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ERRATA.

MPC	Line		
21937	15	Add	H 13.0 G
21946	- 7	Add	Id. S. Nakano, B. G. Marsden (d)
21956	20	Add	= 1980 SJ

* * * * *

CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object	Date	UT	R. A. (2000)	Decl.	Reference	Mag.	N	Obs.
1954 UV	1954	10 22.17189	01 15 52.39	+08 21 13.8	MPC 20444		1	760
1954 UV	1954	10 22.21564	01 15 49.70	+08 21 05.8	MPC 20444		1	760
1955 RA	1955	09 13.13845	21 29 25.15	-01 51 49.9	MPC 5634			760
1955 RC	1955	09 19.16458	21 13 33.73	-03 40 13.2	MPC 6751	17.1		760
1955 RC	1955	09 19.20694	21 13 32.88	-03 40 24.7	MPC 6751			760

Note 1: originally published as 1987 SG13.

* * * * *

IDENTIFICATION CHANGES.

Continuation to MPC 21832.

Object		Date	UT	R. A. (2000)	Decl.	Old desig.	Mag.	Obs.
1975 EJ6	*	1975	03 15.87869	10 56 14.53	+11 03 38.7	1975 EK1	17.5	095
1975 RQ2	*	1975	09 06.88503	22 14 30.63	-11 11 20.9	1975 RL1	16.5	095
1990 FP5	*	1990	03 19.18715	10 14 22.80	+14 35 19.3	1990 FF3		809
1990 FP5		1990	03 19.19341	10 14 22.46	+14 35 20.6	1990 FF3		809
1990 FP5		1990	03 19.19965	10 14 22.13	+14 35 21.8	1990 FF3		809
1992 JU3	*	1992	05 08.22395	13 48 34.51	-07 47 26.9	1992 JQ2		809
1992 JU3		1992	05 08.23438	13 48 33.99	-07 47 24.3	1992 JQ2		809
1992 JU3		1992	05 08.24480	13 48 33.48	-07 47 21.3	1992 JQ2		809
1992 QH2	*	1992	08 26.29716	00 15 00.72	+05 28 34.1	1990 DM2		801
1992 QH2		1992	08 26.32300	00 14 59.85	+05 28 30.1	1990 DM2		801

OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

006 Fabra Observatory, Barcelona. 0.38-m f/11 Mailhat astrograph. Observers J. M. Codina, J. Nunez and N. Torras.
012 Uccle. 0.4-m f/5 double astrograph. Observer T. Pauwels.
046 Klet. 0.57-m f/5 reflector. Observer Z. Moravec. Measured by Z. Vavrova and M. Tichy.
104 San Marcello Pistoiese. 0.40-m reflector. Observers L. Tesi and P. Gigli. Measured by L. Tesi. Reductions by G. Cattani.
105 Sternberg Astronomical Institute, Moscow. 0.2-m f/15 refractor. Observer S. V. Zhuiko. Measured by N. M. Evstigneeva.
108 Montelupo. 0.20-m f/10 reflector + CCD. Observers M. Tombelli, S. Bartolini and A. Boattini. Measured by M. Tombelli.
303 Merida. 1.0-m Schmidt. Observer O. Naranjo.
323 Perth Observatory, Bickley. 0.33-m astrograph. Observers G. Lowe and M. P. Candy.
361 Sumoto. 0.20-m f/6.3 reflector + CCD. Observers S. Nakano and K. Kawanishi.
372 Geisei. 0.60-m f/3.5 reflector. Observer T. Seki. In part from Orient. Astron. Assoc. Comet Bull.
385 Oohira. 0.25-m f/3.4 hyperboloid astrocamera + CCD. Observer T. Urata.
399 Kushiro. 0.25-m f/3.4 hyperboloid astrocamera. Observer S. Ueda. Measurer H. Kaneda.
400 Kitami. 0.25-m f/2.6 Schmidt camera. Observer K. Endate. Measured by K. Watanabe.
410 Sengamine. 0.20-m f/4.8 reflector + CCD. Observer K. Ito.
411 Oizumi. 0.16-m f/6.3 reflector + CCD. Observer T. Kobayashi.
474 Mt. John Observatory. 0.6-m reflector. Observer A. C. Gilmore. Measured by P. M. Kilmartin.
503 Cambridge. Observer J. D. Shanklin.
540 Linz. 0.3-m f/5.2 Schmidt-Cassegrain + CCD. Observers E. Meyer, E. Obermair and H. Raab.
571 Cavriana. 0.4-m f/5 reflector. Observer L. Lai.
575 La-Chaux-de-Fonds. Observers A. Behrend and R. Behrend.
587 Sormano. 0.5-m reflector + CCD. Observers M. Cavagna, C. Gualdoni, P. Sicoli and A. Testa.
595 Farra d'Isonzo. 0.4-m reflector. Observers W. Boschin, F. Damonte, G. Lombardi and E. Pettarin. Communicated by L. Bittesini.
655 Sooke. 0.6-m reflector + CCD. Observer J. Newton. Measured by D. D. Balam. Long. and Parallax 236.383, 0.6656, +0.7438 (see MPC 19348).
657 Climenhaga Observatory, Victoria. 0.5-m reflector + CCD. Observers D. D. Balam and L. Bogan.
670 Camarillo. 0.25-m Schmidt-Cassegrain + CCD. Observer J. E. Rogers.
675 Palomar. 0.46-m Schmidt telescope. Observers E. Helin, K. Lawrence, P. Rose, E. M. Shoemaker, C. S. Shoemaker and D. H. Levy.
691 Kitt Peak. 0.91-m Spacewatch telescope. Observer J. V. Scotti.
786 U.S. Naval Observatory, Washington. 0.61-m reflector + CCD. Observers J. A. DeYoung and R. E. Schmidt.
801 Oak Ridge. 1.5-m reflector + CCD. Observers R. E. McCrosky and C.-Y. Shao.
871 Akou. 0.20-m f/4.0 reflector + CCD. Observer K. Kawanishi.
894 Otomo. 0.25-m f/3.4 reflector. Observer S. Otomo.
897 YGCO Chiyoda Observatory. 0.25-m f/3.4 Wright-Schmidt. Observer T. Kojima.
900 Kiryuu Observatory, Ohtsu. 0.26-m f/2.9 reflector + CCD. Observer Y. Ikari.

902 Ootake. 0.25-m f/3.3 reflector. Observer K. Takehashi. Measured by H. Nakahira.

Object	Date	UT	R. A. (2000)	Decl.	Mag.	N	Obs.
		Periodic Comet Smirnova-Chernykh					
/1984 V	1993	03 20.63576	13 58 47.47	-04 21 19.0		1	361
/1984 V	1993	03 20.64826	13 58 47.25	-04 21 15.4		1	361
/1984 V	1993	03 20.68091	13 58 46.22	-04 21 09.8		1	361
/1984 V	1993	03 30.40865	13 53 57.04	-03 52 36.0	15.5 T	2	691
/1984 V	1993	04 01.57307	13 52 44.57	-03 46 01.9			411
/1984 V	1993	04 01.58094	13 52 44.27	-03 46 00.9			411
/1984 V	1993	04 01.58488	13 52 44.07	-03 45 59.5			411
/1984 V	1993	04 01.70867	13 52 39.73	-03 45 36.1		3	361
/1984 V	1993	04 01.71319	13 52 39.46	-03 45 37.1		3	361
/1984 V	1993	04 10.55384	13 47 20.61	-03 19 04.3			361
/1984 V	1993	04 10.55905	13 47 20.46	-03 19 03.0			361
/1984 V	1993	04 10.59260	13 47 19.23	-03 18 58.9			411
/1984 V	1993	04 10.59906	13 47 18.96	-03 18 57.1			411
/1984 V	1993	04 10.60229	13 47 18.84	-03 18 57.1			411
/1984 V	1993	04 14.65129	13 44 45.43	-03 07 23.4			411
/1984 V	1993	04 14.65775	13 44 45.18	-03 07 21.7			411
/1984 V	1993	04 14.66097	13 44 45.06	-03 07 20.6			411
/1984 V	1993	04 14.74270	13 44 41.72	-03 07 08.0		4	361
/1984 V	1993	04 14.74721	13 44 41.81	-03 07 07.9			361
		Periodic Comet Schwassmann-Wachmann 1					
/1989 XV	1993	04 10.42542	05 29 54.40	+29 03 24.6			411
/1989 XV	1993	04 10.43046	05 29 54.58	+29 03 24.1			411
/1989 XV	1993	04 10.43299	05 29 54.67	+29 03 24.1			411
/1989 XV	1993	04 15.44617	05 33 00.51	+28 59 21.3			411
/1989 XV	1993	04 15.45124	05 33 00.81	+28 59 20.9			411
/1989 XV	1993	04 15.45377	05 33 00.94	+28 59 20.6			411
		Periodic Comet Faye					
/1991 XXI	1993	03 30.27750	11 25 53.57	-01 21 18.6	22.4 N	5	691
/1991 XXI	1993	03 30.28536	11 25 53.35	-01 21 16.0	20.4 T		691
		Comet Shoemaker-Levy (1991 XXIV)					
/1991 XXIV	1992	07 19.51076	20 32 39.54	+37 15 43.6	13 T		897
/1991 XXIV	1992	07 19.54149	20 32 37.26	+37 15 16.1			897
/1991 XXIV	1992	09 27.45770	19 50 55.00	+12 16 27.3	14.5 T		897
/1991 XXIV	1992	09 27.46753	19 50 54.96	+12 16 12.0			897
/1991 XXIV	1992	10 22.48472	19 58 48.22	+05 21 40.2	15 T		897
/1991 XXIV	1992	11 23.43108	20 19 08.00	-00 17 10.1	15 T		897
/1991 XXIV	1992	11 23.44931	20 19 09.10	-00 17 19.4			897
		Periodic Comet Chernykh					
/1991o	1993	03 26.13029	07 57 02.13	+20 43 31.7	22.2 N	6	691
/1991o	1993	03 26.13871	07 57 02.22	+20 43 33.0	19.6 T		691
/1991o	1993	03 26.15245	07 57 02.31	+20 43 32.5	19.9 T		691
/1991o	1993	03 26.16079	07 57 02.47	+20 43 32.8	19.7 T		691
		Comet Spacewatch (1992h)					
/1992h	1993	03 18.60382	13 14 01.52	+42 09 59.9	16.0 T		902
/1992h	1993	03 18.61076	13 14 00.42	+42 10 14.2			902
/1992h	1993	03 20.61250	13 10 03.74	+43 05 34.5			361
/1992h	1993	03 20.61771	13 10 03.11	+43 05 45.0			361
/1992h	1993	03 20.63222	13 10 01.28	+43 06 07.7	15.7 T		410

/1992h	1993 03 20.63677	13 10 00.79	+43 06 15.0					410
/1992h	1993 03 28.36365	12 53 14.38	+46 25 21.3					691
/1992h	1993 03 28.36699	12 53 13.90	+46 25 26.0	18.2	N			691
/1992h	1993 03 28.37221	12 53 13.17	+46 25 33.6	15.3	T		7	691
/1992h	1993 03 29.53626	12 50 30.26	+46 53 10.4					411
/1992h	1993 03 29.54273	12 50 29.40	+46 53 17.9					411
/1992h	1993 03 29.54596	12 50 29.02	+46 53 22.4					411
/1992h	1993 04 01.55540	12 43 15.33	+48 01 30.1					411
/1992h	1993 04 01.56186	12 43 14.40	+48 01 38.6					411
/1992h	1993 04 01.56509	12 43 13.96	+48 01 42.9					411
/1992h	1993 04 08.44476	12 25 52.23	+50 18 18.1					411
/1992h	1993 04 08.45122	12 25 51.26	+50 18 25.1					411
/1992h	1993 04 08.45445	12 25 50.77	+50 18 28.2					411
/1992h	1993 04 10.51727	12 20 29.03	+50 53 58.5					411
/1992h	1993 04 10.52372	12 20 28.00	+50 54 05.8					411
/1992h	1993 04 10.52695	12 20 27.51	+50 54 08.3					411
/1992h	1993 04 10.54343	12 20 24.78	+50 54 25.1					361
/1992h	1993 04 10.54655	12 20 24.53	+50 54 27.2					361
/1992h	1993 04 10.54984	12 20 23.77	+50 54 30.2					361
/1992h	1993 04 14.72811	12 09 26.88	+51 58 26.9					361
/1992h	1993 04 14.73159	12 09 26.27	+51 58 30.4					361
/1992h	1993 04 14.73793	12 09 25.19	+51 58 34.7					361
/1992h	1993 04 15.53011	12 07 20.76	+52 09 31.1					411
/1992h	1993 04 15.53657	12 07 19.77	+52 09 37.7					411
/1992h	1993 04 15.53980	12 07 19.35	+52 09 40.3					411
	Periodic Comet Daniel							
/1992o	1993 03 30.34528	11 22 07.26	+37 04 14.5				8	691
/1992o	1993 03 30.35662	11 22 06.78	+37 04 09.8				8	691
/1992o	1993 03 30.36566	11 22 06.33	+37 04 06.1	22.3	N		8	691
	Periodic Comet Brewington							
/1992p	1993 03 30.12755	08 25 15.36	+28 58 30.9					691
/1992p	1993 03 30.13663	08 25 15.34	+28 58 27.7					691
/1992p	1993 03 30.14536	08 25 15.49	+28 58 23.4	19.9	T			691
/1992p	1993 03 30.19032	08 25 15.78	+28 58 05.1	22.4	N		9	691
	Periodic Comet Swift-Tuttle							
/1992t	1992 10 23.82153	15 30 14.24	+51 57 21.0					006
/1992t	1992 10 23.83160	15 30 19.68	+51 56 48.7					006
/1992t	1992 10 27.78681	16 03 52.22	+48 16 00.3					006
/1992t	1992 10 27.80590	16 04 01.62	+48 14 45.3					006
/1992t	1992 10 28.82917	16 12 16.82	+47 10 13.3					006
/1992t	1992 10 28.85868	16 12 30.51	+47 08 14.5					006
/1992t	1992 11 03.73333	16 55 54.98	+40 06 09.4					006
/1992t	1992 11 03.74132	16 55 58.09	+40 05 32.4					006
/1992t	1992 11 04.81181	17 03 08.12	+38 41 00.1					006
/1992t	1992 11 04.82222	17 03 11.83	+38 40 09.8					006
/1992t	1992 11 05.78403	17 09 26.59	+37 22 41.7					006
/1992t	1992 11 05.79861	17 09 31.82	+37 21 30.1					006
/1992t	1992 11 06.75694	17 15 34.00	+36 03 02.1					006
/1992t	1992 11 06.76597	17 15 37.61	+36 02 15.4					006
/1992t	1992 11 07.77847	17 21 48.14	+34 38 19.0					006
/1992t	1992 11 07.78542	17 21 50.85	+34 37 45.7					006
/1992t	1992 11 09.70764	17 33 02.87	+31 55 53.4					595
/1992t	1992 11 09.73125	17 33 10.74	+31 53 49.6					595
/1992t	1992 11 09.77292	17 33 24.69	+31 50 17.5					540
/1992t	1992 11 09.77465	17 33 25.31	+31 50 09.9					540
/1992t	1992 11 09.77639	17 33 25.79	+31 50 00.3					540

/1992t	1992	11	09.77812	17 33 26.49	+31 49 51.3		540
/1992t	1992	11	12.80903	17 49 43.24	+27 31 22.6		006
/1992t	1992	11	12.81667	17 49 45.64	+27 30 43.2		006
/1992t	1992	11	13.83750	17 54 53.77	+26 03 37.0		006
/1992t	1992	11	13.84236	17 54 55.31	+26 03 09.9		006
/1992t	1992	11	17.75972	18 13 08.97	+20 33 08.0		006
/1992t	1992	11	17.76458	18 13 10.27	+20 32 45.9		006
/1992t	1992	11	18.69957	18 17 12.18	+19 15 37.8		571
/1992t	1992	11	18.70608	18 17 14.01	+19 15 06.4		595
/1992t	1992	11	18.71120	18 17 15.17	+19 14 40.0		571
/1992t	1992	11	18.72239	18 17 17.95	+19 13 44.6		571
/1992t	1992	11	18.77326	18 17 30.86	+19 09 36.1		595
/1992t	1992	11	19.69201	18 21 21.39	+17 54 40.2		595
/1992t	1992	11	20.70590	18 25 28.07	+16 33 06.5		595
/1992t	1992	11	20.78021	18 25 45.65	+16 27 08.5		595
/1992t	1992	11	21.77083	18 29 39.11	+15 08 41.3		006
/1992t	1992	11	21.77917	18 29 40.98	+15 08 01.8		006
/1992t	1992	11	22.71547	18 33 15.39	+13 54 55.5		571
/1992t	1992	11	22.71782	18 33 15.93	+13 54 44.0		571
/1992t	1992	11	22.72257	18 33 16.97	+13 54 22.7		571
/1992t	1992	11	23.75694	18 37 06.74	+12 35 03.2		006
/1992t	1992	11	23.76181	18 37 07.82	+12 34 40.4		006
/1992t	1992	11	24.75914	18 40 43.13	+11 19 30.1		575
/1992t	1992	11	25.77708	18 44 16.50	+10 04 11.5		006
/1992t	1992	11	25.78681	18 44 18.51	+10 03 28.7		006
/1992t	1992	12	01.62778	19 02 53.63	+03 20 35.9		105
/1992t	1992	12	03.75833	19 08 59.64	+01 05 58.4		006
/1992t	1992	12	03.76736	19 09 01.13	+01 05 25.1		006
/1992t	1992	12	06.72216	19 16 58.41	-01 50 47.0		575
/1992t	1992	12	06.73120	19 16 59.83	-01 51 14.2		575
/1992t	1992	12	08.75347	19 22 08.35	-03 45 08.1		006
/1992t	1992	12	08.76181	19 22 09.64	-03 45 35.8		006
/1992t	1992	12	15.73507	19 38 20.17	-09 40 23.4		006
/1992t	1992	12	15.74514	19 38 21.52	-09 40 52.1		006
/1992t	1992	12	18.62465	19 44 28.38	-11 52 07.4		105
/1992t	1993	02	16.68773	21 34 00.51	-41 05 48.5		474
/1992t	1993	02	16.69491	21 34 01.58	-41 05 57.9		474
/1992t	1993	02	18.68472	21 38 06.23	-41 51 52.4		474
/1992t	1993	02	18.68900	21 38 06.92	-41 52 00.1		474
/1992t	1993	02	23.69667	21 48 42.98	-43 47 51.6		474
/1992t	1993	02	23.70037	21 48 43.29	-43 47 56.1		474
/1992t	1993	03	15.68299	22 37 45.78	-51 42 46.7		474
/1992t	1993	03	15.68779	22 37 46.57	-51 42 53.6		474
/1992t	1993	03	15.69404	22 37 47.51	-51 43 02.3		474
/1992t	1993	03	15.70075	22 37 48.61	-51 43 11.4		474

Periodic Comet Vaisala 1

/1992u	1993	02	12.62569	09 54 48.03	+16 51 47.0	14.5 T	894
/1992u	1993	02	12.63681	09 54 47.66	+16 51 55.4		894
/1992u	1993	02	23.84375	09 50 59.90	+19 27 06.2		104
/1992u	1993	02	23.85903	09 50 59.49	+19 27 18.5		104
/1992u	1993	02	24.84792	09 50 40.98	+19 40 35.3		104
/1992u	1993	02	24.86111	09 50 40.70	+19 40 45.0		104
/1992u	1993	02	25.92639	09 50 21.17	+19 54 57.7		104
/1992u	1993	02	25.93889	09 50 20.93	+19 55 08.2		104
/1992u	1993	03	16.82014	09 48 22.83	+23 23 25.3		104
/1992u	1993	03	16.83194	09 48 22.87	+23 23 28.4		104
/1992u	1993	03	20.09402	09 49 02.21	+23 48 29.0		801
/1992u	1993	03	20.11884	09 49 02.51	+23 48 39.3		801

/1992u	1993	03	20.52418	09	49	08.97	+23	51	31.5		361
/1992u	1993	03	20.54722	09	49	09.39	+23	51	39.6	14.2 T	410
/1992u	1993	03	20.56071	09	49	09.44	+23	51	47.3		410
/1992u	1993	03	20.66319	09	49	10.82	+23	52	29.2		361
/1992u	1993	03	20.66979	09	49	10.98	+23	52	32.6		361
/1992u	1993	03	23.13797	09	49	58.66	+24	08	23.2		801
/1992u	1993	03	23.16645	09	49	59.20	+24	08	33.3		801
/1992u	1993	03	29.43612	09	52	59.04	+24	38	48.6		411
/1992u	1993	03	29.44117	09	52	59.18	+24	38	49.5		411
/1992u	1993	03	29.44370	09	52	59.22	+24	38	49.9		411
/1992u	1993	03	30.15542	09	53	24.85	+24	41	21.6	18.1 N	691
/1992u	1993	03	30.16434	09	53	25.13	+24	41	23.7	14.0 T A	691
/1992u	1993	03	30.17277	09	53	25.43	+24	41	25.3	14.0 T	691
/1992u	1993	04	01.53091	09	54	58.67	+24	48	24.4		411
/1992u	1993	04	01.53597	09	54	58.83	+24	48	24.7		411
/1992u	1993	04	01.53850	09	54	58.93	+24	48	25.0		411
/1992u	1993	04	08.43149	10	00	38.94	+24	57	25.1		411
/1992u	1993	04	08.43655	10	00	39.22	+24	57	24.7		411
/1992u	1993	04	08.43907	10	00	39.32	+24	57	24.9		411
/1992u	1993	04	10.46189	10	02	37.18	+24	56	54.1		411
/1992u	1993	04	10.46693	10	02	37.46	+24	56	53.9		411
/1992u	1993	04	10.46946	10	02	37.61	+24	56	53.9		411
/1992u	1993	04	10.52883	10	02	41.12	+24	56	50.5		361
/1992u	1993	04	10.53266	10	02	41.38	+24	56	51.2		361
/1992u	1993	04	10.53612	10	02	41.57	+24	56	52.3		361
/1992u	1993	04	10.65230	10	02	48.24	+24	56	43.7	15 T	900
/1992u	1993	04	15.48164	10	08	03.27	+24	49	38.5		411
/1992u	1993	04	15.48670	10	08	03.59	+24	49	37.1		411
/1992u	1993	04	15.48923	10	08	03.75	+24	49	36.2		411

Periodic Comet Schaumasse

/1992x	1992	11	23.49051	04	24	58.93	+13	17	45.9	15.5 T	897
/1992x	1992	11	23.51528	04	24	56.87	+13	17	57.9		897
/1992x	1992	12	14.39983	03	57	53.46	+16	49	32.1	13.5 T	897
/1992x	1992	12	14.43015	03	57	50.99	+16	50	00.5		897
/1992x	1992	12	14.45486	03	57	48.79	+16	50	20.3	15.0 T	894
/1992x	1992	12	14.46701	03	57	47.71	+16	50	28.9		894
/1992x	1992	12	22.44039	03	47	09.24	+18	49	49.8	13.5 T	897
/1992x	1992	12	22.49514	03	47	04.69	+18	50	44.8	14.5 T	894
/1992x	1992	12	22.50833	03	47	03.77	+18	50	53.5		894
/1992x	1992	12	26.53854	03	42	19.87	+19	58	56.7	13 T	897
/1992x	1992	12	31.45110	03	37	29.95	+21	28	21.6	12 T	897
/1992x	1993	01	29.53594	03	40	53.16	+32	13	43.4	10 T	897
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/1992x	1993	01	29.56632	03	40	55.22	+32	14	28.3		897
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/1992x	1993	02	10.48785	04	02	31.39	+37	12	37.5		897
/1992x	1993	02	10.49537	04	02	32.36	+37	12	48.4		897
/1992x	1993	02	10.52992	04	02	37.03	+37	13	36.8		897
/1992x	1993	02	11.57089	04	05	08.90	+37	39	32.8		897
/1992x	1993	02	11.57569	04	05	09.71	+37	39	39.1		897
/1992x	1993	02	11.58183	04	05	10.67	+37	39	47.8		897
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/1992x	1993	02	12.91333	04	08	34.70	+38	12	45.9		575
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/1992x	1993	02	13.47922	04	10	05.01	+38	26	50.4		897

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/1992x	1993	02	19.52899	04	28	12.88	+40	52	11.5			897
/1992x	1993	02	22.95729	04	40	15.64	+42	09	55.1			595
/1992x	1993	02	25.83958	04	51	24.41	+43	11	43.5			595
/1992x	1993	02	25.85208	04	51	27.60	+43	11	57.3			595
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/1992x	1993	02	25.92826	04	51	45.77	+43	13	30.2			108
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/1992x	1993	03	08.42813	05	40	15.91	+46	14	21.8			372
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/1992x	1993	03	10.84763	05	53	01.79	+46	42	55.0	11.0	T B	540
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/1992x	1993	03	14.86104	06	15	18.55	+47	16	53.6			587
/1992x	1993	03	15.90069	06	21	16.21	+47	22	37.9		C	012
/1992x	1993	03	15.90660	06	21	18.35	+47	22	41.9			012
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/1992x	1993	04	15.47245	09	15	03.86	+40	30	14.3			411
/1992x	1993	04	15.47392	09	15	04.14	+40	30	13.0			411

Comet Shoemaker (1992y)

/1992y	1993	02	09.40486	01 39 20.81	+48 58 32.5	17	T		372
/1992y	1993	02	15.42396	01 41 18.06	+49 59 19.5	17	T		372

Comet Ohshita (1992a1)

/1992a 1	1992	12	08.84161	13 29 44.20	+13 27 32.4				897
/1992a 1	1992	12	08.84578	13 29 44.84	+13 27 58.3				897
/1992a 1	1992	12	13.80949	13 42 04.98	+22 05 03.8	12	T		897
/1992a 1	1992	12	13.81296	13 42 05.32	+22 05 25.3				897
/1992a 1	1992	12	13.81568	13 42 05.93	+22 05 41.7				897
/1992a 1	1992	12	13.81875	13 42 06.38	+22 06 06.1				897
/1992a 1	1992	12	23.85475	14 16 19.89	+41 40 31.3				897
/1992a 1	1992	12	23.85946	14 16 20.77	+41 41 02.4				897
/1992a 1	1992	12	23.86343	14 16 22.17	+41 41 30.6				897
/1992a 1	1992	12	24.84942	14 20 40.51	+43 39 26.3				897

Comet Mueller (1993a)

/1993a	1993	02	09.48281	08 36 45.39	+55 53 38.5	14	T		372
/1993a	1993	02	12.48611	08 29 30.04	+56 19 43.8	14	T		372
/1993a	1993	02	12.49132	08 29 29.37	+56 19 44.1				372
/1993a	1993	02	22.90208	08 04 12.60	+57 24 42.6				595
/1993a	1993	02	23.87847	08 01 53.61	+57 28 47.1				595
/1993a	1993	02	23.89271	08 01 51.09	+57 28 53.5				595
/1993a	1993	03	12.88975	07 25 21.12	+57 53 20.2	13.6	T	B	540
/1993a	1993	03	12.89545	07 25 20.45	+57 53 19.8	13.5	T	B	540
/1993a	1993	03	12.90051	07 25 19.89	+57 53 19.8	13.4	T	B	540
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/1993a	1993	03	15.82778	07 20 03.31	+57 50 19.6				104
/1993a	1993	03	15.84236	07 20 01.80	+57 50 18.7				104
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/1993a	1993	03	20.14178	07 12 55.03	+57 43 08.4				801
/1993a	1993	03	20.15367	07 12 53.87	+57 43 06.9				801
/1993a	1993	03	20.58785	07 12 13.39	+57 42 13.9	13.1	T		410
/1993a	1993	03	20.60035	07 12 12.24	+57 42 11.9				410
/1993a	1993	03	20.91500	07 11 43.21	+57 41 33.9	12.9	T		540
/1993a	1993	03	20.92194	07 11 42.50	+57 41 31.6	13.0	T		540
/1993a	1993	03	20.92750	07 11 42.13	+57 41 31.0	13.1	T		540
/1993a	1993	03	20.93306	07 11 41.50	+57 41 30.2				540
/1993a	1993	03	20.93861	07 11 41.04	+57 41 30.4				540
/1993a	1993	03	20.97236	07 11 37.86	+57 41 24.6				540
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/1993a	1993	03	23.19774	07 08 19.86	+57 36 25.2				801
/1993a	1993	03	23.21890	07 08 18.08	+57 36 21.9				801
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/1993a	1993	03	29.42806	07 00 13.13	+57 19 44.0				411
/1993a	1993	03	29.43058	07 00 12.97	+57 19 42.7				411
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/1993d            1993 03 26.46322  12 56 39.87  +64 22 17.0   18.2 T  E  691
/1993d            1993 03 26.49987  12 56 38.28  +64 22 16.8   21.5 N  E  691
/1993d            1993 03 26.50309  12 56 38.08  +64 22 16.9             E  691
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/1993d            1993 03 27.33339  12 56 01.67  +64 21 51.8                657
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/1993e            1993 03 17.75868  12 29 50.80  -04 22 13.2   14.0 T  G  894
/1993e            1993 03 17.77153  12 29 50.21  -04 22 12.4             G  894
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/1993e            1993 03 19.42014  12 29 02.78  -04 17 36.3             H  675
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/1993e	1993	04	09.65839	12	18	47.47	-03	16	10.6		871
/1993e	1993	04	09.66527	12	18	47.04	-03	16	08.5		871
/1993e	1993	04	10.47934	12	18	24.15	-03	13	56.6		410
/1993e	1993	04	10.48788	12	18	24.12	-03	13	53.7		410
/1993e	1993	04	10.50332	12	18	23.87	-03	13	47.6		410
/1993e	1993	04	10.50591	12	18	23.78	-03	13	45.5		361
/1993e	1993	04	10.55161	12	18	22.86	-03	13	40.0		411

/1993e	1993 04 10.55807	12 18 22.85	-03 13 37.1						411
/1993e	1993 04 10.56130	12 18 22.52	-03 13 37.8						411
/1993e	1993 04 10.57405	12 18 22.07	-03 13 35.6						361
/1993e	1993 04 10.60875	12 18 21.34	-03 13 27.2						361
/1993e	1993 04 10.62474	12 18 21.12	-03 13 24.7						900
/1993e	1993 04 10.63094	12 18 20.60	-03 13 23.0	14	T				900
/1993e	1993 04 12.56262	12 17 28.42	-03 08 00.2						385
/1993e	1993 04 12.56539	12 17 28.30	-03 08 00.9						385
/1993e	1993 04 12.57257	12 17 28.48	-03 07 58.9						385
/1993e	1993 04 13.07778	12 17 15.16	-03 06 36.8						786
/1993e	1993 04 13.08693	12 17 14.94	-03 06 34.9						786
/1993e	1993 04 13.09603	12 17 14.56	-03 06 33.9						786
/1993e	1993 04 14.61929	12 16 33.77	-03 02 25.9						411
/1993e	1993 04 14.62575	12 16 33.74	-03 02 22.1						411
/1993e	1993 04 14.62898	12 16 33.75	-03 02 23.4						411
/1993e	1993 04 14.63194	12 16 34.04	-03 02 20.9					M	385
/1993e	1993 04 14.63345	12 16 33.36	-03 02 22.9					M	385
/1993e	1993 04 14.63819	12 16 33.40	-03 02 21.1					M	385
/1993e	1993 04 14.71770	12 16 31.20	-03 02 07.7						361
/1993e	1993 04 14.72429	12 16 31.33	-03 02 12.1						361
/1993e	1993 04 15.51646	12 16 10.86	-02 59 59.4						411
/1993e	1993 04 15.52292	12 16 10.54	-02 59 58.5						411
/1993e	1993 04 17.53606	12 15 19.60	-02 54 40.1						361
/1993e	1993 04 17.54267	12 15 19.77	-02 54 35.0						361
/1993e	1993 04 17.54544	12 15 19.38	-02 54 38.0						361
	Periodic Comet Forbes								
/1993f	1993 03 21.84583	21 27 52.66	-18 45 17.1	14	T	N			323
/1993f	1993 03 21.88750	21 27 59.93	-18 44 37.2			N			323
/1993f	1993 03 27.85729	21 46 38.68	-16 58 02.3						323

Note 1: near edge of plate. 2: 28" coma, 14′.4 tail in p.a. 294 , continuing faintly to > 20′.8. 3: poor distribution of reference stars. 4: poor image. 5: 12" coma, 19′.9 tail in p.a. 285.9 + 0.2. 6: 11" coma, 11" tail in p.a. 53 . 7: 23" coma, 2′.93 tail in p.a. 170 . 8: in halo of bright star. 9: 24" coma. A: 38" coma, 2′.27 tail in p.a. 136 . B: time correction to MPC 21835 and 21837. C: image out of focus. D: very obvious tail to northwest. E: probable cirrus; 12" coma, > 0′.75 in p.a. 298 . F: 18" coma, 3′.17 tail in p.a. 300 . G: prediscovery observation. H: independent discovery. I: see IAUC 5725, 5726 and 5745. J: train of condensations extends 10" westward and 13" eastward from midpoint of 54" 11" bar in p.a. 77 -257 ; trails 2′.3 in p.a. 256 and 0′.7 in p.a. 72 ; 1′.0 tail in p.a. 300 ; faint diffuseness extends over p.a. 300 -72 all along northern side of bar. K: train extends 51" along p.a. 76.6-256.6; trails 10′.43 in p.a. 260 and 6′.16 in p.a. 75 from midpoint. L: bar 52" 11" in p.a. 81 -261 ; brightest condensation located 8" from midpoint of bar in p.a. 248 . M: trails 5′ in p.a. 255 , 2′ in p.a. 70 . N: 5" condensation, 1′ tail to southwest.

* * * * *

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. (2000)	Decl.	Mag.	N Obs.
006 Barcelona						
J. M. Codina, Fabra Observatory, E-08022 Barcelona, Spain						
Observers J. M. Codina, J. Nunez, N. Torras						
0.38-m f/11 Mailhat astrograph						
AGK3, SAOC						
	(2)	1987 05 26.92431	15 53 10.95	+26 22 51.4		006
	(2)	1987 05 26.93056	15 53 10.64	+26 22 52.8		006
	(2)	1987 05 26.93681	15 53 10.33	+26 22 53.5		006
	(2)	1987 06 25.93648	15 34 06.70	+25 08 25.5		006
	(2)	1987 06 25.94236	15 34 06.57	+25 08 23.1		006
	(2)	1987 06 25.94792	15 34 06.45	+25 08 20.9		006
	(3)	1987 11 24.81806	22 09 28.21	-12 53 35.6		006
	(3)	1987 11 24.82431	22 09 28.66	-12 53 34.6		006
	(3)	1987 11 24.83056	22 09 29.12	-12 53 33.6		006
	(4)	1987 01 15.79132	00 58 39.87	-00 53 16.2		006
	(4)	1987 01 15.79826	00 58 40.33	-00 53 12.0		006
	(4)	1987 01 15.80486	00 58 40.72	-00 53 08.3		006
	(4)	1987 01 16.82465	00 59 45.93	-00 43 21.2		006
	(4)	1987 01 16.83125	00 59 46.08	-00 43 17.1		006
	(4)	1987 01 16.83750	00 59 46.50	-00 43 12.5		006
	(4)	1987 01 27.76111	01 12 08.95	+01 03 39.5		006
	(4)	1987 01 27.76736	01 12 09.39	+01 03 43.2		006
	(4)	1987 01 27.77361	01 12 09.86	+01 03 46.9		006
	(5)	1987 02 14.95833	08 44 07.98	+17 12 38.2		006

(5)	1987	02	14.96389	08	44	07.70	+17	12	40.4	006
(5)	1987	02	14.96944	08	44	07.45	+17	12	42.8	006
(5)	1987	03	16.83403	08	34	57.06	+19	33	35.3	006
(5)	1987	03	16.84063	08	34	57.12	+19	33	35.8	006
(5)	1987	03	16.84757	08	34	57.19	+19	33	37.0	006
(5)	1987	03	16.85451	08	34	57.24	+19	33	37.6	006
(5)	1987	03	18.80590	08	35	23.59	+19	37	41.9	006
(5)	1987	03	18.81285	08	35	23.68	+19	37	42.8	006
(5)	1987	03	18.81979	08	35	23.75	+19	37	43.9	006
(5)	1987	04	13.93993	08	52	31.69	+19	32	34.1	006
(5)	1987	04	13.94618	08	52	32.07	+19	32	33.4	006
(5)	1987	04	13.95243	08	52	32.42	+19	32	32.6	006
(6)	1987	08	21.95903	19	11	22.66	-16	18	40.9	006
(7)	1987	08	21.95903	19	15	09.06	-16	12	02.9	006
(9)	1987	01	16.86910	03	50	20.23	+22	12	16.7	006
(9)	1987	01	16.87604	03	50	20.34	+22	12	17.7	006
(9)	1987	01	16.88264	03	50	20.44	+22	12	18.8	006
(9)	1987	02	13.77951	04	10	52.02	+23	54	14.7	006
(9)	1987	02	13.78646	04	10	52.49	+23	54	16.5	006
(9)	1987	02	13.79340	04	10	52.94	+23	54	18.2	006
(9)	1987	03	03.79236	04	34	52.43	+25	06	03.2	006
(9)	1987	03	03.79931	04	34	53.03	+25	06	04.9	006
(9)	1987	03	03.80625	04	34	53.68	+25	06	06.6	006
(10)	1987	02	23.80278	05	13	54.51	+23	38	03.6	006
(10)	1987	02	23.81181	05	13	54.66	+23	38	03.1	006
(10)	1987	02	23.81875	05	13	54.80	+23	38	02.8	006
(11)	1987	02	27.79097	06	09	19.31	+22	02	54.5	006
(11)	1987	02	27.79931	06	09	19.48	+22	02	55.2	006
(11)	1987	02	27.80833	06	09	19.61	+22	02	56.2	006
(14)	1987	01	27.81389	02	37	59.35	+10	54	37.3	006
(14)	1987	01	27.82361	02	37	59.68	+10	54	41.3	006
(14)	1987	01	27.83264	02	37	59.99	+10	54	44.6	006
(19)	1987	02	06.78368	03	45	41.01	+18	16	16.8	006
(19)	1987	02	06.79063	03	45	41.44	+18	16	18.4	006
(19)	1987	02	06.79757	03	45	41.93	+18	16	20.1	006
(20)	1987	12	29.77014	04	09	08.49	+20	00	30.1	006
(20)	1987	12	29.77500	04	09	08.32	+20	00	29.8	006
(20)	1987	12	29.77986	04	09	08.17	+20	00	29.5	006
(22)	1987	02	16.81632	04	18	12.55	+27	39	06.8	006
(22)	1987	02	16.82362	04	18	12.84	+27	39	08.0	006
(22)	1987	02	16.83021	04	18	13.15	+27	39	09.6	006
(27)	1987	01	24.78958	02	40	22.98	+14	47	46.9	006
(27)	1987	01	24.79792	02	40	23.60	+14	47	50.1	006
(27)	1987	01	24.80625	02	40	24.21	+14	47	53.5	006
(30)	1987	02	07.91461	08	36	11.44	+18	22	47.0	006
(30)	1987	02	07.92188	08	36	10.99	+18	22	48.3	006
(30)	1987	02	07.92917	08	36	10.52	+18	22	49.4	006
(30)	1987	02	20.05035	08	25	22.82	+18	49	56.3	006
(30)	1987	02	20.06042	08	25	22.34	+18	49	57.0	006
(30)	1987	02	20.06806	08	25	22.01	+18	49	57.8	006
(30)	1987	02	26.95382	08	20	54.94	+18	59	28.7	006
(30)	1987	02	26.96424	08	20	54.60	+18	59	29.2	006
(30)	1987	02	26.97361	08	20	54.28	+18	59	29.8	006
(30)	1987	03	23.91875	08	17	18.18	+18	56	12.1	006
(30)	1987	03	23.92882	08	17	18.30	+18	56	11.4	006
(30)	1987	03	23.94028	08	17	18.46	+18	56	10.6	006
(30)	1987	03	31.84167	08	20	04.84	+18	43	40.2	006
(30)	1987	03	31.85347	08	20	05.16	+18	43	38.6	006
(39)	1987	11	27.81736	23	44	05.25	-10	19	11.9	006

(39)		1987 11 27.82431	23 44 05.51	-10 19 10.4				006
(39)		1987 11 27.83125	23 44 05.74	-10 19 08.7				006
(40)		1987 11 11.97743	01 55 28.41	+05 04 27.3				006
(40)		1987 11 11.98681	01 55 27.90	+05 04 25.9				006
(40)		1987 11 11.99376	01 55 27.55	+05 04 25.2				006
(40)		1987 11 16.91250	01 51 36.37	+04 58 01.9				006
(40)		1987 11 16.91982	01 51 36.04	+04 58 01.4				006
(40)		1987 11 16.92571	01 51 35.78	+04 58 01.2				006
(40)		1987 12 18.87604	01 44 01.05	+06 07 51.7				006
(40)		1987 12 18.88194	01 44 01.14	+06 07 53.4				006
(40)		1987 12 18.88819	01 44 01.20	+06 07 55.3				006
(45)		1987 06 02.96597	15 06 00.05	-06 24 24.5				006
(45)		1987 06 02.97469	15 05 59.71	-06 24 24.2				006
(45)		1987 06 02.98507	15 05 59.31	-06 24 23.9				006
(45)		1987 06 15.90208	14 59 42.02	-06 31 18.4				006
(45)		1987 06 15.91215	14 59 41.79	-06 31 19.4				006
(45)		1987 06 15.92153	14 59 41.58	-06 31 20.5				006
(230)		1987 03 24.83472	08 26 15.53	+05 41 23.9				006
(230)		1987 03 24.84306	08 26 15.59	+05 41 26.0				006
(230)		1987 03 24.85139	08 26 15.63	+05 41 28.0				006
(389)		1987 04 30.93333	11 55 23.51	-13 21 44.3				006
(389)		1987 04 30.94236	11 55 23.35	-13 21 41.1				006
(389)		1987 04 30.95208	11 55 23.13	-13 21 37.7				006
(451)		1987 04 22.93854	12 13 29.95	+21 08 35.8				006
(451)		1987 04 22.94792	12 13 29.67	+21 08 34.9				006
(451)		1987 04 22.95972	12 13 29.26	+21 08 33.7				006
(532)		1987 04 27.95556	12 52 01.30	+23 15 19.5				006
(532)		1987 04 27.96667	12 52 00.92	+23 15 17.0				006
(532)		1987 05 26.96875	12 46 44.06	+19 23 58.5				006
(532)		1987 05 26.97500	12 46 44.12	+19 23 54.5				006
(532)		1987 05 26.98125	12 46 44.18	+19 23 50.2				006
(532)		1987 06 29.96181	13 06 00.69	+12 05 33.8				006
(532)		1987 06 29.97083	13 06 01.19	+12 05 26.2				006
(532)		1987 06 29.98160	13 06 01.75	+12 05 17.1				006
(704)		1987 03 23.80972	07 51 38.32	+09 02 43.4				006
(704)		1987 03 23.81806	07 51 38.39	+09 02 43.5				006
(704)		1987 03 23.82569	07 51 38.44	+09 02 43.7				006
(704)		1987 04 22.83056	08 03 12.54	+08 49 55.7				006
(704)		1987 04 22.84097	08 03 12.92	+08 49 55.3				006
(704)		1987 04 22.85139	08 03 13.32	+08 49 54.6				006

010 Caussols
E. W. Elst, Royal Observatory, B-1180 Brussels, Belgium
C. Pollas, Observatoire de la Cote d'Azur, Avenue Copernic,
F-06130 Grasse, France
Observers D. Albanese, E. W. Elst, C. Pollas
Measurer E. W. Elst
0.9-m Schmidt telescope
PPM

1989 AL1		1993 03 23.01979	12 42 21.41	+09 40 30.6		18.2		010
1989 AL1		1993 03 23.03194	12 42 20.71	+09 40 34.3				010
1989 AL1		1993 03 23.04387	12 42 20.02	+09 40 38.7				010
1989 AL1		1993 03 25.01389	12 40 30.57	+09 53 36.2				010
1993 FT1	*	1993 03 23.01979	12 29 05.53	+10 11 08.9		18.5		010
1993 FT1		1993 03 23.03194	12 29 04.88	+10 11 11.6				010
1993 FT1		1993 03 23.04387	12 29 04.35	+10 11 14.4				010
1993 FT1		1993 03 25.01389	12 27 38.28	+10 19 08.0				010
1993 FU1	*	1993 03 23.01979	12 30 18.21	+10 09 33.0		18.5		010
1993 FU1		1993 03 23.03194	12 30 17.70	+10 09 38.8				010

1993 FU1		1993	03	23.04387	12	30	17.21	+10	09	44.9		010
1993 FU1		1993	03	25.01389	12	28	56.37	+10	27	32.1		010
1993 FV1	*	1993	03	23.01979	12	30	21.69	+06	54	30.8	17.9	010
1993 FV1		1993	03	23.03194	12	30	21.09	+06	54	39.4		010
1993 FV1		1993	03	23.04387	12	30	20.52	+06	54	46.4		010
1993 FV1		1993	03	25.01389	12	28	51.02	+07	16	38.7		010
1993 FW1	*	1993	03	23.01979	12	30	24.88	+10	21	17.8	18.3	010
1993 FW1		1993	03	23.03194	12	30	24.32	+10	21	24.2		010
1993 FW1		1993	03	23.04387	12	30	23.72	+10	21	31.3		010
1993 FW1		1993	03	25.01389	12	28	50.23	+10	40	06.5		010
1993 FX1	*	1993	03	23.01979	12	31	21.07	+08	31	05.6	18.7	010
1993 FX1		1993	03	23.03194	12	31	20.45	+08	31	08.6		010
1993 FX1		1993	03	23.04387	12	31	19.84	+08	31	12.1		010
1993 FX1		1993	03	25.01389	12	29	42.73	+08	40	38.4		010
1993 FY1	*	1993	03	23.01979	12	31	36.81	+09	29	24.8	18.7	010
1993 FY1		1993	03	23.03194	12	31	36.02	+09	29	29.6		010
1993 FY1		1993	03	23.04387	12	31	35.31	+09	29	31.5		010
1993 FY1		1993	03	25.01389	12	29	40.84	+09	40	45.4		010
1993 FZ1	*	1993	03	23.01979	12	32	47.86	+07	09	00.5	18.5	010
1993 FZ1		1993	03	23.03194	12	32	47.26	+07	09	04.7		010
1993 FZ1		1993	03	23.04387	12	32	46.74	+07	09	06.9		010
1993 FZ1		1993	03	25.01389	12	31	14.29	+07	18	55.8		010
1993 FA2	*	1993	03	23.01979	12	33	05.92	+06	42	50.3	18.3	010
1993 FA2		1993	03	23.03194	12	33	05.32	+06	42	53.2		010
1993 FA2		1993	03	23.04387	12	33	04.77	+06	42	56.9		010
1993 FA2		1993	03	25.01389	12	31	38.17	+06	53	01.5		010
1993 FB2	*	1993	03	23.01979	12	33	24.39	+06	55	15.0	18.5	010
1993 FB2		1993	03	23.03194	12	33	23.89	+06	55	18.7		010
1993 FB2		1993	03	23.04387	12	33	23.36	+06	55	22.6		010
1993 FB2		1993	03	25.01389	12	32	00.16	+07	06	05.9		010
1993 FC2	*	1993	03	23.01979	12	35	52.23	+10	52	16.3	18.7	010
1993 FC2		1993	03	23.03194	12	35	51.58	+10	52	21.8		010
1993 FC2		1993	03	23.04387	12	35	50.84	+10	52	27.8		010
1993 FC2		1993	03	25.01389	12	33	58.20	+11	08	28.3		010
1993 FD2	*	1993	03	23.01979	12	38	09.52	+10	17	36.0	19.0	010
1993 FD2		1993	03	23.03194	12	38	08.87	+10	17	37.8		010
1993 FD2		1993	03	23.04387	12	38	08.32	+10	17	39.7		010
1993 FD2		1993	03	25.01389	12	36	26.88	+10	21	52.3		010
1993 FE2	*	1993	03	23.01979	12	38	19.43	+09	45	43.9	18.4	010
1993 FE2		1993	03	23.03194	12	38	18.58	+09	45	43.8		010
1993 FE2		1993	03	23.04387	12	38	17.75	+09	45	43.2		010
1993 FE2		1993	03	25.01389	12	36	12.40	+09	46	20.8		010
1993 FF2	*	1993	03	23.01979	12	38	21.71	+08	20	11.2	18.5	010
1993 FF2		1993	03	23.03194	12	38	21.01	+08	20	13.7		010
1993 FF2		1993	03	23.04387	12	38	20.41	+08	20	15.6		010
1993 FF2		1993	03	25.01389	12	36	40.14	+08	26	24.2		010
1993 FG2	*	1993	03	23.01979	12	38	42.90	+10	00	52.7	18.5	010
1993 FG2		1993	03	23.03194	12	38	42.19	+10	00	54.6		010
1993 FG2		1993	03	23.04387	12	38	41.63	+10	00	56.4		010
1993 FG2		1993	03	25.01389	12	37	04.03	+10	07	04.5		010
1993 FH2	*	1993	03	23.01979	12	38	52.03	+06	35	52.6	17.5	010
1993 FH2		1993	03	23.03194	12	38	51.36	+06	35	58.6		010
1993 FH2		1993	03	23.04387	12	38	50.64	+06	36	03.1		010
1993 FH2		1993	03	25.01389	12	36	58.00	+06	51	11.9		010
1993 FJ2	*	1993	03	23.01979	12	39	43.47	+10	49	44.8	18.5	010
1993 FJ2		1993	03	23.03194	12	39	42.79	+10	49	51.1		010
1993 FJ2		1993	03	23.04387	12	39	42.08	+10	49	55.5		010
1993 FJ2		1993	03	25.01389	12	37	55.68	+11	06	23.8		010
1993 FK2	*	1993	03	23.01979	12	40	11.13	+09	39	10.4	18.5	010

1993 FK2		1993 03 23.03194	12 40 10.52	+09 39 15.2			010
1993 FK2		1993 03 23.04387	12 40 10.07	+09 39 19.5			010
1993 FK2		1993 03 25.01389	12 38 47.98	+09 52 08.8			010
1993 FL2	*	1993 03 23.01979	12 40 44.38	+08 17 12.5		18.5	010
1993 FL2		1993 03 23.03194	12 40 43.68	+08 17 18.3			010
1993 FL2		1993 03 23.04387	12 40 43.11	+08 17 22.6			010
1993 FL2		1993 03 25.01389	12 38 59.21	+08 32 56.3			010
1993 FM2	*	1993 03 23.01979	12 42 09.70	+10 14 18.6		18.6	010
1993 FM2		1993 03 23.03194	12 42 09.04	+10 14 24.1			010
1993 FM2		1993 03 23.04387	12 42 08.54	+10 14 28.0			010
1993 FM2		1993 03 25.01389	12 40 35.13	+10 27 53.2			010
(512)		1993 03 23.01979	12 44 39.23	+09 45 35.6		16.0	010
(512)		1993 03 23.03194	12 44 38.53	+09 45 41.3			010
(512)		1993 03 23.04387	12 44 37.77	+09 45 46.2			010
(512)		1993 03 25.01389	12 42 43.27	+10 00 25.9			010
(1123)		1993 03 23.01979	12 33 44.68	+07 37 29.0		17.0	010
(1123)		1993 03 23.03194	12 33 43.89	+07 37 33.9			010
(1123)		1993 03 23.04387	12 33 43.15	+07 37 37.6			010
(1123)		1993 03 25.01389	12 31 43.33	+07 49 21.0			010
(3819)		1993 03 23.01979	12 28 23.33	+09 26 18.5		18.0	010
(3819)		1993 03 23.03194	12 28 22.69	+09 26 21.1			010
(3819)		1993 03 23.04387	12 28 22.02	+09 26 23.8			010
(3819)		1993 03 25.01389	12 26 37.57	+09 33 00.1			010
(4167)		1993 03 23.01979	12 31 21.78	+07 07 43.4		17.7	010
(4167)		1993 03 23.03194	12 31 21.21	+07 07 52.5			010
(4167)		1993 03 23.04387	12 31 20.66	+07 08 00.8			010
(4167)		1993 03 25.01389	12 29 50.97	+07 30 23.5			010
(4315)		1993 03 23.01979	12 30 27.61	+08 59 05.2		18.1	010
(4315)		1993 03 23.03194	12 30 26.87	+08 59 06.6			010
(4315)		1993 03 23.04387	12 30 26.14	+08 59 08.3			010
(4315)		1993 03 25.01389	12 28 34.45	+09 03 29.7			010

033 Tautenburg
F. Borngen, Thuringer Landessternwarte, Dorfstrasse 73,
O-6901 Tautenburg, Federal Republic of Germany
1.3-m Schmidt telescope
PPM

1978 VC6		1991 12 11.98125	05 57 01.95	+17 51 08.9		19.2	033
1978 VC6		1991 12 12.03194	05 56 58.49	+17 50 59.0			033
1978 VC6		1991 12 12.97014	05 55 56.63	+17 47 52.1			033
1980 TO5		1991 10 06.09132	05 24 33.69	+19 56 58.6		18.9	033
1980 TO5		1991 10 06.13576	05 24 34.77	+19 56 49.5			033
1980 TO5		1991 10 08.07951	05 25 19.75	+19 50 03.6			033
1980 TO5		1991 10 09.12604	05 25 41.64	+19 46 20.3			033
1980 TO5		1991 10 10.12049	05 26 00.80	+19 42 44.0			033
1981 EE1		1991 12 11.98125	05 59 10.95	+19 05 58.1		18.9	033
1981 EE1		1991 12 12.03194	05 59 07.74	+19 05 58.8			033
1981 EE1		1991 12 12.97014	05 58 10.10	+19 06 10.8			033
1987 QR		1991 10 06.09132	05 28 39.10	+20 23 08.0		18.5	033
1987 QR		1991 10 06.13576	05 28 40.68	+20 23 03.3			033
1987 QR		1991 10 08.07951	05 29 48.80	+20 19 36.6			033
1987 QR		1991 10 09.12604	05 30 22.13	+20 17 40.7			033
1987 QR		1991 10 10.12049	05 30 51.78	+20 15 48.4			033
1987 QR		1992 01 03.76250	04 35 54.87	+17 21 01.7		18.2	033
1987 QR		1992 01 03.81389	04 35 53.00	+17 21 01.4			033
1991 TO13	*	1991 10 06.09132	05 22 07.38	+20 40 15.4		18.5	033
1991 TO13		1991 10 06.13576	05 22 08.60	+20 40 06.7			033
1991 TO13		1991 10 08.07951	05 23 02.04	+20 33 43.6			033
1991 TO13		1991 10 09.12604	05 23 27.59	+20 30 10.2			033

1991 TO13		1991	10	10.12049	05 23 50.02	+20 26 43.3			033
1991 TP13	*	1991	10	06.09132	05 24 37.18	+21 48 41.7		19.2	033
1991 TP13		1991	10	06.13576	05 24 38.99	+21 48 51.3			033
1991 TP13		1991	10	08.07951	05 25 58.64	+21 55 29.5			033
1991 TQ13	*	1991	10	06.09132	05 25 47.80	+19 47 41.5		18.6	033
1991 TQ13		1991	10	06.13576	05 25 50.22	+19 47 39.3			033
1991 TQ13		1991	10	08.07951	05 27 36.03	+19 45 50.8			033
1991 TQ13		1991	10	09.12604	05 28 30.30	+19 44 47.9			033
1991 TQ13		1991	10	10.12049	05 29 20.27	+19 43 45.2			033
1991 TR13	*	1991	10	06.09132	05 33 50.55	+20 06 05.7		19.5	033
1991 TR13		1991	10	06.13576	05 33 51.92	+20 05 59.7			033
1991 TR13		1991	10	08.07951	05 34 50.57	+20 01 35.9			033
1991 TR13		1991	10	09.12604	05 35 19.45	+19 59 10.0			033
1991 TR13		1991	10	10.12049	05 35 45.43	+19 56 49.3			033
1991 TS13	*	1991	10	06.09132	05 34 46.38	+20 23 58.9		18.4	033
1991 TS13		1991	10	06.13576	05 34 47.21	+20 24 03.3			033
1991 TS13		1991	10	08.07951	05 35 22.89	+20 27 24.9			033
1991 TS13		1991	10	09.12604	05 35 39.90	+20 29 14.5			033
1991 TS13		1991	10	10.12049	05 35 54.78	+20 30 58.9			033
1991 WC		1991	10	06.09132	05 29 16.13	+20 17 52.9		17.7	033
1991 WC		1991	10	06.13576	05 29 18.21	+20 17 56.0			033
1991 WC		1991	10	08.07951	05 30 49.18	+20 20 15.8			033
1991 WC		1991	10	09.12604	05 31 34.72	+20 21 30.1			033
1991 WC		1991	10	10.12049	05 32 15.91	+20 22 39.3			033
1991 XO5	*	1991	12	11.98125	05 50 44.86	+18 26 23.9		19.4	033
1991 XO5		1991	12	12.03194	05 50 41.36	+18 26 13.3			033
1991 XO5		1991	12	12.97014	05 49 38.61	+18 22 58.4			033
1991 XP5	*	1991	12	11.98125	05 51 00.52	+19 03 18.4		19.0	033
1991 XP5		1991	12	12.03194	05 50 57.11	+19 03 27.9			033
1991 XP5		1991	12	12.97014	05 49 55.69	+19 06 33.0			033
1991 XQ5	*	1991	12	11.98125	05 51 59.42	+16 57 24.9		18.4	033
1991 XQ5		1991	12	12.03194	05 51 56.37	+16 57 20.1			033
1991 XQ5		1991	12	12.97014	05 51 01.03	+16 55 50.0			033
1991 XR5	*	1991	12	11.98125	05 52 14.02	+18 38 33.6		19.6	033
1991 XR5		1991	12	12.03194	05 52 11.03	+18 38 29.1			033
1991 XR5		1991	12	12.97014	05 51 17.50	+18 37 10.5			033
1991 XS5	*	1991	12	11.98125	05 53 06.93	+18 34 11.3		17.9	033
1991 XS5		1991	12	12.03194	05 53 03.38	+18 34 01.9			033
1991 XS5		1991	12	12.97014	05 52 00.13	+18 31 14.7			033
1991 XT5	*	1991	12	11.98125	05 55 15.77	+17 39 17.8		18.0	033
1991 XT5		1991	12	12.03194	05 55 12.38	+17 39 42.8			033
1991 XT5		1991	12	12.97014	05 54 12.26	+17 46 48.1			033
1991 XU5	*	1991	12	11.98125	05 57 07.82	+17 44 10.2		18.7	033
1991 XU5		1991	12	12.03194	05 57 04.44	+17 44 12.5			033
1991 XU5		1991	12	12.97014	05 56 03.23	+17 44 52.2			033
1991 XV5	*	1991	12	11.98125	05 58 15.26	+16 36 30.7		18.6	033
1991 XV5		1991	12	12.03194	05 58 12.58	+16 36 40.0			033
1991 XV5		1991	12	12.97014	05 57 24.78	+16 39 22.0			033
1991 XW5	*	1991	12	11.98125	05 58 28.43	+17 35 34.1		18.8	033
1991 XW5		1991	12	12.03194	05 58 25.06	+17 35 28.1			033
1991 XW5		1991	12	12.97014	05 57 24.93	+17 33 29.3			033
1991 XX5	*	1991	12	11.98125	06 01 33.76	+16 43 56.4		19.1	033
1991 XX5		1991	12	12.03194	06 01 30.71	+16 43 56.4			033
1991 XX5		1991	12	12.97014	06 00 36.68	+16 43 38.1			033
(22)		1991	10	06.09132	05 21 26.63	+21 14 33.7		14	033
(22)		1991	10	06.13576	05 21 27.63	+21 14 44.2			033
(22)		1991	10	08.07951	05 22 11.00	+21 22 36.4			033
(571)		1993	03	01.04028	11 21 24.25	+06 53 00.7		16.3	033
(571)		1993	03	01.08472	11 21 21.59	+06 53 13.5			033

(738)		1991 10 06.09132	05 22 47.83	+19 13 31.8	15.8		033
(738)		1991 10 06.13576	05 22 48.47	+19 13 30.1			033
(738)		1991 10 08.07951	05 23 17.22	+19 12 10.7			033
(738)		1991 10 09.12604	05 23 30.46	+19 11 25.4			033
(738)		1991 10 10.12049	05 23 41.68	+19 10 41.4			033
(738)		1992 01 03.76250	04 35 09.82	+18 02 24.1	15.7		033
(738)		1992 01 03.81389	04 35 07.98	+18 02 25.0			033
(1018)		1993 03 01.04028	11 22 46.44	+06 53 55.8	16.1		033
(1018)		1993 03 01.08472	11 22 43.99	+06 54 06.7			033
(1125)		1991 10 06.09132	05 32 28.27	+21 07 58.0	17.0		033
(1125)		1991 10 06.13576	05 32 29.86	+21 07 59.1			033
(1125)		1991 10 08.07951	05 33 38.56	+21 08 50.4			033
(1125)		1991 10 09.12604	05 34 13.22	+21 09 17.4			033
(1125)		1991 10 10.12049	05 34 44.81	+21 09 41.3			033
(1385)		1992 01 03.76250	04 34 15.66	+16 03 31.6	15.9		033
(1385)		1992 01 03.81389	04 34 13.87	+16 03 39.6			033
(2248)		1993 03 01.04028	11 29 06.31	+05 22 26.0	16.0		033
(2248)		1993 03 01.08472	11 29 04.28	+05 22 38.1			033
(2398)		1991 10 06.09132	05 27 14.51	+20 08 20.8	17.3		033
(2398)		1991 10 06.13576	05 27 17.51	+20 08 24.3			033
(2398)		1991 10 08.07951	05 29 28.94	+20 11 00.6			033
(2398)		1991 10 09.12604	05 30 37.21	+20 12 23.2			033
(2398)		1991 10 10.12049	05 31 40.60	+20 13 40.0			033
(2421)		1991 10 06.09132	05 28 55.33	+20 37 23.7	16.7		033
(2421)		1991 10 06.13576	05 28 55.98	+20 37 27.7			033
(2421)		1991 10 08.07951	05 29 22.50	+20 40 25.4			033
(2421)		1991 10 09.12604	05 29 34.64	+20 42 01.4			033
(2421)		1991 10 10.12049	05 29 44.81	+20 43 32.7			033
(2653)		1991 10 06.09132	05 28 29.16	+18 57 55.7	17.1		033
(2653)		1991 10 06.13576	05 28 30.64	+18 57 49.2			033
(2653)		1991 10 08.07951	05 29 34.17	+18 53 10.6			033
(2653)		1991 10 09.12604	05 30 05.75	+18 50 36.0			033
(2653)		1991 10 10.12049	05 30 34.15	+18 48 05.8			033
(2657)		1993 03 01.04028	11 18 30.91	+07 39 20.9	17.1		033
(2657)		1993 03 01.08472	11 18 28.91	+07 39 33.1			033
(2954)		1991 12 11.98125	06 01 25.23	+17 08 40.5	18.2		033
(2954)		1991 12 12.03194	06 01 21.81	+17 08 39.7			033
(2954)		1991 12 12.97014	06 00 20.80	+17 08 17.2			033
(4556)		1992 01 03.76250	04 32 03.17	+18 07 19.9	18.2		033
(4556)		1992 01 03.81389	04 32 01.15	+18 07 24.6			033
(4915)		1991 10 06.09132	05 32 43.59	+18 55 47.1	18.1		033
(4915)		1991 10 06.13576	05 32 45.86	+18 55 46.3			033
(4915)		1991 10 08.07951	05 34 25.17	+18 55 18.1			033
(4915)		1991 10 09.12604	05 35 16.13	+18 55 00.9			033
(4915)		1991 10 10.12049	05 36 03.11	+18 54 43.3			033
(5130)		1992 01 03.76250	04 42 03.02	+17 24 32.6	17.3		033
(5130)		1992 01 03.81389	04 42 01.76	+17 24 26.9			033

046 Klet
J. Ticha, Hvezdarna Klet, CS-37001 Ceske Budejovice, Czech Republic
Observers J. Ticha, Z. Vavrova, Z. Moravec, M. Tichy, E. Pittich
Measurers Z. Vavrova, M. Tichy
0.63-m Maksutov reflector, 0.57-m reflector
PPM

1993 BC15	*	1993 01 31.02479	09 38 03.31	+09 54 00.9	15.7		046
1993 BC15		1993 01 31.03972	09 38 02.32	+09 53 48.7			046
1993 BC15		1993 02 01.08209	09 37 08.56	+09 43 51.9			046
1993 BC15		1993 02 01.09703	09 37 07.60	+09 43 40.7			046
1993 BD15	*	1993 01 31.02479	09 39 00.11	+08 21 20.4	16.0		046

1993 BD15		1993 01 31.03972	09 38 59.29	+08 21 17.5				046
1993 BD15		1993 02 01.08209	09 38 22.59	+08 19 32.7				046
1993 BD15		1993 02 01.09703	09 38 21.74	+08 19 29.9				046
1993 CD2	*	1993 02 10.82309	10 06 56.64	+24 54 47.0	15.8			046
1993 CD2		1993 02 10.83750	10 06 55.50	+24 54 44.9				046
1993 CD2		1993 02 11.85550	10 05 46.96	+24 52 42.6				046
1993 CD2		1993 02 11.86973	10 05 46.04	+24 52 40.8				046
1993 CE2	*	1993 02 11.88825	10 05 34.45	+16 56 47.7	15.7		E	046
1993 CE2		1993 02 11.90301	10 05 33.90	+16 56 44.8			E	046
1993 CE2		1993 02 12.83704	10 04 35.89	+16 54 53.9			E	046
1993 CE2		1993 02 12.85139	10 04 35.26	+16 54 51.4			E	046
1993 CF2	*	1993 02 11.88825	10 08 20.66	+13 00 03.6	16.3			046
1993 CF2		1993 02 11.90301	10 08 20.05	+13 00 10.3			I	046
1993 CF2		1993 02 12.83704	10 07 29.57	+13 06 18.2				046
1993 CF2		1993 02 12.85139	10 07 28.87	+13 06 22.8				046
1993 CG2	*	1993 02 11.88825	10 13 34.07	+15 57 31.5	15.9			046
1993 CG2		1993 02 11.90301	10 13 33.25	+15 57 31.8				046
1993 CG2		1993 02 12.83704	10 12 43.51	+15 57 31.0				046
1993 CG2		1993 02 12.85139	10 12 42.91	+15 57 30.7				046
1993 CH2	*	1993 02 11.88825	10 14 10.33	+15 00 57.0	16.0			046
1993 CH2		1993 02 11.90301	10 14 09.90	+15 01 00.3				046
1993 CH2		1993 02 12.83704	10 13 39.74	+15 04 12.5				046
4600 P-L		1991 03 13.92942	11 22 45.19	+05 46 24.1				046
4600 P-L		1991 03 13.94354	11 22 44.51	+05 46 26.9				046
(1961)		1993 03 20.89175	12 42 26.57	-00 29 58.6				046
(1961)		1993 03 20.90616	12 42 25.90	-00 29 55.4				046
(2249)		1993 03 20.89175	12 46 55.55	-00 52 34.4				046
(2249)		1993 03 20.90616	12 46 54.90	-00 52 28.2				046
(2722)		1993 03 20.89175	12 48 44.80	-02 59 20.2				046
(2722)		1993 03 20.90616	12 48 44.05	-02 59 13.4				046

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
Measurers L. Tesi, G. Cattani
AGK3, SAOC

1980 AA		1993 02 24.92500	09 09 36.30	+00 35 10.0				104
1980 AA		1993 02 24.94236	09 09 38.62	+00 34 55.0				104
1980 AA		1993 02 25.84861	09 11 44.79	+00 24 45.1				104
1980 AA		1993 02 25.86597	09 11 47.10	+00 24 34.3				104
1988 AL		1993 03 11.85000	10 59 04.80	+06 05 46.3	15.0			104
1988 AL		1993 03 11.86458	10 59 04.24	+06 05 55.5				104
1988 AL		1993 03 15.91111	10 56 18.65	+06 43 43.5	15.0			104
1988 AL		1993 03 15.92569	10 56 18.20	+06 43 50.0				104
1988 AL		1993 03 18.83403	10 54 26.18	+07 10 04.9				104
1988 AL		1993 03 18.84583	10 54 25.79	+07 10 14.7				104
1991 SJ1		1993 03 11.85000	10 57 56.24	+06 02 40.4	14.5			104
1991 SJ1		1993 03 11.86458	10 57 55.56	+06 02 53.4				104
1991 SJ1		1993 03 15.91111	10 55 09.08	+06 52 00.0	14.5			104
1991 SJ1		1993 03 15.92569	10 55 08.70	+06 52 10.2				104
1991 SJ1		1993 03 16.85069	10 54 32.34	+07 03 05.6				104
1991 SJ1		1993 03 16.86528	10 54 31.84	+07 03 16.4				104
1991 SJ1		1993 03 18.83403	10 53 16.97	+07 26 09.8				104
1991 SJ1		1993 03 18.84583	10 53 16.52	+07 26 19.9				104
1991 SJ1		1993 03 22.89375	10 50 54.12	+08 11 20.9				104
1991 SJ1		1993 03 22.91736	10 50 53.67	+08 11 32.1				104
1991 SJ1		1993 03 22.93333	10 50 52.95	+08 11 45.8				104
1993 BP13		1993 03 10.80208	08 49 57.08	-00 27 16.6				104

1993 BP13		1993 03 10.81667	08 49 56.71	-00 27 13.7				104
1993 BP13		1993 03 11.81181	08 49 33.69	-00 23 29.1				104
1993 BP13		1993 03 11.82708	08 49 33.16	-00 23 25.1				104
1993 BP13		1993 03 15.87153	08 48 18.45	-00 08 10.2				104
1993 BP13		1993 03 15.88611	08 48 18.22	-00 08 06.1				104
1993 BP13		1993 03 16.92292	08 48 03.90	-00 04 13.8				104
1993 BP13		1993 03 16.95347	08 48 03.47	-00 04 05.3				104
(5036)		1993 02 23.88266	10 23 28.24	+13 52 03.3				104
(5036)		1993 02 23.89722	10 23 27.70	+13 52 08.7				104
(5036)		1993 02 24.88333	10 22 41.86	+13 57 20.3				104
(5036)		1993 02 24.89792	10 22 41.06	+13 57 24.4				104
(5036)		1993 02 25.88819	10 21 55.14	+14 02 33.7				104
(5036)		1993 02 25.90278	10 21 54.38	+14 02 38.2				104
(5036)		1993 03 16.88681	10 08 55.18	+15 21 50.4				104
(5036)		1993 03 16.90139	10 08 54.74	+15 21 52.8				104
(5438)		1993 03 10.83715	08 56 17.88	-14 21 00.9				104
(5438)		1993 03 10.84825	08 56 17.28	-14 21 03.2				104

372 Geisei
T. Seki, Kamimachi 2-9-35, Kochi, Japan
0.60-m f/3.5 reflector
ACRS

1988 BP3		1993 03 18.69201	12 23 14.53	+02 10 11.2		17.5		372
1988 BP3		1993 03 18.70243	12 23 14.02	+02 10 18.6				372
1988 BP3		1993 03 22.66215	12 20 09.97	+02 42 01.9		17.5		372
1988 BP3		1993 03 22.67222	12 20 09.55	+02 42 07.2				372
1989 GF8		1993 02 25.60625	11 21 27.12	+13 28 32.8		17		372
1989 GF8		1993 02 25.61597	11 21 26.77	+13 28 36.4				372
1989 GF8		1993 02 28.66111	11 18 54.17	+13 46 42.7		17		372
1989 GF8		1993 02 28.67084	11 18 53.58	+13 46 47.2				372
1990 QM		1993 03 17.65729	12 35 05.71	-01 43 47.6		18		372
1990 QM		1993 03 17.66771	12 35 05.01	-01 43 38.7				372
1990 QM		1993 03 18.63646	12 34 16.90	-01 37 01.2		18		372
1990 UF		1993 03 17.58368	10 17 04.93	+05 11 56.1		18.5		372
1991 WC		1993 03 18.66979	12 11 59.55	+04 46 26.1		18		372
1991 WC		1993 03 18.68021	12 11 58.92	+04 46 31.7				372
1993 EE		1993 03 16.66181	11 51 53.98	+06 22 21.9		16.5		372
1993 EE		1993 03 16.67153	11 51 53.56	+06 22 27.6				372
1993 EE		1993 03 17.54097	11 51 08.97	+06 29 40.2		16.5		372
1993 EE		1993 03 17.55069	11 51 08.42	+06 29 46.3				372
1993 FB		1993 03 18.66979	12 14 00.37	+05 17 55.2		18		372
1993 FB		1993 03 18.68021	12 13 59.76	+05 18 01.1				372
1993 FB		1993 03 22.59549	12 09 52.46	+05 25 22.8		18		372
1993 FB		1993 03 22.60729	12 09 51.72	+05 25 25.3				372
1993 FC		1993 03 22.70277	13 08 47.13	+03 48 04.0		17		372
1993 FC		1993 03 22.71354	13 08 46.81	+03 48 08.2				372
1993 FD		1993 03 29.70347	13 02 49.66	+03 22 58.2		16.5		372
1993 FD		1993 03 29.71319	13 02 49.14	+03 22 59.5				372
1993 FE	*	1993 03 16.61944	11 20 23.17	+08 21 46.6		17		372
1993 FE		1993 03 16.62917	11 20 22.63	+08 21 52.4				372
1993 FE		1993 03 17.52917	11 19 43.26	+08 26 25.3		17		372
1993 FF	*	1993 03 16.61944	11 21 02.03	+08 48 42.2		17		372
1993 FF		1993 03 16.62917	11 21 01.45	+08 48 48.4				372
1993 FF		1993 03 17.52708	11 20 09.81	+08 56 44.2		17		372
1993 FG	*	1993 03 16.64063	11 29 59.42	+12 37 32.2		16.5		372
1993 FG		1993 03 16.65069	11 29 58.80	+12 37 32.7				372
1993 FG		1993 03 17.56563	11 29 14.03	+12 39 57.2		16.5		372
1993 FH	*	1993 03 16.64063	11 30 28.81	+13 11 13.9		17.5		372
1993 FH		1993 03 16.65069	11 30 28.30	+13 11 17.1				372

1993 FH		1993 03 17.56563	11 29 04.47	+13 13 29.8	17.5		372
1993 FJ	*	1993 03 16.64063	11 30 45.22	+12 31 44.0	17.5		372
1993 FJ		1993 03 16.65069	11 30 44.66	+12 31 51.4			372
1993 FJ		1993 03 17.56563	11 30 03.67	+12 41 19.8	17.5		372
1993 FK	*	1993 03 17.59757	11 34 37.57	+09 05 16.6	16.5		372
1993 FK		1993 03 17.60799	11 34 36.88	+09 05 19.7			372
1993 FK		1993 03 18.60729	11 33 42.96	+09 09 32.3	16.5		372
1993 FQ3	*	1993 03 17.65729	12 35 47.04	-01 59 40.6	17		372
1993 FQ3		1993 03 17.66771	12 35 46.53	-01 59 34.0			372
1993 FQ3		1993 03 18.63646	12 35 04.32	-01 54 11.9	17		372
1993 FS3	*	1993 03 18.69201	12 20 52.33	+01 31 26.4	17.5		372
1993 FS3		1993 03 18.70243	12 20 51.75	+01 31 29.6			372
1993 FS3		1993 03 22.64132	12 18 08.10	+02 04 14.2	18		372
1993 FS3		1993 03 22.65139	12 18 07.69	+02 04 18.6			372
(1003)		1993 03 17.65729	12 36 33.24	-01 50 08.2	16		372
(1003)		1993 03 17.66771	12 36 32.87	-01 50 00.7			372
(1003)		1993 03 18.63646	12 35 51.54	-01 45 08.0	16		372
(1385)		1993 03 16.64063	11 27 39.36	+12 41 10.0	16		372
(1385)		1993 03 16.65069	11 27 38.88	+12 41 15.2			372
(1385)		1993 03 17.56563	11 26 55.04	+12 46 29.8	16		372
(1501)		1993 03 17.62083	12 20 58.71	+00 50 02.4	17		372
(1521)		1993 03 16.64063	11 27 13.84	+13 14 35.1	17		372
(1521)		1993 03 16.65069	11 27 13.38	+13 14 34.6			372
(1521)		1993 03 17.56563	11 26 20.73	+13 15 19.3	16.5		372
(5071)		1993 03 18.64965	12 28 24.57	+01 07 37.8	17.5		372
(5071)		1993 03 18.65868	12 28 24.26	+01 07 41.8			372
(5125)		1993 03 16.61944	11 18 45.02	+08 29 06.2	16.5		372
(5125)		1993 03 16.62917	11 18 44.28	+08 29 09.1			372
(5125)		1993 03 17.52708	11 17 54.58	+08 32 13.2	17		372

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1.05-m Schmidt
SAOC

(1044)		1993 01 26.54144	05 31 07.42	+26 46 29.1	17		381
(1044)		1993 01 26.57269	05 31 06.55	+26 46 30.0			381
(1044)		1993 01 29.52917	05 29 55.08	+26 45 23.3			381
(1044)		1993 01 29.56389	05 29 54.33	+26 45 21.3			381
(1064)		1993 01 26.54144	05 17 02.03	+24 32 26.0	17		381
(1064)		1993 01 26.57269	05 17 01.37	+24 32 22.2			381
(1064)		1993 01 29.52917	05 16 08.52	+24 23 08.2			381
(1064)		1993 01 29.56389	05 16 07.89	+24 23 01.2			381
(1666)		1993 01 26.54144	05 29 46.31	+22 02 55.8	18		381
(1666)		1993 01 26.57269	05 29 45.74	+22 02 54.8			381
(1829)		1993 01 26.54144	05 27 12.97	+25 19 16.9	16		381
(1829)		1993 01 26.57269	05 27 12.78	+25 19 09.7			381
(1829)		1993 01 29.52917	05 27 10.14	+25 04 51.4			381
(1829)		1993 01 29.56389	05 27 10.16	+25 04 40.1			381
(2563)		1993 01 26.54144	05 12 32.61	+21 58 55.7	18		381

385 Nihondaira Observatory Oohira station
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0.25-m f/3.4 hyperboloid astrocamera + CCD
GSC

1990 VF2		1993 04 14.66840	14 54 55.85	-13 25 36.4			385
1990 VF2		1993 04 14.68206	14 54 55.30	-13 25 33.3			385
1990 VY6		1993 03 20.67483	12 14 40.65	+21 02 32.4	17.3 V		385
1990 VY6		1993 03 20.68096	12 14 40.26	+21 02 34.0			385

1990 VY6	1993 03 20.68715	12 14 39.98	+21 02 34.7				385
1990 VY6	1993 03 21.61684	12 13 52.00	+21 05 38.8	17.3	V		385
1990 VY6	1993 03 21.63056	12 13 51.25	+21 05 41.8				385
1991 VN2	1993 03 21.59549	12 02 38.04	+09 59 26.6	16.5	V		385
1991 VN2	1993 03 21.60191	12 02 37.75	+09 59 28.9				385
1991 VN2	1993 03 21.60741	12 02 37.50	+09 59 30.6				385
1991 VN2	1993 03 29.62743	11 56 31.23	+10 50 23.6				385
1991 VN2	1993 03 29.63252	11 56 31.08	+10 50 27.1				385
1991 VN2	1993 03 29.63738	11 56 30.93	+10 50 28.9				385
1993 CN	1993 03 21.53750	10 46 55.77	+23 27 33.4	16.3	V		385
1993 CN	1993 03 21.54317	10 46 55.53	+23 27 34.1				385
1993 CN	1993 03 21.54861	10 46 55.32	+23 27 35.2				385
1993 EE	1993 03 20.64977	11 48 28.03	+06 55 06.5	16.8	V		385
1993 EE	1993 03 20.65382	11 48 27.74	+06 55 08.0				385
1993 EE	1993 03 20.65810	11 48 27.50	+06 55 10.6				385
1993 EE	1993 03 29.61181	11 41 03.52	+08 00 54.0				385
1993 EE	1993 03 29.61678	11 41 03.33	+08 00 56.6				385
1993 EE	1993 03 29.62170	11 41 03.09	+08 00 59.2				385
1993 EE	1993 04 14.60722	11 31 36.94	+09 14 12.1				385
1993 EE	1993 04 14.61748	11 31 36.68	+09 14 13.5				385
1993 EE	1993 04 14.62257	11 31 36.58	+09 14 14.0				385
1993 EK	1993 03 20.62616	11 47 29.46	-03 32 35.8	17	V		385
1993 EK	1993 03 20.63258	11 47 29.02	-03 32 34.2				385
1993 EK	1993 03 20.63895	11 47 28.58	-03 32 33.5				385
1993 EK	1993 03 21.56337	11 46 28.50	-03 30 02.2	17.3	V		385
1993 EK	1993 03 21.57031	11 46 27.97	-03 30 00.8				385
1993 EK	1993 03 21.57726	11 46 27.47	-03 29 58.7				385
1993 EK	1993 04 13.62558	11 26 32.60	-02 31 37.4				385
1993 EK	1993 04 13.63368	11 26 32.36	-02 31 37.7				385
1993 EK	1993 04 13.64167	11 26 31.95	-02 31 34.4				385
1993 EK	1993 04 14.58264	11 26 01.32	-02 30 01.1				385
1993 EK	1993 04 14.59063	11 26 01.07	-02 30 01.3				385
1993 EK	1993 04 14.59850	11 26 00.82	-02 30 00.9				385
1993 EP	1993 03 20.57049	11 54 32.46	-06 07 17.5	16	V		385
1993 EP	1993 03 20.57882	11 54 31.89	-06 07 17.5				385
1993 EP	1993 03 20.59250	11 54 30.94	-06 07 17.9				385
(4101)	1993 03 20.62616	11 47 16.07	-03 30 54.3	16.5	V		385
(4101)	1993 03 20.63258	11 47 15.72	-03 30 53.2				385
(4101)	1993 03 20.63895	11 47 15.37	-03 30 52.0				385
(4101)	1993 03 21.56337	11 46 24.71	-03 27 51.6	16.5	V		385
(4101)	1993 03 21.57031	11 46 24.33	-03 27 50.5				385
(4101)	1993 03 21.57726	11 46 23.92	-03 27 49.2				385

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Observer S. Ueda
Measurer H. Kaneda
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GSC

1980 TS4	1992 02 08.59410	08 54 53.53	+22 50 14.3	17			399
1980 TS4	1992 02 08.60938	08 54 52.50	+22 50 17.8				399
1988 AL	1989 05 25.55359	17 11 45.70	-09 24 22.8	16.8			399
1988 AL	1989 05 25.56840	17 11 44.80	-09 24 20.7				399
1988 AL	1993 03 18.55139	10 54 36.76	+07 07 34.0	16.5			399
1988 AL	1993 03 18.56597	10 54 36.17	+07 07 41.3				399
1990 UT10	1990 10 19.60139	01 41 27.30	+08 26 03.8	16.7			399
1990 UT10	1990 10 19.61597	01 41 26.38	+08 25 59.1				399
1991 SG1	1993 03 22.59861	13 03 30.62	-17 57 02.6	16.5			399

1991 SG1		1993	03	25.62500	13	00	51.23	-17	42	57.7	16.5	399
1991 SG1		1993	03	25.63958	13	00	50.47	-17	42	51.9		399
1991 UC1		1993	02	25.57778	10	20	25.90	+03	49	19.4	16.3	399
1991 UC1		1993	02	25.59236	10	20	25.09	+03	49	27.2		399
1991 UC1		1993	03	12.47500	10	08	50.34	+05	43	22.2	16.8	399
1991 UC1		1993	03	12.48981	10	08	49.75	+05	43	27.8		399
1991 UC1		1993	03	18.48634	10	05	04.27	+06	26	44.8	16.8	399
1991 UC1		1993	03	18.50069	10	05	03.78	+06	26	48.8		399
1991 UO4		1993	03	18.51817	10	21	28.00	+08	53	17.2	16.7	399
1991 UO4		1993	03	18.53264	10	21	27.10	+08	53	20.4		399
1991 VR		1993	03	29.69097	13	01	48.41	-06	15	22.1	16.8	399
1991 VR		1993	03	29.70556	13	01	47.44	-06	15	18.2		399
1991 VS		1993	03	26.60556	13	07	57.14	+07	17	40.9	16.5	399
1991 VS		1993	03	26.61725	13	07	56.63	+07	17	44.4		399
1991 VN1		1993	03	22.51876	11	37	04.75	+12	29	34.2	16.5	399
1991 VN1		1993	03	22.53333	11	37	03.85	+12	29	40.7		399
1991 VZ1		1993	03	25.59028	11	48	04.32	+18	27	50.2	16.3	399
1991 VZ1		1993	03	25.60486	11	48	03.48	+18	27	52.8		399
1991 VZ1		1993	03	26.50069	11	47	17.83	+18	29	48.0	16.2	399
1991 VZ1		1993	03	26.51528	11	47	17.01	+18	29	49.3		399
1991 VH2		1993	03	25.59028	11	56	51.03	+14	51	04.9	16.7	399
1991 VH2		1993	03	25.60486	11	56	50.20	+14	51	09.6		399
1991 VH2		1993	03	26.50069	11	56	02.66	+14	54	45.3	16.5	399
1991 VH2		1993	03	26.51528	11	56	01.89	+14	54	49.4		399
1991 VY3		1993	03	12.57292	11	16	18.02	+05	21	50.0	16.5	399
1991 VY3		1993	03	22.48692	11	09	16.66	+06	10	28.9	16.8	399
1991 VY3		1993	03	22.50150	11	09	15.91	+06	10	32.5		399
1992 FR2		1992	03	23.56319	13	06	38.69	+02	44	05.0	17	399
1992 FR2		1992	03	23.57813	13	06	37.80	+02	44	12.2		399
1992 FR2	*	1992	03	24.58125	13	05	44.44	+02	51	12.5	17	399
1992 FR2		1992	03	24.59583	13	05	43.64	+02	51	16.7		399
1992 GR		1992	05	02.53194	13	21	08.10	+05	24	36.3	17	399
1992 GR		1992	05	02.55000	13	21	07.39	+05	24	34.2		399
1993 CM		1993	02	25.61111	10	34	19.19	+14	46	04.4	15.5	399
1993 CM		1993	02	25.62569	10	34	18.28	+14	46	07.3		399
1993 CN1		1993	03	12.47500	10	05	52.90	+05	44	34.7	16.8	399
1993 CN1		1993	03	12.48981	10	05	52.17	+05	44	40.5		399
1993 CN1		1993	03	18.48634	10	01	28.90	+06	21	38.4	16.5	399
1993 CN1		1993	03	18.50069	10	01	28.38	+06	21	43.6		399
1993 CO1		1993	03	12.47500	10	09	51.21	+04	54	29.7	17.2	399
1993 CO1		1993	03	12.48981	10	09	50.54	+04	54	35.7		399
1993 CO1		1993	03	18.48634	10	06	01.88	+05	34	24.6	17.2	399
1993 CO1		1993	03	18.50069	10	06	01.34	+05	34	30.3		399
1993 DM		1993	03	12.47500	10	08	29.37	+04	49	01.2	17.3	399
1993 DM		1993	03	12.48981	10	08	28.73	+04	49	06.4		399
1993 DV		1993	03	12.47500	10	09	48.58	+06	50	23.8	17	399
1993 DV		1993	03	12.48981	10	09	48.05	+06	50	27.5		399
1993 DV		1993	03	18.48634	10	06	05.83	+07	15	45.4	17.2	399
1993 DV		1993	03	18.50069	10	06	05.18	+07	15	48.8		399
1993 DF2		1993	03	12.57292	11	17	43.54	+07	29	08.1	16.8	399
1993 DF2		1993	03	22.48692	11	09	01.24	+08	49	59.0	17.2	399
1993 DF2		1993	03	22.50150	11	09	00.57	+08	50	06.5		399
1993 EN	*	1993	03	12.50764	12	24	16.21	+02	56	01.8	17.3	399
1993 EN		1993	03	12.52222	12	24	15.49	+02	56	08.3		399
1993 EN		1993	03	19.55069	12	18	57.11	+03	48	29.7	17	399
1993 EN		1993	03	19.56528	12	18	56.39	+03	48	36.3		399
1993 EO	*	1993	03	12.50764	12	27	08.26	+00	20	52.6	17	399
1993 EO		1993	03	12.52222	12	27	07.52	+00	20	56.9		399
1993 EO		1993	03	19.55069	12	21	17.55	+00	53	56.6	17	399

1993 EO		1993	03	19.56528	12	21	16.71	+00 54 01.1		399
1993 FQ		1993	03	25.69792	13	13	15.75	-14 49 39.9	16.5	399
1993 FQ		1993	03	25.71253	13	13	15.14	-14 49 33.7		399
1993 FQ		1993	03	29.72778	13	10	22.60	-14 15 59.5	16.5	399
1993 FQ		1993	03	29.74271	13	10	21.85	-14 15 51.7		399
1993 FJ1	*	1993	03	25.59028	11	51	52.86	+16 56 41.5	16.5	399
1993 FJ1		1993	03	25.60486	11	51	52.05	+16 56 45.5		399
1993 FJ1		1993	03	26.50069	11	51	13.89	+17 00 11.8	16.5	399
1993 FJ1		1993	03	26.51528	11	51	13.09	+17 00 14.7		399
1993 FK1		1993	03	22.59861	12	59	51.80	-17 55 03.2	16.5	399
1993 FK1	*	1993	03	25.62500	12	57	49.06	-17 30 40.8	16.3	399
1993 FK1		1993	03	25.63958	12	57	48.48	-17 30 33.2		399
1993 FL1		1993	03	22.55145	12	11	41.82	+07 37 24.2	17	399
1993 FL1	*	1993	03	25.66111	12	08	28.04	+07 46 35.7	16.5	399
1993 FL1		1993	03	25.67569	12	08	27.07	+07 46 38.8		399
1993 FL1		1993	03	26.53889	12	07	33.90	+07 48 58.5	16.7	399
1993 FL1		1993	03	26.55347	12	07	32.99	+07 49 00.3		399
1993 FL1		1993	03	29.62014	12	04	24.64	+07 56 25.8	16.7	399
1993 FL1		1993	03	29.63472	12	04	23.89	+07 56 28.8		399
1993 FM1	*	1993	03	25.66111	12	10	06.15	+06 48 46.7	17	399
1993 FM1		1993	03	25.67569	12	10	05.44	+06 48 52.3		399
1993 FM1		1993	03	26.53889	12	09	19.13	+06 55 41.9	16.8	399
1993 FM1		1993	03	26.55347	12	09	18.32	+06 55 48.0		399
1993 FM1		1993	03	29.62014	12	06	34.78	+07 19 00.9	17	399
1993 FM1		1993	03	29.63472	12	06	33.99	+07 19 08.7		399
1993 FN1		1993	03	22.55145	12	14	59.38	+06 58 16.3	16.8	399
1993 FN1	*	1993	03	25.66111	12	12	24.64	+07 24 23.8	16.7	399
1993 FN1		1993	03	25.67569	12	12	24.00	+07 24 29.7		399
1993 FN1		1993	03	26.53889	12	11	41.16	+07 31 35.1	16.5	399
1993 FN1		1993	03	26.55347	12	11	40.41	+07 31 44.0		399
1993 FN1		1993	03	29.62014	12	09	08.06	+07 56 16.6	16.5	399
1993 FN1		1993	03	29.63472	12	09	07.38	+07 56 22.6		399
1993 FO1		1993	03	22.55145	12	15	50.04	+08 28 24.6	16.7	399
1993 FO1	*	1993	03	25.66111	12	12	47.20	+08 41 40.0	16.7	399
1993 FO1		1993	03	25.67569	12	12	46.33	+08 41 42.5		399
1993 FO1		1993	03	26.53889	12	11	55.85	+08 45 12.1	16.7	399
1993 FO1		1993	03	26.55347	12	11	54.95	+08 45 15.5		399
1993 FO1		1993	03	29.62014	12	08	56.43	+08 56 51.2	16.7	399
1993 FO1		1993	03	29.63472	12	08	55.56	+08 56 55.2		399
1993 FP1		1993	03	22.55145	12	16	09.60	+07 20 40.8	16.5	399
1993 FP1	*	1993	03	25.66111	12	13	04.78	+07 34 11.2	16	399
1993 FP1		1993	03	25.67569	12	13	03.84	+07 34 15.1		399
1993 FP1		1993	03	26.53889	12	12	13.11	+07 37 43.1	15.5	399
1993 FP1		1993	03	26.55347	12	12	12.20	+07 37 47.7		399
1993 FP1		1993	03	29.62014	12	09	12.78	+07 49 02.6	16	399
1993 FP1		1993	03	29.63472	12	09	11.90	+07 49 06.6		399
1993 FQ1	*	1993	03	25.66111	12	18	17.02	+07 09 07.8	17	399
1993 FQ1		1993	03	25.67569	12	18	16.30	+07 09 15.9		399
1993 FQ1		1993	03	26.53889	12	17	31.44	+07 16 25.7	16.5	399
1993 FQ1		1993	03	26.55347	12	17	30.66	+07 16 32.7		399
1993 FQ1		1993	03	29.62014	12	14	50.56	+07 41 18.6	17	399
1993 FQ1		1993	03	29.63472	12	14	49.79	+07 41 24.7		399
1993 FR1	*	1993	03	25.66111	12	19	47.71	+06 45 09.5	17	399
1993 FR1		1993	03	25.67569	12	19	46.89	+06 45 13.9		399
1993 FR1		1993	03	26.53889	12	19	08.27	+06 48 56.8	16.8	399
1993 FR1		1993	03	26.55347	12	19	07.56	+06 49 00.6		399
1993 FR1		1993	03	29.62014	12	16	50.03	+07 01 42.3	17.2	399
1993 FR1		1993	03	29.63472	12	16	49.34	+07 01 46.2		399
1993 FS1	*	1993	03	25.66111	12	19	52.53	+07 53 57.1	16.2	399

1993 FS1		1993 03 25.67569	12 19 51.89	+07 54 04.3			399
1993 FS1		1993 03 26.53889	12 19 15.52	+08 01 02.5		16.5	399
1993 FS1		1993 03 26.55347	12 19 14.79	+08 01 08.7			399
1993 FS1		1993 03 29.62014	12 17 05.52	+08 25 04.2		16.5	399
1993 FS1		1993 03 29.63472	12 17 04.83	+08 25 10.4			399
1993 FN2	*	1993 03 26.57049	12 17 40.45	-03 49 42.2		16.7	399
1993 FN2		1993 03 26.58507	12 17 39.72	-03 49 38.0			399
1993 FN2		1993 03 29.65486	12 15 10.18	-03 31 22.8		16.7	399
1993 FN2		1993 03 29.66944	12 15 09.43	-03 31 17.3			399
1993 FO2	*	1993 03 26.57049	12 19 30.37	-04 02 21.2		16.5	399
1993 FO2		1993 03 26.58507	12 19 29.56	-04 02 16.2			399
1993 FO2		1993 03 29.65486	12 16 40.53	-03 47 41.6		16.7	399
1993 FO2		1993 03 29.66944	12 16 39.75	-03 47 38.6			399
1993 FP2	*	1993 03 26.57049	12 24 23.21	-04 37 38.9		16.8	399
1993 FP2		1993 03 26.58507	12 24 22.34	-04 37 35.3			399
1993 FP2		1993 03 29.65486	12 21 15.12	-04 21 56.0		17	399
1993 FP2		1993 03 29.66944	12 21 14.23	-04 21 52.1			399
1993 FP3		1993 02 25.68750	11 22 53.37	+01 10 53.1		16.5	399
1993 FP3		1993 02 25.70243	11 22 52.71	+01 11 09.7			399
1993 FP3		1993 03 12.57292	11 10 11.32	+06 55 59.3		16.3	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
Measurers K. Watanabe, H. Kaneda
0.25-m f/2.6 Schmidt camera, 0.20 f/4.0 hyperboloid astrocamera, 0.25-m f/3.4 hyperboloid astrocamera
GSC

1978 TO8		1989 11 29.54826	05 00 35.21	+21 52 45.0		16.5	400
1978 TO8		1989 11 29.56563	05 00 34.30	+21 52 42.5			400
1980 TH		1993 03 15.50694	10 46 25.24	+04 46 23.6		16.0	400
1980 TH		1993 03 15.52292	10 46 24.52	+04 46 24.3			400
1980 TH		1993 03 25.47431	10 38 56.75	+05 03 24.6		16.5	400
1980 TH		1993 03 25.49028	10 38 55.90	+05 03 25.7			400
1988 AL		1989 06 02.54514	17 04 56.08	-09 07 29.0		17	400
1988 AL		1989 06 02.56319	17 04 55.01	-09 07 25.5			400
1989 CM1		1991 10 29.49792	03 10 40.61	+23 06 46.7		17	400
1989 CM1		1991 10 29.51528	03 10 39.54	+23 06 45.7			400
1989 CM1		1991 10 31.49167	03 08 43.96	+23 03 09.4		17	400
1989 CM1		1991 10 31.50972	03 08 42.88	+23 03 07.2			400
1990 DS9	*	1990 02 28.65694	11 26 40.89	+00 13 27.9		17	400
1990 DS9		1990 02 28.67500	11 26 39.64	+00 13 33.2			400
1990 DS9		1990 03 17.57569	11 10 19.05	+02 17 49.2		17	400
1990 DS9		1990 03 17.59653	11 10 17.93	+02 17 58.9			400
1990 DS9		1990 03 21.57292	11 06 32.64	+02 48 11.1		17	400
1990 DS9		1990 03 21.59167	11 06 31.60	+02 48 17.2			400
1990 UT10		1990 10 10.58472	01 48 26.17	+09 08 48.9		17	400
1990 UT10		1990 10 10.60000	01 48 25.44	+09 08 44.7			400
1990 UT10		1990 10 11.59688	01 47 41.00	+09 04 08.3		16.7	400
1990 UT10		1990 10 11.61285	01 47 40.15	+09 04 04.2			400
1991 UQ2		1991 10 29.47847	02 55 34.56	+18 09 57.0		16.5	400
1991 UQ2		1991 10 29.49792	02 55 33.12	+18 10 03.6			400
1991 UQ2		1991 11 26.44410	02 24 09.98	+20 50 10.3		17	400
1991 UQ2		1991 11 26.45938	02 24 09.17	+20 50 16.3			400
1991 UF3		1991 11 26.44410	02 22 16.89	+19 11 44.1		16.5	400
1991 UF3		1991 11 26.45938	02 22 16.06	+19 11 46.9			400
1991 UM3		1991 11 02.61910	03 47 10.41	+17 31 38.4		17	400
1991 UM3		1991 11 02.63715	03 47 09.30	+17 31 39.8			400

1991 VX		1991	10	31.56007	03	15	05.48	+14	24	19.9	16.7	400
1991 VX		1991	10	31.57604	03	15	04.62	+14	24	19.5		400
1991 VY		1991	10	29.55243	03	20	09.51	+14	00	11.2	16.5	400
1991 VY		1991	10	29.56840	03	20	08.56	+14	00	10.3		400
1991 VG1		1991	11	26.44410	02	23	29.50	+19	38	19.3	16.5	400
1991 VG1		1991	11	26.45938	02	23	28.88	+19	38	20.4		400
1991 XO2		1991	11	02.61910	03	42	54.17	+18	57	40.6	16.7	400
1991 XO2		1991	11	02.63715	03	42	53.24	+18	57	34.6		400
1991 XO2		1991	11	04.61424	03	41	27.41	+18	44	30.9	17	400
1991 XO2		1991	11	04.63160	03	41	26.50	+18	44	22.8		400
1992 FU1		1992	03	23.53611	12	28	22.32	-00	04	49.4	17	400
1992 FU1		1992	03	23.55556	12	28	21.28	-00	04	42.5		400
1992 FX1		1992	03	04.59792	11	33	51.50	+00	19	42.1	16	400
1992 FX1		1992	03	04.61736	11	33	50.57	+00	19	52.7		400
1992 FR2		1992	03	31.52674	12	59	16.10	+03	38	38.3	16.8	400
1992 FR2		1992	03	31.54688	12	59	14.90	+03	38	47.1		400
1992 GQ		1992	03	28.65000	13	44	56.77	+04	47	22.2	16.8	400
1992 GQ		1992	03	28.67222	13	44	55.80	+04	47	30.1		400
1992 GQ		1992	03	31.63819	13	42	54.82	+05	02	33.2	17	400
1992 GQ		1992	03	31.65764	13	42	53.94	+05	02	39.5		400
1992 GR		1992	03	28.65000	13	54	00.31	+05	23	43.5	16.8	400
1992 GR		1992	03	28.67222	13	53	59.17	+05	23	45.5		400
1992 GR		1992	03	31.63819	13	51	21.86	+05	30	53.4	17	400
1992 GR		1992	03	31.65764	13	51	20.85	+05	30	57.0		400
1993 CN1		1991	09	07.58437	00	06	48.59	+06	01	45.8	16.5	400
1993 CN1		1991	09	07.60313	00	06	47.69	+06	01	40.9		400
1993 EQ	*	1993	03	15.53958	12	24	51.68	+00	46	15.0	17	400
1993 EQ		1993	03	15.55556	12	24	50.74	+00	46	15.3		400
1993 EQ		1993	03	20.61319	12	19	34.29	+00	58	42.8	17	400
1993 EQ		1993	03	20.62917	12	19	33.19	+00	58	45.6		400
1993 EQ		1993	03	25.52778	12	14	18.04	+01	10	39.2	16.0	400
1993 EQ		1993	03	25.54132	12	14	17.11	+01	10	38.5		400
1993 EQ		1993	03	29.60694	12	09	55.72	+01	19	43.9	17	400
1993 EQ		1993	03	29.62083	12	09	54.96	+01	19	44.9		400
1993 ER	*	1993	03	15.57153	12	22	03.12	-01	05	12.3	16.5	400
1993 ER		1993	03	15.58611	12	22	02.36	-01	05	07.7		400
1993 ER		1993	03	20.61319	12	17	21.47	-00	36	07.7	16.2	400
1993 ER		1993	03	20.62917	12	17	20.40	-00	36	02.9		400
1993 ER		1993	03	25.52778	12	12	41.24	-00	07	34.6	16.0	400
1993 ER		1993	03	25.54132	12	12	40.40	-00	07	29.6		400
1993 ES	*	1993	03	15.57153	12	39	52.69	-04	55	37.7	16.5	400
1993 ES		1993	03	15.58611	12	39	51.76	-04	55	39.5		400
1993 ES		1993	03	20.64931	12	35	00.89	-05	02	02.3	15.7	400
1993 ES		1993	03	20.66458	12	34	59.78	-05	01	59.8		400
1993 ET	*	1993	03	15.57153	12	41	01.28	-05	47	18.4	17	400
1993 ET		1993	03	15.58611	12	41	00.62	-05	47	02.3		400
1993 ET		1993	03	20.64931	12	36	47.05	-04	19	14.3	17	400
1993 ET		1993	03	20.66458	12	36	46.37	-04	18	59.1		400
1993 ET		1993	03	29.57882	12	29	11.06	-01	45	03.2	16.2	400
1993 ET		1993	03	29.59201	12	29	10.47	-01	44	48.7		400
1993 EU	*	1993	03	15.53958	12	36	01.22	+02	38	47.5	16.0	400
1993 EU		1993	03	15.55556	12	36	00.42	+02	38	55.3		400
1993 EU		1993	03	20.61319	12	31	52.60	+03	08	21.3	16.0	400
1993 EU		1993	03	20.62917	12	31	51.65	+03	08	24.6		400
1993 EU		1993	03	29.63750	12	23	51.48	+03	58	32.1	16.2	400
1993 EU		1993	03	29.65208	12	23	50.69	+03	58	38.0		400
1993 EV	*	1993	03	15.57153	12	42	57.48	-07	05	30.4	16.5	400
1993 EV		1993	03	15.58611	12	42	56.78	-07	05	32.3		400
1993 EV		1993	03	20.64931	12	38	53.40	-06	48	31.9	16.5	400

1993 EV		1993 03 20.66458	12 38 52.72	-06 48 32.2			400
1993 EV		1993 03 29.57882	12 30 59.79	-06 11 37.8	16.5		400
1993 EV		1993 03 29.59201	12 30 59.06	-06 11 34.5			400
1993 FP		1993 03 20.64931	12 35 48.09	-04 05 00.1	16.0		400
1993 FP		1993 03 20.66458	12 35 47.32	-04 04 56.7			400
1993 FD1	*	1993 03 20.61319	12 19 09.13	-01 07 53.0	16.5		400
1993 FD1		1993 03 20.62917	12 19 08.52	-01 07 51.1			400
1993 FD1		1993 03 25.52778	12 14 27.69	-00 37 24.0	16.5		400
1993 FD1		1993 03 25.54132	12 14 26.89	-00 37 16.4			400
1993 FE1		1993 03 15.57153	12 24 47.12	-02 27 19.5	16.7		400
1993 FE1		1993 03 15.58611	12 24 46.21	-02 27 12.8			400
1993 FE1	*	1993 03 20.61319	12 20 07.48	-02 00 21.0	16.5		400
1993 FE1		1993 03 20.62917	12 20 06.63	-02 00 18.9			400
1993 FE1		1993 03 25.52778	12 15 24.12	-01 32 58.7	16.5		400
1993 FE1		1993 03 25.54132	12 15 23.46	-01 32 53.6			400
1993 FE1		1993 03 29.60694	12 11 27.18	-01 10 05.8	17		400
1993 FE1		1993 03 29.62083	12 11 26.64	-01 10 01.6			400
1993 FF1	*	1993 03 20.61319	12 20 42.55	-00 28 41.8	16.3		400
1993 FF1		1993 03 20.62917	12 20 41.53	-00 28 36.7			400
1993 FF1		1993 03 25.52778	12 15 54.45	+00 00 31.5	16.0		400
1993 FF1		1993 03 25.54132	12 15 53.57	+00 00 34.7			400
1993 FG1		1993 03 15.57153	12 29 38.03	-04 45 54.1	16.7		400
1993 FG1		1993 03 15.58611	12 29 37.22	-04 45 36.1			400
1993 FG1	*	1993 03 20.61319	12 26 17.08	-02 51 01.1	16.5		400
1993 FG1		1993 03 20.62917	12 26 16.12	-02 50 31.3			400
1993 FG1		1993 03 25.52778	12 22 51.79	-00 57 56.0	16.5		400
1993 FG1		1993 03 25.54132	12 22 51.38	-00 57 37.9			400
1993 FG1		1993 03 29.54653	12 20 04.90	+00 32 57.5	16.5		400
1993 FG1		1993 03 29.56250	12 20 04.21	+00 33 10.9			400
1993 FQ2		1993 03 15.53958	12 33 54.05	+04 11 51.0	16.3		400
1993 FQ2		1993 03 15.55556	12 33 53.09	+04 11 52.5			400
1993 FQ2	*	1993 03 20.61319	12 29 11.59	+04 17 13.0	16.0		400
1993 FQ2		1993 03 20.62917	12 29 10.86	+04 17 14.6			400
1993 FQ2		1993 03 29.63750	12 20 27.83	+04 22 44.4	16.2		400
1993 FQ2		1993 03 29.65208	12 20 27.07	+04 22 43.7			400
(2645)		1993 03 15.57153	12 20 14.25	-07 44 12.3	16.0		400
(2645)		1993 03 15.58611	12 20 13.44	-07 44 14.9			400

408 Nyukasa
K. Watanabe, 3-8 Mason Hashimoto B-203, Atsubetsu Chuo 3 Jo 4 Chome, Atsubetsu-Ku, Sapporo 004, Japan
Observers M. Hirasawa, S. Suzuki
Measurers K. Watanabe, H. Kaneda
0.30-m f/2.7 Schmidt camera
GSC

1992 CG1		1992 03 07.63785	10 23 47.73	+13 51 11.3	16.7		408
1992 CG1		1992 03 07.65382	10 23 47.04	+13 51 15.5			408
1993 FV3	*	1993 03 20.71875	13 28 22.96	-08 41 57.7	17		408
1993 FV3		1993 03 20.72639	13 28 22.71	-08 41 56.1			408
1993 FV3		1993 03 20.73611	13 28 22.34	-08 41 51.3			408
1993 FV3		1993 03 21.69063	13 27 46.32	-08 36 56.3	17		408
1993 FV3		1993 03 21.70382	13 27 45.44	-08 36 53.0			408

411 Oizumi
T. Kobayashi, 1717-2 Shimo-Koizumi, Oizumi-machi, Ora-gun, Gunma-ken, 370-05 Japan
0.16-m f/6.3 reflector + CCD
GSC

1993 BL3	1993 02 24.50807	09 12 52.29	+30 10 15.9						411
1993 BL3	1993 02 24.51594	09 12 51.85	+30 10 16.2						411
1993 BL3	1993 02 24.51987	09 12 51.63	+30 10 16.7						411
1993 EP	1993 04 10.53418	11 34 03.78	-06 08 43.1						411
1993 EP	1993 04 10.54204	11 34 03.45	-06 08 43.0						411
1993 EP	1993 04 10.54597	11 34 03.26	-06 08 44.8						411
1993 FZ	1993 04 14.63427	11 47 22.52	+02 03 10.8	16					411
1993 FZ	1993 04 14.64212	11 47 22.19	+02 03 13.2						411
1993 FZ	1993 04 14.64605	11 47 22.03	+02 03 15.0						411
1993 FZ	1993 04 15.49736	11 46 52.23	+02 08 11.3						411
1993 FZ	1993 04 15.50523	11 46 51.94	+02 08 13.2						411
1993 FZ	1993 04 15.50917	11 46 51.81	+02 08 14.4						411

413 Siding Spring
R. H. McNaught, Siding Spring Observatory, Coonabarabran, N.S.W. 2357, Australia
Observers J. A. Dawe, M. J. Drinkwater, M. Hartley, R. H. McNaught, Q. A. Parker, K. S. Russell, A. Savage, D. I. Steel, F. G. Watson
Measurer R. H. McNaught
Uppsala Southern Schmidt, U.K. Schmidt, 1.0-m reflector + CCD

1980 AA	1993 03 01.56760	09 19 46.50	-00 09 20.3						413
1980 AA	1993 03 01.56992	09 19 46.75	-00 09 21.3						413
1980 AA	1993 03 02.58800	09 21 51.00	-00 17 13.0						413
1980 AA	1993 03 02.59008	09 21 51.22	-00 17 14.0						413
1980 AA	1993 03 03.56429	09 23 48.04	-00 24 09.6						413
1980 AA	1993 03 03.56661	09 23 48.28	-00 24 10.5						413
1988 XB	1993 03 02.64797	11 58 51.43	+06 14 06.0						413
1988 XB	1993 03 02.65203	11 58 51.10	+06 14 08.9						413
1988 XB	1993 03 03.59711	11 57 28.23	+06 23 57.6						413
1988 XB	1993 03 03.60079	11 57 27.88	+06 23 59.4						413
1990 SB	1993 03 01.51735	07 58 39.56	-00 42 09.8						413
1990 SB	1993 03 01.52049	07 58 39.45	-00 42 08.1						413
1990 SB	1993 03 02.46742	07 58 02.96	-00 33 49.8						413
1990 SB	1993 03 02.47059	07 58 02.82	-00 33 48.2						413
1991 AM	1982 11 13.67293	05 52 32.96	-18 00 40.9					V	413
1991 AM	1982 11 13.72312	05 52 27.78	-18 00 58.7					I	413
1992 FE	1993 03 03.64014	15 48 04.72	-29 18 31.5						413
1992 FE	1993 03 03.64253	15 48 04.78	-29 18 33.1						413
1992 JE	1992 03 28.73781	15 05 25.82	-14 38 10.2					F	413
1992 VM	1993 03 01.42124	05 18 15.64	+14 09 32.4					I	413
1992 VM	1993 03 01.42369	05 18 15.93	+14 09 34.3					I	413
1992 VM	1993 03 01.42780	05 18 16.52	+14 09 36.7						413
1992 VM	1993 03 02.40743	05 20 21.74	+14 21 26.8						413
1992 VM	1993 03 02.41108	05 20 22.24	+14 21 30.6						413
1992 VM	1993 03 03.41440	05 22 30.69	+14 33 22.4						413
1992 VM	1993 03 03.41686	05 22 30.97	+14 33 24.5						413
1992 WD5	1974 04 28.64573	16 20 17.95	-31 41 08.7	17.5 V					413
1992 WD5	1974 04 28.68740	16 20 14.52	-31 41 20.4					b	413
1992 WD5	1991 08 06.44780	17 30 06.08	-33 54 34.7	19.5 V				V	413
1992 WD5	1991 08 06.48600	17 30 05.92	-33 54 23.5					V	413
1993 BW3	1993 03 01.57829	10 03 20.82	-01 20 36.8						413
1993 BW3	1993 03 01.58056	10 03 20.62	-01 20 36.7						413
1993 BW3	1993 03 02.62848	10 01 46.11	-01 19 06.0						413
1993 BW3	1993 03 02.63075	10 01 45.89	-01 19 05.8						413
1993 BW3	1993 03 03.42985	10 00 35.73	-01 17 52.5						413
1993 BW3	1993 03 03.43182	10 00 35.56	-01 17 52.6						413
1993 BX3	1993 03 01.62635	11 27 21.70	-02 33 13.3						413
1993 BX3	1993 03 01.62846	11 27 21.65	-02 33 09.4						413
1993 BX3	1993 03 02.63329	11 27 23.49	-02 02 20.5						413

1993	BX3		1993	03	02.63550	11	27	23.44	-02	02	16.4				413
1993	DK2	*	1993	02	24.62543	11	32	47.24	-02	03	09.9	17	V		413
1993	DK2		1993	02	24.67404	11	32	42.81	-02	03	51.6				413
1993	DK2		1993	03	02.57009	11	23	19.54	-03	29	34.1				413
1993	DK2		1993	03	02.57280	11	23	19.25	-03	29	36.4				413
1993	DK2		1993	03	03.49127	11	21	46.29	-03	42	54.9				413
1993	DK2		1993	03	03.49381	11	21	46.03	-03	42	57.2				413
1993	DK2		1993	03	03.72019	11	21	22.18	-03	46	13.3				413
1993	DL2	*	1993	02	26.59654	10	39	10.03	-27	53	07.7	17.5	V		413
1993	DL2		1993	02	26.64515	10	39	07.09	-27	52	40.6				413
1993	DL2		1993	03	01.60613	10	36	08.40	-27	23	25.0				413
1993	DL2		1993	03	01.60834	10	36	08.26	-27	23	23.6				413
1993	DL2		1993	03	02.56498	10	35	11.02	-27	12	55.5				413
1993	DL2		1993	03	02.56731	10	35	10.87	-27	12	53.9				413
1993	DL2		1993	03	03.43527	10	34	19.48	-27	02	56.5				413
1993	DL2		1993	03	03.43736	10	34	19.35	-27	02	55.1				413
1993	DL2		1993	03	03.69896	10	34	03.01	-26	59	50.5				413
1993	DL2		1993	03	03.70116	10	34	02.86	-26	59	48.9				413
1993	DM2	*	1993	02	28.41770	07	56	14.67	-03	29	54.1	17	V		413
1993	DM2		1993	02	28.45596	07	56	12.96	-03	29	56.1				413
1993	DM2		1993	03	01.47168	07	55	30.13	-03	30	48.5				413
1993	DM2		1993	03	01.47316	07	55	30.06	-03	30	48.5				413
1993	DM2		1993	03	02.44830	07	54	51.51	-03	31	32.1				413
1993	DM2		1993	03	02.45024	07	54	51.43	-03	31	32.2				413
1993	DM2		1993	03	03.42525	07	54	15.37	-03	32	07.2				413
1993	DM2		1993	03	03.42729	07	54	15.29	-03	32	07.2				413
1993	DM2		1993	03	03.59152	07	54	09.04	-03	32	12.6				413
1993	DM2		1993	03	03.59353	07	54	08.97	-03	32	12.5				413
1993	EM	*	1993	03	02.71863	13	38	55.88	-41	22	46.2	18	V		413
1993	EM		1993	03	03.50198	13	39	02.30	-41	30	53.4				413
1993	EM		1993	03	03.50435	13	39	02.32	-41	30	54.8				413
1993	EM		1993	03	03.77605	13	39	03.10	-41	33	44.8				413
1993	EM		1993	03	24.67622	13	31	53.50	-43	42	43.5				413
1159	T-2		1990	10	27.72469	03	24	24.45	+06	32	27.3				413
(4580)			1993	01	30.61345	10	49	01.83	-00	25	25.5			b	413
(4580)			1993	01	30.65512	10	49	00.82	-00	25	10.3				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

1982	MA		1993	03	23.56546	12	33	54.27	-03	31	06.1	18.9			474
1982	MA		1993	03	23.60285	12	33	52.17	-03	30	53.3				474
1982	MA		1993	03	25.50493	12	32	09.02	-03	19	37.6				474
1982	MA		1993	03	25.56170	12	32	05.64	-03	19	16.2				474
1993	ET		1993	03	23.56546	12	34	17.80	-03	28	18.4	16			474
1993	ET		1993	03	23.60285	12	34	15.80	-03	27	39.4				474
1993	FL	*	1993	03	23.56546	12	32	00.78	-03	31	59.8	18.9			474
1993	FL		1993	03	23.60285	12	31	58.51	-03	31	46.3				474
1993	FL		1993	03	25.50493	12	30	12.22	-03	20	19.9				474
1993	FL		1993	03	25.56170	12	30	08.94	-03	19	58.8				474
1993	FM	*	1993	03	23.56546	12	32	04.94	-03	35	30.1	18.8			474
1993	FM		1993	03	23.60285	12	32	03.25	-03	35	19.8				474
1993	FM		1993	03	25.50493	12	30	39.97	-03	25	49.0				474
1993	FM		1993	03	25.56170	12	30	37.31	-03	25	29.0				474
1993	FN	*	1993	03	23.56546	12	32	20.25	-03	19	50.2			f	474

1993 FN		1993 03 23.60285	12 32 17.48	-03 19 57.8	18.5			474
1993 FN		1993 03 25.50493	12 30 12.06	-03 20 00.3			I	474
1993 FN		1993 03 25.56170	12 30 08.14	-03 19 59.0				474
1993 FO	*	1993 03 23.56546	12 32 52.79	-03 43 28.9	18.8			474
1993 FO		1993 03 23.60285	12 32 51.10	-03 43 17.9				474
1993 FO		1993 03 25.50493	12 31 27.15	-03 33 46.6				474
1993 FO		1993 03 25.56170	12 31 24.45	-03 33 28.9				474
1993 FP	*	1993 03 23.56546	12 33 26.35	-03 44 16.1	16.4			474
1993 FP		1993 03 23.60285	12 33 24.37	-03 43 59.3				474
1993 FP		1993 03 25.50493	12 31 49.91	-03 30 14.4				474
1993 FP		1993 03 25.56170	12 31 46.79	-03 29 48.9				474
(2247)		1993 03 23.56546	12 32 44.05	-03 22 31.2	18.0			474
(2247)		1993 03 23.60285	12 32 41.83	-03 22 24.1				474
(2247)		1993 03 25.50493	12 30 51.75	-03 14 59.6				474
(2247)		1993 03 25.56170	12 30 48.28	-03 14 45.0				474

494 Stakenbridge
B. Manning, Moonrakers, Stakenbridge, Churchill, Kidderminster, Worcs. DY10 3LS, England

(4027)		1993 02 19.97258	11 08 01.28	+03 30 30.6				494
(4027)		1993 02 19.99030	11 08 00.47	+03 30 36.5				494

568 Mauna Kea Observatory
D. Jewitt, Institute for Astronomy, 2680 Woodlawn Drive, Honolulu, HI 96822, U.S.A.
D. J. Tholen, Institute for Astronomy, 2680 Woodlawn Drive, Honolulu, HI 96822, U.S.A.
Observers J. F. Bell, W. F. Golisch, D. M. Griep, D. Jewitt, C. D. Kaminski, J. Luu, G. J. Veeder
2.2-m reflector, IRTF encoders
GSC, Ida93 catalogue

1993 FW	*	1993 03 28.41684	12 27 06.31	-03 00 12.7	22.8	R		568
1993 FW		1993 03 28.59830	12 27 05.52	-03 00 07.0				568
1993 FW		1993 03 29.41934	12 27 01.90	-02 59 42.2				568
1993 FW		1993 03 29.42846	12 27 01.85	-02 59 41.8				568
(243)		1993 03 25.45972	12 01 34.02	-01 19 30.4				568
(243)		1993 03 25.46146	12 01 33.92	-01 19 30.2				568
(243)		1993 03 27.45972	11 59 58.30	-01 09 40.7				568
(243)		1993 03 27.46198	11 59 58.19	-01 09 40.2				568
(243)		1993 03 28.60486	11 59 03.83	-01 04 05.7				568
(243)		1993 03 28.60694	11 59 03.76	-01 04 04.9				568
(243)		1993 04 02.47222	11 55 20.03	-00 40 52.1				568
(243)		1993 04 02.47552	11 55 19.90	-00 40 51.3				568

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

(350)		1993 03 26.79950	12 08 50.01	+36 59 50.9				573
(350)		1993 03 26.80824	12 08 49.66	+36 59 51.9				573
(402)		1993 02 25.79007	09 56 17.62	+20 14 22.6				573
(402)		1993 02 25.79389	09 56 17.43	+20 14 24.6				573
(481)		1993 03 23.83758	10 37 35.71	+24 10 49.2				573
(481)		1993 03 23.84099	10 37 35.59	+24 10 49.4				573

587 Sormano
P. Sicoli, Via Valli 9, I-22040 Garbagnate Monastero (Como), Italy
Observers E. Colzani, P. Sicoli, G. Ventre, M. Cavagna, E. Galliani
0.5-m f/5.9 reflector
GSC

1993 FU		1993 03 28.07826	12 05 18.31	-00 29 18.0					587
1993 FU		1993 03 28.09198	12 05 17.75	-00 29 13.5					587
(1584)		1993 03 27.89558	08 30 52.67	-05 55 26.1					587
(1584)		1993 03 27.91050	08 30 52.76	-05 55 29.5					587
(1584)		1993 03 27.92172	08 30 52.80	-05 55 32.2					587
(3446)		1993 01 31.81664	08 49 44.18	+33 15 39.7					587
(3446)		1993 01 31.83596	08 49 42.87	+33 15 43.5					587

589 Santa Lucia Stroncone
A. Vagnozzi, Via Santa Lucia 68, I-05039 Stroncone (Terni), Italy
Observers A. Vagnozzi, V. Risoldi, G. Bernabei, E. Gregori, F. Lombardi
0.50-m f/2.8 Ritchey-Chretien + CCD
GSC

1993 FT	*	1993 03 22.92896	12 09 08.04	-00 50 49.7					589
1993 FT		1993 03 22.94039	12 09 07.41	-00 50 46.5					589
1993 FT		1993 03 22.94914	12 09 06.95	-00 50 44.6					589
1993 FT		1993 03 22.96100	12 09 06.22	-00 50 39.4					589
1993 FT		1993 03 22.97524	12 09 05.46	-00 50 37.9					589
1993 FT		1993 03 23.00496	12 09 03.73	-00 50 29.5					589
1993 FT		1993 03 23.01709	12 09 03.04	-00 50 25.1					589
1993 FT		1993 03 27.84907	12 04 39.07	-00 27 56.3					589
1993 FT		1993 03 27.86387	12 04 38.27	-00 27 52.6					589
1993 FT		1993 03 27.96634	12 04 32.56	-00 27 21.8					589
1993 FT		1993 03 27.98111	12 04 31.55	-00 27 17.7					589
1993 FT		1993 03 27.99459	12 04 30.82	-00 27 16.4					589
1993 FT		1993 03 28.01283	12 04 29.82	-00 27 09.4					589
1993 FT		1993 03 28.83639	12 03 45.96	-00 23 27.8					589
1993 FT		1993 03 28.84851	12 03 45.13	-00 23 23.6					589
1993 FT		1993 03 28.86369	12 03 44.25	-00 23 18.6					589
1993 FT		1993 03 29.90146	12 02 48.35	-00 18 33.9	18.5				589
1993 FT		1993 03 29.94347	12 02 45.93	-00 18 22.3					589
1993 FT		1993 03 30.87353	12 01 56.33	-00 14 11.0					589
1993 FT		1993 03 30.88802	12 01 55.69	-00 14 06.5					589
1993 FT		1993 03 30.90285	12 01 54.84	-00 14 03.7					589
1993 FU	*	1993 03 22.92896	12 09 15.94	-00 52 56.9					589
1993 FU		1993 03 22.94039	12 09 15.41	-00 52 53.3					589
1993 FU		1993 03 22.94914	12 09 14.98	-00 52 51.4					589
1993 FU		1993 03 22.96100	12 09 14.42	-00 52 48.0					589
1993 FU		1993 03 22.97524	12 09 13.75	-00 52 44.3					589
1993 FU		1993 03 23.00496	12 09 12.33	-00 52 36.1					589
1993 FU		1993 03 23.01709	12 09 11.76	-00 52 32.5					589
1993 FU		1993 03 27.84907	12 05 29.13	-00 30 20.1					589
1993 FU		1993 03 27.86387	12 05 28.35	-00 30 17.2					589
1993 FU		1993 03 27.94302	12 05 24.65	-00 29 54.6					589
1993 FU		1993 03 28.88929	12 04 41.37	-00 25 36.1					589
1993 FU		1993 03 28.90457	12 04 40.64	-00 25 31.7					589
1993 FU		1993 03 28.91774	12 04 40.01	-00 25 28.0					589
1993 FU		1993 03 30.82312	12 03 13.54	-00 16 52.4	17				589
1993 FU		1993 03 30.83680	12 03 12.91	-00 16 48.8					589
1993 FV	*	1993 03 27.96634	12 04 15.81	-00 27 35.9					589
1993 FV		1993 03 27.98111	12 04 15.18	-00 27 29.6					589
1993 FV		1993 03 27.99459	12 04 14.68	-00 27 25.2					589
1993 FV		1993 03 28.01283	12 04 13.98	-00 27 22.4					589
1993 FV		1993 03 28.84851	12 03 37.11	-00 23 15.7				M	589
1993 FV		1993 03 28.86369	12 03 36.43	-00 23 11.0				M	589
1993 FV		1993 03 29.90146	12 02 50.41	-00 17 59.9	18.5				589
1993 FV		1993 03 29.94347	12 02 48.54	-00 17 48.2					589
1993 FV		1993 03 30.87353	12 02 07.98	-00 13 14.0					589

1993 FV	1993 03 30.88802	12 02 07.32	-00 13 09.7	589
1993 FV	1993 03 30.90285	12 02 06.63	-00 13 06.0	589
(4651)	1993 03 27.96634	12 04 21.67	-00 24 38.6	589
(4651)	1993 03 27.98111	12 04 20.92	-00 24 32.8	589
(4651)	1993 03 27.99459	12 04 20.39	-00 24 29.2	589
(4651)	1993 03 28.01283	12 04 19.40	-00 24 23.6	589
(4651)	1993 03 28.83639	12 03 41.83	-00 19 51.1	589
(4651)	1993 03 28.84851	12 03 41.24	-00 19 46.7	589
(4651)	1993 03 28.86369	12 03 40.53	-00 19 41.8	589
(4651)	1993 03 30.87353	12 02 08.31	-00 08 32.1	589
(4651)	1993 03 30.88802	12 02 07.66	-00 08 28.1	589
(4651)	1993 03 30.90285	12 02 06.95	-00 08 23.3	589

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

1993 FU	1993 03 27.00910	12 06 07.58	-00 34 10.1	595
1993 FU	1993 03 27.02379	12 06 06.80	-00 34 06.5	595
1993 FU	1993 03 27.05879	12 06 05.13	-00 33 57.5	595
1993 FU	1993 03 27.89804	12 05 26.77	-00 30 07.7	595
1993 FU	1993 03 27.91523	12 05 25.92	-00 30 01.3	595
1993 FU	1993 03 27.92692	12 05 25.43	-00 29 59.6	595
1993 FU	1993 03 31.90586	12 02 24.71	-00 12 01.5	595
1993 FU	1993 03 31.91675	12 02 24.15	-00 11 58.5	595
(4179)	1993 02 17.89410	07 55 07.22	+21 00 59.6	595
(4179)	1993 02 17.91354	07 55 07.96	+21 00 58.8	595
(4651)	1993 03 30.88663	12 02 07.71	-00 08 29.5	595
(4651)	1993 03 30.89388	12 02 07.32	-00 08 26.9	595
(4651)	1993 03 30.92358	12 02 05.95	-00 08 18.0	595
(4651)	1993 03 30.99122	12 02 02.76	-00 07 53.5	595
(4651)	1993 03 31.00346	12 02 02.21	-00 07 49.6	595

596 Colleverde di Guidonia
V. S. Casulli, Via M. Rosa 1, I-00010 Colleverde di Guidonia (RM), Italy
0.31-m f/2.8 Baker-Schmidt + CCD
GSC

1932 CY	1993 03 13.91674	12 10 35.45	+00 30 25.6	596
1932 CY	1993 03 13.92671	12 10 34.92	+00 30 28.1	596
1983 CY2	1993 02 13.83146	08 53 29.35	+20 21 57.1	596
1983 CY2	1993 02 13.84474	08 53 28.55	+20 21 57.5	596
1983 CY2	1993 02 13.85781	08 53 27.75	+20 21 58.1	596
1984 CM1	1993 03 12.84137	10 30 47.30	+09 40 22.1	596
1984 CM1	1993 03 12.85455	10 30 46.87	+09 40 30.6	596
1984 CM1	1993 03 12.85946	10 30 46.70	+09 40 31.0	596
1984 EX	1993 02 13.86997	10 22 23.71	+12 49 29.4	596
1984 EX	1993 02 13.89628	10 22 22.27	+12 49 34.5	596
1984 EX	1993 02 13.91493	10 22 21.10	+12 49 38.1	596
1986 EZ4	1993 02 18.87209	10 31 52.89	+10 12 37.5	596
1986 EZ4	1993 02 18.88872	10 31 51.95	+10 12 41.5	596
1986 EZ4	1993 02 18.90817	10 31 50.80	+10 12 46.6	596
1986 EZ4	1993 02 18.91544	10 31 50.43	+10 12 49.6	596
1987 SG2	1993 02 16.88955	10 23 57.62	+06 44 49.9	596
1987 SG2	1993 02 16.90302	10 23 56.84	+06 44 59.1	596
1987 SG2	1993 02 16.91995	10 23 55.91	+06 45 07.2	596
1988 BK2	1993 03 13.94198	13 21 07.80	+22 39 11.9	596
1988 BK2	1993 03 13.96191	13 21 06.52	+22 39 17.8	596

1989 WL2	1993 02 15.84590	10 00 27.60	+18 59 45.7				596
1989 WL2	1993 02 15.85525	10 00 26.99	+18 59 57.8				596
1989 WL2	1993 02 15.86517	10 00 26.33	+19 00 10.9				596
1989 WL2	1993 02 16.83437	09 59 25.05	+19 22 23.2				596
1989 WL2	1993 02 16.84605	09 59 24.16	+19 22 40.8				596
1989 WL2	1993 02 16.85517	09 59 23.66	+19 22 53.8				596
1989 WL2	1993 02 16.86562	09 59 23.08	+19 23 07.5				596
1990 QC1	1993 03 14.86981	11 04 29.10	-05 53 13.4				596
1990 QC1	1993 03 14.88448	11 04 28.04	-05 53 10.4				596
1991 RS1	1993 03 13.83594	10 48 51.01	+08 24 14.1				596
1991 RS1	1993 03 13.85785	10 48 49.63	+08 24 14.4				596
1991 RS1	1993 03 13.86563	10 48 49.10	+08 24 14.5				596
1991 RS1	1993 03 14.82023	10 47 52.10	+08 24 24.1				596
1991 RS1	1993 03 14.84971	10 47 50.28	+08 24 23.4				596
1991 VZ1	1993 03 16.84312	11 55 47.53	+18 00 05.3				596
1991 VZ1	1993 03 16.86560	11 55 46.36	+18 00 10.2				596
1991 VZ1	1993 03 16.88672	11 55 45.15	+18 00 15.5				596
1991 VZ1	1993 03 16.89618	11 55 44.68	+18 00 18.0				596
1991 VH2	1993 03 11.90287	12 09 00.68	+13 35 59.6				596
1991 VH2	1993 03 11.91262	12 09 00.15	+13 36 01.3				596
1991 VH2	1993 03 11.92192	12 08 59.55	+13 36 06.9				596
1991 VH2	1993 03 12.87455	12 08 11.00	+13 42 15.9				596
1991 VH2	1993 03 12.89090	12 08 10.26	+13 42 23.8				596
1991 VH2	1993 03 12.90858	12 08 09.34	+13 42 30.1				596
(5483)	1993 03 17.93414	13 23 59.71	+03 20 46.2				596
(5483)	1993 03 17.96906	13 23 58.32	+03 20 54.9				596

597 Springe
N. Ehring, Detmoldstrasse 8, W-3000 Hannover 1, Federal Republic of Germany

(127)	1993 03 24.89703	10 12 26.61	+21 21 54.6				597
(127)	1993 03 24.90406	10 12 26.35	+21 21 53.9				597
(235)	1993 03 26.85552	11 10 25.92	+19 21 19.0				597
(235)	1993 03 26.86873	11 10 25.35	+19 21 21.0				597
(350)	1993 03 26.87584	12 08 45.91	+36 59 59.3				597
(350)	1993 03 26.88023	12 08 45.63	+36 59 59.9				597
(472)	1993 03 26.82638	11 44 33.87	+21 48 46.3				597
(472)	1993 03 26.83950	11 44 33.19	+21 48 51.1				597
(484)	1993 03 26.85984	11 14 06.50	+18 56 31.5				597
(484)	1993 03 26.86435	11 14 06.36	+18 56 32.9				597

670 Camarillo
J. E. Rogers, 441 Rowland Avenue, Camarillo, CA 93010
0.25-m Schmidt-Cassegrain + CCD
GSC

1990 RE6	1993 04 03.36227	15 38 19.90	-13 56 38.0	17.4	V		670
1990 RE6	1993 04 03.38987	15 38 19.70	-13 56 32.1				670
1990 RE6	1993 04 03.42249	15 38 19.63	-13 56 24.6				670
1992 WD5	1993 03 22.15105	08 01 38.47	+29 19 59.4	17.1	V		670
1992 WD5	1993 03 22.16426	08 01 40.81	+29 19 36.3				670
1992 WD5	1993 03 22.18716	08 01 44.41	+29 19 02.5				670
1993 FZ	1993 04 03.18157	11 55 48.46	+00 44 52.9	17.0	V		670
1993 FZ	1993 04 03.19479	11 55 47.73	+00 44 57.4				670
1993 FZ	1993 04 03.20880	11 55 47.02	+00 45 04.9				670
(1051)	1993 04 03.30865	16 26 48.03	+01 38 31.2	16.2	V		670
(1051)	1993 04 03.32256	16 26 48.04	+01 38 39.3				670
(1051)	1993 04 03.34688	16 26 47.89	+01 38 52.5				670
(4179)	1993 03 22.21512	08 20 12.04	+19 51 44.0	16.9	V		670
(4179)	1993 03 22.23024	08 20 12.86	+19 51 37.7				670
(4179)	1993 03 22.24785	08 20 13.92	+19 51 36.3				670

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)
Observers P. M. Bendjoya (3, S), T. Gehrels (4, L), E. Helin (2, S), K. Lawrence (2, S), D. H. Levy (3, S), P. Rose (2, S), C. S. Shoemaker (3, S), E. M. Shoemaker (3, S)
Measurers K. Lawrence (2), C. S. Shoemaker (3), B. A. Skiff (6), C. J. van Houten (4), I. van Houten-Groeneveld (4), A. Wisse (4)
1.2-m (L) and 0.46-m (S) Schmidt telescopes

1955 QN		1954 04 04.29271	12 00 02.71	-10 59 28.8		6	675
1955 QN		1954 04 04.31597	12 00 01.39	-10 59 17.2		6	675
1978 VX3		1993 03 19.30503	10 58 01.34	-00 23 26.3	16.5	2	675
1978 VX3		1993 03 19.32726	10 58 00.17	-00 23 16.7		2	675
1978 VX3		1993 03 22.24757	10 55 51.77	-00 06 34.1		2	675
1978 VX3		1993 03 22.27101	10 55 50.65	-00 06 25.4		2	675
1984 UX1		1971 05 13.20278	12 11 46.93	+03 06 20.9	18.5	4	675
1985 TD3		1993 03 24.16719	09 51 58.02	-15 27 27.3	18.5	3	675
1985 TD3		1993 03 24.20000	09 51 57.17	-15 27 07.3		3	675
1985 VF2		1993 03 24.16719	09 46 21.48	-15 23 02.9	17	3	675
1985 VF2		1993 03 24.20000	09 46 20.46	-15 22 51.0		3	675
1988 BK2		1993 03 23.28993	13 12 06.88	+23 07 10.9	17.1	3	675
1988 BK2		1993 03 23.32413	13 12 04.72	+23 07 14.7		3	675
1988 BK2		1993 03 25.39149	13 09 53.56	+23 10 38.6		3	675
1988 BK2		1993 03 25.43350	13 09 50.83	+23 10 42.3		3	675
1988 JL		1993 01 28.51545	11 11 24.24	+43 59 24.8	17.9	3	675
1988 JL		1993 01 28.56197	11 11 22.38	+44 00 13.6		3	675
1988 JN		1993 03 23.17118	10 27 14.60	+16 36 00.5	18	3	675
1988 JN		1993 03 23.22795	10 27 12.79	+16 36 27.4		3	675
1988 UA		1971 03 24.38924	12 04 36.19	-02 13 15.1	20.0	4	675
1988 UA		1971 03 27.32500	12 01 59.85	-01 56 00.1	20.0	4	675
1989 KK		1993 03 21.45417	13 04 47.46	-10 28 12.3	16.0	2	675
1989 KK		1993 03 22.39201	13 04 12.48	-10 19 08.6		2	675
1989 KK		1993 03 22.41372	13 04 11.93	-10 18 56.0		2	675
1991 VC4		1993 03 19.38819	12 09 46.44	-12 57 16.1	17.0	2	675
1991 VC4		1993 03 19.41389	12 09 44.95	-12 57 03.9		2	675
1991 VC4		1993 03 21.36250	12 08 02.54	-12 40 38.0		2	675
1991 VC4		1993 03 21.39653	12 08 01.03	-12 40 20.9		2	675
1993 BB15	*	1993 01 23.30399	07 06 28.78	+22 08 04.6	17.7	3	675
1993 BB15		1993 01 23.34166	07 06 26.74	+22 08 29.8		3	675
1993 BB15		1993 01 24.21563	07 05 42.18	+22 18 41.4		3	675
1993 BB15		1993 01 24.25313	07 05 40.24	+22 19 06.7		3	675
1993 EA		1989 05 02.41858	16 06 12.89	-05 14 44.6		2	675
1993 EA		1989 05 02.44427	16 06 10.24	-05 14 10.6		2	675
1993 EA		1989 05 03.46354	16 04 34.11	-04 51 08.1		2	675
1993 EA		1989 05 03.48611	16 04 32.32	-04 50 42.2		2	675
1993 EA		1989 05 04.37448	16 03 01.83	-04 29 24.6	16	2	675
1993 EA		1989 05 04.39566	16 02 59.28	-04 28 53.9		2	675
1993 ET		1993 03 19.44080	12 37 47.89	-04 40 11.7	16.0	2	675
1993 ET		1993 03 19.46684	12 37 46.42	-04 39 43.8		2	675
1993 ET		1993 03 21.42361	12 36 07.09	-04 05 43.5		2	675
1993 ET		1993 03 21.44757	12 36 05.96	-04 05 18.8		2	675
1993 FQ	*	1993 03 21.48872	13 15 58.88	-15 20 51.3	16.5	2	675
1993 FQ		1993 03 21.51736	13 15 57.85	-15 20 37.7		2	675

1993 FQ		1993 03	22.45625	13 15	23.62	-15 14	05.4		2	675
1993 FR	*	1993 03	21.48872	13 27	57.45	-15 48	54.9	16.0	2	675
1993 FR		1993 03	21.51739	13 27	56.00	-15 48	28.8		2	675
1993 FR		1993 03	22.45625	13 27	09.86	-15 34	21.4		2	675
1993 FX	*	1993 03	21.31441	11 47	25.22	-02 11	54.2	16.0	2	675
1993 FX		1993 03	21.33559	11 47	22.90	-02 12	07.7		2	675
1993 FX		1993 03	22.33333	11 45	32.51	-02 19	33.9		2	675
1993 FX		1993 03	22.36128	11 45	29.20	-02 19	47.0		2	675
1993 FY	*	1993 03	21.31441	12 03	14.39	+01 13	36.7	16.0	2	675
1993 FY		1993 03	21.33559	12 03	13.17	+01 13	54.1		2	675
1993 FY		1993 03	22.33333	12 02	25.31	+01 26	20.8		2	675
1993 FY		1993 03	22.36128	12 02	23.95	+01 26	41.2		2	675
1993 FZ	*	1993 03	21.31441	12 07	25.20	-00 58	28.5	16.0	2	675
1993 FZ		1993 03	21.33559	12 07	23.98	-00 58	18.0		2	675
1993 FZ		1993 03	22.33333	12 06	28.86	-00 50	11.7		2	675
1993 FZ		1993 03	22.36128	12 06	27.22	-00 49	58.1		2	675
1993 FG1		1993 03	19.39514	12 27	06.55	-03 18	48.9	16.0	2	675
1993 FG1		1993 03	19.42014	12 27	05.36	-03 18	15.9		2	675
1993 FG1		1993 03	21.46788	12 25	41.01	-02 31	10.5		2	675
1993 FS2	*	1993 03	19.44080	12 40	21.67	-03 33	19.7	16.5	2	675
1993 FS2		1993 03	19.46684	12 40	20.57	-03 33	06.2		2	675
1993 FS2		1993 03	21.42361	12 39	05.69	-03 16	25.1		2	675
1993 FS2		1993 03	21.44757	12 39	04.99	-03 16	10.6		2	675
1993 FT2	*	1993 03	19.44080	12 41	15.33	-06 17	43.9	16.0	2	675
1993 FT2		1993 03	19.46684	12 41	13.07	-06 17	51.0		2	675
1993 FT2		1993 03	21.42361	12 38	21.17	-06 25	50.3		2	675
1993 FT2		1993 03	21.44757	12 38	18.55	-06 25	58.7		2	675
1993 FP3	*	1993 03	19.29896	11 04	26.44	+09 31	42.6	16.5	2	675
1993 FP3		1993 03	19.32170	11 04	25.35	+09 32	13.9		2	675
1993 FP3		1993 03	22.24201	11 02	07.04	+10 36	54.9		2	675
1993 FP3		1993 03	22.26510	11 02	05.84	+10 37	23.5		2	675
1993 FR3	*	1993 03	21.45417	12 53	07.52	-09 10	29.3	16.5	2	675
1993 FR3		1993 03	22.39201	12 52	23.47	-09 03	53.5		2	675
1993 FR3		1993 03	22.41372	12 52	22.45	-09 03	43.1		2	675
1993 FT3	*	1993 03	19.44878	13 03	29.14	+02 30	09.2	16.5	2	675
1993 FT3		1993 03	19.47378	13 03	27.85	+02 30	22.2		2	675
1993 FT3		1993 03	21.47604	13 01	53.82	+02 44	22.1		2	675
1993 FT3		1993 03	21.51111	13 01	52.11	+02 44	35.5		2	675
1993 FU3	*	1993 03	21.46146	13 15	50.08	-02 32	22.0	16.0	2	675
1993 FU3		1993 03	22.39740	13 15	17.83	-02 21	39.8		2	675
1993 FU3		1993 03	22.41927	13 15	16.96	-02 21	24.9		2	675
4150 T-1		1971 03	24.40486	12 31	28.58	+00 16	01.0		4	675
4150 T-1		1971 03	26.31007	12 29	57.09	+00 39	28.5		4	675
4150 T-1	*	1971 03	26.34896	12 29	55.12	+00 39	56.8	16.6	4	675
4150 T-1		1971 03	27.35208	12 29	06.63	+00 52	13.8		4	675
4150 T-1		1971 04	02.43993	12 24	14.91	+02 05	07.0		4	675
4150 T-1		1971 04	16.21476	12 14	35.20	+04 29	11.5		4	675
4150 T-1		1971 04	16.27708	12 14	32.87	+04 29	45.7		4	675
4150 T-1		1971 05	13.17535	12 07	18.61	+06 57	40.3		4	675
1281 T-2		1971 05	13.20278	12 10	54.04	+00 16	54.0	18.5	4	675
1281 T-2		1971 05	14.23246	12 10	53.96	+00 21	04.7	19.0	4	675
(5457)		1993 01	23.34166	07 27	32.01	+19 34	26.5	17.8	3	675
(5457)		1993 01	24.21563	07 26	48.50	+19 35	20.5		3	675
(5457)		1993 01	24.25314	07 26	46.56	+19 35	22.7		3	675

691 Kitt Peak, Steward Observatory
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Observers T. Gehrels, D. L. Rabinowitz, J. V. Scotti, S. M. Larson, T. Spahr

0.91-m SPACEWATCH telescope, 2.3-m reflector
GSC

1929 PB	1993 03 24.32647	12 27 28.96	-00 04 27.7			691
1929 PB	1993 03 24.35835	12 27 27.11	-00 04 14.0	18.3	V	691
1929 PB	1993 03 24.38995	12 27 25.35	-00 04 00.5			691
1976 UG15	1993 03 23.29206	12 20 13.47	+01 11 35.9	18.5	V	691
1976 UG15	1993 03 23.32399	12 20 11.68	+01 11 48.4			691
1976 UG15	1993 03 23.35664	12 20 09.87	+01 12 01.2			691
1978 SS5	1993 03 28.24646	12 31 42.59	-03 49 27.7	18.4	V	691
1978 SS5	1993 03 28.27362	12 31 41.14	-03 49 18.6			691
1978 SS5	1993 03 28.30068	12 31 39.77	-03 49 06.1			691
1978 SC7	1993 03 19.28467	11 53 54.81	+02 52 41.3			691
1978 SC7	1993 03 19.31658	11 53 52.81	+02 52 45.1	17.6	V	691
1978 SC7	1993 03 19.34838	11 53 50.81	+02 52 49.0			691
1981 EM31	1992 02 29.32667	10 43 27.66	+07 57 58.7	19.8	V	691
1981 EM31	1992 02 29.36165	10 43 25.60	+07 58 11.7			691
1981 EM31	1992 02 29.38249	10 43 24.38	+07 58 19.9			691
1982 SJ1	1993 03 19.21166	09 01 39.03	+11 37 41.5	17.0	V	691
1982 SJ1	1993 03 19.22395	09 01 38.92	+11 37 45.2			691
1982 SJ1	1993 03 19.23569	09 01 38.83	+11 37 48.5			691
1986 JD	1991 12 28.14684	04 57 54.93	+17 50 50.4			691
1986 JD	1991 12 28.16826	04 57 53.64	+17 50 53.2			691
1986 JD	1991 12 28.18976	04 57 52.34	+17 50 56.6	18.6	V	691
1987 QR	1991 12 27.20659	04 41 02.74	+17 24 24.2	18.0	V	691
1987 SC4	1992 02 06.16659	08 16 48.48	+16 34 22.7			691
1987 SC4	1992 02 06.18767	08 16 47.13	+16 34 25.9	18.7	V	691
1987 SC4	1992 02 06.20884	08 16 45.76	+16 34 28.5			691
1988 CW2	1991 12 30.11606	04 31 22.36	+21 24 00.6	18.5	V	691
1988 CW2	1991 12 30.13794	04 31 21.50	+21 23 59.6			691
1988 CW2	1991 12 30.15976	04 31 20.61	+21 23 58.7			691
1989 GF8	1991 10 08.42807	01 58 39.36	+06 25 03.8			691
1989 GF8	1991 10 08.44913	01 58 38.30	+06 24 58.2	18.0	V	691
1989 GF8	1991 10 08.46963	01 58 37.24	+06 24 52.8			691
1991 RP7	1993 02 26.26378	09 22 28.65	+10 49 55.9			691
1991 RP7	1993 02 26.28212	09 22 27.74	+10 49 59.6	17.4	V	691
1991 RP7	1993 02 26.30054	09 22 26.85	+10 50 03.5			691
1991 UC3	1993 03 25.11835	09 45 54.85	+10 57 58.7	19.8	V	691
1991 UC3	1993 03 25.15049	09 45 54.03	+10 58 05.3			691
1991 UC3	1993 03 25.18331	09 45 53.20	+10 58 11.8			691
1992 CQ2	1993 03 19.38964	12 43 00.18	+02 52 46.1	17.4	V	691
1992 CQ2	1993 03 19.41114	12 42 59.34	+02 52 55.9			691
1992 CQ2	1993 03 19.43265	12 42 58.42	+02 53 04.5			691
1993 AJ	1992 12 24.43400	08 51 36.76	+17 08 22.9			691
1993 AJ	1992 12 24.46011	08 51 36.03	+17 08 35.2			691
1993 AJ	1992 12 24.48709	08 51 35.29	+17 08 48.3	16.7	V	691
1993 AN	1991 10 06.43742	01 16 37.28	+03 56 10.9	18.5	V	691
1993 AN	1991 10 06.45797	01 16 36.36	+03 56 05.3			691
1993 AN	1991 10 06.47841	01 16 35.39	+03 55 59.3			691
1993 BC9	1993 02 16.31068	08 32 34.57	+21 29 54.9			691
1993 BC9	1993 02 16.32017	08 32 34.08	+21 29 56.1	18.8	V	691
1993 BC9	1993 02 16.32861	08 32 33.59	+21 29 57.1			691
1993 CP1	1993 03 25.13538	10 10 29.22	+10 59 05.5	17.1	V	691
1993 CP1	1993 03 25.16751	10 10 28.35	+10 59 22.2			691
1993 CP1	1993 03 25.20034	10 10 27.45	+10 59 39.8			691
1993 DC	1993 03 28.14786	06 13 47.84	+34 06 44.5	19.3	V	691
1993 DC	1993 03 28.15671	06 13 49.59	+34 06 43.5	19.3	V	691
1993 DC	1993 03 28.16547	06 13 51.25	+34 06 42.9	19.3	V	691
1993 DQ1	1993 03 19.12471	09 07 27.57	+12 05 57.0			691
1993 DQ1	1993 03 19.13813	09 07 27.00	+12 05 58.2			691

1993	DQ1		1993	03	19.15169	09	07	26.40	+12 05 59.1	691
1993	DQ1		1993	03	20.15731	09	06	40.52	+12 07 58.9	21.2 V 691
1993	DQ1		1993	03	20.16533	09	06	40.04	+12 07 59.2	691
1993	DQ1		1993	03	20.17286	09	06	39.77	+12 08 00.4	691
1993	DQ1		1993	03	26.17073	09	02	44.63	+12 17 44.6	21.9 V 691
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1993	DQ1		1993	03	26.18751	09	02	44.09	+12 17 45.2	21.1 V 691
1993	DT1		1993	03	19.17580	09	11	56.22	+12 30 13.3	19.7 V 691
1993	DT1		1993	03	19.18923	09	11	55.82	+12 30 16.0	691
1993	DT1		1993	03	19.20270	09	11	55.47	+12 30 18.8	691
1993	EA		1993	03	19.25524	12	18	50.64	+08 44 41.4	19.0 V 691
1993	EA		1993	03	19.26678	12	18	49.26	+08 44 50.6	691
1993	EA		1993	03	19.27643	12	18	48.11	+08 44 58.6	691
1993	EA		1993	04	13.20699	11	32	48.77	+13 05 05.5	19.4 V 691
1993	EA		1993	04	13.21474	11	32	48.04	+13 05 08.4	19.7 V 691
1993	EA		1993	04	13.22283	11	32	47.26	+13 05 11.9	19.5 V 691
1993	EG		1991	11	05.47152	03	27	41.16	+14 35 03.2	17.8 V 691
1993	EG		1991	11	05.49230	03	27	39.85	+14 34 56.0	691
1993	EG		1991	11	05.51331	03	27	38.56	+14 34 48.7	691
1993	EL		1993	03	22.26647	12	07	23.54	+34 29 00.0	691
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1993	EL		1993	03	22.27946	12	07	23.02	+34 29 04.9	691
1993	EO		1993	03	23.29054	12	18	02.12	+01 11 46.4	691
1993	EO		1993	03	23.32248	12	18	00.39	+01 11 55.5	16.7 V 691
1993	EO		1993	03	23.35513	12	17	58.61	+01 12 04.9	691
1993	EQ		1993	03	23.28962	12	16	42.37	+01 05 21.0	691
1993	EQ		1993	03	23.32155	12	16	40.22	+01 05 25.7	16.9 V 691
1993	EQ		1993	03	23.35420	12	16	38.03	+01 05 30.4	691
1993	EU		1993	03	19.31150	12	32	58.44	+03 00 47.5	15.9 V 691
1993	EU		1993	03	19.34340	12	32	56.74	+03 00 58.6	691
1993	EU		1993	03	19.37519	12	32	55.06	+03 01 09.6	691
1993	FS	*	1993	03	25.36621	13	02	44.01	-00 18 55.4	18.6 V 691
1993	FS		1993	03	25.39787	13	02	46.61	-00 17 54.8	18.4 V 691
1993	FS		1993	03	25.42991	13	02	49.32	-00 16 53.2	18.3 V 691
1993	FS		1993	03	26.26582	13	04	08.68	+00 09 52.0	691
1993	FS		1993	03	26.27529	13	04	09.48	+00 10 10.4	691
1993	FS		1993	03	26.28449	13	04	10.17	+00 10 27.8	691
1993	FS		1993	03	26.42136	13	04	21.54	+00 14 52.4	18.8 V 691
1993	FS		1993	03	26.42877	13	04	22.13	+00 15 06.8	18.5 V 691
1993	FS		1993	03	26.43653	13	04	22.77	+00 15 20.8	18.6 V 691
1993	FS		1993	03	28.31686	13	07	17.93	+01 16 16.3	18.3 V 691
1993	FS		1993	03	28.32655	13	07	18.72	+01 16 35.2	18.4 V 691
1993	FS		1993	03	28.33592	13	07	19.47	+01 16 53.8	18.4 V 691
1993	FS		1993	03	30.37858	13	10	26.70	+02 23 42.0	17.9 V 691
1993	FS		1993	03	30.38905	13	10	27.51	+02 24 02.9	17.9 V 691
1993	FS		1993	03	30.39807	13	10	28.28	+02 24 20.3	18.1 V 691
1993	FS		1993	04	13.29443	13	31	04.86	+09 33 48.9	18.4 V 691
1993	FS		1993	04	13.30209	13	31	05.44	+09 34 00.2	18.2 V 691
1993	FS		1993	04	13.31067	13	31	06.07	+09 34 14.5	18.2 V 691
1993	FA1	*	1993	03	28.32028	13	12	14.40	+01 06 56.8	19.5 V 691
1993	FA1		1993	03	28.33012	13	12	28.82	+01 14 15.0	19.2 V 691
1993	FA1		1993	03	28.33965	13	12	42.67	+01 21 20.8	19.0 V 691
1993	FA1		1993	03	28.39142	13	13	57.83	+01 59 37.3	19.0 V 691
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1993	FA1		1993	03	30.25294	13	56	29.34	+20	52	13.5	19.7 V	691
1993	FA1		1993	03	30.25947	13	56	36.55	+20	55	23.0		691
1993	FA1		1993	03	30.43016	13	59	38.21	+22	14	47.2		691
1993	FA1		1993	03	30.43816	13	59	46.48	+22	18	21.7		691
1993	FA1		1993	03	30.44642	13	59	55.25	+22	22	02.7		691
1993	FA1		1993	03	31.43560	14	17	19.69	+28	49	37.8	19.8 V	691
1993	FA1		1993	03	31.44423	14	17	27.38	+28	52	32.0	19.8 V	691
1993	FA1		1993	03	31.45295	14	17	35.17	+28	55	27.4	19.7 V	691
1993	FU2	*	1993	03	23.38868	12	23	09.58	+00	09	35.2	19.0 V	691
1993	FU2		1993	03	23.42036	12	23	07.83	+00	09	44.0		691
1993	FU2		1993	03	23.45223	12	23	06.08	+00	09	53.7		691
1993	FU2		1993	03	24.32290	12	22	20.11	+00	14	18.4		691
1993	FU2		1993	03	24.35478	12	22	18.36	+00	14	27.5	18.9 V	691
1993	FU2		1993	03	24.38639	12	22	16.61	+00	14	37.5		691
1993	FV2	*	1993	03	23.39731	12	35	37.56	+00	09	34.3	20.5 V	691
1993	FV2		1993	03	23.42899	12	35	35.71	+00	09	40.4		691
1993	FV2		1993	03	23.46086	12	35	33.76	+00	09	47.8		691
1993	FV2		1993	03	24.33148	12	34	43.16	+00	12	49.9	20.5 V	691
1993	FV2		1993	03	24.36336	12	34	41.20	+00	12	57.0		691
1993	FV2		1993	03	24.39496	12	34	39.32	+00	13	04.1		691
1993	FW2	*	1993	03	23.39734	12	35	39.44	+00	09	58.3	19.5 V	691
1993	FW2		1993	03	23.42902	12	35	37.92	+00	10	04.4		691
1993	FW2		1993	03	23.46089	12	35	36.41	+00	10	10.0		691
1993	FW2		1993	03	24.33163	12	34	55.98	+00	12	52.4		691
1993	FW2		1993	03	24.36351	12	34	54.44	+00	12	58.3	19.3 V	691
1993	FW2		1993	03	24.39512	12	34	52.94	+00	13	04.5		691
1993	FX2	*	1993	03	23.40255	12	43	10.85	+00	09	29.7		691
1993	FX2		1993	03	23.43423	12	43	09.39	+00	09	40.2	18.5 V	691
1993	FX2		1993	03	23.46610	12	43	07.94	+00	09	50.1		691
1993	FX2		1993	03	24.33685	12	42	28.71	+00	14	29.3	19.1 V	691
1993	FX2		1993	03	24.36874	12	42	27.21	+00	14	39.3		691
1993	FX2		1993	03	24.40035	12	42	25.76	+00	14	49.3		691
1993	FY2	*	1993	03	23.40520	12	47	01.02	+00	13	06.3	19.0 V	691
1993	FY2		1993	03	23.43688	12	46	59.04	+00	13	08.5		691
1993	FY2		1993	03	23.46875	12	46	57.08	+00	13	10.2		691
1993	FY2		1993	03	24.33934	12	46	04.20	+00	14	04.3	18.9 V	691
1993	FY2		1993	03	24.37122	12	46	02.20	+00	14	06.4		691
1993	FY2		1993	03	24.40282	12	46	00.21	+00	14	08.2		691
1993	FZ2	*	1993	03	23.40597	12	48	07.40	+00	09	15.0	19.3 V	691
1993	FZ2		1993	03	23.43765	12	48	05.79	+00	09	27.2		691
1993	FZ2		1993	03	23.46952	12	48	04.32	+00	09	39.5		691
1993	FZ2		1993	03	24.34026	12	47	23.86	+00	15	13.9		691
1993	FZ2		1993	03	24.37215	12	47	22.32	+00	15	25.8	19.3 V	691
1993	FZ2		1993	03	24.40375	12	47	20.75	+00	15	38.0		691
1993	FA3	*	1993	03	23.40649	12	48	52.24	+00	09	28.9	18.6 V	691
1993	FA3		1993	03	23.43817	12	48	50.67	+00	09	39.8		691
1993	FA3		1993	03	23.47004	12	48	49.12	+00	09	50.1		691
1993	FA3		1993	03	24.34076	12	48	07.38	+00	14	51.0	18.6 V	691
1993	FA3		1993	03	24.37265	12	48	05.79	+00	15	01.7		691
1993	FA3		1993	03	24.40426	12	48	04.22	+00	15	12.5		691
1993	FB3	*	1993	03	24.22054	11	35	38.46	-00	09	47.9		691
1993	FB3		1993	03	24.25224	11	35	36.78	-00	09	34.8	19.3 V	691
1993	FB3		1993	03	24.28383	11	35	35.01	-00	09	22.0		691
1993	FB3		1993	03	25.22246	11	34	45.88	-00	03	08.6	19.1 V	691
1993	FB3		1993	03	25.25413	11	34	44.17	-00	02	55.8		691
1993	FB3		1993	03	25.28600	11	34	42.41	-00	02	42.9		691
1993	FC3	*	1993	03	24.22072	11	36	09.85	-00	03	50.0		691
1993	FC3		1993	03	24.25242	11	36	08.19	-00	03	38.6	20.3 V	691
1993	FC3		1993	03	24.28401	11	36	06.51	-00	03	27.5		691

1993 FC3		1993	03	25.22284	11	35	19.16	+00	01	52.8		691
1993 FC3		1993	03	25.25452	11	35	17.50	+00	02	03.9	19.9 V	691
1993 FC3		1993	03	25.28639	11	35	15.83	+00	02	14.9		691
1993 FD3	*	1993	03	24.22083	11	36	28.76	+00	01	24.8		691
1993 FD3		1993	03	24.25253	11	36	27.02	+00	01	39.9	17.8 V	691
1993 FD3		1993	03	24.28412	11	36	25.26	+00	01	54.7		691
1993 FD3		1993	03	25.22303	11	35	35.29	+00	09	09.7	17.7 V	691
1993 FD3		1993	03	25.25470	11	35	33.60	+00	09	24.5		691
1993 FD3		1993	03	25.28657	11	35	31.85	+00	09	39.7		691
1993 FE3	*	1993	03	24.22085	11	36	32.51	-00	12	17.9		691
1993 FE3		1993	03	24.25255	11	36	30.66	-00	12	05.7	20.2 V	691
1993 FE3		1993	03	24.28414	11	36	28.84	-00	11	53.8		691
1993 FE3		1993	03	25.22304	11	35	36.33	-00	06	03.2	19.9 V	691
1993 FE3		1993	03	25.25471	11	35	34.50	-00	05	51.1		691
1993 FE3		1993	03	25.28658	11	35	32.67	-00	05	39.2		691
1993 FF3	*	1993	03	24.22172	11	37	48.40	-00	01	07.1	21.1 V	691
1993 FF3		1993	03	24.25341	11	37	46.57	-00	00	51.1		691
1993 FF3		1993	03	24.28499	11	37	44.74	-00	00	35.7		691
1993 FF3		1993	03	25.22392	11	36	52.51	+00	07	04.7		691
1993 FF3		1993	03	25.25559	11	36	50.70	+00	07	20.0		691
1993 FF3		1993	03	25.28746	11	36	48.93	+00	07	36.1	20.7 V	691
1993 FG3	*	1993	03	24.22178	11	37	53.29	-00	09	49.5		691
1993 FG3		1993	03	24.25346	11	37	51.50	-00	09	38.4		691
1993 FG3		1993	03	24.28505	11	37	49.94	-00	09	24.1	20.1 V	691
1993 FG3		1993	03	25.22404	11	37	03.19	-00	03	15.5		691
1993 FG3		1993	03	25.25572	11	37	01.52	-00	03	03.0	20.4 V	691
1993 FG3		1993	03	25.28759	11	36	59.87	-00	02	50.0		691
1993 FH3	*	1993	03	24.22180	11	37	54.94	+00	09	28.5	17.3 V	691
1993 FH3		1993	03	24.25349	11	37	53.54	+00	09	40.0		691
1993 FH3		1993	03	24.28508	11	37	52.11	+00	09	51.1		691
1993 FH3		1993	03	25.22414	11	37	11.89	+00	15	18.0	17.2 V	691
1993 FH3		1993	03	25.25582	11	37	10.49	+00	15	28.6		691
1993 FH3		1993	03	25.28770	11	37	09.07	+00	15	40.2		691
1993 FJ3	*	1993	03	26.29473	12	24	51.65	-03	47	33.8		691
1993 FJ3		1993	03	26.30420	12	24	51.13	-03	47	30.4	19.7 V	691
1993 FJ3		1993	03	26.31390	12	24	50.63	-03	47	27.3		691
1993 FJ3		1993	03	28.24059	12	23	14.52	-03	36	13.3	19.6 V	691
1993 FJ3		1993	03	28.26776	12	23	13.16	-03	36	04.7		691
1993 FJ3		1993	03	28.29482	12	23	11.76	-03	35	52.7		691
1993 FK3	*	1993	03	28.39052	13	12	39.92	+02	09	53.9	19.8 V	691
1993 FK3		1993	03	30.37908	13	11	10.54	+02	25	04.2		691
1993 FK3		1993	03	30.38955	13	11	10.04	+02	25	09.1	20.3 V	691
1993 FL3	*	1993	03	28.39068	13	12	54.32	+01	57	10.7	20.0 V	691
1993 FL3		1993	03	30.37916	13	11	16.78	+02	10	59.5	20.4 V	691
1993 FL3		1993	03	30.38962	13	11	16.21	+02	11	04.2		691
1993 FM3	*	1993	03	28.39082	13	13	06.06	+01	54	08.8	19.7 V	691
1993 FM3		1993	03	30.37948	13	11	44.90	+02	12	07.8	20.0 V	691
1993 FM3		1993	03	30.38994	13	11	44.47	+02	12	13.8		691
1993 FN3	*	1993	03	28.39129	13	13	46.35	+02	03	51.1	20.0 V	691
1993 FN3		1993	03	30.37976	13	12	08.68	+02	14	23.9	20.6 V	691
1993 FN3		1993	03	30.39022	13	12	08.15	+02	14	27.0		691
1993 FO3	*	1993	03	28.39335	13	16	45.19	+01	54	06.3	19.6 V	691
1993 FO3		1993	03	30.38203	13	15	25.29	+02	10	22.8	19.8 V	691
1993 FO3		1993	03	30.39249	13	15	24.80	+02	10	27.7		691
2151 T-1		1993	03	26.36695	13	28	20.78	-02	57	17.8	18.3 V	691
2151 T-1		1993	03	26.38498	13	28	19.85	-02	57	10.0		691
2151 T-1		1993	03	26.40311	13	28	19.00	-02	57	02.8		691
2259 T-1		1993	03	24.34494	12	54	09.61	-00	07	12.6	18.5 V	691
2259 T-1		1993	03	24.37683	12	54	08.21	-00	07	02.3		691

2259 T-1	1993 03 24.40844	12 54 06.83	-00 06 52.0				691
1157 T-2	1993 03 19.17786	09 14 54.91	+12 32 44.6	18.5	V		691
1157 T-2	1993 03 19.19129	09 14 54.67	+12 32 47.6				691
1157 T-2	1993 03 19.20477	09 14 54.41	+12 32 50.2				691
(551)	1993 03 28.24812	12 34 06.79	-03 42 10.3				691
(551)	1993 03 28.27529	12 34 05.41	-03 42 03.6	13.8	V		691
(551)	1993 03 28.30235	12 34 04.16	-03 41 53.4				691
(901)	1993 03 19.13735	09 06 19.40	+11 57 31.4	15.8	V		691
(901)	1993 03 19.15091	09 06 19.01	+11 57 33.6				691
(1074)	1993 03 25.24343	12 05 02.61	+00 12 01.3				691
(1074)	1993 03 25.27511	12 05 01.20	+00 12 09.8				691
(1074)	1993 03 25.30698	12 04 59.76	+00 12 18.4	14.8	V		691
(1501)	1993 03 23.28896	12 15 45.17	+01 13 13.1				691
(1501)	1993 03 23.32089	12 15 43.36	+01 13 21.0	16.2	V		691
(1501)	1993 03 23.35354	12 15 41.50	+01 13 28.7				691
(1684)	1993 03 20.35640	12 17 30.13	+03 58 01.6				691
(1684)	1993 03 20.38151	12 17 28.96	+03 58 09.8	14.7	V		691
(1684)	1993 03 20.40644	12 17 27.81	+03 58 17.9				691
(2087)	1993 03 23.39164	12 27 26.44	+00 33 57.4	15.7	V		691
(2087)	1993 03 23.42332	12 27 24.51	+00 34 09.5				691
(2087)	1993 03 23.45519	12 27 22.57	+00 34 21.8				691
(2417)	1993 03 20.35197	12 11 06.67	+03 55 04.8				691
(2417)	1993 03 20.37708	12 11 05.47	+03 55 12.1				691
(2417)	1993 03 20.40201	12 11 04.29	+03 55 19.3	16.0	V		691
(3780)	1993 03 23.28865	12 15 18.22	+01 08 55.9				691
(3780)	1993 03 23.32059	12 15 16.69	+01 09 07.1				691
(3780)	1993 03 23.35324	12 15 15.08	+01 09 18.1	16.2	V		691
(4025)	1993 03 24.33043	12 33 12.37	-00 07 09.2				691
(4025)	1993 03 24.36231	12 33 10.48	-00 06 55.4	17.2	V		691
(4025)	1993 03 24.39392	12 33 08.62	-00 06 41.6				691
(4155)	1993 03 23.38559	12 18 42.14	+00 21 49.2				691
(4155)	1993 03 23.41727	12 18 40.29	+00 21 57.6	17.4	V		691
(4155)	1993 03 23.44914	12 18 38.42	+00 22 05.1				691
(4470)	1993 03 24.33023	12 32 55.38	-00 07 04.1	17.3	V		691
(4470)	1993 03 24.36212	12 32 53.98	-00 06 54.6				691
(4470)	1993 03 24.39373	12 32 52.56	-00 06 45.2				691
(4757)	1993 03 25.24164	12 02 27.23	+00 00 24.9	17.5	V		691
(4757)	1993 03 25.27332	12 02 26.02	+00 00 32.1				691
(4757)	1993 03 25.30520	12 02 24.80	+00 00 39.6				691
(4915)	1993 03 26.36224	13 21 33.45	-02 51 47.4				691
(4915)	1993 03 26.38028	13 21 32.64	-02 51 41.6	17.9	V		691
(4915)	1993 03 26.39841	13 21 31.81	-02 51 36.2				691
(4971)	1993 03 20.35618	12 17 11.11	+04 03 06.8				691
(4971)	1993 03 20.38129	12 17 09.62	+04 03 16.6	15.9	V		691
(4971)	1993 03 20.40621	12 17 08.16	+04 03 26.4				691
(4975)	1993 03 26.38612	13 29 58.26	-02 42 22.2	17.5	V		691
(4975)	1993 03 26.40425	13 29 57.58	-02 42 14.8				691
(4988)	1993 03 25.12502	09 55 32.29	+11 11 19.2				691
(4988)	1993 03 25.15715	09 55 31.30	+11 11 26.0	18.2	V		691
(4988)	1993 03 25.18998	09 55 30.29	+11 11 33.8				691
(5057)	1993 03 25.36776	13 04 58.05	-00 42 59.1				691
(5057)	1993 03 25.39937	13 04 56.72	-00 42 47.4	17.0	V		691
(5057)	1993 03 25.43137	13 04 55.38	-00 42 35.4				691
(5508)	1993 03 23.40599	12 48 08.88	+00 35 54.3	15.7	V		691
(5508)	1993 03 23.43767	12 48 07.14	+00 36 00.8				691
(5508)	1993 03 23.46953	12 48 05.43	+00 36 07.0				691
(5516)	1993 03 22.42692	14 01 31.26	+01 59 10.5				691
(5516)	1993 03 22.45531	14 01 30.58	+01 59 32.0				691
(5516)	1993 03 22.48446	14 01 29.94	+01 59 53.8	16.2	V		691

693 University of Arizona, Catalina Station
T. Spahr, Lunar and Planetary Laboratory, University of Arizona,
Tucson, AZ 85721, U.S.A.
Observers T. Spahr, C. Hergenrother
Measurer C. Hergenrother
0.4-m f/3 Schmidt

1993 EL		1993 03 16.20363	12 10 49.64	+33 42 34.7				693
1993 EL		1993 03 16.25536	12 10 47.75	+33 43 04.0				693

695 Kitt Peak
T. J. Balonek, Dept. of Physics and Astronomy, Colgate University,
Hamilton, NY 13346, U.S.A.
Observers T. J. Balonek, M. MacKenzie, B. Elmegreen, A. Wong
Burrell Schmidt + CCD
GSC

1991 VR		1993 04 04.42388	12 55 43.02	-05 50 10.8				695
1991 VR		1993 04 04.43756	12 55 42.10	-05 50 06.7				695
1991 VR		1993 04 04.45038	12 55 41.28	-05 50 03.3	16.4	R		695
1991 VR		1993 04 04.46543	12 55 40.27	-05 49 59.4				695
1991 VR		1993 04 04.48093	12 55 39.25	-05 49 55.4				695
1991 VR		1993 04 09.41922	12 50 23.68	-05 27 56.2				695
1991 VR		1993 04 09.42427	12 50 23.27	-05 27 55.1				695
1991 VR		1993 04 09.43624	12 50 22.59	-05 27 52.1				695
1991 VR		1993 04 09.45299	12 50 21.44	-05 27 47.3				695
1993 GA	*	1993 04 02.40465	12 57 05.87	-05 51 12.4				695
1993 GA		1993 04 02.40712	12 57 05.76	-05 51 12.6				695
1993 GA		1993 04 02.41010	12 57 05.49	-05 51 12.2				695
1993 GA		1993 04 02.41249	12 57 05.37	-05 51 11.4	18.1	R		695
1993 GA		1993 04 02.41979	12 57 04.88	-05 51 09.5				695
1993 GA		1993 04 04.43756	12 54 59.29	-05 45 39.4				695
1993 GA		1993 04 04.45038	12 54 58.44	-05 45 37.2				695
1993 GA		1993 04 04.46543	12 54 57.55	-05 45 34.1				695
1993 GA		1993 04 04.48093	12 54 56.53	-05 45 31.7				695

760 Goethe Link
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road,
Flagstaff, AZ 86001, U.S.A.
Observers W. E. Crawley, C. L. Perry
Measurer B. A. Skiff
0.25-m refractor
PDS scanning microdensitometer
PPM, global solutions

1955 QN		1955 07 27.30141	21 55 40.86	-00 33 32.1			V	760
1989 SL		1955 09 19.16458	21 34 52.19	-01 25 48.5				760
1989 SL		1955 09 19.20694	21 34 51.05	-01 26 05.1				760
1992 UD3		1955 09 13.09888	21 10 05.99	-02 10 35.4				760
1992 UD3		1955 09 13.13845	21 10 04.67	-02 10 50.5				760
(156)		1955 07 27.25211	21 49 54.64	+02 21 48.3	14.3			760
(156)		1955 07 27.30141	21 49 52.47	+02 21 46.1				760
(156)		1955 09 13.09888	21 13 37.98	-00 59 37.7	13.5			760
(156)		1955 09 13.13845	21 13 36.84	-00 59 50.0				760
(156)		1955 09 19.16458	21 11 14.01	-01 33 32.7	14.5			760
(156)		1955 09 19.20694	21 11 13.18	-01 33 46.2				760
(256)		1955 09 13.09888	21 31 18.98	-03 55 06.2				760
(256)		1955 09 13.13845	21 31 17.71	-03 55 22.2			f	760
(256)		1955 09 19.16458	21 28 49.82	-04 41 01.6	15.6			760
(256)		1955 09 19.20694	21 28 48.85	-04 41 19.5				760
(483)		1955 07 27.25211	21 57 17.56	+02 25 16.9	15.7			760

(483)	1955 07 27.30141	21 57 16.14	+02 25 04.7						760
(583)	1955 09 19.16458	21 19 46.41	-04 52 28.0	16.0					760
(583)	1955 09 19.20694	21 19 45.39	-04 52 36.9						760
(1250)	1955 08 23.21975	21 35 48.55	-00 57 05.5					V	760
(1413)	1955 08 23.21975	21 31 15.24	-05 41 20.5						760
(1413)	1955 08 23.26697	21 31 13.16	-05 41 39.4						760
(1425)	1955 07 27.25211	21 42 57.24	+01 27 01.8						760
(1425)	1955 07 27.30141	21 42 55.09	+01 26 48.2						760
(1425)	1955 08 23.21975	21 22 07.05	-01 21 40.3						760
(1425)	1955 08 23.26697	21 22 04.70	-01 22 04.1						760
(1425)	1955 09 13.09888	21 09 05.81	-04 12 28.6						760
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(1910)	1955 07 27.25211	21 39 15.29	-00 08 24.8					V	760
(1910)	1955 08 23.21975	21 20 20.20	-02 07 23.4						760
(1910)	1955 08 23.26697	21 20 18.32	-02 07 40.8					V	760
(1910)	1955 09 13.09888	21 08 27.04	-04 12 32.8						760
(1910)	1955 09 13.13845	21 08 26.12	-04 12 46.2						760
(2974)	1955 07 27.25211	21 56 15.35	+00 05 38.5					V	760
(3017)	1955 07 27.25211	21 35 52.24	+01 59 23.7					V	760
(3017)	1955 07 27.30141	21 35 49.98	+01 59 26.1					V	760
(3724)	1955 08 23.21975	21 26 22.04	-03 53 31.6						760
(3724)	1955 08 23.26697	21 26 19.54	-03 53 42.7						760
(3724)	1955 09 13.09888	21 11 40.93	-04 59 05.5						760
(3724)	1955 09 13.13845	21 11 39.73	-04 59 13.4						760
(4221)	1955 09 19.16458	21 20 50.54	-00 03 41.7					V	760
(4221)	1955 09 19.20694	21 20 49.67	-00 04 04.2					D	760
(5010)	1955 07 27.25211	21 52 53.47	+00 25 37.6						760
(5010)	1955 07 27.30141	21 52 51.52	+00 25 19.1					V	760
(5010)	1955 08 23.21975	21 32 33.16	-03 05 52.8						760
(5010)	1955 08 23.26697	21 32 31.03	-03 06 18.4						760
(5010)	1955 09 13.09888	21 19 40.15	-06 17 04.5					V	760
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(5301)	1955 09 19.16458	21 32 05.69	+00 28 09.1						760
(5301)	1955 09 19.20694	21 32 04.63	+00 27 55.5					V	760
(5433)	1955 08 23.21975	21 36 37.08	-02 58 53.1						760
(5433)	1955 08 23.26697	21 36 34.17	-02 59 01.0					D	760
(5433)	1955 09 13.09888	21 19 16.66	-04 17 59.8						760
(5433)	1955 09 13.13845	21 19 15.01	-04 18 08.9						760
(5433)	1955 09 19.16458	21 15 50.39	-04 41 32.8						760
(5433)	1955 09 19.20694	21 15 49.11	-04 41 41.7						760
(5515)	1955 08 23.21975	21 32 49.13	-04 51 48.9					I	760
(5515)	1955 08 23.26697	21 32 47.21	-04 52 17.3					V	760

786 U.S. Naval Observatory
J. A. DeYoung, U.S. Naval Observatory, 3450 Massachusetts Avenue NW, Washington, DC 20392-5420, U.S.A.
Observers J. A. DeYoung, R. E. Schmidt
Measurer J. A. DeYoung
0.61-m reflector + CCD

(503)	1993 03 26.17172	09 08 11.14	+24 03 45.2						786
(503)	1993 03 26.17694	09 08 11.16	+24 03 44.3						786
(503)	1993 03 26.18295	09 08 11.19	+24 03 43.2						786

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

1936	QE1	1993	03	27.30549	13	36	29.48	+01	18	08.9	801
1936	QE1	1993	03	27.32666	13	36	28.59	+01	18	19.6	801
1953	FK1	1993	03	23.23353	11	05	32.62	+15	06	44.9	801
1953	FK1	1993	03	23.25226	11	05	31.67	+15	06	45.7	801
1953	FK1	1993	03	27.23611	11	02	19.68	+15	09	03.5	801
1953	FK1	1993	03	27.25502	11	02	18.77	+15	09	04.3 r	801
1953	TS2	1993	03	26.30487	13	33	54.22	-03	47	45.1	801
1953	TS2	1993	03	26.32730	13	33	53.08	-03	47	37.9	801
1953	TS2	1993	03	27.29927	13	33	04.05	-03	42	24.9	801
1953	TS2	1993	03	27.31950	13	33	02.97	-03	42	18.4	801
1969	TA	1993	03	20.06332	08	50	33.68	+06	45	18.2	801
1969	TA	1993	03	20.09027	08	50	33.24	+06	45	25.4	801
1969	TA	1993	03	23.10883	08	49	56.47	+06	58	52.1	801
1969	TA	1993	03	23.14032	08	49	56.11	+06	59	00.3	801
1974	FO	1993	02	21.34424	12	55	19.55	-06	44	04.7	801
1974	FO	1993	03	20.24209	12	37	56.25	-06	12	05.9	801
1974	FO	1993	03	23.27859	12	35	02.41	-06	02	42.0	801
1974	FO	1993	03	23.29023	12	35	01.68	-06	02	39.4	801
1976	GO3	1993	03	20.24469	12	48	50.32	-01	24	03.7	801
1976	GO3	1993	03	20.25691	12	48	49.69	-01	23	58.6	801
1976	GO3	1993	03	27.26870	12	43	12.45	-00	43	39.9	801
1976	GO3	1993	03	27.28536	12	43	11.59	-00	43	34.1	801
1977	RL	1993	03	20.31587	13	57	13.22	+19	15	12.3	801
1977	RL	1993	03	20.32683	13	57	12.36	+19	15	12.2	801
1977	RL	1993	03	23.31863	13	53	17.20	+19	13	32.3	801
1977	RL	1993	03	23.33256	13	53	16.05	+19	13	31.5	801
1978	SS2	1993	03	20.23916	12	32	18.29	-06	42	33.3	801
1978	SS2	1993	03	20.28567	12	32	16.36	-06	42	14.1	801
1978	SS2	1993	03	23.27582	12	30	13.70	-06	21	12.9	801
1978	SS2	1993	03	23.29459	12	30	12.90	-06	21	04.7	801
1978	TW2	1993	03	23.06448	07	14	54.93	+21	15	47.3	801
1978	TW2	1993	03	23.07497	07	14	55.57	+21	15	47.0	801
1978	TH6	1993	03	23.04684	06	53	58.28	+36	51	54.7 V	801
1978	TH6	1993	03	23.06056	06	53	59.11	+36	51	47.5	801
1978	VY14	1993	03	23.23617	11	05	32.70	+11	33	18.5 t	801
1978	VY14	1993	03	23.25479	11	05	31.80	+11	33	22.0	801
1978	VY14	1993	03	27.23304	11	02	35.21	+11	46	19.9	801
1978	VY14	1993	03	27.25188	11	02	34.39	+11	46	23.2	801
1979	YS	1993	03	22.05789	08	44	57.91	+04	52	11.6 I	801
1979	YS	1993	03	22.19270	08	44	57.01	+04	52	18.2	801
1980	AA	1993	03	23.15291	09	57	00.46	-01	28	13.4	801
1980	AA	1993	03	23.17084	09	57	01.97	-01	28	15.1	801
1981	GM1	1993	03	19.99330	06	45	41.14	+37	20	44.6	801
1981	GM1	1993	03	20.00804	06	45	41.92	+37	20	37.6	801
1981	GM1	1993	03	23.05442	06	48	29.37	+36	55	40.7	801
1981	QX	1993	03	27.33230	13	58	27.25	-04	40	23.9	801
1981	QX	1993	03	27.35345	13	58	26.60	-04	40	10.7	801
1982	BJ	1993	03	23.38522	16	32	06.37	+13	54	56.8	801
1982	BJ	1993	03	23.40176	16	32	06.80	+13	55	06.7	801
1982	BJ	1993	03	27.37411	16	33	39.54	+14	33	14.1 p	801
1982	BQ4	1993	01	19.34399	12	15	27.51	+12	59	00.8	801
1982	BQ4	1993	01	19.38208	12	15	27.95	+12	59	09.8	801
1982	BQ4	1993	03	20.21765	11	50	18.86	+18	47	29.5	801
1982	BQ4	1993	03	20.23270	11	50	18.12	+18	47	33.3	801
1982	BQ4	1993	03	23.24403	11	47	54.51	+18	59	24.1	801
1982	BQ4	1993	03	23.26203	11	47	53.63	+18	59	28.0	801
1982	SJ1	1993	03	20.07416	09	01	34.04	+11	41	59.1	801
1982	SJ1	1993	03	20.10535	09	01	33.84	+11	42	08.4	801
1982	SJ1	1993	03	23.12204	09	01	25.60	+11	56	23.5	801

1982	SJ1	1993	03	23.17414	09	01	25.52	+11	56	38.0	801
1983	EU	1993	03	22.08569	09	54	45.33	+09	55	45.1	801
1983	EU	1993	03	22.17091	09	54	42.94	+09	56	14.4	801
1984	FS	1993	03	23.36615	15	30	04.86	+00	12	19.8	801
1984	FS	1993	03	23.39297	15	30	04.74	+00	12	32.4	801
1984	FS	1993	03	26.34480	15	29	48.28	+00	36	31.6	801
1984	FS	1993	03	26.36280	15	29	48.10	+00	36	40.5	801
1984	UK1	1993	03	23.02889	06	18	32.99	+19	19	22.2	801
1984	UX1	1993	03	23.08890	08	12	52.92	+29	35	52.3	801
1984	UX1	1993	03	23.11553	08	12	53.53	+29	35	43.3	801
1985	QN	1993	03	27.33859	14	01	34.23	-08	41	02.8	801
1985	QN	1993	03	27.35939	14	01	33.45	-08	40	57.8	801
1986	JA	1993	03	20.21481	11	31	40.55	+08	53	37.2	801
1986	JA	1993	03	20.22691	11	31	39.92	+08	53	45.5	801
1986	JD	1993	03	23.30220	13	07	09.77	+10	24	11.9	801
1986	JD	1993	03	23.31549	13	07	09.11	+10	24	18.3	801
1986	JD	1993	03	27.26169	13	03	49.65	+10	55	38.8	801
1986	JD	1993	03	27.27932	13	03	48.67	+10	55	46.8	801
1986	QS	1993	03	22.09002	10	00	35.93	+14	39	18.7	801
1986	QS	1993	03	22.18625	10	00	32.58	+14	39	18.3	801
1986	UM1	1993	03	22.23125	11	15	43.43	+10	53	48.6	801
1986	VF5	1993	03	22.04587	07	28	19.33	+31	56	55.0	801
1986	VF5	1993	03	22.06521	07	28	19.87	+31	56	48.0	801
1986	VF5	1993	03	27.07199	07	30	52.37	+31	28	30.3	801
1986	VF5	1993	03	27.09582	07	30	53.17	+31	28	20.9	801
1986	WQ2	1993	03	23.37682	16	11	25.44	+13	34	30.7	801
1986	WQ2	1993	03	23.39622	16	11	25.79	+13	34	40.6	801
1986	WQ2	1993	03	26.38091	16	12	17.71	+13	59	07.6	801
1986	WQ2	1993	03	26.40263	16	12	17.96	+13	59	18.1	801
1987	SG2	1993	03	22.09279	10	00	24.12	+11	00	59.1	801
1987	SG2	1993	03	27.18389	09	58	44.13	+11	27	47.5	801
1987	SG2	1993	03	27.21115	09	58	43.69	+11	27	55.1	801
1987	UW1	1993	03	20.06624	08	51	58.22	+04	55	39.5	801
1987	UW1	1993	03	20.09977	08	51	57.83	+04	55	49.3	801
1987	UW1	1993	03	23.11179	08	51	34.99	+05	10	28.5	801
1988	AL	1993	03	22.20939	10	52	25.30	+07	39	14.1	801
1988	AL	1993	03	22.22704	10	52	24.68	+07	39	22.5	801
1988	AL	1993	03	27.22891	10	49	48.75	+08	19	23.3	801
1988	AL	1993	03	27.24941	10	49	48.13	+08	19	32.8	801
1988	BX	1993	03	23.02052	06	40	03.49	+13	49	03.4	801
1988	BX	1993	03	23.03359	06	40	04.46	+13	48	57.8	801
1988	BO4	1993	02	18.12288	08	21	33.51	+11	51	13.5	801
1988	BO4	1993	02	18.14319	08	21	32.64	+11	51	15.4	801
1988	BO4	1993	02	20.11645	08	20	12.32	+11	54	25.1	W 801
1988	CP2	1993	03	22.05231	08	42	03.40	+19	11	03.1	801
1988	CP2	1993	03	22.17694	08	42	02.45	+19	11	09.0	801
1988	JN	1993	03	27.19778	10	25	16.56	+17	05	31.3	801
1988	JN	1993	03	27.21446	10	25	16.08	+17	05	38.2	801
1988	MF	1993	03	20.38972	17	10	54.42	+09	47	45.3	801
1988	MF	1993	03	20.40550	17	10	55.24	+09	47	52.1	801
1988	RD	1993	03	20.13267	06	38	33.75	+48	48	20.4	801
1988	RD	1993	03	20.14512	06	38	34.74	+48	48	09.8	801
1988	RD	1993	03	23.19073	06	43	07.60	+48	05	10.8	801
1988	RD	1993	03	23.20377	06	43	08.68	+48	05	00.2	801
1988	VN3	1993	03	23.15635	10	06	55.52	+03	47	08.6	801
1988	VN3	1993	03	23.18038	10	06	54.79	+03	47	17.7	801
1988	XY1	1993	03	23.23882	11	16	06.81	+00	37	08.8	801
1988	XY1	1993	03	23.25721	11	16	05.78	+00	37	14.4	801
1989	CA	1993	03	22.20503	10	45	26.39	+05	21	47.4	801

1989	CA	1993	03	22.22242	10	45	25.58	+05	21	52.5	801
1989	CF	1993	03	27.06035	07	24	48.45	+23	28	23.0	801
1989	CF	1993	03	27.07873	07	24	49.31	+23	28	26.0	801
1989	CM1	1993	03	22.06863	09	11	05.13	+22	06	47.8	801
1989	CM1	1993	03	22.09534	09	11	04.55	+22	06	44.2	801
1989	CM1	1993	03	27.12045	09	09	53.76	+21	52	34.6	801
1989	CM1	1993	03	27.16337	09	09	53.28	+21	52	26.3	801
1989	DK	1993	03	23.08604	07	45	12.83	+15	49	39.6	801
1989	DK	1993	03	27.08601	07	47	15.83	+15	35	15.4	801
1989	DK	1993	03	27.10455	07	47	16.42	+15	35	11.1	801
1989	GH	1993	03	22.20032	10	21	17.89	+18	44	12.0	801
1989	GH	1993	03	22.21878	10	21	17.25	+18	44	18.5	801
1989	GH	1993	03	27.19509	10	18	52.42	+19	12	53.5	801
1989	GH	1993	03	27.21797	10	18	51.77	+19	13	00.5	801
1989	HD	1993	03	26.33588	13	59	18.92	+07	39	10.5	801
1989	HD	1993	03	26.35234	13	59	18.37	+07	39	21.6	801
1989	HD	1993	03	27.33537	13	58	47.79	+07	50	15.0	801
1989	HD	1993	03	27.35672	13	58	47.06	+07	50	29.2	801
1989	LA	1993	03	26.31468	13	36	08.17	-03	09	00.3	801
1989	LA	1993	03	26.33253	13	36	07.44	-03	08	53.4	801
1989	LA	1993	03	27.30266	13	35	28.07	-03	03	01.9	801
1989	LA	1993	03	27.32192	13	35	27.25	-03	02	54.7	801
1989	NB1	1993	03	20.17772	10	19	32.95	+20	34	10.5	801
1989	NB1	1993	03	20.19882	10	19	32.22	+20	34	17.1	801
1990	HC1	1993	03	20.02486	07	35	49.53	-00	31	34.8	801
1990	HC1	1993	03	20.04051	07	35	49.55	-00	31	26.4	801
1990	MV	1993	03	22.08784	09	58	21.46	+28	51	40.5	W 801
1990	MV	1993	03	22.16012	09	58	18.33	+28	51	44.4	W 801
1990	MV	1993	03	27.17465	09	55	20.75	+28	52	56.1	801
1990	MV	1993	03	27.20365	09	55	19.82	+28	52	55.3	801
1990	MX	1993	03	23.29727	13	01	08.88	+03	48	27.8	801
1990	MX	1993	03	23.31038	13	01	08.16	+03	48	32.0	801
1990	MX	1993	03	27.26569	12	57	30.35	+04	10	24.4	r 801
1990	MX	1993	03	27.28267	12	57	29.35	+04	10	29.9	r 801
1990	OE2	1993	03	20.29333	13	22	21.33	+13	39	46.1	801
1990	OE2	1993	03	20.30832	13	22	20.68	+13	39	53.8	801
1990	OE2	1993	03	23.31294	13	20	09.19	+14	05	04.5	801
1990	OE2	1993	03	23.32956	13	20	08.40	+14	05	12.7	801
1990	QC1	1993	03	22.21120	10	56	49.25	-05	30	03.9	801
1990	QC1	1993	03	22.22522	10	56	48.39	-05	30	00.9	801
1990	QG2	1993	03	20.20972	11	42	18.62	+05	35	57.9	801
1990	QG2	1993	03	20.22412	11	42	18.04	+05	36	04.7	801
1990	QG2	1993	03	23.24119	11	40	17.13	+06	00	22.0	801
1990	QG2	1993	03	23.25980	11	40	16.37	+06	00	30.9	801
1990	QY3	1993	03	20.23602	12	30	09.88	-05	42	02.8	801
1990	QY3	1993	03	20.25045	12	30	09.16	-05	41	59.6	801
1990	QY3	1993	03	23.27321	12	27	21.18	-05	29	01.0	801
1990	QY3	1993	03	23.28745	12	27	20.35	-05	28	57.1	801
1990	SW3	1993	03	20.29802	13	53	02.43	+06	47	52.9	801
1990	SW3	1993	03	20.31264	13	53	01.90	+06	47	57.9	801
1990	SW3	1993	03	26.31181	13	49	13.89	+07	22	29.2	801
1990	SW3	1993	03	26.32984	13	49	13.11	+07	22	35.2	801
1990	TN4	1993	03	26.33865	14	01	41.53	+07	39	13.4	801
1990	TN4	1993	03	26.35735	14	01	40.81	+07	39	18.0	801
1990	VA7	1993	03	27.37051	16	15	32.96	-22	35	32.0	801
1990	VA7	1993	03	27.39406	16	15	32.92	-22	35	40.0	801
1990	WK	1993	03	20.09671	09	50	44.59	+26	38	25.9	801
1990	WK	1993	03	20.12579	09	50	43.74	+26	38	26.5	801
1990	WK	1993	03	23.13265	09	49	21.98	+26	38	50.1	801

1990	WK	1993	03	23.17693	09 49 20.76	+26 38 49.7				801
1991	AM	1993	03	23.20806	07 29 19.56	+44 28 17.3				801
1991	AM	1993	03	23.22336	07 29 17.95	+44 28 25.5				801
1991	MA	1993	03	23.36047	11 15 21.29	+56 28 43.2			r	801
1991	PQ10	1993	03	22.21285	11 04 44.81	-02 51 40.1				801
1991	PQ10	1993	03	22.22853	11 04 43.98	-02 51 33.1				801
1991	PQ10	1993	03	27.23050	11 00 42.80	-02 17 18.0				801
1991	PQ10	1993	03	27.24686	11 00 42.04	-02 17 11.3				801
1991	PK11	1993	03	20.07934	09 21 01.26	+11 45 41.7				801
1991	PK11	1993	03	20.11644	09 21 00.51	+11 45 41.4				801
1991	PN13	1993	03	20.05453	08 24 39.34	+23 59 15.3				801
1991	PN13	1993	03	20.08463	08 24 39.16	+23 59 07.3				801
1991	PN13	1993	03	23.12955	08 24 32.93	+23 44 36.2				801
1991	RS1	1993	03	20.18514	10 42 48.55	+08 23 46.8				801
1991	RS1	1993	03	20.20354	10 42 47.55	+08 23 46.5				801
1991	RS1	1993	03	27.20087	10 37 06.46	+08 19 07.1				801
1991	RS1	1993	03	27.22063	10 37 05.57	+08 19 05.7				801
1991	SL1	1993	03	22.07742	09 21 36.97	+21 05 51.1				801
1991	SL1	1993	03	22.19628	09 21 33.87	+21 05 41.0				801
1991	UB2	1993	03	27.13766	09 36 45.12	+04 25 50.1				801
1991	UB2	1993	03	27.16035	09 36 44.64	+04 25 57.1				801
1991	UO4	1993	03	20.18222	10 19 59.74	+08 57 04.2				801
1991	UO4	1993	03	20.19537	10 19 59.02	+08 57 06.0				801
1991	UO4	1993	03	27.18859	10 14 36.25	+09 09 18.5				801
1991	UO4	1993	03	27.20747	10 14 35.46	+09 09 19.8				801
1991	VS	1993	03	20.29066	13 13 07.90	+06 38 57.3				801
1991	VS	1993	03	20.30487	13 13 07.20	+06 39 02.7				801
1991	VS	1993	03	23.30825	13 10 43.82	+06 57 54.1				801
1991	VS	1993	03	23.32510	13 10 42.93	+06 58 00.2				801
1991	VH2	1993	03	23.24682	11 58 56.99	+14 40 46.8				801
1991	VH2	1993	03	23.26383	11 58 56.02	+14 40 50.9				801
1991	VN2	1993	03	23.24962	12 01 21.17	+10 10 34.0			r	801
1991	VN2	1993	03	23.26578	12 01 20.42	+10 10 40.3			r	801
1991	VF5	1993	03	20.32997	14 43 37.37	-06 00 00.1			r	801
1991	VF5	1993	03	20.35884	14 43 36.95	-05 59 49.0			r	801
1991	VF5	1993	03	27.34270	14 41 16.88	-05 10 33.0				801
1991	VF5	1993	03	27.36174	14 41 16.33	-05 10 24.5				801
1992	AS1	1993	03	26.37117	15 57 42.04	-05 40 09.2				801
1992	AS1	1993	03	26.39301	15 57 41.97	-05 40 01.7				801
1992	CE	1993	03	20.32279	14 18 29.94	-12 46 02.0				801
1992	CE	1993	03	20.39414	14 18 28.48	-12 45 50.7				801
1992	CE	1993	03	23.29998	14 17 26.67	-12 37 27.2				801
1992	CE	1993	03	23.33787	14 17 25.80	-12 37 20.8				801
1992	VM	1993	03	23.01144	06 04 35.87	+17 34 11.3			V	801
1992	VM	1993	03	23.02463	06 04 37.57	+17 34 17.1			V	801
1992	WO3	1993	03	27.02914	06 29 12.52	-02 40 44.3				801
1992	WO3	1993	03	27.04600	06 29 14.36	-02 40 36.4				801
1992	WP4	1993	03	19.99044	05 41 28.48	+31 57 36.0				801
1992	WP4	1993	03	20.00528	05 41 29.78	+31 57 30.3				801
1992	WP4	1993	03	26.99866	05 52 12.54	+31 15 21.8				801
1992	WP4	1993	03	27.00832	05 52 13.45	+31 15 18.5				801
1992	WD5	1993	03	20.01322	07 55 34.22	+30 12 45.1				801
1992	WD5	1993	03	20.02171	07 55 35.60	+30 12 32.4				801
1992	WD5	1993	03	22.04896	08 01 20.96	+29 22 26.4				801
1992	WD5	1993	03	22.05529	08 01 22.00	+29 22 16.8				801
1992	WD8	1993	03	22.99795	05 19 57.82	+25 10 19.1				801
1992	WD8	1993	03	23.00507	05 19 58.63	+25 10 14.9				801
1992	YM	1993	03	23.03750	06 42 44.86	+28 11 10.7				801
1992	YM	1993	03	23.05084	06 42 45.71	+28 11 12.4				801

1992 YW3	1993 03 21.01718	07 34 41.41	+33 28 06.9				801
1992 YW3	1993 03 21.02936	07 34 41.98	+33 28 05.0				801
1992 YW3	1993 03 27.07539	07 40 20.43	+33 09 51.4				801
1992 YW3	1993 03 27.09197	07 40 21.41	+33 09 47.9				801
1993 AB	1993 03 23.06823	07 22 19.43	+32 19 31.8				801
1993 AB	1993 03 23.08302	07 22 20.44	+32 19 29.1				801
1993 AB	1993 03 27.06807	07 27 12.71	+32 03 31.5				801
1993 AB	1993 03 27.08213	07 27 13.79	+32 03 27.4				801
1993 BF	1993 03 21.01355	07 09 25.91	+22 44 09.4				801
1993 BF	1993 03 21.02432	07 09 26.20	+22 44 07.3				801
1993 BF	1993 03 27.04975	07 13 15.57	+22 20 32.7				801
1993 BF	1993 03 27.06449	07 13 16.18	+22 20 28.9				801
1993 BT2	1993 03 20.04869	08 22 11.59	+19 50 32.4				801
1993 BT2	1993 03 20.07661	08 22 11.98	+19 50 25.2				801
1993 BT2	1993 03 23.09125	08 23 07.76	+19 37 30.4				801
1993 BT2	1993 03 23.11801	08 23 08.29	+19 37 23.1				801
1993 BV2	1993 03 20.05742	08 28 44.68	+14 06 32.4				801
1993 BV2	1993 03 20.08223	08 28 45.20	+14 06 30.9				801
1993 BV2	1993 03 23.09837	08 30 02.69	+14 02 56.5				801
1993 BV2	1993 03 23.11980	08 30 03.26	+14 02 54.8				801
1993 BW2	1993 03 20.14963	08 25 25.56	+50 54 38.0				801
1993 BW2	1993 03 20.15852	08 25 26.77	+50 54 33.3				801
1993 BW2	1993 03 23.21439	08 32 25.87	+50 30 23.8			V	801
1993 BW2	1993 03 23.22900	08 32 27.66	+50 30 15.9			V	801
1993 BW3	1993 03 23.12580	09 38 50.36	-00 39 47.4				801
1993 BW3	1993 03 23.14451	09 38 49.49	-00 39 46.0				801
1993 BL12	1993 03 27.13122	09 18 28.67	+22 17 18.8				801
1993 BL12	1993 03 27.17909	09 18 28.83	+22 17 11.1				801
1993 BM12	1993 03 27.11101	08 29 25.23	+18 43 48.4				801
1993 BM12	1993 03 27.14124	08 29 25.84	+18 43 44.7			t	801
1993 BP13	1993 03 27.11753	08 47 32.22	+00 31 51.2				801
1993 BP13	1993 03 27.15704	08 47 32.39	+00 31 58.6			I	801
4121 T-1	1993 03 23.30616	13 09 50.16	-05 07 19.4				801
4121 T-1	1993 03 23.32723	13 09 49.25	-05 07 14.3				801
4121 T-1	1993 03 27.29370	13 07 03.28	-04 50 20.0				801
4121 T-1	1993 03 27.31046	13 07 02.54	-04 50 15.6				801
3137 T-2	1993 03 23.32260	13 20 10.47	-03 29 14.0				801
3137 T-2	1993 03 23.35439	13 20 09.27	-03 29 02.3				801
3137 T-2	1993 03 27.29679	13 17 38.74	-03 05 05.4				801
3137 T-2	1993 03 27.31293	13 17 38.08	-03 04 58.8				801
(243)	1993 03 20.21258	12 05 48.01	-01 45 24.0				801
(243)	1993 03 20.23017	12 05 47.13	-01 45 18.8				801
(243)	1993 03 23.26782	12 03 19.82	-01 30 21.5				801
(243)	1993 03 23.28225	12 03 19.11	-01 30 16.9				801
(1051)	1993 03 20.35348	16 24 53.53	-00 29 46.2				801
(1051)	1993 03 20.38477	16 24 54.02	-00 29 29.8				801
(1051)	1993 03 23.38174	16 25 38.73	-00 03 03.5				801
(1051)	1993 03 23.40433	16 25 39.01	-00 02 51.1				801
(1584)	1993 03 27.11492	08 30 48.24	-05 52 04.9				801
(1584)	1993 03 27.15396	08 30 48.35	-05 52 14.4				801
(4179)	1993 03 20.03758	08 17 55.38	+19 59 00.5				801
(4179)	1993 03 20.05162	08 17 56.21	+19 58 57.4				801
(4179)	1993 03 23.09292	08 21 07.97	+19 48 38.6				801
(4179)	1993 03 23.10370	08 21 08.65	+19 48 36.4				801
(4580)	1993 03 27.18859	10 14 40.78	+09 13 04.2				801
(4580)	1993 03 27.20747	10 14 40.37	+09 13 14.7				801
(5513)	1993 03 20.20660	11 50 17.92	-02 05 28.7				801
(5513)	1993 03 20.22081	11 50 16.93	-02 05 23.2				801

809 European Southern Observatory
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Measurers E. W. Elst, W. Kollatschny
1.0-m Schmidt, 3.6-m reflector

1986 NK1	*	1986 07 05.32257	21 37 45.27	-14 33 38.9		6	809
1986 NK1		1986 07 05.32971	21 37 45.08	-14 33 40.7	21.8 V	6	809
1986 NK1		1986 07 05.33666	21 37 44.92	-14 33 42.2		6	809
1986 NK1		1986 07 05.34179	21 37 44.78	-14 33 43.6	22.4	6	809
1986 NK1		1986 07 05.34699	21 37 44.66	-14 33 44.9		6	809
1986 NK1		1986 07 05.35202	21 37 44.53	-14 33 46.0	21.4 R	6	809
1988 CH		1992 02 12.20833	07 57 15.10	+15 11 44.2		4	809
1988 CH		1992 02 12.22153	07 57 14.63	+15 11 48.7		4	809
1988 CH		1992 02 12.23472	07 57 14.14	+15 11 53.1		4	809
(5519)		1993 01 23.23587	09 44 26.43	+10 09 36.9		4	809
(5519)		1993 01 28.24931	09 41 06.50	+10 33 38.0	18.2	4	809
(5519)		1993 01 28.27569	09 41 05.32	+10 33 45.5		4	809

868 Hidaka Observatory
Observer S. Shirai
Measurer S. Hayakawa
0.25-m f/3.4 reflector
GSC

1993 FB1	*	1993 03 18.62219	13 41 01.61	+02 26 58.0	16.0	868
1993 FB1		1993 03 18.65055	13 41 00.55	+02 27 03.7		868
1993 FB1		1993 03 20.60840	13 39 49.82	+02 34 14.7		868
1993 FB1		1993 03 20.63462	13 39 48.41	+02 34 24.3		868
1993 FC1	*	1993 03 19.74543	13 40 33.45	-16 11 42.0	16.5	868
1993 FC1		1993 03 19.77321	13 40 32.66	-16 11 30.1		868
1993 FC1		1993 03 20.73924	13 40 07.42	-16 04 02.8		868
1993 FC1		1993 03 20.76693	13 40 06.64	-16 03 50.5		868

877 Okutama
S. Hayakawa, 1-31-33, Nagano, Gyoda-Shi, Saitama-Ken, 361 Japan
Observer T. Hioki
Measurers S. Hayakawa, T. Hioki
0.30-m f/3.8 hyperboloid astrocamera
GSC

1991 RD5		1993 02 25.65972	10 29 48.69	+08 39 38.7	16.0	877
1991 RD5		1993 02 25.68264	10 29 47.30	+08 39 42.5		877
1993 DA1		1993 03 02.72292	10 18 34.20	+13 04 19.4		877
1993 DA1		1993 03 02.74653	10 18 32.92	+13 04 30.0		877

894 Otomo
S. Otomo, Kiyosato 3545-3902, Takane-cho, Kitakoma-gun, Yamanashi-ken, 407-03, Japan
0.25-m f/3.4 reflector
PPM

1983 AN2		1992 12 22.49514	03 59 28.16	+18 38 01.0	17.0	894
1983 AN2		1992 12 22.50833	03 59 27.71	+18 38 02.2		894
1983 AN2		1992 12 26.54757	03 57 01.57	+18 47 45.7	17.0	894
1983 AN2		1992 12 26.56146	03 57 01.11	+18 47 47.7		894
1983 EM1		1993 04 14.66435	13 44 15.32	-11 58 30.1	17.2	894
1983 EM1		1993 04 14.67743	13 44 14.77	-11 58 27.2		894
1989 GB3		1993 03 20.70903	12 44 34.18	-05 01 38.9	16.8	894

1989 GB3		1993	03	20.72361	12	44	33.37	-05 01 37.6	894
1989 GB3		1993	03	22.62685	12	42	50.41	-04 56 40.2	894
1989 GB3		1993	03	22.63994	12	42	49.67	-04 56 40.2	894
1991 QD		1993	03	22.57257	10	43	47.94	+00 38 05.7 17.5	894
1991 QD		1993	03	22.58576	10	43	47.26	+00 38 10.1	894
1993 DB1		1993	03	16.65694	12	07	14.23	-00 18 23.6 16.5	894
1993 DB1		1993	03	16.67083	12	07	13.48	-00 18 17.8	894
1993 DB1		1993	03	18.66424	12	05	27.98	-00 06 45.1	894
1993 DB1		1993	03	18.67743	12	05	27.24	-00 06 40.5	894
1993 EH		1993	03	20.60003	11	19	45.28	+03 22 12.7 16.5	894
1993 EH		1993	03	20.61250	11	19	44.64	+03 22 20.4	894
1993 ES		1993	03	17.75868	12	37	49.81	-04 58 35.8 16.2	894
1993 ES		1993	03	17.77153	12	37	49.02	-04 58 37.8	894
1993 ES		1993	03	29.61250	12	25	42.30	-05 09 32.8 16.0	894
1993 ES		1993	03	29.63542	12	25	40.83	-05 09 33.7	894
1993 FH1	*	1993	03	20.68127	12	52	59.85	-07 05 40.6 17.2	894
1993 FH1		1993	03	20.69515	12	52	58.90	-07 05 42.4	894
1993 FH1		1993	03	22.65318	12	51	01.45	-07 09 44.6	894
1993 FH1		1993	03	22.66632	12	51	00.49	-07 09 44.9	894
1993 FR2	*	1993	03	29.64896	13	21	30.63	-04 53 13.7 16.6	894
1993 FR2		1993	03	29.66218	13	21	29.88	-04 53 09.0	894
1993 FR2		1993	04	01.70243	13	18	56.69	-04 28 30.9 16.4	894
1993 FR2		1993	04	01.71563	13	18	55.92	-04 28 23.4	894
1993 FR2		1993	04	09.51429	13	12	02.56	-03 25 03.2 16.0	894
1993 FR2		1993	04	13.68194	13	08	19.39	-02 52 28.5 16.3	894
1993 FR2		1993	04	13.69444	13	08	18.71	-02 52 25.4	894
1993 FV3		1993	04	13.70663	13	09	14.18	-06 14 07.6 16.6	894
1993 FV3		1993	04	13.71910	13	09	13.62	-06 14 02.0	894
1993 FV3		1993	04	14.55972	13	08	31.40	-06 08 40.7	894
1993 FV3		1993	04	14.57222	13	08	30.70	-06 08 36.6	894
1993 GB	*	1993	04	14.66435	13	44	34.65	-11 12 38.9 16.5	894
1993 GB		1993	04	14.67743	13	44	33.75	-11 12 41.5	894
1993 GB		1993	04	16.61563	13	42	27.56	-11 17 20.9 16.5	894
1993 GC	*	1993	04	13.70663	13	11	33.63	-07 18 37.2 17.0	894
1993 GC		1993	04	13.71910	13	11	33.01	-07 18 30.4	894
1993 GC		1993	04	14.55972	13	10	57.14	-07 09 17.2 17.2	894
1993 GC		1993	04	14.57222	13	10	56.49	-07 09 11.3	894
(734)		1993	03	16.65694	12	06	13.23	-00 04 14.6	894
(734)		1993	03	16.67083	12	06	12.60	-00 04 12.1	894
(734)		1993	03	18.66424	12	04	39.62	+00 02 43.0	894
(734)		1993	03	18.67743	12	04	39.02	+00 02 45.9	894
(1087)		1993	03	29.64896	13	16	46.67	-04 06 26.8	894
(1087)		1993	03	29.66218	13	16	45.99	-04 06 24.2	894
(1150)		1993	03	20.68127	12	53	36.12	-06 59 18.8 17.5	894
(1150)		1993	03	20.69515	12	53	35.37	-06 59 15.0	894
(1150)		1993	03	22.65318	12	51	48.04	-06 46 38.2	894
(1160)		1993	03	17.75868	12	37	06.40	-04 50 38.3	894
(1160)		1993	03	17.77153	12	37	05.51	-04 50 37.6	894
(1160)		1993	03	29.61250	12	25	07.87	-04 33 03.5	894
(1160)		1993	03	29.63542	12	25	06.37	-04 33 02.0	894
(1190)		1993	04	14.66435	13	47	13.69	-11 07 38.5	894
(1190)		1993	04	14.67743	13	47	12.89	-11 07 37.4	894
(1302)		1993	03	29.64896	13	18	11.05	-04 22 35.5	894
(1302)		1993	03	29.66218	13	18	10.46	-04 22 32.1	894
(2165)		1993	04	14.66435	13	43	00.07	-10 50 47.6 16.5	894
(2165)		1993	04	14.67743	13	42	59.61	-10 50 46.0	894
(2239)		1993	04	13.70663	13	10	09.75	-07 20 37.6	894
(2239)		1993	04	13.71910	13	10	09.25	-07 20 35.8	894
(2239)		1993	04	14.55972	13	09	29.86	-07 18 38.5	894

(2239)	1993 04 14.57222	13 09 29.18	-07 18 35.6			894
(2555)	1993 03 20.68127	12 53 31.77	-07 08 51.0			894
(2555)	1993 03 20.69515	12 53 31.19	-07 08 46.2			894
(2555)	1993 03 22.65318	12 52 04.14	-07 00 00.4			894
(2555)	1993 03 22.66632	12 52 03.53	-06 59 55.9			894
(2610)	1993 03 17.75868	12 36 34.29	-04 27 52.9			894
(2610)	1993 03 17.77153	12 36 33.40	-04 27 47.5			894
(2610)	1993 03 29.61250	12 25 21.72	-03 10 45.3			894
(2610)	1993 03 29.63542	12 25 20.27	-03 10 35.7			894
(2739)	1993 03 20.68127	12 53 05.91	-07 41 54.8			894
(2739)	1993 03 20.69515	12 53 05.00	-07 41 52.2			894
(2739)	1993 03 22.65318	12 51 26.87	-07 32 01.5			894
(2739)	1993 03 22.66632	12 51 26.24	-07 31 56.0			894

896 Yatsugatake South Base Observatory
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Measurer O. Muramatsu
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PPM

1980 CR	1993 02 24.62639	11 37 50.14	+08 02 27.5	16.0		896
1980 CR	1993 02 25.67778	11 37 09.70	+08 12 19.2			896
1993 DC1	1993 03 16.59167	11 41 18.86	+06 12 58.5			896
1993 DD1	1993 03 16.57986	11 43 34.73	+05 42 19.1			896
1993 DD1	1993 03 16.61528	11 43 32.45	+05 42 24.3			896
1993 DD1	1993 03 16.62743	11 43 31.61	+05 42 27.9			896
(3221)	1993 04 14.59965	14 06 02.61	-07 22 09.8	16.5		896
(3221)	1993 04 14.63507	14 06 00.39	-07 21 59.7			896

898 Fujieda
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Measurer T. Urata
0.20-m f/4.0 hyperboloid astrocamera
GSC

1993 EP	* 1993 03 13.58209	12 02 06.15	-06 00 53.2	16.5		898
1993 EP	1993 03 13.59657	12 02 05.20	-06 00 53.8			898

905 Nachi-Katsuura Observatory
T. Urata, 6-1, Muramatsuhara 1 Chome, Shimizu, Shizuoka-Ken 424, Japan
Observer Y. Shimizu
Measurer T. Urata
0.30-m f/3.8 hyperboloid astrocamera
GSC

1990 VB4	1993 04 10.52720	13 16 23.60	-14 46 26.4	16.5		905
1990 VB4	1993 04 10.53507	13 16 23.03	-14 46 25.7			905

* * * * *

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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. For the one-opposition orbits, equinox 2000.0 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. In some batches of MPCs the opportunity is taken to print improved results for previously-discussed multiple-opposition and long-arc single-opposition orbits sideways on pages at the end, following the ephemerides. These high-precision results make reference to earlier orbit computations for identifications and residuals, and the orbit computers are again indicated by the codes listed above.

Comet Mueller (1993d)
T 1992 Aug. 7.55429 TT Nakano

q 5.9078331		(2000.0)	P	Q
	Peri.	62.36270	-0.40847459	-0.45873364
	Node	77.47224	+0.23438804	-0.88826044
e 1.0	Incl.	53.93673	+0.88216255	+0.02359722

From 25 observations 1993 Mar. 19-Apr. 13.

Comet Shoemaker (1992y)
Epoch 1993 Apr. 3.0 TT = JDT 2449080.5
T 1993 Mar. 25.67874 TT Marsden

q 2.3136667		(2000.0)	P	Q
z +0.0002583	Peri.	54.86355	+0.05402708	-0.65811242
+/-0.0000144	Node	55.29944	+0.31080579	-0.70363419
e 0.9994023	Incl.	65.98594	+0.94893669	+0.26793091

From 122 observations 1992 Oct. 25-1993 Feb. 24, mean residual 0".86.

Comet Spacewatch (1992h)
Epoch 1993 Sept. 10.0 TT = JDT 2449240.5
T 1993 Sept. 5.54854 TT Nakano

q 3.0069913		(2000.0)	P	Q
z 0.0000114	Peri.	83.40122	-0.32726635	+0.88654761
+/-0.0000078	Node	203.32372	+0.10375424	+0.37767976
e 0.9999658	Incl.	124.31845	+0.93921871	+0.26719157

From 78 observations 1992 May 1-1993 Apr. 15, mean residual 0".64.

Comet Mueller (1993a)
Epoch 1994 Jan. 8.0 TT = JDT 2449360.5
T 1994 Jan. 12.89554 TT Nakano

q	1.9373218	(2000.0)	P	Q
z	-0.0009803	Peri. 130.66948	+0.78251159	+0.40397429
	+/-0.0000153	Node 144.72261	-0.26797125	-0.46836089
e	1.0018991	Incl. 124.87801	+0.56202048	-0.78577532

From 166 observations 1992 Nov. 26-1993 Apr. 15, mean residual 0".68.

Periodic Comet Pons-Winnecke
Epoch 1995 Dec. 29.0 TT = JDT 2450080.5
T 1996 Jan. 2.45304 TT Nakano

q	1.2558917	(2000.0)	P	Q
n	0.15478996	Peri. 172.31269	-0.06428119	+0.92324322
a	3.4353753	Node 93.42808	-0.93459112	+0.07738449
e	0.6344237	Incl. 22.30145	-0.34986765	-0.37634239
P	6.37			

From 37 observations 1964-1989, mean residual 0".97. Nongravitational parameters A1 = +0.05 +/- 0.02, A2 = +0.0025 +/- 0.0001.

Periodic Comet Churyumov-Gerasimenko
Epoch 1995 Dec. 29.0 TT = JDT 2450080.5 Milbourn
T 1996 Jan. 17.66177 TT

q	1.3000348	(2000.0)	P	Q
n	0.14953233	Peri. 11.38678	+0.46458628	-0.88028212
a	3.5154370	Node 51.00616	+0.80242120	+0.37252175
e	0.6301925	Incl. 7.11334	+0.37453944	+0.29382126
P	6.59			

From 245 observations 1969-1991, mean residual 1".0. Nongravitational parameters A1 = +0.07, A2 = +0.0101.

Periodic Comet du Toit-Neujmin-Delporte
Epoch 1996 Mar. 18.0 TT = JDT 2450160.5
T 1996 Mar. 5.61071 TT Nakano

q	1.7196280	(2000.0)	P	Q
n	0.15417135	Peri. 115.19196	+0.56165113	+0.82733780
a	3.4445588	Node 188.99017	-0.77584888	+0.52339396
e	0.5007697	Incl. 2.84531	-0.28741351	+0.20388949
P	6.39			

From 22 observations 1970-1989, mean residual 0".70. Nongravitational parameters A1 = +1.82 +/- 0.41, A2 = -0.0115 +/- 0.0073.

Periodic Comet Mueller 1 (1987 XXXI)
Epoch 1996 Apr. 27.0 TT = JDT 2450200.5
T 1996 Apr. 25.50111 TT Nakano

q	2.7395389	(2000.0)	P	Q
n	0.11721803	Peri. 29.93919	+0.82459652	-0.56559063
a	4.1349771	Node 4.56044	+0.48393870	+0.69409673
e	0.3374718	Incl. 8.79561	+0.29299131	+0.44535039
P	8.41			

From 29 observations 1987 Oct. 18-1988 Feb. 13, mean residual 0".77.

Periodic Comet West-Hartley (1988 XVI)
Epoch 1996 Apr. 27.0 TT = JDT 2450200.5
T 1996 May 12.04044 TT Nakano

q	2.1331077	(2000.0)	P	Q
n	0.12987632	Peri. 102.97888	-0.83764435	-0.51117163
a	3.8617373	Node 46.66673	+0.33918998	-0.76302537
e	0.4476300	Incl. 15.34603	+0.42813795	-0.39559556
P	7.59			

From 12 observations 1989 Mar. 14-June 30, mean residual 0".78.

Periodic Comet Denning-Fujikawa
Epoch 1996 June 6.0 TT = JDT 2450240.5
T 1996 May 29.77633 TT Muraoka

q	0.7901853	(2000.0)	P	Q
n	0.10912922	Peri. 337.57579	+0.96757798	-0.23438577
a	4.3368595	Node 36.38922	+0.24905163	+0.82339377
e	0.8177978	Incl. 9.12711	+0.04202554	+0.51680365
P	9.03			

From 28 observations 1881-1978, mean residual 2".24. Nongravitational parameters A1 = -0.01 +/- 0.03, A2 = +0.0240 +/- 0.0005.

Periodic Comet Comas Sola
Epoch 1996 June 6.0 TT = JDT 2450240.5 Milbourn
T 1996 June 10.46545 TT

q	1.8463676	(2000.0)	P	Q
n	0.11162696	Peri. 45.76778	-0.27048012	-0.94271581
a	4.2719221	Node 60.86986	+0.80726254	-0.33260117
e	0.5677900	Incl. 12.91681	+0.52456429	+0.02575582
P	8.83			

From 108 observations 1968-1988, mean residual 1".1. Nongravitational parameters A1 = +0.56, A2 = -0.1303.

Periodic Comet Shoemaker-Levy 9 (1993e)
Epoch 1993 May 13.0 TT = JDT 2449120.5
T 1996 June 24.56999 TT Nakano

q	5.0019435	(2000.0)	P	Q
n	0.08209392	Peri. 313.31572	+0.33732198	+0.94130848
a	5.2431876	Node 336.38966	-0.85454723	+0.30067984
e	0.0460109	Incl. 1.76533	-0.39492141	+0.15339485
P	12.01			

From 59 observations 1993 Mar. 15-Apr. 17, mean residual 1".45.

Periodic Comet Parker-Hartley (1987 XXXVI)
Epoch 1996 June 6.0 TT = JDT 2450240.5
T 1996 June 25.45291 TT Nakano

q	3.0463440	(2000.0)	P	Q
n	0.11084441	Peri. 181.20191	+0.41450243	-0.90639946
a	4.2920048	Node 244.31497	+0.83570484	+0.41452824
e	0.2902282	Incl. 5.18301	+0.36025707	+0.08127952
P	8.89			

From 25 observations 1986 Sept.29-1989 Mar. 26, mean residual 1".11.

Periodic Comet Kopff
Epoch 1996 July 16.0 TT = JDT 2450280.5
T 1996 July 2.19980 TT Nakano

q	1.5795617	(2000.0)	P	Q
n	0.15284135	Peri. 162.83487	+0.23851388	+0.96856809
a	3.4645125	Node 120.91329	-0.90038680	+0.24779890
e	0.5440739	Incl. 4.72143	-0.36388836	+0.02171565
P	6.45			

From 196 observations 1977-1991, mean residual 1".11. Nongravitational parameters A1 = -0.31 +/- 0.06, A2 = -0.1259 +/- 0.0011, A3 = -0.17 +/- 0.01.

Periodic Comet Spacewatch (1990 XXIX)
Epoch 1996 July 16.0 TT = JDT 2450280.5
T 1996 July 16.87019 TT Nakano

q	1.5388820	(2000.0)	P	Q
n	0.17722377	Peri. 87.26782	-0.48355524	+0.87186685
a	3.1389765	Node 153.37076	-0.85604689	-0.45254955
e	0.5097504	Incl. 9.97056	-0.18264184	-0.18720872
P	5.56			

From 30 observations 1991 Sept. 8-Nov. 9, mean residual 0".75.

Periodic Comet Gunn
Epoch 1996 July 16.0 TT = JDT 2450280.5
T 1996 July 24.40090 TT Nakano

q	2.4619268	(2000.0)	P	Q
n	0.14423723	Peri. 196.81730	-0.08571240	+0.98211183
a	3.6009560	Node 68.51903	-0.89211818	-0.00072978
e	0.3163130	Incl. 10.37993	-0.44359726	-0.18829718
P	6.83			

From 100 observations 1980-1993, mean residual 1".03. Nongravitational parameters A1 = +1.51 +/- 0.15, A2 = +0.3560 +/- 0.0565.

Periodic Comet Shoemaker-Holt 2 (1988 XI)
Epoch 1996 Aug. 25.0 TT = JDT 2450320.5 Green
T 1996 Aug. 20.21103 TT

q	2.6626291	(2000.0)	P	Q
n	0.12240210	Peri. 5.99753	-0.26620057	-0.91616458
a	4.0173851	Node 99.73070	+0.87126174	-0.36167177
e	0.3372233	Incl. 17.69839	+0.41235934	+0.17273099
P	8.05			

From 47 observations 1989 Mar. 4-1989 May 7, mean residual 1".1.

Periodic Comet Wild 4 (1990 X)
Epoch 1996 Aug. 25.0 TT = JDT 2450320.5
T 1996 Aug. 31.53722 TT Muraoka

q	1.9890618	(2000.0)	P	Q
n	0.16010298	Peri. 170.75395	-0.97494754	+0.22109578
a	3.3589466	Node 22.06534	-0.20800219	-0.86737505
e	0.4078317	Incl. 3.71968	-0.07881870	-0.44584435
P	6.16			

From 157 observations 1990 Jan. 21-Aug. 18, mean residual 0".83.

Periodic Comet Machholz
Epoch 1996 Oct. 4.0 TT = JDT 2450360.5
T 1996 Oct. 15.06962 TT Marsden

q	0.1247178	(2000.0)	P	Q
n	0.18825007	Peri. 14.58608	-0.20171128	-0.46139162
a	3.0151756	Node 94.53200	+0.78920985	-0.59896331
e	0.9586366	Incl. 60.07415	+0.58005205	+0.65449272
P	5.24			

From 94 observations 1986-1991, mean residual 0".93.

Periodic Comet IRAS (1983 XIV)
Epoch 1996 Nov. 13.0 TT = JDT 2450400.5
T 1996 Oct. 31.65110 TT Muraoka

q	1.7027555	(2000.0)	P	Q
n	0.07411244	Peri. 356.88664	+0.99620657	+0.08210496
a	5.6131758	Node 357.70152	-0.05582088	+0.34877602
e	0.6966502	Incl. 45.96289	-0.06675700	+0.93360273
P	13.30			

From 95 observations 1983 June 30-1984 Feb. 22, mean residual 1".09.

Periodic Comet Helin-Roman-Crockett (1988 XIII)
Epoch 1996 Nov. 13.0 TT = JDT 2450400.5
T 1996 Nov. 1.38894 TT Nakano

q	3.4897225	(2000.0)	P	Q
n	0.12084230	Peri. 10.18992	-0.21035580	-0.97484150
a	4.0518814	Node 91.98152	+0.89168259	-0.22223296
e	0.1387402	Incl. 4.23015	+0.40081491	-0.01722068
P	8.16			

From 63 observations 1989 Jan. 3-May 8, mean residual 1".13.

Periodic Comet Tritton (1977 XIII)
Epoch 1996 Nov. 13.0 TT = JDT 2450400.5 Green
T 1996 Nov. 5.01256 TT

q	1.4363618	(2000.0)	P	Q
n	0.15550083	Peri. 147.58521	+0.02619806	-0.99407347
a	3.4248974	Node 300.71391	+0.88901185	+0.07143195
e	0.5806117	Incl. 7.04914	+0.45713412	-0.08194764
P	6.34			

From 7 observations 1978 Feb. 11-Mar. 14, mean residual 0".9.

Periodic Comet Mrkos (1991 IV)
Epoch 1996 Nov. 13.0 TT = JDT 2450400.5
T 1996 Nov. 8.97645 TT Nakano

q	1.4128926	(2000.0)	P	Q
n	0.17466159	Peri. 180.52271	-0.99931799	+0.03371717
a	3.1695999	Node 1.65272	-0.03170186	-0.57427744
e	0.5542363	Incl. 31.47030	-0.01893540	-0.81796612
P	5.64			

From 50 observations 1991 Mar. 15-July 10, mean residual 0".96.

One-opposition minor planets

Planet	H	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1991 TO13	14.0	910921	89.48	89.17	220.72	6.80	0.1116	2.1830	4	5	E	W
1991 TQ13	14.0	910921	329.34	298.18	155.04	2.49	0.1804	2.4346	4	5		W
1991 TR13	14.0	910921	29.98	165.87	211.26	5.02	0.1605	2.9056	4	5		W
1991 TS13	12.0	910921	254.85	102.71	78.48	11.33	0.1223	2.9537	4	5		W
1991 UQ2	13.9	911031	22.92	320.32	38.07	12.95	0.3054	2.5361	28	8		N

1991	UF3	13.1	911031	325.39	51.40	40.26	13.63	0.1895	2.4317	28	6		N
1991	UM3	12.9	911031	41.98	289.60	59.53	9.43	0.2051	2.7755	39	0		N
1991	VX	13.4	911031	330.25	32.52	64.90	5.50	0.2921	2.7679	4	6	E	N
1991	VY	12.9	911031	341.83	358.10	68.57	5.86	0.0919	2.4547	34	8		N
1991	VG1	14.4	911120	352.81	32.80	30.37	5.98	0.2703	2.3829	36	0		N
1992	FU1	14.8	920319	25.47	353.23	149.45	2.26	0.2275	2.3440	5	5		N
1992	FX1	12.8	920319	323.85	43.49	178.49	7.56	0.1469	2.3151	34	8		N
1992	GQ	12.4	920408	22.19	68.47	100.17	9.32	0.1649	3.1197	35	0		N
1992	GR	12.6	920408	57.93	65.57	61.90	13.93	0.1360	2.6475	35	0		N
1993	BF	12.5	930222	118.54	39.43	309.79	9.50	0.1579	2.2579	66	0		B
1993	BT2	13.0	930222	342.02	195.83	329.16	5.43	0.2092	2.6338	59	0		B
1993	BX3	21.0	930202	16.55	289.76	175.71	2.79	0.2810	1.3955	30	0		W
1993	BC9	15.0	930202	57.29	27.65	14.13	1.89	0.2763	2.7769	26	9		W
1993	CO1	13.7	930222	25.09	268.45	216.17	4.03	0.1031	2.3199	31	0		N
1993	DC	16.0	930222	14.90	4.02	70.30	10.06	0.4150	2.3489	38	0		M
1993	DM	13.2	930222	329.14	273.15	277.96	4.20	0.0756	2.5638	25	8		N
1993	DV	13.5	930222	37.41	199.35	262.84	2.51	0.1832	2.6102	31	0		N
1993	DC1	13.2	930222	293.19	122.88	127.72	2.94	0.1422	2.3616	20	5		N
1993	DD1	13.5	930222	18.11	128.41	18.42	4.70	0.0596	2.1860	20	0		N
1993	DQ1	17.0	930222	247.37	344.37	313.79	9.99	0.4913	2.0398	28	0		M
1993	DF2	13.6	930314	316.79	67.15	151.23	4.63	0.0616	2.2471	25	7		N
1993	DK2	15.0	930222	327.04	245.73	340.99	27.89	0.3221	2.5547	7	7		W
1993	DL2	15.0	930222	82.38	206.11	224.23	20.23	0.0824	1.9588	5	0		W
1993	EE	14.1	930314	338.43	67.45	136.45	3.95	0.1460	2.2829	44	0		N
1993	EK	15.1	930314	53.88	125.36	339.33	6.94	0.1785	2.2851	43	0		N
1993	EL	14.5	930314	350.06	90.02	103.64	15.90	0.3502	2.7203	7	9		M
1993	EM	15.0	930314	11.35	276.62	265.19	18.20	0.0668	1.9853	22	5		W
1993	EO	12.5	930314	288.20	215.81	40.30	2.97	0.0290	2.6425	11	7		W
1993	EP	13.2	930314	12.03	178.15	345.37	12.93	0.1256	2.5944	28	8		N
1993	EQ	13.5	930314	3.30	162.79	14.01	7.79	0.0252	2.3082	14	0		W
1993	ET	12.5	930314	54.33	253.44	186.70	32.17	0.4311	2.8467	14	0		W
1993	EU	13.0	930314	332.81	135.23	83.14	3.16	0.1636	2.3809	14	9		W
1993	EV	13.5	930314	345.22	235.24	328.73	2.08	0.1514	2.4281	14	6		N
1993	FB	15.3	930314	32.47	100.41	29.27	6.24	0.2019	2.3194	5	6	E	N
1993	FC	13.7	930314	6.95	28.07	146.11	8.07	0.2367	2.7328	5	5		N
1993	FD	11.8	930314	259.48	272.87	33.56	15.56	0.1711	2.6140	12	5		N
1993	FP	11.9	930403	287.16	101.30	187.76	4.65	0.2342	2.6423	5	6	E	N
1993	FS	19.5	930403	357.71	20.85	179.39	10.00	0.4181	2.1933	19	0		M
1993	FT	15.5	930314	325.93	221.77	4.63	1.84	0.1670	2.4988	8	0		W
1993	FU	12.0	930314	296.25	256.54	5.99	1.21	0.1627	3.1491	9	0		M
1993	FV	13.5	930314	65.46	284.84	183.00	0.50	0.0674	3.0717	3	0		M
1993	FW	7.0	930314	0.00	359.47	187.90	8.03	0.0000	42.4511	1	4	E	M
1993	FZ	13.5	930403	309.72	65.04	183.04	3.01	0.1246	2.2439	25	0		N
1993	FA1	25.0	930314	0.83	343.46	187.39	20.46	0.2891	1.4266	3	0		M
1993	FE1	13.2	930403	280.72	268.65	7.51	1.19	0.0874	2.3281	14	8		N
1993	FG1	14.0	930314	36.71	303.61	183.55	21.29	0.2028	2.2551	14	9		N
1993	FL1	13.0	930403	296.34	212.99	36.14	8.06	0.0186	2.3631	7	7		N
1993	FM1	13.8	930403	4.29	46.07	134.16	5.16	0.0599	2.2461	4	6		N
1993	FN1	12.3	930403	281.08	137.15	146.43	8.54	0.1787	2.6013	7	7		N
1993	FO1	12.1	930403	179.36	314.47	48.89	8.02	0.1499	2.3970	7	7		N
1993	FP1	13.2	930403	11.56	107.56	63.58	4.74	0.1064	2.2347	7	7		N
1993	FQ1	13.0	930403	286.56	135.79	139.60	7.16	0.1455	2.4465	4	6		N
1993	FR1	11.9	930403	38.37	59.76	81.45	5.60	0.0644	3.1877	4	6		N
1993	FS1	12.1	930403	27.26	359.71	148.70	10.04	0.1538	2.9770	4	6		N
1993	FQ2	12.5	930314	8.26	143.47	25.33	10.14	0.1690	2.7735	14	6		N
1993	FR2	13.6	930403	8.97	19.02	166.85	3.72	0.0858	2.2060	15	7		N
1993	FV3	13.6	930314	16.08	345.33	183.91	1.86	0.1368	2.4122	25	9		N

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell
(262) Valda Obs. 61 M 39.65174 Peri. 23.72564
H 11.67 G 0.15 Opp. 16 n 0.24173903 Node 38.86463
rms res. 0".83 (M-C) 1924-1993 e 0.2138303 Incl. 7.72952

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
(1051) Merope Obs. 59 M 296.10458 Peri. 145.86809
H 9.9 G 0.15 Opp. 16 n 0.17059168 Node 181.35318
rms res. 0".99 (M-C) 1925-1993 e 0.0925574 Incl. 23.38244

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell
(2299) Hanko Obs. 20 M 183.33528 Peri. 165.98459
H 13.3 G 0.15 Opp. 10 n 0.23688983 Node 174.56999
rms res. 0".80 (M-C) 1941-1993 e 0.2954784 Incl. 5.25532

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell
(3165) Mikawa Obs. 18 M 243.37248 Peri. 239.09239
H 12.8 G 0.15 Opp. 7 n 0.29296193 Node 88.84058
rms res. 0".96 (M-C) 1953-1993 e 0.1787938 Incl. 3.92366

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell
(3935) Toatenmongakkai Obs. 44 M 112.01353 Peri. 102.74622
H 12.1 G 0.15 Opp. 8 n 0.24310748 Node 301.18618
rms res. 0".92 (M-C) 1951-1993 e 0.2317810 Incl. 8.71634

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
(4470) 1978 QP1 Obs. 22 M 269.20361 Peri. 195.80639
H 12.0 G 0.15 Opp. 7 n 0.17717355 Node 120.34542
rms res. 0".92 (M-C) 1973-1993 e 0.1661202 Incl. 2.44619

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
(4580) Child Obs. 28 M 13.87730 Peri. 14.98042
H 11.7 G 0.15 Opp. 5 n 0.23014645 Node 169.93689
rms res. 0".96 (M-C) 1978-1993 e 0.1069606 Incl. 13.91555

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
(4757) Liselotte Obs. 42 M 14.13068 Peri. 99.54509
H 12.7 G 0.15 Opp. 6 n 0.12497099 Node 84.46225
rms res. 0".70 (M-C) 1973-1993 e 0.0817632 Incl. 0.18303

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell
(4858) 1985 UA Obs. 64 M 89.12671 Peri. 125.01567
H 13.8 G 0.15 Opp. 5 n 0.30565530 Node 330.26796
rms res. 0".65 (M-C) 1985-1993 e 0.1095274 Incl. 3.27971

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell
(5433) 1988 VZ2 Obs. 44 M 49.62030 Peri. 159.15352
H 12.4 G 0.15 Opp. 5 n 0.24317626 Node 270.12874
rms res. 0".78 (M-C) 1955-1992 e 0.2213368 Incl. 7.75846

(5532)* 1932 CY = 1977 KW1 = 1979 UB4
Discovered 1932 Feb. 14 by K. Reinmuth at Heidelberg.
Id. E. Bowell (MPC 13683), S. Nakano (ibid.)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 14.32773	(2000.0)	P	Q
n 0.17890863	Peri. 69.48196	-0.97264803	+0.23166232
a 3.1192381	Node 123.90942	-0.22001272	-0.89535171
e 0.1421683	Incl. 1.17246	-0.07449974	-0.38036547
P 5.51	H 12.1	G 0.15	

Residuals in seconds of arc

320214	024	(7.1+	4.8-)	710402	675	0.7+	0.9+	770518	675	0.6+	1.3+
320306	024	(9.4+	3.2+)	710416	675	0.9-	0.8-	770519	675	0.4-	1.9+
320314	024	2.7+	2.3-	710416	675	0.3+	0.3-	791016	095	0.6+	0.4+
320315	024	(5.9+	0.2+)	710513	675	2.0-	0.1-	930119	801	0.5+	0.8+
540307	760	1.2-	1.6+	710514	675	0.5-	0.4+	930218	801	1.0+	0.9-
710324	675	2.1-	0.4+	710516	675	1.2-	2.1+	930218	801	0.4+	1.0-
710325	675	0.7+	1.0-	760301	033	0.0	1.9+	930220	801	0.4+	0.8-
710325	675	1.1+	0.4-	760302	033	0.2-	0.6+	930220	801	0.9+	1.1-
710326	675	1.1-	0.2+	760303	033	1.8-	1.7+	930313	596	0.4+	2.0-
710327	675	1.5-	0.4+	760303	033	2.2+	0.0	930313	596	(1.0-	2.5-)

(5533)* 1935 SC = 1955 QB1 = 1972 VF = 1977 DA6 = 1982 TY
Discovered 1935 Sep. 21 by P. F. Shajn at Simeis.
Id. T. Kobayashi (MPC 14181)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Ichikawa
M 89.95690	(2000.0)	P	Q
n 0.29400745	Peri. 18.21858	+0.99096908	-0.13309335
a 2.2399096	Node 349.38999	+0.10934377	+0.87253524
e 0.1877408	Incl. 5.08611	+0.07761584	+0.47007277
P 3.35	H 14.1	G 0.15	

Residuals in seconds of arc

350921	094	(2.5+	3.7-)	770219	381	0.2-	0.5-	920921	400	1.3-	0.5-
350922	012	(4.3+	1.3-)	821015	704	(1.3+	3.7+)	920923	400	0.2+	0.3+
350923	012	2.7+	0.2+	821015	704	0.5+	2.6-	920923	400	1.9+	1.1+
350928	012	(5.2+	2.0+)	920824	801	0.3-	0.1+	920925	801	0.5+	0.0
351001	012	0.9-	2.2-	920824	801	0.1-	0.2+	920925	801	0.6+	0.2+
351015	078	0.9+	0.4+	920830	801	0.1+	0.1-	920930	801	0.7+	0.1+
351018	078	0.8+	1.5-	920830	801	0.1+	0.3+	920930	801	0.6+	0.3+
550825	760	0.3-	0.7-	920920	596	(1.6+	3.1+)	921003	691	1.2-	0.2+
550825	760	0.9-	0.7-	920920	596	0.9-	0.8+	921003	691	1.2-	0.2+
721108	095	2.3-	1.2+	920920	596	0.9+	2.3+	921003	691	1.1-	0.5+
770219	381	0.4+	0.1-	920921	400	0.1-	0.1-				

(5534)* 1941 UN = 1984 CT = 1987 WA5
Discovered 1941 Oct. 15 by L. Oterma at Turku.
Id. T. Kobayashi (MPC 16019)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Ichikawa
M 82.29258	(2000.0)	P	Q
n 0.21442653	Peri. 48.74123	+0.51770511	-0.85524427
a 2.7645028	Node 10.15752	+0.74034151	+0.43422492
e 0.3323972	Incl. 7.56232	+0.42880749	+0.28285325
P 4.60	H 12.0	G 0.15	

Residuals in seconds of arc

410920	062	1.0-	0.0	871117	399	0.2+	0.3+	921128	801	0.1-	0.4+
410925	062	1.0+	0.9-	871117	399	0.7+	0.1-	921128	801	0.0	0.4+
410925	062	0.4-	1.5-	871117	399	1.1+	0.1+	921129	801	0.1-	0.4+
410927	062	0.9-	0.0	871117	399	0.1+	0.4-	921129	801	0.0	0.4+
411015	062	0.5-	0.5-	910713	675	0.7-	0.8-	930121	596	0.4-	0.1+
411016	062	2.4+	2.4+	910713	675	1.1-	0.7-	930121	596	0.4-	0.4+
790125	675	2.3-	1.2-	910716	675	0.2+	1.2-	930121	596	0.0	0.1+
790125	675	0.4-	0.2+	910716	675	1.2+	0.7-	930121	596	0.1+	0.3-
840206	688	(0.5+	4.1-)	921029	801	0.1-	0.2+				
840206	688	0.5+	1.3-	921029	801	0.0	0.3+				

(5535)* 1942 EM = 1978 EK6 = 1986 TV14 = 1991 BO2
Discovered 1942 Mar. 23 by K. Reinmuth at Heidelberg.
Id. T. Kobayashi (MPC 17952)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Ichikawa

M	268.34595	(2000.0)	P	Q
n	0.29942738	Peri. 8.56187	-0.63374601	-0.77092392
a	2.2127977	Node 120.79116	+0.70525519	-0.60961078
e	0.0633833	Incl. 4.24445	+0.31777525	-0.18452913
P	3.29	H 13.6	G 0.15	

Residuals in seconds of arc

420323	024	0.8- 0.2-	910119	046	0.4+ 0.0	920630	801	0.3+ 0.8-
420411	024	0.2+ 2.0-	910119	046	1.3+ 0.2+	920702	801	0.1+ 0.4-
420413	024	1.2+ 2.6+	910120	046	0.5- 0.4+	920726	801	0.2- 0.9-
780306	095	1.8- 1.2-	910120	046	1.7+ 0.1-	920726	801	0.1+ 1.4+
861006	095	0.1- 0.9-	910120	511	(3.6- 0.9+)	920731	801	0.7- 0.3-
910105	885	0.2+ 1.0-	910120	511	1.4- 0.2+			
910105	885	0.6- 0.2+	920630	801	0.7+ 0.1+			

(5536)* 1955 QN = 1955 RC = 1935 SX = 1972 QQ = 1979 WA = 1986 VY7
= 1989 UA8

Discovered 1955 Aug. 23 at the Goethe Link Observatory, Indiana University.

Id. S. Kanda (d, MPC 1453), O. Kippes (d, ibid.), H. Oishi (MPC 16867)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Marsden

M	48.81460	(2000.0)	P	Q
n	0.29222809	Peri. 124.24074	+0.95979133	-0.25763317
a	2.2489929	Node 250.90917	+0.20272276	+0.91081771
e	0.0943482	Incl. 6.77429	+0.19417542	+0.32254652
P	3.37	H 12.7	G 0.15	

Residuals in seconds of arc

350919	078(73.6- 25.1-)X	891026	095	0.2- 0.9-	920806	589	0.3- 0.1+
350927	078(63.0- 11.1+)X	910216	801	0.3+ 0.2-	920806	589	0.4- 0.0
540404	675	0.1- 1.1-	910216	801	0.4- 0.5-	920806	589	0.1- 0.2+
540404	675	0.5- 0.9-	910317	801	0.6- 1.0-	920806	589	0.2- 0.4+
550727	760	1.0+ 1.2+	910320	801	0.5- 0.9-	920806	589	0.2- 0.2+
550823	760	0.6+ 1.9+	910320	801	0.5- 1.0-	920807	589	0.0 0.3+
550823	760	0.6+ 2.2-	920629	801	0.6+ 0.5-	920807	589	0.3- 0.3+
550913	760	1.2- 1.6-	920629	801	0.6+ 0.6-	920807	589	0.4- 0.2+
550913	760	1.7- 1.7-	920701	801	0.3+ 0.5-	920807	589	0.1+ 0.1-
550919	760	0.9+ 1.5-	920701	801	0.3+ 0.6-	920818	589	0.3+ 0.1+
550919	760	0.6+ 0.1-	920726	801	0.2+ 0.3-	920818	589	0.2- 0.4+
720816	095	0.6+ 0.1-	920726	801	0.0 0.1+	920818	589	0.1- 0.2+
720818	095	0.5+ 0.2-	920728	596	0.2+ 0.3-	920818	589	0.3+ 0.6+
791125	046(14.5+ 11.2+)	920728	596	0.4- 0.2+	920818	589	0.1- 0.0
791125	046(15.8+ 10.2+)	920728	596	0.8- 0.0	920921	033	0.3- 0.2-
861108	033	0.5+ 0.8+	920729	801	0.1+ 0.0	920922	033	0.0 0.5-
861108	033	0.2- 0.6+	920729	801	0.1+ 0.1-	920922	033	1.0- 0.3+
891024	095	0.3+ 0.8+	920729	596	0.8+ 2.0+	920926	033	0.2+ 1.0-
891024	095	0.7+ 1.4-	920729	596	0.7+ 0.8+	920928	033	1.1- 0.3-
891026	095	0.3+ 1.5-	920729	596	0.4- 0.0			

(5537)* 1964 TA2 = 1971 VP = 1988 TE1

Discovered 1964 Oct. 9 at Purple Mountain Observatory.

Id. T. Kobayashi (MPC 13851)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Ichikawa

M	164.09960	(2000.0)	P	Q
n	0.28703765	Peri. 4.64815	+0.96392506	+0.26378549
a	2.2760238	Node 339.94746	-0.24743234	+0.83874857
e	0.1654553	Incl. 5.95557	-0.09811070	+0.47635915
P	3.43	H 13.0	G 0.15	

Residuals in seconds of arc

641009	330	0.1+	1.1+	881015	391	2.6+	1.2-	921224	801	0.4+	0.3-
641030	330	0.6+	2.0-	881016	391	(7.0-	1.3+)	921224	801	0.4+	0.1-
641109	330	1.1-	1.3+	881016	391	0.9-	0.6+	921227	801	0.0	0.2-
711111	095	0.3-	2.0+	881019	391	(4.0-	1.7+)	921227	801	0.6-	0.1+
880917	095	1.8-	2.0+	881019	391	1.4-	2.0+	930119	801	0.4+	0.6-
881013	391	(2.8+	0.1-)	881019	391	1.7+	0.7+	930119	801	0.3-	0.6+
881013	391	1.0-	1.3-	881031	391	(4.8-	2.8+)	930127	801	0.0	0.4-
881013	391	1.4+	1.1-	881031	391	(6.2-	1.5+)	930127	801	0.6-	0.2-
881015	391	1.4+	2.2-	881102	391	2.7-	1.1+				
881015	391	1.3+	2.4-	881102	391	(4.9-	0.4-)				

(5538)* 1964 TU2 = 1983 CP4 = 1985 XO

Discovered 1964 Oct. 9 at Purple Mountain Observatory.

Id. T. Kobayashi (MPC 14182)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Ichikawa

M	111.95097		(2000.0)	P	Q
n	0.28454905	Peri.	44.88790	+0.93491816	-0.35286990
a	2.2892749	Node	335.70054	+0.29454803	+0.83068569
e	0.1671290	Incl.	5.23714	+0.19791284	+0.43063223
P	3.46	H	14.0	G 0.15	

Residuals in seconds of arc

641009	330	0.0	0.4-	900227	809	0.1-	0.2+	921227	801	0.7+	0.3+
641030	330	0.6+	0.8-	900227	809	0.3+	0.4+	930121	801	0.2-	0.1-
641109	330	0.3+	0.1-	900302	809	0.5-	0.9-	930121	801	0.3-	0.3-
830214	381	1.0+	0.8+	900302	809	0.5-	1.1-	930127	801	0.4+	0.8+
851209	046	0.1+	0.3+	900302	809	0.3-	1.3-	930127	801	0.8-	0.2-
851209	046	0.8-	0.5-	921225	801	0.5+	0.5+				
900227	809	0.7-	0.3+	921225	801	0.3+	0.5+				

(5539)* 1965 UA1 = 1984 UY4 = 1988 XQ3 = 1991 NS3

Discovered 1965 Oct. 16 at Purple Mountain Observatory.

Id. T. Kobayashi (MPC 21096)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Ichikawa

M	82.92108		(2000.0)	P	Q
n	0.25912938	Peri.	120.89637	+0.53950359	-0.84150196
a	2.4366414	Node	296.42735	+0.76124887	+0.50193991
e	0.1545451	Incl.	1.82162	+0.35977219	+0.19982685
P	3.80	H	12.5	G 0.15	

Residuals in seconds of arc

651016	330	1.7-	1.3-	910706	809	0.1+	0.8+	921221	801	0.1-	0.1-
651020	330	0.5-	1.1-	910707	809	0.1-	1.5+	921223	801	0.0	0.3+
651024	330	1.8+	3.0+	910707	809	0.2-	1.3+	921223	801	0.3-	0.4+
841016	413	0.0	0.1+	910708	809	0.2-	1.5-	930215	786	1.1+	0.9+
841016	413	1.0+	0.4-	910708	809	0.4-	1.6-	930215	786	0.9+	0.9+
881201	054	0.6-	0.8+	921201	596	0.7-	0.9-	930215	786	1.1+	0.8+
910706	809	0.0	1.0+	921201	596	2.1-	0.9-	930215	786	1.2+	0.9+
910706	809	0.0	0.8+	921221	801	0.0	0.1-				

(5540)* 1971 QR1 = 1988 VX1

Discovered 1971 Aug. 30 by T. M. Smirnova at the Crimean Astrophysical Observatory.

Id. T. Kobayashi (MPC 13852)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Ichikawa

M	82.17656		(2000.0)	P	Q
n	0.23532589	Peri.	123.29875	+0.97362466	+0.22137729
a	2.5983017	Node	223.98218	-0.22668485	+0.91118053
e	0.3069889	Incl.	4.55926	-0.02586502	+0.34747968
P	4.19	H	14.1	G 0.15	

Residuals in seconds of arc

710830 095	2.4+	0.4+	881112 046	0.6-	1.4-	921001 675	0.3+	0.1+
710916 095	1.7-	0.4-	881207 054	1.7+	0.8+	921004 675	(3.5+	1.0+)
710926 095	0.4-	0.7-	881207 054	1.2-	0.6-	921004 675	0.3+	0.5+
710927 095	(2.4-	7.4+)	910410 809	0.2+	0.9+	921028 801	0.4-	0.3-
881106 875	2.0+	0.5-	910410 809	0.6+	0.8+	921028 801	0.3-	0.2+
881108 875	0.2+	1.7+	910410 809	0.2-	0.2+	921029 801	0.1-	0.4+
881108 875	0.1-	1.3+	920830 801	0.3-	0.3+	921029 801	0.0	0.1+
881112 046	2.0-	0.7-	920830 801	0.3-	0.4+			

(5541)* 1976 UH16 = 1976 ST5 = 1987 SJ11

Discovered 1976 Oct. 22 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Id. C. M. Bardwell (d, MPC 5597; MPC 12784)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bardwell

M 342.54988		(2000.0)	P	Q
n 0.17417566	Peri.	202.44173	+0.80994269	-0.58413557
a 3.1754924	Node	193.68905	+0.56624903	+0.80221775
e 0.1550369	Incl.	12.86985	+0.15282304	+0.12341927
P 5.66	H	12.3	G 0.15	

Residuals in seconds of arc

530816 675	0.3+	1.7+	761118 381	0.1-	2.1+	920703 801	0.9+	0.1-
530816 675	0.7-	0.1+	870916 095	0.2-	1.7+	920703 801	0.4+	0.5+
760924 095	0.6-	1.5-	870919 675	0.2-	0.9-	920728 801	0.5-	0.1+
761022 381	0.6-	0.0	870919 675	0.4+	1.6-	920728 801	0.4-	0.2+
761022 381	0.1+	0.0	870920 675	0.0	0.7-	920730 801	0.6-	0.2+
761024 381	0.1-	0.4+	870920 675	0.3+	1.7-	920730 801	0.3-	0.1+
761024 381	0.2+	0.1+	920629 801	0.4+	0.1-			
761118 381	1.2+	0.5+	920629 801	0.2+	0.4+			

(5542)* 1978 PT4 = 1986 LL

Discovered 1978 Aug. 6 at Perth.

Id. T. Kobayashi (MPC 12949)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Ichikawa

M 159.23546		(2000.0)	P	Q
n 0.23641226	Peri.	262.61694	+0.90865618	-0.33934701
a 2.5903357	Node	116.95548	+0.39936299	+0.87639099
e 0.1597837	Incl.	15.83912	-0.12187351	+0.34173445
P 4.17	H	12.3	G 0.15	

Residuals in seconds of arc

780710 675	0.1+	2.1- Y	900528 801	0.0	0.3-	911105 474	0.5+	0.3-
780711 675	(4.0+	5.7-)Y	900528 801	0.1-	0.2-	920106 801	0.7-	0.4+
780713 675	(10.8-	2.3+)Y	900625 801	0.3-	0.7-	920106 801	0.8-	0.5+
780806 323	0.5-	0.3+	900625 801	0.0	0.5-	930119 801	0.0	0.3+
780806 323	0.1+	1.0+	911010 801	0.4+	0.4-	930119 801	0.3-	0.2-
780809 323	0.2+	1.0+	911010 801	0.3+	0.5-	930121 801	0.1-	0.3-
780809 323	0.3+	0.3+	911013 366	0.1+	1.1-	930121 801	0.0	0.5-
860604 675	(17.6+	3.1-)	911013 366	1.7+	1.4-	930225 801	0.0	0.4+
860604 675	(17.5+	0.9-)	911103 366	0.3+	0.6+	930226 801	0.1-	0.5-
860606 675	(16.0+	5.2-)	911103 366	1.5-	0.4+	930226 801	0.0	0.7-
860606 675	(20.0+	3.9-)	911105 474	(0.4+	5.9+)			

(5543)* 1978 TW2 = 1978 VN12 = 1966 DE = 1968 UT1 = 1983 CE4 = 1985 WV = 1988 RQ3

Discovered 1978 Oct. 3 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. T. Furuta (d, JAM 1968), C. M. Bardwell (MPC 14013)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bardwell

M	63.14533	(2000.0)	P	Q
n	0.29086247	Peri. 310.62202	-0.25698210	-0.96623682
a	2.2560268	Node 154.25108	+0.89910606	-0.24610290
e	0.0981978	Incl. 2.45619	+0.35435644	-0.07628748
P	3.39	H 13.9	G 0.15	

Residuals in seconds of arc

660218	760	0.5+	0.4+	880910	033	0.5-	0.8-	900319	403	(4.1-	0.1+)Y
660218	760	0.5-	0.7-	880911	033	0.0	0.3-	900325	801	0.3-	0.6-
681023	095	2.2-	2.8+	880915	675	0.8+	1.1+	900325	801	0.2-	0.5-
781003	095	1.6-	0.1-	880915	675	0.5+	0.8+	900329	801	0.8-	0.1-
781007	095	0.8+	0.1+	880916	807	0.9+	0.8+	900329	801	0.7-	0.2+
781102	095	0.8+	2.4+	880918	807	1.4+	0.5-	930225	801	0.1+	0.4-
830214	381	1.6+	0.2+	881004	807	1.0-	0.8-	930225	801	0.7+	0.7-
851120	095	1.9+	2.1-	881005	807	0.4+	0.7-	930226	801	0.9-	0.5-
880908	033	0.1+	0.0	881008	807	0.5-	1.9-	930226	801	1.1-	0.7-
880909	033	0.0	0.4-	881105	807	0.0	0.4-	930323	801	0.6-	0.6+
880909	033	0.3+	0.6-	881107	807	0.7-	0.7-	930323	801	0.5-	0.5+
880910	033	0.4-	0.4-	900319	403	1.2+	0.2+ Y				

(5544)* 1978 TH6 = 1976 GQ5 = 1980 BO2 = 1985 DK2 = 1985 GS1 = 1991 RB21

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

Id. A. Lowe (k, MPC 20009), G. V. Williams (ibid.)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	23.37081	(2000.0)	P	Q
n	0.22343865	Peri. 122.67802	-0.67030631	-0.74109235
a	2.6896587	Node 9.70090	+0.58153563	-0.55669646
e	0.1019379	Incl. 13.15913	+0.46098348	-0.37532809
P	4.41	H 13.0	G 0.15	

Residuals in seconds of arc

760402	095	0.3-	0.3-	850415	675	1.1-	0.4-	930225	801	0.5-	0.5-
781002	095	0.2+	0.5-	910914	675	0.7+	0.1-	930226	801	0.4-	1.3-
781008	095	1.5-	0.1+	910914	675	0.1+	0.6-	930323	801	0.0	0.4-
800123	095	2.9+	2.4+	910916	675	0.5+	0.2+	930323	801	0.3+	1.0-
850224	010	(69.6-	8.6+)	910916	675	0.7+	0.4+				
850224	010	(72.3-	32.9+)	930225	801	0.6-	1.7-				

(5545)* 1978 VY14 = 1986 QJ3

Discovered 1978 Nov. 1 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Id. E. Bowell (MPC 12696)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	63.35271	(2000.0)	P	Q
n	0.22860407	Peri. 68.29137	-0.71229229	-0.69971677
a	2.6489886	Node 67.25545	+0.61986745	-0.66394493
e	0.0216645	Incl. 3.42530	+0.32924768	-0.26376803
P	4.31	H 12.7	G 0.15	

Residuals in seconds of arc

781028	675	0.7+	0.1+	860901	809	0.4+	0.2-	860909	809	0.9-	0.9-
781029	675	0.9+	0.2+	860901	809	0.6+	0.1-	890330	400	(4.1+	0.9-)
781101	095	1.8-	0.1+	860904	809	0.9+	0.7+	890330	400	(7.5+	2.5-)
860829	809	2.0-	0.5+	860904	809	1.1+	0.3+	890330	400	(2.9+	2.7-)
860829	809	2.0-	0.5+	860904	809	1.5+	0.1-	890406	400	(0.8+	2.1+)
860829	809	1.8-	0.3+	860906	809	1.5+	0.7+	890406	400	2.1+	1.5+
860831	809	0.7-	0.4+	860906	809	1.5+	0.6+	890406	400	0.4+	2.0+
860831	809	0.9-	0.3+	860906	809	1.6+	0.5+	911205	399	0.6-	1.6+
860831	809	0.7-	0.4+	860909	809	0.9-	0.7-	911205	399	0.7+	0.8-
860901	809	0.0	0.2-	860909	809	0.9-	0.8-	911207	399	0.6+	1.0+

911207 399 0.9- 1.1+ 930226 801 0.5- 0.2- 930327 801 0.1+ 0.2+
930224 801 0.5- 0.5+ 930323 801 0.3+ 0.1+ 930327 801 0.1+ 0.3+
930226 801 0.4- 0.1+ 930323 801 0.1+ 0.4-

(5546)* 1979 YS = 1976 EE = 1990 OO4 = 1991 RK29
Discovered 1979 Dec. 18 by H. Debehogne at the European Southern Observatory.
Id. K. Ichikawa (MPC 20922)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	16.38079	(2000.0)	P	Q
n	0.23216179	Peri. 242.61658	-0.96628334	-0.16106677
a	2.6218563	Node 287.54268	+0.23673238	-0.86258275
e	0.1163202	Incl. 12.16228	-0.10126344	-0.47959201
P	4.25	H 12.5	G 0.15	

Residuals in seconds of arc
760307 808 0.6+ 1.3+ 900725 675 0.3- 0.6+ 910915 675 0.0 0.1-
760307 808 0.1+ 0.7+ 900727 675 0.1+ 0.4- 910916 675 0.1- 0.1-
791218 809 0.9- 0.5+ 900727 675 0.4+ 0.8- 930224 801 0.5- 0.3-
791218 809 0.4+ 2.3+ 900728 675 0.4+ 0.7+ 930224 801 0.4- 0.5-
791218 809 (0.6+ 5.1+) 900728 675 0.0 0.2- 930322 801 0.2+ 1.2-
791223 095 1.0+ 1.7- 910913 675 0.1+ 0.3+ 930322 801 0.6- 0.4-
800122 095 0.1+ 0.6- 910913 675 0.2+ 0.2-
900725 675 0.5- 0.2+ 910914 675 0.2- 0.7-

(5547)* 1980 LE1 = 1984 JW = 1990 VQ3
Discovered 1980 June 11 by C. S. Shoemaker at Palomar.
Id. T. Nomura (MPC 17627), E. Bowell (ibid.)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	72.60569	(2000.0)	P	Q
n	0.23284223	Peri. 334.88212	-0.80132590	+0.56668724
a	2.6167459	Node 240.98746	-0.50517487	-0.81262995
e	0.1211420	Incl. 12.66135	-0.32042963	-0.13600781
P	4.23	H 12.3	G 0.15	

Residuals in seconds of arc
800610 675 1.2+ 1.3+ 901111 374 0.7+ 1.3+ 920401 801 0.4- 0.6-
800611 675 0.4- 1.3- 901115 374 0.4+ 0.3+ 920401 801 0.3- 0.4-
800612 675 (7.8+ 4.5-) 901115 374 1.7- 2.0- 920405 675 1.8- 0.2-
800618 675 (3.9+ 1.5-) 901121 399 0.8- 1.6- 920405 675 1.8- 0.6-
800619 675 (1.9+ 4.0-) 901121 399 1.0+ 0.4+ 920407 675 1.3- 1.5-
800620 675 1.1+ 2.2- 920204 675 0.3- 0.3- 920502 675 (7.8- 2.9-)
800709 675(38.0- 12.5+) 920204 675 1.0+ 0.6- 920502 675 (9.4- 3.1-)
840503 688 0.6- 1.7+ 920225 675 0.8+ 0.8+ 920528 675 1.9+ 1.7-
840503 688 1.4- 0.5+ 920227 675 1.9+ 1.1+ 920528 675 0.6- 0.0
901111 374 (4.0- 0.5-) 920227 675 1.3+ 0.7+

(5548)* 1980 TH = 1985 PX1
Discovered 1980 Oct. 3 by Z. Vavrova at Klet.
Id. H. Kaneda (MPC 16228)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	86.66211	(2000.0)	P	Q
n	0.19006353	Peri. 122.80453	-0.14636518	-0.98657585
a	2.9959659	Node 335.30401	+0.83974596	-0.08521572
e	0.0732791	Incl. 9.98244	+0.52288045	-0.13930680
P	5.19	H 11.9	G 0.15	

Residuals in seconds of arc
801003 046 (4.4+ 2.4-) 850814 010 (1.1+ 3.6+) 900828 095 1.1- 2.3-
801003 046 1.0+ 2.4- 850816 010 (5.4- 0.4+) 900909 809 0.1- 0.1-
801008 095 0.6+ 1.5+ 850824 010 0.3- 0.6- 900909 809 0.1+ 0.1-
801012 095 1.0- 0.4+ 900828 095 1.0+ 0.8- 900909 809 0.3+ 0.1-

900910	809	0.5-	0.5-	900917	809	1.5+	2.6+	930221	801	0.1+	0.8-
900910	809	0.1-	0.2-	900918	809	1.0+	2.3+	930225	801	0.1-	0.3+
900910	809	0.0	0.5-	900918	809	0.4+	2.2+	930225	801	0.1-	0.1-
900910	809	1.2-	0.6-	930126	801	0.4-	0.7+	930315	400	1.4-	0.3-
900911	809	1.0-	0.7-	930126	801	0.6-	0.8+	930315	400	0.1-	1.5-
900911	809	0.9-	0.6-	930219	511	2.4-	0.9-	930325	400	2.5+	0.4+
900914	675	0.0	0.4-	930219	511	1.9+	0.5+	930325	400	0.3-	0.1+
900914	675	1.1+	0.4-	930221	801	0.0	0.5-				

(5549)* 1981 GM1 = 1989 AA10 = 1991 RA7

Discovered 1981 Apr. 1 at the Agassiz Station of the Harvard College Observatory.

Id. G. V. Williams (MPC 19015), B. A. Skiff (ibid.), E. Bowell

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	341.28520	(2000.0)	P	Q
n	0.23593513	Peri. 179.60575	-0.99909950	+0.04073972
a	2.5938268	Node 2.81243	-0.03955882	-0.79344969
e	0.0976049	Incl. 13.97802	-0.01533927	-0.60727084
P	4.18	H 13.2	G 0.15	

Residuals in seconds of arc

810213	413	1.0-	0.9+	810411	413	0.6-	0.4-	910917	675	0.4+	0.8-
810308	095	1.0+	1.9+	810411	413	0.6+	0.3-	911007	033	0.3+	0.6-
810311	413	2.1-	1.6-	810430	413	0.7-	0.3-	911007	033	0.3+	0.3-
810311	413	1.5+	1.2-	810502	413	1.1-	0.3+	911008	033	0.2-	1.0+
810316	413	1.0-	1.0-	890111	675	0.2+	0.2+	930225	801	0.1+	0.3+
810316	413	0.7+	0.3-	890111	675	1.1-	1.2-	930226	801	0.1+	0.7+
810329	413	1.0-	0.3+	910902	413	0.6-	0.5+	930226	801	0.0	0.6+
810329	413	0.5+	0.5+	910902	413	1.2+	0.5-	930319	801	0.2-	0.3-
810401	801	1.7+	1.6+	910903	413	0.3-	0.5+	930320	801	0.1+	0.1-
810407	413	1.0-	0.6-	910910	675	1.4+	0.1+	930323	801	0.2+	0.0
810407	413	0.1+	0.4-	910910	675	1.7-	0.5-				
810408	413	0.8+	0.8-	910917	675	0.7+	1.3-				

(5550)* 1981 UB1 = 1981 SP5 = 1975 RQ2 = 1977 AM = 1983 CP2 = 1986 WD8

Discovered 1981 Oct. 30 by L. G. Taff at the Lincoln Laboratory ETS, New Mexico.

Id. S. Nakano (d, MPC 10752; unpublished), T. Kobayashi (MPC 13152),

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	36.48668	(2000.0)	P	Q
n	0.18106006	Peri. 279.65032	+0.41007523	-0.91198911
a	3.0944795	Node 146.13377	+0.84413070	+0.37507421
e	0.1754081	Incl. 1.09870	+0.34537178	+0.16611804
P	5.44	H 12.4	G 0.15	

Residuals in seconds of arc

750906	095	0.6-	1.1-	830215	688	0.3-	0.7-	921123	364	0.2+	1.4-
770113	095	(1.1-	4.5+)	830215	688	0.6-	1.8-	921123	364	0.6-	0.4-
810925	095	1.7-	0.1+	860907	095	0.8+	0.5+	921124	364	(0.1-	2.9+)
811024	095	(0.6-	3.7+)	860912	095	2.1+	0.4-	921124	364	0.3-	1.0+
811028	095	(1.5-	3.6+)	861130	381	1.2-	1.2-	930125	801	0.1-	0.1-
811030	704	0.7+	0.5-	861130	381	0.6-	0.0	930126	801	0.0	0.9+
811030	704	1.9+	0.7-	861201	381	0.9-	0.5+	930126	801	0.2-	1.2+
811031	704	(1.0+	3.4-)	861201	381	(5.4-	5.6-)	930127	801	0.3-	1.1+

(5551)* 1982 BJ

Discovered 1982 Jan. 24 by C. S. Shoemaker at Palomar.

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bardwell

M	78.41604	(2000.0)	P	Q
n	0.27950777	Peri. 37.75710	-0.86003194	-0.36024458
a	2.3167195	Node 117.34645	+0.30947677	-0.93133789
e	0.1952591	Incl. 24.00433	+0.40567128	-0.05323128
P	3.53	H 13.9	G 0.15	

Residuals in seconds of arc

820124	675	(10.2+ 3.9-)	820304	675	0.7- 0.5-	890201	675	0.7+ 0.6+
820124	675	(11.4+ 0.8-)	820401	675	0.6- 0.3-	890202	801	0.8- 0.9-
820126	381	0.6+ 0.5-	820413	675	0.1- 0.3-	890208	801	2.4- 0.7+
820126	381	1.0+ 0.4+	860512	801	1.8+ 0.4-	920115	413	0.6- 0.3+
820128	381	0.5+ 1.0-	860603	801	0.5- 0.4+	920115	413	0.5- 0.3+
820202	675	0.8- 0.3+	890110	675	0.4- 1.1-	930221	801	0.1- 0.4+
820203	675	0.5- 0.6+	890110	675	0.6- 1.2-	930221	801	0.2+ 0.0
820213	675	0.2+ 2.0+	890111	046	2.0+ 2.2+	930323	801	0.5- 0.1-
820213	675	0.9- 1.5+	890111	046	0.7+ 0.5+	930323	801	0.4- 0.2+
820218	675	0.2+ 2.3-	890114	675	2.0+ 1.0-	930327	801	0.3- 0.3+
820228	675	0.0 0.6-	890130	675	0.4- 0.4+			

(5552)* 1982 SJ1 = 1931 TX = 1973 UT4 = 1973 YF = 1991 RR

Discovered 1982 Sept. 16 by A. Mrkos at Klet.

Id. H. Kaneda (MPC 19293)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	87.48914	(2000.0)	P	Q
n	0.21256273	Peri. 248.97049	+0.43708976	-0.89933340
a	2.7806391	Node 175.05843	+0.86918523	+0.41883391
e	0.2421347	Incl. 8.22846	+0.23123490	+0.12560890
P	4.64	H 12.5	G 0.15	

Residuals in seconds of arc

311006	024	0.0 0.7-	820919	046	0.9+ 1.6+	911004	808	(10.9- 0.5-)
731021	688	1.9+ 0.2-	820919	046	(5.2+ 4.2+)	911106	801	0.1- 0.9+
731023	688	0.0 0.7-	820924	095	(3.0+ 0.3+)	911106	801	0.6+ 0.8+
731219	095	0.4+ 1.8+	820927	095	1.4+ 2.5+	930224	801	0.4+ 0.6+
820916	046	1.6- 0.3-	910903	413	0.8+ 0.1-	930226	801	0.4+ 0.4+
820916	046	0.7- 0.5+	910903	413	0.8- 0.1+	930226	801	0.4+ 0.4+
820917	046	2.6- 1.1-	910904	675	0.8- 1.2-	930319	691	0.8- 0.2-
820917	046	0.6- 1.4+	910904	675	1.1+ 0.4+	930319	691	0.9- 0.2-
820917	095	(1.2- 5.1-)	910904	413	0.8+ 0.1+	930319	691	0.8- 0.4-
820917	046	0.4- 1.9-	910907	675	0.4+ 2.0+	930320	801	0.0 0.8-
820917	046	0.6- 2.0-	910907	675	0.6+ 0.1-	930320	801	0.1+ 0.8-
820918	046	(3.0- 3.6-)	910912	675	0.7+ 1.5-	930323	801	0.1- 0.9-
820918	046	1.7- 1.6-	910912	675	0.2+ 0.8-	930323	801	0.1- 0.9-
820919	095	1.7+ 1.5-	911004	808	(10.8- 0.6+)	930323	801	0.0 0.4-

(5553)* 1984 CM1 = 1981 QC4

Discovered 1984 Feb. 6 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. S. J. Bus (MPC 20631)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	30.69395	(2000.0)	P	Q
n	0.21789038	Peri. 1.09578	-0.95840394	-0.28071007
a	2.7351261	Node 162.33753	+0.26055241	-0.93430881
e	0.2092899	Incl. 9.79394	+0.11650892	-0.21970188
P	4.52	H 13.0	G 0.15	

Residuals in seconds of arc

551116	675	0.2+ 0.6-	840206	688	0.4- 0.2+	840309	688	0.4- 0.9-
810830	675	1.2+ 1.4+	840306	688	1.1- 0.6-	840329	095	0.9- 0.1-
810831	675	1.4- 0.5-	840306	688	0.4- 0.8-	840403	688	0.1+ 1.4-
840206	688	0.0 0.0	840309	688	0.4+ 1.7-	840403	688	0.3- 0.0

840403	095	0.6+	0.7-	930126	801	0.0	0.0	930224	801	0.0	1.0+
840405	095	1.3+	1.5+	930220	801	0.4-	0.6+	930312	596	0.0	1.4+
921227	801	0.0	0.5-	930220	801	0.2-	0.5+	930312	596	0.9+	1.9+
930126	801	0.3-	0.4-	930224	801	0.0	1.1+	930312	596	1.1+	0.8-

(5554)* 1985 TW1 = 1985 TY3 = 1975 XK7 = 1978 NQ7 = 1982 YJ3 = 1983 AE4

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

Id. F. N. Bowman (d, MPC 11826), S. Nakano (MPC 14195)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	111.19145		(2000.0)	P	Q
n	0.29331416	Peri.	72.66558	+0.90042330	-0.42348430
a	2.2434378	Node	312.26264	+0.33030822	+0.81440412
e	0.1975999	Incl.	7.72611	+0.28308012	+0.39674548
P	3.36	H	13.8	G 0.15	

Residuals in seconds of arc

751203	033	0.0	0.4-	851015	688	0.2+	0.7-	900228	809	0.8-	0.6+
751203	033	0.4+	0.2+	900225	809	0.6-	0.5-	900228	809	0.5-	0.6+
780710	675	(7.1+	0.5-)Y	900225	809	0.6-	0.7-	921023	801	0.6+	0.8+
780711	675	(10.7+	8.6-)Y	900225	809	0.3-	0.8-	921023	801	0.7+	0.6+
780713	675	(2.2-	4.6+)Y	900226	809	2.4+	0.6-	921029	801	0.0	0.0
821222	095	0.5-	0.2-	900226	809	2.1+	0.6-	921029	801	0.0	0.0
830106	095	(1.9-	3.6-)	900226	809	1.9+	0.3-	921128	801	0.2-	0.2+
850919	095	1.4+	1.7+	900228	809	1.2-	0.5+	921128	801	0.2-	0.2+
851011	675	1.7-	1.0-	900228	809	0.9-	0.5+	921129	801	0.0	0.1-
851013	675	(12.8-	1.7-)	900228	809	0.4-	0.4+	921129	801	0.0	0.2-
851015	688	0.3+	0.4-	900228	809	1.0-	0.6+				

(5555)* 1986 VF5 = 1978 ED10

Discovered 1986 Nov. 5 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. S. J. Bus (MPC 18111)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	84.76070		(2000.0)	P	Q
n	0.18840315	Peri.	53.94175	+0.54029871	-0.84140790
a	3.0135422	Node	3.40566	+0.70405397	+0.44520040
e	0.1015411	Incl.	10.17184	+0.46085281	+0.30631577
P	5.23	H	12.2	G 0.15	

Residuals in seconds of arc

780315	675	0.1+	0.2+	910913	801	0.1-	0.3+	930119	801	0.3-	0.1-
780316	675	0.4+	0.7+	910913	801	0.0	0.6+	930119	801	0.3-	0.3-
861003	095	(4.0-	2.4+)	910914	675	0.1-	0.6+	930121	801	0.2-	0.0
861007	095	1.3-	0.5-	910914	675	0.2+	1.1+	930121	801	0.1-	0.0
861011	095	0.5+	0.7+	910917	675	0.5-	1.0-	930220	801	1.1+	0.5+
861105	688	0.5+	0.6+	910917	675	0.3+	0.3-	930220	801	0.3-	0.5+
861105	688	0.2+	0.5-	911006	691	1.5-	0.6+	930225	801	0.5+	0.4+
910812	801	0.0	0.4-	911006	691	1.4-	0.7+	930322	801	0.1-	0.1+
910812	801	0.1+	0.2-	911006	691	1.7-	0.7+	930322	801	0.4+	0.3-
910909	801	0.1+	0.7+	911107	675	0.2+	0.3-	930327	801	0.3-	0.6+
910909	801	0.2-	0.6+	911107	675	1.5+	1.2-	930327	801	0.1-	0.5-
910911	675	0.3+	0.4+	911109	675	0.9+	2.2-				
910911	675	0.5+	0.3+	911109	675	1.4+	0.8-				

(5556)* 1988 AL = 1951 EC

Discovered 1988 Jan. 15 by S. Ueda and H. Kaneda at Kushiro.

Id. S. Nakano (MPC 13450)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 29.74328 (2000.0) P Q
n 0.21159861 Peri. 359.06213 -0.97598982 -0.21572834
a 2.7890791 Node 168.34737 +0.20079973 -0.94463953
e 0.1708144 Incl. 8.56646 +0.08439990 -0.24721943
P 4.66 H 12.2 G 0.15
Residuals in seconds of arc

510306	024	0.2+	2.1-	880126	809	0.5+	0.1-	930222	596	0.5+	0.1-
510313	024	1.3-	2.3-	880126	809	0.5+	0.3-	930222	596	0.6+	0.7-
880115	399	1.6+	0.8-	880127	809	0.1-	0.7-	930222	596	2.3+	0.4+
880115	399	0.1+	0.4+	880127	809	0.2-	0.6-	930311	104	0.0	0.1+
880115	399	0.2-	0.4+	880127	809	0.4-	0.5-	930311	104	1.1+	1.0+
880117	809	0.5+	0.0	880128	809	1.3-	0.2+	930312	399	1.0-	0.2+
880117	809	0.8+	0.3-	880128	809	1.2-	0.1+	930312	399	1.7-	0.6+
880117	809	1.1+	0.2-	880128	809	1.1-	0.1+	930315	104	(2.8-	1.8+)
880118	809	0.7+	0.0	880129	809	0.7-	0.1-	930315	104	0.5-	0.3+
880118	809	0.4+	0.0	880129	809	0.5-	0.2-	930318	399	0.1+	0.2+
880120	809	0.3+	0.4+	880130	809	1.1-	0.2-	930318	399	0.1-	0.2-
880120	809	0.5+	0.6+	890525	399	(4.0+	0.2+)	930318	104	2.1-	0.8+
880122	809	0.1-	0.2+	890525	399	1.8+	0.1+	930318	104	(1.1-	4.3+)
880122	809	0.0	0.0	890602	400	0.1-	0.5-	930322	801	0.0	0.3+
880122	809	0.1+	0.3-	890602	400	1.6-	1.2+	930322	801	0.2+	0.2-
880124	809	0.4-	0.7+	930215	399	0.6+	0.0	930327	801	0.5-	0.5+
880124	809	0.2-	0.9+	930215	399	0.1-	0.6-	930327	801	0.7-	0.7+
880124	809	0.1-	0.9+	930221	399	1.1+	0.3-				
880126	809	0.4+	0.1-	930221	399	1.0+	0.7+				

(5557)* 1989 CM1 = 1969 EY = 1973 FS = 1983 VW2
Discovered 1989 Feb. 7 by K. Endate and K. Watanabe at Kitami.
Id. T. Kobayashi (MPC 14478)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 327.55614 (2000.0) P Q
n 0.24324442 Peri. 221.74114 -0.60683951 +0.79458038
a 2.5416015 Node 10.94666 -0.69901636 -0.52173417
e 0.1525824 Incl. 5.95263 -0.37831461 -0.31054060
P 4.05 H 12.6 G 0.15
Residuals in seconds of arc

690312	095	0.0	2.9-	890213	372	0.7+	0.1+	911029	400	1.0+	0.8+
730326	095	1.6-	0.1+	890213	372	1.2-	0.8-	911031	400	1.2-	1.5-
831108	381	1.1+	0.2+	890214	372	1.7+	1.5-	911031	400	1.1-	1.7-
831108	381	0.7-	0.1+	890226	400	(2.2-	3.2+)	930224	596	0.5+	0.1-
890207	400	2.4+	0.4+	890226	400	0.1-	0.6+	930224	596	0.7+	0.7+
890207	400	0.9+	2.5+	890226	372	1.5-	2.0-	930322	801	0.8+	0.2-
890207	400	0.6-	0.7+	890226	372	0.2+	2.6+	930322	801	0.5+	0.1+
890212	400	1.4-	1.2-	890301	372	0.7+	0.3+	930327	801	0.4+	0.4+
890212	400	1.3-	1.3-	890301	372	0.6-	1.9+	930327	801	0.1+	0.4+
890212	400	1.4-	1.1-	911029	400	1.7+	0.2+				

(5558)* 1989 WL2
Discovered 1989 Nov. 24 by R. H. McNaught at Siding Spring.
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 151.45970 (2000.0) P Q
n 0.36597869 Peri. 264.61728 +0.66986913 -0.69544027
a 1.9356739 Node 139.04395 +0.73392994 +0.67320813
e 0.1125354 Incl. 23.37628 -0.11234857 +0.25130390
P 2.69 H 13.9 G 0.15
Residuals in seconds of arc

781024	413	0.8-	0.5+	830417	413	1.0-	0.5-	860801	413	0.1+	1.7-
781024	413	0.9+	1.1-	830417	413	(2.5-	1.2-)	860801	413	0.1-	0.6-

880814 413 (3.1+ 3.3-) 910517 801 0.0 0.6- 930126 801 0.4- 0.2-
891124 413 0.6- 0.6- 910517 801 0.3+ 0.2+ 930127 801 0.4- 0.3-
891124 413 0.4- 0.9- 910610 801 0.2- 0.2+ 930127 801 0.3- 0.5-
891125 413 0.4- 0.3+ 910611 801 0.1+ 0.3+ 930215 596 1.0+ 0.6+
891125 413 1.2+ 0.4- 910611 801 0.2+ 0.3+ 930215 596 1.0+ 0.3-
891206 413 0.2+ 0.1- 921221 801 0.2+ 0.3- 930215 596 0.9+ 1.0-
891206 413 0.5+ 0.6+ 921221 801 0.4+ 0.2- 930216 596 0.1- 1.4-
891227 413 0.1- 0.1+ 921225 801 0.2+ 0.7+ 930216 596 1.9- 0.1+
910516 801 0.5- 1.0- 921225 801 0.9- 0.3+ 930216 596 0.6- 0.5+
910516 801 0.4+ 0.8- 930126 801 0.5- 0.4- 930216 596 0.9+ 0.2-

(5559)* 1990 MV = 1942 JF = 1980 WA2 = 1980 XG2
Discovered 1990 June 27 by E. F. Helin at Palomar.
Id. R. Nagata (MPC 17211, MPC 21574)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

		(2000.0)	P	Q
M	308.27036			
n	0.26755208	Peri. 177.62084	+0.00496560	+0.98052503
a	2.3852313	Node 92.61733	-0.92068555	+0.08110766
e	0.2316150	Incl. 11.33449	-0.39027357	-0.17886365
P	3.68	H 12.0	G 0.15	

Residuals in seconds of arc (or two decimals in units of degrees)
420514 078(39.7+ 10.0+)X 900720 675 0.6+ 0.2- 930224 801 0.1+ 0.2+
420613 078(0.01+ 0.05+)X 900720 675 0.5+ 2.2- 930224 801 0.5+ 0.1+
801130 095 2.0- 2.3+ 900723 675 0.1- 0.8+ 930322 801 0.8+ 0.2+
801210 095 1.4+ 0.3- 900723 675 1.6+ 0.5- 930322 801 0.7- 0.3+
900627 675 0.6- 0.4+ 911207 675 0.8+ 1.7- 930327 801 0.1+ 0.4-
900627 675 2.0- 0.4+ 911207 675 0.0 1.6- 930327 801 0.2+ 0.3-
900629 675 0.1+ 0.2- 930220 801 0.4- 1.6-
900629 675 0.1- 0.0 930220 801 0.6- 0.1+

(5560)* 1990 MX = 1962 JE
Discovered 1990 June 27 by E. F. Helin at Palomar.
Id. B. G. Marsden (MPC 16881)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Marsden

		(2000.0)	P	Q
M	343.54766			
n	0.28515820	Peri. 177.36790	-0.30052203	+0.94906260
a	2.2860136	Node 75.13031	-0.87685128	-0.23585742
e	0.1084240	Incl. 5.62249	-0.37525770	-0.20892933
P	3.46	H 13.3	G 0.15	

Residuals in seconds of arc
620504 760 (5.4+ 0.2+) 900720 675 0.0 0.3- 911209 399 (2.4- 0.7+)
620504 760 2.6+ 0.6- 900723 675 0.9+ 1.3- 911209 399 0.3+ 1.2+
620507 760 1.3- 0.1+ 900723 675 0.9+ 1.2- 930221 801 0.3- 0.8-
620507 760 1.8- 0.6- 911201 675 0.2+ 1.4- 930221 801 0.6- 1.3-
900627 675 0.9- 1.0+ 911201 675 1.1- 1.1- 930323 801 0.1- 0.7+
900627 675 0.5- 0.6+ 911203 675 0.2- 0.4- 930323 801 0.0 0.5+
900629 675 1.1- 1.0- 911203 675 0.4- 1.3- 930327 801 0.4+ 0.0
900629 675 0.1- 1.0+ 911205 399 0.5+ 0.4+ 930327 801 0.4+ 0.0
900720 675 0.9+ 0.4- 911205 399 1.3+ 0.4+

(5561)* 1991 QD = 1930 YN = 1962 SE = 1980 FN9
Discovered 1991 Aug. 17 by S. Otomo at Kiyosato.
Id. S. Nakano (MPC 19033)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

		(2000.0)	P	Q
M	186.72310			
n	0.30487825	Peri. 70.49359	+0.96081049	-0.26392090
a	2.1863436	Node 304.72229	+0.19949264	+0.87068593
e	0.1541277	Incl. 5.92104	+0.19247309	+0.41503224
P	3.23	H 13.4	G 0.15	

Residuals in seconds of arc

301224	690	(5.8-	6.3-)	910908	894	0.1-	0.3+	930225	894	0.3+	2.0+
301225	690	0.9-	0.4-	910909	894	0.9+	0.0	930225	894	0.4+	1.0+
620922	760	1.3+	1.8+	910912	691	0.9-	0.3-	930301	894	0.2-	1.3-
620923	760	1.1-	0.5+	910912	691	1.0-	0.9+	930301	894	0.3+	0.9-
800316	095	0.1+	1.8-	910912	691	1.3-	0.7+	930313	894	1.0-	1.7+
910808	675	0.6-	0.9-	910912	675	1.3+	0.6+	930313	894	0.7-	0.0
910808	675	0.6-	1.0-	910912	675	0.4+	0.2+	930314	894	0.6+	0.9+
910817	894	0.1-	0.3+	910914	675	0.6+	1.0-	930322	894	0.8+	0.3+
910817	894	0.3-	0.7+	910914	675	0.6+	0.8-	930322	894	1.5+	0.8+
910831	894	0.4+	0.1-	910928	894	0.3-	0.4-				
910831	894	0.5-	0.4+	910928	894	0.6+	0.4+				

(5562)* 1991 VS = 1977 CY2 = 1985 DF = 1990 MX1

Discovered 1991 Nov. 4 by S. Ueda and H. Kaneda at Kushiro.

Id. H. Kaneda (MPC 19517)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	69.87194	(2000.0)	P	Q	
n	0.25173229	Peri.	49.30894	-0.78878332	-0.60023605
a	2.4841440	Node	93.39104	+0.51633537	-0.76392465
e	0.1170361	Incl.	7.62343	+0.33349460	-0.23692997
P	3.92	H	13.2	G 0.15	

Residuals in seconds of arc

770212	675	0.7+	0.7-	911104	399	0.9+	0.2+	930220	801	0.1+	0.0
770213	675	1.2+	1.2-	911104	399	0.4+	0.5+	930320	801	0.1-	0.4-
850218	054	0.3-	0.3+	911105	399	1.7+	0.2-	930320	801	0.4-	0.4-
850219	054	2.0-	1.4+	911105	399	1.2+	1.9+	930323	801	0.8+	0.4-
850225	688	0.4+	0.4-	911111	399	2.6-	2.2-	930323	801	0.4+	0.5-
850225	688	2.4-	0.5-	911111	399	1.6-	1.2-	930326	399	0.4-	0.8+
900628	808	(1.0-	3.4-)	930125	801	1.7+	0.7+	930326	399	1.4+	0.2+
900628	808	0.2+	2.2-	930218	801	0.5-	0.4-				

(5563)* 1991 VZ1 = 1942 GN = 1952 HP2 = 1968 UX1 = 1973 YL2

Discovered 1991 Nov. 9 by S. Ueda and H. Kaneda at Kushiro.

Id. H. Kaneda (MPC 19519)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	79.18757	(2000.0)	P	Q	
n	0.21426980	Peri.	49.30500	-0.45251559	-0.87555403
a	2.7658508	Node	68.35944	+0.75340581	-0.47688372
e	0.0625003	Incl.	10.48918	+0.47708419	-0.07737603
P	4.60	H	11.8	G 0.15	

Residuals in seconds of arc

420412	024	(5.1-	3.5+)	911113	399	0.3-	0.1+	930121	801	0.3+	1.2-
420413	024	0.5-	1.7+	911113	399	1.0-	0.6-	930220	801	0.5-	0.2+
420413	024	0.2-	1.6+	911115	894	0.2+	0.5-	930220	801	0.2-	0.0
520426	711	(3.5+	2.6+)Y	911115	894	0.7-	0.5-	930224	801	0.2-	0.3-
681023	095	2.2+	1.8-	911201	675	0.7+	0.1+	930224	801	0.2-	0.3-
731220	095	0.4+	1.2-	911201	675	0.8+	0.1+	930316	596	0.3+	0.6+
911103	372	2.0-	0.1+	911203	675	0.9+	0.2-	930316	596	1.1+	0.1-
911106	372	0.5-	1.4-	911203	675	1.1+	0.5-	930316	596	0.4+	0.0
911108	372	(3.3-	1.7-)	911205	399	1.5+	0.2+	930316	596	1.1+	0.1+
911109	399	0.2-	0.5+	911205	399	0.9+	0.2+	930325	399	0.6-	0.3-
911109	399	1.8-	0.1-	911207	399	1.0+	1.1+	930325	399	1.5-	0.3+
911111	399	1.5-	1.4+	911207	399	0.4-	1.0+	930326	399	0.1+	0.3+
911111	399	0.5-	1.0+	930119	801	0.0	0.0	930326	399	0.7-	0.2-
911112	894	0.4-	0.2-	930119	801	0.1+	0.2-				
911112	894	0.2-	0.4+	930121	801	0.2+	1.0-				

(5564)* 1991 VH2 = 1973 FL1 = 1987 WO4 = 1990 OT1
Discovered 1991 Nov. 9 by S. Ueda and H. Kaneda at Kushiro.
Id. H. Kaneda (MPC 19520)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	3.86118		(2000.0)	P	Q	
n	0.24493435	Peri.	130.40631	-0.82670590	+0.54718829	
a	2.5298975	Node	83.15360	-0.54786161	-0.72992507	
e	0.1232518	Incl.	7.57761	-0.12808201	-0.40962710	
P	4.02	H	12.7	G	0.15	

Residuals in seconds of arc

730327	095	0.5-	0.3-		911113	399	0.6+	0.4+	930311	596	1.4+	0.3-
730402	095	0.4-	1.6-		911113	399	1.7+	0.3-	930311	596	0.3-	1.6+
871126	046	0.2-	1.7-		911201	675	0.2-	0.4-	930312	596	1.9-	1.1-
871126	046	(1.9+ | 3.1-)		911201	675	1.1+	0.9+	930312	596	0.0	0.4+
900729	675	1.2+	0.5-		911203	675	0.1-	0.2+	930312	596	0.2+	0.3-
900729	675	0.1+	0.0		911203	675	0.4-	0.7+	930323	801	0.7+	0.4+
900730	675	1.2-	1.2-		911205	399	1.1-	0.1-	930323	801	0.4+	0.2-
900730	675	0.7+	0.0		911205	399	1.7-	1.3-	930325	399	0.0	0.6-
911109	399	0.2+	0.0		930218	801	0.0	0.9-	930325	399	0.3-	0.5+
911109	399	2.3+	0.6+		930218	801	0.1-	1.1-	930326	399	1.1-	0.3-
911111	399	1.3-	0.1-		930220	801	0.2-	0.5-	930326	399	0.6-	0.4+
911111	399	0.5-	0.5-		930311	596	1.6+	1.9+				

(5565)* 1991 VN2 = 1952 MA = 1962 PL = 1981 RB6 = 1988 CW
Discovered 1991 Nov. 10 by A. Natori and T. Urata at the JCPM Yakiimo Station.
Id. T. Urata (MPC 19520)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	142.51937		(2000.0)	P	Q	
n	0.20853682	Peri.	264.62177	+0.70801438	-0.69654547	
a	2.8163127	Node	139.45020	+0.69784070	+0.66479835	
e	0.2125877	Incl.	10.31082	+0.10832360	+0.26993993	
P	4.73	H	11.9	G	0.15	

Residuals in seconds of arc

520627	024	0.4+	0.1+		880215	033	0.5-	0.0	930228	385	1.0-	1.0-
620803	760	1.5-	0.8-		880215	033	1.2+	0.3-	930228	385	1.4-	1.7-
620803	760	0.5+	1.6-		880216	033	0.8+	0.3+	930321	385	0.1-	0.0
810901	675	0.8+	0.1-		911110	885	0.9+	0.1+	930321	385	0.1+	0.3-
810902	675	0.8+	0.5-		911110	885	0.2+	1.6-	930321	385	0.3+	0.9-
880213	033	(2.5- | 3.0+)		911112	885	0.1+	0.7-	930323	801	0.1-	0.5-
880213	033	(3.1+ | 2.7-)		911112	885	0.4-	0.6-	930323	801	0.2+	0.6-
880213	033	0.0	0.3+		911203	885	1.2-	0.1+	930329	385	1.4-	0.5-
880214	033	1.0+	0.2-		911203	885	0.2+	0.8+	930329	385	0.2-	1.2+
880214	033	0.2+	0.1+		930228	385	1.1-	0.7-	930329	385	0.9+	1.4+

(5566)* 1991 VY3 = 1951 YT1 = 1981 BM = 1987 DQ3 = 1990 RQ6
Discovered 1991 Nov. 11 by S. Ueda and H. Kaneda at Kushiro.
Id. S. Nakano (MPC 19521)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	74.70303		(2000.0)	P	Q	
n	0.17236419	Peri.	311.38773	-0.25941588	-0.96569464	
a	3.1977022	Node	153.64079	+0.89376163	-0.24465357	
e	0.1416055	Incl.	1.51211	+0.36591468	-0.08705459	
P	5.72	H	12.0	G	0.15	

Residuals in seconds of arc

511227	711	0.6-	0.5+	Y	870223	010	0.3-	0.5-	900911	809	0.7+	0.4+
511228	711	0.6+	0.2-	Y	870223	010	0.3+	0.6+	900911	809	0.9+	0.4+
810130	688	(2.0+ | 3.7-)		870223	010	0.1+	0.9+	900912	809	0.4+	0.1+
810130	688	(3.3+ | 3.5-)		900911	809	0.5+	0.4+	900912	809	0.8+	0.0

900912 809 1.0+ 0.0 911113 399 0.1+ 1.1- 930225 399 0.5+ 0.3+
900913 809 1.4- 0.7- 911204 399 0.8+ 0.8+ 930225 399 1.7- 0.3+
900913 809 1.2- 0.7- 911204 399 0.4- 0.2+ 930302 399 1.2- 1.0-
900913 809 1.5- 0.8- 911205 399 0.5+ 0.6+ 930302 399 0.8+ 0.7-
911111 399 0.1+ 0.7- 911205 399 1.7+ 0.4+ 930312 399 0.1- 0.3+
911111 399 1.5- 0.2- 911214 399 1.4- 0.2- 930322 399 1.6+ 0.6-
911113 399 1.3+ 0.9- 911214 399 1.1- 0.1+ 930322 399 0.6- 1.0-

1940 ED = 1983 JH = 1987 OV1
Id. T. Furuta (JAM 1507), S. Nakano
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 311.14956 (2000.0) P Q
n 0.27683172 Peri. 54.23213 -0.54304956 +0.83969341
a 2.3316256 Node 182.88309 -0.79105180 -0.51297576
e 0.1513053 Incl. 3.97462 -0.28166332 -0.17824377
P 3.56 H 14.1 G 0.15
Residuals in seconds of arc (or two decimals in units of degrees)
400312 053(0.42- 0.16+)X 400414 053(0.39- 0.14+)X 870729 801 0.1- 0.4+
400315 053(0.43- 0.15+)X 830514 095 0.4+ 2.2+ 910916 675 0.1+ 1.6-
400318 053(0.42- 0.15+)X 830514 046 1.4+ 2.1- 910916 675 0.9+ 0.3-
400327 053(0.41- 0.14+)X 830515 046 2.6+ 0.9- 911008 691 0.1- 0.4+
400329 053(0.41- 0.15+)X 830516 046 3.1- 0.8+ 911008 691 0.3- 0.5+
400330 053(0.41- 0.15+)X 830516 046 1.4- 0.2- 911008 691 0.4- 0.4+

1971 SB = 1993 FX
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 148.10172 (2000.0) P Q
n 0.38766035 Peri. 76.39020 +0.30076654 -0.95326517
a 1.8628096 Node 355.76620 +0.65286969 +0.22775546
e 0.0982102 Incl. 22.89601 +0.69519828 +0.19852700
P 2.54 H 14.5 G 0.15
Residuals in seconds of arc
710916 808 1.0- 0.0 710926 808 0.4+ 0.7- 711014 808 0.4+ 0.1+
710918 808 0.5- 1.6+ 710926 808 0.8+ 0.5- 930321 675 (0.1+ 4.1+)
710918 808 0.3+ 0.7- 711012 808 0.5- 0.9+ 930321 675 1.6+ 0.2+
710922 808 0.4+ 0.3- 711012 808 0.5- 0.2- 930322 675 0.2+ 0.2+
710922 808 0.0 0.2- 711014 808 0.3+ 0.0 930322 675 1.9- 0.5-

1976 YG1 = 1958 AB = 1974 FR1 = 1983 RA2 = 1987 SO29 = 1989 EE6 = 1993 CJ
Id. A. Lowe (k), G. V. Williams
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 338.31371 (2000.0) P Q
n 0.25639219 Peri. 164.93470 -0.77339656 +0.62608727
a 2.4539527 Node 54.26179 -0.59353562 -0.66012272
e 0.0385243 Incl. 7.03128 -0.22265049 -0.41503341
P 3.84 H 13.0 G 0.15
Residuals in seconds of arc
580111 760 0.1+ 1.2- 830908 801 (1.4- 3.7+) 930213 402 0.5+ 0.8+
580111 760 0.2+ 0.3- 870924 095 0.8- 2.0+ 930214 402 1.3- 0.5-
740321 095 0.6+ 1.5+ 890307 675 0.7+ 0.9- 930214 402 0.6+ 1.1+
761216 095 (5.9- 1.3+) 890308 675 0.7+ 1.5-
761218 095 1.2- 0.6+ 930213 402 0.2+ 1.5+

1977 UO5 = 1977 VW1 = 1979 DT = 1982 RD3 = 1990 EJ7 = 1990 FF3
Id. G. V. Williams (d, MPC 18084), H. Oishi (MPC 19290), K. Ichikawa (d)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Ichikawa

M	291.38572	(2000.0)	P	Q
n	0.17927400	Peri. 356.79185	+0.41651879	-0.90828842
a	3.1149986	Node 68.59027	+0.83503856	+0.36524163
e	0.2029608	Incl. 2.40342	+0.35947559	+0.20398701
P	5.50	H 12.0	G 0.15	

Residuals in seconds of arc

771018	675	0.3-	0.3-	881103	327	0.3-	0.1-	900304	809	0.8-	0.2+
771019	675	0.5-	0.1-	881103	327	1.0+	0.4+	900304	809	0.8-	0.4+
771112	330	(4.9-	1.0-)	900303	809	0.5-	0.5+	900318	809	(3.3+	1.2-)
790222	808	1.3+	0.2-	900303	809	0.4-	0.5+	900318	809	2.0+	1.0-
790222	808	0.1-	0.1-	900303	809	0.3-	0.5+	900318	809	0.8+	0.6-
820913	095	0.1-	0.6+	900304	809	0.9-	0.3+				

1978 EU9 = 1990 RT5 = 1993 FQ3
Id. A. Lowe (k), G. V. Williams
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	334.42677	(2000.0)	P	Q
n	0.19889624	Peri. 80.98672	-0.52623788	+0.85017853
a	2.9065982	Node 157.23842	-0.79590891	-0.48565805
e	0.0060345	Incl. 2.43480	-0.29933710	-0.20330449
P	4.96	H 12.5	G 0.15	

Residuals in seconds of arc

780315	675	0.2-	0.1-	900917	675	0.1+	0.2+	930317	372	0.0	1.7+
780316	675	0.2+	0.1+	900917	675	0.1-	0.1+	930318	372	0.5-	0.3-
900915	675	0.0	0.3-	930317	372	0.6+	1.4-				

1978 SQ4 = 1978 RT5 = 1982 YB5 = 1987 GN1
Id. L. D. Schmadel (d, MPC 7589), S. Nakano (MPC 11995), C. M. Bardwell (ibid., unpublished)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bardwell

M	32.70578	(2000.0)	P	Q
n	0.27375262	Peri. 37.58189	+0.84507158	-0.53460428
a	2.3490767	Node 354.71991	+0.46949974	+0.74849192
e	0.2226724	Incl. 4.50628	+0.25578119	+0.39237495
P	3.60	H 14.5	G 0.15	

Residuals in seconds of arc

780913	095	0.2-	2.6+	781027	675	0.4-	0.1-	870401	675	1.3+	0.1-
780926	095	2.5-	0.8-	781028	675	1.2+	0.1-	870403	675	(4.3-	2.1+)
780927	095	0.4-	0.3-	781029	675	0.1+	0.6-	870403	675	0.0	0.2+
781003	095	0.5+	0.3+	821224	095	0.1+	0.2+				
781007	095	1.2+	0.1+	870401	675	0.6-	1.2+				

1981 EG28 = 1968 UH2 = 1979 YP4 = 1992 JU3
Id. D. W. E. Green (MPC 11150), W. Landgraf (ibid.), G. V. Williams
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	2.72906	(2000.0)	P	Q
n	0.27561623	Peri. 157.28061	+0.98218616	+0.18709752
a	2.3384757	Node 191.97553	-0.18273406	+0.92933800
e	0.1353590	Incl. 4.82710	-0.04380198	+0.31831651
P	3.58	H 14.0	G 0.15	

Residuals in seconds of arc

681023	095	0.4+	2.9-	810302	413	0.6-	2.3+	810405	413	2.1-	0.4+
770211	675	0.4-	0.3-	810306	413	0.5-	0.4+	810405	413	2.4+	2.2-
770212	675	0.9-	0.9-	810306	413	0.9+	0.8+	810406	413	1.6-	0.6-
791218	095	0.7+	1.3-	810311	413	0.8+	1.3-	810407	413	2.0-	0.8+
810212	413	0.3-	0.6-	810315	413	0.8-	0.9-	810410	413	0.1-	0.9-
810302	413	0.5+	2.0+	810315	413	1.4+	0.8-	810410	413	2.2+	2.4-

810501	413	0.3+	0.5-	890707	675	0.2+	2.0-	920508	809	0.3- 0.3-
810503	413	0.3-	1.8-	920508	809	0.6-	1.6+			
890707	675	0.8+	1.2-	920508	809	0.5-	0.5+			

1983 CA1 = 1955 DM = 1966 PA1 = 1966 PF1 = 1974 FY = 1988 GF1
Id. D. W. E. Green (MPC 14189), H. Oishi (d, JAM 2017), G. V. Williams

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Williams
M 79.66584		(2000.0)	P	Q
n 0.21253322	Peri.	181.06811	-0.93240193	-0.35805246
a 2.7808966	Node	337.75378	+0.33255623	-0.79657150
e 0.1585679	Incl.	7.47397	+0.14153795	-0.48710602
P 4.64	H	12.5	G 0.15	

Residuals in seconds of arc

550225	760	2.8-	0.5+	830215	688	0.7+	0.2-	900917	675	1.1+ 0.2+
550225	760	2.8+	1.3+	830219	688	1.2-	0.1+	900917	675	0.3+ 1.0+
660810	074	0.4+	0.0	830219	688	0.6-	0.9-	900918	675	1.0- 1.2-
660812	074	0.2+	0.8+	830315	095	0.5+	0.8-	900918	675	1.5- 0.9-
660816	074	(7.3-	1.1-)	880412	413	1.5-	0.2-	900920	675	0.7+ 1.6-
740320	095	(3.9-	6.0+)	880412	413	0.5+	0.1+	900920	675	0.9- 0.5-
830214	381	0.2-	0.5+	900916	675	0.5+	0.5+			
830215	688	1.3+	0.7-	900916	675	0.8+	1.1+			

1983 VS1 = 1972 GS1 = 1979 YX9 = 1993 CR

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Ichikawa
M 69.33797		(2000.0)	P	Q
n 0.23096830	Peri.	78.57027	-0.08759793	-0.99583924
a 2.6308805	Node	16.51783	+0.87605381	-0.08901395
e 0.2112956	Incl.	5.06804	+0.47419017	-0.01951210
P 4.27	H	13.8	G 0.15	

Residuals in seconds of arc

720409	805	1.3-	0.2+	831107	046	0.8-	1.9-	930213	399	0.6- 0.7-
720409	805	1.1-	1.2-	831108	046	0.3-	1.4+	930213	399	1.7- 0.5+
720410	805	0.9-	1.3-	831108	046	0.6-	2.6-	930221	399	1.1- 0.9-
720410	805	0.2+	3.2-	831109	046	2.3+	0.9-	930221	399	0.0 0.2+
791225	095	0.3+	1.5+	930210	399	2.0+	0.5+			
831107	046	1.4+	1.0-	930210	399	2.3+	2.3+			

1984 SY5 = 1990 TO8 = 1990 UW12
Id. B. G. Marsden (MPC 17435), G. V. Williams (d)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5				Williams
M 180.19317		(2000.0)	P	Q
n 0.16773803	Peri.	248.98312	+0.99229971	-0.11826848
a 3.2562297	Node	117.79322	+0.12335589	+0.91687373
e 0.1483426	Incl.	2.38380	+0.01116315	+0.38125468
P 5.88	H	12.0	G 0.15	

Residuals in seconds of arc

840921	809	0.7-	0.5+	840926	809	0.3+	0.8-	840928	809	0.5+ 0.3+
840921	809	0.5-	0.4+	840926	809	0.6+	0.8-	840928	809	0.5+ 0.2+
840921	809	0.9-	0.4+	840926	809	0.7+	1.0-	840928	809	0.9+ 0.1+
840922	809	0.7-	0.5+	840927	809	0.0	0.1+	840929	809	0.3- 0.4-
840922	809	0.3-	0.5+	840927	809	0.3+	0.3+	840929	809	0.2- 0.0
840922	809	0.1+	0.4+	840927	809	0.4+	0.1+	840929	809	0.1- 0.0
840923	809	0.1-	0.2-	840927	809	0.3+	0.2+	840930	809	0.5- 0.2+
840923	809	0.5+	0.2-	840927	809	0.5+	0.5+	840930	809	0.2- 0.2+
840923	809	1.1+	0.3-	840927	809	0.6+	0.4+	840930	809	0.0 0.2+
840924	809	0.8-	0.2-	840928	809	0.5-	0.1+	841001	809	0.2+ 0.1-
840924	809	0.9-	0.4-	840928	809	0.6-	0.3-	841001	809	0.4+ 0.0
840924	809	0.6-	0.6-	840928	809	0.4-	0.2-	841001	809	0.4+ 0.2-

900922 095 0.3- 0.1+ 901014 046 (3.8+ 2.4+) 901023 095 0.4+ 2.1-
900922 095 0.6+ 1.1- 901015 046 0.2- 0.5+
901014 046 0.5- 2.8+ 901015 046 (3.7- 0.9+)

1986 CB2 = 1993 DU
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Ichikawa

M	347.56720	(2000.0)	P	Q
n	0.28495565	Peri. 285.49911	-0.70456827	+0.70608304
a	2.2870967	Node 299.48060	-0.61585177	-0.65804882
e	0.1172657	Incl. 4.67328	-0.35257646	-0.26156928
P	3.46	H 14.1	G 0.15	

Residuals in seconds of arc
860212 809 0.3+ 0.4- 860215 809 0.8- 0.0 930219 511 0.7- 1.3+
860212 809 0.6+ 0.3- 860215 809 0.7- 0.0 930219 511 0.3- 1.1-
860212 809 0.8+ 0.3- 860215 809 0.8- 0.3+ 930219 511 0.8+ 1.1-
860213 809 0.2- 0.0 860216 809 0.8- 0.2+ 930219 511 (4.1+ 0.9-)
860213 809 0.1- 0.1- 860216 809 0.6- 0.1+ 930221 399 1.5- 0.8+
860213 809 0.0 0.2- 860216 809 0.5- 0.1+ 930221 399 0.6- 1.3+
860214 809 0.3+ 0.0 860217 809 0.4+ 0.4+ 930225 399 0.4+ 0.1+
860214 809 0.3+ 0.1- 860217 809 0.7+ 0.4+ 930225 399 1.8+ 1.4-
860214 809 0.4+ 0.3- 860217 809 0.8+ 0.3+

1988 XB
Id. R. H. McNaught (1993 observations)
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	256.08173	(2000.0)	P	Q
n	0.55427122	Peri. 279.87835	+0.99222798	+0.11294138
a	1.4677581	Node 73.65082	-0.08169060	+0.90785706
e	0.4817660	Incl. 3.12015	-0.09386308	+0.40378189
P	1.78	H 17.5	G 0.15	

Residuals in seconds of arc
881205 888 0.8- 1.9- 881210 888 1.1+ 0.2+ 890104 801 0.6+ 0.2+
881205 888 1.8+ 0.6- 881211 391 0.9- 0.7+ 890105 888 0.0 0.7-
881206 888 0.9- 0.4- 881211 391 0.4+ 0.4+ 890105 888 1.3- 1.3-
881206 888 (2.9- 0.2+) 881212 391 (6.1- 2.6+) 890117 675 0.5+ 0.7-
881206 888 0.3- 0.5- 881212 391 0.6+ 1.4+ 890117 675 0.4+ 0.7-
881207 897 0.6- 0.7+ 881212 391 (8.0- 2.1+) 890117 675 0.5+ 0.8-
881207 897 2.0+ 0.5+ 881212 391 (4.2+ 0.7+) 890118 675 0.1+ 0.2-
881207 888 0.4+ 0.4- 881213 801 0.6+ 0.0 890118 675 0.6+ 0.4-
881207 888 1.4- 0.7- 881214 657 0.2- 0.7- 890118 675 0.1+ 0.4-
881208 801 0.0 0.6+ 881214 675 (4.7- 0.4+) 890217 675 0.8- 0.5+
881208 675 0.2+ 0.9- 881214 675 (2.9- 0.7-) 890217 675 1.0- 0.1-
881208 675 1.8- 1.6+ 881214 888 0.2- 0.6- 890217 675 0.1- 0.6+
881209 010 0.8- 0.9+ 881215 657 0.7+ 0.3+ 930302 413 0.0 0.3+
881209 010 0.4+ 2.0+ 881215 372 (2.2+ 2.0-) 930302 413 0.5+ 0.6+
881209 801 0.7+ 0.4- 881217 897 1.9- 0.2+ 930303 413 0.2+ 0.5+
881209 372 0.6- 0.1- 881219 372 (3.1+ 4.2-) 930303 413 0.0 0.0
881209 372 (3.0+ 1.3-) 890102 888 0.9+ 0.4+
881210 888 0.4+ 0.4- 890102 888 1.1+ 0.4+

1989 FG = 1993 FK
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M	72.05447	(2000.0)	P	Q
n	0.24103792	Peri. 69.82360	-0.54920510	-0.83394143
a	2.5570887	Node 53.60564	+0.73950430	-0.51507304
e	0.1301969	Incl. 3.84619	+0.38923919	-0.19809456
P	4.09	H 13.2	G 0.15	

Residuals in seconds of arc

890204 033	0.2+	0.1-	890329 881	1.0-	1.5+	890412 881	0.3-	0.4-
890204 033	0.4+	0.4+	890401 881	2.6+	0.4-	930317 372	0.2+	1.0-
890306 033	0.0	0.7+	890401 881	0.7-	1.0-	930317 372	1.3-	0.6-
890306 033	0.3-	0.4+	890409 881	2.3+	0.2-	930318 372	0.7+	0.7+
890329 881	2.4-	0.1+	890412 881	0.3-	0.0			

1989 HD = 1984 EH1

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bardwell

M 342.30713		(2000.0)	P	Q	
n 0.23428582	Peri.	115.54999	-0.16981141	+0.97527087	
a 2.6059858	Node	143.77078	-0.96808032	-0.13823399	
e 0.1469134	Incl.	13.84815	-0.18434906	-0.17244737	
P 4.21	H	13.0	G 0.15		

Residuals in seconds of arc

840303 801	0.0	1.4-	890601 675	1.7-	1.0+	890606 675	0.3+	1.0+
890429 675	(0.8+	3.2-)	890601 675	0.1+	1.5+	890710 675	0.2+	0.5-
890429 675	0.5+	2.2-	890602 675	0.4+	0.3+	890710 675	0.3-	1.2-
890503 675	1.5-	1.0-	890602 675	0.1-	0.2+	930326 801	0.1-	0.5+
890503 675	0.8-	0.5-	890604 675	2.2+	0.4-	930326 801	0.4-	0.7+
890529 675	0.3-	0.0	890604 675	2.0+	0.5+	930327 801	0.7+	0.5+
890529 675	2.0-	1.2+	890606 675	0.5+	2.3-	930327 801	0.5+	0.6+

1990 KX = 1993 FH2

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Marsden

M 326.36135		(2000.0)	P	Q	
n 0.29976255	Peri.	169.86558	+0.08211693	+0.99238046	
a 2.2111479	Node	104.80043	-0.92090475	+0.11079420	
e 0.1504763	Incl.	5.45189	-0.38103971	-0.05390428	
P 3.29	H	13.5	G 0.15		

Residuals in seconds of arc

900518 095	(4.8-	2.5+)	900522 095	1.0-	0.6-	930323 010	0.8-	0.0
900518 095	1.2-	2.6+	900523 675	0.8+	0.7+	930323 010	0.1-	0.4+
900521 675	1.8+	1.5-	900523 675	0.1+	0.0	930323 010	0.4-	0.7-
900521 675	2.0+	0.9-	900529 046	0.9-	0.0	930325 010	1.2+	0.2+
900522 095	1.8-	0.4-	900529 046	0.2+	0.1+			

1990 OS1 = 1993 FH1

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M 7.19620		(2000.0)	P	Q	
n 0.27173762	Peri.	225.96078	-0.64762710	+0.76187904	
a 2.3606750	Node	3.72631	-0.64213396	-0.53800455	
e 0.1873761	Incl.	9.68226	-0.41017449	-0.36068191	
P 3.63	H	13.6	G 0.15		

Residuals in seconds of arc

900729 675	0.8+	0.4-	900914 675	0.5-	0.9-	930320 894	0.5+	0.3+
900729 675	0.1+	0.2+	900914 675	0.2+	0.6-	930320 894	0.9-	0.3+
900730 675	0.3-	0.1-	900916 675	0.5-	1.1+	930322 894	1.1+	0.9-
900730 675	0.7-	0.3+	900916 675	0.9+	0.4+	930322 894	0.6-	0.3+

1990 QM = 1979 WW

Id. T. Seki (1993 observations), S. Nakano

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M 314.35598		(2000.0)	P	Q	
n 0.26054349	Peri.	125.27869	+0.27384321	+0.96163417	
a 2.4278167	Node	160.59465	-0.89768250	+0.26168542	
e 0.1798719	Incl.	2.83281	-0.34521880	+0.08234360	
P 3.78	H	13.8	G 0.15		

Residuals in seconds of arc

791116 095	0.1-	0.3+	900826 372	0.4-	0.4+	900914 675	1.2+	0.9-
900820 372	(3.1-	4.3+)	900828 372	0.4-	1.4+	900920 372	0.6-	1.9-
900820 372	(4.3-	6.7+)	900828 372	1.1-	0.7+	900920 372	1.4-	0.6+
900822 675	0.5-	0.8+	900829 675	0.7+	0.3-	930317 372	0.4+	1.0-
900822 675	0.2+	0.8-	900829 675	0.3+	0.2+	930317 372	(2.0-	3.6+)
900824 372	0.1+	0.5+	900831 372	0.8+	0.9-	930318 372	0.6-	0.6+
900824 372	1.1+	2.2+	900831 372	1.0-	0.8-			
900826 372	0.2-	1.1-	900914 675	1.3+	0.8-			

1990 UY3 = 1993 FT1

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5					Marsden
M 204.69059		(2000.0)		P	Q
n 0.17775975	Peri.	293.09322		+0.98690197	-0.01745011
a 3.1326636	Node	68.22029		+0.08892902	+0.88828971
e 0.2240487	Incl.	9.94499		-0.13459618	+0.45895194
P 5.54	H	13.0	G	0.15	

Residuals in seconds of arc

901016 809	0.4-	0.9-	901020 809	1.4+	0.4+	901113 400	0.2+	0.9-
901016 809	0.0	0.2+	901024 809	0.3+	0.9+	930323 010	0.3+	1.2+
901016 809	1.0-	0.3-	901024 809	1.0-	0.7+	930323 010	1.3-	0.9+
901020 809	1.2+	0.5-	901024 809	0.8-	0.3+	930323 010	1.2-	0.8+
901020 809	0.6+	0.2-	901113 400	0.4-	0.3+	930325 010	2.2+	2.9-

1990 UT10 = 1992 CY

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5					Nakano
M 179.54664		(2000.0)		P	Q
n 0.19047253	Peri.	265.07932		+0.70590360	-0.70815957
a 2.9916755	Node	140.00491		+0.65847130	+0.64855756
e 0.1603613	Incl.	1.29239		+0.26098976	+0.27907546
P 5.17	H	12.5	G	0.15	

Residuals in seconds of arc

901010 400	0.4-	0.8-	901019 399	0.7+	1.1+	901022 399	0.8+	0.5-
901010 400	0.7-	0.8-	901019 399	2.3-	0.6+	920206 303	0.7+	0.0
901011 400	1.6+	0.2+	901022 399	0.6+	1.7-	920207 303	0.7-	0.0
901011 400	0.1+	0.6+	901022 399	0.4-	1.1+			

1990 VZ = 1990 UO13 = 1979 VK3 = 1979 YE2

Id. S. Nakano, N. S. Chernykh (d); 1990 VZ = 1939 EE (MPC 17459) is invalid

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5					Nakano
M 182.90222		(2000.0)		P	Q
n 0.17919357	Peri.	0.78287		+0.72485653	-0.68807320
a 3.1159305	Node	42.76117		+0.63178288	+0.64443552
e 0.2585289	Incl.	2.84835		+0.27465143	+0.33355380
P 5.50	H	12.4	G	0.15	

Residuals in seconds of arc

791114 095	0.4+	0.2+	901112 399	0.4+	2.6-	901116 403	(3.8-	2.9-)
791223 095	0.6-	0.5+	901112 399	0.5-	1.6-	901121 399	0.3-	0.2+
901028 095	1.2-	2.0+	901113 399	0.1-	1.0-	901121 399	0.7-	0.7-
901029 095	0.7+	1.5+	901113 399	0.5-	1.2-	901121 095	0.6+	1.8+
901107 896	0.1-	0.2-	901114 896	1.8+	0.1-	901121 095	(1.8+	3.9+)
901107 896	0.3+	0.2+	901114 896	1.7-	0.0	901123 095	2.4+	2.6+
901110 896	0.7-	1.1+	901115 403	2.5-	0.4+	901123 095	(3.7+	3.1+)
901110 896	1.4+	0.5+	901115 403	(3.1-	0.2+)	901124 399	1.6+	0.7-
901112 399	1.2-	2.1-	901116 403	(3.3-	0.2-)	901124 399	0.7+	0.4-

1991 NF = 1993 DM2
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 293.90360 (2000.0) P Q
n 0.35694743 Peri. 342.27450 -0.00591022 +0.92330394
a 1.9681878 Node 285.99043 -0.86227503 -0.19918462
e 0.0523981 Incl. 23.54577 -0.50640580 +0.32838288
P 2.76 H 13.5 G 0.15
Residuals in seconds of arc

910709	675	1.5+	0.2+	930228	413	0.4-	0.3-	930302	413	0.1-	0.2-
910709	675	0.3-	2.2+	930228	413	0.4+	0.1-	930303	413	0.1-	0.1-
910711	675	1.4-	2.6-	930301	413	0.4+	0.6+	930303	413	0.1-	0.0
910816	675	1.3+	0.2+	930301	413	0.4+	0.7+	930303	413	0.3-	0.3-
910816	675	1.1-	0.0	930302	413	0.1-	0.2-	930303	413	0.2-	0.2-

1991 PN10 = 1993 FP3
Id. G. V. Williams
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 324.08881 (2000.0) P Q
n 0.36082014 Peri. 96.85630 -0.08579800 +0.99273419
a 1.9540794 Node 167.26298 -0.99615351 -0.08396322
e 0.0699714 Incl. 22.49799 -0.01780154 -0.08619171
P 2.73 H 14.3 G 0.15
Residuals in seconds of arc

910807	675	1.1+	0.4+	910907	675	0.4-	1.2-	910929	413	0.5+	0.0
910807	675	0.2-	0.6-	910907	675	0.1-	1.8+	910929	413	0.6-	0.1-
910807	675	0.0	0.0	910908	675	1.8+	1.0-	910930	413	0.2-	0.3-
910808	675	0.3+	0.9-	910909	691	1.6-	0.8+	930225	399	0.1-	1.5+
910810	675	0.0	0.8+	910909	675	0.3-	0.5-	930225	399	0.9+	1.5-
910810	675	0.2-	0.2+	910909	691	1.5-	0.9+	930312	399	0.1+	0.6+
910904	675	0.9-	0.0	910909	675	0.0	0.8-	930319	675	1.4-	1.5-
910904	675	0.6+	1.3-	910909	691	1.6-	0.7+	930319	675	0.0	0.9-
910906	413	0.7+	0.1-	910911	675	0.4+	1.1-	930322	675	0.8+	1.5+
910906	413	0.8+	2.1+	910911	675	0.0	0.9-	930322	675	0.2-	0.1-
910907	675	0.2-	0.6+	910917	675	1.8+	0.3+				

1991 RG9 = 1971 OF1 = 1980 FO9 = 1990 DS9 = 1993 BY6
Id. S. Nakano, K. Ichikawa
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano
M 265.64961 (2000.0) P Q
n 0.29861397 Peri. 85.95850 +0.32203796 +0.94649542
a 2.2168142 Node 202.86177 -0.88857859 +0.29455663
e 0.1386131 Incl. 3.08787 -0.32667972 +0.13184391
P 3.30 H 13.6 G 0.15
Residuals in seconds of arc

710728	095	3.7+	1.0-	900321	400	1.1-	1.7-	930123	809	0.2+	0.2+
710801	095	3.4-	2.0-	910911	675	1.0+	1.0-	930123	809	0.5-	0.2-
800316	095	1.4+	2.3-	910911	675	1.0+	1.4-	930123	809	1.2-	0.4-
900228	400	1.9+	0.4-	910914	675	0.9+	1.4-	930128	809	0.3+	0.5+
900228	400	1.5-	2.3-	910914	675	1.3+	1.1-	930128	809	0.3+	0.5-
900317	400	1.0-	0.2-	911007	691	0.6-	0.4+	930128	809	0.8-	0.1-
900317	400	0.9+	0.0	911007	691	0.7-	0.6+				
900321	400	1.6-	0.6+	911007	691	0.7-	0.5+				

1991 UK3 = 1993 FK1

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Nakano
M 61.32961	(2000.0)	P	Q
n 0.18021795	Peri. 269.20859	-0.65216689	-0.74135788
a 3.1041118	Node 222.92218	+0.75448102	-0.61444692
e 0.2551229	Incl. 13.44357	+0.07373424	-0.26989533
P 5.47	H 12.1	G 0.15	

Residuals in seconds of arc

911031 399 1.9- 0.5-	911204 399 0.4+ 1.2-	930322 399 1.1+ 0.6-
911031 399 0.6+ 1.6+	911205 399 0.5+ 0.8-	930325 399 0.9- 0.2+
911104 399 0.7+ 0.4+	911205 399 1.2+ 1.2-	930325 399 0.2- 0.5+
911104 399 0.3+ 1.1-	911209 399 0.8- 2.0+	
911204 399 0.1+ 1.0-	911209 399 1.2- 1.9+	

1991 VC4 = 1980 XH

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Williams
M 141.87830	(2000.0)	P	Q
n 0.25659385	Peri. 195.01277	+0.54435940	-0.82882694
a 2.4526668	Node 222.22819	+0.78809565	+0.55811339
e 0.1908827	Incl. 11.09217	+0.28736406	+0.03943777
P 3.84	H 12.5	G 0.15	

Residuals in seconds of arc

801204 688 (2.8- 5.1+)	911102 675 0.5- 0.6+	930319 675 1.9+ 0.4-
801204 688 0.0 0.2-	911104 675 0.7- 0.2-	930319 675 0.4+ 1.0-
910912 675 0.8+ 1.0-	911104 675 1.3- 0.6+	930321 675 (7.4- 1.2+)
910912 675 0.3+ 1.2-	911208 675 0.3+ 0.0	930321 675 2.5- 0.8+
911102 675 0.2- 1.7+	911208 675 1.7+ 1.5-	

1991 XO2 = 1962 WX1 = 1962 XG1

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Nakano
M 163.76384	(2000.0)	P	Q
n 0.27145842	Peri. 198.79753	+0.46104291	-0.88577954
a 2.3622934	Node 223.79070	+0.82369561	+0.44950226
e 0.2076856	Incl. 4.41197	+0.33009842	+0.11550899
P 3.63	H 14.3	G 0.15	

Residuals in seconds of arc

621130 760 0.9- 0.2+	911104 400 0.4+ 0.8+	911205 399 0.0 0.2+
621130 760 1.0- 0.3-	911104 400 0.7- 0.4-	911207 399 1.5+ 0.7-
621203 760 0.1- 0.5+	911129 691 0.5- 0.1+	911207 399 0.4- 2.1-
621203 760 1.9+ 0.9+	911129 691 0.8- 0.4+	911209 399 1.5+ 0.1+
911102 400 1.5+ 0.4-	911129 691 0.1- 0.2+	911209 399 0.4- 0.5+
911102 400 0.2- 0.6+	911205 399 1.6- 0.6-	

1992 CG1 = 1938 FS = 1981 CC1 = 1981 EX48 = 1985 XJ2 = 1987 FR1 = 1989 TG9

Id. H. Kaneda (MPC 19873), G. V. Williams

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Nakano
M 44.24478	(2000.0)	P	Q
n 0.18186874	Peri. 105.08367	-0.77531345	+0.62923970
a 3.0852996	Node 113.94134	-0.59987730	-0.70678864
e 0.1301389	Incl. 3.40487	-0.19757602	-0.32327577
P 5.42	H 12.1	G 0.15	

Residuals in seconds of arc

380321 029(14.8+ 0.9-)Y	870323 033 1.9- 0.5+	920225 399 2.5+ 0.5-
380321 029 0.9- 3.2- Y	891007 809 1.0+ 1.9-	920226 399 0.5- 0.7-
810201 801 (5.0+ 0.3-)	891007 809 2.2+ 0.9-	920226 399 0.3+ 0.3-
810308 095 2.9+ 2.1+	891007 809 0.8+ 1.9-	920307 408 1.3- 0.7-
851214 675 3.2- 0.7+	920208 399 1.5+ 1.0-	920307 408 0.6- 1.1-
851214 675 2.9- 1.5+	920208 399 0.8+ 1.2-	
870322 033 1.5- 0.6+	920225 399 0.7+ 0.4-	

1992 FR2 = 1935 SD = 1941 KB = 1952 UJ = 1969 RR = 1982 JK3 = 1982 KV = 1990 WC3

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M 11.66021	(2000.0)	P	Q	
n 0.28864305	Peri. 226.53393	+0.88066546	+0.46453303	
a 2.2675767	Node 105.58586	-0.40201660	+0.83659850	
e 0.1414141	Incl. 5.53683	-0.25062124	+0.29036530	
P 3.41	H 12.8	G 0.15		

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

350924 012 0.2+ 0.6-	690908 095(11.4+ 2.4+)	920323 399 1.0+ 0.2-
350928 012(0.08+ 0.08-)	820513 095 1.4+ 0.4-	920323 399 0.1- 0.8+
351001 012 0.3+ 0.9+	820526 688 0.6+ 1.4-	920324 399 0.1- 1.3+
410516 024 0.2- 0.1-	820526 688 1.1- 0.9-	920324 399 0.0 0.6-
521022 760 0.0 0.8-	901118 675 1.5+ 0.6-	920331 400 0.9- 0.0
521022 760 0.5+ 0.4+	901118 675 0.2- 1.3+	920331 400 1.0- 0.8+
521025 760 1.6- 0.1+	901121 675 0.1- 1.8-	
521025 760 (1.9- 4.2+)	901121 675 0.3- 0.5-	

1992 JQ3 = 1979 HZ = 1986 RT4 = 1989 MR

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Ichikawa

M 112.11574	(2000.0)	P	Q	
n 0.30370583	Peri. 345.57359	-0.28323644	+0.95804076	
a 2.1919668	Node 267.95853	-0.87549164	-0.27701192	
e 0.1551153	Incl. 2.52280	-0.39152459	-0.07363633	
P 3.25	H 13.9	G 0.15		

Residuals in seconds of arc

790428 688 0.7- 2.0-	920503 809 1.1+ 0.3+	920508 809 0.5- 0.1-
790428 688 (1.3- 2.8-)	920503 809 1.6+ 0.4+	920509 809 1.5- 0.5+
860906 071 2.2- 1.5+	920503 809 2.4+ 0.7+	920510 809 1.6- 0.1+
860906 071 2.2+ 1.6-	920504 809 0.4- 0.1+	920510 809 1.9- 0.4+
860908 095 (1.8+ 6.9+)	920504 809 0.1- 0.1+	920511 809 0.7+ 0.3+
890629 808 0.0 0.2+	920504 809 0.4+ 0.2+	920511 809 1.1+ 0.0
890629 808(36.9+ 1.9-)	920508 809 1.0- 0.5-	920511 809 1.3+ 0.2-
890701 808 0.1+ 0.3-	920508 809 0.8- 0.1-	

1992 OG2 = 1979 OB6 = 1984 UH4

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Ichikawa

M 3.16098	(2000.0)	P	Q	
n 0.22996951	Peri. 280.22944	+0.62831532	-0.77486359	
a 2.6384926	Node 130.61432	+0.74473453	+0.57332412	
e 0.1354763	Incl. 5.23997	+0.22492298	+0.26624400	
P 4.29	H 13.6	G 0.15		

Residuals in seconds of arc

790724 675 0.2+ 0.0	920724 809 0.4+ 1.2-	920726 809 0.1- 0.2-
790725 675 0.3- 0.9+	920724 809 0.4- 1.1-	920730 809 0.3+ 0.3+
841020 095 0.0 0.1+	920726 809 0.7+ 0.1-	920730 809 1.3- 0.8+
920724 809 1.5+ 0.3+	920726 809 0.3+ 0.1+	920730 809 1.1- 0.3+

1992 WD5

Id. R. H. McNaught (1974, 1991 observations)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 68.95821	(2000.0)	P	Q	
n 0.41009011	Peri. 122.20586	-0.67317838	-0.73917676	
a 1.7942509	Node 10.19045	+0.63177232	-0.58977668	
e 0.3040195	Incl. 6.87551	+0.38431055	-0.32524020	
P 2.40	H 15.5	G 0.15		

Residuals in seconds of arc

740428 413 0.8- 0.2+	910806 413 1.8- 0.2-	921121 675 (1.8+ 4.6-)
740428 413 0.8+ 0.0	910806 413 1.8+ 0.1-	921121 675 (0.1+ 3.3-)

921122	675	1.1+	2.2-	921230	587	1.3-	0.6+	930220	801	0.0	0.5-
921124	675	0.9+	1.3-	921230	587	0.7-	0.2+	930220	801	0.2-	0.7-
921128	675	0.6+	1.6-	930101	410	1.0-	0.3+	930226	658	0.5-	0.0
921128	675	0.2+	2.0-	930101	410	0.7-	0.1-	930226	658	0.3-	0.3+
921215	670	(1.6-	4.7+)	930101	410	0.1+	0.1+	930226	658	0.0	0.1+
921217	670	1.2+	1.6+	930104	670	1.4-	0.7+	930228	658	0.5+	0.8-
921217	670	0.6+	1.1+	930104	670	(3.2-	0.3-)	930228	658	0.3+	0.6-
921217	670	1.1+	0.6+	930119	801	0.3-	1.0-	930228	658	0.2+	0.6-
921217	670	0.7-	1.1-	930119	801	0.1-	1.2-	930306	670	1.7-	1.5+
921218	595	(2.0-	3.3+)	930120	104	1.4+	0.7+	930306	670	0.5-	2.4+
921220	670	0.0	0.1+	930120	104	0.9+	0.9-	930306	670	(2.9-	3.8+)
921220	670	1.5+	1.8+	930126	801	0.2-	0.1-	930316	657	0.7+	0.6-
921220	670	0.3+	0.5+	930126	801	0.2-	0.1+	930316	657	0.8+	0.8-
921221	801	0.5-	0.1+	930126	104	0.8+	0.1-	930316	657	0.7+	0.9-
921223	595	0.6-	0.3+	930126	104	2.2+	0.0	930320	801	0.0	0.0
921226	801	0.5-	0.4+	930127	104	0.5+	0.1-	930320	801	0.2-	0.1-
921226	801	0.5-	0.4+	930127	104	0.4-	0.4-	930322	801	0.2-	0.0
921226	587	1.1-	0.6+	930218	801	0.1+	0.1-	930322	801	0.2-	0.1-
921226	587	0.4-	0.4+	930218	801	0.0	0.1-	930322	670	1.2-	2.1+
921229	410	0.3-	0.4+	930218	657	0.0	0.1+	930322	670	1.2+	1.4-
921229	410	0.3-	0.1+	930218	657	0.5-	0.5+	930322	670	0.6-	1.1-
921229	410	0.3-	0.1-	930218	657	0.3+	0.2+				

1992 WD8
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bardwell
M 19.87017 (2000.0) P Q
n 0.25641010 Peri. 197.65385 -0.66632900 -0.64629211
a 2.4538384 Node 296.03696 +0.72429534 -0.44245837
e 0.2321735 Incl. 24.45074 +0.17720590 -0.62172108
P 3.84 H 13.5 G 0.15
From 16 observations 1992 Nov. 25-1993 Mar. 23, mean residual 0".78.

1992 YM
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bardwell
M 52.20818 (2000.0) P Q
n 0.23826631 Peri. 350.97364 -0.16272926 -0.95663398
a 2.5768805 Node 108.10740 +0.92037610 -0.23541584
e 0.1131796 Incl. 14.72552 +0.35556579 +0.17155412
P 4.14 H 13.0 G 0.15
From 15 observations 1992 Dec. 23-1993 Mar. 23, mean residual 0".73.

1992 YW3
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bardwell
M 41.60875 (2000.0) P Q
n 0.21020172 Peri. 26.57671 -0.40542076 -0.89016431
a 2.8014220 Node 87.95565 +0.79730724 -0.45560886
e 0.2091516 Incl. 12.00976 +0.44714112 +0.00529844
P 4.69 H 12.5 G 0.15
From 14 observations 1992 Dec. 29-1993 Mar. 27, mean residual 0".64.

1993 BW2
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 162.09910 (2000.0) P Q
n 0.63887364 Peri. 287.37192 +0.60266907 -0.73136457
a 1.3351377 Node 121.20247 +0.79684618 +0.57297949
e 0.3061548 Incl. 21.91294 -0.04273369 +0.36986534
P 1.54 H 17.5 G 0.15
From 19 observations 1993 Jan. 28-Mar. 23, mean residual 1".00.

1993 BW3
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 111.13337 (2000.0) P Q
n 0.31329157 Peri. 74.23656 +0.79266008 -0.55959344
a 2.1470241 Node 318.92821 +0.31413734 +0.71502086
e 0.5286694 Incl. 21.60955 +0.52250142 +0.41904696
P 3.15 H 15.0 G 0.15
From 29 observations 1993 Jan. 30-Mar. 23, mean residual 0".68.

1993 BP13 = 1982 RW2 = 1987 VC2
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bardwell
M 37.89292 (2000.0) P Q
n 0.23510356 Peri. 236.08023 -0.79891919 -0.56120845
a 2.5999395 Node 268.86089 +0.59806134 -0.70324148
e 0.1047020 Incl. 12.49262 +0.06364552 -0.43645903
P 4.19 H 11.5 G 0.15
Residuals in seconds of arc
820913 095 0.7+ 1.9- 930215 399 0.5- 1.0+ 930315 104 0.6+ 0.4-
871115 327 0.2+ 0.2+ 930310 104 0.5+ 0.0 930315 104 0.7+ 0.4+
930122 399 1.1+ 1.2- 930310 104 0.6+ 0.4- 930316 104 0.1+ 0.4-
930122 399 0.2- 0.9- 930311 104 1.0+ 0.7- 930316 104 0.1+ 1.3+
930213 399 0.6- 0.8+ 930311 104 1.5- 0.1- 930327 801 0.7+ 0.4-
930213 399 1.3- 0.1- 930312 399 0.0 0.5- 930327 801 0.2+ 0.7-
930215 399 1.5- 1.2+ 930312 399 0.1- 0.8-

1993 CP1 = 1985 HE = 1989 ED1
Id. K. Ichikawa
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams
M 341.82555 (2000.0) P Q
n 0.23927263 Peri. 60.40919 -0.69742438 +0.71423276
a 2.5696504 Node 164.89902 -0.71050484 -0.67834625
e 0.1268787 Incl. 13.06974 -0.09371285 -0.17238889
P 4.12 H 13.0 G 0.15
Residuals in seconds of arc
850418 046 (9.8+ 9.4+) 850421 046 2.8- 1.3+ 930221 399 1.2+ 1.1-
850418 046 (3.0+ 3.2+) 890301 875 (4.1- 1.6+) 930221 399 0.8+ 0.2-
850419 046 1.7+ 1.6- 890301 875 1.5- 0.5+ 930225 399 0.5- 0.7+
850419 046 0.5+ 0.9- 890308 875 1.6+ 1.2- 930225 399 0.4+ 1.0+
850420 046 (5.3- 1.2-) 890308 875 0.1+ 1.1- 930325 691 0.0 0.0
850420 046 (5.0- 1.3-) 930215 399 (3.0- 3.0+) 930325 691 0.1+ 0.4-
850421 046 0.5+ 2.1+ 930215 399 2.1- 1.3+ 930325 691 0.1+ 0.2-

1993 DO = 1977 CK1 = 1985 RH6 = 1990 RH11
Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Ichikawa
M 124.81014 (2000.0) P Q
n 0.18910171 Peri. 269.98257 +0.42769917 -0.90023919
a 3.0061161 Node 154.20665 +0.88583795 +0.39949038
e 0.0925283 Incl. 10.79582 +0.17990148 +0.17313818
P 5.21 H 12.2 G 0.15
Residuals in seconds of arc
770211 675 0.6- 0.1+ 900914 675 0.1- 0.7- 930225 372 0.2- 1.5-
770212 675 0.7+ 0.7- 930219 372 1.4- 0.9+ 930302 372 1.4- 1.7-
850915 095 0.0 1.1- 930219 372 0.9+ 0.4- 930302 372 0.0 0.7+
900914 675 0.7+ 1.1- 930225 372 1.3+ 0.4-

1993 DB1 = 1982 BJ2
Id. S. Nakano, K. Ichikawa

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M 19.02456		(2000.0)	P	Q
n 0.27730731	Peri.	108.56531	-0.90748553	+0.42006539
a 2.3289590	Node	96.27356	-0.38687709	-0.83211376
e 0.1496845	Incl.	0.22384	-0.16369523	-0.36212119
P 3.55	H	13.7	G 0.15	

Residuals in seconds of arc

820116 046	0.5-	0.7-	820119 095	2.9+	1.7+	930225 877	0.4+	1.4-
820116 046	0.8-	0.1-	820120 095	(7.9+	0.2-)	930225 877	1.0+	1.1+
820118 046	0.5+	0.8+	930220 877	0.4+	0.6-	930316 894	0.0	0.5+
820118 046	0.6+	0.1-	930220 877	2.9-	0.6-	930316 894	0.3+	1.5+
820119 046	(0.9-	16.3+)	930223 877	2.2-	0.4+	930318 894	0.1+	0.5+
820119 046	2.7-	1.0-	930223 877	2.5+	2.3-	930318 894	0.1+	0.4+

1993 DT1 = 1981 JA6

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M 315.98082		(2000.0)	P	Q
n 0.23556870	Peri.	55.00602	-0.25802517	+0.96594907
a 2.5965159	Node	200.06695	-0.90357903	-0.24827420
e 0.2413425	Incl.	3.19364	-0.34200578	-0.07281694
P 4.18	H	15.0	G 0.15	

Residuals in seconds of arc

810508 675	1.0-	0.1+	930303 691	0.4+	0.2-	930303 691	0.2-	0.4-
810509 675	1.0+	0.1-	930303 691	0.1-	0.1-	930319 691	0.2+	0.3+
930226 691	0.2+	0.3+	930303 691	0.2-	0.3-	930319 691	0.2-	0.0
930226 691	0.3-	0.2+	930303 691	0.1+	0.1-	930319 691	0.1+	0.2-
930226 691	0.1-	0.1+	930303 691	0.2+	0.3+			

1993 EA = 1984 AJ

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Marsden

M 284.81216		(2000.0)	P	Q
n 0.68703099	Peri.	258.61062	+0.99360891	+0.07143187
a 1.2719943	Node	97.24939	-0.03232187	+0.92191984
e 0.5854685	Incl.	5.05458	-0.10815099	+0.38073782
P 1.43	H	17.0	G 0.15	

Residuals in seconds of arc

840110 675	1.0-	0.7+	930303 691	0.1+	0.2-	930304 691	0.1-	0.0
840110 675	0.9+	0.8-	930303 691	0.1+	0.3-	930319 691	0.2+	0.7+
890502 675	2.0+	0.1-	930303 691	0.2+	0.3-	930319 691	0.1+	0.5+
890502 675	0.1+	0.1-	930303 691	0.2+	0.3-	930319 691	0.0	0.5+
890503 675	2.0-	0.1+	930303 691	0.2+	0.3-	930413 691	0.4-	0.2-
890503 675	(7.0+	5.6-)	930303 691	0.0	0.1-	930413 691	0.3-	0.2-
890504 675	(0.4-	5.5+)	930304 691	0.0	0.1+	930413 691	0.6-	0.3+
890504 675	(1.8-	5.3+)	930304 691	0.1+	0.0			

1993 ER = 1977 VO = 1982 BT9

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Nakano

M 86.83787		(2000.0)	P	Q
n 0.27745446	Peri.	67.00038	-0.50621155	-0.86233376
a 2.3281355	Node	53.41640	+0.78594795	-0.46673995
e 0.1250277	Incl.	0.81466	+0.35501505	-0.19630155
P 3.55	H	13.3	G 0.15	

Residuals in seconds of arc

771111 805	0.4+	0.4-	930315 400	0.6-	1.3+	930325 400	0.5-	1.3-
771112 805	0.3+	0.0	930315 400	0.4+	0.9+	930325 400	1.1-	0.9-
771114 805	0.1-	1.1-	930320 400	1.5+	0.4-			
820119 095	0.2+	0.9+	930320 400	0.4-	1.1-			

1993 ES = 1984 FO1 = 1986 VU3

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Nakano
M 2.26229	(2000.0)	P	Q
n 0.22585301	Peri. 224.02939	-0.68902654	+0.72468542
a 2.6704562	Node 2.46489	-0.59757411	-0.56139869
e 0.1922592	Incl. 11.49608	-0.41005806	-0.39957796
P 4.36	H 12.6	G 0.15	

Residuals in seconds of arc

840321 095	0.1+	0.1+	861105 010	7.4+	1.0+	930320 400	1.6+	2.2-
861104 010	2.1-	0.7-	930315 400	0.8+	0.7+	930320 400	0.8-	1.3+
861104 010	0.8+	0.3+	930315 400	0.7-	0.2+	930329 894	0.4-	0.2+
861104 010	0.0	0.9-	930317 894	0.2-	0.2+	930329 894	0.2+	0.2+
861105 010	6.0-	0.1+	930317 894	0.7-	0.8-			

1993 FQ = 1976 UX19 = 1980 WU3 = 1982 HK1

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Nakano
M 39.93209	(2000.0)	P	Q
n 0.26527442	Peri. 325.51499	-0.99072107	+0.10343650
a 2.3988649	Node 220.70642	-0.07259792	-0.95113908
e 0.1360218	Incl. 7.76908	-0.11489696	-0.29092155
P 3.72	H 13.8	G 0.15	

Residuals in seconds of arc

761024 381	0.3+	1.0+	820424 688	0.8-	0.8-	930325 399	0.3-	2.0+
761024 381	0.3-	0.1+	820521 688	1.2+	1.2-	930325 399	0.1+	1.2+
801129 675	1.0-	1.5-	820521 688	0.1-	0.5-	930329 399	1.0+	0.8+
801129 675	0.2-	1.0-	930321 675	2.2-	1.4-	930329 399	0.1+	0.6+
801201 675	1.1+	0.8-	930321 675	1.2-	0.1+			
820424 688	0.8-	1.2-	930322 675	3.1+	1.4-			

2558 P-L = 1973 AY3 = 1984 BR1

Id. T. Kobayashi (MPC 12690), G. V. Williams

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Williams
M 286.03609	(2000.0)	P	Q
n 0.17758788	Peri. 48.62201	+0.37851576	-0.92512272
a 3.1346844	Node 19.19804	+0.82012786	+0.32040985
e 0.1680027	Incl. 5.15741	+0.42908753	+0.20367986
P 5.55	H 13.0	G 0.15	

Residuals in seconds of arc

600924 675	0.5+	1.0-	601025 675	0.4+	0.1+	881104 046	1.3-	1.1+
600926 675	0.2+	0.1-	601026 675	0.3-	0.8+	881104 046	0.3+	0.7+
600928 675	0.3-	0.5+	730102 095	0.7-	1.1+	881105 046	0.2-	2.3-
600929 675	0.3+	0.8-	730104 095	0.1+	0.1-	881105 046	0.8-	0.5-
601017 675	0.5-	0.2+	840124 381	(4.8+	2.8-)	881110 046	(3.2+	1.1+)
601022 675	0.3-	0.9+	840124 381	1.0+	0.8-	881110 046	1.8+	0.3+

6573 P-L = 1975 EJ6 = 4156 T-3 = 1986 TK6

Id. S. Nakano (MPC 12700), K. Hurukawa, G. V. Williams

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5			Williams
M 147.45571	(2000.0)	P	Q
n 0.23525500	Peri. 29.40326	-0.91561292	-0.39880831
a 2.5988236	Node 127.00414	+0.35527760	-0.86195768
e 0.0791008	Incl. 3.66429	+0.18823071	-0.31301898
P 4.19	H 13.5	G 0.15	

Residuals in seconds of arc

600924 675	0.1+	0.2+	601022 675	1.5-	0.1+	750315 095	(0.6+	7.6+)
600926 675	0.6+	0.9+	601024 675	0.2+	0.2-	771007 675	0.5+	0.2-
600927 675	0.0	1.1+	601026 675	0.2-	0.2+	771011 675	0.5+	0.0
600928 675	1.0+	0.9+	710416 675	1.4-	1.0-	771011 675	0.6+	0.6-
601017 675	0.7-	0.5+	710416 675	0.4-	2.3-	771012 675	0.1-	1.8-

771012	675	0.5-	1.2-	771021	675	0.2+	0.3+	861013	033	0.5+	2.0+
771016	675	0.4+	0.4+	771021	675	0.6+	1.0-	920324	400	0.2-	0.3-
771016	675	0.5-	0.6+	771022	675	0.4+	0.6-	920324	400	0.7+	0.4+
771017	675	0.4-	2.2-	771022	675	0.7+	0.7-				
771017	675	0.5-	1.3-	861013	033	0.2-	0.8+				

4150 T-1 = 1987 RQ6 = 1993 FY

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams

M	101.29974		(2000.0)	P	Q
n	0.26817238	Peri.	288.94428	-0.27441142	-0.96153579
a	2.3815517	Node	176.90481	+0.94499742	-0.27198467
e	0.0829832	Incl.	12.98973	+0.17798384	-0.03838324
P	3.68	H	13.0	G 0.15	

Residuals in seconds of arc

710324	675	1.1+	1.1-	710416	675	0.1+	0.3-	930321	675	1.1-	0.2+
710326	675	0.0	0.0	710416	675	0.3+	0.1+	930322	675	0.3-	1.0+
710326	675	0.0	0.4-	710513	675	0.7-	0.8+	930322	675	0.4+	0.6+
710327	675	0.8-	0.4-	870902	095	0.0	0.2-				
710402	675	0.3-	0.7+	930321	675	1.2+	1.3-				

* * * * *

EPHEMERIDES.

1993 EL a,e,i = 2.72, 0.35, 16 Elements MPC 22034

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	V
1993 05	03	11 59.38	+30 37.9	1.038	1.768	119.6	29.7	17.1
1993 05	13	12 05.01	+27 55.4	1.101	1.771	114.0	31.4	17.3
1993 05	23	12 13.33	+24 50.8	1.172	1.778	108.7	32.6	17.5
1993 06	02	12 23.94	+21 31.2	1.250	1.787	103.8	33.4	17.6
1993 06	12	12 36.35	+18 02.9	1.334	1.800	99.1	33.8	17.8
1993 06	22	12 50.22	+14 30.4	1.424	1.816	94.7	33.9	18.0
1993 07	02	13 05.28	+10 57.7	1.520	1.835	90.4	33.7	18.1
1993 07	12	13 21.28	+07 28.0	1.621	1.856	86.2	33.1	18.3
1993 07	22	13 38.09	+04 03.7	1.727	1.880	82.1	32.4	18.4
1993 08	01	13 55.60	+00 47.1	1.838	1.906	78.0	31.4	18.6

1993 ET a,e,i = 2.85, 0.43, 32 Elements MPC 22034

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	V
1993 05	03	12 08.75	+05 50.7	2.013	2.831	136.6	14.1	17.1
1993 05	13	12 07.31	+07 02.9	2.161	2.875	126.2	16.5	17.4
1993 05	23	12 08.00	+07 49.5	2.323	2.918	116.4	18.1	17.6
1993 06	02	12 10.63	+08 13.9	2.495	2.961	107.4	19.1	17.8
1993 06	12	12 14.96	+08 20.0	2.674	3.002	98.8	19.5	18.0
1993 06	22	12 20.74	+08 11.2	2.855	3.043	90.8	19.5	18.2
1993 07	02	12 27.75	+07 50.5	3.036	3.084	83.1	19.1	18.3
1993 07	12	12 35.77	+07 20.4	3.213	3.123	75.8	18.4	18.5
1993 07	22	12 44.65	+06 43.3	3.386	3.162	68.7	17.4	18.6
1993 08	01	12 54.25	+06 00.8	3.551	3.199	61.8	16.2	18.7

Periodic Comet Shoemaker-Levy 9 (1993e) Elements MPC 22031

Date	TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
1993 05	03	12 09.86	-02 20.0	4.455	5.272	140.5	7.0	13.4
1993 05	13	12 07.56	-02 04.9	4.560	5.269	130.2	8.4	13.5
1993 05	23	12 06.37	-01 56.6	4.682	5.265	120.3	9.6	13.6
1993 06	02	12 06.34	-01 55.5	4.818	5.262	110.6	10.4	13.7
1993 06	12	12 07.46	-02 01.7	4.964	5.259	101.4	10.9	13.8
1993 06	22	12 09.66	-02 14.8	5.114	5.256	92.4	11.1	13.8
1993 07	02	12 12.89	-02 34.4	5.266	5.253	83.8	11.1	13.9

1993 07 12	12 17.04	-03 00.0	5.415	5.250	75.3	10.8	13.9
1993 07 22	12 22.02	-03 30.9	5.558	5.248	67.2	10.3	14.0
1993 08 01	12 27.75	-04 06.6	5.693	5.245	59.1	9.6	14.0
1993 08 11	12 34.11	-04 46.2	5.817	5.243	51.3	8.7	14.0
1993 08 21	12 41.03	-05 29.3	5.928	5.241	43.5	7.6	14.0
1993 08 31	12 48.43	-06 15.0	6.024	5.239	35.9	6.5	14.0

Comet Mueller (1993d) Elements MPC 22029

Date TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
1993 05 03	12 33.34	+62 08.7	5.978	6.203	98.3	9.3	17.3
1993 05 13	12 30.20	+60 59.2	6.077	6.225	93.7	9.3	17.4
1993 05 23	12 28.75	+59 39.4	6.181	6.247	89.1	9.3	17.4
1993 06 02	12 28.94	+58 11.8	6.288	6.270	84.4	9.3	17.5
1993 06 12	12 30.64	+56 38.6	6.395	6.294	79.8	9.1	17.5
1993 06 22	12 33.69	+55 01.5	6.501	6.318	75.2	8.9	17.6
1993 07 02	12 37.92	+53 22.2	6.606	6.343	70.7	8.7	17.6
1993 07 12	12 43.15	+51 42.2	6.706	6.369	66.5	8.4	17.7
1993 07 22	12 49.23	+50 02.6	6.802	6.395	62.4	8.1	17.7
1993 08 01	12 56.02	+48 24.6	6.892	6.422	58.6	7.8	17.8
1993 08 11	13 03.39	+46 49.0	6.975	6.450	55.2	7.4	17.8
1993 08 21	13 11.24	+45 16.8	7.049	6.478	52.2	7.1	17.9
1993 08 31	13 19.47	+43 48.8	7.114	6.506	49.7	6.8	17.9
1993 09 10	13 27.97	+42 25.7	7.168	6.535	47.8	6.6	17.9
1993 09 20	13 36.69	+41 08.2	7.212	6.565	46.7	6.4	18.0
1993 09 30	13 45.54	+39 56.9	7.245	6.596	46.5	6.3	18.0
1993 10 10	13 54.44	+38 52.5	7.266	6.626	47.1	6.3	18.0
1993 10 20	14 03.32	+37 55.5	7.275	6.658	48.6	6.4	18.0
1993 10 30	14 12.11	+37 06.6	7.272	6.690	50.9	6.6	18.1
1993 11 09	14 20.71	+36 26.1	7.257	6.722	53.9	6.8	18.1

1993 FS a,e,i = 2.19, 0.42, 10 Elements MPC 22034

Date TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	V
1993 05 03	13 57.80	+15 23.8	0.327	1.295	147.2	24.9	18.8
1993 05 13	14 10.76	+15 53.3	0.363	1.315	141.8	28.4	19.1
1993 05 23	14 23.66	+15 01.1	0.408	1.342	137.3	30.8	19.5
1993 06 02	14 36.90	+13 08.6	0.462	1.374	133.5	32.4	19.9
1993 06 12	14 50.67	+10 37.3	0.524	1.411	130.0	33.5	20.2
1993 06 22	15 05.05	+07 43.9	0.596	1.452	126.5	34.2	20.6

1992 AB a,e,i = 3.28, 0.55, 41 Elements MPC 21977

Date TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	V
1993 05 03	19 15.77	-25 19.8	2.908	3.464	115.5	15.2	19.9
1993 05 13	19 12.70	-26 33.3	2.823	3.513	126.0	13.5	19.8
1993 05 23	19 07.23	-27 52.4	2.755	3.561	136.8	11.2	19.7
1993 06 02	18 59.52	-29 14.1	2.709	3.609	147.9	8.6	19.5
1993 06 12	18 49.95	-30 34.1	2.689	3.655	159.0	5.7	19.4
1993 06 22	18 39.12	-31 48.0	2.700	3.701	168.4	3.2	19.3
1993 07 02	18 27.82	-32 52.0	2.742	3.746	169.5	2.8	19.4
1993 07 12	18 16.94	-33 44.0	2.815	3.790	160.9	5.0	19.6
1993 07 22	18 07.25	-34 23.8	2.918	3.833	150.3	7.5	19.8
1993 08 01	17 59.37	-34 52.8	3.046	3.876	139.6	9.8	20.0
1993 08 11	17 53.67	-35 13.2	3.197	3.918	129.2	11.6	20.2
1993 08 21	17 50.27	-35 27.6	3.365	3.958	119.2	12.9	20.4
1993 08 31	17 49.16	-35 37.8	3.545	3.998	109.6	13.8	20.5

1990 SP a,e,i = 1.35, 0.39, 14 Elements MPC 21974

Date TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	V
1993 05 03	20 56.46	-30 42.2	1.505	1.879	94.7	32.3	20.1
1993 05 13	21 09.85	-31 34.0	1.391	1.875	101.5	31.9	19.9

1993 05 23	21 21.05	-32 46.3	1.278	1.868	108.8	30.9	19.7
1993 06 02	21 29.47	-34 24.1	1.170	1.858	116.4	29.3	19.5
1993 06 12	21 34.37	-36 30.9	1.069	1.845	124.5	27.0	19.2
1993 06 22	21 34.67	-39 08.2	0.978	1.828	132.9	24.1	18.9
1993 07 02	21 29.11	-42 10.4	0.902	1.808	140.9	20.8	18.6
1993 07 12	21 16.50	-45 22.2	0.842	1.785	147.5	17.8	18.3
1993 07 22	20 56.35	-48 16.4	0.803	1.758	150.2	16.7	18.1
1993 08 01	20 30.36	-50 19.4	0.784	1.729	147.6	18.3	18.1
1993 08 11	20 02.84	-51 08.6	0.785	1.695	140.7	22.3	18.2
1993 08 21	19 39.10	-50 43.3	0.803	1.659	131.8	27.0	18.3
1993 08 31	19 22.97	-49 22.2	0.834	1.619	122.7	31.6	18.5
1993 09 10	19 15.36	-47 28.5	0.872	1.576	113.9	35.7	18.7
1993 09 20	19 15.52	-45 18.4	0.913	1.530	105.8	39.2	18.8
1993 09 30	19 22.08	-43 00.3	0.955	1.481	98.4	42.0	18.9
1993 10 10	19 33.62	-40 36.3	0.993	1.429	91.7	44.3	19.0
1993 10 20	19 49.05	-38 04.6	1.025	1.374	85.6	46.3	19.0
1993 10 30	20 07.49	-35 22.2	1.051	1.316	80.1	48.0	19.0
1993 11 09	20 28.20	-32 25.2	1.067	1.256	75.2	49.7	19.0

1992 AC a,e,i = 2.10, 0.42, 16 Elements MPC 19522

Date TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	V
1993 05 03	22 07.61	-13 47.9	3.014	2.897	73.7	19.5	19.3
1993 05 13	22 16.21	-13 34.2	2.889	2.913	81.3	20.1	19.2
1993 05 23	22 23.42	-13 30.7	2.759	2.927	89.3	20.2	19.1
1993 06 02	22 29.03	-13 39.4	2.628	2.939	97.6	20.0	19.0
1993 06 12	22 32.84	-14 02.1	2.498	2.951	106.4	19.3	18.9
1993 06 22	22 34.61	-14 40.3	2.374	2.961	115.8	18.0	18.8
1993 07 02	22 34.11	-15 35.0	2.260	2.969	125.6	16.2	18.6
1993 07 12	22 31.22	-16 45.7	2.160	2.976	136.1	13.7	18.4
1993 07 22	22 25.89	-18 10.1	2.079	2.982	146.9	10.7	18.2
1993 08 01	22 18.31	-19 43.7	2.021	2.986	157.9	7.3	18.0
1993 08 11	22 08.97	-21 19.6	1.991	2.989	167.6	4.2	17.8
1993 08 21	21 58.62	-22 50.2	1.991	2.991	169.3	3.6	17.8
1993 08 31	21 48.24	-24 08.2	2.020	2.991	160.6	6.4	18.0
1993 09 10	21 38.84	-25 08.8	2.077	2.990	149.6	9.8	18.2
1993 09 20	21 31.23	-25 50.0	2.159	2.987	138.6	12.9	18.4
1993 09 30	21 25.99	-26 12.1	2.261	2.983	127.9	15.4	18.6
1993 10 10	21 23.36	-26 17.3	2.379	2.977	117.7	17.3	18.8
1993 10 20	21 23.34	-26 07.9	2.508	2.971	108.0	18.6	18.9
1993 10 30	21 25.76	-25 46.2	2.642	2.962	98.9	19.3	19.0
1993 11 09	21 30.37	-25 14.3	2.779	2.953	90.2	19.6	19.2
1993 11 19	21 36.87	-24 33.6	2.914	2.942	81.8	19.4	19.2
1993 11 29	21 45.00	-23 45.4	3.045	2.929	73.9	18.9	19.3

Periodic Comet Urata-Niijima (1986 XVI) Elements MPC 16380

Date TT	R. A. (2000)	Decl.	Delta	r	Variation		m2
1993 06 22	03 45.76	+21 40.0	2.240	1.475	-1.53	-15.9	19.4
1993 07 02	04 17.35	+25 03.0	2.197	1.462	-1.65	-14.6	19.4
1993 07 12	04 50.62	+28 05.3	2.160	1.457	-1.77	-12.9	19.3
1993 07 22	05 25.44	+30 41.8	2.129	1.460	-1.87	-10.7	19.3
1993 08 01	06 01.44	+32 48.0	2.105	1.471	-1.94	-8.2	19.3
1993 08 11	06 38.14	+34 21.1	2.085	1.490	-1.96	-5.5	19.3
1993 08 21	07 14.88	+35 20.4	2.070	1.516	-1.94	-2.7	19.4
1993 08 31	07 50.95	+35 47.9	2.059	1.549	-1.86	-0.1	19.5
1993 09 10	08 25.69	+35 47.3	2.048	1.588	-1.75	+2.3	19.6
1993 09 20	08 58.60	+35 24.2	2.038	1.633	-1.61	+4.4	19.7
1993 09 30	09 29.31	+34 45.0	2.027	1.682	-1.45	+6.1	19.8
1993 10 10	09 57.63	+33 56.1	2.013	1.735	-1.30	+7.5	19.9
1993 10 20	10 23.48	+33 03.9	1.996	1.791	-1.15	+8.7	20.0

1993 10 30	10 46.80	+32 13.9	1.973	1.850	-1.02	+9.7	20.1
1993 11 09	11 07.62	+31 31.0	1.946	1.911	-0.91	+10.5	20.3
1993 11 19	11 25.89	+30 59.5	1.913	1.974	-0.81	+11.3	20.4
1993 11 29	11 41.50	+30 42.7	1.876	2.038	-0.74	+12.1	20.5
1993 12 09	11 54.33	+30 43.3	1.835	2.103	-0.69	+13.0	20.5
1993 12 19	12 04.14	+31 03.1	1.792	2.169	-0.67	+13.8	20.6
1993 12 29	12 10.63	+31 42.0	1.751	2.235	-0.67	+14.7	20.7
1994 01 08	12 13.49	+32 38.1	1.713	2.302	-0.70	+15.5	20.8
1994 01 18	12 12.42	+33 47.1	1.683	2.368	-0.77	+16.2	20.9
1994 01 28	12 07.32	+35 00.8	1.667	2.435	-0.86	+16.6	21.0
1994 02 07	11 58.44	+36 08.9	1.667	2.501	-0.96	+16.6	21.1
1994 02 17	11 46.49	+36 59.7	1.689	2.567	-1.07	+16.1	21.2
1994 02 27	11 32.77	+37 22.8	1.735	2.632	-1.15	+15.2	21.4
1994 03 09	11 18.88	+37 13.4	1.807	2.697	-1.19	+13.9	21.6
1994 03 19	11 06.30	+36 31.9	1.903	2.761	-1.19	+12.5	21.8

Comet Helin-Alu (1992a) Elements MPC 19818

Date TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
1993 06 22	14 50.31	-54 02.1	3.727	4.481	132.9	9.6	17.9
1993 07 02	14 50.31	-52 23.0	3.861	4.548	127.1	10.3	18.0
1993 07 12	14 52.31	-50 47.6	4.015	4.614	120.5	10.9	18.2
1993 07 22	14 56.08	-49 18.5	4.185	4.681	113.3	11.5	18.3
1993 08 01	15 01.39	-47 57.6	4.368	4.749	106.0	11.9	18.5
1993 08 11	15 07.99	-46 45.7	4.562	4.817	98.5	12.0	18.6
1993 08 21	15 15.69	-45 42.7	4.762	4.885	91.0	12.0	18.8
1993 08 31	15 24.31	-44 48.3	4.966	4.953	83.5	11.7	18.9
1993 09 10	15 33.67	-44 02.0	5.170	5.022	76.0	11.2	19.1
1993 09 20	15 43.66	-43 22.7	5.372	5.091	68.6	10.6	19.2
1993 09 30	15 54.14	-42 49.6	5.568	5.160	61.2	9.8	19.4
1993 10 10	16 05.01	-42 21.8	5.756	5.230	53.9	8.9	19.5
1993 10 20	16 16.15	-41 58.4	5.932	5.299	46.7	7.9	19.6
1993 10 30	16 27.49	-41 38.5	6.096	5.369	39.7	6.8	19.7
1993 11 09	16 38.91	-41 21.6	6.244	5.439	32.9	5.7	19.8

Comet Shoemaker (1992y) Elements MPC 22029

Date TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m1
1993 07 02	10 21.06	+66 57.6	3.003	2.562	55.2	19.0	15.0
1993 07 12	11 03.22	+63 25.8	3.062	2.612	54.8	18.6	15.1
1993 07 22	11 37.40	+59 34.9	3.128	2.664	54.2	18.0	15.2
1993 08 01	12 05.81	+55 36.4	3.204	2.720	53.2	17.4	15.4
1993 08 11	12 30.07	+51 38.4	3.287	2.778	51.8	16.7	15.5
1993 08 21	12 51.35	+47 46.5	3.377	2.839	50.3	15.9	15.7
1993 08 31	13 10.44	+44 04.9	3.471	2.902	48.5	15.1	15.8
1993 09 10	13 27.87	+40 36.1	3.567	2.967	46.6	14.3	16.0
1993 09 20	13 44.01	+37 21.9	3.663	3.034	44.8	13.5	16.1
1993 09 30	13 59.10	+34 23.5	3.757	3.103	43.2	12.8	16.3
1993 10 10	14 13.32	+31 41.3	3.846	3.174	41.9	12.1	16.4
1993 10 20	14 26.77	+29 15.7	3.928	3.245	41.2	11.7	16.6
1993 10 30	14 39.51	+27 06.6	4.000	3.318	41.2	11.4	16.7
1993 11 09	14 51.56	+25 13.8	4.062	3.392	42.1	11.3	16.8
1993 11 19	15 02.91	+23 37.1	4.111	3.467	43.9	11.4	17.0
1993 11 29	15 13.52	+22 16.2	4.147	3.543	46.6	11.7	17.1
1993 12 09	15 23.34	+21 10.5	4.168	3.619	50.3	12.1	17.2
1993 12 19	15 32.28	+20 19.6	4.175	3.696	54.8	12.6	17.3
1993 12 29	15 40.24	+19 42.9	4.168	3.774	60.0	13.0	17.4
1994 01 08	15 47.10	+19 19.6	4.148	3.852	65.9	13.5	17.4
1994 01 18	15 52.74	+19 09.0	4.117	3.930	72.3	13.8	17.5
1994 01 28	15 56.99	+19 09.8	4.076	4.009	79.2	14.0	17.6
1994 02 07	15 59.72	+19 20.4	4.028	4.088	86.5	13.9	17.6

1994 02 17	16 00.78	+19 39.1	3.978	4.168	94.2	13.7	17.7
1994 02 27	16 00.06	+20 03.4	3.928	4.247	102.1	13.2	17.8
1994 03 09	15 57.51	+20 30.3	3.883	4.327	110.2	12.4	17.8
1994 03 19	15 53.11	+20 56.4	3.848	4.407	118.2	11.5	17.9
1994 03 29	15 46.98	+21 17.8	3.828	4.487	125.9	10.4	17.9
1994 04 08	15 39.38	+21 30.6	3.826	4.567	132.9	9.2	18.0
1994 04 18	15 30.65	+21 31.5	3.848	4.646	138.4	8.3	18.1
1994 04 28	15 21.28	+21 17.9	3.895	4.726	141.7	7.6	18.2
1994 05 08	15 11.79	+20 48.7	3.970	4.806	142.1	7.4	18.3
1994 05 18	15 02.69	+20 04.0	4.073	4.886	139.5	7.7	18.4
1994 05 28	14 54.43	+19 05.4	4.202	4.966	134.6	8.4	18.6
1994 06 07	14 47.34	+17 55.4	4.356	5.046	128.1	9.1	18.7
1994 06 17	14 41.61	+16 36.6	4.532	5.125	120.7	9.8	18.9
1994 06 27	14 37.33	+15 11.9	4.726	5.205	112.8	10.4	19.0
1994 07 07	14 34.48	+13 43.7	4.934	5.284	104.7	10.7	19.2
1994 07 17	14 33.01	+12 14.0	5.152	5.363	96.5	10.9	19.4
1994 07 27	14 32.79	+10 44.6	5.376	5.442	88.4	10.7	19.5
1994 08 06	14 33.70	+09 16.5	5.601	5.521	80.3	10.4	19.7
1994 08 16	14 35.62	+07 50.7	5.825	5.600	72.3	9.9	19.8
1994 08 26	14 38.40	+06 27.9	6.043	5.679	64.3	9.2	19.9
1994 09 05	14 41.91	+05 08.5	6.252	5.757	56.5	8.4	20.1
1994 09 15	14 46.05	+03 53.0	6.449	5.835	48.8	7.4	20.2
1994 09 25	14 50.69	+02 41.5	6.632	5.914	41.2	6.4	20.3
1994 10 05	14 55.74	+01 34.3	6.797	5.991	33.8	5.3	20.4

Periodic Comet Schwassmann-Wachmann 2 Elements MPC 18256

Date TT	R. A. (2000)	Decl.	Delta	r	Elong.	Phase	m2
1993 07 02	04 24.34	+18 52.4	3.336	2.543	32.9	12.5	20.7
1993 07 12	04 43.31	+19 31.9	3.228	2.505	37.9	14.4	20.5
1993 07 22	05 02.52	+20 03.1	3.114	2.469	42.9	16.3	20.4
1993 08 01	05 21.88	+20 25.3	2.994	2.433	47.8	18.0	20.2
1993 08 11	05 41.31	+20 38.6	2.869	2.398	52.9	19.7	20.1
1993 08 21	06 00.69	+20 42.7	2.740	2.364	57.9	21.3	19.9
1993 08 31	06 19.88	+20 37.9	2.608	2.331	63.1	22.7	19.8
1993 09 10	06 38.77	+20 24.7	2.473	2.300	68.3	24.0	19.6
1993 09 20	06 57.18	+20 03.9	2.336	2.270	73.7	25.1	19.4
1993 09 30	07 14.93	+19 36.5	2.200	2.242	79.3	26.0	19.2
1993 10 10	07 31.84	+19 04.1	2.064	2.215	85.1	26.7	19.0
1993 10 20	07 47.66	+18 28.5	1.929	2.190	91.2	27.0	18.8
1993 10 30	08 02.12	+17 52.2	1.798	2.168	97.7	27.0	18.6
1993 11 09	08 14.96	+17 17.8	1.671	2.147	104.6	26.5	18.4
1993 11 19	08 25.80	+16 48.6	1.550	2.129	112.0	25.5	18.2
1993 11 29	08 34.29	+16 28.1	1.438	2.113	120.1	23.8	18.0
1993 12 09	08 40.08	+16 19.4	1.336	2.099	128.8	21.4	17.8
1993 12 19	08 42.82	+16 25.7	1.247	2.088	138.4	18.2	17.7
1993 12 29	08 42.43	+16 48.1	1.175	2.079	148.8	14.2	17.5
1994 01 08	08 39.11	+17 25.8	1.123	2.074	159.9	9.4	17.4
1994 01 18	08 33.52	+18 14.8	1.092	2.071	171.6	4.0	17.4
1994 01 28	08 26.85	+19 08.4	1.087	2.070	176.5	1.7	17.3
1994 02 07	08 20.55	+19 59.5	1.105	2.073	164.7	7.2	17.4
1994 02 17	08 15.98	+20 41.7	1.147	2.078	153.4	12.3	17.5
1994 02 27	08 14.18	+21 11.2	1.210	2.086	142.8	16.7	17.6
1994 03 09	08 15.55	+21 26.8	1.290	2.097	133.0	20.3	17.8
1994 03 19	08 20.13	+21 28.1	1.385	2.110	124.0	23.0	17.9
1994 03 29	08 27.62	+21 15.6	1.490	2.125	115.9	25.0	18.1
1994 04 08	08 37.57	+20 50.2	1.605	2.143	108.4	26.3	18.3
1994 04 18	08 49.53	+20 12.5	1.728	2.164	101.5	27.1	18.5
1994 04 28	09 03.04	+19 23.4	1.855	2.186	95.0	27.3	18.7
1994 05 08	09 17.70	+18 23.7	1.986	2.210	88.9	27.2	18.9

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1994 05 18    09 33.22   +17 14.5    2.119    2.237    83.1    26.7    19.1
1994 05 28    09 49.32   +15 56.7    2.254    2.265    77.6    25.9    19.3
1994 06 07    10 05.80   +14 31.4    2.390    2.294    72.3    24.9    19.5
1994 06 17    10 22.51   +12 59.6    2.525    2.325    67.0    23.7    19.7
1994 06 27    10 39.34   +11 22.6    2.659    2.358    61.9    22.4    19.8
1994 07 07    10 56.20   +09 41.4    2.790    2.391    56.9    20.9    20.0
1994 07 17    11 13.05   +07 56.9    2.918    2.426    51.9    19.2    20.2
1994 07 27    11 29.85   +06 10.3    3.042    2.462    46.9    17.5    20.3
1994 08 06    11 46.58   +04 22.5    3.160    2.498    41.9    15.7    20.5
1994 08 16    12 03.23   +02 34.4    3.273    2.536    36.8    13.8    20.6
1994 08 26    12 19.80   +00 47.0    3.378    2.574    31.7    11.9    20.7

1993 04 23    16 09.97   -32 16.8    1.720    2.607   144.8    12.8    16.5
- 6.31 -1.33  - 17.5 + 7.2   1983 CA1    22051   - 9.82 +0.31  + 29.1 + 6.6
1993 05 23    15 42.76   -31 58.5    1.657    2.656   168.0     4.6    16.1

1993 05 23    15 59.89   +17 55.3    1.270    2.157   141.5    17.0    17.0
-10.74 +0.29  - 67.6 -21.4    (5551)     22042   - 4.61 +1.47  -158.5 - 7.8
1993 06 22    15 34.70   +11 51.0    1.436    2.224   129.4    20.7    17.4

1993 05 23    17 11.67   -23 31.5    1.296    2.284   163.0     7.4    15.8
- 9.33 -0.89  -  6.6 + 2.1    (5181)     20001   - 8.47 +1.11  +  2.6 + 0.1
1993 06 22    16 41.26   -23 33.7    1.342    2.328   161.3     8.1    15.9

1993 05 23    17 12.34   -33 46.2    1.169    2.146   159.2     9.7    15.6
- 9.53 -1.15  - 18.6 + 8.6   1938 DM1    21963   - 8.87 +1.31  + 30.8 + 5.3
1993 06 22    16 40.18   -33 21.9    1.186    2.167   159.3     9.5    15.7

1993 05 23    17 05.37   -28 42.0    4.386    5.363   163.0     3.2    17.2
- 5.33 -0.27  + 14.0 + 1.9   1986 TR6    15067   - 5.18 +0.31  + 22.7 + 0.7
1993 06 22    16 48.53   -27 44.7    4.382    5.361   162.7     3.2    17.2

1993 05 23    17 14.99   -32 03.2    1.639    2.612   159.6     7.8    18.2
-10.39 -0.96  -  5.7 + 6.3   1992 BM     21977   -10.29 +0.99  + 30.6 + 3.9
1993 06 22    16 40.36   -31 21.4    1.624    2.602   160.1     7.7    18.2

1993 05 23    17 12.33   -22 50.7    1.158    2.147   162.9     7.9    17.6
- 8.13 -1.16  + 22.9 + 2.7   1989 GQ1    16235   - 8.70 +1.03  + 28.6 - 1.7
1993 06 22    16 43.02   -21 25.4    1.098    2.087   161.4     8.9    17.5

1993 05 23    17 13.56   -15 07.3    1.937    2.916   161.6     6.3    17.7
- 8.53 -0.69  + 17.1 - 1.6   1988 DJ1    21971   - 8.58 +0.68  +  1.4 - 3.5
1993 06 22    16 45.38   -14 36.1    1.923    2.898   159.7     7.0    17.7

1993 05 23    17 12.75   -15 38.5    1.996    2.976   161.9     6.1    17.3
- 7.93 -0.65  + 51.1 - 0.5   1981 UD2    17629   - 7.95 +0.64  + 35.4 - 4.6
1993 06 22    16 46.56   -13 21.3    1.970    2.942   159.3     7.0    17.3

1993 05 23    17 14.58   -24 06.9    0.920    1.910   162.3     9.3    15.8
- 8.16 -1.36  - 19.9 + 1.9   1987 RB6    21971   - 8.59 +1.27  -  6.7 + 1.1
1993 06 22    16 44.57   -24 45.4    0.899    1.892   162.1     9.5    15.8

1993 05 23    17 12.13   -25 27.6    2.563    3.542   162.6     4.9    17.6
- 7.55 -0.55  -  9.5 + 1.8   1989 SA3    19025   - 7.62 +0.53  +  0.5 + 1.1
1993 06 22    16 47.38   -25 39.7    2.553    3.536   162.7     4.9    17.6

1993 05 23    17 16.13   -22 38.8    1.550    2.533   162.1     7.1    17.3
- 9.33 -1.07  -  6.4 + 1.2   1990 TX     17451   -10.44 +0.78  +  0.6 + 0.2
1993 06 22    16 43.05   -22 45.7    1.465    2.451   161.6     7.5    17.1
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1993 05 23    17 16.42   -24 53.3    0.987    1.974   161.8     9.2    15.6
- 7.72 -1.18  + 12.5 + 3.4   1989 EM     18116   - 7.53 +1.21  + 24.0 - 0.7
1993 06 22    16 49.13   -23 50.9    1.001    1.995   163.1     8.5    15.6

1993 05 23    17 18.94   -23 12.5    1.317    2.299   161.4     8.1    16.2
- 7.59 -1.14  - 13.9 + 0.9   2291 T-1    20830   - 8.87 +0.82  -  7.1 + 0.6
1993 06 22    16 50.62   -23 43.5    1.245    2.238   163.4     7.4    16.0

1993 05 23    17 14.64   -26 06.5    3.836    4.809   161.9     3.7    17.0
- 5.57 -0.37  - 16.1 + 1.2    (5259)     20492   - 5.79 +0.30  -  8.8 + 1.0
1993 06 22    16 56.36   -26 43.7    3.819    4.807   164.6     3.2    16.9

1993 05 23    17 22.11   -35 09.3    2.151    3.107     +1.13    -3.4  18.2
- 9.30 -0.90  - 36.3 + 5.3   1990 TW12   17965   -10.12 +0.67  +  1.5 + 5.9
1993 06 22    16 50.08   -36 02.6    2.112    3.086     +1.13    -4.7  18.1

1993 05 23    17 24.23   -26 11.1    1.419    2.395   159.8     8.4    17.2
- 9.27 -1.12  +  8.1 + 3.7   1977 QT2    20921   -10.07 +0.90  + 26.6 + 1.2
1993 06 22    16 51.47   -25 14.5    1.381    2.374   163.6     6.9    17.1

1993 05 23    17 23.76   -21 48.2    1.805    2.780   160.3     7.0    17.0
- 7.31 -0.85  + 10.5 + 0.9   1979 QM1    11996   - 8.19 +0.60  + 12.1 - 0.8
1993 06 22    16 57.82   -21 11.3    1.750    2.744   164.8     5.6    16.9

1993 05 23    17 26.07   -25 38.3    1.705    2.677   159.5     7.6    17.8
- 8.49 -0.96  - 13.7 + 2.2   1990 TJ     20148   - 9.39 +0.71  +  1.2 + 1.9
1993 06 22    16 56.16   -25 56.4    1.672    2.666   164.6     5.8    17.7

1993 05 23    17 25.74   -05 48.2    1.425    2.379   154.4    10.6    15.4
- 7.97 -0.89  + 38.1 - 7.3    (5129)     19844   - 8.32 +0.78  - 15.8 - 9.3
1993 06 22    16 58.23   -05 11.2    1.443    2.407   156.0     9.9    15.4

1993 05 23    17 26.06   -17 04.3    2.039    3.008   159.2     6.9    16.4
- 8.25 -0.80  - 21.5 - 1.8   1979 EL     17426   - 9.20 +0.53  - 30.0 - 1.1
1993 06 22    16 57.43   -18 22.9    1.995    2.985   163.9     5.4    16.3

1993 05 23    17 28.02   -28 35.8    1.427    2.398   158.4     9.0    16.8
- 8.71 -1.26    -2.8 + 4.3   1988 CF3    21971   -10.51 +0.78  + 25.4 + 3.4
1993 06 22    16 55.41   -28 00.2    1.338    2.333   164.1     6.8    16.5

1993 05 23    17 18.86   -08 02.7    4.461    5.408   157.1     4.2    17.8
- 4.52 -0.28  + 21.3 - 2.1   1973 SY     21963   - 4.74 +0.21  +  5.2 - 3.0
1993 06 22    17 04.07   -07 21.2    4.441    5.400   158.6     3.9    17.8

1993 05 23    17 30.50   -24 45.1    1.252    2.226   158.6     9.5    16.9
- 8.59 -1.41  - 17.8 + 1.5   1977 RD3    15240   -10.98 +0.79  -  3.1 + 2.2
1993 06 22    16 57.06   -25 17.8    1.164    2.161   164.9     7.0    16.5

1993 05 23    17 30.37   -21 38.9    1.598    2.568   158.8     8.2    17.6
- 8.41 -0.97  + 29.8 + 1.5   1981 DE     11147   - 9.25 +0.72  + 30.6 - 1.8
1993 06 22    17 00.75   -20 02.3    1.571    2.566   165.2     5.8    17.5

1993 05 23    17 32.23   -31 01.0    1.533    2.496   156.7     9.2    16.5
- 9.12 -1.12  +  7.5 + 5.7   1985 CZ1    21969   -10.07 +0.85  + 40.2 + 3.5
1993 06 22    16 59.79   -29 45.3    1.506    2.500   164.5     6.2    16.4

1993 05 23    17 29.82   -16 42.9    1.559    2.527   158.3     8.5    17.6
- 7.88 -1.07  + 24.2 - 1.0   1986 RS2    11349   - 9.59 +0.60  + 10.4 - 3.7
1993 06 22    17 00.56   -15 46.0    1.468    2.459   163.4     6.8    17.3
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1993 05 23    17 29.58   -19 55.6    2.271    3.236   158.9     6.5    17.4
- 7.90 -0.70  -  9.4 - 0.3   1990 WE     19868   - 8.58 +0.50  - 10.6 - 0.4
1993 06 22    17 02.65   -20 25.5    2.259    3.254   165.7     4.4    17.3

1993 05 23    17 29.87   -18 13.9    2.017    2.982   158.6     7.1    16.9
- 7.93 -0.76  + 48.7 + 0.4   1992 ED1    21977   - 8.58 +0.56  + 40.2 - 3.3
1993 06 22    17 02.68   -15 53.6    1.986    2.976   163.9     5.4    16.8

1993 05 23    17 34.92   -29 31.0    1.238    2.204   156.7    10.5    17.3
- 8.48 -1.48  - 33.9 + 3.6   7581 P-L    18831   -10.92 +0.83  -  0.2 + 5.7
1993 06 22    17 01.55   -30 26.1    1.171    2.168   164.6     7.1    17.0

1993 05 23    17 28.71   -04 40.4    2.358    3.293   153.1     8.0    16.8
- 6.45 -0.64  + 15.2 - 5.2   1991 CA2    18635   - 7.38 +0.37  - 21.5 - 6.3
1993 06 22    17 06.10   -04 47.7    2.294    3.253   156.9     7.1    16.7

1993 05 23    17 33.94   -22 28.9    1.399    2.368   158.0     9.2    17.5
- 8.18 -1.26  + 49.9 + 3.6   1983 WN     17818   -10.40 +0.66  + 59.2 - 1.6
1993 06 22    17 02.51   -19 35.8    1.286    2.284   165.4     6.4    17.1

1993 05 23    17 29.87   -18 31.6    2.506    3.468   158.6     6.1    17.9
- 6.74 -0.64  + 18.7 - 0.2   1989 UB8    16585   - 7.62 +0.38  + 13.4 - 1.7
1993 06 22    17 06.44   -17 40.6    2.439    3.432   165.6     4.2    17.7

1993 05 23    17 34.33   -16 07.8    2.031    2.989   157.1     7.6    16.5
- 7.72 -0.86  + 27.7 - 0.8    (5142)     19849   - 9.19 +0.44  + 16.0 - 3.1
1993 06 22    17 06.57   -14 57.8    1.938    2.929   164.2     5.4    16.2

1993 05 23    17 36.51   -18 21.9    1.911    2.871   157.1     7.9    17.8
- 7.95 -0.82  + 25.2 - 0.4   1988 CN4    21971   - 8.80 +0.56  + 17.0 - 2.5
1993 06 22    17 08.83   -17 14.7    1.905    2.901   165.9     4.9    17.6

1993 05 23    17 34.25   -11 06.2    1.987    2.937   155.4     8.3    16.9
- 6.36 -0.78  + 39.7 - 2.8   1212 T-2    21978   - 7.61 +0.42  + 12.9 - 5.7
1993 06 22    17 11.08   -09 41.9    1.922    2.904   161.5     6.4    16.7

1993 05 23    17 36.68   -13 10.7    1.425    2.384   155.6    10.1    16.6
- 7.09 -1.02  + 85.6 - 1.7    (5137)     19847   - 8.33 +0.65  + 53.0 - 8.6
1993 06 22    17 10.47   -09 29.9    1.401    2.386   161.2     7.9    16.5

1993 05 23    17 37.13   -21 32.3    2.038    2.997   157.2     7.5    16.2
- 7.32 -0.82  - 21.6 - 0.2   1992 CU     19873   - 8.43 +0.49  - 19.1 + 0.6
1993 06 22    17 11.11   -22 34.7    2.029    3.031   168.0     4.0    16.0

1993 05 23    17 38.48   -23 53.9    1.251    2.218   156.9    10.3    17.4
- 7.00 -1.33  -  4.1 + 1.3   1981 EZ27   21932   - 9.31 +0.69  +  5.1 + 0.9
1993 06 22    17 10.27   -23 51.7    1.189    2.193   167.9     5.6    17.0

1993 05 23    17 39.58   -28 38.2    1.797    2.753   155.9     8.6    16.1
- 7.31 -1.06  - 15.3 + 2.8   1980 TM     21966   - 9.29 +0.50  +  6.3 + 3.4
1993 06 22    17 11.79   -28 53.0    1.718    2.719   167.3     4.7    15.8

1993 05 23    17 40.21   -22 34.0    2.215    3.169   156.5     7.3    17.2
- 7.45 -0.83  - 15.5 + 0.3    (5239)     20325   - 8.90 +0.41  - 11.1 + 0.8
1993 06 22    17 13.42   -23 14.9    2.163    3.165   168.6     3.6    16.9

1993 05 23    17 46.16   -38 05.4    1.637    2.571   151.1    11.0    16.8
- 8.51 -1.32  - 14.6 + 7.5   1982 UE12   20330   -10.69 +0.70  + 38.7 + 8.0
1993 06 22    17 13.63   -37 30.4    1.580    2.568   162.4     6.9    16.6
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1993 05 23    17 41.22   -19 32.4    1.772    2.729   156.1     8.6    17.0
- 6.59 -0.96  +  9.9 - 0.5   1985 XS     21970   - 8.37 +0.45  +  4.5 - 1.5
1993 06 22    17 16.18   -19 08.8    1.707    2.710   168.3     4.4    16.7

1993 05 23    17 42.53   -24 04.3    0.976    1.945   156.0    12.3    17.1
- 5.89 -1.66  + 18.0 + 2.7   2017 P-L    18444   - 9.71 +0.67  + 30.7 + 0.3
1993 06 22    17 14.84   -22 47.1    0.872    1.879   168.9     6.0    16.5

1993 05 23    17 41.93   -04 57.2    2.000    2.925   150.6     9.8    17.2
- 7.10 -0.83  + 19.1 - 5.9    (5188)     20004   - 8.60 +0.39  - 22.7 - 7.2
1993 06 22    17 16.11   -05 00.3    1.946    2.915   158.4     7.4    17.0

1993 05 23    17 45.08   -29 46.4    1.609    2.561   154.5     9.8    17.2
- 7.80 -1.30  -  7.2 + 3.7   1978 SB3    20495   -10.71 +0.49  + 21.8 + 4.5
1993 06 22    17 14.01   -29 26.0    1.491    2.493   167.5     5.1    16.8

1993 05 23    17 46.27   -47 12.0    2.179    3.068   145.7    10.7    16.8
- 8.04 -1.25  - 40.7 + 8.0   1980 FJ1    14614   -10.63 +0.53  + 21.6 +10.8
1993 06 22    17 14.98   -47 45.8    2.082    3.027   153.9     8.5    16.6

1993 05 23    17 36.50   -13 40.3    4.699    5.638   155.9     4.2    17.4
- 4.56 -0.34  -  6.0 - 1.4    (5284)     20621   - 5.16 +0.15  - 14.6 - 1.4
1993 06 22    17 21.04   -14 11.1    4.647    5.640   166.4     2.4    17.3

1993 05 23    17 42.81   -20 39.8    2.625    3.573   155.9     6.7    17.2
- 6.63 -0.67  +  5.3   0.0    (5198)     20131   - 7.76 +0.32  +  4.4 - 0.5
1993 06 22    17 19.41   -20 24.4    2.586    3.590   169.4     3.0    16.9

1993 05 23    17 45.72   +09 35.2    1.868    2.724   140.1    13.8    17.8
- 7.83 -0.87  + 71.1 -11.3   5119 T-3    14797   - 9.12 +0.48  - 11.6 -14.3
1993 06 22    17 17.81   +11 10.0    1.871    2.757   143.7    12.6    17.8

1993 05 23    17 48.66   -22 36.4    1.512    2.465   154.6    10.2    17.0
- 7.92 -1.18  + 28.5 + 1.6   1992 AB1    20340   - 9.94 +0.60  + 32.4 - 1.0
1993 06 22    17 18.59   -21 00.3    1.468    2.475   169.4     4.3    16.7

1993 05 23    17 49.24   -17 58.3    1.413    2.365   154.0    10.8    16.5
- 7.42 -1.34  -  5.1 - 2.2   1985 BH     19018   -10.67 +0.44  - 17.3 - 1.9
1993 06 22    17 18.82   -18 32.6    1.310    2.315   168.6     5.0    16.0

1993 05 23    17 44.49   -00 32.7    1.985    2.891   147.5    10.9    17.5
- 5.75 -0.83  + 81.4 - 5.7   1981 EX4    21966   - 7.47 +0.32  + 28.3 -10.9
1993 06 22    17 22.56   +02 21.3    1.916    2.856   152.4     9.5    17.3

1993 05 23    17 50.08   -23 44.9    1.796    2.744   154.2     9.2    17.5
- 7.86 -1.07  -  8.6 + 0.8   1992 BZ     19688   - 9.90 +0.47  -  0.3 + 1.3
1993 06 22    17 20.58   -23 59.1    1.751    2.758   170.3     3.6    17.2

1993 05 23    17 48.22   -29 15.7    2.133    3.075   153.9     8.3    15.8
- 7.03 -1.00  - 36.8 + 1.7   1992 FB     20035   - 9.39 +0.32  - 16.9 + 4.1
1993 06 22    17 21.15   -30 40.6    2.040    3.042   168.2     3.9    15.4

1993 05 23    17 51.85   -38 04.0    1.079    2.021   150.1    14.5    16.0
- 5.46 -1.93  -115.9 + 3.3   1989 NE1    15254   -11.14 +0.50  - 51.8 +15.7
1993 06 22    17 22.47   -42 39.1    0.990    1.973   159.0    10.6    15.6

1993 05 23    17 43.29   -24 03.0    4.772    5.710   155.8     4.2    17.5
- 4.53 -0.37  -  6.0 + 0.4    (5123)     19842   - 5.29 +0.13  -  3.0 + 0.5
1993 06 22    17 27.63   -24 16.6    4.712    5.720   171.9     1.4    17.2
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1993 05 23	17 55.07	-24 25.4	1.541	2.486	153.1	10.6	17.4
- 7.74 -1.35	- 18.9 + 0.5	1990 OJ2	17023	-11.12 +0.41	- 8.1 + 2.4		
1993 06 22	17 23.53	-25 09.5	1.443	2.452	170.8	3.8	16.9
1993 05 23	17 53.75	-12 18.5	1.392	2.332	151.4	12.0	17.3
- 6.68 -1.30	+ 49.9 - 2.7	1045 T-2	18446	- 9.94 +0.38	+ 18.7 - 7.3		
1993 06 22	17 25.72	-10 26.9	1.290	2.285	164.3	6.9	16.9
1993 05 23	17 57.38	-31 23.4	1.856	2.788	151.5	10.0	17.2
- 7.91 -1.25	- 0.7 + 4.1	1986 RW	21970	-11.09 +0.35	+ 30.7 + 5.0		
1993 06 22	17 25.92	-30 40.2	1.726	2.730	169.0	4.1	16.7
1993 05 23	17 52.34	-45 29.0	4.646	5.514	146.0	5.9	17.0
- 5.62 -0.55	- 11.1 + 4.0	1989 DJ	21973	- 6.83 +0.17	+ 16.5 + 4.7		
1993 06 22	17 32.33	-45 22.3	4.555	5.506	157.2	4.1	16.9
1993 05 23	18 01.90	-25 17.9	1.654	2.589	151.5	10.8	17.3
- 7.65 -1.30	+ 0.1 + 1.5	1982 FG3	15243	-10.93 +0.36	+ 13.5 + 2.1		
1993 06 22	17 30.96	-24 58.7	1.562	2.573	172.5	2.9	16.8
1993 05 23	18 00.01	-26 41.0	1.523	2.462	151.8	11.2	17.1
- 6.71 -1.42	- 15.7 + 1.3	1971 UM	17424	-10.85 +0.27	+ 1.4 + 3.5		
1993 06 22	17 30.56	-27 06.7	1.388	2.398	171.8	3.5	16.4
1993 05 23	17 56.98	-23 19.6	2.230	3.164	152.7	8.4	17.3
- 6.25 -0.91	+ 2.9 + 0.6	1984 UB3	21969	- 8.53 +0.24	+ 7.6 + 0.6		
1993 06 22	17 32.69	-23 04.0	2.129	3.141	173.0	2.3	16.9
1993 05 23	17 52.70	-27 29.0	4.667	5.590	153.3	4.7	16.9
- 5.02 -0.45	- 29.8 + 0.6	(5027)	19490	- 6.19 +0.09	- 22.7 + 1.6		
1993 06 22	17 34.89	-28 49.5	4.577	5.584	171.7	1.5	16.6
1993 05 23	17 56.93	-20 31.4	1.822	2.760	152.6	9.7	16.2
- 5.90 -1.01	- 3.9 - 0.8	1992 CG1	22056	- 8.21 +0.33	- 7.1 - 0.4		
1993 06 22	17 33.28	-20 48.6	1.776	2.787	172.6	2.7	15.9
1993 05 23	18 03.38	-12 58.6	1.810	2.731	149.5	10.9	17.9
- 6.38 -1.12	+ 45.6 - 1.9	1990 VV1	17460	- 9.58 +0.19	+ 23.7 - 5.3		
1993 06 22	17 37.04	-11 08.3	1.679	2.677	166.2	5.2	17.4
1993 05 23	18 06.65	-12 47.7	1.904	2.819	148.6	10.8	17.4
- 7.16 -1.03	- 19.5 - 4.3	1991 YC	19684	- 9.66 +0.29	- 41.2 - 2.6		
1993 06 22	17 39.00	-14 21.8	1.868	2.873	169.3	3.8	17.1
1993 05 23	18 04.19	-15 40.6	2.394	3.310	150.0	8.8	17.6
- 6.46 -0.84	+ 43.4 - 0.8	1976 YA	21964	- 8.62 +0.19	+ 31.8 - 3.1		
1993 06 22	17 39.65	-13 43.4	2.298	3.301	168.8	3.4	17.2
1993 05 23	18 03.74	-01 18.6	1.315	2.216	144.1	15.5	17.1
- 4.40 -1.29	+ 52.2 - 8.9	5166 T-3	15910	- 8.15 +0.21	- 21.9 -14.0		
1993 06 22	17 42.15	-00 23.6	1.223	2.193	156.4	10.7	16.7
1993 05 23	18 03.32	+02 59.3	4.462	5.293	141.6	6.8	17.3
- 3.92 -0.42	+ 13.5 - 4.1	(5285)	20622	- 5.10 +0.05	- 15.0 - 5.0		
1993 06 22	17 48.94	+02 58.6	4.357	5.285	153.4	4.9	17.1
1993 05 23	18 07.57	-04 05.9	4.476	5.335	144.8	6.3	17.5
- 4.12 -0.43	- 5.0 - 3.3	(5126)	21764	- 5.39 +0.04	- 26.0 - 3.4		
1993 06 22	17 52.44	-04 52.0	4.365	5.338	161.3	3.5	17.3