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Brian G. Marsden, Director Gareth V. Williams, Associate Director

ERRATA.

MPC	Line			
17648	18	For	(5.0- 11.2+)	read (5.0- 11.2+)Y
17717	-17	For	B. A. Skiff	read C. M. Olmstead
17980	10	For	(4498) Koyama	read (4498) Shinkoyama

* * * * *

CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Mag.	N Obs.
1949 UL	1949 10	28.21661	01 47 14.89	+03 49 14.2	MPC 9673		3 760
1949 UL	1949 10	28.29023	01 47 09.85	+03 49 06.5	MPC 9673		3 760
1949 UN	1949 10	28.21661	02 00 30.48	+03 33 37.0	MPC10908		5 760
1949 UP	1949 10	28.21661	02 02 15.32	+01 54 20.3	MPC 9739		7 760
1949 UT	1949 10	28.21661	01 53 18.38	-01 06 17.3	MPC 5887		9 760
1949 UT	1949 10	28.29023	01 53 14.82	-01 07 06.9	MPC 5887		9 760
1991 CA1 *	1991 02	14.34983	09 58 47.47	+33 16 47.5	MPC17715		675
1991 CA1	1991 02	14.37413	09 58 45.78	+33 17 27.0	MPC17715		675
1991 CA1	1991 02	16.40625	09 56 28.91	+34 10 40.1	MPC17715		675
1991 CA1	1991 02	16.53785	09 56 19.58	+34 13 58.0	MPC17715		675
391	1954 10	21.25353	23 54 45.74	+15 27 53.3	MPC 1202		760
1510	1952 03	17.08265	10 04 23.11	+08 14 55.1	MPC 881	15.3	A 760
1510	1952 03	17.10697	10 04 22.24	+08 14 54.5	MPC 881		A 760

Note 1: time originally in error. 2: 1949 UL = (3253). 3 = 2 + 1. 4: 1949 UN = (3613). 5 = 4 + 1. 6: 1949 UP = (3263). 7 = 6 + 1. 8: 1949 UT = (2463). 9 = 8 + 1. A: observations originally interchanged.

* * * * *

IDENTIFICATION CHANGES.

Continuation to MPC 17854.

Object	Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
1977 SS3 *	1977 09	22.04203	02 18 07.13	+13 40 56.1	1977 SB2	17.0	095
1980 UE1 *	1980 10	17.89933	02 31 55.30	+13 00 59.7	1980 TW1	17.5	095
1982 RM3 *	1982 09	13.36805	22 13 20.15	-10 51 23.8	1982 QK1	17.5	675
1982 RM3	1982 09	13.38888	22 13 19.19	-10 51 32.0	1982 QK1		675
1983 EL4 *	1983 03	15.85473	11 33 11.65	+01 44 47.5	1983 EM2	17.5	095

DOUBLE DESIGNATIONS.

Continuation to MPC 14668.

	Note		Note		Note
1980 PK4 = 1980 PO2	1	1988 SU = 1988 SC1	2	1990 JK1 = 1990 KO1	1

Note 1: by G. V. Williams. 2: by F. N. Bowman.

* * * * *

IDENTIFICATION WITH A COMET.

S. Nakano reports the following identification:

1989 RL5 = P/Schwassmann-Wachmann 1

* * * * *

INDEX TO ORBITAL ELEMENTS.

The following index to orbital elements continues that on MPC 17079-17085 and refers to orbits of both comets and minor planets published since then. Only the latest orbit for each object is indexed, and multiple-designation minor planets are listed only under the principal designation.

Comet	MPC	Comet	MPC	Comet	MPC	Comet	MPC
1983 XII	17939	1987 VII	17939	1987 XXIII	17939	1988 II	17939
1988 IV	17939	1989 V	17791	1989 XVIII	17595	1989a1	17174
1989c1	17400	1989e1	17400	1990c	17596	1990g	17940
1990i	17595	1990j	17596	1990k	17595	1990l	17595
1990o	17595	1990p	17595	1991a	17596	1991b	17791
1991c	17596	1991d	17792	1991e	17792	1991f	17939
1991g	17940	1991h	17940	1991i	17940		

Planet	MPC	Planet	MPC	Planet	MPC	Planet	MPC	Planet	MPC
(123)	17600	(126)	17796	(127)	17796	(158)	17600	(159)	17406
(163)	17406	(166)	17406	(167)	17796	(184)	17796	(202)	17796
(208)	17406	(220)	17796	(231)	17796	(237)	17178	(257)	17796
(278)	17178	(289)	17601	(295)	17796	(303)	17797	(310)	17406
(312)	17797	(316)	17797	(331)	17406	(386)	17406	(408)	17797
(411)	17797	(414)	17406	(462)	17797	(467)	17179	(477)	17407
(478)	17601	(490)	17797	(506)	17407	(507)	17601	(517)	17944
(529)	17601	(536)	17407	(579)	17944	(592)	17797	(597)	17601
(604)	17407	(607)	17797	(614)	17797	(619)	17944	(678)	17797
(697)	17944	(700)	17407	(709)	17797	(713)	17798	(718)	17944
(738)	17601	(743)	17179	(779)	17179	(823)	17601	(824)	17407
(828)	17601	(830)	17944	(838)	17798	(844)	17798	(866)	17944
(908)	17407	(912)	17798	(924)	17944	(969)	17798	(987)	17944
(992)	17407	(1029)	17407	(1043)	17407	(1048)	17798	(1095)	17798
(1105)	17798	(1109)	17798	(1111)	17407	(1177)	17798	(1183)	17601
(1225)	17798	(1227)	17179	(1228)	17407	(1237)	17408	(1240)	17179
(1247)	17179	(1253)	17798	(1260)	17179	(1275)	17179	(1280)	17601
(1320)	17408	(1344)	17408	(1349)	17408	(1360)	17408	(1372)	17408
(1376)	17408	(1396)	17408	(1407)	17408	(1408)	17408	(1409)	17408
(1419)	17408	(1420)	17409	(1421)	17409	(1431)	17179	(1436)	17409
(1446)	17409	(1456)	17409	(1470)	17409	(1476)	17409	(1484)	17180
(1490)	17409	(1491)	17409	(1514)	17180	(1527)	17409	(1528)	17409
(1531)	17409	(1537)	17410	(1539)	17410	(1547)	17180	(1551)	17410
(1553)	17410	(1554)	17180	(1558)	17180	(1560)	17180	(1562)	17180

(1569) 17799	(1572) 17799	(1594) 17180	(1595) 17180	(1598) 17410
(1599) 17410	(1608) 17410	(1611) 17410	(1616) 17410	(1623) 17410
(1633) 17410	(1635) 17799	(1638) 17799	(1644) 17180	(1650) 17601
(1651) 17799	(1690) 17410	(1700) 17799	(1703) 17799	(1725) 17180
(1818) 17180	(1823) 17799	(1845) 17181	(1854) 17799	(1871) 17601
(1927) 17181	(1937) 17799	(2001) 17602	(2051) 17181	(2082) 17602
(2160) 17181	(2161) 17602	(2163) 17602	(2170) 17602	(2171) 17602
(2192) 17602	(2230) 17799	(2241) 17799	(2254) 17800	(2287) 17181
(2289) 17602	(2293) 17800	(2331) 17181	(2332) 17181	(2356) 17181
(2373) 17602	(2421) 17602	(2431) 17800	(2438) 17181	(2446) 17181
(2448) 17800	(2453) 17181	(2467) 17181	(2483) 17182	(2507) 17800
(2515) 17182	(2592) 17182	(2595) 17182	(2625) 17800	(2627) 17182
(2628) 17602	(2633) 17182	(2634) 17182	(2636) 17411	(2647) 17602
(2654) 17182	(2665) 17800	(2671) 17603	(2675) 17603	(2689) 17411
(2703) 17603	(2706) 17182	(2720) 17800	(2730) 17603	(2732) 17800
(2741) 17182	(2742) 17800	(2743) 17182	(2756) 17182	(2762) 17183
(2769) 17800	(2777) 17183	(2778) 17603	(2790) 17183	(2795) 17183
(2817) 17183	(2870) 17183	(2873) 17183	(2878) 17183	(2883) 17800
(2906) 17801	(2909) 17411	(2926) 17801	(2929) 17603	(2942) 17603
(2947) 17603	(2955) 17603	(2971) 17801	(2991) 17801	(3000) 17603
(3004) 17603	(3041) 17603	(3043) 17604	(3052) 17183	(3058) 17183
(3061) 17801	(3075) 17801	(3095) 17801	(3097) 17604	(3126) 17801
(3127) 17604	(3143) 17604	(3171) 17604	(3188) 17183	(3204) 17801
(3211) 17801	(3212) 17604	(3219) 17604	(3224) 17183	(3232) 17801
(3236) 17184	(3246) 17801	(3251) 17184	(3263) 17604	(3287) 17802
(3291) 17802	(3295) 17802	(3298) 17604	(3333) 17184	(3337) 17802
(3355) 17184	(3380) 17184	(3383) 17411	(3395) 17604	(3418) 17184
(3428) 17802	(3438) 17604	(3443) 17604	(3460) 17411	(3533) 17184
(3536) 17605	(3539) 17184	(3579) 17605	(3583) 17802	(3600) 17184
(3751) 17605	(3762) 17802	(3805) 17802	(3818) 17605	(3834) 17605
(3870) 17411	(3904) 17605	(4019) 17605	(4132) 17411	(4134) 17605
(4192) 17605	(4250) 17605	(4256) 17605	(4266) 17605	(4615) 17184
(4616) 17185	(4617) 17185	(4618) 17185	(4619) 17186	(4620) 17186
(4621) 17186	(4622) 17187	(4623) 17187	(4624) 17187	(4625) 17188
(4626) 17188	(4627) 17188	(4628) 17189	(4629) 17189	(4630) 17190
(4631) 17190	(4632) 17191	(4633) 17191	(4634) 17191	(4635) 17192
(4636) 17192	(4637) 17192	(4638) 17193	(4639) 17193	(4640) 17194
(4641) 17194	(4642) 17194	(4643) 17195	(4644) 17195	(4645) 17195
(4646) 17195	(4647) 17411	(4648) 17411	(4649) 17412	(4650) 17412
(4651) 17412	(4652) 17413	(4653) 17413	(4654) 17414	(4655) 17414
(4656) 17414	(4657) 17415	(4658) 17415	(4659) 17415	(4660) 17416
(4661) 17416	(4662) 17416	(4663) 17417	(4664) 17417	(4665) 17418
(4666) 17418	(4667) 17418	(4668) 17419	(4669) 17419	(4670) 17419
(4671) 17420	(4672) 17420	(4673) 17420	(4674) 17421	(4675) 17421
(4676) 17421	(4677) 17422	(4678) 17422	(4679) 17422	(4680) 17606
(4681) 17606	(4682) 17606	(4683) 17607	(4684) 17607	(4685) 17607
(4686) 17608	(4687) 17608	(4688) 17609	(4689) 17609	(4690) 17609
(4691) 17610	(4692) 17610	(4693) 17610	(4694) 17611	(4695) 17611
(4696) 17612	(4697) 17612	(4698) 17613	(4699) 17613	(4700) 17614
(4701) 17614	(4702) 17614	(4703) 17615	(4704) 17615	(4705) 17615
(4706) 17616	(4707) 17616	(4708) 17617	(4709) 17617	(4710) 17617
(4711) 17617	(4712) 17618	(4713) 17618	(4714) 17619	(4715) 17619
(4716) 17619	(4717) 17620	(4718) 17620	(4719) 17620	(4720) 17621
(4721) 17621	(4722) 17621	(4723) 17802	(4724) 17803	(4725) 17803
(4726) 17803	(4727) 17804	(4728) 17804	(4729) 17804	(4730) 17805
(4731) 17805	(4732) 17806	(4733) 17806	(4734) 17806	(4735) 17807
(4736) 17807	(4737) 17807	(4738) 17808	(4739) 17808	(4740) 17808
(4741) 17809	(4742) 17809	(4743) 17809	(4744) 17810	(4745) 17810
(4746) 17811	(4747) 17811	(4748) 17811	(4749) 17812	(4750) 17812

(4751) 17813 (4752) 17813 (4753) 17813 (4754) 17814 (4755) 17944
(4756) 17945 (4757) 17945 (4758) 17945 (4759) 17946 (4760) 17946
(4761) 17946 (4762) 17947 (4763) 17947 (4764) 17948 (4765) 17948
(4766) 17948 (4767) 17949 (4768) 17949 (4769) 17949 (4770) 17950
(4771) 17950 (4772) 17951 (4773) 17951 (4774) 17952

Planet	MPC	Planet	MPC	Planet	MPC	Planet	MPC
1928 RB	17422	1938 DM1	17952	1939 UB	17423	1940 GO	17423
1941 HA	17814	1942 CG	17622	1942 EM	17952	1943 DF	17952
1948 AF	17623	1949 PN	17953	1950 DE	17423	1953 FK1	17953
1955 EH	17196	1967 HA	17953	1971 BD3	17424	1971 TY2	17623
1971 UM	17424	1971 UN	17196	1972 HL1	17953	1972 KL	17196
1972 RY3	17623	1973 AW3	17623	1973 QO1	17624	1973 SH1	17197
1973 UB5	17197	1974 FJ	17424	1974 FO	17424	1974 ST	17954
1975 BP1	17624	1975 SE2	17624	1975 UE	17425	1975 XH	17624
1976 GK3	17815	1976 GL8	17624	1976 UP18	17625	1976 YA	17625
1977 EM5	17425	1977 QW	17940	1977 QY	17197	1977 RZ1	17940
1977 RX2	17940	1977 RL7	17197	1977 SL	17940	1977 TC1	17425
1977 TD1	17426	1978 QY1	17815	1978 RY6	17815	1978 RR8	17625
1978 SE5	17625	1978 SV7	17198	1978 TR2	17954	1978 VJ8	17954
1978 VV9	17815	1978 XQ	17626	1979 EL	17426	1979 ML1	17955
1979 MW2	17426	1979 MP3	17626	1979 MA6	17426	1979 MH7	17955
1979 QP	17626	1979 QC2	17816	1979 QX2	17955	1979 QX9	17627
1979 SS	17198	1979 SR2	17198	1979 SU2	17198	1979 YN	17955
1980 DX	17627	1980 FO1	17427	1980 FV2	17427	1980 FZ3	17427
1980 KK	17816	1980 KM	17427	1980 LY	17428	1980 LE1	17627
1980 PX	17428	1980 RD1	17956	1980 RV2	17816	1980 SQ	17199
1980 TH3	17428	1980 TC5	17956	1980 TO5	17956	1980 VA	17429
1980 XX	17429	1981 EN4	17816	1981 EL5	17817	1981 EY9	17817
1981 EK10	17627	1981 EY10	17628	1981 EU13	17429	1981 ER17	17817
1981 EG21	17818	1981 ET22	17430	1981 EX24	17430	1981 ET25	17430
1981 EF26	17628	1981 EF30	17431	1981 EQ31	17431	1981 EH35	17431
1981 EW45	17628	1981 QV2	17431	1981 RA2	17199	1981 SO	17199
1981 UD2	17629	1981 UQ11	17199	1981 UU11	17432	1981 WE1	17200
1981 XM2	17956	1982 BA	17957	1982 DC2	17432	1982 DX3	17432
1982 EF	17629	1982 FF3	17629	1982 MA	17200	1982 ST	17432
1982 SO4	17957	1982 TP1	17200	1982 UW3	17201	1982 UH8	17201
1982 VY2	17433	1982 YQ	17818	1982 YL1	17433	1983 GU	17957
1983 JQ	17201	1983 PZ	17201	1983 QH1	17818	1983 RD2	17629
1983 RG2	17202	1983 RP2	17202	1983 RW3	17433	1983 RT4	17202
1983 UC	17434	1983 VQ1	17202	1983 WL	17434	1983 WM	17434
1983 WN	17818	1984 DB	17957	1984 DF1	17434	1984 EC	17630
1984 EX	17819	1984 QJ	17630	1984 SA1	17435	1984 SR5	17630
1984 SY5	17435	1984 SH6	17203	1984 YY1	17958	1985 CA2	17203
1985 FB2	17436	1985 JK	17631	1985 RR4	17436	1985 TS1	17631
1985 TV2	17631	1985 TB3	17436	1985 UG2	17436	1985 VN	17203
1986 AG1	17204	1986 GY	17204	1986 JC	17819	1986 JS	17631
1986 PE	17631	1986 PC1	17204	1986 PU1	17437	1986 QQ	17632
1986 QG1	17437	1986 QR1	17819	1986 QT1	17437	1986 RW	17438
1986 RE2	17205	1986 RU5	17205	1986 SD2	17205	1986 SL2	17175
1986 SQ2	17175	1986 ST2	17175	1986 SU2	17175	1986 TG1	17438
1986 TM1	17632	1986 TW9	17958	1986 TT11	17438	1986 UO	17633
1986 UV	17958	1986 UH3	17633	1986 VY	17958	1986 WO9	17633
1986 XT	17438	1986 XF1	17959	1987 BS1	17959	1987 DF	17820
1987 DJ	17439	1987 DE6	17633	1987 DH6	17959	1987 DN6	17820
1987 DP6	17439	1987 EH	17439	1987 RA1	17440	1987 SL10	17205
1987 SM13	17634	1987 UU2	17206	1987 VB	17206	1987 WV1	17634
1988 BN	17206	1988 BP3	17206	1988 BT3	17821	1988 BY3	17821
1988 BJ4	17634	1988 BO4	17960	1988 CJ	17634	1988 CF3	17821

1988 CV3	17821	1988 CX3	17635	1988 CN4	17440	1988 DJ1	17441
1988 DO1	17822	1988 DJ2	17822	1988 EJ1	17822	1988 EA2	17822
1988 JQ	17960	1988 JA1	17635	1988 KF	17823	1988 PB1	17823
1988 PK1	17823	1988 QF	17596	1988 QY	17960	1988 QD1	17441
1988 RV	17441	1988 RA1	17960	1988 RK1	17441	1988 RL9	17442
1988 TU1	17961	1988 TZ1	17442	1988 TQ4	17823	1988 UV	17207
1988 VV3	17442	1989 AS	17792	1989 AL1	17635	1989 CJ1	17207
1989 EC	17207	1989 EM	17635	1989 EL2	17636	1989 FH	17442
1989 FL	17443	1989 GM	17208	1989 GC1	17636	1989 GZ1	17636
1989 GR3	17443	1989 GU3	17443	1989 GH4	17637	1989 GS4	17961
1989 JK	17443	1989 LJ	17208	1989 NE	17824	1989 NR	17961
1989 NX	17824	1989 RS	17824	1989 SG1	17961	1989 SE2	17962
1989 SK5	17401	1989 SC7	17637	1989 TT2	17824	1989 TY10	17444
1989 TO11	17208	1989 TX15	17962	1989 UQ	17637	1989 VP	17208
1989 VW	17825	1989 WE	17209	1989 WY1	17175	1989 WZ1	17175
1989 WG7	17209	1989 YU9	17792	1990 BG	17962	1990 BG1	17209
1990 BQ1	17209	1990 BL2	17940	1990 DW	17401	1990 DS1	17401
1990 DZ1	17175	1990 DA2	17175	1990 DC2	17175	1990 DD2	17444
1990 DH2	17175	1990 DJ2	17175	1990 DK2	17175	1990 DM2	17175
1990 DN2	17175	1990 DO2	17175	1990 DQ2	17175	1990 DU2	17175
1990 DW2	17175	1990 DX2	17175	1990 DY2	17175	1990 DD3	17175
1990 DF3	17175	1990 DK3	17444	1990 DL3	17175	1990 DM3	17444
1990 DO3	17176	1990 DP3	17176	1990 DU3	17176	1990 DV3	17176
1990 DY3	17176	1990 DA4	17176	1990 DB4	17176	1990 DC4	17176
1990 DD4	17401	1990 DE4	17176	1990 DL4	17176	1990 DM4	17176
1990 DR4	17210	1990 DU4	17940	1990 DW4	17176	1990 EF3	17176
1990 EP3	17401	1990 EQ3	17176	1990 EV5	17176	1990 EZ5	17210
1990 EH6	17176	1990 EL6	17176	1990 EM6	17176	1990 EP6	17176
1990 EQ6	17176	1990 ES6	17176	1990 EV6	17176	1990 EW6	17176
1990 EA7	17176	1990 EB7	17176	1990 EF7	17176	1990 EG7	17176
1990 EL7	17596	1990 ED8	17176	1990 EJ8	17176	1990 EO8	17176
1990 FU	17637	1990 FD3	17940	1990 GE	17963	1990 GN	17176
1990 KL	17210	1990 KO	17210	1990 MB	17445	1990 MC	17638
1990 MF	17638	1990 MJ	17638	1990 MV	17211	1990 OA	17211
1990 OB	17445	1990 OE	17446	1990 OH	17446	1990 OL	17211
1990 OT	17638	1990 OA1	17446	1990 OF1	17446	1990 OK1	17638
1990 OB4	17446	1990 OL4	17211	1990 OE5	17211	1990 PA	17447
1990 QB	17638	1990 QE	17176	1990 QG	17639	1990 QJ	17212
1990 QL	17212	1990 QM	17176	1990 QO	17176	1990 QQ	17212
1990 QR	17176	1990 QT	17176	1990 QW	17176	1990 QY	17596
1990 QA1	17596	1990 QG1	17792	1990 QH1	17213	1990 QJ1	17639
1990 QL1	17792	1990 QM1	17792	1990 QN1	17596	1990 QO1	17597
1990 QP1	17213	1990 QQ1	17447	1990 QR1	17792	1990 QS1	17963
1990 QT1	17597	1990 QW1	17176	1990 QX1	17792	1990 QZ1	17401
1990 QA2	17447	1990 QB2	17401	1990 QC2	17213	1990 QD2	17213
1990 QE2	17597	1990 QF2	17177	1990 QG2	17792	1990 QH2	17401
1990 QJ2	17401	1990 QL2	17792	1990 QM2	17639	1990 QN2	17792
1990 QP2	17447	1990 QR2	17940	1990 QS2	17825	1990 QT2	17639
1990 QU2	17792	1990 QV2	17940	1990 QY2	17448	1990 QZ2	17792
1990 QA3	17177	1990 QB3	17792	1990 QC3	17792	1990 QD3	17597
1990 QG3	17177	1990 QH3	17597	1990 QJ3	17401	1990 QK3	17177
1990 QL3	17214	1990 QM3	17401	1990 QO3	17639	1990 QP3	17640
1990 QX3	17597	1990 QY3	17214	1990 QZ3	17792	1990 QA4	17401
1990 QB4	17640	1990 QE4	17402	1990 QF4	17402	1990 QH4	17792
1990 QJ4	17792	1990 QK4	17792	1990 QL4	17792	1990 QM4	17448
1990 QN4	17214	1990 QO4	17792	1990 QP4	17792	1990 QV4	17214
1990 QC5	17402	1990 QE5	17792	1990 QF5	17792	1990 QH5	17792
1990 QJ5	17792	1990 QL5	17177	1990 QM5	17177	1990 QN5	17177
1990 QO5	17402	1990 QR5	17402	1990 QV5	17448	1990 QW5	17402

1990 QX5	17402	1990 QY5	17402	1990 QZ5	17792	1990 QA6	17792
1990 QB6	17792	1990 QC6	17792	1990 QE6	17963	1990 QJ6	17792
1990 QT6	17792	1990 QE7	17792	1990 QN7	17402	1990 QT7	17792
1990 QV7	17792	1990 QX7	17792	1990 QY7	17402	1990 QD8	17792
1990 QX8	17402	1990 QA9	17402	1990 QE9	17792	1990 QT9	17792
1990 QU9	17792	1990 QW9	17793	1990 RB	17215	1990 RC	17177
1990 RD	17793	1990 RE	17402	1990 RF	17793	1990 RP	17597
1990 RS	17793	1990 RT	17793	1990 RU	17793	1990 RW	17825
1990 RB1	17793	1990 RD1	17793	1990 RF1	17793	1990 RG1	17793
1990 RK1	17793	1990 RM1	17793	1990 RN1	17793	1990 RO1	17964
1990 RC2	17940	1990 RD2	17597	1990 RE2	17940	1990 RF2	17597
1990 RG2	17940	1990 RH2	17597	1990 RJ2	17940	1990 RK2	17940
1990 RL2	17597	1990 RN2	17597	1990 RO2	17597	1990 RP2	17597
1990 RQ2	17793	1990 RR2	17793	1990 RS2	17597	1990 RT2	17793
1990 RU2	17597	1990 RV2	17826	1990 RW2	17597	1990 RX2	17597
1990 RY2	17597	1990 RA3	17793	1990 RB3	17793	1990 RC3	17940
1990 RF3	17793	1990 RG3	17793	1990 RH3	17940	1990 RJ3	17940
1990 RM3	17793	1990 RN3	17940	1990 RR3	17940	1990 RS3	17940
1990 RW3	17964	1990 RC4	17941	1990 RH4	17964	1990 RA5	17793
1990 RE5	17597	1990 RV5	17793	1990 RW5	17793	1990 RX5	17793
1990 RY5	17793	1990 RB6	17793	1990 RC6	17793	1990 RD6	17793
1990 RE6	17793	1990 RF6	17793	1990 RG6	17793	1990 RJ6	17793
1990 RO6	17941	1990 RQ6	17793	1990 RS6	17793	1990 RT6	17793
1990 RZ6	17793	1990 RA7	17793	1990 RB7	17941	1990 RC7	17941
1990 RL7	17941	1990 RM7	17793	1990 RN7	17793	1990 RO7	17793
1990 RP7	17793	1990 RQ7	17793	1990 RR7	17793	1990 RV7	17793
1990 RW7	17793	1990 RY7	17793	1990 RZ7	17793	1990 RA8	17941
1990 RQ8	17793	1990 RT8	17794	1990 RU8	17794	1990 RW8	17941
1990 RX8	17941	1990 SB	17640	1990 SC	17177	1990 SF	17177
1990 SG	17177	1990 SH	17177	1990 SK	17448	1990 SL	17640
1990 SM	17215	1990 SN	17177	1990 SO	17177	1990 SP	17826
1990 SQ	17449	1990 SS	17826	1990 SU	17177	1990 SV	17177
1990 SW	17216	1990 SX	17177	1990 SY	17177	1990 SZ	17177
1990 SA1	17449	1990 SB1	17177	1990 SC1	17177	1990 SD1	17177
1990 SE1	17177	1990 SF1	17177	1990 SH1	17449	1990 SK1	17177
1990 SN1	17402	1990 SO1	17597	1990 SP1	17597	1990 SW1	17941
1990 SZ1	17449	1990 SA2	17216	1990 SB2	17402	1990 SD2	17177
1990 SE2	17177	1990 SF2	17640	1990 SJ2	17402	1990 SL2	17794
1990 SM2	17450	1990 SO2	17402	1990 SS3	17402	1990 SW3	17450
1990 SX3	17402	1990 SY3	17641	1990 SZ3	17402	1990 SB4	17450
1990 SC4	17941	1990 SE4	17402	1990 SF4	17597	1990 SG4	17641
1990 SH4	17178	1990 SJ4	17178	1990 SK4	17450	1990 SN4	17217
1990 SO4	17641	1990 ST4	17402	1990 SW4	17964	1990 SZ4	17941
1990 SB5	17941	1990 SC5	17941	1990 SD5	17941	1990 SE5	17941
1990 SF5	17941	1990 SG5	17941	1990 SH5	17941	1990 SJ5	17794
1990 SL5	17941	1990 SN5	17941	1990 SP5	17794	1990 SQ5	17941
1990 SR5	17941	1990 SS5	17941	1990 ST5	17941	1990 SU5	17941
1990 SV5	17941	1990 SX5	17941	1990 SZ5	17941	1990 SA6	17941
1990 SB6	17941	1990 SE6	17794	1990 SF6	17941	1990 SG6	17941
1990 SK6	17941	1990 SM6	17941	1990 SN6	17941	1990 SO6	17941
1990 SP6	17794	1990 SQ6	17941	1990 SR6	17941	1990 SS6	17941
1990 ST6	17941	1990 SU6	17941	1990 SV6	17941	1990 SW6	17941
1990 SX6	17941	1990 SY6	17941	1990 SZ6	17941	1990 SA7	17941
1990 SF7	17941	1990 SG7	17941	1990 SH7	17941	1990 SL7	17941
1990 SM7	17941	1990 SN7	17941	1990 SO7	17941	1990 SP7	17941
1990 SQ7	17941	1990 SS7	17941	1990 ST7	17941	1990 SV7	17941
1990 SW7	17942	1990 SY7	17942	1990 SZ7	17942	1990 SA8	17942
1990 SB8	17942	1990 SC8	17942	1990 SD8	17942	1990 SE8	17942
1990 SF8	17942	1990 SG8	17942	1990 SH8	17942	1990 SJ8	17942

1990 SK8	17942	1990 SM8	17942	1990 SN8	17942	1990 SO8	17942
1990 SP8	17942	1990 SQ8	17942	1990 SR8	17942	1990 SS8	17942
1990 ST8	17942	1990 SU8	17942	1990 SV8	17942	1990 SW8	17942
1990 SX8	17942	1990 SY8	17942	1990 SZ8	17942	1990 SB9	17942
1990 SE9	17942	1990 SK9	17942	1990 SL9	17942	1990 SM9	17942
1990 SN9	17942	1990 SP9	17942	1990 SS9	17942	1990 ST9	17942
1990 SU9	17942	1990 SW9	17942	1990 SB10	17597	1990 SC10	17597
1990 SF10	17597	1990 SG10	17597	1990 SL10	17597	1990 SS10	17597
1990 ST10	17597	1990 SU10	17641	1990 SW10	17597	1990 SX10	17597
1990 SY10	17597	1990 SZ10	17794	1990 SA11	17597	1990 SB11	17597
1990 SC11	17597	1990 SD11	17597	1990 SE11	17597	1990 SF11	17826
1990 SG11	17794	1990 SG12	17942	1990 SJ12	17794	1990 SN12	17794
1990 SR12	17794	1990 SS12	17794	1990 SB13	17794	1990 SC13	17794
1990 SD13	17794	1990 SE13	17794	1990 SF13	17794	1990 SH13	17794
1990 SA14	17794	1990 SB14	17794	1990 SC14	17794	1990 SD14	17794
1990 SE14	17794	1990 SM14	17794	1990 ST14	17794	1990 SU14	17794
1990 SA15	17942	1990 SQ15	17942	1990 SR15	17942	1990 TB	17217
1990 TC	17942	1990 TD	17942	1990 TF	17451	1990 TH	17402
1990 TJ	17451	1990 TK	17402	1990 TM	17402	1990 TN	17451
1990 TO	17402	1990 TP	17402	1990 TQ	17598	1990 TR	17641
1990 TS	17217	1990 TT	17402	1990 TU	17218	1990 TV	17402
1990 TW	17402	1990 TX	17451	1990 TY	17402	1990 TZ	17965
1990 TB1	17598	1990 TC1	17402	1990 TD1	17403	1990 TE1	17452
1990 TF1	17403	1990 TG1	17452	1990 TH1	17403	1990 TJ1	17403
1990 TK1	17452	1990 TL1	17452	1990 TM1	17598	1990 TN1	17453
1990 TO1	17598	1990 TQ1	17403	1990 TR1	17598	1990 TS1	17178
1990 TT1	17178	1990 TU1	17178	1990 TV1	17178	1990 TX1	17178
1990 TY1	17178	1990 TZ1	17178	1990 TA2	17178	1990 TB2	17178
1990 TC2	17178	1990 TD2	17178	1990 TE2	17178	1990 TF2	17178
1990 TG2	17178	1990 TH2	17178	1990 TJ2	17453	1990 TK2	17178
1990 TL2	17178	1990 TM2	17178	1990 TN2	17178	1990 TP2	17178
1990 TQ2	17178	1990 TR2	17178	1990 TS2	17178	1990 TT2	17178
1990 TU2	17178	1990 TZ2	17453	1990 TG3	17453	1990 TH3	17598
1990 TJ3	17598	1990 TK3	17403	1990 TN3	17598	1990 TO3	17403
1990 TP3	17403	1990 TQ3	17403	1990 TR3	17403	1990 TS3	17403
1990 TT3	17403	1990 TV3	17403	1990 TW3	17403	1990 TX3	17403
1990 TY3	17403	1990 TZ3	17403	1990 TA4	17403	1990 TB4	17642
1990 TC4	17403	1990 TD4	17403	1990 TF4	17642	1990 TG4	17403
1990 TH4	17403	1990 TJ4	17403	1990 TK4	17403	1990 TL4	17826
1990 TN4	17454	1990 TO4	17454	1990 TT4	17403	1990 TX4	17942
1990 TG5	17598	1990 TM5	17942	1990 TR5	17942	1990 TB6	17598
1990 TF6	17598	1990 TL6	17598	1990 TD7	17598	1990 TE7	17403
1990 TF7	17403	1990 TH7	17403	1990 TJ7	17403	1990 TK7	17403
1990 TL7	17403	1990 TM7	17403	1990 TN7	17403	1990 TO7	17403
1990 TP7	17642	1990 TQ7	17403	1990 TR7	17403	1990 TS7	17403
1990 TT7	17598	1990 TV7	17403	1990 TW7	17598	1990 TY7	17403
1990 TZ7	17403	1990 TA8	17403	1990 TD8	17403	1990 TE8	17403
1990 TF8	17598	1990 TG8	17598	1990 TH8	17403	1990 TJ8	17403
1990 TK8	17404	1990 TW8	17794	1990 TX8	17794	1990 TY8	17404
1990 TB9	17598	1990 TC9	17598	1990 TD9	17598	1990 TE9	17598
1990 TF9	17598	1990 TG9	17598	1990 TH9	17598	1990 TJ9	17598
1990 TK9	17598	1990 TL9	17598	1990 TM9	17598	1990 TN9	17598
1990 TO9	17598	1990 TP9	17598	1990 TQ9	17598	1990 TS9	17598
1990 TU9	17598	1990 TV9	17598	1990 TW9	17598	1990 TX9	17598
1990 TY9	17598	1990 TZ9	17598	1990 TB10	17598	1990 TC10	17598
1990 TE10	17598	1990 TF10	17598	1990 TG10	17598	1990 TH10	17598
1990 TJ10	17598	1990 TK10	17598	1990 TL10	17598	1990 TM10	17598
1990 TO10	17598	1990 TP10	17598	1990 TQ10	17598	1990 TR10	17598
1990 TS10	17598	1990 TT10	17598	1990 TU10	17598	1990 TV10	17598

1990 TW10	17599	1990 TX10	17599	1990 TZ10	17599	1990 TA11	17599
1990 TC11	17599	1990 TE11	17599	1990 TF11	17404	1990 TG11	17404
1990 TH11	17404	1990 TJ11	17404	1990 TK11	17404	1990 TL11	17404
1990 TM11	17404	1990 TN11	17404	1990 TO11	17404	1990 TP11	17404
1990 TQ11	17404	1990 TR11	17404	1990 TS11	17404	1990 TT11	17404
1990 TU11	17404	1990 TV11	17404	1990 TW11	17404	1990 TX11	17404
1990 TZ11	17404	1990 TA12	17404	1990 TB12	17404	1990 TC12	17404
1990 TD12	17404	1990 TE12	17404	1990 TF12	17404	1990 TG12	17404
1990 TH12	17599	1990 TL12	17404	1990 TM12	17404	1990 TN12	17404
1990 TO12	17404	1990 TP12	17404	1990 TQ12	17965	1990 TR12	17404
1990 TS12	17404	1990 TT12	17965	1990 TU12	17404	1990 TV12	17404
1990 TW12	17965	1990 TX12	17404	1990 TZ12	17404	1990 TA13	17404
1990 TB13	17599	1990 TC13	17599	1990 TD13	17599	1990 TE13	17599
1990 TF13	17599	1990 TG13	17599	1990 TH13	17599	1990 TJ13	17599
1990 TK13	17599	1990 TL13	17599	1990 TM13	17599	1990 TV13	17599
1990 TO14	17794	1990 UA	17218	1990 UB	17404	1990 UC	17404
1990 UD	17454	1990 UE	17454	1990 UF	17454	1990 UG	17404
1990 UH	17455	1990 UJ	17455	1990 UK	17404	1990 UM	17404
1990 UN	17455	1990 UO	17455	1990 UP	17456	1990 UQ	17642
1990 UT	17404	1990 UV	17404	1990 UW	17456	1990 UY	17456
1990 UZ	17404	1990 UA1	17404	1990 UB1	17404	1990 UC1	17599
1990 UD1	17405	1990 UE1	17456	1990 UF1	17599	1990 UH1	17642
1990 UJ1	17599	1990 UK1	17457	1990 UL1	17794	1990 UN1	17405
1990 UO1	17405	1990 UP1	17599	1990 UR1	17599	1990 UU1	17599
1990 UX1	17599	1990 UY1	17599	1990 UA2	17405	1990 UB2	17599
1990 UC2	17599	1990 UD2	17405	1990 UE2	17405	1990 UF2	17599
1990 UG2	17827	1990 UH2	17457	1990 UJ2	17457	1990 UL2	17405
1990 UM2	17599	1990 UN2	17599	1990 UO2	17965	1990 UP2	17405
1990 UQ2	17599	1990 UR2	17457	1990 UT2	17405	1990 UU2	17405
1990 UV2	17794	1990 UW2	17794	1990 UA3	17405	1990 UB3	17599
1990 UC3	17405	1990 UD3	17458	1990 UE3	17458	1990 UF3	17458
1990 UG3	17599	1990 UK3	17405	1990 UN3	17794	1990 UP3	17794
1990 UQ3	17794	1990 US3	17794	1990 UU3	17794	1990 UV3	17794
1990 UW3	17794	1990 UY3	17794	1990 UZ3	17794	1990 UA4	17794
1990 UB4	17794	1990 UE4	17794	1990 UG4	17965	1990 UH4	17794
1990 UJ4	17794	1990 UK4	17794	1990 UL4	17794	1990 UN4	17794
1990 UO4	17794	1990 UP4	17794	1990 UQ4	17794	1990 UR4	17827
1990 US4	17794	1990 UX4	17794	1990 UY4	17794	1990 UZ4	17794
1990 UB5	17795	1990 UC5	17795	1990 UE5	17795	1990 UG5	17795
1990 UJ5	17795	1990 UK5	17795	1990 UL5	17795	1990 UM5	17795
1990 UN5	17795	1990 UO5	17795	1990 UQ5	17795	1990 VA	17643
1990 VB	17966	1990 VC	17643	1990 VE	17599	1990 VM	17405
1990 VZ	17459	1990 VC1	17643	1990 VE1	17643	1990 VG1	17827
1990 VH1	17405	1990 VK1	17459	1990 VL1	17405	1990 VM1	17405
1990 VN1	17405	1990 VO1	17405	1990 VQ1	17599	1990 VT1	17599
1990 VU1	17966	1990 VV1	17460	1990 VX1	17599	1990 VY1	17599
1990 VB2	17599	1990 VD2	17599	1990 VE2	17644	1990 VG2	17599
1990 VL2	17599	1990 VM2	17599	1990 VN2	17644	1990 VO2	17405
1990 VP2	17644	1990 VS2	17599	1990 VV2	17460	1990 VW2	17599
1990 VX2	17966	1990 VY2	17405	1990 VZ2	17600	1990 VA3	17405
1990 VD3	17600	1990 VE3	17600	1990 VF3	17644	1990 VG3	17460
1990 VH3	17600	1990 VJ3	17600	1990 VM3	17405	1990 VN3	17645
1990 VO3	17460	1990 VR3	17406	1990 VS3	17406	1990 VT3	17406
1990 VU3	17406	1990 VV3	17406	1990 VW3	17406	1990 VX3	17406
1990 VY3	17406	1990 VB4	17645	1990 VC4	17645	1990 VD4	17645
1990 VE4	17600	1990 VG4	17406	1990 VH4	17406	1990 VZ4	17600
1990 VS6	17600	1990 VW6	17600	1990 VY6	17646	1990 VZ6	17600
1990 VA7	17646	1990 VB7	17600	1990 VH7	17827	1990 VD8	17600
1990 WA	17646	1990 WC	17646	1990 WD	17600	1990 WE	17406

1990 WF	17600	1990 WK	17647	1990 WL	17647	1990 WM	17600
1990 WK2	17600	1990 WN2	17942	1990 WQ2	17600	1990 WR2	17600
1990 WS2	17647	1990 WW2	17828	1990 WZ2	17966	1990 WB3	17600
1990 WF3	17600	1990 WX3	17600	1990 WY3	17600	1990 WB4	17600
1990 XA	17647	1990 XB	17600	1990 XE	17648	1990 XF	17648
1990 XH	17648	1990 XJ	17828	1990 XK	17649	1990 XM	17600
1990 XN	17600	1990 XP	17828	1990 XU	17942	1990 XV	17942
1990 XZ	17600	1990 XB1	17649	1990 XD1	17600	1990 YB	17828
1990 YC	17795	1990 YD	17649	1990 YE	17829	1990 YF	17600
1990 YH	17829	1990 YJ	17829	1990 YK	17829	1990 YL	17830
1990 YM	17795	1990 YP	17795	1990 YQ	17650	1990 YR	17795
1990 YT	17650	1990 YW	17795	1990 YX	17966	1990 YY	17942
1990 YZ	17600	1991 AA	17830	1991 AB	17795	1991 AC	17830
1991 AD	17831	1991 AE	17831	1991 AF	17795	1991 AJ	17795
1991 AK	17967	1991 AL	17942	1991 AM	17967	1991 AN	17831
1991 AQ	17832	1991 AW	17967	1991 AA1	17832	1991 AB1	17942
1991 AF1	17832	1991 AH1	17942	1991 AJ1	17832	1991 AK1	17942
1991 AM1	17942	1991 AP1	17967	1991 AR1	17942	1991 AS1	17942
1991 AU1	17942	1991 AD2	17943	1991 AE2	17795	1991 AF2	17795
1991 AG2	17833	1991 AH2	17795	1991 AK2	17795	1991 AL2	17795
1991 AN2	17795	1991 AO2	17833	1991 AQ2	17795	1991 AR2	17795
1991 AS2	17795	1991 AT2	17795	1991 AU2	17795	1991 AV2	17795
1991 AW2	17795	1991 AX2	17795	1991 AY2	17795	1991 AA3	17795
1991 AC3	17795	1991 AF3	17943	1991 AH3	17943	1991 AJ3	17943
1991 AL3	17943	1991 AM3	17943	1991 AO3	17943	1991 AP3	17943
1991 BA	17833	1991 BB	17968	1991 BD	17943	1991 BE	17943
1991 BF	17943	1991 BJ	17833	1991 BK	17943	1991 BL	17795
1991 BN	17834	1991 BO	17968	1991 BP	17795	1991 BQ	17795
1991 BR	17834	1991 BT	17795	1991 BV	17943	1991 BW	17796
1991 BX	17796	1991 BY	17968	1991 BZ	17968	1991 BA1	17796
1991 BD1	17943	1991 BA2	17834	1991 BG2	17943	1991 BH2	17969
1991 BJ2	17943	1991 BK2	17796	1991 BM2	17796	1991 BP2	17943
1991 BQ2	17969	1991 CA	17834	1991 CB	17943	1991 CC	17969
1991 CD	17943	1991 CE	17969	1991 CF	17943	1991 CG	17943
1991 CK	17969	1991 CL	17943	1991 CM	17943	1991 CN	17943
1991 CO	17970	1991 CQ	17835	1991 CS	17970	1991 CU	17943
1991 CW	17943	1991 CX	17943	1991 CY	17943	1991 CZ	17943
1991 CA1	17943	1991 CB1	17970	1991 CC1	17943	1991 CG1	17943
1991 CJ1	17943	1991 CL1	17970	1991 CM1	17943	1991 CN1	17943
1991 CP1	17943	1991 CR1	17943	1991 CS1	17971	1991 CT1	17971
1991 CU1	17971	1991 CY1	17943	1991 CU2	17943	1991 CW2	17943
1991 CX2	17943	1991 CA3	17943	1991 CC3	17943	1991 CK3	17943
1991 CL3	17943	1991 DA	17971	1991 DB	17972	1991 DC	17972
1991 DD	17943	1991 DE	17943	1991 DF	17972	1991 DJ	17972
1991 DK	17943	1991 DO	17943	1991 DP	17943	1991 DS	17972
1991 DV	17973	1991 DG1	17943	1991 DJ1	17943	1991 DK1	17943
1991 DL1	17943	1991 EE	17973	2018 P-L	17218	2095 P-L	17973
2098 P-L	17461	2164 P-L	17461	2541 P-L	17650	2577 P-L	17835
2614 P-L	17973	2642 P-L	17651	3045 P-L	17836	3092 P-L	17974
3535 P-L	17461	4004 P-L	17461	4024 P-L	17651	4066 P-L	17462
4529 P-L	17974	4537 P-L	17219	4545 P-L	17836	4550 P-L	17462
4580 P-L	17219	4582 P-L	17974	4611 P-L	17462	4668 P-L	17651
4801 P-L	17974	4837 P-L	17975	4874 P-L	17462	6104 P-L	17975
6547 P-L	17975	6581 P-L	17219	6586 P-L	17975	6607 P-L	17463
6643 P-L	17651	6670 P-L	17976	6726 P-L	17219	6792 P-L	17463
7082 P-L	17652	7622 P-L	17463	9094 P-L	17652	9538 P-L	17976
1053 T-2	17652	1125 T-2	17652	1136 T-2	17976	1218 T-2	17220
1306 T-2	17652	1335 T-2	17463	1344 T-2	17220	1402 T-2	17976
2030 T-2	17977	2127 T-2	17977	2160 T-2	17464	2216 T-2	17653

2244	T-2	17977	2280	T-2	17977	3013	T-2	17836	3111	T-2	17978
3151	T-2	17653	3159	T-2	17653	3276	T-2	17654	3290	T-2	17464
4272	T-2	17978	5200	T-2	17978	2287	T-3	17654	2610	T-3	17220
3164	T-3	17654	4008	T-3	17221	4019	T-3	17978	4086	T-3	17464
4354	T-3	17836									

* * * * *

OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

046 Klet. Observers A. Mrkos and Z. Vavrova.
091 Aurec sur Loire. 0.41 f/4.8 reflector. Observer R. Chanal.
103 Ljubljana. 0.25 f/12 reflector + CCD. Observers B. Dintinjana and H. Mikuz. Reduction by R. H. McNaught. Longitude and Parallax 14.47, -296, -305 (see MPC 16637).
323 Perth Observatory, Bickley. 0.33-m astrograph. Observer G. Lowe.
372 Geisei. 0.60-m reflector. Observer T. Seki. In part from Orient. Astron. Assoc. Comet Bull.
400 Kitami. 0.20-m f/4.0 reflector. Observer K. Endate. Measured by K. Watanabe.
402 Dynic Astronomical Observatory. 0.25-m f/3.4 Schmidt. Observer A. Sugie.
413 Siding Spring. U.K. Schmidt and Uppsala Southern Schmidt. Observers S. M. Hughes and R. H. McNaught. Measured by R. H. McNaught.
474 Mt. John University Observatory. 0.6-m reflector. Observers A. C. Gilmore and P. M. Kilmartin.
503 Cambridge. Observer J. D. Shanklin.
540 Linz. Observers E. Meyer, E. Obermair and H. Raab.
553 Chorzow. 0.2-m f/5 astrograph. Observers I. Wlodarczyk, M. Szepanski, B. Pawicka and S. Janta. Measured by I. Wlodarczyk, B. Osiejuk, S. Janta and G. Damasiewicz.
568 Mauna Kea. 2.2-m reflector. Observer K. J. Meech. Reduced by B. Mueller and K. J. Meech.
657 Victoria. 0.25-m Schmidt and 0.5-m reflector + CCD. Observers J. B. Tatum, D. D. Balam and R. M. Robb.
675 Palomar. 0.46-m Schmidt. Observers E. Helin, K. Lawrence, D. H. Levy, P. Rose, C. S. Shoemaker and E. M. Shoemaker. Measured by T. M. King, K. Lawrence and P. Rose.
801 Oak Ridge Observatory. 1.5-m reflector + CCD. Observers R. E. McCrosky and C.-Y. Shao.
807 Cerro Tololo. Wide-field CCD camera. Observer W. Weller. Reduced by K. J. Meech and T. Farnham.
875 Yorii. Observers M. Arai and H. Mori.
887 Ojima. 0.30-m f/5.8 reflector. Observers T. Niijima and T. Urata.
896 Yatsugatake South Base Observatory. Observers Y. Kushida, R. Kushida and O. Muramatsu.
900 Kiryuu Observatory, Ohtsu. 0.16-m f/2.5 Schmidt. Observer Y. Ikari.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N Obs.
		Comet Shoemaker-Holt-Rodriquez (1989 V)				
/1989 V	1989	09 02.72374	09 27 40.51	-60 36 52.4	16.4N	474
/1989 V	1989	09 02.73144	09 27 41.24	-60 36 50.3		474
/1989 V	1989	12 05.62432	09 16 18.58	-64 55 13.4	16.9N	474
/1989 V	1990	03 23.37656	06 24 35.55	-34 49 44.7		474
/1989 V	1990	03 23.38918	06 24 35.70	-34 49 27.7		474

Periodic Comet Wild 2

/1989t	1991	03	13.40797	17	16	31.92	-19	03	45.0		801
/1989t	1991	03	13.41391	17	16	32.49	-19	03	45.2		801
/1989t	1991	03	16.39333	17	21	10.81	-19	04	06.4		801
/1989t	1991	03	16.40574	17	21	11.92	-19	04	06.8		801
/1989t	1991	03	17.40703	17	22	41.77	-19	04	04.7		801
/1989t	1991	03	17.40823	17	22	41.86	-19	04	04.7		801
/1989t	1991	04	11.44590	17	49	04.77	-18	45	07.0		657
/1989t	1991	04	11.46118	17	49	05.34	-18	45	05.4		657
/1989t	1991	04	12.46118	17	49	39.68	-18	43	58.1		657
/1989t	1991	04	12.49306	17	49	40.79	-18	43	56.3		657

Periodic Comet Kearns-Kwee

/1989u	1991	03	13.08594	06	54	29.27	+24	51	17.4		801
/1989u	1991	03	13.11122	06	54	30.53	+24	51	06.5		801
/1989u	1991	03	17.01311	06	58	04.52	+24	29	07.9		801
/1989u	1991	03	17.02942	06	58	05.58	+24	29	03.2		801
/1989u	1991	03	21.00380	07	02	02.04	+24	06	46.2		801
/1989u	1991	03	21.01907	07	02	02.94	+24	06	40.3		801

Comet Skorichenko-George (1989e1)

/1989e1	1991	03	08.52238	07	44	06.83	-40	38	29.3	18.4N	474
/1989e1	1991	03	08.56023	07	44	05.58	-40	38	13.7		474
/1989e1	1991	03	18.42142	07	40	23.60	-39	29	00.3	18 T	413

Comet Austin (1990c)

/1990c	1990	08	24.89861	20	12	24.22	-01	41	22.7		553
/1990c	1990	08	25.88231	19	59	01.95	-04	16	04.3		553
/1990c	1990	08	25.89273	19	58	53.16	-04	17	55.3		553
/1990c	1990	08	25.90315	19	58	44.64	-04	19	30.5		553
/1990c	1990	08	25.91495	19	58	34.82	-04	21	14.6		553
/1990c	1990	08	28.82258	19	19	01.40	-11	48	30.6		553
/1990c	1990	08	28.83647	19	18	50.36	-11	50	30.8		553
/1990c	1990	08	28.84897	19	18	40.25	-11	52	22.9		553
/1990c	1990	08	28.87258	19	18	21.37	-11	55	45.0		553
/1990c	1991	03	13.79340	08	43	46.95	-00	01	13.2		540
/1990c	1991	03	13.80451	08	43	45.73	-00	00	50.2		540
/1990c	1991	03	15.91667	08	40	00.30	+01	13	01.5		091
/1990c	1991	03	16.94097	08	38	18.21	+01	47	17.9		091
/1990c	1991	03	17.58970	08	37	16.23	+02	08	23.2		887
/1990c	1991	03	17.59387	08	37	15.87	+02	08	31.1	1	887
/1990c	1991	03	18.06491	08	36	32.18	+02	23	36.9		801
/1990c	1991	03	19.85909	08	33	54.07	+03	19	09.4		503
/1990c	1991	03	21.05509	08	32	16.10	+03	54	32.7		801
/1990c	1991	03	25.26215	08	27	15.74	+05	49	10.2		657
/1990c	1991	04	03.84321	08	19	32.12	+09	20	15.4		503
/1990c	1991	04	05.45839	08	18	39.38	+09	50	07.0		413
/1990c	1991	04	09.54062	08	16	54.09	+10	58	59.1		900
/1990c	1991	04	09.55174	08	16	53.70	+10	59	14.7		900

Comet McNaught-Hughes (1990g)

/1990g	1991	03	13.36354	15	58	43.15	+00	34	21.4		801
/1990g	1991	03	13.37402	15	58	42.35	+00	34	42.0		801
/1990g	1991	03	16.36713	15	54	42.29	+02	14	26.7		801
/1990g	1991	03	16.67569	15	54	16.16	+02	25	02.7	17 T	372
/1990g	1991	03	16.68333	15	54	15.44	+02	25	19.4		372
/1990g	1991	03	17.39929	15	53	13.25	+02	49	58.3		801
/1990g	1991	03	17.80955	15	52	36.87	+03	04	14.1	17 T	372
/1990g	1991	03	20.40550	15	48	35.31	+04	36	22.3		801

/1990g	1991	03	20.40846	15	48	35.00	+04	36	28.6		801
/1990g	1991	03	20.70764	15	48	05.98	+04	47	23.0	15.5T 2	413
			Comet Tsuchiya-Kiuchi (1990i)								
/1990i	1991	02	06.43530	02	28	51.59	-22	21	49.9	17.4N	474
/1990i	1991	02	06.45197	02	28	51.28	-22	21	29.2		474
			Periodic Comet Taylor								
/1990n	1991	03	13.07950	07	24	10.17	+35	31	38.6		801
/1990n	1991	03	13.10650	07	24	11.83	+35	31	43.7		801
/1990n	1991	03	17.03373	07	28	33.10	+35	43	18.4		801
/1990n	1991	03	17.04884	07	28	34.10	+35	43	19.1		801
/1990n	1991	03	21.00722	07	33	24.00	+35	51	21.9	3	801
/1990n	1991	03	21.02213	07	33	25.03	+35	51	23.6		801
			Periodic Comet Metcalf-Brewington								
/1991a	1991	01	14.82024	00	26	43.61	-04	49	32.6		503
			Comet Arai (1991b)								
/1991b	1991	02	05.53345	07	02	22.54	+61	23	49.1		875
/1991b	1991	02	05.52639	07	02	24.34	+61	23	34.1		875
/1991b	1991	02	10.53611	06	43	41.24	+64	09	12.6	14 T	875
/1991b	1991	02	20.50347	06	15	45.64	+67	27	37.0	14.5T	875
/1991b	1991	03	09.53194	06	00	07.24	+69	57	34.8	16 T	875
/1991b	1991	03	13.87778	06	01	47.23	+70	19	08.1	15.5T	540
/1991b	1991	03	13.92085	06	01	48.55	+70	19	18.7		540
			Periodic Comet Swift-Gehrels								
/1991c	1991	04	02.43576	02	46	20.82	+21	55	26.6	16 T	372
/1991c	1991	04	02.44132	02	46	22.01	+21	55	31.6		372
/1991c	1991	04	02.44722	02	46	23.12	+21	55	35.1		372
			Comet Shoemaker-Levy (1991d)								
/1991d	1991	02	16.21689	09	18	25.53	+03	06	42.6	4	801
/1991d	1991	03	07.85694	09	01	29.76	+08	03	57.5		046
/1991d	1991	03	07.87257	09	01	29.02	+08	04	14.2		046
/1991d	1991	03	09.21753	09	00	25.77	+08	24	56.8	14.9T	675
/1991d	1991	03	09.25069	09	00	24.17	+08	25	27.7		675
/1991d	1991	03	12.79198	08	57	43.59	+09	19	48.8		046
/1991d	1991	03	12.80339	08	57	42.98	+09	20	01.8		046
/1991d	1991	03	13.14067	08	57	28.25	+09	25	07.9		801
/1991d	1991	03	13.78602	08	57	00.33	+09	34	55.9		046
/1991d	1991	03	13.79736	08	56	59.74	+09	35	09.0		046
/1991d	1991	03	14.81061	08	56	16.50	+09	50	32.0		046
/1991d	1991	03	14.82051	08	56	16.11	+09	50	39.8		046
/1991d	1991	03	14.85764	08	56	14.45	+09	51	15.7	14.5T	540
/1991d	1991	03	14.90000	08	56	12.71	+09	51	53.0		540
/1991d	1991	03	16.81736	08	54	53.30	+10	20	54.4	14.5T	540
/1991d	1991	03	16.86668	08	54	51.33	+10	21	37.3		540
/1991d	1991	03	17.08203	08	54	42.63	+10	24	53.0		801
/1991d	1991	03	17.09006	08	54	42.29	+10	25	00.0		801
/1991d	1991	03	18.51597	08	53	45.81	+10	46	23.7	14.5T	402
/1991d	1991	03	18.52503	08	53	45.43	+10	46	30.5		402
/1991d	1991	03	21.05697	08	52	10.00	+11	24	03.4		801
/1991d	1991	03	21.08726	08	52	08.87	+11	24	30.0		801
/1991d	1991	03	21.95281	08	51	37.70	+11	37	12.1		540
/1991d	1991	03	21.97902	08	51	36.76	+11	37	35.5		540
/1991d	1991	04	03.87012	08	45	29.65	+14	37	38.1		503
/1991d	1991	04	05.46818	08	44	57.37	+14	58	36.5		413

/1991d	1991	04	13.82153	08	42	59.13	+16	42	34.9		540
/1991d	1991	04	13.84375	08	42	58.90	+16	42	49.7		540
			Periodic Comet Shoemaker-Levy 4								
/1991f	1991	03	09.34340	11	54	06.79	+06	04	36.0	16.8T	675
/1991f	1991	03	09.37917	11	54	05.05	+06	04	54.1		675
/1991f	1991	03	13.20866	11	51	14.93	+06	36	05.1		801
/1991f	1991	03	13.22346	11	51	14.24	+06	36	11.9		801
/1991f	1991	03	16.31994	11	48	55.24	+07	00	43.0		801
/1991f	1991	03	16.33069	11	48	54.71	+07	00	47.5		801
/1991f	1991	03	16.65313	11	48	40.49	+07	03	18.5	17 T	372
/1991f	1991	03	16.66493	11	48	39.98	+07	03	26.8		372
			Comet McNaught-Russell (1991g)								
/1991g	1991	03	11.59241	10	43	21.84	-16	49	27.2	17.6N	474
/1991g	1991	03	11.60699	10	43	21.11	-16	49	15.1		474
/1991g	1991	03	13.16270	10	41	52.45	-16	25	01.2		801
/1991g	1991	03	13.18434	10	41	51.19	-16	24	40.3		801
/1991g	1991	03	20.52552	10	35	07.95	-14	27	31.1	16.5T 5	413
/1991g	1991	03	21.12153	10	34	36.44	-14	17	56.3		801
/1991g	1991	03	21.13618	10	34	35.64	-14	17	40.6		801
/1991g	1991	04	05.48090	10	22	35.09	-10	09	43.8		413
			Periodic Comet Takamizawa								
/1991h	1991	03	17.34047	14	21	16.61	+01	51	01.0		801
/1991h	1991	03	17.36424	14	21	16.85	+01	51	11.8		801
/1991h	1991	03	20.32145	14	21	39.45	+02	14	03.2		801
/1991h	1991	03	20.38964	14	21	39.65	+02	14	36.2		801
/1991h	1991	04	12.47993	14	16	30.93	+05	38	28.1		657
			Periodic Comet Kowal 1								
/1991i	1991	04	03.48281	10	51	52.22	+11	05	12.9	18 T	372
/1991i	1991	04	03.49618	10	51	51.96	+11	05	14.8		372
			Periodic Comet Hartley 1								
/1991j	1991	03	12.48888	14	16	12.59	+12	46	06.8	16.5T 6	675
/1991j	1991	03	12.51893	14	16	11.92	+12	45	55.8	6	675
/1991j	1991	03	15.97577	14	14	51.89	+12	21	51.8		103
/1991j	1991	03	16.62587	14	14	33.28	+12	17	11.3		474
/1991j	1991	03	16.64763	14	14	32.67	+12	16	59.9		474
/1991j	1991	03	16.70903	14	14	30.59	+12	16	34.7		413
/1991j	1991	03	18.68472	14	13	26.98	+12	00	59.7	17.5T	402
/1991j	1991	03	18.73264	14	13	25.07	+12	00	38.4		402
/1991j	1991	03	20.76458	14	12	08.12	+11	43	42.0	17 T	372
/1991j	1991	04	11.32924	13	48	42.84	+07	17	49.8		657
/1991j	1991	04	12.31188	13	47	19.18	+07	01	27.2		657
/1991j	1991	04	12.42889	13	47	08.92	+06	59	29.4		657
			Periodic Comet Mrkos								
/1991k	1991	03	15.60486	12	48	02.40	-01	20	04.2	15.5N 7	400
/1991k	1991	03	15.61528	12	48	01.00	-01	20	38.7	7	400
/1991k	1991	03	15.62222	12	47	59.89	-01	21	11.2	7	400
/1991k	1991	03	15.63264	12	47	58.17	-01	21	48.0	7	400
/1991k	1991	03	16.73542	12	45	04.25	-02	32	45.3	14 T 7	896
/1991k	1991	03	16.95628	12	44	29.36	-02	47	07.9	15 T	046
/1991k	1991	03	16.97017	12	44	27.13	-02	48	00.8		046
/1991k	1991	03	17.03753	12	44	16.12	-02	52	20.0		046
/1991k	1991	03	17.04517	12	44	14.79	-02	52	52.2		046
/1991k	1991	03	17.60104	12	42	45.92	-03	28	58.7	14 T	896

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/1991k     1991 03 17.98406  12 41 43.03  -03 53 58.3           15  T   046
/1991k     1991 03 17.99170  12 41 41.72  -03 54 28.3                   046
/1991k     1991 03 18.02642  12 41 35.98  -03 56 38.7                   046
/1991k     1991 03 18.03406  12 41 34.62  -03 57 07.8                   046
/1991k     1991 03 18.24219  12 41 01.86  -04 10 45.1          14.0T    675
/1991k     1991 03 18.27500  12 40 56.11  -04 12 54.9                   675
/1991k     1991 03 18.54028  12 40 11.89  -04 29 53.9           15  T   413
/1991k     1991 03 18.62014  12 39 59.01  -04 35 07.3           13  T   323
/1991k     1991 03 18.88368  12 39 13.86  -04 52 14.0                   323
/1991k     1991 03 19.55400  12 37 21.92  -05 36 31.2              8 474
/1991k     1991 03 19.56350  12 37 20.25  -05 37 08.3              8 474
/1991k     1991 03 19.63138  12 37 08.40  -05 41 36.4          15.1N 8 474
/1991k     1991 03 19.63444  12 37 07.86  -05 41 48.7              8 474
/1991k     1991 03 19.67951  12 37 00.95  -05 44 49.9                323
/1991k     1991 03 19.70041  12 36 56.43  -05 46 10.8                413
/1991k     1991 03 20.52049  12 34 38.07  -06 40 19.2          14.8N    413
/1991k     1991 03 20.63646  12 34 17.6   -06 48 21           13.5T    372
/1991k     1991 03 20.75556  12 33 56.2   -06 56 13                    372
/1991k     1991 03 20.78472  12 33 50.82  -06 57 45.8              9 413
/1991k     1991 03 21.18954  12 32 42.12  -07 24 55.4                801
/1991k     1991 03 21.19256  12 32 41.56  -07 25 07.9                801
/1991k     1991 03 21.26569  12 32 29.34  -07 29 59.4                657
/1991k     1991 03 21.30528  12 32 22.08  -07 32 45.1                657
/1991k     1991 03 21.43669  12 32 00.06  -07 40 51.2                413
/1991k     1991 03 21.51002  12 31 46.44  -07 45 37.7          15.6N    474
/1991k     1991 03 21.51963  12 31 44.76  -07 46 16.0                   474
/1991k     1991 03 21.73461  12 31 06.22  -08 00 33.0                   413
/1991k     1991 03 21.99249  12 30 21.78  -08 18 00.8                   046
/1991k     1991 03 21.99874  12 30 20.61  -08 18 27.2                   046
/1991k     1991 03 22.01263  12 30 18.09  -08 19 21.1                   046
/1991k     1991 03 22.02096  12 30 16.72  -08 19 52.4                   046
/1991k     1991 03 22.54942  12 28 44.36  -08 54 20.0                   413
/1991k     1991 03 23.59271  12 25 39.09  -10 03 23.1           13.5T    372
/1991k     1991 03 23.59861  12 25 37.97  -10 03 47.4                   372
/1991k     1991 03 23.63819  12 25 30.71  -10 06 23.6                   372
/1991k     1991 03 23.76684  12 25 06.73  -10 14 48.0                   372
/1991k     1991 04 02.40596  11 56 05.09  -20 09 37.5                   413
/1991k     1991 04 03.42442  11 53 05.49  -21 06 01.4                   413
/1991k     1991 04 03.57951  11 52 37.36  -21 14 48.9           14  T   372
/1991k     1991 04 03.58472  11 52 36.41  -21 15 06.1                   372
/1991k     1991 04 03.58889  11 52 35.67  -21 15 19.5                   372
/1991k     1991 04 05.50822  11 47 05.19  -22 56 27.1                   413
/1991k     1991 04 08.58299  11 38 38.23  -25 26 57.0           16  T   372

                Comet Helin-Lawrence (1991l)
/1991l     1991 03 17.40191  13 32 10.92  +08 52 13.4           15  T A 675
/1991l     1991 03 17.42483  13 32 08.94  +08 52 15.7                 A 675
/1991l     1991 03 19.59856  13 29 26.70  +08 56 30.0          15.4N    474
/1991l     1991 03 19.61708  13 29 25.33  +08 56 32.1                   474
/1991l     1991 03 19.69248  13 29 19.55  +08 56 41.2           15  T   413
/1991l     1991 03 19.72083  13 29 17.81  +08 56 41.3                   323
/1991l     1991 03 20.64549  13 28 06.49  +08 58 20.5           15  T   372
/1991l     1991 03 20.65486  13 28 05.85  +08 58 23.6                   372
/1991l     1991 03 20.70041  13 28 02.18  +08 58 31.0           14.5T    413
/1991l     1991 03 20.77361  13 27 56.49  +08 58 34.8                   372
/1991l     1991 03 21.18516  13 27 24.57  +08 59 20.0                   801
/1991l     1991 03 21.19804  13 27 23.56  +08 59 21.4                   801
/1991l     1991 03 21.23375  13 27 21.07  +08 59 24.1                   657
/1991l     1991 03 21.25597  13 27 19.20  +08 59 27.5                   657
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/1991l	1991	03	21.53387	13	26	57.16	+09	00	00.9	15.5	N	474
/1991l	1991	03	21.54567	13	26	56.29	+09	00	02.7			474
/1991l	1991	03	23.60451	13	24	11.92	+09	03	30.6	14.5	T	372
/1991l	1991	03	23.61319	13	24	11.15	+09	03	30.6			372
/1991l	1991	03	23.77222	13	23	58.09	+09	03	46.7			372
/1991l	1991	04	03.57292	13	08	16.55	+09	17	21.4	15	T	372
/1991l	1991	04	03.77552	13	07	57.62	+09	17	30.6			372
/1991l	1991	04	05.50532	13	05	16.82	+09	18	44.0			413
/1991l	1991	04	09.69653	12	58	38.33	+09	20	04.5	16	T	372
/1991l	1991	04	12.87465	12	53	30.89	+09	19	38.3		B	540
/1991l	1991	04	12.90660	12	53	27.62	+09	19	38.1		B	540
			Periodic Comet Giacobini-Zinner									
/1991m	1991	02	16.53353	15	45	02.08	-03	48	44.2	22	N C	568
/1991m	1991	02	16.55584	15	45	02.65	-03	48	37.9		C	568
/1991m	1991	02	16.57802	15	45	03.18	-03	48	31.7		C	568
/1991m	1991	02	16.59861	15	45	03.66	-03	48	24.7		C	568
/1991m	1991	03	14.38655	15	51	29.11	-01	06	39.4		C	807
/1991m	1991	03	15.36367	15	51	31.10	-00	59	06.9		C	807

Note 1: poor guiding. 2: moderately condensed. 3: weak, diffuse image. 4: correction to MPC 17856. 5: strongly condensed. 6: tail > 1 long in p.a. 285 . 7: prediscovery observation. 8: no obvious coma on 30-min long-focus exposure. 9: extremely condensed, basically condensed, very small coma. A: comet image extremely dense, tail fanning to north-northeast. B: tail 3’ long in p.a. 50 . C: stellar appearance.

* * * * *

OBSERVATIONS OF MINOR PLANETS.

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

A earlier approximate position inferior
a sense of motion ambiguous
B black or dark plate
b bad seeing
C correction to earlier position
c crowded star field
D declination uncertain
d diffuse image
E at or near edge of plate
F faint image
f involved with emulsion or plate flaw
G poor guiding
g no guiding
I involved with star
i inkdot measured
M measurement difficult
N near edge of plate, measurement uncertain
O image out of focus
o plate measured in one direction only
P position uncertain
p poor image
R right ascension uncertain
r poor distribution of reference stars

S poor sky
s streaked image
T time uncertain
t trailed image
U uncertain image
u unconfirmed image
V very faint image
W weak image
w weak solution

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
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							
1	1986 01	12.06979	11 25 50.77	+18 19 55.8			006
1	1986 01	12.07813	11 25 50.88	+18 19 58.7			006
1	1986 01	12.08264	11 25 50.92	+18 20 00.0			006
1	1986 02	06.12778	11 22 25.58	+21 15 06.7			006
1	1986 02	06.13194	11 22 25.48	+21 15 08.7			006
1	1986 02	06.13611	11 22 25.35	+21 15 10.6			006
1	1986 03	26.07257	10 45 37.25	+25 27 42.5			006
1	1986 03	26.07917	10 45 36.99	+25 27 42.4			006
3	1986 07	04.89444	16 12 15.68	-03 34 39.1			006
3	1986 07	04.90174	16 12 15.44	-03 34 40.0			006
3	1986 07	04.90903	16 12 15.24	-03 34 40.9			006
3	1986 07	08.95972	16 10 23.13	-03 43 59.9			006
3	1986 07	08.96736	16 10 22.92	-03 44 01.1			006
3	1986 07	08.97500	16 10 22.72	-03 44 02.3			006
4	1986 12	12.79479	00 28 45.97	-06 02 17.5			006
4	1986 12	12.80174	00 28 46.16	-06 02 14.8			006
4	1986 12	12.80833	00 28 46.36	-06 02 11.8			006
4	1986 12	20.87361	00 33 27.98	-05 00 34.3			006
4	1986 12	20.87986	00 33 28.21	-05 00 31.3			006
4	1986 12	20.88611	00 33 28.47	-05 00 28.3			006
4	1986 12	22.82118	00 34 47.35	-04 44 48.1			006
4	1986 12	22.82743	00 34 47.61	-04 44 44.9			006
4	1986 12	22.83368	00 34 47.86	-04 44 41.8			006
6	1986 04	13.89132	13 09 52.06	+12 51 14.0			006
6	1986 04	13.89896	13 09 51.67	+12 51 16.9			006
6	1986 04	13.90486	13 09 51.37	+12 51 19.0			006
8	1986 04	02.07257	13 09 04.56	+03 07 55.3			006
8	1986 04	02.07986	13 09 04.13	+03 07 58.1			006
8	1986 04	02.08646	13 09 03.74	+03 08 01.0			006
9	1986 12	20.95521	03 53 23.25	+21 06 43.7			006
9	1986 12	20.96181	03 53 22.97	+21 06 44.2			006
9	1986 12	20.96806	03 53 22.66	+21 06 44.7			006
9	1986 12	31.76875	03 47 42.49	+21 23 40.3			006
9	1986 12	31.77708	03 47 42.31	+21 23 41.4			006
9	1986 12	31.78542	03 47 42.13	+21 23 42.4			006
15	1986 01	11.86563	01 27 52.85	+22 04 28.0			006
15	1986 01	11.87083	01 27 53.28	+22 04 28.0			006
15	1986 01	11.87537	01 27 53.64	+22 04 27.9			006
16	1986 01	04.85903	04 27 09.17	+17 25 43.6			006
16	1986 01	04.86424	04 27 09.01	+17 25 43.7			006
16	1986 01	04.87014	04 27 08.82	+17 25 44.0			006
18	1986 02	12.97778	06 22 19.02	+14 15 45.4			006

18	1986	02	12.98576	06	22	19.00	+14	15	49.1	006
19	1986	12	06.08021	03	29	55.61	+17	23	39.4	006
19	1986	12	06.08542	03	29	55.36	+17	23	38.2	006
19	1986	12	06.09063	03	29	55.11	+17	23	37.2	006
19	1986	12	11.80590	03	25	55.67	+17	06	21.7	006
19	1986	12	11.81215	03	25	55.43	+17	06	20.9	006
19	1986	12	11.81840	03	25	55.18	+17	06	19.8	006
23	1986	04	14.12431	15	06	34.04	-09	09	11.3	006
23	1986	04	14.13160	15	06	33.67	-09	09	10.9	006
27	1986	11	01.07396	02	40	59.36	+13	02	22.5	006
27	1986	11	01.08299	02	40	58.79	+13	02	20.3	006
27	1986	11	04.94583	02	37	08.15	+12	46	31.6	006
27	1986	11	04.95243	02	37	07.74	+12	46	30.1	006
27	1986	11	04.95833	02	37	07.38	+12	46	28.7	006
27	1986	11	28.93125	02	16	22.52	+11	30	55.7	006
27	1986	11	28.93793	02	16	22.25	+11	30	55.1	006
27	1986	11	28.94479	02	16	22.01	+11	30	54.4	006
28	1986	11	01.00764	00	48	07.17	-06	59	44.9	006
28	1986	11	01.01632	00	48	06.86	-06	59	46.5	006
28	1986	11	01.02465	00	48	06.53	-06	59	48.1	006
29	1986	08	14.14201	22	52	46.92	-11	27	39.1	006
29	1986	08	14.14826	22	52	46.61	-11	27	40.2	006
29	1986	08	14.15522	22	52	46.28	-11	27	41.4	006
29	1986	08	17.07535	22	50	25.91	-11	36	22.2	006
29	1986	08	17.08229	22	50	25.53	-11	36	23.6	006
29	1986	08	17.08924	22	50	25.19	-11	36	24.5	006
29	1986	10	06.83542	22	10	18.97	-13	01	59.1	006
29	1986	10	06.84306	22	10	18.77	-13	01	58.7	006
29	1986	10	06.85069	22	10	18.60	-13	01	58.0	006
29	1986	10	07.87083	22	09	58.37	-13	00	39.9	006
29	1986	10	07.87882	22	09	58.21	-13	00	39.4	006
29	1986	10	07.88750	22	09	58.01	-13	00	38.5	006
29	1986	11	18.83536	22	20	36.10	-10	13	19.8	006
29	1986	11	18.84231	22	20	36.40	-10	13	17.1	006
29	1986	11	18.84925	22	20	36.71	-10	13	14.5	006
37	1986	04	01.99340	11	32	48.30	+03	39	28.9	006
37	1986	04	02.00139	11	32	47.94	+03	39	30.5	006
37	1986	04	02.00868	11	32	47.58	+03	39	32.3	006
42	1986	11	05.80000	21	51	17.79	-24	35	11.4	006
42	1986	11	05.80694	21	51	18.40	-24	35	06.8	006
42	1986	11	05.81389	21	51	18.98	-24	35	02.2	006
44	1986	07	09.00313	21	03	46.90	-16	03	01.5	006
44	1986	07	09.01215	21	03	46.53	-16	03	03.6	006
44	1986	07	09.02049	21	03	46.18	-16	03	05.7	006
52	1986	10	27.86458	22	53	09.45	-14	23	11.1	006
52	1986	10	27.87431	22	53	09.39	-14	23	10.9	006
52	1986	10	27.88160	22	53	09.33	-14	23	11.0	006
88	1986	07	09.09861	22	43	27.09	-02	22	53.5	006
88	1986	07	09.10903	22	43	27.17	-02	22	50.5	006
88	1986	08	14.06493	22	31	12.04	-01	24	24.4	006
88	1986	08	14.10903	22	31	09.99	-01	24	28.4	006
88	1986	08	14.11632	22	31	09.67	-01	24	29.2	006
88	1986	08	17.02604	22	28	57.88	-01	29	35.3	006
88	1986	08	17.03299	22	28	57.55	-01	29	36.2	006
88	1986	08	17.03993	22	28	57.22	-01	29	37.0	006
88	1986	09	01.94931	22	15	57.27	-02	16	40.8	006
88	1986	09	01.95764	22	15	56.83	-02	16	42.6	006
88	1986	09	01.96597	22	15	56.45	-02	16	44.7	006
88	1986	09	04.89514	22	13	35.83	-02	27	51.3	006

88		1986	09	04.90208	22	13	35.51	-02	27	53.0	006
88		1986	09	04.90903	22	13	35.16	-02	27	54.5	006
88		1986	10	07.94965	21	58	17.13	-04	21	53.1	006
88		1986	10	07.96111	21	58	17.09	-04	21	54.6	006
89		1986	02	09.95139	05	24	11.62	+34	06	55.3	006
89		1986	02	09.96007	05	24	11.71	+34	06	50.9	006
89		1986	02	09.96910	05	24	11.80	+34	06	46.3	006
97		1986	04	13.94514	13	05	26.18	+04	37	07.6	006
97		1986	04	13.95521	13	05	25.69	+04	37	11.7	006
97		1986	04	13.96389	13	05	25.27	+04	37	15.2	006
196		1986	11	24.91146	02	13	06.36	+07	59	13.6	006
196		1986	11	24.91944	02	13	06.06	+07	59	13.4	006
196		1986	11	24.92708	02	13	05.77	+07	59	13.3	006
196		1986	12	01.89097	02	09	13.00	+07	58	14.7	006
196		1986	12	01.89896	02	09	12.74	+07	58	15.0	006
196		1986	12	01.90625	02	09	12.52	+07	58	15.0	006
216		1986	01	17.92986	03	47	37.35	+06	41	56.2	006
216		1986	01	26.82778	03	52	45.31	+07	08	56.5	006
216		1986	01	26.83368	03	52	45.55	+07	08	57.7	006
216		1986	02	05.89585	04	00	47.68	+07	48	54.8	006
216		1986	02	05.90382	04	00	48.11	+07	48	57.5	006
216		1986	02	05.91111	04	00	48.46	+07	48	58.8	006
216		1986	02	05.91875	04	00	48.89	+07	49	00.9	006
216		1986	02	05.92604	04	00	49.28	+07	49	02.7	006
216		1986	02	05.93333	04	00	49.68	+07	49	04.6	006
354		1986	01	11.93785	03	25	50.81	-04	30	16.4	006
354		1986	01	11.94444	03	25	50.82	-04	30	12.8	006
354		1986	01	11.95035	03	25	50.80	-04	30	09.5	006
511		1986	02	06.04688	05	52	45.18	+22	17	51.9	006
511		1986	02	06.05347	05	52	45.12	+22	17	54.0	006
511		1986	02	06.05972	05	52	45.05	+22	17	56.3	006

017 Hoher List
E. W. Elst, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180 Brussels, Belgium

1		1991	04	11.96181	14	03	16.61	+02	19	09.2	017
1		1991	04	11.99861	14	03	14.65	+02	19	16.8	7.0 017
1		1991	04	13.00590	14	02	22.70	+02	22	20.2	017
458		1991	04	11.96181	14	13	20.60	+04	11	48.9	017
458		1991	04	11.99861	14	13	19.31	+04	12	00.7	17.8 017
458		1991	04	13.00590	14	12	36.82	+04	17	27.9	017
1679		1991	04	11.96181	13	56	13.42	+01	54	04.1	017
1679		1991	04	11.99861	13	56	11.93	+01	54	25.0	17.5 017
1679		1991	04	13.00590	13	55	32.82	+02	04	34.4	017
1754		1991	04	11.96181	13	53	08.98	+00	25	39.2	017
1754		1991	04	11.99861	13	53	07.66	+00	25	54.1	17.5 017
1754		1991	04	13.00590	13	52	32.53	+00	31	47.3	017

033 Tautenburg
F. Borngen, Karl Schwarzschild Observatorium, O-6901 Tautenburg, Federal Republic of Germany
1.3-m Schmidt telescope
PPM

1949	PN	1991	01	17.05139	10	02	18.53	+14	16	05.8	18.3 033
1949	PN	1991	01	17.13472	10	02	14.98	+14	16	12.1	033
1949	PN	1991	01	18.04306	10	01	37.25	+14	17	16.9	033
1971	BD3	1991	01	14.78333	03	37	44.62	+18	27	13.6	17.3 033
1971	BD3	1991	01	14.83194	03	37	45.67	+18	27	12.6	033
1978	UL2	1991	01	15.06806	09	11	21.09	+16	07	40.3	033

1978	UL2		1991	01	15.11667	09	11	18.84	+16	07	51.2	033
1978	UL2		1991	01	17.02639	09	09	56.24	+16	15	21.1	18.5 033
1980	TH3		1991	01	14.75694	03	26	29.63	+20	33	21.8	18.4 033
1980	TH3		1991	01	15.89861	03	26	36.60	+20	33	07.2	033
1980	TH3		1991	01	16.75278	03	26	43.34	+20	32	59.9	033
1980	TH3		1991	01	18.75069	03	27	03.22	+20	33	00.4	033
1981	EX6		1991	01	18.92986	06	34	56.95	+43	23	20.9	18.5 033
1981	EX6		1991	01	18.97708	06	34	54.13	+43	23	09.3	033
1981	EX6		1991	01	19.00278	06	34	52.53	+43	23	02.0	033
1989	TC1		1991	01	15.06806	09	16	14.71	+14	57	40.0	033
1989	TC1		1991	01	15.11667	09	16	12.27	+14	57	50.1	033
1989	TC1		1991	01	16.14722	09	15	21.55	+15	01	26.2	033
1989	TC1		1991	01	17.02639	09	14	37.65	+15	04	34.9	18.7 033
1989	UE7		1991	01	15.06806	09	17	43.89	+14	31	16.2	033
1989	UE7		1991	01	15.11667	09	17	41.84	+14	31	27.0	033
1989	UE7		1991	01	16.14722	09	16	59.19	+14	34	45.4	033
1989	UE7		1991	01	17.02639	09	16	22.33	+14	37	38.0	19.2 033
1990	VC4		1991	01	14.78333	03	37	38.32	+18	24	56.7	16.9 033
1990	VC4		1991	01	14.83194	03	37	38.71	+18	25	09.8	033
1991	BZ2		1991	01	15.06806	09	12	00.24	+13	28	26.6	033
1991	BZ2		1991	01	15.11667	09	11	57.78	+13	28	34.0	033
1991	BZ2		1991	01	16.14722	09	11	07.34	+13	30	51.7	033
1991	BZ2	*	1991	01	17.02639	09	10	23.23	+13	32	57.2	18.2 033
1991	BA3		1991	01	15.06806	09	12	37.95	+13	19	21.7	033
1991	BA3		1991	01	15.11667	09	12	35.92	+13	19	37.0	033
1991	BA3		1991	01	16.14722	09	11	55.24	+13	25	11.1	033
1991	BA3	*	1991	01	17.02639	09	11	19.90	+13	30	01.9	19.2 033
1991	BB3		1991	01	15.06806	09	13	47.99	+15	36	21.0	033
1991	BB3		1991	01	15.11667	09	13	45.66	+15	36	27.7	033
1991	BB3		1991	01	16.14722	09	12	57.98	+15	39	03.0	033
1991	BB3	*	1991	01	17.02639	09	12	16.38	+15	41	21.3	18.6 033
1991	BC3		1991	01	15.06806	09	15	56.96	+15	11	02.5	033
1991	BC3		1991	01	15.11667	09	15	54.21	+15	10	57.8	033
1991	BC3		1991	01	16.14722	09	14	59.73	+15	08	00.1	033
1991	BC3	*	1991	01	17.02639	09	14	12.31	+15	05	34.1	19.0 033
1991	BD3		1991	01	15.06806	09	19	49.75	+15	37	38.3	033
1991	BD3		1991	01	15.11667	09	19	47.56	+15	37	46.9	033
1991	BD3		1991	01	16.14722	09	19	03.28	+15	40	47.3	033
1991	BD3	*	1991	01	17.02639	09	18	24.73	+15	43	26.3	18.9 033
1991	BE3		1991	01	15.06806	09	22	46.34	+14	43	34.7	033
1991	BE3		1991	01	15.11667	09	22	43.90	+14	43	39.6	033
1991	BE3		1991	01	16.14722	09	21	51.11	+14	44	59.1	033
1991	BE3	*	1991	01	17.02639	09	21	05.12	+14	46	11.0	19.1 033
263			1991	01	15.06806	09	20	54.25	+13	30	52.8	033
263			1991	01	15.11667	09	20	52.16	+13	31	01.9	033
263			1991	01	16.14722	09	20	08.72	+13	34	06.5	033
263			1991	01	17.02639	09	19	30.98	+13	36	48.6	15.9 033
641			1991	01	14.75694	03	21	57.15	+20	12	24.3	16.6 033
641			1991	01	15.89861	03	22	39.07	+20	15	03.8	033
641			1991	01	16.75278	03	23	12.71	+20	17	09.6	033
641			1991	01	18.75069	03	24	36.32	+20	22	19.2	033
847			1991	01	14.75694	03	29	02.77	+19	55	39.6	16.0 033
847			1991	01	15.89861	03	29	18.24	+19	55	12.0	033
847			1991	01	16.75278	03	29	31.52	+19	54	57.2	033
847			1991	01	18.75069	03	30	06.94	+19	54	40.2	033
993			1991	01	15.06806	09	10	45.10	+13	57	58.4	033
993			1991	01	15.11667	09	10	42.92	+13	58	08.4	033
993			1991	01	17.02639	09	09	18.58	+14	04	25.3	16.9 033
1054			1991	01	14.78333	03	46	23.36	+17	18	38.3	14.5 033

1054		1991	01	14.83194	03	46	23.32	+17	18	50.9		033
1340		1991	01	14.75694	03	30	01.96	+19	30	43.8	17.4	033
1340		1991	01	15.89861	03	29	57.33	+19	30	18.9		033
1340		1991	01	16.75278	03	29	55.13	+19	30	04.5		033
1340		1991	01	18.75069	03	29	53.44	+19	29	42.6		033
1635		1991	01	15.06806	09	12	37.91	+13	53	29.5		033
1635		1991	01	15.11667	09	12	35.72	+13	53	38.6		033
1635		1991	01	16.14722	09	11	50.95	+13	56	58.1		033
1635		1991	01	17.02639	09	11	12.10	+13	59	52.7	16.7	033
1779		1991	01	15.06806	09	15	51.20	+14	39	21.4		033
1779		1991	01	15.11667	09	15	48.53	+14	39	31.5		033
1779		1991	01	16.14722	09	14	53.80	+14	43	08.2		033
1779		1991	01	17.02639	09	14	06.17	+14	46	19.0	18.7	033
1835		1991	01	14.75694	03	25	45.06	+19	40	05.7	17.1	033
1835		1991	01	15.89861	03	25	58.24	+19	40	16.0		033
1835		1991	01	16.75278	03	26	09.78	+19	40	29.1		033
1835		1991	01	18.75069	03	26	40.89	+19	41	16.3		033
2349		1991	01	15.06806	09	13	10.96	+14	20	16.7		033
2349		1991	01	15.11667	09	13	08.85	+14	20	40.1		033
2349		1991	01	16.14722	09	12	24.77	+14	28	50.0		033
2349		1991	01	17.02639	09	11	46.55	+14	35	53.6	17.3	033
2467		1991	01	15.06806	09	18	27.95	+15	46	03.1		033
2467		1991	01	15.11667	09	18	25.07	+15	46	09.8		033
2467		1991	01	16.14722	09	17	26.07	+15	48	20.8		033
2467		1991	01	17.02639	09	16	34.87	+15	50	17.4	17.6	033
3131		1991	01	14.75694	03	20	30.76	+19	44	09.6	17.9	033
3131		1991	01	15.89861	03	20	36.07	+19	44	40.1		033
3131		1991	01	16.75278	03	20	41.62	+19	45	07.6		033
3131		1991	01	18.75069	03	20	58.29	+19	46	25.7		033
3345		1991	01	15.06806	09	22	57.13	+13	56	43.5		033
3345		1991	01	15.11667	09	22	54.28	+13	56	21.3		033
3345		1991	01	16.14722	09	21	54.87	+13	48	15.2		033
3345		1991	01	17.02639	09	21	02.99	+13	41	22.9	15.2	033

046 Klet
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Svedska 8, C-15000 Prague 5, Czechoslovakia
Observers A. Mrkos, Z. Vavrova
0.6-m Maksutov reflector

1979	SN	1991	03	14.95263	12	04	46.71	-06	24	30.3		046
1979	SN	1991	03	14.96536	12	04	45.81	-06	24	30.6		046
1979	SN	1991	03	15.96045	12	03	48.43	-06	23	48.4		046
1979	SN	1991	03	15.97469	12	03	47.62	-06	23	47.7		046
1980	GO	1991	03	13.92942	11	19	25.12	+05	32	22.2		046
1980	GO	1991	03	13.94354	11	19	24.18	+05	32	25.7		046
1980	GO	1991	03	14.85182	11	18	44.02	+05	37	13.7		046
1980	GO	1991	03	14.86594	11	18	43.20	+05	37	18.5		046
1986	AA2	1991	03	14.92138	11	42	31.81	+10	18	09.4		046
1986	AA2	1991	03	14.93405	11	42	31.12	+10	18	15.0		046
1986	AA2	1991	03	15.91045	11	41	43.10	+10	24	38.5		046
1986	AA2	1991	03	15.92451	11	41	42.38	+10	24	42.9		046
1989	UR4	1991	03	16.95628	12	41	42.62	-00	53	11.6		046
1989	UR4	1991	03	16.97052	12	41	41.82	-00	53	03.3		046
1990	VF7	1990	10	24.92905	01	56	26.16	+16	40	59.2	16.6	046
1990	VF7	1990	10	24.94317	01	56	25.18	+16	40	56.1		046
1990	WL5	1990	11	10.91837	03	02	18.41	+13	22	24.9	17.0	046
1990	WL5	1990	11	10.93243	03	02	17.53	+13	22	21.2		046
1991	DV	1991	03	16.87851	11	17	42.25	+09	47	02.9	16.7	046
1991	DV	1991	03	16.89257	11	17	41.41	+09	47	10.6		046

1991	EP1	*	1991	03	12.90500	11	01	38.05	+03	06	47.7	16.9	046
1991	EP1		1991	03	12.91912	11	01	37.14	+03	06	49.3		046
1991	EP1		1991	03	13.89256	11	00	38.80	+03	09	27.4		046
1991	EP1		1991	03	13.90668	11	00	37.93	+03	09	28.8		046
1991	EP1		1991	03	14.88671	10	59	39.70	+03	12	09.3		046
1991	EP1		1991	03	14.90083	10	59	39.03	+03	12	11.7		046
1991	EQ1	*	1991	03	13.92942	11	23	32.64	+06	03	38.2		046
1991	EQ1		1991	03	13.94354	11	23	31.98	+06	03	41.1		046
1991	EQ1		1991	03	14.85182	11	22	43.85	+06	06	54.8		046
1991	EQ1		1991	03	14.86594	11	22	43.16	+06	06	58.5		046
1991	ER1	*	1991	03	14.92138	11	45	23.08	+10	17	13.2	16.8	046
1991	ER1		1991	03	14.93405	11	45	22.30	+10	17	16.0		046
1991	ER1		1991	03	15.91045	11	44	58.21	+10	24	30.3		046
1991	ER1		1991	03	15.92451	11	44	57.54	+10	24	34.4		046
1991	FY		1991	03	15.91045	11	40	05.12	+11	32	07.2	16.7	046
1991	FY		1991	03	15.92451	11	40	04.26	+11	32	16.2		046
2604	P-L		1991	03	13.92942	11	21	45.17	+05	58	25.8		046
2604	P-L		1991	03	13.94354	11	21	44.17	+05	58	30.9		046
2604	P-L		1991	03	14.85182	11	20	49.06	+06	02	26.3		046
2604	P-L		1991	03	14.86594	11	20	48.18	+06	02	28.6		046
79			1991	03	12.90500	11	01	40.42	+01	13	32.8		046
79			1991	03	12.91912	11	01	39.64	+01	13	39.2		046
79			1991	03	13.89256	11	00	48.20	+01	20	47.2		046
79			1991	03	13.90668	11	00	47.36	+01	20	53.6		046
79			1991	03	14.88671	10	59	55.97	+01	28	05.0		046
79			1991	03	14.90083	10	59	55.24	+01	28	11.6		046
178			1991	03	12.94429	11	23	31.86	+06	57	35.8		046
178			1991	03	12.97404	11	23	30.15	+06	57	45.0		046
178			1991	03	13.92942	11	22	36.90	+07	02	57.3		046
178			1991	03	13.94354	11	22	36.09	+07	03	02.2		046
178			1991	03	14.85182	11	21	45.61	+07	07	55.5		046
178			1991	03	14.86594	11	21	44.85	+07	08	00.1		046
178			1991	03	16.87851	11	19	53.33	+07	18	47.5		046
178			1991	03	16.89257	11	19	52.50	+07	18	51.3		046
190			1991	03	12.94429	11	20	16.40	+03	25	05.4		046
190			1991	03	12.97404	11	20	15.27	+03	25	14.7		046
190			1991	03	13.92942	11	19	40.65	+03	30	11.1		046
190			1991	03	13.94354	11	19	40.07	+03	30	16.2		046
204			1991	03	14.95263	12	00	47.54	-06	30	57.6		046
204			1991	03	14.96536	12	00	46.94	-06	30	52.9		046
204			1991	03	15.96045	12	00	00.93	-06	23	12.6		046
204			1991	03	15.97469	12	00	00.25	-06	23	05.7		046
343			1991	03	16.87851	11	19	15.93	+08	38	45.1		046
343			1991	03	16.89257	11	19	15.13	+08	38	49.2		046
421			1991	03	12.90500	11	06	04.77	+01	39	27.2		046
421			1991	03	12.91912	11	06	04.19	+01	39	33.8		046
421			1991	03	13.89256	11	05	14.69	+01	47	12.4		046
421			1991	03	13.90668	11	05	13.86	+01	47	19.5		046
421			1991	03	14.88671	11	04	24.30	+01	55	01.5		046
421			1991	03	14.90083	11	04	23.48	+01	55	09.3		046
425			1991	03	16.95628	12	50	23.60	+00	12	12.0		046
425			1991	03	16.97052	12	50	22.89	+00	12	15.0		046
491			1991	03	16.95628	12	50	10.28	+00	36	07.8		046
491			1991	03	16.97052	12	50	09.75	+00	36	14.7		046
497			1991	03	12.94429	11	23	49.14	+05	55	58.5		046
497			1991	03	12.97404	11	23	47.68	+05	56	04.4		046
497			1991	03	13.92942	11	23	01.67	+06	00	00.2		046
497			1991	03	13.94354	11	23	01.12	+06	00	10.0		046
497			1991	03	14.85182	11	22	17.76	+06	03	55.7		046

497	1991	03	14.86594	11	22	17.04	+06	03	59.3		046
533	1991	03	12.90500	11	01	38.39	+03	49	41.3		046
533	1991	03	12.91912	11	01	37.72	+03	49	46.5		046
533	1991	03	13.89256	11	00	55.30	+03	56	29.0		046
533	1991	03	13.90668	11	00	54.72	+03	56	34.2		046
533	1991	03	14.88671	11	00	12.07	+04	03	20.1		046
533	1991	03	14.90083	11	00	11.42	+04	03	25.5		046
542	1991	03	16.87851	11	11	43.56	+10	12	39.2		046
542	1991	03	16.89257	11	11	42.97	+10	12	45.5		046
566	1991	03	14.92138	11	47	41.14	+08	38	24.9		046
566	1991	03	14.93405	11	47	40.56	+08	38	31.2		046
566	1991	03	15.91045	11	47	00.13	+08	42	47.3		046
566	1991	03	15.92451	11	46	59.51	+08	42	50.8		046
673	1991	03	12.90500	11	02	40.98	+02	00	34.7		046
673	1991	03	12.91912	11	02	40.29	+02	00	40.3		046
673	1991	03	13.89256	11	01	53.94	+02	06	10.8		046
673	1991	03	13.90668	11	01	53.26	+02	06	15.2		046
673	1991	03	14.88671	11	01	06.87	+02	11	51.4		046
673	1991	03	14.90083	11	01	06.15	+02	11	57.0		046
758	1991	03	14.92138	11	47	07.34	+09	29	55.2		046
758	1991	03	14.93405	11	47	06.72	+09	30	00.7		046
758	1991	03	15.91045	11	46	23.57	+09	35	07.3		046
758	1991	03	15.92451	11	46	22.90	+09	35	11.7		046
819	1991	03	07.90417	10	29	58.52	+08	11	20.5		046
819	1991	03	07.91840	10	29	57.66	+08	11	20.5		046
819	1991	03	12.86834	10	24	41.94	+08	29	59.7	16.8	046
819	1991	03	12.88231	10	24	41.12	+08	30	03.1		046
819	1991	03	13.85731	10	23	41.36	+08	33	27.0		046
819	1991	03	13.87144	10	23	40.35	+08	33	31.6		046
1207	1991	03	16.95628	12	39	55.79	+00	00	21.2		046
1207	1991	03	16.97052	12	39	55.23	+00	00	21.6		046
1279	1991	03	14.95263	12	10	35.98	-05	42	57.9		046
1279	1991	03	14.96536	12	10	34.82	-05	42	56.5		046
1279	1991	03	15.96045	12	09	36.71	-05	40	16.8		046
1279	1991	03	15.97469	12	09	35.92	-05	40	14.7		046
1295	1991	03	07.90417	10	22	32.71	+08	09	02.4		046
1295	1991	03	07.91840	10	22	32.06	+08	09	06.2		046
1296	1991	03	14.95263	11	56	35.55	-05	33	14.9		046
1296	1991	03	14.96536	11	56	34.77	-05	33	09.2		046
1633	1991	03	16.95628	12	38	45.79	+00	04	06.0		046
1633	1991	03	16.97052	12	38	45.13	+00	04	10.0		046
1677	1991	03	07.90417	10	30	13.00	+08	20	57.6		046
1677	1991	03	07.91840	10	30	12.27	+08	20	58.0		046
1677	1991	03	13.85731	10	24	06.32	+08	24	47.1		046
1677	1991	03	13.87144	10	24	05.23	+08	24	47.4		046
2084	1991	03	16.95628	12	40	15.54	+00	31	44.1		046
2084	1991	03	16.97052	12	40	14.82	+00	31	51.4		046
2093	1991	03	07.90417	10	26	47.32	+10	42	40.1		046
2093	1991	03	07.91840	10	26	46.59	+10	42	44.9		046
2093	1991	03	12.86834	10	22	13.62	+11	23	33.1		046
2093	1991	03	12.88231	10	22	12.64	+11	23	38.5		046
2093	1991	03	13.85731	10	21	21.29	+11	31	22.4		046
2093	1991	03	13.87144	10	21	20.48	+11	31	28.9		046
2311	1991	03	07.90417	10	23	14.56	+10	07	40.0		046
2311	1991	03	07.91840	10	23	13.94	+10	07	43.3		046
2311	1991	03	12.86834	10	20	15.70	+10	31	03.8		046
2311	1991	03	12.88231	10	20	15.24	+10	31	08.1		046
2311	1991	03	13.85731	10	19	41.52	+10	35	32.5		046
2311	1991	03	13.87144	10	19	40.99	+10	35	35.2		046

2542		1991	03	12.86834	10	17	02.97	+12	15	35.5	16.8 046
2542		1991	03	12.88231	10	17	02.43	+12	15	37.7	046
2542		1991	03	13.85731	10	16	24.79	+12	20	31.5	046
2542		1991	03	13.87144	10	16	24.04	+12	20	37.7	046
2724		1991	03	16.87851	11	08	16.99	+07	12	01.2	16.6 046
2724		1991	03	16.89257	11	08	16.39	+07	12	06.2	046
2726		1991	03	12.86834	10	16	42.06	+11	25	54.6	046
2726		1991	03	12.88231	10	16	41.34	+11	25	54.8	046
2726		1991	03	13.85731	10	15	59.01	+11	29	21.7	046
2726		1991	03	13.87144	10	15	58.35	+11	29	23.4	046
2746		1991	03	14.85182	11	19	31.65	+03	33	06.4	046
2746		1991	03	14.86594	11	19	30.73	+03	33	14.3	046
2778		1991	03	14.92138	11	37	19.52	+10	36	36.1	046
2778		1991	03	14.93405	11	37	18.69	+10	36	44.2	046
2931		1991	03	12.94429	11	21	03.02	+06	16	57.4	046
2931		1991	03	12.97404	11	21	01.56	+06	17	09.2	046
2931		1991	03	13.92942	11	20	14.92	+06	21	27.0	046
2931		1991	03	13.94354	11	20	14.25	+06	21	31.6	046
2931		1991	03	14.85182	11	19	29.73	+06	25	42.6	046
2931		1991	03	14.86594	11	19	29.13	+06	25	46.2	046
2931		1991	03	16.87851	11	17	51.29	+06	34	54.6	046
2931		1991	03	16.89257	11	17	50.42	+06	34	57.4	046
3152		1991	03	07.85694	09	02	52.13	+08	50	40.4	046
3152		1991	03	07.87257	09	02	51.52	+08	50	43.4	046
3385		1991	03	14.95263	12	05	16.08	-04	50	03.4	046
3385		1991	03	14.96536	12	05	14.98	-04	49	56.4	046
3385		1991	03	15.96045	12	04	23.63	-04	40	51.0	046
3385		1991	03	15.97469	12	04	22.82	-04	40	43.4	046
3615		1991	03	12.94429	11	15	43.30	+06	38	10.8	046
3615		1991	03	12.97404	11	15	41.93	+06	38	19.3	046
3615		1991	03	16.87851	11	12	47.76	+06	58	38.6	046
3615		1991	03	16.89257	11	12	47.19	+06	58	44.2	046
3624		1991	03	13.92942	11	22	54.07	+06	00	07.4	16.7 046
3624		1991	03	13.94354	11	22	53.05	+06	00	14.0	046
3624		1991	03	14.85182	11	21	58.43	+06	04	11.2	U 046
3624		1991	03	14.86594	11	21	57.67	+06	04	17.5	046
4748		1991	03	12.83370	10	40	47.74	+33	28	04.8	046
4748		1991	03	12.84782	10	40	46.89	+33	28	08.2	046
4748		1991	03	13.82462	10	39	56.33	+33	30	49.1	046
4748		1991	03	13.83735	10	39	55.67	+33	30	51.0	046

091 Aurec-sur-Loire
R. Chanal, Observatoire de Nurol, F-43110 Aurec-sur-Loire, France
0.41-m reflector

596		1991	03	12.93195	09	32	23.25	+35	35	13.5	091
596		1991	03	18.94931	09	28	47.25	+35	27	35.6	091
596		1991	03	18.98681	09	28	46.13	+35	27	31.6	091
2089		1991	03	18.96875	10	28	37.22	+30	07	34.1	091
2089		1991	03	19.00000	10	28	35.11	+30	07	43.0	091

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

1984 EM		1991	03	14.67222	13	02	29.70	-05	11	49.7	16.5 372
1984 EM		1991	03	14.68333	13	02	29.33	-05	11	44.7	372
1984 SQ4		1990	11	11.67187	02	25	05.50	+12	22	49.3	18 372
1984 SQ4		1990	11	11.68160	02	25	05.02	+12	22	46.5	372
1986 UY		1989	08	03.63854	22	03	15.58	-17	20	36.6	18 372
1986 UY		1989	08	03.65208	22	03	14.64	-17	20	41.2	372

1986	UY		1991	03	23.67448	10	40	29.53	+08	59	15.0	18	372
1986	UY		1991	03	23.68611	10	40	29.02	+08	59	18.0		372
1988	QY		1990	11	23.66493	02	49	16.19	+12	37	36.8	18	372
1988	QY		1990	11	23.67882	02	49	15.79	+12	37	35.9		372
1990	TY		1990	11	10.61354	01	06	27.54	-11	45	12.8	18	372
1990	TY		1990	11	10.62535	01	06	27.30	-11	45	18.6		372
1990	TF8		1990	11	11.67187	02	24	28.38	+11	47	47.1	18	372
1990	TF8		1990	11	11.68160	02	24	27.75	+11	47	40.1		372
1990	UD2		1990	11	11.67187	02	23	04.30	+11	56	50.5	18	372
1990	UD2		1990	11	11.68160	02	23	03.97	+11	56	48.3		372
1990	UE2		1990	11	21.55347	02	49	12.37	+12	18	35.5	17.5	372
1990	UE2		1990	11	21.56580	02	49	11.91	+12	18	34.9		372
1990	UE2		1990	11	23.66493	02	47	46.91	+12	06	27.0	17.5	372
1990	UE2		1990	11	23.67882	02	47	46.29	+12	06	21.8		372
1990	WH5	*	1990	11	21.55347	02	49	13.07	+12	10	29.4	18	372
1990	WH5		1990	11	21.56580	02	49	12.45	+12	10	28.5		372
1990	WH5		1990	11	23.66493	02	47	14.32	+12	11	41.3	18	372
1990	WH5		1990	11	23.67882	02	47	13.41	+12	11	42.2		372
1990	WJ5	*	1990	11	21.55347	02	49	33.90	+12	14	57.3	18	372
1990	WJ5		1990	11	21.56580	02	49	33.04	+12	14	55.6		372
1990	WJ5		1990	11	23.66493	02	47	56.96	+12	13	03.0	18	372
1990	WJ5		1990	11	23.67882	02	47	56.17	+12	13	02.1		372
1990	WK5	*	1990	11	21.55347	02	49	53.98	+11	45	23.6	18	372
1990	WK5		1990	11	21.56580	02	49	53.44	+11	45	27.8		372
1990	WK5		1990	11	23.66493	02	48	13.70	+11	44	08.3	18	372
1990	WK5		1990	11	23.67882	02	48	13.12	+11	44	08.5		372
1990	WL5	*	1990	11	21.55347	02	52	00.75	+12	16	12.5	18	372
1990	WL5		1990	11	21.56580	02	51	59.71	+12	16	11.5		372
1990	WL5		1990	11	23.66493	02	50	05.28	+12	04	09.2	17	372
1990	WL5		1990	11	23.67882	02	50	04.44	+12	04	02.9		372
1991	CN1		1991	03	12.62049	10	04	07.62	+09	40	07.1	17	372
1991	CN1		1991	03	12.62986	10	04	07.21	+09	40	09.3		372
1991	ED		1991	03	13.63507	11	06	19.20	+15	58	35.6	18	372
1991	ED		1991	03	13.64583	11	06	18.62	+15	58	36.7		372
1991	ED		1991	04	02.49062	10	47	52.73	+16	26	18.2	18	372
1991	ED		1991	04	02.50243	10	47	52.09	+16	26	19.8		372
1991	EQ	*	1991	03	09.54792	09	15	39.66	-04	10	33.3	17.5	372
1991	EQ		1991	03	09.57222	09	15	38.99	-04	10	23.9		372
1991	EQ		1991	03	13.56944	09	13	46.12	-03	39	21.3	18	372
1991	ER	*	1991	03	09.61285	11	45	50.40	+03	29	07.1	17	372
1991	ER		1991	03	09.62326	11	45	49.86	+03	29	15.3		372
1991	ER		1991	03	14.57847	11	41	54.71	+04	16	47.2	17.5	372
1991	ER		1991	03	14.59010	11	41	54.30	+04	16	53.6		372
1991	ER		1991	03	16.59271	11	40	17.63	+04	36	01.1	17.5	372
1991	ER		1991	03	16.60243	11	40	17.08	+04	36	07.1		372
1991	ER		1991	04	03.50972	11	27	07.46	+07	10	17.2	18	372
1991	ER		1991	04	03.51979	11	27	07.25	+07	10	22.7		372
1991	ES	*	1991	03	09.63368	11	11	24.84	+15	31	16.1	17.5	372
1991	ES		1991	03	09.64375	11	11	24.46	+15	31	18.0		372
1991	ES		1991	03	13.63507	11	07	55.78	+15	47	02.5	18	372
1991	ES		1991	03	13.64583	11	07	55.08	+15	47	03.9		372
1991	ET	*	1991	03	09.63368	11	12	01.45	+15	33	29.4	17.5	372
1991	ET		1991	03	09.64375	11	12	00.99	+15	33	32.5		372
1991	ET		1991	03	13.63507	11	07	38.02	+15	45	40.1	18	372
1991	ET		1991	03	13.64583	11	07	37.28	+15	45	43.5		372
1991	EU	*	1991	03	09.79861	12	17	46.77	+07	09	35.7	17	372
1991	EU		1991	03	09.80937	12	17	46.04	+07	09	40.8		372
1991	EU		1991	03	14.60260	12	13	28.42	+07	45	55.7	17.5	372
1991	EU		1991	03	14.61354	12	13	27.91	+07	46	00.6		372

1991	EU		1991	03	16.61319	12	11	35.02	+08	00	47.0	16.5	372
1991	EU		1991	03	16.62361	12	11	34.49	+08	00	51.2		372
1991	EU		1991	03	20.71562	12	07	38.88	+08	29	48.8	17	372
1991	EU		1991	03	20.72604	12	07	38.18	+08	29	55.2		372
1991	EU		1991	03	23.64861	12	04	49.18	+08	49	17.4	17	372
1991	EU		1991	03	23.66250	12	04	48.37	+08	49	22.1		372
1991	EW	*	1991	03	14.57847	11	39	53.11	+04	59	08.9	16	372
1991	EW		1991	03	14.59010	11	39	52.60	+04	59	16.1		372
1991	EW		1991	03	16.55139	11	38	01.66	+05	13	35.6	16	372
1991	EW		1991	03	16.56181	11	38	00.92	+05	13	41.8		372
1991	EW		1991	03	17.62882	11	37	00.34	+05	21	25.8	16	372
1991	EW		1991	03	17.64028	11	36	59.71	+05	21	29.6		372
1991	EW		1991	04	02.53646	11	23	16.68	+07	01	10.6	17	372
1991	EW		1991	04	02.54705	11	23	16.33	+07	01	13.6		372
1991	EX		1991	02	20.65208	12	02	37.63	+03	44	41.3	17.5	372
1991	EX		1991	02	20.66285	12	02	37.49	+03	44	44.6		372
1991	EH1	*	1991	03	14.60260	12	12	27.17	+07	57	22.0	18.5	372
1991	EH1		1991	03	14.61354	12	12	26.68	+07	57	26.3		372
1991	EH1		1991	03	16.61319	12	11	01.42	+08	09	48.8	18	372
1991	EH1		1991	03	16.62361	12	11	01.07	+08	09	51.6		372
1991	EH1		1991	03	20.71562	12	08	03.01	+08	34	20.8	18	372
1991	EH1		1991	03	20.72604	12	08	02.39	+08	34	26.9		372
1991	EH1		1991	03	23.64861	12	05	54.27	+08	51	03.7	18	372
1991	EH1		1991	03	23.66250	12	05	53.77	+08	51	07.8		372
1991	EH1		1991	04	03.53090	11	58	11.89	+09	44	14.9	18.5	372
1991	EH1		1991	04	03.54132	11	58	11.48	+09	44	18.4		372
1991	FQ	*	1991	03	16.55139	11	37	33.14	+05	10	14.3	18	372
1991	FQ		1991	03	16.56181	11	37	32.64	+05	10	18.3		372
1991	FQ		1991	03	17.62882	11	36	33.85	+05	14	38.8	18	372
1991	FQ		1991	03	17.64028	11	36	33.71	+05	14	39.3		372
1991	FR	*	1991	03	16.55139	11	38	35.63	+05	19	27.0	18	372
1991	FR		1991	03	16.56181	11	38	35.03	+05	19	31.6		372
1991	FR		1991	03	17.62882	11	37	34.86	+05	25	06.2	18	372
1991	FR		1991	03	17.64028	11	37	34.07	+05	25	07.2		372
1991	FT	*	1991	03	17.69922	12	44	47.29	-05	07	12.2	18	372
1991	FT		1991	03	17.70521	12	44	46.55	-05	07	09.9		372
1991	FT		1991	03	19.58872	12	42	54.24	-05	02	48.1	18	372
1991	FT		1991	03	19.67222	12	42	54.19	-05	02	48.6		372
1991	FT		1991	03	19.68229	12	42	53.63	-05	02	46.5		372
1991	FT		1991	03	20.73646	12	41	51.87	-05	00	17.8		372
1991	FT		1991	03	20.74393	12	41	51.96	-05	00	17.6	18	372
1991	FT		1991	03	20.75139	12	41	51.26	-05	00	13.4		372
1991	FT		1991	04	03.55278	12	27	24.25	-04	21	44.2	16.5	372
1991	FT		1991	04	03.56319	12	27	23.65	-04	21	41.8		372
1991	FT		1991	04	09.64549	12	20	59.89	-04	03	40.2	17	372
1991	FT		1991	04	09.65660	12	20	59.32	-04	03	38.1		372
1991	FZ	*	1991	03	17.65104	11	02	17.46	+13	14	34.6	17	372
1991	FZ		1991	03	17.66111	11	02	16.85	+13	14	32.3		372
1991	FZ		1991	03	19.61076	11	00	19.62	+13	15	05.4	17	372
1991	FZ		1991	03	20.69722	10	59	15.27	+13	15	16.4		372
1991	FZ		1991	04	02.51493	10	48	12.89	+13	04	00.7	18	372
1991	FZ		1991	04	02.52569	10	48	12.43	+13	04	00.1		372
1991	FA1	*	1991	03	17.67187	12	18	14.47	+01	03	28.5	18	372
1991	FA1		1991	03	19.64687	12	16	41.57	+01	10	15.7	18	372
1991	FB1	*	1991	03	17.67187	12	19	43.67	+01	24	44.5	18	372
1991	FB1		1991	03	19.64687	12	18	11.67	+01	32	32.6	18	372
1991	GA	*	1991	04	03.53090	11	57	34.75	+09	37	46.7	16.5	372
1991	GA		1991	04	03.54132	11	57	34.22	+09	37	47.5		372
1991	GA		1991	04	08.53472	11	52	58.61	+09	38	31.8	17.0	372

1991	GA		1991	04	08.54792	11	52	57.80	+09 38 31.9	372
1991	GA		1991	04	09.68819	11	51	58.31	+09 37 58.6	16.5 372
1991	GB	*	1991	04	03.55278	12	28	51.76	-04 09 26.6	18 372
1991	GB		1991	04	03.56319	12	28	51.19	-04 09 21.5	372
1991	GB		1991	04	09.64549	12	21	34.62	-03 39 35.5	18 372
1991	GB		1991	04	09.65660	12	21	34.07	-03 39 27.4	372
9546	P-L		1991	03	20.66806	10	57	22.06	+10 52 44.4	17 372
9546	P-L		1991	03	20.68438	10	57	21.26	+10 52 49.3	372
1684			1990	11	21.55347	02	51	51.34	+12 00 04.9	16 372
1684			1990	11	21.56580	02	51	50.62	+12 00 03.9	372
1761			1991	04	03.50972	11	29	17.87	+07 28 45.3	16 372
1761			1991	04	03.51979	11	29	17.52	+07 28 46.0	372
2216			1991	03	16.65313	11	48	59.69	+06 41 27.1	18.5 372
2216			1991	03	16.66493	11	48	59.08	+06 41 32.8	372
4068			1991	04	08.59097	11	59	39.34	+02 19 58.4	17 372
4068			1991	04	08.60417	11	59	38.96	+02 20 00.2	372
4298			1991	03	16.65313	11	47	50.43	+06 19 47.8	16 372
4298			1991	03	16.66493	11	47	49.83	+06 19 52.2	372

385 Nihondaira Observatory Oohira station
T. Urata, 6-1, Muramatsuhara 1 Chome, Shimizu, Shizuoka-Ken 424, Japan
0.30-m f/3.8 hyperboloid astrocamera, 0.31-m f/5.6 reflector
GSC

1991	DM1		1991	03	18.63542	12	04	34.17	+05 19 52.1	16.5 385
1991	DM1		1991	03	18.64792	12	04	33.55	+05 19 59.7	385
1991	DN1		1991	03	18.62917	12	05	26.04	+03 45 03.6	16 385
1991	DN1		1991	03	18.64167	12	05	25.32	+03 45 07.7	385
1991	EX	*	1991	03	14.57986	11	48	35.35	+05 31 30.8	16 385
1991	EX		1991	03	14.59514	11	48	34.53	+05 31 33.9	385
1991	EX		1991	03	18.59931	11	45	34.01	+05 51 54.9	16 385
1991	EX		1991	03	18.66042	11	45	31.12	+05 52 12.4	385

399 Kushiro
H. Kaneda, Taiyo MS 2-H, 2 chome 2-15, kawazoe 8 jo, Minami-ku,
Sapporo 005, Japan
Observer S. Ueda
Measurer H. Kaneda
0.16-m f/3.8 Wright-Schmidt camera
AGK3

1991	EB		1991	03	13.60914	11	15	37.75	-00 23 29.2	16.5 399
1991	EB		1991	03	13.62361	11	15	37.01	-00 23 27.2	399
1991	EC		1991	03	07.49722	11	27	22.10	+07 01 54.9	16.5 399
1991	EC		1991	03	07.51181	11	27	21.32	+07 01 56.8	399
1991	EC		1991	03	10.48611	11	24	34.18	+07 05 35.2	16.5 399
1991	EC		1991	03	10.50041	11	24	33.03	+07 05 39.2	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
Measurers K. Watanabe
0.20-m f/4.0 reflector
AGK3

1949	SA1		1990	09	16.45347	22	31	43.39	-14 00 35.1	15.0 400
1949	SA1		1990	09	16.46875	22	31	42.81	-14 00 38.3	400
1949	SA1		1990	09	16.49132	22	31	42.16	-14 00 42.0	15.0 400
1949	SA1		1990	09	16.50868	22	31	41.47	-14 00 45.5	400
1978	VL11		1991	03	18.48229	11	14	32.17	+16 22 54.1	15.5 400
1978	VL11		1991	03	18.49826	11	14	31.18	+16 22 57.3	400

1989	TX15		1991	03	05.57118	11	04	26.11	+12	18	01.2	16.0	400
1989	TX15		1991	03	05.58646	11	04	25.13	+12	18	02.2		400
1991	DM1		1991	04	02.52674	11	52	50.42	+07	46	45.3	16.0	400
1991	DM1		1991	04	02.54306	11	52	49.64	+07	46	53.6		400
1991	DN1		1991	04	02.52674	11	52	53.39	+04	54	53.3	16.5	400
1991	DN1		1991	04	02.54306	11	52	52.71	+04	54	58.5		400
1991	EV	*	1991	03	10.53507	12	16	59.59	+05	59	13.4	16.0	400
1991	EV		1991	03	10.55174	12	16	58.88	+05	59	21.5		400
1991	EV		1991	03	15.51146	12	12	43.79	+06	40	59.6	16.0	400
1991	EV		1991	03	15.52674	12	12	42.68	+06	41	03.9		400
1991	EC1	*	1991	03	05.54063	11	27	29.42	+12	59	54.2	16.0	400
1991	EC1		1991	03	05.55799	11	27	28.26	+12	59	59.8		400
1991	EC1		1991	03	18.48229	11	14	08.68	+13	42	05.1	16.0	400
1991	EC1		1991	03	18.49826	11	14	07.74	+13	42	08.1		400
1991	ED1	*	1991	03	15.51146	12	12	07.76	+02	44	43.6	16.0	400
1991	ED1		1991	03	15.52674	12	12	06.91	+02	44	50.6		400
1991	ED1		1991	03	21.48507	12	06	39.78	+03	40	29.9	16.5	400
1991	ED1		1991	03	21.50174	12	06	38.79	+03	40	38.8		400
1991	EE1	*	1991	03	15.51146	12	15	50.35	+03	14	12.1	16.0	400
1991	EE1		1991	03	15.52674	12	15	49.63	+03	14	15.3		400
1991	EE1		1991	03	21.48507	12	09	17.15	+03	30	00.8	16.0	400
1991	EE1		1991	03	21.50174	12	09	16.07	+03	30	04.9		400
1991	EE1		1991	04	02.52674	11	56	02.09	+03	56	01.6	16.0	400
1991	EE1		1991	04	02.54306	11	56	00.99	+03	56	05.3		400
1991	EF1	*	1991	03	15.54132	12	29	04.65	+01	47	29.8	16.5	400
1991	EF1		1991	03	15.55799	12	29	03.75	+01	47	31.8		400
1991	EF1		1991	03	18.51458	12	26	34.57	+01	54	26.5	16.0	400
1991	EG1	*	1991	03	15.61007	12	58	05.10	-01	49	57.5	16.5	400
1991	EG1		1991	03	15.62743	12	58	04.30	-01	49	48.5		400
1991	EG1		1991	03	21.51563	12	54	21.91	-00	36	48.8	16.5	400
1991	EG1		1991	03	21.53299	12	54	21.14	-00	36	36.9		400
1991	EJ1	*	1991	03	11.54826	11	56	37.60	+08	04	06.2	16.0	400
1991	EJ1		1991	03	11.56528	11	56	36.56	+08	04	15.0		400
1991	EJ1		1991	03	21.55451	11	48	07.17	+09	37	29.9	15.5	400
1991	EJ1		1991	03	21.57187	11	48	06.19	+09	37	39.0		400
1991	EK1	*	1991	03	11.54826	11	58	23.55	+09	24	13.6	15.5	400
1991	EK1		1991	03	11.56528	11	58	22.35	+09	24	16.3		400
1991	EK1		1991	03	21.55451	11	48	28.66	+09	42	30.4	15.5	400
1991	EK1		1991	03	21.57187	11	48	27.65	+09	42	31.5		400
1991	FF1	*	1991	03	21.58507	13	22	17.95	-00	30	57.8	16.0	400
1991	FF1		1991	03	21.60243	13	22	17.21	-00	30	44.4		400
1991	FF1		1991	04	02.49826	13	13	37.61	+01	29	38.9	16.0	400
1991	FF1		1991	04	02.51354	13	13	36.89	+01	29	47.8		400
1991	GE	*	1991	04	02.49826	13	07	57.35	+06	00	13.6	16.5	400
1991	GE		1991	04	02.51354	13	07	56.80	+06	00	18.0		400
1991	GE		1991	04	09.56354	13	03	08.11	+06	45	37.8	16.0	400
1991	GE		1991	04	09.57813	13	03	07.49	+06	45	42.7		400
1991	GF	*	1991	04	02.49826	13	08	50.32	+06	31	36.4	16.5	400
1991	GF		1991	04	02.51354	13	08	49.50	+06	31	39.2		400
1991	GF		1991	04	09.56354	13	01	49.84	+07	04	45.7	16.0	400
1991	GF		1991	04	09.57813	13	01	49.07	+07	04	50.2		400
1991	GG	*	1991	04	02.49826	13	16	31.10	+05	17	21.4	16.5	400
1991	GG		1991	04	02.51354	13	16	30.32	+05	17	29.2		400
1991	GG		1991	04	09.59340	13	10	28.94	+05	51	17.9	16.5	400
1991	GG		1991	04	09.60868	13	10	27.94	+05	51	22.7		400
288			1991	03	10.53507	12	14	24.75	+05	23	10.6	12.5	400
288			1991	03	10.55174	12	14	24.19	+05	23	17.0		400
288			1991	03	15.51146	12	10	56.95	+05	57	52.7	12.5	400
288			1991	03	15.52674	12	10	56.33	+05	58	02.9		400

288	1991	04	02.52674	11	57	21.27	+07	50	14.6	12.5	400
288	1991	04	02.54306	11	57	20.55	+07	50	19.2		400
483	1991	04	02.52674	11	52	59.77	+04	18	45.9	13.5	400
483	1991	04	02.54306	11	52	59.24	+04	18	54.3		400
1399	1991	03	15.61007	12	53	18.20	-01	02	04.2	16.5	400
1399	1991	03	15.62743	12	53	17.11	-01	01	55.3		400
2779	1991	03	11.54826	11	57	05.56	+08	21	26.1	15.5	400
2779	1991	03	11.56528	11	57	04.31	+08	21	31.8		400
2779	1991	03	21.55451	11	47	18.11	+09	24	10.6	15.5	400
2779	1991	03	21.57187	11	47	17.00	+09	24	18.5		400
2956	1991	03	21.51563	12	54	28.90	-00	58	25.0	16.0	400
2956	1991	03	21.53299	12	54	28.15	-00	58	17.9		400
2982	1991	03	21.58507	13	20	59.90	-00	28	33.4	16.0	400
2982	1991	03	21.60243	13	20	59.34	-00	28	31.7		400
4302	1991	03	10.53507	12	17	24.82	+02	39	30.8	16.0	400
4302	1991	03	10.55174	12	17	24.17	+02	39	34.8		400
4302	1991	03	15.51146	12	13	37.57	+03	21	38.6	16.0	400
4302	1991	03	15.52674	12	13	36.79	+03	21	47.4		400
4302	1991	03	21.48507	12	08	42.29	+04	13	02.7	16.0	400
4302	1991	03	21.50174	12	08	41.59	+04	13	15.2		400
4422	1991	03	10.53507	12	16	15.56	+02	09	45.4	16.5	400
4422	1991	03	10.55174	12	16	14.87	+02	09	53.5		400
4422	1991	03	15.51146	12	11	49.20	+02	48	32.8	16.0	400
4422	1991	03	15.52674	12	11	48.36	+02	48	39.6		400
4422	1991	03	21.48507	12	06	13.80	+03	35	26.0	16.0	400
4422	1991	03	21.50174	12	06	13.10	+03	35	32.5		400
4422	1991	04	02.52674	11	55	02.24	+05	03	58.6	16.5	400
4422	1991	04	02.54306	11	55	01.43	+05	04	07.0		400
4773	1991	03	15.64132	13	13	59.08	-00	55	01.3	16.5	400
4773	1991	03	15.65868	13	13	58.33	-00	54	57.7		400

402 Dynic Astronomical Observatory
A. Sugie, Dynic Astronomical Observatory, Taga 270, Taga-Cho, Inukami-Gun, Shiga-Ken, 522-03, Japan
0.25-m f/3.4 Schmidt
AGK3, SAOC

1977	EK1	1991	04	09.64861	14	22	20.80	-11	21	02.2	17.0	402
1977	EK1	1991	04	09.66250	14	22	20.19	-11	20	55.5		402
1977	EK1	1991	04	12.56659	14	20	23.53	-10	56	48.1		402
1977	EK1	1991	04	12.59583	14	20	22.32	-10	56	35.0		402
1979	SN	1991	03	18.61875	12	01	13.78	-06	21	24.0	16.0	402
1979	SN	1991	03	18.63403	12	01	12.88	-06	21	23.4		402
1979	SN	1991	03	19.61944	12	00	15.06	-06	20	21.8		402
1988	RU6	1991	03	18.54514	11	00	43.33	+04	44	16.8	16.5	402
1988	RU6	1991	03	18.55903	11	00	42.67	+04	44	22.8		402
1988	RU6	1991	03	19.56215	10	59	54.15	+04	50	21.2		402
1988	RU6	1991	03	19.57535	10	59	53.57	+04	50	27.7		402
1991	BV	1991	03	17.51389	09	11	58.78	+18	57	01.8	17.0	402
1991	BV	1991	03	17.52465	09	11	58.76	+18	57	06.5		402
1991	BV	1991	03	18.49167	09	11	47.13	+19	02	46.5		402
1991	BV	1991	03	18.50556	09	11	46.99	+19	02	50.4		402
1991	BQ2	1991	03	13.49803	11	05	47.73	+25	53	12.7	16.0	402
1991	BQ2	1991	03	13.51250	11	05	46.95	+25	53	17.4		402
1991	CZ	1991	03	17.51389	09	07	55.93	+17	50	22.7	16.5	402
1991	CZ	1991	03	17.52465	09	07	55.78	+17	50	33.4		402
1991	CZ	1991	03	18.49167	09	07	44.85	+18	08	10.8		402
1991	CZ	1991	03	18.50556	09	07	44.68	+18	08	25.5		402
1991	CU2	1991	03	18.54514	10	52	21.23	+08	47	34.1	16.5	402
1991	CU2	1991	03	18.55903	10	52	20.51	+08	47	36.5		402

1991	CU2		1991	03	19.56215	10	51	29.06	+08	50	47.8	402
1991	CU2		1991	03	19.57535	10	51	28.41	+08	50	52.2	402
1991	DV		1991	03	06.59922	11	27	00.90	+08	13	08.3	16.0	402
1991	DV		1991	03	12.55579	11	21	37.46	+09	08	42.1	15.5	402
1991	DV		1991	03	12.56944	11	21	36.69	+09	08	48.7		402
1991	EA		1991	03	18.54514	11	02	55.27	+06	06	40.3	17.0	402
1991	EA		1991	03	18.55903	11	02	54.51	+06	06	42.7		402
1991	EA		1991	03	19.56215	11	01	57.93	+06	08	54.7		402
1991	EA		1991	03	19.57535	11	01	57.21	+06	08	57.8		402
1991	EC		1991	02	20.70694	11	40	03.46	+06	43	30.9	17.0	402
1991	EC		1991	02	20.72222	11	40	02.75	+06	43	31.4		402
1991	FW	*	1991	03	18.59236	11	24	44.94	-07	40	36.1	17.5	402
1991	FW		1991	03	18.60634	11	24	44.09	-07	40	30.7		402
1991	FW		1991	03	19.58819	11	23	55.56	-07	29	02.7		402
1991	FW		1991	03	19.60069	11	23	54.90	-07	28	49.6		402
1991	FX	*	1991	03	18.59236	11	32	50.35	-07	01	07.2	17.5	402
1991	FX		1991	03	18.60634	11	32	49.64	-07	01	00.2		402
1991	FX		1991	03	19.58819	11	32	04.90	-06	53	32.6		402
1991	FX		1991	03	19.60069	11	32	04.56	-06	53	21.7		402
1991	FE1	*	1991	03	18.61875	11	59	22.18	-04	31	33.5	16.5	402
1991	FE1		1991	03	18.63403	11	59	21.05	-04	31	27.2		402
1991	FE1		1991	03	19.61944	11	58	21.63	-04	26	02.3		402
1991	FE1		1991	04	12.54236	11	36	43.71	-02	13	00.7	17.5	402
1991	FE1		1991	04	12.55556	11	36	43.01	-02	13	00.6		402
1991	FG1	*	1991	03	18.64653	12	43	21.64	-06	33	11.3	17.5	402
1991	FG1		1991	03	18.66354	12	43	21.33	-06	33	09.8		402
1991	FG1		1991	04	03.54236	12	34	23.98	-06	14	29.4		402
1991	FG1		1991	04	03.55694	12	34	23.45	-06	14	26.1		402
1991	FH1	*	1991	03	18.64653	12	44	17.06	-07	09	55.3	17.0	402
1991	FH1		1991	03	18.66354	12	44	16.30	-07	09	45.3		402
1991	FH1		1991	04	03.54236	12	32	20.29	-05	31	25.6		402
1991	FH1		1991	04	03.55694	12	32	19.42	-05	31	16.3		402
1991	FJ1	*	1991	03	18.64653	12	48	13.38	-09	39	09.3	16.5	402
1991	FJ1		1991	03	18.66354	12	48	12.77	-09	38	58.6		402
1991	FJ1		1991	04	03.54236	12	36	35.96	-06	58	06.3		402
1991	FJ1		1991	04	03.55694	12	36	35.33	-06	57	57.3		402
1991	FJ1		1991	04	09.62292	12	32	09.77	-05	53	51.1	16.5	402
1991	FJ1		1991	04	09.63681	12	32	09.06	-05	53	41.8		402
1991	GH	*	1991	04	03.54236	12	25	47.70	-04	49	34.6	16.5	402
1991	GH		1991	04	03.55694	12	25	47.03	-04	49	25.2		402
1991	GH		1991	04	09.62292	12	21	35.54	-03	39	49.0		402
1991	GH		1991	04	09.63681	12	21	35.09	-03	39	37.7		402

411 Oizumi
T. Kobayashi, 1717-2 Shimo-Koizumi, Oizumi-machi, Ora-gun, Gunma-ken, 370-05 Japan
0.16-m f/4.8 reflector

1991	AO		1991	01	13.85123	11	41	49.38	+01	56	50.2	411
1991	AO		1991	01	16.85622	11	42	19.45	+01	52	52.5	411

413 Siding Spring
R. H. McNaught, Siding Spring Observatory, Coonabarabran, N.S.W. 2357, Australia
Observers K. Cooper, T. Harrison, P. McKenzie, R. H. McNaught, R. Stathakis
Measurer R. H. McNaught
1.2-m U.K. Schmidt, Uppsala Southern Schmidt, 1.0-m reflector + CCD, 3.9-m Anglo-Australian Telescope

1984	DB		1991	02	24.70332	10	53	03.61	+10	08	30.9	413
1986	CG		1991	03	18.60917	12	10	12.98	-13	06	40.9	413

1986	WQ2		1976	11	16.50975	01	07	32.82	-31	46	36.0			413
1987	DF		1991	02	23.76679	15	39	04.51	+01	45	27.8			413
1990	SS		1991	04	10.43619	10	11	46.49	-11	33	43.5	17	V F	413
1990	SS		1991	04	10.47786	10	11	50.76	-11	35	46.5		F	413
1990	SS		1991	04	11.54734	10	13	51.73	-12	26	58.2		F	413
1990	SS		1991	04	11.65116	10	14	02.48	-12	31	37.4		F	413
1991	AU1		1991	03	11.54719	10	31	15.31	-01	44	18.9	16.5	V	413
1991	AU1		1991	03	11.58885	10	31	10.61	-01	44	42.9			413
1991	AU1		1991	03	16.49954	10	22	44.27	-02	30	17.4	16	V O	413
1991	BB		1991	03	20.50301	05	24	21.73	-28	47	55.9		b	413
1991	BB		1991	03	21.44664	05	24	01.29	-28	56	19.5			413
1991	BB		1991	03	21.48611	05	24	00.35	-28	56	39.5			413
1991	BB		1991	04	02.39207	05	22	06.56	-30	38	32.7			413
1991	BA2		1991	02	24.54589	10	22	00.55	-00	41	12.3	15.5	V	413
1991	BA2		1991	02	24.67089	10	21	53.10	-00	40	34.8			413
1991	CQ		1991	04	04.39995	08	46	16.30	+10	02	05.6			413
1991	CQ		1991	04	04.40440	08	46	16.97	+10	02	13.8			413
1991	CQ		1991	04	04.41301	08	46	18.16	+10	02	28.1			413
1991	CS1		1991	02	24.70332	10	50	24.52	+08	37	31.3			413
1991	CT1		1991	02	24.70332	10	46	16.03	+10	04	19.3			413
1991	CN3	*	1991	02	10.57516	08	58	29.50	-17	52	38.5	17.5	V	413
1991	CN3		1991	02	11.65822	08	57	11.46	-17	57	51.8			413
1991	CO3	*	1991	02	10.73862	11	48	52.94	-36	48	17.9	16	V	413
1991	CO3		1991	02	11.77481	11	48	12.46	-37	01	30.5			413
1991	CO3		1991	02	14.64458	11	46	08.66	-37	35	58.2			413
1991	CO3		1991	03	21.64005	11	06	48.34	-39	29	51.4			413
1991	CO3		1991	03	23.70384	11	04	27.29	-39	18	01.2			413
1991	CP3	*	1991	02	10.73862	11	53	33.70	-33	22	16.7	17	V	413
1991	CP3		1991	02	11.76842	11	53	27.83	-33	47	57.7			413
1991	CQ3	*	1991	02	10.73862	11	58	04.61	-34	07	57.6	17	V	413
1991	CQ3		1991	02	11.76842	11	57	36.91	-34	30	50.2			413
1991	DA		1991	03	17.67928	07	01	15.93	-72	27	15.8			413
1991	DA		1991	03	17.71609	07	01	08.74	-72	26	53.0			413
1991	DA		1991	03	17.72969	07	01	06.28	-72	26	45.3			413
1991	DA		1991	03	20.53588	06	52	51.22	-71	59	02.7			413
1991	DA		1991	03	24.63037	06	43	25.03	-71	16	30.0			413
1991	DA		1991	04	03.41620	06	31	06.91	-69	35	31.0			413
1991	DA		1991	04	05.44687	06	30	01.30	-69	15	42.8			413
1991	DG		1991	03	14.61372	08	20	52.91	+04	07	10.0			413
1991	DG		1991	03	20.51343	08	08	53.10	+09	40	01.4		V	413
1991	DG		1991	03	21.45995	08	07	03.58	+10	37	33.9		F	413
1991	DG		1991	03	21.46944	08	07	02.35	+10	38	08.8		V	413
1991	DG		1991	04	04.39181	07	42	05.23	+26	41	05.1			413
1991	DG		1991	04	04.39679	07	42	04.56	+26	41	29.0		T	413
1991	DM		1991	02	24.70332	10	44	00.29	+09	12	15.1			413
1991	EJ		1991	01	26.71733	11	27	37.03	-23	12	57.1			413
1991	EJ		1991	02	12.68189	11	21	53.53	-23	46	57.9	18.5	V	413
1991	EJ		1991	03	06.57616	11	29	29.75	-23	41	36.7		V	413
1991	EJ	*	1991	03	10.59568	11	09	26.14	-23	34	35.4	18.5	V	413
1991	EJ		1991	03	12.55374	11	08	25.97	-23	30	34.4			413
1991	EK		1991	02	12.68189	11	22	41.56	-26	03	28.7	17.5	V	413
1991	EK	*	1991	03	10.59568	11	12	19.16	-25	31	02.0	18.5	V	413
1991	EK		1991	03	12.55374	11	11	04.13	-25	07	58.4			413
1991	EL		1991	02	12.68189	11	31	20.86	-25	26	36.2	18.5	V	413
1991	EL		1991	03	06.57616	11	20	18.19	-25	40	11.7			413
1991	EL	*	1991	03	10.59568	11	18	01.43	-25	35	00.6	18.5	V	413
1991	EL		1991	03	12.55374	11	16	54.30	-25	31	39.3			413
1991	EL		1991	03	20.54553	11	12	23.07	-25	12	41.6			413
1991	EM	*	1991	03	10.59568	11	28	50.04	-26	35	00.7	18.5	V F	413

1991	EM		1991	03	12.55374	11	27	14.41	-26	31	41.0	F 413
1991	EM		1991	03	20.54553	11	20	42.18	-26	09	25.1	413
1991	EN		1991	03	06.57616	11	33	14.25	-21	57	44.3	413
1991	EN	*	1991	03	10.59568	11	31	03.57	-21	52	48.2	17.5V 413
1991	EN		1991	03	12.55374	11	29	59.38	-21	49	41.9	413
1991	EN		1991	03	24.70023	11	23	23.02	-21	21	19.8	413
1991	FB	*	1991	03	18.69428	13	59	42.73	+00	29	24.7	17.5V 413
1991	FB		1991	03	18.74289	13	59	50.38	+00	27	35.9	413
1991	FB		1991	03	19.68878	14	02	36.01	-00	09	23.6	413
1991	FB		1991	03	19.70962	14	02	39.37	-00	10	12.5	413
1991	FB		1991	03	20.69178	14	05	37.43	-00	50	54.5	p 413
1991	FB		1991	03	21.67258	14	08	42.00	-01	33	58.3	413
1991	FB		1991	03	21.72812	14	08	51.89	-01	36	28.3	413
1991	FB		1991	03	23.68159	14	15	24.47	-03	10	37.3	V 413
1991	FB		1991	03	24.71146	14	19	04.79	-04	04	54.2	F 413
1991	FF	*	1991	03	18.60917	12	10	02.71	-14	20	41.4	17.5V 413
1991	FF		1991	03	19.73438	12	09	01.16	-14	20	58.4	F 413
1991	FG	*	1991	03	18.60917	12	14	03.04	-13	30	43.9	15.5V 413
1991	FG		1991	03	19.73438	12	13	36.01	-13	13	50.9	O 413
1991	FH	*	1991	03	18.60917	12	16	36.66	-14	28	12.7	17 V 413
1991	FH		1991	03	19.73438	12	15	54.02	-14	16	44.6	F 413
1991	GD	*	1991	04	09.49226	11	34	03.74	-31	50	13.7	16 V 413
1991	GD		1991	04	10.51516	11	33	21.13	-31	32	24.9	413
1991	GD		1991	04	11.66059	11	32	35.58	-31	12	03.4	413
164			1991	02	23.76679	15	37	49.98	+00	17	08.8	413
322			1991	03	18.60917	12	08	47.50	-12	17	40.1	413
407			1991	03	18.60917	12	16	39.59	-13	42	16.1	413
914			1991	02	10.57516	09	05	07.60	-19	54	41.5	413
1367			1991	03	21.64005	11	13	07.40	-37	31	58.4	413
1367			1991	03	23.70384	11	10	51.46	-37	22	36.9	413
1728			1991	02	24.60839	10	18	51.40	-01	26	29.7	413
2696			1987	02	27.46510	05	32	45.21	-08	02	29.1	T 413
4575			1991	02	24.70332	10	46	28.75	+10	37	46.0	413
4768			1989	11	01.72832	06	34	19.37	+45	18	32.4	413
4768			1991	02	09.62812	09	48	41.81	+11	14	53.5	413

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

1991	BB		1991	02	06.50422	06	47	57.45	-15	07	07.4	16.4 474
1991	BB		1991	02	06.51898	06	47	53.52	-15	07	46.5	474
1991	BB		1991	03	12.44519	05	28	56.96	-27	31	33.0	18.3 474
1991	BB		1991	03	12.47209	05	28	55.63	-27	31	48.1	474
1991	CQ		1991	03	08.44681	07	42	40.38	-08	42	30.0	474
1991	CQ		1991	03	08.47400	07	42	43.82	-08	41	03.9	474
1991	CQ		1991	03	09.44623	07	44	54.25	-07	49	25.5	474
1991	CQ		1991	03	09.47470	07	44	57.97	-07	47	56.6	474
1991	DA		1991	03	11.42073	07	25	39.02	-73	20	14.7	18.0 474
1991	DA		1991	03	11.44808	07	25	31.78	-73	20	04.0	474
1991	DA		1991	03	15.42066	07	09	05.41	-72	48	10.4	17.8 474
1991	DA		1991	03	15.44612	07	08	59.88	-72	47	57.9	474
1991	DG		1991	03	11.48870	08	27	37.07	+01	29	55.0	474
1991	DG		1991	03	11.51220	08	27	33.62	+01	31	03.8	474

493 Calar Alto
J. M. Baur, Via Zara 20, I-33083 Chions, Italy

Observer K. Birkle
Measurers K. Birkle, J. M. Baur
0.8-m f/3 Schmidt

1989	SX13*	1989	09	26.96736	01	24	41.45	+28	55	18.3	17.0	493
1989	SX13	1989	09	27.01597	01	24	40.02	+28	55	08.5		493
1989	SX13	1989	10	03.08819	01	21	42.74	+28	34	05.6		493
1989	SX13	1989	10	03.12986	01	21	41.32	+28	33	57.5		493
1989	SX13	1989	10	04.95555	01	20	45.85	+28	26	40.7		493
1989	SX13	1989	10	05.01805	01	20	43.93	+28	26	26.4		493
1989	SY13*	1989	09	26.96736	01	27	42.87	+28	23	58.9	18.0	493
1989	SY13	1989	09	27.01597	01	27	40.72	+28	23	55.2		493
1989	SY13	1989	10	03.08819	01	22	34.83	+28	17	49.1		493
1989	SY13	1989	10	03.12986	01	22	32.82	+28	17	44.3		493
1989	SY13	1989	10	04.95555	01	20	54.77	+28	14	08.0		493
1989	SY13	1989	10	05.01805	01	20	52.11	+28	14	02.0		493
1989	SZ13*	1989	09	26.96736	01	29	39.12	+28	47	51.3	18.0	493
1989	SZ13	1989	09	27.01597	01	29	36.90	+28	47	53.7		493
1989	SZ13	1989	10	03.08819	01	24	31.98	+28	50	44.9		493
1989	SZ13	1989	10	03.12986	01	24	29.63	+28	50	43.7		493
1989	SZ13	1989	10	04.95555	01	22	51.25	+28	49	33.8		493
1989	SZ13	1989	10	05.94583	01	21	56.99	+28	48	30.0		493
1989	SZ13	1989	10	06.00833	01	21	53.54	+28	48	25.4		493
1989	SA14*	1989	09	26.96736	01	32	38.28	+29	07	03.7	18.5	493
1989	SA14	1989	09	27.01597	01	32	36.31	+29	07	08.9		493
1989	SA14	1989	10	03.08819	01	28	08.71	+29	16	15.7		493
1989	SA14	1989	10	03.12986	01	28	06.60	+29	16	15.5		493
1989	SA14	1989	10	04.95555	01	26	37.13	+29	16	34.8		493
1989	SA14	1989	10	05.01805	01	26	34.57	+29	16	32.7		493
1989	SA14	1989	10	05.94583	01	25	47.16	+29	16	13.8		493
1989	SA14	1989	10	06.00833	01	25	44.07	+29	16	12.3		493
1989	SB14*	1989	09	26.96736	01	34	51.29	+30	14	29.1	18.0	493
1989	SB14	1989	09	27.01597	01	34	48.96	+30	14	21.6		493
1989	SB14	1989	10	03.08819	01	29	47.19	+29	53	36.2		493
1989	SB14	1989	10	03.12986	01	29	44.94	+29	53	26.7		493
1989	SB14	1989	10	04.95555	01	28	08.36	+29	45	06.2		493
1989	SB14	1989	10	05.01805	01	28	05.14	+29	44	48.6		493
1989	SB14	1989	10	05.94583	01	27	14.69	+29	40	07.2		493
1989	SB14	1989	10	06.00833	01	27	11.40	+29	39	52.8		493
1989	SC14*	1989	09	26.96736	01	37	52.60	+29	09	37.3	18.3	493
1989	SC14	1989	09	27.01597	01	37	50.83	+29	09	37.6		493
1989	SC14	1989	10	03.08819	01	33	55.69	+29	07	34.9		493
1989	SC14	1989	10	03.12986	01	33	53.98	+29	07	32.4		493
1989	SC14	1989	10	04.95555	01	32	34.02	+29	04	26.7		493
1989	SC14	1989	10	05.01805	01	32	31.72	+29	04	19.8		493
1989	SC14	1989	10	05.94583	01	31	49.48	+29	02	18.3		493
1989	SC14	1989	10	06.00833	01	31	46.26	+29	02	09.5		493
1989	SD14*	1989	09	26.96736	01	38	26.58	+30	06	11.3	15.8	493
1989	SD14	1989	09	27.01597	01	38	24.00	+30	06	17.0		493
1989	SD14	1989	10	03.08819	01	32	33.34	+30	14	53.0		493
1989	SD14	1989	10	03.12986	01	32	30.55	+30	14	53.9		493
1989	SD14	1989	10	04.95555	01	30	38.01	+30	15	14.4		493
1989	SD14	1989	10	05.01805	01	30	33.95	+30	15	14.2		493
1989	SD14	1989	10	05.94583	01	29	35.54	+30	14	57.1		493
1989	SD14	1989	10	06.00833	01	29	31.55	+30	14	55.7		493
1989	SE14*	1989	09	26.96736	01	39	20.08	+29	20	23.1	18.2	493
1989	SE14	1989	09	27.01597	01	39	17.66	+29	20	34.0		493
1989	SE14	1989	10	03.08819	01	34	08.02	+29	41	36.3		493
1989	SE14	1989	10	03.12986	01	34	05.38	+29	41	41.6		493
1989	SE14	1989	10	04.95555	01	32	22.87	+29	45	36.1		493

1989	SE14	1989	10	05.01805	01	32	19.83	+29	45	40.5	493
1989	SE14	1989	10	05.94583	01	31	25.68	+29	47	12.2	493
1989	SE14	1989	10	06.00833	01	31	22.63	+29	47	13.7	493
1989	SF14*	1989	09	26.96736	01	40	13.07	+30	24	43.6	17.0 493
1989	SF14	1989	09	27.01597	01	40	11.20	+30	24	34.6	493
1989	SF14	1989	10	03.08819	01	36	08.37	+29	58	56.4	493
1989	SF14	1989	10	03.12986	01	36	06.44	+29	58	45.5	493
1989	SF14	1989	10	04.95555	01	34	45.30	+29	48	26.1	493
1989	SF14	1989	10	05.01805	01	34	42.51	+29	48	06.4	493
1989	SF14	1989	10	05.94583	01	33	59.40	+29	42	18.1	493
1989	SF14	1989	10	06.00833	01	33	56.96	+29	42	00.0	493
1989	SG14*	1989	09	26.96736	01	40	34.75	+30	29	33.2	17.3 493
1989	SG14	1989	09	27.01597	01	40	32.24	+30	29	44.2	493
1989	SG14	1989	10	03.08819	01	34	41.12	+30	53	06.6	493
1989	SG14	1989	10	03.12986	01	34	38.45	+30	53	12.1	493
1989	SG14	1989	10	04.95555	01	32	43.98	+30	57	51.6	493
1989	SG14	1989	10	05.01805	01	32	40.50	+30	57	58.5	493
1989	SG14	1989	10	05.94583	01	31	40.56	+30	59	53.2	493
1989	SG14	1989	10	06.00833	01	31	36.81	+30	59	58.1	493
1989	SH14*	1989	09	26.96736	01	42	55.87	+32	14	56.1	17.0 493
1989	SH14	1989	09	27.01597	01	42	53.97	+32	14	54.1	493
1989	SH14	1989	10	03.08819	01	38	35.90	+32	10	44.0	493
1989	SH14	1989	10	03.12986	01	38	33.79	+32	10	40.1	493
1989	SH14	1989	10	04.95555	01	37	10.86	+32	07	49.8	493
1989	SH14	1989	10	05.01805	01	37	08.08	+32	07	43.3	493
1989	SH14	1989	10	05.94583	01	36	24.44	+32	05	55.5	493
1989	SH14	1989	10	06.00833	01	36	21.73	+32	05	48.0	493
1989	TB18*	1989	10	03.08819	01	36	43.59	+32	38	42.9	17.0 493
1989	TB18	1989	10	03.12986	01	36	41.27	+32	38	40.7	493
1989	TB18	1989	10	04.95555	01	35	12.47	+32	36	47.1	493
1989	TB18	1989	10	05.01805	01	35	09.40	+32	36	43.0	493
1989	TB18	1989	10	05.94583	01	34	22.47	+32	35	18.3	493
1989	TB18	1989	10	06.00833	01	34	19.34	+32	35	12.3	493
1989	TC18*	1989	10	03.08819	01	41	16.98	+30	52	49.3	16.0 493
1989	TC18	1989	10	03.12986	01	41	14.91	+30	52	50.7	493
1989	TC18	1989	10	04.95555	01	39	50.67	+30	54	34.2	493
1989	TC18	1989	10	05.01805	01	39	47.87	+30	54	35.7	493
1989	TC18	1989	10	05.94583	01	39	03.45	+30	55	06.9	493
1989	TC18	1989	10	06.00833	01	39	00.44	+30	55	07.4	493
1989	TD18*	1989	10	03.08819	01	41	28.21	+30	42	12.8	15.0 493
1989	TD18	1989	10	03.12986	01	41	25.81	+30	42	10.1	493
1989	TD18	1989	10	04.95555	01	39	50.57	+30	39	43.9	493
1989	TD18	1989	10	05.01805	01	39	47.22	+30	39	37.7	493
1989	TD18	1989	10	05.94583	01	38	57.25	+30	37	58.7	493
1989	TD18	1989	10	06.00833	01	38	53.98	+30	37	50.6	493

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

603		1991	04	07.85683	07	27	08.11	+25	56	52.3	494
603		1991	04	07.86821	07	27	09.12	+25	56	48.1	494
1510		1991	04	07.85683	07	26	02.32	+25	40	06.5	494
1510		1991	04	07.86821	07	26	03.10	+25	40	01.1	494

552 San Vittore
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Observers C. Vacchi, G. Sassi
Measurers V. Goretti, E. Colombini
0.25-m f/2.5 Schmidt, 0.45-m f/5 reflector

1991 GL	*	1991 04 11.93264	12 43 02.64	-03 36 06.8		17.0	552
1991 GL		1991 04 11.96319	12 43 00.33	-03 36 00.7			552
1991 GL		1991 04 12.87917	12 42 16.65	-03 34 31.1		17.0	552
1991 GL		1991 04 12.90556	12 42 15.32	-03 34 28.1			552

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

4		1990 10 26.95382	03 49 11.01	+10 32 24.9		553
4		1990 10 26.97188	03 49 10.09	+10 32 22.1		553
4		1990 10 26.98209	03 49 09.73	+10 32 20.4		553
4		1990 10 26.99248	03 49 09.29	+10 32 18.6		553
4		1990 10 27.00569	03 49 08.38	+10 32 16.0		553
532		1991 01 20.85148	06 25 32.65	+22 05 56.6		553
532		1991 01 20.87231	06 25 31.49	+22 06 05.1		553
532		1991 01 20.89315	06 25 30.44	+22 06 14.4		553

568 Mauna Kea Observatory
D. J. Tholen, Institute for Astronomy, 2680 Woodlawn Drive,
Honolulu, HI 96822, U.S.A.
Observers D. M. Griep, D. P. Cruikshank, J. D. Goldader
2.24-m and IRTF encoders
SAOC, Lick Gaspra catalogue

1990 SS		1991 03 22.35637	09 05 49.68	+28 20 58.9	15.6V	568
1991 CS		1991 02 26.30347	07 23 52.74	-04 16 07.2		568
1991 CS		1991 02 26.30451	07 23 52.79	-04 15 55.7		568
1991 DB		1991 02 26.45313	10 17 00.35	+08 17 25.7		568
951		1991 02 26.66042	16 07 10.17	-23 18 20.9		568
951		1991 03 22.65066	16 23 14.75	-23 54 34.8	16.2V	568
951		1991 03 23.62783	16 23 36.39	-23 55 10.5	16.2V	568
951		1991 03 24.63423	16 23 56.99	-23 55 42.2		568
951		1991 03 25.64733	16 24 16.01	-23 56 09.4	16.3V	568

591 Resse Observatory
N. Ehring, Wiesenstrasse 7, W-3002 Wedemark 15, Federal Republic of Germany

469	1991 02 19.90524	09 11 06.44	+21 01 24.0		591
469	1991 02 19.90878	09 11 06.20	+21 01 22.8		591
596	1991 02 22.06853	09 48 03.63	+35 04 06.6		591
596	1991 02 22.07287	09 48 03.29	+35 04 08.7		591

595 Osservatorio Circulo Culturale Astronomico di Farra
L. Bittesini, Via dei Conventi 10, I-34070 Farra D'Isonzo (GO), Italy
Observer G. Lombardi
Measurers L. Bittesini, F. Piani, G. Lombardi, F. Devetti

1990 SQ		1991 01 22.85972	02 10 49.60	+57 45 07.9		595
1990 SQ		1991 01 22.89583	02 11 05.25	+57 45 09.4		595
1990 SQ		1991 01 23.90833	02 18 29.67	+57 45 30.9		595
1990 SQ		1991 01 23.93056	02 18 38.86	+57 45 30.7		595
1990 SQ		1991 01 24.91389	02 25 48.62	+57 44 23.9		595
1990 SQ		1991 01 25.85347	02 32 39.17	+57 42 15.1		595
1990 SQ		1991 01 25.87222	02 32 47.13	+57 42 11.2		595

657 Victoria, Climenhaga Observatory
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Observers J. B. Tatum, D. D. Balam

1986	TG1	1990	09	27.31951	00	43	42.55	+10	17	41.5	657
1989	TN11	1989	09	06.36743	00	59	21.12	+03	44	58.2	657
1989	TN11	1989	09	06.40910	00	59	19.76	+03	45	03.5	657
1990	DV	1990	02	27.34208	11	01	30.52	-07	40	27.6	657
1990	DV	1990	02	27.39139	11	01	28.19	-07	40	18.7	657
1990	DV	1990	03	02.35250	10	59	10.03	-07	27	59.2	657
1990	DV	1990	03	02.38444	10	59	08.54	-07	27	52.2	657
1990	SQ	1990	12	07.10806	22	10	54.95	+37	14	11.3	657
1990	SQ	1990	12	07.13306	22	10	58.75	+37	15	12.5	657
1990	SY	1990	09	21.27368	00	32	42.87	+12	57	03.8	657
1990	SY	1990	09	21.29590	00	32	41.59	+12	57	03.8	657
1990	SZ	1990	09	21.27368	00	34	24.74	+10	33	17.8	657
1990	SH1	1990	09	18.24903	00	51	14.78	+12	22	33.9	657
1990	SH1	1990	09	20.24868	00	50	27.01	+12	05	51.7	657
1990	SH1	1990	09	20.27646	00	50	26.34	+12	05	34.7	657
1990	SH1	1990	09	21.27368	00	50	00.82	+11	56	51.6	657
1990	SH1	1990	09	21.29590	00	50	00.17	+11	56	38.5	657
1990	SH1	1990	09	27.31951	00	47	04.81	+10	58	25.2	657
1990	SH1	1990	09	27.33618	00	47	04.24	+10	58	14.3	657

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

1991	DB	1991	03	09.21597	10	42	08.61	+24	08	36.2	674
1991	DB	1991	03	09.21840	10	42	09.19	+24	08	54.9	674
1991	DB	1991	03	09.22083	10	42	09.77	+24	09	13.6	674
1991	DB	1991	03	09.23056	10	42	11.37	+24	10	18.3	674
1991	DB	1991	03	09.23299	10	42	11.58	+24	10	33.3	674
1991	DB	1991	03	09.23542	10	42	11.88	+24	10	50.0	674

675 Palomar
E. Helin, MS 183-501, Jet Propulsion Laboratory, Pasadena, CA 91109, U.S.A. (2)
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E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001, U.S.A. (6)
9 = 3 + 6
Observers J. A. Brown (3, S), T. Gehrels (4, L), E. Helin (2, S), H. E. Holt (3, S), H. R. Holt (3, S), C. T. Kowal (6, L), K. Lawrence (2, S), D. H. Levy (3, S), C. M. Olmstead (3, S), P. Rose (2, S), C. S. Shoemaker (3, S), E. M. Shoemaker (3, S)
Measurers E. Bowell (6), S. J. Bus (6), T. M. King (3), K. A. Lawler (3), K. Lawrence (2), D. J. Osip (6), P. Rose (2), B. A. Skiff (6), C. J. van Houten (4), I. van Houten-Groeneveld (4), A. Wisse (4)
1.5-m reflector + CCD (C), 1.2-m (L) and 0.46-m (S) Schmidt telescopes

1938	DM1	1978	03	15.32917	11	25	49.38	+04	56	13.5	15.5V 6 675
1938	DM1	1978	03	16.36563	11	24	44.54	+04	58	56.8	6 675
1953	FK1	1990	09	16.48021	02	15	37.34	+19	19	13.6	16.1 3 675
1953	FK1	1990	09	19.51771	02	14	00.98	+19	35	11.2	3 675
1953	FK1	1990	10	26.38316	01	39	40.03	+21	02	07.6	15.8 3 675
1953	FK1	1990	10	26.42292	01	39	37.37	+21	02	06.6	3 675
1953	FK1	1990	11	13.23125	01	22	52.02	+20	44	22.3	16.1 3 675
1953	FK1	1990	11	15.18160	01	21	24.89	+20	41	37.5	3 675
1964	VT1	1980	04	08.30660	13	01	24.55	-03	36	12.1	6 675
1964	VT1	1980	04	09.35243	13	00	31.39	-03	31	54.1	6 675
1967	JP	1980	11	01.26840	02	24	55.39	+20	13	29.1	17.8V 6 675
1967	JP	1980	11	02.30729	02	24	04.78	+20	09	42.5	6 675

1967	KB	1980	11	01.26840	02	22	11.81	+17	24	57.2		17.8V	6 675
1967	KB	1980	11	02.30729	02	21	08.11	+17	20	33.1			6 675
1968	QE	1978	03	15.38715	11	38	04.56	-00	15	00.5		18.0V	6 675
1968	QE	1978	03	16.42431	11	37	06.78	-00	08	51.0			6 675
1969	TB3	1980	11	01.26840	02	24	48.15	+17	53	47.5		16.2V	6 675
1969	TB3	1980	11	02.30729	02	23	46.92	+17	46	56.0			6 675
1971	UD1	1979	01	27.23698	07	40	28.71	+22	23	37.6		17.5V	6 675
1971	UD1	1979	01	29.35955	07	38	14.34	+22	30	12.9			6 675
1971	UT1	1980	04	08.30660	12	45	09.42	-03	33	34.0			6 675
1971	UT1	1980	04	09.35243	12	44	26.04	-03	28	36.9			6 675
1973	SK1	1980	08	03.27326	20	48	46.29	-10	25	33.2		16.5V	6 675
1973	SK1	1980	08	05.29271	20	47	30.46	-10	34	34.5			6 675
1973	SO3	1980	11	01.32604	02	33	03.81	+19	53	44.7		16.5V	6 675
1973	SO3	1980	11	02.36632	02	31	50.89	+19	50	10.3			6 675
1973	UC	1980	04	08.30660	12	51	00.27	-03	41	52.1			6 675
1973	UC	1980	04	09.35243	12	50	06.88	-03	37	58.6			6 675
1974	QX1	1980	04	08.30660	12	57	46.32	-04	11	52.1			6 675
1974	QX1	1980	04	09.35243	12	56	46.93	-04	06	06.4			6 675
1976	SM2	1978	03	15.32917	11	18	44.59	+03	29	02.7		17.5V	6 675
1976	SM2	1978	03	16.36563	11	17	42.63	+03	36	12.8			6 675
1976	YP1	1978	03	15.38715	11	42	19.81	+02	39	39.7		17.5V	6 675
1976	YP1	1978	03	16.42431	11	41	32.22	+02	44	22.1			6 675
1977	NN	1979	01	27.23698	07	24	43.66	+24	49	45.1		18.2V	6 675
1977	NN	1979	01	29.35955	07	22	28.63	+24	49	53.7			6 675
1977	QK1	1977	09	09.34584	23	44	26.81	-01	14	17.0			6 675
1977	QK1	1977	09	10.22535	23	43	46.53	-01	16	47.3			6 675
1977	QL1	1977	09	09.34584	23	41	25.75	-00	38	13.7			6 675
1977	QL1	1977	09	10.22535	23	40	41.36	-00	40	55.5			6 675
1977	QD2	1977	09	09.34584	23	39	58.86	-02	07	56.2			6 675
1977	QD2	1977	09	10.22535	23	39	08.97	-02	08	11.6			6 675
1977	QN2	1977	09	09.34584	23	25	22.43	-00	22	48.7			6 675
1977	QN2	1977	09	10.22535	23	24	38.51	-00	25	37.6			6 675
1977	RD2	1980	04	08.30660	12	57	13.80	-03	21	27.7			6 675
1977	RD2	1980	04	09.35243	12	56	25.46	-03	17	05.7			6 675
1977	RW6	1979	01	27.23698	07	32	24.47	+24	53	03.7		17.5V	6 675
1977	RW6	1979	01	29.35955	07	30	34.34	+24	56	04.6			6 675
1977	RY19*	1977	09	09.34584	23	26	52.29	-03	59	25.1		19.0V	6 675
1977	RY19	1977	09	10.22535	23	26	02.73	-04	04	12.4			6 675
1977	RZ19*	1977	09	09.34584	23	27	34.24	-05	31	21.7		16.5V	6 675
1977	RZ19	1977	09	10.22535	23	26	47.97	-05	32	16.4			6 675
1977	RA20*	1977	09	09.34584	23	29	23.99	-05	18	49.4		18.8V	6 675
1977	RA20	1977	09	10.22535	23	28	35.39	-05	23	40.1			6 675
1977	RB20*	1977	09	09.34584	23	30	37.43	-02	38	14.4		16.5V	6 675
1977	RB20	1977	09	10.22535	23	29	53.02	-02	41	54.0			6 675
1977	RC20*	1977	09	09.34584	23	31	39.91	-02	56	38.5		17.2V	6 675
1977	RC20	1977	09	10.22535	23	30	56.03	-02	59	02.7			6 675
1977	RD20*	1977	09	09.34584	23	33	33.25	-03	13	44.0		17.5V	6 675
1977	RD20	1977	09	10.22535	23	32	47.79	-03	19	34.2			6 675
1977	RE20*	1977	09	09.34584	23	35	41.51	-04	29	54.6		17.8V	6 675
1977	RE20	1977	09	10.22535	23	34	51.18	-04	33	50.3			6 675
1977	RF20*	1977	09	09.34584	23	39	35.12	-04	37	41.2		16.0V	6 675
1977	RF20	1977	09	10.22535	23	38	57.29	-04	44	19.7			6 675
1977	RG20*	1977	09	09.34584	23	40	28.10	-03	57	34.5		17.0V	6 675
1977	RG20	1977	09	10.22535	23	39	56.58	-04	02	16.3			6 675
1977	RH20*	1977	09	09.34584	23	40	32.70	-05	05	29.2		16.0V	6 675
1977	RH20	1977	09	10.22535	23	39	54.46	-05	09	26.1			6 675
1977	RJ20*	1977	09	09.34584	23	45	55.31	-06	16	07.3		15.5V	6 675
1977	RJ20	1977	09	10.22535	23	45	14.38	-06	22	19.0			6 675
1977	TC1	1980	08	03.27326	20	51	40.36	-09	40	00.3		14.8V	6 675

1977	TC1		1980	08	05.29271	20	49	57.71	-09	46	04.9		6 675
1977	UV2	*	1977	10	18.38108	01	44	52.49	+11	15	37.0	17.5V	6 675
1977	UV2		1977	10	19.42882	01	44	01.80	+11	04	58.7		6 675
1977	UW2	*	1977	10	18.38108	01	45	40.52	+14	19	41.0	17.5V	6 675
1977	UW2		1977	10	19.42882	01	44	59.21	+14	16	12.2		6 675
1977	UX2	*	1977	10	18.38108	01	45	48.60	+13	28	53.9	16.5V	6 675
1977	UX2		1977	10	19.42882	01	44	52.48	+13	23	30.1		6 675
1977	UY2	*	1977	10	18.38108	01	46	01.66	+11	40	40.6	17.5V	6 675
1977	UY2		1977	10	19.42882	01	45	11.72	+11	36	14.5		6 675
1977	UZ2	*	1977	10	18.38108	01	46	22.20	+10	15	09.7	17.0V	6 675
1977	UZ2		1977	10	19.42882	01	45	38.19	+10	04	27.8		6 675
1977	UA3	*	1977	10	18.38108	01	46	36.73	+12	27	44.3	15.5V	6 675
1977	UA3		1977	10	19.42882	01	45	43.80	+12	22	02.2		6 675
1977	UB3	*	1977	10	18.38108	01	47	11.08	+14	46	35.3	15.2V	6 675
1977	UB3		1977	10	19.42882	01	46	08.23	+14	47	31.3		6 675
1977	UC3	*	1977	10	18.38108	01	47	26.99	+09	52	57.6	16.5V	6 675
1977	UC3		1977	10	19.42882	01	46	27.72	+09	45	21.0		6 675
1977	UD3	*	1977	10	18.38108	01	47	33.68	+09	39	17.3	16.5V	6 675
1977	UD3		1977	10	19.42882	01	46	23.93	+09	38	43.0		6 675
1977	UE3	*	1977	10	18.38108	01	48	13.40	+09	21	21.0	17.5V	6 675
1977	UE3		1977	10	19.42882	01	47	18.13	+09	20	56.1		6 675
1977	UF3	*	1977	10	18.38108	01	48	14.15	+09	06	26.0	16.8V	6 675
1977	UF3		1977	10	19.42882	01	47	27.70	+08	58	52.7		6 675
1977	UG3	*	1977	10	18.38108	01	48	30.45	+08	51	40.5	16.5V	6 675
1977	UG3		1977	10	19.42882	01	47	19.33	+08	50	36.0		6 675
1977	UH3	*	1977	10	18.38108	01	48	50.02	+14	27	05.9	17.5V	6 675
1977	UH3		1977	10	19.42882	01	47	38.80	+14	29	10.5		6 675
1977	UJ3	*	1977	10	18.38108	01	49	12.71	+14	23	36.7	17.8V	6 675
1977	UJ3		1977	10	19.42882	01	48	12.93	+14	20	51.4		6 675
1977	UK3	*	1977	10	18.38108	01	50	57.00	+14	22	11.7	19.5V	6 675
1977	UK3		1977	10	19.42882	01	50	25.59	+14	18	56.0		6 675
1977	UL3	*	1977	10	18.38108	01	51	19.54	+10	19	08.2	17.2V	6 675
1977	UL3		1977	10	19.42882	01	50	08.76	+10	17	15.4		6 675
1977	UM3	*	1977	10	18.38108	01	51	27.14	+09	36	30.1	16.5V	6 675
1977	UM3		1977	10	19.42882	01	50	19.00	+09	36	45.9		6 675
1977	UN3	*	1977	10	18.38108	01	51	36.20	+12	41	43.5	17.5V	6 675
1977	UN3		1977	10	19.42882	01	50	50.36	+12	36	12.7		6 675
1977	UO3	*	1977	10	18.38108	01	51	47.94	+11	51	34.9	17.5V	6 675
1977	UO3		1977	10	19.42882	01	50	49.16	+11	46	58.5		6 675
1977	UP3	*	1977	10	18.38108	01	52	03.59	+11	55	21.5	17.8V	6 675
1977	UP3		1977	10	19.42882	01	51	11.72	+11	52	20.6		6 675
1977	UQ3	*	1977	10	18.38108	01	52	48.30	+12	14	28.0	18.8V	6 675
1977	UQ3		1977	10	19.42882	01	52	08.39	+12	10	31.0		6 675
1977	UR3	*	1977	10	18.38108	01	53	21.36	+11	57	58.6	17.8V	6 675
1977	UR3		1977	10	19.42882	01	52	18.60	+11	54	21.7		6 675
1977	US3	*	1977	10	18.38108	01	53	38.52	+13	51	31.7	17.2V	6 675
1977	US3		1977	10	19.42882	01	52	53.10	+13	39	14.9		6 675
1977	UT3	*	1977	10	18.38108	01	53	58.05	+09	08	40.1	16.0V	6 675
1977	UT3		1977	10	19.42882	01	53	05.30	+09	04	37.9		6 675
1977	UU3	*	1977	10	18.38108	01	54	11.57	+10	33	38.2	17.8V	6 675
1977	UU3		1977	10	19.42882	01	53	19.37	+10	23	55.1		6 675
1977	UV3	*	1977	10	18.38108	01	54	23.55	+10	23	50.6	19.5V	6 675
1977	UV3		1977	10	19.42882	01	53	49.73	+10	21	50.7		6 675
1977	UW3	*	1977	10	18.38108	01	54	25.37	+09	58	31.0	17.2V	6 675
1977	UW3		1977	10	19.42882	01	53	13.92	+10	02	13.8		6 675
1977	UX3	*	1977	10	18.38108	01	54	42.28	+13	56	24.7	17.2V	6 675
1977	UX3		1977	10	19.42882	01	53	48.20	+13	48	09.3		6 675
1977	UY3	*	1977	10	18.38108	01	54	44.38	+14	12	54.4	17.8V	6 675
1977	UY3		1977	10	19.42882	01	53	44.87	+14	10	17.3		6 675

1977	UZ3	*	1977	10	18.38108	01	54	59.37	+10	57	04.9		17.8V	6 675
1977	UZ3		1977	10	19.42882	01	54	03.36	+10	53	10.4			6 675
1977	UA4	*	1977	10	18.38108	01	55	11.19	+12	08	14.3		16.8V	6 675
1977	UA4		1977	10	19.42882	01	53	55.50	+12	13	19.1			6 675
1977	UB4	*	1977	10	18.38108	01	55	17.32	+11	58	43.8		17.5V	6 675
1977	UB4		1977	10	19.42882	01	54	25.64	+11	53	35.5			6 675
1977	UC4	*	1977	10	18.38108	01	55	22.93	+14	20	56.2		17.5V	6 675
1977	UC4		1977	10	19.42882	01	54	28.74	+14	16	18.4			6 675
1977	UD4	*	1977	10	18.38108	01	55	23.75	+13	36	48.3		17.5V	6 675
1977	UD4		1977	10	19.42882	01	54	28.23	+13	30	48.8			6 675
1977	UE4	*	1977	10	18.38108	01	56	04.17	+14	50	55.6		16.2V	6 675
1977	UE4		1977	10	19.42882	01	55	09.65	+14	43	37.1			6 675
1977	UF4	*	1977	10	18.38108	01	56	25.49	+11	07	36.4		16.8V	6 675
1977	UF4		1977	10	19.42882	01	55	28.18	+10	59	45.7			6 675
1977	UG4	*	1977	10	18.38108	01	56	30.10	+11	36	47.1		17.5V	6 675
1977	UG4		1977	10	19.42882	01	55	33.00	+11	29	14.6			6 675
1977	UH4	*	1977	10	18.38108	01	56	47.39	+12	01	55.8		17.8V	6 675
1977	UH4		1977	10	19.42882	01	55	57.27	+11	53	46.5			6 675
1977	UJ4	*	1977	10	18.38108	01	57	03.57	+13	32	01.0		17.2V	6 675
1977	UJ4		1977	10	19.42882	01	56	10.94	+13	27	22.9			6 675
1977	UK4	*	1977	10	18.38108	01	57	22.68	+12	16	51.8		19.5V	6 675
1977	UK4		1977	10	19.42882	01	56	50.69	+12	12	27.8			6 675
1977	UL4	*	1977	10	18.38108	01	57	42.85	+09	56	05.9		16.5V	6 675
1977	UL4		1977	10	19.42882	01	56	39.59	+09	52	13.2			6 675
1977	UM4	*	1977	10	18.38108	01	57	52.90	+12	50	23.0		15.2V	6 675
1977	UM4		1977	10	19.42882	01	56	49.28	+12	46	48.7			6 675
1977	UN4	*	1977	10	18.38108	01	58	06.52	+09	29	59.1		17.0V	6 675
1977	UN4		1977	10	19.42882	01	57	11.51	+09	25	06.8			6 675
1977	UO4	*	1977	10	18.38108	01	58	22.40	+11	50	38.5		16.8V	6 675
1977	UO4		1977	10	19.42882	01	57	25.60	+11	50	47.6			6 675
1977	UP4	*	1977	10	18.38108	01	58	36.23	+11	43	41.5		17.0V	6 675
1977	UP4		1977	10	19.42882	01	57	57.71	+11	35	27.8			6 675
1977	UQ4	*	1977	10	18.38108	01	58	50.43	+12	36	54.2		17.2V	6 675
1977	UQ4		1977	10	19.42882	01	57	59.74	+12	32	07.9			6 675
1977	UR4	*	1977	10	18.38108	01	59	17.92	+10	53	20.2		16.5V	6 675
1977	UR4		1977	10	19.42882	01	58	17.69	+10	47	36.4			6 675
1977	US4	*	1977	10	18.38108	01	59	52.71	+13	00	12.2		17.2V	6 675
1977	US4		1977	10	19.42882	01	58	49.34	+12	57	46.4			6 675
1977	UT4	*	1977	10	18.38108	02	00	32.37	+09	39	30.0		18.0V	6 675
1977	UT4		1977	10	19.42882	01	59	30.89	+09	33	37.5			6 675
1977	UU4	*	1977	10	18.38108	02	00	39.70	+12	06	23.1		17.8V	6 675
1977	UU4		1977	10	19.42882	01	59	53.50	+12	00	45.8			6 675
1977	UV4	*	1977	10	18.38108	02	00	55.05	+12	09	31.4		18.0V	6 675
1977	UV4		1977	10	19.42882	02	00	07.24	+12	05	01.7			6 675
1977	UW4	*	1977	10	18.38108	02	00	57.24	+09	40	14.3		17.8V	6 675
1977	UW4		1977	10	19.42882	01	59	58.20	+09	38	26.5			6 675
1977	UX4	*	1977	10	18.38108	02	01	06.50	+09	23	38.6		16.5V	6 675
1977	UX4		1977	10	19.42882	01	59	58.74	+09	22	35.6			6 675
1977	UY4	*	1977	10	18.38108	02	01	12.01	+09	52	12.3		17.5V	6 675
1977	UY4		1977	10	19.42882	02	00	08.62	+09	54	11.4			6 675
1977	UZ4	*	1977	10	18.38108	02	01	21.06	+13	21	38.1		17.5V	6 675
1977	UZ4		1977	10	19.42882	02	00	20.78	+13	15	05.0			6 675
1977	UA5	*	1977	10	18.38108	02	01	22.91	+10	12	17.5		17.8V	6 675
1977	UA5		1977	10	19.42882	02	00	36.04	+10	06	19.6			6 675
1977	UB5	*	1977	10	18.38108	02	01	34.91	+12	02	47.6		17.0V	6 675
1977	UB5		1977	10	19.42882	02	00	55.73	+11	48	17.0			6 675
1977	UC5	*	1977	10	18.38108	02	01	39.74	+11	15	14.8		17.8V	6 675
1977	UC5		1977	10	19.42882	02	00	38.98	+11	12	59.8			6 675
1977	UD5	*	1977	10	18.38108	02	01	57.15	+10	52	10.4		18.0V	6 675

1977	UD5		1977	10	19.42882	02	01	06.82	+10	49	32.4		6 675
1977	UE5	*	1977	10	18.38108	02	04	08.07	+09	50	23.1	17.5V	6 675
1977	UE5		1977	10	19.42882	02	03	06.57	+09	42	13.0		6 675
1977	UF5	*	1977	10	18.38108	02	04	20.44	+11	19	34.6	17.5V	6 675
1977	UF5		1977	10	19.42882	02	03	18.47	+11	15	33.2		6 675
1977	UG5	*	1977	10	18.38108	02	04	49.25	+14	28	20.9	17.5V	6 675
1977	UG5		1977	10	19.42882	02	04	19.05	+14	24	26.5		6 675
1977	UH5	*	1977	10	18.38108	02	04	55.08	+10	03	06.1	17.5V	6 675
1977	UH5		1977	10	19.42882	02	03	59.34	+09	55	32.7		6 675
1977	UJ5	*	1977	10	18.38108	02	05	27.08	+11	58	56.8	17.0V	6 675
1977	UJ5		1977	10	19.42882	02	04	40.36	+11	53	51.2		6 675
1977	UK5	*	1977	10	18.38108	02	05	44.96	+13	12	53.4	18.8V	6 675
1977	UK5		1977	10	19.42882	02	05	09.55	+13	11	45.7		6 675
1977	UL5	*	1977	10	18.38108	02	06	16.80	+10	17	17.4	17.5V	6 675
1977	UL5		1977	10	19.42882	02	05	13.87	+10	16	22.7		6 675
1977	UM5	*	1977	10	18.38108	02	06	35.36	+09	41	02.5	16.0V	6 675
1977	UM5		1977	10	19.42882	02	05	49.26	+09	33	32.5		6 675
1977	UN5	*	1977	10	18.38108	02	06	41.11	+09	08	54.2	17.2V	6 675
1977	UN5		1977	10	19.42882	02	05	53.10	+08	59	29.4		6 675
1977	UO5	*	1977	10	18.38108	02	08	05.66	+10	23	16.8	15.5V	6 675
1977	UO5		1977	10	19.42882	02	07	16.51	+10	19	40.2		6 675
1977	UP5	*	1977	10	18.38108	02	08	43.50	+09	36	56.4	17.5V	6 675
1977	UP5		1977	10	19.42882	02	07	40.52	+09	28	10.5		6 675
1978	EW8	*	1978	03	15.32917	11	11	15.38	+06	33	57.5	19.0V	6 675
1978	EW8		1978	03	16.36563	11	10	43.25	+06	36	55.4		6 675
1978	EX8	*	1978	03	15.32917	11	12	55.10	+02	33	39.6	16.8V	6 675
1978	EX8		1978	03	16.36563	11	12	11.14	+02	41	53.1		6 675
1978	EY8	*	1978	03	15.32917	11	13	39.31	+03	24	26.6	17.2V	6 675
1978	EY8		1978	03	16.36563	11	12	39.41	+03	25	41.3		6 675
1978	EZ8	*	1978	03	15.32917	11	14	11.03	+05	45	44.1	17.5V	6 675
1978	EZ8		1978	03	16.36563	11	13	21.58	+05	53	58.6		6 675
1978	EA9	*	1978	03	15.32917	11	15	15.39	+05	46	29.9	16.5V	6 675
1978	EA9		1978	03	16.36563	11	14	28.34	+05	51	15.7		6 675
1978	EB9	*	1978	03	15.32917	11	19	19.20	+04	09	31.6	16.5V	6 675
1978	EB9		1978	03	16.36563	11	18	25.10	+04	16	05.6		6 675
1978	EC9	*	1978	03	15.32917	11	19	37.37	+03	14	10.3	17.8V	6 675
1978	EC9		1978	03	16.36563	11	18	33.57	+03	18	03.5		6 675
1978	ED9	*	1978	03	15.32917	11	20	03.90	+01	36	56.2	17.2V	6 675
1978	ED9		1978	03	16.36563	11	19	09.52	+01	42	37.1		6 675
1978	EE9	*	1978	03	15.32917	11	21	12.42	+01	23	41.3	17.2V	6 675
1978	EE9		1978	03	16.36563	11	20	12.26	+01	25	23.3		6 675
1978	EF9	*	1978	03	15.32917	11	21	28.43	+01	23	33.7	19.5V	6 675
1978	EF9		1978	03	16.36563	11	20	59.01	+01	27	37.2		6 675
1978	EG9	*	1978	03	15.32917	11	23	45.15	+03	04	57.5	18.2V	6 675
1978	EG9		1978	03	16.36563	11	23	12.72	+03	07	53.4		6 675
1978	EH9	*	1978	03	15.32917	11	25	35.47	+03	47	54.1	16.0V	6 675
1978	EH9		1978	03	16.36563	11	24	33.34	+03	53	01.4		6 675
1978	EJ9	*	1978	03	15.32917	11	25	37.21	+03	23	07.9	18.8V	6 675
1978	EJ9		1978	03	16.36563	11	24	51.67	+03	27	34.5		6 675
1978	EK9	*	1978	03	15.32917	11	25	40.65	+03	13	51.1	17.5V	6 675
1978	EK9		1978	03	16.36563	11	24	54.09	+03	20	48.6		6 675
1978	EL9	*	1978	03	15.32917	11	25	48.39	+04	15	52.8	19.5V	6 675
1978	EL9		1978	03	16.36563	11	25	19.56	+04	19	59.8		6 675
1978	EM9	*	1978	03	15.32917	11	28	19.73	+01	13	03.6	18.0V	6 675
1978	EM9		1978	03	16.36563	11	27	36.49	+01	20	34.2		6 675
1978	EN9	*	1978	03	15.32917	11	28	37.73	+03	00	34.1	17.2V	6 675
1978	EN9		1978	03	16.36563	11	27	42.01	+03	07	14.7		6 675
1978	EO9	*	1978	03	15.32917	11	29	01.17	+02	35	50.8	18.0V	6 675
1978	EO9		1978	03	16.36563	11	28	31.61	+02	40	05.6		6 675

1978	EP9	*	1978	03	15.32917	11	29	51.70	+01	52	02.1	16.2V	6 675
1978	EP9		1978	03	16.36563	11	29	11.89	+02	05	14.5		6 675
1978	EQ9	*	1978	03	15.32917	11	30	19.49	+06	14	46.9	16.2V	6 675
1978	EQ9		1978	03	16.36563	11	29	32.46	+06	19	32.5		6 675
1978	ER9	*	1978	03	15.32917	11	31	53.45	+03	09	01.5	15.8V	6 675
1978	ER9		1978	03	16.36563	11	30	55.41	+03	11	36.8		6 675
1978	ES9	*	1978	03	15.38715	11	33	57.07	+01	42	39.9	17.5V	6 675
1978	ES9		1978	03	16.42431	11	33	08.55	+01	46	24.8		6 675
1978	ET9	*	1978	03	15.38715	11	34	14.70	+01	30	34.3	16.8V	6 675
1978	ET9		1978	03	16.42431	11	33	07.85	+01	33	06.1		6 675
1978	EU9	*	1978	03	15.38715	11	35	12.04	+03	49	17.1	17.2V	6 675
1978	EU9		1978	03	16.42431	11	34	23.68	+03	55	18.1		6 675
1978	EV9	*	1978	03	15.38715	11	35	35.06	-00	59	00.0	17.5V	6 675
1978	EV9		1978	03	16.42431	11	34	50.52	-00	52	37.0		6 675
1978	EW9	*	1978	03	15.38715	11	36	18.03	-00	34	41.5	17.2V	6 675
1978	EW9		1978	03	16.42431	11	35	16.36	-00	30	43.3		6 675
1978	EX9	*	1978	03	15.38715	11	38	24.89	+00	24	51.2	15.5V	6 675
1978	EX9		1978	03	16.42431	11	37	20.35	+00	29	28.7		6 675
1978	EY9	*	1978	03	15.38715	11	39	27.15	+04	26	58.5	18.5V	6 675
1978	EY9		1978	03	16.42431	11	38	41.99	+04	32	04.1		6 675
1978	EZ9	*	1978	03	15.38715	11	39	48.36	+01	12	19.2	17.2V	6 675
1978	EZ9		1978	03	16.42431	11	39	00.78	+01	17	27.0		6 675
1978	EA10	*	1978	03	15.38715	11	41	13.83	+02	32	34.1	19.2V	6 675
1978	EA10		1978	03	16.42431	11	40	42.17	+02	35	46.6		6 675
1978	EB10	*	1978	03	15.38715	11	42	30.68	+04	22	11.1	18.5V	6 675
1978	EB10		1978	03	16.42431	11	41	59.30	+04	24	47.8		6 675
1978	EC10	*	1978	03	15.38715	11	43	01.71	+04	08	40.7	17.0V	6 675
1978	EC10		1978	03	16.42431	11	42	10.89	+04	15	17.5		6 675
1978	ED10	*	1978	03	15.38715	11	43	10.75	+04	17	22.1	16.8V	6 675
1978	ED10		1978	03	16.42431	11	42	17.43	+04	20	07.0		6 675
1978	EE10	*	1978	03	15.38715	11	43	26.86	+04	39	31.8	17.0V	6 675
1978	EE10		1978	03	16.42431	11	42	44.94	+04	55	58.2		6 675
1978	EF10	*	1978	03	15.38715	11	43	31.42	+04	43	31.6	17.5V	6 675
1978	EF10		1978	03	16.42431	11	42	40.52	+04	52	08.5		6 675
1978	EG10	*	1978	03	15.38715	11	43	40.83	+00	52	42.3	17.0V	6 675
1978	EG10		1978	03	16.42431	11	42	56.08	+00	56	58.4		6 675
1978	EH10	*	1978	03	15.38715	11	44	14.81	+03	03	40.7	17.5V	6 675
1978	EH10		1978	03	16.42431	11	43	14.58	+03	09	01.1		6 675
1978	EJ10	*	1978	03	15.38715	11	48	30.40	-00	00	13.0	17.5V	6 675
1978	EJ10		1978	03	16.42431	11	47	22.12	+00	00	47.3		6 675
1978	EK10	*	1978	03	15.38715	11	48	35.36	+02	05	39.1	19.2V	6 675
1978	EK10		1978	03	16.42431	11	47	39.28	+02	11	09.3		6 675
1978	EL10	*	1978	03	15.38715	11	50	01.56	+03	41	03.5	17.5V	6 675
1978	EL10		1978	03	16.42431	11	49	03.38	+03	45	26.5		6 675
1978	EM10	*	1978	03	15.38715	11	50	05.78	+03	47	42.5	17.5V	6 675
1978	EM10		1978	03	16.42431	11	49	15.04	+03	52	35.4		6 675
1978	EN10	*	1978	03	15.38715	11	51	25.15	-00	25	50.5	16.8V	6 675
1978	EN10		1978	03	16.42431	11	50	21.28	-00	22	52.9		6 675
1978	EO10	*	1978	03	15.38715	11	52	09.49	+01	39	07.7	17.5V	6 675
1978	EO10		1978	03	16.42431	11	51	25.51	+01	51	27.0		6 675
1978	EP10	*	1978	03	15.38715	11	52	16.65	+01	08	53.3	16.8V	6 675
1978	EP10		1978	03	16.42431	11	51	30.28	+01	14	05.7		6 675
1978	EQ10	*	1978	03	15.38715	11	53	06.03	+02	14	29.8	17.8V	6 675
1978	EQ10		1978	03	16.42431	11	52	18.26	+02	19	01.5		6 675
1978	ER10	*	1978	03	15.38715	11	53	08.28	+00	02	32.2	17.2V	6 675
1978	ER10		1978	03	16.42431	11	52	22.64	+00	15	01.9		6 675
1978	ES10	*	1978	03	15.38715	11	53	55.02	+00	57	01.9	17.8V	6 675
1978	ES10		1978	03	16.42431	11	53	05.43	+00	59	43.3		6 675
1978	ET10	*	1978	03	15.38715	11	54	52.62	+01	08	18.3	17.2V	6 675

1978	ET10		1978	03	16.42431	11	53	43.99	+01	05	31.2		6 675
1978	EU10*		1978	03	15.38715	11	55	50.75	-01	08	41.0	17.2V	6 675
1978	EU10		1978	03	16.42431	11	55	01.00	-01	03	10.7		6 675
1978	EV10*		1978	03	15.38715	11	56	44.28	+04	26	29.7	16.8V	6 675
1978	EV10		1978	03	16.42431	11	55	45.92	+04	34	43.7		6 675
1978	UL2		1991	02	09.24236	08	51	08.87	+17	51	20.0	17.8	9 675
1978	UL2		1991	02	09.27309	08	51	07.32	+17	51	27.2		9 675
1978	VG5		1977	09	09.34584	23	36	17.06	-02	08	37.8		6 675
1978	VG5		1977	09	10.22535	23	35	39.32	-02	12	35.8		6 675
1978	XQ		1977	09	09.34584	23	28	03.50	-03	04	39.3		6 675
1978	XQ		1977	09	10.22535	23	27	26.92	-03	08	44.7		6 675
1979	BM2	*	1979	01	27.23698	07	17	01.58	+24	56	12.2	17.2V	6 675
1979	BM2		1979	01	29.35955	07	14	52.11	+24	53	28.8		6 675
1979	BN2	*	1979	01	27.23698	07	17	35.62	+22	56	12.0	18.5V	6 675
1979	BN2		1979	01	29.35955	07	16	00.42	+22	58	54.4		6 675
1979	BO2	*	1979	01	27.23698	07	17	48.37	+22	17	44.0	18.0V	6 675
1979	BO2		1979	01	29.35955	07	16	08.22	+22	22	15.4		6 675
1979	BP2	*	1979	01	27.23698	07	19	38.54	+21	37	13.6	17.8V	6 675
1979	BP2		1979	01	29.35955	07	18	02.22	+21	41	22.8		6 675
1979	BQ2	*	1979	01	27.23698	07	23	25.18	+24	13	55.9	15.8V	6 675
1979	BQ2		1979	01	29.35955	07	21	56.24	+24	29	15.1		6 675
1979	BR2	*	1979	01	27.23698	07	24	18.54	+20	43	20.3	17.0V	6 675
1979	BR2		1979	01	29.35955	07	22	18.37	+20	51	04.4		6 675
1979	BS2	*	1979	01	27.23698	07	24	36.12	+23	04	58.6	17.5V	6 675
1979	BS2		1979	01	29.35955	07	22	35.49	+22	55	30.9		6 675
1979	BT2	*	1979	01	27.23698	07	29	55.56	+20	53	32.2	17.5V	6 675
1979	BT2		1979	01	29.35955	07	28	09.75	+21	00	14.8		6 675
1979	BU2	*	1979	01	27.23698	07	30	24.72	+20	45	19.8	16.0V	6 675
1979	BU2		1979	01	29.35955	07	28	44.00	+21	04	57.1		6 675
1979	BV2	*	1979	01	27.23698	07	32	50.90	+21	41	57.3	17.2V	6 675
1979	BV2		1979	01	29.35955	07	30	52.66	+21	44	40.7		6 675
1979	BW2	*	1979	01	27.23698	07	33	06.36	+19	34	34.3	16.5V	6 675
1979	BW2		1979	01	29.35955	07	31	13.68	+19	36	40.6		6 675
1979	BX2	*	1979	01	27.23698	07	36	55.96	+24	11	45.4	18.0V	6 675
1979	BX2		1979	01	29.35955	07	35	14.55	+24	15	27.9		6 675
1979	BY2	*	1979	01	27.23698	07	37	04.94	+24	24	36.8	18.2V	6 675
1979	BY2		1979	01	29.35955	07	34	45.15	+24	31	24.3		6 675
1979	BZ2	*	1979	01	27.23698	07	37	18.20	+22	01	50.7	15.8V	6 675
1979	BZ2		1979	01	29.35955	07	35	15.79	+22	00	20.1		6 675
1979	BA3	*	1979	01	27.23698	07	39	42.57	+20	04	27.0	17.0V	6 675
1979	BA3		1979	01	29.35955	07	37	40.26	+20	17	07.1		6 675
1979	ML1		1990	09	18.18142	22	12	55.75	+00	53	09.5	17.0	9 675
1979	ML1		1990	09	18.21476	22	12	54.33	+00	53	00.0		9 675
1980	GL		1980	04	08.30660	13	00	44.25	-07	29	51.4		6 675
1980	GL		1980	04	09.35243	12	59	38.37	-07	30	02.4		6 675
1980	GM		1980	04	08.30660	13	01	20.43	-04	33	04.7		6 675
1980	GM		1980	04	09.35243	13	00	26.34	-04	25	34.4		6 675
1980	GO		1980	04	08.30660	13	03	16.78	-04	26	03.7		6 675
1980	GO		1980	04	09.35243	13	02	30.58	-04	20	50.4		6 675
1980	GO1	*	1980	04	08.30660	12	44	55.72	-09	12	57.3	17.0V	6 675
1980	GO1		1980	04	09.35243	12	44	01.29	-09	04	41.3		6 675
1980	GP1	*	1980	04	08.30660	12	48	41.08	-04	58	10.7		6 675
1980	GP1		1980	04	09.35243	12	47	44.30	-04	49	33.6		6 675
1980	GQ1	*	1980	04	08.30660	12	50	25.62	-07	44	55.8	17.0V	6 675
1980	GQ1		1980	04	09.35243	12	49	18.62	-07	45	23.4		6 675
1980	GR1	*	1980	04	08.30660	12	53	29.06	-07	37	54.0	17.0V	6 675
1980	GR1		1980	04	09.35243	12	52	31.04	-07	32	33.6		6 675
1980	GS1	*	1980	04	08.30660	12	58	23.80	-03	13	41.4	16.5V	6 675
1980	GS1		1980	04	09.35243	12	57	24.30	-03	11	51.7		6 675

1980	GT1	*	1980	04	08.30660	12	59	42.36	-05	02	34.1	17.5V	6 675
1980	GT1		1980	04	09.35243	12	58	42.74	-04	55	24.5		6 675
1980	GU1	*	1980	04	08.30660	13	00	27.71	-03	29	35.3	16.2V	6 675
1980	GU1		1980	04	09.35243	12	59	18.39	-03	29	16.9		6 675
1980	GV1	*	1980	04	08.30660	13	01	10.51	-06	08	24.3	16.8V	6 675
1980	GV1		1980	04	09.35243	13	00	17.91	-05	38	17.8		6 675
1980	GW1	*	1980	04	08.30660	13	06	17.68	-06	24	46.5	16.5V	6 675
1980	GW1		1980	04	09.35243	13	05	22.84	-06	17	38.6		6 675
1980	GX1	*	1980	04	08.30660	13	07	08.96	-06	57	32.3	16.5V	6 675
1980	GX1		1980	04	09.35243	13	06	16.86	-06	51	17.6		6 675
1980	GY1	*	1980	04	08.30660	13	07	25.37	-05	55	46.2	16.2V	6 675
1980	GY1		1980	04	09.35243	13	06	26.39	-05	50	15.0		6 675
1980	LU		1991	03	18.39757	12	37	48.85	-02	32	44.6	16.0	2 675
1980	LU		1991	03	18.42760	12	37	47.36	-02	32	31.2		2 675
1980	PQ		1980	08	04.30174	21	02	49.40	-06	27	17.3	16.2V	6 675
1980	PQ		1980	08	05.34965	21	02	07.55	-06	41	31.2		6 675
1980	PU		1980	08	04.30174	21	08	12.35	-06	19	02.4	15.8V	6 675
1980	PU		1980	08	05.34965	21	07	17.59	-06	23	27.1		6 675
1980	PF3	*	1980	08	03.27326	20	39	22.18	-11	16	32.2	17.8V	6 675
1980	PF3		1980	08	05.29271	20	37	27.35	-11	17	05.8		6 675
1980	PG3	*	1980	08	03.27326	20	39	27.99	-10	01	07.3	17.2V	6 675
1980	PG3		1980	08	05.29271	20	37	32.02	-09	55	55.0		6 675
1980	PH3	*	1980	08	03.27326	20	39	39.06	-11	14	38.1	17.2V	6 675
1980	PH3		1980	08	05.29271	20	38	11.90	-11	27	13.6		6 675
1980	PJ3	*	1980	08	03.27326	20	41	59.67	-12	50	44.2	17.0V	6 675
1980	PJ3		1980	08	05.29271	20	40	22.37	-12	54	43.7		6 675
1980	PK3	*	1980	08	03.27326	20	47	17.37	-11	16	24.5	17.0V	6 675
1980	PK3		1980	08	05.29271	20	45	37.64	-11	27	18.1		6 675
1980	PL3	*	1980	08	03.27326	20	47	54.49	-10	48	59.4	17.2V	6 675
1980	PL3		1980	08	05.29271	20	46	10.53	-10	54	33.8		6 675
1980	PM3	*	1980	08	03.27326	20	50	55.27	-12	55	00.5	17.0V	6 675
1980	PM3		1980	08	05.29271	20	49	26.17	-13	15	38.3		6 675
1980	PN3	*	1980	08	03.27326	20	50	56.37	-11	40	08.5	17.5V	6 675
1980	PN3		1980	08	05.29271	20	49	24.27	-11	51	58.6		6 675
1980	PO3	*	1980	08	03.27326	20	51	36.56	-11	28	48.2	17.8V	6 675
1980	PO3		1980	08	05.29271	20	49	40.58	-11	40	00.6		6 675
1980	PP3	*	1980	08	03.27326	20	51	37.55	-11	24	15.5	18.2V	6 675
1980	PP3		1980	08	05.29271	20	50	05.30	-11	29	23.6		6 675
1980	PQ3	*	1980	08	03.27326	20	52	14.10	-13	48	46.8	17.0V	6 675
1980	PQ3		1980	08	05.29271	20	50	11.44	-13	54	41.4		6 675
1980	PR3	*	1980	08	03.27326	20	52	42.65	-13	08	12.7	17.2V	6 675
1980	PR3		1980	08	05.29271	20	50	47.03	-13	03	10.3		6 675
1980	PS3	*	1980	08	03.27326	20	53	56.97	-14	33	13.1	17.2V	6 675
1980	PS3		1980	08	05.29271	20	52	04.41	-14	42	24.2		6 675
1980	PT3	*	1980	08	03.27326	20	54	49.90	-10	56	11.4	17.0V	6 675
1980	PT3		1980	08	05.29271	20	52	40.33	-11	00	07.7		6 675
1980	PU3	*	1980	08	03.27326	20	55	15.22	-10	22	24.0	14.5V	6 675
1980	PU3		1980	08	05.29271	20	53	21.09	-10	29	22.3		6 675
1980	PV3	*	1980	08	03.27326	20	56	53.40	-12	07	05.2	16.5V	6 675
1980	PV3		1980	08	05.29271	20	54	57.97	-12	04	30.7		6 675
1980	PW3	*	1980	08	03.27326	20	57	01.67	-10	20	01.2	17.2V	6 675
1980	PW3		1980	08	05.29271	20	55	31.67	-10	26	49.7		6 675
1980	PX3	*	1980	08	04.30174	21	03	45.87	-11	56	07.0	17.8V	6 675
1980	PX3		1980	08	05.34965	21	02	52.25	-11	56	49.5		6 675
1980	PY3	*	1980	08	04.30174	21	04	35.84	-11	33	54.3	17.2V	6 675
1980	PY3		1980	08	05.34965	21	03	36.24	-11	35	09.7		6 675
1980	PZ3	*	1980	08	04.30174	21	04	38.04	-09	17	42.1	17.8V	6 675
1980	PZ3		1980	08	05.34965	21	03	37.17	-09	21	40.5		6 675
1980	PA4	*	1980	08	04.30174	21	05	41.26	-10	53	39.2	17.0V	6 675

1980	PA4		1980	08	05.34965	21	04	48.48	-11	02	40.0		6 675
1980	PB4	*	1980	08	04.30174	21	06	38.00	-10	17	22.2	17.0V	6 675
1980	PB4		1980	08	05.34965	21	05	47.23	-10	22	05.0		6 675
1980	PC4	*	1980	08	04.30174	21	08	24.34	-06	49	04.5	17.5V	6 675
1980	PC4		1980	08	05.34965	21	07	33.58	-06	50	32.7		6 675
1980	PD4	*	1980	08	04.30174	21	09	47.15	-10	57	33.3	15.0V	6 675
1980	PD4		1980	08	05.34965	21	09	01.87	-11	08	23.0		6 675
1980	PE4	*	1980	08	04.30174	21	10	15.10	-06	20	58.9	17.2V	6 675
1980	PE4		1980	08	05.34965	21	09	24.01	-06	29	16.9		6 675
1980	PF4	*	1980	08	04.30174	21	11	09.23	-11	30	50.1	16.0V	6 675
1980	PF4		1980	08	05.34965	21	10	17.65	-11	31	36.7		6 675
1980	PG4	*	1980	08	04.30174	21	13	23.82	-08	29	22.0	17.0V	6 675
1980	PG4		1980	08	05.34965	21	12	27.30	-08	34	15.5		6 675
1980	PH4	*	1980	08	04.30174	21	13	25.81	-06	54	30.2	17.5V	6 675
1980	PH4		1980	08	05.34965	21	12	36.09	-07	01	57.8		6 675
1980	PJ4	*	1980	08	04.30174	21	14	02.86	-12	17	03.0	17.5V	6 675
1980	PJ4		1980	08	05.34965	21	13	06.44	-12	24	13.3		6 675
1980	PK4	*	1980	08	04.30174	21	14	45.25	-07	49	00.0	16.8V	6 675
1980	PK4		1980	08	05.34965	21	14	03.93	-07	52	50.6		6 675
1980	PL4	*	1980	08	04.30174	21	14	55.32	-12	12	40.9	17.8V	6 675
1980	PL4		1980	08	05.34965	21	14	02.46	-12	19	54.9		6 675
1980	PM4	*	1980	08	04.30174	21	15	44.42	-10	02	23.6	17.8V	6 675
1980	PM4		1980	08	05.34965	21	14	46.79	-10	08	34.7		6 675
1980	PN4	*	1980	08	04.30174	21	16	19.05	-08	53	17.6	18.0V	6 675
1980	PN4		1980	08	05.34965	21	15	28.86	-08	58	01.9		6 675
1980	PO4	*	1980	08	04.30174	21	17	21.43	-10	01	58.6	18.0V	6 675
1980	PO4		1980	08	05.34965	21	16	20.89	-10	06	59.8		6 675
1980	PP4	*	1980	08	04.30174	21	17	32.30	-06	58	43.5	16.8V	6 675
1980	PP4		1980	08	05.34965	21	16	48.46	-07	11	00.8		6 675
1980	PQ4	*	1980	08	04.30174	21	17	46.02	-07	25	11.9	16.5V	6 675
1980	PQ4		1980	08	05.34965	21	16	54.76	-07	28	55.5		6 675
1980	PR4	*	1980	08	04.30174	21	17	54.03	-09	50	45.1	17.8V	6 675
1980	PR4		1980	08	05.34965	21	17	01.90	-10	00	36.3		6 675
1980	PS4	*	1980	08	04.30174	21	19	48.59	-10	55	19.4	17.2V	6 675
1980	PS4		1980	08	05.34965	21	19	18.61	-11	04	11.6		6 675
1980	PT4	*	1980	08	04.30174	21	20	16.28	-11	18	21.1	16.8V	6 675
1980	PT4		1980	08	05.34965	21	19	30.86	-11	26	30.9		6 675
1980	PU4	*	1980	08	04.30174	21	22	47.50	-07	22	13.5	17.5V	6 675
1980	PU4		1980	08	05.34965	21	21	50.12	-07	20	47.4		6 675
1980	PV4	*	1980	08	04.30174	21	23	31.15	-08	56	42.2	17.8V	6 675
1980	PV4		1980	08	05.34965	21	22	45.90	-09	03	21.9		6 675
1980	PW4	*	1980	08	04.30174	21	24	54.22	-06	46	16.1	17.5V	6 675
1980	PW4		1980	08	05.34965	21	23	54.72	-06	48	12.8		6 675
1980	PX4	*	1980	08	04.30174	21	25	00.09	-07	07	20.8	16.5V	6 675
1980	PX4		1980	08	05.34965	21	24	03.20	-07	09	07.0		6 675
1980	RC1		1980	08	04.30174	21	19	52.26	-12	00	27.0	15.0V	6 675
1980	RC1		1980	08	05.34965	21	18	56.06	-12	02	20.7		6 675
1980	TH3		1978	03	15.32917	11	30	10.52	+02	43	06.5	16.5V	6 675
1980	TH3		1978	03	16.36563	11	29	19.90	+02	48	06.8		6 675
1980	TX3		1978	03	15.38715	11	46	36.45	+00	22	38.6	17.0V	6 675
1980	TX3		1978	03	16.42431	11	45	47.41	+00	28	20.4		6 675
1980	UF1	*	1980	10	31.22188	01	45	39.35	+19	31	37.8	17.5V	6 675
1980	UF1		1980	11	02.25104	01	43	26.32	+19	29	56.6		6 675
1980	UG1	*	1980	10	31.22188	01	46	32.79	+17	55	19.4	17.0V	6 675
1980	UG1		1980	11	02.25104	01	44	57.51	+17	32	33.5		6 675
1980	UH1	*	1980	10	31.22188	01	46	33.99	+20	32	04.1	16.8V	6 675
1980	UH1		1980	11	02.25104	01	44	45.35	+20	10	10.7		6 675
1980	UJ1	*	1980	10	31.22188	01	49	10.88	+19	52	53.1	15.8V	6 675
1980	UJ1		1980	11	02.25104	01	45	26.92	+20	18	50.6		6 675

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1980 UK1 * 1980 10 31.22188  01 50 01.53  +17 59 57.2          16.2V 6 675
1980 UK1   1980 11 02.25104  01 48 30.74  +17 49 32.5                6 675
1980 UL1 * 1980 10 31.22188  01 50 09.55  +17 08 03.9          16.0V 6 675
1980 UL1   1980 11 02.25104  01 48 34.46  +16 50 55.1                6 675
1980 UM1 * 1980 10 31.22188  01 51 00.24  +19 21 46.9          16.8V 6 675
1980 UM1   1980 11 02.25104  01 49 02.48  +19 06 09.1                6 675
1980 UN1 * 1980 10 31.22188  01 54 27.65  +16 07 33.8          16.8V 6 675
1980 UN1   1980 11 02.25104  01 52 47.19  +15 55 33.3                6 675
1980 UO1 * 1980 10 31.22188  01 54 27.72  +15 33 31.1          17.0V 6 675
1980 UO1   1980 11 02.25104  01 53 02.61  +15 12 22.3                6 675
1980 UP1 * 1980 10 31.22188  01 54 57.50  +15 15 26.4          16.8V 6 675
1980 UP1   1980 11 02.25104  01 52 48.79  +15 04 05.5                6 675
1980 UQ1 * 1980 10 31.22188  01 55 34.00  +18 57 54.5          17.0V 6 675
1980 UQ1   1980 11 02.25104  01 53 47.13  +18 41 57.3                6 675
1980 UR1 * 1980 10 31.22188  01 57 16.57  +17 14 29.1          16.5V 6 675
1980 UR1   1980 11 02.25104  01 55 37.51  +16 51 42.3                6 675
1980 US1 * 1980 10 31.22188  02 04 07.45  +17 41 32.1          16.5V 6 675
1980 US1   1980 11 02.25104  02 02 07.43  +17 38 08.1                6 675
1980 UT1 * 1980 10 31.22188  02 05 24.69  +15 35 30.2          19.0V 6 675
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1980 UU1 * 1980 10 31.22188  02 05 31.42  +16 15 06.5          16.2V 6 675
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1980 UV1 * 1980 10 31.22188  02 05 56.09  +15 30 58.4          18.2V 6 675
1980 UV1   1980 11 02.25104  02 04 25.92  +15 18 00.9                6 675
1980 UW1 * 1980 10 31.22188  02 06 26.41  +16 15 13.4          16.5V 6 675
1980 UW1   1980 11 02.25104  02 04 31.83  +16 04 43.8                6 675
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1980 UX1   1980 11 02.25104  02 05 15.34  +19 42 15.2                6 675
1980 UY1 * 1980 10 31.22188  02 07 51.06  +15 23 03.3          17.0V 6 675
1980 UY1   1980 11 02.25104  02 06 00.26  +15 14 00.4                6 675
1980 VW2   1980 10 31.22188  02 09 18.84  +18 13 57.3                6 675
1980 VW2 * 1980 11 01.26840  02 08 09.70  +18 12 22.0          17.5V 6 675
1980 VW2   1980 11 02.25104  02 07 05.69  +18 10 49.5                6 675
1980 VW2   1980 11 02.30729  02 07 01.69  +18 10 43.5                6 675
1980 VX2   1980 10 31.22188  02 09 10.58  +19 14 59.0                6 675
1980 VX2 * 1980 11 01.26840  02 08 15.36  +18 59 50.5          16.0V 6 675
1980 VX2   1980 11 02.25104  02 07 24.41  +18 45 35.6                6 675
1980 VX2   1980 11 02.30729  02 07 21.13  +18 44 45.3                6 675
1980 VY2 * 1980 11 01.26840  02 08 44.69  +17 34 16.1          17.2V 6 675
1980 VY2   1980 11 02.25104  02 07 04.43  +17 40 05.8                6 675
1980 VY2   1980 11 02.30729  02 06 58.45  +17 40 25.3                6 675
1980 VZ2 * 1980 11 01.26840  02 14 43.59  +19 07 13.4          16.2V 6 675
1980 VZ2   1980 11 02.30729  02 13 52.19  +18 59 31.0                6 675
1980 VA3 * 1980 11 01.26840  02 17 11.07  +19 01 05.1          16.0V 6 675
1980 VA3   1980 11 02.30729  02 16 05.75  +18 57 25.8                6 675
1980 VB3 * 1980 11 01.26840  02 17 22.89  +17 48 19.8          16.5V 6 675
1980 VB3   1980 11 02.30729  02 16 26.85  +17 40 22.2                6 675
1980 VC3 * 1980 11 01.26840  02 18 19.91  +20 17 42.7          17.0V 6 675
1980 VC3   1980 11 02.30729  02 17 25.47  +20 11 39.9                6 675
1980 VD3 * 1980 11 01.26840  02 19 25.00  +19 44 48.3          18.0V 6 675
1980 VD3   1980 11 02.30729  02 18 03.59  +19 49 53.9                6 675
1980 VE3 * 1980 11 01.26840  02 19 35.41  +17 46 29.1          17.2V 6 675
1980 VE3   1980 11 02.30729  02 18 38.44  +17 37 28.8                6 675
1980 VF3 * 1980 11 01.26840  02 20 20.06  +21 24 32.9          17.5V 6 675
1980 VF3   1980 11 02.30729  02 19 32.90  +21 17 10.6                6 675
1980 VG3 * 1980 11 01.26840  02 20 57.08  +21 59 49.0          17.8V 6 675
1980 VG3   1980 11 02.30729  02 19 51.21  +21 33 53.1                6 675
1980 VH3 * 1980 11 01.26840  02 22 38.07  +19 58 28.4          17.0V 6 675
1980 VH3   1980 11 02.30729  02 20 37.03  +20 15 16.7                6 675
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1980 VJ3 * 1980 11 01.26840 02 23 00.02 +18 41 42.4 17.5V 6 675
1980 VJ3 1980 11 02.30729 02 21 59.43 +18 39 44.4 6 675
1980 VK3 * 1980 11 01.26840 02 23 17.26 +18 55 40.6 16.5V 6 675
1980 VK3 1980 11 02.30729 02 22 19.73 +18 51 52.2 6 675
1980 VL3 * 1980 11 01.26840 02 23 54.90 +17 19 46.2 17.5V 6 675
1980 VL3 1980 11 02.30729 02 22 56.76 +17 14 16.7 6 675
1980 VM3 * 1980 11 01.26840 02 24 30.66 +19 30 25.0 16.5V 6 675
1980 VM3 1980 11 02.30729 02 23 35.62 +19 28 07.4 6 675
1980 VN3 * 1980 11 01.26840 02 26 02.08 +22 52 47.0 17.0V 6 675
1980 VN3 1980 11 02.30729 02 25 08.65 +22 40 15.0 6 675
1980 VO3 * 1980 11 01.26840 02 26 05.43 +22 39 53.8 17.2V 6 675
1980 VO3 1980 11 02.30729 02 25 04.79 +22 34 29.5 6 675
1980 VP3 * 1980 11 01.26840 02 27 20.17 +22 48 29.2 17.5V 6 675
1980 VP3 1980 11 02.30729 02 26 29.28 +22 43 13.4 6 675
1980 VQ3 * 1980 11 01.26840 02 28 01.39 +17 29 31.4 16.0V 6 675
1980 VQ3 1980 11 02.30729 02 26 56.39 +17 27 05.5 6 675
1980 VR3 * 1980 11 01.26840 02 28 09.84 +19 15 04.4 16.2V 6 675
1980 VR3 1980 11 02.30729 02 27 01.36 +19 09 30.5 6 675
1980 VS3 * 1980 11 01.26840 02 28 37.18 +19 22 36.6 16.8V 6 675
1980 VS3 1980 11 02.30729 02 27 37.94 +19 19 34.1 6 675
1980 VT3 * 1980 11 01.26840 02 29 00.75 +20 42 24.4 17.5V 6 675
1980 VT3 1980 11 02.30729 02 27 50.45 +20 40 40.8 6 675
1980 VU3 * 1980 11 01.26840 02 29 43.06 +16 57 25.5 14.5V 6 675
1980 VU3 1980 11 02.30729 02 28 56.04 +16 48 57.4 6 675
1980 VV3 * 1980 11 01.32604 02 31 21.10 +18 23 42.8 16.8V 6 675
1980 VV3 1980 11 02.36632 02 30 13.90 +18 20 46.3 6 675
1980 VW3 * 1980 11 01.32604 02 32 21.88 +21 05 15.5 16.8V 6 675
1980 VW3 1980 11 02.36632 02 31 07.44 +21 03 25.2 6 675
1980 VX3 * 1980 11 01.32604 02 33 28.47 +22 44 46.7 17.0V 6 675
1980 VX3 1980 11 02.36632 02 32 35.26 +22 34 33.9 6 675
1980 VY3 * 1980 11 01.32604 02 33 48.04 +24 03 52.3 16.0V 6 675
1980 VY3 1980 11 02.36632 02 32 31.60 +24 07 41.2 6 675
1980 VZ3 * 1980 11 01.32604 02 35 53.62 +22 18 23.5 17.2V 6 675
1980 VZ3 1980 11 02.36632 02 34 04.24 +22 23 54.1 6 675
1980 VA4 * 1980 11 01.32604 02 36 14.41 +21 03 04.6 16.5V 6 675
1980 VA4 1980 11 02.36632 02 35 09.76 +20 58 01.4 6 675
1980 VB4 * 1980 11 01.32604 02 37 09.63 +19 41 12.2 16.2V 6 675
1980 VB4 1980 11 02.36632 02 36 03.66 +19 38 44.7 6 675
1980 VC4 * 1980 11 01.32604 02 37 48.22 +20 21 29.7 17.0V 6 675
1980 VC4 1980 11 02.36632 02 36 57.16 +20 10 00.6 6 675
1980 VD4 * 1980 11 01.32604 02 40 55.84 +18 58 14.4 16.2V 6 675
1980 VD4 1980 11 02.36632 02 39 41.48 +18 54 55.7 6 675
1980 VE4 * 1980 11 01.32604 02 44 57.90 +20 09 57.6 16.5V 6 675
1980 VE4 1980 11 02.36632 02 44 01.20 +20 05 22.4 6 675
1980 VF4 * 1980 11 01.32604 02 45 17.20 +19 23 54.5 16.5V 6 675
1980 VF4 1980 11 02.36632 02 44 11.03 +19 20 28.1 6 675
1980 VG4 * 1980 11 01.32604 02 46 35.35 +21 07 49.1 17.0V 6 675
1980 VG4 1980 11 02.36632 02 45 32.60 +21 02 55.4 6 675
1980 VH4 * 1980 11 01.32604 02 46 41.57 +24 09 17.9 16.8V 6 675
1980 VH4 1980 11 02.36632 02 45 30.92 +24 12 09.0 6 675
1980 VJ4 * 1980 11 01.32604 02 48 12.39 +22 36 27.0 18.0V 6 675
1980 VJ4 1980 11 02.36632 02 47 27.40 +22 33 12.8 6 675
1980 VK4 * 1980 11 01.32604 02 48 31.76 +20 21 36.2 16.8V 6 675
1980 VK4 1980 11 02.36632 02 47 35.16 +20 17 39.6 6 675
1980 VL4 * 1980 11 01.32604 02 48 43.29 +19 11 06.3 17.0V 6 675
1980 VL4 1980 11 02.36632 02 47 29.42 +19 11 42.3 6 675
1980 VM4 * 1980 11 01.32604 02 50 25.03 +21 00 45.2 18.5V 6 675
1980 VM4 1980 11 02.36632 02 49 20.65 +20 54 06.4 6 675
1980 VN4 * 1980 11 01.32604 02 51 37.75 +24 13 27.0 17.5V 6 675

1980	VN4		1980	11	02.36632	02	50	37.26	+24	13	12.2		6 675
1980	VO4	*	1980	11	01.32604	02	52	10.62	+19	06	53.3	16.5V	6 675
1980	VO4		1980	11	02.36632	02	51	12.23	+18	55	41.7		6 675
1980	VP4	*	1980	11	01.32604	02	52	25.55	+22	45	33.7	17.2V	6 675
1980	VP4		1980	11	02.36632	02	51	34.54	+22	41	26.9		6 675
1980	VQ4	*	1980	11	01.32604	02	53	21.25	+19	45	01.5	17.0V	6 675
1980	VQ4		1980	11	02.36632	02	52	10.32	+19	42	01.5		6 675
1980	VR4	*	1980	11	01.32604	02	53	21.35	+19	39	42.5	16.5V	6 675
1980	VR4		1980	11	02.36632	02	52	23.07	+19	38	10.9		6 675
1980	VS4	*	1980	11	01.32604	02	53	24.04	+22	18	24.9	17.2V	6 675
1980	VS4		1980	11	02.36632	02	52	12.27	+22	18	00.5		6 675
1981	EY9		1991	02	11.20972	08	24	36.47	+17	24	16.4	17.5	9 675
1981	EY9		1991	02	11.23958	08	24	34.73	+17	24	17.9		9 675
1981	EH19		1979	10	18.30764	01	39	27.33	+12	52	00.7		6 675
1981	EH19		1979	10	18.35972	01	39	23.84	+12	51	47.7		6 675
1981	EB28		1991	02	11.20972	08	05	41.58	+19	41	43.1	19.0	9 675
1982	BA		1991	03	18.17569	09	30	24.68	+19	32	27.5	16.0	2 675
1982	BA		1991	03	18.19861	09	30	24.33	+19	32	37.9		2 675
1982	FC		1980	11	01.26840	02	23	40.73	+18	53	13.4	17.5V	6 675
1982	FC		1980	11	02.30729	02	22	29.07	+18	51	29.4		6 675
1982	SO4		1991	02	20.39201	12	25	03.04	+02	27	44.2		2 675
1982	SO4		1991	02	20.42205	12	25	01.73	+02	27	49.0		2 675
1982	ST6		1977	09	09.34584	23	29	59.95	-02	36	12.4		6 675
1982	ST6		1977	09	10.22535	23	29	17.78	-02	40	17.9		6 675
1982	UP2		1977	10	18.38108	02	06	54.62	+14	34	57.1	16.2V	6 675
1982	UP2		1977	10	19.42882	02	06	02.42	+14	30	46.1		6 675
1983	AW		1988	09	11.37100	23	20	21.04	-01	28	53.8	18.2	9 675
1983	AW		1988	09	16.35597	23	15	35.99	-02	07	19.9		9 675
1983	AW		1988	09	16.38872	23	15	34.12	-02	07	35.5		9 675
1983	AW		1988	10	07.25938	22	58	10.59	-04	38	36.3	18.5	9 675
1983	AW		1988	10	07.28715	22	58	09.54	-04	38	48.6		9 675
1983	RX		1980	11	01.32604	02	31	28.45	+23	04	20.2	16.2V	6 675
1983	RX		1980	11	02.36632	02	30	16.22	+22	59	00.7		6 675
1984	DF1		1977	09	09.34584	23	31	07.79	-02	59	46.2		6 675
1984	DF1		1977	09	10.22535	23	30	23.38	-03	03	34.7		6 675
1985	PO		1977	09	09.34584	23	32	04.68	-05	48	23.4		6 675
1985	PO		1977	09	10.22535	23	31	23.79	-05	54	45.0		6 675
1985	QM5		1978	03	15.32917	11	16	43.11	+06	01	59.7	18.8V	6 675
1985	QM5		1978	03	16.36563	11	15	56.26	+06	07	27.9		6 675
1985	RE2		1991	03	18.38576	11	59	40.07	-01	41	56.1	16.0	2 675
1985	RE2		1991	03	18.40955	11	59	38.64	-01	41	48.1		2 675
1986	JQ		1991	03	18.22396	10	02	47.95	-20	22	03.1	16.0	2 675
1986	JQ		1991	03	18.25677	10	02	46.47	-20	21	27.7		2 675
1986	QY4		1978	03	15.32917	11	32	08.38	+05	47	45.1	16.7V	6 675
1986	QY4		1978	03	16.36563	11	31	22.76	+05	52	52.0		6 675
1986	RP1		1977	09	09.34584	23	32	16.54	-00	49	05.3		6 675
1986	RP1		1977	09	10.22535	23	31	36.49	-00	54	58.8		6 675
1986	RU2		1991	02	09.24236	08	36	40.64	+20	58	41.8	17.2	9 675
1986	RU2		1991	02	09.27309	08	36	38.56	+20	58	45.6		9 675
1986	RU2		1991	02	11.20972	08	34	38.66	+21	02	36.1	17.5	9 675
1986	RU2		1991	02	11.23958	08	34	36.81	+21	02	41.1		9 675
1986	RC7		1978	03	15.32917	11	33	33.35	+02	11	41.0	17.2V	6 675
1986	RC7		1978	03	15.38715	11	33	29.55	+02	11	58.7		6 675
1986	RC7		1978	03	16.36563	11	32	28.56	+02	16	21.4		6 675
1986	RC7		1978	03	16.39826	11	32	26.44	+02	16	31.4		6 675
1986	TJ2		1991	03	17.19844	09	19	23.31	+21	22	51.8	16.3	2 675
1986	TJ2		1991	03	17.22535	09	19	22.75	+21	22	55.9		2 675
1986	TJ2		1991	03	19.14167	09	18	53.44	+21	26	59.1		2 675
1986	VG		1978	03	15.38715	11	47	09.65	+00	21	53.2	15.5V	6 675

1986	VG	1978	03	16.42431	11	46	15.66	+00	24	21.4		6	675
1986	VY	1991	02	09.24236	08	58	04.54	+20	07	21.6	17.5	9	675
1986	VY	1991	02	09.27309	08	58	02.43	+20	07	24.5		9	675
1987	DG6	1991	02	11.20972	08	15	36.98	+19	26	26.6	17.8	9	675
1987	DG6	1991	02	11.23958	08	15	35.36	+19	26	31.1		9	675
1987	QW2	1980	04	08.30660	13	04	27.33	-05	58	46.8		6	675
1987	QW2	1980	04	09.35243	13	03	40.16	-05	54	17.7		6	675
1987	SE4	1980	11	01.32604	02	53	11.28	+21	03	56.6	15.5V	6	675
1987	SE4	1980	11	02.36632	02	52	09.56	+20	56	13.4		6	675
1987	UU2	1977	10	18.38108	02	00	55.45	+12	21	51.9	15.5V	6	675
1987	UU2	1977	10	19.42882	01	59	55.84	+12	15	26.2		6	675
1987	US4	1978	03	15.38715	11	46	02.47	+00	58	43.7	19.0V	6	675
1987	US4	1978	03	16.42431	11	45	02.62	+01	04	16.4		6	675
1988	BN2	1990	11	13.44479	04	09	15.47	+13	21	42.2	18.0	3	675
1988	BN2	1990	11	14.41910	04	08	05.04	+13	25	34.9		3	675
1988	BO5	1980	04	08.30660	12	59	39.13	-07	37	46.5		6	675
1988	BO5	1980	04	09.35243	12	58	42.75	-07	32	38.2		6	675
1988	CW2	1980	04	08.30660	12	51	32.83	-03	29	21.9		6	675
1988	CW2	1980	04	09.37847	12	50	38.17	-03	23	50.2		6	675
1988	JO	1991	03	09.28073	11	41	59.39	+40	48	14.4	17.4	3	675
1988	JO	1991	03	09.31062	11	41	57.41	+40	48	27.7		3	675
1988	ME	1991	03	18.29497	11	39	46.15	-03	34	08.4	16.4	2	675
1988	ME	1991	03	18.32604	11	39	44.40	-03	33	53.4		2	675
1988	PP	1991	03	17.24965	10	45	59.79	+19	55	05.7	16.0	2	675
1988	PP	1991	03	17.29931	10	45	57.55	+19	55	29.2		2	675
1988	PP	1991	03	18.28125	10	45	14.51	+20	02	45.0	16.0	2	675
1988	PP	1991	03	18.31042	10	45	13.16	+20	02	58.0		2	675
1988	PZ1	1988	09	11.33697	23	30	54.00	-03	37	13.4	17.0	9	675
1988	PZ1	1988	09	11.37100	23	30	52.39	-03	37	22.5		9	675
1988	PZ1	1988	09	16.35597	23	27	12.45	-03	59	57.7		9	675
1988	PZ1	1988	09	16.38872	23	27	10.99	-04	00	07.2		9	675
1988	PZ1	1988	10	07.25938	23	13	42.45	-05	20	56.2	17.8	9	675
1988	PZ1	1988	10	07.28715	23	13	41.62	-05	21	01.7		9	675
1988	RA1	1989	09	29.48177	01	55	42.02	+31	54	00.4	17.7	3	675
1988	RA1	1989	09	29.50677	01	55	41.22	+31	54	00.2		3	675
1988	RF1	1988	08	18.48298	23	43	14.13	-10	22	04.5	18.5	3	675
1988	RK1	1989	11	02.38802	02	42	29.47	+11	32	22.3	17.4	3	675
1988	RM1	1988	11	05.11007	22	24	51.22	-01	36	43.5	18.5	3	675
1988	RM1	1989	11	01.37552	01	00	22.17	+10	19	39.7	18.3	3	675
1988	RM1	1989	11	02.29167	00	59	59.34	+10	16	03.3		3	675
1988	RM1	1990	10	20.49809	03	53	22.98	+17	59	15.8	18.5	3	675
1988	RM1	1990	10	22.48681	03	52	36.82	+17	54	25.8		3	675
1988	RK8	1988	09	11.33697	23	30	47.32	-02	28	41.0	17.0	9	675
1988	RK8	1988	09	11.37100	23	30	45.42	-02	28	55.6		9	675
1988	RK8	1988	09	16.35597	23	26	22.98	-03	05	57.4		9	675
1988	RK8	1988	09	16.38872	23	26	21.13	-03	06	12.2		9	675
1988	RK8	1988	10	07.25938	23	10	30.53	-05	24	50.9	17.5	9	675
1988	RK8	1988	10	07.28715	23	10	29.53	-05	25	00.0		9	675
1988	RT12	1977	10	18.38108	01	57	42.38	+10	07	17.5	18.8V	6	675
1988	RT12	1977	10	19.42882	01	57	10.37	+10	03	24.7		6	675
1988	SK2	1977	10	18.38108	01	45	05.74	+09	16	22.9	19.5V	6	675
1988	SK2	1977	10	19.42882	01	44	35.72	+09	13	25.8		6	675
1988	TZ1	1989	11	02.40590	02	41	26.47	+45	08	41.3	17.6	3	675
1988	TZ1	1989	11	02.44323	02	41	24.95	+45	08	35.3		3	675
1988	TZ1	1989	11	03.38299	02	40	46.60	+45	06	10.4		3	675
1988	TZ1	1989	11	03.41771	02	40	45.24	+45	06	04.7		3	675
1988	TA3	1988	08	18.47586	00	30	41.35	-02	20	27.8		3	675
1988	TA3	1988	08	18.49756	00	30	41.16	-02	20	32.9	18.5	3	675
1988	TA3	1990	10	20.50712	04	02	08.68	+07	55	41.7	18.3	3	675

1988	TA3	1990	10	22.49566	04	01	27.74	+07	50	44.7		3	675
1988	TA3	1990	11	13.37587	03	52	07.32	+07	00	10.8	18.1	3	675
1988	TA3	1990	11	14.40243	03	51	37.52	+06	58	05.1		3	675
1988	VO2	1980	08	04.30174	21	15	21.27	-10	48	50.6	16.5V	6	675
1988	VO2	1980	08	05.34965	21	14	17.16	-10	50	06.7		6	675
1989	AD	1978	03	15.32917	11	22	54.21	+05	47	33.7	16.5V	6	675
1989	AD	1978	03	16.36563	11	21	51.17	+05	51	32.8		6	675
1989	AY6	1980	11	01.32604	02	40	40.70	+20	02	34.8	17.8V	6	675
1989	AY6	1980	11	02.36632	02	39	35.53	+19	57	36.3		6	675
1989	CB1	1979	01	27.23698	07	29	19.49	+19	26	51.8	17.5V	6	675
1989	CB1	1979	01	29.35955	07	27	05.03	+19	36	34.6		6	675
1989	EM	1978	03	15.32917	11	30	27.12	+00	50	50.9	15.5V	6	675
1989	EM	1978	03	16.36563	11	29	27.85	+00	56	36.2		6	675
1989	SZ	1990	10	20.38715	02	39	50.21	+48	39	55.4	17.6	3	675
1989	SZ	1990	10	22.39688	02	38	22.91	+48	41	47.4		3	675
1989	SZ	1990	11	13.25382	02	21	40.36	+48	22	54.1	17.5	3	675
1989	SZ	1990	11	15.25243	02	20	11.43	+48	17	44.5		3	675
1989	SG1	1980	08	04.30174	21	04	25.52	-10	07	37.8	18.5V	6	675
1989	SG1	1980	08	05.34965	21	03	31.76	-10	13	31.1		6	675
1989	SW13*	1989	09	29.48177	02	00	14.50	+31	56	42.9	17.7	3	675
1989	SW13	1989	09	29.50677	02	00	13.38	+31	56	46.4		3	675
1989	TC1	1980	04	08.30660	12	43	27.68	-05	28	09.3		6	675
1989	TC1	1980	04	09.35243	12	42	31.36	-05	22	00.0		6	675
1989	UK2	1991	03	17.44410	13	57	11.21	-28	37	34.4	16.5	2	675
1989	UK2	1991	03	17.46927	13	57	10.39	-28	37	29.3		2	675
1989	UA7	1978	03	15.36111	11	38	23.06	+03	36	01.4	18.5V	6	675
1989	UA7	1978	03	16.42431	11	37	18.26	+03	43	05.8		6	675
1989	YP	1980	08	03.27326	20	53	28.18	-13	02	55.3	15.2V	6	675
1989	YP	1980	08	05.29271	20	51	41.75	-13	23	25.5		6	675
1990	BK	1977	10	18.38108	02	08	12.99	+09	14	50.3	16.5V	6	675
1990	BK	1977	10	19.42882	02	07	24.47	+09	10	54.1		6	675
1990	SV12	1990	09	14.33976	23	52	37.78	-04	31	01.5	17.2	9	675
1990	SV12	1990	09	14.37673	23	52	36.32	-04	31	09.2		9	675
1990	SV13	1990	08	25.35955	23	27	44.84	-06	51	25.7	17.5	9	675
1990	SV13	1990	08	25.39792	23	27	43.04	-06	51	32.8		9	675
1990	UW	1980	11	01.26840	02	25	26.87	+20	06	27.1	15.5V	6	675
1990	UW	1980	11	02.30729	02	24	19.37	+20	02	08.0		6	675
1990	VH7	1988	09	11.30104	22	19	20.02	+03	57	22.5	17.6	3	675
1990	VH7	1988	10	07.23993	22	09	22.82	+02	40	36.9		3	675
1990	VH7	1988	10	09.18819	22	08	54.70	+02	35	04.1		3	675
1990	VH7	1991	01	16.15451	03	18	38.53	+26	05	07.5	18.1	3	675
1990	VH7	1991	01	16.18663	03	18	38.46	+26	05	02.0		3	675
1990	YJ	1978	03	15.38715	11	42	18.40	+02	56	36.1	15.5V	6	675
1990	YJ	1978	03	16.42431	11	41	21.61	+03	06	18.7		6	675
1991	AE	1991	02	11.20972	08	16	31.59	+20	54	00.6	16.5	9	675
1991	AE	1991	02	11.23958	08	16	30.04	+20	54	12.2		9	675
1991	AW	1991	02	09.24236	08	41	00.75	+20	44	09.7	16.0	9	675
1991	AW	1991	02	09.27309	08	40	59.07	+20	44	29.5		9	675
1991	AB1	1991	02	11.20972	08	26	46.85	+19	02	02.9	16.2	9	675
1991	AB1	1991	02	11.23958	08	26	45.46	+19	02	13.7		9	675
1991	AF1	1991	02	09.24236	08	32	22.25	+15	37	54.3	17.0	9	675
1991	AF1	1991	02	09.27309	08	32	20.60	+15	37	54.1		9	675
1991	AF1	1991	02	11.20972	08	30	40.00	+15	38	20.0	16.8	9	675
1991	AF1	1991	02	11.23958	08	30	38.46	+15	38	20.4		9	675
1991	AH1	1991	02	09.24236	08	35	22.35	+17	02	13.7	17.5	9	675
1991	AH1	1991	02	09.27309	08	35	20.52	+17	02	20.1		9	675
1991	AH1	1991	02	11.20972	08	33	30.37	+17	08	21.4	17.8	9	675
1991	AH1	1991	02	11.23958	08	33	28.67	+17	08	27.4		9	675
1991	AS1	1991	02	09.24236	08	58	22.96	+19	34	27.2	16.2	9	675

1991	AS1		1991	02	09.27309	08	58	19.86	+19	34	04.4		9 675
1991	AU1		1991	03	09.23420	10	35	28.29	-01	21	36.5	16.5	3 675
1991	AU1		1991	03	12.26406	10	29	58.51	-01	51	26.7		3 675
1991	AQ2		1991	02	09.24236	08	32	50.40	+18	45	16.4	17.5	9 675
1991	AQ2		1991	02	09.27309	08	32	48.75	+18	45	23.5	18.2	9 675
1991	AQ2		1991	02	11.20972	08	31	08.73	+18	51	17.3	18.0	9 675
1991	AQ2		1991	02	11.23958	08	31	07.10	+18	51	23.9		9 675
1991	AT2		1991	02	09.24236	08	38	42.83	+16	53	31.4	17.5	9 675
1991	AT2		1991	02	09.27309	08	38	41.35	+16	53	40.7		9 675
1991	AT2		1991	02	11.20972	08	37	13.89	+17	02	56.0	17.8	9 675
1991	AT2		1991	02	11.23958	08	37	12.56	+17	03	04.5		9 675
1991	AW2		1991	02	09.24236	08	46	52.12	+19	18	03.6	17.5	9 675
1991	AW2		1991	02	09.27309	08	46	50.65	+19	18	20.2		9 675
1991	AC3		1991	02	09.24236	08	38	47.08	+17	58	18.5	18.5	9 675
1991	AC3		1991	02	09.27309	08	38	45.23	+17	58	28.6		9 675
1991	AC3		1991	02	11.23958	08	36	58.56	+18	08	05.7	18.8	9 675
1991	BB		1991	02	07.26406	06	44	41.96	-15	40	32.1	17	3 675
1991	BB		1991	02	08.21996	06	40	42.33	-16	20	25.1		3 675
1991	BY2	*	1991	01	19.38472	08	42	23.90	+25	30	58.4	17.0	3 675
1991	BY2		1991	01	22.30191	08	36	31.78	+24	58	12.0		3 675
1991	BY2		1991	01	22.34132	08	36	26.99	+24	57	43.4		3 675
1991	CU		1991	02	09.24236	08	37	42.57	+16	13	49.4	17.0	9 675
1991	CU		1991	02	09.27309	08	37	40.87	+16	14	02.9		9 675
1991	CU		1991	02	11.20972	08	36	00.44	+16	27	24.7	17.2	9 675
1991	CU		1991	02	11.23958	08	35	58.86	+16	27	38.1		9 675
1991	CZ		1991	03	17.19844	09	08	00.14	+17	44	31.1	15.9	2 675
1991	CZ		1991	03	17.22535	09	07	59.59	+17	44	59.7		2 675
1991	CZ		1991	03	19.14167	09	07	39.06	+18	19	45.0		2 675
1991	CZ		1991	03	19.15990	09	07	38.86	+18	20	04.3		2 675
1991	CA1		1991	02	16.34913	09	56	33.08	+34	09	13.5		2 675
1991	CA1		1991	03	17.23385	09	32	09.32	+41	36	11.9	16.5	2 675
1991	CA1		1991	03	17.28108	09	32	08.07	+41	36	29.6		2 675
1991	CD1		1991	03	17.25694	11	19	10.57	+37	35	57.1	15.3	2 675
1991	CD1		1991	03	17.30538	11	19	08.52	+37	36	42.4		2 675
1991	CW2		1991	03	18.34618	12	04	03.58	+03	24	12.5	16.0	2 675
1991	CW2		1991	03	18.37274	12	04	01.88	+03	24	17.0		2 675
1991	CA3		1991	03	17.19844	09	08	01.87	+19	52	32.4	16.0	2 675
1991	CA3		1991	03	17.22535	09	08	00.76	+19	52	11.1		2 675
1991	CA3		1991	03	19.14167	09	07	00.62	+19	26	29.1		2 675
1991	CK3		1991	03	18.28385	11	00	31.55	+34	17	07.5	16.3	2 675
1991	CK3		1991	03	18.31806	11	00	30.37	+34	17	13.6		2 675
1991	CR3	*	1991	02	09.24236	09	00	58.97	+17	36	58.8	18.0	9 675
1991	CR3		1991	02	09.27309	09	00	57.39	+17	37	06.8		9 675
1991	DB		1991	03	12.22361	10	53	53.81	+30	01	24.0	16.1	3 675
1991	DB		1991	03	12.25590	10	54	01.44	+30	05	23.4		3 675
1991	DB		1991	03	17.25694	11	21	37.03	+40	44	13.6	16.0	2 675
1991	DB		1991	03	17.30538	11	21	54.93	+40	50	33.5		2 675
1991	DB		1991	03	18.24983	11	28	39.90	+42	53	02.2		2 675
1991	DW		1991	03	18.28385	11	19	37.55	+31	57	44.8	16.5	2 675
1991	DW		1991	03	18.31806	11	19	35.83	+31	57	52.7		2 675
1991	DX		1991	03	18.18160	09	35	46.89	+07	01	06.2	16.4	2 675
1991	DX		1991	03	18.20469	09	35	46.40	+07	01	20.4		2 675
1991	DY		1991	03	18.18160	09	42	49.10	+07	30	06.6	16.3	2 675
1991	DY		1991	03	18.20469	09	42	48.63	+07	30	16.6		2 675
1991	DF1		1991	03	17.24253	10	09	21.62	+19	38	01.1	16.5	2 675
1991	DF1		1991	03	17.29271	10	09	19.70	+19	38	33.3		2 675
1991	DH1		1991	03	18.22986	10	24	58.73	+13	20	00.0	16.3	2 675
1991	DH1		1991	03	18.26285	10	24	57.54	+13	20	19.9		2 675
1991	FC	*	1991	03	17.34444	11	03	40.31	-08	58	49.0	16.0	2 675

1991	FC		1991	03	18.21771	11	02	59.94	-08	35	23.7		2 675
1991	FC		1991	03	18.30278	11	02	55.36	-08	33	04.6		2 675
1991	FD	*	1991	03	17.38958	13	06	20.18	+09	02	48.5	16.0	2 675
1991	FD		1991	03	17.41337	13	06	19.47	+09	03	23.9		2 675
1991	FD		1991	03	18.41545	13	05	54.95	+09	29	23.7		2 675
1991	FD		1991	03	18.43976	13	05	54.31	+09	29	59.5		2 675
1991	FN	*	1991	03	17.48247	13	34	07.66	-11	39	45.4	16.0	2 675
1991	FN		1991	03	17.50903	13	34	05.68	-11	40	04.1		2 675
1991	FN		1991	03	18.46059	13	32	57.93	-11	51	13.1		2 675
1991	FN		1991	03	18.48663	13	32	56.11	-11	51	32.9		2 675
1991	FO	*	1991	03	17.48247	13	40	17.86	-09	08	58.0	16.0	2 675
1991	FO		1991	03	17.50903	13	40	17.07	-09	08	46.6		2 675
1991	FO		1991	03	18.46059	13	39	52.87	-09	02	15.1		2 675
1991	FO		1991	03	18.48663	13	39	52.23	-09	02	04.3		2 675
1991	FP	*	1991	03	17.48247	13	41	41.07	-07	20	46.3	16.2	2 675
1991	FP		1991	03	17.50903	13	41	40.38	-07	20	32.3		2 675
1991	FP		1991	03	18.46059	13	41	22.53	-07	12	03.4		2 675
1991	FP		1991	03	18.48663	13	41	21.91	-07	11	50.4		2 675
1991	FU	*	1991	03	17.31233	10	55	22.97	-08	49	25.4	15.5	2 675
1991	FU		1991	03	17.34444	10	55	21.08	-08	49	21.8		2 675
1991	FU		1991	03	18.21771	10	54	30.49	-08	47	34.8		2 675
1991	FU		1991	03	18.30278	10	54	25.33	-08	47	22.5		2 675
1991	FV	*	1991	03	17.31233	10	57	25.47	-08	22	00.8	15.8	2 675
1991	FV		1991	03	17.34444	10	57	24.00	-08	21	51.0		2 675
1991	FV		1991	03	18.21771	10	56	45.03	-08	17	21.1		2 675
1991	FV		1991	03	18.30278	10	56	41.05	-08	16	54.7		2 675
1991	FC1	*	1991	03	17.25694	11	24	10.55	+42	24	44.5	16.9	2 675
1991	FC1		1991	03	17.30538	11	24	05.26	+42	24	20.8		2 675
1991	FC1		1991	03	18.24983	11	22	26.89	+42	16	34.7	16.9	2 675
1991	GC	*	1991	04	08.35035	13	19	41.64	+06	21	42.5	16	2 675
1991	GC		1991	04	09.31806	13	19	13.27	+06	49	43.7		2 675
1991	GC		1991	04	09.35833	13	19	12.07	+06	50	57.9		2 675
1991	GM	*	1991	04	09.37708	13	12	45.75	-13	03	08.4	16.5	2 675
1991	GM		1991	04	09.40885	13	12	44.50	-13	02	42.1		2 675
1991	GM		1991	04	11.37691	13	11	28.79	-12	35	49.0		2 675
1991	GM		1991	04	11.39965	13	11	27.96	-12	35	31.0		2 675
1991	GN	*	1991	04	10.29323	13	01	45.95	-13	27	44.5	16.0	2 675
1991	GN		1991	04	10.31441	13	01	44.66	-13	27	19.3		2 675
1991	GN		1991	04	12.32292	12	59	48.39	-12	46	02.7		2 675
1991	GN		1991	04	12.34878	12	59	46.73	-12	45	31.2		2 675
2023	P-L		1980	04	08.30660	12	52	30.88	-06	23	04.1		6 675
2023	P-L		1980	04	09.35243	12	51	43.68	-06	18	14.5		6 675
2579	P-L	*	1960	09	24.46184	00	53	02.48	+01	02	34.9	18.8	4 675
2579	P-L		1960	09	26.37988	00	51	02.80	+00	56	00.2		4 675
2579	P-L		1960	09	28.43822	00	48	52.17	+00	48	56.0		4 675
2579	P-L		1960	09	29.39514	00	47	51.12	+00	45	39.4		4 675
2579	P-L		1960	10	17.31529	00	29	20.03	-00	06	21.6		4 675
2579	P-L		1960	10	22.26809	00	24	54.87	-00	15	20.8		4 675
2579	P-L		1960	10	25.30351	00	22	27.54	-00	19	16.2		4 675
2579	P-L		1960	10	26.35766	00	21	39.28	-00	20	19.3		4 675
4060	P-L		1980	04	08.30660	12	51	38.57	-07	33	50.0		6 675
4060	P-L		1980	04	09.35243	12	50	46.00	-07	27	47.2		6 675
4523	P-L		1978	03	15.38715	11	53	57.60	+00	00	56.2	18.5V	6 675
4523	P-L		1978	03	16.42431	11	53	27.95	+00	04	14.3		6 675
4528	P-L	*	1960	09	24.41183	00	20	02.92	+03	14	58.9	17.8	4 675
4528	P-L		1960	09	26.31530	00	18	36.01	+03	01	23.0		4 675
4528	P-L		1960	09	27.40836	00	17	45.44	+02	53	32.4		4 675
4528	P-L		1960	09	28.39725	00	16	59.88	+02	46	22.5		4 675
4528	P-L		1960	10	17.27085	00	04	18.26	+00	40	32.4		4 675

4528	P-L		1960	10	22.22293	00	02	09.49	+00	15	42.9		4 675
4528	P-L		1960	10	24.35836	00	01	26.68	+00	06	34.7		4 675
5568	P-L		1980	04	08.30660	12	59	53.87	-03	08	41.7		6 675
5568	P-L		1980	04	09.35243	12	58	56.46	-03	05	22.1		6 675
6516	P-L	*	1960	09	24.35002	00	02	33.87	-03	28	47.9	17.5	4 675
6516	P-L		1960	09	26.28543	00	00	39.39	-03	24	04.3		4 675
6516	P-L		1960	09	27.34237	23	59	36.83	-03	21	20.9		4 675
6516	P-L		1960	09	28.33822	23	58	38.62	-03	18	39.6		4 675
6516	P-L		1960	10	17.21390	23	43	55.72	-02	03	59.4		4 675
6516	P-L		1960	10	22.15559	23	41	55.92	-01	35	57.1		4 675
6516	P-L		1960	10	24.18787	23	41	23.53	-01	23	21.0		4 675
6516	P-L		1960	10	26.26113	23	41	00.76	-01	09	50.0		4 675
6555	P-L		1991	02	11.20972	08	14	30.67	+20	10	55.9	17.0	9 675
6555	P-L		1991	02	11.23958	08	14	29.17	+20	11	03.4		9 675
6564	P-L		1991	02	11.20972	08	12	44.73	+20	02	56.1	18.0	9 675
6564	P-L		1991	02	11.23958	08	12	43.36	+20	03	00.5		9 675
7639	P-L	*	1960	10	17.28198	00	12	38.13	-05	33	18.8	19.9	4 675
7639	P-L		1960	10	22.23406	00	09	11.33	-05	48	58.2		4 675
7639	P-L		1960	10	25.25350	00	07	16.94	-05	56	42.6		4 675
7639	P-L		1960	10	26.31531	00	06	38.97	-05	59	05.0		4 675
9512	P-L	*	1960	10	17.22501	23	27	17.24	-06	03	09.7	19.4	4 675
9512	P-L		1960	10	22.16324	23	24	52.21	-06	16	56.9		4 675
9512	P-L		1960	10	24.23753	23	24	03.50	-06	21	16.5		4 675
9512	P-L		1960	10	26.27157	23	23	22.86	-06	24	41.9		4 675
9518	P-L	*	1960	10	17.22501	23	27	34.81	-04	08	52.8	19.1	4 675
9518	P-L		1960	10	22.16324	23	25	30.71	-04	15	34.0		4 675
9518	P-L		1960	10	24.23753	23	24	50.61	-04	17	09.8		4 675
9518	P-L		1960	10	26.27157	23	24	18.34	-04	18	01.1		4 675
1281	T-2	*	1973	09	29.25330	00	14	50.96	+05	08	35.6	18.2	4 675
1281	T-2		1973	09	29.31806	00	14	47.76	+05	07	54.2		4 675
1281	T-2		1973	09	30.21007	00	14	06.43	+04	58	14.6		4 675
1281	T-2		1973	09	30.27431	00	14	03.32	+04	57	33.1		4 675
1281	T-2		1973	10	04.28958	00	10	57.75	+04	13	35.8		4 675
1281	T-2		1973	10	04.35208	00	10	54.74	+04	12	54.3		4 675
1281	T-2		1973	10	05.31684	00	10	10.93	+04	02	19.7		4 675
1281	T-2		1973	10	05.37917	00	10	08.00	+04	01	38.2		4 675
2272	T-2		1980	11	01.32604	02	52	57.53	+24	24	57.7	16.2V	6 675
2272	T-2		1980	11	02.36632	02	51	44.33	+24	23	24.0		6 675
3176	T-2		1973	09	19.18611	00	20	03.86	-00	59	23.3		4 675
3176	T-2		1973	09	19.21250	00	20	02.31	-00	59	26.9		4 675
3176	T-2		1973	09	19.23785	00	20	00.86	-00	59	37.4		4 675
3176	T-2		1973	09	19.26354	00	19	59.45	-00	59	41.6		4 675
3176	T-2		1973	09	20.27795	00	19	03.19	-01	04	13.4		4 675
3176	T-2		1973	09	24.37431	00	15	11.76	-01	22	31.4		4 675
3176	T-2		1973	09	24.44167	00	15	07.73	-01	22	48.2		4 675
3176	T-2		1973	09	25.26875	00	14	20.91	-01	26	29.7		4 675
3176	T-2		1973	09	25.33299	00	14	17.06	-01	26	46.5		4 675
3176	T-2		1973	09	29.27986	00	10	31.20	-01	44	01.0		4 675
3176	T-2		1973	09	29.34375	00	10	27.44	-01	44	17.1		4 675
3176	T-2		1973	09	30.23524	00	09	36.84	-01	48	06.2		4 675
3176	T-2	*	1973	09	30.30174	00	09	32.90	-01	48	23.0	19.0	4 675
3176	T-2		1973	10	04.31493	00	05	47.31	-02	04	52.1		4 675
3176	T-2		1973	10	04.37674	00	05	43.63	-02	05	06.2		4 675
3176	T-2		1973	10	05.34167	00	04	50.61	-02	08	52.0		4 675
3176	T-2		1973	10	05.40347	00	04	47.12	-02	09	06.0		4 675
3297	T-2		1973	09	19.22500	00	30	08.52	-01	24	50.3		4 675
3297	T-2		1973	09	19.27865	00	30	05.38	-01	25	05.4		4 675
3297	T-2		1973	09	20.30278	00	29	08.43	-01	30	08.9		4 675
3297	T-2		1973	09	24.38750	00	25	17.44	-01	50	17.4		4 675

3297	T-2		1973	09	24.45434	00	25	13.58	-01	50	38.1	4 675
3297	T-2		1973	09	25.28125	00	24	26.44	-01	54	40.3	4 675
3297	T-2		1973	09	25.34601	00	24	22.59	-01	54	59.7	4 675
3297	T-2		1973	09	29.27986	00	20	36.64	-02	13	53.5	4 675
3297	T-2		1973	09	29.29219	00	20	35.86	-02	13	57.4	4 675
3297	T-2		1973	09	29.34375	00	20	32.79	-02	14	11.7	4 675
3297	T-2		1973	09	29.35694	00	20	32.05	-02	14	14.7	4 675
3297	T-2		1973	09	30.23524	00	19	41.89	-02	18	26.0	4 675
3297	T-2		1973	09	30.24826	00	19	41.10	-02	18	26.1	4 675
3297	T-2	*	1973	09	30.30174	00	19	38.04	-02	18	43.6	18.3 4 675
3297	T-2		1973	09	30.31476	00	19	37.20	-02	18	44.6	4 675
3297	T-2		1973	10	04.31493	00	15	50.12	-02	36	46.0	4 675
3297	T-2		1973	10	04.32708	00	15	49.43	-02	36	48.1	4 675
3297	T-2		1973	10	04.37674	00	15	46.54	-02	37	01.7	4 675
3297	T-2		1973	10	04.38889	00	15	45.88	-02	37	04.7	4 675
3297	T-2		1973	10	05.34167	00	14	52.94	-02	41	12.8	4 675
3297	T-2		1973	10	05.35382	00	14	52.00	-02	41	14.8	4 675
3297	T-2		1973	10	05.40347	00	14	49.35	-02	41	29.5	4 675
3297	T-2		1973	10	05.41597	00	14	48.50	-02	41	30.8	4 675
3336	T-2		1973	09	19.21250	00	02	13.50	-03	42	26.2	4 675
3336	T-2		1973	09	19.26354	00	02	11.12	-03	42	54.9	4 675
3336	T-2		1973	09	20.27795	00	01	26.92	-03	52	28.8	4 675
3336	T-2		1973	09	24.37431	23	58	25.05	-04	30	46.5	4 675
3336	T-2		1973	09	24.44167	23	58	21.89	-04	31	23.9	4 675
3336	T-2	*	1973	09	25.26875	23	57	45.65	-04	39	01.4	17.7 4 675
3336	T-2		1973	09	25.33299	23	57	42.54	-04	39	36.8	4 675
5140	T-2		1973	09	19.29705	00	24	02.57	+17	33	31.1	4 675
5140	T-2		1973	09	20.21458	00	23	19.94	+17	30	30.1	4 675
5140	T-2		1973	09	20.29253	00	23	16.31	+17	30	15.4	4 675
5140	T-2		1973	09	24.40035	00	20	02.45	+17	14	55.5	4 675
5140	T-2		1973	09	24.47986	00	19	58.54	+17	14	35.3	4 675
5140	T-2	*	1973	09	25.29375	00	19	19.82	+17	11	14.0	17.0 4 675
5140	T-2		1973	09	25.35903	00	19	16.58	+17	10	56.9	4 675
5140	T-2		1973	09	29.24062	00	16	10.47	+16	53	21.1	4 675
5140	T-2		1973	09	29.30486	00	16	07.33	+16	53	01.9	4 675
5140	T-2		1973	09	30.19722	00	15	24.90	+16	48	39.4	4 675
5140	T-2		1973	09	30.35295	00	15	17.21	+16	47	53.7	4 675
5140	T-2		1973	10	04.27708	00	12	11.44	+16	27	23.2	4 675
5140	T-2		1973	10	04.33906	00	12	08.45	+16	27	02.4	4 675
5140	T-2		1973	10	05.36632	00	11	20.62	+16	21	23.5	4 675
5140	T-2		1973	10	05.42847	00	11	17.63	+16	21	01.4	4 675
1168	T-3		1977	10	07.24652	01	10	21.28	+17	40	14.7	4 675
1168	T-3		1977	10	11.26632	01	05	58.95	+17	46	33.3	4 675
1168	T-3		1977	10	11.33351	01	05	54.40	+17	46	39.2	4 675
1168	T-3		1977	10	12.26510	01	04	53.14	+17	47	41.6	4 675
1168	T-3		1977	10	12.33125	01	04	48.58	+17	47	46.7	4 675
1168	T-3		1977	10	16.25156	01	00	30.39	+17	50	46.6	4 675
1168	T-3		1977	10	16.31684	01	00	26.07	+17	50	49.2	4 675
1168	T-3	*	1977	10	17.25365	00	59	25.13	+17	51	13.5	18.1 4 675
1168	T-3		1977	10	17.32083	00	59	20.42	+17	51	15.4	4 675
1168	T-3		1977	10	22.42812	00	53	55.34	+17	51	25.2	4 675
1168	T-3		1977	10	22.48003	00	53	52.00	+17	51	25.5	4 675
3395	T-3		1977	10	07.27031	01	16	54.42	+05	22	45.6	4 675
3395	T-3		1977	10	11.28819	01	13	15.23	+04	51	27.1	4 675
3395	T-3		1977	10	11.35642	01	13	11.41	+04	50	54.9	4 675
3395	T-3		1977	10	12.28681	01	12	20.63	+04	43	38.3	4 675
3395	T-3		1977	10	12.35347	01	12	16.86	+04	43	07.5	4 675
3395	T-3	*	1977	10	16.27309	01	08	41.86	+04	12	57.1	18.1 4 675
3395	T-3		1977	10	16.33872	01	08	38.15	+04	12	28.6	4 675

3395	T-3	1977	10	17.27552	01	07	47.32	+04	05	23.7		4 675
3395	T-3	1977	10	17.34236	01	07	43.60	+04	04	54.1		4 675
3395	T-3	1977	10	21.39792	01	04	07.60	+03	35	04.1		4 675
3395	T-3	1977	10	21.45799	01	04	04.24	+03	34	37.8		4 675
3395	T-3	1977	10	22.39844	01	03	15.85	+03	27	55.6		4 675
3395	T-3	1977	10	22.45920	01	03	12.58	+03	27	29.2		4 675
21		1979	01	27.23698	07	21	54.83	+24	47	53.8		6 675
21		1979	01	29.35955	07	19	53.47	+24	52	32.5		6 675
27		1991	02	09.24236	08	47	20.30	+19	56	08.7		9 675
27		1991	02	09.27309	08	47	18.48	+19	56	16.8		9 675
75		1980	10	31.22188	01	45	46.07	+16	44	28.1		6 675
75		1980	11	02.25104	01	43	58.08	+16	38	46.4		6 675
100		1991	02	09.24236	08	48	34.20	+18	38	19.1		9 675
100		1991	02	09.27309	08	48	32.73	+18	38	26.9		9 675
184		1977	09	09.34584	23	47	00.48	-00	45	56.4		6 675
184		1977	09	10.22535	23	46	23.94	-00	49	39.5		6 675
188		1980	10	31.22188	01	48	21.82	+20	18	03.6		6 675
188		1980	11	02.25104	01	46	45.35	+19	58	55.4		6 675
201		1991	02	09.24236	08	51	54.18	+14	14	24.1		9 675
201		1991	02	09.27309	08	51	52.53	+14	14	33.9		9 675
253		1978	03	15.32917	11	15	16.58	+03	06	14.0		6 675
253		1978	03	16.36563	11	14	27.04	+03	13	05.2		6 675
263		1991	02	09.24236	09	00	12.47	+15	01	24.0		9 675
263		1991	02	09.27309	09	00	10.88	+15	01	31.5		9 675
321		1991	02	09.24236	08	46	50.76	+22	03	07.1		9 675
321		1991	02	09.27309	08	46	49.07	+22	03	12.4		9 675
332		1980	04	08.30660	12	52	57.44	-04	22	27.3		6 675
332		1980	04	09.35243	12	52	04.83	-04	17	55.2		6 675
333		1978	03	15.32917	11	30	36.03	+03	18	23.6		6 675
333		1978	03	16.36563	11	29	49.60	+03	22	32.8		6 675
345		1977	10	18.38108	01	55	16.57	+13	07	38.9		6 675
345		1977	10	19.42882	01	54	21.63	+12	56	38.8		6 675
388		1980	10	31.22188	02	00	47.70	+19	09	52.7		6 675
388		1980	11	02.25104	01	59	02.17	+19	03	18.8		6 675
422		1978	03	15.38715	11	44	28.32	+03	47	54.3		6 675
422		1978	03	16.42431	11	43	23.81	+03	53	06.2		6 675
461		1977	10	18.38108	02	03	45.81	+10	42	54.6		6 675
461		1977	10	19.42882	02	02	57.34	+10	38	08.8		6 675
470		1980	08	04.30174	21	21	28.43	-07	43	26.2		6 675
470		1980	08	05.34965	21	20	32.97	-07	50	28.1		6 675
561		1978	03	15.38715	11	47	54.48	+01	57	54.6		6 675
561		1978	03	16.42431	11	47	08.25	+02	03	24.7		6 675
564		1991	02	08.41440	11	34	04.58	+30	27	00.2	15.5	9 675
564		1991	02	08.44392	11	34	03.50	+30	27	16.1		9 675
571		1980	11	01.32604	02	48	14.60	+23	45	31.6		6 675
571		1980	11	02.36632	02	47	12.00	+23	45	47.5		6 675
606		1991	02	09.24236	08	40	01.66	+20	00	10.5		9 675
606		1991	02	09.27309	08	39	59.74	+20	00	12.2		9 675
637		1991	02	09.24236	08	33	39.59	+19	05	13.8		9 675
637		1991	02	09.27309	08	33	38.01	+19	05	19.2		9 675
637		1991	02	11.20972	08	32	05.48	+19	10	39.4		9 675
637		1991	02	11.23958	08	32	03.98	+19	10	45.1		9 675
645		1978	03	15.32917	11	30	36.18	+04	48	23.6		6 675
645		1978	03	16.36563	11	29	45.57	+04	51	31.8		6 675
711		1978	03	15.32917	11	33	22.10	+03	36	57.6		6 675
711		1978	03	15.38715	11	33	18.23	+03	37	12.2		6 675
711		1978	03	16.36563	11	32	13.63	+03	41	16.8		6 675
711		1978	03	16.39826	11	32	11.43	+03	41	25.8		6 675
832		1991	02	09.24236	08	47	53.61	+16	32	39.8	16.0	9 675

832	1991	02	09.27309	08	47	51.97	+16	32	46.4		9	675
885	1979	01	27.23698	07	31	33.61	+19	14	10.2		6	675
885	1979	01	29.35955	07	29	54.46	+19	19	44.4		6	675
962	1978	03	15.32917	11	26	35.15	+05	24	21.3		6	675
962	1978	03	16.36563	11	25	47.33	+05	30	03.5		6	675
993	1991	02	09.24236	08	49	36.83	+15	34	42.1	15.8	9	675
993	1991	02	09.27309	08	49	35.20	+15	34	49.1		9	675
1020	1977	09	09.34584	23	27	00.76	-02	16	46.3		6	675
1020	1977	09	10.22535	23	26	20.39	-02	22	18.7		6	675
1039	1980	08	03.27326	20	58	45.81	-09	41	01.3		6	675
1039	1980	08	05.29271	20	57	01.27	-09	48	30.8		6	675
1143	1978	03	15.32917	11	22	03.21	+00	52	43.0		6	675
1143	1978	03	16.36563	11	21	32.99	+00	56	14.4		6	675
1153	1991	02	11.20972	08	05	07.24	+17	48	42.4		9	675
1153	1991	02	11.23958	08	05	05.46	+17	48	46.6	16.2	9	675
1225	1980	04	08.30660	12	55	06.11	-06	22	17.8		6	675
1225	1980	04	09.35243	12	54	01.95	-06	17	37.0		6	675
1289	1979	01	27.23698	07	20	56.37	+19	49	49.0		6	675
1289	1979	01	29.35955	07	19	12.57	+19	53	59.3		6	675
1289	1980	04	08.30660	12	51	20.12	-05	23	22.2		6	675
1289	1980	04	09.35243	12	50	30.88	-05	17	39.7		6	675
1370	1991	02	11.20972	08	09	56.00	+19	45	41.7	17.5	9	675
1370	1991	02	11.23958	08	09	54.16	+19	45	44.5		9	675
1390	1980	11	01.26840	02	30	36.32	+21	11	33.8		6	675
1390	1980	11	01.32604	02	30	33.05	+21	11	35.5		6	675
1390	1980	11	02.30729	02	29	37.96	+21	12	15.6		6	675
1390	1980	11	02.36632	02	29	34.59	+21	12	17.0		6	675
1392	1978	03	15.32917	11	31	38.48	+05	11	02.0		6	675
1392	1978	03	16.36563	11	30	36.49	+05	13	29.4		6	675
1438	1977	10	18.38108	01	58	10.93	+13	50	46.6		6	675
1438	1977	10	19.42882	01	57	23.40	+13	45	40.8		6	675
1452	1980	11	01.26840	02	17	43.63	+20	46	27.1		6	675
1452	1980	11	02.30729	02	16	41.76	+20	46	18.3		6	675
1485	1980	08	04.30174	21	08	13.46	-12	09	12.2		6	675
1485	1980	08	05.34965	21	07	18.61	-12	09	28.2		6	675
1571	1980	08	04.30174	21	07	55.15	-07	49	58.2		6	675
1571	1980	08	05.34965	21	07	01.83	-07	49	57.1		6	675
1606	1980	04	08.30660	12	53	57.90	-04	40	01.8		6	675
1606	1980	04	09.35243	12	53	06.37	-04	32	35.6		6	675
1610	1977	09	09.34584	23	43	11.72	-02	42	46.7		6	675
1610	1977	09	10.19931	23	42	28.82	-02	45	22.5		6	675
1615	1978	03	15.32917	11	22	17.70	+04	51	20.0		6	675
1615	1978	03	16.36563	11	21	31.96	+04	56	33.1		6	675
1635	1991	02	09.24236	08	51	43.42	+15	28	28.6	15.8	9	675
1635	1991	02	09.27309	08	51	41.80	+15	28	35.7		9	675
1638	1977	10	18.38108	01	45	18.82	+10	50	40.5		6	675
1638	1977	10	19.42882	01	44	23.36	+10	45	21.8		6	675
1656	1991	04	08.30451	13	08	36.86	+12	54	30.9	15	2	675
1686	1978	03	15.32917	11	21	16.70	+04	25	34.0		6	675
1686	1978	03	16.36563	11	20	30.89	+04	30	16.9		6	675
1709	1980	08	04.30174	21	21	44.56	-10	56	39.4		6	675
1709	1980	08	05.34965	21	20	43.68	-10	53	34.4		6	675
1714	1991	02	09.24236	08	35	30.84	+16	13	03.7	16.2	9	675
1714	1991	02	09.27309	08	35	28.96	+16	13	05.9		9	675
1714	1991	02	11.20972	08	33	34.15	+16	15	32.9	16.5	9	675
1714	1991	02	11.23958	08	33	32.28	+16	15	35.2		9	675
1722	1978	03	15.38715	11	37	01.05	+03	27	56.4		6	675
1722	1978	03	16.42431	11	36	08.78	+03	36	14.4		6	675
1740	1991	02	11.20972	08	26	23.05	+18	20	22.1	17.0	9	675

1740	1991	02	11.23958	08	26	21.35	+18	20	26.6		9	675
1779	1991	02	09.24236	08	48	58.93	+16	25	40.8	17.2	9	675
1779	1991	02	09.27309	08	48	56.77	+16	25	49.5		9	675
1789	1991	02	11.20972	08	28	59.47	+20	36	38.8	16.2	9	675
1789	1991	02	11.23958	08	28	57.65	+20	36	44.4		9	675
1825	1991	02	11.20972	08	14	32.50	+17	26	12.0	15.5	9	675
1825	1991	02	11.23958	08	14	30.93	+17	26	14.1		9	675
1848	1977	09	09.34584	23	45	53.97	-00	40	18.4		6	675
1848	1977	09	10.22535	23	45	13.33	-00	44	14.2		6	675
1913	1977	10	18.38108	01	59	04.99	+13	31	20.7		6	675
1913	1977	10	19.42882	01	58	12.07	+13	27	17.0		6	675
1928	1977	09	09.34584	23	37	26.12	-00	40	40.9		6	675
1928	1977	09	10.22535	23	36	49.08	-00	48	03.2		6	675
1930	1991	02	09.24236	08	41	05.97	+21	01	49.3	16.5	9	675
1930	1991	02	09.27309	08	41	04.22	+21	01	49.9		9	675
1946	1980	10	31.22188	01	59	25.17	+18	24	43.8		6	675
1946	1980	11	02.25104	01	57	10.30	+18	27	15.4		6	675
2005	1979	01	27.23698	07	24	16.03	+20	07	48.1		6	675
2005	1979	01	29.35955	07	22	14.38	+20	00	55.0		6	675
2010	1980	11	01.32604	02	46	36.68	+18	22	08.7		6	675
2010	1980	11	02.36632	02	45	43.48	+18	19	19.8		6	675
2021	1991	02	09.24236	08	52	46.44	+14	30	39.9	18.2	9	675
2021	1991	02	09.27309	08	52	44.51	+14	30	49.9		9	675
2029	1980	10	31.22188	01	48	26.40	+21	04	43.7		6	675
2029	1980	11	02.25104	01	46	34.98	+20	49	06.3		6	675
2030	1991	02	11.20972	08	11	15.10	+17	07	44.2	16.8	9	675
2030	1991	02	11.23958	08	11	13.53	+17	07	49.0		9	675
2037	1980	11	01.32604	02	53	05.75	+21	17	03.2		6	675
2037	1980	11	02.36632	02	51	56.57	+21	14	58.8		6	675
2111	1978	03	15.38715	11	51	28.98	+03	25	33.0		6	675
2111	1978	03	16.42431	11	50	45.01	+03	33	14.3		6	675
2177	1977	09	09.34584	23	32	13.40	-05	15	59.4		6	675
2177	1977	09	10.22535	23	31	34.86	-05	19	57.5		6	675
2182	1991	02	09.24236	08	48	13.97	+21	12	03.1	16.5	9	675
2182	1991	02	09.27309	08	48	12.38	+21	12	09.4		9	675
2186	1979	01	27.23698	07	26	01.12	+21	14	58.0		6	675
2186	1979	01	29.35955	07	24	09.85	+21	16	51.4		6	675
2190	1977	09	09.34584	23	44	34.87	-00	12	27.3		6	675
2190	1977	09	10.22535	23	43	49.29	-00	17	19.3		6	675
2270	1977	10	18.38108	01	58	53.36	+09	47	03.2		6	675
2270	1977	10	19.42882	01	58	05.53	+09	43	00.5		6	675
2273	1977	10	18.38108	01	47	47.41	+10	39	06.6		6	675
2273	1977	10	19.42882	01	46	47.66	+10	33	41.7		6	675
2281	1979	01	27.23698	07	27	21.31	+19	28	59.0		6	675
2281	1979	01	29.35955	07	25	08.97	+19	34	25.7		6	675
2349	1991	02	09.24236	08	52	30.17	+17	53	12.2	16.5	9	675
2349	1991	02	09.27309	08	52	28.58	+17	53	28.3		9	675
2367	1978	03	15.32917	11	11	11.58	+03	52	59.3		6	675
2367	1978	03	16.36563	11	10	14.83	+04	00	30.0		6	675
2439	1977	09	09.34584	23	37	19.71	-02	50	11.2		6	675
2439	1977	09	10.22535	23	36	41.54	-02	54	22.1		6	675
2439	1980	04	08.30660	13	02	34.33	-06	13	44.3		6	675
2439	1980	04	09.35243	13	01	46.85	-06	08	51.2		6	675
2447	1991	02	11.20972	08	08	33.24	+15	52	00.4	17.8	9	675
2447	1991	02	11.23958	08	08	31.76	+15	52	11.2		9	675
2466	1991	02	11.20972	08	18	26.68	+15	45	05.1	16.8	9	675
2466	1991	02	11.23958	08	18	25.16	+15	45	13.2		9	675
2467	1991	02	09.24236	08	50	47.55	+16	48	05.4	16.5	9	675
2467	1991	02	09.27309	08	50	45.41	+16	48	10.3		9	675

2503	1980	04	08.30660	12	45	11.53	-05	32	44.1		6	675
2503	1980	04	09.35243	12	44	04.85	-05	28	25.5		6	675
2523	1980	08	04.30174	21	12	41.68	-08	28	10.4		6	675
2523	1980	08	05.34965	21	11	49.73	-08	29	34.2		6	675
2533	1978	03	15.32917	11	26	56.70	+02	20	45.8		6	675
2533	1978	03	16.36563	11	26	09.99	+02	26	10.2		6	675
2544	1980	08	04.30174	21	07	09.19	-09	54	52.4		6	675
2544	1980	08	05.34965	21	05	46.09	-09	50	29.4		6	675
2551	1978	03	15.32917	11	21	03.22	+04	31	43.4		6	675
2551	1978	03	16.36563	11	20	17.20	+04	36	27.1		6	675
2560	1991	02	09.24236	08	38	03.89	+15	50	09.5	15.8	9	675
2560	1991	02	09.27309	08	38	02.30	+15	50	19.6		9	675
2567	1991	02	09.24236	08	45	56.88	+15	44	25.1	16.5	9	675
2567	1991	02	09.27309	08	45	55.27	+15	44	35.8		9	675
2579	1979	01	27.23698	07	32	10.55	+18	47	06.1		6	675
2579	1979	01	29.35955	07	29	51.58	+18	47	22.0		6	675
2644	1991	02	11.20972	08	22	29.48	+22	06	47.6	18.0	9	675
2644	1991	02	11.23958	08	22	27.50	+22	06	52.2		9	675
2665	1980	11	01.32604	02	54	09.06	+23	14	03.3		6	675
2665	1980	11	02.36632	02	53	01.97	+23	08	27.1		6	675
2671	1977	09	09.34584	23	31	19.46	-00	43	33.4		6	675
2671	1977	09	10.22535	23	30	36.88	-00	48	25.6		6	675
2675	1980	11	01.32604	02	42	55.83	+19	07	34.5		6	675
2675	1980	11	02.36632	02	41	46.96	+19	04	16.8		6	675
2676	1991	02	11.20972	08	05	47.96	+18	01	20.3	17.8	9	675
2676	1991	02	11.23958	08	05	46.30	+18	01	23.1		9	675
2678	1977	10	18.38108	02	01	57.91	+09	32	07.3		6	675
2678	1977	10	19.42882	02	00	53.52	+09	28	10.0		6	675
2717	1991	02	11.20972	08	12	49.25	+16	54	09.3	16.5	9	675
2717	1991	02	11.23958	08	12	47.47	+16	54	17.3		9	675
2800	1991	02	09.24236	09	00	56.23	+19	19	18.7	18.5	9	675
2800	1991	02	09.27309	09	00	54.66	+19	19	27.1		9	675
2817	1991	02	09.24236	08	45	09.30	+14	52	00.9	17.8	9	675
2817	1991	02	09.27309	08	45	07.33	+14	52	06.7		9	675
2835	1979	01	27.23698	07	27	41.75	+23	49	57.7		6	675
2835	1979	01	29.35955	07	25	49.44	+23	52	52.4		6	675
2835	1980	04	08.30660	13	05	59.11	-07	30	45.8		6	675
2835	1980	04	09.35243	13	05	06.46	-07	25	49.9		6	675
2855	1977	09	09.34584	23	31	27.08	-00	07	40.7		6	675
2855	1977	09	10.22535	23	30	34.33	-00	09	22.9		6	675
2894	1991	02	09.24236	08	38	51.05	+21	27	22.9	16.8	9	675
2894	1991	02	09.27309	08	38	49.47	+21	27	29.0		9	675
2913	1980	10	31.22188	01	59	38.97	+14	58	11.7		6	675
2913	1980	11	02.25104	01	57	15.06	+15	06	58.5		6	675
2939	1980	11	01.26840	02	23	18.43	+19	09	21.1		6	675
2939	1980	11	02.30729	02	22	15.22	+19	05	04.6		6	675
2967	1977	10	18.38108	01	53	42.72	+09	10	48.2		6	675
2967	1977	10	19.42882	01	52	41.74	+09	12	04.8		6	675
2986	1991	02	09.24236	08	55	46.59	+20	58	18.8	17.8	9	675
2986	1991	02	09.27309	08	55	45.13	+20	58	23.9		9	675
3008	1977	10	18.38108	01	56	42.97	+11	07	20.3		6	675
3008	1977	10	19.42882	01	55	54.78	+11	02	43.6		6	675
3088	1980	08	04.30174	21	21	09.83	-06	45	21.4		6	675
3088	1980	08	05.34965	21	20	24.38	-06	50	58.0		6	675
3123	1979	01	27.23698	07	15	26.81	+21	51	39.3		6	675
3123	1979	01	29.38559	07	13	30.96	+21	56	47.5		6	675
3127	1979	01	27.23698	07	27	47.55	+21	41	37.8		6	675
3127	1979	01	29.35955	07	25	50.14	+21	43	03.6		6	675
3218	1978	03	15.38715	11	38	32.40	+01	35	16.0		6	675

3218		1978	03	16.42431	11	37	36.61	+01	42	26.5		6 675
3282		1991	02	11.20972	08	08	23.29	+17	04	55.0	16.5	9 675
3282		1991	02	11.23958	08	08	21.60	+17	05	04.5		9 675
3300		1980	11	01.26840	02	12	32.90	+18	57	16.6		6 675
3300		1980	11	02.30729	02	11	31.97	+18	57	01.2		6 675
3319		1980	11	01.32604	02	54	37.75	+21	15	57.7		6 675
3319		1980	11	02.36632	02	53	46.82	+21	11	28.9		6 675
3363		1980	08	04.30174	21	08	24.37	-12	32	17.8		6 675
3363		1980	08	05.34965	21	07	32.43	-12	36	42.8		6 675
3395		1978	03	15.38715	11	38	47.75	+03	38	04.9		6 675
3395		1978	03	16.42431	11	37	53.84	+03	42	13.7		6 675
3453		1979	01	27.23698	07	16	22.19	+23	02	01.6		6 675
3453		1979	01	29.35955	07	14	16.86	+23	01	45.6		6 675
3481		1980	08	03.27326	20	38	42.76	-10	07	51.2		6 675
3481		1980	08	05.29271	20	36	41.20	-10	18	48.3		6 675
3572		1980	08	04.30174	21	09	23.99	-10	36	37.2		6 675
3572		1980	08	05.34965	21	08	29.43	-10	40	12.0		6 675
3615		1979	01	27.23698	07	18	02.71	+21	06	51.4		6 675
3615		1979	01	29.35955	07	16	24.92	+21	11	05.5		6 675
3648		1977	10	18.38108	01	48	33.62	+11	29	36.4		6 675
3648		1977	10	19.42882	01	47	36.97	+11	21	04.1		6 675
3824		1978	03	15.32917	11	28	49.55	+01	07	18.0		6 675
3824		1978	03	16.36563	11	27	43.83	+01	12	50.7		6 675
3836		1978	03	15.38715	11	53	32.78	+04	35	48.7		6 675
3836		1978	03	16.42431	11	52	30.78	+04	42	36.8		6 675
3836		1991	02	11.20972	08	30	18.41	+21	41	58.5	17.5	9 675
3836		1991	02	11.23958	08	30	16.28	+21	42	09.0		9 675
3843		1980	04	08.30660	12	57	14.64	-04	51	35.3		6 675
3843		1980	04	09.35243	12	56	36.74	-04	48	16.2		6 675
3912		1977	09	09.34584	23	32	37.19	-05	40	13.9		6 675
3912		1977	09	10.22535	23	31	48.24	-05	44	41.5		6 675
3917		1979	01	27.23698	07	33	18.93	+20	21	14.1		6 675
3917		1979	01	29.35955	07	31	15.29	+20	28	41.4		6 675
3922		1980	04	08.30660	12	45	48.58	-06	06	40.4		6 675
3922		1980	04	09.35243	12	45	03.74	-06	02	18.4		6 675
3938		1977	10	18.38108	01	54	28.85	+08	58	32.0		6 675
3938		1977	10	19.42882	01	53	31.60	+08	52	35.8		6 675
3969		1980	04	08.30660	12	56	27.12	-04	28	13.5		6 675
3969		1980	04	09.35243	12	55	26.39	-04	21	03.0		6 675
3975		1977	09	09.34584	23	34	01.84	-01	37	26.6		6 675
3975		1977	09	10.22535	23	33	22.01	-01	42	01.2		6 675
4082		1980	08	03.27326	20	53	59.26	-11	49	57.6		6 675
4082		1980	08	05.29271	20	51	42.29	-11	46	33.0		6 675
4090		1978	03	15.32917	11	28	18.64	+00	53	17.6		6 675
4090		1978	03	16.36563	11	27	17.09	+00	59	44.3		6 675
4170		1980	08	04.30174	21	05	48.43	-06	26	36.2		6 675
4170		1980	08	05.34965	21	05	02.29	-06	33	05.7		6 675
4201		1980	10	31.22188	01	45	53.47	+16	33	23.8		6 675
4201		1980	11	02.25104	01	44	27.17	+16	21	27.8		6 675
4206		1979	01	27.23698	07	32	11.18	+20	29	37.8		6 675
4206		1979	01	29.35955	07	30	22.37	+20	33	21.8		6 675
4213		1980	10	31.22188	01	56	49.09	+15	52	02.9		6 675
4213		1980	11	02.25104	01	54	54.17	+15	38	24.0		6 675
4217		1978	03	15.38715	11	38	03.87	+03	15	58.3		6 675
4217		1978	03	16.42431	11	36	47.73	+03	16	23.9		6 675
4239		1977	10	18.38108	01	47	44.14	+13	50	18.6		6 675
4239		1977	10	19.42882	01	46	37.13	+13	44	00.5		6 675
4264		1980	04	08.30660	12	58	49.22	-05	07	35.3		6 675
4264		1980	04	09.35243	12	57	54.11	-05	00	58.3		6 675

4274		1978	03	15.38715	11	44	05.62	+04	18	49.8		6 675
4274		1978	03	16.42431	11	43	10.75	+04	22	54.3		6 675
4297		1991	02	09.24236	08	53	50.75	+19	29	15.6	17.5	9 675
4297		1991	02	09.27309	08	53	48.86	+19	29	26.5		9 675
4316		1991	02	09.24236	08	51	14.11	+18	32	38.2	16.8	9 675
4316		1991	02	09.27309	08	51	12.38	+18	32	44.1		9 675
4334		1991	02	09.24236	09	03	36.59	+19	14	32.9	17.5	9 675
4334		1991	02	09.27309	09	03	34.99	+19	14	41.0		9 675
4343		1977	10	18.38108	02	00	47.04	+14	36	34.1		6 675
4343		1977	10	19.42882	01	59	55.81	+14	29	48.8		6 675
4348		1977	10	18.38108	01	53	55.83	+13	31	25.2		6 675
4348		1977	10	19.42882	01	53	23.78	+13	27	22.8		6 675
4397		1991	02	09.24236	08	48	28.72	+19	30	09.4	16.8	9 675
4397		1991	02	09.27309	08	48	26.57	+19	30	09.9		9 675
4404		1991	03	17.19844	09	04	58.98	+23	20	52.8	15.8	2 675
4404		1991	03	17.22535	09	04	58.49	+23	21	22.3		2 675
4404		1991	03	19.14167	09	04	29.15	+23	56	02.7		2 675
4404		1991	03	19.15990	09	04	28.81	+23	56	21.3		2 675
4447		1978	03	15.32917	11	13	23.24	+06	35	18.2		6 675
4447		1978	03	16.36563	11	12	35.09	+06	41	03.1		6 675
4545		1991	02	09.24236	08	58	33.71	+20	04	32.7	16.0	9 675
4545		1991	02	09.27309	08	58	32.10	+20	04	38.8		9 675
4621		1978	03	15.32917	11	31	17.92	+01	16	22.9		6 675
4621		1978	03	16.36563	11	30	19.64	+01	23	47.6		6 675
4638		1979	01	27.23698	07	18	13.90	+20	00	24.4		6 675
4638		1979	01	29.35955	07	16	04.32	+20	00	41.2		6 675
4727		1991	02	09.24236	08	41	10.56	+18	11	49.0	18.5	9 675
4727		1991	02	09.27309	08	41	08.98	+18	11	56.9		9 675
4746		1991	02	11.20972	08	11	10.24	+18	57	10.2	16.8	9 675
4746		1991	02	11.23958	08	11	08.89	+18	57	15.2		9 675
4748		1991	02	08.41440	11	08	29.74	+29	45	00.3	16.8	9 675
4748		1991	02	08.44392	11	08	28.54	+29	45	17.2		9 675
4751		1991	02	09.24236	08	39	52.06	+17	56	14.3	17.8	9 675
4751		1991	02	09.27309	08	39	50.56	+17	56	21.6		9 675
4751		1991	02	11.20972	08	38	20.15	+18	03	10.0	17.8	9 675
4751		1991	02	11.23958	08	38	18.84	+18	03	17.3		9 675
4764		1991	02	09.24236	08	35	51.32	+17	52	00.7	16.8	9 675
4764		1991	02	09.27309	08	35	49.13	+17	52	40.2		9 675
4764		1991	02	11.20972	08	33	39.02	+18	33	11.1	16.5	9 675
4764		1991	02	11.23958	08	33	36.97	+18	33	49.4		9 675

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

1979	OB	1991	03	18.18009	08	27	37.14	+14	12	07.1	18.8R	688
1979	OB	1991	03	18.18727	08	27	37.02	+14	12	08.4	18.7R	688
1990	WA	1991	03	18.14387	07	57	11.20	+63	01	35.8	18.1R	688
1990	WA	1991	03	18.14660	07	57	11.69	+63	01	32.5		688
1991	CS	1991	03	18.15341	07	57	42.72	+37	17	44.5	D	688
1991	CS	1991	03	18.15822	07	57	43.25	+37	18	03.6	16.5R	688
1991	CS	1991	03	18.16018	07	57	43.46	+37	18	11.8		688
1991	FB	1991	03	24.48137	14	18	13.99	-03	53	13.4	16.6R	688
1991	FB	1991	03	24.48432	14	18	14.59	-03	53	22.9		688
1991	FB	1991	03	24.49534	14	18	16.85	-03	53	58.1		688
1510		1991	03	18.12107	07	05	53.21	+28	23	43.4	15.4R	688
1510		1991	03	18.12484	07	05	53.39	+28	23	41.6		688

1515		1991 03 18.20046	08 53 09.60	+33 03 33.1		16.7R	688
1515		1991 03 18.20631	08 53 09.51	+33 03 31.5			688
2218		1991 03 18.19213	08 49 15.07	+32 43 51.7		15.5R	688
2218		1991 03 18.19676	08 49 15.02	+32 43 51.3		15.6R	688
4544		1991 03 18.13727	07 56 00.96	+48 00 23.7		17.6R	688
4544		1991 03 18.14005	07 56 01.14	+48 00 17.4			688

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

1959 EY		1959 03 06.21181	08 42 09.21	+08 52 18.2			690
1959 EY		1959 03 07.21042	08 41 53.57	+08 58 00.8			690
190		1959 03 06.21181	09 19 05.80	+11 08 36.4			690
190		1959 03 07.21042	09 18 37.61	+11 12 49.4			690
338		1959 03 06.21181	09 08 50.77	+10 47 35.6			690
338		1959 03 07.21042	09 08 14.47	+10 49 58.0			690
370		1959 03 06.21181	08 45 23.89	+11 11 05.6			690
370		1959 03 07.21042	08 44 48.23	+11 12 45.3			690
514		1959 03 06.21181	09 19 23.94	+10 45 30.7			690
514		1959 03 07.21042	09 18 47.48	+10 48 38.7			690
979		1959 03 06.21181	08 42 52.47	+04 26 55.3			690
979		1959 03 07.21042	08 42 24.60	+04 31 14.0			690
1167		1959 03 06.21181	08 54 20.14	+09 34 58.5			690
1167		1959 03 07.21042	08 53 51.37	+09 38 27.1			690
1330		1959 03 06.21181	08 47 45.43	+10 47 48.6			690
1330		1959 03 07.21042	08 47 20.67	+10 55 19.8			690
1349		1959 03 06.21181	09 18 49.62	+10 41 26.6			690
1349		1959 03 07.21042	09 18 07.38	+10 42 56.7			690
2218		1931 12 05.32153	04 19 39.06	+09 06 36.4			690
2218		1931 12 07.26041	04 17 51.25	+09 14 55.2			690
2709		1959 03 06.21181	09 12 38.22	+10 57 08.0			690
2709		1959 03 07.21042	09 11 58.00	+11 01 32.3			690

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

1990 SS		1991 03 15.11517	07 24 34.2	+60 41 32		17.0V	691
1990 SS		1991 04 05.29056	10 00 57.34	-06 18 00.7		17.6V	691
1990 SS		1991 04 05.29751	10 00 58.18	-06 18 32.2			691
1990 SS		1991 04 05.31096	10 00 59.92	-06 19 32.1			691
1991 EE		1991 03 17.27875	10 53 31.43	+07 21 56.1			691
1991 EE		1991 03 17.28347	10 53 30.94	+07 22 01.5		19.4V	691
1991 EE		1991 03 17.29615	10 53 29.67	+07 22 14.8			691
1991 EE		1991 03 20.28399	10 48 39.39	+08 16 11.5			691
1991 EE		1991 03 20.29086	10 48 38.73	+08 16 19.5			691
1991 EE		1991 03 20.30204	10 48 37.60	+08 16 31.3			691
1991 EE		1991 04 05.26225	10 23 59.99	+13 00 03.0			691
1991 EE		1991 04 05.26963	10 23 59.36	+13 00 10.4			691
1991 EE		1991 04 05.28253	10 23 58.24	+13 00 22.8		19.4V	691
1991 FA	*	1991 03 17.17763	11 22 41.62	+02 06 58.3		18.7V	691
1991 FA		1991 03 17.19773	11 22 39.92	+02 07 05.7			691
1991 FA		1991 03 17.23556	11 22 36.74	+02 07 19.6			691

1991	FA		1991	03	18.19331	11	21	20.05	+02	13	08.6		691
1991	FA		1991	03	18.20447	11	21	19.14	+02	13	12.9	18.8V	691
1991	FA		1991	03	18.21465	11	21	18.35	+02	13	18.5		691
1991	FA		1991	03	18.39102	11	21	03.68	+02	14	19.6		691
1991	FA		1991	03	18.39799	11	21	03.13	+02	14	21.7		691
1991	FA		1991	03	18.40493	11	21	02.55	+02	14	24.3		691
1991	FA		1991	03	20.26631	11	18	39.60	+02	25	15.9		691
1991	FA		1991	03	20.27738	11	18	38.72	+02	25	19.7		691
1991	FA		1991	04	05.20067	11	03	39.31	+03	33	48.5		691
1991	FA		1991	04	05.20925	11	03	38.95	+03	33	49.8	19.5V	691
1991	FA		1991	04	05.22215	11	03	38.47	+03	33	51.5		691
1991	FE	*	1991	03	18.22896	11	44	52.50	+02	01	21.2	17.9V	691
1991	FE		1991	03	18.25095	11	44	51.00	+02	01	33.2		691
1991	FE		1991	03	18.27294	11	44	49.48	+02	01	44.5		691
1991	FE		1991	03	18.41249	11	44	39.92	+02	02	57.1		691
1991	FE		1991	03	18.41884	11	44	39.49	+02	03	00.6		691
1991	FE		1991	03	18.42905	11	44	38.81	+02	03	05.8		691
1991	FE		1991	03	20.23348	11	42	39.76	+02	18	38.8		691
1991	FE		1991	03	20.24002	11	42	39.31	+02	18	42.3		691
1991	FE		1991	03	20.25110	11	42	38.58	+02	18	48.0		691
1991	FE		1991	04	05.22990	11	27	02.72	+04	20	17.1		691
1991	FE		1991	04	05.23669	11	27	02.38	+04	20	20.5		691
1991	FE		1991	04	05.25020	11	27	01.69	+04	20	25.1	18.6V	691
1991	FD1	*	1991	03	18.32196	11	27	08.39	+01	27	19.2	20.7V	691
1991	FD1		1991	03	18.34396	11	27	06.86	+01	27	24.8		691
1991	FD1		1991	03	18.37334	11	27	04.81	+01	27	33.2		691
1991	FD1		1991	03	20.20832	11	25	01.05	+01	36	24.6	20.9V	691
1991	FD1		1991	03	20.21611	11	25	00.53	+01	36	25.5		691
1991	FD1		1991	03	20.22738	11	24	59.80	+01	36	29.7		691
1991	FD1		1991	03	20.39407	11	24	47.95	+01	37	18.6		691
1991	FD1		1991	03	20.40088	11	24	47.62	+01	37	20.1		691
1991	FD1		1991	03	20.41211	11	24	46.73	+01	37	25.5		691
1991	FD1		1991	03	22.37324	11	22	35.54	+01	46	48.4		691
1991	FD1		1991	03	22.38005	11	22	35.07	+01	46	49.8		691
1991	FD1		1991	03	22.39122	11	22	34.37	+01	46	52.7		691
1991	GJ	*	1991	04	08.24535	12	45	42.31	-01	41	41.8		691
1991	GJ		1991	04	08.28659	12	45	39.48	-01	41	27.5		691
1991	GJ		1991	04	09.26929	12	44	35.29	-01	36	07.7		691
1991	GJ		1991	04	09.28580	12	44	34.20	-01	36	02.0	20.0V	691
1991	GK	*	1991	04	09.35978	13	10	06.13	-02	42	40.4		691
1991	GK		1991	04	09.37999	13	10	03.15	-02	43	31.0	19.6V	691
1991	GK		1991	04	09.40022	13	10	00.17	-02	44	22.0		691
1991	GK		1991	04	10.27284	13	07	57.89	-03	21	02.0		691
1991	GK		1991	04	10.28184	13	07	56.59	-03	21	24.5		691
1991	GK		1991	04	10.29465	13	07	54.68	-03	21	56.6	19.5V	691
1991	GK		1991	04	11.25470	13	05	40.54	-04	02	01.0		691
1991	GK		1991	04	11.26097	13	05	39.61	-04	02	17.1		691
1991	GK		1991	04	11.27399	13	05	37.70	-04	02	49.6	19.4V	691

760 Goethe Link
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road,
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Observers P. E. Barnhart, H. S. Charlip, R. C. Hall, A. M. Heiser,
D. D. McCullough, J. E. Michlovic, C. L. Perry, T. L. Swihart,
Y. Terzian, J. N. Williams, H. S. Yun
Measurer C. M. Olmstead
0.25-m refractor
PDS scanning microdensitometer
AGK3 and Perth 70 secondary nets, global solutions

1954	EL	1954	03	06.37534	12	31	02.82	-07	34	21.7		P 760
1954	RK	1954	09	06.21595	23	51	00.63	+15	15	42.6		760
1963	FL	1963	03	28.36868	12	46	44.39	+17	55	08.5		760
1963	FL	1963	03	28.41556	12	46	42.28	+17	55	20.5		760
1963	MA	1963	06	24.16111	16	40	51.65	-19	23	42.1		760
1963	MA	1963	06	24.20486	16	40	50.00	-19	23	27.8		760
1963	WB	1963	11	19.10415	02	54	21.20	+08	50	39.3		760
1963	WB	1963	11	19.14720	02	54	18.87	+08	50	34.0		760
165		1954	09	06.21595	00	09	32.19	+15	52	11.8	13.3	760
165		1954	09	06.25483	00	09	30.51	+15	52	11.1		760
165		1954	10	21.20563	23	36	51.00	+13	18	28.2	13.7	760
165		1954	10	21.25353	23	36	49.62	+13	18	13.5		760
165		1954	10	24.08030	23	35	29.95	+13	04	39.8	13.1	760
165		1954	10	24.12058	23	35	28.79	+13	04	29.1		760
168		1954	03	06.42256	12	26	17.07	-05	48	55.9		760
203		1954	03	06.37534	12	11	53.71	-02	06	27.4	13.6	760
203		1954	03	06.42256	12	11	51.51	-02	06	17.4		760
203		1960	08	25.14584	21	03	30.81	-19	16	05.4	13.4	760
203		1960	08	25.19097	21	03	28.58	-19	16	09.5		760
236		1954	03	06.42256	12	18	36.69	-03	23	06.7		760
278		1949	10	28.21661	01	46	09.09	+04	09	58.9	14.8	760
278		1949	10	28.29023	01	46	05.05	+04	09	48.1		760
365		1954	03	06.37534	12	26	06.24	-04	32	47.6	14.6	760
365		1954	03	06.42256	12	26	04.34	-04	32	29.1		760
667		1963	03	28.36868	12	35	32.48	+17	40	32.4	14.5	760
667		1963	03	28.41556	12	35	30.62	+17	41	00.4		760
681		1949	10	28.21661	02	03	36.53	+02	00	23.4		760
681		1949	10	28.29023	02	03	33.30	+01	59	52.9		760
687		1954	09	06.21595	23	54	43.49	+09	18	53.1	14.4	760
687		1954	09	06.25483	23	54	41.21	+09	19	08.9		760
853		1963	11	19.10415	02	48	48.76	+05	21	39.4	15.8	760
853		1963	11	19.14720	02	48	46.33	+05	21	26.4		760
904		1949	10	28.21661	01	55	34.15	+06	20	56.6		760
904		1949	10	28.29023	01	55	30.85	+06	20	18.3		760
977		1963	11	19.10415	02	48	46.60	+04	32	01.7	14.9	760
977		1963	11	19.14720	02	48	44.41	+04	32	05.4		760
1016		1954	03	06.37534	12	30	34.19	-01	14	22.0	16.8	760
1016		1954	03	06.42256	12	30	31.36	-01	14	15.1		760
1041		1949	10	28.21661	02	02	55.19	+00	37	21.0		760
1041		1949	10	28.29023	02	02	51.08	+00	37	23.8		760
1300		1963	06	24.16111	16	34	44.26	-20	39	17.4	16.2	760
1300		1963	06	24.20486	16	34	42.16	-20	39	21.1		760
1300		1963	06	25.20556	16	33	54.93	-20	41	08.9	16.1	760
1341		1963	03	28.36868	12	41	32.05	+17	39	10.5	15.3	760
1341		1963	03	28.41556	12	41	29.73	+17	39	27.6		760
1352		1954	03	06.37534	12	29	45.71	-03	49	02.0	16.5	760
1352		1954	03	06.42256	12	29	43.82	-03	48	48.3		760
1550		1949	10	28.21661	01	57	33.94	+00	12	45.5		760
1550		1949	10	28.29023	01	57	29.68	+00	13	06.9		760
2531		1963	03	28.36868	12	50	13.47	+12	41	11.7		760
2531		1963	03	28.41556	12	50	11.35	+12	41	26.4		760
3263		1949	10	28.29023	02	02	11.11	+01	54	08.4		760
3613		1949	10	28.29023	02	00	25.88	+03	33	25.1		760
4700		1949	10	28.21661	01	50	53.52	+03	41	02.9		760
4700		1949	10	28.29023	01	50	49.00	+03	40	50.8		760

801 Oak Ridge
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Observers R. E. McCrosky, C.-Y. Shao, J. M. Zajac
1.5-m reflector + CCD

1948	AG	1991	03	18.32924	14	07	39.97	+38	19	02.2	801
1948	AG	1991	03	18.34477	14	07	39.44	+38	19	16.5	801
1955	QN	1991	03	17.18249	11	15	48.52	-07	16	46.5	801
1955	QN	1991	03	20.19426	11	12	57.41	-06	54	42.4	801
1955	QN	1991	03	20.21495	11	12	56.21	-06	54	33.2	801
1967	UT	1991	03	18.23841	11	59	00.64	+06	15	59.5	801
1967	UT	1991	03	18.26641	11	58	59.07	+06	16	10.5	801
1967	UT	1991	03	20.23122	11	57	09.90	+06	28	38.8	801
1967	UT	1991	03	20.24510	11	57	09.12	+06	28	43.9	801
1973	SH1	1991	03	20.23880	12	23	08.18	+02	10	42.5	801
1973	SH1	1991	03	20.26184	12	23	07.52	+02	10	47.1	801
1973	SH1	1991	03	21.25610	12	22	39.45	+02	14	03.5	801
1973	SH1	1991	03	21.28369	12	22	38.67	+02	14	08.4	801
1975	TH6	1991	03	13.26594	13	13	46.30	+09	37	20.4	801
1975	TH6	1991	03	13.28177	13	13	45.65	+09	37	28.1	801
1975	TH6	1991	03	17.27469	13	10	56.55	+10	09	18.5	801
1975	TH6	1991	03	17.29483	13	10	55.59	+10	09	28.2	801
1977	EK1	1991	03	13.31829	14	28	33.49	-13	59	24.4	801
1977	EK1	1991	03	13.35856	14	28	33.95	-13	59	16.9	801
1977	EK1	1991	03	21.29706	14	29	19.75	-13	28	38.3	801
1977	EK1	1991	03	21.33455	14	29	19.56	-13	28	27.6	801
1977	RR7	1991	03	18.19520	10	38	24.73	+20	09	04.0	801
1977	RR7	1991	03	18.21218	10	38	23.97	+20	09	04.2	801
1977	RR7	1991	03	21.16816	10	36	13.01	+20	10	40.9	801
1977	RR7	1991	03	21.20368	10	36	11.43	+20	10	41.7	801
1978	TA7	1991	03	13.26860	13	29	06.73	+04	00	22.5	801
1978	TA7	1991	03	13.28686	13	29	06.17	+04	00	29.2	801
1978	TA7	1991	03	17.27736	13	26	58.17	+04	24	54.0	801
1978	TA7	1991	03	17.29684	13	26	57.49	+04	25	00.9	801
1978	TV8	1991	03	17.08439	08	58	48.53	+19	16	16.1	801
1978	TV8	1991	03	17.11609	08	58	47.99	+19	16	16.6	801
1978	TV8	1991	03	21.06337	08	57	59.94	+19	16	28.8	801
1978	TV8	1991	03	21.13223	08	57	59.22	+19	16	28.0	801
1979	KD	1991	03	13.23613	12	29	04.14	+04	03	21.9	801
1979	KD	1991	03	13.24861	12	29	03.61	+04	03	28.5	801
1979	KD	1991	03	18.27521	12	25	27.72	+04	49	16.5	801
1979	KD	1991	03	18.29554	12	25	26.77	+04	49	27.6	801
1979	KD	1991	03	20.25105	12	23	57.84	+05	07	20.7	801
1979	KD	1991	03	20.26463	12	23	57.18	+05	07	28.2	801
1979	KR	1991	03	17.08774	09	00	33.96	+03	40	47.0	801
1979	KR	1991	03	17.11296	09	00	33.39	+03	40	59.1	801
1979	KR	1991	03	20.08179	08	59	36.59	+04	04	00.4	801
1979	KR	1991	03	20.10410	08	59	36.18	+04	04	10.6	801
1981	ET26	1991	03	20.23438	11	58	13.28	-00	39	58.0	801
1981	ET26	1991	03	20.24765	11	58	12.40	-00	39	54.5	801
1981	ET26	1991	03	21.23054	11	57	09.27	-00	35	34.7	801
1981	ET26	1991	03	21.24567	11	57	08.27	-00	35	31.2	801
1981	EZ46	1991	03	20.04539	08	08	08.60	+23	03	10.7	801
1981	EZ46	1991	03	20.09226	08	08	09.26	+23	03	05.8	801
1982	EF	1991	03	13.39847	17	05	17.63	-08	46	34.9	801
1982	EF	1991	03	13.41116	17	05	18.35	-08	46	30.2	801
1983	AH1	1991	01	16.11215	05	24	57.59	+16	55	13.6	801
1984	EM	1991	03	17.24514	13	00	50.90	-04	56	20.6	801
1984	EM	1991	03	17.26520	13	00	50.04	-04	56	13.5	801
1984	EM	1991	03	18.28818	13	00	07.88	-04	49	45.1	801
1984	EM	1991	03	18.31627	13	00	06.65	-04	49	34.7	801
1984	EY	1991	03	17.06457	08	44	34.32	+28	03	28.6	801

1984	EY	1991	03	17.09241	08	44	33.84	+28	03	22.3	801
1984	EY	1991	03	18.07160	08	44	19.78	+27	59	36.4	801
1984	EY	1991	03	18.12317	08	44	19.03	+27	59	24.3	801
1984	EN1	1991	03	17.05727	08	41	52.30	+18	03	03.9	801
1984	EN1	1991	03	17.09589	08	41	51.68	+18	03	08.2	801
1984	EN1	1991	03	21.04655	08	41	12.31	+18	09	16.4	801
1984	EN1	1991	03	21.12497	08	41	11.71	+18	09	22.4	801
1984	FN	1991	03	16.35502	15	06	08.37	+04	15	35.8	801
1984	FN	1991	03	16.37659	15	06	07.70	+04	15	29.3	801
1984	FN	1991	03	17.34951	15	05	38.29	+04	10	28.0	801
1984	FN	1991	03	17.37391	15	05	37.46	+04	10	20.3	801
1984	FU	1991	03	20.32875	14	22	11.94	-13	37	40.1	801
1984	FU	1991	03	20.38579	14	22	10.61	-13	37	47.7	801
1984	FU	1991	03	21.29009	14	21	50.66	-13	39	44.8	801
1984	FU	1991	03	21.31888	14	21	49.93	-13	39	48.6	801
1984	SG1	1991	03	13.14921	09	35	52.29	+10	44	02.0	801
1984	SG1	1991	03	13.17404	09	35	51.34	+10	44	06.6	801
1984	SG1	1991	03	20.12051	09	32	07.91	+11	03	18.8	801
1984	SG1	1991	03	20.14406	09	32	07.24	+11	03	21.5	801
1985	KC	1991	03	13.15243	09	45	24.17	+14	59	25.5	801
1985	KC	1991	03	13.17675	09	45	22.92	+14	59	26.3	801
1985	KC	1991	03	17.12293	09	42	21.48	+15	01	00.8	801
1985	KC	1991	03	17.14345	09	42	20.57	+15	01	01.1	801
1985	RK6	1991	03	13.29313	14	04	30.86	-13	25	56.2	801
1985	RK6	1991	03	13.34328	14	04	30.44	-13	25	44.9	801
1986	AA2	1991	03	13.19294	11	43	56.73	+10	06	38.1	801
1986	AA2	1991	03	13.21286	11	43	55.73	+10	06	46.1	801
1986	AA2	1991	03	16.31606	11	41	22.97	+10	27	19.1	801
1986	AA2	1991	03	16.32777	11	41	22.39	+10	27	23.8	801
1986	JQ	1991	03	13.15595	10	06	52.22	-21	46	19.0	801
1986	JQ	1991	03	13.16706	10	06	51.61	-21	46	08.6	801
1986	JQ	1991	03	17.13604	10	03	36.58	-20	40	46.7	801
1986	JQ	1991	03	17.14935	10	03	35.93	-20	40	32.9	801
1986	RU2	1991	03	20.04116	08	18	09.59	+20	52	57.3	801
1986	RU2	1991	03	20.08789	08	18	10.01	+20	52	51.3	801
1986	RU2	1991	03	21.04983	08	18	21.12	+20	50	43.5	801
1986	RU2	1991	03	21.10678	08	18	21.73	+20	50	35.0	801
1986	RC7	1991	03	17.00811	06	43	07.70	+27	32	19.3	801
1986	RC7	1991	03	17.02635	06	43	08.46	+27	32	13.9	801
1986	RC7	1991	03	18.02279	06	43	54.04	+27	28	36.6	801
1986	TC1	1991	03	17.12604	09	58	43.14	+14	29	22.6	801
1986	TC1	1991	03	17.14642	09	58	42.30	+14	29	28.3	801
1986	TC1	1991	03	20.12566	09	56	53.70	+14	42	40.8	801
1986	TC1	1991	03	20.14681	09	56	52.94	+14	42	45.9	801
1986	TL1	1991	03	17.06892	08	45	06.61	+12	48	47.3	801
1986	TL1	1991	03	17.10635	08	45	06.00	+12	48	50.9	801
1986	TL1	1991	03	18.07801	08	44	53.10	+12	50	23.0	V 801
1986	TL1	1991	03	18.13609	08	44	52.25	+12	50	27.0	801
1986	TO3	1991	03	17.17657	11	08	48.34	+04	53	13.5	801
1986	TO3	1991	03	17.18973	11	08	47.51	+04	53	18.0	801
1986	TO3	1991	03	18.19999	11	07	46.71	+04	59	09.4	801
1986	TO3	1991	03	18.21712	11	07	45.64	+04	59	15.6	801
1986	UG	1991	03	20.19145	11	12	09.02	+07	57	55.4	801
1986	UG	1991	03	20.21142	11	12	07.86	+07	58	03.1	801
1986	UG	1991	03	21.18062	11	11	13.84	+08	04	11.1	801
1986	UG	1991	03	21.21169	11	11	12.07	+08	04	22.6	801
1986	VG1	1991	03	21.26689	14	06	32.67	+12	49	41.9	801
1986	VG1	1991	03	21.29321	14	06	32.06	+12	49	46.8	801
1986	WL1	1991	03	18.18865	10	38	45.65	+18	32	22.1	801

1986	WL1	1991	03	18.20799	10	38	44.58	+18 32 23.2	801
1986	WL1	1991	03	21.17094	10	36	10.77	+18 34 36.3	801
1986	WL1	1991	03	21.20119	10	36	09.19	+18 34 37.0	801
1988	JO	1991	03	16.30337	11	34	22.87	+41 33 52.4	801
1988	JO	1991	03	16.31211	11	34	22.28	+41 33 55.1	801
1988	JO	1991	03	17.20170	11	33	24.37	+41 38 23.4	801
1988	JO	1991	03	17.21506	11	33	23.47	+41 38 27.4	801
1988	JU	1991	03	18.02726	07	15	18.21	-02 35 15.2	801
1988	JU	1991	03	18.04343	07	15	18.55	-02 35 04.4	801
1988	JU	1991	03	20.02501	07	15	52.15	-02 13 17.2	801
1988	JU	1991	03	20.03753	07	15	52.41	-02 13 10.8	801
1988	ME	1991	03	17.20505	11	40	44.73	-03 42 40.5	801
1988	ME	1991	03	17.21818	11	40	44.00	-03 42 34.4	801
1988	ME	1991	03	21.22420	11	37	08.15	-03 10 44.2	801
1988	ME	1991	03	21.24013	11	37	07.27	-03 10 36.2	801
1988	PT	1991	03	20.07839	08	37	17.69	+04 14 40.6	801
1988	PT	1991	03	20.10088	08	37	17.42	+04 14 51.9	801
1988	PT	1991	03	21.05303	08	37	10.22	+04 22 47.4	801
1988	PT	1991	03	21.08966	08	37	09.91	+04 23 05.7	801
1988	RR2	1991	03	17.24325	12	46	23.27	-02 06 33.7	801
1988	RR2	1991	03	17.27002	12	46	22.00	-02 06 23.4	801
1988	RR2	1991	03	18.28419	12	45	34.72	-01 59 37.4	801
1988	RG4	1991	03	16.35182	15	45	59.20	-10 38 57.4	801
1988	RG4	1991	03	16.38016	15	45	59.98	-10 38 53.9	801
1988	RG4	1991	03	17.37690	15	46	27.65	-10 36 58.5	801
1988	RG4	1991	03	17.39661	15	46	28.15	-10 36 56.2	801
1988	RR4	1991	03	17.12956	09	58	57.20	+12 43 50.5	801
1988	RR4	1991	03	17.15231	09	58	56.33	+12 43 57.7	801
1988	RR4	1991	03	20.12878	09	57	14.07	+12 59 05.9	801
1988	RR4	1991	03	20.14962	09	57	13.37	+12 59 12.0	801
1988	RT6	1991	03	13.23881	12	40	17.81	+01 08 44.3	801
1988	RT6	1991	03	13.25105	12	40	17.33	+01 08 52.6	801
1988	RT6	1991	03	17.23260	12	37	37.89	+01 53 16.4	801
1988	RT6	1991	03	17.24725	12	37	37.25	+01 53 25.9	801
1988	RU6	1991	03	17.17380	11	01	50.52	+04 35 56.1	801
1988	RU6	1991	03	17.18755	11	01	49.82	+04 36 01.1	801
1988	RU6	1991	03	21.17794	10	58	37.59	+04 59 56.6	801
1988	RU6	1991	03	21.20916	10	58	36.06	+05 00 07.2	801
1988	VB3	1991	03	17.28411	13	44	43.20	-14 15 50.9	801
1988	VB3	1991	03	17.31878	13	44	42.22	-14 15 42.2	801
1988	VB3	1991	03	20.28563	13	43	17.95	-14 02 56.6	801
1988	VB3	1991	03	20.31053	13	43	17.13	-14 02 49.9	801
1989	AL2	1991	03	17.28813	13	53	22.06	+32 47 55.8	801
1989	AL2	1991	03	17.32612	13	53	21.13	+32 48 07.5	801
1989	AL2	1991	03	20.30051	13	52	08.68	+33 02 49.4	801
1989	AL2	1991	03	20.32541	13	52	08.04	+33 02 56.8	801
1989	AM2	1991	03	13.31081	14	14	46.97	+16 48 14.2	801
1989	AM2	1991	03	13.35521	14	14	46.11	+16 48 24.2	801
1989	AM2	1991	03	17.33071	14	13	26.84	+17 02 47.4	801
1989	AM2	1991	03	17.35615	14	13	26.27	+17 02 52.6	801
1989	AN2	1991	03	17.22975	12	53	53.90	-01 36 19.4	801
1989	AN2	1991	03	17.25912	12	53	53.15	-01 36 12.9	801
1989	AN2	1991	03	20.27170	12	52	36.68	-01 24 30.5	801
1989	AN2	1991	03	20.30394	12	52	35.83	-01 24 22.6	801
1989	BQ	1991	03	16.34363	15	35	46.33	+03 31 31.5	801
1989	BQ	1991	03	16.38351	15	35	46.14	+03 31 40.7	801
1989	BQ	1991	03	17.35279	15	35	42.11	+03 35 28.0	801
1989	BQ	1991	03	17.38777	15	35	41.93	+03 35 36.3	801
1989	CK1	1991	03	21.30751	14	40	57.20	+03 45 10.5	801

1989	CK1	1991	03	21.33898	14	40	56.60	+03	45	15.5	801
1989	CH2	1991	03	13.31418	14	16	43.98	+23	52	27.1	801
1989	CH2	1991	03	13.35130	14	16	43.38	+23	52	40.2	801
1989	CH2	1991	03	17.33434	14	15	37.06	+24	16	21.6	801
1989	CH2	1991	03	17.35917	14	15	36.59	+24	16	30.6	801
1989	NX	1991	01	18.22113	07	46	21.47	+08	28	12.6	801
1989	QG	1991	03	20.08480	07	58	30.33	+14	12	59.8	801
1989	QG	1991	03	21.02617	07	58	46.48	+14	16	30.6	801
1989	QG	1991	03	21.06641	07	58	46.91	+14	16	39.3	801
1989	SJ	1991	03	13.22997	11	52	57.73	-01	02	32.6	801
1989	SJ	1991	03	13.24355	11	52	56.91	-01	02	28.1	801
1989	SJ	1991	03	17.21242	11	49	12.47	-00	40	32.2	801
1989	SJ	1991	03	17.22701	11	49	11.61	-00	40	27.7	801
1989	SU1	1991	03	13.14617	09	14	26.80	+21	17	44.6	801
1989	SU1	1991	03	13.17149	09	14	25.84	+21	17	47.6	801
1989	SU1	1991	03	20.11737	09	11	05.48	+21	27	39.9	801
1989	SU1	1991	03	20.15527	09	11	04.58	+21	27	41.4	801
1989	TC1	1991	03	17.05310	08	28	47.47	+18	12	04.5	801
1989	TC1	1991	03	17.09885	08	28	46.79	+18	12	07.5	801
1989	TC1	1991	03	21.04344	08	28	07.13	+18	15	22.8	801
1989	TC1	1991	03	21.12821	08	28	06.44	+18	15	25.9	801
1989	UY	1991	01	19.28524	09	34	40.47	-07	14	53.0	801
1989	UY	1991	03	17.07954	08	56	50.03	-04	29	45.8	801
1989	UY	1991	03	17.10271	08	56	49.58	-04	29	37.6	801
1989	UY	1991	03	18.07429	08	56	32.73	-04	24	01.4	801
1989	UY	1991	03	18.11306	08	56	32.03	-04	23	47.3	801
1989	UR4	1991	03	13.25741	12	44	36.63	-01	11	32.9	801
1989	UR4	1991	03	13.27194	12	44	35.96	-01	11	28.6	801
1989	UR4	1991	03	16.33407	12	42	12.53	-00	56	17.6	801
1989	UR4	1991	03	16.34672	12	42	11.90	-00	56	13.9	801
1989	UR4	1991	03	20.25868	12	38	58.05	-00	36	12.3	801
1989	UR4	1991	03	20.27847	12	38	57.01	-00	36	06.2	801
1989	UE8	1991	03	21.11775	10	20	48.04	+15	44	48.1	801
1989	UE8	1991	03	21.13889	10	20	46.98	+15	44	53.0	801
1989	VW	1991	03	17.06061	08	42	37.37	+26	27	21.1	801
1989	VW	1991	03	17.10999	08	42	36.67	+26	27	17.0	801
1989	VW	1991	03	20.09626	08	42	05.94	+26	23	15.7	801
1989	VW	1991	03	20.16218	08	42	05.32	+26	23	09.6	801
1989	WE	1991	03	13.24118	12	42	58.83	+00	59	12.4	801
1989	WE	1991	03	13.25962	12	42	58.02	+00	59	19.6	801
1989	WE	1991	03	13.28964	12	42	56.68	+00	59	32.6	801
1989	WE	1991	03	13.30343	12	42	56.07	+00	59	38.1	801
1989	WE	1991	03	16.32463	12	40	42.77	+01	20	37.6	801
1989	WE	1991	03	16.33646	12	40	42.21	+01	20	42.3	801
1989	WE	1991	03	17.23812	12	40	01.40	+01	27	01.1	801
1989	WE	1991	03	17.25353	12	40	00.68	+01	27	07.7	801
1989	WE	1991	03	18.27995	12	39	13.49	+01	34	19.3	801
1989	WE	1991	03	18.29963	12	39	12.55	+01	34	27.6	801
1989	WE	1991	03	20.31446	12	37	38.42	+01	48	36.4	801
1989	WE	1991	03	20.33181	12	37	37.60	+01	48	43.7	801
1989	WK	1991	03	17.17949	11	14	08.16	+01	18	33.9	801
1989	WK	1991	03	17.19277	11	14	07.36	+01	18	39.5	801
1989	WK	1991	03	18.20436	11	13	08.23	+01	25	44.2	801
1989	WK	1991	03	18.22174	11	13	07.19	+01	25	51.5	801
1989	WK2	1991	03	21.31240	15	24	13.18	+13	28	46.7	801
1989	WK2	1991	03	21.32920	15	24	12.96	+13	28	57.4	801
1990	BT1	1991	03	17.29219	13	54	52.05	+05	08	58.3	801
1990	BT1	1991	03	17.32212	13	54	51.04	+05	09	08.5	801
1990	BT1	1991	03	20.28950	13	53	09.99	+05	26	33.7	801

1990	BT1		1991	03	20.30721	13	53	09.33	+05	26	39.9	801
1990	BJ2		1991	03	16.34012	15	04	44.81	-10	48	51.7	801
1990	BJ2		1991	03	16.38667	15	04	44.67	-10	48	45.6	801
1990	BJ2		1991	03	17.34616	15	04	42.14	-10	46	31.4	801
1990	BJ2		1991	03	17.40456	15	04	41.87	-10	46	22.7	801
1990	DM		1991	03	13.38634	16	58	41.83	-11	59	20.8	801
1990	DM		1991	03	13.40429	16	58	42.55	-11	59	19.4	801
1990	DR4		1991	03	13.33117	14	29	18.92	-04	34	43.3	801
1990	DR4		1991	03	13.37081	14	29	18.36	-04	34	32.1	801
1990	DR4		1991	03	21.30074	14	26	59.31	-03	51	41.7	801
1990	DR4		1991	03	21.32149	14	26	58.84	-03	51	34.7	801
1990	SP		1991	03	13.37854	16	24	38.80	-04	04	04.7	801
1990	SP		1991	03	13.39433	16	24	38.44	-04	04	14.1	801
1990	SP		1991	03	16.36088	16	23	19.89	-04	36	51.9	801
1990	SP		1991	03	16.37311	16	23	19.42	-04	36	59.8	801
1990	SP		1991	03	21.34887	16	19	44.15	-05	32	05.6	801
1990	SP		1991	03	21.35959	16	19	43.34	-05	32	13.2	V 801
1990	SQ		1991	03	13.04755	06	30	10.72	+42	45	28.9	801
1990	SQ		1991	03	13.05624	06	30	12.38	+42	45	16.5	801
1990	SQ		1991	03	17.02079	06	42	40.54	+41	12	29.6	801
1990	SQ		1991	03	17.02264	06	42	40.87	+41	12	27.0	801
1990	SQ		1991	03	20.01905	06	51	38.52	+40	03	45.6	801
1990	SQ		1991	03	20.02193	06	51	38.98	+40	03	41.6	801
1990	SS		1991	03	16.27557	07	50	44.80	+55	54	55.8	801
1990	SS		1991	03	16.27793	07	50	47.67	+55	54	19.0	801
1990	SS		1991	03	20.03242	08	45	34.25	+38	38	31.1	801
1990	SS		1991	03	20.03382	08	45	35.07	+38	38	07.7	801
1990	VU1		1991	03	17.99828	03	48	13.98	+19	31	47.9	801
1990	VU1		1991	03	18.01395	03	48	14.55	+19	31	51.7	801
1990	VU1		1991	03	20.01075	03	49	29.33	+19	39	38.5	801
1990	VU1		1991	03	20.02892	03	49	30.00	+19	39	43.2	801
1990	WA		1991	03	16.28382	07	51	32.93	+63	35	02.5	801
1990	WA		1991	03	16.28804	07	51	33.65	+63	34	58.7	801
1990	WA		1991	03	20.17045	08	03	12.06	+62	23	56.1	801
1990	WA		1991	03	20.17793	08	03	13.31	+62	23	46.3	801
1990	WW2		1991	03	18.01838	05	43	31.91	+29	02	27.9	801
1990	WW2		1991	03	18.03133	05	43	32.72	+29	02	29.8	801
1990	XJ		1991	03	18.00359	04	45	31.72	+00	41	39.2	801
1990	XJ		1991	03	18.01039	04	45	32.46	+00	41	40.2	801
1991	BA1		1991	01	14.22274	07	56	01.35	+18	15	21.5	801
1991	BA1		1991	01	14.25743	07	55	58.88	+18	15	33.6	801
1991	CQ		1991	03	13.11813	07	53	14.38	-04	40	18.3	801
1991	CQ		1991	03	13.12237	07	53	14.91	-04	40	06.6	801
1991	CS		1991	03	13.10225	07	47	40.73	+30	43	50.8	801
1991	CS		1991	03	17.03686	07	55	25.38	+36	01	17.0	801
1991	CS		1991	03	17.03862	07	55	25.56	+36	01	24.5	801
1991	CS		1991	03	21.01036	08	03	45.67	+40	09	57.5	801
1991	CS		1991	03	21.01229	08	03	45.89	+40	10	03.9	801
1991	DB		1991	03	13.18829	10	58	17.13	+32	00	48.5	801
1991	DB		1991	03	13.19044	10	58	17.69	+32	01	04.7	801
1991	DB		1991	03	14.17751	11	03	13.78	+34	05	47.4	801
1991	DB		1991	03	14.18008	11	03	14.52	+34	06	07.5	801
1991	DB		1991	03	21.15994	11	53	07.13	+48	59	35.1	801
1991	DB		1991	03	21.16106	11	53	07.72	+48	59	43.2	801
1991	DG		1991	03	13.12669	08	24	04.49	+02	49	48.0	801
1991	DG		1991	03	13.12906	08	24	04.17	+02	49	55.2	801
1991	DG		1991	03	18.05583	08	13	47.15	+07	15	07.1	801
1991	DG		1991	03	18.05838	08	13	46.81	+07	15	16.5	801
1991	EL1	*	1991	03	13.19639	11	49	03.39	+02	11	07.2	17.0 801

1991	EL1		1991	03	13.21531	11	49	02.19	+02	11	11.5	801
1991	EL1		1991	03	17.20852	11	44	57.84	+02	27	13.7	801
1991	EL1		1991	03	17.22068	11	44	57.07	+02	27	16.6	801
1991	EM1	*	1991	03	13.24118	12	42	46.92	+01	00	48.3	18.0 801
1991	EM1		1991	03	13.25962	12	42	46.23	+01	00	56.3	801
1991	EM1		1991	03	13.28964	12	42	45.11	+01	01	08.5	801
1991	EM1		1991	03	13.30343	12	42	44.60	+01	01	14.6	801
1991	EM1		1991	03	16.32463	12	40	51.37	+01	22	50.3	801
1991	EM1		1991	03	16.33646	12	40	50.89	+01	22	55.1	801
1991	EM1		1991	03	17.23812	12	40	16.17	+01	29	25.8	801
1991	EM1		1991	03	17.25353	12	40	15.54	+01	29	32.1	801
1991	EM1		1991	03	18.27995	12	39	35.28	+01	36	58.6	801
1991	EM1		1991	03	18.29963	12	39	34.49	+01	37	06.7	801
1991	EN1	*	1991	03	13.24118	12	42	50.37	+01	04	18.9	18.5 801
1991	EN1		1991	03	13.25962	12	42	49.48	+01	04	25.9	801
1991	EN1		1991	03	13.28964	12	42	48.04	+01	04	37.6	801
1991	EN1		1991	03	13.30343	12	42	47.38	+01	04	42.3	801
1991	EN1		1991	03	16.32463	12	40	36.30	+01	20	43.6	801
1991	EN1		1991	03	16.33646	12	40	35.71	+01	20	46.9	801
1991	EO1	*	1991	03	13.24118	12	43	06.99	+00	58	52.0	18.0 801
1991	EO1		1991	03	13.25962	12	43	06.16	+00	58	58.3	801
1991	EO1		1991	03	13.28964	12	43	04.82	+00	59	10.1	801
1991	EO1		1991	03	13.30343	12	43	04.20	+00	59	13.7	801
1991	EO1		1991	03	16.32463	12	40	49.68	+01	17	16.2	801
1991	EO1		1991	03	16.33646	12	40	49.13	+01	17	21.5	801
1991	EO1		1991	03	17.23812	12	40	07.77	+01	22	47.8	801
1991	EO1		1991	03	17.25353	12	40	07.03	+01	22	53.6	801
1991	EO1		1991	03	18.27995	12	39	19.14	+01	29	06.7	801
1991	EO1		1991	03	18.29963	12	39	18.16	+01	29	14.6	801
2574	P-L		1991	03	13.24118	12	42	55.09	+00	56	14.2	801
2574	P-L		1991	03	13.25962	12	42	54.10	+00	56	13.3	801
2574	P-L		1991	03	13.28964	12	42	52.48	+00	56	12.8	801
2574	P-L		1991	03	13.30343	12	42	51.75	+00	56	14.2	801
2604	P-L		1991	03	20.20124	11	15	25.14	+06	24	39.0	801
2604	P-L		1991	03	20.22072	11	15	23.93	+06	24	43.6	801
2604	P-L		1991	03	21.21752	11	14	25.01	+06	28	35.7	801
2604	P-L		1991	03	21.23750	11	14	23.78	+06	28	40.3	801
4598	P-L		1991	03	13.19639	11	48	57.36	+02	04	32.6	801
4598	P-L		1991	03	13.21531	11	48	56.30	+02	04	38.3	801
4598	P-L		1991	03	17.20852	11	45	17.20	+02	25	16.3	801
4598	P-L		1991	03	17.22068	11	45	16.51	+02	25	20.3	801
4598	P-L		1991	03	20.22652	11	42	29.56	+02	40	55.3	801
4598	P-L		1991	03	20.24204	11	42	28.66	+02	41	00.3	801
4600	P-L		1991	03	20.19770	11	15	35.79	+06	34	55.9	801
4600	P-L		1991	03	20.21794	11	15	34.90	+06	35	01.9	801
4600	P-L		1991	03	21.21494	11	14	52.85	+06	39	52.9	801
4600	P-L		1991	03	21.23380	11	14	52.01	+06	39	57.3	801
6787	P-L		1991	03	18.29196	13	07	17.00	-05	34	47.1	801
6787	P-L		1991	03	18.32171	13	07	15.66	-05	34	38.3	801
6787	P-L		1991	03	21.26341	13	05	03.89	-05	19	05.3	801
6787	P-L		1991	03	21.28073	13	05	03.02	-05	18	58.7	801
1133	T-2		1991	03	13.27880	13	39	28.92	-10	58	59.3	801
1133	T-2		1991	03	13.30656	13	39	28.13	-10	58	54.5	801
1133	T-2		1991	03	17.28071	13	37	33.83	-10	47	05.3	801
1133	T-2		1991	03	17.29955	13	37	33.23	-10	47	01.6	801
2280	T-2		1991	03	17.13957	10	12	27.24	+09	38	17.7	801
2280	T-2		1991	03	17.15797	10	12	26.42	+09	38	24.5	801
2280	T-2		1991	03	20.14084	10	10	28.51	+09	56	46.7	801
2280	T-2		1991	03	20.15840	10	10	27.82	+09	56	52.9	801

4265	T-2	1991	03	20.07456	08	00	28.54	+33	52	56.8	801
4265	T-2	1991	03	20.10772	08	00	28.51	+33	52	48.2	801
4265	T-2	1991	03	21.03992	08	00	29.54	+33	48	47.4	801
4265	T-2	1991	03	21.08475	08	00	29.57	+33	48	35.8	801
165		1991	03	13.26367	13	06	21.25	-23	06	40.5	801
165		1991	03	13.28384	13	06	20.51	-23	06	41.3	801
165		1991	03	17.24052	13	03	51.03	-23	08	24.1	801
165		1991	03	17.26692	13	03	49.95	-23	08	24.1	801
348		1991	03	13.14274	09	09	18.53	+28	16	34.9	801
348		1991	03	13.17957	09	09	17.56	+28	16	35.9	801
348		1991	03	14.17269	09	08	53.47	+28	16	58.7	801
348		1991	03	14.18869	09	08	53.08	+28	16	59.0	801
659		1991	03	21.22090	11	34	19.59	+02	22	29.2	801
659		1991	03	21.25229	11	34	18.67	+02	22	33.9	801
900		1991	03	21.23054	11	56	48.03	-00	34	35.9	801
900		1991	03	21.24567	11	56	47.25	-00	34	26.9	801
951		1990	03	22.14888	08	19	00.51	+13	56	37.5	801
951		1990	03	23.12398	08	19	10.15	+13	57	44.3	801
951		1990	04	28.04199	08	41	40.65	+13	34	30.8	801
951		1991	03	13.36760	16	18	35.53	-23	45	30.8	801
951		1991	03	13.38991	16	18	36.31	-23	45	32.4	801
1131		1991	02	09.29980	11	42	36.77	+06	21	20.3	801
1131		1991	02	09.32194	11	42	35.95	+06	21	27.3	801
1131		1991	02	12.32868	11	40	41.81	+06	38	13.2	801
1131		1991	02	12.34731	11	40	41.03	+06	38	18.3	801
2329		1991	03	13.33484	14	43	37.28	+04	51	32.3	801
2329		1991	03	13.34676	14	43	37.65	+04	51	48.1	801
2329		1991	03	16.36416	14	45	12.77	+06	01	17.5	801
2329		1991	03	16.36970	14	45	12.87	+06	01	24.9	801
2958		1991	01	19.38098	12	17	34.75	-02	56	31.1	801
2958		1991	01	19.42470	12	17	35.37	-02	56	37.3	801
4544		1991	03	20.06689	07	58	26.00	+46	47	51.5	801
4544		1991	03	20.07087	07	58	26.29	+46	47	40.8	801
4544		1991	03	21.07764	07	59	44.83	+46	10	27.2	801
4544		1991	03	21.08141	07	59	45.01	+46	10	18.6	801
4765		1991	03	16.29846	08	21	04.54	+55	37	03.9	801
4765		1991	03	16.30782	08	21	04.70	+55	36	58.3	801

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Observers E. W. Elst, G. Pizarro, O. Pizarro, R. M. West
Measurers E. W. Elst, R. M. West
1.0-m Schmidt

1949	SA1	1990	08	26.16042	22	45	25.91	-12	00	24.7	17.8	4	809
1949	SA1	1990	08	26.17361	22	45	25.32	-12	00	29.9		4	809
1949	SA1	1990	08	26.18681	22	45	24.69	-12	00	35.2		4	809
1974	FJ	1990	08	16.27222	23	33	12.33	-04	24	18.7	19.0	4	809
1974	FJ	1990	08	16.28542	23	33	11.81	-04	24	21.3		4	809
1974	FJ	1990	08	16.29861	23	33	11.27	-04	24	23.1		4	809
1974	FO	1990	08	26.16042	22	47	15.16	-10	51	20.6	18.0	4	809
1974	FO	1990	08	26.17361	22	47	14.37	-10	51	21.6		4	809
1974	FO	1990	08	26.18681	22	47	13.52	-10	51	24.0		4	809
1976	GO3	1990	08	16.27222	23	18	14.84	-07	05	03.4	18.6	4	809
1976	GO3	1990	08	16.28542	23	18	14.19	-07	05	06.6		4	809
1976	GO3	1990	08	16.29861	23	18	13.63	-07	05	11.8		4	809
1981	EG21	1990	08	16.27222	23	27	20.50	-03	44	02.6	19.3	4	809

1981	EG21	1990	08	16.28542	23	27	20.11	-03	44	08.9		4 809
1981	EG21	1990	08	16.29861	23	27	19.66	-03	44	13.5		4 809
1984	DF1	1990	08	26.16042	22	50	20.48	-08	29	52.4	18.6	4 809
1984	DF1	1990	08	26.17361	22	50	19.85	-08	29	56.7		4 809
1984	DF1	1990	08	26.18681	22	50	19.15	-08	29	58.5		4 809
1985	FB2	1990	08	16.27222	23	27	17.90	-07	00	46.0	18.7	4 809
1985	FB2	1990	08	16.28542	23	27	17.35	-07	00	54.9		4 809
1985	FB2	1990	08	16.29861	23	27	16.79	-07	01	01.0		4 809
1988	DJ1	1990	08	16.27222	23	36	51.84	-04	20	15.5	18.4	4 809
1988	DJ1	1990	08	16.28542	23	36	51.47	-04	20	20.6		4 809
1988	DJ1	1990	08	16.29861	23	36	51.10	-04	20	25.0		4 809
1988	DJ2	1990	08	26.16042	22	44	13.86	-07	34	51.5	18.4	4 809
1988	DJ2	1990	08	26.17361	22	44	13.23	-07	34	53.9		4 809
1988	DJ2	1990	08	26.18681	22	44	12.56	-07	34	56.4		4 809
1989	FL	1990	08	26.16042	22	53	51.81	-08	48	03.7	18.7	4 809
1989	FL	1990	08	26.17361	22	53	51.14	-08	48	06.3		4 809
1989	FL	1990	08	26.18681	22	53	50.34	-08	48	08.2		4 809
1989	GH4	1990	08	26.16042	22	48	18.26	-09	56	41.8	18.3	4 809
1989	GH4	1990	08	26.17361	22	48	17.52	-09	56	43.5		4 809
1989	GH4	1990	08	26.18681	22	48	16.70	-09	56	45.8		4 809
1989	JK	1990	08	16.27222	23	32	43.80	-03	48	07.3	18.6	4 809
1989	JK	1990	08	16.28542	23	32	43.36	-03	48	14.2		4 809
1989	JK	1990	08	16.29861	23	32	42.85	-03	48	20.1		4 809
1990	QG1	1990	08	16.27222	23	24	39.08	-05	29	26.2	18.5	4 809
1990	QG1	1990	08	16.28542	23	24	38.57	-05	29	26.2		4 809
1990	QG1	1990	08	16.29861	23	24	37.91	-05	29	26.1		4 809
1990	QH1	1990	08	16.27222	23	25	18.45	-05	02	10.8	17.8	4 809
1990	QH1	1990	08	16.28542	23	25	17.84	-05	02	11.5		4 809
1990	QH1	1990	08	16.29861	23	25	17.17	-05	02	12.5		4 809
1990	QL1	1990	08	16.27222	23	24	55.70	-03	22	49.6	18.5	4 809
1990	QL1	1990	08	16.28542	23	24	55.36	-03	22	55.7		4 809
1990	QL1	1990	08	16.29861	23	24	54.98	-03	23	01.0		4 809
1990	QM1	1990	08	16.27222	23	25	28.82	-04	41	03.8	18.6	4 809
1990	QM1	1990	08	16.28542	23	25	28.35	-04	41	06.7		4 809
1990	QM1	1990	08	16.29861	23	25	28.02	-04	41	10.2		4 809
1990	QR1	1990	08	16.27222	23	30	44.44	-04	10	28.5	18.8	4 809
1990	QR1	1990	08	16.28542	23	30	44.00	-04	10	33.0		4 809
1990	QR1	1990	08	16.29861	23	30	43.56	-04	10	36.1		4 809
1990	QT1	1990	08	16.27222	23	31	36.09	-05	41	41.9	18.6	4 809
1990	QT1	1990	08	16.28542	23	31	35.79	-05	41	47.0		4 809
1990	QT1	1990	08	16.29861	23	31	35.40	-05	41	52.3		4 809
1990	QW1	1990	08	16.27222	23	36	22.22	-02	59	49.0	18.7	4 809
1990	QW1	1990	08	16.28542	23	36	21.69	-02	59	49.2		4 809
1990	QW1	1990	08	16.29861	23	36	21.20	-02	59	50.2		4 809
1990	QX1	1990	08	16.27222	23	36	38.73	-04	09	08.0	18.6	4 809
1990	QX1	1990	08	16.28542	23	36	38.38	-04	09	11.3		4 809
1990	QX1	1990	08	16.29861	23	36	37.91	-04	09	14.5		4 809
1990	QY2	1990	08	16.27222	23	25	28.32	-05	13	01.1	18.6	4 809
1990	QY2	1990	08	16.28542	23	25	27.78	-05	13	03.7		4 809
1990	QY2	1990	08	16.29861	23	25	27.25	-05	13	05.9		4 809
1990	QZ2	1990	08	16.27222	23	25	30.41	-05	10	29.5	18.7	4 809
1990	QZ2	1990	08	16.28542	23	25	30.00	-05	10	29.7		4 809
1990	QZ2	1990	08	16.29861	23	25	29.62	-05	10	30.3		4 809
1990	QB3	1990	08	16.27222	23	28	20.86	-03	08	26.9	18.6	4 809
1990	QB3	1990	08	16.28542	23	28	20.50	-03	08	32.2		4 809
1990	QB3	1990	08	16.29861	23	28	20.11	-03	08	36.6		4 809
1990	QC3	1990	08	16.27222	23	29	11.39	-02	43	49.9	18.5	4 809
1990	QC3	1990	08	16.28542	23	29	11.11	-02	43	54.4		4 809
1990	QC3	1990	08	16.29861	23	29	10.76	-02	43	58.0		4 809

1990	QD3	1990	08	16.27222	23	32	34.18	-03	19	03.8	18.5	4 809
1990	QD3	1990	08	16.28542	23	32	33.64	-03	19	00.9		4 809
1990	QD3	1990	08	16.29861	23	32	33.16	-03	18	58.4		4 809
1990	QH3	1990	08	16.27222	23	38	22.38	-04	45	46.7	18.5	4 809
1990	QH3	1990	08	16.28542	23	38	21.75	-04	45	38.8		4 809
1990	QH3	1990	08	16.29861	23	38	21.13	-04	45	31.8		4 809
1990	QP3	1990	08	16.27222	23	24	18.08	-07	41	06.2	18.5	4 809
1990	QP3	1990	08	16.28542	23	24	17.65	-07	41	10.1		4 809
1990	QP3	1990	08	16.29861	23	24	17.19	-07	41	14.6		4 809
1990	QS3	1990	08	16.27222	23	33	38.53	-03	18	18.9	18.6	4 809
1990	QS3	1990	08	16.28542	23	33	38.26	-03	18	23.9		4 809
1990	QS3	1990	08	16.29861	23	33	37.87	-03	18	30.3		4 809
1990	QW3	1990	08	16.27222	23	19	30.75	-03	07	33.6	18.6	4 809
1990	QW3	1990	08	16.28542	23	19	30.17	-03	07	35.6		4 809
1990	QW3	1990	08	16.29861	23	19	29.60	-03	07	37.3		4 809
1990	QX3	1990	08	16.27222	23	18	53.61	-05	10	16.7	18.6	4 809
1990	QX3	1990	08	16.28542	23	18	53.15	-05	10	14.2		4 809
1990	QX3	1990	08	16.29861	23	18	52.75	-05	10	12.1		4 809
1990	QY3	1990	08	16.27222	23	22	17.97	-04	05	38.8	18.5	4 809
1990	QY3	1990	08	16.28542	23	22	17.34	-04	05	41.1		4 809
1990	QY3	1990	08	16.29861	23	22	16.79	-04	05	43.1		4 809
1990	QZ3	1990	08	16.27222	23	21	42.61	-04	29	42.1	18.7	4 809
1990	QZ3	1990	08	16.28542	23	21	42.23	-04	29	49.1		4 809
1990	QZ3	1990	08	16.29861	23	21	41.86	-04	29	55.0		4 809
1990	QA4	1990	08	26.16042	22	49	06.01	-07	36	29.4	18.7	4 809
1990	QA4	1990	08	26.17361	22	49	05.27	-07	36	31.2		4 809
1990	QA4	1990	08	26.18681	22	49	04.50	-07	36	33.3		4 809
1990	QB4	1990	08	26.16042	22	50	03.61	-07	36	16.9	18.7	4 809
1990	QB4	1990	08	26.17361	22	50	03.13	-07	36	21.4		4 809
1990	QB4	1990	08	26.18681	22	50	02.54	-07	36	26.1		4 809
1990	QE4	1990	08	26.16042	22	55	06.79	-06	53	41.7	18.0	4 809
1990	QE4	1990	08	26.17361	22	55	06.53	-06	53	55.0		4 809
1990	QE4	1990	08	26.18681	22	55	06.22	-06	54	08.4		4 809
1990	QF4	1990	08	26.16042	22	55	30.25	-08	38	32.7	18.5	4 809
1990	QF4	1990	08	26.17361	22	55	29.63	-08	38	39.7		4 809
1990	QF4	1990	08	26.18681	22	55	28.95	-08	38	46.0		4 809
1990	QH4	1990	08	26.16042	22	57	55.27	-08	26	32.3	18.6	4 809
1990	QH4	1990	08	26.17361	22	57	54.58	-08	26	33.1		4 809
1990	QH4	1990	08	26.18681	22	57	53.85	-08	26	33.2		4 809
1990	QP4	1990	08	16.27222	23	21	51.44	-05	08	12.9	18.8	4 809
1990	QP4	1990	08	16.28542	23	21	50.90	-05	08	13.7		4 809
1990	QP4	1990	08	16.29861	23	21	50.31	-05	08	15.8		4 809
1990	QJ5	1990	08	16.27222	23	26	39.46	-07	33	40.2	18.5	4 809
1990	QJ5	1990	08	16.28542	23	26	39.07	-07	33	42.0		4 809
1990	QJ5	1990	08	16.29861	23	26	38.59	-07	33	44.2		4 809
1990	QO5	1990	08	26.16042	22	46	34.49	-11	14	18.2	18.6	4 809
1990	QO5	1990	08	26.17361	22	46	33.78	-11	14	21.8		4 809
1990	QO5	1990	08	26.18681	22	46	33.01	-11	14	26.8		4 809
1990	QR5	1990	08	26.16042	22	52	41.48	-09	32	56.7	18.5	4 809
1990	QR5	1990	08	26.17361	22	52	40.93	-09	33	00.3		4 809
1990	QR5	1990	08	26.18681	22	52	40.33	-09	33	04.3		4 809
1990	QZ5	1990	08	26.16042	22	48	05.89	-06	52	55.6	18.5	4 809
1990	QZ5	1990	08	26.17361	22	48	05.44	-06	53	02.3		4 809
1990	QZ5	1990	08	26.18681	22	48	04.88	-06	53	10.4		4 809
1990	QC6	1990	08	16.27222	23	16	59.81	-05	51	07.9	18.6	4 809
1990	QC6	1990	08	16.28542	23	16	59.25	-05	51	11.4		4 809
1990	QC6	1990	08	16.29861	23	16	58.74	-05	51	15.0		4 809
1990	QJ6	1990	08	16.27222	23	19	03.14	-05	26	11.1	18.7	4 809
1990	QJ6	1990	08	16.28542	23	19	02.63	-05	26	14.4		4 809

1990	QJ6	1990	08	16.29861	23	19	02.27	-05	26	16.9		4 809
1990	QL6	1990	08	16.27222	23	21	09.60	-06	42	38.2	19.4	4 809
1990	QL6	1990	08	16.28542	23	21	08.91	-06	42	42.3		4 809
1990	QL6	1990	08	16.29861	23	21	08.22	-06	42	46.7		4 809
1990	QO6	1990	08	16.27222	23	20	40.45	-04	19	40.9	18.5	4 809
1990	QO6	1990	08	16.28542	23	20	40.15	-04	19	50.1		4 809
1990	QO6	1990	08	16.29861	23	20	39.77	-04	20	00.1		4 809
1990	QP6	1990	08	16.27222	23	25	07.89	-05	57	29.0	19.6	4 809
1990	QP6	1990	08	16.28542	23	25	07.21	-05	57	30.3		4 809
1990	QP6	1990	08	16.29861	23	25	06.66	-05	57	31.2		4 809
1990	QQ6	1990	08	16.27222	23	25	27.46	-06	50	00.8	19.2	4 809
1990	QQ6	1990	08	16.28542	23	25	26.99	-06	50	04.4		4 809
1990	QQ6	1990	08	16.29861	23	25	26.29	-06	50	09.3		4 809
1990	QS6	1990	08	16.27222	23	26	15.20	-07	19	12.0	18.7	4 809
1990	QS6	1990	08	16.28542	23	26	14.63	-07	19	14.4		4 809
1990	QS6	1990	08	16.29861	23	26	14.15	-07	19	17.0		4 809
1990	QU6	1990	08	16.27222	23	25	30.95	-06	40	45.0	19.4	4 809
1990	QU6	1990	08	16.28542	23	25	30.66	-06	40	50.7		4 809
1990	QU6	1990	08	16.29861	23	25	30.39	-06	40	53.7		4 809
1990	QV6	1990	08	16.27222	23	25	20.47	-04	58	34.5	18.7	4 809
1990	QV6	1990	08	16.28542	23	25	20.31	-04	58	42.2		4 809
1990	QV6	1990	08	16.29861	23	25	20.15	-04	58	48.8		4 809
1990	QB7	1990	08	16.27222	23	29	21.63	-07	24	33.2	18.8	4 809
1990	QB7	1990	08	16.28542	23	29	21.13	-07	24	39.5		4 809
1990	QB7	1990	08	16.29861	23	29	20.64	-07	24	45.2		4 809
1990	QD7	1990	08	16.27222	23	29	12.43	-04	10	51.9	19.5	4 809
1990	QD7	1990	08	16.28542	23	29	12.03	-04	10	56.7		4 809
1990	QD7	1990	08	16.29861	23	29	11.66	-04	11	01.2		4 809
1990	QE7	1990	08	16.27222	23	30	20.59	-04	20	33.1	18.7	4 809
1990	QE7	1990	08	16.28542	23	30	20.15	-04	20	37.5		4 809
1990	QE7	1990	08	16.29861	23	30	19.76	-04	20	41.2		4 809
1990	QK7	1990	08	16.27222	23	32	25.36	-04	46	50.8	18.8	4 809
1990	QK7	1990	08	16.28542	23	32	24.94	-04	46	56.5		4 809
1990	QK7	1990	08	16.29861	23	32	24.51	-04	47	01.6		4 809
1990	QM7	1990	08	16.27222	23	33	52.62	-07	35	35.7	18.7	4 809
1990	QM7	1990	08	16.28542	23	33	51.99	-07	35	36.7		4 809
1990	QM7	1990	08	16.29861	23	33	51.34	-07	35	38.8		4 809
1990	QN7	1990	08	16.27222	23	35	27.04	-07	06	12.7	18.6	4 809
1990	QN7	1990	08	16.28542	23	35	26.45	-07	06	17.0		4 809
1990	QN7	1990	08	16.29861	23	35	25.86	-07	06	20.3		4 809
1990	QO7	1990	08	26.16042	22	40	29.65	-08	31	51.0	19.2	4 809
1990	QO7	1990	08	26.17361	22	40	29.09	-08	31	54.4		4 809
1990	QO7	1990	08	26.18681	22	40	28.45	-08	31	57.6		4 809
1990	QQ7	1990	08	26.16042	22	41	07.85	-07	42	11.0	19.3	4 809
1990	QQ7	1990	08	26.17361	22	41	07.22	-07	42	12.0		4 809
1990	QQ7	1990	08	26.18681	22	41	06.57	-07	42	13.9		4 809
1990	QR7	1990	08	26.16042	22	41	15.67	-10	28	24.3	18.6	4 809
1990	QR7	1990	08	26.17361	22	41	14.97	-10	28	26.5		4 809
1990	QR7	1990	08	26.18681	22	41	14.17	-10	28	29.8		4 809
1990	QS7	1990	08	26.16042	22	41	54.55	-09	25	47.5	18.6	4 809
1990	QS7	1990	08	26.17361	22	41	53.89	-09	25	51.0		4 809
1990	QS7	1990	08	26.18681	22	41	53.22	-09	25	54.4		4 809
1990	QT7	1990	08	26.16042	22	43	07.46	-07	01	32.1	18.8	4 809
1990	QT7	1990	08	26.17361	22	43	06.98	-07	01	34.8		4 809
1990	QT7	1990	08	26.18681	22	43	06.43	-07	01	38.8		4 809
1990	QU7	1990	08	26.16042	22	43	16.82	-08	43	26.8	18.8	4 809
1990	QU7	1990	08	26.17361	22	43	16.23	-08	43	31.1		4 809
1990	QU7	1990	08	26.18681	22	43	15.55	-08	43	35.2		4 809
1990	QV7	1990	08	26.16042	22	43	38.83	-07	12	55.9	18.7	4 809

1990	QV7	1990	08	26.17361	22	43	38.22	-07	12	59.9		4 809
1990	QV7	1990	08	26.18681	22	43	37.56	-07	13	03.5		4 809
1990	QY7	1990	08	26.16042	22	41	37.32	-07	40	52.9	18.5	4 809
1990	QY7	1990	08	26.17361	22	41	36.49	-07	40	55.6		4 809
1990	QY7	1990	08	26.18681	22	41	35.65	-07	40	58.5		4 809
1990	QA8	1990	08	26.16042	22	45	49.68	-08	49	39.1	18.7	4 809
1990	QA8	1990	08	26.17361	22	45	49.09	-08	49	45.3		4 809
1990	QA8	1990	08	26.18681	22	45	48.53	-08	49	51.0		4 809
1990	QB8	1990	08	26.16042	22	44	54.59	-09	08	46.6	19.4	4 809
1990	QB8	1990	08	26.17361	22	44	54.03	-09	08	50.7		4 809
1990	QB8	1990	08	26.18681	22	44	53.46	-09	08	57.3		4 809
1990	QC8	1990	08	26.16042	22	44	10.02	-10	33	49.1	18.7	4 809
1990	QC8	1990	08	26.17361	22	44	09.27	-10	33	54.9		4 809
1990	QC8	1990	08	26.18681	22	44	08.63	-10	34	00.0		4 809
1990	QD8	1990	08	26.16042	22	47	35.73	-08	52	26.3	18.6	4 809
1990	QD8	1990	08	26.17361	22	47	35.22	-08	52	31.0		4 809
1990	QD8	1990	08	26.18681	22	47	34.66	-08	52	36.6		4 809
1990	QE8	1990	08	26.16042	22	46	37.47	-11	00	38.9	18.6	4 809
1990	QE8	1990	08	26.17361	22	46	36.91	-11	00	44.2		4 809
1990	QE8	1990	08	26.18681	22	46	36.28	-11	00	49.5		4 809
1990	QF8	1990	08	26.16042	22	45	51.08	-11	37	35.5	18.6	4 809
1990	QF8	1990	08	26.17361	22	45	50.32	-11	37	40.6		4 809
1990	QF8	1990	08	26.18681	22	45	49.61	-11	37	46.6		4 809
1990	QJ8	1990	08	26.16042	22	47	18.75	-11	22	34.6	18.6	4 809
1990	QJ8	1990	08	26.17361	22	47	18.21	-11	22	37.7		4 809
1990	QJ8	1990	08	26.18681	22	47	17.53	-11	22	41.7		4 809
1990	QK8	1990	08	26.16042	22	47	19.68	-09	46	37.1	18.7	4 809
1990	QK8	1990	08	26.17361	22	47	19.09	-09	46	40.8		4 809
1990	QK8	1990	08	26.18681	22	47	18.51	-09	46	45.4		4 809
1990	QN8	1990	08	26.16042	22	47	09.31	-09	05	51.8	18.8	4 809
1990	QN8	1990	08	26.17361	22	47	08.70	-09	05	54.1		4 809
1990	QN8	1990	08	26.18681	22	47	07.84	-09	05	57.4		4 809
1990	QO8	1990	08	26.16042	22	45	34.59	-09	39	51.6	18.7	4 809
1990	QO8	1990	08	26.17361	22	45	33.81	-09	39	52.6		4 809
1990	QO8	1990	08	26.18681	22	45	33.02	-09	39	53.0		4 809
1990	QP8	1990	08	26.16042	22	47	26.24	-07	38	14.5	18.8	4 809
1990	QP8	1990	08	26.17361	22	47	25.68	-07	38	17.9		4 809
1990	QP8	1990	08	26.18681	22	47	24.94	-07	38	21.7		4 809
1990	QQ8	1990	08	26.16042	22	49	08.90	-11	10	19.5	18.7	4 809
1990	QQ8	1990	08	26.17361	22	49	08.30	-11	10	22.3		4 809
1990	QQ8	1990	08	26.18681	22	49	07.74	-11	10	25.6		4 809
1990	QR8	1990	08	26.16042	22	50	48.41	-11	20	56.8	18.7	4 809
1990	QR8	1990	08	26.17361	22	50	47.91	-11	21	01.7		4 809
1990	QR8	1990	08	26.18681	22	50	47.29	-11	21	08.7		4 809
1990	QT8	1990	08	26.16042	22	49	39.56	-09	30	30.9	18.6	4 809
1990	QT8	1990	08	26.17361	22	49	38.90	-09	30	37.5		4 809
1990	QT8	1990	08	26.18681	22	49	38.19	-09	30	45.0		4 809
1990	QU8	1990	08	26.16042	22	50	54.13	-10	01	43.0	18.7	4 809
1990	QU8	1990	08	26.17361	22	50	53.52	-10	01	45.4		4 809
1990	QU8	1990	08	26.18681	22	50	52.91	-10	01	49.2		4 809
1990	QX8	1990	08	26.16042	22	51	20.56	-09	38	13.5	18.7	4 809
1990	QX8	1990	08	26.17361	22	51	19.98	-09	38	16.1		4 809
1990	QX8	1990	08	26.18681	22	51	19.33	-09	38	19.8		4 809
1990	QY8	1990	08	26.16042	22	52	43.40	-10	47	15.6	18.6	4 809
1990	QY8	1990	08	26.17361	22	52	42.83	-10	47	20.3		4 809
1990	QY8	1990	08	26.18681	22	52	42.20	-10	47	25.5		4 809
1990	QZ8	1990	08	26.16042	22	53	24.48	-10	10	44.7	18.7	4 809
1990	QZ8	1990	08	26.17361	22	53	23.73	-10	10	51.1		4 809
1990	QZ8	1990	08	26.18681	22	53	23.00	-10	10	56.4		4 809

1990	QB9	1990	08	26.16042	22	56	05.48	-09	38	55.1	18.7	4 809
1990	QB9	1990	08	26.17361	22	56	04.96	-09	39	03.2		4 809
1990	QB9	1990	08	26.18681	22	56	04.40	-09	39	11.9		4 809
1990	QE9	1990	08	26.16042	22	55	34.12	-07	33	17.4	18.7	4 809
1990	QE9	1990	08	26.17361	22	55	33.50	-07	33	19.9		4 809
1990	QE9	1990	08	26.18681	22	55	32.86	-07	33	22.5		4 809
1990	QF9	1990	08	26.16042	22	56	16.70	-10	44	34.2	18.8	4 809
1990	QF9	1990	08	26.17361	22	56	16.12	-10	44	41.5		4 809
1990	QF9	1990	08	26.18681	22	56	15.65	-10	44	47.9		4 809
1990	QG9	1990	08	26.16042	22	56	25.20	-09	52	56.7	19.0	4 809
1990	QG9	1990	08	26.17361	22	56	24.64	-09	53	00.7		4 809
1990	QG9	1990	08	26.18681	22	56	24.03	-09	53	04.0		4 809
1990	QJ9	1990	08	26.16042	22	56	53.79	-11	13	55.4	18.7	4 809
1990	QJ9	1990	08	26.17361	22	56	53.22	-11	13	58.6		4 809
1990	QJ9	1990	08	26.18681	22	56	52.53	-11	14	02.5		4 809
1990	QK9	1990	08	26.16042	22	57	47.60	-11	18	57.7	18.7	4 809
1990	QK9	1990	08	26.17361	22	57	47.17	-11	19	04.5		4 809
1990	QK9	1990	08	26.18681	22	57	46.37	-11	19	13.1		4 809
1990	QL9	1990	08	26.16042	22	57	49.99	-10	58	08.1	18.7	4 809
1990	QL9	1990	08	26.17361	22	57	49.43	-10	58	11.4		4 809
1990	QL9	1990	08	26.18681	22	57	48.82	-10	58	14.8		4 809
1990	QM9	1990	08	26.16042	22	57	20.23	-11	13	07.3	19.7	4 809
1990	QM9	1990	08	26.17361	22	57	19.63	-11	13	10.5		4 809
1990	QM9	1990	08	26.18681	22	57	18.88	-11	13	14.9		4 809
1990	QN9	1990	08	26.16042	22	57	22.95	-10	37	54.2	18.7	4 809
1990	QN9	1990	08	26.17361	22	57	22.24	-10	37	59.5		4 809
1990	QN9	1990	08	26.18681	22	57	21.55	-10	38	05.9		4 809
1990	QO9	1990	08	26.16042	22	57	24.45	-07	38	45.0	19.2	4 809
1990	QO9	1990	08	26.17361	22	57	23.74	-07	38	44.5		4 809
1990	QO9	1990	08	26.18681	22	57	23.06	-07	38	44.7		4 809
1990	QA10*	1990	08	16.27222	23	20	33.98	-02	46	50.4	18.6	4 809
1990	QA10	1990	08	16.28542	23	20	33.55	-02	46	52.2		4 809
1990	QA10	1990	08	16.29861	23	20	33.05	-02	46	53.4		4 809
1990	QA10	1990	08	20.23194	23	18	32.92	-02	52	45.7	18.7	4 809
1990	QA10	1990	08	20.24514	23	18	32.39	-02	52	47.5		4 809
1990	QA10	1990	08	20.25833	23	18	31.82	-02	52	49.4		4 809
1990	QB10*	1990	08	16.27222	23	20	53.25	-03	42	53.1	19.0	4 809
1990	QB10	1990	08	16.28542	23	20	52.66	-03	42	55.8		4 809
1990	QB10	1990	08	16.29861	23	20	52.12	-03	42	58.8		4 809
1990	QB10	1990	08	20.23194	23	18	08.14	-03	54	14.8	18.7	4 809
1990	QB10	1990	08	20.24514	23	18	07.44	-03	54	17.5		4 809
1990	QB10	1990	08	20.25833	23	18	06.80	-03	54	20.1		4 809
1990	QC10*	1990	08	16.27222	23	23	23.81	-06	50	11.5	19.6	4 809
1990	QC10	1990	08	16.28542	23	23	23.03	-06	50	12.2		4 809
1990	QC10	1990	08	16.29861	23	23	22.41	-06	50	13.9		4 809
1990	QC10	1990	08	20.23194	23	20	20.30	-06	56	24.4	19.5	4 809
1990	QC10	1990	08	20.24514	23	20	19.61	-06	56	25.1		4 809
1990	QC10	1990	08	20.25833	23	20	18.82	-06	56	27.4		4 809
1990	QD10*	1990	08	16.27222	23	28	01.51	-02	59	59.5	18.4	4 809
1990	QD10	1990	08	16.28542	23	28	01.04	-03	00	01.9		4 809
1990	QD10	1990	08	16.29861	23	28	00.49	-03	00	04.8		4 809
1990	QD10	1990	08	20.23194	23	25	34.86	-03	12	42.7	18.6	4 809
1990	QD10	1990	08	20.24514	23	25	34.23	-03	12	46.1		4 809
1990	QD10	1990	08	20.25833	23	25	33.63	-03	12	48.4		4 809
1990	QE10*	1990	08	16.27222	23	28	35.29	-05	34	54.7	18.7	4 809
1990	QE10	1990	08	16.28542	23	28	34.83	-05	34	56.7		4 809
1990	QE10	1990	08	16.29861	23	28	34.28	-05	34	59.1		4 809
1990	QE10	1990	08	20.23194	23	26	11.34	-05	43	34.7	18.7	4 809
1990	QE10	1990	08	20.24514	23	26	10.79	-05	43	36.6		4 809

1990	QE10	1990	08	20.25833	23	26	10.10	-05	43	38.7		4 809
1990	QF10*	1990	08	16.27222	23	28	41.38	-07	09	35.4	19.2	4 809
1990	QF10	1990	08	16.28542	23	28	41.04	-07	09	39.7		4 809
1990	QF10	1990	08	16.29861	23	28	40.79	-07	09	42.8		4 809
1990	QF10	1990	08	20.23194	23	27	04.96	-07	30	50.7	18.7	4 809
1990	QF10	1990	08	20.24514	23	27	04.52	-07	30	55.8		4 809
1990	QF10	1990	08	20.25833	23	27	04.01	-07	31	00.3		4 809
1990	QG10*	1990	08	16.27222	23	30	54.75	-03	41	12.3	18.7	4 809
1990	QG10	1990	08	16.28542	23	30	54.32	-03	41	19.7		4 809
1990	QG10	1990	08	16.29861	23	30	53.90	-03	41	27.7		4 809
1990	QG10	1990	08	20.23194	23	28	42.90	-04	18	20.1	19.6	4 809
1990	QG10	1990	08	20.24514	23	28	42.37	-04	18	28.3		4 809
1990	QG10	1990	08	20.25833	23	28	41.95	-04	18	36.3		4 809
1990	QH10*	1990	08	16.21389	22	52	48.00	-08	04	36.6	19.7	4 809
1990	QH10	1990	08	16.22708	22	52	47.34	-08	04	37.5		4 809
1990	QH10	1990	08	16.24028	22	52	46.52	-08	04	38.7		4 809
1990	QH10	1990	08	26.16042	22	43	05.77	-08	08	01.4	19.0	4 809
1990	QH10	1990	08	26.17361	22	43	05.02	-08	08	01.4		4 809
1990	QH10	1990	08	26.18681	22	43	04.18	-08	08	01.2		4 809
1990	QJ10*	1990	08	16.21389	22	53	05.67	-09	03	31.7	19.5	4 809
1990	QJ10	1990	08	16.22708	22	53	05.08	-09	03	34.8		4 809
1990	QJ10	1990	08	16.24028	22	53	04.54	-09	03	38.8		4 809
1990	QJ10	1990	08	26.16042	22	46	00.33	-09	42	00.5	18.7	4 809
1990	QJ10	1990	08	26.17361	22	45	59.77	-09	42	02.7		4 809
1990	QJ10	1990	08	26.18681	22	45	59.19	-09	42	05.7		4 809
1990	QK10*	1990	08	16.21389	22	54	50.09	-08	02	17.2	20.5	4 809
1990	QK10	1990	08	16.22708	22	54	49.51	-08	02	17.0		4 809
1990	QK10	1990	08	16.24028	22	54	48.84	-08	02	19.1		4 809
1990	QK10	1990	08	26.16042	22	46	59.71	-08	21	02.1	19.3	4 809
1990	QK10	1990	08	26.17361	22	46	59.07	-08	21	02.9		4 809
1990	QK10	1990	08	26.18681	22	46	58.29	-08	21	04.5		4 809
1990	QL10*	1990	08	16.21389	22	59	55.40	-08	25	07.4	19.7	4 809
1990	QL10	1990	08	16.22708	22	59	54.72	-08	25	12.0		4 809
1990	QL10	1990	08	16.24028	22	59	53.99	-08	25	17.7		4 809
1990	QL10	1990	08	26.16042	22	51	35.46	-09	28	31.8	19.7	4 809
1990	QL10	1990	08	26.17361	22	51	34.73	-09	28	37.3		4 809
1990	QL10	1990	08	26.18681	22	51	33.89	-09	28	42.6		4 809
1990	QM10*	1990	08	18.22361	22	56	53.65	-07	42	14.5	19.4	4 809
1990	QM10	1990	08	18.23681	22	56	52.96	-07	42	24.0		4 809
1990	QM10	1990	08	18.25000	22	56	52.41	-07	42	32.2		4 809
1990	QM10	1990	08	26.16042	22	51	04.08	-09	05	19.0	18.7	4 809
1990	QM10	1990	08	26.17361	22	51	03.51	-09	05	26.8		4 809
1990	QM10	1990	08	26.18681	22	51	02.78	-09	05	36.3		4 809
1990	QN10*	1990	08	18.22361	23	03	21.81	-10	03	43.6	19.8	4 809
1990	QN10	1990	08	18.23681	23	03	21.14	-10	03	46.9		4 809
1990	QN10	1990	08	18.25000	23	03	20.52	-10	03	48.8		4 809
1990	QN10	1990	08	26.16042	22	56	05.62	-10	30	02.1	19.4	4 809
1990	QN10	1990	08	26.17361	22	56	04.92	-10	30	04.5		4 809
1990	QN10	1990	08	26.18681	22	56	04.08	-10	30	07.8		4 809
1990	RO6	1990	08	26.16042	22	55	27.79	-07	43	33.1	18.8	4 809
1990	RO6	1990	08	26.17361	22	55	27.23	-07	43	35.9		4 809
1990	RO6	1990	08	26.18681	22	55	26.52	-07	43	38.6		4 809
1990	RB7	1990	08	16.27222	23	17	40.65	-05	26	04.2	18.7	4 809
1990	RB7	1990	08	16.28542	23	17	40.28	-05	26	09.5		4 809
1990	RB7	1990	08	16.29861	23	17	39.84	-05	26	14.0		4 809
1990	RF7	1990	08	16.27222	23	23	09.06	-06	57	05.2	19.4	4 809
1990	RF7	1990	08	16.28542	23	23	08.63	-06	57	09.3		4 809
1990	RF7	1990	08	16.29861	23	23	08.13	-06	57	13.1		4 809
1990	RF7	1990	08	26.20347	23	17	30.56	-07	43	35.0	19.2	4 809

1990	RF7		1990	08	26.21667	23	17	30.04	-07	43	39.7		4 809
1990	RF7		1990	08	26.22986	23	17	29.50	-07	43	43.4		4 809
1990	RK7		1990	08	16.27222	23	25	23.70	-06	28	12.6	19.5	4 809
1990	RK7		1990	08	16.28542	23	25	23.20	-06	28	17.5		4 809
1990	RK7		1990	08	16.29861	23	25	22.80	-06	28	21.9		4 809
1990	RK7		1990	08	20.23194	23	23	04.13	-06	46	22.9	19.6	4 809
1990	RK7		1990	08	20.24514	23	23	03.64	-06	46	27.3		4 809
1990	RK7		1990	08	20.25833	23	23	03.15	-06	46	30.4		4 809
1990	RL7		1990	08	16.27222	23	29	30.89	-04	59	26.1	19.3	4 809
1990	RL7		1990	08	16.28542	23	29	30.24	-04	59	28.9		4 809
1990	RL7		1990	08	16.29861	23	29	29.64	-04	59	31.6		4 809
1990	RM7		1990	08	16.27222	23	25	15.28	-05	33	41.0	18.8	4 809
1990	RM7		1990	08	16.28542	23	25	14.85	-05	33	44.0		4 809
1990	RM7		1990	08	16.29861	23	25	14.33	-05	33	47.2		4 809
1990	RM7		1990	08	20.23194	23	23	03.91	-05	47	46.3	18.7	4 809
1990	RM7		1990	08	20.24514	23	23	03.29	-05	47	49.8		4 809
1990	RM7		1990	08	20.25833	23	23	02.78	-05	47	54.3		4 809
1990	RA8		1990	08	16.27222	23	30	24.71	-05	51	24.1	19.0	4 809
1990	RA8		1990	08	16.28542	23	30	24.22	-05	51	25.7		4 809
1990	RA8		1990	08	16.29861	23	30	23.80	-05	51	27.6		4 809
1990	RO8		1990	08	16.27222	23	31	44.24	-03	16	03.8	18.8	4 809
1990	RO8		1990	08	16.28542	23	31	43.66	-03	16	08.5		4 809
1990	RO8		1990	08	16.29861	23	31	43.12	-03	16	13.3		4 809
1990	SV13		1990	08	16.27222	23	33	54.20	-06	23	31.4	18.6	4 809
1990	SV13		1990	08	16.28542	23	33	53.72	-06	23	34.3		4 809
1990	SV13		1990	08	16.29861	23	33	53.22	-06	23	36.0		4 809
1990	SV13		1990	08	26.20347	23	27	05.75	-06	54	11.8	18.6	4 809
1990	SV13		1990	08	26.21667	23	27	05.07	-06	54	15.7		4 809
1990	SV13		1990	08	26.22986	23	27	04.46	-06	54	18.0		4 809
1991	EH	*	1991	03	14.25323	11	34	49.15	-00	40	57.3	20.4V	5 809
1991	EH		1991	03	14.30231	11	34	46.87	-00	40	44.6		5 809
1991	EH		1991	03	15.24179	11	34	05.51	-00	36	31.0		5 809
1991	EH		1991	03	16.23045	11	33	22.05	-00	31	48.0		5 809
1991	EH		1991	03	17.20984	11	32	38.93	-00	27	08.0		5 809
1991	EH		1991	03	18.22113	11	31	54.53	-00	22	21.7		5 809
2577	P-L		1990	08	16.27222	23	19	50.74	-04	31	02.5	18.7	4 809
2577	P-L		1990	08	16.28542	23	19	50.18	-04	31	07.3		4 809
2577	P-L		1990	08	16.29861	23	19	49.67	-04	31	10.2		4 809
4004	P-L		1990	08	26.16042	22	46	14.53	-08	37	28.0	19.0	4 809
4004	P-L		1990	08	26.17361	22	46	13.80	-08	37	30.5		4 809
4004	P-L		1990	08	26.18681	22	46	13.00	-08	37	33.5		4 809
6607	P-L		1990	08	26.16042	22	39	31.39	-10	58	19.1	18.9	4 809
6607	P-L		1990	08	26.17361	22	39	30.68	-10	58	25.1		4 809
6607	P-L		1990	08	26.18681	22	39	29.93	-10	58	29.9		4 809
6726	P-L		1990	08	16.27222	23	33	40.12	-06	13	41.5	19.3	4 809
6726	P-L		1990	08	16.28542	23	33	39.71	-06	13	44.4		4 809
6726	P-L		1990	08	16.29861	23	33	39.27	-06	13	49.1		4 809
1306	T-2		1990	08	16.27222	23	29	09.44	-03	58	16.2	19.0	4 809
1306	T-2		1990	08	16.28542	23	29	08.99	-03	58	19.3		4 809
1306	T-2		1990	08	16.29861	23	29	08.50	-03	58	23.5		4 809
2160	T-2		1990	08	26.16042	22	51	42.82	-08	45	24.4	18.7	4 809
2160	T-2		1990	08	26.17361	22	51	42.22	-08	45	27.3		4 809
2160	T-2		1990	08	26.18681	22	51	41.73	-08	45	30.6		4 809
551			1990	08	26.16042	22	55	52.30	-07	07	56.7	16.7	4 809
551			1990	08	26.17361	22	55	51.73	-07	07	58.9		4 809
551			1990	08	26.18681	22	55	51.10	-07	08	02.3		4 809
1074			1990	08	16.27222	23	23	10.08	-05	03	31.6	16.0	4 809
1074			1990	08	16.28542	23	23	09.59	-05	03	34.5		4 809
1074			1990	08	16.29861	23	23	09.09	-05	03	37.5		4 809

1125	1990	08	16.27222	23	31	06.04	-07	15	32.2	18.3	4	809
1125	1990	08	16.28542	23	31	05.62	-07	15	35.8		4	809
1125	1990	08	16.29861	23	31	05.14	-07	15	39.8		4	809
1330	1990	08	16.27222	23	34	52.86	-04	59	23.7	16.8	4	809
1330	1990	08	16.28542	23	34	52.43	-04	59	29.6		4	809
1330	1990	08	16.29861	23	34	52.03	-04	59	35.8		4	809
1434	1990	08	26.16042	22	44	15.20	-09	21	18.9	16.8	4	809
1434	1990	08	26.17361	22	44	14.65	-09	21	25.4		4	809
1434	1990	08	26.18681	22	44	14.04	-09	21	32.0		4	809
1492	1990	08	26.16042	22	51	42.94	-11	08	04.3	18.0	4	809
1492	1990	08	26.17361	22	51	42.23	-11	08	11.0		4	809
1492	1990	08	26.18681	22	51	41.45	-11	08	17.9		4	809
1764	1990	08	26.16042	22	56	25.52	-07	13	49.5	18.0	4	809
1764	1990	08	26.17361	22	56	24.96	-07	13	53.3		4	809
1764	1990	08	26.18681	22	56	24.38	-07	13	56.6		4	809
2250	1990	08	16.27222	23	17	42.80	-04	35	34.5	17.0	4	809
2250	1990	08	16.28542	23	17	42.32	-04	35	38.0		4	809
2250	1990	08	16.29861	23	17	41.89	-04	35	40.8		4	809
2325	1990	08	26.16042	22	44	43.23	-08	53	50.4	18.2	4	809
2325	1990	08	26.17361	22	44	42.68	-08	53	53.8		4	809
2325	1990	08	26.18681	22	44	42.08	-08	53	57.8		4	809
2422	1990	08	26.16042	22	54	06.22	-06	45	00.5	18.6	4	809
2422	1990	08	26.17361	22	54	05.56	-06	45	05.6		4	809
2422	1990	08	26.18681	22	54	04.81	-06	45	12.2		4	809
2796	1990	08	26.16042	22	50	19.59	-07	15	54.3	18.3	4	809
2796	1990	08	26.17361	22	50	19.04	-07	16	01.3		4	809
2796	1990	08	26.18681	22	50	18.46	-07	16	08.8		4	809
2923	1990	08	26.16042	22	52	16.40	-08	13	58.0	18.7	4	809
2923	1990	08	26.17361	22	52	15.71	-08	14	00.8		4	809
2923	1990	08	26.18681	22	52	14.95	-08	14	04.9		4	809
3773	1990	08	16.27222	23	28	56.25	-06	29	44.7	17.7	4	809
3773	1990	08	16.28542	23	28	55.86	-06	29	47.4		4	809
3773	1990	08	16.29861	23	28	55.50	-06	29	50.0		4	809
4072	1990	08	16.27222	23	34	00.96	-05	27	52.9	18.5	4	809
4072	1990	08	16.28542	23	34	00.40	-05	27	56.6		4	809
4072	1990	08	16.29861	23	33	59.81	-05	27	59.4		4	809
4592	1990	08	16.27222	23	22	54.88	-04	44	33.3	18.4	4	809
4592	1990	08	16.28542	23	22	54.48	-04	44	36.4		4	809
4592	1990	08	16.29861	23	22	54.03	-04	44	39.1		4	809
4622	1990	08	16.27222	23	19	04.76	-03	54	02.2	18.5	4	809
4622	1990	08	16.28542	23	19	04.31	-03	54	05.6		4	809
4622	1990	08	16.29861	23	19	03.89	-03	54	08.3		4	809
4624	1990	08	16.27222	23	23	53.61	-07	34	32.0	18.7	4	809
4624	1990	08	16.28542	23	23	53.12	-07	34	35.2		4	809
4624	1990	08	16.29861	23	23	52.65	-07	34	38.8		4	809
4641	1990	08	16.27222	23	31	17.12	-06	02	27.3	17.8	4	809
4641	1990	08	16.28542	23	31	16.73	-06	02	31.9		4	809
4641	1990	08	16.29861	23	31	16.31	-06	02	35.1		4	809
4642	1990	08	26.16042	22	56	14.58	-07	04	29.4	18.5	4	809
4642	1990	08	26.17361	22	56	14.02	-07	04	32.6		4	809
4642	1990	08	26.18681	22	56	13.48	-07	04	36.2		4	809
4643	1990	08	16.27222	23	25	06.06	-06	37	35.3	17.7	4	809
4643	1990	08	16.28542	23	25	05.58	-06	37	39.3		4	809
4643	1990	08	16.29861	23	25	05.05	-06	37	43.9		4	809
4651	1990	08	26.16042	22	40	27.72	-07	10	39.9	18.7	4	809
4651	1990	08	26.17361	22	40	27.10	-07	10	42.7		4	809
4651	1990	08	26.18681	22	40	26.45	-07	10	46.4		4	809
4664	1990	08	26.16042	22	50	26.34	-07	16	09.3	19.3	4	809
4664	1990	08	26.17361	22	50	25.78	-07	16	11.6		4	809

4664		1990 08 26.18681	22 50 25.13	-07 16 14.7				4	809
4741		1990 08 16.27222	23 33 13.16	-05 34 06.1			18.0	4	809
4741		1990 08 16.28542	23 33 12.79	-05 34 09.4				4	809
4741		1990 08 16.29861	23 33 12.35	-05 34 11.5				4	809

875 Yorii
M. Arai, 2695, Tomita, Saitama, 369-12 Japan
Observers M. Arai, H. Mori
Measurer H. Mori
0.30-m f/3.8 reflector

1989 XF		1991 03 09.64340	12 04 04.49	+11 46 43.3			17	875
1989 XF		1991 03 09.66528	12 04 03.14	+11 46 52.8				875
1989 XF		1991 03 14.56713	12 00 00.14	+12 21 17.2			17	875
1989 XF		1991 03 14.58437	11 59 59.30	+12 21 25.8				875
1991 AO		1991 03 12.56493	11 08 27.01	+05 14 31.0			16.5	875
1991 CN		1991 03 12.49340	09 24 03.82	+18 43 16.7			17	875
1991 EO	*	1991 03 09.64340	12 01 23.05	+11 49 05.4			16.5	875
1991 EO		1991 03 09.66528	12 01 21.75	+11 49 09.8				875
1991 EO		1991 03 14.56713	11 56 18.03	+12 07 05.7			16.5	875
1991 EO		1991 03 14.58437	11 56 16.98	+12 07 09.7				875
1991 EP	*	1991 03 09.64340	12 01 34.10	+13 23 27.5			16	875
1991 EP		1991 03 09.66528	12 01 33.15	+13 23 37.1				875
1991 EP		1991 03 14.56713	11 58 02.04	+13 56 39.3			16	875
1991 EP		1991 03 14.58437	11 58 01.22	+13 56 45.9				875
1991 EY	*	1991 03 09.64340	12 05 14.08	+12 42 54.0			17	875
1991 EY		1991 03 09.66528	12 05 13.27	+12 43 07.6				875
1991 EY		1991 03 17.62639	11 59 55.11	+14 19 51.2			16.5	875
1991 EZ	*	1991 03 09.68160	12 24 16.50	+13 18 20.7			16.5	875
1991 EZ		1991 03 09.70000	12 24 15.81	+13 18 26.5				875
1991 EZ		1991 03 17.65972	12 19 11.60	+13 54 35.7			17	875
1991 EA1	*	1991 03 14.53171	11 50 05.06	+15 36 21.3			15.5	875
1991 EA1		1991 03 14.54977	11 50 03.97	+15 36 25.8				875
1991 EA1		1991 03 17.58090	11 47 08.70	+15 41 58.2			15.5	875
1991 EB1	*	1991 03 14.65625	12 00 55.41	+11 27 44.1			17	875
1991 EB1		1991 03 14.67431	12 00 54.22	+11 27 50.9				875
1991 EB1		1991 03 17.59977	11 57 55.82	+11 42 53.7			17	875
1991 EB1		1991 03 17.61736	11 57 54.61	+11 42 59.4				875

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
AGK3, SAOC, GSC

1990 WM5		1990 12 07.58368	04 45 16.15	+17 01 05.0			16.5	877
1990 WM5		1990 12 07.59514	04 45 15.47	+17 01 02.9				877

881 Toyota
T. Urata, 6-1, Muramatsuhara 1 Chome, Shimizu, Shizuoka-Ken 424, Japan
Observers K. Suzuki, T. Urata
Measurer T. Urata
0.31-m f/5.7 reflector
AGK3

1986 WE		1991 02 08.48229	06 40 52.63	+26 29 54.6			16.5	881
1986 WE		1991 02 08.53576	06 40 51.51	+26 30 05.0				881
1990 VH3		1990 11 16.61840	04 02 27.04	+24 17 41.3			16.5	881
1990 VH3		1990 11 16.64201	04 02 25.87	+24 17 35.2				881
1991 CW		1991 02 17.53993	10 04 41.13	+16 40 41.3			16.5	881
1991 CW		1991 02 17.56354	10 04 39.85	+16 40 52.2				881

1991 CW		1991 02 20.58021	10 01 36.72	+17 04 31.7			16.5		881
1991 CW		1991 03 06.55556	09 48 48.21	+18 34 45.8			17		881
1991 CW		1991 03 06.57639	09 48 47.12	+18 34 54.6					881

885 JCPM Yakiimo Station
T. Urata, 6-1, Muramatsuhara 1 Chome, Shimizu, Shizuoka-Ken 424, Japan
Observers A. Natori, T. Urata
Measurer T. Urata
0.20-m f/4.0 hyperboloid astrocamera
AGK3

1942 EM		1991 01 05.55903	08 20 45.01	+18 40 57.2			16.5		885
1942 EM		1991 01 05.58333	08 20 43.62	+18 41 06.8					885
1991 BE		1991 01 05.55903	08 14 02.31	+18 52 00.8			16.5		885
1991 BE		1991 01 05.58333	08 14 00.19	+18 51 47.1					885
1991 BE		1991 01 20.60972	07 53 36.75	+16 26 52.5					885
1991 BY		1991 02 08.67361	10 31 01.40	+12 14 15.4			16		885
1991 BY		1991 02 08.69653	10 31 00.11	+12 14 16.3					885

886 Susono
T. Furuta, 17-2 Mitsuike, Kagiya, Tokai 477, Japan
Observers M. Akiyama, T. Furuta
Measurer T. Furuta
0.25-m f/4.2 Wright-Schmidt camera
AGK3

1991 BA2		1991 02 19.56806	10 26 37.84	-01 02 39.3					886

887 Ojima
T. Urata, 6-1, Muramatsuhara 1 Chome, Shimizu, Shizuoka-Ken 424, Japan
Observers T. Niijima, T. Urata
Measurer T. Urata
0.30-m f/5.8 reflector, 0.16-m f/3.3 hyperboloid astrocamera
AGK3

1991 BY		1991 03 06.60093	10 08 11.54	+12 31 30.9			16		887
1991 BY		1991 03 06.60822	10 08 11.05	+12 31 31.3					887
1991 DT		1991 03 06.62488	10 32 35.02	+12 41 02.5			16.5		887
1991 DT		1991 03 06.63218	10 32 34.75	+12 41 04.4					887
1991 DU		1991 03 06.63218	10 29 00.1	+12 26 38			17	u	887
1991 EG		1991 03 14.63556	11 40 37.76	+12 04 09.8			16.5		887
1991 EG		1991 03 14.65285	11 40 36.81	+12 04 13.3					887
1991 EG		1991 03 17.61250	11 37 38.61	+12 12 18.2			16.5		887
1991 EG		1991 03 17.63090	11 37 37.47	+12 12 20.8					887
1991 FY		1991 03 09.62894	11 45 30.39	+10 30 45.0			16.5		887
1991 FY		1991 03 14.64414	11 41 11.18	+11 20 12.6			16.5		887
1991 FY		1991 03 14.65285	11 41 10.56	+11 20 18.4					887
1991 FY	*	1991 03 17.61250	11 38 35.89	+11 48 05.0			16.5		887
1991 FY		1991 03 17.63090	11 38 34.97	+11 48 12.7					887

889 Karasuyama
T. Urata, 6-1, Muramatsubara 1 Chome, Shimizu, Shizuoka-Ken 424, Japan
Observers S. Inoda, T. Urata
Measurer T. Urata
0.31-m f/5.6 reflector
AGK3

1982 SO4		1991 02 23.79063	12 22 27.66	+02 37 04.5			16.5		889
1982 SO4		1991 02 23.81007	12 22 26.48	+02 37 08.0					889
1990 WM5	*	1990 11 23.64340	04 58 05.8	+17 22 04			16.5	p	889
1990 WM5		1990 11 23.67674	04 58 04.1	+17 22 01				p	889
1991 BY		1991 02 19.59757	10 21 29.0	+12 23 20			16	G	889
1991 BY		1991 02 19.61597	10 21 27.92	+12 23 21.4					889

1991	DO		1991 03 09.73750	10 02 15.94	+12 00 52.5			16.5		889
1991	DM1	*	1991 02 23.78090	12 19 24.89	+01 37 40.6			16		889
1991	DM1		1991 02 23.80035	12 19 24.28	+01 37 49.9					889
1991	DM1		1991 02 23.81007	12 19 24.04	+01 37 55.3					889
1991	DN1	*	1991 02 23.78090	12 21 37.89	+01 52 28.2			16.5		889
1991	DN1		1991 02 23.80035	12 21 37.26	+01 52 31.5					889

894 Kiyosato and Otomo
S. Miyasaka, 3-8-501, 4 Chome, Nagayama, Tama, Tokyo 206, Japan
Observers S. Miyasaka, S. Otomo, O. Muramatsu
Measurers S. Miyasaka, O. Muramatsu
0.25-m reflector

1979	KR		1991 02 17.59738	09 18 41.64	+00 02 00.6						894
1979	KR		1991 02 17.62094	09 18 40.37	+00 02 10.7						894
1986	TC1		1991 02 17.67089	10 23 31.00	+11 23 40.5						894
1986	TC1		1991 02 17.69214	10 23 29.62	+11 23 51.8						894
1991	CC1		1991 03 09.52847	12 01 49.37	+05 51 31.6			16.5			894
1991	CC1		1991 03 09.55625	12 01 48.05	+05 51 47.5						894
1991	CC1		1991 03 14.70454	11 57 57.17	+06 46 09.2			16.5			894
1991	CS1		1991 02 23.77188	10 51 06.27	+08 32 24.4						894
1991	CS1		1991 02 23.80174	10 51 05.07	+08 32 35.4						894
1991	CT1		1991 03 17.51215	10 24 33.1	+10 39 05					W	894
1991	CT1		1991 03 17.52691	10 24 32.32	+10 39 04.7						894
1991	FJ	*	1991 03 17.70208	12 06 54.2	-04 08 46			16.5	R		894
1991	FJ		1991 03 20.63611	12 04 25.78	-04 01 57.4						894
1991	FJ		1991 03 23.69063	12 01 50.15	-03 54 23.7					W	894
1991	FJ		1991 04 03.46389	11 52 54.61	-03 26 40.8					W	894
1991	FJ		1991 04 03.47639	11 52 54.14	-03 26 38.7					W	894
1991	FK	*	1991 03 17.73681	12 23 21.9	-05 00 58			16.5		W	894
1991	FK		1991 03 19.63611	12 20 12.31	-05 18 05.1					W	894
1991	FK		1991 03 19.65556	12 20 10.30	-05 18 14.4					W	894
1991	FK		1991 03 20.66910	12 18 27.2	-05 27 15					W	894
1991	FK		1991 03 20.68785	12 18 25.0	-05 27 22					W	894
1991	FK		1991 03 25.75625	12 09 42.38	-06 10 50.9					W	894
1991	FK		1991 03 25.76771	12 09 41.08	-06 10 56.4					W	894
1991	FK		1991 04 03.49306	11 54 55.53	-07 19 49.9					W	894
1991	FK		1991 04 03.50556	11 54 54.34	-07 19 56.2					W	894
1991	FL	*	1991 03 17.73681	12 28 29.98	-05 50 48.0			16.5			894
1991	FL		1991 03 17.75625	12 28 29.07	-05 50 40.5					W	894
1991	FL		1991 03 19.63611	12 26 57.28	-05 41 06.3						894
1991	FL		1991 03 19.65556	12 26 56.00	-05 41 01.9					W	894
1991	FL		1991 03 20.68785	12 26 04.45	-05 35 37.4						894
1991	FL		1991 03 23.75278	12 23 27.3	-05 18 52					W	894
1991	FM	*	1991 03 17.73681	12 28 35.99	-05 50 20.8			16.5			894
1991	FM		1991 03 17.75625	12 28 34.85	-05 50 17.6					W	894
1991	FM		1991 03 19.63611	12 26 45.91	-05 43 09.5						894
1991	FM		1991 03 19.65556	12 26 44.67	-05 43 05.2					W	894
1991	FM		1991 03 20.68785	12 25 43.59	-05 39 03.6						894
1991	FM		1991 03 23.75278	12 22 38.5	-05 26 19					W	894

896 Yatsugatake South Base Observatory
O. Muramatsu, 119-1, 2-8 Sakurazutsumi, Musashino, Tokyo 180, Japan
Observers Y. Kushida, R. Kushida, O. Muramatsu
Measurer O. Muramatsu
0.20-m f/4.0 reflector
AGK3

1989	XA		1991 02 07.71806	10 34 10.57	+13 35 16.6			17			896
1989	XA		1991 02 07.75524	10 34 09.22	+13 35 26.8						896
1991	BY		1991 02 08.63507	10 31 03.4	+12 14 15					E	896

1991 BY		1991 02 08.66944	10 31 01.6	+12 14 14				E	896
1991 DJ		1991 03 23.72431	10 41 15.54	+14 48 04.7				W	896
1991 DJ		1991 03 23.73785	10 41 14.88	+14 48 09.6				W	896
1991 DJ		1991 04 03.50799	10 33 40.99	+15 35 02.1					896

898 Fujieda
M. Kizawa, 1458-10, Minami Numagami, Shizuoka-Ken 420, Japan
Observers H. Shiozawa, M. Kizawa
Measurer M. Kizawa
0.20-m f/4.0 hyperboloid astro-camera, 0.20-m f/4.9 reflector

1991 CC1		1991 03 17.56565	11 55 41.78	+07 16 06.6		15.5			898
1991 CC1		1991 03 17.58681	11 55 40.74	+07 16 19.4					898
1991 CC1		1991 03 18.55245	11 54 54.47	+07 26 18.5		15.5			898
1991 CU2		1991 02 20.70119	11 15 54.35	+07 02 35.8		16.5			898
1991 CU2		1991 02 20.72250	11 15 53.49	+07 02 38.1					898
1991 CU2		1991 03 09.56310	11 00 35.66	+08 13 45.7		16			898
1991 CU2		1991 03 09.58907	11 00 34.25	+08 13 50.6					898
1991 CU2		1991 03 14.70770	10 55 45.75	+08 34 03.6		16.5			898
1991 CU2		1991 03 14.74366	10 55 43.95	+08 34 10.8					898
1991 CU2		1991 03 17.52949	10 53 14.25	+08 44 06.8		16			898
1991 CU2		1991 03 17.55309	10 53 12.94	+08 44 13.8					898
1991 CU2		1991 03 18.60009	10 52 18.27	+08 47 43.2					898
1991 CU2		1991 03 18.62190	10 52 16.96	+08 47 48.4					898
1991 CM3		1991 03 18.60009	10 54 05.78	+12 13 12.8		17		F	898
1991 CM3		1991 03 18.62190	10 54 04.68	+12 13 19.5				F	898
1991 FS	*	1991 03 17.56565	11 59 23.97	+06 43 40.1		16.5			898
1991 FS		1991 03 17.58681	11 59 22.58	+06 43 42.4					898
1991 FS		1991 03 18.55245	11 58 24.97	+06 46 36.3		17			898
1991 GA		1991 03 18.56631	12 13 43.53	+09 05 40.1		15.5			898
1991 GA		1991 03 18.58773	12 13 42.16	+09 05 43.9					898
1121		1991 02 20.70119	11 12 51.59	+08 10 29.2					898
1121		1991 02 20.72250	11 12 50.26	+08 10 32.2					898
2240		1991 02 20.70119	11 08 39.14	+06 51 12.6					898
2240		1991 02 20.72250	11 08 38.11	+06 51 18.5					898
2274		1991 02 20.70119	11 07 19.88	+06 32 57.8					898
2274		1991 02 20.72250	11 07 18.75	+06 32 59.7					898

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ORBITAL ELEMENTS.

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The name of the orbit computer is shown on the line giving T for a comet and Epoch for a displayed minor-planet orbit; for many of the minor planets (O-C) residuals are shown in full (in R.A. and Decl.); observations are identified by date and observatory code, X referring to an approximate and Y to a semiaccurate position. For displayed minor planets "Id." shows those involved in establishing the identifications (generally with the principal contributors first), "k" indicating key identifications and "d" (only) double (or multiple) designations; no identifier is shown if only the orbit computer is involved and the results were not previously published. J-P indicates that only the perturbations by the outer planets were considered, and a and n are then related by a gravitational constant augmented by the masses of the inner planets. For the one-opposition orbits, equinox 1950.0 is used, and the columns headed Arc and O show the time span in days covered by the observations and the number of observations utilized in the computation (0 = 10 or more). In the note column N, D means that there are double (or multiple) designations, E means that the value of the eccentricity was assumed, F means both; the double designations are listed at the end; the codes for the orbit computers (column C) are as listed above.

Periodic Comet Shoemaker-Levy 4 (1991f)

T 1990 July 14.54308 ET				Nakano
q 2.0175057		(1950.0)	P	Q
n 0.15102016	Peri.	302.22949	-0.06784436	-0.99519751
a 3.4923098	Node	151.40664	+0.95776700	-0.08477429
e 0.4223005	Incl.	8.47849	+0.27942712	+0.04894114
P 6.53				

From 13 observations 1991 Feb. 9-Mar. 16.

Comet Arai (1991b)

Epoch 1990 Dec. 15.0 ET = JDE 2448240.5

T 1990 Dec. 10.88726 ET				Marsden
q 1.4341611		(1950.0)	P	Q
z +0.0066191	Peri.	337.63280	-0.27572727	-0.43328182
+/-0.0001091	Node	114.82601	+0.96092122	-0.14708425
e 0.9905072	Incl.	70.98154	+0.02459443	+0.88917551

From 55 observations 1990 Dec. 23-1991 Mar. 13, mean residual 1".0.

Periodic Comet Mrkos (1991k)

T 1991 Mar. 18.99022 ET				Nakano
q 1.4087289		(1950.0)	P	Q
n 0.17772375	Peri.	180.42393	-0.99971922	+0.02196869
a 3.1330867	Node	0.97776	-0.01991835	-0.57609055
e 0.5503703	Incl.	31.36095	-0.01283549	-0.81709061
P 5.55				

From 41 observations 1991 Mar. 15-Apr. 8.

Periodic Comet Hartley 1 (1991j)

Epoch 1991 May 24.0 ET = JDE 2448400.5

T 1991 May 17.67839 ET				Marsden
q 1.8183704		(1950.0)	P	Q
n 0.16364526	Peri.	178.74723	-0.79722142	+0.54057772
a 3.3102980	Node	38.25970	-0.55755146	-0.48865025
e 0.4506928	Incl.	25.71980	-0.23146140	-0.68483331
P 6.02				

From 23 observations 1985-1991, mean residual 1".1.

Comet Shoemaker-Levy (1991d)
Epoch 1992 Jan. 19.0 ET = JDE 2448640.5
T 1991 Dec. 31.14250 ET Marsden

		(1950.0)	P	Q
q 2.2649793				
z +0.0027604	Peri.	74.35766	-0.34253640	+0.74879840
+/-0.0000640	Node	144.43185	-0.38794922	-0.66279740
e 0.9937477	Incl.	77.29270	+0.85566595	-0.00074916

From 44 observations 1991 Jan. 13-Apr. 13, mean residual 0".9.

Comet Helin-Lawrence (1991l)
T 1992 Jan. 20.25203 ET Marsden

		(1950.0)	P	Q
q 1.5196176				
	Peri.	271.12326	+0.00082514	+0.98136917
	Node	11.12851	+0.48532292	+0.16759287
e 1.0	Incl.	95.47435	-0.87433459	+0.09395308

From 22 observations 1991 Mar. 19-Apr. 12.

One-opposition minor planets

Planet	H	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1977 QL1	13.0	770825	321.02	51.46	342.96	4.97	0.0939	2.7448	22	6		W
1977 QN2	14.5	770825	12.96	5.53	314.03	2.42	0.2538	2.3733	19	5		W
1977 UM4	13.5	771004	32.05	313.58	19.80	2.57	0.2236	2.3892	27	4	D	W
1977 UO5	12.0	771024	335.77	359.76	67.72	2.44	0.1973	3.1205	25	3	D	W
1980 GL	14.0	800322	327.72	219.25	14.88	11.95	0.1311	2.6588	32	7	D	W
1980 GM	16.0	800411	348.24	43.07	171.62	1.96	0.1605	2.1886	9	0		W
1980 PQ	14.4	800809	344.70	187.64	153.04	15.03	0.2437	2.6324	15	8		E
1980 PU	14.9	800809	25.12	55.49	222.68	4.26	0.2070	2.1922	15	0		E
1980 VW2	14.5	801028	56.10	283.68	20.42	10.25	0.3175	2.7075	2	4	E	W
1980 VX2	14.0	801028	31.23	126.68	230.07	13.12	0.1132	2.2438	2	4	E	W
1980 VD3	15.5	801028	22.19	336.90	29.24	17.19	0.1766	2.5399	8	3	D	W
1988 RF1	11.0	880827	11.83	329.37	1.44	22.54	0.1189	5.1041	51	5		W
1989 SY13	13.0	891001	234.74	218.52	296.71	12.08	0.0885	2.6651	8	6		M
1989 SZ13	13.5	891001	18.99	51.63	306.23	11.69	0.1102	2.7264	9	7		M
1989 SA14	13.0	891001	348.55	100.94	296.58	10.25	0.1940	2.5926	9	8		M
1989 SB14	13.5	891001	82.60	18.34	265.31	13.54	0.1372	2.5491	9	8		M
1989 SC14	14.5	891001	348.77	119.93	277.90	10.25	0.1988	2.6309	9	8		M
1989 SE14	14.5	891001	19.19	32.17	319.49	11.42	0.2125	2.5922	9	8		M
1989 SF14	13.0	891001	12.08	112.19	252.96	13.67	0.1332	2.5215	9	8		M
1989 SG14	13.5	891001	36.81	0.89	328.16	13.76	0.2004	2.5825	9	8		M
1989 TN11	14.0	890911	3.13	346.39	9.89	6.50	0.1758	2.3327	32	0		M
1989 TB18	12.5	891001	305.38	182.21	278.15	13.28	0.2117	2.6092	3	6		M
1989 TC18	11.5	891001	333.85	117.03	305.40	12.20	0.1865	3.0021	3	6		M
1989 TD18	11.0	891001	43.05	34.66	291.96	11.33	0.1525	2.5953	3	6		M
1990 QS3	13.0	900817	13.77	160.24	155.99	5.65	0.2286	2.6130	5	0	E	M
1990 QL6	14.5	900817	112.43	146.81	67.38	1.41	0.1155	2.3020	10	9		M
1990 QP6	15.0	900817	98.67	236.39	350.78	5.57	0.1148	2.2813	10	9		M
1990 QQ6	14.5	900817	46.45	174.27	100.26	1.91	0.1717	2.4087	29	0	D	M
1990 QS6	15.5	900817	316.80	15.25	14.09	2.93	0.1100	2.1937	10	9		M
1990 QU6	17.0	900817	345.00	229.43	130.08	3.10	0.2217	2.3622	10	9		M
1990 QV6	16.0	900817	345.85	211.87	151.29	6.97	0.2965	2.6540	10	9	E	M
1990 QB7	16.0	900817	31.02	164.45	122.44	3.30	0.2300	2.2218	10	9		M
1990 QD7	15.5	900817	10.03	171.34	153.95	5.19	0.1610	2.7289	10	9		M
1990 QK7	13.5	900817	283.83	274.42	156.00	10.52	0.1042	2.9855	10	9		M
1990 QM7	14.5	900817	48.34	284.37	1.45	6.58	0.0516	2.3384	10	9		M
1990 QO7	15.0	900817	1.94	195.08	135.70	0.23	0.1698	3.0796	10	9	E	M
1990 QQ7	14.0	900817	267.34	115.20	335.03	12.49	0.2000	3.2202	10	9	E	M
1990 QR7	16.5	900817	350.40	340.93	3.33	1.85	0.1669	2.1700	10	9	E	M
1990 QS7	13.5	900817	262.37	93.49	1.50	1.74	0.2111	2.9084	10	9	E	M
1990 QU7	14.0	900817	15.58	172.78	145.01	1.83	0.0374	2.9112	10	9		M

1990	QA8	16.0	900817	347.64	204.82	147.64	3.07	0.2404	2.4938	10	9		M
1990	QB8	14.0	900817	244.25	319.70	151.73	8.27	0.2240	2.7771	10	9		M
1990	QC8	14.0	900817	158.14	30.38	140.10	5.32	0.1570	2.3315	10	9		M
1990	QE8	13.5	900817	242.30	327.25	140.81	7.31	0.1661	2.7823	10	9		M
1990	QF8	15.5	900817	306.04	299.19	106.70	2.41	0.1861	2.2956	10	9		M
1990	QJ8	13.5	900817	305.75	348.88	53.34	2.31	0.1295	3.1816	10	9		M
1990	QK8	14.0	900817	55.98	144.65	121.90	2.18	0.1216	3.0393	10	9		M
1990	QN8	16.5	900817	349.53	359.72	348.29	2.80	0.1999	2.3989	10	9		M
1990	QO8	14.5	900817	279.64	83.53	341.33	11.03	0.0927	2.4995	10	9		M
1990	QP8	15.0	900817	349.72	12.12	334.02	0.58	0.0705	2.5428	10	9		M
1990	QQ8	14.0	900817	329.75	325.29	50.83	2.23	0.1620	3.1749	10	9		M
1990	QR8	16.0	900817	355.03	208.08	131.96	4.62	0.1851	2.5116	10	9		M
1990	QT8	16.5	900817	35.35	139.49	142.87	3.91	0.1804	2.1559	10	9		M
1990	QU8	14.5	900817	317.92	348.86	46.91	1.67	0.2011	3.1093	10	9		M
1990	QY8	13.5	900817	272.02	316.34	123.44	3.95	0.1400	2.9271	10	9		M
1990	QZ8	14.0	900817	252.42	330.84	128.22	3.53	0.1604	2.3621	10	9		M
1990	QB9	16.0	900817	326.84	234.20	145.80	6.73	0.1777	2.2864	10	9		M
1990	QF9	13.5	900817	139.76	41.35	148.78	14.67	0.1043	2.8105	10	9		M
1990	QG9	14.0	900817	62.56	188.90	62.89	1.95	0.2003	3.2394	10	9	E	M
1990	QJ9	14.5	900817	38.97	218.35	54.48	2.68	0.2562	3.1819	10	9		M
1990	QK9	15.5	900817	38.87	146.66	137.94	7.03	0.1306	2.3612	10	9		M
1990	QL9	14.0	900817	68.31	209.83	52.54	2.69	0.0509	2.8829	10	9		M
1990	QM9	15.0	900817	46.09	272.41	12.87	4.55	0.0492	2.7532	10	9		M
1990	QN9	15.0	900817	249.44	322.75	127.53	4.12	0.0463	2.2547	10	9		M
1990	QO9	14.5	900817	307.64	62.77	341.21	14.05	0.1462	3.0596	10	9		M
1990	RF7	13.5	900817	323.33	278.89	110.14	2.38	0.1568	3.1467	29	0		M
1990	RK7	13.0	900817	251.47	357.51	104.75	2.08	0.1258	2.8342	29	0		M
1990	RL7	14.5	900817	69.51	256.65	355.24	3.09	0.1522	2.2850	31	0	D	M
1990	RM7	14.5	900817	19.69	274.85	38.22	1.27	0.1547	3.1252	30	0		M
1990	RO8	13.5	900817	228.74	324.13	158.92	3.21	0.1359	2.3769	31	9		M
1990	TY	14.0	901105	316.17	272.52	183.64	22.19	0.2470	2.3144	26	0		N
1990	TF8	13.9	901016	308.65	242.51	216.46	13.52	0.1297	2.5254	29	8		N
1990	UD2	14.1	901105	287.13	63.70	52.79	6.73	0.0317	2.3949	19	6		N
1990	UE2	15.0	901105	19.55	165.08	206.97	4.50	0.2423	2.3972	31	0		N
1990	VH3	14.5	901125	359.12	155.44	267.88	3.28	0.2688	2.5007	12	9		U
1990	VD5	15.0	901105	69.23	102.14	220.53	21.18	0.1989	1.9589	2	4	D	a
1990	WL5	13.8	901125	303.85	288.58	199.22	4.41	0.1879	2.4258	13	6		N
1991	AJ	12.2	910124	2.98	3.83	111.46	10.33	0.1755	3.1994	42	0		E
1991	AB1	11.0	910124	84.58	253.10	130.21	11.50	0.1628	3.0324	29	0		E
1991	AU1	14.5	910213	38.75	138.22	334.16	22.31	0.0547	1.8555	63	0		W
1991	AQ2	14.8	910124	14.93	181.92	282.99	0.07	0.1767	2.4576	27	9		E
1991	AW2	13.2	910124	18.99	333.39	129.69	15.41	0.1527	3.1297	25	7		E
1991	BE	12.0	910124	315.79	246.19	293.18	26.86	0.1663	2.5963	45	0		U
1991	BV	12.1	910213	39.15	308.05	143.10	12.97	0.1375	2.6120	58	0		N
1991	BA1	14.0	910104	334.95	6.94	132.08	4.51	0.0416	2.1605	6	6	E	B
1991	BZ2	15.0	910104	355.92	235.43	250.65	1.64	0.1029	2.1769	2	4	E	W
1991	BA3	15.0	910104	357.21	345.36	142.75	6.32	0.1284	2.8061	2	4	E	W
1991	BB3	15.0	910104	356.71	190.59	296.43	1.41	0.1165	2.4907	2	4	E	W
1991	BC3	15.0	910104	355.56	184.45	306.05	13.89	0.1241	2.7922	2	4	E	W
1991	BE3	14.5	910104	176.46	3.68	306.56	7.27	0.1061	2.4288	2	4	E	W
1991	CN	13.5	910213	342.58	162.76	0.74	3.98	0.0733	2.2741	54	0		W
1991	CU	12.4	910213	145.16	202.49	139.87	10.12	0.0817	2.5856	4	8		E
1991	CW	13.5	910213	62.36	309.09	117.38	4.90	0.1579	2.2581	26	0		U
1991	CZ	13.0	910213	221.34	128.78	153.49	23.20	0.0138	1.8338	40	0		W
1991	CA1	14.0	910213	63.78	305.08	123.42	25.55	0.1071	1.8503	37	0		M
1991	CC1	13.1	910305	337.58	54.11	147.66	6.55	0.1499	2.3058	30	0		N
1991	CU2	13.2	910305	342.76	179.47	7.31	2.44	0.1409	2.3998	33	0		N
1991	CW2	12.5	910213	80.31	67.75	12.69	8.44	0.0777	2.4424	32	8		M
1991	CK3	12.5	910213	5.75	34.50	107.20	17.55	0.3062	3.0727	32	7		W

1991 CO3	12.0	910213	55.17	170.26	281.66	24.57	0.2406	2.4013	41	5		W
1991 DM	14.0	910213	314.02	72.97	137.68	1.84	0.1179	2.5049	4	3		W
1991 DT	12.2	910305	357.66	61.27	100.42	2.40	0.1577	3.1139	13	6		N
1991 DU	12.6	910305	49.52	61.30	35.83	2.06	0.1168	2.9186	13	4		N
1991 DW	12.0	910213	278.19	160.73	90.60	16.56	0.1027	2.5982	28	6		W
1991 DY	12.0	910305	349.11	340.27	188.69	7.00	0.1451	2.6611	27	5		M
1991 DF1	12.5	910213	61.22	269.63	146.85	22.95	0.2911	2.5187	27	5		W
1991 DH1	13.0	910213	335.57	32.07	154.92	10.53	0.1707	2.4566	28	5		W
1991 DM1	11.5	910325	268.35	127.78	163.72	13.29	0.1785	2.5966	38	7		N
1991 DN1	12.8	910325	22.00	79.62	71.08	2.31	0.1505	2.5777	38	6		N
1991 EB	12.8	910305	43.04	215.51	256.73	2.77	0.1464	2.6147	6	6		N
1991 EC	13.0	910305	21.90	128.44	1.79	7.55	0.2524	2.8857	24	0		W
1991 EH	18.5	910305	354.93	275.85	263.63	1.58	0.2874	2.8157	4	5		M
1991 EJ	10.5	910213	154.71	96.07	280.01	22.79	0.1215	5.2549	45	5		W
1991 EK	16.5	910213	326.39	344.80	221.09	13.42	0.1884	1.8098	28	3		W
1991 EL	11.5	910213	328.76	294.05	279.74	22.54	0.0848	5.2211	36	5		W
1991 EM	13.0	910305	241.87	29.63	280.47	20.22	0.1347	3.1998	10	3		W
1991 EN	10.5	910305	233.18	19.03	288.87	19.66	0.0077	5.1263	18	4	E	W
1991 ER	13.9	910325	24.95	342.89	164.49	7.61	0.0826	2.4973	25	8		N
1991 EE1	12.1	910325	195.77	333.82	13.79	10.44	0.0843	2.2603	18	6		N
1991 EH1	13.4	910325	27.36	29.25	115.90	6.32	0.1189	3.1533	20	0		N
1991 EM1	12.0	910305	210.05	175.66	166.12	11.77	0.1733	2.9619	5	0		B
1991 EO1	13.0	910305	190.16	235.93	118.28	3.83	0.1320	2.5997	5	0		B
1991 FJ	11.3	910325	170.52	21.97	349.32	10.46	0.0332	3.0264	17	5		N
1991 FK	14.2	910325	11.49	173.27	358.32	19.81	0.0535	1.9428	17	8		N
1991 FM	12.9	910325	267.66	302.48	341.21	3.81	0.0520	2.2514	6	4		N
1991 FT	13.7	910414	272.21	289.75	4.26	7.34	0.1168	2.3176	23	0		N
1991 FY	13.0	910325	58.31	333.76	137.85	8.55	0.0529	2.3420	8	5		U
1991 FZ	12.6	910325	160.70	0.97	4.16	13.78	0.0614	2.5444	16	6		N
1991 FD1	18.0	910305	272.40	302.22	339.21	4.12	0.2097	2.1634	4	0	E	M
1991 FE1	12.9	910325	127.02	97.13	307.02	3.14	0.1221	2.2602	25	5		N
1991 FJ1	12.3	910414	60.22	280.60	199.36	12.51	0.1307	2.6799	22	6		N
1991 GD	13.5	910325	337.42	322.36	248.00	18.84	0.0298	1.9352	2	3		W
1991 GK	20.5	910325	11.65	144.48	21.35	20.07	0.2804	1.8451	2	9	E	M

1977 UM4 = 1977 SS3 = 1977 TA5 (G. V. Williams)
1977 UO5 = 1977 VW1 (G. V. Williams)
1980 GL = 1980 ES1 (W. Landgraf, G. V. Williams)
1980 VD3 = 1980 VG1 (G. V. Williams)
1990 QQ6 = 1990 RD7 (B. G. Marsden)
1990 RL7 = 1990 QZ9 (S. Nakano, MPC 17944)
1990 VD5 = 1990 VK8 (A. Lowe)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(207) Hedda Obs. 85 M 346.13553 Peri. 191.93587
H 9.92 G 0.15 Opp. 26 n 0.28557909 Node 28.76615
rms res. 0".82 (M-P) 1903-1986 e 0.0288155 Incl. 3.80394

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(328) Gudrun Obs. 44 M 148.09003 Peri. 102.35048
H 8.6 G 0.15 Opp. 19 n 0.18039333 Node 352.07666
rms res. 0".98 (M-P) 1911-1985 e 0.1196612 Incl. 16.11325

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(333) Badenia Obs. 81 M 330.92845 Peri. 18.07017
H 9.46 G 0.15 Opp. 29 n 0.17881256 Node 353.73675
rms res. 0".93 (M-P) 1906-1989 e 0.1739816 Incl. 3.79065

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(410) Chloris Obs. 72 M 317.16074 Peri. 172.46790
H 8.30 G 0.15 Opp. 27 n 0.21871637 Node 96.67435
rms res. 0".87 (M-P) 1914-1989 e 0.2368159 Incl. 10.92978

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(522) Helga Obs. 67 M 355.80824 Peri. 248.99064
H 9.12 G 0.15 Opp. 30 n 0.14241042 Node 116.88756
rms res. 0".90 (M-P) 1904-1989 e 0.0760619 Incl. 4.44982

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(635) Vundtia Obs. 63 M 293.68542 Peri. 217.65629
H 9.01 G 0.15 Opp. 15 n 0.17718610 Node 183.15447
rms res. 0".86 (M-P) 1908-1987 e 0.0873750 Incl. 11.03577

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(638) Moira Obs. 59 M 254.65915 Peri. 126.82324
H 9.8 G 0.15 Opp. 24 n 0.21796710 Node 103.10230
rms res. 0".97 (M-P) 1906-1990 e 0.1603155 Incl. 7.70521

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(645) Agrippina Obs. 51 M 218.38880 Peri. 82.03603
H 9.94 G 0.15 Opp. 15 n 0.17263190 Node 0.29892
rms res. 1".01 (M-P) 1913-1987 e 0.1666026 Incl. 7.02411

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(681) Gorgo Obs. 27 M 321.53748 Peri. 122.05015
H 11.0 G 0.15 Opp. 10 n 0.17973676 Node 177.54953
rms res. 0".71 (M-P) 1932-1987 e 0.0968253 Incl. 12.55989

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(746) Marlu Obs. 20 M 345.15512 Peri. 308.40022
H 10.00 G 0.15 Opp. 13 n 0.18010724 Node 1.46424
rms res. 0".68 (M-P) 1915-1985 e 0.2402341 Incl. 17.50052

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(893) Leopoldina Obs. 40 M 164.33359 Peri. 225.35808
H 9.47 G 0.15 Opp. 13 n 0.18457239 Node 144.62313
rms res. 0".79 (M-P) 1918-1991 e 0.1455867 Incl. 17.02212

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(931) Whittemora Obs. 47 M 341.93052 Peri. 308.27604
H 9.26 G 0.15 Opp. 14 n 0.17301391 Node 112.31409
rms res. 0".75 (M-P) 1920-1989 e 0.2187012 Incl. 11.31119

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(957) Camelia Obs. 31 M 303.82579 Peri. 224.83222
H 9.7 G 0.15 Opp. 16 n 0.19752288 Node 232.46160
rms res. 0".99 (M-P) 1921-1986 e 0.0805488 Incl. 14.76890

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(980) Anacostia Obs. 106 M 163.21175 Peri. 69.71441
H 7.85 G 0.06 Opp. 23 n 0.21682513 Node 285.55029
rms res. 0".73 (M-P) 1929-1989 e 0.2004097 Incl. 15.88923

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(993) Moultona Obs. 50 M 118.08698 Peri. 248.73976
H 11.8 G 0.15 Opp. 14 n 0.20372223 Node 183.87251
rms res. 0".72 (M-P) 1931-1989 e 0.0491805 Incl. 1.77509

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(1004) Belopolskya Obs. 67 M 306.52306 Peri. 227.30584
H 9.99 G 0.15 Opp. 24 n 0.15694608 Node 153.31356
rms res. 0".90 (M-P) 1923-1990 e 0.0868449 Incl. 2.97875

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(1008) La Paz Obs. 28 M 158.28143 Peri. 22.47332
H 10.4 G 0.15 Opp. 10 n 0.18145392 Node 20.16833
rms res. 0".71 (M-P) 1923-1986 e 0.0810479 Incl. 8.94102

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(1023) Thomana Obs. 24 M 257.89066 Peri. 197.48206
H 9.76 G 0.15 Opp. 14 n 0.17532337 Node 194.13535
rms res. 0".92 (M-P) 1924-1987 e 0.1132032 Incl. 10.05801

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(1057) Wanda Obs. 32 M 141.43880 Peri. 112.37648
H 10.96 G 0.15 Opp. 15 n 0.19973613 Node 258.53444
rms res. 0".80 (M-P) 1925-1990 e 0.2456603 Incl. 3.51090

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(1117) Reginita Obs. 57 M 16.78782 Peri. 150.73775
H 11.9 G 0.15 Opp. 18 n 0.29246866 Node 146.68429
rms res. 1".02 (M-P) 1904-1988 e 0.1981488 Incl. 4.34430

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(1256) Normannia Obs. 52 M 229.47477 Peri. 112.01037
H 9.66 G 0.15 Opp. 16 n 0.12830238 Node 237.82023
rms res. 0".95 (M-P) 1930-1990 e 0.0849694 Incl. 4.18077

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(1284) Latvia Obs. 31 M 130.69632 Peri. 114.78741
H 10.24 G 0.15 Opp. 11 n 0.22924614 Node 302.55990
rms res. 0".76 (M-P) 1933-1989 e 0.1717092 Incl. 10.89725

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(1309) Hyperborea Obs. 51 M 111.90629 Peri. 248.61459
H 10.2 G 0.15 Opp. 13 n 0.17219070 Node 205.62747
rms res. 0".96 (M-P) 1919-1989 e 0.1545307 Incl. 10.30376

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(1339) Desagneauxa Obs. 53 M 294.29468 Peri. 163.59951
H 10.81 G 0.15 Opp. 21 n 0.18760299 Node 290.78385
rms res. 0".89 (M-P) 1937-1990 e 0.0492273 Incl. 8.67460

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(1341) Edmee Obs. 25 M 57.17674 Peri. 142.23710
H 10.58 G 0.15 Opp. 11 n 0.21699968 Node 107.20040
rms res. 0".86 (M-P) 1935-1990 e 0.0778532 Incl. 13.10032

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(1463) Nordenmarkia Obs. 56 M 323.70419 Peri. 71.31035
H 10.6 G 0.15 Opp. 16 n 0.17643081 Node 330.95064
rms res. 0".92 (M-P) 1938-1988 e 0.1988572 Incl. 7.29828

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
(1510) Charlois Obs. 36 M 56.09199 Peri. 163.50883
H 11.2 G 0.15 Opp. 9 n 0.22595847 Node 331.10468
rms res. 1".00 (M-P) 1939-1991 e 0.1513849 Incl. 11.84752

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Bowell	
(1515) Perrotin	Obs. 13	M	141.49528	Peri.	350.41900
H 12.6 G 0.15	Opp. 4	n	0.23901286	Node	48.90370
rms res. 1".27 (M-P)	1907-1991	e	0.2335101	Incl.	10.65125

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Bowell	
(1574) Meyer	Obs. 38	M	186.50061	Peri.	259.36739
H 10.3 G 0.15	Opp. 15	n	0.14821292	Node	246.21285
rms res. 0".82 (M-P)	1930-1989	e	0.0509673	Incl.	14.40395

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Bowell	
(1592) Mathieu	Obs. 48	M	275.12380	Peri.	176.40858
H 11.6 G 0.15	Opp. 11	n	0.21362890	Node	105.86293
rms res. 0".85 (M-P)	1951-1987	e	0.3017261	Incl.	13.48180

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Bowell	
(1652) Herge	Obs. 55	M	172.75537	Peri.	12.73815
H 13.2 G 0.15	Opp. 14	n	0.29187719	Node	251.28984
rms res. 0".93 (M-P)	1933-1990	e	0.1503373	Incl.	3.19714

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Bowell	
(1655) Comas Sola	Obs. 22	M	126.43592	Peri.	323.37705
H 11.04 G 0.15	Opp. 8	n	0.21273568	Node	110.87558
rms res. 0".79 (M-P)	1901-1986	e	0.2351196	Incl.	9.59673

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Bowell	
(1705) Tapio	Obs. 61	M	158.76099	Peri.	155.88307
H 12.8 G 0.15	Opp. 9	n	0.28240789	Node	188.16542
rms res. 0".88 (M-P)	1941-1990	e	0.2448229	Incl.	7.69957

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Bowell	
(1706) Dieckvoss	Obs. 38	M	248.03562	Peri.	338.43843
H 12.8 G 0.15	Opp. 11	n	0.31798871	Node	279.25442
rms res. 0".97 (M-P)	1931-1987	e	0.1145942	Incl.	1.87156

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Bowell	
(1714) Sy	Obs. 29	M	316.80859	Peri.	321.79439
H 11.9 G 0.15	Opp. 8	n	0.23971591	Node	300.37527
rms res. 0".67 (M-P)	1951-1991	e	0.1558813	Incl.	7.98727

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Bowell	
(1740) Paavo Nurmi	Obs. 15	M	172.35457	Peri.	79.01527
H 13.24 G 0.15	Opp. 7	n	0.25435083	Node	295.51730
rms res. 1".41 (M-P)	1939-1991	e	0.1898688	Incl.	1.99966

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Bowell	
(1790) Volkov	Obs. 47	M	159.13618	Peri.	147.10793
H 12.5 G 0.15	Opp. 14	n	0.29433963	Node	1.55926
rms res. 0".76 (M-P)	1926-1987	e	0.1008282	Incl.	5.11052

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Bowell	
(1793) Zoya	Obs. 58	M	48.49237	Peri.	322.74412
H 12.6 G 0.15	Opp. 15	n	0.29725910	Node	225.44394
rms res. 0".97 (M-P)	1933-1991	e	0.0976537	Incl.	1.50853

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Bowell	
(1809) Prometheus	Obs. 60	M	115.66375	Peri.	229.68997
H 12.1 G 0.15	Opp. 10	n	0.19686867	Node	99.24514
rms res. 0".79 (M-P)	1955-1990	e	0.0996137	Incl.	3.26113

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(1900) Katyusha Obs. 27 M 53.25135 Peri. 142.29525
H 12.2 G 0.15 Opp. 11 n 0.30004635 Node 281.45594
rms res. 0".92 (M-P) 1953-1987 e 0.1346087 Incl. 6.54377

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(1919) Clemence Obs. 19 M 87.15095 Peri. 99.75459
H 13.45 G 0.15 Opp. 5 n 0.36588533 Node 356.45466
rms res. 0".60 (M-P) 1971-1989 e 0.0951751 Incl. 19.33305

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2106) Hugo Obs. 50 M 141.60633 Peri. 249.34422
H 11.7 G 0.15 Opp. 7 n 0.22174536 Node 151.56184
rms res. 0".70 (M-P) 1936-1991 e 0.0970599 Incl. 8.04320

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2218) Wotho Obs. 18 M 112.83596 Peri. 324.74250
H 11.2 G 0.15 Opp. 5 n 0.18587253 Node 96.17444
rms res. 0".73 (M-P) 1931-1991 e 0.1657308 Incl. 14.95611

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2264) Sabrina Obs. 78 M 214.13532 Peri. 74.24926
H 10.5 G 0.15 Opp. 18 n 0.17650271 Node 241.75378
rms res. 0".86 (M-P) 1933-1991 e 0.1594944 Incl. 0.14586

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2270) Yazhi Obs. 27 M 309.12231 Peri. 180.18101
H 10.9 G 0.15 Opp. 9 n 0.17538018 Node 75.78180
rms res. 0".93 (M-P) 1958-1988 e 0.1235182 Incl. 2.12979

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2291) Kevo Obs. 24 M 277.73782 Peri. 298.60037
H 10.8 G 0.15 Opp. 7 n 0.18547637 Node 169.14716
rms res. 0".91 (M-P) 1941-1990 e 0.0577407 Incl. 24.49521

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2304) Slavia Obs. 46 M 346.33963 Peri. 60.33284
H 12.4 G 0.15 Opp. 6 n 0.23336214 Node 195.50568
rms res. 0".80 (M-P) 1962-1991 e 0.1325361 Incl. 13.57262

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2366) Aaryn Obs. 23 M 144.66619 Peri. 110.29494
H 13.8 G 0.15 Opp. 10 n 0.29391683 Node 307.80914
rms res. 1".04 (M-P) 1934-1986 e 0.1277086 Incl. 1.08026

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2367) Praha Obs. 34 M 103.97384 Peri. 297.51274
H 13.2 G 0.15 Opp. 14 n 0.30077186 Node 190.35591
rms res. 0".93 (M-P) 1942-1991 e 0.0994616 Incl. 1.87860

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2411) Zellner Obs. 35 M 36.72877 Peri. 129.50754
H 12.75 G 0.15 Opp. 9 n 0.29685151 Node 130.54329
rms res. 0".90 (M-P) 1961-1987 e 0.0862118 Incl. 1.61798

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2447) Kronstadt Obs. 36 M 179.88560 Peri. 209.31637
H 13.0 G 0.15 Opp. 8 n 0.24359288 Node 146.37879
rms res. 0".96 (M-P) 1961-1991 e 0.2622990 Incl. 8.78966

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2510) Shandong Obs. 16 M 254.58806 Peri. 209.29963
H 12.60 G 0.15 Opp. 6 n 0.29136668 Node 102.46912
rms res. 0".96 (M-P) 1942-1991 e 0.1959824 Incl. 5.26831

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2533) A905 VA Obs. 45 M 281.20976 Peri. 218.33221
H 11.7 G 0.15 Opp. 11 n 0.18068960 Node 201.57003
rms res. 0".88 (M-P) 1905-1989 e 0.1694603 Incl. 1.56563

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2674) Pandarus Obs. 53 M 230.07231 Peri. 35.95822
H 9.62 G 0.15 Opp. 11 n 0.08375564 Node 179.21527
rms res. 0".91 (M-P) 1972-1990 e 0.0674070 Incl. 1.85953

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2676) Aarhus Obs. 16 M 225.51891 Peri. 45.68112
H 12.8 G 0.15 Opp. 7 n 0.26447581 Node 289.11392
rms res. 0".95 (M-P) 1933-1991 e 0.1259392 Incl. 4.54745

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2709) Sagan Obs. 17 M 351.69104 Peri. 307.88961
H 13.3 G 0.15 Opp. 7 n 0.30294814 Node 240.59479
rms res. 1".15 (M-P) 1951-1986 e 0.0697034 Incl. 2.73216

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2711) Aleksandrov Obs. 19 M 177.98890 Peri. 208.16103
H 11.5 G 0.15 Opp. 7 n 0.18893659 Node 157.42661
rms res. 1".07 (M-P) 1953-1991 e 0.0972453 Incl. 10.27835

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2718) 1951 OM Obs. 57 M 135.85342 Peri. 259.20536
H 11.7 G 0.15 Opp. 9 n 0.17980448 Node 44.69274
rms res. 0".87 (M-P) 1951-1990 e 0.1642931 Incl. 1.50382

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2913) Horta Obs. 31 M 167.18517 Peri. 21.72226
H 12.6 G 0.15 Opp. 5 n 0.22173904 Node 29.94359
rms res. 0".72 (M-P) 1931-1989 e 0.1993386 Incl. 16.07148

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(2978) Roudebush Obs. 49 M 153.75530 Peri. 3.74555
H 11.7 G 0.15 Opp. 8 n 0.17928485 Node 348.60059
rms res. 0".92 (M-P) 1929-1991 e 0.1740066 Incl. 1.24004

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(3137) 1982 SM1 Obs. 20 M 122.10341 Peri. 134.68100
H 13.4 G 0.15 Opp. 7 n 0.26496974 Node 286.14566
rms res. 1".01 (M-P) 1971-1991 e 0.1915765 Incl. 2.46887

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(3191) Svanetia Obs. 48 M 321.00159 Peri. 187.26038
H 12.1 G 0.15 Opp. 7 n 0.20226308 Node 50.45866
rms res. 0".82 (M-P) 1975-1991 e 0.0100750 Incl. 2.73516

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(3208) Lunn Obs. 31 M 27.18064 Peri. 23.54441
H 12.1 G 0.15 Opp. 8 n 0.17954929 Node 136.55159
rms res. 0".77 (M-P) 1931-1991 e 0.1196605 Incl. 2.33971

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(3218) Delphine Obs. 17 M 241.88830 Peri. 240.49642
H 14.1 G 0.15 Opp. 6 n 0.24632826 Node 182.89544
rms res. 0".97 (M-P) 1960-1988 e 0.2176089 Incl. 2.71124

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(3253) Gradie Obs. 20 M 251.16668 Peri. 233.80576
H 13.5 G 0.15 Opp. 6 n 0.29222997 Node 59.67042
rms res. 1".07 (M-P) 1949-1986 e 0.1970940 Incl. 7.42361

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(3275) Oberndorfer Obs. 30 M 242.63435 Peri. 192.26012
H 13.3 G 0.15 Opp. 6 n 0.27676204 Node 44.93839
rms res. 0".78 (M-P) 1939-1990 e 0.1820347 Incl. 8.58842

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(3319) Kibi Obs. 24 M 7.62156 Peri. 109.76961
H 12.1 G 0.15 Opp. 7 n 0.17516749 Node 270.99522
rms res. 0".92 (M-P) 1965-1986 e 0.1587936 Incl. 3.78398

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(3366) 1985 SD1 Obs. 41 M 111.06603 Peri. 142.96652
H 11.4 G 0.15 Opp. 9 n 0.18931739 Node 179.95759
rms res. 0".89 (M-P) 1952-1990 e 0.0835671 Incl. 9.95558

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(3535) 1979 SN11 Obs. 33 M 148.20291 Peri. 163.24414
H 13.9 G 0.15 Opp. 5 n 0.28280342 Node 262.09561
rms res. 0".68 (M-P) 1972-1991 e 0.1850602 Incl. 1.56939

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(3572) 1954 UJ2 Obs. 15 M 131.92212 Peri. 165.42444
H 12.8 G 0.15 Opp. 4 n 0.22193165 Node 232.29002
rms res. 0".80 (M-P) 1954-1985 e 0.1346610 Incl. 3.40046

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(3580) 1983 CS2 Obs. 42 M 287.61554 Peri. 177.99510
H 12.6 G 0.15 Opp. 7 n 0.20389512 Node 347.59322
rms res. 0".83 (M-P) 1949-1990 e 0.2361430 Incl. 3.39950

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(3670) Northcott Obs. 25 M 244.02767 Peri. 135.50970
H 12.0 G 0.15 Opp. 6 n 0.21701150 Node 106.75404
rms res. 1".08 (M-P) 1983-1990 e 0.0178425 Incl. 6.44757

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(4082) Swann Obs. 18 M 331.55392 Peri. 99.21742
H 12.8 G 0.15 Opp. 5 n 0.26657971 Node 294.22863
rms res. 0".72 (M-P) 1947-1989 e 0.2558857 Incl. 9.60412

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
(4206) 1986 QL Obs. 92 M 71.55527 Peri. 32.15786
H 11.9 G 0.15 Opp. 5 n 0.20355683 Node 249.64774
rms res. 0".54 (M-P) 1979-1990 e 0.0186291 Incl. 1.16245

(4775)* 1927 TC = 1990 JA
Discovered 1927 Oct. 3 by M. Wolf at Heidelberg.
Id. S. Nakano (MPC 16574)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano
M 122.76708 (1950.0) P Q
n 0.26526584 Peri. 6.85548 +0.95573842 +0.28690889
a 2.3989167 Node 336.15724 -0.27700527 +0.80281958
e 0.4487937 Incl. 9.27802 -0.09915718 +0.52265095
P 3.72 H 13.7 G 0.15
Residuals in seconds of arc

271003	024	(6.0-	7.3+)	900722	801	0.3-	0.9+	900911	657	0.6+	2.4-
271004	024	2.4-	2.0+	900802	657	0.6+	0.3-	900911	657	0.5+	0.1-
271006	024	0.0	3.1+	900802	657	0.1-	1.3-	900917	675	0.1+	0.3-
271009	024	(4.1-	0.5-)	900816	801	0.3-	1.2+	900917	675	0.2-	0.4+
271016	024	0.1+	0.9+	900816	801	0.3-	1.2+	900919	675	0.7+	1.0-
271021	024	1.7-	1.1-	900817	801	0.3+	0.9+	900919	675	0.3+	0.2+
271026	024	1.2+	0.1-	900817	801	0.3+	0.9+	900921	801	0.5+	0.6+
271028	024	1.0+	0.8+	900820	809	0.4+	1.0-	900921	801	0.5+	0.6+
271029	024	0.9-	1.5-	900820	809	0.1+	1.5-	900923	675	0.0	1.1+
271119	754	2.6+	0.1+	900820	809	0.7-	2.1-	900923	675	1.0-	1.8+
750601	413	0.6-	0.1-	900820	675	1.4-	0.3+	900923	568	0.9+	0.5-
750601	413	0.6-	0.3+	900820	675	1.5-	0.6+	900924	568	0.8+	2.2+
900503	413	1.1+	0.4+	900821	675	(1.2-	3.5-)	900925	675	0.8+	0.3-
900504	413	0.0	0.6+	900821	675	2.0-	0.3-	900925	675	0.6+	0.0
900619	413	0.8+	0.2-	900822	675	0.3+	1.2+	900930	657	0.3+	1.8-
900620	413	0.1-	0.3-	900822	675	0.4-	0.9+	900930	657	0.2+	1.0-
900622	413	0.8+	0.1-	900822	568	(1.8+	4.2+)	901006	657	0.4+	0.1+
900623	474	(2.9-	0.3+)	900824	657	1.4-	0.4-	901015	568	0.3+	0.7-
900623	474	(4.6-	1.3+)	900824	657	0.9-	1.2-	901016	801	0.3-	0.0
900718	801	0.7-	0.4+	900828	675	0.8+	0.6-	901016	801	0.4-	0.1+
900718	801	0.5-	0.4+	900828	675	0.8+	0.6-	901017	801	0.3-	0.0
900720	657	(0.3-	4.1-)	900903	657	1.0-	0.8+	901017	801	0.3-	0.1+
900720	657	(2.1+	4.5-)	900910	657	0.7+	0.1+	901212	568	1.9-	0.2-
900721	413	1.0+	0.7+	900910	413	1.4+	0.9-	910118	801	0.2-	0.1+
900722	801	0.3-	0.8+	900910	413	0.8+	1.2-	910118	801	0.5-	0.0

(4776)* 1975 VD = 1982 RD2 = 1982 UU

Discovered 1975 Nov. 3 at the Agassiz Station of the Harvard College Observatory.

Id. E. Bowell (MPC 7459), K. Hurukawa (d, JAM 1329)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano
M 233.99141 (1950.0) P Q
n 0.27999610 Peri. 348.59658 +0.98867383 +0.15001040
a 2.3140251 Node 2.78815 -0.12922797 +0.86641448
e 0.2332210 Incl. 5.39749 -0.07631637 +0.47625919
P 3.52 H 14.4 G 0.15
Residuals in seconds of arc

751103	801	0.5-	1.3+	821024	688	0.6-	0.7+	890930	801	0.5+	1.0+
751104	801	(4.2-	1.4+)	821024	688	2.6+	0.5+	891004	809	0.2+	1.0-
751105	801	1.7-	0.1+	821115	688	0.1-	0.3-	891004	809	0.7+	1.0-
751106	801	0.2+	0.2+	821115	688	0.7+	0.6-	891004	809	1.3+	1.1-
751202	801	0.4-	0.8+	890827	801	0.8-	0.9+	891005	809	1.5-	0.5-
751204	801	1.1-	0.8+	890904	095	(2.9-	5.5+)	891005	809	1.2-	0.6-
820915	010	(3.3-	2.1+)	890908	888	0.9-	0.2+	891005	809	0.8-	0.7-
820916	010	(4.3-	2.9+)	890908	888	1.0-	0.1+	891006	809	0.6-	0.7-
820918	010	1.7-	2.1+	890908	095	0.2+	1.8+	891006	809	0.5-	0.9-
820920	095	1.0-	0.9+	890908	095	0.6-	1.1+	891006	809	0.2-	0.9-
820922	095	1.3+	2.9-	890926	399	0.2+	0.4-	891006	413	1.4-	1.5+
820926	095	2.5+	1.4-	890926	399	(2.3-	0.3+)	891008	809	0.8+	0.7-
821017	688	1.2+	0.6-	890926	399	0.6+	0.6-	891008	809	1.2+	0.8-
821017	688	0.1-	1.2-	890930	801	0.3-	1.1+	891008	809	1.6+	0.8-

891008 413 0.6+ 0.4+ 891025 888 0.9- 1.1+ 891026 888 1.3+ 0.4-
891009 888 1.0- 0.9+ 891025 888 0.9- 0.7+
891009 888 0.3- 1.3+ 891026 888 1.8+ 0.2-

(4777)* 1976 SM2 = 1979 OQ15 = 1989 UX2

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

Id. T. Kobayashi (MPC 15550)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	267.35605	(1950.0)	P	Q
n	0.30733530	Peri. 167.97888	+0.99920334	-0.03949833
a	2.1746753	Node 194.28850	+0.03442992	+0.92548402
e	0.1304706	Incl. 1.32487	+0.02018073	+0.37672167
P	3.21	H 14.1	G 0.15	

Residuals in seconds of arc

760924 095 0.6- 1.1+ 890907 033 1.0+ 0.8+ 891030 400 (2.4+ 4.1+)
760928 095 (3.8+ 1.1+) 890907 033 0.7+ 0.5+ 891102 400 0.8+ 1.2-
760929 095 0.5- 0.6- 891023 033 0.6+ 0.6- 891102 400 0.8- 0.0
761025 095 1.4+ 0.7- 891023 033 0.1+ 0.2- 891119 399 2.6- 0.1+
761026 095 (3.0- 1.5-) 891025 033 0.5+ 0.1+ 891119 399 (3.9- 2.3-)
780315 675 0.1- 1.2+ 891025 033 0.5+ 0.7+ 891119 399 1.2- 0.2-
780316 675 0.7+ 0.0 891027 033 0.8- 0.2+ 891121 400 0.3- 0.4+
790730 095 0.3- 0.6+ 891030 400 1.2+ 0.3+ 891121 400 0.8+ 0.3+

(4778)* 1978 TV8 = 1984 YG4

Discovered 1978 Oct. 9 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Id. S. Nakano (MPC 12695)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	97.48036	(1950.0)	P	Q
n	0.17563397	Peri. 42.38243	+0.22128105	-0.97508248
a	3.1578903	Node 34.84191	+0.88712516	+0.19454943
e	0.1768628	Incl. 1.58226	+0.40502303	+0.10660526
P	5.61	H 12.6	G 0.15	

Residuals in seconds of arc

781009 095 2.5- 1.7+ 891005 807 2.3+ 0.8+ 910216 801 0.3+ 0.8+
781028 675 0.3+ 0.2- 891021 095 0.2- 0.0 910216 801 0.1+ 0.1+
781029 675 0.0 0.1- 891025 095 2.2- 0.9+ 910217 372 0.3+ 0.7+
781101 095 1.8+ 0.3- 891025 095 1.4- 0.3- 910217 372 (3.2- 2.8+)
841227 095 0.5- 0.3- 891030 807 1.0+ 0.3- 910317 801 0.2+ 0.3+
841229 095 0.3+ 1.9- 891030 801 0.3- 0.6+ 910317 801 0.0 0.3+
841231 095 0.2+ 0.6- 891030 801 0.9- 0.6+ 910321 801 0.1- 0.4+
891004 807 0.6+ 0.5- 891101 807 0.7+ 0.7- 910321 801 0.0 0.3+

(4779)* 1978 XQ = 1973 YK3 = 1986 EG2

Discovered 1978 Dec. 6 by E. Bowell and A. Warnsch at Palomar.

Id. S. Nakano (MPC 12131, MPC 17626)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	21.15791	(1950.0)	P	Q
n	0.17364443	Peri. 331.10645	-0.91485916	-0.40377054
a	3.1819655	Node 185.08009	+0.37348792	-0.84488137
e	0.1321957	Incl. 0.93033	+0.15342585	-0.35091996
P	5.68	H 11.9	G 0.15	

Residuals in seconds of arc

731225 095 1.6- 1.6- 781205 675 2.1+ 1.2+ 860308 809 0.7- 0.4+
770909 675 0.4- 0.8- 781206 675 0.6+ 0.5- 860308 809 0.8- 0.3+
770910 675 0.7- 1.2- 781206 675 0.2- 0.5- 860309 809 0.7- 0.5+
781203 675 0.5+ 0.1+ 860306 688 1.0+ 2.4- 860309 809 0.7- 1.3+
781203 675 0.1+ 0.3+ 860306 688 1.9+ 2.3- 860315 809 0.5+ 0.0

860315 809 0.1+ 0.4+ 910113 675 0.0 0.2- 910114 675 0.0 0.2-
901225 896 0.3+ 1.2+ 910113 675 1.4- 0.4+
901225 896 1.0+ 1.1+ 910114 675 0.9- 0.4-

(4780)* 1979 HE5 = 1985 DK = 1988 CT1

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

Id. T. Kobayashi (MPC 13151), E. Goffin (MPC 15877)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	336.72739		(1950.0)	P	Q
n	0.30827758	Peri.	118.57774	-0.68825973	+0.72128933
a	2.1702416	Node	107.70910	-0.69082056	-0.61891061
e	0.0599103	Incl.	4.67968	-0.22150735	-0.31095233
P	3.20	H	13.7	G 0.15	

Residuals in seconds of arc

790425 095 0.1+ 1.2+ 880216 809 1.0- 0.8- 901217 801 0.7- 0.5+
790428 095 1.6- 1.6+ 880217 809 0.1+ 1.3- 901220 801 1.2- 0.1+
790430 095 2.7+ 1.8+ 880217 809 1.2+ 1.7- 901220 801 1.1- 0.3+
850216 046 2.8+ 0.6- 880217 809 0.5+ 1.0- 910111 675 0.2+ 0.5+
850216 046 3.0+ 0.8- 880221 809 0.1+ 0.5- 910111 675 0.7- 1.1+
850220 046 1.2- 0.4+ 880221 809 0.3+ 1.1- 910113 675 0.7- 1.7+
850220 046 2.9- 1.4+ 880221 809 0.2+ 1.3- 910113 675 1.9- 1.8+
850220 046 1.1- 0.3+ 880223 809 0.7+ 0.9- 910114 801 1.1+ 1.7+
850220 046 1.6- 1.0+ 880223 809 0.4- 1.2- 910114 801 0.7+ 1.4+
880211 809 2.7+ 1.0- 880223 809 0.2+ 1.1- 910116 801 0.1- 0.5+
880215 809 0.7+ 0.9- 890801 675 0.8+ 1.9- 910116 801 0.8+ 0.3+
880216 809 0.6- 1.0- 890801 675 0.2+ 1.9-
880216 809 0.6- 1.0- 901217 801 0.7- 0.5+

(4781)* 1980 TP = 1961 UL = 1983 QB = 1983 RJ2

Discovered 1980 Oct. 3 by Z. Vavrova at Klet.

Id. E. Bowell (k, MPC 8284), C. M. Bardwell (ibid.)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	211.48052		(1950.0)	P	Q
n	0.31116357	Peri.	189.88741	+0.97824595	+0.20716247
a	2.1568017	Node	158.14728	-0.18826633	+0.90861224
e	0.1902338	Incl.	1.67644	-0.08712437	+0.36263965
P	3.17	H	14.6	G 0.15	

Residuals in seconds of arc

611018 760 (3.4- 1.9-) 830816 046 1.4- 1.0- 910114 691 0.2- 0.5-
611018 760 0.0 0.7- 830816 046 0.8- 1.1- 910115 691 0.0 0.3-
801003 046 0.1+ 0.3- 830902 688 (2.6+ 2.5-) 910115 691 0.3- 0.4-
801003 046 0.1- 0.7+ 830902 688 (2.5+ 2.7-) 910115 691 0.2- 0.7-
801005 046 0.1+ 0.7+ 830904 688 1.9+ 1.1- 910116 691 0.2- 0.2-
801005 046 0.7- 0.7+ 830904 688 1.2+ 0.9- 910116 691 0.3- 0.2-
801008 095 (0.0 2.4+) 830904 095 (3.4- 2.4-) 910116 691 0.3- 0.2-
801030 046 1.3- 1.3+ 830906 095 0.9- 1.6+ 910118 511 (2.0+ 1.8-)
801030 046 (4.4- 4.1+) 850220 675 (2.0+ 1.5-) 910118 046 0.0 0.5+
801111 046 0.5+ 0.4+ 850222 675 1.1+ 0.4- 910118 046 0.3+ 1.0-
801111 046 0.6+ 0.1- 860708 801 0.9- 0.8- 910118 511 0.8- 1.2-
801113 046 1.1+ 0.2+ 901227 372 2.3- 0.4+ 910209 801 0.7+ 0.2-
801113 046 1.4- 1.2- 901227 372 (4.3- 0.6-) 910209 801 0.4+ 0.2-
830813 688 0.8+ 0.1- 910114 691 0.2- 0.1- 910210 801 1.2+ 0.0
830813 688 1.6+ 1.0- 910114 691 0.2- 0.5- 910210 801 0.7+ 0.1-

(4782)* 1980 TH3 = 1983 GU1= 1990 VB1

Discovered 1980 Oct. 14 by H. Debehogne and L. Houziaux at Haute Provence.

Id. T. Urata (k, MPC 17428), S. Nakano (ibid.)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Urata

M	166.08362	(1950.0)	P	Q
n	0.20590548	Peri. 345.93769	+0.82066922	+0.57134280
a	2.8402558	Node 339.21177	-0.52193090	+0.74359980
e	0.0717191	Incl. 1.34529	-0.23257291	+0.34731360
P	4.79	H 12.5	G 0.15	

Residuals in seconds of arc

780315	675	0.5-	0.3-	801107	330	(3.8+	0.0)	901110	887	0.8+	0.1+
780316	675	0.2+	0.5-	801110	330	(3.4+	0.2+)	901111	385	1.0-	1.4+
801010	095	0.7+	2.2+	830409	095	0.5+	1.2+	901111	385	0.9-	1.5+
801014	511	1.0+	0.2+	901014	033	1.1+	0.4-	901214	801	0.8+	0.7-
801014	511	0.3-	0.1-	901015	033	0.6+	0.3-	901214	801	0.8+	0.8-
801014	511	1.8-	0.5-	901015	033	0.7+	0.4-	910114	033	0.4-	0.1-
801014	330	0.0	0.8-	901018	033	0.3+	0.0	910115	033	0.2-	0.6+
801028	330	0.8-	0.0	901018	033	0.6-	1.3-	910116	033	0.7-	0.3-
801031	330	1.6+	0.1-	901026	385	0.5-	1.4-	910118	033	0.1+	0.3+
801103	330	0.4-	0.5-	901026	385	(1.4+	3.9+)				
801104	330	(3.4+	2.1-)	901110	887	0.7-	1.7+				

(4783)* 1983 AH1 = 1987 AA

Discovered 1983 Jan. 12 by C. S. Shoemaker at Palomar.

Id. S. Nakano (MPC 11732)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	73.60371	(1950.0)	P	Q
n	0.24194614	Peri. 356.68031	-0.27078806	-0.92372689
a	2.5506855	Node 108.89435	+0.88962729	-0.34765116
e	0.2102290	Incl. 16.64008	+0.36774598	+0.16083316
P	4.07	H 13.7	G 0.15	

Residuals in seconds of arc

830110	675	0.4+	0.5-	870108	552	1.0-	2.8+	901213	801	0.7+	0.2+
830110	675	1.4+	0.7-	870108	552	2.2-	1.7+	901213	801	0.5+	0.2+
830111	675	1.0+	2.2-	870121	552	0.9-	0.1+	901215	801	0.4+	0.4-
830111	675	0.5+	0.1+	870121	552	2.0+	2.2-	901215	801	0.2+	0.6-
830112	675	(2.1+	3.7-)	870124	552	0.3-	1.1+	910114	801	0.1-	0.3+
830112	675	2.7-	0.9+	870124	552	1.1-	1.0-	910114	801	0.0	0.4+
830210	675	0.2-	0.2+	870130	552	0.0	0.2+	910116	801	0.1+	0.1+
830211	675	1.5-	0.0	870130	552	0.3+	0.8+	910116	801	0.8-	0.1-
830215	675	1.4+	0.2-	901116	801	0.0	0.4-	910122	675	0.0	1.2-
870106	552	2.3+	0.4+	901116	801	0.2-	0.2-	910122	675	0.4-	0.2-

(4784)* 1984 DF1 = 1982 VN7 = 1990 QV8

Discovered 1984 Feb. 28 by H. Debehogne at the European Southern Observatory.

Id. T. Furuta (JAM 1695), S. Nakano (MPC 17434)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	285.08688	(1950.0)	P	Q
n	0.22505107	Peri. 169.70766	-0.93045464	-0.36620915
a	2.6767964	Node 348.78771	+0.33159937	-0.82762762
e	0.1156806	Incl. 3.55070	+0.15587178	-0.42535088
P	4.38	H 13.4	G 0.15	

Residuals in seconds of arc

770909	675	0.2+	0.4-	840301	809	0.0	0.1-	840305	809	0.6-	0.3+
770910	675	0.4+	0.8-	840301	809	0.3+	0.4-	840305	809	0.3-	0.0
821109	095	0.8-	0.2+	840303	809	0.8-	0.2+	840305	809	0.5+	0.1-
821114	095	0.7+	0.0	840303	809	0.4-	0.1+	840306	809	1.2-	0.5+
840228	809	0.8+	0.8-	840303	809	0.1-	0.0	840306	809	0.4-	0.4+
840228	809	0.7+	0.5-	840304	809	1.5-	0.3+	840306	809	0.4-	0.2+
840228	809	0.5+	0.1-	840304	809	1.4-	0.3+	840308	809	0.5-	0.2+
840301	809	0.3-	0.2+	840304	809	1.1-	0.3+	840308	809	0.2-	0.0

840308	809	0.1-	0.1+	840311	809	0.5+	0.3+	900910	809	0.2-	0.9+
840308	809	0.4-	0.9-	840311	809	0.8+	0.3+	900910	809	0.2+	0.6+
840308	809	0.4-	1.2-	840311	809	0.9+	0.5-	900910	809	0.8+	0.5+
840308	809	0.4-	1.3-	840311	809	0.9+	0.4-	900911	809	0.4-	0.0
840309	809	0.1-	0.5+	840311	809	0.6+	0.3-	900911	809	0.1-	0.1+
840309	809	0.0	0.4+	840314	809	0.6+	0.3+	900911	809	0.1+	0.1+
840309	809	0.6+	0.4+	840314	809	0.9+	0.3+	900912	809	1.7-	0.9+
840309	809	0.6-	0.0	840314	809	0.9+	0.2+	900912	809	1.6-	0.9+
840309	809	0.5-	0.0	900816	809	1.1+	1.0-	900912	809	1.3-	0.9+
840309	809	0.4-	0.3-	900816	809	0.7+	1.4-	900912	809	1.0-	0.0
840310	809	0.4+	0.1+	900816	809	0.9+	1.5-	900913	809	0.8-	0.0
840310	809	0.6+	0.2+	900818	809	(2.8+	0.2+)	900913	809	0.6-	0.0
840310	809	0.5+	0.2+	900818	809	1.7+	0.8-	900913	809	0.2+	0.2-
840310	809	0.3+	0.4+	900818	809	0.8+	1.2-	900914	809	0.4+	0.2-
840310	809	0.5+	0.5+	900826	809	0.8-	1.4+	900914	809	0.8+	0.2+
840310	809	0.5+	0.4+	900826	809	0.0	0.3+				
840311	809	0.2+	0.3+	900826	809	0.2-	1.8+				

(4785)* 1984 YH1 = 1978 NC1 = 1979 SE5 = 1981 AN2

Discovered 1984 Dec. 17 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Id. S. Nakano (MPC 12580)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	238.13340		(1950.0)		P		Q
n	0.22663920	Peri.	113.09046		+0.58272830		-0.81168354
a	2.6642769	Node	301.20625		+0.72742312		+0.54290078
e	0.0628964	Incl.	2.67847		+0.36233042		+0.21547291
P	4.35	H	13.2	G	0.15		

Residuals in seconds of arc

780709	809	0.3-	0.5+	841217	095	1.0+	1.8+	900227	809	0.2-	0.6+
780710	809	1.0+	0.2-	841223	095	0.8-	2.2-	900301	809	0.2-	2.0-
780711	809	1.6+	1.0+	841227	095	1.1+	1.1+	900301	809	0.2-	1.9-
790923	095	2.3-	0.3-	900226	809	0.3-	1.0+	900301	809	0.3-	1.8-
810108	381	0.7+	2.0+	900226	809	0.1+	1.0+	900329	801	0.1+	0.1-
810108	381	1.0-	1.5+	900226	809	0.2+	1.4+	900329	801	0.1+	0.1+
841119	675	1.7+	0.8-	900227	809	0.7-	0.3+				
841121	675	0.3+	0.6-	900227	809	0.5-	0.6+				

(4786)* 1985 PE2 = 1948 GA = 1970 KF = 1984 EV1 = 1984 FM1

Discovered 1985 Aug. 13 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. B. G. Marsden (MPC 14020), T. A. Vinogradova

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Marsden

M	352.35716		(1950.0)		P		Q
n	0.27229858	Peri.	116.95487		-0.60289836		+0.78965497
a	2.3574318	Node	115.50456		-0.76937581		-0.53769783
e	0.1937141	Incl.	7.24583		-0.21112657		-0.29550986
P	3.62	H	12.9	G	0.15		

Residuals in seconds of arc

480402	008(70.4-	58.4+)X		850919	095	0.1-	1.1+	910114	801	0.7+	0.2-
700531	095	0.0	1.5+	850920	095	0.2+	1.4+	910116	801	0.4+	0.4+
700611	095	0.2+	1.6+	880509	400	0.3-	1.5-	910116	801	0.5+	0.3+
840305	095	1.6+	2.1-	880509	400	0.3-	0.2-	910117	046	1.6-	1.5+
840321	095	(7.9-	7.5-)	901220	801	1.2+	1.0-	910117	046	0.9+	0.6-
850813	095	0.4+	2.9-	901220	801	0.5+	0.7-	910118	046	2.8-	1.3+
850824	095	0.4+	0.2-	910114	801	0.9+	0.2-	910118	046	2.5-	1.6+

(4787)* 1986 RC7 = 1959 UB = 1969 RL = 1969 RW1 = 1973 YG2 = 1988 CK1

Discovered 1986 Sept. 6 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Id. H. Oishi (d, JAM 852), S. Nakano (MPC 14789)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	191.84937	(1950.0)		P	Q
n	0.29052236	Peri.	9.09973	+0.99942177	+0.02970485
a	2.2577872	Node	349.15680	-0.03399941	+0.87901069
e	0.1130476	Incl.	5.04575	+0.00041643	+0.47587585
P	3.39	H	13.6	G 0.15	

Residuals in seconds of arc

591028	760	1.1-	0.1+	780315	675	0.3-	1.6+	880213	054	1.0+	0.6+
591028	760	1.8+	0.3-	780316	675	0.8+	0.2+	910210	801	0.3+	0.3+
591103	760	(4.0-	3.3-)	780316	675	0.4+	1.4+	910210	801	0.3+	0.1+
591103	760	0.7+	0.2+	860906	095	0.6-	0.7+	910211	801	0.4+	0.1+
690908	095	(4.2+	1.6+)	860915	095	1.4+	0.6+	910211	801	0.3+	0.2+
690913	095	0.6-	0.4-	861002	095	1.8-	1.6+	910317	801	0.0	0.4+
731220	095	2.0-	0.8-	861008	095	1.4-	1.1+	910317	801	0.4-	1.0-
780315	675	0.6+	0.5-	880213	054	0.4+	0.7+	910318	801	0.0	0.1-

(4788)* 1986 TL1 = 1976 YJ1 = 1979 RN1 = 1984 AS

Discovered 1986 Oct. 4 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. S. Nakano (MPC 11521)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	184.98245	(1950.0)		P	Q
n	0.28967720	Peri.	109.94821	+0.89073724	-0.44833502
a	2.2621766	Node	276.75028	+0.38377235	+0.82994062
e	0.1306045	Incl.	4.31502	+0.24352813	+0.33195524
P	3.40	H	14.0	G 0.15	

Residuals in seconds of arc

761216	095	(6.4-	0.5-)	861004	688	0.6+	0.5+	890826	801	1.2+	0.6-
761218	095	0.5-	0.3+	861004	688	0.6+	0.7+	910121	511	1.3-	0.0
790914	095	0.3-	1.2-	861007	095	1.7-	0.2+	910121	511	1.3-	0.2+
840105	688	0.4+	1.3+	861011	095	0.1-	0.5-	910123	511	1.0+	0.3-
840105	688	1.8+	0.3-	861105	688	0.3+	0.1-	910317	801	0.1-	1.0+
840108	688	1.1-	2.6-	861105	688	0.4-	1.3+	910317	801	0.2-	1.0+
840108	688	1.1+	1.0-	861204	688	0.3-	0.2+	910318	801	0.2+	0.6+
861003	095	(3.9-	2.2-)	861204	688	0.3+	1.1-	910318	801	0.3-	0.7-

(4789)* 1987 UU2 = 1976 HE1

Discovered 1987 Oct. 20 by J. B. Tatum and D. D. Balam at Victoria.

Id. G. V. Williams (MPC 17206)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	101.22121	(1950.0)		P	Q
n	0.29425270	Peri.	152.08657	+0.99966233	-0.02360446
a	2.2386648	Node	209.27210	+0.01770694	+0.92481729
e	0.1239402	Incl.	1.27331	+0.01901821	+0.37967857
P	3.35	H	13.4	G 0.15	

Residuals in seconds of arc

760430	808	0.1+	0.1-	871020	657	1.7-	1.4+	900719	657	0.5+	1.2+
760430	808	1.0+	1.7+	871020	657	(0.3+	5.3-)	900719	675	(26.4-	5.4-)
771018	675	0.5-	0.2+	871021	657	0.4+	0.4-	900719	657	0.3-	1.1-
771019	675	0.1+	0.2+	871021	657	0.2+	0.5+	900720	675	0.4-	1.6+
870918	095	(1.5+	2.3-)	890304	675	0.8+	0.8+	900720	675	1.8-	1.5-
870918	095	(1.2-	2.7+)	890306	675	0.2-	1.5-	901114	801	1.6+	0.1+
870921	095	1.3-	0.7+	890306	675	1.0-	0.0	901114	801	1.0+	0.2+
871002	095	1.9+	1.0-	900719	657	0.6+	0.6-	901115	801	0.5+	1.4-

(4790)* 1988 PP = 1978 EA1
Discovered 1988 Aug. 9 by E. F. Helin at Palomar.
Id. C. M. Bardwell (MPC 15559)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bardwell

M	16.60157	(1950.0)		P	Q
n	0.23155763	Peri.	85.55251	-0.78458686	+0.59728663
a	2.6264148	Node	131.02051	-0.61934044	-0.74244556
e	0.0817234	Incl.	12.73745	-0.02899813	-0.30335338
P	4.26	H	11.8	G 0.15	

Residuals in seconds of arc

780305	095	0.0	2.3+	891028	675	1.6-	0.2-	910114	675	0.5+	1.4-
880716	675	0.8-	0.8-	901214	801	0.6-	0.8-	910116	801	0.1-	0.7-
880717	675	0.0	1.3-	901214	801	0.4+	0.4+	910116	801	0.0	0.5-
880809	675	1.7+	2.5-	901217	801	1.7-	0.4+	910218	675	0.6+	0.3-
880811	675	0.2+	1.7-	901217	801	0.5-	0.4+	910218	675	0.0	0.7-
880905	675	0.6+	1.1-	910112	675	0.5-	1.4-	910317	675	0.6+	2.4-
880905	675	0.7-	0.5-	910112	675	0.1-	1.7-	910317	675	1.4+	1.3-
891026	675	0.4+	1.4-	910114	801	0.0	0.5-	910318	675	1.4-	0.3+
891026	675	0.2-	0.1-	910114	801	0.1+	0.7-	910318	675	1.8-	0.6+
891028	675	2.3+	0.7-	910114	675	0.1+	1.0-				

(4791)* 1988 PB1
Discovered 1988 Aug. 14 by C. S. Shoemaker at Palomar.
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	9.86348	(1950.0)		P	Q
n	0.08296010	Peri.	165.00494	+0.38547206	-0.81574303
a	5.2066278	Node	260.71856	+0.79517413	+0.53076900
e	0.0468831	Incl.	25.91062	+0.46809123	-0.22988601
P	11.88	H	9.8	G 0.15	

Residuals in seconds of arc

880813	675	1.2+	0.1-	881106	675	0.2-	0.1+	901022	675	0.1+	0.3-
880814	675	0.4-	1.0+	890829	675	0.4+	0.6-	901113	675	0.9-	0.9-
880911	675	1.3-	1.1+	890901	675	1.0+	0.7-	901115	675	0.7+	0.2-
880913	675	1.1-	0.9-	890924	675	1.1-	0.4-	901215	801	0.2+	1.6+
881007	675	0.1+	0.0	891103	675	0.2-	2.1-	901215	801	0.1+	1.5+
881009	675	0.8+	0.8+	891104	675	0.2+	1.4+				
881104	675	0.1+	0.5-	901020	675	0.0	0.4-				

(4792)* 1988 RK1 = 1989 UN9
Discovered 1988 Sept. 10 by C. S. Shoemaker at Palomar.
Id. G. V. Williams (MPC 17441)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	111.09750	(1950.0)		P	Q
n	0.08157342	Peri.	282.85618	+0.95089645	+0.27481003
a	5.2654676	Node	61.34727	-0.18112072	+0.86712709
e	0.0908937	Incl.	9.33821	-0.25098051	+0.41541552
P	12.08	H	9.9	G 0.15	

Residuals in seconds of arc

880910	675	(0.3-	4.4+)	890928	675	0.6+	1.2-	901112	675	0.2+	0.3+
880914	675	0.5-	0.8-	891026	372	(5.8-	1.9+)	901112	675	(3.2+	0.9+)
880916	675	0.3+	0.7+	891026	372	(7.5-	2.6+)	901114	675	0.1+	0.1-
881007	675	0.4+	0.6-	891102	675	0.2+	1.1+	901114	675	0.3-	0.0
881009	675	0.3+	0.3+	891103	675	1.9-	0.1-	910116	675	1.1+	0.5-
881105	675	0.4-	0.3+	891103	675	1.1-	1.5+	910118	675	0.8-	0.5-
881107	675	0.3+	0.7-	891122	675	0.7+	0.2-				
890928	675	0.7+	0.0	891122	675	0.3+	0.2-				

(4793)* 1988 RR4 = 1982 BY2 = 1982 BJ10

Discovered 1988 Sept. 1 by H. Debehogne at the European Southern Observatory.

Id. S. Nakano (MPC 14952)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	15.59926	(1950.0)	P	Q
n	0.22594536	Peri. 62.14471	-0.79074556	+0.61133044
a	2.6697285	Node 155.50036	-0.58497879	-0.73945551
e	0.1528350	Incl. 4.36588	-0.18033654	-0.28192311
P	4.36	H 12.9	G 0.15	

Residuals in seconds of arc

820119	095	1.7+	2.3-	880908	809	0.2+	0.1-	881103	807	0.3+	0.4-
820120	095	1.3+	0.5+	880908	809	0.2+	0.3-	881105	807	0.0	1.0-
820127	046	1.1-	2.3+	880912	809	0.1+	0.2+	900129	033	0.1+	0.7+
820127	046	2.1-	2.2-	880912	809	0.0	0.2+	900129	033	0.5-	1.0+
880901	809	0.4+	0.6-	880912	809	0.0	0.2+	910211	801	0.2-	0.0
880901	809	0.4+	0.6-	880915	809	0.7+	0.8+	910211	801	0.1+	0.5+
880901	809	0.5+	0.7-	880915	809	0.5+	0.8+	910212	801	0.1-	0.1+
880903	809	1.1-	0.1+	880915	809	0.2+	0.7+	910212	801	0.2-	0.1+
880903	809	0.8-	0.1-	880920	809	(1.9+	2.3+)	910317	801	0.2-	0.3-
880903	809	0.6-	0.2-	880920	809	(2.0+	2.2+)	910317	801	0.2-	0.4-
880906	809	0.4-	0.6-	880920	809	(1.6+	2.3+)	910320	801	0.2+	0.4-
880906	809	0.3-	0.7-	881004	807	0.6+	0.5-	910320	801	0.4+	0.4-
880908	809	0.4-	0.0	881007	807	0.5+	0.1+				

(4794)* 1988 SO2 = 1980 EY1 = 1983 BR = 1985 VH

Discovered 1988 Sept. 16 by S. J. Bus at Cerro Tololo.

Id. B. G. Marsden (MPC 15418)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Marsden

M	172.68323	(1950.0)	P	Q
n	0.28775474	Peri. 353.09647	-0.97309145	-0.23017764
a	2.2722410	Node 173.56690	+0.21564283	-0.92586480
e	0.1157025	Incl. 5.40257	+0.08118621	-0.29965417
P	3.43	H 14.0	G 0.15	

Residuals in seconds of arc

800315	095	1.2-	1.2-	880916	807	1.6+	0.3-	900228	589	1.6-	1.1+
830121	688	1.5+	1.2-	880918	807	1.2+	1.0-	900228	589	0.3-	0.4-
830121	688	0.6+	0.9-	881004	807	1.1-	1.1-	900228	589	1.2+	1.2-
851111	095	2.7-	2.5-	881103	807	1.0+	0.2-	900327	801	0.2+	0.4+
851114	054	0.0	1.4+	881106	807	0.0	0.5+	900327	801	0.1+	0.2+
851115	054	0.4-	1.6+	881108	807	0.4+	0.2+	900328	801	0.2+	0.2+
851115	054	0.4-	0.2+	900228	589	0.1-	0.6+	900328	801	0.3+	0.1+

(4795)* 1989 CB1 = 1974 VA3 = 1974 WN1

Discovered 1989 Feb. 7 by A. Takahashi and K. Watanabe at Kitami.

Id. B. G. Marsden (MPC 14955)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	201.40148	(1950.0)	P	Q
n	0.30212747	Peri. 131.73293	-0.08200016	+0.99453433
a	2.1995942	Node 133.43986	-0.93874432	-0.05529451
e	0.1532385	Incl. 5.10691	-0.33471640	-0.08856622
P	3.26	H 14.2	G 0.15	

Residuals in seconds of arc

741109	808	0.8-	0.4-	890110	033	0.0	0.2+	890204	399	1.0+	1.1-
741109	808	0.5+	0.7-	890111	033	0.6+	0.1-	890204	399	0.1-	0.4+
741117	808	(42.2-	0.3-)	890112	033	1.1+	0.4-	890204	399	(1.6-	2.3+)
741117	808	(49.1-	0.5-)	890202	033	0.3-	0.1-	890205	399	1.0-	0.1-
790127	675	0.2+	0.9-	890204	033	0.7+	0.3-	890205	399	1.1-	0.0
790129	675	0.8+	1.1-	890204	399	0.7-	0.7+	890205	399	(1.2-	2.1-)

890207 400 (5.4+ 1.4-) 890211 399 (2.3+ 1.2-) 890312 400 0.6- 1.6-
890207 400 (2.8+ 0.5-) 890212 809 0.4+ 0.3+ 890312 400 (3.0- 0.4+)
890207 400 (3.9+ 1.1-) 890212 809 0.5+ 0.2+ 900816 801 0.4+ 0.1+
890208 809 0.2+ 0.7+ 890212 809 0.3+ 0.2+ 900816 801 0.4+ 0.2+
890208 809 0.5+ 0.5+ 890213 809 0.3+ 0.1- 900820 809 1.2+ 0.8+
890208 809 0.6+ 0.3+ 890213 809 0.5+ 0.4- 900820 809 0.7+ 0.4+
890209 809 0.3- 1.2+ 890213 809 1.0+ 0.4- 900820 809 0.2+ 0.1-
890209 809 0.0 1.4+ 890214 809 0.2- 0.4- 900820 801 0.2+ 0.6-
890209 809 0.1+ 1.6+ 890214 809 0.2- 0.4- 900820 801 0.0 0.4-
890210 809 0.1- 0.4+ 890301 809 0.3- 0.4- 900825 675 0.1- 1.4-
890210 809 0.1- 0.4+ 890301 809 0.7- 0.3- 900825 675 0.5- 0.2-
890210 809 0.3+ 0.6+ 890301 809 1.0- 0.1- 900826 809 0.4- 1.0+
890210 400 (5.0+ 2.5+) 890302 809 1.6- 0.0 900826 809 0.9- 0.2+
890210 400 (4.7+ 3.6-) 890302 809 1.6- 0.1- 900826 809 1.1- 0.1-
890210 400 1.5+ 0.5+ 890302 809 1.3- 0.0 900921 801 0.1- 0.7+
890210 033 1.0+ 0.1+ 890303 809 0.2- 0.1+ 900921 801 0.1- 0.4+
890210 033 0.7+ 0.2+ 890303 809 0.1- 0.3- 900922 801 0.0 0.4+
890211 399 (2.7+ 0.3-) 890303 809 0.1+ 0.2- 900922 801 0.0 0.3+
890211 399 0.1- 0.6+ 890312 400 0.3+ 1.1-

(4796)* 1989 LU = 1974 HJ1 = 1982 OH = 1986 TU12
Discovered 1989 June 3 by E. F. Helin at Palomar.
Id. C. M. Bardwell (MPC 14958)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M 192.81415	(1950.0)	P	Q
n 0.27240273	Peri. 35.28964	+0.87685292	+0.47943974
a 2.3568308	Node 296.02397	-0.44966927	+0.79171133
e 0.1784522	Incl. 2.26969	-0.17007793	+0.37859041
P 3.62	H 12.9	G 0.15	

Residuals in seconds of arc
740424 805 0.1- 0.9+ 890630 675 1.5- 0.4- 910111 675 0.7+ 2.1-
740425 805 0.0 0.7+ 890630 675 0.6- 0.4+ 910111 675 (0.5+ 3.9-)
820717 688 0.3+ 1.3- 890703 675 0.5+ 2.1- 910113 675 1.2+ 0.5-
820717 688 2.0+ 1.3- 890703 675 (2.6- 4.1+) 910113 675 0.7+ 1.2-
861005 095 2.4- 1.0+ 901118 675 0.2+ 1.6- 910116 801 0.4+ 0.9-
890603 675 (2.3+ 3.1-) 901118 675 0.7- 1.7- 910116 801 0.3+ 0.8-
890603 675 0.5+ 2.3- 901215 801 1.2- 0.3- 910118 801 0.3+ 0.7-
890605 675 0.4- 1.9- 901215 801 0.1- 0.4+ 910118 801 0.2+ 1.7-
890605 675 (1.3+ 2.7-) 901217 801 0.3+ 0.4-

(4797)* 1989 SJ = 1978 VY9 = 1985 QB4
Discovered 1989 Sept. 30 by T. Nomura and N. Kawanishi at Minami-Oda.
Id. S. Nakano (MPC 15564)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M 194.17600	(1950.0)	P	Q
n 0.26323505	Peri. 77.21172	+0.78975040	-0.61310209
a 2.4112389	Node 320.59736	+0.54984776	+0.72197496
e 0.1856361	Incl. 1.80586	+0.27195908	+0.32071480
P 3.74	H 12.5	G 0.15	

Residuals in seconds of arc
781105 675 0.5+ 0.1- 890930 374 (1.0+ 3.0+) 891023 374 (5.0- 0.6+)
781106 675 0.3+ 0.3+ 890930 374 2.5- 1.3+ 891023 374 (2.1- 3.6-)
781107 675 1.1- 0.5+ 891004 871 0.3+ 1.4+ 891023 374 0.2+ 2.2-
781108 675 0.3+ 0.3- 891004 374 (3.6- 1.6+) 910209 801 0.2- 0.3+
850819 071 1.1- 0.7- 891004 871 1.4+ 0.5- 910209 801 0.3- 0.1-
850819 071 0.2+ 0.4- 891004 374 (4.7- 0.4+) 910313 801 0.3+ 0.2+
850819 071 1.8+ 0.4+ 891007 374 (3.7- 2.1-) 910313 801 0.2- 0.3+
850820 071 0.9- 0.4+ 891007 374 1.6+ 1.7- 910317 801 0.2+ 0.3-
890930 374 0.9- 1.3+ 891021 095 (5.3- 0.6-) 910317 801 0.0 0.7-

(4798)* 1989 SU1 = 1975 GH = 1985 JO1 = 1986 WN8
Discovered 1989 Sept. 26 by E. W. Elst at the European Southern Observatory.
Id. S. Nakano (MPC 15717)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M 351.13889	(1950.0)	P	Q
n 0.30261108	Peri. 160.52787	-0.28029669	+0.95779641
a 2.1972501	Node 93.15372	-0.88890751	-0.23393606
e 0.1090471	Incl. 3.65871	-0.36232196	-0.16703279
P 3.26	H 13.7	G 0.15	

Residuals in seconds of arc

750415	805	0.7+	1.4+	890926	809	1.5-	0.1+	891008	809	0.9-	1.6+
750418	805	0.9-	1.8+	890928	809	0.8-	0.5-	891008	809	0.5-	2.3+
850511	675	0.5+	0.3+	890928	809	1.5-	0.5-	891008	809	0.5-	2.0+
850514	675	1.1+	1.3-	890928	809	1.9-	1.4-	910117	033	0.3-	0.6-
861130	381	2.5+	0.8+	891003	809	1.8+	1.1-	910117	033	0.7-	0.4-
861130	381	0.7+	0.2+	891003	809	2.1+	0.8-	910118	033	0.6-	0.1-
861201	381	1.4+	0.6+	891003	809	1.2+	1.1-	910313	801	0.0	0.4+
861201	381	0.5+	0.1+	891007	809	0.4-	0.3-	910313	801	0.0	0.3+
890926	809	0.8-	0.2-	891007	809	0.1+	0.2+	910320	801	0.2+	0.4+
890926	809	1.4-	0.0	891007	809	0.3-	0.5+	910320	801	0.1+	0.3+

(4799)* 1989 TC1 = 1977 QM4 = 1985 TT2
Discovered 1989 Oct. 8 by Y. Mizuno and T. Furuta at Kani.
Id. K. Ichikawa (MPC 15565); 1989 TC1 = 1962 WT (ibid.) is invalid
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M 246.31016	(1950.0)	P	Q
n 0.25386045	Peri. 81.35433	+0.79185897	+0.61063081
a 2.4702412	Node 241.00999	-0.56444850	+0.72588443
e 0.1269293	Incl. 0.61933	-0.23314645	+0.31657829
P 3.88	H 13.1	G 0.15	

Residuals in seconds of arc

770818	095	0.6-	1.8+	891020	403	1.1-	0.6-	891102	046	0.8-	0.1-
800408	675	0.8-	0.5-	891023	403	(2.8+	4.2+)Y	910115	033	0.7+	0.2-
800409	675	0.4+	0.5-	891023	403	1.3-	2.2+	910115	033	0.3+	0.1-
851014	010	(4.0+	4.3+)	891025	046	0.9+	1.7-	910116	033	0.9-	0.0
851015	010	(4.7-	0.8+)	891025	046	0.9+	2.0-	910117	033	0.3-	0.3+
891004	807	0.5+	1.3+	891026	046	1.0+	2.3-	910217	801	0.2-	1.1+
891005	807	2.0+	1.9+	891026	046	0.4+	1.5-	910217	801	0.4-	0.6+
891008	403	2.4-	1.4-	891027	046	(0.6-	2.8-)	910317	801	0.4+	0.1+
891008	403	0.3-	0.5- Y	891027	046	2.0+	2.1-	910317	801	0.4+	0.4+
891009	403	0.8-	0.8-	891030	807	1.2+	1.6+	910321	801	0.5+	0.4+
891009	403	0.1+	2.5+	891101	807	1.0+	1.0+	910321	801	0.4+	0.4+
891020	403	0.7-	0.9+	891102	046	2.2-	0.6+				

(4800)* 1989 TG17 = 1979 YG6 = 1984 UO4
Discovered 1989 Oct. 9 by H. Debehogne at the European Southern Observatory.
Id. H. Kaneda (MPC 16877)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M 157.10581	(1950.0)	P	Q
n 0.18839023	Peri. 183.11408	+0.99914540	-0.04126546
a 3.0136800	Node 179.23870	+0.04072152	+0.97288475
e 0.1006328	Incl. 10.28627	+0.00708697	+0.22757951
P 5.23	H 11.2	G 0.15	

Residuals in seconds of arc

791223	095	0.2-	2.0+	890908	095	0.8+	0.5-	891009	809	0.6+	0.0
841020	095	0.0	0.9-	890908	095	(0.1+	5.1-)	891009	809	0.8+	0.1-
890904	095	0.4-	3.1+	891009	809	0.3+	0.1+	891010	809	0.9-	0.6-

891010	809	0.7-	0.6-	901115	801	0.4-	0.2+	910213	801	0.6+	1.2+
891010	809	0.3-	0.6-	901213	801	0.2+	0.8-	910213	801	0.1-	0.4+
891010	809	0.1-	0.7-	901213	801	0.0	0.3-	910216	801	(2.0-	2.7-)
901114	801	0.7-	0.4-	901214	801	0.3+	0.1-	910216	801	0.0	1.0-
901114	801	0.7-	0.1+	901214	801	0.5+	0.1-				

(4801)* 1989 UR4 = 1939 BE = 1952 DA1 = 1985 YQ1

Discovered 1989 Oct. 22 by A. Mrkos at Klet.

Id. S. Nakano (MPC 16584)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	118.46586	(1950.0)	P	Q
n	0.22968432	Peri. 43.09811	-0.33345015	-0.94207563
a	2.6406762	Node 66.40978	+0.85386294	-0.31802422
e	0.1656516	Incl. 2.25870	+0.39966121	-0.10655565
P	4.29	H 12.6	G 0.15	

Residuals in seconds of arc

390119	062	0.6+	1.1+	891024	046	0.9-	1.2+	901220	801	0.6-	0.7-
390120	062	2.0-	0.1+	891028	046	(3.2+	5.2+)	910313	801	0.0	0.9+
520217	711	2.5+	0.8+ Y	891030	095	1.2+	1.6-	910313	801	0.2+	1.0+
851217	010	0.6-	2.3-	891030	095	0.8-	1.2-	910316	801	0.4+	0.8+
851217	010	1.1+	1.1-	891121	095	0.6+	0.2-	910316	801	0.3+	0.7+
851219	010	0.2+	1.6+	891121	095	0.3+	1.2-	910316	046	0.0	1.6-
891022	046	0.3-	2.1+	891125	364	1.0+	1.6-	910316	046	(1.3-	2.3+)
891022	046	0.5-	2.0+	891125	364	(0.3+	3.1-)	910320	801	0.5+	0.6+
891023	046	0.5+	1.7+	901214	801	0.5-	1.2-	910320	801	0.6+	0.6+
891023	046	(2.0+	3.1+)	901214	801	1.8-	0.5-				
891024	046	2.3-	1.6+	901220	801	1.2-	0.4-				

(4802)* 1989 UA7 = 1949 OW = 1979 SH11 = 1979 TB2

Discovered 1989 Oct. 23 by F. Borngen at Tautenburg.

Id. H. Kaneda (MPC 16030)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	291.64238	(1950.0)	P	Q
n	0.29836120	Peri. 213.23937	+0.71787969	+0.69605124
a	2.2180661	Node 102.64406	-0.63581618	+0.66296982
e	0.2118145	Incl. 0.74606	-0.28352519	+0.27565139
P	3.30	H 14.6	G 0.15	

Residuals in seconds of arc

490728	024	0.8+	1.0+	791014	095	1.2-	3.0-	891025	033	1.7+	0.3+
490730	024	0.2+	1.6-	890907	033	1.3-	1.1+	891025	033	1.8+	1.0+
780315	675	0.4-	0.3-	890907	033	0.8-	1.2+	891027	033	0.3-	0.5+
780316	675	1.0-	1.4-	891023	033	0.9+	0.8-				
790924	095	1.8-	0.8-	891023	033	0.7+	0.4-				

(4803)* 1989 XA = 1969 UL = 1981 EG49 = 1982 KQ

Discovered 1989 Dec. 1 by J. M. Baur at Chions.

Id. H. Kaneda (MPC 15897)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	344.73988	(1950.0)	P	Q
n	0.19936330	Peri. 183.21073	-0.65573483	+0.75410750
a	2.9020568	Node 45.81783	-0.69151710	-0.58048871
e	0.0323676	Incl. 2.91908	-0.30301144	-0.30717217
P	4.94	H 12.1	G 0.15	

Residuals in seconds of arc

691016	095	0.9+	2.0-	891121	399	0.4-	1.5-	891202	567	0.2-	1.4-
810308	095	0.5-	0.1+	891122	399	1.3+	0.0	891202	567	0.1-	1.5-
820521	688	0.1-	0.6-	891122	399	0.1-	1.7-	891202	567	0.3-	1.5-
820521	688	0.2-	0.8-	891201	567	0.4+	0.8-	891203	567	0.3-	0.3+
891121	399	2.1+	1.6-	891201	567	0.0	1.0-	891203	567	0.4-	0.1+

891223	567	1.5-	0.6+		900121	567	1.2+	2.0+		910203	567	0.3+	0.6-
891223	567	2.2-	1.1+		900121	567	0.8+	2.2+		910203	567	0.8-	0.5-
891223	567	(2.9-	1.7+)		900121	567	0.5+	2.1+		910207	896	0.3-	0.3+
891225	567	1.4-	1.3+		900217	567	0.1-	0.7-		910207	896	(4.4+	0.3+)
891225	567	1.4-	1.5+		900217	567	0.0	0.3+		910214	567	0.6+	0.9-
891225	567	2.2-	1.8+		900218	567	0.2-	0.2-		910214	567	0.9-	0.5-
891227	567	0.3-	1.5+		900218	567	1.2-	0.1+		910217	567	0.0	0.5-
891227	567	0.2-	1.1+		900218	567	0.6-	0.1+		910217	567	0.3-	0.2-
891229	567	0.3-	0.2+		900222	567	0.0	0.5-		910217	567	0.8-	0.6-
891229	567	1.0+	0.3-		900222	567	0.4+	0.3-		910313	567	0.6+	0.8+
891230	567	1.1+	0.4-		900222	567	0.5+	0.1+		910313	567	0.2+	0.5+
891230	567	0.7+	0.4-		900224	567	0.2+	0.7+		910313	567	0.5+	0.0
900101	567	1.0+	1.1-		900224	567	0.4+	0.8+		910314	567	0.1+	0.2-
900101	567	0.5+	1.1-		900224	567	0.6+	0.7+		910314	567	0.3+	0.4+

(4804)* 1989 XC1 = 1962 QB = 1971 QJ1

Discovered 1989 Dec. 2 by E. W. Elst at the European Southern Observatory.

Id. H. Kaneda (MPC 16435)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	191.12800	(1950.0)	P	Q	
n	0.22333069	Peri.	271.52215	+0.95597065	-0.25446289
a	2.6905255	Node	103.23699	+0.29107020	+0.88564255
e	0.1179279	Incl.	8.63680	-0.03739340	+0.38844035
P	4.41	H	11.6	G 0.15	

Residuals in seconds of arc

620828	760	1.1-	0.4+		891202	809	0.5-	0.3+		910118	801	0.2+	0.1-
710820	095	(7.0+	11.1-)		891202	809	0.8-	0.5+		910209	801	0.1-	0.1-
710824	095	1.7+	0.4-		891202	809	1.3-	0.3+		910209	801	0.2-	0.0
891025	095	2.8+	0.9-		891203	809	0.2+	0.2-		910211	801	0.2-	0.0
891106	809	0.8+	0.6+		891203	809	0.3-	0.0		910211	801	0.3-	0.0
891106	809	0.6-	0.0		891203	809	1.0-	0.3-		910212	801	0.4-	0.2-
891106	809	0.1-	0.2-		910114	801	0.6+	0.1-		910212	801	0.5-	0.0
891120	095	(3.9+	0.4-)		910114	801	0.7+	0.2-					
891124	095	(3.8+	1.1-)		910118	801	0.3+	0.1-					

(4805)* 1990 VH7

Discovered 1990 Nov. 13 by C. S. Shoemaker at Palomar.

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	74.72839	(1950.0)	P	Q	
n	0.08176106	Peri.	89.70565	+0.97014076	-0.12833129
a	5.2574082	Node	277.66111	+0.03234323	+0.90942599
e	0.0900810	Incl.	11.98550	+0.24037641	+0.39556978
P	12.05	H	10.1	G 0.15	

Residuals in seconds of arc

880815	675	0.9+	0.0		890930	675	0.3-	1.6+		901114	675	1.2-	0.9+
880911	675	1.9+	0.3-		891103	675	0.6+	1.3+		901116	675	0.2+	0.3+
881007	675	1.6-	0.9+		891104	675	0.4+	1.4-		910116	675	1.1+	0.2-
881009	675	1.5-	0.5-		901025	675	0.0	0.2-		910116	675	0.4+	0.7-
890928	675	0.5+	1.0-		901025	675	0.1-	0.7+					
890929	675	0.9-	0.8-		901113	675	0.2-	0.7-					

(4806)* 1990 YJ = 1953 UP = 1963 WC = 1968 DO = 1968 FA = 1976 SD1 = 1981 AX = 1986 RZ6 = 1989 OZ

Discovered 1990 Dec. 22 by A. Natori and T. Urata at the JCPM Yakiimo Station.

Id. T. Urata (MPC 17829)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Urata
M 109.55576 (1950.0) P Q
n 0.29604286 Peri. 290.46379 -0.16178746 -0.98666576
a 2.2296310 Node 168.80259 +0.93602725 -0.15913492
e 0.0973555 Incl. 5.24814 +0.31253449 -0.03415790
P 3.33 H 13.2 G 0.15
Residuals in seconds of arc (or two decimals in units of degrees)

531018 760 0.7+ 1.3-	780316 675 0.5- 1.0+	901222 885 1.3- 0.6+
531018 760 0.9- 0.8+	810108 046(12.5- 37.0-)	901223 885 1.5- 0.1+
631119 760(0.02- 0.05-)X	810108 046(12.8- 28.2-)	901223 885 0.6+ 1.5-
680227 095 (4.8- 5.9-)	810109 688 1.9+ 0.9-	910113 885 1.9- 0.2-
680325 095 0.1- 1.9-	810109 688 (2.8+ 2.5-)	910113 885 0.2- 0.8+
680325 020 (5.2+ 72.2-)	860906 095 (0.7- 4.5+)	910115 885 0.5+ 0.9-
680325 020 (2.5+ 63.7-)	890729 675 1.1+ 1.6-	910115 885 1.7+ 0.1-
760924 095 0.7- 0.4+	890729 675 (1.8+ 2.8-)	910120 885 0.3- 0.1+
780315 675 0.2- 0.6+	901222 885 0.7+ 0.3+	910120 885 0.4+ 0.6+

(4807)* 1991 AO = 1929 UG = 1961 VR = 1961 XF = 1970 GW = 1982 QM1
= 1982 RM3
Discovered 1991 Jan. 10 by T. Kobayashi at Oizumi.
Id. T. Kobayashi, O. Kippes (d, MPC 2324); 1929 UG = 1990 QP8 (MPC 17622) is invalid
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kobayashi
M 156.89323 (1950.0) P Q
n 0.27757654 Peri. 92.51493 +0.45889800 -0.88847880
a 2.3274528 Node 330.16788 +0.81170129 +0.42117694
e 0.2112098 Incl. 0.48918 +0.36132208 +0.18225093
P 3.55 H 13.5 G 0.15
Residuals in seconds of arc

291026 690 2.1+ 1.0-	700410 805 0.1+ 1.0+	820913 675 1.4+ 2.2-
291027 690 1.0- 1.0-	700410 805 0.3+ 0.6+	910110 411 0.2- 1.0-
291103 690(10.3+ 0.8+)	700410 805 0.6- 0.4+	910112 411 1.4+ 2.8+
611110 760 0.2- 0.1-	820816 095 0.7- 1.5+	910113 411 2.0- 0.7-
611110 760 1.1- 1.9+	820819 675 0.9+ 1.2+	910116 411 0.1- 0.1+
611203 760 0.3+ 0.3-	820819 675 0.6- 0.8+	910312 875 1.6+ 0.9-
611203 760 0.8- 1.5+	820913 675 1.4- 0.3+	

1950 DO = 1980 VE4
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
M 160.06283 (1950.0) P Q
n 0.21559920 Peri. 109.87842 +0.81738262 -0.57416242
a 2.7544694 Node 285.19001 +0.50856616 +0.75759891
e 0.0576384 Incl. 2.80044 +0.27064020 +0.31045355
P 4.57 H 10.7 G 0.15
Residuals in seconds of arc

500217 024 0.5- 1.3+	500315 024 0.0 2.2-	801102 675 0.4- 0.3-
500223 024 0.1- 2.1+	500322 024 2.1- 2.3-	
500307 024 2.5+ 0.7+	801101 675 0.5+ 0.0	

1967 JP = 1966 CU = 1966 DT
Id. S. Nakano (MPC 9416)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano
M 168.07316 (1950.0) P Q
n 0.17840983 Peri. 265.08783 -0.61834145 +0.78490794
a 3.1250493 Node 326.61300 -0.68943131 -0.56597129
e 0.1133814 Incl. 4.13354 -0.37727751 -0.25218251
P 5.52 H 12.7 G 0.15

Residuals in seconds of arc

660214	330	0.0	0.6-		670531	808	0.1-	1.4-		770214	675	0.5+	0.2+
660224	330	0.0	0.6+		670602	808	0.9+	1.3+		801101	675	0.3+	0.4+
670506	808	0.8-	0.0		770213	675	0.5-	0.2-		801102	675	0.3-	0.5-

1967 KB = 1988 TD1
Id. T. Kobayashi (MPC 13852)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Bowell	
M 341.73846		(1950.0)	P	Q	
n 0.24237459	Peri.	291.30422	+0.34949654	+0.93693733	
a 2.5476787	Node	359.15113	-0.83883075	+0.31252879	
e 0.2526718	Incl.	3.02558	-0.41739088	+0.15644232	
P 4.07	H	13.2	G 0.15		

Residuals in seconds of arc

670531	808	1.0+	0.4+		801102	675	0.2+	0.2+		881016	399	1.0-	0.0
670602	808	0.7-	0.7+		881013	399	(3.8+	0.2+)		881019	399	2.1-	0.9-
670613	808	0.2-	0.8-		881013	399	1.6+	0.4-		881019	399	(1.6-	2.7-)
801101	675	0.4-	0.3+		881016	399	1.6+	1.2+					

1978 CH = 1978 EV = 1976 YS4 = 1989 YR8 = 1991 DL1
Id. J. G. Williams (d, MPC 5892), H. Kaneda

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Kaneda	
M 164.82259		(1950.0)	P	Q	
n 0.15822239	Peri.	270.56032	+0.68739121	-0.72242709	
a 3.3855099	Node	135.69816	+0.70164257	+0.63394178	
e 0.0082181	Incl.	6.14650	+0.18759271	+0.27607410	
P 6.23	H	11.3	G 0.15		

Residuals in seconds of arc

761218	095	0.8+	3.0-		891225	033	0.3-	1.5+		910305	400	0.8+	1.8-
780202	675	0.3+	0.1+		891226	033	0.2+	1.8+		910309	402	0.2-	3.0-
780203	675	0.1-	0.0		910220	400	0.3-	1.6+		910309	402	0.7+	2.0-
780208	675	0.2+	1.3-		910220	400	1.1+	1.2+					
780305	095	0.6-	0.7+		910305	400	2.4-	2.7+					

1978 EN10 = 1978 ED2 = 1978 GR = 1990 RB6

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Williams	
M 234.11720		(1950.0)	P	Q	
n 0.27014327	Peri.	231.13462	-0.75251597	+0.65828946	
a 2.3699542	Node	349.98334	-0.56446977	-0.65985071	
e 0.0510477	Incl.	6.38967	-0.33925446	-0.36228721	
P 3.65	H	14.0	G 0.15		

Residuals in seconds of arc

780305	095	(5.5+	0.6+)		900909	809	1.5-	0.5+		900912	809	1.7+	0.3-
780315	675	1.0-	0.0		900909	809	1.1-	0.8+		900914	809	0.1-	0.4-
780316	675	0.2-	0.3-		900909	809	2.3-	0.9+		900915	809	0.1-	0.2-
780407	095	1.1+	0.1+		900910	809	2.2-	0.9+		900915	809	0.1+	0.3-
900827	675	1.4+	0.4-		900910	809	2.0-	1.2+		900915	809	0.9+	0.7-
900827	675	1.7+	0.6-		900912	809	1.6+	0.3-		900916	809	1.1+	0.6-
900908	809	2.0-	0.4+		900912	809	1.6+	0.4-		900916	809	1.4+	0.7-

1978 SP4 = 1970 EP = 1986 GQ = 1991 EF1

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Williams	
M 126.32682		(1950.0)	P	Q	
n 0.19038174	Peri.	78.79476	-0.11125655	-0.99210317	
a 2.9926265	Node	17.90431	+0.82232749	-0.12462365	
e 0.0873967	Incl.	10.85715	+0.55803179	-0.01415066	
P 5.18	H	12.0	G 0.15		

Residuals in seconds of arc

700307	095	0.2-	0.3-	780930	049	1.5+	0.5-	910315 400	0.6+	0.3+
780913	095	1.2-	0.5+	781001	049	0.5+	0.7-	910315 400	0.2-	0.0
780926	095	(5.9-	2.4+)	781003	095	0.9-	1.3+	910318 400	0.2+	0.5+
780927	095	0.6+	1.2+	860409	688	(5.2+	1.4+)			
780930	049	1.2-	0.6-	860409	688	0.3+	0.6+			

1979 DF = 1977 UL5
Id. K. L. Faul
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	339.63474	(1950.0)	P	Q	
n	0.22761661	Peri.	125.21435	-0.92910797	-0.33878014
a	2.6566443	Node	35.65501	+0.19794037	-0.79426726
e	0.1700230	Incl.	14.73676	+0.31237476	-0.50434862
P	4.33	H	12.6	G 0.15	

Residuals in seconds of arc

771018	675	0.3+	0.2-	790304	688	2.7-	0.7-	790501 801	1.2-	0.1-
771019	675	0.1-	0.1-	790323	688	0.0	1.4+			
790228	688	1.9+	1.0+	790401	688	1.8+	1.8-			

1979 MY2 = 1980 UT1
Id. S. J. Bus
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	137.69791	(1950.0)	P	Q	
n	0.25201476	Peri.	326.06813	-0.91000734	+0.40909777
a	2.4822874	Node	238.21901	-0.36062016	-0.86110775
e	0.1383387	Incl.	4.53904	-0.20454765	-0.30188153
P	3.91	H	14.7	G 0.15	

Residuals in seconds of arc

790623	413	0.3-	0.2-	790724	675	0.1-	1.3+	790728 413	0.0	0.5-
790624	413	0.9-	0.3-	790724	413	1.6-	1.2-	790823 675	0.1-	0.5-
790625	413	0.8-	0.2+	790725	675	0.3-	1.1+	801031 675	0.2+	0.0
790629	413	2.3+	0.0	790726	675	1.7+	0.0	801102 675	0.2-	0.0

1979 MO7 = 1980 UV1
Id. S. J. Bus
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	336.63695	(1950.0)	P	Q	
n	0.17208067	Peri.	167.30882	+0.78376433	-0.61569193
a	3.2012137	Node	230.99777	+0.56022628	+0.75750537
e	0.1413244	Incl.	6.01749	+0.26806713	+0.21704623
P	5.73	H	14.5	G 0.15	

Residuals in seconds of arc

790624	413	0.3-	0.5-	790724	413	0.9+	0.4+	801102 675	0.2-	0.2-
790625	413	1.3+	0.2+	790728	413	0.7-	0.3-			
790629	413	1.2-	0.3+	801031	675	0.2+	0.2+			

1980 GG = 1991 GG
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	68.34029	(1950.0)	P	Q	
n	0.26843692	Peri.	94.68210	-0.97133133	+0.21304792
a	2.3799868	Node	97.64587	-0.23739231	-0.89288227
e	0.1810808	Incl.	6.10934	+0.01266259	-0.39670118
P	3.67	H	14.2	G 0.15	

Residuals in seconds of arc

800412	046	1.1-	2.4-	800413	046	1.5-	1.8-	800414 046	0.6+	0.6-
800412	046	(2.5-	3.1-)	800413	046	0.7-	1.0-	800414 046	0.6-	0.9-

800415 046 0.8+ 1.9+ 800416 046 1.5- 1.8+ 910409 400 (4.8+ 3.0+)
800415 046 3.0+ 0.6+ 910402 400 (1.4- 4.6-) 910409 400 2.3+ 4.1+
800416 046 (2.3+ 3.6+) 910402 400 1.3- 1.7-

1980 GO = 1980 EP1 = 1988 VW6
Id. B. G. Marsden (d, MPC 9203), S. Nakano (MPC 14186)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	23.33794	(1950.0)	P	Q
n	0.17462607	Peri. 52.68447	-0.94293360	+0.33253583
a	3.1700297	Node 146.72835	-0.31455645	-0.87261624
e	0.1057883	Incl. 1.79757	-0.10922668	-0.35771612
P	5.64	H 13.0	G 0.15	

Residuals in seconds of arc
800315 095 1.3+ 0.5- 800414 046 2.0- 0.9+ 910313 046 (4.5+ 1.0+)
800408 675 0.1+ 0.8- 800415 046 2.2- 0.9- 910313 046 0.1+ 0.0
800409 675 0.4+ 0.5- 800415 046 0.5+ 3.0+ 910314 046 1.3+ 0.1-
800413 046 1.2+ 0.9- 881103 033 0.3- 0.2- 910314 046 1.4- 0.2+
800413 046 1.2- 1.8+ 881103 033 0.1+ 0.2-
800414 046 2.1+ 1.9- 881104 033 0.1+ 0.5+

1980 KD = 1940 FD = 1991 GE
Id. L. D. Schmadel, H. Kaneda
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	38.56137	(1950.0)	P	Q
n	0.17193736	Peri. 65.43097	-0.93103076	+0.34839437
a	3.2029922	Node 134.74588	-0.36488089	-0.88328174
e	0.2029129	Incl. 8.79886	-0.00660810	-0.31374310
P	5.73	H 11.5	G 0.15	

Residuals in seconds of arc (or two decimals in units of degrees)
400331 053(0.09+ 0.03-)X 800524 809 0.3+ 0.2+ 800606 809 0.3+ 0.2-
400331 053(0.10+ 0.03-)X 800524 809 0.7+ 0.1+ 800611 809 0.2- 0.3+
400402 053(0.10+ 0.03-)X 800524 809 0.8+ 0.3+ 800611 809 0.1- 0.5+
400411 053(0.09+ 0.02-)X 800525 809 1.0+ 0.1+ 800611 809 0.2- 0.7+
800521 809 0.2- 0.3- 800525 809 0.5+ 0.3- 800612 809 0.5- 1.6-
800521 809 0.4- 0.4- 800603 809 1.1- 0.2+ 800612 809 0.2- 0.8-
800521 809 0.2- 0.4- 800603 809 0.5- 0.3+ 800612 809 0.0 0.1-
800522 809 0.7- 0.1+ 800603 809 0.1- 0.5+ 910402 400 1.0+ 1.0+
800522 809 0.2+ 0.4+ 800604 809 0.1+ 0.2+ 910402 400 2.2+ 0.9-
800522 809 0.4+ 0.4+ 800604 809 0.7+ 0.5+ 910409 400 1.7- 0.1+
800523 809 0.9+ 0.5- 800604 809 2.5- 0.3+ 910409 400 1.6- 0.2-
800523 809 0.4+ 0.0 800606 809 0.1+ 0.1-
800523 809 0.4+ 0.0 800606 809 0.3+ 0.0

1980 TX3 = 1987 BL2
Id. T. Kobayashi (MPC 14016)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	130.51039	(1950.0)	P	Q
n	0.20501633	Peri. 153.43829	+0.99664148	+0.08129926
a	2.8484619	Node 201.90509	-0.07902683	+0.92350132
e	0.0802860	Incl. 1.50641	-0.02145971	+0.37488097
P	4.81	H 12.9	G 0.15	

Residuals in seconds of arc
780315 675 0.1+ 1.6- 801015 095 (2.3+ 1.7-) 890701 675 0.2- 1.1-
780316 675 0.9- 0.4- 870130 046 1.3+ 0.3+ 890701 675 0.8- 0.4-
801007 675 0.1- 0.5- 870130 046 1.0+ 0.7+ 890703 675 1.1+ 0.7-
801008 675 0.1+ 0.0 870131 046 (4.0- 0.1-) 890703 675 0.1- 0.0
801009 675 0.6+ 0.1+ 870131 046 0.8- 1.6+ 890801 675 0.2- 2.2+
801010 675 0.3- 0.2- 870201 046 0.9- 0.2- 890801 675 0.0 1.6+
801010 095 0.4+ 0.9- 870201 046 (2.5- 0.8-)

1980 VA3 = 1980 TV12 = 1990 VF7
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	122.23024	(1950.0)		P	Q
n	0.29483963	Peri.	41.32978	+0.86239222	-0.50613003
a	2.2356929	Node	349.06188	+0.44855460	+0.77364894
e	0.1366390	Incl.	3.19790	+0.23468793	+0.38118200
P	3.34	H	14.0	G 0.15	

Residuals in seconds of arc

801010 095	0.1+	0.1+	901024 046	0.6+	0.1+	901110 046	0.8-	0.6+
801101 675	0.2+	0.7-	901024 046	0.4-	0.1-	901113 046	0.4-	0.4-
801102 675	0.3+	0.8-	901110 046	0.4-	0.2+	901113 046	0.8+	1.1+

1981 EO9 = 1989 SR12
Id. H. Kaneda, H. Oishi
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	159.27868	(1950.0)		P	Q
n	0.17112116	Peri.	16.17936	+0.93736658	+0.33081399
a	3.2131690	Node	323.90697	-0.33659215	+0.77948277
e	0.1548220	Incl.	10.67415	-0.08971965	+0.53194804
P	5.76	H	11.8	G 0.15	

Residuals in seconds of arc

810202 413	0.4-	0.1-	810315 413	0.8-	0.2-	810429 413	0.4-	0.7+
810214 413	0.7+	0.5-	810407 413	0.6+	0.7-	890928 493	0.7-	1.0-
810301 413	0.9-	1.2+	810407 413	0.8+	0.8-	890928 493	0.2-	0.3+
810301 413	0.8+	0.2-	810408 413	1.6-	0.8+	891003 493	0.7+	0.3-
810307 413	0.9-	0.2+	810408 413	1.1+	0.1-	891003 493	0.2+	1.0+
810307 413	0.3+	0.5+	810409 413	1.1-	0.1+			
810311 413	1.7+	0.9-	810409 413	0.0	0.1+			

1981 EH19 = 1991 EL1
Id. G. V. Williams, S. J. Bus (1979 obs.)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	55.82674	(1950.0)		P	Q
n	0.29604427	Peri.	201.66357	-0.91553979	+0.40222168
a	2.2296239	Node	2.05732	-0.35966890	-0.81626575
e	0.0927320	Incl.	3.43172	-0.18006994	-0.41464196
P	3.33	H	14.5	G 0.15	

Residuals in seconds of arc

791018 675	0.4+	0.5-	810311 413	0.3+	0.2+	810408 413	1.0+	0.4-
791018 675	0.4-	0.6+	810311 413	0.7+	0.4-	810430 413	0.8+	0.1+
810202 413	0.7+	0.9-	810316 413	2.0-	0.3+	810502 413	0.3+	0.7-
810213 413	1.0+	0.0	810316 413	2.4+	1.8-	910313 801	0.9+	0.5+
810302 413	1.2-	0.9+	810329 413	2.7-	0.3+	910313 801	0.8+	0.3+
810303 413	1.5-	0.2+	810329 413	0.1+	0.2-	910317 801	0.5-	0.4+
810303 413	0.1+	0.6+	810407 413	0.4-	0.5+	910317 801	0.4-	0.4+
810307 413	1.4-	0.2+	810407 413	1.7+	0.3-			
810307 413	1.4+	1.1-	810408 413	1.7-	0.6+			

1981 EF48 = 1977 UQ3
Id. K. L. Faul
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	336.82418	(1950.0)		P	Q
n	0.12669351	Peri.	120.66740	+0.96116999	+0.27521055
a	3.9261462	Node	223.36714	-0.26220687	+0.88789542
e	0.0092261	Incl.	1.69267	-0.08602217	+0.36864735
P	7.78	H	13.2	G 0.15	

Residuals in seconds of arc

771018	675	0.9-	0.6-	810213	413	1.5+	0.1+	810315 413 0.6+ 1.3-
771019	675	1.0+	0.4+	810306	413	1.5-	1.6+	810501 413 0.4- 0.2-
810212	413	1.3-	0.4+	810311	413	0.8-	0.0	
810212	413	0.1+	0.4+	810311	413	1.7+	1.2-	

1981 RJ5 = 1978 EY9
Id. S. J. Bus
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	275.02133	(1950.0)	P	Q	
n	0.17452622	Peri.	267.07835	+0.83007621	-0.55692098
a	3.1712386	Node	126.76299	+0.52470750	+0.76271123
e	0.2487351	Incl.	2.03906	+0.18882672	+0.32880176
P	5.65	H	12.9	G 0.15	

Residuals in seconds of arc

780315	675	1.6+	0.3+	810928	095	0.2-	0.0	811024 095 0.5+ 0.2-
780316	675	1.4-	0.3+	811005	095	(0.4+	3.8+)	811026 095 0.3+ 0.3-
810908	095	0.3-	0.6+	811022	095	0.4-	0.3+	

1981 VU = 1977 RX18
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	232.61001	(1950.0)	P	Q	
n	0.25936190	Peri.	206.50278	+0.68748441	-0.72610188
a	2.4351848	Node	200.07316	+0.67223933	+0.64250684
e	0.1927621	Incl.	1.98444	+0.27469887	+0.24486942
P	3.80	H	14.5	G 0.15	

Residuals in seconds of arc

770909	675	0.4-	0.0	811102	688	0.9-	0.7-	811124 688 1.2+ 0.1-
770910	675	0.3+	0.1+	811105	688	1.8+	1.1+	811124 688 1.5- 0.1+
811102	688	0.7-	1.9-	811105	688	0.1+	1.3+	

1983 AW = 1980 GP1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	240.46565	(1950.0)	P	Q	
n	0.29536080	Peri.	282.23991	-0.43238242	-0.90156797
a	2.2330622	Node	193.40852	+0.85015516	-0.40212531
e	0.1680600	Incl.	3.67262	+0.30046903	-0.15959461
P	3.34	H	14.6	G 0.15	

Residuals in seconds of arc

800408	675	0.3-	0.9-	830112	046	0.7-	1.7+	880911 675 1.5- 1.2-
800409	675	0.4-	1.3-	830114	095	0.9+	1.3-	880916 675 0.1+ 0.0
830112	688	(3.4-	0.6+)	830121	688	0.2+	0.1+	880916 675 1.1+ 0.5-
830112	688	0.0	0.9-	830121	688	0.2+	0.0	881007 675 0.2+ 0.3+
830112	046	(5.0-	4.7+)	830210	095	0.8-	0.7-	881007 675 1.3+ 1.8-

1983 EB1 = 1977 RD20
Id. S. J. Bus
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	135.80082	(1950.0)	P	Q	
n	0.26000715	Peri.	330.20417	-0.71553678	-0.69847659
a	2.4311543	Node	165.47186	+0.64978828	-0.67163603
e	0.1219942	Incl.	2.67992	+0.25648063	-0.24705363
P	3.79	H	13.5	G 0.15	

Residuals in seconds of arc

770909	675	0.0	0.2+	830211	809	0.4+	0.1-	830213 809 0.4- 0.1+
770910	675	0.2-	0.3+	830211	809	0.1-	0.5-	830213 809 0.7- 0.0
830211	809	0.1+	0.6-	830213	809	0.9-	0.1+	830217 809 0.8+ 0.4+

830217	809	0.8+	0.3+	830219	809	0.1-	0.3-	830304	046	0.8-	0.1+
830217	809	0.7+	0.8+	830219	809	0.3-	0.0				
830219	809	0.1-	0.5-	830304	046	0.7+	0.6+				

1983 RZ1 = 1980 VD4

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	212.20499	(1950.0)		P	Q
n	0.30174906	Peri.	296.61915	+0.66868464	+0.74333240
a	2.2014328	Node	15.38779	-0.65603028	+0.60109543
e	0.1910784	Incl.	3.85217	-0.34997874	+0.29349826
P	3.27	H	14.5	G 0.15	

Residuals in seconds of arc

801101	675	0.1+	0.1+	830902	688	1.0+	1.0-	830906	688	0.1+	0.9-
801102	675	0.1-	0.1-	830904	095	2.4-	1.3+	830906	095	2.5+	1.4+
830902	688	0.5-	0.3-	830906	688	0.1-	0.2+	830911	095	0.6-	0.7-

1984 SG1 = 1986 AB2

Id. S. Nakano (MPC 11425)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	179.41736	(1950.0)		P	Q
n	0.21255013	Peri.	95.99208	+0.92002368	-0.38802894
a	2.7807491	Node	286.84997	+0.33310169	+0.84790853
e	0.0841765	Incl.	3.27529	+0.20639691	+0.36122660
P	4.64	H	12.7	G 0.15	

Residuals in seconds of arc

840925	688	0.8+	0.3-	860112	688	1.9-	0.7+	910217	046	(0.9+	3.6-)
840925	688	1.9+	1.6-	860112	688	(8.0-	1.3+)	910217	046	2.6-	2.2-
840927	046	2.3+	2.3-	860117	688	1.7+	1.5+	910219	046	0.5+	2.0-
840927	046	2.7+	2.5-	860117	688	1.1+	0.9+	910219	046	0.8+	0.8-
840929	046	0.7-	0.3-	891102	872	2.3-	2.4+	910313	801	0.4+	0.7-
840929	046	1.5-	0.9+	891102	872	1.4+	1.8+	910313	801	0.2+	0.7-
840930	046	0.6+	1.6-	910212	511	1.7-	2.1-	910320	801	0.1+	0.6-
840930	046	1.8-	2.4-	910212	511	2.5-	0.0	910320	801	0.3+	1.3-

1984 SN4 = 1980 UY1

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	257.52423	(1950.0)		P	Q
n	0.23290027	Peri.	8.01949	+0.96673428	+0.25558381
a	2.6163111	Node	337.16463	-0.23608371	+0.87641141
e	0.2117074	Incl.	1.48935	-0.09843427	+0.40814207
P	4.23	H	14.8	G 0.15	

Residuals in seconds of arc

801031	675	0.1+	0.1+	840924	809	0.4-	0.0	840928	809	0.2-	0.1+
801102	675	0.1-	0.2-	840924	809	0.1+	0.2-	840929	809	0.6-	0.0
840921	809	0.2-	0.5-	840924	809	0.6+	0.0	840929	809	0.3-	0.2+
840921	809	0.6+	0.5-	840926	809	0.1-	0.2+	840929	809	0.0	0.7+
840921	809	0.8+	0.3-	840926	809	0.4-	0.3+	840930	809	0.7-	0.2+
840922	809	0.7-	0.5+	840926	809	0.6-	0.2+	840930	809	0.6-	0.1+
840922	809	0.7-	0.2+	840927	809	0.8+	0.0	840930	809	0.5-	0.2-
840922	809	0.4-	0.1-	840927	809	1.0+	0.1-	841001	809	0.3+	0.0
840923	809	0.2+	0.2+	840927	809	1.2+	0.1-	841001	809	0.6-	0.2+
840923	809	0.4+	0.1+	840928	809	1.1-	0.4-	841001	809	1.8+	0.2-
840923	809	0.5+	0.0	840928	809	0.6-	0.3-	841001	809	0.3+	0.2-

1984 TD = 1990 TE14
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda
M 74.58951 (1950.0) P Q
n 0.17024197 Peri. 95.99227 +0.87140094 -0.49056959
a 3.2242222 Node 293.38576 +0.44947676 +0.79951829
e 0.1584161 Incl. 0.08537 +0.19654779 +0.34657175
P 5.79 H 13.3 G 0.15
Residuals in seconds of arc
840927 033 0.1- 0.0 841019 801 0.6- 1.2+ 901014 033 0.6- 0.1-
840927 033 0.0 0.5- 901014 033 0.7+ 0.2+
841003 801 0.7+ 0.3- 901014 033 0.0 0.3-

1985 JX1 = 1978 EV10 = 1978 KB
Id. E. Bowell (k), G. V. Williams (d)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 308.68271 (1950.0) P Q
n 0.29415386 Peri. 135.31414 +0.06202583 +0.99728072
a 2.2391663 Node 138.19395 -0.93156486 +0.07215938
e 0.0908024 Incl. 3.42279 -0.35824532 -0.01497291
P 3.35 H 14.5 G 0.15
Residuals in seconds of arc
780315 675 0.3- 0.3+ 780525 413 (5.6- 0.4-) 850524 675 0.7- 1.2-
780316 675 0.2+ 0.4- 850513 675 0.0 1.3- 850524 675 0.2+ 0.1+
780525 413 0.1+ 0.2+ 850515 675 0.4+ 2.3+

1985 RL3 = 1981 LH = 1991 GF
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano
M 17.17379 (1950.0) P Q
n 0.28868616 Peri. 175.72143 -0.20035483 +0.97155160
a 2.2673509 Node 82.68564 -0.90257134 -0.13290400
e 0.1044703 Incl. 7.31424 -0.38108124 -0.19602045
P 3.41 H 13.4 G 0.15
Residuals in seconds of arc
810604 688 0.0 0.1+ 850910 809 0.5+ 0.2+ 850920 809 0.0 0.5-
810604 688 0.1- 0.3- 850914 809 0.1- 0.2- 850920 809 0.4+ 0.7-
850906 809 0.2- 0.3+ 850914 809 0.2+ 0.5- 850920 809 0.7+ 0.7-
850906 809 0.1- 0.5+ 850914 809 0.5+ 0.7- 850922 809 0.2- 0.2+
850906 809 0.0 0.7+ 850916 809 1.0+ 0.3- 850922 809 0.1- 0.4-
850908 809 0.6- 1.0+ 850916 809 1.1+ 0.4- 910402 400 0.8- 0.9+
850908 809 0.1- 1.0+ 850916 809 1.2+ 0.4- 910402 400 0.7+ 1.1-
850908 809 0.1+ 0.9+ 850918 809 1.5- 0.1- 910409 400 1.0- 0.4-
850910 809 0.1- 0.2+ 850918 809 1.5- 0.1- 910409 400 1.1+ 0.6+
850910 809 0.1+ 0.2+ 850918 809 1.3- 0.2-

1985 VL = 1990 SY10
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda
M 231.63947 (1950.0) P Q
n 0.17449095 Peri. 357.10124 -0.89865759 +0.42183618
a 3.1716659 Node 208.81567 -0.39724638 -0.89893609
e 0.0275301 Incl. 14.45148 -0.18603724 -0.11818694
P 5.65 H 12.1 G 0.15
Residuals in seconds of arc
851111 095 0.3- 0.2- 900917 675 0.1+ 0.3+ 900920 675 0.2+ 0.5+
851114 054 0.4+ 0.5+ 900917 675 0.0 0.5+ 900920 675 0.2- 1.1+
851115 054 0.7+ 0.9- 900919 675 0.5- 0.2-
851115 054 0.8- 0.6+ 900919 675 0.4+ 2.1-

1986 JQ = 1989 QH1
Id. H. Kaneda (MPC 16579)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda
M 339.56504 (1950.0) P Q
n 0.36714107 Peri. 73.35124 +0.34691382 +0.91156347
a 1.9315861 Node 219.28936 -0.93693841 +0.32619310
e 0.0742972 Incl. 20.39599 -0.04239361 +0.25030002
P 2.68 H 13.5 G 0.15
Residuals in seconds of arc

860513	054	2.7+	0.4-	860608	675	0.6-	2.4+	910317 801 1.0- 0.2-
860514	054	(3.5+	3.6-)	860609	675	(1.0+	4.7+)	910317 801 1.1- 0.0
860603	675	1.1-	1.1-	890829	675	0.3+	0.2-	910318 675 1.5+ 1.2-
860603	675	0.9-	1.2+	890901	675	0.2-	0.0	910318 675 2.3+ 0.0
860604	675	0.6+	1.8-	910313	801	0.8-	0.8+	
860604	675	0.8-	0.0	910313	801	0.8-	0.6+	

1986 UY
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano
M 192.19379 (1950.0) P Q
n 0.29370524 Peri. 45.08249 +0.80128012 -0.59815636
a 2.2414459 Node 351.62785 +0.52158869 +0.70872942
e 0.1654941 Incl. 4.97030 +0.29307919 +0.37404756
P 3.36 H 14.2 G 0.15
Residuals in seconds of arc

861009	092	0.5+	0.0	861030	372	(3.1+	3.8-)	861126 372 0.5+ 1.9+
861009	092	0.9+	0.8-	861103	372	2.7-	0.7+	890803 372 1.1+ 1.5+
861011	092	0.2+	0.4-	861104	372	(3.4-	5.7+)	890803 372 1.6- 0.7-
861011	092	0.1-	0.3-	861105	688	0.3-	0.2-	910323 372 0.5- 0.3-
861012	092	1.3+	0.1-	861105	688	0.3+	0.4+	910323 372 0.9+ 0.9+
861012	092	0.4+	0.3-	861107	372	2.4-	0.2-	
861030	372	2.7+	1.2+	861126	372	1.1-	2.0-	

1986 VG1 = 1990 FN
Id. G. V. Williams (MPC 16873)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 152.19055 (1950.0) P Q
n 0.08210014 Peri. 342.23726 +0.50963924 -0.76360873
a 5.2429225 Node 75.38131 +0.83071019 +0.31673453
e 0.1208025 Incl. 24.18660 +0.22402771 +0.56265526
P 12.00 H 9.5 G 0.15
Residuals in seconds of arc

861107	511	1.0+	1.4+	861108	511	0.2+	1.3-	910211 801 0.4- 0.0
861107	511	1.1+	0.9+	861108	511	(2.7-	0.4+)	910211 801 0.4- 0.3-
861107	511	0.1-	0.2-	900323	675	0.4+	0.1+	910321 801 0.2+ 0.1+
861107	511	0.4-	0.4-	900323	675	0.3+	0.3-	910321 801 0.3+ 0.0
861108	511	0.0	0.1+	900325	675	0.6-	0.3+	
861108	511	1.7-	0.5-	900325	675	(1.7-	2.4-)	

1986 VF5 = 1978 ED10
Id. S. J. Bus
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
M 331.97355 (1950.0) P Q
n 0.18835461 Peri. 53.54620 +0.55605466 -0.83110377
a 3.0140600 Node 2.71159 +0.69482468 +0.45931591
e 0.1016589 Incl. 10.16702 +0.45609416 +0.31352099
P 5.23 H 12.0 G 0.15
Residuals in seconds of arc

780315	675	0.1-	0.2-	861007	095	0.3+	1.4-	861105 688 0.2- 0.4-
780316	675	0.1+	0.2+	861011	095	2.1+	0.0	
861003	095	2.4-	1.2+	861105	688	0.1+	0.7+	

1986 WL1 = 1984 DL1
Id. S. Nakano (MPC 11640)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	152.20713	(1950.0)	P	Q
n	0.28470649	Peri. 41.19627	+0.15782209	-0.98481800
a	2.2884309	Node 39.87942	+0.87382808	+0.10518933
e	0.0566914	Incl. 6.47355	+0.45990942	+0.13808947
P	3.46	H 13.6	G 0.15	

Residuals in seconds of arc

840226	095	0.3+	0.3-	861207	046	0.8-	1.5+	891005	046	0.4+	1.1-
840305	095	0.4-	0.0	861207	046	2.3+	1.3+	891005	046	1.4+	0.8+
861125	046	1.7-	1.6-	861209	046	(4.4+	0.4+)	910318	801	0.3-	0.5-
861125	046	0.3-	0.8-	861209	046	(8.2+	0.1-)	910318	801	0.1-	0.6-
861129	046	0.1-	0.7+	891003	046	1.1-	0.3+	910321	801	0.2-	0.5-
861129	046	0.2+	0.4-	891003	046	0.0	0.1+	910321	801	0.3-	0.5-
861204	046	(7.1+	0.8-)	891004	046	1.4+	2.5-				
861204	046	(7.2+	0.8+)	891004	046	0.8-	0.2+				

1987 RU3 = 1977 UN1 = 1980 PU3
Id. E. Bowell (k), G. V. Williams
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	85.23153	(1950.0)	P	Q
n	0.28978487	Peri. 139.60259	+0.99731280	-0.06179280
a	2.2616162	Node 223.98892	+0.04354626	+0.93199777
e	0.1873177	Incl. 3.24842	+0.05891435	+0.35715795
P	3.40	H 13.5	G 0.15	

Residuals in seconds of arc

771018	095	0.0	0.2-	870902	095	0.1-	0.3+	870923	095	2.5-	0.8+
800803	675	0.0	0.1-	870917	095	2.5+	1.4-	870926	095	1.4+	2.2-
800805	675	0.1+	0.2-	870917	095	1.4-	2.8+				

1987 SB3 = 1977 UD3
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	104.30605	(1950.0)	P	Q
n	0.29302967	Peri. 309.40388	+0.94717654	+0.31570960
a	2.2448896	Node 32.30693	-0.25209596	+0.84167520
e	0.1907209	Incl. 6.06056	-0.19825296	+0.43807569
P	3.36	H 15.2	G 0.15	

Residuals in seconds of arc

771018	675	0.3-	0.2-	870922	071	(5.1-	7.5+)	870924	071	1.8-	1.6-
771019	675	0.3+	0.3+	870923	071	2.2-	2.8+	870925	071	(5.5-	1.8-)
870904	095	0.3+	0.6-	870923	071	(4.9-	1.5+)	870927	095	1.8+	0.6-
870921	071	(0.7+	5.4+)	870923	071	0.2-	3.1-				
870921	071	0.3-	3.0+	870924	095	2.5+	0.1-				

1988 BN2
Id. C. S. Shoemaker (1990 obs.)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	295.04632	(1950.0)	P	Q
n	0.27370456	Peri. 162.84029	-0.59748781	+0.69648830
a	2.3493516	Node 68.56768	-0.77665464	-0.37932068
e	0.1582393	Incl. 25.27113	-0.19953917	-0.60911400
P	3.60	H 13.0	G 0.15	

Residuals in seconds of arc

880124	675	0.0	0.1-	880217	675	0.0	0.9+	901114	675	0.3-	0.3+
880124	675	0.1-	0.1+	880220	675	0.2-	0.8-				
880125	675	0.3+	0.1-	901113	675	0.3+	0.3-				

1988 CF7 = 1990 SX14
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	95.87435	(1950.0)	P	Q
n	0.23262695	Peri. 134.30716	+0.99109415	-0.07915590
a	2.6183601	Node 230.53256	+0.04194260	+0.94877893
e	0.2004277	Incl. 7.97326	+0.12638516	+0.30586416
P	4.24	H 13.1	G 0.15	

Residuals in seconds of arc

880215 809	0.3+	0.0	880221 809	0.4+	0.8-	900917 675	0.6-	0.8-
880216 809	0.4-	0.4+	880221 809	0.2+	0.7-	900917 675	0.0	0.0
880216 809	0.3-	0.2+	880223 809	0.8-	0.7+	900919 675	0.5+	0.8+
880216 809	0.1-	0.3-	880223 809	0.2-	0.7+	900919 675	0.1+	0.0
880221 809	0.4+	0.7-	880223 809	0.3+	0.5+			

1988 HE = 1989 SD14
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M	250.77139	(1950.0)	P	Q
n	0.24205241	Peri. 346.07842	+0.57414458	+0.80560231
a	2.5499440	Node 318.68596	-0.72837037	+0.42102696
e	0.1905575	Incl. 12.79087	-0.37394465	+0.41682276
P	4.07	H 12.5	G 0.15	

Residuals in seconds of arc

880415 474	0.5-	0.5-	880421 474	0.8-	0.2+	891003 493	0.4+	1.2+
880415 474	0.1+	0.3-	880521 474	0.6+	2.0+	891003 493	1.6-	1.2+
880416 474	2.4+	0.3+	880521 474	0.5+	1.3+	891004 493	0.5-	0.3+
880416 474	3.3+	0.1-	880605 474	1.2-	1.3-	891005 493	0.5-	0.2+
880418 474	1.6-	0.4-	880605 474	0.5-	0.9-	891005 493	1.2-	2.7-
880418 474	1.3-	0.4-	890926 493	0.8+	2.2+	891006 493	0.2+	3.0-
880421 474	1.1-	0.1+	890927 493	2.6+	0.7+			

1988 HF = 1980 JF = 1990 UZ3
Id. T. Kobayashi (MPC 13451), S. Nakano (ibid.), H. Kaneda
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	357.09799	(1950.0)	P	Q
n	0.24041371	Peri. 350.16316	-0.92101248	-0.38823780
a	2.5615130	Node 166.85552	+0.36618934	-0.89072284
e	0.1352589	Incl. 8.02315	+0.13282085	-0.23639848
P	4.10	H 12.8	G 0.15	

Residuals in seconds of arc

800511 046	0.1-	0.6+	880416 400	(0.7-	6.0-)	901016 809	0.6-	0.6+
800511 046	0.5-	1.4+	880509 400	0.8+	0.8+	901016 809	2.0-	0.6+
800512 046	1.1+	1.0-	880509 400	1.3-	1.2-	901020 809	0.7+	1.7-
800512 046	0.6+	0.3-	880509 400	0.6+	1.1-	901020 809	0.9+	0.3+
800513 046	1.0-	0.7-	880514 400	2.3+	0.4+	901020 809	0.2+	1.4-
800513 046	(2.5+	2.9-)	880514 400	1.3-	1.1+	901024 809	1.9+	0.5+
880416 400	(0.2-	6.6-)	880514 400	1.2-	0.3+	901024 809	0.5+	0.4+
880416 400	(5.3-	5.0-)	901016 809	1.3-	0.1+	901024 809	0.5-	0.9+

1988 PZ1 = 1979 BN2
Id. S. J. Bus
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	210.83720	(1950.0)	P	Q
n	0.17388469	Peri. 317.71192	+0.94975162	+0.31298552
a	3.1790339	Node 24.04949	-0.28484624	+0.86883038
e	0.1711151	Incl. 0.48541	-0.12974774	+0.38363242
P	5.67	H 13.0	G 0.15	

Residuals in seconds of arc

790127 675	1.9-	0.4+	880813 033	0.3+	0.2+	880813 511	0.2+	0.9+
790129 675	2.0+	0.1-	880813 511	0.3+	0.2-	880814 033	0.1+	0.0

880814 033 0.0 0.2- 880911 675 0.4+ 0.3- 880916 675 0.4+ 0.1-
880815 511 0.8- 0.2- 880911 675 0.3- 0.1- 881007 675 0.1- 0.2-
880815 511 1.0- 0.6+ 880916 675 0.2- 0.6+ 881007 675 0.7+ 0.8-

1988 RR2 = 1980 JD
Id. T. Kobayashi (MPC 15068)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano
M 357.36051 (1950.0) P Q
n 0.26475273 Peri. 131.63197 +0.20314100 +0.97886150
a 2.4020152 Node 150.06400 -0.91186643 +0.19796134
e 0.2023965 Incl. 2.72748 -0.35669784 +0.05139533
P 3.72 H 13.8 G 0.15
Residuals in seconds of arc
800511 046 (3.8+ 1.7-) 880909 046 0.3+ 0.3+ 880920 809 0.3+ 0.1+
800511 046 1.5+ 1.0+ 880909 046 1.2- 0.2+ 881006 807 0.1+ 0.4+
800512 046 2.1- 0.5- 880910 046 0.9- 0.8- 881007 807 0.6- 0.5-
800512 046 0.4- 0.7- 880910 046 (2.2- 0.1+) 881104 807 0.2+ 0.2+
800513 046 2.7+ 1.0- 880914 807 0.6+ 0.2- 881106 807 0.4- 0.1+
800513 046 0.5- 0.1+ 880915 807 0.7+ 0.5- 910317 801 0.2- 0.5-
800514 046 0.9- 0.3+ 880920 809 0.6+ 0.0 910317 801 0.0 0.8-
800514 046 0.2- 1.2+ 880920 809 0.4+ 0.1+ 910318 801 0.3- 0.1+

1988 RK8 = 1971 SU3 = 1980 GT1 = 1990 EJ10
Id. S. J. Bus (k), G. V. Williams
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 307.59857 (1950.0) P Q
n 0.28791531 Peri. 214.25716 +0.84462822 -0.53535160
a 2.2713961 Node 178.10904 +0.49987696 +0.78775019
e 0.1177138 Incl. 2.34918 +0.19164078 +0.30471020
P 3.42 H 14.5 G 0.15
Residuals in seconds of arc
710926 805 0.7+ 0.1+ 880911 675 0.2- 0.3+ 881007 675 0.0 0.4-
710927 805 0.5- 0.5- 880911 071 (0.3+ 3.1+) 881007 675 0.1- 0.9-
800408 675 0.1- 0.5- 880911 071 (0.5+ 2.9+) 900307 809 (2.7+ 3.6+)
800409 675 0.2- 0.1- 880916 675 0.3+ 0.7+ 900307 809 0.9+ 1.5+
880911 675 0.2+ 0.1- 880916 675 0.2- 0.5+ 900307 809 0.8- 1.1-

1988 RT11 = 1978 EK10
Id. S. J. Bus
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
M 221.72923 (1950.0) P Q
n 0.23962830 Peri. 45.16280 +0.47817308 -0.87823979
a 2.5671070 Node 16.27479 +0.79882018 +0.43171860
e 0.1318313 Incl. 1.37726 +0.36501620 +0.20570345
P 4.11 H 15.9 G 0.15
Residuals in seconds of arc
780315 675 0.1+ 0.3- 880915 807 0.4+ 0.4- 881104 807 0.1- 0.3-
780316 675 0.9- 1.4- 881006 807 0.2+ 0.4+ 881106 807 0.8+ 1.3-
880914 807 0.1+ 0.0 881007 807 0.5- 0.4-

1988 SO1 = 1968 YE = 1990 AB1 = 1991 EP
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nagata
M 195.90662 (1950.0) P Q
n 0.18873677 Peri. 261.00934 +0.91060419 -0.37900314
a 3.0099899 Node 121.10780 +0.41230238 +0.86051084
e 0.1223281 Incl. 11.09700 -0.02840361 +0.34040816
P 5.22 H 10.6 G 0.15

Residuals in seconds of arc

681222 095	0.5+	2.7-	881007 807	0.3-	0.4+	910309 875	0.1-	0.5-
880916 807	0.8+	1.2-	881104 807	0.0	0.3+	910309 875	0.1-	0.0
880918 807	1.6+	1.8-	881106 807	0.5-	0.2+	910314 875	0.1+	0.8-
881005 807	0.4-	0.3+	900104 511	0.0	1.9+	910314 875	0.5-	1.0-
881006 807	0.4-	0.2+	900104 511	0.3-	0.5+			

1988 SW2 = 1979 BX2
Id. G. V. Williams, S. J. Bus
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M 215.36934		(1950.0)	P	Q
n 0.17440173	Peri.	287.65616	+0.95575796	+0.29251403
a 3.1727476	Node	55.34594	-0.25354949	+0.87269584
e 0.1695454	Incl.	2.16114	-0.14912871	+0.39094440
P 5.65	H	12.5	G 0.15	

Residuals in seconds of arc

790127 675	0.5+	0.1+	881004 807	0.4-	0.4+	881105 807	0.3+	0.1-
790129 675	0.5-	0.2-	881005 807	0.3+	0.3+	881106 807	0.0	0.1+
880916 807	0.1+	0.2+	881008 807	0.3+	0.9-	881107 807	0.6-	0.3-
880918 807	0.3-	0.3-	881104 807	0.3+	0.5+			

1988 UH = 1977 UJ5
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M 86.81919		(1950.0)	P	Q
n 0.18077796	Peri.	325.97301	-0.98013728	-0.19674623
a 3.0976979	Node	202.71927	+0.19327702	-0.91945551
e 0.1093909	Incl.	3.70197	+0.04443999	-0.34042985
P 5.45	H	12.1	G 0.15	

Residuals in seconds of arc

771018 675	0.2+	0.1-	881022 372	0.8+	0.6+	881106 372	(3.7-	1.3+)Y
771019 675	0.2-	0.1+	881022 372	1.8-	0.6-	881110 046	(3.8+	0.1-)
881018 372	0.7+	0.7+	881102 372	0.1+	0.6-	881110 046	0.9+	0.9-
881018 372	0.5+	1.0+	881103 372	0.1+	0.2+	881111 046	0.9-	1.1+
881019 372	0.4-	1.5-	881105 372	(3.0+	5.8+)Y	881111 046	(3.4-	4.1+)

1988 YB = 1978 EQ9
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M 179.17644		(1950.0)	P	Q
n 0.17017415	Peri.	44.92790	-0.41918620	-0.90738566
a 3.2250788	Node	69.87750	+0.82352752	-0.39418748
e 0.1499664	Incl.	1.86540	+0.38221114	-0.14583382
P 5.79	H	12.3	G 0.15	

Residuals in seconds of arc

780315 675	0.2-	0.0	890103 046	0.5+	0.6+	890111 071	0.6+	1.6+
780316 675	0.3+	0.2+	890104 877	0.5-	0.9- Y	890112 046	(2.9+	6.7-)
881230 877	0.8-	0.7+	890104 877	1.1+	0.6- Y	890112 046	(1.6+	7.9-)
881230 877	1.1-	1.5+	890104 046	0.2-	0.7+	890204 877	1.1+	0.1+
890102 877	(1.6+	6.4-)Y	890109 046	1.9+	1.6-	890204 877	0.3-	1.4-
890102 877	(1.9+	5.6-)Y	890109 046	1.0+	1.8-			
890103 046	1.6-	0.3+	890111 071	1.5-	0.8+			

1989 AY6 = 1990 OA4
Id. H. E. Holt (MPC 16875)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M 213.78428		(1950.0)	P	Q
n 0.27573527	Peri.	284.39331	-0.70526281	+0.70780486
a 2.3378026	Node	300.68224	-0.63106690	-0.65262111
e 0.1317741	Incl.	2.67970	-0.32304635	-0.27036635
P 3.57	H	13.8	G 0.15	

Residuals in seconds of arc

801101	675	0.1-	0.5+	890212	809	0.3-	0.4-	890301 809	0.3-	0.4+
801102	675	0.0	0.1-	890212	809	0.1-	0.5-	890303 809	0.7-	0.6+
890110	033	0.1+	0.4+	890212	809	0.0	0.3-	890303 809	0.7-	0.7+
890111	033	0.4+	0.5+	890213	809	0.7-	0.3-	900529 413	(0.9+	3.0-)
890112	033	0.9+	0.2+	890213	809	0.3-	0.4-	900529 413	0.4-	1.4+
890207	809	0.6-	0.6-	890213	809	0.0	0.7-	900726 033	1.0+	0.6+
890207	809	0.2-	0.6-	890225	809	0.3+	0.5+	900727 033	1.6+	0.6+
890207	809	0.1-	0.8-	890225	809	0.1+	0.4+	900727 675	1.3-	0.1-
890209	809	0.1-	0.3-	890225	809	0.3-	0.4+	900727 675	1.3+	1.4-
890209	809	0.1+	0.2-	890226	809	0.2+	0.4+	900728 033	0.3+	0.1+
890209	809	0.4+	0.1-	890226	809	0.3+	0.7+	900730 675	1.4-	1.7-
890210	809	0.1+	1.0-	890226	809	0.5+	0.6+	900730 675	0.4-	1.0-
890210	809	0.4+	1.0-	890301	809	0.4-	0.5+			
890210	809	0.5+	0.9-	890301	809	0.2-	0.4+			

1989 AF7 = 1989 CX5 = 1978 EP10
Id. S. Nakano (d, MPC 16553), E. Bowell
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	181.18439	(1950.0)		P	Q
n	0.17375527	Peri.	343.06478	-0.75255166	-0.65852174
a	3.1806123	Node	155.74665	+0.60525451	-0.69398093
e	0.1135523	Incl.	0.54237	+0.25948599	-0.29110064
P	5.67	H	13.4	G 0.15	

Residuals in seconds of arc

780315	675	0.2+	0.0	890111	033	0.0	0.2+	890204 033	0.5+	0.1-
780316	675	0.1-	0.1+	890112	033	0.1+	0.4-	890210 033	0.0	0.7-
890110	033	0.0	0.6+	890202	033	0.0	0.4+	890210 033	0.6-	0.1+

1989 EM = 1990 RB2
Id. H. E. Holt (MPC 17635)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	227.77504	(1950.0)		P	Q
n	0.26988882	Peri.	301.52619	-0.57675326	+0.81664055
a	2.3714435	Node	293.23654	-0.74138841	-0.53420243
e	0.1727633	Incl.	1.32853	-0.34307274	-0.21846275
P	3.65	H	13.5	G 0.15	

Residuals in seconds of arc

780315	675	0.1-	0.4+	890406	675	1.7+	1.0-	900919 675	(3.0-	0.7-)
780316	675	0.0	0.6-	890408	675	0.6+	1.2+	900923 809	0.6-	1.5+
890305	675	0.2-	1.8+	890408	675	1.4+	0.9-	900923 809	0.3-	1.3+
890306	675	0.9-	1.7+	900915	675	0.6+	0.2-	900923 809	0.0	1.0+
890306	046	0.6-	0.1-	900916	675	2.1-	0.3+	900924 809	0.3+	0.9+
890306	046	(3.2+	0.1+)	900916	675	1.8-	0.0	900924 809	0.8+	0.6+
890308	046	(2.8-	0.5+)	900918	675	1.2-	1.6-	900924 809	1.1+	0.7+
890308	046	0.1+	0.6+	900918	675	0.3-	0.3-	901022 675	2.3+	1.2-
890406	675	0.7-	0.4+	900919	675	0.2-	0.8+			

1989 GF4 = 1990 RZ8
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	122.96752	(1950.0)		P	Q
n	0.21072644	Peri.	81.77560	+0.48834866	+0.86982743
a	2.7967696	Node	217.71878	-0.83893820	+0.44585024
e	0.2217498	Incl.	6.58077	-0.24020467	+0.21122927
P	4.68	H	12.8	G 0.15	

Residuals in seconds of arc

890403 809	0.6-	0.2+	890405 809	0.8+	0.8-	900913 675	0.1+	0.5-
890403 809	0.1+	0.3-	890406 809	1.0-	0.3+	900917 675	0.4-	0.2+
890403 809	0.1+	0.4+	890406 809	0.1-	0.4-	900917 675	0.1+	0.3+
890405 809	1.0+	0.5+	890406 809	0.5-	0.1+			

1989 SG1 = 1991 CJ2
Id. S. Nakano (MPC 17961)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Bowell
M 84.40717		(1950.0)	P	Q
n 0.23829270	Peri.	329.77550	-0.71728505	-0.69599576
a 2.5766903	Node	165.96175	+0.66343421	-0.69668586
e 0.1451072	Incl.	7.83005	+0.21297232	-0.17383533
P 4.14	H	14.5	G 0.15	

Residuals in seconds of arc

800804 675	0.3-	0.9-	891007 809	0.2+	0.7+	910219 372	1.1-	1.1-
800805 675	0.3+	0.8+	891007 809	0.1-	0.5+	910219 372	(2.6+	3.5-)
890926 809	0.6-	0.2-	891008 809	0.3+	0.8+	910219 372	(4.1+	1.1-)
890926 809	0.5-	0.1-	891008 809	0.3-	0.8+	910220 372	0.5+	1.2-
890926 809	0.5-	0.6-	891008 809	0.4-	0.1-	910220 372	0.3-	1.4-
890928 809	1.9+	0.9-	910212 372	0.5+	0.4+	910306 372	(0.5+	3.2-)
890928 809	0.9+	1.2-	910212 372	0.1-	1.6+	910306 372	(3.5+	1.2-)
890928 809	(1.6+	2.1-)	910216 372	1.1-	0.6+			
891007 809	0.9-	0.3-	910216 372	1.4+	0.7+			

1989 SL1 = 1978 JV = 1984 AT = 1991 EV

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Nakano
M 97.30388		(1950.0)	P	Q
n 0.29792710	Peri.	37.01021	-0.92732983	-0.36756785
a 2.2202202	Node	121.28122	+0.32059728	-0.87724218
e 0.0556882	Incl.	4.72371	+0.19307194	-0.30877180
P 3.31	H	13.6	G 0.15	

Residuals in seconds of arc

780505 095	1.2-	3.4-	890928 809	0.6+	0.5+	891008 809	0.9+	0.5+
840108 688	0.5+	1.8-	890928 809	0.2+	0.2+	910310 400	0.1-	1.4+
840108 688	0.7-	1.1-	891007 809	1.8-	0.2-	910310 400	2.0+	1.0+
890926 809	0.7+	0.2-	891007 809	1.2-	0.1+	910315 400	(3.4+	4.5+)
890926 809	0.3+	0.0	891007 809	1.6-	0.2-	910315 400	0.6-	1.1+
890926 809	0.7+	0.4-	891008 809	0.4+	0.4-			
890928 809	(2.9+	1.6+)	891008 809	0.9+	0.3+			

1989 SV1 = 1984 YP5 = 1991 CR3
Id. B. A. Skiff (k), G. V. Williams

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Williams
M 122.70231		(1950.0)	P	Q
n 0.17317141	Peri.	273.96661	+0.76678493	-0.64077130
a 3.1877573	Node	125.88738	+0.60600543	+0.70304424
e 0.2161516	Incl.	2.69675	+0.21165606	+0.30844925
P 5.69	H	12.5	G 0.15	

Residuals in seconds of arc

841228 095	0.1-	0.6-	891003 809	2.0+	1.2-	891009 391	0.3-	1.0+
890926 809	0.9-	1.5-	891003 809	1.4+	0.9-	891028 807	1.4-	2.8+
890926 809	1.4-	1.6-	891003 809	1.3+	1.3-	910209 675	0.3+	0.1-
890926 809	0.6-	1.2-	891006 807	0.1-	2.3+	910209 675	0.3-	0.2+
891002 807	0.4-	2.0+	891009 391	0.2+	0.4-			

1989 SL12 = 1991 BD3
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 99.72329 (1950.0) P Q
n 0.20069901 Peri. 132.56846 +0.13040287 -0.99139921
a 2.8891665 Node 309.93526 +0.90531740 +0.12362045
e 0.1624119 Incl. 0.82776 +0.40422209 +0.04296044
P 4.91 H 13.5 G 0.15
Residuals in seconds of arc

890930	809	0.2-	0.6-	891001	809	0.1+	0.1+	910115	033	0.4-	0.4+
890930	809	0.4+	0.8-	891002	809	0.8-	0.9+	910116	033	0.2-	0.4-
890930	809	0.8+	0.6-	891002	809	0.3-	0.8+	910117	033	0.1+	0.2-
891001	809	0.1-	0.5-	891002	809	0.0	0.8+				
891001	809	0.1+	0.2-	910115	033	0.6+	0.1+				

1989 TZ2 = 1991 AX1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Lowe
M 102.64039 (1950.0) P Q
n 0.20077787 Peri. 316.01390 +0.14602589 -0.98844490
a 2.8884099 Node 125.54852 +0.92085250 +0.12079073
e 0.0671782 Incl. 2.86439 +0.36153439 +0.09157663
P 4.91 H 13.0 G 0.15
Residuals in seconds of arc

891007	809	0.8+	0.0	891008	809	0.7-	0.2-	910114	399	0.0	1.6+
891007	809	0.8+	0.7-	910114	399	1.3-	0.3-	910123	399	0.5-	1.4+
891007	809	0.4-	0.2+	910114	399	0.3-	0.8+	910123	399	0.8-	0.4+
891008	809	0.0	0.5+	910114	399	1.2+	2.6-	910123	399	1.6+	0.5+
891008	809	0.5-	0.1+	910114	399	0.3+	0.5+	910123	399	0.1-	2.3-

1989 UH1 = 1978 YP1 = 1980 GO1
Id. E. Bowell (k), G. V. Williams
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 218.74638 (1950.0) P Q
n 0.26379118 Peri. 162.21333 +0.94304004 -0.32466729
a 2.4078488 Node 216.98569 +0.28867283 +0.90701684
e 0.1428543 Incl. 6.92834 +0.16535865 +0.26816341
P 3.74 H 13.5 G 0.15
Residuals in seconds of arc

781222	095	0.0	1.3-	891029	399	0.7+	1.2+	891120	399	2.2-	0.5+
800408	675	0.5+	0.4+	891029	399	0.6+	0.2-	891120	399	0.7-	0.5+
800409	675	0.1+	1.7+	891029	399	(2.5+	2.2+)	891120	399	(2.8-	0.6+)
891024	095	0.1-	0.9-	891102	391	1.3-	1.7+	891125	399	1.3+	0.6-
891024	095	0.5+	1.7+	891102	391	(1.5-	2.7+)	891125	399	(2.7+	0.2-)
891026	399	0.7-	0.3+	891104	391	1.6+	0.9+	891125	399	0.1-	1.3+
891026	399	1.1-	0.3+	891104	391	1.2+	0.5-	891203	399	1.1-	1.4-
891026	399	1.1-	1.0-	891107	391	0.4+	0.2+	891203	399	(2.7-	1.2-)
891026	095	1.2+	1.6-	891107	391	(1.3-	2.4-)				
891026	095	(0.0	3.7-)	891107	391	(3.0-	2.1+)				

1989 UC5 = 1977 UK4
Id. S. J. Bus
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
M 71.50095 (1950.0) P Q
n 0.08084531 Peri. 159.74011 +0.97936343 -0.18372943
a 5.2970347 Node 211.22368 +0.15571340 +0.95154983
e 0.1432915 Incl. 9.34867 +0.12884338 +0.24656931
P 12.19 H 13.3 G 0.15
Residuals in seconds of arc

771018	675	0.8+	0.8+	891004	807	0.6-	0.2+	891030	807	0.2-	0.4+
771019	675	0.8-	0.8-	891005	807	0.8+	0.3-	891101	807	0.0	0.2-

1989 UO5 = 1977 UK5
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
M 92.58660 (1950.0) P Q
n 0.08088905 Peri. 324.16061 +0.98482096 +0.10471286
a 5.2951251 Node 30.72075 -0.00144625 +0.80245396
e 0.0457785 Incl. 15.72246 -0.17356724 +0.58745456
P 12.18 H 12.2 G 0.15
Residuals in seconds of arc

771018	675	0.0	0.1+	891004	807	0.0	0.0	891101 807	0.3+ 0.2+
771019	675	0.0	0.1-	891030	807	0.3-	0.2-		

1989 UE7 = 1983 RV8
Id. F. Borngen (1991 obs.), D. W. E. Green, G. V. Williams
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 158.63268 (1950.0) P Q
n 0.17774932 Peri. 196.75324 +0.98087199 -0.19464298
a 3.1327862 Node 174.46939 +0.18094639 +0.90784382
e 0.1802868 Incl. 1.22571 +0.07175335 +0.37139427
P 5.54 H 13.0 G 0.15
Residuals in seconds of arc

830911	095	0.2+	0.6-	891025	033	0.6+	0.7-	910115 033	0.9+ 1.7-
890907	033	0.1+	0.8+	891025	033	0.8+	0.1+	910115 033	0.6+ 0.1-
890907	033	0.4-	0.1+	891027	033	1.2-	0.6-	910116 033	0.7- 0.3+
891023	033	0.3+	0.3-	891204	385	(2.6+	0.2-)Y	910117 033	1.0- 0.8+
891023	033	0.0	0.3-	891204	385	0.4-	1.5+ Y		

1989 WC = 1978 ED9
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 164.67131 (1950.0) P Q
n 0.23235682 Peri. 153.69674 +0.28263504 -0.95882207
a 2.6203890 Node 279.87528 +0.87496487 +0.26961324
e 0.1577679 Incl. 1.62204 +0.39313346 +0.08926892
P 4.24 H 13.0 G 0.15
Residuals in seconds of arc

780315	675	0.3+	0.4+	891121	399	0.4-	0.2+	891206 399	0.3+ 1.2+
780316	675	0.4-	0.5-	891121	399	1.4-	0.7-	891218 399	1.2- 0.7-
891119	399	(9.4-	0.3-)	891121	399	0.2-	1.4-	891218 399	0.2- 0.9-
891119	399	(7.8-	0.5+)	891206	399	2.7+	2.3+	891218 399	0.3+ 0.1-

1989 YV4 = 1990 BC3 = 1977 RA20
Id. H. Kaneda (d, MPC 16553), S. Nakano (d, ibid.), G. V. Williams
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 195.76479 (1950.0) P Q
n 0.26538912 Peri. 74.05492 -0.29974779 -0.95389905
a 2.3981737 Node 33.39949 +0.86442630 -0.27825886
e 0.1257588 Incl. 1.57140 +0.40363155 -0.11246607
P 3.71 H 15.0 G 0.15
Residuals in seconds of arc

770909	675	0.6+	0.3+	891231	413	1.2-	1.1-	900129 033	0.6+ 0.3-
770910	675	0.6-	0.3-	891231	413	1.1+	0.8+		
891230	413	0.1+	0.3+	900129	033	0.6-	0.4+		

1989 YO5 = 1952 DR = 1952 FH = 1985 DO4 = 1991 EX
Id. S. Nakano, S. Kanda (d, MPC 1855)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M 16.62059		(1950.0)	P	Q
n 0.17657041	Peri.	119.62613	-0.83782870	+0.54405166
a 3.1467152	Node	93.36845	-0.51524111	-0.76057935
e 0.1113321	Incl.	2.60010	-0.18047070	-0.35429768
P 5.58	H 12.0	G 0.15		

Residuals in seconds of arc

520226	711	1.6-	3.2+ Y	891228	511	1.7-	0.5-	900104	511	(4.8+	0.1+)
520226	760	0.5-	0.0	891229	511	2.6-	0.4+	910220	372	0.5-	1.6-
520320	760	1.1+	0.8+	891229	511	1.5-	0.8+	910220	372	2.3+	1.0-
520320	760	2.2+	1.5-	891229	511	0.3-	0.4-	910314	385	0.6-	0.7+
850220	675	0.7-	1.8+	900103	511	0.9+	1.9-	910314	385	2.3-	0.9-
850223	675	0.9+	0.2-	900103	511	1.8+	0.3-	910318	385	0.1+	0.1+
891228	511	2.9+	0.7+	900104	511	0.7+	0.3-	910318	385	0.3-	0.8-

1990 BE2 = 1977 RE20
Id. S. J. Bus

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M 193.24382		(1950.0)	P	Q
n 0.26370562	Peri.	105.94843	-0.33390328	-0.94259538
a 2.4083695	Node	3.56803	+0.83297160	-0.29742069
e 0.1932984	Incl.	4.37569	+0.44121073	-0.15183834
P 3.74	H 14.1	G 0.15		

Residuals in seconds of arc

770909	675	0.7+	0.0	900130	399	1.0-	1.4+	900228	399	(3.0-	0.8+)
770910	675	0.6-	0.2-	900202	399	1.5+	0.2+	900228	399	0.3+	0.6-
900128	399	0.1+	1.4-	900202	399	(0.0	2.6-)	900302	399	0.5-	0.8-
900128	399	0.7+	0.4-	900202	399	(3.5-	3.1-)	900302	399	0.6+	0.0
900128	399	(2.5+	0.1-)	900218	399	1.2-	0.0	900302	399	0.2-	0.3-
900130	399	0.3+	0.5+	900218	399	0.1+	1.7+				
900130	399	0.8-	0.5-	900218	399	(2.8-	0.4+)				

1990 GN = 1977 RY19
Id. S. J. Bus

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M 176.47596		(1950.0)	P	Q
n 0.27641621	Peri.	173.98248	-0.98745034	-0.15792175
a 2.3339616	Node	356.92986	+0.14361860	-0.89371798
e 0.1633058	Incl.	1.70862	+0.06569267	-0.41991534
P 3.57	H 15.1	G 0.15		

Residuals in seconds of arc

770909	675	0.7-	0.7+	900404	809	0.1+	0.5+	900416	809	0.7+	0.4-
770910	675	0.2+	0.3+	900404	809	0.1+	0.7+	900416	809	0.1-	0.3-
900302	809	0.2+	0.8+	900404	809	0.3-	1.0+	900417	809	0.1-	0.1+
900302	809	0.2+	0.1+	900415	809	0.8+	1.1-	900417	809	1.3-	0.5+
900302	809	0.1+	0.7-	900416	809	0.2+	0.5-				

1990 HP = 1980 VY2
Id. S. J. Bus

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M 216.90073		(1950.0)	P	Q
n 0.36462137	Peri.	187.64988	-0.77944384	+0.59618851
a 1.9404746	Node	31.58424	-0.55353533	-0.51156940
e 0.0509160	Incl.	21.55495	-0.29336997	-0.61875360
P 2.70	H 14.3	G 0.15		

Residuals in seconds of arc

801101	675	0.5-	0.2-	900426	675	0.4-	0.5+	900518	675	0.3-	0.2-
801102	675	0.8+	0.2+	900428	675	0.4+	0.9+	900521	675	1.2+	1.2+
801102	675	0.2-	0.1-	900428	675	0.3-	1.0-	900521	675	1.9-	1.1-
900426	675	0.2+	0.5-	900518	675	1.1+	0.2+				

1990 MG = 1958 VN = 1979 BY2
Id. G. V. Williams, S. J. Bus
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M 156.88875		(1950.0)	P	Q
n 0.30423379	Peri.	218.05557	+0.59107591	+0.80415198
a 2.1894301	Node	88.26489	-0.72370190	+0.56318866
e 0.1869317	Incl.	3.61362	-0.35620896	+0.19015289
P 3.24	H	14.5	G 0.15	

Residuals in seconds of arc

581111	760	0.0	0.9-	900623	675	0.5+	2.0-	900729	675	0.2-	0.4-
581111	760	0.2+	0.5+	900623	675	0.2+	0.8-	900729	675	0.3-	0.1-
790127	675	0.8+	1.1-	900725	675	0.2-	0.3+	900730	675	(4.5-	0.2-)
790129	675	0.9-	0.1-	900725	675	0.0	0.6+	900730	675	1.2+	1.4+
900621	675	(4.4+	1.9-)	900729	675	0.5-	1.2-				
900621	675	0.1-	0.0	900729	675	0.2-	0.9+				

1990 MR = 1990 OF4 = 1980 VM4 = 1983 RH5
Id. E. Bowell (d, MPC 16995), R. Nagata (d, ibid.), S. J. Bus (k), G. V. Williams
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M 167.85832		(1950.0)	P	Q
n 0.27501758	Peri.	7.17966	-0.25919398	+0.95941367
a 2.3418680	Node	247.84768	-0.89194226	-0.28190355
e 0.2179988	Incl.	6.88967	-0.37048277	+0.00746982
P 3.58	H	14.5	G 0.15	

Residuals in seconds of arc

801101	675	1.3+	0.7+	900621	675	0.0	0.6-	900725	675	0.1-	0.1-
801102	675	1.2-	0.7-	900621	675	1.2+	0.7-	900727	675	1.9-	0.6+
830901	095	0.4+	1.3-	900724	675	1.7+	0.5+	900727	675	0.8-	0.1-
900618	675	1.4+	0.5-	900724	675	0.8+	1.1+	900729	675	1.0-	1.0+
900618	675	0.3+	0.4-	900725	675	1.5-	0.4-	900729	675	0.1-	0.6+

1990 QN2 = 1978 EC9
Id. S. J. Bus
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M 145.31502		(1950.0)	P	Q
n 0.27237383	Peri.	335.32562	+0.78098677	+0.62382941
a 2.3569976	Node	345.95444	-0.55053899	+0.66501120
e 0.1379083	Incl.	7.08686	-0.29490081	+0.41060561
P 3.62	H	14.2	G 0.15	

Residuals in seconds of arc

780315	675	0.9+	0.4-	900914	675	1.9+	1.3-	900927	809	0.5+	0.7+
780316	675	1.2-	0.2-	900914	675	(0.9+	2.5-)	900927	809	0.8+	0.5+
900822	675	0.2+	0.9+	900916	675	0.6-	0.3+	900927	809	1.3+	0.5+
900822	675	0.2-	0.0	900916	675	0.0	0.1-	900928	809	0.9-	1.0+
900824	675	0.1+	1.2+	900919	675	1.8-	0.5-	900928	809	0.6-	0.8+
900824	675	0.5-	1.0+	900919	675	0.0	0.3-	900928	809	0.6-	0.7+
900828	675	0.1+	0.5-	900920	675	0.6+	1.4-				
900828	675	0.1-	1.7-	900920	675	0.0	2.0-				

1990 QO6 = 1990 RG7 = 1977 RM8
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M	110.78500	(1950.0)	P	Q
n	0.22795915	Peri. 178.50471	+0.91112458	+0.40168320
a	2.6539877	Node 157.11631	-0.38052363	+0.90585116
e	0.1726797	Incl. 13.71703	-0.15828382	+0.13447782
P	4.32	H 14.5	G 0.15	

Residuals in seconds of arc

770908	675	0.1+	0.1+	900820	809	0.1-	0.2+	900913	809	0.3+	0.2-
770909	675	0.0	0.8-	900820	809	0.7-	0.2+	900913	809	0.8+	0.2+
900816	809	0.9+	0.0	900826	809	0.2-	0.1+	900914	809	0.7-	0.0
900816	809	1.0+	0.3-	900826	809	0.3-	0.7+	900914	809	0.2-	0.0
900816	809	0.0	1.4-	900826	809	0.3-	0.9+	900914	809	0.2-	0.2-
900820	809	0.3-	0.6+	900913	809	0.1+	0.2-				

1990 RQ2 = 1976 SR = 1978 GZ = 1981 BX = 1983 RW1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	91.53574	(1950.0)	P	Q
n	0.28444766	Peri. 69.60911	+0.59520617	-0.80317893
a	2.2898189	Node 343.78758	+0.69952900	+0.53329754
e	0.2252633	Incl. 5.17097	+0.39546023	+0.26551333
P	3.46	H 13.9	G 0.15	

Residuals in seconds of arc

760924	095	1.1+	2.0+	900919	675	0.9-	0.9+	900928	809	0.4+	0.3-
780407	095	0.9-	1.5-	900919	675	0.6-	0.2-	900928	809	0.8+	0.3-
810130	095	0.1+	0.7+	900923	809	0.6+	0.3-	900929	809	1.1-	0.5+
830906	688	0.1-	1.3-	900923	809	0.9+	0.4-	900929	809	0.8-	0.4+
830906	688	0.2-	0.7+	900923	809	1.2+	0.3-	900929	809	0.4-	0.4+
830911	095	3.0-	0.6+	900924	809	0.6-	1.2-	900930	809	0.4+	0.7+
900915	675	1.3+	0.8-	900924	809	0.1-	1.2-	900930	809	1.0+	0.5+
900916	675	0.3-	0.3+	900924	809	0.2+	1.2-	900930	809	1.4+	0.4+
900916	675	0.5-	0.0	900928	809	0.1+	0.4-				

1990 SP
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bardwell

M	225.10949	(1950.0)	P	Q
n	0.62501847	Peri. 47.96701	-0.04147371	-0.98526444
a	1.3547968	Node 45.24753	+0.83366009	-0.12566427
e	0.3871961	Incl. 13.51254	+0.55071843	+0.11602793
P	1.58	H 17.0	G 0.15	

From 20 observations 1990 Aug. 18-1991 Mar. 21, mean residual 0".6.

1990 SQ
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	131.23151	(1950.0)	P	Q
n	0.34820243	Peri. 51.93794	+0.64013457	-0.76820307
a	2.0010050	Node 358.17360	+0.57639100	+0.48846962
e	0.4485318	Incl. 17.49293	+0.50793813	+0.41383750
P	2.83	H 12.5	G 0.15	

From 122 observations 1990 Sept. 23-1991 Mar. 20, mean residual 0".86.

1990 SS
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	138.06053	(1950.0)	P	Q
n	0.44347394	Peri. 115.76180	-0.42640175	-0.90452820
a	1.7030366	Node 359.44635	+0.66420702	-0.31070065
e	0.4749723	Incl. 19.39289	+0.61401188	-0.29205111
P	2.22	H 19.0	G 0.15	

From 35 observations 1990 Sept. 25-1991 Apr. 11, mean residual 0".65.

1990 SM6 = 1983 QH = 1983 RY8 = 1985 DR1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	35.83668	(1950.0)	P	Q
n	0.28673704	Peri. 72.12623	-0.21827292	-0.97511162
a	2.2776143	Node 30.56472	+0.86384068	-0.21160956
e	0.0650292	Incl. 4.38881	+0.45402227	-0.06617190
P	3.44	H 14.0	G 0.15	

Residuals in seconds of arc

830816	801	0.0	0.3-	900915	809	0.1+	1.3+	900925	809	0.0	2.3-
830911	095	0.4+	0.5-	900915	809	0.0	1.3+	900925	809	0.6-	0.8-
850220	046	0.6-	0.2+	900922	809	0.2+	0.6+	900925	809	0.2-	1.1-
850220	046	0.6+	0.4-	900922	809	0.2+	0.5+				
900915	809	0.0	0.5+	900922	809	0.2+	0.6+				

1990 SN7 = 1977 QA2
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	157.21740	(1950.0)	P	Q
n	0.30442460	Peri. 276.24788	+0.81270904	+0.58005383
a	2.1885151	Node 48.31340	-0.50109418	+0.74408992
e	0.2051886	Incl. 4.23513	-0.29733591	+0.33146303
P	3.24	H 15.4	G 0.15	

Residuals in seconds of arc

770819	095	0.2+	0.7-	900914	809	0.8-	0.8+	900925	809	0.3+	0.7+
770822	095	0.1-	0.4+	900922	809	0.5+	0.9-	900925	809	0.4+	0.4+
900914	809	0.1-	0.9+	900922	809	0.4+	1.2-	900925	809	0.4-	0.4+
900914	809	0.5-	0.8+	900922	809	0.0	1.5-				

1990 SP7 = 1979 FM3 = 1986 WQ9
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	253.64690	(1950.0)	P	Q
n	0.21159989	Peri. 136.42069	-0.95832869	+0.28135295
a	2.7890679	Node 59.98145	-0.27524878	-0.86309174
e	0.0830663	Incl. 3.27488	-0.07644760	-0.41942004
P	4.66	H 12.8	G 0.15	

Residuals in seconds of arc

790331	095	0.0	0.0	900914	809	0.1+	0.0	900922	809	0.5-	0.2-
861130	381	(10.1+	5.7-)	900914	809	0.4-	0.4-	900925	809	0.5+	0.0
861130	381	2.1-	0.2-	900918	675	0.2-	0.0	900925	809	0.1+	0.2-
861201	381	(9.0-	7.1-)	900918	675	0.6+	0.5+	900925	809	0.5-	0.6-
861201	381	2.1+	0.3+	900922	809	0.3+	0.7+				
900914	809	0.5+	0.6+	900922	809	0.4-	0.3-				

1990 SV12 = 1985 YK1
Id. A. Lowe
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	61.94038	(1950.0)	P	Q
n	0.17444026	Peri. 315.62105	+0.94741792	-0.31804212
a	3.1722803	Node 62.95380	+0.30351310	+0.85812939
e	0.1771520	Incl. 2.27367	+0.10138580	+0.40306718
P	5.65	H 13.0	G 0.15	

Residuals in seconds of arc

851217	010	0.5+	1.7-	900914	675	1.6+	1.0+	900922	809	0.1+	0.1+
851217	010	0.6-	0.0	900921	809	0.7-	0.0	900922	809	0.5+	0.0
851219	010	0.1+	1.6+	900921	809	0.5-	0.2+	900922	809	0.9+	0.4-
900914	675	1.7-	1.3-	900921	809	0.1-	0.3+				

1990 SV13 = 1978 UB = 1982 UV3
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M	75.37277	(1950.0)		P	Q
n	0.24366103	Peri.	19.33244	+0.89681365	-0.44231027
a	2.5387087	Node	6.94065	+0.39504368	+0.79113583
e	0.0582056	Incl.	4.42448	+0.19916267	+0.42245204
P	4.05	H	14.0	G 0.15	

Residuals in seconds of arc

781028	801	2.5-	0.6-	900816	809	0.3-	0.6+	900923	809	0.5-	0.2+
781030	801	2.5+	0.5+	900825	675	1.4-	1.6-	900923	809	0.2-	0.0
821019	033	0.2-	0.0	900825	675	0.6-	0.8-	900923	809	0.5+	0.1-
821019	033	0.3+	0.2-	900826	809	1.5+	0.6+	900924	809	0.9-	0.3+
900816	809	0.1-	1.1+	900826	809	1.1+	0.5-	900924	809	0.5-	0.2+
900816	809	0.0	0.2+	900826	809	1.7+	0.0	900924	809	0.3-	0.1+

1990 TC = 1972 GV = 1975 VL5 = 1975 XA4 = 1980 TT12 = 1980 UE1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	7.23129	(1950.0)		P	Q
n	0.18647691	Peri.	220.35848	+0.37071416	-0.92384124
a	3.0342592	Node	208.26861	+0.89549684	+0.38277404
e	0.0544446	Incl.	11.61252	+0.24628525	-0.00118527
P	5.29	H	12.0	G 0.15	

Residuals in seconds of arc

720412	095	0.6-	1.8-	900918	675	1.2+	0.2-	901009	413	1.9-	1.3+
751102	095	0.7+	0.3-	900918	675	1.1+	0.9-	901011	413	(4.1-	1.0-)
751203	095	0.3-	1.0-	900920	675	1.3+	1.2-	901011	413	(4.8-	0.7+)
801010	095	0.5-	1.2+	900920	675	1.0+	0.8-				
801017	095	0.0	0.3-	901009	413	2.3-	0.1-				

1990 TV12 = 1989 SX13
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M	88.52088	(1950.0)		P	Q
n	0.08276979	Peri.	114.18131	+0.92782134	+0.09900945
a	5.2146162	Node	241.94097	-0.17579307	+0.96641297
e	0.0896276	Incl.	24.05083	+0.32900510	+0.23715626
P	11.91	H	10.0	G 0.15	

Residuals in seconds of arc

890926	493	0.1+	0.5-	891004	493	0.6-	0.4-	901015	033	0.2+	0.2-
890927	493	0.3-	1.4-	891005	493	0.1+	0.5+	901018	033	0.4-	0.6+
891003	493	1.2+	0.1+	901014	033	1.3+	1.1-	901018	033	1.6-	0.8+
891003	493	0.5-	1.7+	901015	033	0.5+	0.1-				

1990 WA
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bardwell

M	90.36381	(1950.0)		P	Q
n	0.24854244	Peri.	11.98054	+0.14681852	-0.89822754
a	2.5053535	Node	70.72672	+0.86738987	-0.08441438
e	0.4677440	Incl.	26.03254	+0.47547780	+0.43134847
P	3.97	H	15.5	G 0.15	

From 30 observations 1990 Nov. 13-1991 Mar. 20, mean residual 1".0.

1990 XJ
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bardwell

M	232.09046	(1950.0)		P	Q
n	0.50322091	Peri.	97.45217	+0.81698666	+0.16590474
a	1.5654178	Node	254.30804	-0.31329331	+0.93174751
e	0.2190744	Incl.	35.00556	+0.48412818	+0.32298947
P	1.96	H	14.5	G 0.15	

From 25 observations 1990 Dec. 15-1991 Mar. 18, mean residual 0".8.

1991 AF = 1962 SO = 1976 YF4 = 1986 RE10
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M 123.66017	(1950.0)	P	Q
n 0.28567957	Peri. 180.79114	+0.37912542	-0.92101269
a 2.2832314	Node 246.93307	+0.84947914	+0.38474146
e 0.0889458	Incl. 5.57868	+0.36694564	+0.06090679
P 3.45	H 13.3	G 0.15	

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

620930	760(0.04-	0.01-)X	860908 095	0.9-	0.6-	910108 413	0.6+ 0.6-
761218 095	0.4-	0.5+	860911 095	1.0+	0.6+	910117 413	0.4- 0.3+
761220 095	0.6+	0.4-	910107 413	0.2-	0.2+		

1991 AD2 = 1981 WT7 = 1985 UP6 = 1989 TX13
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M 159.99988	(1950.0)	P	Q
n 0.23272706	Peri. 245.32404	+0.89360934	-0.44666914
a 2.6176091	Node 141.16455	+0.43303708	+0.83208148
e 0.1598056	Incl. 4.03705	+0.11807302	+0.32882683
P 4.24	H 12.8	G 0.15	

Residuals in seconds of arc

811125 095	0.2-	1.0+	891003 809	0.8-	0.0	910114 675	1.3- 0.2-
851018 095	0.4+	1.3-	891003 809	0.3-	0.1-	910114 675	1.4- 0.8-
891002 809	0.5-	0.2+	891003 809	1.9+	0.7+	910218 675	0.5- 0.4-
891002 809	0.2-	0.1-	910112 675	2.0+	0.4+	910218 675	1.0+ 0.3+
891002 809	0.2-	0.0	910112 675	0.2+	0.4+		

1991 AJ3 = 1989 SH14
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M 227.61471	(1950.0)	P	Q
n 0.17311540	Peri. 2.62781	+0.35674403	+0.90283282
a 3.1884512	Node 288.35936	-0.86161951	+0.21867203
e 0.0517165	Incl. 14.65094	-0.36103395	+0.37023701
P 5.69	H 11.5	G 0.15	

Residuals in seconds of arc

890926 493	0.9-	0.1-	891004 493	0.7+	1.7+	910109 033	0.7+ 0.3-
890927 493	0.3+	2.2-	891005 493	3.2+	1.7+	910115 033	0.3- 0.4-
891003 493	0.9+	1.2+	891005 493	3.4-	1.5-	910115 033	0.3+ 0.6+
891003 493	1.4-	0.9+	891006 493	0.5+	1.7-	910116 033	0.7- 0.0

1991 AO3 = 1989 NU
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M 202.81825	(1950.0)	P	Q
n 0.26611884	Peri. 250.02194	+0.92431640	+0.35993791
a 2.3937878	Node 88.71212	-0.28515974	+0.87226742
e 0.1164221	Incl. 7.28785	-0.25362003	+0.33105021
P 3.70	H 13.4	G 0.15	

Residuals in seconds of arc

890702 675	0.7-	0.6-	890704 675	1.3-	0.2-	910115 033	0.1- 0.3-
890702 675	0.5+	0.5+	910109 033	0.1+	0.1-	910116 033	0.3+ 0.1+
890704 675	1.5+	0.3+	910115 033	0.2-	0.3+		

1991 BB
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bardwell

M 138.08984	(1950.0)	P	Q
n 0.76295565	Peri. 322.82079	-0.10249942	+0.81750829
a 1.1861416	Node 294.35331	-0.69535207	-0.46628742
e 0.2724535	Incl. 38.46778	-0.71132227	+0.33801810
P 1.29	H 16.0	G 0.15	

From 24 observations 1991 Jan. 12-Apr. 4, mean residual 1".1.

1991 CB = 1962 CH = 1981 BV = 1988 NJ
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	102.47368	(1950.0)	P	Q
n	0.20307265	Peri. 316.56931	+0.07489133	-0.96745616
a	2.8666088	Node 127.64135	+0.97786773	+0.02376461
e	0.1304198	Incl. 17.77245	+0.19536116	+0.25192028
P	4.85	H 11.8	G 0.15	

Residuals in seconds of arc

620204	760	1.3+ 0.3-	910203	400	2.7+ 0.9+	910219	675	0.1- 0.8-
620204	760	1.1- 1.5+	910204	400	0.7- 0.3+	910219	675	0.2+ 0.7-
810130	095	0.1+ 0.9-	910204	400	0.2- 0.4+	910220	400	0.7+ 1.5+
880711	675	0.5- 0.7-	910218	675	0.7- 1.2-	910220	400	1.6- 0.2+
880713	675	0.4+ 0.4-	910218	675	0.3- 1.9-			

1991 CQ
Epoch 1991 Mar. 5.0 ET = JDE 2448320.5 Williams

M	11.67580	(1950.0)	P	Q
n	0.24690584	Peri. 296.27309	-0.35819503	-0.93236684
a	2.5164124	Node 174.04473	+0.93195299	-0.35390345
e	0.4760472	Incl. 28.10182	-0.05621346	+0.07378640
P	3.99	H 16.5	G 0.15	

From 25 observations 1991 Feb. 10-Apr. 4.

1991 CS
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bardwell

M	321.84210	(1950.0)	P	Q
n	0.82824840	Peri. 249.24277	+0.62477513	-0.74201036
a	1.1229549	Node 156.24450	+0.71967354	+0.66799329
e	0.1646180	Incl. 37.11139	-0.30286306	+0.05661790
P	1.19	H 17.5	G 0.15	

From 22 observations 1991 Jan. 19-Mar. 21, mean residual 0".8.

1991 CD1 = 1955 DB = 1988 PG
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M	56.68249	(1950.0)	P	Q
n	0.27493000	Peri. 66.96703	-0.90154289	+0.29531880
a	2.3423700	Node 128.64655	-0.35003107	-0.92741785
e	0.2246080	Incl. 23.88541	+0.25435932	-0.22952766
P	3.58	H 12.5	G 0.15	

Residuals in seconds of arc

550223	760	1.1+ 0.2-	880810	675	1.0- 2.9-	910317	675	1.7+ 1.8+
550223	760	0.4+ 6.1-	910210	675	1.6- 0.2-	910317	675	1.9+ 1.5+
880808	675	0.4- 2.2-	910213	675	2.1- 0.7-			

1991 CN1 = 1980 GW1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	73.89842	(1950.0)	P	Q
n	0.26302540	Peri. 327.00250	-0.91710934	-0.39858241
a	2.4125200	Node 189.51465	+0.37373916	-0.85402682
e	0.1150455	Incl. 2.26068	+0.13867044	-0.33432058
P	3.75	H 13.9	G 0.15	

Residuals in seconds of arc

800408	675	0.6- 0.1+	910210	372	0.9+ 0.3-	910309	372	1.0+ 0.9+
800409	675	0.6+ 0.3-	910212	372	1.4- 1.2-	910309	372	0.8- 0.9+
910207	372	0.0 0.2-	910212	372	0.9- 0.7-	910312	372	0.2- 0.1+
910207	372	0.4+ 0.5+	910216	372	1.5+ 0.3-	910312	372	0.1- 0.8-
910210	372	1.0- 0.0	910216	372	0.4+ 1.2+			

1991 CA3 = 1983 AC2 = 1983 EU3
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams
M 157.09273 (1950.0) P Q
n 0.36907107 Peri. 105.59720 +0.05750381 -0.99310131
a 1.9248463 Node 340.23200 +0.76034556 +0.10989920
e 0.1006135 Incl. 17.58690 +0.64696827 -0.04088959
P 2.67 H 14.0 G 0.15
Residuals in seconds of arc

830112	688	0.7-	0.4+	910214	675	0.0	1.2-	910317 675	0.4-	0.3-
830112	688	0.3-	0.1-	910214	675	1.6-	0.4-	910317 675	1.7-	0.0
830122	688	(6.8+	2.9+)	910219	675	0.0	0.9-	910319 675	1.4-	1.2-
830122	688	2.0+	1.1+	910219	675	0.5+	0.5+			
830315	095	2.3+	2.8+	910220	675	1.1+	0.7-			

1991 CL3 = 1972 VB2 = 1989 UQ2
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda
M 91.23560 (1950.0) P Q
n 0.17272966 Peri. 78.51943 -0.18062084 -0.97633977
a 3.1931901 Node 22.94854 +0.74078496 -0.21456283
e 0.1453671 Incl. 17.75467 +0.64700368 -0.02689690
P 5.71 H 11.4 G 0.15
Residuals in seconds of arc

721103	033	(6.8-	3.8+)	891029	400	0.8-	0.8-	910214 675	0.2+	0.9-
721104	033	0.3-	0.8+	891102	400	0.5-	0.2-	910214 675	0.1-	0.6+
891029	400	1.1+	0.5+	891102	400	1.2+	1.5-	910218 675	0.0	0.7+
891029	400	1.0-	1.1+	891102	400	0.4+	0.2+	910220 675	0.2-	0.4-

1991 CM3 = 1987 BP2
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Urata
M 156.57383 (1950.0) P Q
n 0.26015857 Peri. 297.48781 +0.42761149 -0.90174393
a 2.4302109 Node 127.05467 +0.85480698 +0.38059118
e 0.1328391 Incl. 4.54899 +0.29402967 +0.20495913
P 3.79 H 12.8 G 0.15
Residuals in seconds of arc

870131	046	0.3-	0.7+	870202	046	1.2+	0.2+	910220 400	0.7+	0.9+
870131	046	1.0-	0.6-	870202	046	1.3+	2.9-	910220 400	0.2+	0.7-
870201	046	1.8-	2.1+	910214	400	0.1-	0.0	910318 898	0.3-	0.4+
870201	046	0.7+	0.4+	910214	400	0.4-	0.1-	910318 898	0.1-	0.4-

1991 DA
Epoch 1991 Mar. 5.0 ET = JDE 2448320.5 Williams
M 2.19670 (1950.0) P Q
n 0.02400427 Peri. 191.23809 -0.74072996 -0.20180135
a 11.9017382 Node 313.40877 +0.66421377 -0.07702919
e 0.8673789 Incl. 61.88977 +0.10069356 -0.97639271
P 41.06 H 13.5 G 0.15
From 16 observations 1991 Feb. 18-Apr. 5.

1991 DB
Epoch 1991 Feb. 13.0 ET = JDE 2448300.5 Williams
M 331.93221 (1950.0) P Q
n 0.43664261 Peri. 50.89894 -0.87109846 +0.48533189
a 1.7207534 Node 157.82383 -0.48914835 -0.84376747
e 0.4032762 Incl. 11.47680 -0.04383341 -0.22914932
P 2.26 H 18.5 G 0.15
From 25 observations 1991 Feb. 13-Mar. 21.

1991 DG
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bardwell

M	116.25808	(1950.0)	P	Q
n	0.57810723	Peri. 63.05581	-0.45858898	+0.88864767
a	1.4271308	Node 179.64129	-0.86840655	-0.44785334
e	0.3628256	Incl. 11.15763	-0.18859006	-0.09865445
P	1.70	H 18.5	G 0.15	

From 17 observations 1991 Feb. 20-Apr. 4, mean residual 0".9.

1991 DO = 1988 RX9
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Urata

M	1.85140	(1950.0)	P	Q
n	0.21530086	Peri. 246.81778	-0.73375461	+0.67664511
a	2.7570134	Node 335.62426	-0.55630193	-0.65012837
e	0.0911699	Incl. 8.53917	-0.39004146	-0.34566531
P	4.58	H 12.2	G 0.15	

Residuals in seconds of arc

880910	809	0.2-	0.5-	880913	809	0.0	0.5+		910223	889	0.6+	0.4-
880910	809	0.1+	0.5-	910219	889	0.2+	1.2+	Y	910223	889	1.1-	0.5-
880910	809	0.4+	0.5-	910219	889	0.6-	0.4+		910309	889	0.0	0.2+
880913	809	0.3-	0.3+	910221	889	1.0-	1.3-					
880913	809	0.1-	0.5+	910221	889	1.8+	0.3+					

1991 DX = 1983 EL4 = 1989 SK9
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 (J-P) Marsden

M	124.79219	(1950.0)	P	Q
n	0.24091782	Peri. 263.37768	+0.18045087	-0.98346816
a	2.5579436	Node 176.12742	+0.96742364	+0.17469457
e	0.1503996	Incl. 12.91511	+0.17756403	+0.04766751
P	4.09	H 13.0	G 0.15	

Residuals in seconds of arc

830315	095	0.4-	2.3-	890926	809	0.2-	0.2+		910219	675	1.1-	0.4+
890925	809	0.7-	1.1-	890926	809	0.1+	0.2+		910220	675	0.3-	0.4+
890925	809	0.2+	1.0-	890926	809	0.3+	0.1+		910318	675	0.3+	0.9-
890925	809	0.9+	1.0-	910219	675	0.1+	0.2-		910318	675	1.1+	0.1+

1991 EA = 1983 AG6 = 1983 CA8
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	92.35551	(1950.0)	P	Q
n	0.25515890	Peri. 151.71644	-0.78408997	-0.62034910
a	2.4618536	Node 349.87402	+0.54679087	-0.67579107
e	0.0749919	Incl. 6.28049	+0.29363696	-0.39808721
P	3.86	H 13.3	G 0.15	

Residuals in seconds of arc

830115	095	0.4-	0.3-	910310	399	1.5+	0.0		910319	402	0.0	0.9-
830210	095	0.5+	0.6+	910310	399	1.5+	1.1+		910319	402	0.7+	0.5+
910307	399	2.8-	0.5-	910318	402	0.2+	0.2-					
910307	399	2.2-	0.6-	910318	402	1.1+	0.4+					

1991 ED = 1981 JO2
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	337.74701	(1950.0)	P	Q
n	0.28449491	Peri. 242.28012	+0.11611990	+0.99060888
a	2.2895654	Node 34.62324	-0.86062466	+0.13662892
e	0.1074320	Incl. 7.29864	-0.49582392	-0.00515670
P	3.46	H 14.3	G 0.15	

Residuals in seconds of arc

810505	675	1.2-	0.3-	910309	372	(5.5-	0.0)	910402	372	0.9+ 0.9-
810506	675	1.2+	0.3+	910309	372	2.2-	0.2-	910402	372	0.7- 1.2+
910306	372	0.8+	0.1+	910313	372	1.3-	0.2+			
910306	372	1.8+	0.5+	910313	372	0.7+	0.9-			

1991 EE

Epoch 1991 Mar. 25.0 ET = JDE 2448340.5				Marsden	
M	323.13105	(1950.0)		P	Q
n	0.29296099	Peri.	115.13336	+0.23798508	+0.97067338
a	2.2452404	Node	168.47862	-0.94111201	+0.23911091
e	0.6245045	Incl.	9.80227	-0.24014847	+0.02488307
P	3.36	H	17.5	G 0.15	

From 24 observations 1991 Mar. 13-Apr. 5.

1991 EG = 1984 CC

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Kaneda	
M	106.34193	(1950.0)		P	Q
n	0.28751420	Peri.	81.34207	-0.62834507	-0.77494292
a	2.2735081	Node	47.81518	+0.67262982	-0.58521921
e	0.2018284	Incl.	5.27796	+0.39083449	-0.23870892
P	3.43	H	14.1	G 0.15	

Residuals in seconds of arc

840201	046	0.2-	0.0	910309	887	0.6+	1.7-	910314	887	1.5- 0.7+
840201	046	0.1-	1.0-	910309	887	1.6-	0.6+	910314	887	0.7+ 1.1+
840204	046	0.8+	0.0	910312	887	0.3+	0.0	910317	887	0.1+ 0.2-
840204	046	0.5-	1.1+	910312	887	1.1+	0.3-	910317	887	0.4+ 0.3-

1991 EU = 1969 VR1 = 1976 YC3 = 1977 AK = 1981 GE = 1989 TU16

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5				Nakano	
M	144.02073	(1950.0)		P	Q
n	0.29165978	Peri.	358.56489	-0.18851879	-0.97866173
a	2.2519134	Node	102.29646	+0.90181856	-0.20546777
e	0.0990167	Incl.	4.79910	+0.38882382	+0.00205370
P	3.38	H	13.7	G 0.15	

Residuals in seconds of arc

691115	095	3.5+	3.9-	891007	809	0.8+	0.7-	910314	372	2.5+ 1.2-
761216	095	0.5+	0.3+	891008	809	0.7-	0.2+	910316	372	1.3- 0.3+
770113	095	3.0-	2.2+	891008	809	0.4-	0.2+	910316	372	0.1+ 0.1-
810405	688	1.2-	2.1-	891008	809	0.1-	0.1+	910320	372	0.4+ 1.0-
810405	688	1.1-	0.3-	910309	372	0.4-	0.7-	910320	372	0.7- 1.2+
891007	809	0.1+	0.9-	910309	372	2.7-	0.5-	910323	372	0.9+ 0.5+
891007	809	0.4+	0.8-	910314	372	0.6+	1.2-	910323	372	1.3+ 0.1-

1991 FA

Epoch 1991 Mar. 25.0 ET = JDE 2448340.5				Marsden	
M	51.61037	(1950.0)		P	Q
n	0.34247040	Peri.	90.85553	+0.33936439	-0.94045194
a	2.0232708	Node	339.27343	+0.83953388	+0.31218845
e	0.4654761	Incl.	3.16564	+0.42428137	+0.13449357
P	2.88	H	17.5	G 0.15	

From 14 observations 1991 Mar. 17-Apr. 5.

1991 FB
Epoch 1991 Mar. 25.0 ET = JDE 2448340.5 Bowell

M	347.66233	(1950.0)	P	Q
n	0.27223190	Peri. 218.25256	-0.55189488	+0.83239314
a	2.3578167	Node 18.42179	-0.72045613	-0.44554089
e	0.5602665	Incl. 9.16544	-0.41994644	-0.32956787
P	3.62	H 18.8	G 0.15	

From 12 observations 1991 Mar. 18-24.

1991 FE
Epoch 1991 Mar. 25.0 ET = JDE 2448340.5 Marsden

M	76.77975	(1950.0)	P	Q
n	0.28076620	Peri. 228.86276	+0.74161015	-0.67076790
a	2.3097918	Node 173.24525	+0.63652503	+0.69928426
e	0.5356999	Incl. 4.49063	+0.21177884	+0.24712739
P	3.51	H 14.5	G 0.15	

From 12 observations 1991 Mar. 18-Apr. 5.

1991 FL = 1987 BJ2
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	69.79895	(1950.0)	P	Q
n	0.26703906	Peri. 283.88796	-0.99624686	+0.08337063
a	2.3882852	Node 260.89816	-0.06748382	-0.91647900
e	0.1425773	Incl. 1.35045	-0.05420453	-0.39129986
P	3.69	H 13.1	G 0.15	

Residuals in seconds of arc

870130	046	0.0 1.0-	910317	894	0.2- 1.8-	910320	894	0.8+ 0.2-	
870130	046	0.4- 0.1-	910317	894	0.9+ 0.1-	910323	894	0.2+ 0.9-	Y
870201	046	1.7+ 0.8+	910319	894	1.1+ 2.3+				
870201	046	1.3- 0.3+	910319	894	2.8- 0.7+				

1991 GA = 1976 GB3
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	28.67588	(1950.0)	P	Q
n	0.26034790	Peri. 190.17421	-0.66816220	+0.73852945
a	2.4290325	Node 37.99070	-0.67187678	-0.54686034
e	0.1134860	Incl. 8.42513	-0.31959485	-0.39435772
P	3.79	H 12.9	G 0.15	

Residuals in seconds of arc

760401	095	(9.9+ 3.8+)	760405	095	2.0- 0.9+	910403	372	0.9+ 0.1-	
760401	095	0.2- 0.1+	910318	898	0.2+ 0.2+	910408	372	0.9+ 0.1-	
760402	095	1.9+ 0.1-	910318	898	0.3- 0.0	910408	372	0.3- 0.3+	
760404	095	0.3+ 0.8-	910403	372	0.5- 0.4-	910409	372	1.0- 0.1+	

2579 P-L = 1980 GU1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	92.63999	(1950.0)	P	Q
n	0.28284163	Peri. 216.42513	-0.46001010	+0.88579064
a	2.2984788	Node 26.35031	-0.77845345	-0.36909434
e	0.1709194	Incl. 7.94678	-0.42708422	-0.28132597
P	3.48	H 14.6	G 0.15	

Residuals in seconds of arc

600924	675	1.1- 0.3-	601017	675	0.4- 0.5-	800408	675	0.2+ 0.2+	
600926	675	0.8+ 0.7+	601022	675	0.7- 0.0	800409	675	0.2- 0.2-	
600928	675	0.6+ 0.4+	601025	675	0.3+ 0.2-				
600929	675	0.4+ 0.3-	601026	675	0.1+ 0.3+				

4523 P-L = 1977 CE1
Id. E. Bowell (MPC 14206), T. Kobayashi (ibid.)

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M 278.09053	(1950.0)	P	Q	
n 0.08274797	Peri. 113.47316	+0.77729975	+0.62908330	
a 5.2155226	Node 207.54620	-0.58309441	+0.71577152	
e 0.0452773	Incl. 0.95410	-0.23623297	+0.30319190	
P 11.91	H 11.2	G 0.15		

Residuals in seconds of arc

600924 675	0.3+	0.2-	601017 675	0.8-	0.3+	770214 675	0.5+	0.2-
600926 675	0.1-	1.2-	601022 675	0.1+	0.0	780315 675	0.4-	0.1-
600927 675	0.1+	0.8+	601024 675	0.8+	0.9+	780316 675	0.5+	0.3+
600928 675	0.8+	0.0	601026 675	0.8+	0.1-			
601017 675	1.9-	0.3-	770213 675	0.5-	0.1+			

4528 P-L = 1990 SA14

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nagata

M 105.31229	(1950.0)	P	Q	
n 0.26229693	Peri. 178.31747	+0.97421239	-0.22537778	
a 2.4169847	Node 194.72094	+0.20650769	+0.90978388	
e 0.1992233	Incl. 2.41957	+0.09091096	+0.34856584	
P 3.76	H 15.0	G 0.15		

Residuals in seconds of arc

600924 675	0.1+	0.5+	900923 809	0.3+	0.9+	900925 809	1.1-	0.2+
600926 675	0.4-	0.6-	900923 809	1.1+	1.1+	900925 809	0.5-	0.2+
600927 675	0.3+	0.7+	900924 809	(8.2-	0.3-)	900925 809	0.2-	0.2+
600928 675	0.2-	0.9-	900924 809	(7.6-	0.5-)	900927 809	(11.2-	13.3+)
601017 675	0.3-	0.2-	900924 809	(7.2-	0.3-)	900927 809	(10.9-	13.4+)
601022 675	0.2-	0.3+	900924 809	0.5-	1.2-	900927 809	(10.5-	13.4+)
601024 675	0.2+	0.1-	900924 809	0.2-	1.3-			
900923 809	0.4-	0.8+	900924 809	0.3+	1.3-			

6516 P-L = 1980 UX1

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M 138.75314	(1950.0)	P	Q	
n 0.29703654	Peri. 2.06253	+0.96738411	-0.25212175	
a 2.2246557	Node 12.62243	+0.23076141	+0.83713843	
e 0.2432983	Incl. 6.44991	+0.10448518	+0.48542133	
P 3.32	H 16.0	G 0.15		

Residuals in seconds of arc

600924 675	0.3-	0.5-	601017 675	0.1+	0.6+	801031 675	0.4+	0.2-
600926 675	0.0	0.1+	601022 675	0.2-	0.1+	801102 675	0.4-	0.1+
600927 675	0.1-	0.3-	601024 675	0.5+	0.4-			
600928 675	0.6+	0.4+	601026 675	0.6-	0.1+			

7639 P-L = 1979 FJ = 1983 CO8 = 1991 AF3

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M 29.71201	(1950.0)	P	Q	
n 0.23805975	Peri. 78.16966	-0.98447371	-0.15799552	
a 2.5783709	Node 92.70489	+0.11581065	-0.91204472	
e 0.1814016	Incl. 4.39107	+0.13190681	-0.37843340	
P 4.14	H 14.1	G 0.15		

Residuals in seconds of arc

601017 675	1.0-	0.4-	790327 801	0.6+	1.5+	910115 033	0.1-	0.2+
601022 675	0.7+	0.2+	830210 095	0.7-	2.3-	910116 033	0.1-	0.4+
601025 675	0.4+	0.1-	910109 033	0.0	0.7+			
601026 675	0.0	0.3+	910115 033	0.2+	0.2+			

9512 P-L = 1991 EW
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Williams

M	55.20174	(1950.0)	P	Q
n	0.30841754	Peri. 80.34615	-0.87173810	+0.48936258
a	2.1695850	Node 128.94832	-0.46094249	-0.80216039
e	0.1265082	Incl. 1.80031	-0.16614665	-0.34214468
P	3.20	H 14.5	G 0.15	

Residuals in seconds of arc

601017	675	0.5+	0.6+	910314	372	(4.4+	0.4-)	910317	372	0.7-	0.3+
601022	675	1.1-	0.9-	910314	372	(7.1+	1.7+)	910317	372	0.1+	0.8-
601024	675	0.7+	0.1+	910316	372	1.2+	0.6-	910402	372	1.1-	0.1+
601026	675	0.1-	0.2+	910316	372	0.6-	1.0+	910402	372	1.0+	0.0

9518 P-L = 1978 EH10
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	145.66340	(1950.0)	P	Q
n	0.25975758	Peri. 258.24153	+0.00624108	+0.99994123
a	2.4327112	Node 12.12656	-0.90019823	+0.00947825
e	0.1684087	Incl. 2.41850	-0.43543564	-0.00526274
P	3.79	H 14.7	G 0.15	

Residuals in seconds of arc

601017	675	0.2+	0.1+	601024	675	0.5+	0.2-	780315	675	0.0	0.1-
601022	675	0.7-	0.1-	601026	675	0.0	0.2+	780316	675	0.0	0.1+

9546 P-L = 1976 PG = 1982 SR5
Id. T. Kobayashi (MPC 14631)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	359.40939	(1950.0)	P	Q
n	0.17828790	Peri. 124.13250	-0.71149862	+0.70100500
a	3.1264738	Node 100.42937	-0.65985250	-0.64274948
e	0.1030384	Incl. 2.83235	-0.24158725	-0.30897425
P	5.53	H 11.4	G 0.15	

Residuals in seconds of arc

600924	675	1.0+	0.1-	760801	095	0.2+	0.5-	910220	400	0.5+	2.3-
601017	675	0.2+	0.5+	820916	095	0.1+	0.4-	910320	372	2.1-	0.1+
601022	675	1.7-	0.1-	910214	400	0.9+	0.8-	910320	372	3.4-	0.9+
601024	675	0.3+	1.0-	910214	400	1.3+	1.0-				
601026	675	0.4+	0.2-	910220	400	2.3+	1.5+				

1281 T-2 = 1990 UA4
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda

M	56.99851	(1950.0)	P	Q
n	0.23580971	Peri. 261.05114	-0.07961095	-0.99543090
a	2.5947464	Node 193.84889	+0.97904319	-0.06813602
e	0.1683953	Incl. 12.72388	+0.18744740	-0.06689394
P	4.18	H 14.3	G 0.15	

Residuals in seconds of arc

730929	675	1.1+	0.7-	731005	675	0.3-	0.0	901020	809	1.0+	0.2+
730929	675	0.3+	0.1-	731005	675	0.1-	0.5-	901020	809	0.2+	0.3-
730930	675	0.0	1.1+	901016	809	0.2+	0.2+	901024	809	0.7+	1.3+
730930	675	0.0	1.4+	901016	809	0.8-	0.5-	901024	809	0.4-	0.0
731004	675	0.3-	0.4-	901016	809	1.7-	0.8-	901024	809	0.9-	0.4+
731004	675	0.7-	0.7-	901020	809	1.6+	0.5-				

2145 T-2 = 1988 DZ1 = 1990 RO9
Id. H. Kaneda (MPC 16242), E. Bowell

Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	70.54898	(1950.0)	P	Q
n	0.22915943	Peri. 197.03877	+0.90965990	-0.41419524
a	2.6447070	Node 187.65037	+0.40303382	+0.89826024
e	0.1616481	Incl. 13.46660	+0.10041214	+0.14687014
P	4.30	H 14.4	G 0.15	

Residuals in seconds of arc

730919 675	0.9-	1.4+	730930 675	0.1-	0.3+	880223 809	0.3+	0.1-
730919 675	0.5+	0.1+	730930 675	0.2-	0.4-	880223 809	0.0	0.2+
730920 675	(2.6-	1.7-)	731004 675	1.1+	0.2+	880223 809	0.5-	0.5+
730924 675	(2.7-	0.7+)	731004 675	0.5+	1.0-	900914 675	0.6-	0.1+
730924 675	(3.9-	0.1-)	731005 675	(2.8+	0.6-)	900914 675	0.3+	0.4-
730925 675	2.1-	0.1+	731005 675	0.3+	0.2+	900918 675	0.1-	0.4-
730925 675	(1.6-	2.7+)	880216 809	0.1-	0.4-	900918 675	0.6+	0.4-
730929 675	1.4+	0.4+	880216 809	0.2-	0.1+			
730929 675	0.6-	0.9-	880216 809	0.5+	1.0-			

2272 T-2 = 1975 EJ
Id. T. Kobayashi (MPC 15257)
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nakano

M	357.11879	(1950.0)	P	Q
n	0.29340024	Peri. 161.93718	-0.97262737	-0.23216598
a	2.2429989	Node 4.67096	+0.19568833	-0.84098097
e	0.0934992	Incl. 6.87242	+0.12530791	-0.48872279
P	3.36	H 13.6	G 0.15	

Residuals in seconds of arc

730925 675	1.0+	0.3-	730930 675	0.9+	1.1-	750304 095	1.2+	0.2+
730925 675	1.2+	0.7+	731004 675	0.4-	0.7-	750314 095	1.6-	1.0-
730929 675	0.9-	2.9+	731004 675	0.0	0.2-	801101 675	0.0	0.3+
730929 675	0.6+	1.7+	731005 675	1.7-	2.5-	801102 675	0.2-	0.2+
730930 675	0.6+	0.0	731005 675	0.6-	1.6-			

3176 T-2 = 1977 UR3
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	170.27381	(1950.0)	P	Q
n	0.26089568	Peri. 106.52086	-0.66619956	-0.74512509
a	2.4256313	Node 25.33692	+0.65349401	-0.60334714
e	0.0566649	Incl. 4.16658	+0.35933789	-0.28418452
P	3.78	H 14.9	G 0.15	

Residuals in seconds of arc

730919 675	1.2+	1.5-	730925 675	0.2+	0.2-	731004 675	0.9-	0.5-
730919 675	0.2+	1.9+	730925 675	0.5-	0.1+	731005 675	0.0	0.1-
730919 675	0.0	1.8-	730929 675	0.4-	0.9+	731005 675	0.0	0.2+
730919 675	0.7+	0.8+	730929 675	0.1-	1.2+	771018 675	0.2+	0.5-
730920 675	0.0	0.1-	730930 675	0.1+	0.1+	771019 675	0.2-	0.4+
730924 675	0.2-	0.5-	730930 675	0.3-	0.2+			
730924 675	1.2-	0.6+	731004 675	1.2+	1.0-			

3297 T-2 = 1977 UF5
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell

M	109.14134	(1950.0)	P	Q
n	0.26600559	Peri. 174.13455	-0.82898199	+0.55708342
a	2.3944671	Node 39.85112	-0.51618758	-0.72807353
e	0.1590935	Incl. 4.42737	-0.21526551	-0.39945838
P	3.71	H 13.8	G 0.15	

Residuals in seconds of arc

730919 675	1.1+	1.2-	730924 675	0.4+	1.2+	730925 675	0.1-	0.4+
730919 675	0.4-	0.4-	730924 675	1.4+	0.2+	730929 675	0.4+	0.1+
730920 675	1.6-	0.0	730925 675	0.2+	0.8+	730929 675	0.3-	0.3-

730929 675 0.6- 0.0 731004 675 0.1- 0.2- 731005 675 (2.0+ 2.8-)
730929 675 0.0 0.7+ 731004 675 0.1+ 0.8+ 731005 675 0.0 0.9-
730930 675 (0.2+ 4.0-) 731004 675 0.2- 0.2+ 771018 675 1.1+ 0.0
730930 675 0.1- 0.5- 731004 675 0.4+ 0.3+ 771019 675 1.1- 0.0
730930 675 (1.3+ 3.1-) 731005 675 (2.9+ 1.8-)
730930 675 0.3+ 0.4- 731005 675 0.8- 0.7-

3336 T-2 = 1980 PJ4
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
M 4.40412 (1950.0) P Q
n 0.27409855 Peri. 230.81786 +0.88580152 -0.46282986
a 2.3470998 Node 156.69286 +0.44775346 +0.83323899
e 0.2062563 Incl. 4.90433 +0.12195290 +0.30249182
P 3.60 H 15.4 G 0.15
Residuals in seconds of arc
730919 675 0.0 0.4- 730924 675 0.5- 0.8+ 730925 675 0.1- 0.6-
730919 675 0.4- 0.1- 730924 675 0.0 0.6+ 800804 675 0.0 0.4-
730920 675 0.5+ 0.3+ 730925 675 0.4+ 0.5- 800805 675 0.0 0.4+

5140 T-2 = 1991 AM1
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Kaneda
M 238.19610 (1950.0) P Q
n 0.18932908 Peri. 22.32759 +0.51617941 +0.84222206
a 3.0037088 Node 279.06288 -0.80766643 +0.41818868
e 0.0853381 Incl. 9.06749 -0.28501534 +0.34026495
P 5.21 H 11.4 G 0.15
Residuals in seconds of arc
730919 675 (5.4+ 0.6+) 730929 675 2.3- 0.7+ 731005 675 0.8+ 0.1+
730920 675 0.1+ 0.3- 730929 675 1.7- 0.0 910115 889 1.9+ 0.6+
730920 675 1.5+ 0.4+ 730930 675 0.4+ 0.1- 910115 889 0.7+ 0.1-
730924 675 0.7+ 0.9- 730930 675 0.4+ 0.4+ 910118 889 1.7- 0.6-
730924 675 0.5+ 1.3- 731004 675 0.4+ 0.3+ 910118 889 0.2- 1.3-
730925 675 1.1- 0.1+ 731004 675 0.5+ 0.2- 910208 889 0.8- 0.5+
730925 675 1.2- 0.4- 731005 675 1.1+ 1.1+ 910208 889 0.2+ 0.9+

1168 T-3 = 1990 RN7
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Nagata
M 61.27831 (1950.0) P Q
n 0.22387862 Peri. 49.72919 +0.70529785 -0.70865734
a 2.6861338 Node 355.28040 +0.56006911 +0.57341662
e 0.1586810 Incl. 13.32702 +0.43460042 +0.41109386
P 4.40 H 14.4 G 0.15
Residuals in seconds of arc
771007 675 0.7+ 1.6- 771017 675 2.2- 0.9+ 900914 809 1.7- 0.4-
771011 675 1.6+ 0.8+ 771022 675 0.3- 1.2- 900915 809 0.9- 1.1-
771011 675 2.2+ 1.6+ 771022 675 1.3- 0.4+ 900915 809 0.7- 1.1-
771012 675 1.9+ 0.0 900913 809 0.1- 0.9+ 900915 809 0.3- 1.0-
771012 675 1.4+ 0.7+ 900913 809 0.2+ 0.7+ 900921 809 2.3+ 1.1+
771016 675 2.3- 0.9- 900913 809 0.7+ 0.6+ 900921 809 2.6+ 0.9+
771016 675 0.7- 0.3- 900914 809 2.3- 0.4- 900921 809 2.8+ 1.0+
771017 675 0.2+ 0.4+ 900914 809 1.9- 0.5-

3395 T-3 = 1980 PO3
Epoch 1991 Dec. 10.0 ET = JDE 2448600.5 Bowell
M 221.61373 (1950.0) P Q
n 0.27906768 Peri. 345.10590 -0.95895953 -0.28353400
a 2.3191545 Node 178.41752 +0.26777727 -0.90822794
e 0.0496397 Incl. 4.68867 +0.09323068 -0.30778318
P 3.53 H 14.6 G 0.15

Residuals in seconds of arc

771007	675	1.3-	1.4+	771016	675	0.6-	1.6-	771021	675	1.5-	0.9+
771011	675	(3.8-	1.7+)	771016	675	0.5-	0.2-	771022	675	2.0+	0.1-
771011	675	(2.7-	1.4+)	771017	675	1.2-	0.0	771022	675	1.0+	0.6-
771012	675	0.6+	0.9-	771017	675	0.5-	0.6+	800803	675	0.2+	0.0
771012	675	1.2+	0.7-	771021	675	0.7+	1.3+	800805	675	0.2-	0.0

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NEW NAMES OF MINOR PLANETS.

(2019) van Albada = 1935 SX1
Discovered 1935 Sept. 28 by H. van Gent at Johannesburg.
Named in memory of G. B. van Albada (1911-1972), Dutch astronomer, director of the Bosscha Observatory in Lembang from 1948 to 1958 and of the Astronomical Institute of the Municipal University in Amsterdam from 1959 until his death.

(2183) Neufang = 1959 OB
Discovered 1959 July 26 by C. Hoffmeister at Bloemfontein.
Named for a village in Thuringia where the discoverer lived and worked for many decades. The village is in the vicinity of the Sonneberg Observatory, which was established by the discoverer, and it is the current staff members of that Observatory who have proposed the name for this minor planet.

(2203) van Rhijn = 1935 SQ1
Discovered 1935 Sept. 28 by H. van Gent at Johannesburg.
Named in memory of P. J. van Rhijn (1886-1960), Dutch astronomer, former director of the Kapteyn Astronomical Laboratory. His main activity was the investigation of the Galactic structure.

(2378) Pannekoek = 1935 CY
Discovered 1935 Feb. 13 by H. van Gent at Johannesburg.
Named in memory of A. Pannekoek (1873-1960), Dutch astronomer, director of the Astronomical Institute of the Municipal University in Amsterdam from 1921 to 1941. His main activity was stellar astrophysics.

(2801) Huygens = 1935 SU1
Discovered 1935 Sept. 28 by H. van Gent at Johannesburg.
Named in memory of Christian Huygens (1629-1695), celebrated Dutch physicist and astronomer, well known for his wave theory of light and as the discoverer of Saturn’s satellite Titan.

(2831) Stevin = 1930 SZ
Discovered 1930 Sept. 17 by H. van Gent at Johannesburg.
Named in memory of Simon Stevin (1548-1620), Dutch mathematician, inventor of the decimal point.

(2945) Zanstra = 1935 ST1
Discovered 1935 Sept. 28 by H. van Gent at Johannesburg.
Named in memory of H. Zanstra (1894-1972), Dutch astronomer, director of the Astronomical Institute of the Municipal University in Amsterdam from 1946 to 1959. He is well known for his method for obtaining the surface temperatures of the central stars of planetary nebulae.

(2947) Kippenhahn = 1955 QP1
Discovered 1955 Aug. 22 by I. Groeneveld at Heidelberg.
Named in honor of Rudolf Kippenhahn (1926-), German astronomer, director of the Max-Planck-Institut fur Physik und Astrophysik at Garching and currently a vice president of the IAU.

(2951) Perepadin = 1977 RB8
Discovered 1977 Sept. 13 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of Aleksandr Ivanovich Perepadin, friend of the discoverer, learned agronomist, good manager, reader at the Crimean Agricultural Institute and chairman of the Bakhchisaraj District Council.

(3246) Bidstrup = 1976 GQ3
Discovered 1976 Apr. 1 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of Herluf Bidstrup (1912-1988), well known Danish caricaturist.

(3302) Schliemann = 1977 RS6
Discovered 1977 Sept. 11 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of Heinrich Schliemann (1822-1890), famous German archaeologist, who undertook, at his own expense, a 12-year excavation at Hissarlik and discovered the ancient site of Troy. Name proposed following a suggestion by C. E. Spratt.

(3311) Podobed = 1976 QM1
Discovered 1976 Aug. 26 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of Vladimir Vladimirovich Podobed, professor at the Sternberg Astronomical Institute, prominent specialist on meridian and photographic astrometry and author of two textbooks on astrometry.

(3323) Turgenev = 1979 SY9
Discovered 1979 Sept. 22 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of the famous Russian writer Ivan Sergeevich Turgenev (1818-1883).

(3349) Manas = 1979 FH2
Discovered 1979 Mar. 23 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named for an epic poem of the Kirghiz people.

(3358) Anikushin = 1978 RX
Discovered 1978 Sept. 1 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of Mikhail Konstantinovich Anikushin, member of the U.S.S.R. Academy of Arts, well known Soviet sculptor, creator of the Pushkin monument in Leningrad and other works.

(3359) Purcari = 1978 RA6
Discovered 1978 Sept. 13 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named for the producer of the best Moldavian wines.

(3372) Bratijchuk = 1976 SP4
Discovered 1976 Sept. 24 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of Matrena Vasil'evna Bratijchuk, professor of astronomy and founder and head of the Laboratory for Space Research at Uzhgorod University.

(3373) Koktebelia = 1978 QQ2
Discovered 1978 Aug. 31 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named for the Crimean settlement of Koktebel', home and workplace of the brilliant Russian poet, painter and water-colorist Maksimilian Aleksandrovich Kirienko-Voloshin (1877-1932), almost all of whose work was devoted to the Crimea.

(3385) Bronnina = 1979 SK11
Discovered 1979 Sept. 24 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of Nina Mikhailovna Bronnikova, astronomer at the Pulkovo Observatory. One of the main observers with the Pulkovo normal astrograph for many years, she is known for her work on star catalogues and for her observations of minor planets and comets.

(3408) Shalamov = 1977 QG4
Discovered 1977 Aug. 18 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of the Soviet writer Varlam Tikhonovich Shalamov (1907-1982).

(3436) Ibadinov = 1976 SS3
Discovered 1976 Sept. 24 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of Hursandkul Ibadinov, researcher on comets, founder and head of the laboratory for modeling cometary processes at the Tadjik Academy of Sciences' Institute of Astrophysics in Dushanbe.

(3444) Stepanian = 1980 RJ2
Discovered 1980 Sept. 7 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of husband-and-wife staff members at the Crimean Astrophysical Observtory for more than 30 years. Natalia Nikolaevna Stepanian, prominent astrophysicist, is head of the observatory's solar physics department. Arnol'd Artashesovich Stepanian, head of the gamma-ray laboratory, initiated the construction of the unique 48-element telescope for the observatory's research on gamma-ray sources.

(3448) Narbut = 1977 QA5
Discovered 1977 Aug. 22 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of Georgij Ivanovich Narbut (1886-1920), outstanding Ukrainian artist, master of graphic arts, and rector of the Ukrainian Academy of Arts. One of his pictures shows Halley's Comet in 1910.

(3461) Mandelshtam = 1977 SA1
Discovered 1977 Sept. 18 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of the Soviet poet Osip Emilievich Mandel'shtam (1891-1938).

(3504) Kholshevnikov = 1981 RV3
Discovered 1981 Sept. 3 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of the celestial mechanician Konstantin Vladislavovich Kholshevnikov, professor at Leningrad University.

(3535) Ditte = 1979 SN11
Discovered 1979 Sept. 24 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named for the principal heroine of "Ditte, a human child", a novel by the Danish writer Martin Andersen Nex (1869-1954).

(3548) Eurybates = 1973 SO
Discovered 1973 Sept. 19 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Eurybates was a herald in the Greek army during the siege of Troy.

(3575) Anyuta = 1984 DU2
Discovered 1984 Feb. 26 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of the outstanding sportswoman and pioneer Soviet parachutist Anna Aleksandrovna Shishmareva.

(3576) Galina = 1984 DB3
Discovered 1984 Feb. 26 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in honor of Galina Bogdanovna Pyasetskaya, who with Anna Shishmareva accomplished in 1935 a twin parachute jump from an altitude of 7923 meters without oxygen equipment.

(3798) de Jager = 2402 T-3
Discovered 1977 Oct. 16 by I. van Houten-Groeneveld at Leiden, on Palomar Schmidt plates taken by T. Gehrels.
Named in honor of Cornelis de Jager, Dutch astronomer, former director of the observatory at Utrecht and General Secretary of the IAU from 1967 to 1973. His research concentrated on solar physics. He promoted international scientific collaboration, in particular with the Soviet Union.

(3936) Elst = 2321 T-3
Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Named in honor of Eric W. Elst (1936-), Belgian astronomer at the Observatory at Uccle. For many years he has been enthusiastically searching for minor planets, especially Trojans, and several of his discoveries have now been permanently numbered.

(4108) Rakos = 3439 T-3
Discovered 1977 Oct. 16 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Named in honor of Karl D. Rakos (1925-), Croatian-born Austrian astronomer, since 1973 professor of astronomy at the University of Vienna and former director of the Vienna Observatory. His main field is double stars, and he served as president of IAU Commission 26 from 1985 to 1988.

(4151) Alanhale = 1985 HV1
Discovered 1985 Apr. 24 by C. S. Shoemaker and E. M. Shoemaker at Palomar.
Named in honor of Alan Hale for his many observations of comets. In the past several years he has published careful visual observations of

more than 130 comets, several at more than one apparition. His observations include both magnitude estimates and confirmations of discoveries. He has also applied his magnitude estimating skill to asteroids, particularly the fast-moving objects 1989 AC and 1989 VA, and has participated in asteroid occultation teams. He has done much to promote asteroid-comet education through articles on comets and emphasis on asteroids in his introductory astronomy classes. Citation provided by David Levy.

(4153) Roburnham = 1985 JT1

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

Named in honor of Robert Burnham, senior editor of the magazine "Astronomy". Over many years he has been partly responsible for its evolution into the astronomical publication with the world's largest readership. In 1983, Burnham's "The Star Book" appeared with a series of clearly designed star charts to guide beginners on their way to an understanding of the night sky. Citation provided by David Levy.

(4173) Thicksten = 1982 KG1

Discovered 1982 May 27 by C. S. Shoemaker and S. J. Bus at Palomar.

Named in honor of Robert P. Thicksten, superintendent of the Palomar Observatory, California Institute of Technology since 1981. By his technical skill and his leadership of the Observatory staff, he has maintained and improved the Palomar telescopes (the 200-Hale Telescope, the 48-inch Oschin Schmidt, the 60-inch reflector and the 18-inch Schmidt) and their auxiliary instruments to keep them at the peak of their operational potential and, in so doing, provides invaluable support of the progress of astronomical research. Citation provided by Robert J. Brucato at the request of the discoverers.

(4175) Billbaum = 1985 GX

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

Named in honor of William A. Baum on the occasion of his retirement from the directorship of the Planetary Research Center at Lowell Observatory, a post he has held since 1965. Baum's astronomical research is extraordinarily diverse, covering many of the major fields of optical astronomy. He has contributed importantly to studies of atmospheric and surface phenomena on Mars, Saturn's rings, the properties of grains in cometary comae, metallicity gradients in elliptical galaxies, and testing the constancy of fundamental atomic constants over cosmological timescales. Additionally, he has been active in the development of instrumentation, including early pulse-counting equipment, the Carnegie image tube, image stabilization devices and astronomical optics in general. Baum directed the International Planetary Patrol Program, was a member of the imaging team in the Viking missions to Mars and is currently a member of the Hubble Space Telescope Wide Field/Planetary Camera team. He has served on many national panels and committees and, in 1976-1977, as president of the Division for Planetary Sciences of the American Astronomical Society. Citation material provided by R. L. Millis at the request of the discoverer.

(4204) Barsig = 1985 JG1

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

Named in honor of Walter Barsig, a teacher of science and director of a major Bavarian state school board; also a director of the Annual Cultural Festival of the Ries of Nordlingen, Germany, the location of one of the best known impact craters on Earth. Barsig has successfully

promoted popular knowledge about the local impact craters, Ries and Steinheim, and the public recognition of their scientific significance. He has been remarkable in his efforts to make the local population of the Ries area aware of the intimate relationship between the geological, cultural, and economic evolution of a natural landmark, which was created by an asteroid impact 15 million years ago. Citation provided by Dieter Stoffler at the request of the discoverers.

(4251) Kavasch = 1985 JK1

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

Named in honor of Julius Kavasch (1920-1978) and his son Wulf-Dietrich Kavasch, both amateur geologists and popular science writers about the Ries impact crater, Germany. Julius Kavasch, principal of the elementary school of Monchsdeggingen, Ries, spent all his life popularizing the geology of the Ries crater to the benefit of students and the local public. He played an outstanding role in providing local support for the national and international professional research on the Ries impact crater. His son, a veterinarian at Hohenaltheim, Ries, has taken over and enlarged upon his father's activities. As a director of the Annual Cultural Festival of the Ries, he initiated the foundation of the "Rieskrater-Museum", which is not only devoted to the Ries crater but is one of the best examples of a museum that comprehensively presents impact cratering phenomena in the solar system. Citation provided by Dieter Stoffler at the request of the discoverers.

(4253) Marker = 1985 TN3

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

Named after Wolfgang Marker, owner and director of the Marker cement factory at Harburg, located on the edge of the Ries impact crater, Germany. Marker and his forebears have maintained a long tradition of support for geological research in one of the world's best studied impact craters. Marker's responsible interest in the Ries geology and his involvement in the production of special cement from local impact breccias has kept quarries in operation that have yielded invaluable information about the Ries crater. This has been of fundamental importance for research opportunities in the field of impact cratering. Citation provided by Dieter Stoffler at the request of the discoverers.

(4283) Stoffler = 1988 BZ

Discovered 1988 Jan. 23 by C. S. Shoemaker and E. M. Shoemaker at Palomar.

Named in honor of Dieter Stoffler, professor and director of the Institute for Planetology, University of Munster, Germany. He is especially well known for his careful and elegant calibration of the temperatures and peak shock pressures associated with different grades of shock metamorphism. At the Ries impact crater in Germany, he solved these relationships chiefly from quantitative study of shock-formed phases of silica. He has worked extensively on the origin of the regolith, impact breccias, and magmatic history of the moon, and on the petrology of meteorites.

(4296) van Woerkom = 1935 SA2

Discovered 1935 Sept. 28 by H. van Gent at Johannesburg.

Named in honor of A. J. J. van Woerkom, Dutch-born astronomer, who worked in Leiden on the distribution of comet orbits and at Yale Observatory on problems of celestial mechanics before moving to the Electric Boat Company in Connecticut around 1960.

(4348) Poulydamas = 1988 RU
Discovered 1988 Sept. 11 by C. S. Shoemaker and E. M. Shoemaker at Palomar.
Named for Hektor's most trusted advisor and strategist, Poulydamas, who was born on the same night as Hektor. The gods gave Hektor skill with arms and gave Poulydamas better judgment. He sensibly advised Hektor to lock the gates of Troy against Achilles, but Hektor disregarded his friend's advice and went out of the city to his doom and to the eventual doom of Troy. Name and citation provided by R. Preston at the request of the discoverers.

(4355) Memphis = 3524 P-L
Discovered 1960 Oct. 17 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Named after the former capital of the old Egyptian kingdom.

(4356) Marathon = 9522 P-L
Discovered 1960 Oct. 17 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Named after a village near Athens, near which the Athenian troops defeated the invading Persian army in the year 490 B.C.

(4357) Korinthos = 2069 T-2
Discovered 1973 Sept. 29 by C. J. van Houten at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Named after the important seaport town in classical Greece.

(4359) Berlage = 1935 TG
Discovered 1935 Sept. 28 by H. van Gent at Johannesburg.
Named in honor of H. P. Berlage (1896-1968), Dutch meteorologist and astronomer. His main astronomical activities were investigations about the origin of the solar system.

(4385) Elsasser = 2534 P-L
Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Named in honor of Hans F. Elsasser (1929-), professor of astronomy at Heidelberg University and since 1968 first director of the Max-Planck-Institut fur Astronomie. During 1962-1975 he was also director of the Heidelberg Observatory at Konigstuhl. A scientific member of the Max-Planck-Gesellschaft, Elsasser was a founder of MPIA in Heidelberg and its associated observatory at Calar Alto. He has made important contributions to the study of interplanetary matter and the zodiacal light, the optics of the earth's atmosphere, the structure of the Galaxy and the Magellanic Clouds and star formation. He was deeply concerned with the design and establishment of large telescopes and their auxiliary instrumentation at Calar Alto. Elsasser served as president of the IAU Commission 21 during 1970-1973. His many honors include membership in the scientific academies of Austria, Halle (Leopoldina) and Heidelberg. Name proposed and citation prepared by L. D. Schmadel.

(4386) Lust = 6829 P-L
Discovered 1960 Sept. 26 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Named in honor of Reimar Lust (1923-), German astronomer, former director general of the Max-Planck-Gesellschaft and of the European Space Agency.

(4387) Tanaka = 4829 T-2
Discovered 1973 Sept. 19 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Named in honor of Yasuo Tanaka (1931-), Japanese astrophysicist, who organized the first group of space scientists in the Netherlands. Tanaka is head of the space research group in Japan. He contributed to the launching of the Japanese satellites Hakucho (1979), Tenma (1983) and Ginga (1987). Ginga observed the first x-ray signals from supernova 1987A.

(4412) Chephren = 2535 P-L
Discovered 1960 Sept. 26 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Chephren was a pharaoh of the old Egyptian kingdom. He reigned about 2500 B.C. and built the second largest pyramid near Giza. He is also known because of his monumental sphinx.

(4413) Mycerinos = 4020 P-L
Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Mycerinos was pharaoh of the old Egyptian kingdom of the fourth dynasty. He reigned about 2500 B.C. and built the third largest pyramid near Giza.

(4414) Sesostris = 4153 P-L
Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Sesostris was the name of three pharaohs of the old Egyptian kingdom (twelfth dynasty). They reigned about 1900 B.C. During Sesostris I (1971-1926 B.C.) Egyptian architecture had one of its high points, with buildings in Karnak and Heliopolis.

(4415) Echnaton = 4237 P-L
Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Echnaton was a pharaoh of the old Egyptian kingdom who reigned from 1375 to 1358 B.C. He started a religious reformation by replacing the worship of the traditional Egyptian gods by that of the single god Aten. In his time Egyptian art was more colorful and more relaxed.

(4416) Ramses = 4530 P-L
Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Ramses II, also called Ramesses, was a pharaoh of the old Egyptian kingdom who reigned from 1332 to 1298 B.C. He made war with the Hittites in Asia Minor and built large temple complexes at Abu Simbel. Ramses was one of the first names that Champollion could read by translation of the Egyptian hieroglyphs.

(4532) Copland = 1985 GM1
Discovered 1985 Apr. 15 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Named in memory of American composer Aaron Copland (1900-1990). Although his earliest works show the influence of European composers, most of his later compositions make inimitable use of American folks tunes and jazz melodies. Copland’s quintessential ballet scores "Billy the Kid", "Rodeo" and "Appalachian Spring" have long been concert-hall staples, and his "Fanfare for the Common Man", which is also part of the Third Symphony, represents one of the world’s most recognizable melodies. Name suggested and citation provided, in part, by D. J. Tholen.

(4543) Phoinix = 1989 CQ1
Discovered 1989 Feb. 2 by C. S. Shoemaker at Palomar.
Named for a wise old commander of the Greeks in the Trojan war. Phoinix, who had no sons, raised Achilles as if he were his own son. When Achilles refused to fight for the Greeks, Phoinix pleaded with Achilles, "Many a time you wet my shirt, hiccuping wine-bubbles in distress, when you were small." Name and citation provided by R. Preston at the request of the discoverer.

(4548) Wielen = 2538 P-L
Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Named in honor of Roland Wielen (1938-), German astronomer, director of the Astronomisches Rechen-Institut in Heidelberg, professor of theoretical astronomy at Heidelberg University since 1985, and from 1978 to 1985 professor of astronomy and astrophysics at the Berlin Technical University. His main work covers the fields of the stellar dynamics (the luminosity function of nearby stars, kinematics and dynamics of galaxies, dynamical evolution of star clusters and of clusters of galaxies) and astrometry. He has also worked on problems of galactic structure and served as president of IAU Commission 33 from 1982 to 1985. Name proposed and citation prepared by L. D. Schmadel.

(4549) Burkhardt = 1276 T-2
Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Named in honor of Gernot Burkhardt (1951-), astronomer at the Astronomisches Rechen-Institut in Heidelberg. Burkhardt is an expert in computer hardware and a skilled programmer whose work is close to indispensible to almost all of his colleagues. He also serves as an editor of Astronomy and Astrophysics Abstracts and is responsible for the rather complex data handling procedures. Name proposed and citation prepared by L. D. Schmadel.

(4586) Gunvor = 6047 P-L
Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Named in honor of Mrs. Gunvor Ulla Marie Ollongren-Lundgren (1942-), Swedish-born wife of Dutch astronomer and mathematician Alexander Ollongren. She has recently helped provide explanations for several Scandinavian names of minor planets.

(4587) Rees = 3239 T-2
Discovered 1973 Sept. 30 by C. J. van Houten and I. van Houten-Groeneveld at Leiden on Palomar Schmidt plates taken by T. Gehrels.
Named in honor of Martin J. Rees (1942-), English astronomer, professor of astronomy at the University of Cambridge and director of the Institute of Astronomy. His main research covers galactic evolution and related problems. Name proposed by J. H. Oort.

(4703) Kagoshima = 1988 BL
Discovered 1988 Jan. 16 by M. Mukai and M. Takeishi at the JCPM Kagoshima Station.
Named for the prefecture and its capital city, home of the discoverers, located at the southern tip of Kyushu Island in southwestern Japan. The rocket launching centers of the Institute of Space and Astronautical Science and the National Space Development Agency are located in Kagoshima prefecture. The city, often referred to as the "Naples of the East", is

dominated by the presence of Sakurajima, one of the most active volcanoes in Japan, in the adjoining Kinko Bay.

(4707) Khryses = 1988 PY
Discovered 1988 Aug. 13 by C. S. Shoemaker and E. M. Shoemaker at Palomar.
Named for the priest of Apollo whose daughter, Khryseis, was abducted by Agamemnon. Apollo, angered, sent a plague among the Greeks, until Agamemnon then took Achilles' girl, Briseis, thus sparking the quarrel between Agamemnon and Achilles that led to the events described in the "Iliad". Name and citation provided by R. Preston at the request of the discoverers.

(4708) Polydoros = 1988 RT
Discovered 1988 Sept. 11 by C. S. Shoemaker and E. M. Shoemaker at Palomar.
Named for the brother of Polydoros and a son of Priam; born of the queen Laothoe. Although Polydoros was the swiftest of the sons of Priam, Priam refused to let the boy fight; but Polydoros rushed Achilles anyway, and Achilles killed him beside the River Skamander, near his brother Lykaon. Name and citation provided by R. Preston at the request of the discoverers.

(4709) Ennomos = 1988 TU2
Discovered 1988 Oct. 12 by C. S. Shoemaker and E. M. Shoemaker at Palomar.
Named for a warrior of Mysia who was a prophet and a seer of birdflight. Ennomos was one of many Trojans butchered by Achilles in the waters of the River Skamander. Name and citation provided by R. Preston at the request of the discoverers.

(4724) Brocken = 1961 BC
Discovered 1961 Jan. 18 by C. Hoffmeister and J. Schubart on plates taken by N. Richter at Sonneberg.
Named for the highest summit in the Harz Mountains that offers a wide view on a large part of northern Germany. Name proposed by the second discoverer, following a suggestion by F. Borngen.

(4727) Ravel = 1979 UD1
Discovered 1979 Oct. 24 by F. Borngen at Tautenburg.
Named for the French composer Maurice Ravel (1875-1937), a significant representative of impressionism in music. His preference for Spanish music is manifested in his works "Rhapsodie espagnole" and "Bolero".

(4734) Rameau = 1982 UQ3
Discovered 1982 Oct. 19 by F. Borngen at Tautenburg.
Named for Jean Philippe Rameau (1683-1764), the greatest French composer of the eighteenth century. He is well known for some operas, very charming piano pieces like "Le Rappel des Oiseaux" and for his fundamental writings on the theory of music.

(4751) Alicemanning = 1991 BG
Discovered 1991 Jan. 17 by B. G. W. Manning at Stakenbridge.
Named in honor of Alice K. Manning, wife of the discoverer, for her support and encouragement of the discoverer's hobby over many years. The attention given to practical details such as warm clothing on cold nights, and the push needed to persuade him to finish the construction and fitting of measuring-machine encoders has contributed greatly to cometary astrometry and success in discovering minor planets.

EPHEMERIDES.

1991 DG a,e,i = 1.43, 0.36, 11 Elements MPC 18128

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1991	04 14	07 22.61	+39 39.4	0.164	0.999	83.9	86.8	17.6
1991	04 19	07 08.65	+46 51.1					
1991	04 24	06 48.37	+54 06.9	0.159	0.961	69.2	101.9	18.1
1991	04 29	06 16.50	+61 01.6					
1991	05 04	05 25.28	+66 49.3	0.163	0.932	57.9	113.6	18.8
1991	05 09	04 09.7	+70 22.3					
1991	05 14	02 43.7	+70 47.1	0.177	0.914	52.7	118.4	19.3
1991	05 19	01 34.56	+68 32.1					
1991	05 24	00 50.96	+64 56.9	0.200	0.909	54.0	115.8	19.3
1991	05 29	00 26.32	+61 02.0					
1991	06 03	00 13.42	+57 16.9	0.228	0.917	58.9	108.8	19.2
1991	06 08	00 07.56	+53 52.8					
1991	06 13	00 05.92	+50 51.8	0.257	0.937	65.2	100.3	19.1
1991	06 18	00 06.79	+48 11.6					
1991	06 23	00 09.13	+45 48.9	0.283	0.968	72.3	91.6	18.9
1991	06 28	00 12.25	+43 40.2					
1991	07 03	00 15.62	+41 42.0	0.302	1.008	79.8	83.0	18.8
1991	07 08	00 18.80	+39 50.6					
1991	07 13	00 21.43	+38 02.1	0.315	1.055	88.2	74.5	18.7
1991	07 18	00 23.25	+36 12.7					
1991	07 23	00 24.05	+34 18.9	0.321	1.106	97.7	65.6	18.6

1991 CQ a,e,i = 2.52, 0.48, 28 Elements MPC 18126

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1991	04 14	09 09.24	+13 51.3	0.894	1.580	112.6	35.9	18.7
1991	04 24	09 32.72	+16 29.8					
1991	05 04	09 55.50	+18 03.4	1.155	1.687	102.3	35.7	19.4
1991	05 14	10 17.48	+18 47.1					
1991	05 24	10 38.69	+18 52.7	1.448	1.800	92.3	34.2	20.0
1991	06 03	10 59.14	+18 30.1					
1991	06 13	11 18.90	+17 46.2	1.759	1.917	82.8	31.7	20.5

1991 FE a,e,i = 2.31, 0.54, 4 Elements MPC 18130

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1991	04 14	11 20.73	+05 09.9	1.865	2.754	146.0	11.8	18.8
1991	04 24	11 15.92	+05 49.2					
1991	05 04	11 13.68	+06 10.3	2.151	2.846	124.5	17.0	19.3
1991	05 14	11 13.82	+06 14.9					
1991	05 24	11 16.09	+06 05.0	2.490	2.931	105.8	19.4	19.8
1991	06 03	11 20.15	+05 42.7					
1991	06 13	11 25.72	+05 10.2	2.850	3.011	89.2	19.7	20.2
1991	06 23	11 32.55	+04 29.0					
1991	07 03	11 40.39	+03 40.7	3.205	3.085	74.0	18.5	20.4
1991	07 13	11 49.08	+02 46.5					
1991	07 23	11 58.45	+01 47.6	3.538	3.153	59.8	16.2	20.6

Periodic Comet Mrkos (1991k) Elements MPC 18081

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1991	04 14	11 25.29	-29 14.0	0.493	1.436	145.4	23.4	14.0
1991	04 24	11 07.13	-34 23.2					
1991	05 04	10 57.90	-37 49.0	0.652	1.492	126.5	32.9	14.8
1991	05 14	10 56.71	-40 12.4					
1991	05 24	11 02.25	-42 01.3	0.846	1.572	115.2	35.7	15.6
1991	06 03	11 13.15	-43 31.6					
1991	06 13	11 28.36	-44 51.1	1.057	1.671	107.4	35.5	16.3

1991 06 23	11 47.09	-46 03.9					
1991 07 03	12 08.68	-47 11.2	1.282	1.783	101.1	34.0	17.0
1991 07 13	12 32.64	-48 12.6					
1991 07 23	12 58.55	-49 07.4	1.523	1.903	95.0	32.1	17.7
1991 08 02	13 25.99	-49 54.3					
1991 08 12	13 54.61	-50 31.9	1.783	2.028	88.6	30.0	18.3
1991 08 22	14 24.08	-50 59.2					
1991 09 01	14 54.01	-51 15.3	2.062	2.156	81.4	27.6	18.9
1991 09 11	15 24.10	-51 19.8					
1991 09 21	15 54.05	-51 12.6	2.356	2.284	73.5	24.9	19.4

Comet Helin-Lawrence (1991l) Elements MPC 18082

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1991 04 14		12 51.69	+09 19.2	2.825	3.783	159.9	5.2	12.5
1991 04 24		12 35.41	+09 06.9					
1991 05 04		12 19.76	+08 39.1	2.779	3.589	137.6	10.9	12.3
1991 05 14		12 05.56	+07 56.1					
1991 05 24		11 53.43	+06 59.1	2.855	3.393	113.8	15.8	12.1
1991 06 03		11 43.65	+05 50.2					
1991 06 13		11 36.28	+04 31.3	2.998	3.196	91.8	18.5	11.9
1991 06 23		11 31.21	+03 03.8					
1991 07 03		11 28.22	+01 28.8	3.151	2.999	72.1	18.8	11.8
1991 07 13		11 27.06	-00 13.3					
1991 07 23		11 27.50	-02 02.6	3.269	2.802	54.4	17.1	11.5
1991 08 02		11 29.29	-03 59.5					
1991 08 12		11 32.25	-06 04.6	3.320	2.606	38.6	14.0	11.3

Periodic Comet Hartley 1 (1991j) Elements MPC 18081

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1991 04 14		13 44.89	+06 32.7	0.857	1.841	163.7	8.8	16.1
1991 04 24		13 30.20	+03 20.7					
1991 05 04		13 16.56	-00 17.6	0.860	1.822	154.3	13.9	16.1
1991 05 14		13 05.80	-04 07.4					
1991 05 24		12 59.08	-07 55.6	0.957	1.819	134.9	23.2	16.3
1991 06 03		12 56.69	-11 34.3					
1991 06 13		12 58.43	-15 00.1	1.121	1.832	118.0	29.3	16.7
1991 06 23		13 03.89	-18 13.2					
1991 07 03		13 12.59	-21 14.1	1.325	1.861	104.5	31.9	17.2
1991 07 13		13 24.08	-24 04.0					
1991 07 23		13 38.02	-26 43.7	1.552	1.904	93.3	32.2	17.6
1991 08 02		13 54.11	-29 13.3					
1991 08 12		14 12.12	-31 32.7	1.792	1.959	83.7	30.9	18.1
1991 08 22		14 31.89	-33 41.5					
1991 09 01		14 53.25	-35 38.5	2.039	2.025	74.8	28.8	18.6
1991 09 11		15 16.05	-37 23.0					
1991 09 21		15 40.15	-38 53.7	2.290	2.100	66.4	26.0	19.1

1991 FB a,e,i = 2.36, 0.56, 9 Elements MPC 18130

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1991 04 14		16 39.58	-35 42.4	0.124	1.084	128.4	46.5	16.2
1991 04 19		17 48.47	-44 17.5					
1991 04 24		19 06.88	-49 21.9	0.132	1.055	108.4	64.8	16.8
1991 04 29		20 19.44	-50 44.4					
1991 05 04		21 16.16	-49 51.4	0.165	1.039	96.2	74.7	17.6
1991 05 09		21 57.29	-48 04.9					
1991 05 14		22 26.83	-46 08.3	0.207	1.038	92.0	76.5	18.1
1991 05 19		22 48.40	-44 18.5					
1991 05 24		23 04.47	-42 40.9	0.250	1.053	92.4	73.8	18.5

1991 BB a,e,i = 1.19, 0.27, 38 Elements MPC 18125

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1991	05 04	05 24.46	-35 04.9	0.687	0.938	63.9	74.9	17.7
1991	05 09	05 24.04	-35 41.8					
1991	05 14	05 23.02	-36 13.0	0.637	0.906	61.9	79.7	17.6
1991	05 19	05 21.25	-36 35.7					
1991	05 24	05 18.57	-36 45.8	0.568	0.882	60.3	85.7	17.5
1991	05 29	05 14.83	-36 37.6					
1991	06 03	05 09.92	-36 03.0	0.482	0.867	58.6	93.1	17.4
1991	06 08	05 03.78	-34 51.0					
1991	06 13	04 56.35	-32 45.7	0.384	0.863	56.2	102.1	17.3
1991	06 18	04 47.59	-29 22.5					
1991	06 23	04 37.48	-24 02.7	0.284	0.869	51.7	113.4	17.3
1991	06 28	04 26.08	-15 47.2					
1991	07 03	04 13.43	-03 21.0	0.201	0.886	45.1	125.6	17.6
1991	07 08	03 59.46	+13 52.3					
1991	07 13	03 43.74	+33 42.7	0.177	0.912	49.6	121.9	17.0
1991	07 18	03 25.21	+51 36.7					
1991	07 23	03 01.52	+65 02.1	0.230	0.945	65.7	101.5	16.4
1991	07 28	02 27.2	+74 20.8					
1991	08 02	01 28.0	+80 35.3	0.319	0.983	75.2	86.5	16.5
1991	08 07	23 31.2	+84 10.1					
1991	08 12	20 44.5	+84 42.6	0.413	1.025	79.9	76.8	16.8
1991	08 17	18 56.5	+83 12.1					
1991	08 22	18 05.8	+81 13.5	0.503	1.069	82.4	69.7	17.1

Comet Arai (1991b) Elements MPC 18081

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1991	05 04	08 00.3	+71 14.7	2.526	2.414	72.1	23.4	15.8
1991	05 14	08 33.9	+70 41.8					
1991	05 24	09 07.70	+69 52.9	2.849	2.614	66.4	20.8	16.4
1991	06 03	09 40.67	+68 49.0					
1991	06 13	10 12.22	+67 31.5	3.142	2.815	62.2	18.6	17.0
1991	06 23	10 42.06	+66 02.5					
1991	07 03	11 10.08	+64 24.5	3.407	3.017	59.3	16.8	17.5
1991	07 13	11 36.35	+62 39.7					
1991	07 23	12 01.04	+60 50.4	3.649	3.218	57.4	15.4	17.9
1991	08 02	12 24.31	+58 58.8					
1991	08 12	12 46.36	+57 06.8	3.872	3.418	56.5	14.3	18.3
1991	08 22	13 07.36	+55 16.2					
1991	09 01	13 27.44	+53 28.9	4.077	3.616	56.3	13.4	18.6
1991	09 11	13 46.75	+51 46.3					
1991	09 21	14 05.38	+50 10.0	4.266	3.812	56.9	12.7	19.0

Comet Shoemaker-Levy (1991d) Elements MPC 18082

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1991	05 04	08 44.04	+20 15.3	3.397	3.468	85.6	16.9	14.6
1991	05 14	08 47.45	+21 41.3					
1991	05 24	08 52.61	+22 56.2	3.568	3.316	67.6	16.4	14.5
1991	06 03	08 59.36	+24 01.3					
1991	06 13	09 07.57	+24 58.0	3.699	3.168	51.5	14.5	14.3
1991	06 23	09 17.13	+25 47.4					
1991	07 03	09 27.91	+26 30.9	3.771	3.025	37.3	11.7	14.2

Periodic Comet Shoemaker-Levy 3 (1991e) Elements MPC 17792

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1991	05 04	09 16.93	+12 36.0	2.440	2.724	95.3	21.6	17.3
1991	05 14	09 26.22	+11 51.7					

1991 05 24	09 36.79	+10 59.6	2.711	2.744	81.1	21.4	17.5
1991 06 03	09 48.37	+10 00.2					
1991 06 13	10 00.77	+08 54.1	2.978	2.767	68.2	19.9	17.8
1991 06 23	10 13.82	+07 41.6					
1991 07 03	10 27.36	+06 23.6	3.228	2.794	56.2	17.6	18.0
1991 07 13	10 41.31	+05 00.5					
1991 07 23	10 55.55	+03 33.0	3.454	2.825	44.8	14.7	18.2
1991 08 02	11 10.03	+02 02.0					
1991 08 12	11 24.68	+00 27.9	3.648	2.859	33.6	11.3	18.4

1991 CS a,e,i = 1.12, 0.16, 37 Elements MPC 18126

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1991 05 04	09 55.08	+52 42.1	0.806	1.274	88.5	52.3	19.5
1991 05 14	10 21.88	+52 05.1					
1991 05 24	10 48.44	+50 52.5	0.969	1.296	81.7	50.6	19.9
1991 06 03	11 14.59	+49 10.5					
1991 06 13	11 40.31	+47 02.4	1.093	1.307	76.5	49.1	20.1
1991 06 23	12 05.68	+44 30.7					
1991 07 03	12 30.75	+41 37.1	1.178	1.306	72.6	48.0	20.2
1991 07 13	12 55.64	+38 22.0					
1991 07 23	13 20.53	+34 46.2	1.227	1.294	69.7	47.4	20.3

Periodic Comet Giacobini-Zinner (1991m) Elements MPC 14592

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1991 05 04	15 30.33	+06 42.2	2.670	3.606	154.5	6.9	20.6
1991 05 14	15 21.68	+08 08.3					
1991 05 24	15 12.63	+09 20.0	2.576	3.477	148.1	8.9	20.5
1991 06 03	15 03.87	+10 13.4					
1991 06 13	14 56.04	+10 46.4	2.588	3.344	131.0	13.2	20.6
1991 06 23	14 49.70	+10 58.9					
1991 07 03	14 45.22	+10 52.7	2.675	3.205	112.5	17.0	20.7
1991 07 13	14 42.79	+10 30.1					
1991 07 23	14 42.49	+09 54.0	2.797	3.061	95.2	19.3	20.7
1991 08 02	14 44.26	+09 07.3					
1991 08 12	14 48.03	+08 12.6	2.920	2.912	79.5	20.0	20.7
1991 08 22	14 53.68	+07 12.0					
1991 09 01	15 01.09	+06 07.6	3.019	2.758	65.5	19.5	20.7
1991 09 11	15 10.15	+05 01.0					
1991 09 21	15 20.79	+03 53.7	3.075	2.597	53.0	18.0	20.6
1991 10 01	15 32.93	+02 47.2					
1991 10 11	15 46.53	+01 42.6	3.079	2.432	42.1	16.0	20.4

Periodic Comet Wirtanen Elements MPC 13046

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1991 05 04	00 12.83	-08 06.7	2.586	1.980	43.5	20.5	20.5
1991 05 14	00 35.49	-05 55.9					
1991 05 24	00 59.37	-03 38.5	2.287	1.813	50.2	25.4	19.9
1991 06 03	01 24.72	-01 14.4					
1991 06 13	01 51.82	+01 15.9	2.001	1.646	55.1	30.4	19.2
1991 06 23	02 20.98	+03 51.6					
1991 07 03	02 52.51	+06 30.7	1.748	1.483	57.9	35.5	18.4
1991 07 13	03 26.73	+09 10.1					
1991 07 23	04 03.83	+11 44.7	1.546	1.331	58.3	40.5	17.7
1991 08 02	04 43.88	+14 07.6					
1991 08 12	05 26.67	+16 09.9	1.413	1.203	56.6	44.7	17.1
1991 08 22	06 11.59	+17 42.6					
1991 09 01	06 57.74	+18 38.2	1.354	1.114	53.9	47.0	16.6
1991 09 11	07 43.93	+18 53.0					
1991 09 21	08 28.95	+18 28.0	1.360	1.083	51.9	46.8	16.5

1991 10 01	09 11.81	+17 28.8					
1991 10 11	09 51.84	+16 03.9	1.407	1.116	52.0	44.8	16.7
1991 10 21	10 28.68	+14 23.2					
1991 10 31	11 02.28	+12 35.8	1.464	1.206	54.8	42.3	17.1
1991 11 10	11 32.72	+10 49.4					
1991 11 20	12 00.14	+09 10.3	1.506	1.335	60.6	40.1	17.6
1991 11 30	12 24.70	+07 43.1					
1991 12 10	12 46.47	+06 31.2	1.520	1.487	69.1	38.2	18.1
1991 12 20	13 05.48	+05 37.2					
1991 12 30	13 21.67	+05 02.6	1.498	1.651	80.5	36.0	18.6
1992 01 09	13 34.88	+04 48.9					
1992 01 19	13 44.90	+04 56.8	1.447	1.818	94.9	32.6	18.9
1992 01 29	13 51.46	+05 26.1					
1992 02 08	13 54.29	+06 15.8	1.385	1.985	112.6	27.3	19.2
1992 02 18	13 53.19	+07 22.6					
1992 02 28	13 48.22	+08 41.0	1.346	2.149	133.2	19.6	19.5
1992 03 09	13 39.75	+10 02.8					
1992 03 19	13 28.66	+11 17.8	1.373	2.309	154.0	10.9	19.8
1992 03 29	13 16.24	+12 16.3					
1992 04 08	13 03.90	+12 51.5	1.498	2.464	160.1	7.9	20.3
1992 04 18	12 52.96	+13 00.8					
1992 04 28	12 44.27	+12 46.0	1.729	2.613	144.3	13.0	20.9

1991 EE a,e,i = 2.25, 0.62, 10 Elements MPC 18129

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1991 05 24	10 13.13	+20 24.6	0.789	1.241	86.2	54.5	19.4	
1991 05 29	10 18.38	+20 33.8						
1991 06 03	10 24.59	+20 38.3	0.770	1.152	79.1	59.8	19.4	
1991 06 08	10 31.70	+20 38.5						
1991 06 13	10 39.63	+20 34.9	0.737	1.067	73.1	65.6	19.3	
1991 06 18	10 48.33	+20 28.0						
1991 06 23	10 57.70	+20 18.5	0.688	0.990	67.9	72.0	19.2	
1991 06 28	11 07.65	+20 07.1						
1991 07 03	11 18.09	+19 54.5	0.623	0.924	63.3	79.6	19.1	
1991 07 08	11 28.93	+19 41.2						
1991 07 13	11 40.08	+19 28.0	0.545	0.875	59.3	88.3	19.0	
1991 07 18	11 51.46	+19 15.8						
1991 07 23	12 02.98	+19 05.3	0.455	0.848	55.7	97.9	19.0	
1991 07 28	12 14.61	+18 57.0						
1991 08 02	12 26.46	+18 50.9	0.360	0.845	52.5	107.8	19.0	
1991 08 07	12 38.81	+18 46.3						
1991 08 12	12 52.30	+18 41.7	0.262	0.869	50.0	116.6	18.9	
1991 08 17	13 08.19	+18 34.3						
1991 08 22	13 29.18	+18 17.6	0.168	0.914	50.6	121.2	18.4	
1991 08 27	14 01.62	+17 32.2						
1991 09 01	15 02.96	+15 04.9	0.083	0.977	65.2	110.4	16.2	
1991 09 06	17 16.41	+06 03.6						
1991 09 11	20 17.99	-09 02.7	0.063	1.053	136.5	41.2	13.2	
1991 09 16	21 58.56	-15 11.7						
1991 09 21	22 44.33	-16 52.1	0.142	1.137	157.7	19.6	14.5	
1991 09 26	23 08.69	-17 17.7						
1991 10 01	23 23.68	-17 15.5	0.243	1.226	155.0	20.2	15.9	
1991 10 06	23 33.98	-16 59.1						
1991 10 11	23 41.76	-16 33.5	0.355	1.317	149.7	22.5	16.9	

Periodic Comet Kowal 2 (1979 II) Elements MPC 13046

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		m2
1991 05 24	23 38.18	+13 01.1	2.851	2.546	-0.94	-4.4	20.8	
1991 06 03	23 52.57	+15 07.1						

1991 06 13	00 06.97	+17 15.9	2.514	2.419	-1.15	-4.8	20.3
1991 06 23	00 21.36	+19 26.7					
1991 07 03	00 35.74	+21 38.9	2.175	2.292	-1.42	-5.1	19.8
1991 07 13	00 50.05	+23 51.4					
1991 07 23	01 04.22	+26 03.0	1.844	2.165	-1.81	-5.3	19.2
1991 08 02	01 18.16	+28 12.3					
1991 08 12	01 31.72	+30 17.1	1.533	2.041	-2.36	-5.2	18.5
1991 08 22	01 44.66	+32 14.6					
1991 09 01	01 56.75	+34 01.5	1.248	1.921	-3.17	-5.0	17.8
1991 09 11	02 07.57	+35 32.7					
1991 09 21	02 16.71	+36 41.5	1.000	1.808	-4.28	-5.1	17.1
1991 10 01	02 23.76	+37 19.4					
1991 10 11	02 28.33	+37 15.0	0.797	1.706	-5.59	-6.6	16.3
1991 10 21	02 30.49	+36 15.8					
1991 10 31	02 30.85	+34 11.3	0.652	1.619	-6.66	-9.8	15.7
1991 11 10	02 30.59	+30 58.5					
1991 11 20	02 31.42	+26 49.4	0.581	1.553	-6.96	-9.6	15.2
1991 11 30	02 34.80	+22 11.6					
1991 12 10	02 41.59	+17 40.1	0.590	1.512	-6.44	-1.7	15.1
1991 12 20	02 52.08	+13 44.5					
1991 12 30	03 05.91	+10 40.1	0.668	1.500	-5.51	+7.4	15.4
1992 01 09	03 22.53	+08 29.0					
1992 01 19	03 41.39	+07 05.1	0.796	1.517	-4.56	+12.1	15.8
1992 01 29	04 01.89	+06 18.7					
1992 02 08	04 23.60	+05 59.5	0.962	1.562	-3.76	+13.2	16.4

Periodic Comet Gehrels 3 Elements MPC 16381

Date ET	R. A. (1950) Decl.	Delta	r	Elong.	Phase	m2
1991 05 24	00 42.17 +05 27.4	4.770	4.191	50.0	10.7	20.6
1991 06 03	00 50.46 +06 20.6					
1991 06 13	00 58.16 +07 09.6	4.497	4.167	64.8	12.7	20.5
1991 06 23	01 05.14 +07 53.8					
1991 07 03	01 11.28 +08 32.6	4.190	4.142	80.3	14.0	20.3
1991 07 13	01 16.45 +09 05.2					
1991 07 23	01 20.49 +09 30.8	3.869	4.117	96.9	14.2	20.1
1991 08 02	01 23.27 +09 48.8					
1991 08 12	01 24.64 +09 58.4	3.560	4.092	115.0	13.0	19.9
1991 08 22	01 24.52 +09 59.0					
1991 09 01	01 22.86 +09 50.4	3.293	4.067	134.7	10.2	19.7
1991 09 11	01 19.71 +09 32.5					
1991 09 21	01 15.26 +09 06.1	3.102	4.041	156.1	5.8	19.5
1991 10 01	01 09.81 +08 32.8					
1991 10 11	01 03.78 +07 54.9	3.017	4.015	178.5	0.4	19.4
1991 10 21	00 57.70 +07 15.6					
1991 10 31	00 52.09 +06 38.3	3.051	3.989	158.1	5.3	19.4
1991 11 10	00 47.41 +06 06.0					
1991 11 20	00 44.05 +05 41.5	3.194	3.963	135.8	10.0	19.5
1991 11 30	00 42.23 +05 26.5					
1991 12 10	00 42.04 +05 21.9	3.419	3.937	114.9	13.1	19.6
1991 12 20	00 43.50 +05 27.7					
1991 12 30	00 46.52 +05 43.5	3.688	3.911	95.7	14.5	19.8
1992 01 09	00 50.98 +06 08.5					
1992 01 19	00 56.74 +06 41.6	3.967	3.885	78.1	14.3	19.9
1992 01 29	01 03.66 +07 21.8					
1992 02 08	01 11.59 +08 07.9	4.227	3.859	61.7	13.0	20.0
1992 02 18	01 20.40 +08 58.7					
1992 02 28	01 29.98 +09 53.2	4.448	3.833	46.4	10.8	20.1
1992 03 09	01 40.23 +10 50.4					
1992 03 19	01 51.03 +11 49.2	4.616	3.807	31.9	7.9	20.1

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1991 04 14    15 16.50   -16 19.5    1.948    2.871   151.9     9.5    16.5
- 5.34  -0.93  + 36.0  + 3.7  1988 UH   18115  - 7.49  +0.28  + 42.8  - 1.9
1991 05 14    14 55.02   -14 11.1    1.893    2.898   172.9     2.5    16.1

1991 04 14    15 39.48   -15 47.7    1.480    2.381   146.5    13.4    17.0
- 5.31  -1.38  + 34.7  + 3.9  1983 EB1  18108  - 9.40  +0.17  + 41.3  - 2.4
1991 05 14    15 14.55   -13 42.1    1.413    2.422   175.3     2.0    16.4

1991 05 14    17 12.33   -20 45.4    2.771    3.701   153.2     7.1    18.5
- 6.06  -0.74  +  8.5  + 0.7  1981 RJ5  18108  - 7.94  +0.17  + 10.5  - 0.3
1991 06 13    16 49.65   -20 15.1    2.644    3.653   172.3     2.1    18.1

1991 05 14    17 42.09   -28 13.0    1.589    2.491   145.8    13.2    18.7
- 5.99  -1.49  - 21.3  + 2.2  3176 T-2  18133  -10.77  +0.11  +  1.8  + 4.6
1991 06 13    17 14.02   -28 46.8    1.494    2.506   174.2     2.4    18.0

1991 06 13    17 51.80   -30 11.2    1.810    2.816   170.1     3.6    18.0
-10.85  -0.31  -  3.1  + 4.7  1990 BE2  18120  - 7.73  +1.20  + 19.5  + 1.8
1991 07 13    17 21.15   -29 41.1    1.906    2.840   151.3     9.9    18.4

1991 06 13    17 57.32   -13 03.5    1.528    2.527   166.7     5.3    17.5
- 9.98  -0.49  +  6.2  - 4.5  1975 VS5  13297  - 7.79  +1.13  - 20.8  - 4.1
1991 07 13    17 27.67   -13 26.2    1.556    2.494   150.9    11.4    17.7

1991 06 13    17 57.09   -23 28.7    2.128    3.136   171.6     2.7    17.9
- 8.14  -0.39  -  7.2  + 0.7  1986 QB3  12206  - 6.70  +0.83  -  3.0  + 0.3
1991 07 13    17 32.59   -23 43.2    2.135    3.082   154.2     8.3    18.1

1991 06 13    17 58.92   -23 10.6    1.450    2.458   171.2     3.6    17.8
-10.88  -0.46  - 18.8  + 1.1  1989 YG8  16879  - 7.89  +1.31  - 10.8  + 0.8
1991 07 13    17 27.50   -23 54.3    1.533    2.482   153.0    10.7    18.3

1991 06 13    17 58.01   -15 22.8    2.233    3.234   168.2     3.7    16.3
- 8.64  -0.28  - 15.5  - 2.4  (4512)    16560  - 6.84  +0.81  - 26.8  - 1.4
1991 07 13    17 32.79   -16 28.0    2.324    3.263   153.1     8.1    16.7

1991 06 13    17 58.60   -05 52.4    1.961    2.937   160.5     6.6    16.8
- 8.47  -0.29  + 24.0  - 6.8  1988 VD5  16029  - 6.53  +0.87  - 16.9  - 6.1
1991 07 13    17 33.97   -05 43.0    2.039    2.955   148.7    10.3    17.1

1991 06 13    18 00.49   -22 09.1    1.238    2.246   170.7     4.2    16.5
- 9.64  -0.74  +  8.4  + 0.6  1931 UB   11855  - 7.71  +1.32  +  8.2  - 1.2
1991 07 13    17 30.65   -21 41.0    1.214    2.172   153.6    12.0    16.7

1991 06 13    18 01.26   -28 19.8    1.377    2.383   169.5     4.5    17.0
-10.37  -0.73  +  7.1  + 4.4  1980 PW   16022  - 8.36  +1.32  + 29.5  + 1.6
1991 07 13    17 29.37   -27 19.7    1.356    2.310   153.3    11.4    17.2

1991 06 13    18 00.79   -15 51.9    1.886    2.887   168.1     4.2    18.1
- 8.56  -0.38  + 20.0  - 2.3  1981 EO15 10821  - 6.80  +0.90  +  2.8  - 3.2
1991 07 13    17 35.38   -15 16.0    1.929    2.873   153.3     9.1    18.3

1991 06 13    18 00.79   -20 24.9    2.713    3.718   170.3     2.6    17.3
- 7.66  -0.28  -  1.8  - 0.3  (4500)    16417  - 6.45  +0.65  -  3.8  - 0.5
1991 07 13    17 37.91   -20 33.0    2.761    3.708   155.1     6.6    17.6

1991 06 13    18 04.69   -34 09.5    1.142    2.140   165.3     6.9    15.5
-10.87  -0.92  -  6.1  + 8.5  1964 TA2  13851  - 8.41  +1.62  + 42.6  + 5.1
1991 07 13    17 31.05   -33 08.1    1.129    2.085   152.6    13.0    15.6
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1991 06 13    18 02.98   -11 03.5    2.216    3.205   164.2     4.9    16.3
- 7.67  -0.34  + 20.9  - 3.9  (4513)    16560  - 6.37  +0.73  -  4.7  - 4.2
1991 07 13    17 39.96   -10 38.7    2.252    3.188   152.5     8.5    16.5

1991 06 13    18 04.73   -35 39.5    2.123    3.113   164.2     5.1    17.0
- 9.20  -0.45  -  8.0  + 5.8  1987 SO5  16026  - 7.41  +0.97  + 24.9  + 4.0
1991 07 13    17 37.21   -35 10.7    2.168    3.109   153.1     8.5    17.2

1991 06 13    18 04.81   -23 24.5    0.801    1.809   169.8     5.7    14.3
- 8.88  -1.04  - 39.2  - 0.7  1988 KA   13303  - 6.55  +1.74  - 30.9  + 2.3
1991 07 13    17 36.49   -25 15.1    0.794    1.769   155.1    14.0    14.5

1991 06 13    18 03.95   -22 03.2    2.554    3.559   169.9     2.9    17.6
- 7.88  -0.33  -  4.4  + 0.2  1982 UJ7  14348  - 6.70  +0.68  -  3.1     0.0
1991 07 13    17 40.23   -22 14.2    2.598    3.550   155.8     6.7    17.8

1991 06 13    18 05.35   -18 53.3    2.007    3.010   168.7     3.8    16.9
- 8.64  -0.47  + 20.2  - 0.7  1989 CL3  15562  - 7.49  +0.82  + 12.4  - 2.0
1991 07 13    17 38.75   -18 01.9    1.994    2.946   154.8     8.4    17.0

1991 06 13    18 07.46   -40 50.4    2.048    3.022   159.7     6.7    17.1
-10.20  -0.47  -  5.6  + 8.4  1980 FH1  16228  - 7.91  +1.12  + 40.0  + 5.3
1991 07 13    17 37.38   -39 53.0    2.121    3.051   151.1     9.3    17.3

1991 06 13    18 10.25   -25 34.2    1.224    2.229   168.4     5.2    16.3
-10.58  -0.90  +  4.2  + 2.8  (4339)    15691  - 9.04  +1.36  + 19.1  + 0.9
1991 07 13    17 36.63   -24 55.7    1.202    2.167   155.1    11.4    16.5

1991 06 13    18 07.73   -25 21.4    1.812    2.816   169.0     3.9    16.0
- 7.93  -0.51  -  5.4  + 1.5  1989 AL5  15893  - 6.59  +0.91  +  3.8  + 1.0
1991 07 13    17 43.33   -25 22.9    1.829    2.791   156.6     8.3    16.2

1991 06 13    18 08.90   -24 21.6    2.189    3.191   168.9     3.5    17.7
- 8.28  -0.43  + 19.4  + 1.5  1989 CX2  15716  - 7.10  +0.78  + 24.4  - 0.2
1991 07 13    17 43.61   -23 12.8    2.200    3.159   156.7     7.3    17.8

1991 06 13    18 13.45   -40 50.0    1.919    2.891   159.1     7.2    15.7
- 9.48  -0.68  - 32.0  + 8.0  1987 WS   12800  - 8.17  +1.07  + 19.1  + 7.2
1991 07 13    17 43.74   -41 07.7    1.939    2.873   151.4     9.7    15.9

1991 06 13    18 11.38   -04 59.5    1.945    2.912   158.1     7.5    16.3
- 7.20  -0.43  -  7.1  - 7.5  1986 PT4  16426  - 6.16  +0.74  - 47.8  - 5.3
1991 07 13    17 49.19   -06 26.1    1.980    2.918   152.2     9.4    16.4

1991 06 13    18 13.01   -30 38.5    1.697    2.694   166.1     5.2    16.8
- 8.29  -0.60  - 11.4  + 4.0  1986 QJ2  16580  - 6.90  +1.00  + 13.7  + 3.2
1991 07 13    17 47.27   -30 33.3    1.726    2.690   156.6     8.6    17.0

1991 06 13    18 15.34   -26 11.7    1.730    2.729   167.2     4.7    17.3
- 9.51  -0.54  - 24.2  + 2.1  1990 BH1  16032  - 7.85  +1.02  -  7.9  + 2.4
1991 07 13    17 46.42   -27 00.3    1.809    2.774   157.1     8.2    17.6

1991 06 13    18 13.84   -14 47.0    2.000    2.993   164.9     5.1    16.5
- 7.76  -0.52  - 22.2  - 3.5  (4559)    16692  - 7.09  +0.73  - 38.2  - 1.7
1991 07 13    17 49.27   -16 21.1    1.998    2.960   156.8     7.8    16.6

1991 06 13    18 17.02   -42 01.2    2.070    3.034   157.7     7.3    18.0
-10.66  -0.69  - 20.5  + 8.5  1981 ED1  14187  - 9.36  +1.07  + 31.9  + 7.1
1991 07 13    17 43.73   -41 41.4    2.084    3.015   151.1     9.4    18.1
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1991 06 13    18 14.05   -10 56.8    2.264    3.246   162.4     5.4    16.8
- 7.55  -0.40  + 17.5  - 4.0  1982 SG4  15244  - 6.65  +0.66  -  7.3  - 3.9
1991 07 13    17 50.80   -10 41.4    2.297    3.246   154.9     7.6    16.9

1991 06 13    18 18.79   -35 22.6    1.641    2.627   162.4     6.7    17.7
-11.42  -0.80  - 14.0  + 7.2  1980 FZ3  17427  - 9.94  +1.22  + 30.5  + 5.5
1991 07 13    17 43.01   -34 54.6    1.656    2.610   154.3     9.7    17.8

1991 06 13    18 17.55   -26 02.7    1.187    2.188   166.7     6.1    16.5
- 9.72  -0.95  - 11.3  + 2.3  1988 RR   14621  - 8.52  +1.31  +  6.0  + 2.1
1991 07 13    17 46.01   -26 10.3    1.179    2.152   157.1    10.6    16.7

1991 06 13    18 19.13   -29 58.7    1.002    2.001   165.2     7.4    17.0
-10.14  -1.11  + 11.6  + 6.3  1981 EP13 10159  - 8.57  +1.55  + 45.5  + 2.8
1991 07 13    17 46.11   -28 26.3    0.991    1.967   156.9    11.7    17.2

1991 06 13    18 17.23   -15 04.4    1.613    2.605   164.4     6.0    15.6
- 8.81  -0.75  - 36.5  - 4.8  1989 AZ1  14358  - 8.53  +0.87  - 55.5  - 1.4
1991 07 13    17 48.22   -17 28.7    1.574    2.540   156.9     9.0    15.6

1991 06 13    18 18.28   -34 02.3    1.369    2.360   163.3     7.1    16.7
- 9.01  -0.97  - 36.7  + 5.7  4667 P-L  15904  - 8.33  +1.20  +  7.3  + 6.8
1991 07 13    17 48.26   -34 48.5    1.341    2.304   155.3    10.6    16.7

1991 06 13    18 18.28   -14 39.1    1.050    2.046   163.9     7.9    16.7
- 9.12  -1.09  + 21.7  - 4.6  1933 SD   14181  - 8.84  +1.23  - 11.0  - 5.8
1991 07 13    17 47.05   -14 20.9    0.991    1.963   155.6    12.3    16.7

1991 06 13    18 18.46   -21 28.9    1.778    2.776   166.5     4.9    16.9
- 8.12  -0.60  - 13.0  - 0.5  1987 RG6  15558  - 7.29  +0.85  - 12.7  + 0.3
1991 07 13    17 52.68   -22 08.9    1.796    2.768   158.7     7.7    17.0

1991 06 13    18 18.88   -32 27.0    2.258    3.247   164.1     4.9    16.2
- 8.63  -0.53  +  2.5  + 4.2  1989 AO6  15251  - 7.77  +0.78  + 27.3  + 3.1
1991 07 13    17 51.85   -31 40.2    2.265    3.227   157.2     7.0    16.3

1991 06 13    18 22.23   -31 53.2    1.000    1.996   163.8     8.2    17.1
- 9.65  -1.28  -  9.2  + 6.7  1955 SF   11339  - 9.05  +1.50  + 36.3  + 5.7
1991 07 13    17 49.01   -31 10.7    0.957    1.933   156.8    12.0    17.1

1991 06 13    18 20.69   -28 42.5    1.547    2.543   165.4     5.8    15.9
- 8.81  -0.91  - 44.8  + 1.9  1978 VE5  15405  - 8.77  +0.96  - 20.9  + 4.7
1991 07 13    17 50.87   -30 26.1    1.500    2.469   157.4     9.1    16.0

1991 06 13    18 21.43   -24 16.9    2.660    3.654   166.0     3.8    17.6
- 7.55  -0.41  -  7.7  + 0.7  1988 YB   18115  - 6.96  +0.59  -  1.6  + 0.9
1991 07 13    17 57.83   -24 31.3    2.699    3.670   159.9     5.5    17.7

1991 06 13    18 25.12   -19 04.2    1.521    2.515   164.4     6.2    16.7
- 9.65  -0.78  -  4.4  - 1.7  (4459)    16225  - 8.94  +0.98  - 11.2  - 0.9
1991 07 13    17 53.99   -19 29.0    1.530    2.505   158.7     8.5    16.8

1991 06 13    18 24.74   -24 16.7    1.934    2.928   165.3     5.1    17.2
- 7.80  -0.56  -  9.7  + 0.7  1979 GE   10630  - 7.07  +0.78  -  2.4  + 1.1
1991 07 13    17 59.96   -24 35.5    1.978    2.955   160.4     6.6    17.3

1991 06 13    18 29.46   -38 21.6    1.949    2.919   158.8     7.2    15.3
-11.17  -0.85  - 83.6  + 7.1  1934 GA   16226  -10.63  +1.01  - 27.6  + 9.3
1991 07 13    17 53.31   -41 12.4    2.031    2.972   152.8     9.0    15.5
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1991 06 13    18 28.79   -27 53.3    1.245    2.239   163.9     7.2    16.5
-10.23  -0.93  - 22.0  + 3.3  (4403)    16014  - 8.95  +1.28  +  3.9  + 3.6
1991 07 13    17 55.93   -28 20.8    1.293    2.271   159.0     9.2    16.7

1991 06 13    18 31.14   -30 50.4    1.326    2.315   162.5     7.6    16.6
-10.33  -1.08  -  6.3  + 5.1  1988 RL9  17442  -10.00  +1.19  + 28.7  + 4.5
1991 07 13    17 56.42   -30 15.6    1.305    2.281   158.6     9.4    16.6

1991 06 13    18 29.92   -29 16.8    1.898    2.886   163.3     5.8    18.2
- 8.85  -0.70  -  9.8  + 3.0  1981 EJ23 10541  - 8.42  +0.83  + 11.7  + 3.1
1991 07 13    18 01.20   -29 13.9    1.910    2.886   159.9     7.0    18.2

1991 06 13    18 31.98   -26 04.7    1.467    2.458   163.5     6.7    17.3
- 9.36  -1.03  -  9.2  + 1.8  1988 VD3  14028  - 9.83  +0.93  +  7.4  + 2.6
1991 07 13    17 59.55   -26 08.9    1.405    2.386   160.2     8.3    17.2

1991 06 13    18 31.28   -10 29.3    1.732    2.704   158.9     7.8    17.4
- 7.87  -0.60  + 10.1  - 5.6  1981 EN26 10619  - 7.27  +0.77  - 21.5  - 4.3
1991 07 13    18 06.06   -10 48.7    1.783    2.752   158.1     7.9    17.5

1991 06 13    18 32.14   -20 21.5    2.100    3.086   163.2     5.5    15.5
- 7.67  -0.61  + 38.2  + 0.1  1986 RB12 14789  - 7.59  +0.64  + 33.9  - 1.7
1991 07 13    18 06.96   -18 29.8    2.071    3.052   161.5     6.1    15.5

1991 06 13    18 33.51   +03 24.4    1.734    2.651   148.0    11.7    18.0
- 7.56  -0.80  + 21.7  -11.1  1983 RL4   9766  - 8.36  +0.60  - 52.0  -11.6
1991 07 13    18 07.04   +02 39.8    1.638    2.563   148.9    11.8    17.8

1991 06 13    18 38.18   -41 15.9    1.590    2.550   155.6     9.5    17.4
- 9.95  -1.32  - 37.4  + 7.9  1978 RN5  10025  -11.37  +0.98  + 28.1  +11.1
1991 07 13    18 01.94   -41 35.9    1.485    2.439   153.8    10.6    17.2

1991 06 13    18 34.01   -03 41.6    1.724    2.673   153.7     9.7    18.0
- 7.27  -0.69  + 10.5  - 8.7  1981 EA22 10618  - 7.34  +0.68  - 41.0  - 7.3
1991 07 13    18 09.59   -04 29.9    1.714    2.669   154.8     9.3    17.9

1991 06 13    18 34.56   -24 15.4    1.910    2.897   163.0     5.9    16.7
- 7.40  -0.76  -  8.3  + 0.4  1981 VK   14783  - 7.84  +0.64  -  1.3  + 1.4
1991 07 13    18 09.12   -24 31.4    1.856    2.842   162.5     6.2    16.6

1991 06 13    18 36.12   -16 24.8    1.961    2.940   161.0     6.5    17.0
- 7.66  -0.65  -  3.3  - 2.7  (4496)    16416  - 7.69  +0.64  - 16.2  - 1.6
1991 07 13    18 10.71   -16 56.1    1.966    2.949   161.9     6.2    17.0

1991 06 13    18 40.73   -30 13.0    1.494    2.475   160.8     7.8    16.9
- 9.23  -1.16  - 49.4  + 2.3  1988 VR   14025  -10.38  +0.87  - 18.1  + 6.5
1991 07 13    18 07.56   -32 02.0    1.443    2.424   160.2     8.2    16.8

1991 06 13    18 49.61   -32 14.6    1.012    1.992   158.3    10.8    14.7
-14.19  -1.33  +109.1  +11.6  (4440)    16219  -12.38  +1.74  +145.3  - 2.5
1991 07 13    18 04.07   -25 26.4    1.025    2.015   161.3     9.3    14.7

1991 06 13    18 41.97   -20 05.9    1.620    2.601   160.8     7.4    16.2
- 7.58  -0.88  +  1.3  - 1.4  1981 EL21 10308  - 8.25  +0.70  -  3.9  - 0.6
1991 07 13    18 15.29   -20 11.4    1.582    2.573   163.7     6.4    16.0

1991 06 13    18 50.11   -37 30.2    1.646    2.607   156.0     9.1    18.3
-12.18  -1.20  -102.6  + 7.3  1987 HA   15886  -12.62  +1.09  - 35.9  +11.8
1991 07 13    18 08.66   -41 06.4    1.727    2.683   155.1     9.2    18.4
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1991 06 13    18 45.08   -25 47.7    1.791    2.769   160.6     7.0    17.2
- 8.98  -0.89  - 10.8  + 1.3  (4515)    16561  - 9.59  +0.73  +  3.1  + 2.5
1991 07 13    18 14.22   -26 01.5    1.765    2.755   163.4     6.0    17.1

1991 06 13    18 41.89   -23 33.0    2.222    3.201   161.3     5.8    17.2
- 7.16  -0.66  - 14.0    0.0  1986 PQ1  11148  - 7.58  +0.54  -  8.8  + 1.3
1991 07 13    18 17.58   -24 09.6    2.208    3.199   164.4     4.9    17.2

1991 06 13    18 48.15   -29 11.9    0.987    1.971   159.5    10.4    17.0
- 8.50  -1.43  - 52.8  + 2.7  1981 JB3  16230  - 9.30  +1.22  - 14.9  + 7.6
1991 07 13    18 16.52   -31 02.7    1.001    1.994   162.3     8.9    17.0

1991 06 13    18 46.43   -19 26.5    1.433    2.411   159.7     8.4    16.8
- 7.23  -1.07  +  8.4  - 1.8  1974 SW   12695  - 8.71  +0.68  -  0.1  - 1.2
1991 07 13    18 19.31   -19 15.2    1.351    2.346   164.5     6.7    16.5

1991 06 13    18 47.59   -25 56.4    1.912    2.887   160.0     6.9    15.8
- 7.65  -0.82  - 18.3  + 0.8  (4507)    16420  - 8.36  +0.62  -  5.8  + 2.6
1991 07 13    18 20.93   -26 36.0    1.895    2.889   164.8     5.3    15.7

1991 06 13    18 46.19   -21 11.3    1.663    2.641   160.1     7.5    16.3
- 6.63  -0.88  -  3.6  - 1.2  1986 PW4  14618  - 7.58  +0.62  -  6.1  + 0.1
1991 07 13    18 22.11   -21 28.4    1.619    2.615   165.5     5.6    16.1

1991 06 13    18 47.18   -07 29.7    1.910    2.858   154.0     9.0    15.8
- 7.27  -0.73  - 19.7  - 7.0  (4424)    16213  - 7.89  +0.55  - 55.3  - 4.1
1991 07 13    18 22.10   -09 27.5    1.900    2.878   160.4     6.8    15.7

1991 06 13    18 50.46   -28 46.4    1.624    2.598   159.1     8.0    17.7
- 7.88  -0.99  - 12.7  + 2.4  6073 P-L   7943  - 8.79  +0.73  +  9.4  + 3.9
1991 07 13    18 22.27   -28 54.2    1.604    2.598   164.3     6.1    17.6

1991 06 13    19 17.85   -68 08.7    1.070    1.902   131.5    23.6    18.3
-18.21  -4.66  - 98.7  +25.6  3509 P-L  15903  -20.84  +4.11  + 94.5  +28.7
1991 07 13    18 02.50   -68 21.1    1.079    1.914   132.0    23.3    18.3

1991 06 13    18 49.28   -20 12.9    1.907    2.879   159.2     7.2    17.7
- 7.05  -0.91  -  7.9  - 1.6  1981 SN1  13301  - 8.74  +0.44  - 12.5    0.0
1991 07 13    18 23.11   -20 46.4    1.784    2.781   165.6     5.2    17.4

1991 06 13    18 50.05   -12 18.1    1.962    2.919   156.1     8.1    16.9
- 7.61  -0.77  - 28.2  - 5.2  1990 FS1  16437  - 8.51  +0.52  - 50.8  - 2.0
1991 07 13    18 23.50   -14 22.4    1.935    2.924   163.6     5.6    16.7

1991 06 13    18 49.36   -04 53.3    2.287    3.219   151.9     8.6    16.4
- 7.03  -0.65  + 17.9  - 6.1  1988 XO1  16431  - 7.84  +0.42  - 20.1  - 5.9
1991 07 13    18 25.08   -04 56.8    2.236    3.200   157.7     6.9    16.3

1991 06 13    18 52.55   -21 44.2    2.046    3.015   158.7     7.0    17.0
- 8.30  -0.83  + 11.5  - 0.1  1988 VZ2  14027  - 9.37  +0.53  + 13.1  + 0.2
1991 07 13    18 23.53   -21 07.7    1.983    2.979   165.8     4.8    16.8

1991 06 13    18 50.10   -22 53.7    1.777    2.751   159.4     7.5    17.0
- 6.97  -0.83  -  7.6  - 0.4  1990 EZ5  17210  - 7.69  +0.61  -  4.4  + 1.0
1991 07 13    18 25.45   -23 14.4    1.774    2.772   166.3     5.0    16.9

1991 06 13    19 01.48   -26 53.0    1.067    2.041   156.9    11.3    16.9
-11.17  -1.79  -175.2  - 2.3  1985 DD   13465  -13.97  +1.09  -123.3  +16.2
1991 07 13    18 18.42   -34 55.5    1.090    2.077   160.6     9.4    16.9
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1991 06 13	18 52.70	-16 20.0		1.108	2.082	157.3	10.8	15.3
- 7.21	-1.24	+ 23.0	- 4.1	(4408)	16016	- 8.60	+0.86	- 2.2	- 3.9
1991 07 13	18 25.11	-15 49.1		1.080	2.078	164.6	7.5	15.1	
1991 06 13	18 54.46	-15 56.5		1.570	2.535	156.8	9.1	17.5	
- 8.33	-1.02	+ 4.2	- 3.5	1978 TB2	12326	- 9.68	+0.64	- 13.6	- 2.3
1991 07 13	18 24.38	-16 12.9		1.524	2.518	164.6	6.1	17.3	
1991 06 13	18 54.41	-15 16.3		1.323	2.290	156.5	10.2	17.6	
- 8.06	-1.21	- 13.1	- 5.3	1977 DD1	14780	- 9.97	+0.69	- 37.0	- 2.3
1991 07 13	18 23.86	-16 37.0		1.261	2.257	164.7	6.8	17.3	
1991 06 13	18 55.16	-33 38.4		1.640	2.604	156.8	8.8	18.3	
- 8.28	-1.27	- 27.1	+ 3.7	4314 P-L	14629	-10.81	+0.60	+ 11.6	+ 7.6
1991 07 13	18 23.07	-34 09.1		1.515	2.501	161.8	7.3	17.9	
1991 06 13	18 57.61	-37 38.9		1.669	2.623	154.7	9.5	16.3	
- 8.84	-1.29	- 76.6	+ 4.6	1988 VP	14025	-11.01	+0.71	- 24.5	+10.6
1991 07 13	18 24.12	-40 21.8		1.636	2.605	157.6	8.5	16.2	
1991 06 13	18 55.04	-21 04.0		1.832	2.800	158.0	7.8	16.6	
- 6.40	-0.91	- 9.7	- 1.5	1981 UT7	14473	- 8.06	+0.45	- 12.5	+ 0.4
1991 07 13	18 30.85	-21 41.0		1.743	2.745	167.5	4.6	16.3	
1991 06 13	18 52.19	-07 53.9		0.855	1.820	153.3	14.5	16.3	
- 3.27	-1.35	- 1.3	-12.9	1983 RC4	12203	- 5.94	+0.68	- 80.5	-10.6
1991 07 13	18 34.64	-10 00.8		0.771	1.768	163.0	9.7	15.8	
1991 06 13	19 00.03	-10 21.5		1.482	2.432	153.0	10.9	16.5	
- 7.08	-1.10	+ 23.3	- 6.0	1984 QQ	14349	- 9.20	+0.51	- 15.6	- 6.2
1991 07 13	18 32.65	-10 09.5		1.398	2.388	162.8	7.2	16.1	
1991 06 13	19 02.06	-21 21.8		1.618	2.582	156.5	9.0	17.7	
- 7.85	-1.08	- 10.9	- 1.5	1218 T-2	17220	- 9.66	+0.57	- 11.3	+ 1.0
1991 07 13	18 32.77	-21 59.7		1.569	2.572	168.0	4.7	17.4	
1991 06 13	19 03.45	-25 05.8		1.743	2.705	156.5	8.6	17.9	
- 8.55	-1.04	- 26.4	+ 0.1	(4425)	16213	-10.10	+0.60	- 13.7	+ 3.3
1991 07 13	18 32.45	-26 11.9		1.723	2.724	167.4	4.7	17.7	
1991 06 13	19 00.69	-20 13.3		0.977	1.951	156.6	11.9	16.6	
- 6.56	-1.48	+ 4.3	- 2.8	1984 HS1	14192	- 8.95	+0.84	- 5.6	- 0.7
1991 07 13	18 33.13	-20 19.1		0.939	1.944	167.9	6.3	16.3	
1991 06 13	19 04.41	-23 04.5		1.402	2.367	156.1	10.0	17.1	
- 8.56	-1.27	- 24.0	- 1.2	(4411)	16017	-10.66	+0.69	- 17.3	+ 2.7
1991 07 13	18 31.97	-24 13.7		1.363	2.367	167.7	5.3	16.8	
1991 06 13	19 05.35	-35 48.1		1.291	2.248	154.0	11.4	17.0	
- 8.34	-1.48	- 44.8	+ 5.4	2390 T-3	12701	-10.54	+0.88	+ 9.0	+ 9.9
1991 07 13	18 32.67	-36 50.3		1.276	2.263	161.4	8.2	16.9	
1991 06 13	19 05.40	-33 07.8		1.231	2.193	154.9	11.3	16.4	
- 7.91	-1.57	- 28.7	+ 4.0	1981 SO	17199	-10.92	+0.77	+ 16.1	+ 8.7
1991 07 13	18 32.82	-33 35.5		1.160	2.155	163.7	7.6	16.0	
1991 06 13	19 02.72	-13 47.2		1.596	2.549	154.1	10.0	17.2	
- 7.11	-1.12	- 16.4	- 5.7	1988 XP	14202	- 9.72	+0.40	- 43.9	- 2.9
1991 07 13	18 34.67	-15 22.8		1.483	2.483	166.4	5.5	16.8	

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1991 06 13    19 04.11   -14 26.2    1.594    2.546   154.0    10.1    17.2
- 7.78  -1.08  -  6.9  - 4.8  1985 UY4  12317  - 9.82  +0.51  - 29.7  - 2.4
1991 07 13    18 34.77   -15 25.5    1.531    2.531   166.5     5.4    16.9

1991 06 13    19 01.17   -12 16.0    2.389    3.330   153.7     7.8    18.1
- 6.77  -0.72  +  1.3  - 3.8  1983 XH1  16024  - 8.12  +0.32  - 19.4  - 2.8
1991 07 13    18 36.92   -12 45.0    2.314    3.307   165.3     4.5    17.8

1991 06 13    19 05.09   -29 52.6    2.096    3.051   155.7     7.9    16.6
- 7.42  -0.90  +  1.0  + 2.4  1989 AK1  14357  - 8.90  +0.47  + 21.6  + 3.6
1991 07 13    18 38.10   -29 20.8    2.046    3.046   167.2     4.2    16.4

1991 06 13    19 08.27   -18 34.9    1.408    2.365   154.5    10.7    17.8
- 7.38  -1.28  -  4.1  - 3.2  1988 RK8  18114  -10.21  +0.50  - 15.9  - 0.7
1991 07 13    18 38.61   -19 09.4    1.322    2.328   168.9     4.8    17.4

1991 06 13    19 05.35   -16 35.3    1.862    2.813   154.5     8.9    17.2
- 6.58  -0.94  +  0.6  - 3.1  1978 SP5  15403  - 8.58  +0.37  - 14.2  - 1.7
1991 07 13    18 40.20   -16 58.4    1.775    2.778   168.4     4.2    16.8

1991 06 13    19 05.88   -28 01.3    2.523    3.474   155.8     6.9    16.7
- 6.84  -0.76  - 38.3  + 0.6  1990 HM1  16588  - 8.29  +0.33  - 23.6  + 3.7
1991 07 13    18 41.16   -29 39.7    2.494    3.493   167.6     3.6    16.5

1991 06 13    19 08.46   -25 03.6    2.042    2.995   155.3     8.1    17.1
- 6.89  -0.93  - 15.2  - 0.1  (4656)    17414  - 8.83  +0.37  -  6.6  + 2.4
1991 07 13    18 42.47   -25 40.8    1.973    2.978   169.7     3.5    16.8

1991 06 13    19 09.66   -25 52.1    1.514    2.472   155.1    10.0    18.5
- 6.70  -1.19  +  2.0  + 0.8  1981 EL10 16424  - 9.07  +0.52  + 14.4  + 2.6
1991 07 13    18 42.86   -25 31.0    1.453    2.460   169.8     4.2    18.1

1991 06 13    19 07.91   -23 30.9    2.552    3.501   155.4     6.9    17.8
- 6.59  -0.72  - 11.6  - 0.3  1984 DY   14191  - 7.94  +0.31  -  7.4  + 1.4
1991 07 13    18 44.22   -24 02.7    2.513    3.519   170.5     2.7    17.5

1991 06 13    19 08.95   -12 20.1    2.023    2.959   152.1     9.2    16.0
- 6.02  -0.84  - 40.4  - 5.7  1990 FC1  16437  - 7.79  +0.32  - 63.7  - 1.6
1991 07 13    18 46.10   -15 03.7    1.979    2.982   168.5     3.9    15.7

1991 06 13    19 14.03   -22 25.4    1.412    2.366   153.9    10.9    17.8
- 7.30  -1.26  - 28.6  - 2.0  4074 T-3  15908  - 9.79  +0.55  - 25.3  + 2.6
1991 07 13    18 45.03   -23 54.9    1.386    2.395   170.7     3.9    17.5

1991 06 13    19 19.21   -36 51.8    2.167    3.095   151.0     9.1    16.7
- 9.24  -1.21  -106.7  + 3.1  1986 GU   14618  -12.15  +0.39  - 60.5  +10.6
1991 07 13    18 44.18   -41 16.6    2.177    3.147   158.9     6.7    16.7

1991 06 13    19 14.70   -13 52.9    1.875    2.809   151.5     9.9    17.8
- 6.97  -1.00  -  9.2  - 4.6  1982 BS1  10832  - 9.36  +0.31  - 31.3  - 2.3
1991 07 13    18 47.79   -14 57.9    1.791    2.795   168.8     4.1    17.4

1991 06 13    19 16.82   -36 06.9    1.682    2.621   151.7    10.6    15.9
- 7.29  -1.29  + 10.8  + 5.6  1986 PN4  14786  -10.09  +0.50  + 55.2  + 7.4
1991 07 13    18 47.44   -34 31.4    1.584    2.579   165.1     5.8    15.5

1991 06 13    19 17.80   -26 23.2    1.387    2.339   153.2    11.3    17.3
- 6.59  -1.50  - 36.7  - 1.4  3285 T-2  15257  -11.04  +0.29  - 23.9  + 5.1
1991 07 13    18 48.06   -28 06.2    1.253    2.260   169.7     4.6    16.7
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1991 06 13    19 17.77   -21 08.8    1.631    2.576   152.8    10.4    18.3
- 6.94  -1.26  -  7.2  - 2.0  1988 XR   14202  -10.49  +0.27  - 10.1  + 0.9
1991 07 13    18 48.82   -21 40.2    1.496    2.506   171.7     3.4    17.7

1991 06 13    19 16.58   -25 30.4    1.937    2.882   153.5     9.0    16.8
- 6.22  -1.05  - 21.9  - 0.5  1982 UD2  12707  - 8.96  +0.26  - 13.2  + 3.0
1991 07 13    18 51.38   -26 29.5    1.832    2.841   171.2     3.1    16.4

1991 06 13    19 24.85   -38 22.2    1.323    2.258   149.5    13.2    16.1
- 7.89  -1.69  + 13.4  + 7.7  1983 NR    8285  -11.55  +0.67  + 75.2  +10.0
1991 07 13    18 51.33   -36 13.8    1.244    2.239   164.0     7.2    15.8

1991 06 13    19 23.52   -28 04.4    1.252    2.201   151.9    12.5    16.4
- 6.56  -1.63  - 27.7    0.0  1978 RV5  13684  -11.13  +0.38  -  5.7  + 6.3
1991 07 13    18 53.29   -29 06.3    1.153    2.161   170.0     4.7    15.9

1991 06 13    19 17.34   -07 18.9    1.565    2.485   147.8    12.6    15.4
- 5.21  -1.09  - 34.5  - 9.6  (4461)    16226  - 8.07  +0.27  - 83.5  - 5.3
1991 07 13    18 54.91   -10 23.9    1.484    2.483   166.4     5.5    15.0

1991 06 13    19 20.49   -10 29.0    1.692    2.613   148.7    11.6    16.9
- 6.14  -1.12  + 50.8  - 4.0  1987 OQ   12322  - 9.29  +0.22  + 18.3  - 6.3
1991 07 13    18 54.90   -08 41.1    1.561    2.556   164.9     6.0    16.5

1991 06 13    19 24.57   -33 30.9    1.440    2.380   150.9    12.0    17.4
- 6.56  -1.57  - 49.5  + 1.6  1980 SG    9296  -11.20  +0.31  - 12.1  + 9.5
1991 07 13    18 54.48   -35 18.0    1.330    2.327   165.2     6.4    16.9

1991 06 13    19 25.78   -34 43.7    1.814    2.743   150.4    10.5    18.0
- 7.51  -1.34  - 12.3  + 3.5  1981 EK4  15878  -11.17  +0.31  + 25.9  + 7.8
1991 07 13    18 54.73   -34 31.2    1.686    2.684   165.9     5.3    17.5

1991 06 13    19 26.12   -29 17.4    1.787    2.722   151.3    10.3    16.0
- 7.07  -1.27  - 82.3  - 0.8  (4448)    16221  -10.63  +0.26  - 59.7  + 7.5
1991 07 13    18 56.75   -33 06.0    1.733    2.734   167.3     4.7    15.7

1991 06 13    19 21.83   -15 30.9    0.894    1.847   150.5    15.7    15.9
- 3.63  -1.70  + 33.9  - 5.2  1978 SD7  13854  - 8.70  +0.33  -  2.0  - 5.8
1991 07 13    18 59.61   -14 41.9    0.798    1.808   170.6     5.3    15.2

1991 06 13    19 33.78   -34 10.5    0.875    1.822   148.9    16.7    16.4
- 5.46  -2.47  -254.9  - 9.4  1988 JL   13469  -15.71  -0.10  -194.1  +27.9
1991 07 13    18 57.72   -46 34.5    0.823    1.796   154.8    13.9    16.1

1991 06 13    19 31.78   -29 53.5    1.323    2.261   150.0    13.0    17.0
- 6.94  -1.64  - 49.9  + 0.1  1969 UP1  11728  -11.61  +0.36  - 21.5  + 8.2
1991 07 13    19 00.27   -31 55.8    1.255    2.260   168.7     5.1    16.6

1991 06 13    19 31.12   -18 49.9    1.578    2.505   149.3    12.0    17.7
- 6.73  -1.23  - 16.3  - 3.6  1979 FD2  14013  - 9.88  +0.32  - 26.0  + 0.4
1991 07 13    19 03.34   -20 00.6    1.537    2.551   174.6     2.1    17.2

1991 06 13    19 30.94   -16 36.3    2.127    3.041   148.7    10.0    18.3
- 6.76  -1.04  - 10.8  - 3.5  1981 YS1  15553  - 9.95  +0.10  - 24.7  - 1.0
1991 07 13    19 03.78   -17 34.0    1.993    3.005   173.4     2.2    17.7

1991 06 13    19 31.83   -19 34.3    1.207    2.144   149.3    14.0    16.4
- 6.03  -1.55  - 20.1  - 4.5  1982 XV   15707  -10.35  +0.34  - 31.4  + 0.9
1991 07 13    19 03.78   -21 01.6    1.148    2.162   175.0     2.3    15.7
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1991 06 13    19 30.59   -19 33.7    1.640    2.568   149.6    11.6    16.1
- 5.42  -1.20  -  0.2  - 2.8  (4426)    16214  - 8.89  +0.19  -  9.6  - 0.2
1991 07 13    19 06.58   -19 53.2    1.549    2.564   175.3     1.9    15.5

1991 06 13    19 30.85   -23 36.2    1.090    2.034   150.2    14.4    16.0
- 3.77  -1.70  - 28.6  - 3.8  1988 XK1  14203  - 9.84  +0.04  - 31.2  + 3.3
1991 07 13    19 07.25   -25 18.9    0.948    1.963   174.8     2.7    15.1

1991 06 13    19 28.99   -16 59.2    2.261    3.177   149.3     9.4    16.6
- 4.94  -0.87  -  7.7  - 3.1  2222 T-2  16243  - 7.42  +0.12  - 20.7  - 1.0
1991 07 13    19 08.65   -17 45.7    2.173    3.186   174.3     1.8    16.1

1991 06 13    19 29.56   +07 21.8    1.418    2.263   136.1    18.1    15.4
- 3.87  -1.30  + 45.1  -12.5  (4332)    15688  - 8.80  -0.10  - 57.4  -19.8
1991 07 13    19 08.34   +07 17.1    1.214    2.157   150.4    13.4    14.8

1991 06 13    19 34.28   -18 53.0    1.806    2.725   148.6    11.2    18.0
- 6.10  -1.15  - 12.2  - 3.2  1979 MZ2  16576  - 9.49  +0.16  - 22.1   0.0
1991 07 13    19 08.48   -19 50.6    1.718    2.733   175.6     1.6    17.4

1991 06 13    19 38.10   -19 25.8    1.279    2.206   147.8    14.2    15.6
- 6.66  -1.48  + 87.6    0.0  1986 CL1  12318  -10.47  +0.38  + 75.2  - 4.5
1991 07 13    19 08.96   -15 13.1    1.223    2.235   172.3     3.5    15.0

1991 06 13    19 32.56   -08 38.1    1.689    2.589   145.2    12.9    18.0
- 4.82  -1.16  + 30.0  - 5.8  4089 P-L  15903  - 8.71  +0.03  - 10.7  - 6.9
1991 07 13    19 10.08   -08 07.0    1.535    2.532   165.7     5.7    17.4

1991 06 13    19 36.46   -22 31.2    2.087    3.002   148.7    10.1    18.6
- 5.53  -1.08  - 20.3  - 2.1  1978 VK8  13603  - 9.11  +0.03  - 21.6  + 1.6
1991 07 13    19 12.47   -23 41.0    1.943    2.958   176.7     1.1    18.0

1991 06 13    19 35.90   -20 40.2    1.786    2.705   148.6    11.3    16.7
- 5.20  -1.15  -  6.7  - 2.5  (4365)    15865  - 8.78  +0.11  - 12.7  + 0.5
1991 07 13    19 12.61   -21 14.8    1.685    2.700   177.1     1.1    16.1

1991 06 13    19 40.49   -18 43.4    1.288    2.211   147.1    14.5    16.6
- 5.05  -1.50  - 35.5  - 5.7  4045 T-3  15908  - 9.74  +0.16  - 50.8  + 1.1
1991 07 13    19 15.24   -21 05.4    1.225    2.241   177.6     1.1    15.9

1991 06 13    19 43.69   -30 12.2    2.244    3.148   147.4    10.0    17.3
- 5.44  -1.14  - 36.7  - 0.3  1982 YL1  17433  - 9.56  -0.07  - 21.7  + 5.1
1991 07 13    19 19.23   -31 49.9    2.074    3.081   170.1     3.2    16.7

1991 06 13    19 48.04   -30 07.9    1.869    2.773   146.5    11.7    17.3
- 6.13  -1.40  - 33.5  - 0.4  1989 AD   14204  -11.35  -0.10  - 14.6  + 6.2
1991 07 13    19 19.44   -31 32.4    1.697    2.705   170.4     3.6    16.7

1991 06 13    19 42.16   -19 03.4    1.685    2.595   146.8    12.4    15.8
- 3.81  -1.21  - 13.9  - 3.9  1986 PB5  14475  - 8.03  -0.03  - 27.8  - 0.3
1991 07 13    19 22.22   -20 12.5    1.558    2.575   178.1     0.7    15.0

1991 07 13    19 25.05   -34 06.7    2.076    3.077   167.9     4.0    17.1
-10.43  -0.08  - 45.7  + 6.5  (4525)    16565  - 6.54  +1.24  -  4.7  + 5.9
1991 08 12    18 57.17   -35 21.1    2.205    3.067   141.9    11.8    17.6

1991 07 13    19 26.77   -12 02.2    2.123    3.129   170.0     3.2    15.9
- 7.65  -0.06  - 45.8  - 3.6  1984 EA1  14349  - 4.78  +0.93  - 54.0  + 0.8
1991 08 12    19 06.29   -14 40.0    2.223    3.123   147.1    10.2    16.4
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1991 07 13    19 27.01   -23 27.7    1.549    2.565   178.5     0.6    17.0
-10.45  +0.05  - 15.8  + 2.2  1989 YH1  16031  - 5.51  +1.39  +  0.2  + 2.4
1991 08 12    19 00.60   -23 51.2    1.704    2.604   145.6    12.7    17.9

1991 07 13    19 27.82   -19 40.9    1.248    2.264   177.6     1.1    16.4
-10.72  -0.19  - 30.0  - 0.6  1985 UG2  17436  - 5.88  +1.60  - 21.9  + 2.5
1991 08 12    18 59.63   -21 04.3    1.313    2.225   145.6    14.9    17.2

1991 07 13    19 28.60   -24 59.1    1.196    2.212   176.9     1.4    15.7
-11.40  +0.04  -  0.9  + 3.6  (4536)    16569  - 5.28  +1.70  + 18.6  + 2.1
1991 08 12    19 00.53   -24 29.7    1.330    2.240   145.5    14.9    16.6

1991 07 13    19 28.58   -22 22.8    1.250    2.266   179.0     0.4    17.4
-10.53  -0.10  - 24.7  + 1.4  1980 FN1  13854  - 5.34  +1.60  -  8.5  + 3.0
1991 08 12    19 01.65   -23 15.4    1.348    2.259   145.9    14.6    18.2

1991 07 13    19 28.84   -22 58.8    1.746    2.763   178.6     0.5    15.7
- 8.78  -0.13  +  0.4  + 1.4  1981 SW7  10027  - 5.23  +1.18  + 10.9  + 1.6
1991 08 12    19 05.40   -22 42.2    1.806    2.712   146.8    11.8    16.4

1991 07 13    19 36.47   -26 10.3    1.743    2.758   175.0     1.8    17.0
-10.23  -0.15  - 28.8  + 3.2  (4465)    16405  - 6.48  +1.26  -  4.0  + 4.0
1991 08 12    19 08.81   -27 00.9    1.853    2.758   146.8    11.6    17.7

1991 07 13    19 37.56   -32 02.0    1.152    2.159   169.6     4.9    16.9
-11.58  -0.06  +  2.3  + 8.5  1980 FU   11837  - 5.37  +1.78  + 44.8  + 4.2
1991 08 12    19 08.74   -30 43.1    1.283    2.196   145.8    15.0    17.6

1991 07 13    19 37.42   -16 00.6    0.819    1.832   173.3     3.7    15.7
- 9.35  -0.44  - 14.0  - 4.8  1982 UG7  10309  - 4.27  +1.90  - 26.0  + 0.7
1991 08 12    19 12.66   -17 10.7    0.843    1.788   148.8    17.1    16.3

1991 07 13    19 37.93   -26 48.3    1.390    2.403   174.3     2.4    14.4
-10.60  -0.49  - 70.4  + 2.5  (4497)    16416  - 7.33  +1.48  - 36.2  + 7.1
1991 08 12    19 07.39   -29 36.7    1.403    2.313   145.8    14.2    14.9

1991 07 13    19 37.77   -21 21.9    2.041    3.057   176.9     1.0    17.6
- 8.18  -0.22  - 25.4  + 0.1  1975 UF   12004  - 5.71  +0.97  - 16.5  + 2.3
1991 08 12    19 14.76   -22 28.8    2.084    2.998   149.0    10.0    18.1

1991 07 13    19 38.95   -05 09.5    1.247    2.238   162.8     7.7    17.4
-12.68  +0.02  + 93.5  -10.7  1948 AA   17011  - 7.05  +1.58  + 28.0  - 9.1
1991 08 12    19 06.48   -02 10.1    1.397    2.295   143.9    15.1    18.0

1991 07 13    19 37.37   -10 25.2    0.741    1.748   168.0     6.9    15.6
- 6.72  -0.48  - 19.7  -11.2  1953 PR    9360  - 2.23  +1.84  - 64.0  - 2.1
1991 08 12    19 19.65   -12 47.6    0.726    1.682   150.1    17.5    15.9

1991 07 13    19 40.90   -25 46.2    1.577    2.591   174.7     2.1    15.8
- 9.49  -0.21  - 78.8  + 3.4  (4526)    16565  - 5.79  +1.29  - 43.0  + 7.0
1991 08 12    19 15.22   -28 55.3    1.715    2.628   147.7    11.9    16.5

1991 07 13    19 41.18   -36 43.6    1.584    2.579   164.9     5.9    15.5
- 9.19  -0.36  - 40.3  + 8.1  1975 TS3  11430  - 5.69  +1.39  + 14.6  + 8.2
1991 08 12    19 15.64   -37 22.2    1.631    2.524   144.3    13.5    15.9

1991 07 13    19 42.31   -13 45.4    1.086    2.095   170.7     4.5    16.7
- 9.99  -0.47  - 12.5  - 5.3  1978 SH3  13853  - 6.23  +1.58  - 30.1  - 0.4
1991 08 12    19 14.17   -14 58.4    1.100    2.037   149.0    14.8    17.1
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