.5+	0.9+
810429	413	0.7+	0.7-	870922	010	2.4+	0.5-	871016	688	2.1-	2.3+
870921	688	0.2-	0.1+	870923	095	(3.3-	5.6+)	871023	095	(1.7-	4.7+)

1981 ED6
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	153.44592	(1950.0)	P	Q	
n	0.24148244	Peri.	65.62621	+0.23736582	+0.96324215
a	2.5539497	Node	218.79133	-0.94804676	+0.20147043
e	0.2923926	Incl.	11.58256	-0.21181317	+0.17769138
P	4.08	H	16.0	G 0.15	

Residuals in seconds of arc

781026	675	1.5-	1.5-	810307	413	0.6-	1.0-	810409	413	2.0-	1.2+
781027	675	1.5+	1.3+	810310	413	0.5-	0.8+	810409	413	0.9+	2.0-
810209	413	1.5+	0.4+	810312	413	0.6-	0.1-	901012	413	0.8-	3.0-
810307	413	1.5+	0.2+	810312	413	(4.6+	1.9-)	901012	413	0.9+	2.5+

1981 EK12 = 1991 GH6
Id. B. G. Marsden, S. J. Bus (1979 obs.)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M	96.19369	(1950.0)	P	Q	
n	0.29973229	Peri.	319.66338	-0.99744405	-0.04266457
a	2.2113012	Node	218.00823	+0.05921288	-0.94251712
e	0.0333000	Incl.	5.34078	-0.03999006	-0.33142302
P	3.29	H	15.5	G 0.15	

Residuals in seconds of arc

791018	675	1.4-	1.9-	810312	413	0.1-	0.0	910408	809	0.8+	0.1-
791018	675	2.0+	0.1-	810312	413	0.3-	0.9-	910408	809	0.2+	0.0
810212	413	0.1+	0.1+	810406	413	2.0+	0.6-	910410	809	0.8-	0.6+
810214	413	0.6-	1.1+	810408	413	0.0	0.1+	910410	809	0.1-	0.8-
810301	413	1.2-	1.1+	810408	413	2.0+	1.7-	910410	809	0.1-	0.3-
810301	413	0.0	0.9-	810409	413	0.2+	0.8-	910419	809	0.1-	0.3-
810306	413	0.5-	1.9+	810409	413	0.9+	1.4-	910419	809	0.2-	0.2+
810306	413	0.2-	0.3-	810501	413	1.1-	0.2-	910419	809	0.3-	0.5-
810308	413	1.1-	0.7+	810503	413	2.1-	2.1+				
810308	413	0.9+	0.7-	910408	809	0.4+	0.3+				

1981 EQ12
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	186.99689	(1950.0)	P	Q	
n	0.26627395	Peri.	95.00437	+0.89985915	+0.42520906
a	2.3928580	Node	239.86200	-0.43131110	+0.83422056
e	0.2668698	Incl.	6.45432	-0.06499423	+0.35110299
P	3.70	H	14.5	G 0.15	

Residuals in seconds of arc

780610	675	0.2+	0.0	810301	413	(4.1+	0.8-)	810312	413	0.7+	0.4-
780611	675	0.2-	0.1-	810306	413	0.7-	1.3+	810409	413	(3.0-	1.7+)
810209	413	1.6-	0.5+	810306	413	(4.6+	1.5-)	810409	413	0.1+	0.3-
810212	413	1.7+	0.0	810308	413	1.3-	0.8+	810503	413	0.2-	1.5-
810214	413	0.1+	0.9-	810308	413	0.8+	0.2-	810503	413	0.0	1.5+
810301	413	0.7+	0.4-	810312	413	(3.1-	2.5+)	880213	809	0.1-	0.4-

1981 EM13 = 1991 GN8
Id. B. G. Marsden, S. J. Bus (1979 obs.)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden
M 91.38938 (1950.0) P Q
n 0.29950408 Peri. 310.88448 -0.99618393 +0.05346079
a 2.2124243 Node 232.29324 -0.02624162 -0.93733682
e 0.0815589 Incl. 5.00261 -0.08324033 -0.34429876
P 3.29 H 16.0 G 0.15
Residuals in seconds of arc

791018	675	1.5-	0.7-	810312	413	0.5+	0.0	910408	809	0.9+	0.1+
791018	675	1.4+	1.2+	810406	413	0.9-	0.8+	910408	809	0.1+	0.1+
810209	413	0.7-	1.5+	810406	413	(3.3+	2.5-)	910410	809	0.7+	1.0+
810212	413	0.4+	0.9+	810408	413	0.9-	0.4-	910410	809	0.7+	0.9-
810301	413	1.3+	0.9-	810408	413	0.6+	2.3-	910410	809	0.1+	0.1+
810301	413	1.7+	0.9-	810409	413	0.8-	0.3+	910419	809	0.8-	1.8+
810306	413	1.8-	0.9+	810409	413	1.2+	1.1-	910419	809	0.7-	0.9+
810306	413	0.5+	0.5-	810501	413	0.2+	2.0-	910419	809	1.0-	0.6+
810308	413	1.7-	1.4+	810503	413	0.0	1.9-				
810312	413	0.8-	1.0+	910408	809	1.2+	0.1+				

1981 ET13
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 10.37958 (1950.0) P Q
n 0.28581226 Peri. 294.76780 -0.68765045 +0.72286056
a 2.2825247 Node 291.60966 -0.63693109 -0.64549432
e 0.2178583 Incl. 4.18780 -0.34850488 -0.24659621
P 3.45 H 14.5 G 0.15
Residuals in seconds of arc

791122	675	0.4+	1.1-	810308	413	0.6-	0.2-	810409	413	0.3+	0.1+
791124	675	0.2-	0.7-	810308	413	1.1+	0.2+	810501	413	0.8-	0.9-
791125	675	0.1+	0.8+	810312	413	0.9-	0.4-	810503	413	1.2-	0.4-
810212	413	0.3+	0.6+	810312	413	1.1+	1.2-	840108	675	(6.3-	1.3+)
810212	413	1.7+	1.7+	810406	413	1.4-	1.1+	840108	675	0.2-	0.1+
810301	413	0.1-	0.0	810406	413	0.1-	0.0	880410	293	0.2+	0.5+
810301	413	1.7+	0.4-	810408	413	1.0-	0.3-	880410	293	0.3+	0.7+
810306	413	1.3-	0.1-	810408	413	0.6+	1.2-				
810306	413	1.2+	0.7-	810409	413	1.0-	0.5+				

1981 EM19 = 1991 GA8
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano
M 232.47298 (1950.0) P Q
n 0.20430520 Peri. 49.04165 +0.92448667 -0.38109008
a 2.8550679 Node 333.35527 +0.34289481 +0.84244373
e 0.0134878 Incl. 1.24372 +0.16657595 +0.38086601
P 4.82 H 13.9 G 0.15
Residuals in seconds of arc

810202	413	0.3-	1.0-	810311	413	(2.7-	0.9+)	810430	413	0.3-	0.3+
810209	413	1.0-	0.1-	810316	413	1.4-	0.6+	810502	413	0.3+	0.1+
810213	413	0.5+	0.5+	810329	413	1.1-	0.0	910408	809	0.9+	0.9-
810302	413	0.5-	0.9+	810329	413	1.2+	0.9-	910408	809	0.5+	1.4-
810302	413	(3.5+	1.5-)	810407	413	1.6+	0.1-	910408	809	0.4-	1.9-
810303	413	0.6-	0.8+	810408	413	1.1-	0.4-	910410	809	0.1+	1.2+
810303	413	1.2+	0.5-	810408	413	1.3+	0.4-	910410	809	1.1+	1.3+
810307	413	0.5-	0.8+	810411	413	0.6-	0.4+	910410	809	2.2-	1.5+
810307	413	1.4+	0.9-	810411	413	0.2-	0.0				

1981 EX19 = 1963 UH
Id. K. Hurukawa (JAM 1901), C. M. Bardwell (MPC 10040)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	1.56089	(1950.0)		P	Q
n	0.31172939	Peri.	131.11832	+0.84660249	+0.53219699
a	2.1541911	Node	196.73003	-0.49386131	+0.78166105
e	0.2130339	Incl.	1.10076	-0.19840673	+0.32522664
P	3.16	H	14.5	G 0.15	

Residuals in seconds of arc

631018	760	0.4+	0.9+	810307	413	2.4+	0.8-	810502 413	0.3+	0.5+
631018	760	0.4-	0.9-	810311	413	1.2-	0.9+	810503 413	0.6+	0.0
810209	413	1.1-	0.4-	810311	413	0.5-	0.3-	850814 688	1.5+	2.1+
810213	413	0.1-	0.5+	810316	413	1.4+	0.4-	850814 688	0.7+	0.1+
810302	413	2.3-	1.2+	810329	413	0.2-	0.5-	850912 688	0.1-	1.9-
810302	413	(3.9+	2.0-)	810408	413	1.5-	2.1+	850912 688	1.9-	0.6-
810303	413	1.6-	0.5-	810408	413	0.8+	0.0	851012 801	(4.1+	3.7+)
810303	413	0.9+	0.7-	810411	413	(3.3-	0.4+)	891231 413	0.5+	0.5+
810307	413	0.5-	0.2+	810411	413	1.9+	2.6-			

1981 EL24

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	190.70219	(1950.0)		P	Q
n	0.19853567	Peri.	86.46862	+0.76389957	-0.64517470
a	2.9101164	Node	313.70950	+0.58386844	+0.70046527
e	0.0627683	Incl.	1.14061	+0.27487286	+0.30511967
P	4.96	H	13.5	G 0.15	

Residuals in seconds of arc

770612	675	0.3-	2.0-	810311	413	1.6-	0.9+	810502 413	1.1-	0.7-
770613	675	0.3+	1.7+	810315	413	1.7-	2.1+	810503 413	0.9+	0.8-
810209	413	0.8+	0.8-	810315	413	1.2+	0.4+	910512 688	0.3+	0.8+
810213	413	0.5+	0.1-	810406	413	0.7-	1.4+	910513 688	0.3+	0.3+
810302	413	1.4-	0.3-	810406	413	1.4+	0.7-	910513 688	0.0	0.2+
810302	413	1.2+	1.9-	810410	413	1.8+	1.3-			
810306	413	1.5-	0.4+	810426	413	(2.4+	2.9-)			

1981 EQ24 = 1991 GX4

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M	16.17521	(1950.0)		P	Q
n	0.29947894	Peri.	77.36004	+0.09883234	+0.99480745
a	2.2125481	Node	198.36461	-0.94027080	+0.08536555
e	0.1719814	Incl.	4.42281	-0.32576524	+0.05541542
P	3.29	H	15.5	G 0.15	

Residuals in seconds of arc

810212	413	1.8-	1.3+	810407	413	1.1-	0.6-	910410 809	0.3+	1.0-
810213	413	0.4-	0.2+	810410	413	2.3+	2.7-	910410 809	0.2-	0.6+
810302	413	1.4-	0.9+	810426	413	0.2+	2.5-	910410 809	0.0	0.0
810302	413	2.2+	1.5-	810502	413	1.4-	0.2-	910410 809	0.1+	0.1+
810306	413	0.2+	0.8+	910408	809	1.6-	1.4+	910419 809	0.9+	0.9+
810306	413	0.9+	0.3+	910408	809	0.8-	1.2+	910419 809	2.0-	2.6+
810311	413	0.8-	1.0+	910408	809	1.1-	0.8+	910419 809	0.4+	0.7+
810311	413	2.5+	1.4-	910408	809	0.5+	0.8-	910419 809	0.9+	0.1+
810315	413	1.2-	1.7+	910408	809	0.8+	1.7-	910419 809	1.3+	0.2+
810315	413	0.2+	0.7+	910408	809	1.2+	1.7-	910419 809	0.9+	0.1-
810405	413	1.6-	0.1-	910410	809	0.7-	0.5-			
810405	413	(4.0+	4.3-)	910410	809	0.2-	0.6-			

1981 ES29 = 1981 GY = 1991 KB

Id. W. Landgraf (d, MPC 8380), K. Hurukawa (d, ibid.), S. Nakano

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	76.85376	(1950.0)	P	Q
n	0.20369585	Peri. 338.71312	-0.98972795	+0.12496253
a	2.8607589	Node 208.73687	-0.10115366	-0.95538253
e	0.2068498	Incl. 8.30515	-0.10102736	-0.26763516
P	4.84	H 12.4	G 0.15	

Residuals in seconds of arc

810209	413	0.3+	0.5-	810308	413	0.5-	0.1+	810409 688	0.9+ 0.8-
810212	413	0.2+	0.7-	810308	413	1.7-	0.1+	910518 894	0.4+ 0.2-
810301	413	0.5+	0.8+	810312	413	1.7-	1.2+	910518 894	0.7- 0.7+
810306	413	0.2-	0.9+	810312	413	0.2+	0.0	910519 894	0.0 0.2- Y
810306	413	0.6+	0.1+	810409	688	1.4+	1.3-	910519 894	0.3+ 0.1- Y

1981 EJ40 = 1988 RH

Id. S. J. Bus (MPC 13854)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M	224.16636	(1950.0)	P	Q
n	0.21267466	Peri. 57.22068	+0.69850816	-0.70326140
a	2.7796690	Node 345.80136	+0.32733426	+0.47843892
e	0.3234301	Incl. 32.64781	+0.63634789	+0.52585132
P	4.63	H 14.0	G 0.15	

Residuals in seconds of arc

810209	413	2.1+	1.6+	810310	413	2.3-	0.9+	880914 807	0.9+ 0.5-
810214	413	2.3-	0.4-	810312	413	1.9+	0.3+	880915 807	(4.0- 0.3-)
810302	413	(3.9-	1.0-)	810430	413	0.7+	1.2-	880919 675	0.8+ 0.7+
810302	413	1.9+	1.3-	810502	413	0.3+	0.1-	880919 675	0.0 1.1+
810307	413	2.0-	0.4+	880908	675	0.1-	0.2-		
810307	413	(2.7+	0.0)	880909	675	1.7-	1.1-		

1981 EO42 = 1983 VJ2 = 1985 FV2

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	17.14690	(1950.0)	P	Q
n	0.24468447	Peri. 26.67490	+0.84146336	-0.54021959
a	2.5316196	Node 6.05325	+0.47700371	+0.73394715
e	0.1355987	Incl. 5.50170	+0.25378512	+0.41168480
P	4.03	H 13.5	G 0.15	

Residuals in seconds of arc

791122	675	0.2+	0.1-	810311	413	0.2+	0.6-	810410 413	1.9+ 0.3+
791124	675	0.1+	0.4+	810315	413	1.4-	0.2-	810426 413	(4.9+ 1.0-)
791125	675	0.4-	0.7+	810315	413	1.3+	0.7-	810501 413	0.7- 0.2+
810209	413	0.9+	0.6-	810405	413	0.5-	0.7+	810501 413	(2.8- 0.5+)
810212	413	0.2+	0.2-	810405	413	(4.5+	0.5-)	810503 413	1.4- 0.2+
810213	413	0.6+	0.1-	810406	413	0.6-	0.6+	831108 381	0.9- 0.2-
810302	413	1.2-	1.5-	810406	413	1.8+	0.0	831108 381	0.2+ 1.6-
810302	413	0.2+	1.9-	810407	413	0.1-	0.2+	850322 801	0.1- 2.3+
810306	413	0.0	0.8+	810407	413	(4.0+	0.2-)	871024 801	0.1- 0.7-
810311	413	0.4-	1.2-	810410	413	0.7-	1.7+	871028 095	0.6+ 1.8+

1981 ED43 = 1987 SW2

Id. S. Nakano (MPC 12697)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	8.81051	(1950.0)	P	Q
n	0.21164015	Peri. 293.63288	+0.54879956	+0.83565302
a	2.7887142	Node 9.74559	-0.71050705	+0.48041313
e	0.2194297	Incl. 7.61426	-0.44045293	+0.26624661
P	4.66	H 13.5	G 0.15	

Residuals in seconds of arc

730925	675	0.6+	2.0-	730929	675	0.5-	1.4+	730930 675	0.1+ 0.6+
730925	675	2.3+	1.7-	730929	675	0.6-	1.0+	730930 675	0.0 0.6-

731004	675	0.7+	1.2-	810501	413	1.9-	1.5-	870921	071	(5.6-	0.5-)
731004	675	1.5+	0.9-	810503	413	0.7-	2.3-	870921	071	(4.7-	0.8-)
731005	675	0.7-	0.4-	870917	809	2.1-	0.2-	870923	809	0.8+	0.2+
731005	675	1.4-	0.3+	870917	809	1.9-	0.3-	870923	809	1.0+	0.2+
810302	413	2.4+	0.3-	870917	809	1.8-	0.2-	870923	809	0.9+	0.2+
810306	413	1.8-	0.2+	870919	809	2.1-	0.9-	870924	809	1.8+	0.6+
810311	413	0.5-	0.4-	870919	809	1.8-	0.9-	870924	809	1.9+	0.7+
810315	413	0.5-	1.1+	870919	809	1.7-	0.8-	870924	809	2.1+	0.7+
810405	413	0.9-	0.8-	870919	809	1.4-	0.8-	870926	809	1.7+	1.8+
810405	413	(4.3+	1.2-)	870919	809	1.2-	0.8-	870926	809	1.8+	1.8+
810406	413	1.1-	0.2-	870919	809	1.1-	0.5-	870926	809	2.0+	1.8+
810406	413	1.1+	0.9-	870920	071	(3.1-	1.4-)				
810501	413	1.4+	0.6+	870920	071	0.8+	2.6-				

1981 EF47
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	111.73292	(1950.0)	P	Q	
n	0.19871314	Peri.	110.28973	-0.45213947	-0.89192360
a	2.9083834	Node	6.60237	+0.79577458	-0.40666732
e	0.0808011	Incl.	3.23891	+0.40288053	-0.19772199
P	4.96	H	15.5	G 0.15	

Residuals in seconds of arc

791122	675	(6.5-	1.6-)	810311	413	1.1-	0.9+	910512	688	0.5-	0.6+
791124	675	0.9-	0.3-	810405	413	(5.9+	1.1-)	910512	688	0.6+	0.8-
791125	675	1.0+	0.8+	810426	413	0.5+	0.2+	910513	688	0.3+	0.0
810213	413	(3.3-	0.7+)	810502	413	0.8-	0.7+	910513	688	0.3-	0.3+
810302	413	0.9+	0.7-	841119	675	2.0-	0.2-				
810306	413	0.3+	1.1-	841121	675	1.9+	0.1-				

1981 QX = A913 CG = 1989 KL
Id. B. G. Marsden (MPC 15065)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M	197.19404	(1950.0)	P	Q	
n	0.23585800	Peri.	104.03651	+0.20717977	+0.97827647
a	2.5943974	Node	177.88053	-0.95573533	+0.20396449
e	0.2882935	Incl.	11.20997	-0.20891752	+0.03706258
P	4.18	H	13.5	G 0.15	

Residuals in seconds of arc

130211	662	1.2+	2.3-	Y	810904	046	0.9+	1.6-	890602	675	0.2+	0.0
130212	662	3.1-	5.1-	Y	810905	046	1.6+	0.2-	890706	675	0.9+	1.0-
130212	662	0.3-	4.2-	Y	810905	046	1.5+	0.3-	890706	675	0.2+	3.1-
130213	662	0.2-	2.0-	Y	810906	046	0.1-	1.6-	890710	675	1.2+	1.1-
810824	046	0.1-	0.6-		810906	046	0.5+	0.8+	890710	675	0.9+	1.4-
810824	046	0.4+	0.6+		890530	675	1.9-	0.2-	901020	675	1.2+	0.2-
810828	046	0.4-	1.6-		890531	675	0.1-	0.6+	901020	675	0.0	0.2+
810828	046	0.9-	2.4-		890601	675	0.7+	0.1+	901022	675	1.4+	1.2-
810904	046	1.6-	1.1-		890601	675	2.0-	0.5+	901022	675	1.6-	0.0

1981 SW7 = 1976 YK2
Id. K. Hurukawa (MPC 10027)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	340.19732	(1950.0)	P	Q	
n	0.18107638	Peri.	58.26403	+0.99435019	+0.06927131
a	3.0942935	Node	297.65328	-0.09754103	+0.89517947
e	0.1934335	Incl.	5.20984	+0.04187420	+0.44028990
P	5.44	H	12.0	G 0.15	

Residuals in seconds of arc

761216	095	0.3+	1.0-	761220	095	0.6+	1.2-	811002	095	0.2+	1.0-
761218	095	1.1-	0.5-	810929	095	0.0	2.2+	811124	095	1.0-	1.9+

860809 801 0.0 0.2- 860903 071 1.4+ 0.2- 861002 095 0.1- 0.6-
860829 095 0.5- 0.9+ 860903 071 0.5- 0.6-
860901 801 1.5+ 0.1+ 860906 095 0.9- 1.3-

1982 DQ6 = 1984 UO1
Id. B. G. Marsden (MPC 10387)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M	330.87109	(1950.0)	P	Q
n	0.28075670	Peri. 68.74823	+0.06115081	-0.99756290
a	2.3098485	Node 17.84473	+0.87025091	+0.03680167
e	0.0868272	Incl. 6.29464	+0.48879845	+0.05927820
P	3.51	H 13.5	G 0.15	

Residuals in seconds of arc
820216 327 0.3- 0.0 841028 046 0.9- 1.9+ 841030 046 0.0 0.6+
820219 327 1.2+ 0.1- 841028 046 0.6- 0.4- 841031 046 2.0+ 0.6-
820224 327 0.7- 0.7+ 841029 046 0.1+ 1.4- 860413 801 0.4- 0.8-
820228 327(11.7+ 0.2-) 841029 046 0.3- 0.9- 870826 801 0.2- 0.4+

1982 ST6 = 1977 RM2 = 1983 YC1
Id. A. Lowe (k, MPC 13675), D. W. E. Green (ibid.)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Green

M	39.67796	(1950.0)	P	Q
n	0.20685513	Peri. 329.03915	+0.53070688	+0.84749290
a	2.8315562	Node 333.01001	-0.77286159	+0.47891474
e	0.0530472	Incl. 1.29985	-0.34790109	+0.22890271
P	4.76	H 12.0	G 0.15	

Residuals in seconds of arc
770909 675 0.8+ 0.3- 820928 095 1.3- 0.4- 890104 413 1.3+ 1.4-
770909 095 0.7- 0.7- 831230 675 0.7+ 0.1+ 890110 413 2.9- 1.7+
770910 675 0.7+ 0.9- 840108 675 0.6- 0.6+ 890110 413 2.0+ 1.5-
820916 095 0.8+ 1.8+ 890104 413 0.8- 0.4-

1982 UV1 = 1971 SA2
Id. S. Nakano (MPC 10758)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	260.59609	(1950.0)	P	Q
n	0.18131372	Peri. 253.59713	+0.99312569	-0.10671222
a	3.0915927	Node 112.50830	+0.11699415	+0.91794894
e	0.1766873	Incl. 2.98469	-0.00370610	+0.38207622
P	5.44	H 12.4	G 0.15	

Residuals in seconds of arc
710923 095 0.4+ 0.3+ 821021 046 1.0- 1.5+ 881230 046 1.4+ 0.8+
711011 095 1.1+ 2.0- 821021 046 1.3+ 0.7+ 881230 046 0.1+ 1.1+
821016 046 0.3- 1.0- 870825 801 0.1+ 0.1+ 900317 046 0.0 2.1-
821016 046 1.7- 2.8- 870828 095 2.4+ 1.0- 900317 046 2.9- 3.3-
821020 046 0.5+ 0.1+ 870831 095 0.2+ 0.7-
821020 046 0.7- 0.1- 870924 095 1.3- 0.3-

1982 UD2 = 1987 UF
Id. E. Bowell (MPC 12707)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	319.57363	(1950.0)	P	Q
n	0.19701208	Peri. 327.19789	+0.98556300	-0.16651807
a	2.9251006	Node 42.42150	+0.16346640	+0.88877257
e	0.1343458	Incl. 2.60123	+0.04409426	+0.42703051
P	5.00	H 12.5	G 0.15	

Residuals in seconds of arc
821016 046 0.3- 0.3+ 821020 046 1.1+ 0.2+ 821021 046 1.9- 1.3-
821016 046 0.9- 0.7- 821021 046 0.2+ 1.1- 821021 046 1.2+ 0.5-

821022 095 1.6- 2.3+ 871119 688 0.2- 1.3+ 890130 046 0.2+ 1.0-
821109 095 (4.5+ 1.8+) 871119 688 2.0- 1.3- 890131 046 0.5+ 0.5+
821114 095 1.5+ 2.5+ 871121 095 1.7+ 0.0 890131 046 2.2- 0.7+
871020 688 0.2+ 0.4+ 871124 688 2.1+ 1.5- 890201 046 0.6+ 0.1+
871020 688 0.6- 1.2+ 871124 688 (3.3+ 0.8+) 890201 046 1.4- 0.2+
871027 095 0.5- 1.7- 890130 046 2.4+ 0.3-

1982 VK12 = 1987 QP7
Id. D. W. E. Green (MPC 13595)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Green

M	218.56649	(1950.0)	P	Q
n	0.17341215	Peri. 323.07458	+0.40531030	-0.91330107
a	3.1848064	Node 102.98383	+0.84822245	+0.35936397
e	0.1545271	Incl. 2.35610	+0.34094316	+0.19167342
P	5.68	H 11.0	G 0.15	

Residuals in seconds of arc
821113 095 2.2- 1.2- 871022 413 0.2- 0.3- 890112 046 (6.4- 0.8+)
821222 095 0.2- 2.5+ 871022 413 1.5+ 0.8+ 890112 046 (4.5- 0.4+)
830106 095 1.7+ 2.3+ 881208 801 1.6+ 0.2- 890126 046 2.0+ 2.0-
870822 033 0.3- 2.1- 890103 046 0.5- 1.2+ 890126 046 1.9+ 2.9-
870822 033 0.8- 2.3- 890103 046 2.7- 1.2- 890127 046 (3.5+ 2.1-)
870823 033 0.7- 1.9- 890104 046 2.2- 1.0- 890127 046 3.4+ 2.1-
870831 095 1.7- 0.4- 890104 046 2.6- 0.2- 890128 046 (4.2+ 1.7-)
870904 095 0.2- 0.0 890106 801 1.7- 0.5- 890128 046 2.9+ 2.8-
870924 095 0.5+ 0.4+ 890109 046 0.3- 1.2-
870927 095 1.7+ 1.6+ 890109 046 1.7- 0.7-

1983 GR = 1983 JS = 1988 VA3
Id. S. Nakano (d, MPC 10752; MPC 14017), T. Kobayashi (ibid.)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	128.81520	(1950.0)	P	Q
n	0.27019576	Peri. 185.33241	-0.74911464	+0.65859829
a	2.3696472	Node 36.18851	-0.60319861	-0.63371081
e	0.0597057	Incl. 6.93018	-0.27382237	-0.40578183
P	3.65	H 12.8	G 0.15	

Residuals in seconds of arc
830411 809 1.2- 0.7- 881105 046 (1.6- 4.3-) 881114 399 1.3- 0.6-
830411 809 1.5- 0.3+ 881105 046 (0.0 5.0-) 881114 399 0.7+ 0.1-
830411 809 1.5- 1.4+ 881108 399 0.1+ 0.7+ 881114 399 0.7+ 0.6+
830507 688 1.3+ 0.3+ 881108 399 1.5+ 0.6+ 900320 385 0.3+ 0.3-
830507 688 0.5+ 1.3- 881108 399 2.4+ 0.5- 900320 385 1.4+ 1.1-
830515 688 0.4+ 0.3- 881111 399 1.8- 1.4- 900428 801 1.3- 0.4+
830515 688 1.2+ 0.8- 881111 399 1.3- 0.6+ 900428 801 0.7- 1.5+
881104 046 (5.2- 1.1-) 881111 399 0.2+ 1.0-
881104 046 (5.3- 4.5-) 881111 399 0.8- 0.2+

1983 LL = 1970 WF1 = 1980 RV6 = 1987 QC5
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nagata

M	140.74971	(1950.0)	P	Q
n	0.28385423	Peri. 12.10162	+0.30101090	+0.94967265
a	2.2930092	Node 275.46435	-0.88199031	+0.24268353
e	0.1240115	Incl. 4.99569	-0.36260933	+0.19805696
P	3.47	H 13.5	G 0.15	

Residuals in seconds of arc
701123 033 0.1+ 0.6- 830613 675 1.4- 0.3- 870831 010 0.7+ 1.3-
800913 675 1.1- 1.7+ 830614 675 1.3+ 0.1- 870831 010 0.3+ 1.1-
800914 675 0.6- 2.2+ 830614 675 1.1+ 0.5-
830610 675 1.0- 0.4+ 870831 010 0.6+ 1.7-

1983 NR = 1961 CT = 1979 OH14
Id. C. M. Bardwell (MPC 8285), G. V. Williams
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Bardwell

M 20.16323		(1950.0)	P	Q
n 0.24092067	Peri.	352.23132	+0.57280490	+0.79592946
a 2.5579235	Node	312.46476	-0.73700863	+0.39547312
e 0.1315399	Incl.	15.40298	-0.35876570	+0.45836373
P 4.09	H	12.5	G 0.15	

Residuals in seconds of arc

610215 033	0.3+	0.3-	830711 688	0.5-	0.3+	841127 801	0.5-	0.5-
610215 033	1.0+	0.0	830711 688	0.9-	0.5+	841224 801	0.0	1.7-
610217 033	0.5-	1.1+	830713 688	1.2-	0.2-	870625 809	0.9+	1.1-
610217 033	(3.8+	0.2-)	830713 688	(4.7-	0.6+)	870625 809	0.8+	1.3-
790719 095	1.1+	2.2-	830813 688	0.5-	1.9+	870625 809	1.2+	1.2-
790730 095	(0.3-	5.2+)	830813 688	0.4-	2.2+			

1983 RL4 = 1983 TA1
Id. F. N. Bowman (d, MPC 9414), K. Hurukawa (ibid.), W. Landgraf (ibid.)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M 325.65225		(1950.0)	P	Q
n 0.23067505	Peri.	212.57815	+0.94150069	-0.32896236
a 2.6331098	Node	166.04668	+0.33541766	+0.93577034
e 0.2742784	Incl.	17.67546	-0.03273286	+0.12695528
P 4.27	H	14.0	G 0.15	

Residuals in seconds of arc

810202 413	1.0-	0.2-	830912 688	0.2+	0.3+	890302 809	0.3+	0.1+
810213 413	0.7+	2.2-	830912 688	0.3-	2.1-	890302 809	0.1-	0.5+
830908 675	0.4-	1.1-	831009 675	1.4+	1.3+	890302 809	0.1-	0.1-
830909 675	0.6-	1.4+	831009 675	0.5+	0.2+	890303 809	0.6+	0.2+
830909 675	0.2-	1.2+	890207 809	(5.9+	6.7+)	890303 809	0.1-	0.5-
830911 688	0.0	1.7-	890207 809	(5.9+	7.2+)	890303 809	0.5-	0.1+
830911 688	0.5-	1.2-	890207 809	(6.0+	6.6+)			

1984 BS = 1991 HE
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nagata

M 214.69363		(1950.0)	P	Q
n 0.30681611	Peri.	311.12012	+0.48065817	-0.87065861
a 2.1771279	Node	109.86442	+0.83413978	+0.41719337
e 0.1062988	Incl.	6.37969	+0.27051533	+0.26058258
P 3.21	H	13.3	G 0.15	

Residuals in seconds of arc

840127 046	(3.2-	2.0+)	840201 046	0.2+	0.9-	910416 399	(3.2+	0.9-)
840127 046	1.2-	0.9+	840201 046	0.5-	0.8+	910418 399	0.1-	0.3+
840129 046	0.5+	0.0	910416 399	1.7+	1.3-	910418 399	1.4-	0.8+
840129 046	1.0+	0.8-	910416 399	0.2-	0.1+			

1984 UT
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M 171.68106		(1950.0)	P	Q
n 0.21249821	Peri.	201.81843	+0.29230444	-0.93078809
a 2.7812020	Node	231.88016	+0.91345782	+0.33970318
e 0.2308212	Incl.	16.20286	+0.28311290	-0.13503810
P 4.64	H	13.0	G 0.15	

Residuals in seconds of arc

841026 688	0.9-	0.5-	841031 688	0.1-	1.2-	841127 046	0.1-	0.6-
841026 688	0.6+	0.8-	841118 688	0.7+	1.1+	841127 046	1.7+	0.1-
841030 046	1.1-	0.7+	841118 688	0.4+	2.5-	841128 046	0.7+	0.9-
841031 046	0.4-	1.2+	841121 675	0.2-	0.3-	841128 046	1.0+	1.4-
841031 688	1.2+	2.0+	841124 675	0.0	0.7-	841130 046	1.0-	1.9+

841130	046	2.3-	2.1+	900227	801	0.0	1.3-	900329	801	0.2+ 0.5+
850217	801	0.1-	0.3+	900326	801	0.2-	0.4+	900329	801	0.3- 0.7+
900227	801	0.0	0.4-	900326	801	0.2+	0.2+			

1985 CY1 = 1991 GS9
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	88.27684	(1950.0)	P	Q	
n	0.17744281	Peri.	337.63808	-0.73394042	-0.67498493
a	3.1363928	Node	159.31708	+0.65106567	-0.73088635
e	0.2826901	Incl.	12.37210	+0.19350699	-0.10099745
P	5.55	H	14.5	G 0.15	

Residuals in seconds of arc

850212	809	0.1+	0.3-	850218	809	0.3+	0.1-	850226	809	0.1- 0.7+
850212	809	0.1-	0.2-	850219	809	0.2-	0.5+	850226	809	0.2- 0.9+
850212	809	0.1-	0.1-	850219	809	0.3-	0.3+	850227	809	0.1- 0.9+
850214	809	0.3-	0.1-	850219	809	0.0	0.6+	850227	809	0.3+ 0.2+
850214	809	0.1+	0.2-	850220	809	0.6-	0.5+	850228	809	0.0 0.5-
850214	809	0.0	0.3-	850220	809	0.4-	0.6+	850228	809	0.4+ 0.4-
850215	809	0.7+	0.2-	850220	809	0.2-	0.8+	910410	033	0.1+ 0.3-
850215	809	0.4+	0.1+	850221	809	0.3-	0.3-	910410	033	0.6- 0.4+
850215	809	0.4+	0.0	850221	809	0.1-	0.3-	910411	033	0.7- 0.4-
850216	809	0.1+	0.3-	850221	809	0.1+	0.4-	910412	033	0.3+ 0.2-
850216	809	0.6+	0.4-	850224	809	0.9-	1.3+	910412	033	0.0 0.4+
850216	809	0.5+	0.4-	850224	809	0.7-	1.3+	910507	033	0.1+ 0.0
850217	809	0.5+	0.8-	850224	809	0.6-	1.0+	910513	033	0.4- 0.4-
850217	809	0.2+	0.6-	850225	809	0.4-	1.4-	910513	033	0.3- 0.2+
850217	809	0.3+	0.7-	850225	809	0.1-	1.5-	910514	033	1.5+ 0.1+
850218	809	0.4+	0.5+	850225	809	0.1+	1.4-			
850218	809	0.2+	0.2+	850226	809	0.1+	0.7+			

1985 DC1 = 1991 GK2
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M	55.96996	(1950.0)	P	Q	
n	0.17139579	Peri.	20.46398	-0.99768407	-0.06785598
a	3.2097422	Node	155.64373	+0.06071133	-0.91951528
e	0.1417362	Incl.	0.65252	+0.03066964	-0.38715270
P	5.75	H	12.5	G 0.15	

Residuals in seconds of arc

850214	809	0.5+	0.2-	850220	809	2.0-	0.7-	850226	809	0.0 0.4+
850214	809	0.6+	0.2-	850220	809	1.6-	0.8-	850226	809	0.2+ 0.5+
850214	809	0.6+	0.0	850221	809	0.4-	0.7+	850227	809	0.6+ 0.8-
850216	809	0.2+	0.2+	850221	809	0.3-	0.6+	850227	809	0.8+ 0.8-
850216	809	0.5+	0.1+	850221	801	0.7+	1.3-	850227	809	0.8+ 1.1-
850216	809	0.7+	0.3-	850221	809	0.2-	0.4+	850228	809	0.1+ 0.8+
850217	809	0.5-	0.2-	850222	809	0.9+	0.3+	850228	809	0.3+ 0.8+
850217	809	0.4-	0.1-	850222	809	1.3+	0.6+	910408	809	3.0+ 1.8+
850217	809	0.2-	0.2-	850222	809	1.2+	0.8+	910408	809	1.4+ 0.8+
850218	809	0.3-	0.2+	850223	809	0.6+	0.1+	910408	809	1.7- 1.1+
850218	809	0.0	0.1+	850223	809	0.6+	0.1-	910410	809	0.4+ 0.6-
850218	809	0.3+	0.0	850223	809	0.2+	0.2-	910410	809	0.6- 1.8-
850219	809	0.9-	0.4-	850224	809	0.1+	0.8+	910410	809	1.6- 1.2-
850219	809	1.2-	0.5-	850224	809	0.1-	0.7+	910419	809	0.2+ 0.3+
850219	809	1.3-	0.4-	850224	809	0.3-	0.6+	910419	809	0.3- 0.2+
850220	809	2.1-	0.6-	850226	809	0.1-	0.3+	910419	809	0.8- 0.7-

1985 DX2 = 1990 DQ
Id. S. Nakano (MPC 16579)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	96.09075	(1950.0)	P	Q
n	0.18858861	Peri. 4.52092	-0.98926248	-0.13981833
a	3.0115662	Node 167.20368	+0.12733630	-0.96747227
e	0.0317282	Incl. 11.07629	+0.07173015	-0.21082750
P	5.23	H 11.4	G 0.15	

Residuals in seconds of arc

850224 675 (4.1- 0.5+)	900218 399 (3.2- 2.5-)	910508 675 0.2- 1.0+
850224 675 1.6- 1.1-	900218 399 1.2+ 0.0	910510 675 1.4- 1.0-
850227 675 0.1- 1.4+	900228 399 1.2- 0.2+	910510 675 0.4- 0.9-
850227 675 1.7+ 0.5-	900228 399 (1.9+ 5.1-)	
900218 399 (2.3+ 2.9+)	910508 675 2.0+ 1.0+	

1985 PQ = 1978 JM1 = 1991 ED1

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nagata

M	11.62582	(1950.0)	P	Q
n	0.29932427	Peri. 115.97956	-0.01170282	+0.99923169
a	2.2133058	Node 153.26965	-0.94455078	+0.00122922
e	0.1934535	Incl. 4.77017	-0.32815678	-0.03917301
P	3.29	H 14.1	G 0.15	

Residuals in seconds of arc

780506 095 0.5- 1.7-	850820 688 1.2- 2.2+	910315 400 0.5+ 1.1-
850814 688 1.0+ 0.5-	850822 688 1.2- 1.4+	910321 400 0.2+ 2.4+
850814 688 (6.5+ 0.5+)	850822 688 1.3+ 1.4-	910321 400 0.1- 1.9+
850820 688 0.5- 0.5+	910315 400 0.7+ 0.3+	

1985 QM5 = 1990 QO2

Id. H. E. Holt (MPC 17016), G. V. Williams (ibid.)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	99.30886	(1950.0)	P	Q
n	0.19568663	Peri. 187.40730	+0.91559876	+0.40143709
a	2.9382942	Node 148.89298	-0.36657801	+0.85682985
e	0.1435992	Incl. 2.54716	-0.16522552	+0.32355970
P	5.04	H 13.5	G 0.15	

Residuals in seconds of arc

780315 675 0.4+ 1.6+	900828 675 0.3+ 1.0-	900924 809 0.7- 0.9+
780316 675 0.6+ 1.1+	900828 675 0.4- 1.4-	900924 809 0.3- 0.6+
850823 095 1.4- 2.2+	900914 675 0.1- 0.3-	900924 809 0.2+ 0.4+
850915 095 0.2+ 1.7-	900914 675 0.8- 0.1+	900925 809 1.0- 0.4+
850920 095 1.7+ 1.6-	900920 675 0.2- 0.1+	900925 809 0.7- 0.3+
900822 675 0.5- 0.1-	900920 675 0.8+ 0.8+	900925 809 0.2- 0.1-
900822 675 0.3- 0.1-	900923 809 0.4+ 0.0	900927 809 0.9- 0.4+
900824 675 (2.5- 0.5+)	900923 809 0.9+ 0.1+	900927 809 0.1+ 0.7+
900824 675 0.2- 0.7+	900923 809 0.8+ 0.1+	900927 809 1.2+ 1.0+

1985 RZ1 = 1952 RM = 1991 GH2

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M	236.05116	(1950.0)	P	Q
n	0.26973188	Peri. 359.31566	+0.93399165	-0.35671979
a	2.3723680	Node 21.61743	+0.32805631	+0.83371094
e	0.2418907	Incl. 3.15296	+0.14155796	+0.42151756
P	3.65	H 14.0	G 0.15	

Residuals in seconds of arc

520911 839 1.4- 0.1+	850912 688 0.4+ 1.8+	910408 809 1.6+ 0.7+
520911 839 1.3+ 0.2+	850912 688 0.2- 0.5+	910408 809 0.6+ 0.2-
850814 095 0.9+ 1.5+	850915 095 1.6- 0.3+	910410 809 0.7- 0.5-
850818 095 1.9- 1.6-	850920 095 0.4+ 0.3-	910410 809 2.2- 0.3+
850823 095 1.9+ 2.1-	910408 809 2.6+ 1.9+	910410 809 1.5- 1.5-

1986 JC = 1986 LD = 1990 KH2 = 1990 SJ10
Id. S. Singer-Brewster (d, MPC 10936), H. Kaneda (MPC 17819),
G. V. Williams (d)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5			Williams
M 173.58724	(1950.0)	P	Q
n 0.27569873	Peri. 176.18559	+0.12983453	+0.98130063
a 2.3380091	Node 101.23466	-0.91346319	+0.17411722
e 0.2406341	Incl. 8.33004	-0.38565269	-0.08205042
P 3.57	H 14.0	G 0.15	

Residuals in seconds of arc

860502 675 0.4- 0.9+	860608 675 (5.3- 0.8-)	900919 675 0.3+ 0.1+
860503 675 0.3+ 0.6-	900529 413 1.1+ 0.1+	900920 675 0.8+ 0.1+
860503 675 0.1+ 0.5-	900529 413 1.1- 0.6+	900920 675 (1.5- 3.3+)
860603 675(21.4+ 3.7-)	900917 675 0.4+ 0.8-	900924 413 0.7- 0.4+
860603 675(18.8+ 3.5-)	900917 675 0.0 0.9-	900924 413 0.4- 1.3+
860608 675 (4.5- 2.6-)	900919 675 0.3- 0.6-	

1986 UU = 1986 XC1 = 1989 NF1
Id. F. N. Bowman (d, MPC 11723), H. E. Holt (MPC 15067)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5			Williams
M 236.05202	(1950.0)	P	Q
n 0.30221957	Peri. 108.21722	+0.95633234	+0.27901789
a 2.1991474	Node 235.66698	-0.29176356	+0.89359494
e 0.2548687	Incl. 6.05106	-0.01739202	+0.35162068
P 3.26	H 13.5	G 0.15	

Residuals in seconds of arc

861007 095 2.5+ 2.9+	861108 046 0.7- 1.4-	890709 675 0.2- 0.5-
861012 095 0.3- 0.2+	861127 095 0.6- 0.7-	890930 801 0.2+ 0.6+
861028 046 0.4- 1.2-	861204 688 0.1+ 0.2-	890930 801 0.8+ 0.6+
861028 046 0.5- 2.4-	861204 688 0.2+ 0.8-	891025 801 1.2- 0.4+
861103 046 0.8- 1.3+	890707 675 0.5- 0.3+	891030 801 0.2- 0.2+
861103 046 0.5- 2.0+	890707 675 0.3- 0.4-	910115 688 0.1+ 0.4+
861108 046 1.4+ 0.8-	890709 675 1.1+ 0.6-	910115 688 0.2+ 0.5+

1987 KD1 = 1971 SG = 1991 JL1
Id. G. V. Williams, C. M. Bardwell

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5			Williams
M 14.26678	(1950.0)	P	Q
n 0.23888586	Peri. 122.06359	+0.21437349	+0.97186085
a 2.5724232	Node 159.62187	-0.96372620	+0.22672385
e 0.2580837	Incl. 16.28150	-0.15898369	-0.06389662
P 4.13	H 12.5	G 0.15	

Residuals in seconds of arc

710925 808 0.8+ 0.5+	870620 675 0.1+ 0.2-	870629 675 (4.7- 0.9-)
710925 808 0.2- 1.1-	870620 675(12.3- 0.7-)	910507 675 0.1- 0.7-
710925 808 0.5- 0.6-	870620 675(12.4- 1.6-)	910507 675 0.9+ 0.4-
870529 675 0.4+ 1.0-	870621 675 1.2- 1.3+	910509 675 0.8- 0.7-
870531 675 0.4+ 0.7+	870623 675 0.2+ 0.4+	910509 675 0.7- 0.2-
870531 675 0.6+ 0.1+	870629 675 (6.4- 1.5-)	

1987 ML1 = 1953 LA = 1991 GF2

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5			Williams
M 40.52979	(1950.0)	P	Q
n 0.23240820	Peri. 116.37892	-0.45558745	+0.86289369
a 2.6200028	Node 124.79383	-0.88175229	-0.40367402
e 0.1612327	Incl. 15.44917	-0.12228237	-0.30407527
P 4.24	H 12.5	G 0.15	

Residuals in seconds of arc

530605 024	0.3-	1.1-	870627 046	0.9+	0.1+	870630 046	0.5-	1.0-
870625 046	1.0-	0.7+	870628 046	0.2-	0.3-	910415 675	1.3-	1.0-
870626 046	0.1-	1.0+	870628 046	0.5+	0.0	910417 675	1.2+	1.1+
870627 046	0.7+	0.8+	870630 046	0.1-	0.5-	910419 675	0.2+	0.3+

1987 SC6 = 1991 GP2

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M 300.92786		(1950.0)	P	Q
n 0.17378774	Peri.	151.76409	+0.69347216	+0.72045618
a 3.1802223	Node	162.13910	-0.66478418	+0.64318977
e 0.1647314	Incl.	1.17058	-0.27777393	+0.25932569
P 5.67	H	12.0	G 0.15	

Residuals in seconds of arc

870831 095	0.4+	2.0+	870924 809	0.4+	0.1+	871002 809	0.1+	0.4-
870904 095	1.4-	0.7+	870924 809	0.4+	0.2+	910408 809	2.0+	2.4+
870917 809	0.2-	1.1-	870924 809	0.7+	0.2+	910408 809	2.2+	2.0+
870917 809	0.2+	0.9-	870924 095	0.9-	1.6+	910408 809	0.9+	0.6+
870917 809	0.1-	1.2-	870927 095	(3.7-	1.2+)	910410 809	0.9-	0.9-
870919 809	0.3-	0.7-	871001 809	0.6+	0.7+	910410 809	1.2-	1.3-
870919 809	0.2-	0.7-	871001 809	0.6+	0.7+	910410 809	1.2-	1.9-
870919 809	0.3-	0.7-	871001 809	0.6+	0.8+	910419 809	1.5+	0.5-
870921 046	0.2+	0.6+	871002 809	0.0	0.4-	910419 809	0.8-	0.5-
870921 046	0.6-	1.2-	871002 809	0.1+	0.4-	910419 809	2.6-	0.1-

1987 VA1 = 1987 WD4 = 1933 HC = 1951 WZ = 1971 TB1 = 1974 FU1 = 1984 DR1 = 1989 AB10

Id. F. N. Bowman (d, MPC 13145), B. A. Skiff (k), G. V. Williams

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M 128.93829		(1950.0)	P	Q
n 0.19085446	Peri.	178.32536	-0.86685196	+0.48244451
a 2.9876830	Node	31.52821	-0.46015343	-0.67710596
e 0.0797259	Incl.	13.91557	-0.19190232	-0.55567510
P 5.16	H	11.5	G 0.15	

Residuals in seconds of arc

330424 024	3.0-	5.5-	871115 046	2.1+	1.9-	890202 675	0.2+	0.5+
511129 711	(33.0-	33.6+)Y	871123 046	(0.5+	4.2-)	890202 675	0.5+	0.1-
711011 095	2.0-	2.0-	871123 046	(1.6+	4.8-)	890307 675	0.0	1.1-
740321 095	1.3+	0.4+	871125 046	0.6-	0.8-	890307 675	0.5+	0.7+
840226 095	1.3-	2.1+	871125 046	1.9+	1.0+	890308 675	0.2+	1.6-
871028 095	(1.9-	4.2+)	890111 675	0.9-	0.7+	890308 675	0.8+	0.4-
871115 046	2.4+	1.3-	890111 675	1.0-	0.9+			

1987 WS = 1987 UP1 = 1976 SY5 = 1976 UM1

Id. H. Kaneda (d, MPC 12800), T. Kobayashi (ibid.), S. Nakano (ibid.)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M 352.48869		(1950.0)	P	Q
n 0.18260848	Peri.	297.02524	+0.71428043	+0.69642011
a 3.0769617	Node	19.10289	-0.54326182	+0.61415643
e 0.0836606	Incl.	12.22522	-0.44121430	+0.37122892
P 5.40	H	11.3	G 0.15	

Residuals in seconds of arc

760924 095	1.5+	0.9+	871129 400	(3.2-	3.1+)	900227 801	1.0-	0.6+
761026 095	2.6-	1.0+	871129 400	(0.9-	5.2+)	900227 801	0.1+	0.1+
871028 399	0.2-	1.4-	871210 400	0.1-	0.4+	900318 400	1.5+	0.5+
871028 399	0.8-	1.2-	871210 400	0.3+	0.6-	900318 400	(6.0+	0.4-)
871028 399	0.4-	0.5+	871211 400	1.1+	0.3-	900320 095	(3.9-	1.3+)
871128 399	0.8-	0.7- Y	871211 400	1.2+	1.2+	900320 095	(5.3-	3.5-)
871128 399	0.6-	0.4+ Y	871211 400	1.2+	0.6+	900321 400	2.1+	0.1+

900321 400 (1.2+ 3.0+) 900327 801 0.3- 0.0 900327 675 0.8- 2.0-
900322 801 0.3- 0.2+ 900327 801 0.8- 0.7- 900329 400 1.5+ 1.9+
900322 801 1.2- 0.0 900327 675 0.9- 1.5- 900329 400 0.6+ 1.8+

1988 AV1 = 1951 YQ2 = 1979 BQ2
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nagata
M 329.89401 (1950.0) P Q
n 0.21953899 Peri. 337.48632 +0.04665871 -0.98902110
a 2.7214160 Node 109.60887 +0.93762178 -0.00504878
e 0.2703492 Incl. 8.56013 +0.34451177 +0.14768810
P 4.49 H 13.5 G 0.15
Residuals in seconds of arc
511228 711(23.4+ 8.7-)Y 880114 046 2.2- 0.1+ 880116 046 1.9+ 0.6+
790127 675 0.3- 0.4+ 880115 046 1.5+ 0.3- 880120 046 0.4+ 0.3+
790129 675 0.3+ 0.5- 880115 046 0.3- 0.4- 880120 046 1.3- 0.3-
880114 046 (4.1- 0.5-) 880116 046 (3.7+ 2.9+)

1988 CG = 1976 UL15 = 1976 UX20 = 1990 WW4
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda
M 19.46163 (1950.0) P Q
n 0.28873104 Peri. 7.45882 -0.98975065 -0.14056729
a 2.2671159 Node 164.39269 +0.12570471 -0.94126255
e 0.1356447 Incl. 5.37218 +0.06776414 -0.30702711
P 3.41 H 14.5 G 0.15
Residuals in seconds of arc
761022 381 0.8+ 1.3+ 880219 875 2.4- 0.6- 901121 809 0.5- 0.3-
761022 381 0.2+ 0.4+ 880219 875 1.7- 1.1- 901121 809 1.8- 0.1+
761024 381 1.5- 0.1+ 880221 875 (1.0- 7.2+) 901122 809 0.8+ 1.6+
880210 875 1.5- 1.2+ Y 880221 875 1.9+ 2.1+ 901122 809 0.2+ 0.8+
880210 875 1.0- 0.2- Y 901116 809 0.5+ 2.7- 901122 809 0.3- 0.7+
880213 875 2.8+ 0.3+ 901117 809 1.4+ 1.8-
880213 875 2.1+ 0.8- 901121 809 0.0 0.2-

1988 PH4
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 278.52111 (1950.0) P Q
n 0.23533380 Peri. 160.87896 +0.94558458 +0.32537619
a 2.5982435 Node 180.13444 -0.31560728 +0.91691002
e 0.4414025 Incl. 9.30709 -0.07913186 +0.23109816
P 4.19 H 17.0 G 0.15
From 8 observations 1988 Aug. 14-Oct. 28, mean residual 0".61.

1988 TA1 = 1991 GX3
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden
M 190.14016 (1950.0) P Q
n 0.18378048 Peri. 204.89908 +0.67015717 -0.73888761
a 3.0638723 Node 203.22637 +0.70729320 +0.66444624
e 0.1012093 Incl. 10.26050 +0.22500156 +0.11205489
P 5.36 H 12.0 G 0.15
Residuals in seconds of arc
881005 399 1.6+ 1.6- 881014 046 0.8+ 2.2- 881102 399 0.3+ 1.5+
881005 399 2.1+ 2.6+ 881014 046 0.5+ 1.1- 881102 399 1.8+ 1.3+
881011 046 (8.4+ 0.6+) 881016 399 1.8- 0.1+ 881103 033 0.4- 0.0
881012 046 (7.9+ 0.6+) 881016 399 (3.2- 1.0+) 881103 033 1.0- 0.5-
881013 399 3.1+ 0.2- 881019 399 1.4- 1.4- 881104 033 0.5- 0.1+
881013 399 0.1- 0.1- 881019 399 1.6- 1.8- 910408 809 0.9+ 1.4+
881013 399 0.9- 0.4- 881102 399 1.6- 1.4- 910408 809 0.7- 0.4+

910408 809 1.0- 0.1- 910410 809 0.5+ 0.7- 910419 809 0.2+ 3.2-
910410 809 0.5+ 0.9+ 910419 809 0.1- 3.1-
910410 809 0.1- 0.5+ 910419 809 1.3- 1.6-

1988 TH1 = 1989 VU3 = 1989 WA7
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda
M 166.64963 (1950.0) P Q
n 0.08357682 Peri. 118.14177 +0.35099810 +0.93601163
a 5.1809828 Node 172.26848 -0.91271248 +0.34822754
e 0.1130578 Incl. 11.19795 -0.20917999 +0.05118407
P 11.79 H 9.9 G 0.15
Residuals in seconds of arc
880910 675 0.3- 0.1- 881106 675 0.1+ 1.4- 891103 809 1.5- 0.3+
880910 675 0.6- 0.2- 881112 071 (0.5- 3.6+) 891128 511 1.4- 0.4-
881008 675 0.6+ 1.1+ 881112 071 (0.2- 4.3+) 891128 511 1.6+ 0.5+
881010 675 0.1- 0.8+ 891103 809 2.1+ 0.6- 891128 511 1.0- 0.5+
881104 675 0.1+ 0.5- 891103 809 0.0 0.4- 891128 511 (3.2+ 0.0)

1988 UC = 1973 VW = 1991 GS3
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden
M 257.42501 (1950.0) P Q
n 0.19811863 Peri. 315.19855 +0.99408899 +0.10496826
a 2.9142046 Node 38.80120 -0.08300327 +0.89942203
e 0.0941512 Incl. 2.53602 -0.06998243 +0.42428961
P 4.97 H 12.0 G 0.15
Residuals in seconds of arc
731103 033 0.1- 0.2+ 881102 400 1.9+ 0.4+ 910410 809 0.6+ 1.3+
881016 400 (3.9+ 0.4+) 881102 400 0.7+ 0.4- 910410 809 1.1+ 0.9+
881016 400 1.3+ 1.8- 881106 400 0.3- 0.5+ 910410 809 0.8+ 0.0
881016 400 1.0+ 1.6- 881106 400 0.3+ 1.3+ 910419 809 0.1+ 1.1-
881018 400 1.9- 0.5- 910408 809 1.0+ 0.1- 910419 809 2.7- 0.4-
881018 400 0.4- 1.4+ 910408 809 0.9+ 0.3+ 910419 809 2.3- 1.9-
881018 400 2.0- 0.5- 910408 809 0.0 0.1-

1988 VS4 = 1990 KH
Id. C. M. Bardwell (MPC 16582)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bardwell
M 252.01122 (1950.0) P Q
n 0.35729243 Peri. 313.50772 -0.96631576 +0.10642007
a 1.9669206 Node 233.97928 -0.05271974 -0.97304549
e 0.0388252 Incl. 16.84113 -0.25190175 -0.20459043
P 2.76 H 14.0 G 0.15
Residuals in seconds of arc
881007 675 0.3+ 0.1- 900520 675 0.0 0.6+ 900625 675 0.1+ 0.2+
881008 675 0.1+ 0.7+ 900520 675 0.3- 1.1- 900625 675 0.2+ 0.5+
881104 675 0.1+ 1.4- 900523 675 0.1- 0.2+ 900627 675 0.3- 0.8-
881109 675 0.5- 1.2+ 900523 675 0.3+ 0.0 900627 675 0.2- 0.2-

1988 XH1 = 1991 GS1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nagata
M 331.84954 (1950.0) P Q
n 0.22519593 Peri. 248.19037 +0.80363160 +0.54632823
a 2.6756483 Node 77.95643 -0.41667558 +0.79967664
e 0.1890395 Incl. 13.96469 -0.42492083 +0.24908382
P 4.38 H 11.9 G 0.15
Residuals in seconds of arc
881202 399 0.1- 0.3- 881202 399 1.1- 1.7+ 881207 399 2.5+ 1.4-
881202 399 0.3- 1.0- 881202 399 0.3+ 2.1+ 881207 399 0.5- 0.5-

881207 399 0.2+ 1.0- 881216 399 0.3- 2.3+ 910412 675 0.0 0.3+
881207 399 0.1- 0.6- 910410 675 0.1- 0.1- 910412 675 1.1- 0.5-
881216 399 0.6- 1.1- 910410 675 1.3+ 0.3+

1989 AV2
Id. C. S. Shoemaker (1991 obs.)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 150.39213 (1950.0) P Q
n 0.08139390 Peri. 118.42035 +0.67675797 -0.66441459
a 5.2732069 Node 285.20332 +0.50622043 +0.73270491
e 0.1011161 Incl. 19.18381 +0.53454610 +0.14729820
P 12.11 H 10.0 G 0.15
Residuals in seconds of arc
890111 675 0.6+ 1.1- 890307 675 0.3+ 0.7- 910416 675 0.3- 2.2-
890111 675 0.2- 1.4+ 890308 675 0.1+ 1.2+ 910417 675 0.0 0.5+
890130 675 0.9- 0.9+ 910414 675 0.3+ 0.8+
890130 675 0.2+ 1.7- 910414 675 0.0 0.9+

1989 BL = 1951 YW = 1986 WA9
Id. H. Oishi (MPC 14358)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Oishi
M 103.72580 (1950.0) P Q
n 0.08227642 Peri. 30.56298 -0.30687913 -0.94066645
a 5.2354311 Node 77.63901 +0.84043184 -0.33923880
e 0.1045893 Incl. 8.52572 +0.44665370 -0.00797893
P 11.98 H 9.9 G 0.15
Residuals in seconds of arc
511223 711 0.9- 3.2+ Y 890129 888 0.1- 0.4- 890207 888 0.1- 0.5+
511223 711 (0.6- 7.1+)Y 890129 888 0.3- 0.0 890210 888 0.0 0.4+
861130 381 0.2+ 1.1- 890131 675 2.0+ 1.2- 890210 888 0.1- 0.0
861130 381 0.5+ 1.3- 890201 675 0.6+ 2.0- 890213 888 (6.9- 1.8-)
861201 381 1.5+ 1.0- 890201 675 1.5+ 0.3+ 890213 888 (5.9- 0.1-)
861201 381 0.0 1.6- 890203 888 0.1+ 0.1+ 890226 888 0.9- 0.2+
890111 675 0.9- 0.4- 890203 888 0.1- 0.5+ 890226 888 0.6- 0.1-
890111 675 0.8- 0.9+ 890205 888 0.3+ 0.0 910514 675 1.7- 0.6-
890128 888 (3.2- 2.7+) 890205 888 0.2- 0.2+ 910516 675 0.2+ 1.1-
890128 888 (4.1- 4.4+) 890207 888 0.7- 0.7+ 910518 675 0.3+ 0.9-

1989 BW = 1978 GF2
Id. C. S. Shoemaker (1991 obs.), B. G. Marsden, G. V. Williams
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 141.81798 (1950.0) P Q
n 0.08296709 Peri. 354.82367 +0.41301661 -0.86555483
a 5.2063356 Node 70.53440 +0.84594570 +0.24941071
e 0.1490417 Incl. 17.48310 +0.33733240 +0.43429153
P 11.88 H 9.5 G 0.15
Residuals in seconds of arc
780411 095 1.1+ 2.3+ 890202 675 1.1+ 1.0+ 910414 675 0.2- 0.2+
890109 675 0.2- 1.1- 890307 675 0.7- 0.9- 910414 675 0.7- 1.5-
890131 675 0.8- 0.6- 890308 675 0.2+ 0.1+ 910416 675 0.1+ 0.1+

1989 EY1 = 1970 GW1 = 1975 GD1 = 1977 UT3 = 1982 VH = 1987 UR9
Id. A. Lowe (k), G. V. Williams
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 252.74934 (1950.0) P Q
n 0.20183378 Peri. 40.50326 -0.18107358 -0.98248893
a 2.8783271 Node 59.97119 +0.88865939 -0.18257974
e 0.0198873 Incl. 2.90699 +0.42130375 -0.03715036
P 4.88 H 12.5 G 0.15

Residuals in seconds of arc

700412	805	0.1+	0.9-	771019	675	0.2+	0.3+	890306	046	0.9-	0.6-
700412	805	0.9-	1.2-	821111	046	3.1+	1.4+	890306	046	0.2+	0.3-
700412	805	1.1-	0.9-	821111	046	1.0-	3.4-	890307	046	0.1-	0.1-
750415	805	1.4+	0.0	871028	095	1.7-	0.7-	890307	046	0.9-	0.2+
750420	805	1.2-	0.3+	890305	046	1.5+	1.6+				
771018	675	0.0	0.2+	890305	046	1.4+	0.4+				

1989 RJ = 1991 GX5

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5		(J-P)		Marsden	
M	190.80398	(1950.0)		P	Q
n	0.28986913	Peri.	215.50374	+0.47982510	-0.87691477
a	2.2611824	Node	205.85659	+0.81907168	+0.45918626
e	0.2414677	Incl.	3.69131	+0.31446694	+0.14201575
P	3.40	H	14.5	G 0.15	

Residuals in seconds of arc

890902	511	0.3+	1.2-	891002	071	0.5+	2.1+	910410	809	0.8+	1.2+
890902	511	0.2+	1.0-	891002	071	0.7-	0.0	910410	809	0.7+	0.2+
890902	511	1.3+	1.0-	910408	809	0.1+	0.3+	910419	809	0.7-	0.4-
890904	511	1.1-	1.0+	910408	809	0.4+	0.2-	910419	809	1.4-	0.1-
890908	511	1.6-	1.2-	910408	809	0.1+	0.8+	910419	809	1.1-	0.6-
890908	511	0.8+	2.0+	910410	809	1.5+	0.2-				

1989 RO2

Id. C. S. Shoemaker (1991 obs.)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Williams	
M	195.08168	(1950.0)		P	Q
n	0.26037355	Peri.	45.05330	+0.76835824	-0.63879543
a	2.4288730	Node	354.22360	+0.41804514	+0.54773076
e	0.2965240	Incl.	23.15288	+0.48462756	+0.54030677
P	3.79	H	12.5	G 0.15	

Residuals in seconds of arc

890903	675	0.3-	0.2-	891001	675	(2.0+	3.3-)	910414	675	0.6-	1.4-
890903	675	0.0	0.5+	891004	675	0.7+	2.0-	910419	675	0.5-	0.4+
890927	675	(3.6-	0.6-)	891030	675	0.5+	0.3+				
890930	675	0.1-	0.1-	891101	675	0.3-	1.0+				

1989 TZ15 = 1975 TB1 = 1978 ER9

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Kaneda	
M	275.21706	(1950.0)		P	Q
n	0.21084058	Peri.	257.05638	-0.33676337	+0.94142285
a	2.7957602	Node	353.18503	-0.79562960	-0.29456563
e	0.1143922	Incl.	8.58066	-0.50355136	-0.16417709
P	4.67	H	12.3	G 0.15	

Residuals in seconds of arc

751003	095	0.9-	1.5+	891004	809	0.3-	0.4-	891007	809	0.9+	0.2-
780315	675	0.2+	0.4+	891005	809	0.1+	0.4-	891007	809	1.2+	0.2-
780316	675	0.2-	0.4-	891005	809	0.4+	0.4-	891008	809	0.6-	0.2+
891004	809	1.0-	0.0	891005	809	0.7+	0.5-	891008	809	0.4-	0.3+
891004	809	0.6-	0.1-	891007	809	0.7+	0.1-	891008	809	0.1-	0.4+

1989 UF = 1989 UT4 = 1979 YM6 = 1991 GH4

Id. S. Nakano (d, MPC 15676), B. G. Marsden

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5		(J-P)		Marsden	
M	207.05866	(1950.0)		P	Q
n	0.29123544	Peri.	205.89950	+0.61460593	-0.78748287
a	2.2541048	Node	206.25377	+0.74063048	+0.59620011
e	0.1760531	Incl.	5.98920	+0.27152540	+0.15625673
P	3.38	H	14.0	G 0.15	

Residuals in seconds of arc

791223	095	0.1-	0.9+	891026	046	1.4+	1.4-	910410	809	1.1-	1.4-
891020	403	0.1-	0.8-	891027	046	2.7+	1.0-	910410	809	0.5-	1.1-
891020	403	0.6-	1.3-	891027	046	2.2+	1.0-	910410	809	0.2+	1.7-
891021	095	1.2-	1.1-	891102	046	1.0-	0.3+	910410	809	1.3+	0.5+
891023	403	1.6-	1.7+	891102	046	1.2-	1.1+	910410	809	0.5+	1.1+
891023	403	0.5-	1.1-	910408	809	0.1-	0.3-	910410	809	0.5+	0.3-
891025	046	2.3+	2.2-	910408	809	1.4-	0.9-	910419	809	1.3-	0.1-
891025	046	2.0+	2.4-	910408	809	0.6-	0.4-	910419	809	3.2-	1.0+
891025	095	1.5-	0.1-	910408	809	2.1+	1.2-	910419	809	1.7-	1.8-
891025	095	0.8-	2.8+	910408	809	1.2+	1.4-				
891026	046	0.5+	2.3-	910408	809	1.3+	2.4-				

1990 DK = 1986 XF2
Id. C. S. Shoemaker (1991 obs.), C. M. Bardwell, G. V. Williams
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	95.77909		(1950.0)	P	Q
n	0.08323914	Peri.	219.85645	-0.38828008	-0.91317124
a	5.1949854	Node	253.31220	+0.87501575	-0.32314050
e	0.0797336	Incl.	7.43327	+0.28911248	-0.24839183
P	11.84	H	10.5	G 0.15	

Residuals in seconds of arc

861201	010	0.2+	0.4-	900128	675	0.7-	1.2+	910416	675	0.8-	0.5-
861201	010	0.0	1.1-	900220	675	0.6+	0.5+	910416	675	1.2-	0.5-
861203	010	(5.2-	1.5+)	900222	675	0.4+	0.5+	910417	675	1.3+	1.0-
861203	010	(15.5-	1.2-)	900327	675	2.0-	1.3-				
900126	675	0.4+	0.2+	900327	675	1.6+	0.1-				

1990 TU10 = 1971 SG2 = 1985 QN1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	120.75621		(1950.0)	P	Q
n	0.20959116	Peri.	97.61368	+0.87037665	+0.48432075
a	2.8068599	Node	233.46100	-0.48398886	+0.80836816
e	0.2407374	Incl.	6.34242	-0.09054979	+0.33462564
P	4.70	H	13.6	G 0.15	

Residuals in seconds of arc

710926	095	0.0	0.1+	850817	675	0.9+	0.9+	901012	033	0.4+	0.6+
850816	675	0.1-	0.4-	901010	033	0.1+	0.1+	901013	033	0.0	1.6-
850816	675	0.6+	0.5+	901011	033	0.1-	0.3+	901014	033	0.7-	0.1-
850817	675	1.4-	1.0-	901011	033	0.4+	0.5+				

1990 VH4 = 1956 UM = 1959 JH = 1973 FG2 = 1989 QK1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	206.84969		(1950.0)	P	Q
n	0.20429084	Peri.	222.60884	+0.16226630	+0.98586728
a	2.8552016	Node	56.77043	-0.89133515	+0.16455647
e	0.0323049	Incl.	2.85456	-0.42330992	+0.03141450
P	4.82	H	11.7	G 0.15	

Residuals in seconds of arc

561029	760	0.7+	1.4+	890829	808	0.6-	1.8+	901121	364	1.3-	0.3-
590502	760	2.3-	1.9+	890829	808	1.0+	1.2+	901122	364	2.2-	1.0+
590502	760	0.3-	0.6-	901113	364	1.7+	1.0-	901122	364	0.9-	0.3+
730330	095	1.2+	1.0+	901113	364	(3.0+	1.6-)				
730331	095	3.1+	1.1+	901121	364	(3.7-	1.7-)				

1990 VS4 = 1986 WW7
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda
M 146.49483 (1950.0) P Q
n 0.23914700 Peri. 138.33199 +0.95792052 +0.27213330
a 2.5705502 Node 206.29907 -0.28591714 +0.93268196
e 0.1915314 Incl. 11.88920 +0.02529176 +0.23674424
P 4.12 H 14.4 G 0.15
Residuals in seconds of arc

861130 675	1.3+	0.8+	901115 809	0.5+	0.3+	901121 809	1.0+	0.2-
861130 675	(4.9+	0.0)	901115 809	0.4-	1.3-	901121 809	0.2-	0.1-
861203 675	1.2-	0.9-	901117 809	0.4-	0.3+	901121 809	0.0	0.0
861203 675	0.1-	0.1+	901117 809	0.0	0.6+			
901115 809	0.4+	0.9-	901117 809	1.0-	1.2+			

1990 VZ4 = 1989 RD
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda
M 203.63167 (1950.0) P Q
n 0.19764878 Peri. 96.49440 +0.24398691 +0.96949660
a 2.9188154 Node 187.74755 -0.94411829 +0.23195230
e 0.1024492 Incl. 9.98827 -0.22161010 +0.07921154
P 4.99 H 13.2 G 0.15
Residuals in seconds of arc

890901 511	0.7+	0.1+	901115 809	0.4+	0.2-	901121 809	0.2+	0.1+
890901 511	2.0+	0.9+	901115 809	1.8-	0.7-	901121 809	0.3+	0.4+
890903 511	1.3-	1.4-	901117 809	0.5+	0.1+	901121 809	0.9-	0.3+
890903 511	1.5-	0.3+	901117 809	0.2-	0.5+	901123 372	0.2-	0.4-
901115 809	2.2+	0.7+	901117 809	2.0-	0.8-	901123 372	1.6+	0.1+

1990 VD6 = 1988 GR2 = 1989 RG2
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda
M 201.28447 (1950.0) P Q
n 0.21183881 Peri. 126.32331 +0.35559275 +0.93363658
a 2.7869704 Node 164.33383 -0.90066163 +0.35468043
e 0.1390333 Incl. 9.23137 -0.24972469 +0.05024473
P 4.65 H 13.0 G 0.15
Residuals in seconds of arc

880415 054	0.1-	1.3-	890905 511	0.3-	0.7+	901117 809	0.0	0.8-
880415 054	0.5-	1.1-	901115 809	1.0+	0.2-	901123 809	1.2-	0.5+
890902 511	0.7+	1.2-	901115 809	1.0+	0.8+	901123 809	0.0	0.8-
890902 511	0.7+	0.2+	901115 809	1.8-	0.6-	901123 809	(3.3-	0.6-)
890905 511	0.3-	0.2-	901117 809	0.8+	0.1+			
890905 511	0.5-	1.2-	901117 809	0.4+	1.1-			

1990 VS6 = 1979 SV13 = 1982 DH4 = 1985 WN
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano
M 139.48924 (1950.0) P Q
n 0.18800204 Peri. 278.12210 +0.87655645 +0.47863371
a 3.0178270 Node 53.29642 -0.41297704 +0.80193503
e 0.0827734 Incl. 3.61723 -0.24718161 +0.35750521
P 5.24 H 12.6 G 0.15
Residuals in seconds of arc

790920 675	0.5-	0.8+	820221 033	0.5-	0.1+	901121 372	0.9-	1.2+
790921 675	0.3+	0.3-	851120 095	0.2+	0.6-	901121 372	(4.9-	2.6+)
820220 033	0.2+	0.1+	901115 372	(1.0+	5.0+)	901123 372	0.6+	0.4-
820220 033	0.3+	0.0	901115 372	0.5+	1.2-	901123 372	0.8+	0.0
820220 033	0.2+	0.3+	901117 372	0.5+	0.4+	901212 372	1.0+	0.7-
820221 033	0.1+	0.3+	901117 372	2.7-	1.0+	901212 372	0.2+	0.1-

1990 WB2 = 1977 EQ = 1978 NG7
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	5.88778		(1950.0)		P		Q				
n	0.27095222	Peri.	60.96743		-0.97980671		-0.16031318				
a	2.3652347	Node	109.59309		+0.10851282		-0.92829992				
e	0.1448574	Incl.	7.28684		+0.16793983		-0.33549805				
P	3.64	H	13.7	G	0.15						

Residuals in seconds of arc

770309	095	0.4+	1.0-	901111	809	0.1+	0.3-	901118	809	0.5-	0.3-
770313	095	0.4-	1.2+	901111	809	0.0	0.5-	901120	809	1.0+	0.6+
780710	675	(10.3+	10.5-)Y	901111	809	0.1+	0.2+	901120	809	0.6-	0.3+
780711	675	0.1-	1.1+ Y	901118	809	0.4-	1.0-	901120	809	0.2+	0.0
780713	675	0.1+	0.9- Y	901118	809	0.1+	1.0+				

1990 WE2 = 1955 HY = 1973 UH5
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	194.85144		(1950.0)		P		Q				
n	0.23626914	Peri.	90.23592		+0.36548565		+0.92695947				
a	2.5913817	Node	201.80452		-0.91865260		+0.34455931				
e	0.2110524	Incl.	13.17395		-0.14999213		+0.14840827				
P	4.17	H	13.0	G	0.15						

Residuals in seconds of arc

550418	675	0.4+	1.0-	731031	033	0.7-	0.9-	901118	809	0.7+	0.3+
550418	675	0.6-	0.3+	901111	809	0.6-	0.9+	901118	809	0.2-	0.2-
731027	033	1.5-	0.8-	901111	809	0.6-	0.8+	901120	809	1.3+	0.5+
731027	033	1.6+	0.5+	901111	809	2.4-	0.2-	901120	809	0.4-	0.8-
731028	033	0.8+	0.1-	901118	809	1.6+	0.5-	901120	809	0.5+	0.0

1990 WP4 = 1979 MM
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	302.18351		(1950.0)		P		Q				
n	0.21341176	Peri.	123.29576		-0.84040994		+0.51194631				
a	2.7732594	Node	88.08350		-0.53729162		-0.74412052				
e	0.0907239	Incl.	10.24896		-0.07091437		-0.42918018				
P	4.62	H	13.0	G	0.15						

Residuals in seconds of arc

790622	805	1.5-	0.3+	901117	809	0.9+	0.4-	901122	809	0.2+	0.4+
790622	805	1.4+	0.1+	901121	809	0.2-	0.3+	901122	809	0.1+	0.5+
790625	805	0.2+	0.3-	901121	809	0.2-	0.8-	901122	809	0.2-	0.3+
901116	809	0.1-	0.2+	901121	809	0.3-	0.4-				

1990 WS4 = 1976 UF12 = 1989 PR
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	121.89084		(1950.0)		P		Q				
n	0.21651339	Peri.	223.19043		+0.93669014		-0.34955551				
a	2.7467104	Node	157.24534		+0.33398366		+0.87424242				
e	0.0825440	Incl.	3.04642		+0.10519746		+0.33691415				
P	4.55	H	13.7	G	0.15						

Residuals in seconds of arc

761022	381	0.1-	0.3+	890801	675	1.1+	1.4+	901121	809	0.3-	0.4-
761022	381	0.1+	0.0	901116	809	2.2+	0.7-	901122	809	0.3-	0.1+
890729	675	(6.8-	2.9-)	901117	809	(3.2+	0.2+)	901122	809	0.8-	0.1-
890729	675	2.2-	0.8-	901121	809	0.1+	0.3+	901122	809	0.4-	0.1+
890801	675	1.1+	0.8-	901121	809	0.4-	0.2+				

1990 YA = 1990 VN8 = 1986 WL10
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda
M 99.12378 (1950.0) P Q
n 0.23997389 Peri. 127.44362 +0.86804800 -0.49064805
a 2.5646418 Node 262.05600 +0.42785673 +0.81680549
e 0.2735761 Incl. 4.39380 +0.25185569 +0.30346876
P 4.11 H 13.3 G 0.15
Residuals in seconds of arc

861130 381	1.4+	0.7+	901113 046	0.5+	0.8-	901218 675	0.9+	0.4-
861130 381	1.8-	1.6-	901113 046	0.2-	0.6-	901218 675	1.0+	0.0
861201 381	0.0	0.5+	901115 400	0.1-	1.2+	901219 675	0.9-	0.1-
861201 381	0.4+	0.5+	901115 400	0.2-	0.3+	901219 675	0.9-	0.3+

1990 YM
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bardwell
M 74.95997 (1950.0) P Q
n 0.26674824 Peri. 38.30896 -0.72928442 -0.55395288
a 2.3900208 Node 103.22986 +0.48047016 -0.83250764
e 0.2492204 Incl. 24.36490 +0.48712694 -0.00819936
P 3.69 H 12.5 G 0.15
From 22 observations 1990 Dec. 14-1991 May 16, mean residual 0".9.

1991 AS1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bardwell
M 107.12772 (1950.0) P Q
n 0.23499522 Peri. 122.38794 +0.10065212 -0.93250542
a 2.6007385 Node 317.18325 +0.65124732 +0.32530553
e 0.2278462 Incl. 30.68564 +0.75216094 -0.15687561
P 4.19 H 13.0 G 0.15
From 11 observations 1991 Jan. 14-May 11, mean residual 0".8.

1991 BV
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bardwell
M 109.52417 (1950.0) P Q
n 0.23362493 Peri. 307.69426 -0.02596101 -0.99051956
a 2.6108981 Node 143.09735 +0.97324047 -0.05586365
e 0.1375513 Incl. 12.98265 +0.22831778 +0.12549998
P 4.22 H 12.5 G 0.15
From 26 observations 1991 Jan. 19-May 13, mean residaul 1".1.

1991 BM2 = 1989 TJ16
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda
M 61.83176 (1950.0) P Q
n 0.17998335 Peri. 95.83704 -0.36328746 -0.93167400
a 3.1068085 Node 15.46585 +0.85114454 -0.33293454
e 0.1711518 Incl. 0.51689 +0.37891319 -0.14538967
P 5.48 H 13.0 G 0.15
Residuals in seconds of arc

891004 809	0.3-	0.1-	891006 809	0.2-	0.2+	910117 046	2.1-	0.2+
891004 809	0.4+	0.2-	891006 809	0.1-	0.2+	910118 046	1.3+	0.4+
891004 809	0.4+	0.0	910115 017	0.7+	0.7+	910118 046	0.9+	0.6+
891006 809	0.2-	0.1-	910117 046	0.8-	2.0-			

1991 CZ
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bardwell
M 339.28879 (1950.0) P Q
n 0.39698774 Peri. 129.91058 +0.25952658 +0.94958893
a 1.8335158 Node 153.49418 -0.96175078 +0.27066038
e 0.0137868 Incl. 23.20676 -0.08764359 -0.15818921
P 2.48 H 13.5 G 0.15
From 30 observations 1991 Feb. 7-May 17, mean residual 0".9.

1991 CO3 = 1972 BF
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 134.95113 (1950.0) P Q
n 0.26527235 Peri. 170.18879 -0.04687310 -0.91216280
a 2.3988774 Node 281.63184 +0.88593891 +0.15031608
e 0.2395050 Incl. 24.56185 +0.46142731 -0.38126646
P 3.72 H 12.5 G 0.15
Residuals in seconds of arc
720119 095 0.1+ 0.2+ 910214 413 1.3- 0.2- 910406 413 0.4- 0.1+
910210 413 0.1- 0.4+ 910321 413 0.8+ 0.3- 910504 413 0.7+ 0.3+
910211 413 0.8+ 0.6- 910323 413 0.1- 0.2+ 910515 413 0.3- 0.2+

1991 DA
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 8.95122 (1950.0) P Q
n 0.02409413 Peri. 191.25159 -0.74073391 -0.20171000
a 11.8721271 Node 313.40412 +0.66424018 -0.07722398
e 0.8670217 Incl. 61.88558 +0.10049011 -0.97639620
P 40.91 H 13.5 G 0.15
From 29 observations 1991 Feb. 18-May 13, mean residual 0".73.

1991 DB
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bardwell
M 103.09041 (1950.0) P Q
n 0.43738689 Peri. 50.94479 -0.87095986 +0.48558604
a 1.7188008 Node 157.79557 -0.48937087 -0.84354815
e 0.4026532 Incl. 11.45728 -0.04410311 -0.22941820
P 2.25 H 18.5 G 0.15
From 30 observations 1991 Feb. 13-May 17, mean residual 1".2.

1991 EE
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Marsden
M 39.31294 (1950.0) P Q
n 0.29278018 Peri. 115.07095 +0.23680821 +0.97096492
a 2.2461647 Node 168.47265 -0.94125716 +0.23792859
e 0.6241347 Incl. 9.76596 -0.24074226 +0.02484182
P 3.37 H 18.5 G 0.15
From 36 observations 1991 Mar. 13-June 5, mean residual 0".4.

1991 EL
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 350.87878 (1950.0) P Q
n 0.08270461 Peri. 297.35195 -0.73134364 +0.56781858
a 5.2173453 Node 279.69001 -0.40675160 -0.80777171
e 0.0868013 Incl. 22.53508 -0.54743914 -0.15838852
P 11.92 H 11.5 G 0.15
From 7 observations 1991 Feb. 12-May 15, mean residual 0.".74.

1991 EN
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 276.50632 (1950.0) P Q
n 0.08512363 Peri. 1.51581 +0.34446080 +0.88315198
a 5.1180276 Node 288.72210 -0.86479041 +0.16649943
e 0.0233987 Incl. 19.64594 -0.36535503 +0.43854364
P 11.58 H 10.5 G 0.15
From 7 observations 1991 Mar. 6-May 31, mean residual 0".52.

1991 FA
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Marsden
M 145.72940 (1950.0) P Q
n 0.35424183 Peri. 91.49603 +0.33272110 -0.94282987
a 1.9781968 Node 339.03864 +0.84242200 +0.30631298
e 0.4462186 Incl. 3.07602 +0.42381818 +0.13131715
P 2.78 H 17.5 G 0.15
From 20 observations 1991 Mar. 17-May 19, mean residual 0".4.

1991 FG
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 63.17694 (1950.0) P Q
n 0.21504737 Peri. 324.91597 -0.97560202 -0.19756212
a 2.7591795 Node 204.23088 +0.21283371 -0.95809899
e 0.3380127 Incl. 13.49285 -0.05387491 -0.20740188
P 4.58 H 13.0 G 0.15
From 12 observations 1991 Feb. 10-May 31, mean residual 0".68.

1991 FU = 1970 ES1 = 1989 SW13
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 91.41311 (1950.0) P Q
n 0.23694183 Peri. 187.26504 -0.73737841 -0.65452158
a 2.5864746 Node 310.44277 +0.63022541 -0.57768363
e 0.1087792 Incl. 12.67237 +0.24308232 -0.48773263
P 4.16 H 11.5 G 0.15
Residuals in seconds of arc

700303 805	0.0	0.1+	910317 675	0.3+	0.2-	910412 675	0.9+	0.0
700303 805	0.1+	0.2+	910318 675	0.1+	1.3-	910412 413	1.2+	0.6+
700303 805	0.2+	0.2+	910318 675	0.7-	0.3+	910412 413	0.7-	1.4+
890929 675	0.0	0.7-	910410 675	0.6+	0.4-	910507 675	2.0-	0.9-
890929 675	0.3+	0.3-	910410 675	0.2-	0.9-	910507 675	2.0-	0.3-
910317 675	0.6-	0.1+	910412 675	1.9+	0.4+			

1991 GD
Id. R. H. McNaught (1975, 1988 obs.)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 176.78032 (1950.0) P Q
n 0.36643688 Peri. 206.31599 -0.07507085 -0.94895753
a 1.9340600 Node 249.30443 +0.96286336 +0.01091492
e 0.0824846 Incl. 19.11534 +0.25934246 -0.31521497
P 2.69 H 13.5 G 0.15
Residuals in seconds of arc

750407 413	1.4-	0.2+	910409 413	(0.9-	3.6+)	910415 413	0.2+	0.2+
750407 413	1.4+	0.9-	910409 413	(0.3+	3.5-)	910420 413	0.5-	0.0
880209 413	0.3-	0.0	910410 413	0.0	0.1+	910515 413	0.4+	0.1-
880209 413	0.2+	0.2-	910411 413	0.5+	0.4+	910518 413	0.3-	0.2+

1991 GZ = 1989 UO6
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M	40.73157		(1950.0)		P		Q				
n	0.28933484	Peri.	7.01962		-0.53656639		+0.84215824				
a	2.2639653	Node	230.54559		-0.77751895		-0.51804502				
e	0.0619656	Incl.	3.97575		-0.32796462		-0.14966244				
P	3.41	H	13.5	G	0.15						

Residuals in seconds of arc

891026	033	0.4-	1.0+	910408	809	1.5-	0.2+	910414	400	0.3+	0.2-
891026	033	0.8+	0.6-	910410	809	1.0+	0.3-	910416	400	2.7+	1.0-
891028	033	0.4-	0.5-	910410	809	1.5+	0.0	910419	809	0.7-	0.3-
910408	809	0.6-	0.2+	910410	809	0.1-	0.1-	910419	809	1.2-	0.3-
910408	809	0.6-	0.2-	910414	400	0.3+	2.3+	910419	809	1.1-	0.4-

1991 GA1 = 1973 JB = 1988 RF8
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	16.64054		(1950.0)		P		Q				
n	0.27218263	Peri.	93.01940		+0.16578098		+0.98516920				
a	2.3581013	Node	187.00575		-0.98562592		+0.16404362				
e	0.3039911	Incl.	21.27357		-0.03253010		+0.05031251				
P	3.62	H	13.0	G	0.15						

Residuals in seconds of arc

730504	029	0.1+	0.4-	910408	675	0.3+	1.0-	910510	675	0.4-	0.1+
730504	029	0.1-	0.4-	910409	675	0.3+	0.8-	910510	675	0.8-	1.9+
880910	071	0.2+	0.1-	910412	675	0.7+	0.1-	910512	675	1.4-	0.0
880910	071	1.3-	0.9-	910412	675	0.5+	1.5+	910512	675	0.4-	0.0
880910	071	1.1+	0.7+	910414	675	0.0	1.4-				
910408	675	0.4+	0.4+	910416	675	0.3+	0.1+				

1991 GB1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Marsden

M	43.26915		(1950.0)		P		Q				
n	0.35865122	Peri.	221.95209		-0.43300132		+0.88999633				
a	1.9619496	Node	23.50930		-0.70197950		-0.23350682				
e	0.0437097	Incl.	20.98980		-0.56545083		-0.39163899				
P	2.75	H	14.0	G	0.15						

From 14 observations 1991 Feb. 23-May 9, mean residual 0".7.

1991 GG1 = 1970 ES3 = 1975 EH2 = 1978 UZ2 = 1980 BZ = 1980 EH = 1985 BG2 = 1988 RQ13
Id. H. Kaneda, A. Lowe
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	130.42019		(1950.0)		P		Q				
n	0.19082229	Peri.	138.70401		-0.37251982		-0.92470298				
a	2.9880187	Node	332.89020		+0.79979975		-0.27702802				
e	0.0540886	Incl.	9.91224		+0.47069029		-0.26111277				
P	5.17	H	11.0	G	0.15						

Residuals in seconds of arc

700308	805	1.1+	0.8-	850121	688	1.4-	1.1+	910416	400	(0.3+	5.6+)
700308	805	0.4-	0.1-	880914	095	1.1-	1.9-	910416	400	(3.8+	3.1+)
700308	805	0.6-	0.0	880914	095	(1.2+	5.7-)	910514	399	0.1+	0.9-
750308	095	1.9-	0.6+	880916	095	1.2+	0.1-	910514	400	1.3+	0.3+
781026	675	(5.9+	1.1-)	880916	095	0.9+	0.3+	910514	399	0.4+	0.9+
781027	675	(7.6+	1.8-)	910411	400	(2.2-	4.5+)	910514	399	1.3-	0.1-
800123	095	1.1+	2.8-	910411	400	0.9-	1.1-	910514	400	0.0	1.6-
800315	095	0.2+	0.0	910414	400	0.3+	1.1+				
850121	688	1.4+	1.1+	910414	400	0.1-	0.8+				

1991 GV1 = 1951 MM = 1979 HG6
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 2.67620 (1950.0) P Q
n 0.24415418 Peri. 148.61412 +0.13647981 +0.98400850
a 2.5352839 Node 128.97498 -0.93663379 +0.16580325
e 0.2472586 Incl. 8.46628 -0.32263044 -0.06508879
P 4.04 H 12.5 G 0.15
Residuals in seconds of arc

510630	711	0.1-	0.0	Y	910409	675	2.3+	0.0	910509	675	0.6-	0.3-
790428	095	0.5+	0.2+		910411	675	(3.3+ | 1.2+)	910512	675	0.9-	0.2-
910317	675	0.1+	1.5-		910411	675	1.6+	1.3+	910512	675	1.2-	1.0-
910317	675	0.6-	0.9-		910413	675	0.0	1.9+				
910409	675	0.3+	0.4+		910509	675	2.0-	0.2-				

1991 GX1 = 1990 EY1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 119.35215 (1950.0) P Q
n 0.08372480 Peri. 164.09874 -0.21599239 -0.96541725
a 5.1748764 Node 298.17933 +0.87675673 -0.12596235
e 0.0360128 Incl. 9.53412 +0.42970330 -0.22826085
P 11.77 H 10.5 G 0.15
Residuals in seconds of arc

900224	809	0.6+	0.8+		900304	809	0.9-	0.4-	910419	675	0.2-	0.0
900224	809	0.1-	0.8+		900304	809	1.1-	0.4-	910514	675	0.3+	0.9+
900224	809	0.9-	0.7+		900304	809	1.8-	0.3-	910516	675	0.0	0.5+
900302	809	1.6+	0.4-		910415	675	0.3+	1.9-	910516	675	0.5+	0.5+
900302	809	1.4+	0.3-		910415	675	0.9-	0.6-	910518	675	0.4+	0.5+
900302	809	1.3+	0.3-		910419	675	0.4-	0.0				

1991 GB2 = 1973 DM = 1983 OF
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 45.14573 (1950.0) P Q
n 0.22485202 Peri. 94.09694 -0.62381822 +0.76455396
a 2.6783758 Node 135.89224 -0.77708031 -0.58452117
e 0.1250931 Incl. 13.47607 -0.08364817 -0.27164729
P 4.38 H 12.5 G 0.15
Residuals in seconds of arc

730227	029	0.1+	0.2+		910415	675	0.1-	0.1+	910513	675	0.8-	0.4+
730228	029	0.2-	0.6-		910417	675	(0.2+ | 6.5-)	910515	675	0.5+	0.2+
830717	688	1.2-	0.4-		910419	675	0.3+	0.0	910515	675	1.0-	0.3-
830717	688	1.3+	0.0		910513	675	1.1+	0.2-				

1991 GU9 = 1986 AW = 1990 BQ2
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 279.13913 (1950.0) P Q
n 0.25088193 Peri. 262.39925 +0.97850572 +0.03187985
a 2.4897542 Node 95.61402 +0.04704979 +0.92740807
e 0.0937699 Incl. 11.81326 -0.20078067 +0.37269014
P 3.93 H 12.8 G 0.15
Residuals in seconds of arc

860111	688	3.0+	1.7-		900129	046	2.1+	1.2-	910412	033	0.1+	0.4+
860111	688	2.9-	1.1+		910410	033	0.4+	0.1-	910507	033	0.4-	0.9-
900122	046	3.8-	1.7+		910410	033	0.5-	0.5+	910513	033	0.1+	0.1+
900122	046	2.0-	0.7+		910411	033	0.2-	0.4+	910513	033	0.5-	0.1+
900129	046	3.9+	0.7-		910412	033	0.4+	0.1-	910514	033	0.5+	0.3-

1991 HG = 1981 RW3 = 1981 TR3 = 1981 UE16 = 1983 CF8 = 1983 EU2
Id. H. Kaneda, N. S. Chernykh (d)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M 29.48086		(1950.0)	P	Q
n 0.26576334	Peri.	211.98112	-0.41432264	+0.90938839
a 2.3959219	Node	33.58293	-0.82036774	-0.35567647
e 0.0541883	Incl.	3.80797	-0.39412374	-0.21565485
P 3.71	H 12.8		G 0.15	

Residuals in seconds of arc

810903	095	0.6-	0.5-	830305	095	0.9+	0.1-		910421	894	1.5-	0.4+
811007	095	(9.0- | 1.7-)	910416	894	0.1+	1.2-	Y	910502	894	2.1+	2.1+
811024	095	0.7+	0.3+	910416	894	0.1-	0.9-	Y	910505	894	(6.5+ | 1.7-)
830210	095	0.8-	0.2+	910421	894	0.5-	0.6-					

1991 HH = 1970 RF = 1984 KU = 1990 BW3

Id. S. Nakano, G. V. Williams

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M 357.01781		(1950.0)	P	Q
n 0.27481482	Peri.	63.35091	+0.49707909	+0.86490179
a 2.3430198	Node	236.62811	-0.82279573	+0.44432389
e 0.1966495	Incl.	4.78714	-0.27553505	+0.23349769
P 3.59	H 13.5		G 0.15	

Residuals in seconds of arc

700908	095	0.5+	0.7+	900124	033	0.5-	0.2+		910509	675	0.8-	0.5+
840525	071	0.9-	0.5-	910416	894	1.5+	0.0		910509	675	0.6-	0.0
840525	071	(4.3- | 0.7+)	910416	894	2.0+	0.1+		910512	675	1.1-	1.2-
840525	071	1.4-	0.3+	910421	894	1.1+	0.8+	Y	910512	675	1.2-	0.7-
900124	033	0.6-	0.2-	910421	894	1.6+	0.5+	Y				

1991 HO = 1955 MB

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M 9.18217		(1950.0)	P	Q
n 0.21698621	Peri.	177.85167	-0.23872328	+0.91952932
a 2.7427189	Node	78.22403	-0.89560101	-0.08419582
e 0.2097633	Incl.	18.59796	-0.37537985	-0.38389698
P 4.54	H 12.5		G 0.15	

Residuals in seconds of arc

550616	760	(1.2+ | 8.6+)	910419	675	0.4-	0.8-		910515	675	0.1-	0.4+
550616	760	0.4+	0.5+	910419	675	0.1+	0.1+		910516	675	0.1-	0.1-
550622	760	0.5+	0.5+	910420	675	0.5-	0.4+		910516	675	0.8+	0.3-
550622	760	1.0-	1.1-	910515	675	0.4+	0.3+					

1991 JA = 1984 GT = 1984 HQ

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Urata

M 66.90041		(1950.0)	P	Q
n 0.28467092	Peri.	159.01061	-0.79312296	+0.59808886
a 2.2886215	Node	58.24661	-0.57629229	-0.67578420
e 0.0661848	Incl.	7.77879	-0.19708670	-0.43081949
P 3.46	H 14.0		G 0.15	

Residuals in seconds of arc

840407	372	0.9-	0.3+	840419	046	2.1-	0.0		910503	385	1.6-	0.9-
840407	372	0.1+	0.3+	910502	385	1.0+	0.3-		910505	385	1.2-	0.7+
840407	372	1.2+	0.4-	910502	385	0.3+	0.5-		910517	385	0.3-	0.2-
840419	046	1.6+	0.5-	910503	385	1.8+	1.5+					

1991 JJ = 1976 UG4 = 1976 YZ3
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano
M 52.65056 (1950.0) P Q
n 0.23580871 Peri. 165.23858 -0.67088881 +0.70944232
a 2.5947538 Node 62.09648 -0.70269580 -0.51519685
e 0.1258414 Incl. 14.13866 -0.23691099 -0.48089895
P 4.18 H 12.1 G 0.15
Residuals in seconds of arc

761028 095	0.7-	0.4+	910505 403	0.8-	1.1+	910510 894	0.7+	1.3-
761218 095	0.4+	0.2+	910508 675	0.4-	0.4+	910510 894	1.1+	0.9-
910504 403	0.8+	0.2+ Y	910508 675	0.0	0.2-	910512 675	0.2+	0.6-
910504 403	0.1+	0.6- Y	910510 675	0.2+	0.2-	910518 403	(3.0-	5.0+)Y
910505 403	0.9-	0.7+	910510 675	1.0+	0.8-	910518 403	1.7-	2.7+

1991 JL = 1984 GQ = 1985 RL6
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano
M 56.91152 (1950.0) P Q
n 0.28636659 Peri. 39.75253 -0.63718561 +0.77050151
a 2.2795781 Node 190.70646 -0.72937709 -0.61037121
e 0.1660239 Incl. 5.54214 -0.24900513 -0.18377815
P 3.44 H 14.2 G 0.15
Residuals in seconds of arc

840404 071	0.1+	0.4+	910503 894	1.2-	0.8+	910510 894	0.6+	0.4+
840404 071	0.4-	1.3-	910505 894	0.9+	0.4-	910517 894	0.8-	0.1+ Y
850915 095	0.3+	1.1-	910505 894	0.5+	0.7-	910517 894	0.8-	0.1- Y
910503 894	0.7-	0.1+	910510 894	1.5+	0.1-			

1991 JR
Epoch 1991 May 4.0 ET = JDE 2448380.5 Marsden
M 334.50733 (1950.0) P Q
n 0.59221581 Peri. 206.96538 -0.06669319 +0.98619885
a 1.4043738 Node 59.55997 -0.88075752 +0.01317715
e 0.2602991 Incl. 10.12323 -0.46884775 -0.16503998
P 1.66 H 22.5 G 0.15
From 20 observations 1991 May 8-19.

1991 JU = 1978 WJ1 = 1984 KN
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano
M 7.30682 (1950.0) P Q
n 0.27913000 Peri. 239.78249 +0.39308352 +0.91191339
a 2.3188093 Node 53.83087 -0.78539186 +0.39965673
e 0.1351919 Incl. 8.39754 -0.47816835 +0.09321189
P 3.53 H 13.6 G 0.15
Residuals in seconds of arc

781129 675	0.2-	0.6-	840522 071	1.5-	1.4-	910510 372	(3.4+	98.8-)
781130 675	0.7+	0.7-	840522 071	1.4-	0.5-	910513 372	2.2+	0.3-
840522 071	(8.3-	1.1-)	840522 071	2.3+	0.3-	910517 372	0.4-	1.5+
840522 071	1.3+	0.4+	910505 372	0.7-	1.6-	910517 372	1.7+	2.7+
840522 071	1.9-	1.0-	910505 372	2.0-	0.8-	910518 372	(5.3+	0.8+)

1991 JW
Epoch 1991 May 4.0 ET = JDE 2448380.5 Williams
M 233.37702 (1950.0) P Q
n 0.93218078 Peri. 301.88542 +0.98891666 +0.08505705
a 1.0378533 Node 53.51657 -0.01707574 +0.87935482
e 0.1182718 Incl. 8.70539 -0.14748649 +0.46850870
P 1.06 H 19.5 G 0.15
From 17 observations 1991 Apr. 19-May 18.

1991 JX
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Marsden

M	41.12290	(1950.0)	P	Q
n	0.24558356	Peri. 64.52226	+0.11570486	+0.99305029
a	2.5254369	Node 212.14472	-0.92519269	+0.09986104
e	0.5993455	Incl. 2.31902	-0.36142892	+0.06228070
P	4.01	H 18.5	G 0.15	

From 37 observations 1991 May 9-June 6, mean residual 0".7.

1991 JY
Epoch 1991 May 24.0 ET = JDE 2448400.5 Marsden

M	121.36756	(1950.0)	P	Q
n	1.07234049	Peri. 37.06461	+0.08734494	-0.76603803
a	0.9453245	Node 57.89989	+0.63364431	-0.45056020
e	0.2967153	Incl. 48.74324	+0.76867792	+0.45845528
P	0.92	H 16.5	G 0.15	

From 39 observations 1991 May 14-June 3.

1991 JB1 = 1934 GK = 1968 HN1 = 1985 GN = 1987 SO10
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	35.56070	(1950.0)	P	Q
n	0.17289695	Peri. 147.18200	-0.68011180	+0.72796423
a	3.1911299	Node 79.80335	-0.69014809	-0.59587733
e	0.1203977	Incl. 5.05352	-0.24727223	-0.33911397
P	5.70	H 12.5	G 0.15	

Residuals in seconds of arc

340406	024	1.6+	1.8-	870929	033	0.1-	0.2-	910505 894	0.7+ 0.4-
680430	095	3.0-	5.9+	870930	033	1.4+	0.9+	910510 894	0.9+ 2.6-
850415	688	0.9-	0.4-	870930	033	0.4-	0.2-	910510 894	0.2+ 0.4-
850415	688	1.3-	1.9-	871001	033	0.4+	0.9-	910514 894	0.3+ 0.0
870929	033	1.0-	0.7-	910505	894	0.3-	0.1+	910514 894	1.6+ 0.5+

1991 JE1 = 1969 LD = 1974 EJ = 1976 SQ4 = 1980 KB1 = 1987 SM6 = 1990 BH2
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	22.77789	(1950.0)	P	Q
n	0.17831493	Peri. 65.32074	-0.44498130	+0.89551916
a	3.1261579	Node 178.22204	-0.87609992	-0.43390282
e	0.1318730	Incl. 11.31774	-0.18558173	-0.09886239
P	5.53	H 11.6	G 0.15	

Residuals in seconds of arc

690606	095	0.8-	0.1-	870921	046	0.1-	2.2-	910507 376	(22.2- 11.9+)Y
740313	095	0.0	2.5-	870921	046	1.4-	3.7-	910507 376	0.8+ 3.3+ Y
760924	095	1.1+	2.2-	900121	675	0.9-	1.8-	910514 376	1.0+ 2.5-
760929	095	4.0+	1.8-	900121	675	1.3-	0.8-	910514 376	0.5- 3.5-
800517	095	2.1-	2.6-	900124	675	0.4-	1.5-	910518 376	0.3- 1.5-
870917	095	0.0	2.4-	900124	675	0.0	2.1-	910518 376	0.7+ 1.4-

1991 JG1
Epoch 1991 May 4.0 ET = JDE 2448380.5 Williams

M	23.22065	(1950.0)	P	Q
n	0.61447231	Peri. 322.37231	-0.91602822	+0.04627910
a	1.3702543	Node 225.79443	-0.06118978	-0.99781849
e	0.1830042	Incl. 33.76717	-0.39641911	+0.04707979
P	1.60	H 19.5	G 0.15	

From 10 observations 1991 May 9-19.

1991 JH1 = 1951 CQ = 1980 FG11 = 1987 DT
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	60.24366	(1950.0)	P	Q
n	0.27433770	Peri. 83.48938	-0.63161834	+0.77487036
a	2.3457356	Node 147.29786	-0.72842640	-0.58201303
e	0.1905918	Incl. 2.67165	-0.26543031	-0.24665107
P	3.59	H 13.5	G 0.15	

Residuals in seconds of arc

510207 012	0.2-	0.7-	870225 046	0.5+	0.7+	910514 894	1.7+	0.3+
800316 095	0.5-	1.4-	870225 046	2.8+	1.5+	910514 894	0.8+	1.5-
870224 046	2.7-	0.2-	910504 881	2.1-	1.2+ Y	910517 894	0.5-	1.0+ Y
870224 046	(5.9+	1.1-)	910504 881	0.1+	0.6-			

2017 P-L = 1980 TT6
Id. E. Bowell (MPC 7461)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	160.33805	(1950.0)	P	Q
n	0.29527291	Peri. 55.21090	+0.73275978	+0.67937381
a	2.2335053	Node 261.96028	-0.63644371	+0.66397200
e	0.2180050	Incl. 2.25235	-0.24083711	+0.31239785
P	3.34	H 15.0	G 0.15	

Residuals in seconds of arc

600924 675	0.4+	0.1-	601025 675	0.6+	0.3-	900918 675	1.5+	0.3+
600926 675	0.0	0.1-	601026 675	0.0	0.5-	900919 675	0.8-	0.2-
600928 675	0.5-	1.6-	801008 095	0.7+	2.2+	900919 675	0.1+	0.2-
600929 675	0.2+	0.2+	801012 095	1.9-	0.3+	900920 675	1.0-	0.5-
601022 675	0.3+	0.3+	900918 675	0.9+	0.5+	900920 675	0.5-	0.4-

2780 P-L = 1950 PH = 1953 FJ1 = 1962 BC = 1967 EP = 1974 SG3 = 1977 JW
= 1978 PX = 1988 RW11
Id. E. Bowell (MPC 15423), B. G. Marsden (ibid.), H. Kaneda
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	142.76660	(1950.0)	P	Q
n	0.20907000	Peri. 317.72254	-0.21924884	-0.97425811
a	2.8115226	Node 144.84782	+0.91773127	-0.22418046
e	0.1248683	Incl. 5.22688	+0.33120880	-0.02375403
P	4.71	H 12.0	G 0.15	

Residuals in seconds of arc

500812 760	1.0-	1.1-	600926 675	0.5+	0.2-	740921 095	(3.2+	6.7-)
500812 760	(3.9-	5.1+)	600928 675	0.3+	0.4+	770515 095	1.1+	0.9-
530321 760	0.7+	0.9-	600929 675	0.6+	0.8+	780808 095	0.8+	1.5+
530321 760	(16.3-	7.2-)	620128 760	0.8+	0.3-	880914 807	0.1-	0.6-
530405 760	0.1+	0.3+	620128 760	0.8+	0.4-	880915 807	0.1+	1.3-
530405 760	0.2-	0.1-	670309 095	1.2-	0.6+	880915 095	(2.6-	2.9+)
600924 675	1.1-	0.2-	670404 095	1.9-	1.3+	880915 095	0.3-	0.8+

4047 P-L = 1978 NL6 = 1991 GR8
Id. B. G. Marsden, G. V. Williams
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	318.74992	(1950.0)	P	Q
n	0.21215307	Peri. 322.15101	+0.52160877	+0.85308906
a	2.7842176	Node 339.27970	-0.77366039	+0.46662202
e	0.0186630	Incl. 2.07012	-0.35968582	+0.23345864
P	4.65	H 14.5	G 0.15	

Residuals in seconds of arc

600924 675	0.4-	0.2+	600928 675	0.3+	0.7+	601022 675	0.8-	0.1-
600925 675	0.2-	0.2-	600928 675	1.2+	2.3+	601024 675	1.1-	1.2-
600926 675	1.3+	0.0	601017 675	1.0-	1.4-	601026 675	0.1-	0.5+

780710	675	0.1+	0.4-	Y	910408	809	1.0+	0.6+	910410	809	0.5+ 0.6+
780711	675	(9.1+	0.8-)	Y	910408	809	1.1+	0.1+	910410	809	0.3- 0.1-
780713	675	(9.1-	5.1+)	Y	910408	809	0.0	0.2-	910410	809	1.9- 0.1-

4081 P-L = 1980 PF1 = 1983 NG
Id. E. Bowell (k, MPC 5980), S. Nakano, G. V. Williams
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	119.81626		(1950.0)	P	Q
n	0.29454579	Peri.	162.18075	+0.99898643	-0.02012933
a	2.2371795	Node	199.10824	+0.00767725	+0.95752647
e	0.1448860	Incl.	7.06461	+0.04435291	+0.28764193
P	3.35	H	14.5	G 0.15	

Residuals in seconds of arc

600924	675	0.3-	0.4-		601017	675	0.0	1.2+	900913	675	0.3- 0.1+
600924	675	0.1-	0.1+		601022	675	0.5+	1.1+	900916	675	0.2- 0.4-
600925	675	0.3-	0.0		601024	675	0.0	1.0+	900916	675	0.3+ 0.2-
600925	675	0.2+	1.2-		601026	675	0.4+	0.3+	900917	675	0.1- 0.5+
600926	675	0.5+	0.4-		800806	809	0.5-	0.3+	900917	675	0.2- 0.4+
600926	675	0.3-	1.4-		800807	809	0.2-	0.7+	900919	675	0.4+ 0.5-
600928	675	0.3-	0.2-		830715	801	0.0	0.2+	900919	675	0.5+ 0.3-

6582 P-L = 1985 DF4
Id. E. Bowell (MPC 11844)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	107.58061		(1950.0)	P	Q
n	0.17622610	Peri.	103.46109	-0.41489911	-0.90986398
a	3.1508125	Node	11.05287	+0.82961060	-0.37943075
e	0.1566974	Incl.	0.74837	+0.37363749	-0.16786855
P	5.59	H	12.5	G 0.15	

Residuals in seconds of arc

600924	675	0.3+	0.8-		601024	675	1.3-	1.8+	881004	807	1.1- 0.2-
600926	675	0.0	1.0-		601026	675	1.5+	0.2+	881008	807	0.5- 0.0
600927	675	1.2+	0.1-		850222	675	0.6-	0.2-	881103	807	0.1+ 0.2+
600928	675	0.1+	0.5-		850223	675	0.4+	0.2-	881106	807	0.9- 0.1+
601017	675	1.1-	0.8-		880916	807	1.3+	0.9+	881108	807	0.8- 0.6-
601022	675	0.3-	0.2+		880918	807	1.4+	0.3+			

9507 P-L = 1984 SV6 = 1988 AW2 = 1991 GD3
Id. O. Kippes (MPC 9761), S. Nakano (MPC 13303; unpublished)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	211.72133		(1950.0)	P	Q
n	0.08196063	Peri.	333.14224	+0.99093623	-0.12511684
a	5.2488706	Node	34.15520	+0.13349257	+0.87651569
e	0.0840665	Incl.	4.99664	+0.01500439	+0.46482903
P	12.03	H	10.8	G 0.15	

Residuals in seconds of arc

601017	675	0.1+	0.3-		840929	809	0.4+	0.3-	910408	809	1.3+ 0.4+
601022	675	0.5-	0.7-		840929	809	0.0	0.1+	910408	809	1.3+ 0.3+
601024	675	1.5+	1.1-		840929	809	0.1-	0.6+	910410	809	0.0 0.9-
601026	675	1.2+	1.2-		840930	809	0.2+	0.5+	910410	809	2.0- 0.4+
770211	675	1.6-	0.1-		840930	809	0.2-	0.2+	910410	809	1.2- 0.7-
770212	675	0.0	0.3-		840930	809	0.1-	0.0	910410	809	0.3+ 0.6-
840928	809	0.3-	0.6-		880111	033	0.8+	0.4-	910410	809	0.3- 0.3-
840928	809	0.3-	0.5-		880111	033	0.2+	0.4-	910410	809	1.0- 1.4-
840928	809	0.2-	0.3-		910408	809	0.5+	0.3-			

1045 T-2 = 1990 RA9
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	114.29539		(1950.0)		P		Q				
n	0.28819878	Peri.	166.54497		+0.99442218		-0.09557295				
a	2.2699064	Node	199.11031		+0.07967279		+0.95783829				
e	0.1415629	Incl.	7.83209		+0.06911427		+0.27094578				
P	3.42	H	14.0	G	0.15						

Residuals in seconds of arc

730929	675	0.2-	0.0	731004	675	2.0+	1.1-	900917	675	0.0	0.0
730929	675	0.4+	0.2-	731005	675	1.1-	1.0+	900919	675	0.2-	0.2+
730930	675	0.8-	0.3+	731005	675	0.7-	1.8+	900919	675	0.1+	0.3+
730930	675	0.6-	0.3-	900913	675	0.4+	0.3-				
731004	675	1.6+	1.5-	900917	675	0.3-	0.1-				

1188 T-2 = 2424 T-3 = 1991 GM5
Id. T. Kobayashi (MPC 15077), S. Nakano
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	46.97957		(1950.0)		P		Q				
n	0.25724422	Peri.	339.57919		-0.76386607		+0.64440728				
a	2.4485312	Node	240.59240		-0.58631894		-0.71580139				
e	0.0956927	Incl.	2.32401		-0.26970118		-0.26901233				
P	3.83	H	14.0	G	0.15						

Residuals in seconds of arc

730920	675	1.0-	1.1+	731004	675	2.0+	0.9-	771021	675	1.9+	1.7-
730924	675	2.0-	0.7+	731004	675	2.0+	0.5-	771022	675	1.1-	1.2+
730924	675	2.1-	0.6+	731005	675	0.2+	0.9-	771022	675	0.7-	1.8+
730925	675	1.9-	1.8-	731005	675	1.4+	0.6-	910408	809	0.6+	0.8-
730925	675	1.0-	0.7+	771016	675	0.3-	2.1-	910408	809	0.6+	0.4-
730929	675	0.1+	1.3+	771016	675	0.5+	0.4-	910408	809	1.3-	0.7-
730929	675	1.1+	0.0	771017	675	0.7-	0.6+	910410	809	0.2+	0.9+
730930	675	0.3+	0.9+	771017	675	0.9-	0.9+	910410	809	0.1+	0.4+
730930	675	1.1+	1.1-	771021	675	1.3+	0.1-	910410	809	0.4-	0.3+

2268 T-3 = 1991 GB8
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M	221.28669		(1950.0)		P		Q				
n	0.18354388	Peri.	164.51851		+0.87371588		-0.47100486				
a	3.0665048	Node	224.25093		+0.42573123		+0.86130294				
e	0.1306882	Incl.	10.03171		+0.23531571		+0.19055622				
P	5.37	H	13.5	G	0.15						

Residuals in seconds of arc

771007	675	1.1+	1.1+	771017	675	0.7-	0.8+	910410	809	0.1-	0.3-
771011	675	0.1-	1.2+	771021	675	1.1+	1.0-	910410	809	0.9+	0.2+
771011	675	0.9-	0.1+	771021	675	0.0	0.9-	910410	809	1.3+	0.1+
771012	675	0.6-	0.8-	771022	675	1.0+	0.3-	910419	809	0.0	0.4-
771012	675	1.7-	0.1+	771022	675	1.8+	0.3+	910419	809	0.6+	0.4-
771016	675	0.4+	1.8-	910408	809	0.8-	0.9+	910419	809	1.2+	0.7-
771016	675	0.4-	1.1-	910408	809	0.9-	0.1+				
771017	675	0.7-	1.4+	910408	809	2.3-	0.7-				

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NEW NAMES OF MINOR PLANETS.

(1875) Neruda = 1969 QQ
Discovered 1969 Aug. 22 by L. Kohoutek at Bergedorf.
Named in memory of Jan Neruda (1834-1891), Czech lyric poet, novelist and journalist. He published several volumes of poems, notably "Cosmic

Songs", as well as collections of essays, plays and stories, of which the best known is "Stories from Mala Strana".

(1931) Capek = 1969 QB
Discovered 1969 Aug. 22 by L. Kohoutek at Bergedorf.
Named in memory of Karel Capek (1890-1938), Czech dramatist and novelist, best known for his allegorical plays "R.U.R." (Rossum's Universal Robots) and "The Insect Comedy" and for his novel "Krakatit". He anticipated both the destructive possibilities of nuclear physics and the moral problems these possibilities would raise.

(2158) Tietjen = 1933 OS
Discovered 1933 July 24 by K. Reinmuth at Heidelberg.
Named in memory of Friedrich Tietjen (1832-1895), professor of astronomy at Berlin University and director of the Astronomisches Rechen-Institut since 1874. For many years, he served as an editor of the respected 'Berliner Astronomisches Jahrbuch' and 'Nautisches Jahrbuch'. After a 13-year period of observations of minor planets and comets, Tietjen became the most prolific orbit computer of the ARI. Name proposed and citation prepared by L. D. Schmadel.

(2278) Gotz = 1953 GE
Discovered 1953 Apr. 7 by K. Reinmuth at Heidelberg.
Named in memory of Paul Gotz, first assistant of Max Wolf at the Heidelberg-Konigstuhl Observatory during 1903-1905. Gotz was a skillful and diligent observer with the Bruce telescope and the 0.15-m astrograph. He discovered 20 numbered minor planets. Name proposed and citation prepared by G. Klare and L. D. Schmadel.

(2290) Helffrich = 1932 CD1
Discovered 1932 Feb. 14 by K. Reinmuth at Heidelberg.
Named in memory of J. Helffrich, on the staff of the Heidelberg-Konigstuhl Observatory between 1909 and 1911. As an assistant of Max Wolf, he discovered 13 numbered minor planets. Name proposed and citation prepared by G. Klare and L. D. Schmadel.

(2306) Bauschinger = 1939 PM
Discovered 1939 Aug. 15 by K. Reinmuth at Heidelberg.
Named in memory of Julius Bauschinger (1860-1934), eminent German astronomer, professor of astronomy and director of the Astronomisches Rechen-Institut, Berlin, and the Leipzig University Observatory. For almost 15 years, Bauschinger worked on classical astrometric problems at the Munich Observatory. His extensive meridian observations resulted in two large catalogues, 'Munchener Sternverzeichnisse', including mean places of almost 50 000 stars. He also discussed the orbit of periodic comet Brooks 2 (1889 V) in great detail. Successor of F. Tietjen, Bauschinger in 1897 managed the separation of the ARI from the Berlin Observatory. For many years, he was editor of the famous 'Berliner Astronomisches Jahrbuch'. With P. V. Neugebauer, Bauschinger elaborated tables of the history and statistics of minor planets (1901) and his well-known textbook on orbit determination 'Die Bahnbestimmung der Himmelskorper' (1906). The decade 1909-1919 was a period of practical work at the Strasbourg Observatory 49-cm refractor, with which he photometrically observed NGC nebulae and measured double stars. As director of the Leipzig Observatory (1920-1930), Bauschinger heavily supported a repetition of the AG zones project. Name proposed and citation prepared by L. D. Schmadel.

(2373) Immo = 1929 PC
Discovered 1929 Aug. 4 by M. Wolf at Heidelberg.

Named in honor of Immo Appenzeller (1940-), professor of astronomy at Heidelberg University and since 1975 director of the observatory at Konigstuhl. He has made important contributions to the fields of star formation, stellar evolution, interstellar magnetic fields and active galaxies. Appenzeller is also deeply involved in the development of astronomical instrumention. Name proposed and citation prepared by G. Klare and L. D. Schmadel.

(2453) Wabash = A921 SA

Discovered 1921 Sept. 30 by K. Reinmuth at Heidelberg.

Named in honor of Bob (Wabash) Warshow, occasional operator in the central computing facility at the Harvard-Smithsonian Center for Astrophysics. In his spare time he is a spelunker, and among his exploits was an expedition directly underneath the radio telescope at Arecibo. Name proposed by B. G. Marsden, who found the key identification involving this planet.

(2465) Wilson = 1949 PK

Discovered 1949 Aug. 2 by K. Reinmuth at Heidelberg.

Named in honor of Sir Robert Wilson F.R.S., Perren Professor of Astronomy at University College London, and head of the Department of Physics and Astronomy. Wilson played a leading role in the development of the International Ultraviolet Explorer, one of the most successful astronomical satellites ever launched. He is one of the U.K.'s foremost astronomers and a past vice president of the IAU. Name proposed by C. M. Bardwell, who made the identifications involving this minor planet, and G. V. Williams, following a suggestion by M. M. Dworetsky, who prepared the citation.

(2591) Dworetsky = 1949 PS

Discovered 1949 Aug. 2 by K. Reinmuth at Heidelberg.

Named in honor of Michael M. Dworetsky, senior lecturer at University College, London. His research interests mainly involve the stellar abundances of the mercury group of elements. He has also taken a large part in the development of the undergraduate astronomy degree program, particularly the practical work associated with it. He is currently tutor to astronomy studies and has maintained a wide interest in all matters astronomical. Name proposed by C. M. Bardwell, who made the identifications involving this minor planet, following a suggestion by G. V. Williams. Citation written by D. McNally.

(2719) Suzhou = 1965 SU

Discovered 1965 Sept. 22 at the Purple Mountain Observatory.

Named for a city in southeastern Jiangsu province, famous at home and abroad for its beautiful scenery and elegant ancient gardens. Long described as "the land of fish and rice", "home of silk" and "Venice of the Orient", Suzhou is a shining pearl inlaid on the Yangtse River delta and is also a center of industry and commerce.

(2729) Urumqi = 1979 UA2

Discovered 1979 Oct. 18 at the Purple Mountain Observatory.

Named for an open city in the western part of China, capital of the Xinjiang Uygur autonomous region. The political, economic, cultural, scientific and technological center of Xinjiang, Urumqi is located at the northern foot of the Tianshan Mountains, with the Junggar Basin in the north. It is farther from a sea than any other city in the world. It is a "treasure bowl" rich in natural resources and with a wide cultural diversity. Strategically located on the ancient "Silk Road", Urumqi now occupies an important place on the second Eurasian Land Bridge.

(2857) NOT = 1942 DA
Discovered 1942 Feb. 17 by L. Oterma at Turku.
Named for the 2.56-m Nordic Optical Telescope, erected on La Palma. The optics were made in Y. Vaisala's tunnel laboratory at Tuorla, University of Turku, in a project led by Tapio Korhonen, a student of Vaisala.

(2885) Palva = 1939 TC
Discovered 1939 Oct. 7 by Y. Vaisala at Turku.
Named in honor of Tauno Palva, son-in-law of the discoverer, internationally known ear surgeon and professor of otorhinolaryngology at the University of Helsinki.

(2898) Neuvo = 1938 DN
Discovered 1938 Feb. 20 by Y. Vaisala at Turku.
Named in honor of Yrjo Neuvo, grandson of the discoverer, professor of digital sound processing at Tampere University of Technology and research professor of the Academy of Finland.

(2911) Miahelena = 1938 GJ
Discovered 1938 Apr. 8 by H. Alikoski at Turku.
Named by the discoverer in honor of his wife.

(2912) Lapalma = 1942 DM
Discovered 1942 Feb. 18 by L. Oterma at Turku.
Named for one of the Canary Islands, site of the Nordic Optical Telescope and telescopes from several other European countries.

(2946) Muchachos = 1941 UV
Discovered 1941 Oct. 15 by L. Oterma at Turku.
Named for the Roque de los Muchachos, the mountain on La Palma where the Nordic Optical Telescope and other European telescopes are situated.

(2962) Otto = 1940 YF
Discovered 1940 Dec. 28 by Y. Vaisala at Turku.
Named in honor of Otto Oskari Vaisala, great-grandson of the discoverer.

(2972) Niilo = 1939 TB
Discovered 1939 Oct. 7 by Y. Vaisala at Turku.
Named in honor of Niilo Anselmi Vaisala, great-grandson of the discoverer.

(2980) Cameron = 1981 EU17
Discovered 1981 Mar. 2 by S. J. Bus at Siding Spring in the course of the U.K.-Caltech Asteroid Survey.
Named in honor of Alastair G. W. Cameron, astrophysicist and cosmogonist and currently associate director for theoretical astrophysics at the Harvard-Smithsonian Center for Astrophysics. Known to his colleagues as "Big Al", Cameron has, in his long and distinguished career, been a prolific producer of cosmogonical theories, never hesitating to revise or replace them when confronted with new data. He has consistently emphasized that the origin of planetary systems must be understood in the context of star formation. He was among the first to advocate such concepts as a turbulent accretion disk solar nebula, and the origin of the moon by a giant impact on the proto-earth. Cameron has also contributed greatly to studies of nucleosynthesis in stars and supernovae, and to understanding the significance of the cosmic abundances of nuclides. This work has been

valuable for interpreting the meteoritic record of the early history of the solar system. Citation provided by S. J. Weidenschilling.

(2988) Korhonen = 1943 EM
Discovered 1943 Mar. 1 by L. Oterma at Turku.
Named in honor of Tapio Korhonen, well-known telescope maker, especially of telescope optics. Among his successes is the optical system of the Nordic Optical Telescope, for which an image quality of 0".2 is obtainable in principle.

(3037) Alku = 1944 BA
Discovered 1944 Jan. 17 by Y. Vaisala at Turku.
Named for the boat the discoverer enjoyed in his boyhood. It was built by the father of the discoverer and instilled in him a lifelong love of sailing. The name means "the beginning".

(3166) Klondike = 1940 FG
Discovered 1940 Mar. 30 by Y. Vaisala at Turku.
Named in memory of the brothers Karl F. Joutsen and Anton F. Johnsson, who during 1901-1905 made a fortune in their mine, Dominion Creek 21, in the Klondike gold rush. Among their benefactions to the University of Turku were the means to construct its library in 1954.

(3207) Spinrad = 1981 EY25
Discovered 1981 Mar. 2 by S. J. Bus in the course of the U.K. Schmidt-Caltech Asteroid Survey at Siding Spring.
Named in honor of Hyron Spinrad, a professor of astronomy at the University of California at Berkeley and a specialist in the study of both comets and galaxies. Spinrad has been a pioneer in the use of the metastable oxygen line at 630 nm to determine water production in comets and in the study of faint periodic comets at large heliocentric distances. His image-dissector scanner observations of 25 comets constitute one of the larger, uniform cometary data sets. He is currently adding to cometary knowledge with interpretation of very high dispersion CCD echelle spectroscopy and two-dimensional (interference filter) CCD photometry of brighter comets. In more than a quarter-century of teaching Spinrad has guided many outstanding students in their doctorate research. Citation provided by Ray L. Newburn at the request of the discoverer.

(3212) Agricola = 1938 DH2
Discovered 1938 Feb. 19 by Y. Vaisala at Turku.
Named for Mikael Agricola (c. 1510-1557), bishop, the reformer of Finland, 'father of Finnish literature'. Around 1538 he issued his 'ABC-kiria', the first book printed in the Finnish language, and in 1548 he translated the New Testament into Finnish.

(3223) Forsius = 1942 RN
Discovered 1942 Sept. 7 by Y. Vaisala at Turku.
Named for Sigfrid Aronus Forsius (c. 1550-1624), pastor, naturalist and astronomer. Among his various life-works he was rector of several parishes, mapped the Tornio river valley (1601-1602), was professor of astronomy at Uppsala University (1608-1610), and prepared almanacs for the horizons of Stockholm and Turku, from 1613 as a monopoly.

(3259) Brownlee = 1984 SZ4
Discovered 1984 Sept. 25 by J. Platt at Palomar.
Named in honor of Donald E. Brownlee, professor of astronomy at the University of Washington. Brownlee is renowned for his successful recovery, identification and chemical and minerological investigation of

extraterrestrial particles from the atmosphere--the "Brownlee" particles. He showed that many of these particles very probably are cometary dust. Brownlee also extracted and studied extraterrestrial particles from deep sea sediments and polar ice. His results from the interplanetary dust captured by the earth provide especially important clues about the material from which comets accreted. Citation provided by E. M. and C. S. Shoemaker.

(3272) Tillandz = 1938 DB1
Discovered 1938 Feb. 24 by Y. Vaisala at Turku.
Named for Elias Tillandz (1640-1693), from 1670 professor of medicine at the old Academia Aboensis. He has a botanist and the only physician in Finland at the time, cultivating his own medicinal plants.

(3281) Maupertuis = 1938 DZ
Discovered 1938 Feb. 24 by Y. Vaisala at Turku.
Named for Pierre-Louis Moreau de Maupertuis (1698-1759), French mathematician and geodesist, from 1731 a member of the French Academy. During 1736-1737 he conducted the degree measurement in the Tornio river valley in Finland.

(3287) Olmstead = 1981 DK1
Discovered 1981 Feb. 28 by S. J. Bus in the course of the U.K. Schmidt-Caltech Asteroid Survey at Siding Spring.
Named in honor of C. Michelle Olmstead for her enthusiastic assistance in the asteroid astrometry programs at Lowell Observatory and the U.S. Geological Survey. As a student at Northern Arizona University, Olmstead is a NASA undergraduate fellow, and she has participated in the observational, discovery, identification and astrometric stages of the asteroid survey work. Name and citation endorsed by E. Bowell, E. M. and C. S. Shoemaker and H. E. Holt.

(3381) Mikkola = 1941 UG
Discovered 1941 Oct. 15 by L. Oterma at Turku.
Named in honor of Seppo Mikkola, well-known specialist in celestial mechanics and stellar dynamics, a student of Vaisala who has continued the Turku tradition of computing orbits of minor planets and comets.

(3497) Innanen = 1941 HJ
Discovered 1941 Apr. 19 by L. Oterma at Turku.
Named in honor of the Finnish-Canadian astronomer Kimmo Innanen, well-known specialist in celestial mechanics and galactic dynamics. With Seppo Mikkola he predicted the existence of "Mars Trojans", the first of which was recently discovered.

(3498) Belton = 1981 EG14
Discovered 1981 Mar. 1 by S. J. Bus in the course of the U.K. Schmidt-Caltech Asteroid Survey at Siding Spring.
Named in honor of Michael J. S. Belton of the National Optical Astronomy Observatories for his fundamental contributions to our understanding of solar system astrophysics, his contagious enthusiasm for astronomy, and his many outstanding achievements as an internationally highly respected scientist and a motivating teacher who has the ability to convey the excitement of astronomy to specialist and public alike. Belton has tirelessly and selflessly worked to further the causes of space science and space exploration and has repeatedly demonstrated that the U.S. has a future in space that is exciting to the individual and important to the nation and the human race. Among many other things, he has made significant discoveries about the properties of comets and asteroids, as well as the outer solar system. He has worked on a number of planetary and astrophysics

missions, most recently as team leader of the Galileo imaging investigation of the Jovian system. Citation provided by J. H. Rahe at the request of the discoverer.

(3503) Brandt = 1981 EF17

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

Named in honor of John C. Brandt of the Laboratory for Atmospheric and Space Physics, University of Colorado, for his fundamental contributions to our understanding of solar system astrophysics. Founder of a "Comet Observatory", Brandt has worked on many aspects of cometary science, particularly the interaction of the solar wind with comets. He was Comet Scientist on the International Cometary Explorer mission, which ushered in a new era of in situ exploration by flying through the tail of Comet Giacobini-Zinner in 1985, and thus represented the only tail interception by any of the Giacobini-Zinner or Halley spacecraft. Citation provided by J. H. Rahe at the request of the discoverer.

(3522) Becker = 1941 SW

Discovered 1941 Sept. 21 by Y. Vaisala at Turku.

Named for Reinhold von Becker (1788-1858), a member of the old Academia Aboensis from 1813 onward. The weekly 'Turun Viikkosanomat', which he began publishing in 1820, had an essential influence on the evolution of the Finnish literary language.

(3536) Schleicher = 1981 EV20

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

Named in honor of David G. Schleicher of the Lowell Observatory for his many contributions to the physical study of comets. An enthusiastic observer, Schleicher has pursued spectroscopic and spectrophotometric investigations of cometary comae using a variety of ground-based telescopes and the International Ultraviolet Explorer satellite. These studies have resulted in a better understanding of the group properties of comets and the identification of a number of peculiar objects with clearly anomalous relative abundances. Schleicher played a key role in the discovery of Comet Halley's periodic variability and in the subsequent interpretation of this behavior in terms of nuclear rotation. In addition to his observational research, Schleicher's detailed calculation of the fluorescence efficiency of OH has been extremely important to the analysis of cometary spectra. Citation provided by R. L. Millis at the request of the discoverer.

(3577) Putilin = 1969 TK

Discovered 1969 Oct. 7 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Ivan Ivanovich Putilin (1893-1954), assistant professor at the Kiev State University, known mainly for his works on minor planets. He observed minor planets and computed their orbits. His book "Malye planety" was for many years a reference source for observers and other researchers on minor planets.

(3593) Osip = 1981 EB20

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

Named in honor of David J. Osip. As an undergraduate at the Massachusetts Institute of Technology, Osip was involved in a number of projects concerning solar system occultation research, including both lunar occultations and the prediction of occultations of stars by Saturn's rings. In his current role as a research assistant at Lowell Observatory, he has

taken part in asteroid occultation chases and has participated in an extensive program of cometary research. This research has involved the observation of comets using both photoelectric photometry and CCD imaging. Citation provided by D. G. Schleicher at the request of the discoverer.

(3597) Kakkuri = 1941 UL

Discovered 1941 Oct. 15 by L. Oterma at Turku.

Named in honor of Juhani Kakkuri, since 1977 director of the Finnish Geodetic Institute, interested also in astronomy. He developed for practical use the stellar triangulation method first presented by Vaisala. The Institute measured and still measures standard baselines in various continents using the Vaisala interference method.

(3606) Pohjola = 1939 SF

Discovered 1939 Sept. 19 by Y. Vaisala at Turku.

Named for a place in the Finnish national epic Kalevala. Pohjola, ruled by the mistress Louhi, was the home of darkness, coldness and all kinds of badness, an exact opposite of Kalevala.

(3619) Nash = 1981 EU35

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

Named in honor of Douglas B. Nash of the San Juan Capistrano Research Institute, California, in recognition of his many contributions to the understanding of the compositions and processes affecting solar system bodies. Nash has achieved these advances by innovation and persistence in designing, executing and applying the results of laboratory investigations. His work on the spectral reflectances of lunar samples, meteorites, rock and mineral samples, and frozen gases has allowed comparison with and interpretation of telescopic data. His investigations of luminescence, ultraviolet irradiation, sputtering by a variety of ion species, and evaporation have led to the identification of new "space weathering" processes and a better understanding of the surfaces of the moon and the Galilean satellites of Jupiter. Citation provided by Dennis L. Matson at the request of the discoverer.

(3681) Boyan = 1974 QO2

Discovered 1974 Aug. 27 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named for Wise Boyan, the legendary old Russian stroy-teller and bard.

(3711) Ellensburg = 1983 QD

Discovered 1983 Aug. 31 by J. Gibson at Palomar.

Named by the discoverer to honor the city of his birth, established in the 1880s by the tracks of the Northern Pacific Railroad. Originally a small trading post in what was then Washington Territory, the city is named for Ellen Shoudy, wife of its founder and first mayor. The city is home to Central Washington University, originally Washington State Normal School, which this year celebrates the centennial of its founding.

(3725) Valsecchi = 1981 EA11

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

Named in honor of Giovanni B. Valsecchi, of the Istituto di Astrofisica Spaziale, Rome. Valsecchi’s work on the dynamical effects of the outer planets, principally Jupiter, on cometary orbits gave new insight to the existence of temporary captures and the evolution of cometary orbits. This work is summarized in the first "Atlas of Orbital Patterns at Close Encounters", of which he is a co-author. He was one of the first, together

with Andrea Carusi, to recognize the difficulties in reliably identifying asteroid families, and he pointed out many inconsistencies in the existing families claimed by various workers. He also contributed to the theory of the dynamical evolution of a swarm of gravitationally interacting small bodies and the understanding of three-body interactions in terms of a two-body model. His keen insight into the physical nature of problems makes it always fruitful to seek his counsel. Citation provided by Donald R. Davis at the request of the discoverer.

(3770) Nizami = 1974 QT1

Discovered 1974 Aug. 24 by L. I. Chernykh at the Crimean Astrophysical Oservatory.

Named in memory of the distinguished Azerbaijani poet and thinker Nizami Ghiandjevi Abu Mukhammed Il'yas ibn Yusub (1141-1209), whose poetry had an major influence on the development of literature in the Middle East.

(3776) Vartiovuori = 1938 GG

Discovered 1938 Apr. 5 by H. Alikoski at Turku.

Named for the hill in Turku on which Argelander's old observatory was situated. The building now includes astronomical collections in memory of Vaisala.

(3804) Drunina = 1969 TB2

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

Named in honor of the Soviet poetess Yuliya Vladimirovna Drunina.

(3811) Karma = 1953 TH

Discovered 1953 Oct. 13 by L. Oterma at Turku.

Named in memory of Birger Karma (1899-1943), mathematician, a teacher of the discoverer at school and university and one of the founders of the society Turun Ursa for amateur astronomers.

(3890) Bunin = 1976 YU5

Discovered 1976 Dec. 18 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of an outstanding Russian writer and Nobel laureate Ivan Alekseevich Bunin (1870-1953).

(3892) Dezso = 1941 HD

Discovered 1941 Apr. 19 by L. Oterma at Turku.

Named in honor of the Hungarian astronomer Dezso Lorant, an old friend of the discoverer, founder of the Observatory for Solar Physics in Debrecen and its director for many years.

(3897) Louhi = 1942 RT

Discovered 1942 Sept. 8 by Y. Vaisala at Turku.

Named for the powerful mistress of the dark and cold Pohjola, a place in the national epic Kalevala.

(3906) Chao = 1987 KE1

Discovered 1987 May 31 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named in honor of Edward C. T. Chao, geologist with the U.S. Geological Survey. A discoverer of the high-pressure silica polymorphs coesite and stishovite at Meteor Crater, Arizona, Chao was the pioneer investigator of the shock metamorphism of rocks. He studied numerous terrestrial impact structures, including especially the Ries crater in Germany, and played a

prominent role in demonstrating impact effects in the rocks brought back from the moon. Chao also carried out intensive studies of tektites and advanced key evidence that they are also the product of impacts.

(3967) Shekhtelia = 1976 YW2
Discovered 1976 Dec. 16 by L. I. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of Fyodor Osipovich Shekhtel' (1859-1926), a famous Russian architect and a bright representative of the "Russian Modern style". He designed many important buildings in Moscow and elsewhere.

(4043) Perolof = 1175 T-3
Discovered 1977 Oct. 17 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar-Schmidt plates taken by T. Gehrels.
Named in honor of Per Olof Lindblad, Swedish astronomer, director of the Stockholm Observatory at Saltsjobaden. He has served as president of the council of the European Southern Observatory and is currently a vice president of the IAU. He is the son of the astronomer Bertil Lindblad (1895-1965).

(4044) Erikhog = 5142 T-3
Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar-Schmidt plates taken by T. Gehrels.
Named in honor of Erik Hog (1932-), Danish astronomer at the Copenhagen Observatory. He is meridian circle astrometrist and designer of several instruments, including a micrometer for the Carlsberg Transit Circle. He has been involved with Hipparcos since the mission evaluation study in 1975 as a member of the science team, of the scientific advisory group for MATRA (leader of MESH-Consortium for construction of HIPPARCOS) and as team leader of the data reduction consortium of the Tycho part of the Hipparcos mission.

(4066) Haapavesi = 1940 RG
Discovered 1940 Sept. 7 by H. Alikoski at Turku.
Named for the birthplace of the discoverer's father. Haapavesi has been known for centuries for the manufacture of skis.

(4133) Heureka = 1942 DB
Discovered 1942 Feb. 17 by L. Oterma at Turku.
Named for the new science center in Vantaa, near Helsinki.

(4135) Svetlanov = 1966 PG
Discovered 1966 Aug. 14 by L. I. Chernykh and T. M. Smirnova at the Crimean Astrophysical Observatory.
Named in honor of the famous Soviet composer and conductor Evgenij Fyodorovich Svetlanov.

(4163) Saaremaa = 1941 HC
Discovered 1941 Apr. 19 by L. Oterma at Turku.
Named for an island in the Baltic. Some 2500 years ago a large iron meteorite impacted there, causing a lake 16 m deep and some smaller craters.

(4174) Pikulia = 1982 SB6
Discovered 1982 Sept. 16 by L. I. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of the famous Soviet writer Valentin Savvich Pikul' (1928-1990), author of many novels on Russian history.

(4181) Kivi = 1938 DK1
Discovered 1938 Feb. 24 by Y. Vaisala at Turku.
Named in memory of Aleksis Kivi (1834-1872), the first Finnish-language dramatist and novelist. His principal work, 'Seitseman veljesta' ('Seven brothers'), completed in 1870, was translated into many languages and also made into a movie.

(4184) Berdyayev = 1969 TJ1
Discoveredd 1969 Oct. 8 by L. I. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of the famous Russian philosopher Nikolaj Aleksandrovich Berdyayev (1874-1948).

(4196) Shuya = 1982 SA13
Discovered 1982 Sept. 16 by L. I. Chernykh at the Crimean Astrophysical Observatory.
Named for the discoverer's birthplace, a town in Central Russia. The discoverer dedicates this name to her parents, Ekaterina Il'inichna Trushechkina (1907-1950) and Ivan Mokeevich Trushechkin (1907-).

(4203) Brucato = 1985 FD3
Discovered 1985 Mar. 26 by C. S. Shoemaker and E. M. Shoemaker at Palomar.
Named for Robert J. Brucato, assistant director of the Palomar Observatory. Working with more than a dozen government agencies of the surrounding communities, he has vigorously and effectively led the effort to preserve the dark sky of Palomar. This effort has been crucial for the preservation of Palomar as a front-line astronomical observatory and has been especially important for projects such as the photographic searches for comets and minor planets. Brucato is also in charge of the new ten-year long survey of the northern sky, using the Oschin Schmidt telescope, and has directed the complete refurbishment of this telescope. He has been a strong advocate of all branches of astronomy carried out at Palomar and has helped to maintain it as one of the premier astronomical observatories in the world. Citation provided by Gerry Neugebauer at the request of the discoverers.

(4209) Briggs = 1986 TG4
Discovered 1986 Oct. 4 by E. F. Helin at Palomar.
Named in honor of Geoffrey A. Briggs, space physicist, former Director of the Solar System Exploration program at NASA headquarters, where he played a leading role in establishing the U.S.-Soviet Joint Working Group for Solar System Exploration and served as co-chairman. In the 1970s he was at JPL as an active member of the Viking Orbiter Imaging Team. Currently with the Air and Space Museum, Briggs continues to energize the presentation of Space related accomplishments to the public. The discoverer wishes to acknowledge his longterm support and enthusiasm for solar system research. The naming is heartily endorsed by Jurgen Rahe and the scientific community who have known him as a serious, hardworking scientist trying to accomplish the most with limited resources.

(4217) Engelhardt = 1988 BO2
Discovered 1988 Jan. 24 by C. S. Shoemaker and E. M. Shoemaker at Palomar.
Named in honor of Wolf von Engelhardt, professor of mineralogy, and director of the Institute of Mineralogy and Petrography, University of Tubingen, Germany, from 1957 to 1977. In Europe, von Engelhardt was a pioneer in research on impact craters and shock metamorphism of minerals and rocks. In 1962 he initiated and successfully conducted one of the

most comprehensive research programs devoted to the study of the Ries crater, Germany. Since the first return of lunar samples in 1969, he was and continues to be a Principal Investigator in NASA's lunar sample analysis program. Citation provided by Dieter Stoffler at the request of the discoverers.

(4227) Kaali = 1942 DC

Discovered 1942 Feb. 17 by L. Oterma at Turku.

Named for the place on the island of Saaremaa where a meteorite impacted 2500 years ago. In the smaller craters one can still use magnets to collect iron fragments.

(4231) Fireman = 1976 WD

Discovered 1976 Nov. 11 at the Agassiz Station of the Harvard College Observatory.

Named in memory of Edward L. Fireman (1922-1990), on the staff of the Brookhaven National Laboratory during 1950-1956 and subsequently a physicist at the Harvard-Smithsonian Center for Astrophysics. Best known for his pioneering measurements of radioactive isotopes to determine the cosmic-ray exposure ages of freshly fallen meteorites, Fireman applied the technique to lunar samples and debris from artificial satellites as well. He also developed a method for measuring the relationship of age and depth in cores of ice bored into Antarctica and Greenland and examined the implications for the earth's climatic record over the last 200 000 years. Long interested in the experimental search for neutrinos, he was in recent years particularly involved in measuring the argon 37 produced in the chlorine and potassium detectors to a depth of 1.5 km in the Homestake Mine, South Dakota.

(4235) Tatishckev = 1978 SL5

Discovered 1978 Sept. 27 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Vasilij Nikitick Tatishchev (1686-1750), an outstanding Russian scientist and statesman, fellow companion of Peter I. The first Russian historiographer, he is known also for his works in geography, cartography, philosophy and economics.

(4242) Brecher = 1981 FQ

Discovered 1981 Mar. 28 at the Agassiz Station of the Harvard College Observatory.

Named in honor of Aviva and Kenneth Brecher, each of whose research interests cover an enormous range. Both on the staff of the Massachusetts Institute of Technology in the 1970s, Kenneth has since then been a professor of physics at Boston University, working in theoretical high-energy astrophysics, x-ray and gamma-ray astronomy, observational tests and consequences of gravitational theories and cosmology, as well as in archaeoastronomy and the history of astronomy, these last with the particular view of attempting to use ancient records to establish results of astrophysical interest. Aviva's astronomical interests have been more in the area of planetary evolution, with particular attention to the effects of magnetic fields and electric conductivity in meteorites and lunar samples. Subsequently she moved to the Arthur D. Little company, where her activities included the safety of nuclear and geotechnical systems and of the environment generally, and since 1985 she has joined her husband at Boston University as director of Academic and Corporate Relations.

(4266) Waltari = 1940 YE

Discovered 1940 Dec. 28 by Y. Vaisala at Turku.

Named in memory of Mika Waltari (1908-1979), Finnish writer, from 1957 a member of the Academy of Finland. He was best known internationally for

his extensive historical novel 'Sinuhe, egyptilainen' ('Sinuhe, Egyptian'), which was translated into several languages and also filmed.

(4286) Rubtsov = 1988 PU4

Discovered 1988 Aug. 8 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of the remarkable Soviet lyric poet Nikolaj Mikhajlovich Rubtsov (1936-1971).

(4309) Marvin = 1978 QC

Discovered 1978 Aug. 30 at the Agassiz Station of the Harvard College Observatory.

Named in honor of Ursula B. Marvin, geologist at the Harvard-Smithsonian Center for Astrophysics, well-known for her outstanding mineralogical and petrologic research on meteorites and lunar samples. Her meteorite studies have focused in recent years on the rich wealth of samples from Antarctica, and she was also involved in collecting them. This work also led to her analysis of dust grains, some of them of volcanic origin, in Antarctic ice samples. Her discovery of cordierite in an Apollo 15 lunar sample strongly suggested that this particular rock must have originated more than 40 km below the lunar surface. Marvin has also been responsible for mapping sections of Ganymede, maintains a strong interest in the history of meteorites and currently serves as secretary general of the International Commission on the History of Geological Sciences.

(4361) Nezhdanova = 1977 TG7

Discovered 1977 Oct. 9 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Antonina Vasil'evna Nezhdanova (1873-1950), an outstanding Soviet singer, actress at the Bolshoj Theater and professor at the Moscow Conservatory.

(4437) Yaroshenko = 1983 GA2

Discovered 1983 Apr. 10 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Nikolaj Aleksandrovich Yaroshenko (1846-1898), well-known Russian painter, a member and one of the leaders of the nineteenth-century Russian Society of Traveling Art Exhibitions.

(4438) Sykes = 1983 WR

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

Named in honor of Mark V. Sykes, planetary scientist at the Steward Observatory of the University of Arizona, Tucson. Sykes was the first to suggest that the dust bands discovered in data from the Infrared Astronomical Satellite (IRAS) were due to the catastrophic disruptions of small asteroids and comets. He has also discovered several additional dust bands, a second type of dust trail, and identified parent comets responsible for some of the IRAS dust trails. Citation provided by E. F. Tedesco at the request of the discoverer.

(4446) Carolyn = 1985 TT

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

Named in honor of Carolyn Spellmann Shoemaker, comet and asteroid discoverer. Shoemaker began searching for asteroids in 1980, using plates taken at the U.K. Schmidt Telescope at Siding Spring. She helped develop a new photographic survey program using the 0.46-m Schmidt camera at Palomar Mountain and a newly designed stereomicroscope, which greatly increased the

efficiency of film scanning. In 1983 Shoemaker found her first near-earth asteroid, the Amor object (2299) Nefertiti, and later that year she found her first comet, 1983p. By February 1991 she had discovered 22 comets, at a rate of about one per 100 hours of scanning, and for discoveries recognized in the names of the comets she thus surpassed the tally of W. R. Brooks and moved into the all-time second place behind J.-L. Pons. Shoemaker already holds the record for finding new periodic comets: 9 by early 1991. Citation prepared by D. H. Levy and J. Mueller at the request of the discoverer.

(4449) Sobinov = 1987 RX3

Discovered 1987 Sept. 3 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Leonid Vital'evich Sobinov (1872-1934), a remarkable Russian singer, leading tenor soloist of the Bolshoj Theatre in Moscow.

(4502) Elizabethann = 1989 KG

Discovered 1989 May 29 by H. E. Holt at Palomar.

Named in honor of Elizabeth Ann Holt, daughter of the discoverer.

(4512) Sinuhe = 1939 BM

Discovered 1939 Jan. 20 by Y. Vaisala at Turku.

Named for Mika Waltari's world-renowned historical novel 'Sinuhe, egyptilainen'.

(4544) Xanthus = 1989 FB

Discovered 1989 Mar. 31 by H. E. Holt and N. G. Thomas at Palomar.

This is another Greek name for Apollo meaning the 'Fair'; as such, Xanthus delighted in high places, such as the peaks of high mountains and wavelapped promontaries in the seas.

(4551) Cochran = 1979 MC

Discovered 1979 June 28 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in honor of William C. Cochran and Anita L. Cochran, husband and wife astronomers at the University of Texas at Austin. William's broad range of research has concerned planetary (including cometary) atmospheres, Raman scattering, stellar radial velocity variations and motions in stellar chromospheres and photospheres. Using a spectroscopic radial velocity meter, he is currently surveying several dozen stars to search for reflex motions (as small as about 2 m/s) that would indicate the presence of planetary companions. Anita is a specialist in the chemistry of cometary comae and in particular how the chemistry changes with changing heliocentric distance. An assiduous observer, she has used spatially resolved spectra to help transform the photometry of comets into a quantitative discipline. She has also developed sophisticated cometary models to understand how the observed atoms, molecules, and radicals are related to the larger parent molecules present in cometary nuclei. Anita is currently a team member of the Imaging Science Subsystem of the Comet Rendezvous-Asteroid Flyby mission.

(4560) Klyuchevskij = 1976 YD2

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

Named in memory of Vasilij Osipovich Klyuchevskij (1841-1911), a famous Russian historian.

(4581) Asclepius = 1989 FC

Discovered 1989 Mar. 31 by H. E. Holt and N. G. Thomas at Palomar.

Named for the Greek god of healing and medicine, son of Apollo by Coronis. Physician to the Argonauts, many of whom he restored to life, he was killed by Zeus with a thunderbolt for attempting to resuscitate Orion, who had been murdered by Artemis, Apollo's twin sister. For avenging Asclepius' murder by killing the Cyclops who had made the thunderbolt, Apollo was banished by Zeus.

(4582) Hank = 1989 FW

Discovered 1989 Mar. 31 by H. E. Holt and N. G. Thomas at Palomar.

Named in honor of Henry Reid Holt, son of the first discoverer.

(4598) Coradini = 1985 PG1

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

Named in honor of sister and brother Angioletta and Marcello Coradini, who have very actively promoted the development of planetary sciences in Europe, particularly in Italy, during the past twenty years. At the beginning of her scientific career, Angioletta carried out theoretical work on impact processes on planetary surfaces. Later, she studied the formation of planetesimals and the origin of satellite systems. Currently at the Istituto di Astrofisica Spaziale, she is involved in a number of proposed space missions. Marcello, also an IAS member but currently at the European Space Agency, has worked on Mars, participating in the Viking Lander Imaging Team, and he has carried out laboratory experiments on hypervelocity impacts. He was involved in the exploration of Halley's Comet as a co-investigator of the Giotto Multicolor Camera Team. As a member of the ESA scientific directorate, he is contributing to both the development of the European community of planetary scientists and to planetary exploration in general. Citation provided by M. Fulchignoni at the request of the discoverer. Name endorsed by A. W. Harris.

(4628) Laplace = 1986 RU4

Discovered 1986 Sept. 7 by E. W. Elst at Rozhen.

Named in memory of the great French mathematician, astronomer and physicist, Pierre-Simon, marquis de Laplace (1749-1827). Although Newton had concluded that divine intervention was periodically required to preserve the solar system in equilibrium, Laplace managed to prove in 1773, by applying Newtonian gravitation, the invariability of planetary mean motions to the cubes of the eccentricities and inclinations. In 1786 he showed that the effects of planetary perturbations were conservative and periodic, not cumulative and disruptive; the eccentricities and inclinations of planetary orbits to each other will remain small, constant and self-correcting. In 1796 he published his famous "Exposition du systeme du monde", which treats also his "nebular hypothesis", which ascribes the origin of the solar system to the contraction of a gaseous nebula. His monumental "Traite de mecanique celeste", published between 1798 and 1827, offered a complete mechanical interpretation of the solar system. Laplace is also well known for his investigations on probability.

(4629) Walford = 1986 TD7

Discovered 1986 Oct. 7 by E. F. Helin at Palomar.

Named in honor of Roy L. Walford, professor of pathology at the UCLA School of Medicine, noted for his work in gerontology. His numerous publications include not only scientific papers, but also popular books on the subject of aging in humans. A scientist, writer, actor and explorer, he has given inspiration and encouragement to many, including the discoverer and her family.

(4664) Hanner = 1985 PJ

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

Named in honor of Martha S. Hanner, planetary scientist at the Jet Propulsion Laboratory who specializes in groundbased and space studies of particulate matter in the solar system, especially cometary dust. Her publications attest to her work as an enthusiastic observer of comets at infrared wavelengths, as an organizer of the P/Halley infrared monitoring program at the Infrared Telescope Facility on Mauna Kea, as a champion of improvements in infrared photometric standards, and on the nature of zodiacal light. She has investigated the formation of infrared spectral features in dust and the scattering properties of dust. Hanner is an energetic supporter of better science education for young people, to which end she has been a teacher and organizer of space science seminars for science teachers. Citation provided by Ray L. Newburn at the request of the discoverer.

(4665) Muinonen = 1985 TZ1

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

Named in honor of Karri O. Muinonen, planetary scientist at the Lowell Observatory. Formerly at the observatory and astrophysics laboratory of the University of Helsinki, Muinonen worked on the light-scattering properties of inhomogeneous media and independently originated the suggestion that coherent backscattering is responsible for both the opposition spike and the negative polarization of light from the surfaces of many atmosphereless bodies. He has since turned to the study of the spatial distribution of minor planets, particularly the population of planet crossers that might pose a hazard to the earth, and he has devised a new way of assessing the uncertainty of minor planet orbits, and hence ephemerides.

(4666) Dietz = 1986 JA1

Discovered 1986 May 4 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named in honor of Robert S. Dietz, geologist and professor emeritus at Arizona State University. Dietz is a pioneer in the study and recognition of terrestrial impact structures, and he was one of the early proponents of the impact origin of the craters of the moon. He championed the concept of shatter cones as diagnostic features of terrestrial impact structures and discovered shatter cones at many of the impact sites now known. On the basis of evidence from shatter cones, Dietz revived the hypothesis of impact origin of the great Vredefort Ring of South Africa and proposed an impact origin for the Sudbury Basin, Ontario.

(4680) Lohrmann = 1937 QC

Discovered 1937 Aug. 31 by H. U. Sandig at Bergedorf.

Named for Wilhelm Gotthelf Lohrmann, an amateur astronomer and author of the famous lunar topographic atlas "Topographie der sichtbaren Mondoberflache" (1824). Lorhmann was director of the Dresden "Mathematisch-Physikalischer Salon". When H. U. Sandig founded the Institute of Geodetical Astronomy at the Dresden University of Technology in 1961, he chose the name of Lohrmann for his new institute, now known as the Lohrmann Observatory.

(4689) Donn = 1980 YB

Discovered 1980 Dec. 30 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in honor of Bertram D. Donn for his fundamental contributions to our understanding of solar system astrophysics. In addition to proposing an innovative theory of cometary composition, formation and evolution, Donn

succeeded in deriving generally accepted fundamental properties of cometary nuclei that form the basis of current theories. He also carried out very original research on cometary structures using fractals and on the condensation of pre-cometary and interstellar materials. Citation provided by J. H. Rahe at the request of the discoverer.

(4693) Drummond = 1983 WH

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

Named in honor of Jack D. Drummond of the Steward Observatory, University of Arizona. Drummond's analysis of orbital similarities led to the identification of a cometary parent for the Epsilon Geminids and to the identification of streams among near-earth asteroids. He has done extensive analysis of asteroid lightcurves to find pole directions and shapes for more than 25 objects, as well as studies of phase curves which suggest the existence of both rough and smooth surfaces among the asteroids. As one of the first to apply speckle interferometry to these bodies, he developed many theoretical contributions to the analysis of speckle data and produced the first speckle images showing features on the surface of an asteroid, namely, that of (4) Vesta. His enthusiasm for studies of asteroids, comets and meteors has made him a pleasurable colleague for collaborative efforts. Citation provided by Donald R. Davis at the request of the discoverer.

(4694) Festou = 1985 PM

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

Named in honor of Michel C. Festou of the Observatoire Midi-Pyrenees, Toulouse, for his extensive and wide-ranging studies of comets, both theoretical and observational. Festou was the first to calculate a vectorial model for the dissociation of water in cometary comae, and he has made major contributions to the theoretical understanding of emission by various species, including, for example, [O I] and CN. He has been a preeminent practitioner of ultraviolet spectroscopy of comets, identifying features due to OH^+, CO_2^+ and [O I], and he has also contributed numerous ground-based observations of comets. Citation provided by Michael F. A'Hearn at the request of the discoverer.

(4696) Arpigny = 1985 TP

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

Named in honor of Claude Arpigny of the Universite de Liege, to recognize his preeminence in high-resolution cometary spectroscopy. Arpigny's fundamental studies of the excitation of molecular spectra in comets are unparalleled for care and detailed understanding. He has made significant contributions to our understanding of the emission by NH_2, [O I], CN and CH. He has also shown care and diligence by encouraging the work of others both in spectroscopy and other types of cometary studies, in his service to the community in preparing the forthcoming "Atlas of Cometary Spectra" and in various activities of IAU Commission 15. Citation provided by Michael F. A'Hearn at the request of the discoverer.

(4700) Carusi = 1986 VV6

Discovered 1986 Nov. 6 by E. Bowell at the Anderson Mesa Station of Lowell Observatory.

Named in honor of Andrea Carusi, Istituto di Astrofisica Spaziale, in recognition of his work on the dynamics of cometary orbits and studies of the identification of asteroid families. Carusi was one of the first to use numerical techniques to study the effects of close planetary encounters in changing cometary orbits and was a principal contributor to the atlas of

orbital patterns at close encounters. He identified many cases of temporary satellite capture about Jupiter and was the first, together with Giovanni Valsecchi, to recognize the importance of near-tangent orbits in the case of close planetary encounters. He was also one of the first to apply the technique of numerical cluster analysis to the problem of the identification of asteroid families, and his early result on the number of families has withstood the test of time. His enthusiasm for solar system studies has led him to deliver many popular talks on a variety of topics in planetary science for the general public. Citation provided by Donald R. Davis at the request of the discoverer.

(4701) Milani = 1986 VW6

Discovered 1986 Nov. 6 by E. Bowell at the Anderson Mesa Station of Lowell Observatory.

Named in honor of Andrea Milani of the University of Pisa for his contributions to understanding the dynamics of asteroid orbits and the use of sophisticated numerical techniques to investigate the long-term evolution of orbits in the solar system. Milani was a pioneer in applying massively parallel computers to a variety of problems in solar system dynamics, ranging from integration of outer planet orbits over timescales of hundreds of millions of years to the evolution of hundreds of asteroids moving on orbits crossing that of the earth and other planets. He contributed to the development of refined proper elements for more than 4000 mainbelt asteroids and to the identification of secular resonances throughout the solar system. His very intense and energetic style of doing research has resulted in an impressive number of contributions so far in his career. Citation provided by Donald R. Davis at the request of the discoverer.

(4711) Kathy = 1989 KD

Discovered 1989 May 31 by H. E. Holt at Palomar.

Named in honor of Kathleen Garnette Moeller, daughter of the discoverer.

(4732) Froeschle = 1981 JG

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

Named in honor of Claude and Christiane Froeschle, Observatoire de la Cote d'Azur, Nice. Husband and wife, the Froeschles have both contributed to our understanding of the dynamics of minor bodies (minor planets, comets, meteorites and dust particles) by numerical analysis of their orbital evolution. Claude was one of the first to investigate ergodic and chaotic regions in mean-motion resonances with Jupiter. He tested the so-called gravitational hypothesis for the formation of the Kirkwood gaps and showed that meteor streams situated in mean motion resonances may break into seperate parts. He also modeled the dynamical evolution of short-period comets using a Monte Carlo method. Christiane was one of the first to explore orbital evolution at secular resonances. She has shown that the principal secular resonances are good candidate sources for meteorites. Citation provided by H. Scholl at the request of the discoverer.

(4735) Gary = 1983 AN

Discovered 1983 Jan. 9 by E. Bowell at the Anderson Mesa Station of Lowell Observatory.

Named in honor of George Gary Shoemaker, manager of Meteor Crater Enterprises, Inc., on the occasion of the Asteroids, Comets, Meteors 1991 Conference in Flagstaff, Arizona, with which his company is associated. As manager of the visitor facilities and museum at Meteor Crater, Arizona, Shoemaker has played a leading role in the preservation of this National Natural Landmark and its associated meteorites and in developing the presentation of the scientific story of the crater to the public. He has

consistently encouraged and supported research at the crater and the use of the crater for educational purposes. Citation provided by E. M. Shoemaker at the request of the discoverer.

(4736) Johnwood = 1983 AF2

Discovered 1983 Jan. 13 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named for John A. Wood, geologist at the Harvard-Smithsonian Center for Astrophysics, associate director of the planetary sciences division from 1981 to 1986. For more than 30 years, Wood has been a leading investigator of the petrography and petrology of chondritic meteorites as samples of primordial planetary materials. He also studied lunar rocks, beginning with those returned from the Apollo 11 mission. Wood is renowned for his theory that lunar anorthosites accumulated from a global magma ocean that developed very early in the history of the moon.

(4745) Nancymarie = 1989 NG1

Discovered 1989 July 9 by H. E. Holt at Palomar.

Named in honor of Nancy Marie Martinez, daughter of the discoverer.

(4765) Wasserburg = 1986 JN1

Discovered 1986 May 5 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named for Gerald J. Wasserburg, professor of geology and geophysics at the California Institute of Technology. One of the pioneers in the development of techniques of isotopic age determination, Wasserburg is famous for the very high precision ages obtained in his laboratory for lunar rocks. These ages have provided much of the primary chronological control for deciphering the history of evolution of the moon. He has also carried out extensive investigations of the ages of meteorites and developed key evidence bearing on the earliest history of the solar system and of nucleosynthesis events that predate the solar system.

(4768) Hartley = 1988 PH1

Discovered 1988 Aug. 11 by A. J. Noymer at Siding Spring.

Named in honor of Malcolm Hartley, deputy astronomer in charge of the U.K. Schmidt telescope at Siding Spring, with which this minor planet was discovered. Among his own discoveries are the Amor object 1988 SM and ten comets, eight of which are of short period.

(4769) Castalia = 1989 PB

Discovered 1989 Aug. 9 by E. F. Helin at Palomar.

Named for Castalia, a nymph pursued by Apollo. Fleeing his attention, she dived into the earth, whence a spring burst forth and was given her name. The mythical spring, on Mount Parnassus at Delphi, was the site of the most important oracle to ancient Greece. Castalia was sacred to the muses and was considered a divine source of poetic inspiration. The name also refers to a genus of aquatic plants of the water-lily family, distinguished by rounded, floating leaves and large, fragrant flowers of various colors. Name suggested by S. Ostro, who captured the stunning radar images of 1989 PB soon after its discovery.

(4783) Wasson = 1983 AH1

Discovered 1983 Jan. 12 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named for John T. Wasson, cosmochemist and professor at the University of California at Los Angeles. Wasson is the leading investigator of the chemistry of iron meteorites and developed the chemical classification scheme for irons now in general use. He has written extensively on the

origin and evolution of meteorites, their asteroid parent bodies and the solar nebula. With his student and colleague Frank T. Kyte, Wasson has also contributed important observations and insights on the geochemical signature left in the stratigraphic record by the impact of large extraterrestrial bodies on the earth.

(4788) Simpson = 1986 TL1

Discovered 1986 Oct. 4 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in honor of Robert W. L. Simpson, English composer, who this year has celebrated his 70th birthday. Simpson's musical character has been mainly expressed in his symphonies and string quartets, which are influenced by Beethoven, Bruckner and Sibelius. The discoverer has long regarded Simpson as one of the greatest musical structuralists. An astronomer by avocation, Simpson is a fellow of the Royal Astronomical Society.

(4789) Sprattia = 1987 UU2

Discovered 1987 Oct. 20 by D. D. Balam at the Climenhaga Observatory of the University of Victoria.

Named in honor of Christopher E. Spratt, an active amateur member of the Royal Astronomical Society of Canada for 20 years, with special interests in comets, minor planets, meteors and variable stars. He has written numerous articles on these subjects, including some on Canadian meteorites, in the Journal of the Royal Astronomical Society of Canada, and he has been of much practical help to the astrometric program carried out at the University of Victoria. Spratt maintains a carefully-chosen representative collection of meteorites and was coordinator for the northwest North American section of the Amateur Observation Network of the International Halley Watch. He has contributed more than 32 000 observations of long-period and semiregular variable stars and dwarf novae to the American Association of Variable Star Observers and in 1976 was the most prolific observer of that year. The Chant Medal of the Royal Astronomical Society of Canada was bestowed upon him in 1988. Spratt holds an honors diploma in horticulture and, as a professional member of the gardening staff at the University of Victoria, does much to make the university a pleasant place in which to work. Citation provided by J. B. Tatum at the request of the discoverer.

(4791) Iphidamas = 1988 PB1

Discovered 1988 Aug. 14 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named for the huge, stalwart son of the Trojan counselor Antenor and brother of Agenor. During the battle near the Greek encampment, Iphidamas thrust his spear into Agamemnon, who was saved by his war belt. Pulling the spear toward himself, Agamemnon then killed Iphidamas with a sword stroke to the neck.

(4792) Lykaon = 1988 RK1

Discovered 1988 Sept. 10 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named for the brother of Polydoros and a son of Priam; born of the queen Laothoe. Some years before the Trojan war, Achilles captured Lykaon and sold him into slavery, but Lykaon made his way back to Troy, only to be killed by Achilles beside the River Skamander. Name and citation provided by Richard Preston at the request of the discoverers.

(4797) Ako = 1989 SJ

Discovered 1989 Sept. 30 by T. Nomura and K. Kawanishi at Minami-Oda Observatory.

Named for a city in Hyogo Prefecture and its ancient castle on the Seto inland sea. Ako is famous for its salt production and the story of "Chushin-Gura", which shows the loyalty of samurais to their local lord. Three centuries ago 47 loyal samurais committed harakari after avenging their master. The second discoverer, by profession a dentist, lives in Ako and observes comets and minor planets at his private observatory there.

(4802) Khatchaturian = 1989 UA7

Discovered 1989 Oct. 23 by F. Borngen at Tautenburg.

Named for the Armenian composer Aram Khatchaturian (1903-1978), well known for his ballets "Gajaneh" and "Spartakus", as well as for instrumental pieces such as the "Sabre Dance". His compositions combine in melody, rhythm and orchestration the national folk music of the Transcaucasus with the traditions of classical symphonic music.

(4803) Birkle = 1989 XA

Discovered 1989 Dec. 1 by J. M. Baur at Chions.

Named in honor of Kurt Birkle, since 1974 the local director of the Calar Alto Observatory, which is managed in close cooperation with the Max-Planck-Institut fur Astronomie in Heidelberg. As an MPI collaborator Birkle performed pioneering work on site testing in mediterranean and other countries for a new large observatory. He is also an expert in astrophotography, well known for his observations of comets.

(4805) Asteropaios = 1990 VH7

Discovered 1990 Nov. 13 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named for the leader of the Paionians, among the greatest of the Trojan allies. Spear-throwing Asteropaios, considered by Sarpedon to be one of the bravest warriors, challenged and wounded Achilles but was slain in the encounter.

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EPHEMERIDES.

1991 EE a,e,i = 2.25, 0.62, 10 Elements MPC 18437

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1991 06	13	10 39.92	+20 34.7	0.734	1.067	73.2	65.7	20.3
1991 06	23	10 57.99	+20 18.4					
1991 07	03	11 18.38	+19 54.4	0.621	0.924	63.4	79.7	20.1
1991 07	13	11 40.39	+19 28.0					
1991 07	23	12 03.33	+19 05.4	0.453	0.848	55.8	98.0	20.0
1991 08	02	12 26.94	+18 51.0					
1991 08	12	12 53.08	+18 41.5	0.261	0.870	50.2	116.4	19.9
1991 08	22	13 30.80	+18 15.9					
1991 09	01	15 07.46	+14 52.4	0.082	0.979	66.3	109.3	17.2
1991 09	11	20 19.96	-09 08.2					
1991 09	21	22 43.05	-16 47.0	0.144	1.139	157.6	19.7	15.6
1991 10	01	23 22.42	-17 11.7					
1991 10	11	23 40.68	-16 30.4	0.356	1.318	149.6	22.6	17.9
1991 10	21	23 52.81	-15 21.2					
1991 10	31	00 03.03	-13 56.0	0.614	1.501	136.9	26.9	19.5

1991 JW a,e,i = 1.04, 0.12, 9 Elements MPC 18442

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1991 06	13	11 26.80	-16 26.8	0.166	1.051	97.8	73.2	18.3
1991 06	18	11 22.66	-19 41.6					
1991 06	23	11 19.27	-22 48.6	0.176	1.031	89.8	80.3	18.6

1991 06 28	11 16.26	-25 48.1						
1991 07 03	11 13.31	-28 40.1	0.184	1.011	83.0	86.6	18.9	
1991 07 08	11 10.14	-31 24.4						
1991 07 13	11 06.52	-34 00.9	0.189	0.991	76.9	92.4	19.1	
1991 07 18	11 02.12	-36 28.8						
1991 07 23	10 56.59	-38 46.0	0.190	0.972	71.5	97.9	19.4	
1991 07 28	10 49.62	-40 49.4						
1991 08 02	10 41.01	-42 35.1	0.187	0.955	66.4	103.3	19.6	
1991 08 07	10 30.66	-43 58.8						
1991 08 12	10 18.65	-44 55.8	0.183	0.941	61.6	108.5	19.8	
1991 08 17	10 05.17	-45 20.5						
1991 08 22	09 50.70	-45 06.6	0.176	0.929	57.4	113.5	19.9	
1991 08 27	09 36.05	-44 09.0						
1991 09 01	09 22.23	-42 25.2	0.168	0.920	53.9	117.6	20.1	

1991 JY a,e,i = 0.95, 0.30, 49 Elements MPC 18443

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1991 06 13		11 42.04	-42 47.3	0.371	1.191	109.3	53.6	16.7
1991 06 23		11 27.00	-44 13.9					
1991 07 03		11 23.04	-45 28.2	0.618	1.220	93.3	56.3	17.9
1991 07 13		11 24.97	-46 46.5					
1991 07 23		11 30.58	-48 14.7	0.829	1.225	82.5	55.3	18.5
1991 08 02		11 38.79	-49 54.2					
1991 08 12		11 49.23	-51 45.8	0.985	1.207	74.3	53.9	18.8
1991 08 22		12 01.82	-53 50.4					
1991 09 01		12 16.77	-56 07.8	1.071	1.166	68.1	53.4	18.9
1991 09 11		12 34.74	-58 37.9					
1991 09 21		12 56.91	-61 19.7	1.076	1.102	63.9	54.9	18.9

1991 JX a,e,i = 2.53, 0.60, 2 Elements MPC 18443

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1991 06 13		19 09.27	+46 36.5	0.034	1.025	106.1	72.1	13.7
1991 06 18		22 12.87	+41 31.3					
1991 06 23		23 24.33	+33 08.4	0.065	1.012	84.8	91.6	15.8
1991 06 28		23 55.93	+27 55.1					
1991 07 03		00 13.46	+24 38.5	0.109	1.017	86.9	86.9	16.8
1991 07 08		00 24.52	+22 24.9					
1991 07 13		00 31.90	+20 46.1	0.153	1.038	93.7	77.8	17.2
1991 07 18		00 36.77	+19 26.7					
1991 07 23		00 39.73	+18 17.8	0.193	1.074	102.4	67.5	17.5
1991 07 28		00 41.06	+17 13.8					
1991 08 02		00 40.89	+16 10.8	0.231	1.123	112.4	56.6	17.6
1991 08 07		00 39.27	+15 05.6					
1991 08 12		00 36.29	+13 56.4	0.267	1.183	123.9	45.3	17.7
1991 08 17		00 32.12	+12 42.6					
1991 08 22		00 26.99	+11 24.3	0.305	1.251	136.6	33.8	17.8
1991 08 27		00 21.15	+10 02.6					
1991 09 01		00 14.86	+08 39.0	0.350	1.324	150.0	22.4	17.9
1991 09 06		00 08.42	+07 15.5					
1991 09 11		00 02.11	+05 54.4	0.406	1.401	163.5	11.8	18.0
1991 09 16		23 56.23	+04 38.0					
1991 09 21		23 51.01	+03 28.2	0.477	1.480	175.3	3.2	18.1
1991 09 26		23 46.59	+02 26.5					
1991 10 01		23 43.05	+01 33.3	0.565	1.560	169.5	6.7	18.7
1991 10 06		23 40.42	+00 49.0					
1991 10 11		23 38.71	+00 13.7	0.671	1.641	158.5	12.9	19.5
1991 10 16		23 37.92	-00 13.1					
1991 10 21		23 37.97	-00 31.9	0.794	1.722	148.2	17.7	20.1

1991 DB a,e,i = 1.72, 0.40, 11 Elements MPC 18437

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1991	06 13	19 13.09	+30 54.7	0.281	1.180	119.6	48.5	17.9
1991	06 23	19 05.97	+24 40.0					
1991	07 03	18 58.33	+17 45.0	0.329	1.284	139.0	31.3	18.0
1991	07 13	18 51.99	+10 38.0					
1991	07 23	18 48.47	+03 54.8	0.423	1.397	149.3	21.8	18.4
1991	08 02	18 48.43	-01 56.5					
1991	08 12	18 51.84	-06 45.3	0.578	1.512	142.1	24.3	19.3
1991	08 22	18 58.47	-10 32.7					
1991	09 01	19 07.80	-13 25.7	0.791	1.625	128.6	29.0	20.3

(4341) Poseidon a,e,i = 1.84, 0.68, 12 Elements MPC 15692

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1991	07 23	23 35.92	-15 27.7	1.707	2.483	129.8	18.3	19.7
1991	08 02	23 32.53	-17 09.0					
1991	08 12	23 25.53	-19 14.9	1.433	2.368	150.5	12.2	19.0
1991	08 22	23 14.67	-21 39.2					
1991	09 01	23 00.19	-24 09.6	1.255	2.241	163.6	7.3	18.4
1991	09 11	22 43.05	-26 29.2					
1991	09 21	22 25.08	-28 20.6	1.190	2.101	146.3	15.4	18.4
1991	10 01	22 08.45	-29 33.0					
1991	10 11	21 55.09	-30 04.7	1.220	1.947	122.3	25.7	18.7
1991	10 21	21 46.21	-30 00.3					
1991	10 31	21 42.17	-29 27.2	1.295	1.777	101.1	33.3	18.8
1991	11 10	21 42.78	-28 31.6					
1991	11 20	21 47.62	-27 17.5	1.363	1.590	83.5	38.1	18.8
1991	11 30	21 56.12	-25 47.0					
1991	12 10	22 07.83	-24 00.2	1.389	1.386	69.1	41.6	18.6
1991	12 20	22 22.38	-21 55.8					
1991	12 30	22 39.44	-19 31.5	1.348	1.165	57.5	45.4	18.3
1992	01 09	22 58.82	-16 43.7					
1992	01 19	23 20.32	-13 27.4	1.220	0.932	48.6	52.3	17.8
1992	01 29	23 43.56	-09 36.2					
1992	02 08	00 07.75	-05 01.5	0.993	0.712	42.2	68.4	17.3
1992	02 18	00 30.67	+00 25.5					
1992	02 28	00 47.31	+06 53.0	0.673	0.591	35.5	103.0	17.4

1991 DG a,e,i = 1.43, 0.36, 11 Elements MPC 18128

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1991	07 23	00 24.05	+34 18.9	0.321	1.106	97.7	65.6	18.6
1991	07 28	00 23.70	+32 17.6					
1991	08 02	00 22.04	+30 05.6	0.322	1.160	108.8	55.9	18.4
1991	08 07	00 19.00	+27 39.9					
1991	08 12	00 14.54	+24 58.3	0.323	1.215	121.9	45.1	18.2
1991	08 17	00 08.80	+21 59.7					
1991	08 22	00 01.99	+18 45.6	0.329	1.271	136.8	33.0	18.0
1991	08 27	23 54.42	+15 19.4					
1991	09 01	23 46.42	+11 46.6	0.346	1.327	153.1	20.1	17.8
1991	09 06	23 38.36	+08 14.2					
1991	09 11	23 30.66	+04 50.1	0.379	1.381	169.2	7.9	17.7
1991	09 16	23 23.67	+01 41.3					
1991	09 21	23 17.66	-01 07.3	0.433	1.434	172.2	5.4	17.9
1991	09 26	23 12.78	-03 33.0					
1991	10 01	23 09.10	-05 35.3	0.506	1.485	159.4	13.7	18.7
1991	10 06	23 06.63	-07 15.0					
1991	10 11	23 05.36	-08 33.7	0.595	1.534	147.4	20.5	19.3
1991	10 16	23 05.20	-09 33.6					
1991	10 21	23 06.08	-10 17.0	0.699	1.580	136.9	25.5	19.9

1991 10 26	23 07.88	-10 46.1					
1991 10 31	23 10.50	-11 02.9	0.815	1.624	127.6	29.0	20.4

Periodic Comet Arend — Elements MPC 13042

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1991 08 12	06 41.98	+37 59.5	2.618	1.983	41.9	20.0	20.1
1991 08 22	07 10.06	+37 58.0					
1991 09 01	07 36.79	+37 41.6	2.556	2.054	49.7	22.0	20.2
1991 09 11	08 01.96	+37 13.9					
1991 09 21	08 25.36	+36 38.4	2.477	2.135	58.7	23.7	20.3
1991 10 01	08 46.85	+35 58.7					
1991 10 11	09 06.34	+35 18.6	2.375	2.226	69.2	24.8	20.4
1991 10 21	09 23.67	+34 41.4					
1991 10 31	09 38.74	+34 10.2	2.253	2.322	81.4	25.0	20.4
1991 11 10	09 51.37	+33 47.9					
1991 11 20	10 01.35	+33 36.8	2.116	2.424	95.8	23.9	20.5
1991 11 30	10 08.43	+33 38.1					
1991 12 10	10 12.33	+33 52.4	1.983	2.529	112.5	21.1	20.5
1991 12 20	10 12.79	+34 18.0					
1991 12 30	10 09.70	+34 51.2	1.881	2.637	131.5	16.2	20.6
1992 01 09	10 03.13	+35 26.0					
1992 01 19	09 53.61	+35 54.5	1.846	2.746	150.6	10.1	20.7
1992 01 29	09 42.08	+36 08.9					
1992 02 08	09 29.81	+36 03.5	1.911	2.855	159.3	7.0	21.0

Periodic Comet Tsuchinshan 2 — Elements MPC 14593

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1991 09 01	03 31.96	+26 38.4	2.434	2.796	100.3	20.8	20.9
1991 09 11	03 38.96	+27 21.4					
1991 09 21	03 44.06	+27 58.5	2.087	2.690	116.6	19.5	20.4
1991 10 01	03 46.90	+28 28.4					
1991 10 11	03 47.10	+28 49.4	1.780	2.584	135.0	15.9	19.9
1991 10 21	03 44.41	+28 58.6					
1991 10 31	03 38.87	+28 53.1	1.540	2.479	155.6	9.5	19.4
1991 11 10	03 30.89	+28 30.1					
1991 11 20	03 21.41	+27 48.8	1.394	2.375	170.8	3.8	19.0
1991 11 30	03 11.78	+26 51.9					
1991 12 10	03 03.44	+25 45.5	1.354	2.274	152.7	11.5	18.7
1991 12 20	02 57.69	+24 38.4					
1991 12 30	02 55.30	+23 38.5	1.404	2.177	130.8	20.0	18.6
1992 01 09	02 56.59	+22 51.5					
1992 01 19	03 01.56	+22 19.9	1.512	2.086	111.7	26.0	18.6
1992 01 29	03 09.95	+22 03.3					
1992 02 08	03 21.46	+21 59.7	1.647	2.003	95.8	29.3	18.6
1992 02 18	03 35.75	+22 05.9					
1992 02 28	03 52.50	+22 18.1	1.788	1.930	82.7	30.6	18.6
1992 03 09	04 11.42	+22 32.7					
1992 03 19	04 32.25	+22 45.7	1.923	1.869	71.8	30.4	18.6
1992 03 29	04 54.72	+22 53.6					
1992 04 08	05 18.58	+22 53.1	2.052	1.823	62.6	29.2	18.7
1992 04 18	05 43.56	+22 41.6					
1992 04 28	06 09.39	+22 16.8	2.174	1.794	54.8	27.3	18.7
1992 05 08	06 35.82	+21 37.1					
1992 05 18	07 02.56	+20 41.7	2.294	1.782	47.9	24.9	18.8
1992 05 28	07 29.37	+19 30.6					
1992 06 07	07 56.05	+18 04.2	2.416	1.790	41.6	22.1	18.9
1992 06 17	08 22.40	+16 23.6					
1992 06 27	08 48.31	+14 30.4	2.542	1.815	35.6	19.0	19.1

Periodic Comet Skiff-Kosai (1976 XVI) Elements MPC 13042

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		m2
1991	09 01	07 56.22	+21 48.1	3.535	2.847	-0.86	+1.6	20.3
1991	09 11	08 12.41	+21 08.2					
1991	09 21	08 27.94	+20 25.3	3.342	2.847	-0.91	+2.2	20.2
1991	10 01	08 42.69	+19 40.6					
1991	10 11	08 56.57	+18 55.5	3.117	2.850	-0.96	+2.8	20.0
1991	10 21	09 09.41	+18 11.6					
1991	10 31	09 21.09	+17 30.7	2.869	2.856	-1.03	+3.4	19.8
1991	11 10	09 31.42	+16 54.7					
1991	11 20	09 40.20	+16 25.4	2.612	2.867	-1.12	+4.1	19.7
1991	11 30	09 47.23	+16 04.9					
1991	12 10	09 52.26	+15 54.8	2.364	2.881	-1.24	+4.8	19.5
1991	12 20	09 55.09	+15 56.6					
1991	12 30	09 55.58	+16 10.7	2.151	2.899	-1.39	+5.5	19.3
1992	01 09	09 53.69	+16 36.8					
1992	01 19	09 49.58	+17 12.6	2.006	2.920	-1.55	+5.9	19.2
1992	01 29	09 43.67	+17 54.4					
1992	02 08	09 36.64	+18 37.4	1.960	2.944	-1.63	+5.8	19.1
1992	02 18	09 29.36	+19 16.3					
1992	02 28	09 22.74	+19 47.0	2.027	2.971	-1.58	+5.2	19.3
1992	03 09	09 17.55	+20 06.9					
1992	03 19	09 14.34	+20 14.9	2.198	3.001	-1.44	+4.5	19.5
1992	03 29	09 13.35	+20 11.3					
1992	04 08	09 14.59	+19 56.8	2.443	3.033	-1.27	+4.0	19.8
1992	04 18	09 17.96	+19 32.6					
1992	04 28	09 23.20	+18 59.6	2.731	3.068	-1.12	+3.7	20.0
1992	05 08	09 30.05	+18 18.8					
1992	05 18	09 38.27	+17 31.0	3.036	3.105	-0.99	+3.6	20.3
1992	05 28	09 47.60	+16 36.8					
1992	06 07	09 57.84	+15 36.9	3.337	3.144	-0.88	+3.5	20.6
1992	06 17	10 08.79	+14 31.8					
1992	06 27	10 20.31	+13 22.2	3.620	3.184	-0.78	+3.4	20.8

Periodic Comet Smirnova-Chernykh Elements MPC 14593

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1991	09 01	08 24.46	+22 44.3	4.540	3.753	34.6	8.8	19.0
1991	09 11	08 36.75	+22 12.4					
1991	09 21	08 48.53	+21 40.3	4.325	3.734	48.4	11.6	18.9
1991	10 01	08 59.71	+21 09.0					
1991	10 11	09 10.16	+20 39.6	4.063	3.716	62.9	13.8	18.7
1991	10 21	09 19.77	+20 13.4					
1991	10 31	09 28.40	+19 51.5	3.768	3.698	78.4	15.2	18.6
1991	11 10	09 35.90	+19 35.4					
1991	11 20	09 42.08	+19 26.4	3.458	3.682	95.2	15.5	18.4
1991	11 30	09 46.79	+19 25.8					
1991	12 10	09 49.83	+19 34.5	3.158	3.666	113.7	14.2	18.1
1991	12 20	09 51.06	+19 53.1					
1991	12 30	09 50.39	+20 21.1	2.900	3.652	133.9	11.2	17.9
1992	01 09	09 47.81	+20 57.3					
1992	01 19	09 43.48	+21 39.2	2.720	3.638	155.5	6.4	17.8
1992	01 29	09 37.76	+22 23.3					
1992	02 08	09 31.16	+23 05.4	2.647	3.626	172.0	2.2	17.7
1992	02 18	09 24.34	+23 41.5					
1992	02 28	09 18.01	+24 08.6	2.692	3.615	155.2	6.6	17.7
1992	03 09	09 12.79	+24 25.0					
1992	03 19	09 09.17	+24 30.1	2.843	3.605	133.9	11.5	17.8
1992	03 29	09 07.41	+24 24.5					
1992	04 08	09 07.61	+24 09.1	3.069	3.596	114.2	14.7	18.0

1992 04 18	09 09.73	+23 45.1						
1992 04 28	09 13.61	+23 13.4	3.335	3.589	96.4	16.2	18.2	
1992 05 08	09 19.07	+22 34.9						
1992 05 18	09 25.92	+21 50.4	3.612	3.583	80.3	16.2	18.3	
1992 05 28	09 33.93	+21 00.4						
1992 06 07	09 42.93	+20 05.4	3.877	3.578	65.5	15.0	18.5	
1992 06 17	09 52.74	+19 05.8						
1992 06 27	10 03.21	+18 02.1	4.114	3.575	51.8	12.9	18.6	
1992 07 07	10 14.22	+16 54.5						
1992 07 17	10 25.65	+15 43.6	4.310	3.573	38.7	10.2	18.7	
1991 08 12	21 36.24	-17 33.5	1.807	2.819	176.1	1.4	15.2	
- 8.31 -0.14	- 37.5	+ 1.6	(4863)	18405	- 5.20	+1.06	- 12.8	+ 5.7
1991 09 11	21 13.76	-18 56.4	1.921	2.825	147.8	10.9	15.9	
1991 08 12	21 55.41	+09 59.8	1.738	2.683	153.4	9.7	18.0	
- 7.78 -0.29	-105.6	-12.9	1982 FN	10762	- 5.56	+0.95	-143.1	+ 1.2
1991 09 11	21 33.14	+03 20.6	1.804	2.743	153.7	9.4	18.1	
1991 08 12	21 57.89	-09 38.3	1.281	2.285	169.7	4.6	16.2	
-10.29 -0.44	- 12.0	- 3.1	1980 FH12	16228	- 7.20	+1.33	- 9.9	+ 3.3
1991 09 11	21 28.37	-10 22.8	1.361	2.306	153.6	11.2	16.7	
1991 08 12	22 01.12	-10 42.2	1.070	2.075	169.5	5.1	15.2	
-13.56 -1.07	+ 73.2	+ 1.4	1984 QR	14349	-11.82	+1.62	+ 77.8	- 0.2
1991 09 11	21 18.03	-06 52.3	1.022	1.966	151.4	14.2	15.3	
1991 08 12	22 01.61	-22 41.7	0.965	1.968	168.2	6.0	16.1	
- 9.69 -0.76	- 24.0	+ 6.0	1974 SX1	11057	- 6.66	+1.61	+ 33.5	+10.6
1991 09 11	21 32.67	-22 35.8	0.998	1.937	150.1	15.0	16.5	
1991 08 12	22 01.04	-04 21.2	1.632	2.626	165.5	5.5	18.3	
- 8.61 -0.38	- 41.0	- 5.6	1979 MY2	18105	- 6.51	+1.00	- 49.6	+ 2.7
1991 09 11	21 35.82	-06 52.2	1.712	2.663	155.8	8.9	18.6	
1991 08 12	21 58.00	-03 10.9	0.769	1.768	165.0	8.5	14.4	
- 4.51 -0.63	- 49.9	-12.2	1987 SJ	12455	- 1.97	+1.38	- 74.9	+ 4.6
1991 09 11	21 44.55	-06 49.3	0.792	1.767	158.0	12.3	14.6	
1991 08 12	22 02.26	-08 31.1	1.736	2.736	168.1	4.4	18.0	
- 8.58 -0.46	- 53.6	- 3.8	2114 T-2	15727	- 7.07	+0.93	- 51.2	+ 4.3
1991 09 11	21 36.21	-11 23.1	1.770	2.718	155.3	8.9	18.2	
1991 08 12	22 02.13	-00 31.0	0.751	1.744	162.2	10.2	16.2	
- 6.52 -0.65	- 81.7	-14.4	1981 EO27	8288	- 3.49	+1.49	-104.8	+ 6.8
1991 09 11	21 43.15	-05 50.2	0.813	1.785	157.7	12.4	16.5	
1991 08 12	22 03.96	-11 01.3	1.786	2.788	169.1	4.0	17.3	
- 7.89 -0.50	- 64.7	- 3.0	1989 BN1	14622	- 6.79	+0.85	- 56.2	+ 5.4
1991 09 11	21 39.44	-14 18.4	1.795	2.742	155.2	8.9	17.6	
1991 08 12	22 04.40	+04 04.2	1.696	2.663	158.0	8.2	16.1	
- 6.90 -0.46	- 21.6	- 9.7	3034 P-L	15423	- 5.70	+0.84	- 59.5	- 1.9
1991 09 11	21 43.11	+01 48.2	1.698	2.652	156.6	8.7	16.2	
1991 08 12	22 05.65	-06 27.4	1.167	2.165	166.2	6.4	16.0	
- 8.08 -0.73	- 53.3	- 7.4	1953 VX1	14011	- 6.64	+1.19	- 62.2	+ 4.6
1991 09 11	21 40.01	-09 42.8	1.160	2.122	156.5	10.9	16.1	

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1991 08 12    22 07.54   -17 33.4    0.713    1.719   169.0     6.4    14.6
- 8.15  -0.81  +  8.6  + 2.6  1974 SR1  18412  - 4.84  +1.68  + 42.2  + 6.8
1991 09 11    21 43.43   -16 24.8    0.772    1.738   155.3    14.0    15.1

1991 08 12    22 07.34   -07 54.5    1.842    2.838   166.8     4.7    16.3
- 7.65  -0.49  - 66.8  - 4.4  (4528)    16566  - 6.65  +0.80  - 66.0  + 4.4
1991 09 11    21 43.52   -11 30.0    1.860    2.815   157.0     8.0    16.5

1991 08 12    22 06.54   +06 23.0    1.567    2.526   155.7     9.5    17.6
- 7.04  -0.56  - 51.1  -12.5  1981 EO7   8392  - 6.07  +0.88  - 99.5  - 2.1
1991 09 11    21 44.23   +02 17.8    1.536    2.492   156.7     9.2    17.5

1991 08 12    22 08.38   -12 55.3    0.876    1.880   168.7     6.1    16.1
- 7.78  -0.81  - 49.1  - 2.8  1978 SL6  13853  - 5.53  +1.45  - 27.0  + 8.8
1991 09 11    21 44.23   -15 10.9    0.914    1.879   156.0    12.6    16.4

1991 08 12    22 08.56   +04 37.4    2.138    3.097   157.0     7.3    16.1
- 6.50  -0.35  - 68.1  - 8.5  1979 FA3  16576  - 5.45  +0.67  - 94.1  + 0.4
1991 09 11    21 48.75   +00 17.7    2.184    3.142   158.3     6.8    16.2

1991 08 12    22 10.93   -08 47.1    1.575    2.572   166.5     5.3    18.0
- 8.52  -0.65  - 49.2  - 4.4  1063 T-2  15075  - 7.71  +0.92  - 48.8  + 4.4
1991 09 11    21 43.69   -11 30.4    1.563    2.521   157.0     9.0    18.1

1991 08 12    22 11.91   -17 36.4    1.618    2.618   168.0     4.6    16.5
- 9.14  -0.54  - 32.5  + 1.4  1990 FP1  16587  - 7.57  +1.01  -  4.8  + 6.7
1991 09 11    21 43.99   -18 42.1    1.681    2.625   154.4     9.5    16.9

1991 08 12    22 12.50   -07 50.2    0.987    1.985   165.7     7.3    16.5
- 8.30  -0.72  - 56.4  - 6.1  1988 RD3  16430  - 6.09  +1.33  - 52.2  + 6.7
1991 09 11    21 47.13   -10 56.9    1.054    2.023   158.0    10.8    16.8

1991 08 12    22 11.83   -18 02.1    0.780    1.784   167.9     6.8    17.2
- 7.33  -0.89  - 43.7  + 1.9  1978 VV6  15701  - 5.01  +1.52  +  3.1  +11.2
1991 09 11    21 48.84   -19 20.3    0.829    1.793   155.0    13.7    17.6

1991 08 12    22 13.51   -20 32.2    2.004    3.000   166.9     4.4    15.3
- 6.45  -0.49  - 91.8  + 1.4  1983 CF1  16869  - 5.78  +0.70  - 56.3  + 9.2
1991 09 11    21 52.95   -24 28.7    2.064    2.994   152.7     8.9    15.6

1991 08 12    22 21.70   -22 00.4    1.923    2.913   164.5     5.3    18.2
- 8.91  -0.57  - 53.1  + 2.9  1986 GD   13858  - 8.07  +0.83  - 14.7  + 8.4
1991 09 11    21 53.63   -23 52.2    1.990    2.924   153.2     8.9    18.4

1991 08 12    22 20.99   -01 48.4    1.746    2.721   160.2     7.2    16.9
- 7.47  -0.69  - 39.3  - 7.5  1979 SL7  12697  - 7.56  +0.70  - 62.5  + 0.6
1991 09 11    21 55.90   -04 36.2    1.687    2.659   160.8     7.1    16.8

1991 08 12    22 21.50   -26 05.0    1.474    2.460   162.6     7.1    16.1
- 7.76  -0.81  - 65.9  + 4.7  1987 VU   16026  - 7.32  +0.96  -  8.4  +12.4
1991 09 11    21 55.61   -28 10.6    1.486    2.414   150.5    11.9    16.3

1991 08 12    22 17.45   +02 40.5    0.900    1.877   157.4    12.0    15.9
- 4.65  -0.76  -115.6  -15.9  1987 SG1  13687  - 3.44  +1.09  -143.6  + 7.2
1991 09 11    22 01.90   -04 31.3    0.956    1.939   162.3     9.1    15.9

1991 08 12    22 23.67   -22 08.2    1.403    2.394   164.1     6.7    15.9
- 9.23  -0.74  - 49.8  + 3.9  1983 GR   18423  - 8.04  +1.09  -  1.7  +10.2
1991 09 11    21 54.36   -23 37.1    1.470    2.413   153.5    10.7    16.2
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1991 08 12	22 23.87	-16 24.6	1.184	2.179	165.3	6.8	17.6
- 8.88	-1.06	- 30.1	- 0.2	1973 ST3	14943	- 9.01	+1.08	- 1.7	+ 8.5
1991 09 11	21 53.06	-17 28.5	1.138	2.102	156.9	10.9	17.6
1991 08 12	22 22.89	-14 50.2	1.925	2.917	165.5	5.0	16.7
- 7.26	-0.57	- 46.0	- 0.7	1989 EY1	18431	- 6.88	+0.69	- 28.7	+ 5.8
1991 09 11	21 59.36	-16 54.4	1.952	2.912	158.4	7.3	16.8
1991 08 12	22 22.07	-13 34.1	2.176	3.167	165.5	4.6	17.8
- 6.77	-0.54	- 42.2	- 1.4	1977 DQ3	16021	- 6.70	+0.58	- 31.2	+ 4.7
1991 09 11	21 59.81	-15 35.5	2.159	3.121	159.2	6.6	17.8
1991 08 12	22 22.06	-16 08.6	1.188	2.184	165.7	6.6	14.2
- 5.52	-0.85	-121.0	- 3.0	(4522)	16564	- 5.42	+0.93	- 86.1	+13.2
1991 09 11	22 02.36	-21 49.3	1.193	2.152	156.1	10.9	14.3
1991 08 12	22 28.56	+01 02.1	1.585	2.548	-1.40	-8.0	16.1
- 7.85	-0.75	- 27.1	- 9.0	1988 XE1	16234	- 7.86	+0.77	- 59.0	- 0.6
1991 09 11	22 02.19	-01 22.3	1.567	2.543	-1.40	-8.3	16.0
1991 08 12	22 30.25	-25 32.2	2.041	3.018	161.2	6.2	16.9
- 7.59	-0.66	- 77.7	+ 3.4	1989 AG	14205	- 7.65	+0.66	- 32.1	+10.3
1991 09 11	22 04.94	-28 29.8	2.080	3.004	151.6	9.2	17.1
1991 08 12	22 32.11	-29 34.4	2.104	3.070	158.6	6.9	16.1
- 8.29	-0.61	- 40.9	+ 5.8	1987 VA1	18428	- 7.87	+0.74	+ 10.0	+ 9.6
1991 09 11	22 05.38	-30 28.0	2.178	3.092	150.0	9.4	16.3
1991 08 12	22 31.71	+00 42.5	1.895	2.854	156.6	8.1	16.0
- 7.52	-0.67	+ 8.3	- 6.7	1986 SD2	17205	- 7.76	+0.61	- 20.2	- 2.0
1991 09 11	22 06.42	+00 16.1	1.866	2.842	162.6	6.1	15.9
1991 08 12	22 32.30	-01 23.8	2.418	3.378	157.9	6.5	17.1
- 6.08	-0.52	- 31.5	- 5.5	1989 GB1	16877	- 6.43	+0.43	- 49.0	+ 0.1
1991 09 11	22 11.78	-03 34.9	2.376	3.358	164.7	4.5	16.9
1991 08 12	22 34.87	-30 56.9	2.404	3.362	157.3	6.7	16.1
- 6.62	-0.61	- 74.0	+ 4.8	(4436)	16217	- 6.93	+0.53	- 24.5	+10.4
1991 09 11	22 12.43	-33 34.9	2.452	3.350	148.2	9.1	16.3
1991 08 12	22 36.34	-11 19.9	1.934	2.914	161.6	6.3	16.7
- 6.86	-0.67	- 38.8	- 2.5	1989 CU8	15563	- 7.23	+0.57	- 32.1	+ 4.4
1991 09 11	22 12.93	-13 18.9	1.931	2.909	163.1	5.8	16.7
1991 08 12	22 43.33	-05 18.2	1.387	2.356	157.8	9.4	17.8
- 7.64	-0.88	- 55.8	- 6.7	1990 DD2	17444	- 7.99	+0.79	- 63.1	+ 4.4
1991 09 11	22 16.79	-08 37.3	1.419	2.408	165.6	6.0	17.7
1991 08 12	22 45.45	-36 49.7	1.589	2.528	151.7	10.9	17.2
- 7.96	-1.01	- 46.7	+ 9.9	1975 VV2	16421	- 8.41	+0.88	+ 36.0	+14.9
1991 09 11	22 17.41	-37 14.9	1.627	2.521	145.4	13.1	17.3
1991 08 12	22 48.39	-11 43.4	1.121	2.099	158.9	10.0	16.5
- 8.31	-1.15	- 18.1	- 3.0	2018 P-L	17218	- 9.01	+0.96	- 7.7	+ 5.8
1991 09 11	22 18.51	-12 38.3	1.141	2.128	164.6	7.2	16.5
1991 08 12	22 47.89	-37 02.8	1.863	2.794	151.2	10.0	15.6
- 7.52	-0.89	- 57.6	+ 8.8	1990 HR	16700	- 8.07	+0.73	+ 16.7	+13.7
1991 09 11	22 21.52	-38 13.2	1.926	2.810	144.8	11.9	15.8

1991 08 12	22 49.09	-24 07.9	1.776	2.742	157.9	8.0	16.0		
- 7.16	-0.93	- 55.9	+ 2.4	1989 EV	14479	- 8.53	+0.56	- 12.8	+10.6
1991 09 11	22 22.81	-26 06.2	1.745	2.695	155.8	8.8	16.0		
1991 08 12	22 48.01	-00 40.6	1.167	2.126	154.3	11.9	17.7		
- 4.74	-1.17	- 76.9	-14.2	1980 RC	14781	- 7.33	+0.52	-125.7	+ 0.7
1991 09 11	22 26.80	-06 12.0	1.052	2.048	168.5	5.6	17.1		
1991 08 12	23 07.40	-21 35.6	0.928	1.894	154.4	13.4	16.5		
-13.71	-1.86	+ 25.5	+ 6.4	1988 EL	15712	-15.22	+1.47	+ 85.2	+ 9.8
1991 09 11	22 17.79	-18 55.7	0.923	1.902	160.7	10.1	16.4		
1991 08 12	22 49.36	-18 27.3	2.186	3.154	159.1	6.6	15.8		
- 5.93	-0.69	- 72.3	- 0.3	(4557)	16691	- 6.96	+0.40	- 48.1	+ 7.6
1991 09 11	22 28.00	-21 42.3	2.188	3.154	160.1	6.2	15.8		
1991 08 12	22 51.93	-04 15.1	1.551	2.508	155.4	9.7	16.6		
- 5.55	-0.93	- 43.6	- 7.4	1973 SC6	14943	- 7.26	+0.46	- 61.8	+ 2.1
1991 09 11	22 30.15	-07 10.7	1.490	2.486	169.2	4.4	16.2		
1991 08 12	22 57.03	-09 58.5	2.437	3.390	156.4	6.9	17.1		
- 6.49	-0.63	- 50.6	- 2.7	1980 DO	13685	- 7.44	+0.35	- 46.6	+ 3.9
1991 09 11	22 34.33	-12 36.3	2.449	3.440	167.9	3.5	17.0		
1991 08 12	22 56.53	-08 22.8	1.939	2.895	156.0	8.2	16.1		
- 6.01	-0.76	- 38.9	- 3.8	(4462)	16404	- 7.17	+0.42	- 39.9	+ 3.5
1991 09 11	22 34.59	-10 34.4	1.942	2.937	169.0	3.7	15.9		
1991 08 12	22 57.40	+00 05.3	1.799	2.735	152.0	10.0	18.3		
- 5.73	-0.89	- 49.1	- 8.8	1989 EC3	15894	- 7.70	+0.34	- 79.9	- 0.2
1991 09 11	22 35.00	-03 23.9	1.704	2.702	170.4	3.6	17.9		
1991 08 12	22 59.37	-06 03.7	2.478	3.421	154.5	7.3	17.9		
- 5.49	-0.67	- 35.3	- 4.2	1988 CN2	15711	- 6.98	+0.24	- 43.9	+ 1.6
1991 09 11	22 39.00	-08 13.1	2.397	3.395	171.0	2.7	17.5		
1991 08 12	23 02.18	+00 18.1	1.970	2.897	150.9	9.8	16.4		
- 5.75	-0.78	- 68.7	- 8.0	4594 P-L	16439	- 7.21	+0.35	- 91.1	+ 1.4
1991 09 11	22 40.67	-03 59.0	1.952	2.952	171.9	2.8	16.1		
1991 08 12	23 19.11	-45 53.6	1.828	2.692	141.0	13.7	17.2		
- 9.80	-1.64	- 90.7	+10.2	1977 RL	13853	-13.74	+0.59	+ 11.4	+20.7
1991 09 11	22 39.66	-48 12.1	1.796	2.618	136.3	15.4	17.2		
1991 08 12	23 05.77	-14 57.1	2.400	3.347	155.1	7.3	16.6		
- 5.26	-0.72	- 56.3	- 1.7	1989 GL5	14796	- 6.98	+0.22	- 44.5	+ 5.4
1991 09 11	22 45.67	-17 41.7	2.352	3.337	165.7	4.3	16.4		
1991 08 12	23 12.76	-09 10.6	1.538	2.481	152.4	10.9	17.6		
- 6.45	-1.09	- 48.3	- 4.8	1990 FW1	16587	- 8.83	+0.41	- 47.4	+ 5.2
1991 09 11	22 47.07	-11 52.7	1.521	2.520	170.7	3.7	17.3		
1991 08 12	23 21.19	-09 49.9	1.194	2.136	150.6	13.5	16.8		
- 6.44	-1.47	- 26.1	- 5.2	1988 TJ2	18291	-10.41	+0.38	- 26.2	+ 5.5
1991 09 11	22 52.49	-11 28.1	1.137	2.138	171.8	3.8	16.3		
1991 08 12	23 17.57	-20 54.0	1.858	2.795	152.2	9.7	17.7		
- 5.56	-1.03	- 96.7	- 0.6	1990 KC1	18295	- 8.34	+0.23	- 63.3	+10.9
1991 09 11	22 54.39	-25 15.5	1.837	2.801	159.3	7.3	17.6		

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1991 08 12    23 19.62   +00 32.8    1.620    2.531   147.0    12.6    16.8
- 5.41  -1.14  + 15.4  - 7.0  1982 TK3  13687  - 8.96  +0.14  - 18.0  - 3.0
1991 09 11    22 55.71   +00 21.4    1.496    2.499   173.1     2.8    16.2

1991 08 12    23 14.51   -11 37.2    2.155    3.090   152.6     8.7    17.2
- 4.17  -0.84  - 91.9  - 4.9  1988 BK4  13451  - 6.73  +0.10  - 91.2  + 5.5
1991 09 11    22 56.44   -16 31.1    2.056    3.048   167.9     4.0    16.9

1991 08 12    23 19.49   -05 20.8    1.670    2.596   149.6    11.4    17.0
- 4.86  -1.06  - 26.3  - 6.0  1982 UT6  16425  - 7.93  +0.18  - 41.4  + 1.7
1991 09 11    22 58.03   -07 16.6    1.588    2.593   175.7     1.7    16.4

1991 08 12    23 24.47   -10 22.9    1.274    2.210   149.9    13.3    17.0
- 6.15  -1.36  - 32.8  - 4.7  1324 T-2  15080  - 9.65  +0.37  - 29.3  + 5.9
1991 09 11    22 57.56   -12 15.6    1.250    2.251   171.9     3.6    16.6

1991 08 12    23 19.15   +09 36.7    2.202    3.064   141.8    11.8    16.2
- 4.79  -0.83  -  1.6  - 8.8  (4554)    16690  - 7.13  +0.14  - 47.7  - 5.3
1991 09 11    22 59.50   +08 16.4    2.111    3.098   166.3     4.4    15.8

1991 08 12    23 24.50   +00 30.5    1.621    2.525   146.0    13.0    16.8
- 6.14  -1.11  - 14.8  - 8.2  1990 DX   16241  - 9.03  +0.27  - 46.0  - 1.1
1991 09 11    22 59.21   -01 13.6    1.582    2.586   174.9     2.0    16.3

1991 08 12    23 26.39   -09 14.9    1.855    2.775   149.2    10.8    16.7
- 6.41  -1.11  - 12.0  - 3.5  1943 DL   15873  - 9.90  +0.11  - 14.5  + 3.0
1991 09 11    22 59.68   -10 06.6    1.736    2.740   174.0     2.2    16.1

1991 08 12    23 20.05   -02 10.4    1.829    2.743   148.2    11.2    17.7
- 4.62  -0.95  - 58.7  - 7.7  1977 RG    9765  - 7.28  +0.17  - 79.8  + 1.6
1991 09 11    23 00.14   -05 55.4    1.772    2.777   176.7     1.2    17.1

1991 08 12    23 22.60   -03 37.2    2.598    3.501   148.2     8.8    17.4
- 4.61  -0.74  - 30.2  - 4.8  1988 BZ1  13450  - 6.97  +0.04  - 45.3  + 0.4
1991 09 11    23 03.78   -05 39.9    2.466    3.472   177.7     0.7    16.8

1991 08 12    23 19.43   +04 29.7    0.997    1.917   144.9    17.7    16.8
- 1.69  -1.42  -  4.9  -14.2  1987 RO3  15248  - 6.38  +0.13  - 74.5  - 5.9
1991 09 11    23 04.50   +02 15.6    0.905    1.907   172.4     4.0    16.1

1991 08 12    23 23.96   +03 59.6    1.398    2.299   144.3    14.9    16.9
- 3.26  -1.21  -  6.9  -10.7  1977 PE1  18414  - 7.31  +0.06  - 59.0  - 4.6
1991 09 11    23 05.77   +02 09.7    1.281    2.284   172.6     3.3    16.2

1991 08 12    23 37.52   -36 36.6    2.286    3.157   143.3    11.1    17.5
- 7.72  -1.21  - 84.8  + 5.0  1986 AK   12959  -11.36  +0.16  - 21.7  +14.5
1991 09 11    23 06.38   -39 34.0    2.272    3.153   145.5    10.4    17.4

1991 08 12    23 29.17   +14 44.3    2.406    3.219   136.6    12.5    17.7
- 5.14  -0.91  + 41.6  - 7.8  1988 BK5  14355  - 8.42  -0.05  - 10.1  - 8.4
1991 09 11    23 07.25   +15 32.8    2.217    3.179   159.3     6.4    17.2

1991 08 12    23 26.10   +00 05.7    1.112    2.032   145.8    16.3    16.6
- 2.74  -1.44  - 10.8  -11.0  1987 QW7  14620  - 7.84  +0.03  - 58.3  - 2.6
1991 09 11    23 07.52   -01 53.3    0.997    2.003   176.6     1.7    15.7

1991 08 12    23 23.73   +02 56.3    1.342    2.248   144.9    15.0    18.2
- 2.57  -1.19  - 80.6  -13.9  1981 EO40 10623  - 6.44  +0.09  -131.3  - 0.5
1991 09 11    23 07.87   -02 46.2    1.256    2.262   177.4     1.2    17.4
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1991 08 12	23 31.51	-03 38.0	1.784	2.686	146.2	12.1	18.1		
- 5.43	-1.15	- 33.6	- 7.0	1986 EZ4	14618	- 9.40	+0.01	- 55.8	+ 0.7
1991 09 11	23 07.14	-06 06.2	1.646	2.653	178.2	0.7	17.3		
1991 08 12	23 27.78	-05 10.5	1.802	2.712	147.6	11.5	18.2		
- 4.32	-1.05	- 66.5	- 7.5	1985 CH2	10310	- 7.82	+0.03	- 84.3	+ 2.6
1991 09 11	23 07.57	-09 15.4	1.692	2.697	175.6	1.6	17.5		
1991 08 12	23 35.38	-05 55.8	1.237	2.153	146.1	15.2	17.0		
- 5.70	-1.54	+ 44.5	- 4.0	1981 EH11	11838	-10.75	+0.13	+ 29.6	- 0.4
1991 09 11	23 07.65	-04 11.2	1.146	2.152	178.4	0.7	16.1		
1991 08 12	23 30.17	-07 30.4	1.157	2.086	147.8	15.0	16.2		
- 4.01	-1.43	- 72.2	- 8.1	1972 KL	17196	- 8.24	+0.22	- 77.5	+ 7.0
1991 09 11	23 08.74	-11 43.0	1.138	2.142	173.3	3.2	15.8		
1991 08 12	23 32.61	-00 12.3	1.515	2.413	144.5	14.1	17.1		
- 4.00	-1.27	- 22.6	- 9.2	1989 CA	14359	- 8.78	-0.09	- 61.6	- 2.1
1991 09 11	23 11.28	-02 31.4	1.353	2.359	177.4	1.1	16.2		
1991 09 11	23 13.13	+29 18.0	1.295	2.201	-2.52	+1.5	17.1		
- 6.41	-0.03	-163.5	-25.3	1987 UW	12961	- 1.79	+1.37	-246.4	+ 0.9
1991 10 11	22 58.26	+18 14.4	1.283	2.193	-2.28	+0.8	17.0		
1991 09 11	23 13.44	+18 53.3	0.869	1.835	156.1	12.9	14.8		
- 7.15	+0.10	- 78.1	-19.3	1987 KB	13606	- 0.99	+1.62	-123.0	+ 4.6
1991 10 11	22 58.44	+13 07.3	0.977	1.904	149.1	15.6	15.2		
1991 09 11	23 14.44	-23 06.3	2.152	3.125	162.0	5.7	18.1		
- 9.40	+0.04	- 25.7	+ 8.2	1981 GG	10544	- 5.66	+1.07	+ 28.0	+ 8.4
1991 10 11	22 49.96	-23 03.0	2.326	3.126	136.4	12.7	18.6		
1991 09 11	23 15.17	-01 52.3	1.145	2.151	176.8	1.5	15.2		
-10.53	-0.03	+ 21.6	- 2.0	1972 AU	13602	- 5.05	+1.60	+ 26.1	+ 3.2
1991 10 11	22 48.80	-00 50.3	1.250	2.153	146.2	15.0	16.0		
1991 09 11	23 16.17	-13 39.7	0.779	1.781	171.4	4.9	17.6		
- 8.36	+0.02	- 31.3	+ 8.7	1978 VT9	5318	- 1.84	+1.78	+ 38.9	+12.0
1991 10 11	22 57.62	-13 34.1	0.890	1.793	143.3	19.4	18.5		
1991 09 11	23 16.47	-08 00.2	1.724	2.730	176.9	1.1	17.5		
- 7.83	-0.01	- 63.8	+ 2.0	4641 P-L	14629	- 4.20	+1.09	- 28.9	+ 8.3
1991 10 11	22 56.42	-10 30.8	1.869	2.745	144.6	12.2	18.3		
1991 09 11	23 18.90	-22 29.6	1.163	2.145	162.5	8.1	16.6		
- 8.50	-0.19	- 60.1	+11.9	1979 YQ	12705	- 3.84	+1.53	+ 30.0	+15.1
1991 10 11	22 57.20	-23 20.5	1.234	2.082	137.5	18.9	17.0		
1991 09 11	23 20.11	-07 13.3	1.964	2.970	177.2	1.0	17.0		
- 7.29	-0.11	- 44.7	+ 0.9	1974 SP1	13169	- 4.52	+0.94	- 19.8	+ 6.6
1991 10 11	23 00.45	-09 00.6	2.049	2.932	146.1	10.9	17.6		
1991 09 11	23 21.82	+03 26.9	0.766	1.768	171.2	5.0	15.1		
- 7.79	-0.26	- 52.5	- 8.8	1988 VF1	14026	- 2.38	+1.79	- 52.0	+ 8.4
1991 10 11	23 02.78	+00 18.1	0.815	1.752	149.8	16.7	15.7		
1991 09 11	23 22.54	-12 31.7	1.739	2.740	172.2	2.9	16.7		
- 9.30	-0.09	- 41.4	+ 4.2	7571 P-L	11522	- 5.72	+1.15	+ 0.3	+ 8.3
1991 10 11	22 57.73	-13 40.9	1.864	2.730	143.3	12.6	17.3		

1991 09 11	23 23.27	-05 16.8	1.196	2.202	177.4	1.2	16.3		
- 8.16	-0.22	- 93.7	- 0.6	1984 SX5	12579	- 4.15	+1.38	- 54.8	+11.7
1991 10 11	23 01.86	-09 22.4	1.267	2.170	146.3	14.8	17.0		
1991 09 11	23 23.59	-06 37.7	2.488	3.493	176.9	0.9	18.0		
- 7.02	-0.06	- 46.3	+ 0.8	(4406)	16015	- 4.70	+0.77	- 25.5	+ 5.5
1991 10 11	23 04.49	-08 34.1	2.626	3.507	147.2	8.9	18.6		
1991 09 11	23 28.94	-04 01.2	1.520	2.525	175.9	1.6	16.5		
- 7.85	-0.28	- 81.8	- 1.7	1987 SG2	15887	- 5.03	+1.12	- 56.7	+ 9.0
1991 10 11	23 07.03	-07 48.8	1.566	2.470	148.1	12.3	17.1		
1991 09 11	23 29.36	-01 10.9	1.841	2.845	174.3	2.0	16.3		
- 7.48	-0.14	- 94.1	- 1.9	1990 LA	16880	- 4.74	+0.96	- 73.1	+ 7.9
1991 10 11	23 09.00	-05 39.7	1.956	2.861	149.5	10.2	16.9		
1991 09 11	23 32.70	+11 51.8	1.208	2.189	162.4	8.0	17.2		
- 9.88	-0.47	+ 19.0	-10.9	1981 DX1	14946	- 6.54	+1.45	- 24.0	- 1.7
1991 10 11	23 04.51	+11 27.1	1.226	2.153	150.8	13.1	17.4		
1991 09 11	23 33.26	-01 43.7	1.170	2.173	173.9	2.8	15.3		
-10.12	-0.43	- 29.1	- 2.7	1976 EB	14185	- 6.51	+1.47	- 14.9	+ 6.7
1991 10 11	23 04.81	-03 07.0	1.210	2.131	149.4	13.8	15.8		
1991 09 11	23 34.41	+04 43.7	1.461	2.456	168.8	4.6	16.2		
-10.03	-0.18	- 8.2	- 5.6	1977 DR1	13454	- 6.26	+1.26	- 17.7	+ 2.5
1991 10 11	23 07.31	+03 49.9	1.586	2.509	151.5	10.9	16.7		
1991 09 11	23 35.80	-07 09.0	0.915	1.919	173.9	3.2	15.5		
- 5.94	-0.46	- 99.9	- 0.3	1987 QN7	15558	- 2.62	+1.42	- 47.8	+15.2
1991 10 11	23 19.47	-11 19.3	0.952	1.879	149.0	15.9	16.1		
1991 09 11	23 42.37	-06 58.7	1.859	2.861	172.4	2.7	16.4		
- 7.74	-0.27	- 47.1	+ 0.8	1986 QB1	12133	- 5.61	+0.91	- 20.4	+ 7.1
1991 10 11	23 20.17	-08 51.6	1.951	2.863	150.5	9.9	16.9		
1991 09 11	23 43.50	-07 21.8	1.354	2.355	172.0	3.4	15.8		
- 8.67	-0.51	- 67.3	+ 0.2	1989 BY	14359	- 6.41	+1.19	- 31.5	+10.3
1991 10 11	23 17.72	-10 08.8	1.379	2.295	149.3	12.8	16.3		
1991 09 11	23 46.83	-00 35.1	1.625	2.623	170.4	3.7	15.0		
- 6.97	-0.33	- 50.0	- 2.5	1986 VT	14619	- 4.88	+0.94	- 37.7	+ 6.1
1991 10 11	23 26.73	-03 02.6	1.713	2.650	154.6	9.3	15.4		
1991 09 11	23 49.89	-01 36.5	1.339	2.337	170.1	4.2	17.4		
- 8.62	-0.58	- 44.8	- 3.1	1989 EL6	14956	- 6.75	+1.14	- 31.4	+ 7.0
1991 10 11	23 23.63	-03 49.6	1.351	2.289	153.5	11.2	17.6		
1991 09 11	23 51.21	+07 02.4	1.051	2.039	164.6	7.5	16.7		
-10.06	-0.40	- 52.1	- 8.8	1978 NQ1	15875	- 6.16	+1.47	- 59.9	+ 5.8
1991 10 11	23 23.43	+03 47.1	1.170	2.120	155.5	11.3	17.2		
1991 09 11	23 52.21	-07 34.7	1.688	2.685	169.9	3.8	16.6		
- 8.22	-0.47	- 65.6	+ 0.4	1989 AZ5	14954	- 6.70	+0.93	- 34.2	+ 8.9
1991 10 11	23 27.22	-10 20.2	1.726	2.645	151.2	10.5	17.0		
1991 09 11	23 52.10	-12 20.9	1.838	2.830	167.9	4.3	17.5		
- 7.89	-0.35	-125.1	+ 3.9	1986 EN	16426	- 6.03	+0.89	- 69.1	+12.8
1991 10 11	23 28.94	-17 28.6	1.977	2.866	146.9	11.0	18.0		

1991 09 11	23 52.08	+03 43.3	1.796	2.786	166.8	4.7	17.4
- 7.19	-0.37	- 91.6	- 5.1	1977 EF1	16694	- 5.55	+0.85	- 86.9	+ 6.4
1991 10 11	23 30.73	-01 05.8	1.862	2.805	156.2	8.3	17.7
1991 09 11	23 55.76	+32 28.9	1.692	2.555	141.1	14.3	17.8
- 9.72	-0.86	- 27.9	-19.4	1988 WC	16875	- 9.27	+1.05	-136.6	-12.8
1991 10 11	23 23.73	+28 10.0	1.530	2.437	148.4	12.4	17.4
1991 09 11	23 55.07	-11 45.7	1.726	2.718	167.6	4.6	15.3
- 8.37	-0.39	- 21.7	+ 3.5	1981 TJ4	14947	- 6.47	+0.95	+ 15.6	+ 7.7
1991 10 11	23 30.33	-12 02.7	1.818	2.733	150.8	10.3	15.6
1991 09 11	23 56.00	-35 31.8	0.963	1.893	147.9	16.4	16.2
- 8.65	-0.76	-176.9	+27.4	1990 BW	16436	- 5.27	+1.64	+ 2.9	+26.6
1991 10 11	23 30.66	-39 50.7	1.116	1.911	129.1	23.9	16.8
1991 09 11	23 54.83	-05 26.9	1.865	2.861	169.6	3.7	17.5
- 7.31	-0.48	- 49.8	- 0.8	4601 P-L	15727	- 6.35	+0.79	- 29.7	+ 6.9
1991 10 11	23 32.00	-07 40.5	1.863	2.793	153.6	9.1	17.7
1991 09 11	23 56.78	+02 19.6	1.390	2.382	166.8	5.5	16.5
- 8.77	-0.56	- 47.9	- 5.1	1977 RD7	12568	- 6.93	+1.10	- 45.8	+ 5.6
1991 10 11	23 30.17	-00 20.8	1.437	2.385	156.3	9.7	16.8
1991 09 11	23 57.03	+27 44.0	1.656	2.551	145.5	12.9	14.4
- 6.82	-0.56	- 12.3	-16.0	1986 YA	11633	- 5.58	+0.94	- 89.5	- 7.2
1991 10 11	23 35.65	+24 55.2	1.632	2.560	152.5	10.4	14.3
1991 09 11	23 58.28	-04 20.5	1.771	2.765	168.7	4.1	15.3
- 7.10	-0.42	- 56.9	- 0.7	1986 RF13	14949	- 5.74	+0.82	- 35.1	+ 7.2
1991 10 11	23 36.70	-06 53.2	1.844	2.781	155.0	8.7	15.6
1991 09 11	00 03.03	-00 21.3	1.239	2.231	166.6	6.0	17.2
- 9.02	-0.80	- 34.2	- 4.0	6568 P-L	12583	- 7.92	+1.14	- 26.4	+ 6.4
1991 10 11	23 34.02	-02 11.4	1.237	2.189	156.6	10.4	17.3
1991 09 11	00 04.96	+14 19.6	1.315	2.275	156.7	10.1	17.5
- 8.73	-0.58	- 40.7	-12.2	1979 KO1	15877	- 6.72	+1.14	- 77.5	+ 1.1
1991 10 11	23 38.62	+10 57.8	1.391	2.351	159.1	8.7	17.7
1991 09 11	00 06.95	+07 32.9	1.149	2.128	161.5	8.6	16.5
- 8.11	-0.89	- 10.1	- 8.9	1987 QZ1	15067	- 7.38	+1.13	- 36.5	+ 1.4
1991 10 11	23 39.97	+06 04.1	1.133	2.098	159.8	9.5	16.5
1991 09 11	00 06.85	+15 30.1	1.099	2.058	155.5	11.7	16.0
- 7.33	-0.89	- 28.2	-15.2	1970 WD	14184	- 6.51	+1.15	- 86.7	- 1.6
1991 10 11	23 42.30	+12 12.7	1.078	2.044	159.7	9.7	15.9
1991 09 11	00 05.89	-04 16.1	1.727	2.717	166.8	4.9	16.7
- 6.69	-0.56	- 44.8	- 1.2	1969 TQ1	11746	- 6.10	+0.75	- 26.6	+ 6.8
1991 10 11	23 44.27	-06 18.2	1.737	2.684	156.9	8.4	16.8
1991 09 11	00 08.28	-06 34.0	1.302	2.292	166.1	6.0	16.3
- 8.13	-0.78	- 73.5	- 0.7	1981 WR	14017	- 7.32	+1.03	- 38.5	+11.0
1991 10 11	23 41.76	-09 43.9	1.320	2.262	154.4	11.0	16.6
1991 09 11	00 11.67	-06 49.9	1.379	2.367	165.3	6.2	16.7
- 9.65	-0.71	- 34.1	+ 0.8	(4548)	16573	- 8.33	+1.08	- 2.9	+ 8.4
1991 10 11	23 41.40	-07 59.3	1.439	2.383	155.4	10.1	16.9

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1991 09 11    00 10.56   -14 38.3    2.056    3.033   162.9     5.6    16.4
- 7.58  -0.47  - 42.9  + 3.9  1979 FQ2  14472  - 6.77  +0.71  -  1.0  + 8.9
1991 10 11    23 46.85   -15 53.3    2.136    3.048   151.0     9.1    16.7

1991 09 11    00 12.07   +01 03.1    0.823    1.812   164.0     8.8    15.9
- 7.93  -1.01  - 27.9  - 5.9  1988 VM3  16431  - 6.49  +1.39  - 22.4  + 7.3
1991 10 11    23 45.98   -00 36.9    0.866    1.836   159.9    10.8    16.1

1991 09 11    00 12.63   -06 37.3    1.766    2.751   165.1     5.4    16.0
- 7.98  -0.55  - 53.3  + 0.4  (4597)    17004  - 7.10  +0.80  - 25.5  + 7.9
1991 10 11    23 47.51   -08 49.4    1.841    2.783   156.1     8.4    16.2

1991 09 11    00 14.62   -01 27.3    1.568    2.551   164.2     6.2    17.0
- 8.14  -0.78  - 42.2  - 3.1  1989 CN1  14478  - 8.12  +0.81  - 32.7  + 6.1
1991 10 11    23 47.29   -03 36.8    1.543    2.501   159.0     8.2    17.0

1991 09 11    00 18.95   +18 53.6    1.893    2.816   151.0    10.0    17.3
-10.63  -0.82  + 26.7  -10.2  1986 EJ   16871  -10.76  +0.81  - 27.2  - 5.7
1991 10 11    23 43.82   +18 44.6    1.857    2.806   157.6     7.8    17.1

1991 09 11    00 12.67   -02 21.6    2.297    3.279   164.8     4.6    17.3
- 6.66  -0.53  - 55.2  - 2.3  1967 DA   13043  - 6.76  +0.52  - 46.6  + 5.1
1991 10 11    23 50.61   -05 07.8    2.254    3.206   158.9     6.4    17.3

1991 09 11    00 16.09   +01 53.2    1.887    2.864   162.8     6.0    17.1
- 6.34  -0.60  - 85.2  - 5.1  1051 T-2  15075  - 6.35  +0.62  - 83.1  + 5.9
1991 10 11    23 54.81   -02 39.5    1.876    2.839   161.1     6.6    17.1

1991 09 11    00 21.12   +02 12.5    1.104    2.083   161.5     8.8    16.0
- 9.22  -0.90  - 26.6  - 5.4  1990 DM3  17444  - 8.17  +1.18  - 26.4  + 5.4
1991 10 11    23 51.18   +00 33.0    1.165    2.136   161.5     8.5    16.2

1991 09 11    00 16.48   -13 11.0    1.934    2.910   162.3     6.0    16.2
- 5.74  -0.57  - 95.5  + 2.3  1977 DS2  13463  - 5.65  +0.60  - 50.6  +11.3
1991 10 11    23 57.24   -17 06.7    1.983    2.900   151.6     9.4    16.4

1991 09 11    00 23.09   +02 29.1    1.456    2.430   160.9     7.8    17.9
- 7.38  -0.83  - 70.1  - 6.1  3395 T-3  18134  - 7.56  +0.79  - 69.6  + 6.4
1991 10 11    23 57.68   -01 23.5    1.454    2.425   162.3     7.2    17.9

1991 09 11    00 26.66   -01 03.7    1.063    2.042   161.2     9.2    16.6
- 8.18  -1.13  - 38.8  - 4.1  1977 DY8  15403  - 8.55  +1.05  - 26.2  + 7.9
1991 10 11    23 57.52   -03 03.6    1.063    2.034   161.4     9.0    16.6

1991 09 11    00 23.40   +01 58.5    1.879    2.850   161.0     6.6    16.1
- 6.38  -0.64  - 49.3  - 4.2  (4466)    16405  - 6.61  +0.59  - 49.0  + 4.4
1991 10 11    00 01.65   -00 44.8    1.878    2.850   163.5     5.7    16.1

1991 09 11    00 27.79   +00 39.1    1.587    2.558   160.4     7.6    18.1
- 7.45  -0.88  - 48.6  - 4.5  1989 AW6  14955  - 8.27  +0.66  - 46.5  + 5.4
1991 10 11    00 01.35   -02 02.0    1.545    2.516   162.8     6.7    18.0

1991 09 11    00 25.48   +17 41.8    1.528    2.458   151.0    11.4    16.6
- 6.03  -0.85  - 57.1  -13.7  1981 DQ   16423  - 6.68  +0.68  -112.3  - 2.3
1991 10 11    00 03.57   +13 06.7    1.467    2.443   164.4     6.3    16.3

1991 09 11    00 29.04   +04 49.3    0.887    1.861   158.6    11.4    16.3
- 7.53  -1.27  + 10.8  - 7.6  1977 QD2   9213  - 8.02  +1.15  -  9.3  + 2.0
1991 10 11    00 01.23   +04 33.6    0.895    1.877   165.0     7.9    16.2
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1991 09 11    00 29.82   +00 40.4    1.336    2.308   159.9     8.6    16.7
- 7.08  -0.89  - 86.9  - 5.1  (4518)    16562  - 7.34  +0.81  - 74.4  + 8.9
1991 10 11    00 05.06   -03 47.6    1.369    2.341   162.6     7.3    16.8

1991 09 11    00 31.77   +04 58.2    1.362    2.326   157.9     9.4    18.1
- 7.28  -0.88  - 79.2  - 7.3  3453 T-3  16590  - 7.52  +0.81  - 82.2  + 6.5
1991 10 11    00 06.44   +00 30.3    1.398    2.376   165.1     6.2    18.1

1991 09 11    00 33.31   +06 34.1    1.292    2.253   156.8    10.1    17.0
- 7.57  -1.08  - 39.0  - 8.5  1988 WB   14356  - 8.75  +0.78  - 59.3  + 2.9
1991 10 11    00 05.38   +03 45.5    1.253    2.235   165.8     6.3    16.7

1991 09 11    00 32.13   -06 36.7    1.357    2.330   160.2     8.4    16.5
- 6.84  -0.95  - 45.0  - 0.2  (4630)    17190  - 7.57  +0.75  - 14.7  + 9.4
1991 10 11    00 07.37   -08 24.1    1.363    2.327   159.9     8.5    16.5

1991 09 11    00 29.51   -00 31.9    0.931    1.910   160.3    10.2    17.3
- 4.76  -1.20  - 82.4  - 7.2  3336 T-2  18134  - 6.13  +0.86  - 70.3  +11.3
1991 10 11    00 09.34   -04 55.4    0.903    1.880   162.7     9.1    17.2

1991 09 11    00 33.26   -04 49.4    2.012    2.978   160.0     6.6    16.9
- 6.58  -0.64  - 69.3  - 1.0  (4535)    16568  - 6.96  +0.53  - 48.1  + 7.5
1991 10 11    00 10.79   -08 01.0    2.058    3.019   160.8     6.2    16.9

1991 09 11    00 33.95   +04 44.0    1.910    2.866   157.5     7.7    17.7
- 6.99  -0.72  - 46.0  - 5.2  1981 EW21 11045  - 7.58  +0.55  - 53.3  + 3.2
1991 10 11    00 09.77   +01 59.6    1.910    2.890   166.4     4.7    17.6

1991 09 11    00 35.06   +13 02.1    1.861    2.794   152.7     9.5    16.4
- 7.36  -0.75  - 15.9  - 8.3  (4534)    16568  - 7.87  +0.60  - 47.8  - 1.2
1991 10 11    00 09.73   +11 13.7    1.868    2.849   166.5     4.7    16.2

1991 09 11    00 37.85   -00 21.1    1.692    2.654   158.3     8.1    16.8
- 6.57  -0.86  - 38.5  - 3.4  1964 VT1  11739  - 7.76  +0.53  - 33.4  + 5.2
1991 10 11    00 13.78   -02 24.7    1.659    2.637   165.2     5.6    16.7

1991 09 11    00 38.31   +04 00.0    1.861    2.815   156.8     8.1    16.2
- 6.94  -0.83  -  7.3  - 4.2  1986 VF5  18111  - 8.19  +0.48  - 16.3  + 1.7
1991 10 11    00 13.20   +03 13.7    1.808    2.791   167.6     4.4    15.9

1991 09 11    00 38.40   -00 51.2    1.857    2.817   158.2     7.6    17.1
- 6.39  -0.76  - 44.9  - 2.8  1981 QP3  14472  - 7.29  +0.50  - 37.3  + 5.3
1991 10 11    00 15.56   -03 09.6    1.855    2.831   165.1     5.2    17.0

1991 09 11    00 36.01   +02 05.2    0.790    1.765   158.0    12.3    16.0
- 3.84  -1.33  - 96.5  - 9.6  1981 RR3  10023  - 5.49  +0.88  - 87.4  +12.5
1991 10 11    00 17.92   -03 11.8    0.797    1.782   165.5     8.1    15.8

1991 09 11    00 45.62   +16 38.5    1.112    2.039   148.4    15.0    15.6
- 6.43  -1.28  - 13.9  -14.5  1984 SM   15554  - 8.31  +0.77  - 77.3  - 3.7
1991 10 11    00 19.70   +14 01.8    1.092    2.077   167.3     6.0    15.3

1991 09 11    00 46.25   -18 50.0    2.055    2.990   153.4     8.7    17.0
- 6.88  -0.76  - 86.1  + 4.8  1990 KG   16588  - 7.80  +0.49  - 29.6  +12.4
1991 10 11    00 21.93   -21 57.7    2.127    3.033   149.9     9.5    17.2

1991 09 11    00 44.60   +00 57.2    1.791    2.743   156.3     8.5    16.5
- 5.99  -0.78  - 45.5  - 3.5  1974 ST   17954  - 6.95  +0.49  - 41.0  + 4.9
1991 10 11    00 22.85   -01 28.1    1.823    2.806   167.5     4.4    16.4
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1991 09 11    00 44.44   +13 09.4    2.139    3.058   150.9     9.2    16.7
- 5.20  -0.73  - 40.9  - 8.0  1980 TB12 14614  - 6.54  +0.34  - 70.9  - 1.0
1991 10 11    00 24.86   +10 08.8    2.074    3.063   170.3     3.1    16.3

1991 09 11    00 44.87   -02 23.0    2.198    3.149   156.9     7.2    18.2
- 5.43  -0.72  - 56.6  - 2.6  1979 MK3  12941  - 6.87  +0.31  - 48.4  + 5.3
1991 10 11    00 24.52   -05 15.1    2.139    3.114   165.1     4.7    18.0

1991 09 11    00 45.33   -02 19.1    1.635    2.591   156.8     8.8    17.2
- 5.20  -0.96  - 77.6  - 4.5  1987 YH   12951  - 7.31  +0.38  - 69.1  + 7.6
1991 10 11    00 24.11   -06 21.4    1.553    2.529   164.1     6.2    17.0

1991 09 11    00 47.73   +01 36.6    1.726    2.674   155.4     9.0    17.4
- 5.97  -0.93  - 63.8  - 5.3  1985 CE2  12697  - 7.87  +0.40  - 65.8  + 5.1
1991 10 11    00 24.51   -01 57.2    1.663    2.646   167.5     4.7    17.1

1991 09 11    00 48.82   -01 07.3    2.184    3.130   155.7     7.6    16.7
- 6.59  -0.77  - 36.4  - 2.5  1989 FJ   14625  - 8.10  +0.34  - 31.1  + 4.3
1991 10 11    00 24.75   -03 01.1    2.131    3.112   166.8     4.2    16.5

1991 09 11    00 51.77   +07 39.9    1.282    2.223   152.2    12.2    16.5
- 5.78  -1.20  - 16.4  - 8.1  1987 UJ   12580  - 8.22  +0.53  - 41.6  + 1.0
1991 10 11    00 27.58   +05 56.0    1.238    2.231   171.6     3.7    16.1

1991 09 11    00 54.84   +33 36.1    2.083    2.879   134.4    14.5    16.7
- 7.07  -0.99  + 31.1  -13.2  1936 NB   14182  - 8.96  +0.45  - 48.9  -11.3
1991 10 11    00 28.14   +33 06.0    2.035    2.956   152.3     9.0    16.5

1991 09 11    00 50.06   +19 30.7    1.301    2.207   145.7    14.9    16.1
- 4.66  -1.13  - 51.6  -15.3  1981 DC2  15406  - 6.74  +0.54  -115.9  - 3.3
1991 10 11    00 29.86   +14 57.2    1.267    2.254   168.6     5.0    15.7

1991 09 11    00 51.74   +05 18.2    1.802    2.739   153.2     9.5    15.6
- 5.03  -0.90  - 28.8  - 5.5  1979 QK4  13151  - 7.07  +0.32  - 41.8  + 1.9
1991 10 11    00 31.35   +03 18.6    1.731    2.723   171.9     3.0    15.2

1991 09 11    00 59.98   +00 16.3    1.441    2.381   152.7    11.2    16.9
- 7.91  -1.20  - 22.7  - 3.6  1988 VK4  14793  -10.28  +0.54  - 19.4  + 4.9
1991 10 11    00 29.49   -01 02.7    1.416    2.404   169.1     4.5    16.6

1991 09 11    00 54.37   +10 15.9    1.989    2.908   150.4     9.8    17.0
- 5.72  -0.86  - 33.0  - 7.1  2041 T-3  12572  - 7.62  +0.31  - 58.1  - 0.2
1991 10 11    00 32.20   +07 46.4    1.921    2.914   172.7     2.5    16.5

1991 09 11    00 54.55   -00 51.8    2.345    3.281   154.3     7.7    16.1
- 5.73  -0.72  - 24.2  - 2.1  1972 RY3  17623  - 7.28  +0.27  - 19.9  + 3.6
1991 10 11    00 33.22   -02 08.4    2.303    3.288   168.9     3.4    15.8

1991 09 11    00 54.04   +03 55.4    2.359    3.289   153.2     7.9    17.7
- 5.28  -0.74  - 40.6  - 4.3  1986 WP8  13163  - 7.08  +0.22  - 48.6  + 2.2
1991 10 11    00 33.74   +01 29.7    2.266    3.256   171.5     2.6    17.3

1991 09 11    00 54.66   +08 29.7    2.395    3.314   151.2     8.4    18.6
- 5.30  -0.73  - 34.0  - 5.6  1979 MK7  13164  - 7.08  +0.22  - 52.3  + 0.3
1991 10 11    00 34.34   +06 09.4    2.299    3.293   173.3     2.0    18.1

1991 09 11    00 58.28   +02 55.2    1.160    2.105   152.5    12.8    17.2
- 5.16  -1.39  - 48.3  - 7.6  9521 P-L  14480  - 8.79  +0.40  - 58.7  + 5.4
1991 10 11    00 34.03   -00 09.4    1.079    2.070   170.5     4.6    16.6
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1991 09 11    00 58.35   +01 37.1    2.359    3.287   152.8     8.0    17.9
- 5.64  -0.77  - 49.3  - 3.8  1981 QY2  12452  - 7.55  +0.21  - 51.7  + 3.3
1991 10 11    00 36.77   -01 07.6    2.278    3.266   170.2     3.0    17.6

1991 09 11    01 04.89   +14 06.8    1.072    1.989   146.2    16.3    16.9
- 6.82  -1.53  +  9.1  -12.2  1974 MG   10295  -10.01  +0.64  - 47.1  - 4.0
1991 10 11    00 35.61   +12 54.8    1.057    2.050   171.0     4.4    16.5

1991 09 11    01 00.14   +02 15.4    1.022    1.970   152.2    13.8    16.3
- 4.51  -1.50  - 62.2  - 8.5  1975 VP   13309  - 8.54  +0.42  - 69.8  + 7.3
1991 10 11    00 37.02   -01 31.9    0.951    1.942   169.9     5.2    15.8

1991 09 11    01 01.88   +16 00.1    1.015    1.932   145.8    17.0    16.4
- 5.37  -1.53  - 12.5  -14.6  1978 VL5  16021  - 8.76  +0.59  - 77.5  - 3.9
1991 10 11    00 36.77   +13 25.6    0.987    1.979   170.9     4.6    15.9

1991 09 11    01 04.72   +04 54.7    1.954    2.873   150.3    10.0    17.7
- 7.01  -1.04  +  2.6  - 4.0  4047 T-2  18303  - 9.87  +0.22  -  9.2  + 0.7
1991 10 11    00 37.09   +04 36.2    1.842    2.837   173.7     2.2    17.1

1991 09 11    01 05.48   +25 05.0    1.914    2.756   139.3    13.8    16.4
- 6.92  -1.15  + 34.3  -10.5  1977 EV   14343  -10.12  +0.25  - 32.7  - 9.8
1991 10 11    00 37.33   +25 06.3    1.796    2.758   160.6     6.9    16.0

1991 09 11    01 02.09   +14 18.1    1.674    2.576   146.7    12.4    16.9
- 5.72  -1.11  - 28.6  -10.0  1979 MS6  15406  - 8.67  +0.28  - 72.8  - 2.9
1991 10 11    00 37.97   +11 32.9    1.568    2.561   172.4     3.0    16.3

1991 09 11    01 04.96   +17 17.5    1.964    2.843   144.4    11.9    17.5
- 5.44  -1.04  +  0.3  - 8.6  1988 BB   12945  - 8.61  +0.13  - 46.5  - 5.3
1991 10 11    00 41.73   +16 02.2    1.804    2.791   169.4     3.8    16.9

1991 09 11    01 03.14   +02 14.4    1.557    2.488   151.5    11.1    16.1
- 4.56  -1.05  - 40.7  - 4.8  1980 UC   14782  - 7.13  +0.30  - 43.0  + 4.5
1991 10 11    00 43.11   -00 08.5    1.528    2.521   172.0     3.2    15.7

1991 09 11    01 07.51   +11 15.0    1.483    2.392   147.1    13.2    17.5
- 5.32  -1.28  - 26.1  - 9.5  1984 UC1  16578  - 9.23  +0.19  - 66.1  - 1.9
1991 10 11    00 42.99   +08 42.7    1.355    2.351   175.0     2.1    16.8

1991 09 11    01 08.87   +12 00.6    2.087    2.979   146.5    10.8    16.1
- 5.66  -0.97  +  4.8  - 6.2  1986 VG   12943  - 8.54  +0.13  - 24.4  - 2.5
1991 10 11    00 45.54   +11 24.5    1.965    2.959   173.8     2.1    15.6

1991 09 11    01 09.32   +09 19.9    2.133    3.032   147.6    10.2    18.2
- 5.91  -0.91  - 30.7  - 6.2  1981 GC   10831  - 8.34  +0.19  - 52.2   0.0
1991 10 11    00 45.92   +07 04.2    2.056    3.053   176.2     1.3    17.7

1991 09 11    01 05.88   +02 41.3    2.550    3.463   150.7     8.2    18.2
- 5.04  -0.74  - 38.7  - 3.6  1977 DN4  12451  - 7.11  +0.12  - 43.6  + 2.3
1991 10 11    00 46.06   +00 26.8    2.453    3.446   172.8     2.1    17.8

1991 09 11    01 05.81   +11 07.7    1.165    2.086   147.6    15.0    17.3
- 3.40  -1.40  - 48.2  -12.5  1989 CO3  14623  - 7.71  +0.22  - 96.1  - 0.7
1991 10 11    00 46.17   +07 09.6    1.058    2.055   176.2     1.8    16.4

1991 09 11    01 10.03   +02 53.2    1.781    2.699   149.7    10.9    17.1
- 5.63  -1.05  - 33.2  - 4.6  1978 SM5  14471  - 8.51  +0.22  - 39.1  + 3.2
1991 10 11    00 46.49   +00 50.3    1.715    2.709   173.2     2.5    16.6
```

1991 09 11 01 08.54 +17 29.0 1.236 2.132 143.6 16.3 16.0
- 4.39 -1.39 - 30.2 -14.0 1969 TA 18280 - 8.20 +0.32 - 94.6 - 4.5
1991 10 11 00 46.50 +14 04.5 1.167 2.160 171.6 3.9 15.4

1991 09 11 01 12.35 -05 02.4 1.766 2.687 150.3 10.7 17.5
- 6.10 -1.08 - 70.2 - 2.3 (4514) 16561 - 9.04 +0.23 - 51.4 + 8.4
1991 10 11 00 47.20 -08 24.5 1.720 2.696 164.7 5.6 17.2

1991 09 11 01 15.62 +06 03.1 1.564 2.473 147.4 12.7 17.2
- 6.89 -1.25 - 21.7 - 6.2 1983 CM 16425 -10.29 +0.29 - 38.7 + 1.5
1991 10 11 00 47.01 +04 18.2 1.505 2.502 175.8 1.7 16.6

1991 09 11 01 17.16 +12 52.8 1.265 2.163 144.3 15.8 17.5
- 6.78 -1.48 + 3.6 -10.0 1974 QM2 10773 -10.59 +0.41 - 42.0 - 3.2
1991 10 11 00 47.61 +11 42.7 1.231 2.227 173.8 2.8 17.0

1991 09 11 01 19.48 +02 32.2 1.263 2.180 147.5 14.4 16.0
- 5.33 -1.39 - 80.5 - 6.9 1990 FS 16586 - 9.07 +0.31 - 79.6 + 7.7
1991 10 11 00 54.73 -01 54.9 1.252 2.245 171.4 3.8 15.6

1991 09 11 01 24.47 +05 22.5 1.396 2.298 145.5 14.4 16.3
- 5.45 -1.40 - 41.2 - 7.2 (4508) 16420 - 9.87 +0.14 - 57.7 + 2.9
1991 10 11 00 58.64 +02 35.5 1.323 2.320 176.0 1.7 15.7

1991 10 11 01 02.66 +05 06.7 1.508 2.506 178.5 0.6 16.0
- 7.33 +0.09 - 86.4 + 1.6 3019 T-3 12801 - 3.02 +1.17 - 45.8 +10.2
1991 11 10 00 45.17 +01 32.6 1.678 2.549 144.4 13.1 16.9

1991 10 11 01 03.67 +03 40.0 2.597 3.594 177.1 0.8 17.0
- 7.04 0.00 - 44.7 + 0.9 1983 HJ 12959 - 4.49 +0.78 - 23.7 + 5.6
1991 11 10 00 44.93 +01 48.7 2.731 3.583 144.4 9.3 17.6

1991 10 11 01 04.82 +05 32.9 1.121 2.119 178.7 0.6 15.2
- 7.49 -0.04 - 97.4 + 0.3 1983 RQ4 14018 - 2.62 +1.43 - 51.2 +12.9
1991 11 10 00 46.95 +01 26.7 1.219 2.107 144.7 15.8 16.1

1991 10 11 01 05.26 +05 09.1 1.574 2.573 178.3 0.7 17.2
- 9.11 +0.06 - 71.7 + 1.1 1940 ED 9684 - 4.67 +1.23 - 36.8 + 9.1
1991 11 10 00 42.42 +02 11.5 1.735 2.603 144.0 12.9 18.0

1991 10 11 01 06.04 +16 42.1 1.813 2.801 169.8 3.6 16.4
- 9.13 -0.14 - 26.5 - 5.8 1988 AG 12944 - 5.73 +1.15 - 36.6 + 2.8
1991 11 10 00 41.35 +14 51.6 1.861 2.748 147.6 11.1 16.7

1991 10 11 01 06.18 +24 51.9 1.450 2.419 161.6 7.5 17.8
-10.41 +0.03 - 19.8 -11.4 1981 EB33 11841 - 5.16 +1.47 - 52.6 + 1.2
1991 11 10 00 40.16 +22 40.0 1.584 2.477 147.5 12.4 18.2

1991 10 11 01 07.47 -00 21.9 1.680 2.673 172.9 2.6 15.0
-10.32 -0.01 + 15.5 + 3.4 1988 BL2 12962 - 6.09 +1.24 + 43.7 + 5.3
1991 11 10 00 40.56 +01 03.6 1.824 2.683 143.1 12.8 15.7

1991 10 11 01 08.02 -42 20.2 0.960 1.783 131.1 25.0 15.8
-12.81 +0.39 + 29.3 +34.6 1986 WQ2 16580 - 3.63 +2.08 +189.3 +16.7
1991 11 10 00 40.29 -36 18.7 1.104 1.796 118.0 29.2 16.3

1991 10 11 01 09.86 +08 40.9 1.332 2.330 177.0 1.3 16.1
- 9.66 -0.16 - 61.2 - 2.4 1988 XT 14203 - 5.31 +1.41 - 39.7 + 8.5
1991 11 10 00 44.50 +05 49.3 1.408 2.297 146.0 14.0 16.8

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1991 10 11    01 10.66   +00 44.4    1.368    2.363   173.8     2.6    15.3
- 9.51  -0.08  - 41.7  + 3.5  (4541)    16571  - 5.09  +1.36  +  1.5  + 9.4
1991 11 10    00 46.09   -00 26.9    1.485    2.356   143.6    14.4    16.0

1991 10 11    01 12.80   +07 23.1    1.727    2.724   177.0     1.1    17.0
- 8.91  -0.07  - 40.4  - 0.7  1981 EG1  14614  - 5.29  +1.13  - 21.3  + 6.3
1991 11 10    00 49.29   +05 37.6    1.856    2.741   147.0    11.3    17.7

1991 10 11    01 16.18   +23 04.0    1.279    2.253   163.1     7.4    17.5
-10.92  -0.02  - 41.5  -11.3  5447 T-2  16589  - 5.44  +1.56  - 66.0  + 3.4
1991 11 10    00 48.73   +19 55.4    1.424    2.333   149.6    12.4    18.0

1991 10 11    01 19.26   +23 39.4    1.103    2.077   162.3     8.4    14.9
-17.92  -1.12  +154.7  -11.1  1986 TM   12960  -14.06  +2.21  + 73.3  -10.5
1991 11 10    00 25.08   +29 20.4    1.130    2.013   143.2    17.1    15.2

1991 10 11    01 16.45   -00 50.0    1.649    2.641   171.7     3.1    14.8
- 6.86  -0.12  - 81.4  + 3.8  (4576)    16863  - 3.77  +1.03  - 32.3  +10.9
1991 11 10    00 58.38   -03 53.7    1.770    2.638   144.3    12.6    15.4

1991 10 11    01 17.90   +15 40.7    2.217    3.205   170.0     3.1    17.4
- 7.65  -0.11  - 40.2  - 4.1  1979 OQ5  16869  - 5.05  +0.89  - 43.2  + 3.1
1991 11 10    00 57.01   +13 22.1    2.323    3.225   151.1     8.5    17.8

1991 10 11    01 20.22   +06 01.9    1.266    2.262   175.2     2.1    16.1
- 9.54  -0.24  - 76.7  - 0.5  (4310)    15681  - 5.50  +1.39  - 41.7  +10.6
1991 11 10    00 54.64   +02 43.7    1.355    2.252   147.0    13.9    16.8

1991 10 11    01 21.81   -43 57.3    1.066    1.866   129.3    24.5    16.6
-12.04  -0.12  - 26.8  +34.1  1988 MF   16027  - 4.92  +1.99  +147.5  +21.1
1991 11 10    00 52.47   -40 31.9    1.194    1.854   115.9    28.7    17.0

1991 10 11    01 20.17   +04 51.0    2.481    3.477   175.0     1.4    17.4
- 7.22  -0.11  - 44.5  + 0.4  (4344)    15693  - 5.07  +0.76  - 25.3  + 5.5
1991 11 10    01 00.13   +02 56.8    2.601    3.483   148.3     8.6    17.9

1991 10 11    01 27.87   +15 47.4    0.926    1.915   168.7     5.9    16.6
-18.37  -0.83  + 95.8  - 8.6  (4531)    16567  -12.41  +2.40  + 48.4  - 3.8
1991 11 10    00 35.65   +19 14.5    0.997    1.903   146.6    16.7    17.2

1991 10 11    01 25.34   -07 09.2    1.332    2.312   165.1     6.4    16.4
- 8.23  -0.41  - 59.9  + 7.4  1988 AV1  18429  - 5.41  +1.24  + 11.1  +13.9
1991 11 10    01 01.82   -08 34.5    1.366    2.232   142.0    15.8    16.8

1991 10 11    01 26.43   +07 08.0    1.263    2.258   173.7     2.8    16.6
- 9.67  -0.22  - 76.0  - 0.6  1978 RH1  13056  - 5.56  +1.37  - 42.3  +10.2
1991 11 10    01 00.65   +03 50.6    1.388    2.293   148.9    12.9    17.3

1991 10 11    01 28.47   +03 01.0    2.449    3.441   172.4     2.2    17.9
- 7.37  -0.19  - 65.9  + 0.8  4343 T-3  12703  - 5.54  +0.74  - 40.8  + 6.8
1991 11 10    01 07.40   +00 09.8    2.545    3.429   148.5     8.7    18.3

1991 10 11    01 31.09   +48 57.4    2.465    3.268   137.1    12.0    16.6
-11.14  -0.53  -  4.7  -15.5  1990 QJ   17212  - 8.77  +1.22  - 87.4  - 9.5
1991 11 10    00 57.98   +46 28.3    2.377    3.212   141.5    11.1    16.4

1991 10 11    01 30.77   +03 38.9    1.044    2.037   172.1     3.9    15.0
- 8.61  -0.56  - 10.6  + 1.8  1978 UV   12949  - 5.44  +1.46  + 24.3  + 8.7
1991 11 10    01 05.95   +03 46.6    1.077    1.997   150.0    14.4    15.5
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