of Commission 20 of the International Astronomical Union, usually in batches on the date of each full moon, by:

Minor Planet Center
Smithsonian Astrophysical Observatory
Cambridge, MA 02138, U.S.A.
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Brian G. Marsden, Director Conrad M. Bardwell, Associate Director

ERRATA.

MPC	Line				
14428	-17	For	Garnagnate Monastero	read	Garbagnate Monastero
14552	-19	For	Garnagnate Monastero	read	Garbagnate Monastero
14993	2	For	Garnagnate Monastero	read	Garbagnate Monastero
15072	24	For	1985 NH1	read	1985 HN1
15110	12	For	1983 AY	read	(4147) 1983 AY
15119	12	For	1175 T-3	read	(4043) 1175 T-3

* * * * *

CORRECTED OBSERVATION.

The following observation corrects that previously published.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Mag.	N Obs.
3780	1988 03	12.67153	11 29 03.71	+05 24 33.2	MPC13033		1 888

Note 1: time originally erroneously given as 1988 03 12.67653.

* * * * *

DELETED OBSERVATIONS.

The following observations are to be deleted.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Obs.
1988 XO4 *	1988 12	11.56698	05 12 56.90	+21 12 03.9	MPC14902	894
1988 XO4	1988 12	11.60294	05 13 01.24	+21 11 37.5	MPC14902	894

* * * * *

IDENTIFICATION CHANGES.

Continuation to MPC 14977.

Object	Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
1964 YO *	1964 12	25.50972	03 57 18.99	+22 39 33.5	1964 VS1		330
1970 LR *	1970 06	11.92388	16 51 57.50	-16 19 27.0	1970 KK	16.0	095
1981 XN2 *	1981 12	15.57708	03 18 57.14	+11 24 28.6	1981 WK9		323
1981 XN2	1981 12	15.60139	03 18 56.18	+11 24 40.2	1981 WK9		323
1982 XV4 *	1982 12	13.55013	03 08 04.20	+12 44 42.9	1982 VU4	18.5	381
1982 XV4	1982 12	13.59596	03 08 02.36	+12 44 37.9	1982 VU4	18.5	381
1982 XV4	1982 12	14.51124	03 07 31.66	+12 43 27.1	1982 VU4	18.5	381
1982 XV4	1982 12	14.53486	03 07 31.11	+12 43 24.8	1982 VU4	18.5	381

1982 XV4	1982 12 14.55631	03 07 30.09	+12 43 23.6	1982 VU4	18.5	381
1982 XV4	1982 12 14.57861	03 07 29.34	+12 43 22.7	1982 VU4	18.5	381
1985 AH *	1985 01 11.82789	07 36 58.25	+22 12 05.8	1984 YP	16.8	046
1985 AH	1985 01 11.84207	07 36 57.50	+22 12 06.2	1984 YP		046
1988 RC10*	1988 09 01.01840	20 56 44.84	-12 40 09.1	1975 VS5		809
1988 RC10	1988 09 01.02465	20 56 44.61	-12 40 11.7	1975 VS5		809
1988 RC10	1988 09 01.03090	20 56 44.39	-12 40 14.3	1975 VS5		809
1988 RC10	1988 09 09.19757	20 51 56.49	-13 36 36.9	1975 VS5		809
1988 RC10	1988 09 09.20382	20 51 56.27	-13 36 39.5	1975 VS5		809
1988 RC10	1988 09 09.21007	20 51 56.04	-13 36 42.1	1975 VS5		809
1989 EH11*	1989 03 10.84722	09 00 06.78	+16 57 00.1	1989 CE7	19.7	033
1989 EH11	1989 03 10.87222	09 00 06.12	+16 57 07.1	1989 CE7		033

* * * * *

IDENTIFICATIONS.

The following list of identifications with numbered minor planets continues that on MPC 14977.

	Note		Note		Note
A907 VN = (3092)	1	A916 AA = (1584)	2	A916 MA = (1105)	2
A918 FB = (2242)	1	1926 GA = (2353)	1	1928 UA = (3018)	1
1930 SV = (2423)	1	1933 BR = (3016)	1	1949 KC1 = (1074)	2
1949 ST1 = (1604)	2	1950 RL1 = (2362)	1	1951 DC = (3008)	1
1951 ET = (3023)	1	1952 FP = (2240)	1	1952 KK1 = (2494)	2
1953 TP3 = (1013)	2	1955 MH = (2815)	1	1955 XG1 = (3104)	1
1957 OJ = (3014)	1	1958 XY = (2072)	2	1961 DN = (2708)	1
1962 TJ = (2666)	1	1964 CK = (2731)	1	1965 UP = (2760)	1
1965 UM2 = (2525)	2	1965 UN2 = (2848)	2	1967 EN1 = (3080)	1
1977 BA1 = (3018)	1	1979 FS = (2153)	1	1979 HJ5 = (2962)	1
1979 SK12= (2174)	1	1981 UB21= (2760)	1	1981 WK9 = (2904)	1
1982 VX5 = (3113)	1	1984 DF2 = (2863)	1	1984 HS = (3015)	1
1987 QR5 = (3187)	1				

Note 1: identification by S. Nakano. 2: identification by G. V. Williams.

* * * * *

INDEX TO ORBITAL ELEMENTS.

The following index to orbital elements continues that on MPC 14074-14080 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. The index does not include the set of one-opposition T-2 orbits given on MPC 14907-14930.

Comet	MPC	Comet	MPC	Comet	MPC	Comet	MPC
/1983 XII	14903	/1987 VII	14903	/1987 XXIX	14903	/1987 XXXII	14903
/1987 XXXVI	14460	/1987z	14592	/1987g1	14904	/1988h	14904
/1988r	14322	/1989a	14747	/1989b	14460	/1989c	14322
/1989d	14154	/1989e	14461	/1989f	14460	/1989j	14747
/1989k	14747	/1989o	14747	/1989r	15053		

Comet	MPC	Comet	MPC
P/Chernykh	14592	P/Daniel	14594
P/du Toit-Hartley	14594	P/Gale	14595
P/Giacobini-Zinner	14592	P/Giclas	14594
P/Grigg-Skjellerup	14593	P/Kowal 1	14593

P/Machholz	14748	P/Schuster	14594
P/Shoemaker 2	14593	P/Singer Brewster	14595
P/Smirnova-Chernykh	14593	P/Tsuchinshan 2	14593
P/Wolf	14594		

Planet	MPC	Planet	MPC	Planet	MPC	Planet	MPC	Planet	MPC
(5)	14752	(36)	14752	(38)	14158	(66)	14752	(69)	14752
(73)	14158	(76)	14752	(79)	14159	(109)	14159	(110)	14752
(124)	14159	(130)	14159	(132)	14159	(133)	14752	(140)	14752
(144)	14752	(154)	14159	(164)	14159	(165)	14752	(168)	14159
(170)	14159	(173)	14753	(179)	14753	(185)	14753	(189)	14753
(190)	14753	(197)	14159	(200)	14753	(218)	14753	(225)	14753
(233)	14753	(238)	14753	(252)	14159	(253)	14159	(254)	14753
(297)	14160	(299)	14160	(300)	14753	(309)	14160	(311)	14160
(315)	14160	(327)	14160	(338)	14754	(340)	14160	(342)	14160
(350)	14754	(356)	14160	(360)	14754	(364)	14754	(369)	14160
(370)	14754	(377)	14160	(378)	14160	(381)	14161	(384)	14754
(387)	14161	(390)	14754	(391)	14754	(400)	14161	(403)	14161
(404)	14930	(415)	14754	(418)	14161	(428)	14754	(430)	14161
(431)	14754	(432)	14755	(438)	14755	(444)	14930	(448)	14755
(456)	14755	(458)	14755	(461)	14755	(474)	14755	(476)	14755
(488)	14930	(496)	14755	(499)	14755	(505)	14755	(518)	14756
(521)	14930	(530)	14756	(531)	14756	(532)	14462	(537)	14756
(544)	14756	(548)	14756	(550)	14756	(559)	14930	(565)	14756
(574)	14756	(580)	14756	(581)	14756	(584)	14930	(585)	14757
(587)	14757	(588)	14757	(591)	14757	(595)	14757	(608)	14757
(611)	14757	(615)	14757	(617)	14462	(620)	14757	(631)	14757
(644)	14757	(647)	14757	(655)	14758	(667)	14758	(672)	14758
(679)	14930	(685)	14758	(690)	14930	(692)	14758	(695)	14758
(712)	14930	(714)	14758	(722)	14758	(726)	14758	(729)	14758
(740)	14758	(748)	14759	(755)	14759	(760)	14759	(762)	14931
(763)	14759	(777)	14759	(778)	14759	(797)	14759	(805)	14759
(807)	14759	(811)	14759	(819)	14759	(825)	14759	(827)	14760
(836)	14760	(856)	14760	(857)	14760	(863)	14760	(874)	14760
(880)	14760	(883)	14760	(888)	14760	(891)	14760	(895)	14931
(914)	14760	(1012)	14760	(1027)	14761	(1031)	14761	(1040)	14761
(1044)	14761	(1045)	14761	(1061)	14761	(1066)	14761	(1073)	14761
(1080)	14761	(1088)	14761	(1089)	14761	(1121)	14761	(1125)	14762
(1128)	14762	(1142)	14762	(1151)	14931	(1159)	14762	(1169)	14762
(1188)	14762	(1213)	14762	(1222)	14762	(1230)	14762	(1235)	14762
(1245)	14762	(1264)	14762	(1265)	14763	(1276)	14763	(1287)	14763
(1299)	14763	(1306)	14763	(1307)	14763	(1317)	14161	(1318)	14763
(1351)	14763	(1352)	14931	(1361)	14763	(1365)	14763	(1367)	14763
(1382)	14763	(1392)	14161	(1397)	14764	(1398)	14764	(1411)	14764
(1412)	14764	(1417)	14764	(1422)	14161	(1424)	14764	(1433)	14764
(1461)	14764	(1467)	14161	(1471)	14764	(1473)	14764	(1474)	14764
(1478)	14161	(1489)	14764	(1503)	14765	(1512)	14765	(1520)	14765
(1521)	14765	(1538)	14765	(1546)	14765	(1548)	14765	(1549)	14765
(1555)	14765	(1559)	14765	(1568)	14765	(1570)	14765	(1573)	14766
(1578)	14766	(1579)	14766	(1582)	14766	(1583)	14766	(1584)	14766
(1586)	14766	(1587)	14766	(1589)	14766	(1621)	14766	(1622)	14766
(1642)	14766	(1663)	14162	(1666)	14162	(1668)	14767	(1671)	14162
(1688)	14162	(1704)	14767	(1710)	14767	(1718)	14767	(1729)	14162
(1739)	14162	(1740)	14767	(1741)	14162	(1742)	14162	(1745)	14162
(1750)	14767	(1754)	14767	(1758)	14767	(1776)	14767	(1780)	14767
(1789)	14767	(1818)	14767	(1821)	14162	(1835)	14768	(1859)	14768
(1870)	14768	(1884)	14768	(1887)	14768	(1891)	15054	(1894)	14768
(1896)	14768	(1908)	14768	(1912)	14768	(1956)	15054	(1976)	14768
(1981)	14768	(1993)	14768	(2015)	14769	(2018)	14769	(2022)	14769

(2029) 14769	(2030) 14769	(2037) 14769	(2054) 14769	(2056) 14769
(2095) 15054	(2117) 14769	(2150) 14769	(2179) 15054	(2214) 14769
(2267) 15054	(2272) 14931	(2274) 14931	(2278) 14162	(2298) 14769
(2339) 14770	(2374) 15054	(2380) 14163	(2383) 14163	(2418) 14163
(2469) 14931	(2480) 14163	(2487) 14163	(2575) 14163	(2604) 14163
(2611) 14770	(2660) 14163	(2736) 14931	(2749) 14163	(2765) 14931
(2780) 14770	(2799) 14163	(2811) 14163	(2832) 14163	(2879) 14164
(2925) 14164	(2928) 14164	(2945) 14164	(2954) 14164	(2958) 14164
(2969) 14164	(2977) 14164	(2986) 14931	(2988) 14164	(3008) 14770
(3012) 14931	(3080) 14164	(3089) 14164	(3103) 14164	(3114) 14165
(3117) 14165	(3122) 14931	(3148) 14932	(3187) 14165	(3193) 14165
(3195) 14165	(3284) 14932	(3306) 14165	(3320) 14165	(3374) 14324
(3542) 14597	(3655) 14932	(3709) 14165	(3957) 14165	(3958) 14166
(3959) 14166	(3960) 14166	(3961) 14167	(3962) 14167	(3963) 14168
(3964) 14168	(3965) 14168	(3966) 14169	(3967) 14169	(3968) 14169
(3969) 14169	(3970) 14170	(3971) 14170	(3972) 14171	(3973) 14171
(3974) 14171	(3975) 14172	(3976) 14172	(3977) 14172	(3978) 14173
(3979) 14173	(3980) 14173	(3981) 14174	(3982) 14174	(3983) 14174
(3984) 14175	(3985) 14175	(3986) 14175	(3987) 14176	(3988) 14176
(3989) 14177	(3990) 14177	(3991) 14177	(3992) 14178	(3993) 14178
(3994) 14178	(3995) 14179	(3996) 14179	(3997) 14179	(3998) 14180
(3999) 14180	(4000) 14180	(4001) 14324	(4002) 14324	(4003) 14325
(4004) 14325	(4005) 14326	(4006) 14326	(4007) 14326	(4008) 14327
(4009) 14327	(4010) 14327	(4011) 14328	(4012) 14328	(4013) 14328
(4014) 14329	(4015) 14329	(4016) 14330	(4017) 14330	(4018) 14331
(4019) 14331	(4020) 14331	(4021) 14332	(4022) 14332	(4023) 14332
(4024) 14333	(4025) 14333	(4026) 14333	(4027) 14334	(4028) 14334
(4029) 14334	(4030) 14335	(4031) 14335	(4032) 14335	(4033) 14336
(4034) 14336	(4035) 14337	(4036) 14337	(4037) 14337	(4038) 14338
(4039) 14338	(4040) 14339	(4041) 14339	(4042) 14339	(4043) 14340
(4044) 14340	(4045) 14462	(4046) 14463	(4047) 14463	(4048) 14463
(4049) 14464	(4050) 14464	(4051) 14465	(4052) 14465	(4053) 14465
(4054) 14465	(4055) 14466	(4056) 14466	(4057) 14467	(4058) 14467
(4059) 14467	(4060) 14468	(4061) 14468	(4062) 14469	(4063) 14469
(4064) 14469	(4065) 14470	(4066) 14597	(4067) 14597	(4068) 14598
(4069) 14598	(4070) 14598	(4071) 14599	(4072) 14599	(4073) 14599
(4074) 14600	(4075) 14600	(4076) 14600	(4077) 14601	(4078) 14601
(4079) 14601	(4080) 14602	(4081) 14602	(4082) 14602	(4083) 14603
(4084) 14603	(4085) 14604	(4086) 14604	(4087) 14604	(4088) 14605
(4089) 14605	(4090) 14606	(4091) 14606	(4092) 14606	(4093) 14607
(4094) 14607	(4095) 14607	(4096) 14608	(4097) 14608	(4098) 14608
(4099) 14609	(4100) 14609	(4101) 14609	(4102) 14610	(4103) 14610
(4104) 14610	(4105) 14611	(4106) 14611	(4107) 14611	(4108) 14612
(4109) 14770	(4110) 14770	(4111) 14771	(4112) 14771	(4113) 14771
(4114) 14772	(4115) 14772	(4116) 14772	(4117) 14773	(4118) 14773
(4119) 14773	(4120) 14774	(4121) 14774	(4122) 14774	(4123) 14775
(4124) 14775	(4125) 14776	(4126) 14776	(4127) 14776	(4128) 14777
(4129) 14777	(4130) 14777	(4131) 14778	(4132) 14778	(4133) 14932
(4134) 14932	(4135) 14933	(4136) 14933	(4137) 14933	(4138) 14934
(4139) 14934	(4140) 14934	(4141) 14935	(4142) 14935	(4143) 14935
(4144) 14936	(4145) 14936	(4146) 14936	(4147) 14937	(4148) 14937
(4149) 14937	(4150) 14938	(4151) 14938	(4152) 14938	(4153) 14939
(4154) 14939	(4155) 14939	(4156) 14940	(4157) 14940	(4158) 14940
(4159) 14941	(4160) 14941	(4161) 14941	(4162) 15054	(4163) 15054
(4164) 15055	(4165) 15055	(4166) 15055	(4167) 15056	(4168) 15056
(4169) 15057	(4170) 15057	(4171) 15057	(4172) 15058	(4173) 15058
(4174) 15059	(4175) 15059	(4176) 15059	(4177) 15060	(4178) 15060
(4179) 15061	(4180) 15062			

Planet	MPC	Planet	MPC	Planet	MPC	Planet	MPC
A909 TF	14340	1928 RB	14181	1930 XK	14778	1931 FC	15062
1931 GC	14340	1932 HD	14341	1933 OB	14612	1933 SD	14181
1935 SC	14181	1935 SA2	14182	1935 TG	14341	1936 NB	14182
1939 BM	14182	1942 DC	14341	1943 DL	14341	1943 EN	14342
1950 HJ	14342	1950 TF	14942	1954 UO2	14612	1964 TU2	14182
1965 SO	14182	1967 DB	14183	1968 OH	14779	1968 OG1	14342
1969 GD	14183	1969 TJ2	14470	1969 TN4	14183	1970 PS	14470
1970 WD	14184	1971 QW1	14470	1971 TF	14613	1972 TE	14342
1972 TW3	14471	1973 RF	14904	1973 SL	14904	1973 SN	14904
1973 SP	14904	1973 SQ	14904	1973 SS	14904	1973 ST	14904
1973 SU	14904	1973 SV	14904	1973 SX	14904	1973 SY	14904
1973 SZ	14904	1973 SA1	14904	1973 SB1	14904	1973 SC1	14904
1973 SD1	14904	1973 SE1	14904	1973 SF1	14904	1973 SG1	14904
1973 SH1	14904	1973 SK1	14904	1973 SL1	14904	1973 SM1	14904
1973 SN1	14904	1973 SO1	14904	1973 SP1	14904	1973 SQ1	14343
1973 SR1	14904	1973 SS1	14904	1973 SU1	14904	1973 SV1	14904
1973 SW1	14942	1973 SX1	14904	1973 SY1	14904	1973 SB2	14904
1973 SC2	14904	1973 SO3	14942	1973 SQ3	14904	1973 SR3	14943
1973 ST3	14943	1973 SG5	14904	1973 SY5	14904	1973 SB6	14904
1973 SC6	14943	1973 SD6	14904	1973 SF6	14944	1973 SN6	14944
1973 TP	14944	1973 UC	14779	1973 UJ5	14184	1975 DB	15062
1975 LY	14322	1975 QC	14779	1975 SS	14184	1975 TQ3	14184
1975 YD	14779	1976 EB	14185	1976 GL3	14185	1976 QN	14471
1976 QL2	14185	1976 WC1	14780	1977 DD1	14780	1977 DT1	14471
1977 DL3	14613	1977 EV	14343	1977 EG5	14613	1977 EM5	14945
1977 QU2	14343	1977 QJ3	14343	1978 QP1	14344	1978 QG2	14344
1978 RR	14186	1978 RZ	14945	1978 RJ7	14186	1978 RC9	15063
1978 SM5	14471	1978 VR4	14945	1978 VY14	14613	1979 FQ2	14472
1979 FD3	14780	1979 HW6	14780	1979 OD15	14781	1979 QT8	14781
1980 FJ1	14614	1980 FT3	14344	1980 FY4	14781	1980 GO	14186
1980 JC	14344	1980 LU	15063	1980 NB	14186	1980 RC	14781
1980 TV2	14946	1980 TG4	14345	1980 TB12	14614	1980 UC	14782
1980 YB	14782	1980 YC	15063	1981 DX1	14946	1981 DF2	14782
1981 ED1	14187	1981 EG1	14614	1981 EZ2	14615	1981 ES8	14187
1981 EG11	14472	1981 EP15	14345	1981 EW17	15064	1981 EZ17	14472
1981 EM24	14187	1981 EK25	14345	1981 ER27	15064	1981 EX28	14345
1981 EX30	14782	1981 EK34	14346	1981 ES35	15064	1981 EX38	14346
1981 ER40	14346	1981 GF1	15064	1981 QB	14346	1981 QT	14347
1981 QX	15065	1981 QP3	14472	1981 RM3	14347	1981 RV4	14188
1981 SA5	14947	1981 SA7	14188	1981 TJ4	14947	1981 UT	14347
1981 UT7	14473	1981 VK	14783	1982 BQ2	14473	1982 CE	14615
1982 FA	14615	1982 FC	14347	1982 JB3	14188	1982 RH	14783
1982 SX5	14784	1982 SK8	14348	1982 UP2	14474	1982 UU5	14784
1982 UX5	14784	1982 UG6	14784	1982 UY6	14785	1982 UJ7	14348
1982 UX10	14785	1982 VM5	14188	1983 AW	14155	1983 AO2	14155
1983 BM	15065	1983 CC	15065	1983 CE	14189	1983 CA1	14189
1983 DC	14155	1983 EX	14189	1983 EM1	14189	1983 GA2	14190
1983 GC2	14190	1983 HB1	14947	1983 JQ	14190	1983 PP	14785
1983 PM1	14155	1983 RC	14615	1983 RX	14616	1983 RT1	14474
1983 RX1	14155	1983 RQ3	14155	1983 RB4	14155	1983 RH4	14155
1983 RM4	14155	1983 RY4	14190	1983 TS1	14191	1983 WA	14191
1983 WH	14348	1983 WJ	14348	1983 XE	14947	1984 BK	14948
1984 DY	14191	1984 EP	14785	1984 EA1	14349	1984 GR	14785
1984 HS1	14192	1984 JA2	14616	1984 OA	14192	1984 QQ	14349
1984 QR	14349	1984 SS1	14786	1984 SQ3	14192	1984 SJ7	14350
1984 UK1	14616	1984 YU1	14474	1985 CG	15066	1985 CJ1	14616
1985 FH	14617	1985 GU1	14948	1985 GV1	14474	1985 HL	14617
1985 JJ	14786	1985 JZ1	14155	1985 KA	15066	1985 PE	14595

1985 PM1	14155	1985 PG2	14155	1985 PH2	14155	1985 QU4	14155
1985 QX4	14155	1985 QG5	14155	1985 QH5	14350	1985 QJ5	14155
1985 QL5	14155	1985 QM5	14155	1985 QP5	14155	1985 QD6	14155
1985 QO6	14474	1985 RG	14155	1985 RJ	14155	1985 RS	14350
1985 RU	15066	1985 RR1	14155	1985 RD2	14155	1985 RE2	14193
1985 RJ2	14155	1985 RJ3	14155	1985 RN3	14155	1985 RQ3	14155
1985 RR4	14155	1985 RJ5	14155	1985 RK5	14350	1985 RK6	14193
1985 RM6	14155	1985 RN6	14155	1985 SG2	14155	1985 SM2	14155
1985 SV2	14155	1985 SX2	14194	1985 SC3	14155	1985 SG3	14155
1985 SJ3	14194	1985 SL3	14194	1985 SM3	14194	1985 SN3	14155
1985 SR4	14155	1985 TB	14618	1985 TL	14155	1985 TN	14155
1985 TO	14155	1985 TP	15066	1985 TR	14155	1985 TS	14155
1985 TU	14155	1985 TW	14155	1985 TB1	14156	1985 TH1	14194
1985 TQ1	14195	1985 TS1	14156	1985 TW1	14195	1985 TY1	14156
1985 TZ1	14195	1985 TV2	14156	1985 TB3	14156	1985 TH3	14156
1985 TN3	14350	1985 TZ3	14156	1985 UA	14195	1985 UC	14156
1985 UF	14156	1985 UK	14196	1985 UR	14156	1985 UT	14156
1985 UU	14156	1985 UY	14156	1985 UG2	14156	1985 UH2	14156
1985 UJ2	14156	1985 UF3	14156	1985 UH3	14156	1985 UK3	14156
1985 UO3	14156	1985 VP	14196	1985 VC1	14196	1985 VD1	14156
1985 VF1	14156	1985 XB	14475	1986 AE	14948	1986 EZ4	14618
1986 GU	14618	1986 JZ	14351	1986 LK1	14748	1986 PE	14786
1986 PF	14748	1986 PM	14748	1986 PN1	14748	1986 PN4	14786
1986 PT4	14748	1986 PV4	14475	1986 PW4	14618	1986 PX4	14619
1986 PY4	14461	1986 PB5	14475	1986 PX5	14787	1986 PK6	14948
1986 PV6	14748	1986 QO	14748	1986 QT	14787	1986 QZ	14748
1986 QS1	14595	1986 QP2	14787	1986 QR2	14595	1986 QT2	14748
1986 QR3	14787	1986 QV3	14748	1986 QX3	14619	1986 QA4	14476
1986 QO4	14748	1986 QY4	14788	1986 QF5	14748	1986 QK5	14748
1986 QR5	14748	1986 RR	14748	1986 RE1	14748	1986 RJ1	14748
1986 RK1	14788	1986 RO1	14788	1986 RP1	14748	1986 RS1	14949
1986 RU1	14748	1986 RX1	14748	1986 RU2	14748	1986 RV2	14789
1986 RX2	14748	1986 RA3	14748	1986 RF3	14748	1986 RG3	14748
1986 RU4	14789	1986 RB5	14748	1986 RD5	14748	1986 RK5	14748
1986 RS5	14748	1986 RT5	14476	1986 RU5	14461	1986 RV5	14461
1986 RW5	14461	1986 RX5	14461	1986 RY5	14461	1986 RA7	14748
1986 RB7	14748	1986 RC7	14789	1986 RD7	14748	1986 RE7	14748
1986 RB12	14789	1986 RH12	14790	1986 RF13	14949	1986 SC	14748
1986 SD	14748	1986 SF	14949	1986 SZ1	14748	1986 SC2	14790
1986 TH	14748	1986 TJ	14748	1986 TR	14748	1986 TS	14748
1986 TE1	14748	1986 TG1	14749	1986 TK1	14749	1986 TP1	14749
1986 TR1	14749	1986 TH3	14749	1986 TO3	14749	1986 TR3	14749
1986 TG4	14790	1986 TR4	14461	1986 TS4	14749	1986 TB5	15053
1986 TO5	14749	1986 TQ5	14749	1986 TX5	14749	1986 TF6	14749
1986 TR6	15067	1986 TS6	14351	1986 TE7	14749	1986 TR11	14749
1986 TT11	14749	1986 TU11	14749	1986 TZ11	14749	1986 TB12	14749
1986 TC12	14749	1986 UO	14749	1986 UQ	14749	1986 UU	15067
1986 UM1	14790	1986 UN2	14749	1986 UD3	14949	1986 UH3	14749
1986 VC	14950	1986 VT	14619	1986 VD1	14790	1986 VQ2	14749
1986 VF5	14749	1986 VK6	14749	1986 VM6	14749	1986 WM3	14791
1986 WM5	14749	1987 BC	14791	1987 CH	14749	1987 DD	14620
1987 DQ6	14749	1987 GD	15067	1987 QA	14950	1987 QV	14156
1987 QC1	14156	1987 QD1	14196	1987 QF1	14156	1987 QZ1	15067
1987 QG2	14351	1987 QO2	14156	1987 QS2	14156	1987 QT2	14156
1987 QW2	14197	1987 QX2	14156	1987 QB3	14156	1987 QC3	14156
1987 QD3	14156	1987 QE3	14156	1987 QF3	14156	1987 QH3	14197
1987 QK3	14156	1987 QS5	14156	1987 QX5	14156	1987 QZ5	14156
1987 QB6	14156	1987 QY6	14156	1987 QZ6	14156	1987 QW7	14620
1987 QX7	14156	1987 QY7	14156	1987 RC1	14197	1987 RD1	14352

1987 RM1	14352	1987 SO	14620	1987 SY	14353	1987 ST1	14476
1987 SN3	14476	1987 SS3	14198	1987 SC4	14950	1987 SR9	14156
1987 SS9	14620	1987 SK10	14905	1987 SL10	14156	1987 UA1	14322
1987 UN1	14322	1987 VB	14322	1987 VD	14595	1987 VE1	14353
1987 WD	14323	1987 WQ	14595	1987 XD	14354	1987 YK	14620
1987 YS1	14950	1988 AF	14791	1988 AK	14354	1988 AK1	14791
1988 AA5	14621	1988 BK	14198	1988 BS	14156	1988 BW	14749
1988 BJ1	14792	1988 BM3	14595	1988 BB4	14792	1988 BG4	14792
1988 BJ4	14749	1988 BH5	14354	1988 BK5	14355	1988 CC	14355
1988 CF	14749	1988 CQ	14749	1988 CT2	14951	1988 CK4	14951
1988 CT5	14749	1988 CU7	14621	1988 DN	14792	1988 DO	14355
1988 EA	14323	1988 EC	15068	1988 EY1	14595	1988 EB2	14595
1988 ER2	14323	1988 FE	14749	1988 FN	14905	1988 FM1	14323
1988 FS2	14323	1988 FW2	14323	1988 FX2	14323	1988 FD3	14323
1988 FE3	14323	1988 FL3	14793	1988 GB	14621	1988 GZ	14323
1988 ND	14793	1988 NU	14905	1988 PB1	14951	1988 PJ1	14355
1988 PK1	14156	1988 PM1	14905	1988 PN1	14156	1988 PP1	15053
1988 PT1	14198	1988 PV1	14156	1988 PB2	14156	1988 PC2	14461
1988 PK2	14199	1988 PX2	14156	1988 QC	14199	1988 RA	14199
1988 RD	14749	1988 RK	14156	1988 RR	14621	1988 RF1	14156
1988 RG1	14156	1988 RK1	14157	1988 RM1	14157	1988 RE2	14461
1988 RR2	15068	1988 RA3	14157	1988 RD3	14157	1988 RJ3	14157
1988 RP3	14157	1988 RC4	14157	1988 RF4	14905	1988 RG4	14951
1988 RH4	14905	1988 RJ4	14905	1988 RM4	14905	1988 RN4	14952
1988 RO4	14905	1988 RP4	14905	1988 RR4	14952	1988 RS4	14905
1988 RT4	14905	1988 RV4	14905	1988 RX4	14905	1988 RY4	14905
1988 RZ4	14905	1988 RA5	14953	1988 RB5	14905	1988 RC5	14905
1988 RD5	14905	1988 RE5	14905	1988 RF5	14905	1988 RJ5	14905
1988 RK5	14905	1988 RM5	14905	1988 RN5	14905	1988 RO5	14905
1988 RP5	14905	1988 RQ5	14905	1988 RR5	14905	1988 RU5	14905
1988 RY5	14905	1988 RZ5	14905	1988 RA6	14905	1988 RB6	14905
1988 RC6	14905	1988 RD6	14905	1988 RE6	14905	1988 RF6	14157
1988 RG6	14905	1988 RH6	14905	1988 RJ6	14905	1988 RK6	14905
1988 RL6	14905	1988 RM6	14905	1988 RN6	14905	1988 RO6	14905
1988 RS6	14905	1988 RT6	14905	1988 RU6	14953	1988 RC7	14905
1988 RF7	14953	1988 RQ8	14595	1988 RF9	15068	1988 RG9	14905
1988 RH9	14905	1988 RK9	14905	1988 RL9	14905	1988 RR9	14905
1988 RS9	14905	1988 RA10	14906	1988 SB	14906	1988 SJ	14157
1988 SK	14157	1988 SL	14157	1988 SN	14749	1988 SP	14477
1988 SQ	14157	1988 TA	14199	1988 TG	14157	1988 TJ	14749
1988 TK	14749	1988 TL	14749	1988 TN	14749	1988 TS	14749
1988 TT	14749	1988 TU	14906	1988 TX	14157	1988 TA1	14157
1988 TB1	14157	1988 TH1	14595	1988 TL1	14906	1988 TM1	14157
1988 TU1	14157	1988 TW1	14749	1988 TX1	14906	1988 TN2	14749
1988 TR2	14906	1988 VA	14157	1988 VH	14199	1988 VO	14157
1988 VT	14954	1988 VZ	14323	1988 VE1	14157	1988 VS1	14323
1988 VU1	14200	1988 VV1	14157	1988 VF2	14157	1988 VH2	14157
1988 VJ2	14157	1988 VK2	14157	1988 VO2	14157	1988 VR2	14157
1988 VS2	14157	1988 VX2	14906	1988 VB3	14749	1988 VM3	14157
1988 VN3	14157	1988 VO3	14157	1988 VP3	14157	1988 VQ3	14157
1988 VR3	14158	1988 VS3	14158	1988 VZ3	14200	1988 VG4	14158
1988 VK4	14793	1988 VN4	14200	1988 VP4	14622	1988 VB5	14201
1988 VR5	14595	1988 VY5	14906	1988 VS6	14906	1988 VD7	14201
1988 VE7	14158	1988 WB	14356	1988 WC	14201	1988 WE	14158
1988 WF	14158	1988 WG	14201	1988 XA	14202	1988 XB	14793
1988 XC	14202	1988 XD	14158	1988 XE	14158	1988 XK	14158
1988 XL	14158	1988 XO	14158	1988 XP	14202	1988 XQ	14158
1988 XR	14202	1988 XT	14203	1988 XU	14323	1988 XY	14158
1988 XZ	14158	1988 XD1	14158	1988 XE1	14158	1988 XH1	14158

1988 XJ1	14158	1988 XK1	14203	1988 XL1	14203	1988 XM1	14203
1988 XO1	14323	1988 XQ1	14323	1988 XR1	14323	1988 XT1	14158
1988 XU1	14595	1988 XW1	14204	1988 XX1	14323	1988 XB2	14158
1988 XE2	14158	1988 XG2	14323	1988 XL2	14158	1988 XU2	14749
1988 XV2	14749	1988 XV4	14906	1988 XW4	14906	1988 XX4	14906
1988 XY4	14906	1988 XZ4	14906	1988 XA5	14906	1988 XB5	14906
1988 XC5	14906	1988 YB	14595	1988 YD	14323	1988 YF	14323
1989 AA	14323	1989 AD	14204	1989 AE	14158	1989 AF	14205
1989 AG	14205	1989 AH	14158	1989 AJ	14158	1989 AK	14205
1989 AM	14323	1989 AO	14158	1989 AQ	14158	1989 AR	14158
1989 AT	14158	1989 AU	14357	1989 AX	14205	1989 AZ	15069
1989 AA1	14158	1989 AB1	14323	1989 AE1	14323	1989 AF1	14323
1989 AG1	14357	1989 AK1	14357	1989 AL1	14323	1989 AM1	14461
1989 AN1	14358	1989 AS1	14323	1989 AU1	14461	1989 AX1	14461
1989 AZ1	14358	1989 AA2	14323	1989 AB2	14323	1989 AC2	14323
1989 AD2	14323	1989 AE2	14323	1989 AL2	14461	1989 AM2	14954
1989 AN2	14906	1989 AV2	14749	1989 AX2	14323	1989 AD3	14323
1989 AF3	14323	1989 AH3	14323	1989 AL3	14323	1989 AM3	14323
1989 AN3	14323	1989 AO3	14749	1989 AL5	14749	1989 AN5	14749
1989 AR5	14749	1989 AS5	14749	1989 AW5	14750	1989 AZ5	14954
1989 AD6	14750	1989 AG6	14750	1989 AH6	14750	1989 AJ6	14750
1989 AK6	14750	1989 AL6	14750	1989 AN6	14750	1989 AO6	14750
1989 AP6	14750	1989 AR6	14750	1989 AS6	14750	1989 AT6	14955
1989 AU6	14750	1989 AV6	14750	1989 AW6	14955	1989 AX6	14750
1989 AY6	14906	1989 AZ6	14906	1989 AA7	14906	1989 AC7	14906
1989 AD7	14906	1989 AE7	14906	1989 AF7	14906	1989 AG7	14906
1989 AH7	14906	1989 AJ7	14906	1989 AL7	14906	1989 AM7	14906
1989 BA	14158	1989 BB	14323	1989 BC	14461	1989 BD	14461
1989 BG	14595	1989 BH	14461	1989 BJ	14358	1989 BK	14461
1989 BL	14358	1989 BN	14477	1989 BO	14794	1989 BQ	14794
1989 BR	14750	1989 BT	14461	1989 BW	14461	1989 BY	14359
1989 BZ	14595	1989 BA1	14359	1989 BC1	14906	1989 BD1	14461
1989 BF1	14461	1989 BJ1	14461	1989 BK1	14461	1989 BN1	14622
1989 BO1	14461	1989 BR1	14595	1989 BS1	14595	1989 BT1	14461
1989 BU1	14461	1989 BV1	14461	1989 BW1	14461	1989 BX1	14461
1989 CA	14359	1989 CD	14324	1989 CE	14461	1989 CF	14595
1989 CH	14461	1989 CL	14324	1989 CM	14324	1989 CN	14906
1989 CO	14955	1989 CP	14324	1989 CQ	14324	1989 CR	14461
1989 CT	14359	1989 CV	14595	1989 CW	14461	1989 CX	14462
1989 CZ	14478	1989 CA1	14462	1989 CB1	14955	1989 CC1	14595
1989 CG1	14750	1989 CH1	14622	1989 CJ1	14595	1989 CK1	14906
1989 CL1	14360	1989 CM1	14478	1989 CN1	14478	1989 CQ1	14794
1989 CR1	14462	1989 CS1	14462	1989 CU1	14462	1989 CV1	14462
1989 CW1	14906	1989 CX1	14595	1989 CY1	14478	1989 CE2	14595
1989 CH2	14906	1989 CK2	14906	1989 CO2	14595	1989 CP2	14595
1989 CQ2	14595	1989 CR2	14595	1989 CS2	14622	1989 CT2	14595
1989 CU2	14595	1989 CV2	14595	1989 CW2	14595	1989 CX2	14596
1989 CY2	14596	1989 CA3	14596	1989 CB3	14596	1989 CC3	14596
1989 CD3	14596	1989 CF3	14596	1989 CH3	14596	1989 CJ3	14623
1989 CL3	14623	1989 CM3	14906	1989 CO3	14623	1989 CA4	14596
1989 CB4	14462	1989 CC4	14462	1989 CD4	14794	1989 CH4	14750
1989 CS4	14750	1989 CE5	14906	1989 CH5	14906	1989 CJ5	14906
1989 CO5	14906	1989 CP5	14906	1989 CR5	14906	1989 CS5	14906
1989 CX5	14906	1989 CA6	14906	1989 CB6	14906	1989 CE6	14906
1989 DA	14795	1989 DB	14596	1989 DC	14462	1989 EA	14462
1989 EC	14596	1989 EE	14750	1989 EF	14623	1989 EG	14479
1989 EL	14596	1989 EM	14596	1989 EQ	14906	1989 ES	14596
1989 EV	14479	1989 EX	14596	1989 EY	14462	1989 EB1	14906
1989 EF1	14596	1989 EG1	14750	1989 EH1	14596	1989 EJ1	14596

1989 EL1	14624	1989 EO1	14462	1989 ER1	14750	1989 ES1	14462
1989 ET1	14596	1989 EU1	14596	1989 EW1	14462	1989 EX1	14462
1989 EY1	14462	1989 EA2	14462	1989 EC2	14906	1989 ED2	14906
1989 EK2	14624	1989 EL2	14596	1989 EM2	14596	1989 EN2	14596
1989 EP2	14596	1989 EV2	14596	1989 EY2	15069	1989 EZ2	14596
1989 EC3	14596	1989 ED3	14596	1989 EE3	14596	1989 EH6	14906
1989 EJ6	14906	1989 EL6	14956	1989 FB	15069	1989 FC	15069
1989 FE	14596	1989 FG	14750	1989 FH	14596	1989 FJ	14625
1989 FL	14596	1989 FN	14596	1989 FO	14625	1989 FQ	14596
1989 FR	14596	1989 FW	15053	1989 GA	14625	1989 GB	14750
1989 GE	14750	1989 GF	14750	1989 GH	14750	1989 GJ	14750
1989 GL	14750	1989 GM	14596	1989 GN	14596	1989 GO	14906
1989 GP	14750	1989 GV	14596	1989 GX	14596	1989 GZ	14750
1989 GA1	14750	1989 GB1	14750	1989 GC1	14750	1989 GD1	14750
1989 GF1	14750	1989 GG1	14750	1989 GK1	14750	1989 GL1	14750
1989 GM1	14750	1989 GO1	14750	1989 GP1	14750	1989 GQ1	14750
1989 GR1	14750	1989 GT1	14750	1989 GU1	14750	1989 GV1	14750
1989 GW1	14750	1989 GY1	14750	1989 GZ1	14750	1989 GB2	14750
1989 GE2	14750	1989 GF2	14751	1989 GG2	14751	1989 GH2	14751
1989 GJ2	14751	1989 GK2	14751	1989 GM2	14751	1989 GN2	14751
1989 GP2	14751	1989 GR2	14751	1989 GS2	14751	1989 GU2	14751
1989 GW2	14751	1989 GX2	14751	1989 GA3	14795	1989 GB3	14795
1989 GC3	14751	1989 GD3	14751	1989 GE3	14751	1989 GF3	14751
1989 GG3	14751	1989 GM3	14751	1989 GN3	14751	1989 GR3	14596
1989 GT3	14795	1989 GU3	14596	1989 GV3	14596	1989 GW3	14751
1989 GX3	14751	1989 GA4	14751	1989 GB4	14795	1989 GC4	14751
1989 GD4	14751	1989 GF4	14596	1989 GG4	14596	1989 GH4	14596
1989 GJ4	14751	1989 GK4	14751	1989 GL4	14751	1989 GN4	14751
1989 GO4	14796	1989 GP4	14956	1989 GQ4	14751	1989 GR4	14751
1989 GS4	14751	1989 GT4	14956	1989 GU4	14597	1989 GD5	14751
1989 GL5	14796	1989 GN5	14597	1989 GO5	14597	1989 GP5	14597
1989 GW5	14751	1989 GX5	14751	1989 GY5	14751	1989 GZ5	14751
1989 GP6	14957	1989 GQ6	14906	1989 GR6	14957	1989 GU6	14906
1989 GV6	14907	1989 GB8	15053	1989 GC8	15053	1989 GD8	15053
1989 GE8	15053	1989 GF8	15053	1989 GH8	15053	1989 GJ8	15053
1989 GK8	15053	1989 GL8	15053	1989 GM8	15053	1989 HA	14751
1989 HD	14751	1989 HG	14751	1989 JA	14957	1989 JB	14751
1989 JC	14957	1989 JD	14597	1989 JF	14751	1989 JG	14796
1989 JK	14751	1989 JL	14751	1989 JM	14751	1989 KA	14797
1989 KB	15053	1989 KC	14751	1989 KD	15069	1989 KE	14751
1989 KF	14751	1989 KG	15070	1989 KH	14751	1989 KJ	14751
1989 KK	15070	1989 LA	14958	1989 LH	14907	1989 LJ	14752
1989 LL	14907	1989 LM	14958	1989 LT	14907	1989 LU	14958
1989 LW	15053	1989 MD	14907	1989 ME	15070	1989 NA	15070
1989 NE	15053	1989 NJ	15071	1989 NM	15071	1989 NO	15071
1989 NR	15071	1989 NX	15053	1989 NB1	15072	1989 NE1	15053
1989 NG1	15072	1989 NH1	15053	1989 NK1	15053	1989 OA	15072
1989 OB	15072	1989 OD	15053	1989 OE	15053	1989 OG	15053
1989 OJ	15053	1989 PA	15053	1989 PB	15072	1989 PC	15053
1989 QE	15053	1989 QF	15073	1989 RA	15053	2040 P-L	15073
2041 P-L	14959	2113 P-L	15073	2196 P-L	14480	2506 P-L	14959
2514 P-L	15073	2550 P-L	14626	2566 P-L	14626	2572 P-L	14627
2604 P-L	14627	2740 P-L	14959	2777 P-L	14627	3005 P-L	14627
3051 P-L	15074	3074 P-L	14628	3109 P-L	14628	3557 P-L	14628
4060 P-L	14960	4077 P-L	14797	4116 P-L	14628	4247 P-L	14960
4276 P-L	14629	4314 P-L	14629	4523 P-L	14206	4641 P-L	14629
4657 P-L	14206	4821 P-L	14960	4848 P-L	14629	5016 P-L	14960
5568 P-L	14797	6035 P-L	15074	6045 P-L	14360	6193 P-L	15074
6214 P-L	14629	6242 P-L	14630	6531 P-L	14961	6600 P-L	14961

6602 P-L	14961	6676 P-L	14962	7072 P-L	14630	7590 P-L	14962
7643 P-L	14962	9508 P-L	14630	9511 P-L	14630	9519 P-L	14631
9521 P-L	14480	9535 P-L	14631	9546 P-L	14631	9570 P-L	15074
1050 T-2	14962	1051 T-2	15075	1063 T-2	15075	1105 T-2	15075
1133 T-2	15076	1139 T-2	15076	1159 T-2	15076	1173 T-2	15077
1179 T-2	14963	1188 T-2	15077	1243 T-2	15077	1246 T-2	14963
1251 T-2	15077	1260 T-2	15078	1262 T-2	15078	1269 T-2	15079
1276 T-2	15079	1304 T-2	15079	1309 T-2	14964	1317 T-2	14964
1324 T-2	15080	1331 T-2	15080	1352 T-2	15080	1493 T-2	15081
2040 T-2	15081	2045 T-2	15081	2083 T-2	14964	2092 T-2	15082
2137 T-2	15082	2151 T-2	15082	2155 T-2	14965	2160 T-2	14965
2168 T-2	15083	2170 T-2	14965	2224 T-2	14965	2225 T-2	14966
2257 T-2	14966	2277 T-2	14966	2304 T-2	15083	3020 T-2	15083
3060 T-2	14967	3067 T-2	14967	3076 T-2	14967	3088 T-2	15083
3129 T-2	15084	3137 T-2	14968	3145 T-2	14968	3189 T-2	14968
3212 T-2	15084	3233 T-2	15084	3236 T-2	14969	3262 T-2	15085
3282 T-2	15085	3289 T-2	14969	4068 T-2	15085	4129 T-2	15085
4136 T-2	14969	4171 T-2	14970	4239 T-2	15086	4240 T-2	15086
4254 T-2	15086	4829 T-2	14970	5027 T-2	15087	5065 T-2	14970
5069 T-2	15087	5104 T-2	15087	5141 T-2	15087	5332 T-2	15088
1076 T-3	15088	1081 T-3	14971	2158 T-3	14631	2318 T-3	14632
4157 T-3	14480	4379 T-3	14361	5010 T-3	14206	5119 T-3	14797

* * * * *

OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

017 Hoher List. 0.30-m astrograph. Observer M. Nolte. Measured by M. Nolte and H.-J. Tucholke.
046 Klet. Observers A. Mrkos and Z. Vavrova.
056 Skalnate Pleso. 0.3-m f/5 astrograph. Observers G. Cervak, J. Fabricius, J. Klobusnik, E. M. Pittich, P. Rychtarcik, P. Schalling and J. Svoren.
084 Pulkovo. Observers N. M. Bronnikova, V. V. Bobylev, A. E. Evpokimov and S. A. Usovich. From Kiev Komet. Tsirk.
293 Burlington remote site. Observer T. Handley.
399 Kushiro. Observer S. Ueda. Measured by H. Kaneda.
400 Kitami. Observer K. Endate. Measured by K. Watanabe.
403 Kani. Observer Y. Mizuno. Measured by T. Furuta.
413 Siding Spring. Uppsala Southern Schmidt. Observer R. H. McNaught.
474 Mt. John. Observers A. C. Gilmore and P. M. Kilmartin.
491 Yebes. Observers J. Martin-Pintado, J. Garcia, F. Sanchez and F. Lahulla.
494 Stakenbridge. Observer B. Manning. Communicated by G. M. Hurst.
503 Cambridge. Observer J. D. Shanklin.
568 Mauna Kea. 2.2-m reflector + CCD. Observer K. J. Meech.
657 Victoria. Observers J. Tatum and D. Balam.
675 Palomar. 1.5-m reflector and 0.46-m Schmidt. Observers R. Crockett, J. Gibson, E. Helin and B. Roman.
801 Oak Ridge. 1.5-m reflector. Observers C. M. Bardwell, K. Kawanishi, R. E. McCrosky and C.-Y. Shao. Measured by C.-Y. Shao.
875 Yorii Observatory. Observers M. Arai and H. Mori. Measured by H. Mori.
892 YGCO Hoshikawa and Nagano stations. 0.25-m f/4.0 reflector. Observer S. Hayakawa.
897 YGCO Chiyoda Station. Observer T. Kojima.
974 Genoa. Observer R. Alfano. Long. and Parallax 8.94, -305, -297 (see MPC 11200).

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
		Periodic Comet Schwassmann-Wachmann 1					
/1974 II	1989	08 06.26638	00 01 09.58	+08 10 37.8			801
/1974 II	1989	08 27.26194	23 55 00.93	+08 04 47.8			801
/1974 II	1989	08 28.58611	23 54 30.95	+08 03 25.6	14.5T	1	897
/1974 II	1989	08 28.59306	23 54 30.62	+08 03 24.1		1	897
/1974 II	1989	09 04.32325	23 51 48.49	+07 54 37.2			801
/1974 II	1989	09 20.45972	23 44 40.36	+07 23 36.6	13 T	2	897
/1974 II	1989	09 20.48299	23 44 39.76	+07 23 34.2		2	897
		Comet Kohler (1977 XIV)					
/1977 XIV	1977	09 24.76389	16 06 58.09	+22 18 29.0			056
/1977 XIV	1977	09 28.76050	16 17 47.90	+20 33 35.7			056
/1977 XIV	1977	10 15.73606	17 13 26.28	+11 16 53.0			056
/1977 XIV	1977	10 15.75690	17 13 30.92	+11 16 06.3			056
/1977 XIV	1977	10 20.72707	17 33 00.92	+07 51 52.5			056
/1977 XIV	1977	10 20.74789	17 33 05.99	+07 50 56.0			056
/1977 XIV	1977	11 11.68472	19 17 06.37	-10 33 42.7			056
/1977 XIV	1977	11 11.69514	19 17 09.75	-10 34 17.1			056
		Comet Meier (1978 XXI)					
/1978 XXI	1978	06 01.87118	08 06 19.28	+45 02 58.8			056
		Comet Meier (1979 IX)					
/1979 IX	1979	11 23.01181	12 03 28.02	+53 46 05.0			056
		Periodic Comet Stephan-Oterma					
/1980 X	1981	01 08.00625	05 35 05.80	+38 12 49.1			056
/1980 X	1981	01 08.04653	05 35 06.82	+38 13 39.8			056
/1980 X	1981	01 09.96111	05 36 01.06	+38 51 11.1			056
/1980 X	1981	01 11.01319	05 36 34.52	+39 10 48.4			056
/1980 X	1981	01 11.04792	05 36 35.70	+39 11 22.9			056
/1980 X	1981	01 28.78646	05 52 22.64	+43 02 24.4			056
/1980 X	1981	01 28.83924	05 52 26.14	+43 02 51.0			056
/1980 X	1981	01 29.80556	05 53 38.22	+43 10 28.2			056
/1980 X	1981	01 30.80417	05 54 53.89	+43 18 00.0			056
/1980 X	1981	01 30.86319	05 54 58.13	+43 18 26.1			056
/1980 X	1981	02 02.97778	05 59 07.97	+43 38 42.3			056
/1980 X	1981	02 06.81701	06 04 42.18	+43 57 58.5			056
/1980 X	1981	02 06.87118	06 04 47.03	+43 58 14.2			056
		Comet Panther (1981 II)					
/1981 II	1981	01 30.10694	19 09 01.39	+52 59 32.7			056
/1981 II	1981	02 26.80625	19 35 16.51	+75 42 22.3			056
/1981 II	1981	02 26.81458	19 35 18.66	+75 42 53.2			056
/1981 II	1981	04 07.80660	07 58 13.11	+60 40 05.3			056
/1981 II	1981	04 07.84826	07 58 15.80	+60 37 43.6			056
/1981 II	1981	04 08.90868	07 59 21.79	+59 37 46.7			056
/1981 II	1981	04 08.92743	07 59 22.82	+59 36 44.2			056
/1981 II	1981	04 11.94479	08 02 27.99	+56 51 22.7			056
/1981 II	1981	04 11.96285	08 02 29.02	+56 50 23.4			056
/1981 II	1981	04 12.87326	08 03 24.22	+56 02 04.5			056
/1981 II	1981	04 12.88993	08 03 25.10	+56 01 13.1			056
		Comet Bowell (1982 I)					
/1982 I	1982	03 28.07882	17 58 37.12	-22 14 56.1		3	056
/1982 I	1982	03 28.12361	17 58 39.74	-22 14 50.1		3	056

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/1982 I    1982 04 21.02257  18 14 37.72  -22 13 29.6                    056
/1982 I    1982 04 21.07049  18 14 38.91  -22 13 31.5                    056

                Comet Austin (1982 VI)
/1982 VI   1982 09 11.08854  12 36 36.06  +42 05 18.5                3 056
/1982 VI   1982 09 11.10729  12 36 37.39  +42 04 57.6                3 056
/1982 VI   1982 09 16.09583  12 42 33.00  +40 47 00.7                3 056
/1982 VI   1982 09 16.10208  12 42 33.80  +40 46 53.7                  056
/1982 VI   1982 09 18.09502  12 44 23.78  +40 16 12.3                  056
/1982 VI   1982 09 18.10220  12 44 24.33  +40 16 05.4                  056
/1982 VI   1982 09 21.09236  12 46 45.25  +39 31 17.2                  056
/1982 VI   1982 09 21.10434  12 46 45.88  +39 31 08.0                  056
/1982 VI   1982 09 26.12535  12 49 59.71  +38 20 03.2                  056
/1982 VI   1982 09 27.10174  12 50 32.64  +38 06 57.1                  056
/1982 VI   1982 10 28.12940  13 02 22.13  +33 26 51.4                  056
/1982 VI   1982 10 28.14236  13 02 22.25  +33 26 46.3                  056
/1982 VI   1982 11 16.09826  13 04 44.80  +32 51 38.1                  056
/1982 VI   1982 11 16.11285  13 04 44.60  +32 51 39.0                  056
/1982 VI   1982 11 23.10382  13 04 07.76  +33 05 24.0                  056
/1982 VI   1982 11 24.15868  13 03 56.59  +33 08 44.8                  056
/1982 VI   1982 11 24.17188  13 03 56.51  +33 08 46.6                  056

            Periodic Comet Churyumov-Gerasimenko
/1982 VIII 1982 10 15.91163  05 03 20.93  +19 04 41.4                  056
/1982 VIII 1982 10 15.95851  05 03 28.69  +19 05 30.4                  056
/1982 VIII 1982 10 17.98958  05 09 26.44  +19 42 30.0                  056
/1982 VIII 1982 10 18.05116  05 09 36.66  +19 43 34.7                  056
/1982 VIII 1982 10 18.89178  05 12 04.98  +19 59 03.2                  056
/1982 VIII 1982 11 24.89931  06 45 48.33  +32 03 12.1                  056
/1982 VIII 1982 11 24.92801  06 45 51.18  +32 03 45.0                  056
/1982 VIII 1982 12 14.72535  07 08 12.58  +37 23 16.2                  056
/1982 VIII 1982 12 14.77431  07 08 14.07  +37 23 54.8                  056

                Periodic Comet Gunn
/1982 X    1989 05 26.89777  14 44 17.63  -10 46 55.5                  046
/1982 X    1989 05 26.90355  14 44 17.42  -10 46 57.1                  046

              Comet Shoemaker (1984 XV)
/1984 XV   1987 08 26.45413  22 30 15.77  -10 20 16.7          22.0N   568

              Periodic Comet Borrelly
/1987 XXXII1988 01 21.84942  02 48 08.05  +36 16 19.9                  491
/1987 XXXII1988 01 21.94083  02 48 17.67  +36 19 47.0                  491
/1987 XXXII1988 01 22.82453  02 49 51.22  +36 52 23.2                  491
/1987 XXXII1988 01 22.83076  02 49 51.91  +36 52 33.3                  491
/1987 XXXII1988 01 22.83630  02 49 52.21  +36 52 42.6                  491
/1987 XXXII1988 02 15.99031  03 47 40.84  +47 51 04.9                  491
/1987 XXXII1988 03 15.97744  05 26 22.35  +53 16 43.1                  491
/1987 XXXII1988 03 18.01578  05 33 55.44  +53 23 45.2                  491

              Periodic Comet Tempel 2
/1987g     1988 05 19.13875  15 57 19.89  +03 46 04.8                  491
/1987g     1988 05 20.06988  15 56 28.70  +03 48 44.9                  491
/1987g     1988 07 12.97715  15 24 51.67  -04 04 57.3                  491

                Comet Liller (1988a)
/1988a     1988 04 15.02541  01 15 24.97  +48 44 09.0                  084
/1988a     1988 04 15.02714  01 15 25.19  +48 44 14.7                  084
/1988a     1988 04 15.03343  01 15 26.25  +48 44 40.1                  084
```

/1988a	1988	04	21.88039	01	38	54.09	+56	27	30.4		491
/1988a	1988	04	28.02185	02	13	11.20	+63	32	08.7		084
/1988a	1988	04	28.02277	02	13	11.48	+63	32	13.8		084
/1988a	1988	04	28.02525	02	13	12.56	+63	32	24.1		084
/1988a	1988	04	28.02612	02	13	12.99	+63	32	28.1		084
/1988a	1988	04	29.99050	02	28	42.43	+65	45	27.7		084
/1988a	1988	04	29.99235	02	28	43.40	+65	45	35.2		084
/1988a	1988	04	30.00193	02	28	48.46	+65	46	13.0		084
/1988a	1988	05	02.93830	02	58	17.74	+68	55	44.3		084
/1988a	1988	05	02.93922	02	58	18.10	+68	55	47.8		084
/1988a	1988	05	02.94799	02	58	24.56	+68	56	20.9		084
/1988a	1988	05	02.98645	02	58	51.47	+68	58	42.8		084
/1988a	1988	05	02.98732	02	58	52.08	+68	58	46.4		084
/1988a	1988	05	06.89487	03	54	43.85	+72	34	57.6		084
/1988a	1988	05	06.89656	03	54	45.51	+72	35	02.8		084
/1988a	1988	05	06.92957	03	55	19.92	+72	36	35.7		084
/1988a	1988	05	08.93061	04	33	09.08	+73	59	07.7		084
/1988a	1988	05	08.93282	04	33	11.64	+73	59	12.4		084
/1988a	1988	05	11.89520	05	39	40.15	+75	07	55.6		084
/1988a	1988	05	11.89685	05	39	42.69	+75	07	56.8		084
/1988a	1988	05	11.90555	05	39	55.81	+75	08	02.6		084
/1988a	1988	05	12.90378	06	04	01.63	+75	13	50.1		084
/1988a	1988	05	12.90478	06	04	03.20	+75	13	50.0		084
/1988a	1988	05	12.90803	06	04	07.97	+75	13	50.1		084
/1988a	1988	05	12.90901	06	04	09.38	+75	13	50.1		084
/1988a	1988	05	13.96962	06	29	52.73	+75	09	45.3		084
/1988a	1988	05	13.97100	06	29	54.71	+75	09	43.7		084
/1988a	1988	05	16.89716	07	36	42.61	+74	06	25.3		084
/1988a	1988	05	16.89855	07	36	44.92	+74	06	20.6		084
/1988a	1988	05	16.93194	07	37	28.34	+74	05	12.6		084
/1988a	1988	05	16.93375	07	37	30.21	+74	05	08.7		084
/1988a	1988	05	17.97925	07	58	37.34	+73	25	55.6		491
/1988a	1988	05	17.98617	07	58	44.87	+73	25	36.6		491
/1988a	1988	05	17.99310	07	58	52.89	+73	25	19.8		491
/1988a	1988	05	19.12335	08	19	45.78	+72	34	55.6		491
/1988a	1988	06	16.93144	11	25	02.64	+41	43	49.2		491
/1988a	1988	06	16.93802	11	25	03.71	+41	43	27.9		491
/1988a	1988	07	11.89712	12	07	19.12	+23	09	53.0		491
/1988a	1988	07	12.89681	12	08	38.82	+22	35	23.8		491

Comet Shoemaker-Holt-Rodriquez (1988h)

/1988h	1989	06	08.61477	01	28	10.73	-70	31	41.8	14.5N	474
/1988h	1989	06	08.61668	01	28	11.66	-70	31	45.1		474
/1988h	1989	06	29.73030	04	58	43.24	-74	02	29.7	14.6N	474
/1988h	1989	06	29.73493	04	58	45.92	-74	02	28.4		474
/1988h	1989	08	12.80606	08	49	25.67	-63	30	37.8		413
/1988h	1989	08	12.80780	08	49	26.02	-63	30	35.2		413

Periodic Comet West-Hartley

/1989k	1989	06	30.42405	13	54	37.51	-13	12	07.5	18.5N	474
/1989k	1989	06	30.45814	13	54	38.08	-13	12	18.8		474

Periodic Comet Brorsen-Metcalf

/1989o	1989	07	25.96435	02	13	27.55	+29	38	09.7		056
/1989o	1989	07	25.98171	02	13	36.26	+29	39	17.9		056
/1989o	1989	07	27.68160	02	27	46.9	+31	25	58		897
/1989o	1989	07	27.68681	02	27	49.70	+31	26	17.3		897
/1989o	1989	07	27.69294	02	27	52.79	+31	26	38.2		897
/1989o	1989	07	27.71204	02	28	02.87	+31	27	50.3		897

```
/1989o     1989 07 30.00486  02 49 09.99  +33 49 10.8                    046
/1989o     1989 07 30.00833  02 49 12.34  +33 49 26.8                    046
/1989o     1989 08 02.93056  03 30 53.96  +37 30 53.0                 3  056
/1989o     1989 08 02.96181  03 31 15.59  +37 32 26.8                    056
/1989o     1989 08 06.00521  04 08 14.29  +39 49 11.2                    046
/1989o     1989 08 06.00799  04 08 16.54  +39 49 20.2                    046
/1989o     1989 08 06.03194  04 08 34.87  +39 50 15.9                    046
/1989o     1989 08 06.03403  04 08 36.41  +39 50 20.4                    046
/1989o     1989 08 10.08090  05 02 07.30  +41 38 58.9                    046
/1989o     1989 08 10.08229  05 02 08.50  +41 39 00.6                    046
/1989o     1989 08 10.08854  05 02 13.39  +41 39 06.8                    046
/1989o     1989 08 10.08993  05 02 14.60  +41 39 07.0                    046
/1989o     1989 08 14.06701  05 55 41.75  +41 49 54.5                    046
/1989o     1989 08 14.06840  05 55 42.87  +41 49 53.3                    046
/1989o     1989 08 14.09062  05 56 00.27  +41 49 41.4                    046
/1989o     1989 08 14.09201  05 56 01.47  +41 49 40.5                    046
/1989o     1989 08 15.05903  06 08 37.72  +41 38 04.1                    017
/1989o     1989 08 16.07396  06 21 32.61  +41 20 27.5                    046
/1989o     1989 08 16.07535  06 21 33.65  +41 20 25.5                    046
/1989o     1989 08 17.07609  06 33 57.69  +40 58 00.5                    046
/1989o     1989 08 17.07742  06 33 58.74  +40 57 58.6                    046
/1989o     1989 08 17.09796  06 34 13.66  +40 57 29.4                    046
/1989o     1989 08 17.09883  06 34 14.33  +40 57 28.3                    046
/1989o     1989 08 18.70648  06 53 20.89  +40 11 48.0          6.5T      399
/1989o     1989 08 18.72616  06 53 34.48  +40 11 12.0                    399
/1989o     1989 08 18.74618  06 53 48.38  +40 10 33.1                    399
/1989o     1989 08 26.36736  08 09 33.13  +34 42 57.5                    293
/1989o     1989 08 26.36944  08 09 34.20  +34 42 52.8                    293
/1989o     1989 08 27.80515  08 21 18.54  +33 28 37.1                    897
/1989o     1989 08 27.80631  08 21 19.09  +33 28 34.1                    897
/1989o     1989 08 29.72627  08 35 58.82  +31 45 48.4           6  T      399
/1989o     1989 08 29.72789  08 35 59.58  +31 45 44.3                    399
/1989o     1989 08 29.73009  08 36 00.73  +31 45 37.2                    399
/1989o     1989 08 30.14131  08 39 00.95  +31 23 11.5           6  T      974
/1989o     1989 08 30.14246  08 39 00.94  +31 23 09.1                    974
/1989o     1989 08 30.14316  08 39 02.20  +31 23 07.6                    974
/1989o     1989 08 30.16446  08 39 10.48  +31 21 59.1                    974
/1989o     1989 09 01.12978  08 52 53.99  +29 33 07.5                    503

                Comet Okazaki-Levy-Rudenko (1989r)
/1989r     1989 08 28.54653  15 21 29.32  +33 57 16.9          12  T      875
/1989r     1989 08 28.55284  15 21 28.68  +33 57 13.6                    875
/1989r     1989 08 29.48160  15 19 55.52  +33 51 57.6          13  T      400
/1989r     1989 08 29.49271  15 19 54.43  +33 51 52.5                    400
/1989r     1989 08 31.50694  15 16 38.72  +33 40 16.5          12  T      400
/1989r     1989 08 31.51458  15 16 38.04  +33 40 14.2                    400
/1989r     1989 08 31.90603  15 16 01.04  +33 37 55.2                 4  494
/1989r     1989 09 02.87308  15 13 00.87  +33 26 22.1                    503
/1989r     1989 09 04.03830  15 11 17.79  +33 19 28.6                    801
/1989r     1989 09 04.05713  15 11 16.13  +33 19 21.6                    801
/1989r     1989 09 04.06656  15 11 15.26  +33 19 18.1                    801
/1989r     1989 09 05.23507  15 09 34.94  +33 12 19.6                    657
/1989r     1989 09 12.77274  14 59 45.86  +32 27 53.1                    056
/1989r     1989 09 12.79340  14 59 44.26  +32 27 44.8                    056
/1989r     1989 09 16.45035  14 55 28.32  +32 06 54.7                    403
/1989r     1989 09 18.18160  14 53 32.90  +31 56 59.3                    657
/1989r     1989 09 19.75903  14 51 49.83  +31 48 16.6                    056
/1989r     1989 09 19.77465  14 51 48.65  +31 48 08.2                    056
/1989r     1989 09 19.78889  14 51 47.94  +31 48 04.3                    056
```

/1989r	1989	09	20.42639	14	51	06.66	+31	44	34.6	9.5T	892
/1989r	1989	09	20.44427	14	51	05.35	+31	44	26.1	12 T	897
/1989r	1989	09	20.46852	14	51	04.08	+31	44	18.4		897
/1989r	1989	09	21.79236	14	49	40.0	+31	37	02		056
/1989r	1989	09	24.82503	14	46	31.08	+31	20	31.1		503

Comet Helin-Roman (1989s)

/1989s	1989	09	05.16007	17	51	29.20	-06	14	08.5	14.0T	675
/1989s	1989	09	05.18507	17	51	23.61	-06	17	10.0		675
/1989s	1989	09	06.19288	17	48	02.90	-08	14	53.9		657
/1989s	1989	09	06.42623	17	47	18.55	-08	40	46.5	12.5T	413
/1989s	1989	09	07.18507	17	44	59.47	-10	03	01.2		675
/1989s	1989	09	07.20694	17	44	55.64	-10	05	14.3		675
/1989s	1989	09	07.21917	17	44	53.68	-10	06	30.3		657
/1989s	1989	09	07.46357	17	44	10.66	-10	31	43.5		413
/1989s	1989	09	07.59135	17	43	48.49	-10	44	47.7		413
/1989s	1989	09	08.20712	17	42	05.18	-11	46	35.1		675
/1989s	1989	09	08.40938	17	41	32.67	-12	05	58.7	5	413

Periodic Comet Wild 2

/1989t	1988	09	09.50289	01	31	25.78	+05	53	41.8	23 N	6 568
/1989t	1988	09	09.51534	01	31	25.29	+05	53	40.2		6 568
/1989t	1988	09	09.53027	01	31	24.94	+05	53	37.2		6 568
/1989t	1989	09	10.43605	03	52	40.03	+16	29	08.1		675
/1989t	1989	09	10.44206	03	52	40.09	+16	29	08.0		675
/1989t	1989	09	10.46663	03	52	40.33	+16	29	07.5		675
/1989t	1989	09	10.47310	03	52	40.41	+16	29	07.3	19.2T	675
/1989t	1989	09	11.46262	03	52	50.88	+16	28	41.7	7	675
/1989t	1989	09	11.47829	03	52	51.02	+16	28	41.0	7	675
/1989t	1989	09	11.49580	03	52	51.19	+16	28	40.7	7	675

Periodic Comet Kearns-Kwee

/1989u	1989	09	10.29145	22	35	09.43	-03	02	10.4	19.9T	8 675
/1989u	1989	09	10.29714	22	35	09.20	-03	02	10.8		8 675
/1989u	1989	09	10.30361	22	35	08.94	-03	02	12.2		8 675
/1989u	1989	09	10.31065	22	35	08.59	-03	02	13.2		8 675
/1989u	1989	09	11.28252	22	34	27.19	-03	05	00.7		8 675
/1989u	1989	09	11.29390	22	34	26.70	-03	05	02.7		8 675
/1989u	1989	09	11.30571	22	34	26.22	-03	05	04.9		8 675
/1989u	1989	09	11.31321	22	34	25.85	-03	05	07.0		8 675

Note 1: image diffuse with condensation. 2: image almost stellar. 3: poor sky. 4: possible elongation in p.a. 105 . 5: involved with star. 6: stellar appearance. 7: 20" tail in p.a. 260 on best frames. 8: stellar nucleus, possible faint coma a few arcsec across.

* * * * *

OBSERVATIONS OF MINOR PLANETS.

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

A earlier approximate position inferior
a sense of motion ambiguous
B black or dark plate
b bad seeing

C correction to earlier position
c crowded star field
D declination uncertain
d diffuse image
E at or near edge of plate
F faint image
G poor guiding
g no guiding
I involved with star
i inkdot measured
M measurement difficult
N near edge of plate, measurement uncertain
O image out of focus
o plate measured in one direction only
P position uncertain
p poor image
R right ascension uncertain
r 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.
010 Caussols								
A. Maury, CERGA Caussols, F-06460 Saint Vallier de Thiey, France								
Observers A. Maury, C. Pollas								
Measurer R. Chemin								
0.9-m Schmidt telescope								
1989 PB		1989 08 25.98681	04 39 52.04	+74 23 26.9				010
1989 PB		1989 08 26.02500	04 49 41.42	+74 34 55.1				010
033 Tautenburg								
S. Marx, Karl Schwarzschild Observatorium, DDR-6901 Tautenburg, Democratic Republic of Germany								
Observers F. Borngen, R. Ziener								
1.3-m Schmidt telescope								
SAOC								
1982 DY3		1982 02 21.92569	10 43 19.24	+11 46 14.7				033
1982 DX6	*	1982 02 20.86181	10 40 34.38	+13 22 33.9		17.9V		033
1982 DX6		1982 02 20.95174	10 40 28.75	+13 23 17.4				033
1982 DX6		1982 02 21.92569	10 39 28.49	+13 31 04.2				033
1982 DX6		1982 02 21.95347	10 39 26.96	+13 31 16.9				033
1982 DX6		1982 02 21.96597	10 39 25.98	+13 31 24.9				033
1982 DY6	*	1982 02 20.86181	10 41 05.34	+11 55 17.3		18.3V	F	033
1982 DY6		1982 02 20.95174	10 41 00.73	+11 56 01.2				033
1982 DY6		1982 02 21.96597	10 40 18.40	+11 59 59.3			U	033
1982 DZ6	*	1982 02 20.86181	10 42 24.07	+13 20 34.3		17.9V		033
1982 DZ6		1982 02 20.95174	10 42 18.84	+13 21 11.7				033
1982 DZ6		1982 02 21.96597	10 41 21.34	+13 28 04.2				033
1982 DA7	*	1982 02 20.86181	10 43 58.98	+13 54 56.9		18.7V	V	033
1982 DA7		1982 02 20.95174	10 43 54.68	+13 55 15.4			d	033
1982 DA7		1982 02 21.92569	10 43 12.06	+14 03 06.8				033

1982	DA7		1982	02	21.95347	10	43	11.17	+14	03	16.7		033
1982	DA7		1982	02	21.96597	10	43	10.38	+14	03	25.3		033
1982	DB7	*	1982	02	20.86181	10	45	42.14	+11	31	58.8	18.1V	033
1982	DB7		1982	02	20.95174	10	45	38.49	+11	32	26.8		033
1982	DB7		1982	02	21.92569	10	44	58.29	+11	37	37.6		033
1982	DB7		1982	02	21.96597	10	44	56.94	+11	37	48.6		033
1982	DC7	*	1982	02	20.86181	10	45	45.41	+12	44	03.1	17.9V	033
1982	DC7		1982	02	20.95174	10	45	40.78	+12	44	32.7		033
1982	DC7		1982	02	21.92569	10	44	51.03	+12	49	56.6		033
1982	DC7		1982	02	21.96597	10	44	49.06	+12	50	09.6		033
1982	DD7	*	1982	02	20.86181	10	47	24.10	+13	26	36.8	18.1V V	033
1982	DD7		1982	02	20.95174	10	47	18.73	+13	27	02.5		033
1982	DE7	*	1982	02	20.86181	10	48	41.28	+13	58	01.3	18.4V	033
1982	DE7		1982	02	20.95174	10	48	35.61	+13	58	30.5		033
1982	DF7	*	1982	02	20.86181	10	48	56.05	+12	32	56.6	17.6V	033
1982	DF7		1982	02	20.95174	10	48	50.44	+12	33	22.8		033
1982	DF7		1982	02	21.92569	10	47	49.38	+12	38	07.2		033
1982	DF7		1982	02	21.95347	10	47	48.32	+12	38	12.0		033
1982	DF7		1982	02	21.96597	10	47	47.37	+12	38	16.8		033
1982	DG7	*	1982	02	20.86181	10	49	06.10	+13	48	13.8	18.8V V	033
1982	DG7		1982	02	20.95174	10	49	01.01	+13	48	39.2		033
1982	DG7		1982	02	21.96597	10	48	04.27	+13	53	18.9		033
1982	DH7	*	1982	02	20.86181	10	50	08.14	+12	17	38.8	17.1V	033
1982	DH7		1982	02	20.91458	10	50	05.83	+12	18	12.2		033
1982	DH7		1982	02	20.94236	10	50	04.87	+12	18	28.3		033
1982	DH7		1982	02	20.95174	10	50	04.45	+12	18	33.3		033
1982	DH7		1982	02	21.92569	10	49	25.09	+12	28	22.1		033
1982	DH7		1982	02	21.95347	10	49	24.11	+12	28	36.8		033
1982	DH7		1982	02	21.96597	10	49	23.42	+12	28	46.7		033
1917			1989	08	05.03646	20	02	39.83	+40	41	52.7	17.0	033
1917			1989	08	05.05590	20	02	38.76	+40	41	59.0		033
3551			1989	08	05.87361	18	04	27.72	+01	42	06.0	17.7	033
3551			1989	08	05.92153	18	04	25.07	+01	41	31.6		033

046 Klet
A. Mrkos, Dept. of Astronomy and Astrophysics, Charles University,
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Observers A. Mrkos, Z. Vavrova
0.6-m Maksutov reflector

1980	JH		1989	08	05.96858	21	44	19.56	+07	04	57.9		046
1980	JH		1989	08	05.98148	21	44	19.13	+07	04	56.1		046
3870			1989	07	29.88669	19	43	24.31	+00	43	56.1		046
3870			1989	07	29.90087	19	43	23.57	+00	43	50.7		046

095 Crimean Astrophysical Observatory
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Observers N. S. Chernykh, L. I. Chernykh, L. G. Karachkina,
T. M. Smirnova, L. V. Zhuravleva

1935	SP1		1987	09	02.00164	00	12	08.36	-09	30	45.9		095
1935	SP1		1987	09	03.93114	00	09	20.12	-09	12	00.8		095
1935	SP1		1987	09	22.90807	23	39	17.04	-05	56	09.1		095
1967	DB		1987	08	28.94495	21	55	17.64	-16	51	29.4	15.5	095
1976	SJ		1987	09	25.82245	22	55	16.59	-06	56	47.3	15.0 E	095
1977	EV		1987	09	22.98410	01	28	51.38	+29	29	02.2	16.5 E	095
1977	EV		1987	09	25.89571	01	26	23.74	+29	35	25.8	16.0	095
1977	EV		1987	09	26.05439	01	26	15.16	+29	35	42.8	16.5	095

1977	RW6	1987	09	25.05446	02	40	18.26	+15	51	26.8		E	095
1977	RW6	1987	10	22.94625	02	22	31.95	+14	51	13.4			095
1977	RW6	1987	10	27.93446	02	18	13.35	+14	34	00.2			095
1978	PL4	1987	09	22.98410	01	11	48.34	+27	04	01.0			095
1978	PL4	1987	09	25.89571	01	09	40.13	+27	12	08.2			095
1978	PL4	1987	09	26.05439	01	09	32.66	+27	12	30.2			095
1978	PL4	1987	10	25.83597	00	43	10.90	+26	05	40.2			095
1980	JC	1987	09	03.04861	00	57	40.78	+06	46	56.1	16.0V		095
1980	JC	1987	09	23.95528	00	41	42.90	+05	50	30.0	15.5V		095
1980	JC	1987	10	23.82188	00	14	16.25	+03	38	59.4	16.0V		095
1980	PF	1987	09	22.98410	01	21	14.96	+23	31	29.9			095
1980	PF	1987	09	25.89571	01	18	44.34	+23	36	05.5			095
1980	PF	1987	09	26.05439	01	18	35.33	+23	36	14.0			095
1981	DX1	1987	09	25.89571	01	01	41.68	+27	02	02.9	16.0		095
1981	DX1	1987	09	26.05439	01	01	33.41	+27	02	28.5	16.5	E	095
1981	TO3	1987	10	27.93446	02	47	49.57	+14	06	35.2			095
1982	SK8	1987	10	22.94625	02	28	02.59	+12	33	37.7			095
1982	SK8	1987	10	27.93446	02	23	55.36	+12	09	17.3		E	095
1982	UV1	1987	08	28.94495	22	22	22.28	-13	33	33.0			095
1982	UV1	1987	08	31.92402	22	20	08.45	-13	48	55.8			095
1982	UV1	1987	09	24.83363	22	05	15.35	-15	21	09.2			095
1982	UD2	1987	10	27.93446	02	44	40.66	+15	43	13.6			095
1982	UD2	1987	11	21.86556	02	23	43.49	+14	32	41.4			095
1983	RC	1987	08	28.87286	21	13	10.45	-02	24	26.7	14.0	E	095
1983	RC	1987	08	31.85174	21	11	53.25	-03	29	58.2	14.0		095
1983	RC	1987	09	24.76287	21	11	01.68	-11	49	36.9	14.9	E	095
1983	RX2	1987	08	27.02495	00	07	04.65	-11	19	51.1			095
1983	RX2	1987	09	03.93114	00	02	04.02	-12	07	01.6			095
1983	RX2	1987	09	22.90807	23	45	58.23	-13	42	36.5			095
1983	TW1	1987	08	27.02495	00	07	56.88	-04	25	30.8			095
1983	TW1	1987	09	02.00164	00	04	34.87	-05	05	00.7			095
1983	TW1	1987	09	22.90807	23	48	39.48	-07	28	32.3		E	095
1984	ER1	1987	09	01.93081	23	03	11.63	-06	50	22.9	16.5		095
1986	CL1	1987	08	28.79914	20	34	28.11	+02	21	50.6		E	095
1987	OT	1987	08	31.85174	21	27	51.32	-07	59	12.4		E	095
1987	PL	1987	08	27.94465	22	43	00.88	+02	57	07.7	16.0V		095
1987	PL	1987	09	02.90625	22	38	06.43	+02	44	16.1	16.0V		095
1987	PL	1987	09	16.81252	22	27	08.96	+02	01	37.6	16.0V		095
1987	PL	1987	09	20.81606	22	24	22.33	+01	47	33.0	16.0V		095
1987	PM	1987	09	02.90625	22	43	47.69	+03	41	36.0	16.0V	E	095
1987	PM	1987	09	16.81252	22	32	32.64	+02	42	51.5	16.3V		095
1987	PM	1987	09	20.81606	22	29	39.80	+02	23	50.8	16.5V		095
1987	QL	1987	09	01.93081	23	18	27.54	-05	58	54.9	15.5	E	095
1987	QL	1987	09	22.83446	23	03	20.89	-09	49	59.4	16.0		095
1987	QL	1987	09	25.82245	23	01	35.86	-10	16	43.3	16.0		095
1987	QR	1987	09	16.88546	23	18	14.86	-01	59	45.5	15.5V		095
1987	QR	1987	09	17.82776	23	17	35.95	-02	07	04.6	16.0V		095
1987	QR	1987	09	23.81219	23	13	39.69	-02	52	32.6	16.0V		095
1987	QG1	1987	09	25.75094	21	42	02.21	-04	00	35.6	16.5		095
1987	QL1	1987	08	26.87618	22	17	58.99	-05	32	03.0	14.5		095
1987	QL1	1987	09	01.85304	22	12	57.43	-05	37	33.2	14.5		095
1987	QL1	1987	09	22.76086	22	00	35.72	-05	58	53.5	14.5	E	095
1987	QL1	1987	09	25.75094	21	59	53.33	-06	00	04.9	15.0		095
1987	QE3	1987	08	26.87618	22	04	03.81	-07	02	15.5			095
1987	QE3	1987	09	01.85304	21	59	20.94	-07	43	21.4			095
1987	QY6	1987	08	26.87618	21	57	39.38	-04	30	35.9		M	095
1987	QZ6	1987	09	01.85304	21	53	58.15	-05	58	09.5			095
1987	QJ7	1987	08	26.87618	22	21	12.76	+00	09	34.2	16.0	E	095
1987	QJ7	1987	09	01.85304	22	16	42.87	-00	29	03.0	15.5	E	095

1987	QA8		1987	08	28.87286	21	17	12.09	-08	37	55.9	15.5	095
1987	QA8		1987	08	31.85174	21	15	24.88	-09	11	35.8	16.0	095
1987	QA9		1987	08	27.02495	23	54	24.73	-10	41	44.3	16.5 M	095
1987	QA9		1987	09	22.90807	23	33	01.82	-13	04	04.5	15.5	095
1987	QO9		1987	08	26.95343	22	51	04.99	-11	42	15.4	15.5 E	095
1987	QO9		1987	09	22.83446	22	31	42.45	-14	32	50.2	16.0 E	095
1987	QO9		1987	09	25.82245	22	30	04.45	-14	45	41.6	15.5 E	095
1987	QQ9	*	1987	08	26.78609	20	18	18.06	-05	33	57.0		095
1987	QR9	*	1987	08	26.78609	20	25	51.95	-07	31	27.3	15.0	095
1987	QS9	*	1987	08	26.78609	20	27	35.07	-07	06	19.3	15.0	095
1987	QT9	*	1987	08	26.78609	20	31	46.65	-04	35	22.8	15.5 E	095
1987	QU9	*	1987	08	26.78609	20	33	55.62	-05	00	18.9	15.0 N	095
1987	QV9	*	1987	08	26.87618	21	55	13.89	-03	57	56.1	16.0 E	095
1987	QW9	*	1987	08	26.87618	21	57	08.23	-02	37	38.1	16.0	095
1987	QW9		1987	09	01.85304	21	53	29.78	-03	26	49.3	16.0 E	095
1987	QX9	*	1987	08	26.87618	22	00	11.12	-02	03	17.9	16.2	095
1987	QY9	*	1987	08	26.87618	22	13	24.27	-05	01	31.2	16.5	095
1987	QZ9	*	1987	08	26.87618	22	14	29.08	-07	09	59.8	16.0	095
1987	QZ9		1987	09	01.85304	22	09	46.07	-07	14	11.0	16.5 M	095
1987	QA10	*	1987	08	26.87618	22	17	57.98	-08	58	16.0	16.5 E	095
1987	QB10	*	1987	08	26.87618	22	19	24.93	-06	16	25.9	15.5 d	095
1987	QB10		1987	09	01.85304	22	14	14.09	-07	01	17.0	15.5	095
1987	QB10		1987	09	25.75094	21	59	21.79	-09	35	54.1	16.5	095
1987	QC10	*	1987	08	26.87618	22	21	31.90	-04	54	53.2	15.8	095
1987	QC10		1987	09	01.85304	22	17	53.21	-04	51	52.4	16.5	095
1987	QD10	*	1987	08	26.87618	22	24	20.97	-04	21	14.4	16.5 N	095
1987	QE10	*	1987	08	26.95343	22	59	03.03	-10	03	22.8	16.5	095
1987	QF10	*	1987	08	26.95343	22	59	16.95	-08	33	53.6	16.5	095
1987	QG10	*	1987	08	26.95343	23	05	13.36	-12	19	53.1	15.0	095
1987	QG10		1987	09	01.93081	23	00	59.89	-13	12	34.4	15.5 E	095
1987	QG10		1987	09	22.83446	22	46	30.28	-15	33	41.0	15.5 E	095
1987	QG10		1987	09	25.82245	22	45	02.56	-15	44	42.0	15.5 E	095
1987	QH10	*	1987	08	26.95343	23	05	58.52	-05	42	19.6	15.0 E	095
1987	QH10		1987	09	01.93081	23	02	16.49	-04	55	46.3	15.9 E	095
1987	QJ10	*	1987	08	26.95343	23	06	17.14	-10	18	09.7	15.0	095
1987	QJ10		1987	09	01.93081	23	02	12.17	-11	05	38.1	15.5	095
1987	QJ10		1987	09	22.83446	22	48	01.79	-13	34	10.2	15.5	095
1987	QJ10		1987	09	25.82245	22	46	18.16	-13	51	06.8	15.5	095
1987	QK10	*	1987	08	26.95343	23	13	33.27	-07	52	08.4	16.5	095
1987	QL10	*	1987	08	26.95343	23	15	03.69	-08	40	29.5	16.5	095
1987	QL10		1987	09	01.93081	23	10	27.34	-09	05	56.1	16.5	095
1987	QM10	*	1987	08	26.95343	23	21	57.77	-05	40	14.4	16.0 E	095
1987	QN10	*	1987	08	26.95343	23	22	10.76	-07	32	37.2	16.0	095
1987	QO10	*	1987	08	26.95343	23	25	00.88	-12	18	25.0	16.5 N	095
1987	QP10	*	1987	08	26.95343	23	25	53.19	-11	18	20.8	16.5 E	095
1987	QQ10	*	1987	08	26.95343	23	28	16.99	-09	48	48.1	16.0 N	095
1987	QQ10		1987	09	22.83446	23	04	37.82	-11	46	42.2	15.5	095
1987	QQ10		1987	09	25.82245	23	02	15.38	-11	53	58.3	16.0	095
1987	QR10	*	1987	08	26.95343	23	29	27.33	-06	43	03.5	16.5 N	095
1987	QS10	*	1987	08	27.02495	23	35	54.24	-11	02	44.6	15.0 N	095
1987	QS10		1987	09	22.90807	23	17	22.33	-13	27	50.5	15.0 E	095
1987	QT10	*	1987	08	27.02495	23	43	21.75	-04	12	20.9	16.0 M	095
1987	QU10	*	1987	08	27.02495	23	44	12.56	-07	59	00.8	15.5	095
1987	QU10		1987	09	02.00164	23	40	34.03	-08	32	36.1	15.5	095
1987	QU10		1987	09	22.90807	23	25	21.32	-10	21	54.3	15.5	095
1987	QV10	*	1987	08	27.02495	23	44	31.25	-08	40	23.9	16.0	095
1987	QV10		1987	09	02.00164	23	41	10.22	-09	32	59.5	16.0	095
1987	QV10		1987	09	22.90807	23	27	12.17	-12	30	05.0	16.0	095
1987	QW10	*	1987	08	27.02495	23	56	49.04	-08	23	30.0	16.5	095

1987	QW10	1987	09	02.00164	23	53	06.37	-09	10	13.3		15.5	095
1987	QW10	1987	09	03.93114	23	51	44.57	-09	25	32.0		15.5	095
1987	QW10	1987	09	22.90807	23	36	07.19	-11	42	58.1		15.0	095
1987	QX10*	1987	08	27.02495	00	04	22.55	-04	57	20.3		16.5	M 095
1987	QY10*	1987	08	27.02495	00	06	41.82	-08	38	28.1		16.0	095
1987	QY10	1987	09	02.00164	00	03	51.88	-09	31	02.0		15.5	095
1987	QY10	1987	09	03.93114	00	02	49.35	-09	48	18.1		15.5	095
1987	QY10	1987	09	22.90807	23	50	26.33	-12	33	13.1		16.0	E 095
1987	QZ10*	1987	08	27.02495	00	07	39.55	-10	23	36.8		16.5	095
1987	QA11*	1987	08	27.02495	00	08	06.56	-04	49	19.1		16.5	M 095
1987	QB11*	1987	08	28.79914	20	08	37.04	+04	14	04.0		16.0	095
1987	QC11*	1987	08	28.79914	20	20	39.83	+04	24	20.4		16.0	E 095
1987	QD11*	1987	08	28.79914	20	21	15.46	-01	56	24.6		15.5	095
1987	QE11*	1987	08	28.87286	21	20	14.31	-07	28	32.8		16.0	095
1987	QE11	1987	08	31.85174	21	18	19.44	-07	47	58.0		16.0	095
1987	QF11*	1987	08	28.87286	21	21	28.29	-10	36	54.6		16.0	E 095
1987	QG11*	1987	08	28.87286	21	26	07.93	-10	44	10.4		15.5	E 095
1987	QG11	1987	08	31.85174	21	23	47.04	-10	47	38.2		16.5	E 095
1987	QH11*	1987	08	28.87286	21	38	08.49	-03	24	05.2			095
1987	QJ11*	1987	08	28.87286	21	40	49.74	-04	19	03.0		16.0	095
1987	QK11*	1987	08	28.94495	22	11	01.76	-14	15	03.8		16.0	095
1987	QK11	1987	08	31.92402	22	08	47.68	-14	34	41.6		16.0	095
1987	QL11*	1987	08	31.85174	21	04	23.20	-05	24	23.6		16.0	095
1987	QM11*	1987	08	31.85174	21	06	03.91	-01	51	10.7		16.5	E 095
1987	QN11*	1987	08	31.92402	21	53	04.38	-16	59	09.2		16.0	095
1987	QO11*	1987	08	31.92402	22	05	13.16	-16	39	39.8		16.2	095
1987	QP11*	1987	08	31.92402	22	30	13.42	-12	05	35.3		16.0	E 095
1987	QQ11*	1987	08	27.94465	22	42	29.60	-01	56	43.0		16.0V	095
1987	QQ11	1987	09	02.90625	22	37	32.02	-02	09	05.6		16.0V	095
1987	QQ11	1987	09	16.81252	22	26	19.46	-02	43	03.3		16.5V	095
1987	QQ11	1987	09	20.81606	22	23	24.52	-02	53	02.2		16.0V	095
1987	QR11*	1987	08	27.94465	23	04	01.92	+02	55	51.1		16.5V	095
1987	QR11	1987	09	02.90625	22	58	43.32	+02	38	29.7		16.0V	095
1987	QR11	1987	09	16.81252	22	46	19.73	+01	45	42.2		16.5V	095
1987	QR11	1987	09	17.82776	22	45	28.16	+01	41	30.6		16.0V	095
1987	QR11	1987	09	23.81219	22	40	41.10	+01	16	10.9		16.0V	E 095
1987	RF	1987	09	25.82245	22	45	20.28	-06	57	59.5		16.0	E 095
1987	RT	1987	08	26.95343	22	53	34.56	-07	49	38.7			E 095
1987	RT	1987	09	22.83446	22	34	58.77	-09	34	53.5			095
1987	RT	1987	09	25.82245	22	33	21.64	-09	43	22.2			E 095
1987	RW	1987	09	01.93081	22	54	04.75	-06	59	08.7			095
1987	RX	1987	08	28.94495	22	11	16.82	-11	27	37.0		16.2	095
1987	RX	1987	08	31.92402	22	09	12.39	-11	42	04.6		16.0	095
1987	RY	1987	08	28.94495	22	12	44.89	-11	44	41.2			095
1987	RY	1987	08	31.92402	22	10	34.24	-11	56	42.6			095
1987	RY	1987	09	24.83363	21	56	42.34	-13	09	07.4			095
1987	RZ	1987	08	28.94495	22	13	53.35	-12	35	33.7			M 095
1987	RZ	1987	08	31.92402	22	11	44.55	-12	49	48.2			095
1987	RZ	1987	09	24.83363	21	58	06.57	-14	16	02.2			095
1987	RE1	1987	08	26.95343	23	06	46.07	-06	34	23.8			095
1987	RE1	1987	09	01.93081	23	01	21.83	-06	37	47.2		15.0	095
1987	RG1	1987	08	26.95343	23	15	47.11	-05	08	15.1		16.5	E 095
1987	RG1	1987	09	01.93081	23	11	06.89	-05	31	36.2		16.0	E 095
1987	RG1	1987	09	22.83446	22	54	10.21	-06	54	36.3		15.5	E 095
1987	RU1 *	1987	09	01.85304	21	55	39.39	-08	42	20.9			095
1987	RV1 *	1987	09	01.85304	22	01	41.12	-03	10	53.7		16.0	095
1987	RW1 *	1987	09	01.85304	22	08	12.81	-00	47	49.1		16.5	M 095
1987	RX1 *	1987	09	01.85304	22	09	47.19	-04	57	53.7		16.5	M 095
1987	RY1 *	1987	09	01.85304	22	10	04.23	-01	56	15.8		16.0	095

1987	RZ1	*	1987	09	01.85304	22	17	14.02	-02	39	04.9	16.0		095
1987	RA2	*	1987	09	01.85304	22	21	29.23	-01	07	46.7	16.0	E	095
1987	RB2	*	1987	09	01.85304	22	22	38.92	-06	13	56.2	15.5	E	095
1987	RC2	*	1987	09	01.93081	22	49	45.08	-10	02	12.7	16.5	N	095
1987	RD2	*	1987	09	01.93081	22	50	20.17	-08	57	57.7	16.0	E	095
1987	RE2	*	1987	09	01.93081	22	55	25.88	-09	54	45.2	16.5	N	095
1987	RF2	*	1987	09	01.93081	22	55	43.41	-12	12	32.9	16.5	N	095
1987	RG2	*	1987	09	01.93081	23	00	27.94	-13	39	28.0	16.0	E	095
1987	RH2	*	1987	09	01.93081	23	00	54.61	-10	42	40.4	16.5		095
1987	RJ2	*	1987	09	01.93081	23	02	42.83	-12	37	34.8	16.5		095
1987	RK2	*	1987	09	01.93081	23	02	47.22	-11	07	57.2	16.0		095
1987	RK2		1987	09	22.83446	22	44	10.32	-12	12	59.0	16.5	M	095
1987	RL2	*	1987	09	01.93081	23	04	20.30	-13	36	21.6	16.5	N	095
1987	RM2	*	1987	09	01.93081	23	05	31.65	-09	25	29.7	17.0		095
1987	RN2	*	1987	09	01.93081	23	06	45.58	-11	17	02.7	16.5		095
1987	RO2	*	1987	09	01.93081	23	09	53.50	-06	24	01.2	16.5		095
1987	RP2	*	1987	09	01.93081	23	10	50.15	-09	54	32.3	16.5		095
1987	RQ2	*	1987	09	01.93081	23	12	34.32	-12	04	41.2	16.0		095
1987	RQ2		1987	09	22.83446	22	57	23.44	-13	11	00.1	16.0		095
1987	RQ2		1987	09	25.82245	22	55	37.44	-13	14	02.2	16.5	M	095
1987	RR2	*	1987	09	01.93081	23	15	27.00	-13	53	06.6	17.0	N	095
1987	RS2	*	1987	09	01.93081	23	20	20.70	-09	36	29.3	16.0		095
1987	RS2		1987	09	22.83446	23	03	56.20	-11	01	43.3	16.0		095
1987	RS2		1987	09	25.82245	23	01	46.41	-11	10	32.1	16.0		095
1987	RT2	*	1987	09	01.93081	23	21	48.36	-06	07	39.0	16.5	E	095
1987	RU2	*	1987	09	01.93081	23	22	42.56	-12	00	09.9	16.5		095
1987	RV2	*	1987	09	01.93081	23	23	55.67	-08	47	26.1	16.0		095
1987	RW2	*	1987	09	01.93081	23	24	38.67	-08	41	44.8	16.0		095
1987	RX2	*	1987	09	01.93081	23	25	35.06	-09	40	03.8	16.0		095
1987	RY2	*	1987	09	01.93081	23	26	07.46	-06	05	47.9	16.0	E	095
1987	RZ2	*	1987	09	01.93081	23	28	54.71	-09	56	20.4	17.0	E	095
1987	RZ2		1987	09	22.90807	23	12	39.91	-11	27	01.4	16.5	E	095
1987	RZ2		1987	09	25.82245	23	10	32.85	-11	36	24.3	15.5	E	095
1987	RA3	*	1987	09	02.00164	23	40	18.91	-06	14	11.5	16.5		095
1987	RA3		1987	09	22.90807	23	24	47.84	-08	51	31.0	16.0		095
1987	RB3	*	1987	09	02.00164	23	40	30.18	-09	43	48.4	15.5		095
1987	RC3	*	1987	09	02.00164	23	43	23.33	-05	02	59.2	16.0		095
1987	RC3		1987	09	22.90807	23	28	21.40	-06	41	42.1	16.0	E	095
1987	RD3	*	1987	09	02.00164	23	53	30.47	-05	09	09.0	15.5		095
1987	RE3	*	1987	09	02.00164	23	54	26.04	-04	33	25.0	16.0		095
1987	RF3	*	1987	09	02.00164	23	59	05.15	-09	17	45.3	16.5		095
1987	RF3		1987	09	22.90807	23	42	08.24	-10	08	00.8	16.0		095
1987	RH3	*	1987	09	03.93114	23	56	05.45	-09	50	52.6	16.5		095
1987	RJ3	*	1987	09	03.93114	23	57	22.21	-10	11	54.6	16.5		095
1987	RK3	*	1987	09	03.93114	23	59	09.40	-10	02	43.0	16.5		095
1987	RL3	*	1987	09	03.93114	00	08	39.82	-14	53	31.1	16.0		095
1987	RM3	*	1987	09	03.93114	00	17	57.88	-13	55	43.0	16.0		095
1987	RN3	*	1987	09	02.97917	00	04	23.09	+13	27	59.1	16.0V	d	095
1987	RN3		1987	09	17.88890	23	52	56.58	+13	07	03.5	16.0V		095
1987	RN3		1987	09	26.89957	23	45	11.11	+12	32	59.4	16.5V		095
1987	RO3	*	1987	09	02.97917	00	06	17.92	+07	59	47.8	17.0V		095
1987	RO3		1987	09	17.88890	23	58	02.03	+06	26	43.6	17.0V		095
1987	RO3		1987	09	26.89957	23	52	04.07	+05	11	20.5	16.0V		095
1987	RP3	*	1987	09	02.97917	00	08	44.69	+08	27	07.6	16.5V		095
1987	RP3		1987	09	17.88890	23	57	40.81	+07	36	49.6	16.5V		095
1987	RP3		1987	09	26.89957	23	50	15.26	+06	52	42.7	16.0V		095
1987	RP3		1987	10	23.75001	23	32	58.25	+04	32	22.6	16.0V		095
1987	RQ3	*	1987	09	02.97917	00	13	03.41	+08	20	30.3	16.5V		095
1987	RQ3		1987	09	17.88890	00	04	51.88	+05	51	22.6	16.5V		095

1987	RQ3		1987	09	26.89957	23	59	02.80	+04	06	48.1	16.0V	E 095
1987	RR3	*	1987	09	02.97917	00	15	08.40	+11	52	40.3	15.5V	095
1987	RR3		1987	09	17.88890	00	05	35.13	+10	44	33.2	16.0V	095
1987	RR3		1987	09	26.89957	23	59	06.35	+09	49	14.7	16.0V	095
1987	RS3	*	1987	09	02.97917	00	20	23.48	+09	04	06.7	16.5V	095
1987	RS3		1987	09	17.88890	00	11	22.72	+07	38	46.8	16.5V	095
1987	RS3		1987	09	26.89957	00	05	03.57	+06	34	28.8	16.5V	095
1987	RT3	*	1987	09	02.97917	00	21	36.06	+10	35	12.2	17.0V	095
1987	RT3		1987	09	17.88890	00	10	29.16	+10	08	03.7	17.0V	095
1987	RT3		1987	09	26.89957	00	02	50.99	+09	38	11.7	16.5V	095
1987	RU3	*	1987	09	02.97917	00	28	05.02	+08	36	00.5	15.0V	095
1987	RU3		1987	09	17.88890	00	20	01.97	+07	29	35.6	15.5V	095
1987	RU3		1987	09	17.96529	00	19	58.24	+07	29	11.1	15.0V	E 095
1987	RU3		1987	09	23.95528	00	15	31.15	+06	48	15.4	14.5V	E 095
1987	RU3		1987	09	26.89957	00	13	14.31	+06	26	06.4	14.8V	095
1987	RV3	*	1987	09	02.97917	00	28	08.91	+08	35	53.2	16.5V	095
1987	RV3		1987	09	17.88890	00	18	34.95	+07	11	00.2	16.5V	095
1987	RV3		1987	09	26.89957	00	11	11.32	+05	59	27.3	16.5V	095
1987	RW3	*	1987	09	03.04861	00	51	20.52	+10	09	15.4	16.5V	095
1987	RW3		1987	09	17.96529	00	42	46.12	+09	48	20.9	16.5V	095
1987	RW3		1987	09	23.95528	00	38	25.61	+09	32	08.6	15.5V	095
1987	RW3		1987	10	23.82188	00	16	13.66	+07	39	11.9	16.3V	095
1987	RX3	*	1987	09	03.04861	01	01	05.92	+13	07	21.6	16.5V	095
1987	RX3		1987	09	23.95528	00	48	49.11	+12	23	32.0	15.5V	095
1987	RX3		1987	09	26.97219	00	46	37.78	+12	12	50.2	16.0V	095
1987	SF		1987	09	22.90807	23	52	11.52	-07	56	17.6	E	095
1987	SS3		1987	08	26.95343	23	02	49.19	-08	45	42.8	15.5	095
1987	SS3		1987	09	01.93081	22	57	26.44	-09	23	51.1	16.0	095
1987	SS3		1987	09	22.83446	22	40	07.92	-11	12	46.5	15.5	095
1987	SS3		1987	09	25.82245	22	38	18.95	-11	22	41.4	16.0	095
1987	SV3		1987	09	02.00164	00	00	08.54	-05	19	55.8	15.5	095
1987	SM4		1987	09	25.89571	01	00	51.67	+23	57	41.1		095
1987	SM4		1987	09	26.05439	01	00	44.37	+23	57	33.2	N	095
1987	ST4		1987	08	27.94465	23	02	24.60	-00	01	29.6	16.5V	095
1987	ST4		1987	09	02.90625	22	57	07.45	-00	31	22.7	16.5V	095
1987	ST4		1987	09	16.81252	22	44	35.47	-01	51	23.8	16.5V	095
1987	ST4		1987	09	20.81606	22	41	14.64	-02	15	06.5	16.5V	095
1987	SA6		1987	09	25.82245	22	36	56.02	-07	18	11.6	16.5	E 095
1987	SE7		1987	09	02.97917	00	03	19.26	+09	33	23.5	17.0V	095
1987	SE7		1987	09	17.88890	23	51	32.42	+09	24	50.2	16.8V	095
1987	SE7		1987	09	26.89957	23	43	28.04	+08	54	23.9	16.0V	095
1987	SY11		1987	08	27.02495	00	05	00.00	-05	18	23.0	16.5	095
1987	SY11		1987	09	02.00164	00	00	42.56	-05	37	40.7	15.5	095
1987	SV12		1987	09	01.93081	23	29	40.58	-07	49	51.2	16.5	E 095
1987	SV12		1987	09	22.90807	23	14	39.58	-09	22	04.4		E 095
1987	SE13		1987	09	01.93081	23	27	59.47	-08	00	30.6	16.5	E 095
1987	SE13		1987	09	25.82245	23	10	41.10	-09	57	13.0	16.0	E 095
1987	SN13*		1987	09	22.83446	22	41	43.10	-15	21	28.6	16.5	E 095
1987	SO13*		1987	09	22.83446	22	44	01.21	-13	59	47.7	16.5	095
1987	SP13*		1987	09	22.83446	22	44	28.57	-15	05	37.1	14.5	095
1987	SP13		1987	09	25.82245	22	41	35.37	-14	54	19.4	15.0	095
1987	SQ13*		1987	09	22.83446	22	47	36.49	-11	38	30.0	16.5	095
1987	SR13*		1987	09	22.83446	22	48	23.24	-11	18	30.4	16.5	095
1987	SS13*		1987	09	22.83446	22	59	38.60	-12	19	15.7	16.0	095
1987	ST13*		1987	09	22.90807	23	14	44.29	-07	30	21.4	15.0	E 095
1987	SU13*		1987	09	22.90807	23	22	10.46	-06	24	15.6	16.0	E 095
1987	SV13*		1987	09	22.90807	23	27	37.68	-08	33	45.1		095
1987	SW13*		1987	09	22.90807	23	28	58.34	-09	53	23.8	16.5	095
1987	SX13*		1987	09	22.90807	23	29	48.10	-10	03	03.2	16.0	095

1987	SY13*	1987	09	22.90807	23	50	19.66	-12	26	47.3	16.5	E 095
1987	SZ13*	1987	09	22.98410	01	05	44.51	+22	41	47.5		E 095
1987	SA14*	1987	09	22.98410	01	08	06.62	+25	16	09.0	16.5	E 095
1987	SA14	1987	09	25.89571	01	05	52.61	+25	21	23.0	16.0	095
1987	SA14	1987	09	26.05439	01	05	45.08	+25	21	34.3	16.5	095
1987	SB14*	1987	09	22.98410	01	21	54.38	+27	35	29.9	16.5	095
1987	SC14*	1987	09	22.98410	01	25	10.42	+25	18	32.4	16.5	095
1987	SD14*	1987	09	22.98410	01	27	21.43	+23	50	00.7	16.5	095
1987	SD14	1987	09	25.89571	01	24	45.21	+23	58	25.8	16.5	095
1987	SD14	1987	09	26.05439	01	24	36.06	+23	58	47.8	16.0	095
1987	SE14*	1987	09	22.98410	01	29	47.75	+20	12	59.5	16.5	E 095
1987	SF14*	1987	09	22.98410	01	32	14.50	+30	00	45.8	16.5	E 095
1987	SG14*	1987	09	22.98410	01	35	25.53	+22	57	43.2		095
1987	SH14*	1987	09	22.98410	01	39	01.90	+24	12	19.9	16.5	095
1987	SJ14*	1987	09	22.98410	01	41	40.90	+23	28	06.4	16.5	095
1987	SK14*	1987	09	22.98410	01	45	53.13	+25	39	02.1	16.5	E 095
1987	SL14*	1987	09	22.98410	01	46	20.84	+22	36	12.9	16.0	E 095
1987	SM14*	1987	09	22.98410	01	47	26.12	+25	44	41.3	16.5	E 095
1987	SN14*	1987	09	23.05806	01	46	18.00	+22	36	38.0	16.0	E 095
1987	SO14*	1987	09	23.05806	01	51	40.34	+25	25	46.8	16.0	E 095
1987	SO14	1987	09	25.97834	01	50	01.12	+25	25	50.8	16.0	095
1987	SP14*	1987	09	23.05806	01	53	41.09	+26	09	28.7	17.0	095
1987	SP14	1987	09	25.97834	01	53	11.02	+26	24	56.2	16.5	095
1987	SQ14*	1987	09	23.05806	01	54	04.67	+23	51	25.0	16.0	095
1987	SQ14	1987	09	25.97834	01	52	27.74	+23	54	50.4	16.0	095
1987	SQ14	1987	10	25.90818	01	28	53.67	+23	02	05.4	16.0	095
1987	SR14*	1987	09	23.05806	01	54	21.79	+22	49	20.0	16.5	095
1987	SR14	1987	09	25.97834	01	53	05.17	+22	57	20.1	16.5	095
1987	SS14*	1987	09	23.05806	01	55	05.21	+24	09	52.5	16.5	095
1987	SS14	1987	09	25.97834	01	53	34.49	+24	19	18.9	16.0	095
1987	ST14*	1987	09	23.05806	01	57	19.37	+20	32	11.7	16.5	N 095
1987	ST14	1987	09	25.97834	01	50	17.91	+23	05	10.5	16.5	095
1987	SU14*	1987	09	23.05806	02	01	59.70	+21	42	12.9	17.0	095
1987	SU14	1987	09	25.97834	01	51	34.62	+21	56	40.1	16.5	095
1987	SV14*	1987	09	23.05806	02	03	07.30	+26	41	00.1	15.5	095
1987	SV14	1987	09	25.97834	02	01	14.95	+27	00	25.9	16.0	095
1987	SW14*	1987	09	23.05806	02	06	09.86	+28	50	19.6	15.0	095
1987	SW14	1987	09	25.97834	02	04	38.78	+29	13	10.8	15.5	I 095
1987	SX14*	1987	09	23.05806	02	15	33.84	+26	42	03.6	16.5	095
1987	SY14*	1987	09	23.05806	02	20	26.11	+26	07	48.3	16.5	095
1987	SZ14*	1987	09	23.05806	02	21	51.81	+22	30	04.8	16.5	095
1987	SA15*	1987	09	23.05806	02	22	48.33	+26	31	36.0	17.0	095
1987	SB15*	1987	09	24.76287	20	45	16.57	-10	50	07.1		E 095
1987	SC15*	1987	09	24.76287	21	05	22.14	-12	08	00.0	15.5	E 095
1987	SD15*	1987	09	24.76287	21	07	40.09	-12	16	42.2	16.0	E 095
1987	SE15*	1987	09	24.76287	21	08	05.40	-11	44	22.7	16.0	E 095
1987	SF15*	1987	09	24.76287	21	08	55.78	-09	41	28.5	15.5	095
1987	SG15*	1987	09	24.76287	21	14	34.42	-09	58	43.9	15.5	095
1987	SH15*	1987	09	24.76287	21	18	47.72	-10	49	03.6		E 095
1987	SJ15*	1987	09	24.83363	21	42	07.14	-17	27	25.1	16.0	095
1987	SK15*	1987	09	24.83363	21	51	35.46	-13	48	11.6	16.0	095
1987	SL15*	1987	09	24.83363	21	56	12.55	-15	18	33.0	15.5	095
1987	SM15*	1987	09	25.05446	02	03	26.10	+15	30	37.5	16.5	E 095
1987	SN15*	1987	09	25.05446	02	06	47.64	+15	36	13.6	16.0	E 095
1987	SO15*	1987	09	25.05446	02	07	01.54	+16	46	00.4	16.2	E 095
1987	SP15*	1987	09	25.05446	02	09	46.90	+12	51	14.0	15.5	095
1987	SQ15*	1987	09	25.05446	02	10	37.83	+14	19	56.9	16.5	095
1987	SR15*	1987	09	25.05446	02	13	23.64	+13	42	04.2	16.0	095
1987	SS15*	1987	09	25.05446	02	17	49.56	+16	38	48.0	16.0	095

1987	ST15*	1987	09	25.05446	02	19	16.64	+12	56	31.1		16.5	095
1987	SU15*	1987	09	25.05446	02	22	47.46	+16	31	45.2			M 095
1987	SV15*	1987	09	25.05446	02	24	23.45	+15	46	23.3		16.2	095
1987	SW15*	1987	09	25.05446	02	27	05.62	+12	49	18.9		16.5	095
1987	SX15*	1987	09	25.05446	02	39	06.87	+15	43	55.7		15.8	095
1987	SY15*	1987	09	25.05446	02	41	00.68	+15	30	51.4		16.0	E 095
1987	SZ15*	1987	09	25.05446	02	44	13.09	+17	34	02.7		16.2	E 095
1987	SA16*	1987	09	25.75094	21	42	08.52	-02	49	28.1		16.5	095
1987	SB16*	1987	09	25.75094	22	04	14.81	-07	26	59.9		15.5	E 095
1987	SC16*	1987	09	25.82245	21	33	58.96	-07	50	29.3		16.5	095
1987	SD16*	1987	09	25.82245	22	32	29.83	-12	12	59.2		16.0	E 095
1987	SE16*	1987	09	25.82245	22	55	25.42	-13	06	52.8		16.5	M 095
1987	SF16*	1987	09	25.82245	23	05	25.24	-10	33	10.4		16.0	095
1987	SG16*	1987	09	25.89571	00	58	49.20	+25	07	02.6		15.0	E 095
1987	SH16*	1987	09	25.89571	01	00	09.80	+22	52	09.0		16.5	095
1987	SJ16*	1987	09	25.89571	01	06	03.66	+27	25	16.6		16.5	095
1987	SK16*	1987	09	25.89571	01	06	15.56	+23	29	54.9		17.0	M 095
1987	SL16*	1987	09	25.89571	01	09	00.19	+26	18	00.4		16.5	095
1987	SM16*	1987	09	25.89571	01	15	50.83	+22	32	03.2		16.0	095
1987	SN16*	1987	09	25.89571	01	17	56.04	+25	26	25.8		16.5	095
1987	SN16	1987	09	26.05439	01	17	47.61	+25	26	34.3		16.5	095
1987	SO16*	1987	09	25.89571	01	22	54.22	+23	51	23.4		16.0	095
1987	SO16	1987	09	26.05439	01	22	44.28	+23	51	09.3		16.5	M 095
1987	SP16*	1987	09	25.89571	01	29	07.41	+26	14	49.0		16.0	095
1987	SP16	1987	09	26.05439	01	28	56.75	+26	15	34.7		16.5	M 095
1987	SQ16*	1987	09	25.89571	01	33	34.36	+23	09	10.5		16.5	N 095
1987	SR16*	1987	09	25.97834	01	41	24.54	+25	01	49.4		16.5	095
1987	SS16*	1987	09	25.97834	01	44	14.34	+22	51	53.7		15.5	095
1987	ST16*	1987	09	25.97834	01	48	26.01	+29	13	51.4		16.5	E 095
1987	SU16*	1987	09	25.97834	01	52	29.69	+26	52	00.9		16.5	095
1987	SV16*	1987	09	25.97834	01	54	22.41	+22	04	44.4		17.0	M 095
1987	SW16*	1987	09	25.97834	01	55	15.73	+20	19	02.9		16.5	E 095
1987	SX16*	1987	09	25.97834	01	59	28.50	+20	10	59.7		16.5	E 095
1987	SY16*	1987	09	25.97834	02	11	20.08	+20	57	54.9		16.0	095
1987	SZ16*	1987	09	26.05439	01	04	06.05	+24	44	02.5		16.5	M 095
1987	SA17*	1987	09	26.05439	01	06	00.56	+27	30	36.6		16.5	095
1987	SB17*	1987	09	26.05439	01	09	16.18	+26	18	51.4		16.5	095
1987	SC17*	1987	09	26.05439	01	24	20.48	+23	38	33.2		16.5	095
1987	SD17*	1987	09	26.05439	01	24	42.87	+23	53	07.7		16.0	095
1987	SE17*	1987	09	26.05439	01	41	21.17	+25	02	23.8		16.0	N 095
1987	SF17*	1987	09	26.05439	01	44	11.63	+25	39	36.9		16.5	N 095
1987	SG17*	1987	09	27.75398	21	31	10.32	-03	07	05.4		16.0	E 095
1987	SH17*	1987	09	27.75398	21	33	30.86	-07	24	58.1			095
1987	SJ17*	1987	09	27.75398	21	34	48.59	-07	22	56.5		16.0	095
1987	SK17*	1987	09	27.75398	21	41	08.18	-05	51	16.5			M 095
1987	SL17*	1987	09	27.75398	21	44	34.29	-11	50	05.1		16.0	N 095
1987	SM17*	1987	09	16.81252	22	48	18.96	+03	11	03.6		16.0V	095
1987	SM17	1987	09	17.82776	22	47	34.12	+03	03	47.9		16.2V	095
1987	SM17	1987	09	23.81219	22	43	32.94	+02	20	03.8		16.0V	095
1987	SN17*	1987	09	16.88546	23	13	46.73	+00	52	06.9		15.4V	E 095
1987	SN17	1987	09	17.82776	23	13	00.92	+00	45	44.8		16.0V	095
1987	SN17	1987	09	23.81219	23	08	20.89	+00	05	23.8		15.8V	095
1987	SO17*	1987	09	16.88546	23	15	35.24	+00	52	03.9		16.5V	N 095
1987	SO17	1987	09	17.82776	23	14	55.00	+00	39	32.1		16.3V	095
1987	SO17	1987	09	23.81219	23	10	45.77	-00	41	24.8		16.0V	095
1987	SP17*	1987	09	16.88546	23	15	50.16	+02	23	07.9		16.3V	095
1987	SP17	1987	09	17.82776	23	15	02.11	+02	17	51.2		16.3V	095
1987	SP17	1987	09	23.81219	23	10	01.29	+01	43	24.2		16.0V	095
1987	SQ17*	1987	09	17.96529	00	31	55.38	+07	09	36.0		15.5V	095

1987	SQ17		1987	09	23.95528	00	26	18.94	+07	10	29.4	15.5V	095
1987	SQ17		1987	10	23.82188	00	01	16.96	+06	36	11.4	16.0V	095
1987	SR17	*	1987	09	17.96529	00	32	50.96	+09	57	16.9	15.5V	095
1987	SR17		1987	09	23.95528	00	29	13.08	+09	10	53.4	16.0V	095
1987	SR17		1987	10	23.82188	00	12	40.36	+04	40	16.8	16.8V	095
1987	SS17	*	1987	09	18.91389	01	19	46.76	+11	00	47.6	16.5V P	095
1987	SS17		1987	09	26.97219	01	14	05.72	+10	51	39.3	16.5V E	095
1987	SS17		1987	10	02.96355	01	09	20.44	+10	40	39.9	16.5V	095
1987	ST17	*	1987	09	18.91389	01	24	36.95	+18	17	20.8	16.0V	095
1987	ST17		1987	09	20.96236	01	23	42.08	+18	06	14.3	15.0V	095
1987	ST17		1987	09	26.97219	01	20	25.17	+17	26	30.1	16.0V E	095
1987	ST17		1987	10	02.96355	01	16	25.52	+16	37	05.1	16.0V E	095
1987	SU17	*	1987	09	18.91389	01	24	49.47	+13	48	57.9	16.0V	095
1987	SU17		1987	09	20.96236	01	23	41.76	+13	36	25.5	16.0V	095
1987	SU17		1987	09	26.97219	01	19	48.50	+12	53	51.8	16.0V	095
1987	SU17		1987	10	02.96355	01	15	15.05	+12	04	18.9	16.5V	095
1987	SV17	*	1987	09	18.91389	01	27	01.06	+13	40	50.2	15.0V	095
1987	SV17		1987	09	20.96236	01	25	58.94	+13	37	58.4	15.0V	095
1987	SV17		1987	09	26.97219	01	22	13.67	+13	23	49.2	15.0V E	095
1987	SV17		1987	10	02.96355	01	17	35.72	+13	01	57.2	15.0V	095
1987	SW17	*	1987	09	18.91389	01	29	32.00	+12	35	22.8	15.5V	095
1987	SW17		1987	09	20.96236	01	28	26.48	+12	32	06.6	15.5V	095
1987	SW17		1987	10	02.96355	01	19	46.02	+11	56	14.7	16.0V	095
1987	SX17	*	1987	09	18.91389	01	42	49.00	+16	18	28.2	15.0V	095
1987	SX17		1987	09	20.96236	01	41	59.47	+16	12	29.8	15.0V	095
1987	SX17		1987	10	02.96355	01	34	39.29	+15	15	33.6	15.0V	095
1987	TA		1987	10	25.90818	01	18	30.90	+16	23	17.1	E	095
1987	TK	*	1987	10	15.72990	22	24	12.13	-09	37	24.6	E	095
1987	TL	*	1987	10	15.72990	22	26	49.96	-11	00	44.4		095
1987	TM	*	1987	10	15.72990	22	29	15.60	-14	04	20.5	16.0	095
1987	TN	*	1987	10	15.72990	22	29	51.84	-14	02	16.3	16.0	095
1987	TO	*	1987	10	15.72990	22	30	48.37	-08	19	16.2	E	095
1987	TP	*	1987	10	15.72990	22	32	30.68	-14	13	25.2		095
1987	TQ	*	1987	10	15.72990	22	36	23.17	-16	08	23.6	16.0	095
1987	TR	*	1987	10	15.72990	22	38	50.92	-09	46	47.6	16.5	095
1987	TS	*	1987	10	15.72990	22	40	27.93	-15	11	06.6	16.0	095
1987	TT	*	1987	10	15.72990	22	43	01.24	-09	50	32.8	16.0	095
1987	UG		1987	10	22.94625	02	57	35.72	+16	21	51.7	E	095
1987	UG		1987	10	27.93446	02	53	50.63	+15	56	55.6	E	095
1987	UJ		1987	09	25.05446	02	24	44.72	+17	38	10.8		095
1987	UK		1987	09	25.05446	02	41	34.83	+17	58	35.1	E	095
1987	UK		1987	10	22.94625	02	28	30.73	+15	22	50.9		095
1987	UK		1987	10	27.93446	02	24	08.64	+14	40	44.8		095
1987	UK		1987	11	21.86556	02	04	28.40	+11	18	40.8		095
1987	UT		1987	08	28.02036	23	48	22.65	+06	15	05.0	15.0V	095
1987	UT		1987	09	16.88546	23	34	16.15	+06	03	50.5	15.5V	095
1987	UT		1987	09	18.84376	23	32	40.58	+05	58	06.2	16.3V E	095
1987	UT		1987	09	23.88509	23	28	39.73	+05	41	15.0	16.3V E	095
1987	UA1		1987	09	23.05806	02	17	27.01	+25	24	37.2		095
1987	UW1		1987	10	22.94625	02	20	58.17	+18	26	05.7	E	095
1987	UW1		1987	10	27.93446	02	16	53.84	+17	42	02.0	E	095
1987	UW1		1987	11	21.86556	01	58	56.69	+13	54	56.1		095
1987	UX1		1987	10	27.93446	02	19	19.48	+20	19	33.8	E	095
1987	UU2		1987	09	18.91389	01	33	52.52	+10	38	12.6	16.5V E	095
1987	UU2		1987	09	18.98685	01	33	50.04	+10	38	02.3	15.5V E	095
1987	UU2		1987	09	21.03457	01	32	46.65	+10	30	21.7	16.0V	095
1987	UU2		1987	10	02.96355	01	24	23.89	+09	30	49.2	15.0V	095
1987	UD4		1987	09	25.05446	02	29	15.20	+16	56	17.4	16.0	095
1987	UN4	*	1987	10	22.94625	02	22	58.42	+20	41	26.7	16.2 E	095

1987	UO4	*	1987	10	22.94625	02	23	13.82	+11	48	52.5	15.5	E 095
1987	UO4		1987	10	27.93446	02	19	08.50	+11	31	47.1	15.8	E 095
1987	UP4	*	1987	10	22.94625	02	23	27.76	+14	28	37.6	16.5	095
1987	UQ4	*	1987	10	22.94625	02	23	45.42	+20	45	09.3		E 095
1987	UR4	*	1987	10	22.94625	02	26	47.70	+14	30	57.5	16.5	095
1987	US4	*	1987	10	22.94625	02	27	05.32	+18	48	28.7	16.0	095
1987	US4		1987	10	27.93446	02	22	26.55	+18	36	28.1	16.0	095
1987	UU4	*	1987	10	22.94625	02	29	14.06	+11	40	23.6	16.0	E 095
1987	UU4		1987	10	27.93446	02	23	54.68	+11	35	01.6	16.0	E 095
1987	UU4		1987	11	21.86556	01	58	11.02	+11	21	12.3	16.0	095
1987	UV4	*	1987	10	22.94625	02	29	25.65	+12	05	00.1	15.5	E 095
1987	UV4		1987	10	27.93446	02	25	23.54	+11	36	01.2	15.5	E 095
1987	UW4	*	1987	10	22.94625	02	30	24.86	+16	37	50.6	16.0	095
1987	UX4	*	1987	10	22.94625	02	32	54.14	+17	31	56.1	15.5	095
1987	UX4		1987	10	27.93446	02	27	57.86	+17	19	45.6	15.5	095
1987	UX4		1987	11	21.86556	02	03	52.22	+16	00	58.7	15.8	095
1987	UY4	*	1987	10	22.94625	02	33	14.63	+16	18	51.8	15.8	095
1987	UY4		1987	10	27.93446	02	27	48.70	+16	14	33.9	16.0	095
1987	UZ4	*	1987	10	22.94625	02	33	53.83	+19	27	30.6	16.5	095
1987	UZ4		1987	10	27.93446	02	28	20.60	+19	14	02.2	16.2	M 095
1987	UA5	*	1987	10	22.94625	02	41	30.05	+11	53	33.6	16.0	E 095
1987	UA5		1987	10	27.93446	02	36	20.71	+11	45	03.8	16.0	E 095
1987	UA5		1987	11	21.86556	02	12	23.83	+11	20	32.6	16.0	095
1987	UB5	*	1987	10	22.94625	02	42	42.34	+17	44	04.0	16.0	095
1987	UC5	*	1987	10	22.94625	02	42	58.27	+17	27	04.7	16.0	095
1987	UD5	*	1987	10	22.94625	02	43	05.91	+14	59	26.4	16.0	095
1987	UD5		1987	10	27.93446	02	38	37.12	+14	37	21.4	16.5	095
1987	UE5	*	1987	10	22.94625	02	43	25.02	+17	13	00.7	16.0	095
1987	UE5		1987	10	27.93446	02	38	43.89	+17	17	19.4	16.0	095
1987	UF5	*	1987	10	22.94625	02	45	12.88	+12	44	37.8	16.0	E 095
1987	UF5		1987	10	27.93446	02	40	43.60	+12	38	05.0	16.0	095
1987	UF5		1987	11	21.86556	02	18	34.00	+12	12	13.6	16.0	095
1987	UG5	*	1987	10	22.94625	02	46	22.63	+16	37	49.2	16.2	095
1987	UG5		1987	10	27.93446	02	41	43.35	+16	04	26.2	16.2	M 095
1987	UH5	*	1987	10	22.94625	02	46	33.61	+17	39	54.8	16.0	095
1987	UH5		1987	10	27.93446	02	41	57.70	+17	22	09.7	16.5	095
1987	UJ5	*	1987	10	22.94625	02	48	04.13	+15	42	37.9		095
1987	UK5	*	1987	10	22.94625	02	48	23.42	+15	44	38.7		095
1987	UL5	*	1987	10	22.94625	02	53	56.67	+14	49	04.6	16.5	E 095
1987	UM5	*	1987	10	22.94625	02	55	24.45	+20	22	16.4		E 095
1987	UN5	*	1987	10	22.94625	02	55	42.09	+14	54	50.0		E 095
1987	UO5	*	1987	10	22.94625	02	57	28.86	+16	31	27.5	15.5	E 095
1987	UO5		1987	10	27.93446	02	53	34.50	+15	43	08.7	15.8	E 095
1987	UP5	*	1987	10	25.83597	00	23	12.06	+24	12	06.0	16.5	095
1987	UQ5	*	1987	10	25.83597	00	28	13.62	+26	19	57.6	16.5	095
1987	UR5	*	1987	10	25.83597	00	29	29.98	+28	29	30.8	16.5	095
1987	US5	*	1987	10	25.83597	00	33	04.61	+26	17	54.5	16.5	M 095
1987	UT5	*	1987	10	25.83597	00	33	12.04	+26	08	16.8	16.0	095
1987	UU5	*	1987	10	25.83597	00	37	03.80	+29	09	26.5	16.5	095
1987	UV5	*	1987	10	25.83597	00	39	29.33	+23	54	12.6	16.5	095
1987	UW5	*	1987	10	25.83597	00	40	33.40	+28	41	51.6	16.0	M 095
1987	UX5	*	1987	10	25.83597	00	45	21.15	+28	25	44.0	16.5	095
1987	UY5	*	1987	10	25.83597	00	50	40.73	+28	08	08.5	16.5	M 095
1987	UZ5	*	1987	10	25.83597	00	55	05.23	+25	43	18.9	16.5	095
1987	UA6	*	1987	10	25.83597	00	59	27.92	+23	13	11.2		E 095
1987	UB6	*	1987	10	25.83597	01	01	11.72	+24	31	19.8	16.0	E 095
1987	UC6	*	1987	10	25.90818	01	21	47.01	+18	28	06.5	16.5	095
1987	UD6	*	1987	10	25.90818	01	24	16.46	+19	50	15.7	16.0	095
1987	UE6	*	1987	10	25.90818	01	24	58.35	+20	06	25.5	16.0	095

1987	UF6	*	1987	10	25.90818	01	28	16.72	+18	54	37.2	16.5	095
1987	UH6	*	1987	10	25.90818	01	29	38.14	+18	09	27.2	15.5	095
1987	UJ6	*	1987	10	25.90818	01	30	22.07	+17	20	48.3	16.5	095
1987	UK6	*	1987	10	25.90818	01	36	51.92	+21	36	00.7	16.0	095
1987	UL6	*	1987	10	25.90818	01	37	12.73	+25	39	20.5	16.0	095
1987	UM6	*	1987	10	25.90818	01	40	53.88	+22	16	10.6	16.5	095
1987	UN6	*	1987	10	27.93446	02	16	33.92	+14	19	37.4	15.5 E	095
1987	UO6	*	1987	10	27.93446	02	18	01.64	+14	15	06.0	16.5	095
1987	UP6	*	1987	10	27.93446	02	19	37.44	+13	29	45.8	15.8	095
1987	UQ6	*	1987	10	27.93446	02	19	37.49	+15	21	22.6	16.2	095
1987	UR6	*	1987	10	27.93446	02	27	08.40	+13	50	06.4	16.2	095
1987	US6	*	1987	10	27.93446	02	33	09.37	+17	16	06.4	16.0 M	095
1987	UT6	*	1987	10	27.93446	02	33	17.16	+13	47	45.3	16.0	095
1987	UU6	*	1987	10	27.93446	02	34	14.42	+15	38	38.3	16.0	095
1987	UV6	*	1987	10	27.93446	02	38	02.65	+13	58	08.4	16.0	095
1987	UW6	*	1987	10	27.93446	02	40	06.20	+19	39	42.0	16.3	095
1987	UX6	*	1987	10	27.93446	02	43	08.70	+15	22	44.7		095
1987	UY6	*	1987	10	27.93446	02	43	16.84	+14	23	12.5	16.2	095
1987	UZ6	*	1987	10	27.93446	02	43	22.83	+18	25	42.4		095
1987	UB7	*	1987	10	27.93446	02	48	11.30	+15	05	05.0	16.2	095
1987	UC7	*	1987	10	27.93446	02	50	33.08	+13	46	44.4	16.5 E	095
1987	VF		1987	09	25.05446	02	29	26.08	+12	19	24.2	16.5	095
1987	VQ		1987	10	22.94625	02	57	12.32	+15	25	18.0	E	095
1987	VQ		1987	10	27.93446	02	53	04.00	+15	01	01.7	N	095
1987	VQ		1987	11	21.86556	02	30	01.08	+12	50	31.6	E	095
1987	VR		1987	10	27.93446	02	52	54.98	+14	20	02.4	E	095
1987	WF		1987	10	27.93446	02	53	34.28	+16	20	10.7	E	095
1987	WF		1987	11	21.86556	02	25	38.52	+16	05	47.3		095
1987	WE1		1987	10	22.94625	02	23	55.35	+16	34	30.4		095
1987	WE1		1987	10	27.93446	02	18	14.78	+16	36	20.8		095
1987	WE1		1987	11	21.86556	01	51	55.50	+16	28	04.2	E	095
1987	WJ1		1987	10	27.93446	02	40	16.32	+16	59	30.4	16.0	095
1987	WJ1		1987	11	21.86556	02	19	10.19	+16	27	00.5	16.0	095
1987	WU2		1987	08	27.94465	22	46	17.64	+02	48	47.8	15.0V	095
1987	WU2		1987	09	02.90625	22	41	03.64	+02	59	47.8	15.5V	095
1987	WU2		1987	09	16.81252	22	29	09.80	+03	05	26.0	15.0V	095
1987	WU2		1987	09	20.81606	22	26	12.35	+03	03	18.3	15.5V	095
1987	WC5	*	1987	11	21.86556	01	56	48.53	+12	51	47.9	16.2	095
1987	WD5	*	1987	11	21.86556	02	01	04.90	+09	39	32.2	16.0 N	095
1987	WE5	*	1987	11	21.86556	02	02	49.41	+10	48	48.7	16.2 M	095
1987	WF5	*	1987	11	21.86556	02	11	15.20	+08	56	55.3	15.5 E	095
1987	WG5	*	1987	11	21.86556	02	17	04.93	+17	03	06.0	15.8	095
1987	WH5	*	1987	11	21.86556	02	18	05.29	+10	12	08.4	16.0	095
1987	WJ5	*	1987	11	21.86556	02	19	02.36	+13	18	24.0	16.0	095
1987	WL5	*	1987	11	21.86556	02	19	10.72	+13	15	38.2	16.2	095
1989	AX		1987	09	02.00164	00	04	26.44	-04	56	21.7		095
1989	AX		1987	09	22.90807	23	48	54.60	-06	47	33.0	16.0 E	095
1989	AG1		1987	09	23.05806	02	00	43.03	+25	56	13.1	15.5	095
1989	AG1		1987	09	25.97834	01	59	16.12	+25	56	09.5	15.5	095
1989	AG1		1987	10	25.90818	01	36	52.49	+24	14	17.5	16.0	095
1989	AK1		1987	09	22.98410	01	27	38.57	+23	23	17.6	16.0	095
1989	AK1		1987	09	25.89571	01	25	39.93	+23	22	33.6	16.0	095
1989	AK1		1987	09	26.05439	01	25	32.98	+23	22	26.8	16.0	095
1989	BJ		1987	09	03.04861	00	46	44.27	+09	30	19.0	16.5V E	095
1989	BJ		1987	09	17.96529	00	38	13.82	+08	48	24.0	15.7V	095
1989	BJ		1987	09	23.95528	00	33	47.10	+08	21	58.1	15.5V	095
1989	BJ		1987	10	23.82188	00	11	47.96	+05	40	54.3	16.0V	095
1989	BN		1987	08	27.02495	00	08	12.19	-06	03	37.0	15.5	095
1989	BN		1987	09	02.00164	00	04	12.53	-06	34	02.6	15.0	095

1989	BN	1987	09	22.90807	23	45	21.03	-08	22	29.5		15.5	095
3538	P-L	1987	08	26.87618	22	01	33.10	-05	10	29.4			095
3538	P-L	1987	09	01.85304	21	56	24.89	-05	16	30.5			095
3538	P-L	1987	09	22.76086	21	44	39.34	-05	42	51.7			095
6032	P-L	1987	09	25.05446	02	07	44.65	+16	50	29.4		16.0	E 095
3262	T-2	1987	08	26.95343	23	07	35.44	-13	13	20.1		15.0	095
3262	T-2	1987	09	01.93081	23	02	15.05	-13	35	04.4		15.0	E 095
3262	T-2	1987	09	22.83446	22	45	13.47	-14	08	13.8		15.0	095
3262	T-2	1987	09	25.82245	22	43	32.17	-14	05	50.4		15.0	095
1076	T-3	1987	08	27.94465	22	36	35.98	-01	27	39.2		16.0V	E 095
1076	T-3	1987	09	02.90625	22	30	34.16	-01	27	36.7		16.0V	E 095
1076	T-3	1987	09	16.81252	22	17	26.94	-01	39	58.0		16.0V	095
1076	T-3	1987	09	20.81606	22	14	22.22	-01	44	46.0		16.0V	E 095
3006	T-3	1987	09	25.05446	02	37	28.32	+13	05	47.0			095
3		1987	09	22.76086	21	35	51.48	-09	28	48.0			095
35		1987	10	25.90818	01	38	12.27	+17	05	17.6			E 095
39		1987	08	27.02495	00	07	37.35	-03	12	50.8			E 095
39		1987	09	02.00164	00	04	52.22	-04	05	58.4			095
39		1987	09	22.90807	23	51	20.12	-07	27	46.9			E 095
53		1987	08	28.94495	22	04	22.82	-12	55	11.4			095
53		1987	08	31.92402	22	01	50.89	-13	13	50.6			095
53		1987	09	24.83363	21	45	07.38	-15	15	38.0			095
74		1987	08	28.87286	21	47	09.44	-07	36	14.5			E 095
74		1987	09	22.76086	21	33	48.61	-09	55	56.2			095
74		1987	09	27.75398	21	33	00.80	-10	16	43.3			095
82		1987	08	26.95343	22	51	20.85	-10	32	38.3			E 095
82		1987	09	22.83446	22	30	03.97	-12	21	58.8			E 095
99		1987	10	22.94625	02	46	45.70	+15	17	23.1			095
99		1987	10	27.93446	02	41	59.80	+15	12	43.2			095
99		1987	11	21.86556	02	18	10.46	+14	43	18.0			095
151		1987	10	15.72990	22	24	04.54	-17	26	57.3			E 095
167		1987	08	26.95343	22	54	54.13	-06	27	59.4			E 095
167		1987	09	22.83446	22	35	01.94	-08	50	35.4			E 095
167		1987	09	25.82245	22	33	14.19	-09	03	35.7			E 095
167		1987	10	15.72990	22	25	50.91	-10	01	33.6			E 095
175		1987	08	27.02495	23	53	05.20	-03	56	20.6			095
175		1987	09	02.00164	23	49	33.18	-04	13	47.9			095
190		1987	08	26.87618	22	22	14.67	-06	57	19.5			E 095
190		1987	09	01.85304	22	18	44.09	-07	23	11.1			095
190		1987	09	25.75094	22	06	19.77	-09	01	15.8			E 095
212		1987	08	26.87618	22	14	04.61	-08	42	37.0			E 095
212		1987	09	01.85304	22	09	22.19	-09	01	46.9			095
212		1987	09	22.76086	21	55	16.34	-09	59	48.4			095
212		1987	09	25.75094	21	53	48.08	-10	05	49.0			095
212		1987	09	27.75398	21	52	54.77	-10	09	22.9			095
214		1987	08	28.94495	22	06	10.52	-12	46	51.6			095
214		1987	08	31.92402	22	03	31.26	-12	57	06.0			095
214		1987	09	24.83363	21	46	33.40	-13	52	13.8			095
215		1987	08	28.94495	21	48	17.22	-15	40	02.3			E 095
215		1987	09	24.83363	21	31	51.12	-16	39	21.9			E 095
217		1987	08	26.95343	22	53	39.05	-05	06	09.8			E 095
217		1987	09	22.83446	22	40	26.91	-10	17	48.5			095
217		1987	09	25.82245	22	39	33.33	-10	45	40.3		16.5	095
217		1987	10	15.72990	22	39	21.21	-12	49	44.3			095
224		1987	10	22.94625	02	16	59.75	+20	16	22.0			E 095
224		1987	10	27.93446	02	12	09.94	+20	02	00.2			E 095
224		1987	11	21.86556	01	50	26.22	+18	29	05.8			E 095
257		1987	08	27.02495	23	36	24.11	-07	01	28.5			095
257		1987	09	22.90807	23	16	28.53	-08	49	01.9			E 095

266	1987	11	21.86556	02	13	53.70	+17	30	53.8		095
291	1987	08	26.95343	22	59	28.53	-06	19	57.0		095
291	1987	09	22.83446	22	34	45.38	-09	13	59.5	E	095
291	1987	10	15.72990	22	23	14.78	-10	37	33.4	E	095
305	1987	09	25.05446	02	37	44.22	+15	25	33.6		095
305	1987	10	22.94625	02	22	37.38	+13	27	24.5		095
305	1987	10	27.93446	02	18	46.47	+12	59	32.2		095
305	1987	11	21.86556	02	00	36.92	+10	45	24.0		095
316	1987	08	28.94495	22	15	54.48	-12	31	19.5		095
316	1987	08	31.92402	22	13	41.84	-12	45	09.4		095
316	1987	09	24.83363	21	58	25.54	-14	15	26.4		095
384	1987	08	27.02495	00	01	33.32	-08	08	26.1		095
384	1987	09	02.00164	23	57	32.23	-08	36	15.9		095
384	1987	09	03.93114	23	56	06.03	-08	45	29.3		095
384	1987	09	22.90807	23	39	47.40	-10	11	49.0		095
385	1987	08	26.95343	22	53	29.91	-09	35	38.2	E	095
385	1987	09	22.83446	22	30	20.84	-10	16	34.5	E	095
392	1987	09	25.05446	02	38	20.72	+16	33	44.9		095
392	1987	10	22.94625	02	24	32.71	+12	18	39.8	E	095
392	1987	10	27.93446	02	20	52.71	+11	24	54.0	E	095
417	1987	09	25.05446	02	43	34.92	+14	01	02.6	E	095
417	1987	10	22.94625	02	26	48.80	+11	43	54.0	E	095
417	1987	11	21.86556	02	03	49.20	+08	59	41.6	E	095
441	1987	09	23.05806	02	17	55.45	+23	01	42.0		095
441	1987	09	25.97834	02	16	46.77	+22	57	34.7	E	095
441	1987	10	25.90818	01	55	54.44	+20	46	23.8	E	095
454	1987	09	25.05446	02	36	03.27	+14	41	23.2		095
454	1987	11	21.86556	01	49	06.07	+12	27	44.4	E	095
476	1987	08	26.78609	20	00	24.13	-12	39	21.5	E	095
517	1987	10	22.94625	02	51	41.27	+20	53	42.2	E	095
517	1987	10	27.93446	02	47	59.94	+20	36	03.9	E	095
517	1987	11	21.86556	02	28	37.53	+18	40	03.8	E	095
550	1987	09	23.05806	02	10	14.83	+28	52	53.1		095
550	1987	09	25.97834	02	08	43.95	+28	52	06.1		095
555	1987	08	27.02495	23	53	22.85	-03	15	13.2	E	095
555	1987	09	02.00164	23	49	53.01	-03	42	40.8		095
578	1987	10	22.94625	02	57	13.14	+18	47	27.2	E	095
578	1987	10	27.93446	02	52	36.20	+18	38	32.6		095
578	1987	11	21.86556	02	29	12.09	+17	36	43.6	E	095
591	1987	09	22.98410	01	34	56.23	+23	33	40.3		095
591	1987	09	26.05439	01	32	35.26	+23	34	28.3		095
592	1987	08	31.85174	20	59	47.36	-10	11	49.9	E	095
592	1987	09	24.76287	20	50	44.48	-12	24	08.7	E	095
643	1987	09	23.05806	02	05	28.24	+26	27	32.5		095
643	1987	09	25.97834	02	04	09.51	+26	22	38.3		095
643	1987	10	25.90818	01	44	35.52	+24	13	08.7		095
647	1987	09	25.75094	21	38	38.42	-01	40	05.7	E	095
682	1987	08	28.79914	20	21	48.26	-03	22	39.4		095
708	1987	08	26.95343	23	06	44.06	-07	09	37.2		095
708	1987	09	01.93081	23	01	41.60	-07	34	34.5		095
708	1987	09	22.83446	22	44	14.77	-08	55	31.9		095
708	1987	09	25.82245	22	42	05.22	-09	04	38.6		095
708	1987	10	15.72990	22	32	05.76	-09	39	10.5		095
739	1987	08	28.94495	21	59	42.18	-19	19	46.3	E	095
764	1987	09	23.05806	01	55	54.06	+24	38	19.2		095
764	1987	09	25.97834	01	54	32.93	+24	34	08.4		095
764	1987	10	25.90818	01	33	59.71	+22	19	37.8		095
788	1987	08	26.87618	22	24	08.91	-01	18	05.5		095
788	1987	09	01.85304	22	20	05.74	-02	02	57.7		095

808	1987	08	28.87286	21	24	45.52	-10	48	59.8	E 095
808	1987	08	31.85174	21	22	32.81	-11	04	34.5	E 095
823	1987	09	25.05446	02	20	09.16	+19	01	38.6	E 095
823	1987	10	25.90818	01	55	41.43	+16	41	18.8	E 095
853	1987	08	28.87286	21	46	02.30	-04	09	32.2	E 095
853	1987	09	22.76086	21	31	36.69	-07	56	22.0	095
853	1987	09	27.75398	21	30	37.51	-08	32	54.0	095
884	1987	08	28.87286	21	31	42.70	-09	50	18.4	095
884	1987	08	31.85174	21	30	12.20	-09	55	21.6	E 095
884	1987	09	24.76287	21	20	48.94	-10	29	06.4	E 095
902	1987	10	25.90818	01	19	59.59	+16	15	49.9	E 095
906	1987	10	22.94625	02	58	14.26	+17	06	35.8	E 095
906	1987	10	27.93446	02	53	39.46	+17	08	22.5	E 095
906	1987	11	21.86556	02	29	49.22	+17	03	29.8	E 095
953	1987	10	15.72990	22	47	22.44	-17	15	55.5	E 095
967	1987	08	27.02495	00	12	17.63	-10	32	53.0	E 095
967	1987	09	02.00164	00	08	38.70	-11	13	41.2	095
967	1987	09	03.93114	00	07	15.65	-11	26	49.8	095
967	1987	09	22.90807	23	50	29.10	-13	15	53.8	E 095
990	1987	08	27.02495	23	55	48.27	-02	49	04.0	E 095
990	1987	09	02.00164	23	51	28.24	-02	40	50.8	E 095
1025	1987	09	24.83363	21	49	31.05	-12	08	40.2	095
1058	1987	08	28.87286	21	30	14.16	-06	25	17.3	095
1058	1987	08	31.85174	21	28	17.72	-06	43	44.7	E 095
1058	1987	09	24.76287	21	22	28.61	-08	49	41.0	E 095
1071	1987	08	26.95343	23	22	07.44	-12	37	34.2	095
1071	1987	09	01.93081	23	17	27.57	-13	07	13.1	095
1071	1987	09	22.83446	23	00	05.62	-14	31	56.5	095
1071	1987	09	25.82245	22	57	48.53	-14	39	47.1	095
1071	1987	10	15.72990	22	46	35.16	-14	55	16.9	095
1078	1987	09	02.00164	00	11	41.53	-11	28	15.8	E 095
1078	1987	09	03.93114	00	10	14.02	-11	43	08.4	095
1078	1987	09	22.90807	23	52	59.39	-13	59	52.2	E 095
1128	1987	10	22.94625	02	33	46.47	+14	27	20.0	095
1128	1987	10	27.93446	02	29	28.85	+14	08	12.3	095
1128	1987	11	21.86556	02	08	59.22	+12	34	22.9	095
1173	1987	08	26.87618	22	05	30.64	-04	37	31.8	095
1173	1987	09	01.85304	22	02	24.59	-04	51	43.2	095
1173	1987	09	22.76086	21	53	06.84	-05	41	41.4	095
1173	1987	09	25.75094	21	52	05.99	-05	48	10.4	095
1191	1987	08	28.94495	22	20	21.30	-19	19	02.4	E 095
1191	1987	08	31.92402	22	18	08.10	-19	45	51.8	E 095
1217	1987	08	26.95343	23	00	12.59	-08	09	52.1	095
1217	1987	09	22.83446	22	37	29.50	-11	29	18.5	095
1217	1987	09	25.82245	22	35	31.99	-11	45	45.4	E 095
1244	1987	09	23.05806	02	00	43.74	+25	45	46.6	095
1244	1987	09	25.97834	01	58	56.44	+25	44	36.0	095
1244	1987	10	25.90818	01	31	49.65	+23	39	19.8	095
1256	1987	09	25.05446	02	16	03.82	+16	31	18.8	095
1268	1987	08	28.94495	22	23	09.10	-12	02	17.4	095
1268	1987	08	31.92402	22	21	18.03	-12	10	47.8	095
1268	1987	09	24.83363	22	07	59.21	-13	06	08.4	E 095
1301	1987	08	26.95343	23	01	19.69	-05	27	03.3	E 095
1301	1987	09	01.93081	22	56	50.14	-06	52	13.4	N 095
1301	1987	09	22.83446	22	40	42.13	-11	51	52.8	095
1301	1987	09	25.82245	22	38	38.27	-12	31	41.5	095
1307	1987	08	28.87286	21	14	35.94	-08	48	53.5	E 095
1307	1987	09	24.76287	20	59	47.07	-10	47	57.9	095
1409	1987	08	31.85174	21	00	30.43	-10	46	22.0	E 095

1410		1987	10	15.72990	22	52	40.55	-08	13	31.2	095
1416		1987	08	26.95343	23	07	50.53	-09	11	24.6	095
1416		1987	09	01.93081	23	02	49.13	-09	23	19.2	095
1416		1987	09	22.83446	22	45	04.15	-09	55	46.6	095
1416		1987	09	25.82245	22	42	49.57	-09	57	57.8	095
1416		1987	10	15.72990	22	32	09.75	-09	48	23.5	095
1418		1987	10	25.90818	01	21	17.70	+17	02	39.6	E 095
1421		1987	09	03.93114	00	18	35.66	-09	17	59.0	095
1465		1987	09	22.83446	22	33	52.42	-08	03	31.5	N 095
1468		1987	09	25.89571	00	59	41.52	+28	35	45.2	095
1468		1987	09	26.05439	00	59	31.81	+28	36	15.0	E 095
1471		1987	09	01.85304	22	25	26.06	-03	19	20.2	E 095
1471		1987	09	25.75094	22	04	28.30	-03	30	51.7	E 095
1477		1987	09	25.89571	00	58	21.36	+29	16	36.6	E 095
1477		1987	10	25.83597	00	29	53.80	+29	24	03.2	095
1481		1987	08	28.94495	21	53	58.74	-15	13	11.6	E 095
1481		1987	08	31.92402	21	51	38.74	-15	21	26.4	E 095
1481		1987	09	24.83363	21	37	25.06	-15	58	08.8	095
1497		1987	08	26.95343	23	00	07.62	-05	14	06.5	E 095
1497		1987	09	01.93081	22	55	30.20	-05	40	19.5	N 095
1497		1987	09	22.83446	22	39	46.59	-07	11	12.1	E 095
1497		1987	09	25.82245	22	37	54.50	-07	22	07.7	E 095
1520		1987	09	22.98410	01	48	22.96	+29	32	01.1	E 095
1520		1987	09	23.05806	01	48	20.74	+29	31	53.8	E 095
1520		1987	09	25.97834	01	46	52.62	+29	26	05.4	E 095
1545		1987	09	25.05446	02	20	49.32	+12	01	12.6	095
1547		1987	08	26.78609	20	15	03.76	-13	22	03.5	E 095
1553		1987	08	26.95343	23	10	01.92	-09	18	23.5	095
1553		1987	09	01.93081	23	05	37.51	-09	50	38.9	095
1553		1987	09	22.83446	22	49	57.78	-11	33	42.9	095
1553		1987	09	25.82245	22	47	57.42	-11	45	32.4	095
1585		1987	08	28.94495	22	06	12.22	-12	45	33.0	095
1585		1987	08	31.92402	22	03	54.72	-13	32	28.6	095
1585		1987	09	24.83363	21	48	53.28	-19	11	50.2	095
1616		1987	10	22.94625	02	34	55.18	+12	22	47.2	E 095
1616		1987	10	27.93446	02	30	30.21	+12	14	59.1	E 095
1616		1987	11	21.86556	02	09	04.46	+11	41	51.6	095
1623		1987	08	26.95343	22	53	47.85	-09	46	20.5	E 095
1623		1987	09	01.93081	22	49	24.78	-10	17	03.7	E 095
1623		1987	09	22.83446	22	34	22.89	-11	53	51.7	E 095
1624		1987	08	26.95343	23	07	19.25	-07	03	22.9	095
1624		1987	09	01.93081	23	03	14.66	-07	31	34.8	095
1624		1987	09	22.83446	22	48	52.48	-09	06	28.5	095
1624		1987	09	25.82245	22	47	01.57	-09	18	08.4	095
1625		1987	08	26.87618	22	14	56.11	-06	44	54.1	095
1625		1987	09	01.85304	22	09	36.92	-06	48	54.5	095
1625		1987	09	22.76086	21	54	06.84	-07	00	14.4	095
1625		1987	09	25.75094	21	52	30.44	-07	00	44.4	095
1625		1987	09	27.75398	21	51	32.00	-07	00	44.7	095
1630		1987	10	27.93446	02	43	21.00	+14	05	24.4	095
1630		1987	11	21.86556	02	22	42.82	+12	58	42.0	095
1644		1987	08	26.87618	22	01	10.99	-01	52	55.4	095
1644		1987	09	01.85304	21	55	51.25	-02	17	40.1	095
1644		1987	09	22.76086	21	40	29.63	-03	50	44.5	095
1644		1987	09	25.75094	21	38	58.49	-04	03	10.8	095
1644		1987	09	27.75398	21	38	05.01	-04	11	14.7	095
1698		1987	08	26.95343	22	55	59.35	-08	31	59.1	E 095
1698		1987	09	01.93081	22	51	42.55	-08	57	05.0	E 095
1698		1987	09	22.83446	22	37	08.21	-10	17	35.7	095

1698	1987	09	25.82245	22	35	19.46	-10	26	55.1		E	095
1706	1987	10	22.94625	02	27	42.97	+17	42	59.1			095
1706	1987	10	27.93446	02	22	13.20	+17	14	56.2			095
1706	1987	11	21.86556	01	57	23.56	+14	45	54.9			095
1732	1987	08	26.95343	23	24	08.60	-06	19	05.2			095
1732	1987	09	01.93081	23	20	30.68	-07	10	59.2			095
1732	1987	09	22.83446	23	06	37.87	-10	10	34.4		E	095
1732	1987	09	25.82245	23	04	48.68	-10	33	13.0			095
1732	1987	10	15.72990	22	56	23.94	-12	25	30.0		E	095
1744	1987	10	22.94625	02	38	40.69	+16	47	12.5			095
1744	1987	11	21.86556	02	06	57.98	+15	07	03.0			095
1752	1987	08	28.87286	21	46	57.37	-04	56	44.6		E	095
1752	1987	09	22.76086	21	35	50.87	-07	01	52.7			095
1752	1987	09	25.82245	21	35	53.07	-07	13	14.1			095
1757	1987	09	01.93081	23	16	23.36	-10	30	40.1		M	095
1757	1987	09	25.82245	22	54	10.78	-12	15	40.0			095
1770	1987	08	31.92402	22	15	38.59	-18	02	10.0			095
1770	1987	09	24.83363	21	56	28.93	-18	33	19.0			095
1799	1987	08	26.95343	22	52	58.49	-07	42	38.5		E	095
1799	1987	09	22.83446	22	35	50.42	-11	35	29.1		E	095
1799	1987	09	25.82245	22	34	20.67	-11	56	56.8		E	095
1799	1987	10	15.72990	22	29	01.58	-13	39	07.3			095
1808	1987	08	28.94495	21	56	34.29	-14	57	26.9			095
1808	1987	08	31.92402	21	53	59.48	-15	08	47.4			095
1808	1987	09	24.83363	21	37	46.32	-16	06	47.0			095
1891	1987	09	25.89571	01	01	44.31	+22	31	31.8			095
1898	1987	08	26.95343	23	08	00.04	-05	30	43.9		E	095
1898	1987	09	01.93081	23	03	47.29	-05	59	33.4	16.0		095
1898	1987	09	22.83446	22	48	38.11	-07	41	32.7		E	095
1898	1987	09	25.82245	22	46	43.88	-07	54	17.3			095
1898	1987	10	15.72990	22	38	14.36	-08	52	18.6		E	095
1908	1987	10	22.94625	02	28	28.58	+17	30	24.1			095
1908	1987	10	27.93446	02	24	08.00	+17	17	00.7			095
1908	1987	11	21.86556	02	03	31.66	+15	59	39.0			095
1909	1987	08	26.87618	21	57	36.03	-09	16	03.8		E	095
1909	1987	08	28.94495	21	55	41.96	-09	27	25.8		E	095
1909	1987	09	22.76086	21	38	47.03	-11	18	31.1	15.5	E	095
1909	1987	09	24.83363	21	38	02.18	-11	24	36.6		E	095
1910	1987	09	27.75398	21	32	53.66	-04	00	45.6			095
1958	1987	09	25.97834	01	43	56.86	+20	42	23.3		E	095
1958	1987	10	25.90818	01	18	29.29	+19	58	54.2		E	095
1969	1987	09	25.05446	02	37	57.48	+15	14	52.1			095
1969	1987	10	27.93446	02	17	43.93	+13	12	43.0			095
2006	1987	08	31.92402	22	30	53.77	-13	50	11.7		E	095
2006	1987	09	24.83363	22	10	07.53	-14	01	12.1		E	095
2067	1987	08	28.94495	21	51	46.18	-12	46	39.0		E	095
2094	1987	08	28.87286	21	28	28.91	-08	30	58.8			095
2094	1987	08	31.85174	21	25	44.80	-08	42	22.9			095
2094	1987	09	24.76287	21	11	13.14	-09	57	09.1			095
2116	1987	08	26.78609	20	08	15.80	-11	17	18.6			095
2137	1987	08	26.87618	22	15	38.56	-06	38	54.9			095
2137	1987	09	01.85304	22	10	48.86	-06	49	23.1		M	095
2137	1987	09	22.76086	21	56	04.87	-07	22	59.4			095
2137	1987	09	25.75094	21	54	28.07	-07	26	31.5			095
2137	1987	09	27.75398	21	53	28.38	-07	28	34.8			095
2169	1987	10	22.94625	02	28	20.37	+13	08	09.1			095
2169	1987	10	27.93446	02	24	02.52	+12	49	06.7			095
2169	1987	11	21.86556	02	03	46.96	+11	20	38.3			095
2174	1987	08	27.02495	00	02	03.39	-04	26	54.5			095

2174	1987	09	02.00164	23	58	20.05	-04	09	03.4		095
2187	1987	08	28.94495	22	05	36.10	-17	44	55.1		095
2196	1987	08	31.85174	21	00	22.02	-03	15	31.8		095
2196	1987	09	24.76287	20	51	45.96	-05	08	19.4		095
2209	1987	08	28.94495	22	15	23.26	-10	59	02.0		095
2209	1987	08	31.92402	22	13	02.18	-11	15	02.0		095
2209	1987	09	24.83363	21	57	22.66	-13	01	27.2		095
2213	1987	08	28.94495	22	15	47.26	-16	54	55.4		095
2213	1987	08	31.92402	22	13	49.58	-17	23	10.7		095
2219	1987	09	03.93114	23	46	00.76	-14	18	04.2	E	095
2219	1987	09	22.90807	23	31	46.71	-15	40	56.3	E	095
2241	1987	08	26.78609	20	29	22.75	-03	58	30.9	E	095
2241	1987	08	28.79914	20	28	34.13	-04	02	03.3	E	095
2247	1987	09	25.05446	02	06	37.33	+15	16	01.3	E	095
2280	1987	08	26.95343	23	22	01.01	-10	37	25.6		095
2280	1987	09	01.93081	23	17	25.43	-11	23	40.4		095
2280	1987	09	22.83446	22	59	40.91	-13	41	19.4		095
2280	1987	09	25.82245	22	57	30.43	-13	54	04.5		095
2280	1987	10	15.72990	22	49	39.30	-14	16	46.6		095
2283	1987	08	26.87618	22	12	46.12	-02	38	01.0		095
2283	1987	09	01.85304	22	07	18.89	-03	25	23.9		095
2283	1987	09	22.76086	21	51	59.27	-06	08	32.2		095
2283	1987	09	25.75094	21	50	34.41	-06	29	01.4		095
2283	1987	09	27.75398	21	49	45.78	-06	42	01.5		095
2309	1987	08	26.95343	22	49	52.29	-07	42	27.3	N	095
2309	1987	09	22.83446	22	31	46.97	-11	05	08.4	E	095
2309	1987	09	25.82245	22	30	08.24	-11	24	14.4	E	095
2312	1987	08	28.94495	22	21	39.78	-17	49	11.0		095
2312	1987	08	31.92402	22	19	44.26	-17	59	16.4		095
2312	1987	09	24.83363	22	06	05.82	-18	53	59.2		095
2318	1987	09	22.90807	23	29	16.99	-06	12	57.0	E	095
2354	1987	08	28.87286	21	45	31.02	-10	52	44.6	E	095
2384	1987	09	23.05806	02	19	14.95	+20	28	55.0	E	095
2384	1987	09	25.97834	02	17	25.66	+20	35	29.3	E	095
2384	1987	10	25.90818	01	50	01.89	+20	37	52.8		095
2403	1987	08	26.87618	22	08	27.76	-07	10	27.0		095
2403	1987	09	01.85304	22	03	16.33	-07	31	32.1		095
2403	1987	09	25.75094	21	48	27.29	-08	42	12.7		095
2403	1987	09	27.75398	21	47	52.68	-08	45	50.4		095
2418	1987	09	22.90807	23	16	52.42	-06	03	07.2	E	095
2442	1987	08	28.87286	21	30	29.62	-08	01	15.3		095
2442	1987	08	31.85174	21	28	20.51	-08	22	54.1	E	095
2459	1987	10	22.94625	02	44	28.51	+15	21	17.8		095
2459	1987	10	27.93446	02	40	48.19	+14	47	00.2		095
2459	1987	11	21.86556	02	22	22.75	+11	54	33.2		095
2460	1987	11	21.86556	02	29	33.82	+09	13	06.3	E	095
2475	1987	08	26.78609	20	22	10.38	-06	09	30.4		095
2489	1987	10	22.94625	02	40	50.54	+14	47	54.6		095
2489	1987	10	27.93446	02	36	51.16	+14	31	26.4		095
2489	1987	11	21.86556	02	17	29.05	+13	09	23.7	M	095
2490	1987	10	22.94625	02	39	11.18	+13	52	42.0		095
2490	1987	10	27.93446	02	35	23.25	+12	56	40.0		095
2494	1987	08	28.87286	21	24	17.42	-02	51	58.0		095
2494	1987	08	31.85174	21	22	07.00	-02	58	44.2		095
2494	1987	09	24.76287	21	09	44.19	-03	57	36.1		095
2504	1987	09	25.05446	02	12	53.52	+14	57	17.6		095
2520	1987	09	02.00164	23	54	36.20	-03	25	58.8	E	095
2524	1987	09	25.05446	02	16	42.62	+14	05	51.7		095
2602	1987	08	26.95343	23	03	54.69	-06	20	23.4		095

2602	1987	09	01.93081	22	58	48.30	-07	07	41.3		095
2602	1987	09	22.83446	22	41	29.60	-09	43	11.0		095
2602	1987	09	25.82245	22	39	27.42	-10	01	32.3		095
2645	1987	08	26.95343	23	03	33.41	-11	02	19.2		095
2645	1987	09	01.93081	22	56	51.54	-11	02	41.2		095
2645	1987	09	22.83446	22	33	42.58	-10	44	41.3	E	095
2645	1987	09	25.82245	22	30	54.56	-10	38	35.8	E	095
2712	1987	09	24.83363	21	50	27.18	-12	51	13.2	M	095
2727	1987	09	01.85304	22	27	17.88	-05	32	09.2	E	095
2760	1987	08	31.92402	22	23	31.82	-16	23	41.0		095
2760	1987	09	24.83363	22	09	19.21	-16	47	38.4	E	095
2767	1987	09	03.93114	00	15	24.06	-15	53	28.4		095
2811	1987	10	22.94625	02	34	48.64	+16	41	01.8		095
2811	1987	10	27.93446	02	30	37.10	+16	22	31.0		095
2811	1987	11	21.86556	02	10	17.20	+14	42	15.8		095
2828	1987	09	22.90807	23	17	21.47	-10	52	36.3	E	095
2863	1987	09	25.05446	02	27	41.71	+11	31	48.3	E	095
2896	1987	08	26.78609	20	17	35.81	-12	52	49.9	N	095
2939	1987	08	26.95343	22	57	50.62	-08	01	11.9		095
2939	1987	09	01.93081	22	52	05.43	-08	26	23.8	E	095
2939	1987	09	22.83446	22	33	18.06	-09	42	17.2	E	095
2939	1987	09	25.82245	22	31	08.07	-09	49	46.2	E	095
2944	1987	09	25.05446	02	25	22.43	+11	49	26.0		095
2945	1987	08	28.94495	21	51	41.16	-16	55	45.4	E	095
2974	1987	10	22.94625	02	42	38.63	+15	26	02.4		095
2974	1987	10	27.93446	02	38	08.62	+14	42	26.2		095
2974	1987	11	21.86556	02	16	51.93	+11	14	58.6		095
2993	1987	09	22.98410	01	03	53.78	+27	41	43.1	E	095
2993	1987	09	25.89571	01	01	27.33	+27	54	23.1		095
2993	1987	09	26.05439	01	01	18.76	+27	54	57.4	E	095
2993	1987	10	25.83597	00	32	50.79	+27	20	51.3		095
3001	1987	08	26.78609	20	19	40.18	-09	18	15.2		095
3027	1987	09	25.05446	02	07	56.10	+12	37	20.0	E	095
3061	1987	08	26.95343	23	14	21.20	-10	08	15.1		095
3061	1987	09	01.93081	23	10	15.99	-10	40	38.3		095
3061	1987	09	22.83446	22	55	29.94	-12	18	07.8		095
3061	1987	09	25.82245	22	53	41.03	-12	27	53.6		095
3061	1987	10	15.72990	22	46	11.11	-12	54	32.8		095
3095	1987	10	22.94625	02	35	39.32	+19	31	26.4		095
3095	1987	10	27.93446	02	32	02.20	+19	14	58.6		095
3095	1987	11	21.86556	02	14	19.20	+17	37	42.2		095
3101	1987	08	28.87286	21	25	48.05	-07	48	14.1	M	095
3193	1987	08	26.95343	22	59	37.79	-12	28	46.3		095
3193	1987	09	22.83446	22	32	50.18	-13	49	52.5	E	095
3221	1987	08	28.94495	22	14	52.50	-18	56	13.0	E	095
3221	1987	08	31.92402	22	12	14.07	-19	10	25.4	E	095
3227	1987	08	26.95343	22	59	56.89	-07	03	13.3		095
3227	1987	09	22.83446	22	37	15.69	-09	58	27.3		095
3252	1987	09	01.85304	22	21	49.03	-06	44	57.3	E	095
3260	1987	08	26.78609	20	30	27.40	-10	45	20.7		095
3278	1987	09	03.93114	00	20	00.79	-12	39	30.9	E	095
3294	1987	10	22.94625	02	25	17.78	+19	59	55.6		095
3294	1987	10	27.93446	02	20	32.30	+19	49	27.8		095
3321	1987	08	26.95343	22	53	16.63	-05	48	55.7	E	095
3321	1987	09	25.82245	22	34	31.84	-10	33	04.4	E	095
3321	1987	10	15.72990	22	31	42.54	-12	20	12.5		095
3323	1987	09	01.93081	23	15	05.34	-05	41	58.9	E	095
3350	1987	08	28.94495	21	57	21.16	-15	33	23.2		095
3371	1987	09	23.05806	02	19	36.40	+28	26	38.3		095

3381	1987	08	26.87618	21	59	42.07	-04	07	53.5			095
3381	1987	09	01.85304	21	54	19.18	-04	33	53.4			095
3381	1987	09	22.76086	21	40	06.94	-06	08	07.8			095
3381	1987	09	25.75094	21	39	02.51	-06	19	37.1			095
3393	1987	08	28.94495	21	55	53.04	-10	45	29.6		E	095
3451	1987	08	28.79914	20	11	17.86	+03	27	27.0			095
3469	1987	10	22.94625	02	44	34.74	+16	00	17.6			095
3469	1987	10	27.93446	02	40	48.70	+15	29	56.0			095
3469	1987	11	21.86556	02	22	12.12	+12	56	31.4			095
3494	1987	10	22.94625	02	53	26.37	+19	19	07.8		E	095
3494	1987	10	27.93446	02	48	43.14	+18	45	25.0		E	095
3494	1987	11	21.86556	02	25	13.60	+15	40	31.5			095
3507	1987	08	27.02495	23	50	23.87	-06	07	10.4			095
3507	1987	09	02.00164	23	46	35.96	-06	36	18.0			095
3507	1987	09	22.90807	23	31	25.58	-08	17	12.8	15.5		095
3615	1987	08	28.94495	21	57	45.26	-13	12	38.6			095
3615	1987	08	31.92402	21	55	36.90	-13	25	32.4			095
3615	1987	09	24.83363	21	42	17.08	-14	43	48.5			095
3689	1987	08	31.85174	21	23	55.96	-02	41	51.0		E	095
3693	1987	08	28.79914	20	09	12.31	-04	01	32.6		E	095
3705	1987	09	25.05446	02	36	57.17	+13	36	05.0			095
3705	1987	10	22.94625	02	21	51.66	+12	02	43.0		E	095
3705	1987	10	27.93446	02	17	59.01	+11	41	03.3		E	095
3705	1987	11	21.86556	02	00	27.54	+10	07	49.8		E	095
3721	1987	09	22.98410	01	17	46.83	+20	27	05.7		E	095
3730	1987	09	23.05806	02	08	27.19	+24	22	15.3			095
3730	1987	09	25.97834	02	07	01.99	+24	26	34.5			095
3730	1987	10	25.90818	01	42	50.54	+23	22	50.3			095
3735	1987	08	26.87618	21	59	28.09	-08	17	51.6		E	095
3741	1987	08	28.87286	21	28	33.48	-07	48	36.8			095
3741	1987	08	31.85174	21	26	38.34	-08	10	11.6			095
3745	1987	10	25.90818	01	25	57.82	+19	21	13.8			095
3746	1987	10	22.94625	02	43	51.26	+16	16	25.9			095
3746	1987	10	27.93446	02	39	44.71	+15	59	40.2			095
3746	1987	11	21.86556	02	19	57.31	+14	32	32.3			095
3766	1987	09	25.05446	02	41	30.70	+13	37	54.8		E	095
3766	1987	10	22.94625	02	25	55.77	+12	12	06.2		E	095
3766	1987	10	27.93446	02	22	07.76	+11	52	25.0		E	095
3766	1987	11	21.86556	02	03	58.72	+10	22	13.9		E	095
3773	1987	10	22.94625	02	43	44.75	+14	29	12.7			095
3773	1987	10	27.93446	02	38	39.57	+14	10	59.4			095
3773	1987	11	21.86556	02	14	56.04	+12	46	58.8			095
3775	1987	09	25.05446	02	27	10.18	+12	39	00.9			095
3805	1987	09	01.85304	22	18	26.40	-00	44	24.0		E	095
3898	1987	10	22.94625	02	47	53.92	+15	33	46.4			095
3898	1987	10	27.93446	02	44	06.82	+15	15	11.1			095
3898	1987	11	21.86556	02	24	52.09	+13	39	01.8			095
3935	1987	08	31.85174	20	59	21.81	-10	48	12.6		E	095
3999	1987	08	27.94465	23	07	36.86	-02	32	30.1	16.5V	E	095
3999	1987	09	02.90625	23	02	22.99	-03	00	07.2	16.0V		095
3999	1987	09	16.81252	22	49	54.28	-04	09	52.5	16.0V		095
4029	1987	09	02.97917	00	31	36.46	+08	29	57.8	17.0V		095
4029	1987	09	17.88890	00	20	55.96	+07	08	06.2	17.0V		095
4029	1987	09	23.95528	00	15	53.92	+06	27	00.4	16.5V	N	095
4029	1987	09	26.89957	00	13	24.71	+06	05	57.2	16.5V		095
4046	1987	08	27.94465	23	05	27.76	+03	56	23.8	15.5V		095
4046	1987	09	02.90625	23	00	56.14	+03	16	54.2	15.0V		095
4046	1987	09	16.81252	22	50	13.92	+01	29	34.0	16.0V		095
4046	1987	09	17.82776	22	49	29.58	+01	21	20.2	15.0V		095

4046		1987	09	20.81606	22	47	23.63	+00	56	58.4	15.5V 095
4046		1987	09	23.81219	22	45	24.52	+00	32	44.2	15.0V 095
4051		1987	09	03.04861	00	57	41.24	+10	36	02.7	16.5V 095
4051		1987	09	17.96529	00	49	48.67	+10	06	32.9	16.5V 095
4051		1987	09	23.95528	00	45	28.69	+09	44	39.0	15.0V 095
4051		1987	10	23.82188	00	22	33.75	+07	15	04.1	15.8V 095
4071		1987	09	22.98410	01	21	55.64	+25	37	47.6	095
4071		1987	09	25.89571	01	20	13.96	+25	33	25.3	095
4071		1987	09	26.05439	01	20	07.78	+25	33	06.7	095
4076		1987	09	18.91389	01	33	10.14	+10	45	37.6	16.0V E 095
4076		1987	09	18.98685	01	33	07.46	+10	45	30.9	16.0V E 095
4076		1987	09	20.96236	01	32	02.14	+10	40	30.5	16.0V E 095
4076		1987	10	02.96355	01	23	53.54	+10	00	48.5	16.0V 095
4087		1987	09	25.05446	02	08	59.92	+12	06	19.0	095
4094		1987	08	26.87618	21	59	12.54	-08	00	23.3	095
4094		1987	09	01.85304	21	55	05.82	-08	21	10.5	095
4094		1987	09	22.76086	21	45	47.11	-09	23	17.0	095
4115		1987	08	27.94465	22	33	48.55	+02	17	26.1	16.5V E 095
4115		1987	09	02.90625	22	29	32.68	+01	41	42.6	16.0V E 095
4115		1987	09	16.81252	22	20	07.95	+00	09	40.2	16.0V 095
4148		1987	09	23.05806	02	06	58.84	+20	02	08.6	E 095
4148		1987	09	25.97834	02	05	08.71	+20	02	22.4	E 095
4148		1987	10	25.90818	01	36	32.99	+18	35	49.3	095
4155		1987	09	25.05446	02	32	48.94	+15	43	42.5	095

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

1983	JQ	1989	07	09.17743	17	54	16.40	-21	52	34.0	293
1985	QN	1989	07	09.17743	17	52	41.34	-21	28	18.4	293
1986	RJ	1989	07	30.16875	18	39	11.20	-20	06	25.8	293
1986	TZ1	1989	07	30.21354	19	59	35.89	-26	52	25.8	293
1989	OB	1989	08	26.09757	21	28	57.48	+12	11	35.6	293
1539		1989	07	09.17743	17	55	04.15	-21	36	27.3	293

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

1986	TX	1989	06	25.62396	19	32	47.45	-24	37	49.0	18 372
1986	TX	1989	06	25.63611	19	32	46.86	-24	37	52.4	372
1986	TX	1989	07	05.63750	19	23	21.14	-25	16	38.0	17.5 372
1986	TX	1989	07	05.64931	19	23	20.18	-25	16	39.1	372
1988	JM	1989	08	03.60937	21	25	22.80	-03	35	45.4	15.5 372
1988	JM	1989	08	03.62326	21	25	22.14	-03	35	45.5	372
1988	JM	1989	08	27.63958	21	06	15.38	-04	18	58.6	16.5 372
1988	JM	1989	08	27.65139	21	06	14.84	-04	19	01.4	372
1989	QF	1989	09	08.70139	23	33	43.17	-01	45	03.7	17 372
1989	QF	1989	09	08.71250	23	33	39.94	-01	45	12.9	372
1989	QK *	1989	08	28.57083	22	46	04.03	-02	22	12.2	18 372
1989	QK	1989	08	28.58541	22	46	03.48	-02	22	16.4	372
1989	QK	1989	08	30.65764	22	44	36.93	-02	40	50.5	18 372
1989	QK	1989	08	30.67257	22	44	36.36	-02	40	55.8	372

392 JCPM Sapporo Station
K. Watanabe, 3-8-B203, Ashibetsu Chuo 3 Jo 4 Chome, Shiroishi-Ku,
Sapporo 005, Japan

1989	SF	1989	09	29.54479	01	03	33.92	+12	37	55.9	16.0 392
1989	SF	1989	09	29.56076	01	03	32.69	+12	37	57.3	392

400 Kitami
K. Watanabe, 3-8-B203, Ashibetsu Chuo 3 Jo 4 Chome, Shiroishi-Ku,
Sapporo 005, Japan
Observers K. Endate, T. Fujii, M. Yanai
Measurer K. Watanabe
0.16-m f/3.3 reflector, 0.20-m f/4.0 reflector
AGK3, SAOC

1989 QB		1989	08	29.51389	23	07	02.71	-02	04	22.7	16.0	400
1989 QB		1989	08	29.52986	23	07	01.88	-02	04	23.7		400
1989 QE		1989	08	29.51389	23	08	54.53	-02	15	01.0	15.0	400
1989 QE		1989	08	29.52986	23	08	53.64	-02	15	01.1		400
1989 QE		1989	09	23.46285	22	47	45.60	-02	33	17.7	15.5	400
1989 QE		1989	09	23.47882	22	47	44.85	-02	33	17.7		400
1989 QE		1989	09	23.48854	22	47	44.39	-02	33	18.2		400
1989 QG	*	1989	08	25.55313	23	26	53.51	-00	11	52.2	16.0	400
1989 QG		1989	08	25.57118	23	26	52.87	-00	12	01.4		400
1989 QG		1989	08	25.58368	23	26	52.33	-00	12	07.7		400
1989 QG		1989	08	29.57500	23	24	13.04	-00	44	38.9	16.0	400
1989 QG		1989	08	29.59097	23	24	12.30	-00	44	51.1		400
1989 QG		1989	08	31.52847	23	22	49.60	-01	01	27.6	16.0	400
1989 QG		1989	08	31.54340	23	22	49.01	-01	01	37.4		400
1989 QG		1989	08	31.55938	23	22	48.17	-01	01	46.6		400
1989 QG		1989	09	23.54757	23	05	14.31	-04	37	07.8	16.5	400
1989 QG		1989	09	23.56285	23	05	13.59	-04	37	18.1		400
1989 QG		1989	09	23.57951	23	05	12.92	-04	37	26.3		400
1989 QH	*	1989	08	29.54444	23	21	28.83	-00	16	19.9	16.5	400
1989 QH		1989	08	29.56042	23	21	28.02	-00	16	21.9		400
1989 QH		1989	08	31.52847	23	19	47.44	-00	21	33.4	16.5	400
1989 QH		1989	08	31.54340	23	19	46.48	-00	21	34.5		400
1989 QH		1989	09	23.50451	22	59	11.59	-01	47	45.7	16.5	400
1989 QH		1989	09	23.52188	22	59	10.72	-01	47	50.6		400
1989 QH		1989	09	23.53299	22	59	10.20	-01	47	52.3		400
1989 QJ	*	1989	08	29.57569	22	52	47.55	-06	55	48.2	16.0	400
1989 QJ		1989	08	29.59514	22	52	46.43	-06	55	54.7		400
1989 QJ		1989	08	29.61667	22	52	45.06	-06	55	59.7		400
1989 QJ		1989	09	07.52292	22	44	01.83	-07	40	52.1	16.0	400
1989 QJ		1989	09	07.54236	22	44	00.76	-07	40	57.1		400
1989 QJ		1989	09	07.55625	22	43	59.86	-07	41	00.7		400
1989 QJ		1989	09	23.49375	22	30	05.33	-08	50	18.8	16.5	400
1989 QJ		1989	09	23.51319	22	30	04.59	-08	50	29.5		400
1989 RL2	*	1989	09	07.59201	23	52	22.09	+08	22	05.2	16.0	400
1989 RL2		1989	09	07.60764	23	52	21.24	+08	22	04.0		400
1989 RL2		1989	09	07.61944	23	52	20.44	+08	22	01.4		400
1989 RL2		1989	09	20.46215	23	39	19.24	+07	24	21.2	16.0	400
1989 RL2		1989	09	20.47604	23	39	18.30	+07	24	18.2		400
1989 RL2		1989	09	20.48715	23	39	17.76	+07	24	13.0		400
1989 RM2	*	1989	09	07.59201	23	49	54.60	+07	11	57.2	16.0	400
1989 RM2		1989	09	07.60764	23	49	53.89	+07	11	53.7		400
1989 RM2		1989	09	07.61944	23	49	53.31	+07	11	52.5		400
1989 RM2		1989	09	20.46215	23	39	16.19	+06	23	48.7	16.5	400
1989 RM2		1989	09	20.47604	23	39	15.61	+06	23	44.4		400
1989 RM2		1989	09	20.48715	23	39	14.94	+06	23	40.7		400
1989 SF	*	1989	09	23.60799	01	08	59.32	+12	52	27.2	16.5	400
1989 SF		1989	09	23.62465	01	08	58.70	+12	52	25.0		400
1989 SF		1989	09	23.63576	01	08	57.78	+12	52	23.2		400
4020 P-L		1989	08	29.57500	23	26	53.53	-00	21	45.2	16.5	400
4020 P-L		1989	08	29.59097	23	26	52.83	-00	21	48.9		400
1406		1989	09	07.59201	23	52	09.34	+07	23	57.6	14.5	400
1406		1989	09	07.60764	23	52	08.48	+07	23	57.4		400

1406		1989	09	07.61944	23	52	07.87	+07	23	58.0	400
1406		1989	09	20.46215	23	39	44.94	+07	19	24.9	14.5 400
1406		1989	09	20.47604	23	39	44.08	+07	19	24.1	400
1406		1989	09	20.48715	23	39	43.39	+07	19	21.8	400
1905		1989	08	25.55313	23	25	09.43	-00	26	45.2	15.5 400
1905		1989	08	25.57118	23	25	08.58	-00	26	50.1	400
1905		1989	08	25.58368	23	25	08.03	-00	26	54.8	400
1905		1989	08	29.54444	23	21	44.16	-00	52	40.3	15.5 400
1905		1989	08	29.56042	23	21	43.40	-00	52	45.9	400
3069		1989	08	29.54444	23	18	00.37	-01	07	59.9	14.5 400
3069		1989	08	29.56042	23	17	59.70	-01	08	03.5	400
3094		1989	08	25.55313	23	27	49.52	-00	22	54.5	16.0 400
3094		1989	08	25.57118	23	27	48.77	-00	23	02.8	400
3094		1989	08	25.58368	23	27	48.16	-00	23	11.7	400
3094		1989	08	29.57500	23	25	10.39	-01	00	00.0	16.0 400
3094		1989	08	29.59097	23	25	09.73	-01	00	08.5	400
3445		1989	08	29.54444	23	18	42.87	-00	45	04.9	16.5 400
3445		1989	08	29.56042	23	18	42.12	-00	45	08.4	400
3566		1989	08	29.54444	23	20	32.01	-00	55	52.0	16.5 400
3566		1989	08	29.56042	23	20	31.12	-00	55	55.5	400

403 Kani
T. Furuta, Mitsuike 17-2, Kakiya-Cho, Tokai, Aichi-Ken 477, Japan
Observers Y. Mizuno, T. Furuta
Measurer T. Furuta

1983 BM		1989	08	28.63715	22	52	02.45	-04	55	43.0	403
1989 SB	*	1989	09	23.55069	00	03	06.38	+01	59	41.5	16.0 403
1989 SB		1989	09	23.56528	00	03	05.37	+01	59	39.3	403
1989 SB		1989	09	24.54618	00	02	08.8	+01	56	42	403
1989 SB		1989	09	24.56042	00	02	08.0	+01	56	38	403
1989 SC	*	1989	09	23.55069	23	56	24.10	+01	05	22.5	16.5 403
1989 SC		1989	09	23.56528	23	56	23.10	+01	05	21.3	403
1989 SC		1989	09	24.54618	23	55	16.85	+01	04	07.1	403
1989 SC		1989	09	24.56042	23	55	16.04	+01	04	05.9	403
1989 SD	*	1989	09	23.61389	00	47	24.3	+02	47	52	16.5 403
1989 SD		1989	09	23.62847	00	47	23.4	+02	47	45	403
1989 SD		1989	09	24.61667	00	46	31.24	+02	44	14.5	403
1989 SD		1989	09	24.63264	00	46	30.4	+02	44	10	403
1989 SE	*	1989	09	23.58194	00	28	15.91	+01	37	38.3	16.0 403
1989 SE		1989	09	23.59653	00	28	15.14	+01	37	40.4	403
1989 SE		1989	09	24.59861	00	27	19.1	+01	40	19	403
1989 SG	*	1989	09	24.54618	23	53	51.05	+00	02	30.4	16.0 403
1989 SG		1989	09	24.56042	23	53	50.23	+00	02	29.5	403
1989 SG		1989	09	29.56632	23	48	40.9	+00	11	02	403
1989 SG		1989	09	29.58264	23	48	39.7	+00	11	08	403

413 Siding Spring
R. H. McNaught, Siding Spring Observatory, Coonabarabran, N.S.W. 2357, Australia
Observers M. Hartley, S. M. Hughes, R. H. McNaught, K. S. Russell
Measurer R. H. McNaught
1.2-m U. K. Schmidt Telescope and (1) Uppsala Southern Schmidt

1989 NE1		1976	03	28.57314	12	16	49.77	+11	08	59.3	18 413
1989 NE1		1976	03	28.62175	12	16	46.79	+11	09	03.5	413
1989 NE1		1985	09	05.57380	22	08	31.64	-35	33	03.7	17 413
1989 NE1		1985	09	05.58907	22	08	30.75	-35	32	58.0	413
1989 OB		1989	08	25.63368	21	28	47.82	+11	53	47.8	1 413
1989 OB		1989	08	25.63576	21	28	47.83	+11	53	52.5	1 413
1989 OB		1989	08	25.63785	21	28	47.83	+11	53	57.8	1 413

1989	OB		1989	08	29.55315	21	30	09.51	+14	28	21.3	1	413
1989	OB		1989	08	29.55592	21	30	09.54	+14	28	27.8	1	413
1989	OB		1989	08	29.55869	21	30	09.57	+14	28	34.2	1	413
1989	OB		1989	09	06.56424	21	34	55.54	+19	32	25.4	1	413
1989	OB		1989	09	06.56632	21	34	55.59	+19	32	30.9	1	413
1989	OB		1989	09	06.56840	21	34	55.68	+19	32	35.2	1	413
1989	OG		1985	04	17.68181	15	48	36.90	-38	44	46.3	17.5	413
1989	OG		1985	04	17.79065	15	48	31.97	-38	45	37.1		413
1989	OG		1985	05	11.65089	15	22	18.17	-40	54	04.5	17.5	413
1989	OG		1985	05	11.66478	15	22	16.97	-40	54	05.0		413
1989	PC		1984	08	01.46534	17	59	12.39	-06	39	43.2	15 V	413
1989	PC		1984	08	01.50006	17	59	11.51	-06	40	21.9		413
1989	PC		1985	12	15.57789	05	54	05.19	-02	42	31.5	16 V	413
1989	PC		1985	12	15.62995	05	54	02.00	-02	42	16.7	p	413
1989	QF		1989	09	07.64931	23	38	10.42	-01	30	46.8	1	413
1989	QF		1989	09	07.65278	23	38	09.42	-01	30	50.0	1	413
1989	QF		1989	09	07.65625	23	38	08.50	-01	30	52.0	1	413
1989	QL	*	1989	08	26.48883	21	36	05.53	-47	17	08.3	15 V	413
1989	QL		1989	08	26.57216	21	35	59.85	-47	17	51.3		413
1989	QL		1989	08	26.58509	21	35	58.94	-47	17	58.2		413
1989	QL		1989	08	26.62676	21	35	56.17	-47	18	19.9		413
1989	QL		1989	09	03.46767	21	28	28.35	-48	07	29.1		413
1989	QL		1989	09	03.51281	21	28	25.99	-48	07	39.8		413
1989	QL		1989	09	03.57156	21	28	22.73	-48	07	53.5		413
1989	QL		1989	09	03.62365	21	28	20.05	-48	08	05.3		413
1989	QL		1989	09	19.54410	21	20	38.41	-48	03	54.8	1	413
1989	QL		1989	09	21.48089	21	20	29.43	-47	55	52.3	1	413
1989	QL		1989	09	21.53537	21	20	29.08	-47	55	38.0	1	413
1989	RC		1989	09	21.52122	01	00	13.06	-20	49	12.2	16 V	413
1989	RC		1989	09	21.55172	01	00	14.33	-20	49	10.8	p	413
1989	RC		1989	09	22.51718	01	01	00.24	-20	47	16.0		413
1989	RS1		1989	07	07.63020	20	45	35.94	+01	32	39.7	18 V	413
1989	RS1		1989	07	07.67186	20	45	37.28	+01	33	02.0	I	413
1989	RS1		1989	09	17.39392	22	25	18.61	-07	16	03.3	15.5V	413
1989	RS1		1989	09	20.54314	22	35	11.79	-08	33	17.8	1	413
1989	SA	*	1989	09	21.52122	01	00	18.84	-20	55	05.7	15 V	413
1989	SA		1989	09	21.55172	01	00	17.43	-20	55	14.2		413
1989	SA		1989	09	22.51718	00	59	29.81	-20	59	47.1		413

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

1980	DA1		1989	06	04.57600	15	16	58.13	-22	42	36.7	17.6	474
1980	DA1		1989	06	04.59058	15	16	57.68	-22	42	35.8		474
1980	DA1		1989	06	08.47258	15	14	41.16	-22	38	01.1	17.3	474
1980	DA1		1989	06	08.49226	15	14	40.43	-22	38	00.1		474
1984	HX		1988	07	14.51168	18	24	46.68	-27	10	00.6	18.7	474
1984	HX		1988	07	14.53344	18	24	45.37	-27	09	58.6		474
1985	KC		1989	09	01.61326	00	17	08.41	+03	44	58.8	18.1	474
1985	KC		1989	09	01.63207	00	17	07.58	+03	44	58.2		474
1985	KC		1989	09	09.71056	00	10	03.25	+03	31	39.8	17.6	474
1985	KC		1989	09	09.72716	00	10	02.14	+03	31	37.1		474
1985	PM		1989	06	08.51541	16	06	21.78	-30	42	35.4	16.3	474
1985	PM		1989	06	08.52837	16	06	20.99	-30	42	32.2		474
1985	PM		1989	06	30.49292	15	50	37.74	-29	12	00.0	16.8	474
1985	PM		1989	06	30.51259	15	50	37.24	-29	11	55.4		474

1985	TB		1989	09	01.66946	00	28	29.07	-31	27	04.0	19.4	r 474
1985	TB		1989	09	01.71749	00	28	25.53	-31	27	18.6		r 474
1985	TB		1989	09	02.64347	00	27	14.52	-31	33	04.2	19.4	r 474
1985	TB		1989	09	02.68612	00	27	11.07	-31	33	20.7		r 474
1985	YP		1989	06	04.60823	17	04	15.65	-35	35	24.7	16.9	474
1985	YP		1989	06	04.62096	17	04	14.27	-35	35	14.4		474
1985	YP		1989	06	08.58103	16	57	45.43	-34	41	25.7	16.9	474
1985	YP		1989	06	08.59446	16	57	44.03	-34	41	14.0		474
1985	YP		1989	06	29.48343	16	28	19.91	-28	53	06.7	16.4	474
1985	YP		1989	06	29.49766	16	28	19.03	-28	52	52.0		474
1986	JN1		1989	07	29.66781	19	47	03.54	-53	01	12.0	16.4	474
1986	JN1		1989	07	29.68404	19	47	01.84	-53	01	20.7		474
1986	RB		1989	06	04.49515	14	32	34.28	-56	11	54.4	17.9	474
1986	RB		1989	06	04.51309	14	32	32.75	-56	11	46.1		474
1986	TM		1989	06	04.41043	14	06	54.81	-46	36	35.4	19.2	474
1986	TM		1989	06	04.45383	14	06	52.55	-46	36	23.0		474
1986	TM		1989	06	08.38207	14	03	39.75	-46	17	09.7	18.8	474
1986	TM		1989	06	08.41737	14	03	38.06	-46	16	58.4		474
1988	JV		1989	09	05.55199	22	12	24.14	-33	40	55.3	1	474
1988	JV		1989	09	05.59736	22	12	21.68	-33	41	06.8	1	474
1988	JV		1989	09	09.67398	22	08	52.49	-33	57	08.9	15.5	474
1988	JV		1989	09	09.68567	22	08	51.89	-33	57	10.8		474
1988	LH		1988	07	13.55558	17	13	26.99	-18	07	02.6	18.6	474
1988	LH		1988	07	13.58370	17	13	26.34	-18	07	01.0		474
1988	VP4		1989	06	04.54417	14	57	53.67	-35	35	27.9	17.5	474
1988	VP4		1989	06	04.55707	14	57	53.36	-35	35	07.4		474
1988	VP4		1989	06	08.44613	14	57	19.47	-33	56	15.2	17.6	474
1988	VP4		1989	06	08.45580	14	57	19.34	-33	56	01.0		474
1988	VP4		1989	06	29.42845	15	04	08.91	-27	53	01.8	18.3	474
1988	VP4		1989	06	29.45750	15	04	09.91	-27	52	41.0		474
1989	JA		1989	05	10.57557	13	38	51.01	+20	23	53.1		474
1989	JA		1989	06	04.36112	09	44	17.33	-11	59	44.0	16.3	474
1989	JA		1989	06	04.36564	09	44	13.00	-12	00	20.2		474
1989	JA		1989	06	08.34966	08	42	44.82	-20	09	48.6		474
1989	JA		1989	06	08.35487	08	42	40.03	-20	10	20.7		474
1989	MD		1989	09	01.33890	16	39	39.47	-27	56	14.2		474
1989	MD		1989	09	01.36141	16	39	40.67	-27	56	13.8	18.4	474
1989	ME		1989	07	23.42802	19	59	22.52	-44	38	15.1	16.3	474
1989	ME		1989	07	23.44098	19	59	21.48	-44	38	11.6		474
1989	ME		1989	07	29.64168	19	51	24.59	-44	04	08.3	15.6	474
1989	ME		1989	07	29.65279	19	51	23.74	-44	04	04.0		474
1989	ME		1989	09	01.38543	19	22	53.76	-38	44	40.1	17.1	474
1989	ME		1989	09	01.40071	19	22	53.39	-38	55	30.2		474
1989	NE1		1989	07	23.32779	20	04	23.86	-46	49	42.5	17.0	474
1989	NE1		1989	07	23.34075	20	04	23.06	-46	49	45.9		474
1989	NE1		1989	07	28.61321	19	59	11.57	-46	57	16.5	16.6	474
1989	NE1		1989	07	28.62976	19	59	10.62	-46	57	16.2		474
1989	NE1		1989	07	29.59518	19	58	15.88	-46	57	18.4	16.4	474
1989	NE1		1989	07	29.60991	19	58	14.95	-46	57	18.0		474
1989	NE1		1989	09	02.50036	19	46	01.35	-43	18	07.5		474
1989	NE1		1989	09	02.51494	19	46	01.64	-43	17	57.2		474
1989	OC		1989	08	08.40107	15	52	22.82	-26	28	04.8	18.1	474
1989	OC		1989	08	08.42488	15	52	25.62	-26	28	01.0		474
1989	OL	*	1989	07	29.64168	19	51	53.04	-43	49	40.6	17.7	474
1989	OL		1989	07	29.65279	19	51	52.26	-43	49	41.5		474
1989	OL		1989	08	08.59965	19	42	27.01	-43	49	21.9	17.8	474
1989	OL		1989	08	08.61250	19	42	26.32	-43	49	20.9		474
1989	OL		1989	09	02.45053	19	33	28.97	-41	54	54.3	18.6	474
1989	OL		1989	09	02.47536	19	33	29.07	-41	54	43.9		474

1989	OM	*	1989	07	29.66781	19	45	20.46	-52	57	01.9	17.5	474
1989	OM		1989	07	29.68404	19	45	19.36	-52	57	00.0		474
1989	OM		1989	08	05.44481	19	38	55.74	-52	30	06.0		474
1989	OM		1989	08	05.46646	19	38	54.56	-52	29	58.8		474
1989	OM		1989	08	08.63356	19	36	24.45	-52	11	09.5		474
1989	OM		1989	08	08.64861	19	36	23.75	-52	11	03.1		474
1989	OM		1989	09	01.42258	19	31	16.80	-48	17	26.2	17.5	474
1989	OM		1989	09	01.43896	19	31	17.08	-48	17	14.1		474
1989	PB		1989	08	18.50748	23	51	00.94	+04	08	15.4		474
1989	PB		1989	08	18.50852	23	51	01.10	+04	08	27.4		474
1989	PB		1989	08	18.52935	23	51	04.82	+04	12	23.0		474
1989	PB		1989	08	18.53005	23	51	04.93	+04	12	30.6		474
1989	PB		1989	08	20.46060	00	00	02.27	+12	07	54.6		474
1989	RA		1989	09	04.45922	22	40	49.10	-02	48	18.7		474
1989	RA		1989	09	04.47087	22	40	48.63	-02	48	28.0		474
1989	RA		1989	09	06.48596	22	39	36.30	-03	15	19.6		474
1989	RA		1989	09	06.50054	22	39	35.75	-03	15	30.5		474
1989	RC		1989	09	22.58036	01	01	01.47	-20	47	00.9	18.0	474
1989	RC		1989	09	22.59668	01	01	01.96	-20	46	58.9		474
1989	RC1	*	1989	09	05.55199	22	12	44.54	-32	17	51.3	1	474
1989	RC1		1989	09	05.59756	22	12	42.86	-32	18	22.0	1	474
1989	RC1		1989	09	06.42850	22	12	13.22	-32	27	32.7	16	474
1989	RC1		1989	09	06.43949	22	12	12.79	-32	27	40.2		474
1989	RC1		1989	09	09.62242	22	10	23.68	-32	59	40.9	t	474
1989	RC1		1989	09	10.43486	22	09	58.60	-33	07	04.1		474
1989	RC1		1989	09	10.69678	22	09	49.73	-33	09	19.6		474
1989	RC1		1989	09	10.70222	22	09	49.58	-33	09	22.2		474
1989	RD1	*	1989	09	05.55199	22	18	31.61	-34	03	26.4	1	474
1989	RD1		1989	09	05.59756	22	18	29.28	-34	03	36.3	1	474
1989	RD1		1989	09	06.45390	22	17	49.92	-34	06	35.6	17	474
1989	RD1		1989	09	06.46582	22	17	49.35	-34	06	38.5		474
1989	RD1		1989	09	09.64736	22	15	27.59	-34	15	09.4		474
1989	RD1		1989	09	09.65836	22	15	27.08	-34	15	11.0		474
1989	RD1		1989	09	10.47051	22	14	52.98	-34	16	46.0		474
1989	RD1		1989	09	10.71287	22	14	42.35	-34	17	09.3		474
1989	RD1		1989	09	10.71900	22	14	42.10	-34	17	09.3		474
1989	RN2	*	1989	09	01.61326	00	15	21.02	+03	28	36.6	17.7	474
1989	RN2		1989	09	01.63207	00	15	20.11	+03	28	36.6		474
1989	RN2		1989	09	09.71056	00	09	04.11	+03	28	20.8	17.8	474
1989	RN2		1989	09	09.72716	00	09	03.15	+03	28	19.6		474
1989	RN2		1989	09	26.50681	23	54	19.98	+03	11	52.7	17.8	474
1989	RN2		1989	09	26.52503	23	54	18.99	+03	11	51.1		474
243			1989	05	09.68355	17	11	42.80	-24	34	03.6		474
243			1989	05	09.74223	17	11	41.23	-24	34	02.6		474
243			1989	06	08.55545	16	47	18.78	-24	00	58.5	13.8	474
243			1989	06	08.56124	16	47	18.46	-24	00	57.6		474
3813			1989	09	03.35916	16	49	08.04	-25	13	07.1	18.4 t	474
3813			1989	09	03.38068	16	49	10.30	-25	13	06.5	t	474
4154			1989	06	04.68387	18	58	34.85	-35	10	08.5	17.1	474
4154			1989	06	04.70071	18	58	34.20	-35	10	12.5		474
4154			1989	06	30.59998	18	35	06.76	-36	00	40.5		474
4154			1989	06	30.61225	18	35	05.88	-36	00	40.3		474

491 Yebes
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Observers J. Martin-Pintado, J. Garcia, F. Sanchez, F. Lahulla

1		1988	07	12.14557	00	22	03.42	-11	18	04.3		491
1		1988	07	12.14973	00	22	03.52	-11	18	04.0		491

1	1988	07	12.15388	00	22	03.60	-11 18 05.4	491
1	1988	07	13.15288	00	22	28.28	-11 20 00.8	491
1	1988	07	13.15634	00	22	28.39	-11 20 00.9	491
1	1988	07	13.15980	00	22	28.45	-11 20 01.9	491
1	1988	09	08.98602	00	10	25.35	-16 12 56.6	491
1	1988	09	08.99295	00	10	25.00	-16 12 59.6	491
1	1988	09	08.99988	00	10	24.70	-16 13 01.4	491
1	1988	10	19.98224	23	39	10.84	-18 10 26.3	491
1	1988	10	19.99343	23	39	10.43	-18 10 25.2	491
1	1988	10	20.00532	23	39	10.09	-18 10 25.0	491
1	1988	12	12.81090	23	42	14.90	-13 27 24.6	491
1	1988	12	12.81783	23	42	15.18	-13 27 21.2	491
1	1988	12	12.82475	23	42	15.48	-13 27 17.0	491
1	1988	12	12.93735	23	42	19.48	-13 26 19.9	491
1	1988	12	12.94289	23	42	19.52	-13 26 19.1	491
1	1988	12	12.94843	23	42	19.75	-13 26 16.3	491
1	1988	12	13.93375	23	42	55.75	-13 18 05.7	491
1	1988	12	13.94068	23	42	56.09	-13 18 02.1	491
1	1988	12	13.94760	23	42	56.38	-13 17 58.0	491
2	1988	07	12.00250	20	29	45.31	+17 58 18.9	491
2	1988	07	12.00943	20	29	44.99	+17 58 18.3	491
2	1988	07	12.01635	20	29	44.68	+17 58 16.8	491
2	1988	07	13.00877	20	29	01.26	+17 55 37.0	491
2	1988	07	13.01500	20	29	00.93	+17 55 36.2	491
2	1988	07	13.02124	20	29	00.68	+17 55 35.3	491
2	1988	09	08.90673	19	52	00.62	+09 20 48.5	491
2	1988	09	08.91435	19	52	00.55	+09 20 43.3	491
2	1988	09	08.92266	19	52	00.39	+09 20 36.6	491
2	1988	10	19.89544	19	58	43.97	+01 49 55.5	491
2	1988	10	19.90236	19	58	44.21	+01 49 52.0	491
2	1988	10	19.90929	19	58	44.41	+01 49 48.6	491
4	1988	02	16.07827	07	51	26.30	+25 33 20.8	491
4	1988	02	16.08519	07	51	26.02	+25 33 23.2	491
4	1988	02	16.09212	07	51	25.71	+25 33 24.6	491
4	1988	02	19.05311	07	49	20.13	+25 43 11.5	491
4	1988	02	19.06003	07	49	19.79	+25 43 12.7	491
4	1988	02	19.06696	07	49	19.49	+25 43 13.1	491
4	1988	03	15.92948	07	42	59.41	+26 20 03.2	491
4	1988	03	15.93848	07	42	59.52	+26 20 02.3	491
4	1988	03	15.94749	07	42	59.55	+26 20 01.7	491
4	1988	03	18.08780	07	43	26.86	+26 19 38.8	491
4	1988	03	18.09335	07	43	26.95	+26 19 39.0	491
4	1988	03	18.09889	07	43	27.05	+26 19 38.7	491
4	1988	04	20.98873	08	07	14.35	+25 18 33.7	491
4	1988	04	20.99566	08	07	14.76	+25 18 32.8	491
4	1988	04	21.00258	08	07	15.19	+25 18 31.6	491
4	1988	04	21.93302	08	08	16.05	+25 15 29.5	491
4	1988	04	21.93995	08	08	16.47	+25 15 27.9	491
4	1988	04	21.94687	08	08	16.97	+25 15 25.8	491
6	1988	12	14.02055	08	52	22.36	+08 16 42.4	491
6	1988	12	14.02748	08	52	22.27	+08 16 43.7	491
6	1988	12	14.03440	08	52	22.16	+08 16 45.8	491
6	1988	12	14.12120	08	52	21.15	+08 17 02.1	491
6	1988	12	14.12813	08	52	21.04	+08 17 03.0	491
6	1988	12	14.13505	08	52	20.92	+08 17 04.8	491
11	1988	02	16.18977	13	46	55.80	-05 14 56.0	491
11	1988	02	16.19669	13	46	55.94	-05 14 55.4	491
11	1988	02	16.20362	13	46	55.99	-05 14 55.3	491
11	1988	02	19.17604	13	47	31.86	-05 09 50.9	491

11	1988	02	19.18296	13	47	31.94	-05	09	49.6	491
11	1988	02	19.19231	13	47	32.03	-05	09	49.0	491
11	1988	03	16.11093	13	42	54.50	-03	30	51.5	491
11	1988	03	16.11785	13	42	54.26	-03	30	48.9	491
11	1988	03	16.12478	13	42	54.03	-03	30	46.8	491
11	1988	03	18.13455	13	41	48.82	-03	19	33.1	491
11	1988	03	18.13940	13	41	48.65	-03	19	30.9	491
11	1988	03	18.14425	13	41	48.47	-03	19	29.4	491
11	1988	04	21.11789	13	14	22.26	+00	05	25.6	491
11	1988	04	21.12482	13	14	21.88	+00	05	27.7	491
11	1988	04	21.13175	13	14	21.57	+00	05	29.5	491
11	1988	05	18.00435	12	57	04.94	+01	19	06.1	491
11	1988	05	18.01128	12	57	04.73	+01	19	05.7	491
11	1988	05	18.01820	12	57	04.60	+01	19	06.0	491
11	1988	05	19.90782	12	56	28.00	+01	19	06.5	491
11	1988	05	19.91475	12	56	27.79	+01	19	06.7	491
11	1988	05	19.92167	12	56	27.68	+01	19	06.8	491
11	1988	07	11.90959	13	14	25.53	-02	29	25.2	491
11	1988	07	11.91651	13	14	25.95	-02	29	28.1	491
11	1988	07	11.92344	13	14	26.35	-02	29	30.7	491
11	1988	07	12.91482	13	15	19.30	-02	36	51.6	491
11	1988	07	12.92105	13	15	19.58	-02	36	53.6	491
11	1988	07	12.92728	13	15	19.88	-02	36	56.8	491
13	1988	03	16.03925	06	30	26.87	+42	50	17.6	491
13	1988	03	16.04617	06	30	27.22	+42	50	14.4	491
13	1988	03	16.05379	06	30	27.81	+42	50	11.2	491
18	1988	07	12.06731	22	56	26.60	-03	18	06.6	491
18	1988	07	12.07424	22	56	26.81	-03	18	07.4	491
18	1988	07	12.08117	22	56	27.03	-03	18	08.0	491
18	1988	07	13.06210	22	57	01.44	-03	19	55.9	491
18	1988	07	13.06902	22	57	01.65	-03	19	56.2	491
18	1988	07	13.07595	22	57	01.85	-03	19	57.3	491
18	1988	09	09.00871	22	46	23.59	-12	56	31.1	491
18	1988	09	09.01563	22	46	23.33	-12	56	36.5	491
18	1988	09	09.02256	22	46	23.06	-12	56	43.2	491
18	1988	12	12.81090	23	41	31.87	-12	47	28.5	491
18	1988	12	12.81783	23	41	32.45	-12	47	23.8	491
18	1988	12	12.82475	23	41	33.21	-12	47	19.9	491
18	1988	12	12.93735	23	41	44.28	-12	46	00.8	491
18	1988	12	12.94289	23	41	44.90	-12	45	58.2	491
18	1988	12	12.94843	23	41	45.42	-12	45	54.2	491
18	1988	12	13.93375	23	43	25.34	-12	34	37.8	491
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18	1988	12	13.94760	23	43	26.70	-12	34	29.6	491
20	1988	01	22.03017	04	04	40.74	+19	51	22.6	491
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25	1988	12	12.95864	05	08	49.78	-00	47	07.9	491
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25	1988	12	13.07014	05	08	42.76	-00	47	38.7	491
25	1988	12	13.07707	05	08	42.34	-00	47	40.4	491
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25	1988	12	14.05633	05	07	42.41	-00	52	05.0	491
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39	1988	01	21.82726	00	38	59.06	-04	02	57.2	491
39	1988	01	21.83764	00	38	59.88	-04	02	52.1	491

39	1988	12	13.99920	08	03	20.87	+09	04	15.9	491
39	1988	12	14.00612	08	03	20.63	+09	04	15.8	491
39	1988	12	14.01305	08	03	20.47	+09	04	17.0	491
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39	1988	12	14.10816	08	03	17.62	+09	04	21.4	491
39	1988	12	14.11509	08	03	17.36	+09	04	22.3	491
40	1988	01	21.86777	02	05	13.03	+09	45	43.0	491
40	1988	01	21.87816	02	05	13.63	+09	45	47.6	491
40	1988	01	21.88855	02	05	14.23	+09	45	53.3	491
44	1988	01	22.03017	04	14	01.69	+17	16	35.9	491
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59	1988	04	21.11789	13	11	29.89	-00	19	03.5	491
59	1988	04	21.12482	13	11	29.54	-00	19	02.8	491
59	1988	04	21.13175	13	11	29.34	-00	18	59.9	491
59	1988	05	18.00435	12	56	28.53	+01	32	23.0	491
59	1988	05	18.01128	12	56	28.31	+01	32	23.6	491
59	1988	05	18.01820	12	56	28.24	+01	32	26.0	491
59	1988	05	19.90782	12	55	53.92	+01	35	51.2	491
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59	1988	05	19.92167	12	55	53.52	+01	35	54.4	491
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148	1988	03	16.02367	09	49	09.71	+19	21	51.1	491
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148	1988	05	19.89536	10	00	16.85	+22	02	54.7	491
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324	1988	01	22.06411	05	46	55.58	+36	31	00.3	491
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552	1988	12	13.00712	04	48	38.66	+24	35	23.1	491
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1251       1988 05 18.03690  13 13 08.09  +00 39 27.8                    491
1417       1988 04 21.99535  12 29 16.12  +10 00 26.9                    491
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1685       1988 07 13.02839  22 33 06.52  +10 55 54.7                    491
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3037       1988 02 19.15768  11 15 20.40  +29 45 25.0                    491
3057       1988 03 16.14694  12 58 42.91  +07 41 49.3                    491
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3252       1988 12 13.04071  05 28 07.67  +42 20 54.6                    491
3252       1988 12 14.07573  05 26 49.92  +42 17 56.4                    491
3353       1988 05 19.10897  17 06 08.94  -21 52 29.8                    491
```

504 Le Creusot
J.-C. Merlin, 17 rue P. Mendes-France, F-71200 Le Creusot, France
Observer J.-C. Merlin
Measurer R. H. McNaught

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1989 PB    1989 08 23.89601  00 49 15.05  +44 57 39.0                    504
1989 PB    1989 08 23.89821  00 49 19.39  +44 59 40.6                  t 504
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510 Siegen
M. Kretlow, Hauptmarkt 13, D-5900 Siegen, Federal Republic of Germany
Observers M. Kretlow, C. Springob
Measurer M. Kretlow
AGK3

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 194       1989 05 04.01112  11 37 55.10  +14 25 44.0                    510
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 194       1989 05 05.00487  11 37 42.90  +14 27 50.4                    510
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 423       1989 01 11.75938  06 26 13.02  +31 43 46.2                    510
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511 Haute Provence
E. W. Elst, Royal Observatory, B-1180 Brussels, Belgium
Observers E. W. Elst, A. Laugier
Measurers E. W. Elst, P. Van den Eijnde
0.6-m Schmidt

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1976 SV10  1989 09 04.92118  21 58 15.29  -10 08 40.1                  511
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1989	RJ	*	1989	09	02.07500	23	32	14.03	+02	00	59.5	17.5	511
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1989	RR		1989	09	05.01771	23	27	20.07	+04	03	44.9		511
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1989	RS		1989	09	05.01771	23	30	50.78	+02	31	58.2		511
1989	RS		1989	09	07.10556	23	29	35.34	+02	16	42.5		511
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1989	RT		1989	09	03.09514	23	33	10.62	+02	57	44.6		511
1989	RT		1989	09	04.96806	23	31	22.15	+02	55	10.7		511
1989	RT		1989	09	04.98889	23	31	20.99	+02	55	09.0		511
1989	RT		1989	09	05.01771	23	31	19.02	+02	55	07.3		511
1989	RT		1989	09	07.10556	23	29	14.80	+02	51	36.5		511
1989	RT		1989	09	07.12639	23	29	13.63	+02	51	34.7		511

1989	RU	*	1989	09	03.07431	23	33	54.51	+03	37	45.2	17.4	511
1989	RU		1989	09	03.09514	23	33	53.61	+03	37	36.6		511
1989	RU		1989	09	04.96806	23	32	33.75	+03	22	44.1		511
1989	RU		1989	09	04.98889	23	32	32.97	+03	22	37.3		511
1989	RU		1989	09	05.01771	23	32	31.62	+03	22	21.7		511
1989	RU		1989	09	08.05139	23	30	18.46	+02	57	21.5	17.6	511
1989	RU		1989	09	08.07222	23	30	17.65	+02	57	12.9		511
1989	RV	*	1989	09	03.07431	23	35	06.01	+03	56	11.8	17.8	511
1989	RV		1989	09	03.09514	23	35	03.85	+03	56	28.7		511
1989	RV		1989	09	04.96806	23	32	02.04	+04	20	24.2		511
1989	RV		1989	09	04.98889	23	31	60.00	+04	20	41.8		511
1989	RV		1989	09	05.01771	23	31	56.99	+04	21	01.1		511
1989	RV		1989	09	07.10556	23	28	29.56	+04	47	02.5		511
1989	RV		1989	09	07.12639	23	28	27.48	+04	47	15.8		511
1989	RW		1989	09	01.89375	21	54	31.34	+01	24	44.1		511
1989	RW		1989	09	01.91806	21	54	30.21	+01	24	32.4		511
1989	RW	*	1989	09	03.86424	21	53	09.30	+01	10	46.7		511
1989	RW		1989	09	03.88646	21	53	08.35	+01	10	36.4	17.4	511
1989	RW		1989	09	05.94410	21	51	45.55	+00	55	51.9		511
1989	RW		1989	09	05.99653	21	51	43.48	+00	55	30.2		511
1989	RW		1989	09	06.89444	21	51	08.46	+00	49	03.6		511
1989	RW		1989	09	06.91875	21	51	07.23	+00	48	49.2		511
1989	RW		1989	09	06.94028	21	51	06.64	+00	48	39.6		511
1989	RX		1989	09	01.89375	21	59	34.50	+01	27	47.1		511
1989	RX		1989	09	01.91806	21	59	33.29	+01	27	41.9		511
1989	RX	*	1989	09	03.86424	21	58	05.44	+01	16	25.9		511
1989	RX		1989	09	03.88646	21	58	04.53	+01	16	19.0	16.8	511
1989	RX		1989	09	05.94410	21	56	34.67	+01	03	59.0		511
1989	RX		1989	09	05.99653	21	56	32.35	+01	03	40.0		511
1989	RX		1989	09	06.89444	21	55	54.31	+00	58	08.9		511
1989	RX		1989	09	06.91875	21	55	53.41	+00	57	59.3		511
1989	RX		1989	09	06.94028	21	55	52.33	+00	57	53.3		511
1989	RY		1989	09	01.89375	22	01	48.17	+00	50	39.0		511
1989	RY		1989	09	01.91806	22	01	47.09	+00	50	30.6		511
1989	RY	*	1989	09	03.86424	22	00	25.99	+00	39	33.5		511
1989	RY		1989	09	03.88646	22	00	24.90	+00	39	24.2	17.7	511
1989	RY		1989	09	05.94410	21	59	02.33	+00	27	11.5		511
1989	RY		1989	09	05.99653	21	59	00.14	+00	26	54.7		511
1989	RY		1989	09	06.89444	21	58	25.54	+00	21	20.7		511
1989	RY		1989	09	06.91875	21	58	24.54	+00	21	13.5		511
1989	RY		1989	09	06.94028	21	58	23.65	+00	21	04.7		511
1989	RA1		1989	09	03.01563	23	28	19.40	-06	04	05.8	17.5	511
1989	RA1		1989	09	03.04896	23	28	17.91	-06	04	48.0	17.5	511
1989	RE1	*	1989	09	03.01563	23	21	17.74	-04	38	35.1		511
1989	RE1		1989	09	03.04896	23	21	15.96	-04	38	42.6		511
1989	RE1		1989	09	07.06076	23	17	54.90	-04	52	48.0	17.2	511
1989	RE1		1989	09	07.08194	23	17	54.13	-04	52	51.3		511
1989	RF1	*	1989	09	03.01563	23	21	42.88	-04	04	50.1		511
1989	RF1		1989	09	03.04896	23	21	41.16	-04	05	03.5		511
1989	RF1		1989	09	07.06076	23	18	18.47	-04	36	05.0	17.7	511
1989	RF1		1989	09	07.08194	23	18	17.62	-04	36	12.6		511
1989	RG1	*	1989	09	03.01563	23	25	06.99	-05	54	27.5		511
1989	RG1		1989	09	03.04896	23	25	05.24	-05	54	37.9		511
1989	RG1		1989	09	07.06076	23	21	43.91	-06	15	12.0	18.0	511
1989	RG1		1989	09	07.08194	23	21	43.43	-06	15	15.8		511
1989	RH1	*	1989	09	03.01563	23	29	53.48	-03	28	04.9		511
1989	RH1		1989	09	03.04896	23	29	51.52	-03	28	11.0		511
1989	RH1		1989	09	07.06076	23	25	50.26	-03	41	46.1	17.5	511
1989	RH1		1989	09	07.08194	23	25	49.36	-03	41	50.3		511

1989	RJ1	*	1989	09	03.95556	22	51	42.16	-04	05	48.0	17.5	511
1989	RJ1		1989	09	03.97639	22	51	41.28	-04	05	56.3		511
1989	RJ1		1989	09	03.99722	22	51	40.28	-04	06	04.1		511
1989	RJ1		1989	09	05.05069	22	50	50.13	-04	12	53.7	17.8	511
1989	RJ1		1989	09	05.07153	22	50	49.05	-04	13	01.2		511
1989	RJ1		1989	09	06.02569	22	50	04.10	-04	19	20.0		511
1989	RJ1		1989	09	06.04653	22	50	03.09	-04	19	24.8		511
1989	RJ1		1989	09	08.00625	22	48	30.72	-04	32	28.0		511
1989	RJ1		1989	09	08.02708	22	48	29.95	-04	32	34.6		511
1989	RK1	*	1989	09	03.95556	22	52	09.20	-03	56	45.9	17.5	511
1989	RK1		1989	09	03.97639	22	52	07.96	-03	56	43.6		511
1989	RK1		1989	09	03.99722	22	52	06.80	-03	56	41.9		511
1989	RK1		1989	09	05.05069	22	50	58.96	-03	55	10.5	17.5	511
1989	RK1		1989	09	05.07153	22	50	57.65	-03	55	06.2		511
1989	RK1		1989	09	06.02569	22	49	56.90	-03	53	50.8		511
1989	RK1		1989	09	06.04653	22	49	55.37	-03	53	44.8		511
1989	RK1		1989	09	08.00625	22	47	50.62	-03	51	10.1		511
1989	RK1		1989	09	08.02708	22	47	49.45	-03	51	08.0		511
1989	RL1	*	1989	09	03.95556	22	54	31.04	-03	50	00.5	17.7	511
1989	RL1		1989	09	03.97639	22	54	29.88	-03	50	07.8		511
1989	RL1		1989	09	03.99722	22	54	28.74	-03	50	16.9		511
1989	RL1		1989	09	05.05069	22	53	37.21	-03	58	34.3	17.6	511
1989	RL1		1989	09	05.07153	22	53	36.40	-03	58	44.1		511
1989	RL1		1989	09	06.02569	22	52	49.67	-04	06	19.6		511
1989	RL1		1989	09	06.04653	22	52	48.77	-04	06	28.2		511
1989	RL1		1989	09	08.00625	22	51	13.15	-04	22	06.3		511
1989	RL1		1989	09	08.02708	22	51	11.95	-04	22	18.4		511
1989	RM1	*	1989	09	03.95556	22	57	50.89	-04	34	53.3	17.7	511
1989	RM1		1989	09	03.97639	22	57	49.52	-04	34	54.3		511
1989	RM1		1989	09	03.99722	22	57	48.00	-04	34	56.9		511
1989	RM1		1989	09	05.05069	22	56	45.81	-04	36	06.1	17.8	511
1989	RM1		1989	09	05.07153	22	56	44.60	-04	36	04.9		511
1989	RN1	*	1989	09	05.05069	22	49	12.61	-05	12	43.2	17.5	511
1989	RN1		1989	09	05.07153	22	49	11.65	-05	12	44.9		511
1989	RN1		1989	09	06.02569	22	48	22.44	-05	14	59.9		511
1989	RN1		1989	09	06.04653	22	48	21.31	-05	15	01.7		511
1989	RN1		1989	09	08.00625	22	46	40.66	-05	19	34.0		511
1989	RN1		1989	09	08.02708	22	46	39.72	-05	19	34.5		511
1989	RO1	*	1989	09	05.05069	22	54	27.51	-02	48	18.2	17.5	511
1989	RO1		1989	09	05.07153	22	54	26.49	-02	48	28.4		511
1989	RO1		1989	09	06.02569	22	53	41.17	-02	55	57.3		511
1989	RO1		1989	09	06.04653	22	53	40.19	-02	56	06.9		511
1989	RZ1	*	1989	09	04.04965	23	22	55.02	+00	57	09.1	17.0	511
1989	RZ1		1989	09	04.06944	23	22	54.21	+00	56	58.7		511
1989	RZ1		1989	09	08.05139	23	20	16.12	+00	20	10.4	17.2	511
1989	RZ1		1989	09	08.07222	23	20	15.34	+00	19	59.4		511
1989	RA2		1989	09	01.89375	21	54	26.96	+01	38	23.8		511
1989	RA2		1989	09	01.91806	21	54	25.64	+01	38	16.7		511
1989	RA2	*	1989	09	03.86424	21	52	53.98	+01	28	01.9		511
1989	RA2		1989	09	03.88646	21	52	53.07	+01	27	51.9	17.5	511
1989	RA2		1989	09	05.94410	21	51	18.82	+01	16	40.5		511
1989	RA2		1989	09	05.99653	21	51	16.37	+01	16	24.9		511
1989	RB2	*	1989	09	04.96806	23	17	51.55	+04	07	24.8	18.0	511
1989	RB2		1989	09	04.98889	23	17	50.70	+04	07	22.0		511
1989	RB2		1989	09	05.01771	23	17	49.02	+04	07	15.1		511
1989	RB2		1989	09	07.10556	23	16	04.32	+03	59	15.2		511
1989	RB2		1989	09	07.12639	23	16	03.50	+03	59	12.6		511
1989	RD2	*	1989	09	02.91354	22	07	09.30	-10	17	58.9	16.9	511
1989	RD2		1989	09	02.94201	22	07	08.25	-10	18	11.4		511

1989	RD2		1989	09	06.96597	22	04	45.36	-10	44	42.1		511
1989	RD2		1989	09	06.98681	22	04	44.62	-10	44	50.0		511
1989	RD2		1989	09	07.95278	22	04	13.24	-10	50	55.2		511
1989	RD2		1989	09	07.97361	22	04	12.62	-10	51	02.3		511
1989	RE2	*	1989	09	06.96597	21	55	25.59	-08	38	21.9	17.0	511
1989	RE2		1989	09	06.98681	21	55	24.91	-08	38	30.4		511
1989	RE2		1989	09	07.95278	21	54	53.03	-08	46	14.5		511
1989	RE2		1989	09	07.97361	21	54	52.29	-08	46	25.5		511
1989	RF2	*	1989	09	02.85903	20	56	25.18	-14	20	10.4	17.6	511
1989	RF2		1989	09	02.88472	20	56	23.30	-14	20	09.0		511
1989	RF2		1989	09	05.87118	20	55	00.99	-14	38	44.9		511
1989	RF2		1989	09	05.89722	20	55	00.13	-14	38	53.8		511
1989	RF2		1989	09	05.91944	20	54	59.73	-14	38	58.7		511
1989	RG2	*	1989	09	02.85903	21	02	19.61	-11	33	47.9	17.8	511
1989	RG2		1989	09	02.88472	21	02	18.83	-11	33	58.1		511
1989	RG2		1989	09	05.87118	21	00	59.31	-11	55	59.5		511
1989	RG2		1989	09	05.89722	21	00	58.61	-11	56	11.8		511
1989	RG2		1989	09	05.91944	21	00	58.04	-11	56	19.5		511
1989	RH2	*	1989	09	02.85903	21	04	06.17	-12	26	16.4	17.0	511
1989	RH2		1989	09	02.88472	21	04	05.07	-12	26	01.9		511
1989	RH2		1989	09	05.87118	21	02	13.83	-11	57	31.7		511
1989	RH2		1989	09	05.89722	21	02	12.77	-11	57	16.2		511
1989	RH2		1989	09	05.91944	21	02	12.04	-11	57	03.9		511
6034	P-L		1989	09	03.07431	23	25	22.94	+04	40	21.6	17.5	511
6034	P-L		1989	09	03.09514	23	25	22.11	+04	40	10.3		511
6034	P-L		1989	09	04.96806	23	24	14.14	+04	24	01.9		511
6034	P-L		1989	09	04.98889	23	24	13.35	+04	23	51.0		511
6034	P-L		1989	09	05.01771	23	24	12.17	+04	23	35.8		511
6034	P-L		1989	09	07.10556	23	22	53.57	+04	04	45.4		511
6034	P-L		1989	09	07.12639	23	22	52.69	+04	04	34.1		511
15			1989	09	03.86424	21	54	20.63	+02	18	15.9		511
15			1989	09	03.88646	21	54	19.48	+02	18	14.2	10.0	511
61			1989	09	03.07431	23	21	02.87	+04	06	45.5	10.0	511
61			1989	09	03.09514	23	21	01.55	+04	06	49.5		511
61			1989	09	04.96806	23	19	07.77	+04	12	24.1		511
61			1989	09	04.98889	23	19	06.36	+04	12	29.0		511
61			1989	09	05.01771	23	19	04.52	+04	12	33.1		511
61			1989	09	07.10556	23	16	55.61	+04	18	17.0		511
61			1989	09	07.12639	23	16	54.27	+04	18	20.4		511
79			1989	09	02.07500	23	23	45.73	+02	07	43.2	10.0	511
79			1989	09	02.10486	23	23	44.38	+02	07	32.4		511
79			1989	09	02.12569	23	23	43.37	+02	07	23.7		511
79			1989	09	04.04965	23	22	16.48	+01	55	08.2		511
79			1989	09	04.06944	23	22	15.41	+01	54	59.6		511
79			1989	09	08.05139	23	19	07.30	+01	27	38.5		511
79			1989	09	08.07222	23	19	06.18	+01	27	29.1		511
810			1989	09	03.01563	23	26	28.11	-04	59	38.8		511
810			1989	09	03.04896	23	26	26.56	-04	59	54.3		511
810			1989	09	07.06076	23	23	29.16	-05	31	08.4	15.5	511
810			1989	09	07.08194	23	23	28.29	-05	31	17.3		511
833			1989	09	03.01563	23	22	52.03	-06	05	20.5		511
833			1989	09	03.04896	23	22	50.32	-06	05	24.0		511
833			1989	09	07.06076	23	19	23.23	-06	12	03.5	16.8	511
833			1989	09	07.08194	23	19	22.45	-06	12	03.7		511
1067			1989	09	01.89375	22	00	49.42	+01	01	02.2		511
1067			1989	09	01.91806	22	00	48.04	+01	00	59.8		511
1067			1989	09	03.86424	21	59	06.80	+00	56	38.1		511
1067			1989	09	03.88646	21	59	05.58	+00	56	35.0	16.0	511
1067			1989	09	05.94410	21	57	20.69	+00	51	38.2		511

1067	1989	09	05.99653	21	57	17.92	+00	51	29.9	511
1067	1989	09	06.89444	21	56	33.11	+00	49	12.7	511
1067	1989	09	06.91875	21	56	31.91	+00	49	09.0	511
1067	1989	09	06.94028	21	56	30.88	+00	49	05.9	511
1086	1989	09	03.07431	23	31	09.69	+04	52	06.0	16.4 511
1086	1989	09	03.09514	23	31	08.73	+04	52	03.6	511
1086	1989	09	04.96806	23	29	46.36	+04	47	44.1	511
1086	1989	09	04.98889	23	29	45.50	+04	47	43.1	511
1086	1989	09	05.01771	23	29	44.12	+04	47	35.6	511
1086	1989	09	07.10556	23	28	10.47	+04	42	22.0	511
1086	1989	09	07.12639	23	28	09.52	+04	42	18.2	511
1106	1989	09	05.05069	22	49	14.96	-01	51	16.0	17.0 511
1106	1989	09	05.07153	22	49	13.87	-01	51	17.2	511
1106	1989	09	06.02569	22	48	18.14	-01	53	06.1	511
1106	1989	09	06.04653	22	48	16.82	-01	53	06.5	511
1106	1989	09	08.00625	22	46	22.59	-01	56	51.1	511
1106	1989	09	08.02708	22	46	21.41	-01	56	53.4	511
1258	1989	09	03.07431	23	26	17.26	+05	53	33.1	16.7 511
1258	1989	09	03.09514	23	26	16.37	+05	53	30.7	511
1258	1989	09	04.96806	23	24	53.82	+05	48	55.2	511
1258	1989	09	04.98889	23	24	52.92	+05	48	52.7	511
1258	1989	09	05.01771	23	24	51.59	+05	48	49.3	511
1297	1989	09	02.85903	20	52	19.77	-11	48	12.2	16.7 511
1297	1989	09	02.88472	20	52	18.82	-11	48	15.1	511
1297	1989	09	05.87118	20	50	33.96	-11	51	54.1	511
1297	1989	09	05.89722	20	50	33.14	-11	51	56.6	511
1297	1989	09	05.91944	20	50	32.40	-11	51	57.1	511
1361	1989	09	01.94687	21	48	55.11	-04	53	42.9	16.0 511
1361	1989	09	01.97257	21	48	54.33	-04	54	00.9	511
1361	1989	09	03.91007	21	47	45.06	-05	18	12.0	511
1361	1989	09	03.93229	21	47	44.27	-05	18	28.0	511
1361	1989	09	07.90764	21	45	31.21	-06	07	45.8	511
1361	1989	09	07.92847	21	45	30.66	-06	08	00.3	511
1382	1989	09	03.01563	23	21	41.99	-04	31	35.9	511
1382	1989	09	03.04896	23	21	39.95	-04	31	45.9	511
1382	1989	09	07.06076	23	17	38.43	-04	53	50.1	16.7 511
1382	1989	09	07.08194	23	17	37.38	-04	53	55.6	511
1597	1989	09	03.01563	23	20	03.60	-06	41	10.6	511
1597	1989	09	03.04896	23	20	01.93	-06	41	30.0	511
1597	1989	09	07.06076	23	17	08.72	-07	14	30.6	17.7 511
1597	1989	09	07.08194	23	17	08.23	-07	14	38.7	511
1825	1989	09	02.07500	23	22	06.26	+01	57	52.3	17.0 511
1825	1989	09	02.12569	23	22	03.78	+01	57	41.0	511
1825	1989	09	04.04965	23	20	29.67	+01	50	34.6	511
1825	1989	09	04.06944	23	20	28.46	+01	50	29.6	511
1825	1989	09	08.05139	23	17	08.28	+01	34	29.6	511
1825	1989	09	08.07222	23	17	07.32	+01	34	24.1	511
1979	1989	09	01.94687	21	54	28.20	-04	16	35.1	17.6 511
1979	1989	09	01.97257	21	54	26.95	-04	16	45.3	511
1979	1989	09	03.91007	21	52	50.25	-04	31	08.0	511
1979	1989	09	03.93229	21	52	48.86	-04	31	21.1	511
2022	1989	09	03.01563	23	30	37.74	-05	57	11.8	511
2022	1989	09	03.04896	23	30	36.05	-05	57	18.9	511
2022	1989	09	07.06076	23	27	08.47	-06	09	30.9	16.8 511
2022	1989	09	07.08194	23	27	07.53	-06	09	33.3	511
2402	1989	09	02.07500	23	34	41.61	-00	58	27.0	16.7 511
2402	1989	09	02.10486	23	34	39.78	-00	58	30.9	511
2402	1989	09	02.12569	23	34	38.73	-00	58	31.6	511
2467	1989	09	01.94687	21	59	41.09	-06	24	07.9	16.0 511

2467	1989	09	01.97257	21	59	39.64	-06	24	08.9		511
2467	1989	09	03.91007	21	57	53.58	-06	25	28.6		511
2467	1989	09	03.93229	21	57	52.43	-06	25	30.6		511
2467	1989	09	07.90764	21	54	29.34	-06	28	18.5		511
2467	1989	09	07.92847	21	54	28.37	-06	28	19.5		511
2697	1989	09	02.07500	23	23	01.46	+01	24	21.6	16.8	511
2697	1989	09	02.10486	23	23	00.22	+01	24	14.8		511
2697	1989	09	02.12569	23	22	59.51	+01	24	11.0		511
2697	1989	09	04.04965	23	21	44.67	+01	17	23.2		511
2697	1989	09	04.06944	23	21	43.79	+01	17	18.8		511
2697	1989	09	08.05139	23	19	05.33	+01	02	24.8		511
2697	1989	09	08.07222	23	19	04.53	+01	02	21.1		511
2824	1989	09	05.87118	21	05	21.49	-14	50	09.0	16.8	511
2824	1989	09	05.89722	21	05	20.44	-14	50	11.7		511
2824	1989	09	05.91944	21	05	19.62	-14	50	10.8		511
2921	1989	09	03.01563	23	27	26.86	-04	16	12.5		511
2921	1989	09	03.04896	23	27	25.48	-04	16	23.0		511
2921	1989	09	07.06076	23	24	39.77	-04	36	33.4	17.7	511
2921	1989	09	07.08194	23	24	39.19	-04	36	36.6		511
2987	1989	09	02.91354	21	58	41.66	-11	55	38.4	17.6	511
2987	1989	09	02.94201	21	58	40.53	-11	55	47.0		511
2987	1989	09	04.92118	21	57	12.22	-12	04	19.6		511
2987	1989	09	04.94271	21	57	11.32	-12	04	23.4		511
3011	1989	09	03.07431	23	30	37.74	+03	03	55.9	17.5	511
3011	1989	09	03.09514	23	30	36.72	+03	03	50.5		511
3011	1989	09	04.96806	23	29	23.71	+02	53	52.8		511
3011	1989	09	04.98889	23	29	22.93	+02	53	47.5		511
3011	1989	09	05.01771	23	29	21.69	+02	53	38.7		511
3011	1989	09	07.10556	23	27	57.92	+02	42	04.0		511
3011	1989	09	07.12639	23	27	57.11	+02	41	56.7		511
3011	1989	09	08.05139	23	27	19.53	+02	36	40.4	17.7	511
3011	1989	09	08.07222	23	27	18.51	+02	36	32.5		511
3234	1989	09	03.01563	23	26	11.45	-05	19	41.0		511
3234	1989	09	03.04896	23	26	09.95	-05	19	50.7		511
3234	1989	09	07.06076	23	23	16.17	-05	38	49.5	17.5	511
3234	1989	09	07.08194	23	23	15.55	-05	38	52.3		511
3533	1989	09	05.05069	22	47	59.87	-02	07	40.9	16.8	511
3533	1989	09	05.07153	22	47	58.87	-02	07	48.0		511
3533	1989	09	06.02569	22	47	06.07	-02	15	35.3		511
3533	1989	09	06.04653	22	47	04.90	-02	15	43.2		511
3815	1989	09	03.07431	23	21	20.41	+02	58	09.3	17.3	511
3815	1989	09	03.09514	23	21	19.38	+02	58	00.6		511
3815	1989	09	04.96806	23	19	51.71	+02	44	24.7		511
3815	1989	09	04.98889	23	19	50.81	+02	44	16.6		511
3815	1989	09	05.01771	23	19	49.44	+02	44	02.5		511
3815	1989	09	07.10556	23	18	09.96	+02	28	24.9		511
3815	1989	09	07.12639	23	18	09.05	+02	28	16.3		511
3815	1989	09	08.05139	23	17	25.02	+02	21	10.7	17.5	511
3815	1989	09	08.07222	23	17	24.17	+02	21	00.8		511
4133	1989	09	02.91354	21	53	27.43	-10	07	24.7	17.5	511
4133	1989	09	02.94201	21	53	25.62	-10	07	26.5		511
4133	1989	09	04.92118	21	51	36.37	-10	08	58.6		511
4133	1989	09	04.94271	21	51	35.25	-10	08	59.8		511

556 Reintal
F. Frevert, Dilichstrasse 1, D-6330 Wetzlar, Federal Republic of Germany
Observer F. Seiler
0.30-m f/6 reflector
AGK3

68	1988	11	17.86875	04	58	46.62	+27	57	42.2	556
68	1988	11	17.87569	04	58	46.22	+27	57	42.4	556
68	1988	11	17.88264	04	58	45.82	+27	57	42.9	556
68	1988	11	17.88958	04	58	45.53	+27	57	45.5	556
68	1988	11	17.89653	04	58	45.04	+27	57	44.5	556
68	1988	11	17.90347	04	58	44.64	+27	57	45.9	556
68	1988	11	17.91042	04	58	44.27	+27	57	47.1	556
202	1989	01	04.84722	06	57	28.02	+15	23	15.8	556
202	1989	01	04.85417	06	57	27.66	+15	23	18.7	556
202	1989	01	04.86111	06	57	27.25	+15	23	20.1	556
559	1989	01	02.77083	06	48	58.88	+20	27	05.7	556
559	1989	01	02.77778	06	48	58.47	+20	27	06.4	556
559	1989	01	02.78472	06	48	58.05	+20	27	08.6	556
559	1989	01	02.79167	06	48	57.60	+20	27	10.5	556
559	1989	01	04.81250	06	46	57.71	+20	35	27.2	556
559	1989	01	04.82639	06	46	56.89	+20	35	30.8	556
559	1989	01	04.83333	06	46	56.46	+20	35	33.2	556
803	1989	02	02.79861	07	37	34.76	+12	20	24.0	556
803	1989	02	02.80556	07	37	34.50	+12	20	23.9	556
803	1989	02	02.81250	07	37	34.26	+12	20	26.1	556
803	1989	02	02.81944	07	37	33.93	+12	20	25.7	556
2365	1989	01	04.86806	06	51	24.95	+22	52	16.5	556
2365	1989	01	04.87500	06	51	24.48	+22	52	15.6	556
2365	1989	01	04.88194	06	51	24.02	+22	52	14.4	556
2365	1989	01	04.88889	06	51	23.58	+22	52	12.5	556
3037	1988	02	15.86111	11	17	49.59	+29	04	50.6	556
3037	1988	02	15.86806	11	17	49.19	+29	04	56.8	556
3037	1988	02	15.87500	11	17	48.91	+29	05	00.4	556
3037	1988	02	15.88889	11	17	48.28	+29	05	11.8	556
3228	1989	02	04.82639	08	57	56.66	+15	42	35.5	556
3228	1989	02	04.84028	08	57	55.71	+15	42	37.2	556
3228	1989	02	04.84722	08	57	55.41	+15	42	40.4	556
3228	1989	02	04.85417	08	57	54.90	+15	42	40.9	556

563 Seewalchen
F. Frevert, Dilichstrasse 1, D-6330 Wetzlar, Federal Republic of Germany
Observer M. Bressler
0.25-m f/6 reflector
AGK3, SAOC

3211	1988	11	05.78681	00	37	45.33	+20	10	50.7	563
3211	1988	11	05.80069	00	37	44.87	+20	10	49.2	563
3211	1988	11	05.81597	00	37	44.19	+20	10	47.0	563
3888	1988	07	23.91667	20	04	46.65	+17	35	39.2	563
3888	1988	07	23.93056	20	04	46.11	+17	35	28.3	563
3888	1988	07	23.94444	20	04	45.56	+17	35	17.1	563
3888	1988	07	23.96944	20	04	44.53	+17	34	56.3	563
3951	1988	11	01.77639	00	19	25.71	+12	07	23.3	563
3951	1988	11	01.79028	00	19	25.40	+12	07	17.9	563
3951	1988	11	01.80417	00	19	25.15	+12	07	12.9	563
3967	1989	02	07.84931	07	47	00.26	+30	10	28.7	563
3967	1989	02	07.85764	07	46	59.92	+30	10	33.9	563
3967	1989	02	07.88056	07	46	58.83	+30	10	39.5	563
3967	1989	02	07.89028	07	46	58.48	+30	10	42.4	563
4085	1989	05	02.85625	12	49	27.80	+13	11	49.3	563
4085	1989	05	02.87361	12	49	27.25	+13	11	43.6	563
4085	1989	05	02.88750	12	49	26.72	+13	11	39.5	563
4085	1989	05	02.90139	12	49	26.17	+13	11	33.5	563
4167	1989	05	07.85417	13	23	42.27	+10	20	05.8	563
4167	1989	05	07.87153	13	23	41.65	+10	20	09.2	563

4167	1989 05 07.88889	13 23 41.01	+10 20 15.7			563
4175	1989 03 05.92708	09 54 03.53	+09 05 31.3			563
4175	1989 03 05.93750	09 54 03.22	+09 05 39.7			563

568 Mauna Kea Observatory
D. J. Tholen, Institute for Astronomy, 2680 Woodlawn Drive,
Honolulu, HI 96822, U.S.A.
Observers D. J. Tholen, J. R. Spencer, D. M. Griep
IRTF telescope encoders
SAOC

1982 TA	1989 09 21.35556	01 10 10.22	+05 02 09.0			568
1982 TA	1989 09 21.51493	01 09 54.60	+05 02 18.8			568
1982 TA	1989 09 22.29861	01 08 40.05	+05 03 06.4			568
1982 TA	1989 09 22.43310	01 08 26.14	+05 03 14.0			568
1987 QA	1989 09 08.45140	21 16 57.77	+09 12 41.6		17.1V	568
1989 PB	1989 08 15.46597	23 43 05.71	-02 45 29.9			568
1989 PB	1989 08 23.35139	00 34 12.98	+37 15 36.5		12.4V	568
243	1989 09 22.24281	16 56 02.90	-23 28 50.5			568
449	1989 09 21.38611	03 32 17.35	+15 44 16.6			568
449	1989 09 22.36759	03 32 25.22	+15 44 14.8			568
1917	1989 09 08.39858	19 44 42.47	+33 59 38.3		14.1V	568

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

714	1989 09 03.86247	23 06 12.67	+16 49 28.4			573
714	1989 09 03.87063	23 06 12.28	+16 49 25.8			573
980	1989 08 05.89019	21 35 35.10	+03 11 23.2			573
980	1989 08 05.89690	21 35 34.70	+03 11 25.2			573

587 Sormano
P. Sicoli, Via Valli 9, I-22040 Garbagnate Monastero (Como), Italy
Observers M. Cavagna, P. Sicoli, A. Testa, G. Vospini
0.5-m f/8 reflector
SAOC

304	1989 07 05.94398	19 03 18.14	+03 02 35.1			587
304	1989 07 17.00191	18 54 03.44	+01 30 54.9			587
304	1989 07 26.88493	18 46 48.02	-00 26 13.4			587

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

1988 EC	1989 08 07.36719	23 37 56.39	-08 56 18.8			657
1988 EC	1989 08 08.35458	23 37 08.76	-08 45 25.0			657
1988 EC	1989 08 08.39764	23 37 06.45	-08 44 55.5			657
1988 EC	1989 08 25.28549	23 16 46.31	-05 34 07.6			657
1988 EC	1989 08 25.30007	23 16 44.89	-05 33 57.0			657
1988 EC	1989 08 28.36632	23 11 54.41	-04 58 47.1			657
1988 EC	1989 08 28.40660	23 11 50.31	-04 58 17.6			657
1988 EC	1989 09 03.28611	23 01 59.40	-03 50 59.4			657
1988 KG	1989 08 04.32830	22 05 51.37	+05 11 31.4			657
1988 KG	1989 08 05.29896	22 05 17.66	+05 08 32.1			657
1988 KG	1989 08 05.36146	22 05 15.32	+05 08 18.0			657
1988 KG	1989 08 07.35747	22 04 03.22	+05 01 17.7			657
1988 KG	1989 08 07.43854	22 04 00.10	+05 00 56.9			657
1988 KG	1989 08 08.32333	22 03 27.34	+04 57 32.7			657
1988 KG	1989 08 08.36361	22 03 25.74	+04 57 22.2			657
1988 KG	1989 08 26.33368	21 50 54.59	+03 10 03.8			657

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1988 KG    1989 09 03.31736  21 45 24.16  +02 04 03.6                    657
1989 OB    1989 08 26.34757  21 29 00.83  +12 21 22.5                    657
1989 OB    1989 08 26.36493  21 29 01.07  +12 22 04.9                    657
1989 OB    1989 09 06.28826  21 34 42.84  +19 21 38.5                    657
1989 OB    1989 09 06.33410  21 34 44.61  +19 23 19.1                    657
1989 OB    1989 09 08.24097  21 36 22.16  +20 31 59.9                    657
1989 PB    1989 08 24.25704  01 03 18.24  +50 35 39.9                    657
1989 PB    1989 08 24.26328  01 03 34.87  +50 41 44.5                    657
1989 PB    1989 08 24.26954  01 03 51.69  +50 47 52.4                    657
1989 PB    1989 08 25.23965  02 17 58.78  +66 20 06.3                  t 657
1989 PB    1989 08 25.24660  02 18 50.40  +66 26 22.2                  t 657
```

675 Palomar
J. Gibson, OAO Corporation and Jet Propulsion Laboratory, MS 238-332, Pasadena, CA 91109, U.S.A. (1)
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C. Shoemaker, P.O. Box 984, Flagstaff, AZ 86002, U.S.A. (3)
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E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001, U.S.A. (6)
9 = 3 + 6
Observers R. Crockett (2, S), T. Gehrels (4, L), J. Gibson (1, C), E. Helin (2, S), H. E. Holt (3, S), H. R. Holt (2, S), C. Mikolajczak (2, S), B. Roman (2, S), C. S. Shoemaker (3, S), E. M. Shoemaker (3, S), N. G. Thomas (3, S), K. W. Zeigler (6, S)
Measurers J. Alu (2), J. Gibson (1), B. Roman (2), C. S. Shoemaker (3), D. Tracy (2), C. J. van Houten (4), I. van Houten-Groeneveld (4), A. Wisse (4), K. W. Zeigler (6)
1.5-m reflector + CCD (C), 1.2-m (L) and 0.46-m (S) Schmidt telescopes

```
1954 NZ  * 1954 07 10.44479  22 35 09.04  -03 05 09.2          17.5V 1 675
1954 NA1 * 1954 07 10.44479  22 35 09.77  -03 02 49.1          17.5V 1 675
1954 NB1 * 1954 07 10.44479  22 35 34.12  -03 14 02.7          17.5V 1 675
1959 LM    1988 07 07.46270  00 16 31.79  +08 20 39.8                1 675
1959 LM    1988 07 07.46674  00 16 31.81  +08 20 40.3                1 675
1959 LM    1988 07 07.47074  00 16 31.85  +08 20 41.3                1 675
1959 LM    1988 07 07.47485  00 16 31.86  +08 20 42.2                1 675
1959 LM    1988 07 08.45971  00 16 40.80  +08 24 08.5                1 675
1959 LM    1988 07 08.46646  00 16 40.83  +08 24 09.9                1 675
1959 LM    1988 07 08.47120  00 16 40.87  +08 24 10.7                1 675
1959 LM    1988 07 08.47961  00 16 40.93  +08 24 12.5                1 675
1959 LM    1988 08 22.35414  00 02 05.89  +08 51 36.6                1 675
1959 LM    1988 08 22.36013  00 02 05.59  +08 51 35.6                1 675
1959 LM    1988 08 22.36545  00 02 05.33  +08 51 34.7                1 675
1959 LM    1988 10 19.32618  23 05 28.75  +03 13 32.9                1 675
1959 LM    1988 10 19.33506  23 05 28.36  +03 13 29.8                1 675
1959 LM    1988 10 19.33993  23 05 28.15  +03 13 28.2                1 675
1959 LM    1988 10 20.27906  23 04 49.02  +03 07 45.4                1 675
1959 LM    1988 10 20.28515  23 04 48.81  +03 07 43.5                1 675
1959 LM    1988 10 20.29066  23 04 48.54  +03 07 41.2                1 675
1981 RP2   1989 09 05.17248  17 59 56.52  -23 13 32.0          16.0  2 675
1981 RP2   1989 09 05.19670  17 59 57.93  -23 13 24.2                2 675
1982 TA    1989 09 05.43767  01 24 28.86  +04 35 14.2          16.0  2 675
1982 TA    1989 09 05.46840  01 24 28.00  +04 35 17.8                2 675
1982 TA    1989 09 07.39462  01 23 38.32  +04 39 37.3                2 675
1985 TP    1989 08 02.26042  19 16 24.09  -19 39 00.6          17.0  9 675
1985 TP    1989 08 02.29066  19 16 22.79  -19 39 02.4                9 675
1986 AE    1989 06 15.39465  22 07 24.53  +03 02 25.1                1 675
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1986	AE		1989	06	15.39941	22	07	24.63	+03	02	30.4		1 675
1986	AE		1989	06	15.40418	22	07	24.71	+03	02	35.7		1 675
1987	FF1		1989	09	05.43073	01	19	10.67	-15	28	13.2	16.5	2 675
1987	FF1		1989	09	05.46267	01	19	09.87	-15	28	30.4		2 675
1987	FF1		1989	09	07.38889	01	18	23.17	-15	45	00.4		2 675
1987	FF1		1989	09	07.41285	01	18	22.49	-15	45	12.5		2 675
1987	QA		1989	09	01.21319	21	30	22.93	+15	14	33.8	18	3 675
1987	QA		1989	09	01.24427	21	30	19.28	+15	13	07.6		3 675
1988	EJ		1989	09	06.26684	21	52	45.71	+02	38	38.5	16.5	2 675
1988	EJ		1989	09	06.29132	21	52	44.68	+02	38	23.4		2 675
1988	EJ		1989	09	08.24323	21	51	28.11	+02	16	42.4		2 675
1988	EJ		1989	09	08.26736	21	51	27.10	+02	16	30.6		2 675
1988	KG		1989	09	05.26823	21	44	09.05	+01	46	51.3	14.2	2 675
1988	KG		1989	09	05.29167	21	44	08.28	+01	46	39.0		2 675
1988	KG		1989	09	07.24358	21	42	56.32	+01	29	10.0		2 675
1988	KG		1989	09	07.26892	21	42	55.43	+01	28	54.7		2 675
1988	PC1		1988	09	11.18872	21	10	05.74	+14	51	07.5	17.5	3 675
1988	PC1		1988	09	13.15365	21	09	13.39	+14	36	09.8		3 675
1988	PL1		1988	10	07.13767	20	58	18.18	+16	16	09.7	18	3 675
1988	PL1		1988	10	09.12292	20	59	19.35	+15	50	10.1		3 675
1989	KD		1989	07	07.23385	15	53	36.29	-10	35	28.1	15.6	3 675
1989	OB		1989	08	29.28350	21	30	02.97	+14	17	13.2	15	3 675
1989	OB		1989	09	01.21319	21	31	25.14	+16	11	03.6		3 675
1989	OB		1989	09	03.27638	21	32	35.48	+17	29	46.6		3 675
1989	PC		1989	09	05.21007	20	15	19.78	-28	36	02.6	14.8	2 675
1989	PC		1989	09	05.23611	20	15	19.91	-28	36	23.4		2 675
1989	PC		1989	09	07.23698	20	15	29.05	-29	04	48.6		2 675
1989	PC		1989	09	07.26233	20	15	29.06	-29	05	08.3		2 675
1989	PE		1989	09	05.30990	23	24	37.57	-19	58	35.3	16.8	2 675
1989	PE		1989	09	05.33368	23	24	36.17	-19	59	16.7		2 675
1989	PE		1989	09	07.28142	23	22	54.82	-20	54	29.8		2 675
1989	PE		1989	09	07.32222	23	22	52.56	-20	55	37.2		2 675
1989	PF		1989	09	05.31580	23	36	40.02	-15	18	44.9	15.5	2 675
1989	PF		1989	09	05.33924	23	36	39.17	-15	19	10.7		2 675
1989	PF		1989	09	08.29028	23	35	05.99	-16	09	57.8		2 675
1989	PF		1989	09	08.31719	23	35	04.96	-16	10	27.0		2 675
1989	PK		1989	09	05.32188	00	35	24.93	+27	22	26.1	15.7	2 675
1989	PK		1989	09	05.34497	00	35	23.51	+27	22	50.3		2 675
1989	PK		1989	09	07.33646	00	33	25.80	+27	56	44.5		2 675
1989	PK		1989	09	07.36875	00	33	24.11	+27	57	11.1		2 675
1989	PT		1989	09	06.27951	23	01	04.70	-10	26	03.0	16.5	2 675
1989	PT		1989	09	06.30399	23	01	03.39	-10	26	16.5		2 675
1989	PT		1989	09	08.25451	22	59	26.37	-10	44	46.3		2 675
1989	PT		1989	09	08.27882	22	59	25.08	-10	44	58.8		2 675
1989	PU	*	1989	08	02.38784	22	17	18.98	-13	49	14.8	16	3 675
1989	PU		1989	08	02.41719	22	17	18.52	-13	50	06.4		3 675
1989	PU		1989	08	29.35989	22	03	28.15	-27	12	07.0	16.5	3 675
1989	PU		1989	09	01.27607	22	01	45.59	-28	28	16.0		3 675
1989	QF		1989	09	08.30174	23	35	24.35	-01	39	57.3	15.5	2 675
1989	QF		1989	09	08.32899	23	35	17.05	-01	40	19.4		2 675
1989	RB	*	1989	09	05.30990	23	17	56.22	-20	58	25.0	15.7	2 675
1989	RB		1989	09	05.33368	23	17	53.94	-20	58	02.6		2 675
1989	RB		1989	09	07.28142	23	14	56.56	-20	28	25.3		2 675
1989	RB		1989	09	07.32222	23	14	52.63	-20	27	47.9		2 675
1989	RC		1989	08	09.36424	22	16	32.95	-08	20	49.8	14.0	2 675
1989	RC		1989	08	09.39601	22	16	45.43	-08	22	04.9		2 675
1989	RC	*	1989	09	05.38958	00	34	02.80	-19	52	24.3	16.0	2 675
1989	RC		1989	09	05.41927	00	34	06.90	-19	52	40.1		2 675
1989	RC		1989	09	07.34896	00	38	56.82	-20	09	59.4		2 675

1989	RC		1989	09	07.37483	00	39	00.12	-20	10	11.7		2 675
1989	RZ	*	1989	09	05.36771	00	31	24.29	+17	19	43.3	15.5	2 675
1989	RZ		1989	09	05.40122	00	31	22.41	+17	20	25.3		2 675
1989	RZ		1989	09	08.36198	00	28	23.63	+18	16	02.8		2 675
1989	RZ		1989	09	08.38750	00	28	21.86	+18	16	30.9		2 675
1989	RA1	*	1989	09	06.31597	23	25	54.12	-07	11	08.1	16.0	2 675
1989	RA1		1989	09	06.34028	23	25	52.88	-07	11	38.6		2 675
1989	RA1		1989	09	08.26163	23	24	26.76	-07	50	24.6		2 675
1989	RA1		1989	09	08.28438	23	24	25.65	-07	50	49.9		2 675
1989	RB1	*	1989	09	05.26823	21	48	13.67	+00	25	59.8	16.5	2 675
1989	RB1		1989	09	05.29167	21	48	12.95	+00	25	19.1		2 675
1989	RB1		1989	09	07.24358	21	47	07.43	-00	28	49.3		2 675
1989	RB1		1989	09	07.26892	21	47	06.54	-00	29	29.2		2 675
1989	RP1	*	1989	09	05.38281	00	08	07.79	-03	37	37.3	15.5	2 675
1989	RP1		1989	09	05.41337	00	08	06.69	-03	38	02.5		2 675
1989	RP1		1989	09	07.33646	00	07	06.67	-04	04	01.3		2 675
1989	RP1		1989	09	07.36267	00	07	05.74	-04	04	22.2		2 675
1989	RQ1	*	1989	09	05.38281	00	19	30.66	-03	49	54.8	15.0	2 675
1989	RQ1		1989	09	05.41337	00	19	30.19	-03	50	17.5		2 675
1989	RQ1		1989	09	07.33646	00	19	11.52	-04	15	16.1		2 675
1989	RQ1		1989	09	07.36267	00	19	11.07	-04	15	37.0		2 675
1989	RR1	*	1989	09	05.32188	00	43	59.39	+30	11	57.5	16.8	2 675
1989	RR1		1989	09	05.34497	00	43	58.55	+30	12	07.0		2 675
1989	RR1		1989	09	07.33646	00	42	47.83	+30	28	28.5		2 675
1989	RR1		1989	09	07.36875	00	42	46.73	+30	28	40.3		2 675
1989	RS1	*	1989	09	06.26684	21	54	14.50	-02	36	08.1	16.5	2 675
1989	RS1		1989	09	06.29132	21	54	17.65	-02	36	42.2		2 675
1989	RS1		1989	09	08.24323	21	59	12.37	-03	24	40.6		2 675
1989	RT1	*	1989	09	06.37483	00	23	57.09	-00	30	01.0	16.2	2 675
1989	RT1		1989	09	06.39878	00	23	55.67	-00	29	44.6		2 675
1989	RT1		1989	09	08.34913	00	22	03.09	-00	07	27.5		2 675
1989	RT1		1989	09	08.37465	00	22	01.39	-00	07	10.7		2 675
1989	RU1	*	1989	09	06.39878	00	32	43.03	+00	16	06.8	16.5	2 675
1989	RU1		1989	09	08.34913	00	30	21.85	+00	39	07.3		2 675
1989	RU1		1989	09	08.37465	00	30	19.72	+00	39	24.4		2 675
1989	RV1	*	1989	09	01.36631	00	04	18.91	+00	53	42.0	16	3 675
1989	RV1		1989	09	04.40920	00	03	39.21	-00	03	39.2		3 675
1989	RW1	*	1989	09	05.30990	23	19	46.31	-21	36	22.7	16.5	2 675
1989	RW1		1989	09	05.33368	23	19	43.90	-21	36	14.7		2 675
1989	RW1		1989	09	07.28142	23	16	36.91	-21	23	49.2		2 675
1989	RW1		1989	09	07.32222	23	16	32.74	-21	23	33.3		2 675
1989	RX1	*	1989	09	05.43767	01	24	56.62	+02	01	55.9	16.0	2 675
1989	RX1		1989	09	05.46840	01	24	56.99	+02	01	34.3		2 675
1989	RX1		1989	09	07.39462	01	25	28.41	+01	38	48.6		2 675
1989	RX1		1989	09	07.41806	01	25	28.61	+01	38	32.5		2 675
1989	RY1	*	1989	09	06.38038	00	50	56.57	-05	27	21.3	16.0	2 675
1989	RY1		1989	09	06.40451	00	50	55.85	-05	27	40.6		2 675
1989	RY1		1989	09	08.39358	00	50	04.85	-05	55	10.1		2 675
1989	RY1		1989	09	08.41719	00	50	04.13	-05	55	29.4		2 675
1989	RC2	*	1989	09	06.27951	22	58	07.13	-09	52	29.0	16.5	2 675
1989	RC2		1989	09	06.30399	22	58	05.99	-09	52	49.6		2 675
1989	RC2		1989	09	08.25451	22	56	50.58	-10	17	12.4		2 675
1989	RC2		1989	09	08.27882	22	56	49.60	-10	17	30.3		2 675
1989	RJ2	*	1989	09	02.42621	23	10	46.09	+41	37	42.3	17	3 675
1989	RJ2		1989	09	04.34513	23	09	28.66	+41	45	20.4		3 675
1989	RK2	*	1989	09	06.27951	23	02	56.70	-07	34	29.7	16.0	2 675
1989	RK2		1989	09	06.30399	23	02	55.27	-07	34	35.8		2 675
1989	RK2		1989	09	08.25451	23	01	13.84	-07	42	20.6		2 675
1989	RK2		1989	09	08.27882	23	01	12.38	-07	42	27.1		2 675

3523	P-L	*	1960	10	17.23681	00	26	17.55	+14	30	02.3	17.6	4 675
3523	P-L		1960	10	22.12083	00	22	13.78	+14	10	12.1		4 675
3523	P-L		1960	10	22.17778	00	22	10.98	+14	09	58.2		4 675
3523	P-L		1960	10	22.29097	00	22	05.49	+14	09	30.4		4 675
3523	P-L		1960	10	24.21256	00	20	37.61	+14	01	33.0		4 675
3523	P-L		1960	10	24.30972	00	20	33.11	+14	01	11.5		4 675
3523	P-L		1960	10	25.20486	00	19	54.14	+13	57	29.6		4 675
3523	P-L		1960	10	25.32778	00	19	48.49	+13	56	59.1		4 675
3523	P-L		1960	10	26.28264	00	19	08.21	+13	53	02.2		4 675
3523	P-L		1960	10	26.37951	00	19	03.88	+13	52	39.9		4 675
1107	T-2		1973	09	19.18611	00	11	23.40	+05	22	16.1		4 675
1107	T-2		1973	09	19.23785	00	11	20.79	+05	22	01.3		4 675
1107	T-2		1973	09	20.22847	00	10	32.00	+05	17	00.6		4 675
1107	T-2		1973	09	24.34688	00	07	07.52	+04	55	30.1		4 675
1107	T-2		1973	09	24.41597	00	07	03.88	+04	55	07.3		4 675
1107	T-2		1973	09	25.24375	00	06	23.12	+04	50	38.7		4 675
1107	T-2		1973	09	25.30729	00	06	19.75	+04	50	21.3		4 675
1107	T-2	*	1973	09	29.25330	00	03	05.69	+04	28	48.6	17.8	4 675
1107	T-2		1973	09	29.31806	00	03	02.46	+04	28	26.5		4 675
1107	T-2		1973	09	30.21007	00	02	19.41	+04	23	32.7		4 675
1107	T-2		1973	09	30.27431	00	02	16.22	+04	23	10.6		4 675
1107	T-2		1973	10	04.28958	23	59	07.46	+04	01	08.9		4 675
1107	T-2		1973	10	04.35208	23	59	04.41	+04	00	48.8		4 675
1107	T-2		1973	10	05.31684	23	58	20.64	+03	55	38.1		4 675
1107	T-2		1973	10	05.37917	23	58	17.72	+03	55	18.0		4 675
2069	T-2		1973	09	25.25642	00	27	07.26	+07	13	24.6		4 675
2069	T-2		1973	09	25.32031	00	27	04.47	+07	12	56.3		4 675
2069	T-2		1973	09	29.26632	00	24	17.57	+06	43	25.6		4 675
2069	T-2	*	1973	09	29.33073	00	24	14.78	+06	42	56.0	16.7	4 675
2069	T-2		1973	09	30.22257	00	23	36.96	+06	36	07.8		4 675
2069	T-2		1973	09	30.28785	00	23	34.18	+06	35	37.5		4 675
2069	T-2		1973	10	04.30208	00	20	44.77	+06	04	54.5		4 675
2069	T-2		1973	10	04.36476	00	20	42.07	+06	04	25.7		4 675
2069	T-2		1973	10	05.32917	00	20	01.80	+05	57	00.7		4 675
2069	T-2		1973	10	05.39132	00	19	59.14	+05	56	32.5		4 675
2086	T-2		1973	09	19.19948	00	32	44.88	+05	57	36.8		4 675
2086	T-2		1973	09	19.25006	00	32	42.72	+05	57	26.7		4 675
2086	T-2		1973	09	20.26458	00	31	58.67	+05	54	00.7		4 675
2086	T-2		1973	09	24.36181	00	28	57.49	+05	39	43.0		4 675
2086	T-2		1973	09	24.42847	00	28	54.61	+05	39	29.0		4 675
2086	T-2		1973	09	25.25642	00	28	17.42	+05	36	27.7		4 675
2086	T-2		1973	09	25.32031	00	28	14.40	+05	36	14.3		4 675
2086	T-2		1973	09	29.26632	00	25	15.52	+05	21	36.2		4 675
2086	T-2	*	1973	09	29.33073	00	25	12.60	+05	21	20.8	18.7	4 675
2086	T-2		1973	09	30.22257	00	24	32.04	+05	17	58.4		4 675
2086	T-2		1973	09	30.28785	00	24	28.98	+05	17	43.5		4 675
2086	T-2		1973	10	04.30208	00	21	26.13	+05	02	19.7		4 675
2086	T-2		1973	10	04.36476	00	21	23.20	+05	02	04.3		4 675
2086	T-2		1973	10	05.32917	00	20	39.57	+04	58	22.1		4 675
2086	T-2		1973	10	05.39132	00	20	36.65	+04	58	08.0		4 675
2272	T-2		1973	09	25.25642	00	44	56.37	+05	32	51.2		4 675
2272	T-2		1973	09	25.32031	00	44	52.31	+05	32	40.1		4 675
2272	T-2		1973	09	29.26632	00	40	44.40	+05	19	38.7		4 675
2272	T-2	*	1973	09	29.33073	00	40	40.26	+05	19	24.3	17.3	4 675
2272	T-2		1973	09	30.22257	00	39	43.53	+05	16	18.2		4 675
2272	T-2		1973	09	30.28785	00	39	39.25	+05	16	03.6		4 675
2272	T-2		1973	10	04.30208	00	35	21.03	+05	01	53.5		4 675
2272	T-2		1973	10	04.36476	00	35	16.89	+05	01	40.5		4 675
2272	T-2		1973	10	05.32917	00	34	14.81	+04	58	10.7		4 675

2272	T-2		1973	10	05.39132	00	34	10.76	+04	57	58.2		4 675
3025	T-2		1973	09	19.21250	00	06	27.40	-03	51	04.5		4 675
3025	T-2		1973	09	19.26354	00	06	24.79	-03	51	25.9		4 675
3025	T-2		1973	09	20.27795	00	05	36.14	-03	58	15.4		4 675
3025	T-2		1973	09	24.37431	00	02	15.67	-04	25	23.3		4 675
3025	T-2		1973	09	24.44167	00	02	12.02	-04	25	49.3		4 675
3025	T-2		1973	09	25.26875	00	01	31.88	-04	31	10.7		4 675
3025	T-2		1973	09	25.33299	00	01	28.50	-04	31	35.4		4 675
3025	T-2		1973	09	29.27986	23	58	16.34	-04	55	56.1		4 675
3025	T-2		1973	09	29.34375	23	58	13.05	-04	56	20.1		4 675
3025	T-2		1973	09	30.23524	23	57	30.88	-05	01	33.5		4 675
3025	T-2	*	1973	09	30.30174	23	57	27.42	-05	01	56.7	18.1	4 675
3025	T-2		1973	10	04.31493	23	54	22.87	-05	23	47.3		4 675
3025	T-2		1973	10	04.37674	23	54	19.86	-05	24	05.9		4 675
3025	T-2		1973	10	05.34167	23	53	37.73	-05	28	55.5		4 675
3025	T-2		1973	10	05.40347	23	53	34.97	-05	29	15.4		4 675
3285	T-2		1973	09	29.27986	00	19	35.03	-04	53	16.1		4 675
3285	T-2		1973	09	29.34375	00	19	31.49	-04	53	29.0		4 675
3285	T-2		1973	09	30.23524	00	18	46.37	-04	55	53.1		4 675
3285	T-2	*	1973	09	30.30174	00	18	42.73	-04	56	02.0	16.3	4 675
3285	T-2		1973	10	04.31493	00	15	20.55	-05	05	09.5		4 675
3285	T-2		1973	10	04.37674	00	15	17.22	-05	05	17.1		4 675
3285	T-2		1973	10	05.34167	00	14	29.95	-05	07	04.7		4 675
3285	T-2		1973	10	05.40347	00	14	26.72	-05	07	11.4		4 675
3704	T-2		1973	09	19.21250	00	05	17.94	-01	52	29.9		4 675
3704	T-2		1973	09	19.26354	00	05	15.16	-01	52	50.5		4 675
3704	T-2		1973	09	20.27795	00	04	21.45	-01	59	50.9		4 675
3704	T-2		1973	09	24.37431	00	00	43.06	-02	27	49.3		4 675
3704	T-2		1973	09	24.44167	00	00	39.29	-02	28	15.9		4 675
3704	T-2	*	1973	09	25.26875	23	59	55.80	-02	33	50.3	19.1	4 675
3704	T-2		1973	09	25.33299	23	59	52.21	-02	34	16.4		4 675
4170	T-2		1973	09	19.22500	00	38	46.72	-02	42	56.9		4 675
4170	T-2		1973	09	19.27865	00	38	44.11	-02	43	26.2		4 675
4170	T-2		1973	09	20.30278	00	37	54.32	-02	52	53.8		4 675
4170	T-2		1973	09	24.38750	00	34	27.78	-03	30	50.6		4 675
4170	T-2		1973	09	24.45434	00	34	24.05	-03	31	28.2		4 675
4170	T-2		1973	09	25.28125	00	33	41.24	-03	39	10.4		4 675
4170	T-2		1973	09	25.34601	00	33	37.74	-03	39	46.7		4 675
4170	T-2	*	1973	09	29.29219	00	30	06.99	-04	16	02.2	17.2	4 675
4170	T-2		1973	09	29.35694	00	30	03.30	-04	16	38.4		4 675
5030	T-2		1973	09	20.21458	00	06	41.93	+15	13	33.2		4 675
5030	T-2		1973	09	20.29253	00	06	39.52	+15	13	21.6		4 675
5030	T-2		1973	09	24.40035	00	04	32.07	+15	02	56.3		4 675
5030	T-2		1973	09	24.47986	00	04	29.58	+15	02	43.9		4 675
5030	T-2	*	1973	09	25.29375	00	04	04.19	+15	00	29.3	19.2	4 675
5030	T-2		1973	09	25.35903	00	04	02.15	+15	00	19.6		4 675
5030	T-2		1973	09	29.24062	00	02	01.51	+14	49	07.6		4 675
5030	T-2		1973	09	29.30486	00	01	59.34	+14	48	55.9		4 675
5030	T-2		1973	09	30.19722	00	01	31.86	+14	46	12.5		4 675
5030	T-2		1973	09	30.35295	00	01	26.93	+14	45	44.3		4 675
5059	T-2		1973	09	19.29705	00	12	43.31	+14	52	26.9		4 675
5059	T-2		1973	09	20.21458	00	12	03.92	+14	44	23.5		4 675
5059	T-2		1973	09	20.29253	00	12	00.54	+14	43	43.2		4 675
5059	T-2		1973	09	24.40035	00	09	03.87	+14	06	21.1		4 675
5059	T-2		1973	09	24.47986	00	09	00.42	+14	05	36.6		4 675
5059	T-2	*	1973	09	25.29375	00	08	25.69	+13	57	55.4	17.0	4 675
5059	T-2		1973	09	25.35903	00	08	22.84	+13	57	17.6		4 675
5059	T-2		1973	09	29.24062	00	05	37.76	+13	19	48.0		4 675
5059	T-2		1973	09	29.30486	00	05	34.92	+13	19	10.9		4 675

5059	T-2		1973	09	30.19722	00	04	57.58	+13	10	22.0		4 675
5059	T-2		1973	09	30.35295	00	04	50.81	+13	08	49.5		4 675
5059	T-2		1973	10	04.27708	00	02	10.25	+12	29	26.6		4 675
5059	T-2		1973	10	04.33906	00	02	07.71	+12	28	47.3		4 675
5059	T-2		1973	10	05.36632	00	01	27.06	+12	18	23.0		4 675
5059	T-2		1973	10	05.42847	00	01	24.38	+12	17	44.4		4 675
5061	T-2		1973	09	19.29705	00	14	32.58	+14	43	42.6		4 675
5061	T-2		1973	09	20.21458	00	13	41.70	+14	42	43.4		4 675
5061	T-2		1973	09	20.29253	00	13	37.16	+14	42	40.1		4 675
5061	T-2		1973	09	24.40035	00	09	45.19	+14	35	04.0		4 675
5061	T-2		1973	09	24.47986	00	09	40.47	+14	34	51.1		4 675
5061	T-2	*	1973	09	25.29375	00	08	55.03	+14	32	44.8	16.8	4 675
5061	T-2		1973	09	25.35903	00	08	51.06	+14	32	33.2		4 675
5061	T-2		1973	09	29.24062	00	05	13.90	+14	20	06.4		4 675
5061	T-2		1973	09	29.30486	00	05	10.07	+14	19	52.0		4 675
5061	T-2		1973	09	30.19722	00	04	21.45	+14	16	29.9		4 675
5061	T-2		1973	09	30.35295	00	04	12.37	+14	15	54.8		4 675
5061	T-2		1973	10	04.27708	00	00	45.86	+13	59	04.4		4 675
5061	T-2		1973	10	04.33906	00	00	42.37	+13	58	47.0		4 675
5066	T-2		1973	09	19.29705	00	13	56.48	+17	20	13.1		4 675
5066	T-2		1973	09	20.21458	00	13	14.90	+17	13	37.4		4 675
5066	T-2		1973	09	20.29253	00	13	11.25	+17	13	04.6		4 675
5066	T-2		1973	09	24.40035	00	10	01.30	+16	41	05.4		4 675
5066	T-2		1973	09	24.47986	00	09	57.38	+16	40	25.7		4 675
5066	T-2	*	1973	09	25.29375	00	09	19.56	+16	33	35.2	17.3	4 675
5066	T-2		1973	09	25.35903	00	09	16.30	+16	33	02.1		4 675
5066	T-2		1973	09	29.24062	00	06	13.93	+15	58	34.7		4 675
5066	T-2		1973	09	29.30486	00	06	10.78	+15	57	58.9		4 675
5066	T-2		1973	09	30.19722	00	05	29.12	+15	49	38.6		4 675
5066	T-2		1973	09	30.35295	00	05	21.48	+15	48	11.3		4 675
5066	T-2		1973	10	04.27708	00	02	20.45	+15	09	47.3		4 675
5066	T-2		1973	10	04.33906	00	02	17.56	+15	09	09.2		4 675
5066	T-2		1973	10	05.36632	00	01	31.22	+14	58	43.1		4 675
5066	T-2		1973	10	05.42847	00	01	28.37	+14	58	05.1		4 675
5148	T-2		1973	09	19.29705	00	25	35.21	+15	06	04.7		4 675
5148	T-2		1973	09	20.21458	00	24	46.91	+15	06	09.8		4 675
5148	T-2		1973	09	20.29253	00	24	42.73	+15	06	10.0		4 675
5148	T-2		1973	09	24.40035	00	20	58.49	+15	03	33.3		4 675
5148	T-2		1973	09	24.47986	00	20	53.80	+15	03	27.4		4 675
5148	T-2	*	1973	09	25.29375	00	20	09.02	+15	02	22.2	17.2	4 675
5148	T-2		1973	09	25.35903	00	20	05.07	+15	02	18.0		4 675
5148	T-2		1973	09	29.24062	00	16	27.74	+14	54	35.0		4 675
5148	T-2		1973	09	29.30486	00	16	23.93	+14	54	26.6		4 675
5148	T-2		1973	09	30.19722	00	15	34.57	+14	52	07.3		4 675
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5148	T-2		1973	10	04.33906	00	11	46.76	+14	39	12.8		4 675
5148	T-2		1973	10	05.36632	00	10	52.10	+14	35	30.3		4 675
5148	T-2		1973	10	05.42847	00	10	48.63	+14	35	15.6		4 675
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5482	T-2		1973	09	29.30486	00	26	15.58	+15	18	49.9		4 675
5482	T-2	*	1973	09	30.19722	00	25	20.88	+15	16	08.3	17.2	4 675
5482	T-2		1973	09	30.35295	00	25	10.77	+15	15	40.5		4 675
5482	T-2		1973	10	04.27708	00	21	11.68	+15	01	51.6		4 675
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5482	T-2		1973	10	05.36632	00	20	06.32	+14	57	32.7		4 675
5482	T-2		1973	10	05.42847	00	20	02.55	+14	57	16.5		4 675
5485	T-2		1973	09	29.24062	00	26	01.54	+13	11	17.2		4 675
5485	T-2		1973	09	29.30486	00	25	57.66	+13	11	00.7		4 675
5485	T-2	*	1973	09	30.19722	00	25	06.32	+13	07	00.7	17.2	4 675

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5485 T-2    1973 10 04.27708  00 21 09.92  +12 47 12.3                    4 675
5485 T-2    1973 10 04.33906  00 21 06.10  +12 46 52.1                    4 675
5485 T-2    1973 10 05.36632  00 20 07.15  +12 41 31.9                    4 675
5485 T-2    1973 10 05.42847  00 20 03.46  +12 41 12.3                    4 675
3100 T-3    1977 10 07.27031  01 30 52.78  +05 43 10.2                    4 675
3100 T-3    1977 10 11.28819  01 27 15.99  +05 18 12.6                    4 675
3100 T-3    1977 10 11.35642  01 27 12.02  +05 17 46.8                    4 675
3100 T-3    1977 10 12.28681  01 26 21.35  +05 11 58.0                    4 675
3100 T-3    1977 10 12.35347  01 26 17.56  +05 11 34.2                    4 675
3100 T-3 *  1977 10 16.27309  01 22 42.64  +04 47 28.7           19.1     4 675
3100 T-3    1977 10 16.33872  01 22 38.91  +04 47 06.6                    4 675
3100 T-3    1977 10 17.27552  01 21 47.71  +04 41 26.4                    4 675
3100 T-3    1977 10 17.34236  01 21 44.01  +04 41 02.4                    4 675
3100 T-3    1977 10 21.39792  01 18 04.56  +04 17 06.1                    4 675
3100 T-3    1977 10 21.45799  01 18 01.23  +04 16 46.8                    4 675
3100 T-3    1977 10 22.39844  01 17 11.25  +04 11 21.8                    4 675
3100 T-3    1977 10 22.45920  01 17 08.10  +04 11 01.8                    4 675
3873        1989 09 05.44410  02 05 51.01  +42 11 49.5           16.3     2 675
3873        1989 09 05.47500  02 05 51.25  +42 12 00.2                    2 675
3873        1989 09 07.40694  02 06 04.99  +42 23 07.6                    2 675
3873        1989 09 07.42951  02 06 04.86  +42 23 15.3                    2 675

688 Lowell Observatory, Anderson Mesa Station
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road,
   Flagstaff, AZ 86001, U.S.A.
Observer S. J. Bus
Measurer S. J. Bus
1.8-m Perkins reflector + Lowell CCD camera
1981 EA7    1989 08 27.47309  01 00 33.99  +18 09 16.0                      688
1981 EA7    1989 08 27.48403  01 00 34.07  +18 09 20.0                      688
1981 EK8    1989 08 27.27326  20 32 10.14  -12 43 44.1                      688
1981 EK8    1989 08 27.28196  20 32 09.81  -12 43 44.5                      688
1981 EK8    1989 08 27.33623  20 32 07.82  -12 43 47.7                      688
1981 EV8    1989 08 27.21927  22 02 35.18  -00 56 59.9                      688
1981 EV8    1989 08 27.22396  22 02 34.97  -00 57 02.0                      688
1981 EV8    1989 08 27.35810  22 02 28.42  -00 58 00.8                      688
1981 EE14   1989 08 27.31840  20 39 10.48  -07 01 03.6                      688
1981 EE14   1989 08 27.32755  20 39 10.14  -07 01 07.2                      688
1981 EE14   1989 08 27.35069  20 39 09.31  -07 01 16.0                      688
1981 EX28   1989 08 27.43657  21 59 49.66  -05 21 49.1                      688
1981 EX28   1989 08 27.45095  21 59 48.78  -05 21 51.7                      688

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R. E. McCrosky, Harvard-Smithsonian Center for Astrophysics,
   60 Garden Street, Cambridge, MA 02138, U.S.A.
Observers R. E. McCrosky, C.-Y. Shao
1.5-m reflector
AC
1951 JQ     1989 07 09.24427  19 07 43.51  -16 38 53.3                      801
1951 JQ     1989 07 29.14507  18 51 17.33  -16 06 49.4                      801
1969 QR     1989 09 01.29592  23 00 09.01  +08 56 09.6                      801
1969 QR     1989 09 03.28489  22 58 23.39  +08 43 39.0                      801
1975 ED     1989 09 01.11079  20 04 19.34  -17 25 41.0                      801
1975 ED     1989 09 03.07267  20 03 46.90  -17 27 57.6                    W 801
1975 VD     1989 08 27.30888  00 55 01.61  +03 44 32.4                      801
1976 SV10   1989 09 04.16254  21 58 50.40  -10 05 50.8                      801
1977 EG5    1989 06 29.19774  17 35 46.80  -07 04 41.8                      801
1977 EG5    1989 07 29.09360  17 14 58.26  -08 21 51.7                      801
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1978	QP1	1989	08	26.20375	22	43	42.46	-10	36	34.1		801
1979	OK15	1989	09	01.24171	21	58	08.72	-12	08	04.9		801
1979	OK15	1989	09	03.22878	21	56	40.59	-12	24	18.3		801
1979	SV9	1989	07	09.20657	18	36	09.23	-12	35	56.8		801
1979	SV9	1989	07	29.11764	18	20	53.80	-13	25	42.2		801
1981	EE37	1989	09	03.36211	01	05	57.33	+03	35	06.1		801
1982	SA13	1989	09	01.13392	20	54	23.21	-16	25	29.4		801
1982	SA13	1989	09	04.12632	20	52	57.45	-16	32	33.7		801
1982	TF2	1989	09	03.34094	00	00	44.14	+03	01	33.2		801
1982	TF2	1989	09	25.21284	23	43	10.83	+01	25	37.8		801
1984	HC2	1989	09	01.35144	00	57	41.73	-01	49	14.4	w	801
1984	JA1	1989	05	09.08986	10	13	04.53	+00	56	12.8		801
1985	KA	1989	07	29.23801	21	33	12.54	+32	29	32.0		801
1985	RG4	1989	07	29.16925	20	00	21.04	-05	28	20.1		801
1985	TN3	1989	09	01.26305	22	54	26.88	-09	32	08.3		801
1985	TN3	1989	09	04.24610	22	51	03.67	-09	22	24.1		801
1986	UG	1989	09	03.26030	22	12	05.82	-13	13	18.0		801
1986	UG	1989	09	04.20039	22	11	14.32	-13	19	29.3	W	801
1987	QA	1989	08	26.14084	21	41	36.67	+19	21	32.2		801
1987	QA	1989	09	01.17476	21	30	26.96	+15	16	16.6		801
1988	AF5	1989	08	26.09821	19	48	24.71	-13	41	35.3		801
1988	AF5	1989	09	01.07987	19	47	40.56	-14	05	47.0		801
1988	BK3	1989	08	27.22078	22	36	13.63	-01	09	22.8		801
1988	BK3	1989	09	04.21997	22	28	48.57	-02	10	53.8		801
1988	DB	1989	09	04.10352	20	49	31.37	-17	53	45.2	18	801
1988	EC	1989	08	27.23967	23	13	42.90	-05	11	40.8		801
1988	EJ	1989	08	27.15799	22	00	04.36	+04	26	50.3		801
1988	EJ	1989	09	03.18951	21	54	52.75	+03	12	29.1		801
1988	JM	1989	09	03.14633	21	01	58.19	-04	37	28.4		801
1988	KG	1989	08	27.12635	21	50	20.78	+03	03	53.6		801
1988	KG	1989	09	03.16665	21	45	30.04	+02	05	23.8		801
1989	JA	1989	09	25.35901	04	16	39.34	-08	46	24.6		801
1989	OB	1989	08	26.18559	21	28	58.00	+12	15	01.9		801
1989	OB	1989	08	27.11130	21	29	15.92	+12	51	38.7		801
6034	P-L	1989	09	01.31823	23	26	24.84	+04	54	52.3		801
1361		1989	08	27.14088	21	52	33.76	-03	41	23.9		801
1361		1989	09	01.20668	21	49	22.09	-04	44	27.1		801
1917		1989	08	26.05155	19	46	03.64	+39	33	40.6		801
1917		1989	08	27.02697	19	45	35.55	+39	18	48.1		801
4169		1989	09	03.32019	23	13	00.10	-08	52	22.6		801

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GPO 0.4-m astrograph

1979	HX4	1989	02	11.30937	10	35	23.60	+11	37	02.6	16.8	809
1979	HX4	1989	02	11.31424	10	35	23.34	+11	37	04.8		809
1979	HX4	1989	02	11.31910	10	35	23.07	+11	37	06.9		809
1979	HX4	1989	02	13.30799	10	33	37.17	+11	52	37.1		809
1979	HX4	1989	02	13.31285	10	33	36.91	+11	52	39.3		809
1979	HX4	1989	02	13.31771	10	33	36.65	+11	52	41.6		809
1979	HX4	1989	02	17.33889	10	29	54.92	+12	24	18.9		809
1979	HX4	1989	02	17.34305	10	29	54.69	+12	24	20.9		809
1979	HX4	1989	02	17.34722	10	29	54.46	+12	24	22.6		809
1979	HX4	1989	02	18.34896	10	28	58.00	+12	32	15.4		809
1979	HX4	1989	02	18.35382	10	28	57.68	+12	32	17.7		809

1979	HX4	1989	03	01.29896	10	18	33.66	+13	55	40.5	809
1979	HX4	1989	03	01.30382	10	18	33.38	+13	55	42.7	809
1979	HX4	1989	03	01.30868	10	18	33.10	+13	55	44.9	809
1981	EZ17	1989	02	08.12674	09	16	32.41	+01	04	16.7	809
1981	EZ17	1989	02	08.13299	09	16	32.10	+01	04	20.2	809
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1981	EZ17	1989	02	09.09028	09	15	43.06	+01	13	21.6	809
1981	EZ17	1989	02	09.09583	09	15	42.76	+01	13	24.6	809
1981	EZ17	1989	02	10.05972	09	14	53.39	+01	22	40.7	809
1981	EZ17	1989	02	10.06528	09	14	53.11	+01	22	44.1	809
1981	EZ17	1989	02	10.07083	09	14	52.82	+01	22	47.6	809
1981	EZ17	1989	02	11.05035	09	14	02.73	+01	32	22.1	809
1981	EZ17	1989	02	11.05521	09	14	02.48	+01	32	25.0	809
1981	EZ17	1989	02	11.06007	09	14	02.22	+01	32	27.4	809
1981	SM1	1989	02	08.28819	10	20	21.25	+11	23	12.0	17.1 809
1981	SM1	1989	02	08.29375	10	20	21.01	+11	23	13.5	809
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1981	SM1	1989	02	09.27917	10	19	38.25	+11	27	44.9	809
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1981	SM1	1989	02	12.28368	10	17	25.30	+11	41	40.1	809
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1982	SK8	1989	02	14.32674	09	28	23.00	+12	59	00.3	809
1982	SK8	1989	02	27.11493	09	18	10.80	+13	56	36.8	809
1982	SK8	1989	02	27.12118	09	18	10.51	+13	56	38.4	809
1982	SK8	1989	02	27.12743	09	18	10.22	+13	56	40.1	809
1982	SK8	1989	03	01.11771	09	16	45.90	+14	04	47.9	809
1982	SK8	1989	03	01.12396	09	16	45.62	+14	04	49.5	809
1982	SK8	1989	03	01.13021	09	16	45.35	+14	04	51.3	809
1982	SK8	1989	03	02.11736	09	16	04.96	+14	08	46.7	809
1982	SK8	1989	03	02.12292	09	16	04.75	+14	08	47.9	809
1982	SK8	1989	03	02.12847	09	16	04.51	+14	08	49.2	809
1982	SK8	1989	03	03.11285	09	15	25.32	+14	12	38.4	809
1982	SK8	1989	03	03.11771	09	15	25.12	+14	12	39.9	809
1982	SK8	1989	03	03.12257	09	15	24.91	+14	12	40.9	809
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1984	JA1	1989	02	07.35590	10	48	04.08	-05	47	47.4	809
1984	JA1	1989	02	07.36215	10	48	03.85	-05	47	47.0	809

1984	JA1	1989	02	08.34236	10	47	28.75	-05	46	20.8	809
1984	JA1	1989	02	08.34792	10	47	28.55	-05	46	20.3	809
1984	JA1	1989	02	08.35347	10	47	28.36	-05	46	19.9	809
1984	JA1	1989	02	09.32917	10	46	52.57	-05	44	44.3	809
1984	JA1	1989	02	09.33472	10	46	52.36	-05	44	44.0	809
1984	JA1	1989	02	09.34028	10	46	52.18	-05	44	43.4	809
1984	JA1	1989	02	11.29340	10	45	38.08	-05	41	00.9	809
1984	JA1	1989	02	11.29826	10	45	37.87	-05	41	00.2	809
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1984	JA1	1989	02	18.36910	10	40	45.56	-05	22	03.6	809
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1984	JA1	1989	02	19.38646	10	40	00.95	-05	18	38.5	809
1984	JA1	1989	02	19.39132	10	40	00.74	-05	18	37.9	809
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1984	JA1	1989	02	24.20590	10	36	23.97	-05	00	18.4	809
1984	JA1	1989	02	25.32882	10	35	32.18	-04	55	31.6	809
1984	JA1	1989	02	25.33368	10	35	31.94	-04	55	30.4	809
1984	JA1	1989	02	25.33854	10	35	31.70	-04	55	29.2	809
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1984	JA1	1989	02	27.33646	10	33	59.21	-04	46	33.7	809
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1984	JA1	1989	02	28.34479	10	33	12.30	-04	41	51.4	809
1984	JA1	1989	02	28.34965	10	33	12.08	-04	41	50.0	809
1984	JA1	1989	03	01.33403	10	32	26.26	-04	37	06.7	809
1984	JA1	1989	03	01.34236	10	32	25.87	-04	37	04.2	809
1984	JA1	1989	03	01.35069	10	32	25.48	-04	37	01.7	809
1984	JA1	1989	03	02.32465	10	31	40.17	-04	32	15.2	809
1984	JA1	1989	03	02.32951	10	31	39.95	-04	32	13.8	809
1984	JA1	1989	03	02.33438	10	31	39.72	-04	32	12.5	809
1984	JA1	1989	03	03.35451	10	30	52.18	-04	27	03.7	809
1984	JA1	1989	03	03.35938	10	30	51.94	-04	27	02.1	809
1984	JA1	1989	03	03.36424	10	30	51.69	-04	27	00.7	809
1984	QR	1989	02	08.24583	09	47	12.39	+13	11	51.4	16.5 809
1984	QR	1989	02	08.25139	09	47	11.87	+13	11	49.7	809
1984	QR	1989	02	08.25694	09	47	11.34	+13	11	47.9	809
1984	QR	1989	02	09.18472	09	45	45.47	+13	07	02.3	809
1984	QR	1989	02	09.19028	09	45	44.95	+13	07	00.6	809
1984	QR	1989	02	09.19583	09	45	44.42	+13	06	58.9	809
1984	QR	1989	02	10.22847	09	44	08.80	+13	01	42.2	809
1984	QR	1989	02	10.23403	09	44	08.28	+13	01	40.4	809
1984	QR	1989	02	10.23958	09	44	07.75	+13	01	38.6	809
1984	QR	1989	02	12.18993	09	41	08.66	+12	51	41.8	809
1984	QR	1989	02	12.19479	09	41	08.20	+12	51	40.4	809
1984	QR	1989	02	12.19965	09	41	07.74	+12	51	38.9	809
1984	QR	1989	02	13.19063	09	39	37.58	+12	46	36.8	809
1984	QR	1989	02	13.19549	09	39	37.14	+12	46	34.6	809
1984	QR	1989	02	13.20035	09	39	36.69	+12	46	33.8	809
1984	QR	1989	02	14.33229	09	37	54.23	+12	40	48.3	809
1984	QR	1989	02	14.33715	09	37	53.78	+12	40	46.8	809
1984	QR	1989	02	24.03125	09	24	20.39	+11	52	07.3	809

1984	QR	1989	02	24.03681	09	24	19.92	+11	52	05.7	809
1984	QR	1989	02	24.04236	09	24	19.46	+11	52	04.1	809
1984	QR	1989	02	26.08854	09	21	45.91	+11	41	56.2	809
1984	QR	1989	02	26.09340	09	21	45.54	+11	41	54.6	809
1984	QR	1989	02	26.09826	09	21	45.17	+11	41	53.0	809
1984	QR	1989	02	28.14757	09	19	19.13	+11	31	46.8	809
1984	QR	1989	02	28.15174	09	19	18.83	+11	31	45.6	809
1984	QR	1989	02	28.15590	09	19	18.52	+11	31	44.4	809
1984	QR	1989	03	01.15694	09	18	10.26	+11	26	48.7	809
1984	QR	1989	03	01.16111	09	18	09.97	+11	26	47.7	809
1984	QR	1989	03	01.16528	09	18	09.70	+11	26	46.7	809
1984	QR	1989	03	02.15504	09	17	04.21	+11	21	55.7	809
1984	QR	1989	03	02.16007	09	17	03.87	+11	21	54.3	809
1984	QR	1989	03	02.16510	09	17	03.53	+11	21	52.6	809
1984	QR	1989	03	03.18229	09	15	58.34	+11	16	54.1	809
1984	QR	1989	03	03.18576	09	15	58.12	+11	16	53.1	809
1984	QR	1989	03	03.18924	09	15	57.89	+11	16	52.1	809
1986	QL	1989	02	09.22917	09	37	04.98	+12	26	40.8	16.8 809
1986	QL	1989	02	09.23472	09	37	04.67	+12	26	41.9	809
1986	QL	1989	02	09.24028	09	37	04.38	+12	26	43.2	809
1986	QL	1989	02	10.24653	09	36	12.38	+12	30	53.8	809
1986	QL	1989	02	10.25208	09	36	12.10	+12	30	55.2	809
1986	QL	1989	02	10.25764	09	36	11.81	+12	30	56.5	809
1986	QL	1989	02	11.12639	09	35	27.11	+12	34	31.9	809
1986	QL	1989	02	11.13194	09	35	26.82	+12	34	33.6	809
1986	QL	1989	02	11.13750	09	35	26.53	+12	34	35.0	809
1986	QL	1989	02	12.12118	09	34	35.55	+12	38	39.8	809
1986	QL	1989	02	12.12604	09	34	35.31	+12	38	41.0	809
1986	QL	1989	02	12.13090	09	34	35.04	+12	38	42.3	809
1986	QL	1989	02	14.32187	09	32	41.57	+12	47	47.9	809
1986	QL	1989	02	14.32674	09	32	41.32	+12	47	49.2	809
1986	QL	1989	02	27.11493	09	22	15.80	+13	38	26.2	809
1986	QL	1989	02	27.12118	09	22	15.49	+13	38	27.7	809
1986	QL	1989	02	27.12743	09	22	15.21	+13	38	29.2	809
1986	QL	1989	03	01.11771	09	20	47.52	+13	45	39.0	809
1986	QL	1989	03	01.12396	09	20	47.23	+13	45	40.6	809
1986	QL	1989	03	01.13021	09	20	46.97	+13	45	42.2	809
1986	QL	1989	03	02.11736	09	20	04.96	+13	49	09.2	809
1986	QL	1989	03	02.12292	09	20	04.71	+13	49	10.4	809
1986	QL	1989	03	02.12847	09	20	04.48	+13	49	11.5	809
1986	QL	1989	03	03.11285	09	19	23.45	+13	52	33.9	809
1986	QL	1989	03	03.11771	09	19	23.25	+13	52	35.0	809
1986	QL	1989	03	03.12257	09	19	23.04	+13	52	36.1	809
1986	RO2	1989	02	07.34965	10	42	40.35	-05	31	37.9	16.0 809
1986	RO2	1989	02	07.35590	10	42	40.09	-05	31	37.5	809
1986	RO2	1989	02	07.36215	10	42	39.84	-05	31	37.3	809
1986	RO2	1989	02	08.34236	10	42	00.74	-05	30	47.5	809
1986	RO2	1989	02	08.34792	10	42	00.52	-05	30	47.3	809
1986	RO2	1989	02	08.35347	10	42	00.27	-05	30	47.1	809
1986	RO2	1989	02	09.32917	10	41	20.48	-05	29	46.5	809
1986	RO2	1989	02	09.33472	10	41	20.25	-05	29	46.1	809
1986	RO2	1989	02	09.34028	10	41	20.03	-05	29	45.9	809
1986	RO2	1989	02	11.29340	10	39	58.06	-05	27	13.4	809
1986	RO2	1989	02	11.29826	10	39	57.87	-05	27	12.7	809
1986	RO2	1989	02	11.30313	10	39	57.64	-05	27	12.3	809
1986	RO2	1989	02	12.35382	10	39	12.27	-05	25	34.0	809
1986	RO2	1989	02	12.35868	10	39	12.05	-05	25	33.3	809
1986	RO2	1989	02	12.36424	10	39	11.82	-05	25	32.8	809
1986	RO2	1989	02	17.36736	10	35	26.91	-05	15	04.2	809

1986	RO2	1989	02	17.37153	10	35	26.72	-05	15	03.4	809
1986	RO2	1989	02	17.37569	10	35	26.54	-05	15	02.5	809
1986	RO2	1989	02	18.36910	10	34	40.38	-05	12	28.1	809
1986	RO2	1989	02	18.37396	10	34	40.15	-05	12	27.4	809
1986	RO2	1989	02	19.38646	10	33	52.71	-05	09	39.7	809
1986	RO2	1989	02	19.39132	10	33	52.48	-05	09	38.9	809
1986	RO2	1989	02	25.32882	10	29	09.31	-04	50	09.5	809
1986	RO2	1989	02	25.33368	10	29	09.08	-04	50	08.5	809
1986	RO2	1989	02	25.33854	10	29	08.85	-04	50	07.6	809
1986	RO2	1989	02	26.28438	10	28	23.36	-04	46	34.8	809
1986	RO2	1989	02	26.28924	10	28	23.13	-04	46	33.7	809
1986	RO2	1989	02	26.29410	10	28	22.90	-04	46	32.6	809
1986	RQ2	1989	02	09.30764	10	26	58.36	+11	03	22.0	16.7 809
1986	RQ2	1989	02	09.31319	10	26	58.13	+11	03	24.6	809
1986	RQ2	1989	02	09.31875	10	26	57.91	+11	03	27.4	809
1986	RQ2	1989	02	10.31944	10	26	18.92	+11	11	15.0	809
1986	RQ2	1989	02	10.32500	10	26	18.71	+11	11	17.4	809
1986	RQ2	1989	02	10.33055	10	26	18.48	+11	11	20.1	809
1986	RQ2	1989	02	11.27604	10	25	41.35	+11	18	44.6	809
1986	RQ2	1989	02	11.28090	10	25	41.15	+11	18	47.1	809
1986	RQ2	1989	02	11.28576	10	25	40.95	+11	18	49.4	809
1986	RQ2	1989	02	13.29201	10	24	20.47	+11	34	37.0	809
1986	RQ2	1989	02	13.29688	10	24	20.28	+11	34	39.5	809
1986	RQ2	1989	02	13.30174	10	24	20.08	+11	34	41.7	809
1986	RQ2	1989	02	26.20243	10	15	20.74	+13	16	30.2	809
1986	RQ2	1989	02	26.20764	10	15	20.53	+13	16	32.6	809
1986	RQ2	1989	02	26.21285	10	15	20.31	+13	16	35.1	809
1986	RQ2	1989	02	27.27118	10	14	35.87	+13	24	43.6	809
1986	RQ2	1989	02	27.27604	10	14	35.67	+13	24	45.9	809
1986	RQ2	1989	02	27.28090	10	14	35.47	+13	24	48.1	809
1986	RQ2	1989	02	28.30382	10	13	52.84	+13	32	36.5	809
1986	RQ2	1989	02	28.30868	10	13	52.63	+13	32	39.0	809
1986	RQ2	1989	02	28.31354	10	13	52.44	+13	32	41.4	809
1986	TG4	1989	02	07.24896	10	09	08.01	+13	42	00.5	16.6 809
1986	TG4	1989	02	07.25521	10	09	07.68	+13	42	00.6	809
1986	TG4	1989	02	07.26146	10	09	07.34	+13	42	01.0	809
1986	TG4	1989	02	08.26875	10	08	12.45	+13	42	13.8	809
1986	TG4	1989	02	08.27431	10	08	12.14	+13	42	13.8	809
1986	TG4	1989	02	08.27986	10	08	11.84	+13	42	14.0	809
1986	TG4	1989	02	09.24792	10	07	18.80	+13	42	28.3	809
1986	TG4	1989	02	09.25347	10	07	18.52	+13	42	28.4	809
1986	TG4	1989	02	09.25903	10	07	18.21	+13	42	28.5	809
1986	TG4	1989	02	10.26458	10	06	22.67	+13	42	42.2	809
1986	TG4	1989	02	10.27014	10	06	22.36	+13	42	42.3	809
1986	TG4	1989	02	10.27569	10	06	22.06	+13	42	42.4	809
1986	TG4	1989	02	12.25104	10	04	32.15	+13	43	08.9	809
1986	TG4	1989	02	12.25590	10	04	31.88	+13	43	08.9	809
1986	TG4	1989	02	12.26076	10	04	31.59	+13	43	09.0	809
1986	TG4	1989	02	13.22396	10	03	37.65	+13	43	20.7	809
1986	TG4	1989	02	13.22882	10	03	37.38	+13	43	20.8	809
1986	TG4	1989	02	13.23368	10	03	37.11	+13	43	20.9	809
1986	TG4	1989	02	14.34549	10	02	34.51	+13	43	32.8	809
1986	TG4	1989	02	14.35035	10	02	34.21	+13	43	33.2	809
1986	TG4	1989	02	17.30799	09	59	47.46	+13	43	59.3	809
1986	TG4	1989	02	17.31285	09	59	47.19	+13	43	59.5	809
1986	TG4	1989	02	17.31771	09	59	46.90	+13	43	59.7	809
1986	TG4	1989	02	26.16979	09	51	34.27	+13	43	43.8	809
1986	TG4	1989	02	26.17465	09	51	34.02	+13	43	43.8	809
1986	TG4	1989	02	26.17951	09	51	33.74	+13	43	43.8	809

1986	TG4	1989	02	27.23438	09	50	36.65	+13	43	29.0	809
1986	TG4	1989	02	27.23924	09	50	36.40	+13	43	28.9	809
1986	TG4	1989	02	27.24410	09	50	36.16	+13	43	28.6	809
1986	TG4	1989	02	28.24687	09	49	42.48	+13	43	14.1	809
1986	TG4	1989	02	28.25174	09	49	42.21	+13	43	13.9	809
1986	TG4	1989	02	28.25660	09	49	41.96	+13	43	13.9	809
1986	TG4	1989	03	02.17396	09	48	00.92	+13	42	34.6	809
1986	TG4	1989	03	02.17882	09	48	00.67	+13	42	34.5	809
1986	TG4	1989	03	02.18368	09	48	00.44	+13	42	34.4	809
1986	TG4	1989	03	03.22795	09	47	06.23	+13	42	08.5	809
1986	TG4	1989	03	03.23333	09	47	05.96	+13	42	08.4	809
1986	TG4	1989	03	03.23872	09	47	05.67	+13	42	08.1	809
1989	AY6	1989	02	07.20174	09	23	18.63	+13	48	39.3	16.9 809
1989	AY6	1989	02	07.20799	09	23	18.24	+13	48	40.6	809
1989	AY6	1989	02	07.21424	09	23	17.83	+13	48	41.8	809
1989	AY6	1989	02	09.14028	09	21	13.81	+13	55	35.8	809
1989	AY6	1989	02	09.14583	09	21	13.45	+13	55	37.2	809
1989	AY6	1989	02	09.15139	09	21	13.10	+13	55	38.5	809
1989	AY6	1989	02	10.11944	09	20	10.61	+13	59	05.6	809
1989	AY6	1989	02	10.12500	09	20	10.26	+13	59	06.9	809
1989	AY6	1989	02	10.12986	09	20	09.94	+13	59	08.0	809
1989	AY6	1989	02	12.08160	09	18	04.09	+14	06	06.7	809
1989	AY6	1989	02	12.08646	09	18	03.78	+14	06	07.7	809
1989	AY6	1989	02	12.09132	09	18	03.47	+14	06	08.9	809
1989	AY6	1989	02	13.12396	09	16	57.04	+14	09	48.9	809
1989	AY6	1989	02	13.12882	09	16	56.74	+14	09	49.9	809
1989	AY6	1989	02	13.13368	09	16	56.44	+14	09	50.6	809
1989	AY6	1989	02	25.02188	09	05	01.95	+14	48	40.4	809
1989	AY6	1989	02	25.02674	09	05	01.66	+14	48	41.1	809
1989	AY6	1989	02	25.03160	09	05	01.36	+14	48	42.0	809
1989	AY6	1989	02	26.05035	09	04	06.75	+14	51	35.7	809
1989	AY6	1989	02	26.05521	09	04	06.49	+14	51	36.8	809
1989	AY6	1989	02	26.06007	09	04	06.24	+14	51	37.6	809
1989	AY6	1989	03	01.06562	09	01	33.54	+14	59	37.9	809
1989	AY6	1989	03	01.07049	09	01	33.30	+14	59	38.6	809
1989	AY6	1989	03	01.07535	09	01	33.05	+14	59	39.3	809
1989	AY6	1989	03	03.03924	09	00	00.82	+15	04	25.9	809
1989	AY6	1989	03	03.04410	09	00	00.59	+15	04	26.7	809
1989	CH	1989	02	08.15521	09	11	50.61	+16	30	28.4	16.6 809
1989	CH	1989	02	08.16007	09	11	50.38	+16	30	32.2	809
1989	CH	1989	02	08.16493	09	11	50.16	+16	30	35.8	809
1989	CH	1989	02	08.17257	09	11	49.78	+16	30	41.4	809
1989	CH	1989	02	08.17743	09	11	49.54	+16	30	45.1	809
1989	CH	1989	02	08.18229	09	11	49.32	+16	30	48.8	809
1989	CH	1989	02	09.10486	09	11	06.37	+16	42	46.0	809
1989	CH	1989	02	09.11042	09	11	06.10	+16	42	50.4	809
1989	CH	1989	02	09.11597	09	11	05.82	+16	42	54.8	809
1989	CH	1989	02	10.10139	09	10	20.00	+16	55	38.5	809
1989	CH	1989	02	10.10694	09	10	19.74	+16	55	42.9	809
1989	CH	1989	02	10.11250	09	10	19.47	+16	55	47.1	809
1989	CH	1989	02	11.08750	09	09	34.30	+17	08	20.6	809
1989	CH	1989	02	11.09305	09	09	33.99	+17	08	25.0	809
1989	CH	1989	02	11.09861	09	09	33.72	+17	08	29.3	809
1989	CH	1989	02	12.10035	09	08	47.70	+17	21	19.3	809
1989	CH	1989	02	12.10521	09	08	47.49	+17	21	22.8	809
1989	CH	1989	02	12.11007	09	08	47.25	+17	21	26.7	809
1989	CH	1989	02	14.29826	09	07	07.61	+17	49	09.9	809
1989	CH	1989	02	14.30313	09	07	07.34	+17	49	13.2	809
1989	CH	1989	02	23.03785	09	01	06.59	+19	34	16.8	809

1989	CH	1989	02	23.04271	09	01	06.34	+19	34	20.1	809
1989	CH	1989	02	25.03785	08	59	54.74	+19	56	38.9	809
1989	CH	1989	02	25.04271	08	59	54.57	+19	56	42.3	809
1989	CH	1989	02	25.04757	08	59	54.39	+19	56	45.4	809
1989	CH	1989	02	26.06632	08	59	19.73	+20	07	51.0	809
1989	CH	1989	02	26.07118	08	59	19.58	+20	07	54.0	809
1989	CH	1989	02	26.07604	08	59	19.43	+20	07	56.8	809
1989	CH	1989	02	28.11146	08	58	14.41	+20	29	30.8	809
1989	CH	1989	02	28.11632	08	58	14.23	+20	29	33.8	809
1989	CH	1989	02	28.12118	08	58	14.08	+20	29	36.9	809
1989	CH	1989	03	01.08125	08	57	45.64	+20	39	29.0	809
1989	CH	1989	03	01.08542	08	57	45.48	+20	39	31.3	809
1989	CH	1989	03	03.05000	08	56	51.47	+20	59	06.0	809
1989	CH	1989	03	03.05417	08	56	51.40	+20	59	08.6	809
1989	CL	1989	02	08.17257	09	13	55.01	+16	02	48.4	16.9 809
1989	CL	1989	02	08.17743	09	13	54.77	+16	02	49.9	809
1989	CL	1989	02	08.18229	09	13	54.53	+16	02	51.3	809
1989	CL	1989	02	09.12292	09	13	08.59	+16	07	20.5	809
1989	CL	1989	02	09.12847	09	13	08.32	+16	07	22.1	809
1989	CL	1989	02	09.13403	09	13	08.02	+16	07	23.9	809
1989	CL	1989	02	10.10139	09	12	20.92	+16	11	57.5	809
1989	CL	1989	02	10.10694	09	12	20.67	+16	11	59.0	809
1989	CL	1989	02	10.11250	09	12	20.42	+16	12	00.7	809
1989	CL	1989	02	11.08750	09	11	33.16	+16	16	36.0	809
1989	CL	1989	02	11.09305	09	11	32.89	+16	16	37.6	809
1989	CL	1989	02	11.09861	09	11	32.62	+16	16	39.1	809
1989	CL	1989	02	11.10625	09	11	32.22	+16	16	40.1	809
1989	CL	1989	02	11.11181	09	11	31.95	+16	16	41.4	809
1989	CL	1989	02	11.11736	09	11	31.69	+16	16	43.0	809
1989	CL	1989	02	12.10035	09	10	44.48	+16	21	17.0	809
1989	CL	1989	02	12.10521	09	10	44.24	+16	21	18.5	809
1989	CL	1989	02	12.11007	09	10	44.03	+16	21	19.6	809
1989	CL	1989	02	13.10347	09	09	56.73	+16	25	54.9	809
1989	CL	1989	02	13.10903	09	09	56.46	+16	25	56.4	809
1989	CL	1989	02	13.11458	09	09	56.20	+16	25	57.7	809
1989	CL	1989	02	14.29826	09	09	00.10	+16	31	18.2	809
1989	CL	1989	02	14.30313	09	08	59.88	+16	31	19.9	809
1989	CL	1989	02	25.05590	09	01	20.97	+17	15	28.3	809
1989	CL	1989	02	25.06076	09	01	20.76	+17	15	29.5	809
1989	CL	1989	02	25.06562	09	01	20.58	+17	15	30.7	809
1989	CL	1989	03	03.12951	08	57	52.22	+17	35	49.0	809
1989	CL	1989	03	03.13299	08	57	52.10	+17	35	49.8	809
1989	CL	1989	03	03.13646	08	57	51.99	+17	35	50.4	809
1989	CL	1989	03	03.14132	08	57	51.81	+17	35	51.5	809
1989	CL	1989	03	03.14618	08	57	51.65	+17	35	52.5	809
1989	CL	1989	03	03.15104	08	57	51.48	+17	35	53.5	809
1989	CN	1989	02	07.22118	09	23	49.77	+14	49	19.0	17.2 809
1989	CN	1989	02	07.22743	09	23	49.36	+14	49	20.8	809
1989	CN	1989	02	07.23368	09	23	48.95	+14	49	23.0	809
1989	CN	1989	02	08.08437	09	22	54.10	+14	54	12.0	809
1989	CN	1989	02	08.09063	09	22	53.68	+14	54	14.4	809
1989	CN	1989	02	08.09687	09	22	53.26	+14	54	16.4	809
1989	CN	1989	02	10.20972	09	20	36.30	+15	06	09.7	809
1989	CN	1989	02	10.21528	09	20	35.94	+15	06	11.5	809
1989	CN	1989	02	10.22083	09	20	35.59	+15	06	13.3	809
1989	CN	1989	02	12.16771	09	18	30.77	+15	17	01.8	809
1989	CN	1989	02	12.17257	09	18	30.44	+15	17	03.4	809
1989	CN	1989	02	12.17743	09	18	30.11	+15	17	05.0	809
1989	CN	1989	02	27.07257	09	04	06.08	+16	30	20.0	809

1989	CN	1989	02	27.07882	09	04	05.71	+16	30	21.9	809
1989	CN	1989	02	27.08507	09	04	05.34	+16	30	23.7	809
1989	CN	1989	02	28.05590	09	03	17.84	+16	34	22.5	809
1989	CN	1989	02	28.06215	09	03	17.53	+16	34	24.0	809
1989	CN	1989	02	28.06840	09	03	17.23	+16	34	25.4	809
1989	CN	1989	02	28.09410	09	03	15.94	+16	34	32.1	809
1989	CN	1989	02	28.09896	09	03	15.70	+16	34	33.6	809
1989	CN	1989	02	28.10382	09	03	15.46	+16	34	35.1	809
1989	CN	1989	03	01.05035	09	02	30.54	+16	38	21.5	809
1989	CN	1989	03	01.05660	09	02	30.23	+16	38	22.7	809
1989	CN	1989	03	02.07604	09	01	43.20	+16	42	19.4	809
1989	CN	1989	03	02.08264	09	01	42.90	+16	42	20.9	809
1989	CN	1989	03	02.08924	09	01	42.59	+16	42	22.4	809
1989	CW	1989	02	12.18993	09	45	20.51	+13	29	40.5	16.8 809
1989	CW	1989	02	12.19479	09	45	20.21	+13	29	42.0	809
1989	CW	1989	02	12.19965	09	45	19.88	+13	29	43.4	809
1989	CW	1989	02	13.19063	09	44	16.87	+13	34	36.2	809
1989	CW	1989	02	13.19549	09	44	16.56	+13	34	37.5	809
1989	CW	1989	02	13.20035	09	44	16.23	+13	34	38.9	809
1989	CW	1989	02	14.33229	09	43	03.75	+13	40	12.3	809
1989	CW	1989	02	14.33715	09	43	03.45	+13	40	14.3	809
1989	CX	1989	02	25.10243	09	25	28.22	+14	52	45.3	16.0 809
1989	CX	1989	02	25.10729	09	25	27.79	+14	52	40.5	809
1989	CX	1989	02	25.11215	09	25	27.35	+14	52	35.8	809
1989	CX	1989	02	27.11493	09	22	32.11	+14	21	01.6	809
1989	CX	1989	02	27.12118	09	22	31.55	+14	20	55.4	809
1989	CX	1989	02	27.12743	09	22	30.98	+14	20	49.3	809
1989	CX	1989	03	01.11771	09	19	46.44	+13	49	39.0	809
1989	CX	1989	03	01.12396	09	19	45.92	+13	49	33.1	809
1989	CX	1989	03	01.13021	09	19	45.41	+13	49	27.2	809
1989	CX	1989	03	02.11736	09	18	27.64	+13	34	07.0	809
1989	CX	1989	03	02.12292	09	18	27.20	+13	34	01.9	809
1989	CX	1989	03	02.12847	09	18	26.74	+13	33	56.7	809
1989	CB1	1989	02	08.20764	09	25	48.46	+15	59	29.1	17.1 809
1989	CB1	1989	02	08.21319	09	25	48.11	+15	59	31.4	809
1989	CB1	1989	02	08.21875	09	25	47.75	+15	59	33.7	809
1989	CB1	1989	02	09.16736	09	24	46.79	+16	06	44.7	809
1989	CB1	1989	02	09.17292	09	24	46.44	+16	06	47.4	809
1989	CB1	1989	02	09.17847	09	24	46.07	+16	06	50.1	809
1989	CB1	1989	02	10.20972	09	23	39.50	+16	14	35.1	809
1989	CB1	1989	02	10.21528	09	23	39.13	+16	14	37.7	809
1989	CB1	1989	02	10.22083	09	23	38.79	+16	14	40.3	809
1989	CB1	1989	02	12.16771	09	21	33.37	+16	29	14.1	809
1989	CB1	1989	02	12.17257	09	21	33.05	+16	29	16.2	809
1989	CB1	1989	02	12.17743	09	21	32.71	+16	29	18.4	809
1989	CB1	1989	02	13.14271	09	20	30.69	+16	36	27.5	809
1989	CB1	1989	02	13.14757	09	20	30.38	+16	36	29.4	809
1989	CB1	1989	02	13.15243	09	20	30.09	+16	36	31.6	809
1989	CB1	1989	02	14.30937	09	19	15.50	+16	45	01.7	809
1989	CB1	1989	02	14.31424	09	19	15.18	+16	45	03.8	809
1989	CB1	1989	03	01.09549	09	04	49.67	+18	22	27.2	809
1989	CB1	1989	03	01.10174	09	04	49.31	+18	22	29.5	809
1989	CB1	1989	03	01.10799	09	04	48.96	+18	22	31.8	809
1989	CB1	1989	03	02.09861	09	03	59.65	+18	28	03.4	809
1989	CB1	1989	03	02.10417	09	03	59.37	+18	28	05.2	809
1989	CB1	1989	03	02.10972	09	03	59.10	+18	28	07.1	809
1989	CB1	1989	03	03.09618	09	03	11.60	+18	33	28.3	809
1989	CB1	1989	03	03.10104	09	03	11.37	+18	33	29.5	809
1989	CB1	1989	03	03.10590	09	03	11.14	+18	33	31.1	809

1989	CW1	1989	02	08.24583	09	43	47.86	+13	30	02.1	17.1	809
1989	CW1	1989	02	08.25139	09	43	47.67	+13	30	02.8		809
1989	CW1	1989	02	08.25694	09	43	47.50	+13	30	03.3		809
1989	CW1	1989	02	09.18472	09	43	16.35	+13	31	39.9		809
1989	CW1	1989	02	09.19028	09	43	16.16	+13	31	40.4		809
1989	CW1	1989	02	09.19583	09	43	15.97	+13	31	41.2		809
1989	CW1	1989	02	10.22847	09	42	41.07	+13	33	29.9		809
1989	CW1	1989	02	10.23403	09	42	40.88	+13	33	30.4		809
1989	CW1	1989	02	10.23958	09	42	40.68	+13	33	31.1		809
1989	CW1	1989	02	12.18993	09	41	34.75	+13	36	56.3		809
1989	CW1	1989	02	12.19479	09	41	34.59	+13	36	56.8		809
1989	CW1	1989	02	12.19965	09	41	34.43	+13	36	57.2		809
1989	CW1	1989	02	13.19063	09	41	00.95	+13	38	40.5		809
1989	CW1	1989	02	13.19549	09	41	00.79	+13	38	41.1		809
1989	CW1	1989	02	13.20035	09	41	00.63	+13	38	41.6		809
1989	CW1	1989	02	14.33229	09	40	22.30	+13	40	40.4		809
1989	CW1	1989	02	14.33715	09	40	22.11	+13	40	40.8		809
1989	CY1	1989	02	09.22917	09	32	31.87	+12	35	59.7	17.0	809
1989	CY1	1989	02	09.23472	09	32	31.53	+12	36	01.8		809
1989	CY1	1989	02	09.24028	09	32	31.19	+12	36	03.8		809
1989	CY1	1989	02	10.24653	09	31	32.37	+12	42	16.0		809
1989	CY1	1989	02	10.25208	09	31	32.06	+12	42	18.3		809
1989	CY1	1989	02	10.25764	09	31	31.75	+12	42	20.1		809
1989	CY1	1989	02	11.12639	09	30	41.25	+12	47	43.3		809
1989	CY1	1989	02	11.13194	09	30	40.91	+12	47	45.4		809
1989	CY1	1989	02	11.13750	09	30	40.57	+12	47	47.5		809
1989	CY1	1989	02	12.12118	09	29	42.87	+12	53	54.3		809
1989	CY1	1989	02	12.12604	09	29	42.57	+12	53	56.4		809
1989	CY1	1989	02	12.13090	09	29	42.26	+12	53	58.1		809
1989	CY1	1989	02	14.32187	09	27	33.39	+13	07	35.6		809
1989	CY1	1989	02	14.32674	09	27	33.09	+13	07	37.8		809
1989	CY1	1989	02	27.11493	09	15	54.03	+14	23	59.5		809
1989	CY1	1989	02	27.12118	09	15	53.69	+14	24	01.8		809
1989	CY1	1989	02	27.12743	09	15	53.36	+14	24	04.0		809
1989	CY1	1989	03	01.11771	09	14	19.38	+14	34	49.4		809
1989	CY1	1989	03	01.12396	09	14	19.08	+14	34	51.4		809
1989	CY1	1989	03	01.13021	09	14	18.77	+14	34	53.5		809
1989	CY1	1989	03	02.11736	09	13	34.26	+14	40	04.9		809
1989	CY1	1989	03	02.12292	09	13	34.02	+14	40	06.7		809
1989	CY1	1989	03	02.12847	09	13	33.77	+14	40	08.4		809
1989	CY1	1989	03	03.11285	09	12	50.91	+14	45	10.5		809
1989	CY1	1989	03	03.11771	09	12	50.70	+14	45	12.2		809
1989	CY1	1989	03	03.12257	09	12	50.49	+14	45	13.4		809
1989	CE2	1989	02	13.25937	09	54	29.48	+07	35	13.7	16.7	809
1989	CE2	1989	02	13.26424	09	54	28.93	+07	35	11.8		809
1989	CE2	1989	02	13.26910	09	54	28.38	+07	35	09.8		809
1989	CH4	1989	02	08.22847	09	43	11.38	+14	08	38.1	17.0	809
1989	CH4	1989	02	08.23403	09	43	11.04	+14	08	39.4		809
1989	CH4	1989	02	08.23958	09	43	10.70	+14	08	40.6		809
1989	CH4	1989	02	09.18472	09	42	13.79	+14	12	17.8		809
1989	CH4	1989	02	09.19028	09	42	13.45	+14	12	19.1		809
1989	CH4	1989	02	09.19583	09	42	13.11	+14	12	20.4		809
1989	CH4	1989	02	10.22847	09	41	10.14	+14	16	17.6		809
1989	CH4	1989	02	10.23403	09	41	09.80	+14	16	18.9		809
1989	CH4	1989	02	10.23958	09	41	09.45	+14	16	20.2		809
1989	CH4	1989	02	12.18993	09	39	10.04	+14	23	47.1		809
1989	CH4	1989	02	12.19479	09	39	09.75	+14	23	48.4		809
1989	CH4	1989	02	12.19965	09	39	09.43	+14	23	49.5		809
1989	CH4	1989	02	13.19063	09	38	08.48	+14	27	34.8		809

1989	CH4		1989	02	13.19549	09	38	08.19	+14	27	35.9		809
1989	CH4		1989	02	13.20035	09	38	07.88	+14	27	37.0		809
1989	CH4		1989	02	14.33229	09	36	57.91	+14	31	52.6		809
1989	CH4		1989	02	14.33715	09	36	57.60	+14	31	53.7		809
1989	CH5		1989	02	08.20764	09	26	35.46	+14	55	24.6	17.2	809
1989	CH5		1989	02	08.21319	09	26	35.22	+14	55	27.6		809
1989	CH5		1989	02	08.21875	09	26	34.96	+14	55	30.8		809
1989	CH5		1989	02	09.16736	09	25	51.70	+15	04	03.4		809
1989	CH5		1989	02	09.17292	09	25	51.44	+15	04	06.4		809
1989	CH5		1989	02	09.17847	09	25	51.20	+15	04	09.4		809
1989	CH5		1989	02	10.20972	09	25	04.22	+15	13	24.2		809
1989	CH5		1989	02	10.21528	09	25	03.95	+15	13	27.5		809
1989	CH5		1989	02	10.22083	09	25	03.70	+15	13	30.4		809
1989	CH5		1989	02	12.16771	09	23	35.33	+15	30	53.0		809
1989	CH5		1989	02	12.17257	09	23	35.11	+15	30	55.5		809
1989	CH5		1989	02	12.17743	09	23	34.91	+15	30	57.9		809
1989	CE7		1989	02	13.12396	09	15	57.51	+13	41	58.9	17.2	809
1989	CE7		1989	02	13.12882	09	15	57.22	+13	42	01.9		809
1989	CE7		1989	02	13.13368	09	15	56.93	+13	42	05.0		809
1989	CB8	*	1989	02	07.24896	10	10	23.43	+12	59	23.2	17.0	809
1989	CB8		1989	02	07.25521	10	10	23.05	+12	59	24.6		809
1989	CB8		1989	02	07.26146	10	10	22.67	+12	59	26.2		809
1989	CB8		1989	02	12.25104	10	05	24.01	+13	20	28.1		809
1989	CB8		1989	02	12.25590	10	05	23.70	+13	20	29.3		809
1989	CB8		1989	02	12.26076	10	05	23.39	+13	20	30.4		809
1989	CB8		1989	02	13.22396	10	04	23.69	+13	24	37.9		809
1989	CB8		1989	02	13.22882	10	04	23.41	+13	24	38.9		809
1989	CB8		1989	02	13.23368	10	04	23.11	+13	24	40.2		809
1989	CB8		1989	02	14.34549	10	03	13.18	+13	29	24.5		809
1989	CB8		1989	02	14.35035	10	03	12.91	+13	29	25.7		809
1989	CB8		1989	02	17.30799	10	00	05.82	+13	41	58.4		809
1989	CB8		1989	02	17.31285	10	00	05.49	+13	41	59.7		809
1989	CB8		1989	02	17.31771	10	00	05.19	+13	42	01.1		809
1989	CB8		1989	02	26.16979	09	50	49.84	+14	16	59.6		809
1989	CB8		1989	02	26.17465	09	50	49.54	+14	17	00.7		809
1989	CB8		1989	02	26.17951	09	50	49.24	+14	17	01.9		809
1989	CB8		1989	02	27.23438	09	49	45.36	+14	20	46.8		809
1989	CB8		1989	02	27.23924	09	49	45.06	+14	20	47.9		809
1989	CB8		1989	02	27.24410	09	49	44.77	+14	20	48.9		809
1989	CB8		1989	02	28.24687	09	48	45.21	+14	24	16.2		809
1989	CB8		1989	02	28.25174	09	48	44.91	+14	24	17.2		809
1989	CB8		1989	02	28.25660	09	48	44.63	+14	24	18.2		809
1989	CB8		1989	03	02.17396	09	46	53.63	+14	30	36.5		809
1989	CB8		1989	03	02.17882	09	46	53.36	+14	30	37.4		809
1989	CB8		1989	03	02.18368	09	46	53.07	+14	30	38.4		809
1989	CB8		1989	03	03.22795	09	45	54.02	+14	33	52.1		809
1989	CB8		1989	03	03.23333	09	45	53.70	+14	33	52.8		809
1989	CB8		1989	03	03.23872	09	45	53.41	+14	33	53.4		809
1989	CC8	*	1989	02	07.24896	10	12	43.54	+12	09	02.5	17.1	809
1989	CC8		1989	02	07.25521	10	12	43.23	+12	09	03.8		809
1989	CC8		1989	02	07.26146	10	12	42.94	+12	09	05.1		809
1989	CC8		1989	02	10.28403	10	10	28.05	+12	21	53.6		809
1989	CC8		1989	02	10.28958	10	10	27.75	+12	21	54.9		809
1989	CC8		1989	02	10.29514	10	10	27.47	+12	21	56.0		809
1989	CC8		1989	02	12.29896	10	08	54.38	+12	30	35.7		809
1989	CC8		1989	02	12.30382	10	08	54.16	+12	30	37.0		809
1989	CC8		1989	02	12.30868	10	08	53.92	+12	30	38.2		809
1989	CC8		1989	02	13.24271	10	08	10.04	+12	34	42.7		809
1989	CC8		1989	02	13.24757	10	08	09.82	+12	34	43.9		809

1989	CC8		1989	02	13.25243	10	08	09.59	+12	34	45.2			809
1989	CD8	*	1989	02	07.34965	10	43	43.25	-05	31	52.2		17.1	809
1989	CD8		1989	02	07.35590	10	43	42.99	-05	31	51.6			809
1989	CD8		1989	02	07.36215	10	43	42.71	-05	31	51.1			809
1989	CD8		1989	02	08.34236	10	43	03.02	-05	30	35.5			809
1989	CD8		1989	02	08.34792	10	43	02.79	-05	30	35.1			809
1989	CD8		1989	02	08.35347	10	43	02.57	-05	30	34.7			809
1989	CD8		1989	02	09.32917	10	42	22.28	-05	29	10.1			809
1989	CD8		1989	02	09.33472	10	42	22.05	-05	29	09.7			809
1989	CD8		1989	02	09.34028	10	42	21.83	-05	29	09.5			809
1989	CD8		1989	02	11.29340	10	40	59.08	-05	25	51.7			809
1989	CD8		1989	02	11.29826	10	40	58.87	-05	25	51.2			809
1989	CD8		1989	02	11.30313	10	40	58.66	-05	25	50.8			809
1989	CD8		1989	02	12.35382	10	40	13.06	-05	23	48.8			809
1989	CD8		1989	02	12.35868	10	40	12.86	-05	23	48.0			809
1989	CD8		1989	02	12.36424	10	40	12.61	-05	23	47.2			809
1989	CE8	*	1989	02	08.12674	09	22	09.57	+00	42	48.0		17.1	809
1989	CE8		1989	02	08.13299	09	22	09.23	+00	42	48.9			809
1989	CE8		1989	02	08.13924	09	22	08.89	+00	42	50.3			809
1989	CE8		1989	02	09.08472	09	21	17.33	+00	45	26.6			809
1989	CE8		1989	02	09.09028	09	21	17.02	+00	45	27.8			809
1989	CE8		1989	02	09.09583	09	21	16.72	+00	45	28.8			809
1989	CE8		1989	02	10.05972	09	20	24.25	+00	48	16.0			809
1989	CE8		1989	02	10.06528	09	20	23.92	+00	48	16.9			809
1989	CE8		1989	02	10.07083	09	20	23.62	+00	48	17.8			809
1989	CE8		1989	02	11.05035	09	19	30.41	+00	51	16.2			809
1989	CE8		1989	02	11.05521	09	19	30.15	+00	51	17.1			809
1989	CE8		1989	02	11.06007	09	19	29.89	+00	51	18.1			809
1989	CE8		1989	02	12.03715	09	18	36.99	+00	54	23.1			809
1989	CE8		1989	02	12.04236	09	18	36.73	+00	54	24.1			809
1989	CE8		1989	02	12.04757	09	18	36.44	+00	54	25.1			809
1989	CE8		1989	02	13.06562	09	17	41.57	+00	57	46.4			809
1989	CE8		1989	02	13.07049	09	17	41.31	+00	57	47.3			809
1989	CE8		1989	02	13.07535	09	17	41.05	+00	57	48.3			809
1989	CE8		1989	02	14.04132	09	16	49.48	+01	01	06.9			809
1989	CE8		1989	02	14.04618	09	16	49.19	+01	01	07.8			809
1989	CE8		1989	02	26.01701	09	06	59.34	+01	49	30.6			809
1989	CE8		1989	02	26.02188	09	06	59.11	+01	49	32.2			809
1989	CE8		1989	02	26.02674	09	06	58.89	+01	49	33.4			809
1989	CE8		1989	02	27.01632	09	06	15.93	+01	54	00.7			809
1989	CE8		1989	02	27.02257	09	06	15.66	+01	54	02.2			809
1989	CE8		1989	02	27.02882	09	06	15.40	+01	54	03.8			809
1989	CE8		1989	02	28.02118	09	05	33.43	+01	58	32.9			809
1989	CE8		1989	02	28.02604	09	05	33.21	+01	58	34.5			809
1989	CE8		1989	02	28.03090	09	05	33.01	+01	58	35.5			809
1989	CE8		1989	03	02.01979	09	04	12.33	+02	07	43.6			809
1989	CE8		1989	03	02.02465	09	04	12.13	+02	07	45.2			809
1989	CE8		1989	03	02.02951	09	04	11.94	+02	07	46.2			809
1989	CF8	*	1989	02	08.17257	09	12	02.25	+15	59	36.2		17.0	809
1989	CF8		1989	02	08.17743	09	12	01.93	+15	59	37.0			809
1989	CF8		1989	02	08.18229	09	12	01.60	+15	59	37.8			809
1989	CF8		1989	02	09.10486	09	10	57.83	+16	02	04.7			809
1989	CF8		1989	02	09.11042	09	10	57.44	+16	02	05.7			809
1989	CF8		1989	02	09.11597	09	10	57.05	+16	02	06.6			809
1989	CF8		1989	02	11.08750	09	08	41.85	+16	07	12.5			809
1989	CF8		1989	02	11.09305	09	08	41.50	+16	07	13.3			809
1989	CF8		1989	02	11.09861	09	08	41.08	+16	07	14.3			809
1989	CF8		1989	02	12.10035	09	07	33.22	+16	09	45.0			809
1989	CF8		1989	02	12.10521	09	07	32.91	+16	09	45.7			809

1989	CF8		1989	02	12.11007	09	07	32.60	+16	09	46.4		809
1989	CF8		1989	02	28.07674	08	52	02.14	+16	39	13.5		809
1989	CF8		1989	02	28.08160	08	52	01.86	+16	39	14.0		809
1989	CF8		1989	02	28.08646	08	52	01.57	+16	39	14.6		809
1989	CF8		1989	03	01.02257	08	51	18.98	+16	40	14.8		809
1989	CF8		1989	03	01.02882	08	51	18.68	+16	40	15.3		809
1989	CF8		1989	03	01.03507	08	51	18.39	+16	40	15.9		809
1989	CF8		1989	03	02.05590	08	50	33.50	+16	41	16.0		809
1989	CF8		1989	03	02.06215	08	50	33.21	+16	41	16.3		809
1989	CF8		1989	03	02.06840	08	50	32.92	+16	41	16.7		809
1989	CG8	*	1989	02	08.17257	09	18	22.16	+15	48	52.7	17.6	809
1989	CG8		1989	02	08.17743	09	18	21.98	+15	48	55.8		809
1989	CG8		1989	02	08.18229	09	18	21.80	+15	48	59.2		809
1989	CG8		1989	02	09.12292	09	17	46.31	+15	59	03.7		809
1989	CG8		1989	02	09.12847	09	17	46.10	+15	59	07.4		809
1989	CG8		1989	02	09.13403	09	17	45.89	+15	59	11.1		809
1989	CH8	*	1989	02	08.17257	09	18	59.32	+16	30	10.3	17.0	809
1989	CH8		1989	02	08.17743	09	18	59.00	+16	30	11.0		809
1989	CH8		1989	02	08.18229	09	18	58.68	+16	30	11.5		809
1989	CH8		1989	02	09.12292	09	17	57.66	+16	32	12.8		809
1989	CH8		1989	02	09.12847	09	17	57.30	+16	32	13.6		809
1989	CH8		1989	02	09.13403	09	17	56.93	+16	32	14.3		809
1989	CH8		1989	02	10.10139	09	16	54.29	+16	34	15.7		809
1989	CH8		1989	02	10.10694	09	16	53.93	+16	34	16.4		809
1989	CH8		1989	02	10.11250	09	16	53.58	+16	34	17.2		809
1989	CH8		1989	02	11.10625	09	15	49.43	+16	36	19.6		809
1989	CH8		1989	02	11.11181	09	15	49.06	+16	36	20.3		809
1989	CH8		1989	02	11.11736	09	15	48.71	+16	36	21.0		809
1989	CH8		1989	02	13.10347	09	13	41.91	+16	40	16.1		809
1989	CH8		1989	02	13.10903	09	13	41.55	+16	40	16.8		809
1989	CH8		1989	02	13.11458	09	13	41.19	+16	40	17.4		809
1989	CH8		1989	03	03.14132	08	57	08.65	+17	02	51.2		809
1989	CH8		1989	03	03.14618	08	57	08.43	+17	02	51.6		809
1989	CH8		1989	03	03.15104	08	57	08.20	+17	02	52.0		809
1989	CJ8	*	1989	02	08.28819	10	16	30.47	+11	11	20.6	16.7	809
1989	CJ8		1989	02	08.29375	10	16	30.22	+11	11	23.9		809
1989	CJ8		1989	02	08.29930	10	16	29.98	+11	11	27.2		809
1989	CJ8		1989	02	09.26805	10	15	46.40	+11	20	59.8		809
1989	CJ8		1989	02	09.27361	10	15	46.15	+11	21	03.0		809
1989	CJ8		1989	02	09.27917	10	15	45.89	+11	21	06.4		809
1989	CJ8		1989	02	10.28403	10	14	59.62	+11	31	09.0		809
1989	CJ8		1989	02	10.28958	10	14	59.36	+11	31	12.3		809
1989	CJ8		1989	02	10.29514	10	14	59.10	+11	31	15.6		809
1989	CJ8		1989	02	11.21979	10	14	15.83	+11	40	33.5		809
1989	CJ8		1989	02	11.22465	10	14	15.60	+11	40	36.4		809
1989	CJ8		1989	02	11.22951	10	14	15.37	+11	40	39.3		809
1989	CJ8		1989	02	11.24410	10	14	14.66	+11	40	49.0		809
1989	CJ8		1989	02	11.24896	10	14	14.43	+11	40	52.0		809
1989	CJ8		1989	02	11.25382	10	14	14.20	+11	40	55.0		809
1989	CJ8		1989	02	12.28368	10	13	24.85	+11	51	22.8		809
1989	CJ8		1989	02	12.28854	10	13	24.62	+11	51	25.7		809
1989	CJ8		1989	02	12.29340	10	13	24.37	+11	51	29.0		809
1989	CJ8		1989	02	17.29167	10	09	15.15	+12	43	19.0		809
1989	CJ8		1989	02	17.29583	10	09	14.94	+12	43	21.7		809
1989	CJ8		1989	02	17.30000	10	09	14.72	+12	43	24.5		809
1989	CJ8		1989	02	25.30937	10	02	19.84	+14	07	03.3		809
1989	CJ8		1989	02	25.31424	10	02	19.59	+14	07	06.2		809
1989	CJ8		1989	02	25.31910	10	02	19.35	+14	07	09.3		809
1989	CJ8		1989	02	27.25278	10	00	40.60	+14	26	54.9		809

1989	CJ8		1989	02	27.25833	10	00	40.31	+14	26	58.3	809
1989	CJ8		1989	02	27.26389	10	00	40.03	+14	27	01.7	809
1989	CJ8		1989	03	01.27396	09	58	58.94	+14	47	10.1	809
1989	CJ8		1989	03	01.27882	09	58	58.71	+14	47	13.0	809
1989	CJ8		1989	03	01.28368	09	58	58.46	+14	47	16.0	809
1989	CK8	*	1989	02	08.32222	10	31	39.21	+07	57	25.7	16.4 809
1989	CK8		1989	02	08.32778	10	31	38.99	+07	57	28.0	809
1989	CK8		1989	02	08.33333	10	31	38.75	+07	57	30.4	809
1989	CK8		1989	02	09.29028	10	30	58.26	+08	04	23.9	809
1989	CK8		1989	02	09.29583	10	30	58.02	+08	04	26.6	809
1989	CK8		1989	02	09.30139	10	30	57.78	+08	04	29.0	809
1989	CK8		1989	02	10.30208	10	30	14.49	+08	11	47.4	809
1989	CK8		1989	02	10.30764	10	30	14.24	+08	11	50.1	809
1989	CK8		1989	02	10.31319	10	30	13.98	+08	11	52.5	809
1989	CK8		1989	02	12.31632	10	28	45.06	+08	26	47.2	809
1989	CK8		1989	02	12.32118	10	28	44.85	+08	26	49.2	809
1989	CK8		1989	02	12.32604	10	28	44.63	+08	26	51.4	809
1989	CK8		1989	02	26.21927	10	17	39.16	+10	15	53.5	809
1989	CK8		1989	02	26.22448	10	17	38.92	+10	15	56.0	809
1989	CK8		1989	02	26.22969	10	17	38.68	+10	15	58.4	809
1989	CK8		1989	02	27.29618	10	16	46.65	+10	24	23.7	809
1989	CK8		1989	02	27.30104	10	16	46.43	+10	24	26.0	809
1989	CK8		1989	02	27.30590	10	16	46.20	+10	24	28.3	809
1989	CK8		1989	02	28.28785	10	15	58.72	+10	32	10.7	809
1989	CK8		1989	02	28.29271	10	15	58.48	+10	32	13.0	809
1989	CK8		1989	02	28.29757	10	15	58.23	+10	32	15.3	809
1989	CK8		1989	03	02.30486	10	14	22.28	+10	47	52.4	809
1989	CK8		1989	03	02.30903	10	14	22.09	+10	47	54.2	809
1989	CK8		1989	03	02.31319	10	14	21.89	+10	47	55.9	809
1989	CL8	*	1989	02	09.30764	10	24	28.45	+11	36	49.4	16.9 809
1989	CL8		1989	02	09.31319	10	24	28.19	+11	36	53.5	809
1989	CL8		1989	02	09.31875	10	24	27.94	+11	36	57.5	809
1989	CL8		1989	02	10.31944	10	23	45.80	+11	49	19.3	809
1989	CL8		1989	02	10.32500	10	23	45.55	+11	49	23.4	809
1989	CL8		1989	02	10.33055	10	23	45.30	+11	49	27.5	809
1989	CL8		1989	02	13.29201	10	21	34.17	+12	26	39.2	809
1989	CL8		1989	02	13.29688	10	21	33.96	+12	26	42.9	809
1989	CL8		1989	02	13.30174	10	21	33.73	+12	26	46.3	809
1989	CM8	*	1989	02	09.37014	11	22	22.35	+05	12	05.7	17.4 809
1989	CM8		1989	02	09.37569	11	22	22.05	+05	12	07.6	809
1989	CM8		1989	02	09.38125	11	22	21.75	+05	12	09.4	809
1989	CM8		1989	02	10.35694	11	21	29.33	+05	17	25.6	809
1989	CM8		1989	02	10.36250	11	21	29.02	+05	17	27.5	809
1989	CM8		1989	02	10.36806	11	21	28.74	+05	17	29.1	809
1989	CN8	*	1989	02	10.24653	09	36	54.40	+12	32	43.5	17.2 809
1989	CN8		1989	02	10.25208	09	36	54.11	+12	32	46.4	809
1989	CN8		1989	02	10.25764	09	36	53.81	+12	32	49.4	809
1989	CN8		1989	02	12.12118	09	35	17.10	+12	48	51.4	809
1989	CN8		1989	02	12.12604	09	35	16.84	+12	48	54.1	809
1989	CN8		1989	02	12.13090	09	35	16.57	+12	48	56.5	809
1989	CO8	*	1989	02	11.18646	09	54	16.95	+14	27	02.8	17.2 809
1989	CO8		1989	02	11.19132	09	54	16.63	+14	27	04.2	809
1989	CO8		1989	02	11.19618	09	54	16.32	+14	27	05.4	809
1989	CO8		1989	02	12.23299	09	53	07.06	+14	32	18.8	809
1989	CO8		1989	02	12.23785	09	53	06.73	+14	32	20.0	809
1989	CO8		1989	02	12.24271	09	53	06.42	+14	32	21.5	809
1989	CO8		1989	02	13.27465	09	51	57.11	+14	37	29.4	809
1989	CO8		1989	02	13.27951	09	51	56.79	+14	37	30.7	809
1989	CO8		1989	02	13.28438	09	51	56.48	+14	37	32.1	809

1989	CP8	*	1989	02	12.25104	10	03	48.28	+14	02	46.1	17.4	809
1989	CP8		1989	02	12.25590	10	03	47.99	+14	02	48.5		809
1989	CP8		1989	02	12.26076	10	03	47.73	+14	02	50.7		809
1989	CQ8	*	1989	02	12.28368	10	15	24.37	+12	57	34.9	17.4	809
1989	CQ8		1989	02	12.28854	10	15	24.19	+12	57	36.4		809
1989	CQ8		1989	02	12.29340	10	15	23.98	+12	57	37.8		809
1989	CR8	*	1989	02	13.12396	09	13	49.70	+13	03	38.4	17.4	809
1989	CR8		1989	02	13.12882	09	13	49.41	+13	03	40.4		809
1989	CR8		1989	02	13.13368	09	13	49.12	+13	03	42.5		809
1989	CS8	*	1989	02	13.25937	09	54	22.90	+07	14	35.7	17.1	809
1989	CS8		1989	02	13.26424	09	54	22.58	+07	14	37.2		809
1989	CS8		1989	02	13.26910	09	54	22.26	+07	14	38.8		809
1989	CT8	*	1989	02	13.29201	10	26	09.91	+11	10	07.4	16.8	809
1989	CT8		1989	02	13.29688	10	26	09.68	+11	10	08.6		809
1989	CT8		1989	02	13.30174	10	26	09.46	+11	10	09.9		809
1989	CU8	*	1989	02	13.30799	10	35	02.24	+11	23	41.0	17.2	809
1989	CU8		1989	02	13.31285	10	35	02.01	+11	23	42.3		809
1989	CU8		1989	02	13.31771	10	35	01.78	+11	23	43.5		809
1989	CU8		1989	02	17.33889	10	31	46.98	+11	41	27.3		809
1989	CU8		1989	02	17.34305	10	31	46.78	+11	41	28.4		809
1989	CU8		1989	02	17.34722	10	31	46.58	+11	41	29.5		809
1989	CU8		1989	02	18.34896	10	30	57.02	+11	45	53.7		809
1989	CU8		1989	02	18.35382	10	30	56.81	+11	45	54.6		809
1989	DH	*	1989	02	25.30937	10	08	04.20	+12	43	14.6	17.1	809
1989	DH		1989	02	25.31424	10	08	04.01	+12	43	16.1		809
1989	DH		1989	02	25.31910	10	08	03.81	+12	43	17.4		809
1989	DJ	*	1989	02	27.23438	09	47	44.42	+13	42	05.9	16.9	809
1989	DJ		1989	02	27.23924	09	47	44.26	+13	42	06.1		809
1989	DJ		1989	02	27.24410	09	47	44.11	+13	42	06.3		809
1989	DJ		1989	02	28.24687	09	47	10.93	+13	42	48.3		809
1989	DJ		1989	02	28.25174	09	47	10.77	+13	42	48.5		809
1989	DJ		1989	02	28.25660	09	47	10.61	+13	42	48.8		809
1989	DJ		1989	03	02.17396	09	46	08.03	+13	44	04.3		809
1989	DJ		1989	03	02.17882	09	46	07.87	+13	44	04.8		809
1989	DJ		1989	03	02.18368	09	46	07.72	+13	44	04.9		809
1989	DJ		1989	03	03.22795	09	45	34.04	+13	44	43.3		809
1989	DJ		1989	03	03.23333	09	45	33.87	+13	44	43.4		809
1989	DJ		1989	03	03.23872	09	45	33.69	+13	44	43.6		809
1989	DK	*	1989	02	28.23021	09	43	05.65	+01	38	13.7	16.9	809
1989	DK		1989	02	28.23507	09	43	05.36	+01	38	14.2		809
1989	DK		1989	02	28.23993	09	43	05.09	+01	38	14.3		809
1989	DK		1989	03	01.25451	09	42	08.37	+01	39	35.8		809
1989	DK		1989	03	01.25937	09	42	08.10	+01	39	35.9		809
1989	DK		1989	03	01.26424	09	42	07.82	+01	39	36.5		809
1989	DK		1989	03	02.23576	09	41	14.52	+01	40	58.9		809
1989	DK		1989	03	02.24062	09	41	14.27	+01	40	59.3		809
1989	DK		1989	03	02.24549	09	41	14.00	+01	40	59.6		809
1989	DK		1989	03	03.29826	09	40	17.22	+01	42	31.9		809
1989	DK		1989	03	03.30313	09	40	16.92	+01	42	32.6		809
1989	DL	*	1989	02	28.23021	09	43	28.13	+02	06	54.8	17.2	809
1989	DL		1989	02	28.23507	09	43	27.93	+02	06	55.9		809
1989	DL		1989	02	28.23993	09	43	27.73	+02	06	56.6		809
1989	DL		1989	03	01.25451	09	42	50.09	+02	10	30.4		809
1989	DL		1989	03	01.25937	09	42	49.91	+02	10	31.5		809
1989	DL		1989	03	01.26424	09	42	49.74	+02	10	32.5		809
1989	DL		1989	03	02.23576	09	42	14.13	+02	13	59.5		809
1989	DL		1989	03	02.24062	09	42	13.94	+02	14	00.6		809
1989	DL		1989	03	02.24549	09	42	13.77	+02	14	01.6		809
1989	DM	*	1989	02	28.23021	09	48	28.92	+01	52	10.9	16.5	809

1989	DM	1989	02	28.23507	09	48	28.68	+01	52	12.0	809
1989	DM	1989	02	28.23993	09	48	28.45	+01	52	12.9	809
1989	DM	1989	03	01.25451	09	47	39.37	+01	56	01.1	809
1989	DM	1989	03	01.25937	09	47	39.13	+01	56	02.1	809
1989	DM	1989	03	01.26424	09	47	38.90	+01	56	03.1	809
1989	DM	1989	03	02.23576	09	46	53.26	+01	59	44.9	809
1989	DM	1989	03	02.24062	09	46	53.03	+01	59	45.9	809
1989	DM	1989	03	02.24549	09	46	52.80	+01	59	47.0	809
1989	EO1	1989	02	11.18646	09	53	02.01	+14	17	00.6	17.0 809
1989	EO1	1989	02	11.19132	09	53	01.67	+14	17	01.1	809
1989	EO1	1989	02	11.19618	09	53	01.35	+14	17	01.6	809
1989	EO1	1989	02	12.23299	09	51	52.23	+14	19	09.0	809
1989	EO1	1989	02	12.23785	09	51	51.90	+14	19	09.5	809
1989	EO1	1989	02	12.24271	09	51	51.59	+14	19	10.3	809
1989	EO1	1989	02	13.27465	09	50	42.60	+14	21	15.0	809
1989	EO1	1989	02	13.27951	09	50	42.29	+14	21	15.6	809
1989	EO1	1989	02	13.28438	09	50	41.97	+14	21	16.2	809
1989	EO1	1989	02	26.15243	09	36	42.88	+14	42	41.0	809
1989	EO1	1989	02	26.15729	09	36	42.56	+14	42	41.4	809
1989	EO1	1989	02	26.16215	09	36	42.28	+14	42	41.6	809
1989	EO1	1989	02	27.16632	09	35	41.40	+14	43	50.3	809
1989	EO1	1989	02	27.17153	09	35	41.07	+14	43	50.9	809
1989	EO1	1989	02	27.17674	09	35	40.74	+14	43	51.1	809
1989	EO1	1989	03	01.23715	09	33	39.53	+14	45	54.2	809
1989	EO1	1989	03	01.24201	09	33	39.24	+14	45	54.5	809
1989	EO1	1989	03	01.24687	09	33	38.95	+14	45	54.8	809
1989	EO1	1989	03	03.28819	09	31	44.20	+14	47	31.3	809
1989	EO1	1989	03	03.29236	09	31	43.98	+14	47	31.8	809
1989	EW1	1989	02	12.26632	10	07	30.57	+16	13	37.9	16.6 809
1989	EW1	1989	02	12.27118	10	07	30.24	+16	13	39.5	809
1989	EW1	1989	02	12.27604	10	07	29.92	+16	13	41.2	809
1989	EW1	1989	02	14.35625	10	05	12.67	+16	24	07.8	809
1989	EW1	1989	02	14.36180	10	05	12.29	+16	24	09.0	809
1989	EW1	1989	02	17.32257	10	01	56.14	+16	38	26.4	809
1989	EW1	1989	02	17.32743	10	01	55.81	+16	38	27.8	809
1989	EW1	1989	02	17.33229	10	01	55.46	+16	38	29.2	809
1989	EW1	1989	02	18.25556	10	00	54.56	+16	42	46.6	809
1989	EW1	1989	02	18.25972	10	00	54.28	+16	42	47.2	809
1989	EW1	1989	02	24.16146	09	54	30.99	+17	07	55.5	809
1989	EW1	1989	02	24.16840	09	54	30.53	+17	07	58.3	809
1989	EW1	1989	02	26.18507	09	52	24.48	+17	15	29.5	809
1989	EW1	1989	02	26.18993	09	52	24.19	+17	15	30.7	809
1989	EW1	1989	02	26.19479	09	52	23.90	+17	15	31.9	809
1989	EW1	1989	02	28.26424	09	50	18.26	+17	22	36.7	809
1989	EW1	1989	02	28.26910	09	50	17.99	+17	22	37.7	809
1989	EW1	1989	02	28.27396	09	50	17.70	+17	22	38.7	809
1989	EW1	1989	03	02.18993	09	48	25.96	+17	28	37.3	809
1989	EW1	1989	03	02.19479	09	48	25.68	+17	28	38.2	809
1989	EW1	1989	03	02.19965	09	48	25.39	+17	28	39.2	809
1989	EW1	1989	03	03.24479	09	47	26.08	+17	31	39.1	809
1989	EW1	1989	03	03.24965	09	47	25.82	+17	31	40.1	809
1989	EW1	1989	03	03.25451	09	47	25.56	+17	31	40.9	809
1989	EX1	1989	02	07.24896	10	10	08.01	+13	49	33.3	16.4 809
1989	EX1	1989	02	07.25521	10	10	07.73	+13	49	37.4	809
1989	EX1	1989	02	07.26146	10	10	07.42	+13	49	41.6	809
1989	EX1	1989	02	08.26875	10	09	18.15	+14	00	42.3	809
1989	EX1	1989	02	08.27431	10	09	17.87	+14	00	45.9	809
1989	EX1	1989	02	08.27986	10	09	17.60	+14	00	49.5	809
1989	EX1	1989	02	09.24792	10	08	29.41	+14	11	29.6	809

1989	EX1	1989	02	09.25347	10	08	29.16	+14	11	33.3	809
1989	EX1	1989	02	09.25903	10	08	28.88	+14	11	37.0	809
1989	EX1	1989	02	10.26458	10	07	37.79	+14	22	46.8	809
1989	EX1	1989	02	10.27014	10	07	37.51	+14	22	50.1	809
1989	EX1	1989	02	10.27569	10	07	37.20	+14	22	53.9	809
1989	EX1	1989	02	12.26632	10	05	53.74	+14	45	06.9	809
1989	EX1	1989	02	12.27118	10	05	53.49	+14	45	10.5	809
1989	EX1	1989	02	12.27604	10	05	53.24	+14	45	13.8	809
1989	EX1	1989	02	14.35625	10	04	02.01	+15	08	34.8	809
1989	EX1	1989	02	14.36180	10	04	01.69	+15	08	38.5	809
1989	EX1	1989	02	17.32257	10	01	20.16	+15	41	52.1	809
1989	EX1	1989	02	17.32743	10	01	19.89	+15	41	55.4	809
1989	EX1	1989	02	17.33229	10	01	19.60	+15	41	58.6	809
1989	EX1	1989	02	18.25556	10	00	28.87	+15	52	18.7	809
1989	EX1	1989	02	18.25972	10	00	28.63	+15	52	21.4	809
1989	EX1	1989	02	23.08785	09	56	01.95	+16	45	28.6	809
1989	EX1	1989	02	23.09479	09	56	01.58	+16	45	33.3	809
1989	EX1	1989	02	24.16146	09	55	02.84	+16	57	00.9	809
1989	EX1	1989	02	24.16840	09	55	02.46	+16	57	05.3	809
1989	EX1	1989	02	26.18507	09	53	12.95	+17	18	22.7	809
1989	EX1	1989	02	26.18993	09	53	12.68	+17	18	25.8	809
1989	EX1	1989	02	26.19479	09	53	12.43	+17	18	29.1	809
1989	EX1	1989	02	28.26424	09	51	22.17	+17	39	44.1	809
1989	EX1	1989	02	28.26910	09	51	21.90	+17	39	47.4	809
1989	EX1	1989	02	28.27396	09	51	21.64	+17	39	50.3	809
1989	EX1	1989	03	02.18993	09	49	42.74	+17	58	55.7	809
1989	EX1	1989	03	02.19479	09	49	42.47	+17	58	58.8	809
1989	EX1	1989	03	02.19965	09	49	42.20	+17	59	01.7	809
1989	EX1	1989	03	03.24479	09	48	49.36	+18	09	08.8	809
1989	EX1	1989	03	03.24965	09	48	49.12	+18	09	11.7	809
1989	EX1	1989	03	03.25451	09	48	48.88	+18	09	14.6	809
1989	EF6	1989	03	01.09549	09	06	36.12	+18	22	33.0	17.2 809
1989	EF6	1989	03	01.10174	09	06	35.84	+18	22	32.9	809
1989	EF6	1989	03	01.10799	09	06	35.55	+18	22	32.8	809
1989	EF6	1989	03	02.09861	09	05	50.36	+18	22	01.3	809
1989	EF6	1989	03	02.10417	09	05	50.12	+18	22	01.0	809
1989	EF6	1989	03	02.10972	09	05	49.84	+18	22	00.9	809
1989	EF6	1989	03	03.09618	09	05	06.09	+18	21	22.0	809
1989	EF6	1989	03	03.10104	09	05	05.88	+18	21	21.9	809
1989	EF6	1989	03	03.10590	09	05	05.66	+18	21	21.7	809
1989	EE11*	1989	03	01.21806	09	27	57.65	-01	18	03.4	16.9 809
1989	EE11	1989	03	01.22361	09	27	57.38	-01	18	02.2	809
1989	EE11	1989	03	01.22917	09	27	57.11	-01	18	01.0	809
1989	EF11*	1989	03	02.17396	09	47	13.74	+14	31	22.7	17.6 809
1989	EF11	1989	03	02.17882	09	47	13.48	+14	31	24.6	809
1989	EF11	1989	03	02.18368	09	47	13.22	+14	31	26.6	809
1989	EF11	1989	03	03.22795	09	46	17.57	+14	38	16.9	809
1989	EF11	1989	03	03.23333	09	46	17.29	+14	38	19.2	809
1989	EF11	1989	03	03.23872	09	46	17.02	+14	38	21.6	809
1989	EG11*	1989	03	03.31563	09	26	09.80	+02	36	19.6	17.4 809
1989	EG11	1989	03	03.32049	09	26	09.50	+02	36	19.3	809
133		1989	02	09.22917	09	36	52.94	+13	42	07.6	809
133		1989	02	09.23472	09	36	52.65	+13	42	08.9	809
133		1989	02	09.24028	09	36	52.33	+13	42	09.4	809
133		1989	02	10.24653	09	35	59.79	+13	44	29.2	809
133		1989	02	10.25208	09	35	59.51	+13	44	29.8	809
133		1989	02	10.25764	09	35	59.21	+13	44	30.5	809
133		1989	02	27.11493	09	21	43.66	+14	20	25.6	809
133		1989	02	27.12118	09	21	43.36	+14	20	26.2	809

133	1989	02	27.12743	09	21	43.07	+14	20	26.9	809
133	1989	03	01.11771	09	20	11.41	+14	23	55.5	809
133	1989	03	01.12396	09	20	11.11	+14	23	56.4	809
133	1989	03	01.13021	09	20	10.86	+14	23	56.9	809
133	1989	03	02.11736	09	19	26.65	+14	25	36.0	809
133	1989	03	02.12292	09	19	26.40	+14	25	36.2	809
133	1989	03	02.12847	09	19	26.15	+14	25	36.4	809
133	1989	03	03.11285	09	18	42.92	+14	27	11.0	809
133	1989	03	03.11771	09	18	42.69	+14	27	11.6	809
133	1989	03	03.12257	09	18	42.47	+14	27	12.2	809
137	1989	02	07.34965	10	43	53.56	-05	29	55.8	809
137	1989	02	07.35590	10	43	53.33	-05	29	54.8	809
137	1989	02	07.36215	10	43	53.11	-05	29	53.5	809
137	1989	02	08.34236	10	43	18.44	-05	26	33.8	809
137	1989	02	08.34792	10	43	18.25	-05	26	32.7	809
137	1989	02	08.35347	10	43	18.04	-05	26	31.3	809
137	1989	02	09.32917	10	42	42.90	-05	23	03.9	809
137	1989	02	09.33472	10	42	42.70	-05	23	02.7	809
137	1989	02	09.34028	10	42	42.53	-05	23	01.5	809
137	1989	02	11.29340	10	41	30.30	-05	15	40.8	809
137	1989	02	11.29826	10	41	30.11	-05	15	39.6	809
137	1989	02	11.30313	10	41	29.93	-05	15	38.5	809
137	1989	02	12.35382	10	40	50.11	-05	11	27.8	809
137	1989	02	12.35868	10	40	49.95	-05	11	26.9	809
137	1989	02	12.36424	10	40	49.74	-05	11	25.5	809
137	1989	02	17.36736	10	37	33.03	-04	49	26.2	809
137	1989	02	17.37153	10	37	32.86	-04	49	25.0	809
137	1989	02	17.37569	10	37	32.69	-04	49	23.8	809
137	1989	02	18.36910	10	36	52.44	-04	44	38.9	809
137	1989	02	18.37396	10	36	52.20	-04	44	37.2	809
137	1989	02	19.38646	10	36	10.84	-04	39	37.8	809
137	1989	02	19.39132	10	36	10.62	-04	39	36.2	809
137	1989	02	24.19896	10	32	50.68	-04	14	18.5	809
137	1989	02	24.20590	10	32	50.36	-04	14	16.3	809
137	1989	02	25.32882	10	32	02.97	-04	08	00.2	809
137	1989	02	25.33368	10	32	02.77	-04	07	58.8	809
137	1989	02	25.33854	10	32	02.54	-04	07	57.4	809
137	1989	02	26.28438	10	31	22.58	-04	02	34.8	809
137	1989	02	26.28924	10	31	22.37	-04	02	33.4	809
137	1989	02	26.29410	10	31	22.19	-04	02	31.5	809
137	1989	02	27.33160	10	30	38.31	-03	56	30.1	809
137	1989	02	27.33646	10	30	38.10	-03	56	28.5	809
390	1989	02	13.20799	09	42	27.48	+05	55	44.3	809
390	1989	02	13.21285	09	42	27.18	+05	55	44.1	809
390	1989	02	13.21771	09	42	26.88	+05	55	43.5	809
400	1989	02	08.22847	09	43	55.19	+15	07	28.3	809
400	1989	02	08.23403	09	43	54.91	+15	07	28.4	809
400	1989	02	08.23958	09	43	54.63	+15	07	28.8	809
557	1989	02	07.20174	09	19	39.83	+13	34	21.8	809
557	1989	02	07.20799	09	19	39.43	+13	34	22.8	809
557	1989	02	07.21424	09	19	39.07	+13	34	24.6	809
557	1989	02	09.14028	09	17	42.78	+13	40	42.2	809
557	1989	02	09.14583	09	17	42.44	+13	40	43.3	809
557	1989	02	09.15139	09	17	42.08	+13	40	44.0	809
557	1989	02	10.11944	09	16	43.87	+13	43	54.3	809
557	1989	02	10.12500	09	16	43.54	+13	43	55.0	809
557	1989	02	10.12986	09	16	43.24	+13	43	55.8	809
557	1989	02	12.08160	09	14	46.67	+13	50	16.1	809
557	1989	02	12.08646	09	14	46.39	+13	50	17.0	809

557	1989	02	12.09132	09	14	46.08	+13	50	17.9	809
557	1989	02	13.12396	09	13	44.96	+13	53	38.6	809
557	1989	02	13.12882	09	13	44.65	+13	53	39.1	809
557	1989	02	13.13368	09	13	44.37	+13	53	39.5	809
557	1989	02	25.02188	09	03	08.37	+14	28	26.0	809
557	1989	02	25.02674	09	03	08.13	+14	28	27.0	809
557	1989	02	25.03160	09	03	07.91	+14	28	27.4	809
557	1989	02	26.05035	09	02	21.25	+14	31	00.0	809
557	1989	02	26.05521	09	02	21.05	+14	31	01.1	809
557	1989	02	26.06007	09	02	20.84	+14	31	01.6	809
557	1989	03	01.06562	09	00	12.78	+14	37	59.8	809
557	1989	03	01.07049	09	00	12.57	+14	38	00.0	809
557	1989	03	01.07535	09	00	12.38	+14	38	00.7	809
557	1989	03	03.03924	08	58	56.81	+14	42	07.4	809
557	1989	03	03.04410	08	58	56.65	+14	42	07.9	809
588	1989	02	12.08160	09	22	37.64	+14	31	05.2	809
588	1989	02	12.08646	09	22	37.46	+14	31	05.5	809
588	1989	02	12.09132	09	22	37.25	+14	31	06.1	809
588	1989	03	01.11771	09	13	08.99	+14	50	53.0	809
588	1989	03	01.12396	09	13	08.78	+14	50	53.2	809
588	1989	03	01.13021	09	13	08.58	+14	50	53.4	809
588	1989	03	02.11736	09	12	39.46	+14	51	49.1	809
588	1989	03	02.12292	09	12	39.30	+14	51	49.5	809
588	1989	03	02.12847	09	12	39.15	+14	51	49.9	809
588	1989	03	03.11285	09	12	10.65	+14	52	40.8	809
588	1989	03	03.11771	09	12	10.49	+14	52	41.1	809
588	1989	03	03.12257	09	12	10.34	+14	52	41.4	809
632	1989	02	13.27465	09	51	42.21	+14	57	37.8	809
632	1989	02	13.27951	09	51	41.95	+14	57	39.3	809
632	1989	02	13.28438	09	51	41.65	+14	57	40.5	809
632	1989	02	17.15208	09	47	58.83	+15	14	09.0	809
632	1989	02	17.15625	09	47	58.58	+15	14	10.1	809
632	1989	02	17.16042	09	47	58.33	+15	14	11.2	809
632	1989	02	18.22708	09	46	56.52	+15	18	38.4	809
632	1989	02	18.23125	09	46	56.27	+15	18	39.3	809
632	1989	02	26.15243	09	39	26.95	+15	49	39.6	809
632	1989	02	26.15729	09	39	26.71	+15	49	40.9	809
632	1989	02	26.16215	09	39	26.45	+15	49	41.8	809
632	1989	02	27.16632	09	38	31.53	+15	53	17.1	809
632	1989	02	27.17153	09	38	31.25	+15	53	17.7	809
632	1989	02	27.17674	09	38	30.95	+15	53	18.8	809
632	1989	03	01.23715	09	36	40.31	+16	00	25.8	809
632	1989	03	01.24201	09	36	40.06	+16	00	26.2	809
632	1989	03	01.24687	09	36	39.81	+16	00	27.6	809
632	1989	03	03.28819	09	34	53.64	+16	07	05.8	809
632	1989	03	03.29236	09	34	53.43	+16	07	07.1	809
647	1989	02	07.34965	10	45	25.67	-05	01	58.1	809
647	1989	02	07.35590	10	45	25.36	-05	01	57.4	809
647	1989	02	07.36215	10	45	25.05	-05	01	56.7	809
647	1989	02	08.34236	10	44	37.61	-05	00	21.9	809
647	1989	02	08.34792	10	44	37.35	-05	00	21.4	809
647	1989	02	08.35347	10	44	37.07	-05	00	21.0	809
647	1989	02	09.32917	10	43	48.70	-04	58	31.8	809
647	1989	02	09.33472	10	43	48.45	-04	58	31.3	809
647	1989	02	09.34028	10	43	48.18	-04	58	30.4	809
647	1989	02	11.29340	10	42	08.43	-04	54	10.3	809
647	1989	02	11.29826	10	42	08.22	-04	54	09.6	809
647	1989	02	11.30313	10	42	07.95	-04	54	08.6	809
647	1989	02	12.35382	10	41	12.56	-04	51	25.6	809

647	1989	02	12.35868	10	41	12.31	-04	51	24.9	809
647	1989	02	12.36424	10	41	12.02	-04	51	24.4	809
647	1989	02	17.36736	10	36	37.51	-04	35	01.6	809
647	1989	02	17.37153	10	36	37.27	-04	35	00.0	809
647	1989	02	17.37569	10	36	37.00	-04	34	58.9	809
647	1989	02	18.36910	10	35	40.73	-04	31	05.8	809
647	1989	02	18.37396	10	35	40.43	-04	31	04.0	809
647	1989	02	19.38646	10	34	42.70	-04	26	52.7	809
647	1989	02	19.39132	10	34	42.42	-04	26	51.7	809
660	1989	02	13.25937	09	53	43.04	+08	02	47.4	809
660	1989	02	13.26424	09	53	42.78	+08	02	50.4	809
660	1989	02	13.26910	09	53	42.49	+08	02	53.4	809
662	1989	02	08.28819	10	20	33.60	+11	59	35.4	809
662	1989	02	08.29375	10	20	33.33	+11	59	37.4	809
662	1989	02	08.29930	10	20	33.03	+11	59	39.1	809
662	1989	02	09.26805	10	19	45.02	+12	05	27.8	809
662	1989	02	09.27361	10	19	44.74	+12	05	29.8	809
662	1989	02	09.27917	10	19	44.46	+12	05	31.9	809
662	1989	02	11.21979	10	18	06.45	+12	17	17.6	809
662	1989	02	11.22465	10	18	06.16	+12	17	19.5	809
662	1989	02	11.22951	10	18	05.94	+12	17	21.3	809
662	1989	02	11.24410	10	18	05.15	+12	17	27.3	809
662	1989	02	11.24896	10	18	04.90	+12	17	29.3	809
662	1989	02	11.25382	10	18	04.66	+12	17	31.0	809
662	1989	02	12.28368	10	17	11.63	+12	23	49.2	809
662	1989	02	12.28854	10	17	11.38	+12	23	50.8	809
662	1989	02	12.29340	10	17	11.13	+12	23	52.4	809
662	1989	02	17.29167	10	12	47.14	+12	54	41.0	809
662	1989	02	17.29583	10	12	46.92	+12	54	42.3	809
662	1989	02	17.30000	10	12	46.66	+12	54	43.9	809
662	1989	02	25.30937	10	05	33.59	+13	43	28.5	809
662	1989	02	25.31424	10	05	33.34	+13	43	30.3	809
662	1989	02	25.31910	10	05	33.09	+13	43	31.6	809
662	1989	02	27.25278	10	03	49.43	+13	54	54.3	809
662	1989	02	27.25833	10	03	49.12	+13	54	56.1	809
662	1989	02	27.26389	10	03	48.82	+13	54	58.2	809
662	1989	03	01.27396	10	02	02.24	+14	06	32.8	809
662	1989	03	01.27882	10	02	01.97	+14	06	34.2	809
662	1989	03	01.28368	10	02	01.69	+14	06	36.2	809
706	1989	02	09.29028	10	25	47.49	+07	39	15.0	809
706	1989	02	09.29583	10	25	47.19	+07	39	15.3	809
706	1989	02	09.30139	10	25	46.90	+07	39	16.2	809
706	1989	02	10.30208	10	24	52.61	+07	40	42.7	809
706	1989	02	10.30764	10	24	52.32	+07	40	42.9	809
706	1989	02	10.31319	10	24	52.01	+07	40	43.4	809
706	1989	02	12.31632	10	23	01.87	+07	43	46.6	809
706	1989	02	12.32118	10	23	01.62	+07	43	46.8	809
706	1989	02	12.32604	10	23	01.36	+07	43	47.5	809
848	1989	02	08.15521	09	05	05.32	+15	15	20.0	809
848	1989	02	08.16007	09	05	05.07	+15	15	21.0	809
848	1989	02	08.16493	09	05	04.83	+15	15	22.1	809
848	1989	02	09.10486	09	04	20.43	+15	18	40.5	809
848	1989	02	09.11042	09	04	20.19	+15	18	42.4	809
848	1989	02	09.11597	09	04	19.91	+15	18	43.2	809
848	1989	02	28.07674	08	50	49.20	+16	19	04.8	809
848	1989	02	28.08160	08	50	49.02	+16	19	05.2	809
848	1989	02	28.08646	08	50	48.85	+16	19	06.2	809
848	1989	03	01.02257	08	50	15.37	+16	21	36.1	809
848	1989	03	01.02882	08	50	15.14	+16	21	37.7	809

848		1989	03	01.03507	08	50	14.93	+16	21	38.5	809
848		1989	03	02.05590	08	49	39.40	+16	24	19.0	809
848		1989	03	02.06215	08	49	39.19	+16	24	19.7	809
848		1989	03	02.06840	08	49	38.98	+16	24	21.2	809
898		1989	02	08.12674	09	18	58.93	+01	01	45.1	809
898		1989	02	08.13299	09	18	58.61	+01	01	46.1	809
898		1989	02	08.13924	09	18	58.28	+01	01	47.6	809
898		1989	02	09.08472	09	18	08.94	+01	05	01.3	809
898		1989	02	09.09028	09	18	08.63	+01	05	02.5	809
898		1989	02	09.09583	09	18	08.38	+01	05	03.8	809
898		1989	02	10.05972	09	17	18.02	+01	08	28.4	809
898		1989	02	10.06528	09	17	17.73	+01	08	29.1	809
898		1989	02	10.07083	09	17	17.45	+01	08	30.6	809
898		1989	02	11.05035	09	16	26.22	+01	12	03.4	809
898		1989	02	11.05521	09	16	26.01	+01	12	04.5	809
898		1989	02	11.06007	09	16	25.72	+01	12	05.6	809
898		1989	02	26.01701	09	03	55.81	+02	15	56.5	809
898		1989	02	26.02188	09	03	55.60	+02	15	57.5	809
898		1989	02	26.02674	09	03	55.38	+02	15	58.6	809
898		1989	02	27.01632	09	03	09.73	+02	20	39.3	809
898		1989	02	27.02257	09	03	09.44	+02	20	41.2	809
898		1989	02	27.02882	09	03	09.16	+02	20	43.0	809
898		1989	02	28.02118	09	02	24.17	+02	25	27.7	809
898		1989	02	28.02604	09	02	23.94	+02	25	28.7	809
898		1989	02	28.03090	09	02	23.75	+02	25	29.9	809
898		1989	03	02.01979	09	00	55.83	+02	35	03.5	809
898		1989	03	02.02465	09	00	55.62	+02	35	05.0	809
898		1989	03	02.02951	09	00	55.42	+02	35	06.5	809
999		1989	02	07.34965	10	45	01.65	-04	39	39.1	809
999		1989	02	07.35590	10	45	01.39	-04	39	38.1	809
999		1989	02	07.36215	10	45	01.12	-04	39	37.0	809
999		1989	02	08.34236	10	44	20.08	-04	36	15.3	809
999		1989	02	08.34792	10	44	19.87	-04	36	13.9	809
999		1989	02	08.35347	10	44	19.64	-04	36	12.7	809
1104		1989	02	13.14271	09	22	05.61	+17	40	38.8	809
1104		1989	02	13.14757	09	22	05.35	+17	40	40.3	809
1104		1989	02	13.15243	09	22	05.07	+17	40	42.3	809
1104		1989	03	01.09549	09	08	48.13	+19	18	05.1	809
1104		1989	03	01.10174	09	08	47.85	+19	18	06.8	809
1104		1989	03	01.10799	09	08	47.60	+19	18	08.8	809
1104		1989	03	02.09861	09	08	09.12	+19	22	49.0	809
1104		1989	03	02.10417	09	08	08.90	+19	22	50.7	809
1104		1989	03	02.10972	09	08	08.68	+19	22	51.9	809
1104		1989	03	03.09618	09	07	31.86	+19	27	20.6	809
1104		1989	03	03.10104	09	07	31.69	+19	27	21.8	809
1104		1989	03	03.10590	09	07	31.50	+19	27	23.0	809
1289		1989	02	07.20174	09	17	31.47	+13	42	44.6	809
1289		1989	02	07.20799	09	17	31.14	+13	42	46.3	809
1289		1989	02	07.21424	09	17	30.80	+13	42	48.0	809
1289		1989	02	25.02188	09	03	03.86	+14	54	52.6	809
1289		1989	02	25.02674	09	03	03.64	+14	54	53.6	809
1289		1989	02	25.03160	09	03	03.45	+14	54	54.8	809
1289		1989	02	26.05035	09	02	20.01	+14	58	36.2	809
1289		1989	02	26.05521	09	02	19.80	+14	58	37.7	809
1289		1989	02	26.06007	09	02	19.59	+14	58	38.6	809
1289		1989	03	01.06562	09	00	17.30	+15	09	07.6	809
1289		1989	03	01.07049	09	00	17.11	+15	09	08.5	809
1289		1989	03	01.07535	09	00	16.91	+15	09	09.2	809
1289		1989	03	03.03924	08	59	02.21	+15	15	40.0	809

1289	1989	03	03.04410	08	59	01.96	+15	15	40.6	809
1301	1989	03	02.01979	09	06	09.80	+01	14	31.0	809
1301	1989	03	02.02465	09	06	09.62	+01	14	39.0	809
1301	1989	03	02.02951	09	06	09.49	+01	14	46.8	809
1307	1989	02	10.07708	09	17	51.08	+08	02	31.0	809
1307	1989	02	10.08264	09	17	50.73	+08	02	32.8	809
1307	1989	02	10.08819	09	17	50.41	+08	02	34.4	809
1404	1989	02	08.28819	10	17	22.80	+11	44	36.2	809
1404	1989	02	08.29375	10	17	22.61	+11	44	36.9	809
1404	1989	02	08.29930	10	17	22.45	+11	44	37.3	809
1404	1989	02	09.26805	10	16	51.47	+11	45	51.3	809
1404	1989	02	09.27361	10	16	51.27	+11	45	51.5	809
1404	1989	02	09.27917	10	16	51.09	+11	45	51.7	809
1404	1989	02	10.28403	10	16	18.64	+11	47	08.0	809
1404	1989	02	10.28958	10	16	18.46	+11	47	08.6	809
1404	1989	02	10.29514	10	16	18.30	+11	47	08.8	809
1404	1989	02	11.21979	10	15	48.29	+11	48	20.1	809
1404	1989	02	11.22465	10	15	48.13	+11	48	20.7	809
1404	1989	02	11.22951	10	15	47.96	+11	48	21.0	809
1404	1989	02	11.24410	10	15	47.48	+11	48	22.8	809
1404	1989	02	11.24896	10	15	47.30	+11	48	23.2	809
1404	1989	02	11.25382	10	15	47.14	+11	48	23.5	809
1404	1989	02	12.28368	10	15	13.59	+11	49	43.1	809
1404	1989	02	12.28854	10	15	13.45	+11	49	43.3	809
1404	1989	02	12.29340	10	15	13.27	+11	49	43.9	809
1430	1989	02	08.28819	10	21	09.68	+10	07	34.4	809
1430	1989	02	08.29375	10	21	09.38	+10	07	35.9	809
1430	1989	02	08.29930	10	21	09.10	+10	07	37.1	809
1437	1989	02	13.25937	09	54	42.19	+06	33	10.5	809
1437	1989	02	13.26424	09	54	42.01	+06	33	10.6	809
1437	1989	02	13.26910	09	54	41.84	+06	33	10.8	809
1486	1989	02	09.18472	09	40	34.99	+13	56	57.8	809
1486	1989	02	09.19028	09	40	34.63	+13	56	59.8	809
1486	1989	02	09.19583	09	40	34.27	+13	57	01.4	809
1486	1989	02	10.22847	09	39	27.22	+14	02	36.3	809
1486	1989	02	10.23403	09	39	26.86	+14	02	37.6	809
1486	1989	02	10.23958	09	39	26.50	+14	02	39.6	809
1486	1989	02	12.18993	09	37	19.66	+14	13	07.5	809
1486	1989	02	12.19479	09	37	19.35	+14	13	08.9	809
1486	1989	02	12.19965	09	37	19.03	+14	13	10.5	809
1486	1989	02	13.19063	09	36	14.71	+14	18	26.9	809
1486	1989	02	13.19549	09	36	14.41	+14	18	28.4	809
1486	1989	02	13.20035	09	36	14.10	+14	18	29.5	809
1490	1989	02	08.12674	09	17	27.65	+00	32	10.0	809
1490	1989	02	08.13299	09	17	27.27	+00	32	10.9	809
1490	1989	02	08.13924	09	17	26.89	+00	32	12.2	809
1490	1989	02	09.08472	09	16	29.33	+00	35	20.6	809
1490	1989	02	09.09028	09	16	28.99	+00	35	22.0	809
1490	1989	02	09.09583	09	16	28.65	+00	35	23.0	809
1490	1989	02	10.05972	09	15	30.11	+00	38	44.7	809
1490	1989	02	10.06528	09	15	29.77	+00	38	45.7	809
1490	1989	02	10.07083	09	15	29.45	+00	38	47.0	809
1490	1989	02	11.05035	09	14	30.19	+00	42	19.1	809
1490	1989	02	11.05521	09	14	29.87	+00	42	20.0	809
1490	1989	02	11.06007	09	14	29.55	+00	42	21.1	809
1492	1989	02	07.22118	09	18	34.72	+15	43	44.0	809
1492	1989	02	07.22743	09	18	34.34	+15	43	47.2	809
1492	1989	02	07.23368	09	18	33.92	+15	43	50.7	809
1492	1989	02	08.08437	09	17	40.92	+15	51	22.7	809

1492	1989	02	08.09063	09	17	40.52	+15	51	26.0	809
1492	1989	02	08.09687	09	17	40.11	+15	51	29.4	809
1492	1989	02	08.17257	09	17	35.09	+15	52	10.0	809
1492	1989	02	08.17743	09	17	34.80	+15	52	12.4	809
1492	1989	02	08.18229	09	17	34.50	+15	52	15.3	809
1492	1989	02	09.12292	09	16	35.50	+16	00	35.1	809
1492	1989	02	09.12847	09	16	35.16	+16	00	38.0	809
1492	1989	02	09.13403	09	16	34.79	+16	00	40.8	809
1492	1989	02	10.10139	09	15	33.94	+16	09	13.1	809
1492	1989	02	10.10694	09	15	33.61	+16	09	16.0	809
1492	1989	02	10.11250	09	15	33.24	+16	09	19.1	809
1492	1989	02	11.10625	09	14	30.77	+16	18	03.6	809
1492	1989	02	11.11181	09	14	30.44	+16	18	06.8	809
1492	1989	02	11.11736	09	14	30.12	+16	18	09.7	809
1492	1989	02	13.10347	09	12	26.13	+16	35	30.0	809
1492	1989	02	13.10903	09	12	25.79	+16	35	32.8	809
1492	1989	02	13.11458	09	12	25.47	+16	35	35.9	809
1492	1989	02	25.05590	09	01	01.59	+18	11	54.7	809
1492	1989	02	25.06076	09	01	01.34	+18	11	56.6	809
1492	1989	02	25.06562	09	01	01.09	+18	11	58.6	809
1492	1989	03	03.12951	08	56	25.38	+18	52	59.4	809
1492	1989	03	03.13299	08	56	25.23	+18	53	00.8	809
1492	1989	03	03.13646	08	56	25.07	+18	53	02.2	809
1699	1989	02	28.07674	08	48	56.66	+15	27	07.9	809
1699	1989	02	28.08160	08	48	56.36	+15	27	08.3	809
1699	1989	02	28.08646	08	48	56.07	+15	27	08.9	809
1699	1989	03	01.02257	08	48	12.48	+15	30	08.0	809
1699	1989	03	01.02882	08	48	12.21	+15	30	09.3	809
1699	1989	03	01.03507	08	48	11.91	+15	30	10.2	809
1699	1989	03	02.05590	08	47	25.76	+15	33	20.1	809
1699	1989	03	02.06215	08	47	25.49	+15	33	20.9	809
1699	1989	03	02.06840	08	47	25.19	+15	33	21.6	809
1719	1989	02	09.29028	10	25	04.94	+07	02	35.3	809
1719	1989	02	09.29583	10	25	04.64	+07	02	35.6	809
1719	1989	02	09.30139	10	25	04.32	+07	02	35.9	809
1719	1989	02	10.30208	10	24	05.92	+07	03	44.4	809
1719	1989	02	10.30764	10	24	05.61	+07	03	44.9	809
1719	1989	02	10.31319	10	24	05.28	+07	03	45.4	809
1719	1989	02	12.31632	10	22	07.04	+07	06	13.2	809
1719	1989	02	12.32118	10	22	06.77	+07	06	13.5	809
1719	1989	02	12.32604	10	22	06.50	+07	06	13.8	809
1804	1989	02	07.22118	09	18	50.79	+16	32	57.8	809
1804	1989	02	07.22743	09	18	50.39	+16	32	59.0	809
1804	1989	02	07.23368	09	18	50.00	+16	33	00.1	809
1804	1989	02	08.08437	09	17	56.30	+16	35	39.1	809
1804	1989	02	08.09063	09	17	55.91	+16	35	40.2	809
1804	1989	02	08.09687	09	17	55.49	+16	35	41.4	809
1804	1989	02	08.17257	09	17	50.52	+16	35	56.2	809
1804	1989	02	08.17743	09	17	50.22	+16	35	57.7	809
1804	1989	02	08.18229	09	17	49.91	+16	35	58.4	809
1804	1989	02	09.12292	09	16	50.45	+16	38	53.1	809
1804	1989	02	09.12847	09	16	50.13	+16	38	53.7	809
1804	1989	02	09.13403	09	16	49.74	+16	38	54.5	809
1804	1989	02	10.10139	09	15	48.68	+16	41	52.1	809
1804	1989	02	10.10694	09	15	48.34	+16	41	53.3	809
1804	1989	02	10.11250	09	15	47.95	+16	41	53.9	809
1804	1989	02	11.10625	09	14	45.37	+16	44	52.7	809
1804	1989	02	11.11181	09	14	45.02	+16	44	54.0	809
1804	1989	02	11.11736	09	14	44.68	+16	44	54.8	809

1804		1989	02	13.10347	09	12	40.67	+16	50	43.2	809
1804		1989	02	13.10903	09	12	40.35	+16	50	43.7	809
1804		1989	02	13.11458	09	12	40.00	+16	50	44.8	809
1804		1989	02	25.05590	09	01	15.89	+17	19	23.4	809
1804		1989	02	25.06076	09	01	15.64	+17	19	23.9	809
1804		1989	02	25.06562	09	01	15.39	+17	19	24.4	809
1804		1989	03	03.12951	08	56	32.01	+17	28	49.8	809
1804		1989	03	03.13299	08	56	31.84	+17	28	50.0	809
1804		1989	03	03.13646	08	56	31.67	+17	28	50.1	809
1804		1989	03	03.14132	08	56	31.45	+17	28	50.1	809
1804		1989	03	03.14618	08	56	31.22	+17	28	50.7	809
1804		1989	03	03.15104	08	56	30.99	+17	28	51.1	809
1833		1989	02	09.37014	11	21	45.82	+04	37	55.3	809
1833		1989	02	09.37569	11	21	45.63	+04	37	57.1	809
1833		1989	02	09.38125	11	21	45.46	+04	37	59.2	809
1833		1989	02	10.35694	11	21	14.10	+04	44	31.0	809
1833		1989	02	10.36250	11	21	13.93	+04	44	32.7	809
1833		1989	02	10.36806	11	21	13.76	+04	44	34.4	809
2169		1989	02	13.27465	09	55	02.73	+15	06	50.7	809
2169		1989	02	13.27951	09	55	02.48	+15	06	52.0	809
2169		1989	02	13.28438	09	55	02.22	+15	06	53.0	809
2184		1989	02	13.20799	09	42	36.61	+06	26	49.7	809
2184		1989	02	13.21285	09	42	36.42	+06	26	50.3	809
2184		1989	02	13.21771	09	42	36.18	+06	26	51.4	809
2184		1989	02	28.16285	09	31	26.30	+07	22	46.4	809
2184		1989	02	28.16771	09	31	26.10	+07	22	47.7	809
2184		1989	02	28.17257	09	31	25.90	+07	22	48.8	809
2184		1989	03	01.17257	09	30	44.78	+07	26	36.5	809
2184		1989	03	01.17760	09	30	44.57	+07	26	37.8	809
2184		1989	03	01.18264	09	30	44.36	+07	26	38.7	809
2184		1989	03	03.19618	09	29	23.75	+07	34	13.5	809
2184		1989	03	03.20104	09	29	23.57	+07	34	14.6	809
2184		1989	03	03.20590	09	29	23.40	+07	34	15.9	809
2334		1989	03	01.29896	10	23	29.39	+14	36	58.4	809
2334		1989	03	01.30382	10	23	29.09	+14	37	00.8	809
2334		1989	03	01.30868	10	23	28.82	+14	37	03.0	809
2422		1989	02	24.03125	09	28	47.03	+12	11	31.0	16.5 809
2422		1989	02	24.03681	09	28	46.73	+12	11	34.3	809
2422		1989	02	24.04236	09	28	46.43	+12	11	37.8	809
2519		1989	03	01.09549	09	09	03.56	+19	14	42.4	809
2519		1989	03	01.10174	09	09	03.31	+19	14	43.8	809
2519		1989	03	01.10799	09	09	03.07	+19	14	44.8	809
2519		1989	03	02.09861	09	08	24.96	+19	17	20.4	809
2519		1989	03	02.10417	09	08	24.72	+19	17	21.2	809
2519		1989	03	02.10972	09	08	24.50	+19	17	22.0	809
2519		1989	03	03.09618	09	07	47.60	+19	19	50.8	809
2519		1989	03	03.10104	09	07	47.40	+19	19	51.9	809
2519		1989	03	03.10590	09	07	47.20	+19	19	52.6	809
2528		1989	02	08.17257	09	14	27.71	+15	41	03.6	809
2528		1989	02	08.17743	09	14	27.49	+15	41	05.0	809
2528		1989	02	08.18229	09	14	27.26	+15	41	06.2	809
2528		1989	02	09.12292	09	13	42.88	+15	44	31.9	809
2528		1989	02	09.12847	09	13	42.59	+15	44	33.2	809
2528		1989	02	09.13403	09	13	42.32	+15	44	34.2	809
2528		1989	02	10.10139	09	12	56.75	+15	48	04.5	809
2528		1989	02	10.10694	09	12	56.49	+15	48	05.7	809
2528		1989	02	10.11250	09	12	56.22	+15	48	06.9	809
2528		1989	02	13.10347	09	10	36.39	+15	58	49.9	809
2528		1989	02	13.10903	09	10	36.14	+15	58	51.3	809

2528	1989	02	13.11458	09	10	35.91	+15	58	51.9	809
2553	1989	02	08.26875	10	07	44.14	+15	02	01.0	809
2553	1989	02	08.27431	10	07	43.90	+15	02	02.9	809
2553	1989	02	08.27986	10	07	43.68	+15	02	04.7	809
2553	1989	02	09.24792	10	07	00.26	+15	07	26.8	809
2553	1989	02	09.25347	10	07	00.02	+15	07	28.5	809
2553	1989	02	09.25903	10	06	59.77	+15	07	30.6	809
2553	1989	02	10.26458	10	06	14.21	+15	13	04.8	809
2553	1989	02	10.27014	10	06	13.97	+15	13	06.5	809
2553	1989	02	10.27569	10	06	13.72	+15	13	08.5	809
2553	1989	02	12.26632	10	04	42.60	+15	24	08.3	809
2553	1989	02	12.27118	10	04	42.39	+15	24	09.8	809
2553	1989	02	12.27604	10	04	42.17	+15	24	11.9	809
2553	1989	02	14.35625	10	03	05.73	+15	35	37.4	809
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3452	1989	02	08.27986	10	11	00.32	+15	21	44.3	809
3452	1989	02	10.26458	10	09	00.74	+15	33	27.8	809
3452	1989	02	10.27014	10	09	00.38	+15	33	29.6	809
3452	1989	02	10.27569	10	09	00.02	+15	33	31.6	809
3452	1989	02	12.26632	10	06	58.05	+15	45	10.9	809
3452	1989	02	12.27118	10	06	57.74	+15	45	12.5	809
3452	1989	02	12.27604	10	06	57.44	+15	45	14.5	809
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3497	1989	02	13.26910	09	52	11.45	+07	36	18.1	809
3705	1989	02	07.22118	09	22	20.39	+14	48	28.1	809
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3705	1989	02	08.09063	09	21	37.69	+14	52	07.2	809
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3705	1989	02	10.21528	09	19	53.12	+15	01	00.1	809
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4067       1989 02 12.23785  09 51 49.68  +13 43 52.8                    809
4067       1989 02 12.24271  09 51 49.37  +13 43 53.7                    809
4067       1989 02 13.27465  09 50 45.93  +13 46 26.2                    809
4067       1989 02 13.27951  09 50 45.63  +13 46 26.6                    809
4067       1989 02 13.28438  09 50 45.34  +13 46 27.4                    809
4067       1989 02 17.15208  09 46 49.36  +13 55 42.2                    809
4067       1989 02 17.15625  09 46 49.10  +13 55 42.9                    809
4067       1989 02 17.16042  09 46 48.83  +13 55 43.6                    809
4067       1989 02 18.22708  09 45 44.27  +13 58 10.3                    809
4067       1989 02 18.23125  09 45 44.01  +13 58 11.2                    809
4067       1989 02 26.15243  09 38 06.73  +14 14 19.9                    809
4067       1989 02 26.15729  09 38 06.46  +14 14 20.4                    809
4067       1989 02 26.16215  09 38 06.18  +14 14 21.0                    809
4067       1989 02 27.16632  09 37 11.74  +14 16 05.7                    809
4067       1989 02 27.17153  09 37 11.46  +14 16 06.2                    809
4067       1989 02 27.17674  09 37 11.18  +14 16 06.7                    809
4067       1989 03 01.23715  09 35 22.83  +14 19 25.2                    809
4067       1989 03 01.24201  09 35 22.57  +14 19 25.8                    809
4067       1989 03 01.24687  09 35 22.32  +14 19 26.4                    809
4067       1989 03 03.28819  09 33 39.69  +14 22 21.5                    809
4067       1989 03 03.29236  09 33 39.46  +14 22 21.8                    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 EE1   1989 03 14.64861  11 37 06.52  +06 37 13.0            16      875
1989 EE1   1989 03 14.66458  11 37 05.27  +06 37 14.3                    875
1989 EE1   1989 03 29.56042  11 21 40.24  +06 51 35.2            16.5    875
1989 EE1   1989 03 29.57986  11 21 39.08  +06 51 34.6                    875
 873       1989 03 14.61285  11 34 55.40  +06 19 11.4            15.5    875
 873       1989 03 14.64271  11 34 53.93  +06 19 24.8                    875
 873       1989 03 14.64861  11 34 53.57  +06 19 28.3                    875
 873       1989 03 14.66458  11 34 52.68  +06 19 34.8                    875

886 Susono
T. Furuta, 17-2 Mitsuike, Kagiya, Tokai 477, Japan
Observers M. Akiyama, T. Furuta
Measurer T. Furuta
1989 MH    1989 06 12.51736  16 11 37.93  -16 04 38.7            15.5    886
1989 MH    1989 06 12.59444  16 11 34.05  -16 05 01.6                    886

888 Gekko
Y. Oshima, Gekko Observatory, Kan-nami, Shizuoka 419-01, Japan
Observer Y. Oshima
0.5-m f/4 reflector
1975 VD    1989 09 08.67778  00 51 10.21  +04 25 24.7            16.5    888
1975 VD    1989 09 08.71111  00 51 09.01  +04 25 29.3                    888
1976 EB    1988 12 10.59167  03 34 55.20  +30 06 18.0            15      888
```

1976	EB		1988	12	10.62431	03	34	53.56	+30	06	07.1	888
1976	SZ5		1989	01	02.68681	06	39	21.99	+21	07	20.2	17.5 888
1976	SZ5		1989	01	02.72083	06	39	20.16	+21	07	22.5	888
1977	DT1		1988	03	12.48889	09	57	20.28	+18	19	21.8	17 888
1977	DT1		1988	03	12.50486	09	57	19.80	+18	19	32.6	888
1977	DY8		1988	11	05.67569	02	04	14.93	+13	34	34.8	17 888
1977	DY8		1988	11	05.70833	02	04	12.93	+13	34	32.3	888
1978	RJ7		1988	11	06.71736	03	01	34.13	+12	17	54.4	17 888
1978	RJ7		1988	11	06.74931	03	01	32.09	+12	17	43.4	888
1978	RJ7		1988	11	07.60000	03	00	37.82	+12	12	37.0	16 888
1978	RJ7		1988	11	07.63333	03	00	35.67	+12	12	25.0	888
1981	EE37		1989	09	08.66944	01	03	37.16	+03	35	54.9	17.0 888
1981	EE37		1989	09	08.70278	01	03	35.98	+03	35	54.2	888
1981	JS1		1989	08	28.66875	00	04	46.00	+05	06	50.5	17.5 888
1981	JS1		1989	08	28.70208	00	04	44.56	+05	06	45.7	888
1984	HC2		1989	09	08.66111	00	54	14.71	-02	34	25.7	17.0 888
1984	HC2		1989	09	08.69444	00	54	13.55	-02	34	38.5	888
1987	CR	*	1987	02	05.71049	08	30	16.03	+16	49	14.7	17.0 888
1988	DA		1988	03	08.53229	10	54	47.70	+10	35	38.0	16 888
1988	DA		1988	03	08.55590	10	54	46.17	+10	35	41.8	888
1988	EC		1989	08	28.58542	23	11	33.14	-04	56	13.2	16.0 888
1988	EC		1989	08	28.61875	23	11	29.72	-04	55	49.6	888
1988	ED		1988	03	10.57639	09	58	08.73	+12	54	18.6	17 888
1988	ED		1988	03	10.59236	09	58	07.84	+12	54	19.0	888
1988	TQ1		1988	11	07.57500	00	46	51.76	+12	33	55.5	17.0 888
1988	TQ1		1988	11	07.60833	00	46	50.57	+12	33	51.6	888
1988	TN2		1988	11	05.61181	00	50	55.73	-00	32	44.3	17 888
1988	TN2		1988	11	05.64444	00	50	55.04	-00	33	06.3	888
1988	TQ4	*	1988	10	10.70139	02	59	35.39	+14	50	09.3	17.0 888
1988	TQ4		1988	10	10.73333	02	59	34.21	+14	50	03.8	888
1988	TR4	*	1988	10	13.65208	01	06	49.58	+11	54	50.4	17.0 888
1988	TR4		1988	10	13.67639	01	06	48.04	+11	54	46.8	888
1988	TS4	*	1988	10	14.67708	01	04	57.63	+09	33	52.1	16 888
1988	TS4		1988	10	14.71042	01	04	55.91	+09	33	45.7	888
1988	TT4	*	1988	10	14.67708	01	07	19.15	+10	29	12.0	16 888
1988	TT4		1988	10	14.71042	01	07	18.20	+10	28	12.7	888
1988	TU4	*	1988	10	14.67708	01	08	20.35	+09	56	34.8	16 888
1988	TU4		1988	10	14.71042	01	08	18.76	+09	56	21.2	888
1988	UO		1988	10	09.68403	03	16	37.87	+20	07	16.5	16 888
1988	UO		1988	10	09.71458	03	16	36.82	+20	07	18.8	888
1988	VZ2		1988	11	30.57500	03	18	39.98	+25	49	14.1	13 888
1988	VZ2		1988	11	30.60694	03	18	38.44	+25	48	56.7	888
1988	VZ2		1988	12	05.62708	03	15	12.09	+25	01	20.4	15 888
1988	VZ2		1988	12	05.66042	03	15	10.70	+25	01	04.9	888
1988	VO3		1988	12	07.59097	03	13	58.66	+25	01	59.6	17.0 888
1988	VO3		1988	12	07.62431	03	13	57.22	+25	01	56.1	888
1988	VR3		1988	12	07.60764	03	45	52.23	+15	58	04.6	16.5 888
1988	VR3		1988	12	07.64097	03	45	50.36	+15	58	01.0	888
1988	VB5		1988	11	10.57292	02	55	10.65	+13	12	43.4	16 888
1988	VB5		1988	11	10.60556	02	55	08.86	+13	12	17.8	888
1988	VR5		1988	12	01.54583	02	37	50.13	+10	08	50.5	17 888
1988	VR5		1988	12	01.60000	02	37	48.36	+10	08	24.6	888
1988	VD7		1988	12	14.57708	03	42	59.88	+19	17	14.7	17 888
1988	VD7		1988	12	14.60903	03	42	58.17	+19	17	15.8	888
1988	VN7		1988	11	30.56667	02	50	23.06	+14	45	42.7	17.5 888
1988	VN7		1988	11	30.59861	02	50	21.32	+14	45	50.1	888
1988	VY10	*	1988	11	06.72500	03	37	36.80	+15	24	18.3	17 888
1988	VY10		1988	11	06.75764	03	37	34.92	+15	24	25.4	888
1988	VZ10	*	1988	11	11.67361	03	47	48.35	+21	41	13.9	17.5 888

1988	VZ10		1988	11	11.70417	03	47	46.53	+21	41	06.7		888
1988	VA11	*	1988	11	13.53194	00	43	20.10	+08	27	55.9	17.5	888
1988	VA11		1988	11	13.56528	00	43	20.17	+08	27	56.2		888
1988	WG		1988	12	02.63681	04	55	57.05	+27	29	29.0	16	888
1988	WG		1988	12	02.66944	04	55	55.11	+27	29	37.6		888
1988	XA		1988	12	10.60833	04	46	33.91	+19	37	44.2	16	888
1988	XA		1988	12	10.63264	04	46	32.03	+19	37	35.1		888
1988	XE		1988	11	05.74514	05	20	46.90	+27	29	40.3	16	888
1988	XE		1988	11	05.77778	05	20	46.65	+27	29	21.9		888
1988	XK		1989	01	01.57361	04	05	41.39	+17	21	29.6	17.0	888
1988	XK		1989	01	01.60644	04	05	40.53	+17	21	20.4		888
1988	XE2		1988	12	10.60833	04	48	06.65	+20	41	02.8	17	888
1988	XE2		1988	12	10.63264	04	48	04.01	+20	41	05.3		888
1988	XL2		1988	11	14.58264	02	57	44.75	+19	34	47.8	16	888
1988	XL2		1988	11	14.61458	02	57	42.77	+19	34	57.4		888
1988	XH5		1988	12	01.62361	03	54	19.32	+20	38	39.6	17.5	888
1988	XH5		1988	12	01.64722	03	54	17.71	+20	38	37.1		888
1988	XK5	*	1988	12	01.52986	02	36	33.99	+11	49	22.7	17.0	888
1988	XK5		1988	12	01.56111	02	36	32.99	+11	49	12.5		888
1988	XL5	*	1988	12	01.54583	02	39	00.80	+09	55	41.1	18.0	888
1988	XL5		1988	12	01.60000	02	38	58.78	+09	55	37.2		888
1988	XM5	*	1988	12	03.63542	04	28	51.12	+19	26	03.2	17.5	888
1988	XM5		1988	12	03.66875	04	28	49.25	+19	25	59.1		888
1988	XN5	*	1988	12	07.51528	02	37	08.10	+19	51	11.0	16	888
1988	XN5		1988	12	07.54931	02	37	07.95	+19	51	10.7		888
1988	XO5	*	1988	12	10.61597	04	50	58.87	+28	15	45.5	17	888
1988	XO5		1988	12	10.64931	04	50	56.68	+28	15	55.1		888
1988	XP5	*	1988	12	10.67500	05	04	33.82	+17	42	40.3	17	888
1988	XP5		1988	12	10.71047	05	04	31.51	+17	42	39.8		888
1988	XQ5	*	1988	12	15.59931	03	43	53.28	+18	50	22.4	16	888
1988	XQ5		1988	12	15.63194	03	43	52.38	+18	50	24.8		888
1988	YL		1989	01	29.67014	08	39	22.38	+26	50	12.3	16	888
1988	YL		1989	01	29.70278	08	39	20.18	+26	50	18.8		888
1989	AW9	*	1989	01	01.51806	03	38	53.40	+18	51	32.5	15.5	888
1989	AW9		1989	01	01.55000	03	38	52.97	+18	51	32.4		888
1989	AX9	*	1989	01	05.76389	09	07	31.11	+14	46	59.4	17.5	888
1989	AX9		1989	01	05.79444	09	07	29.14	+14	47	04.3		888
1989	AY9	*	1989	01	05.77153	09	06	22.84	+17	19	15.0	17	888
1989	AY9		1989	01	05.80208	09	06	23.22	+17	19	07.5		888
1989	BJ2	*	1989	01	29.67847	08	47	14.04	+23	05	34.6	17.5	888
1989	BJ2		1989	01	29.71111	08	47	12.19	+23	05	38.7		888
1989	CV2		1989	01	29.75208	09	09	55.43	+07	58	08.7	17	888
1989	CV2		1989	01	29.77708	09	09	53.93	+07	58	04.8		888
1989	CY7	*	1989	02	05.55903	07	44	46.89	+17	16	02.7	17	888
1989	CY7		1989	02	05.59028	07	44	45.22	+17	16	09.0		888
1989	CZ7	*	1989	02	07.70000	10	28	44.92	+09	58	26.9	16	888
1989	CZ7		1989	02	07.73264	10	28	43.48	+09	58	40.5		888
1989	CA8	*	1989	02	10.68958	09	21	46.00	+21	06	50.9	17.0	888
1989	CA8		1989	02	10.72292	09	21	44.03	+21	06	52.8		888
12			1986	11	25.56840	04	44	56.30	+19	08	00.7	12	888
12			1986	11	25.60104	04	44	54.13	+19	07	50.7		888
62			1989	01	05.77153	09	08	21.31	+16	26	49.2	13	888
62			1989	01	05.80208	09	08	20.19	+16	26	57.6		888
83			1988	11	14.59792	03	00	29.38	+20	17	56.0	11.0	888
83			1988	11	14.62986	03	00	27.25	+20	17	52.6		888
140			1988	12	07.76875	08	09	16.37	+20	12	51.6	14	888
140			1988	12	07.79931	08	09	15.70	+20	12	56.1		888
140			1988	12	15.72847	08	05	19.60	+20	30	12.4	15	888
140			1988	12	15.76042	08	05	18.54	+20	30	16.6		888

172	1987	01	25.67708	09	46	50.08	+17	52	19.5	13.0	888
172	1987	01	25.72847	09	46	46.87	+17	52	26.1		888
261	1989	08	28.67708	00	26	42.19	-03	11	09.8	13.0	888
261	1989	08	28.71042	00	26	40.94	-03	11	20.6		888
333	1989	02	02.78785	11	51	40.87	+01	34	24.3	15	888
333	1989	02	02.80451	11	51	40.49	+01	34	27.3		888
427	1987	02	05.70278	08	34	50.55	+17	08	26.3	16	888
427	1987	02	05.72576	08	34	49.25	+17	08	28.2		888
448	1988	11	03.52292	00	35	40.65	-02	49	29.9	16	888
448	1988	11	03.55555	00	35	39.80	-02	49	30.0		888
448	1988	11	13.52361	00	31	20.24	-02	14	47.4	14	888
448	1988	11	13.55694	00	31	19.81	-02	14	39.6		888
470	1988	11	11.53819	00	59	56.87	-00	05	18.5	13	888
470	1988	11	11.56944	00	59	55.92	-00	05	24.9		888
734	1987	02	28.56667	10	05	17.59	+16	32	12.0	15	888
734	1987	02	28.60486	10	05	15.66	+16	32	15.8		888
734	1987	03	06.60660	10	00	35.11	+16	45	35.5	15.0	888
734	1987	03	06.68229	10	00	31.65	+16	45	43.9		888
734	1987	03	06.70451	10	00	30.61	+16	45	46.3		888
777	1988	12	05.77500	07	54	12.31	+20	52	54.0	16	888
777	1988	12	05.80625	07	54	11.56	+20	52	47.4		888
834	1987	01	30.65556	09	18	21.56	+11	31	00.7	15	888
834	1987	01	30.71528	09	18	18.79	+11	31	14.3		888
846	1988	11	12.67986	03	51	39.92	+20	21	58.7	15	888
846	1988	11	12.71042	03	51	38.34	+20	21	52.9		888
899	1988	12	15.57569	02	30	43.81	+20	02	18.4	14	888
899	1988	12	15.60764	02	30	43.66	+20	02	02.7		888
899	1989	01	01.42639	02	33	59.26	+18	20	45.2	14	888
899	1989	01	01.45764	02	33	59.91	+18	20	34.7		888
1064	1988	12	05.68403	06	25	12.26	+26	14	39.5	16	888
1064	1988	12	05.72361	06	25	10.17	+26	14	36.4		888
1125	1987	03	03.62535	10	23	54.50	+14	29	43.2	16	888
1125	1987	03	03.67882	10	23	51.76	+14	29	57.4		888
1125	1987	03	04.67604	10	23	06.38	+14	34	28.9	16	888
1125	1987	03	04.69896	10	23	05.39	+14	34	37.1		888
1125	1987	03	06.62188	10	21	39.63	+14	43	03.2	16	888
1125	1987	03	06.71563	10	21	35.27	+14	43	24.9		888
1132	1989	03	10.55417	08	41	18.68	+27	37	00.0	16.5	888
1132	1989	03	10.58750	08	41	17.56	+27	37	00.0		888
1212	1988	02	19.61979	10	10	22.99	+11	30	34.6	14	888
1212	1988	02	19.64201	10	10	22.15	+11	30	43.8		888
1212	1988	03	07.45417	10	00	03.91	+13	04	08.8	16	888
1212	1988	03	07.48681	10	00	02.85	+13	04	19.3		888
1212	1988	03	09.57639	09	58	54.96	+13	14	45.5	14.0	888
1212	1988	03	09.58403	09	58	54.49	+13	14	45.2	14.5	888
1212	1988	03	09.60694	09	58	53.97	+13	14	54.1		888
1212	1988	03	09.61458	09	58	53.48	+13	14	54.5		888
1212	1988	03	10.53056	09	58	24.96	+13	19	21.1	15.0	888
1212	1988	03	10.56181	09	58	23.94	+13	19	29.4		888
1345	1987	02	05.71049	08	32	55.57	+16	30	41.2	16	888
1345	1987	02	05.73340	08	32	54.69	+16	30	48.5		888
1482	1987	03	26.60938	12	58	08.76	-01	57	24.4	16	888
1482	1987	03	26.64340	12	58	07.29	-01	57	13.9		888
1488	1987	03	24.53993	10	05	36.03	+15	52	46.2	16	888
1488	1987	03	24.56771	10	05	35.17	+15	52	42.7		888
1806	1987	01	25.65694	09	00	19.35	+12	09	55.2	15.0	888
1806	1987	01	25.70660	09	00	16.13	+12	10	00.4		888
1825	1989	08	28.59375	23	25	35.90	+02	12	42.5	16	888
1825	1989	08	28.62708	23	25	34.21	+02	12	37.9		888

1909	1988	12	02.55764	03	34	12.02	+18	36	11.4	17	888
1909	1988	12	02.59028	03	34	10.05	+18	36	08.5		888
2053	1989	08	28.59375	23	20	37.10	+02	26	27.9	16	888
2053	1989	08	28.62708	23	20	35.70	+02	26	15.7		888
2067	1988	11	13.54861	00	55	14.46	+02	27	04.7	16.5	888
2067	1988	11	13.58125	00	55	13.70	+02	26	59.6		888
2417	1987	03	02.63368	10	07	23.22	+16	24	13.1	16.0	888
2417	1987	03	02.65799	10	07	22.16	+16	24	19.1		888
2417	1987	03	24.51285	09	55	00.23	+17	17	58.1	16.5	888
2417	1987	03	24.55451	09	54	59.26	+17	18	00.0		888
2561	1988	11	05.66806	02	01	30.04	+08	37	51.4	17	888
2561	1988	11	05.70000	02	01	28.29	+08	37	39.5		888
3010	1989	08	28.57708	22	25	26.46	-11	28	44.6	17	888
3010	1989	08	28.61042	22	25	24.85	-11	28	56.9		888
3054	1988	11	05.62014	00	56	55.95	+03	10	10.5	16	888
3054	1988	11	05.65278	00	56	55.18	+03	10	06.1		888
3585	1987	02	05.71049	08	31	09.21	+16	13	07.5	17.0	888
3585	1987	02	05.73340	08	31	08.02	+16	13	13.3		888
3727	1988	12	14.56875	02	37	31.59	+08	46	05.1	16.5	888
3727	1988	12	14.60069	02	37	30.97	+08	46	04.6		888
3916	1988	12	05.68403	06	27	12.14	+25	53	24.3	17	888
3916	1988	12	05.72361	06	27	10.37	+25	53	28.0		888
3922	1988	11	14.59792	03	00	37.50	+19	57	47.1	17.0	888
3922	1988	11	14.62986	03	00	35.81	+19	57	41.0		888
3961	1988	11	30.47500	00	52	27.58	+24	28	10.4	17	888
3961	1988	11	30.50833	00	52	27.30	+24	27	58.6		888
3984	1988	11	06.71736	02	58	15.10	+12	08	06.9	17	888
3984	1988	11	06.74931	02	58	13.16	+12	08	01.3		888
4005	1988	12	05.71528	08	39	13.12	+23	58	40.8	16	888
4005	1988	12	05.75486	08	39	12.57	+23	58	51.3		888
4023	1989	01	02.68681	06	40	51.09	+21	08	46.2	17.0	888
4023	1989	01	02.72083	06	40	48.63	+21	08	46.1		888
4053	1988	11	05.51111	00	47	50.30	+12	06	48.5	17.0	888
4053	1988	11	05.55694	00	47	48.68	+12	06	37.7		888
4053	1988	11	11.52222	00	44	46.68	+11	44	29.7	17.0	888
4053	1988	11	11.55347	00	44	45.88	+11	44	20.9		888
4145	1988	10	10.77292	04	36	06.93	+28	48	17.1	17.0	888
4145	1988	10	10.80903	04	36	06.83	+28	48	20.1		888
4178	1988	04	10.56215	12	56	26.27	-05	31	17.1	16	888
4178	1988	04	10.58646	12	56	25.17	-05	31	11.4		888

894 Kiyosato
S. Miyasaka, 3-8-501, 4 Chome, Nagayama, Tama, Tokyo 206, Japan
Observer S. Miyasaka
0.25-m reflector

2331	1989	03	08.53007	10	26	18.86	+01	52	35.8		894
2331	1989	03	08.56029	10	26	17.43	+01	52	44.2		894
2331	1989	03	08.58610	10	26	16.02	+01	52	54.2		894

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

1989 PB	1989	08	23.61950	00	40	46.93	+40	56	18.9	13	897
1989 PB	1989	08	23.62569	00	40	56.42	+41	01	37.6		897
1989 PB	1989	08	23.62836	00	41	00.68	+41	04	03.2		897
1989 PB	1989	08	23.63194	00	41	06.10	+41	07	00.7		897
1989 PB	1989	08	23.63455	00	41	10.21	+41	09	18.1		897

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

Comet Shoemaker (1984 XV)
Epoch 1984 Sept. 17.0 ET = JDE 2445960.5
T 1984 Sept. 3.56036 ET

				Green
q 5.4891528	(1950.0)	P		Q
z +0.0008726	Peri. 183.25319	+0.57683278		+0.81677964
+/-0.0000066	Node 238.02479	+0.74972850		-0.52372619
e 0.9952102	Incl. 179.21531	+0.32430097		-0.24203696

From 45 observations, 1984 Oct. 23-1987 Aug. 26; mean residual 0".8.

Comet Helin-Roman (1989s)
T 1989 Aug. 20.28860 ET Marsden

		(1950.0)	P	Q
q 1.3244591	Peri.	154.90139	+0.76308606	-0.18066286
	Node	127.90846	-0.64057317	-0.33891951
e 1.0	Incl.	128.14164	+0.08582356	-0.92330629

From 10 observations 1989 Sept. 5-8.

Comet Okazaki-Levy-Rudenko (1989r)
T 1989 Nov. 11.92132 ET Marsden

		(1950.0)	P	Q
q 0.6424184	Peri.	150.57378	-0.07444436	-0.03898497
	Node	274.81816	+0.60067506	+0.79587156
e 1.0	Incl.	90.15060	+0.79601980	-0.60420910

From 45 observations 1989 Aug. 24-Sept. 24.

Periodic Comet Kearns-Kwee (1989u)
Epoch 1990 Nov. 5.0 ET = JDE 2448200.5
T 1990 Nov. 22.60779 ET Kobayashi

		(1950.0)	P	Q
q 2.2153825	Peri.	131.83466	+0.04824378	-0.99268790
n 0.10994596	Node	315.02756	+0.86368706	+0.09710319
a 4.3153551	Incl.	9.00711	+0.50171426	-0.07170565
e 0.4866280				
P 8.96				

From 142 observations 1963-1989, mean residual 1".15. Nongravitational parameters A1 = +3.18, A2 = -0.4567.

One-opposition minor planets

Planet	H	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1987 OT	14.0	870724	12.20	120.41	172.87	8.66	0.2613	2.7184	43	8		M
1987 PM	12.5	870813	31.12	24.40	277.83	7.48	0.0634	2.7749	46	6		M
1987 QR	14.5	870902	0.23	153.08	191.45	3.05	0.2220	2.3617	33	6		M
1987 QG1	14.0	870902	344.43	49.13	311.99	8.06	0.2470	2.3346	35	0		N
1987 QZ6	14.5	870813	18.14	15.21	290.75	4.99	0.0687	2.2558	11	0		M
1987 QJ7	13.5	870902	350.48	131.32	220.75	4.62	0.2078	2.2286	6	3		N
1987 QA8	12.5	870902	46.60	94.56	168.62	9.18	0.1876	2.2394	3	4		N
1987 QA9	12.0	870902	21.45	241.05	77.22	5.31	0.1406	2.6014	33	5		N
1987 QG10	13.8	870922	5.01	221.22	120.15	4.32	0.1904	2.1914	30	4		F
1987 QQ10	12.9	870912	358.58	297.31	51.16	3.18	0.1245	2.3052	30	3		F
1987 QV10	11.7	870912	355.07	212.13	143.65	10.91	0.1095	3.0010	26	3		F
1987 QY10	11.2	870912	339.31	240.00	139.38	11.21	0.1213	2.9928	26	4		F
1987 QR11	12.5	870902	120.14	271.83	301.33	7.95	0.1197	2.5977	27	5		x
1987 RF	14.0	870922	11.06	157.58	176.32	5.72	0.1994	2.1156	24	5		N
1987 RW	14.5	870902	321.76	52.82	340.12	5.83	0.1712	2.2689	21	0		G
1987 RX	13.0	870902	349.82	205.15	147.49	1.51	0.2838	3.0960	14	5		N
1987 RZ	12.5	870902	347.49	227.28	125.16	2.03	0.2006	3.1996	29	0		M
1987 RE1	14.0	870902	337.72	32.99	342.70	4.99	0.2171	2.2954	30	0		N
1987 RG1	12.5	870922	9.68	347.47	348.34	1.23	0.1861	2.4365	36	0		N
1987 RQ2	13.9	870912	352.95	298.22	59.83	3.03	0.2651	2.5205	24	3		F
1987 RN3	13.3	870912	327.16	113.03	288.02	7.94	0.1386	2.7354	24	3		x
1987 RQ3	14.7	870912	21.66	123.90	193.92	9.80	0.2796	2.7562	24	3		x
1987 RT3	13.1	870912	223.25	186.96	317.87	7.89	0.0915	2.8057	24	3		x
1987 RU3	14.5	870912	354.57	141.93	223.73	3.28	0.1872	2.2651	24	5		x
1987 RV3	15.1	870912	18.06	116.36	216.99	3.92	0.1532	2.2768	24	3		x
1987 SM4	13.5	870922	6.77	72.03	289.68	8.82	0.1898	2.5791	30	8		M
1987 SE13	12.5	870922	324.00	306.49	96.14	2.85	0.1992	3.1688	29	8		N
1987 SA14	11.5	870922	359.77	55.31	321.26	13.35	0.1627	3.2199	3	3	E	N
1987 SD14	12.0	870922	14.08	31.03	330.79	11.31	0.0164	2.2994	3	3	E	N
1987 SM17	14.9	870912	356.75	109.28	242.39	5.00	0.1718	2.3171	7	3		x

1987	SN17	13.1	870912	65.09	41.10	223.68	4.06	0.1769	2.6332	7	3		x
1987	SO17	15.0	870912	325.01	222.31	186.04	9.90	0.2719	2.3934	7	3		x
1987	SP17	12.8	870912	275.45	203.97	256.74	4.20	0.2259	2.7044	7	3		x
1987	SQ17	14.6	870922	11.50	0.71	344.70	5.44	0.2052	2.2646	36	3		x
1987	SR17	15.4	870922	7.09	135.27	216.28	4.53	0.2371	2.2889	36	3		x
1987	SU17	14.0	870922	28.51	120.51	214.12	6.31	0.1346	2.3431	14	4		M
1987	SX17	14.0	870912	19.82	85.57	243.26	3.27	0.3195	2.4754	14	3		x
1987	UT	14.5	870922	7.44	48.64	295.75	4.13	0.2420	2.3340	59	6		M
1987	UA1	13.0	871012	22.37	122.62	235.33	11.37	0.1415	2.3627	60	0		M
1987	UW1	12.5	871101	358.93	168.47	229.97	8.67	0.1346	2.6172	30	0		M
1987	UU2	13.5	870922	8.04	151.90	209.30	1.27	0.1255	2.2372	32	8		M
1987	UD4	13.0	871101	50.43	315.26	9.89	5.32	0.1902	2.5349	37	7		N
1987	VF	13.5	871121	349.83	29.12	31.25	8.54	0.2601	2.7664	52	7		N
1987	VQ	14.0	871101	323.41	261.63	190.63	1.60	0.1778	2.3792	34	9		M
1987	VR	11.5	871101	348.87	201.55	212.81	9.63	0.0499	3.0555	29	7		M
1988	LH	13.5	880628	46.50	321.52	237.15	5.87	0.2184	3.0255	29	8		B
1988	PC1	12.5	880827	332.63	129.15	243.11	19.07	0.2124	3.1532	31	4		B
1988	PL1	14.5	880827	352.29	93.29	246.55	19.59	0.0128	1.9561	55	4		B
1988	TQ1	13.5	881026	326.95	82.53	345.70	5.86	0.1438	2.4596	27	0		N
1988	TN2	13.0	881115	31.83	150.51	193.83	16.11	0.1704	2.5444	32	9		N
1988	UO	11.0	881026	44.05	309.99	30.90	9.73	0.1865	2.7326	36	0		N
1988	VO3	14.0	881205	28.87	0.16	14.85	4.91	0.2498	2.5647	38	0		N
1988	VR3	13.5	881205	32.52	194.12	182.69	2.25	0.2053	2.4136	31	0		N
1988	VR5	13.0	881115	24.51	157.35	219.07	12.89	0.1221	2.5407	27	0		N
1988	VN7	14.5	881115	14.30	327.97	61.78	8.15	0.1700	2.2931	27	6		N
1988	XE	13.0	881205	7.25	168.55	252.14	12.71	0.2971	2.6430	60	0		N
1988	XK	12.0	881225	310.92	260.83	237.00	7.12	0.1479	2.8871	29	9		N
1988	XE2	13.5	871231	352.53	230.18	82.04	8.64	0.2835	2.2654	5	7	E	N
1988	XL2	12.5	881205	13.15	350.03	44.10	15.97	0.2310	3.1007	23	9		N
1989	AY6	14.0	890203	287.01	284.47	300.68	2.68	0.1312	2.3377	52	0		G
1989	CN	13.0	890203	126.83	209.39	149.79	1.31	0.1366	2.2228	51	0		G
1989	CX	13.5	890223	20.86	145.76	327.63	24.40	0.2319	2.3463	33	0		G
1989	CW1	10.0	890114	64.05	108.73	322.02	9.04	0.0539	5.1163	36	0		G
1989	CV2	14.0	890203	7.44	193.28	292.54	12.49	0.1387	2.6920	32	0		N
1989	CH5	12.5	890203	62.88	280.88	139.42	17.79	0.1369	3.1779	36	0		G
1989	CB8	14.0	890203	316.56	207.94	346.56	2.26	0.0945	2.2610	24	0		G
1989	CC8	15.0	890203	11.47	62.34	56.52	0.46	0.3158	2.5794	6	0		G
1989	CD8	11.5	890203	119.16	125.58	261.92	9.30	0.0980	2.9866	5	0		G
1989	CE8	13.0	890203	59.10	177.85	253.69	9.47	0.0928	2.7282	22	0		G
1989	CJ8	13.5	890203	313.61	64.98	144.54	8.65	0.1914	2.4647	21	0		G
1989	CL8	15.0	890203	355.52	8.73	141.15	7.92	0.1531	2.1652	4	9		G
1989	CO8	13.5	890203	208.31	311.51	349.64	2.23	0.1559	2.1565	2	9	E	G
1989	CU8	11.5	890203	191.97	316.45	7.61	2.88	0.2623	2.7601	5	8	E	G
1989	DJ	9.0	890223	262.18	282.85	327.79	20.38	0.0554	5.3208	4	0	E	G
1989	DK	13.0	890223	21.85	187.53	297.86	11.90	0.0876	2.6142	3	0		G
1989	DL	11.5	890223	359.81	252.91	257.31	8.32	0.0796	3.9191	2	9	E	G
1989	DM	14.0	890223	30.33	181.00	275.65	6.56	0.3032	2.6116	2	9		G
1989	EE1	13.5	890315	336.18	194.63	9.29	6.73	0.1337	2.2732	21	8		N
1989	EW1	13.5	890223	77.34	35.00	22.79	2.85	0.1216	2.2149	24	0		G
1989	EF6	13.0	890223	8.27	162.46	330.41	8.87	0.0343	2.7292	10	0		G
1989	MH	12.0	890623	9.09	154.13	85.42	11.52	0.2259	2.9854	19	6		N
1989	OC	14.5	890713	354.94	326.94	306.31	8.04	0.3100	2.4344	18	6		B
1989	OL	14.0	890802	3.33	248.95	46.43	13.05	0.1371	2.5370	35	6		B
1989	OM	13.5	890802	351.60	288.44	25.63	17.07	0.2901	2.9360	34	8		B
1989	PE	14.0	890822	101.53	86.02	149.07	26.72	0.0214	1.8538	29	7		B
1989	PF	12.5	890822	2.58	189.96	146.96	18.73	0.2381	2.7457	30	7		B
1989	PK	13.0	890822	11.04	5.45	327.53	20.21	0.3086	2.5747	29	7		M
1989	PT	13.5	890822	29.28	155.10	144.90	6.34	0.1268	2.2862	30	7		B
1989	PU	13.5	890802	354.03	192.94	137.46	29.89	0.2468	2.5560	30	4		B

1989 QG	13.0	890911	336.34	198.29	176.34	8.16	0.0579	2.4629	29	0		N
1989 QH	14.0	890911	7.66	31.07	306.49	2.83	0.1465	2.1918	25	7		N
1989 QL	13.0	890911	69.15	152.60	100.87	22.66	0.0730	1.9266	26	3		m
1989 RA	15.0	890822	351.36	175.05	174.35	10.72	0.2245	2.5219	5	0		B
1989 RF	12.5	890822	2.10	119.22	208.59	4.35	0.1558	3.2015	6	6		M
1989 RG	14.5	890911	307.83	107.91	314.06	4.13	0.1921	2.3248	6	7		N
1989 RJ	15.0	890911	316.49	204.17	207.83	3.41	0.1978	2.1841	6	6	E	N
1989 RL	15.0	890822	350.03	166.80	177.12	2.93	0.1914	2.1935	5	8		M
1989 RS	12.5	890911	3.99	157.54	188.07	10.99	0.1426	3.3910	4	7	E	N
1989 RT	15.0	890911	33.84	344.22	319.70	5.77	0.1668	2.2856	4	7		N
1989 RU	13.5	890911	46.08	94.65	194.08	8.29	0.1698	2.7163	5	7	E	N
1989 RV	15.5	890911	16.36	348.67	340.68	23.27	0.1417	2.1654	4	7		N
1989 RW	12.5	890911	72.53	27.19	211.70	10.21	0.2083	2.9427	5	8		N
1989 RX	13.5	890911	339.89	132.70	236.84	7.03	0.2112	2.6667	5	9		N
1989 RY	15.5	890911	342.46	143.80	231.69	5.65	0.3249	2.5544	5	9		N
1989 RA1	13.5	890822	49.72	106.30	162.87	25.76	0.2254	2.4674	5	6		M
1989 RC1	13.5	890822	339.71	244.73	116.34	15.06	0.2290	2.3262	5	8		B
1989 RD1	13.5	890822	342.03	270.94	85.31	12.86	0.2151	2.6504	5	9		B
1989 RJ1	16.0	890911	347.94	162.14	201.03	2.07	0.2019	2.2668	4	9		N
1989 RK1	14.5	890911	359.52	11.40	333.72	11.01	0.1537	2.5073	4	9		N
1989 RL1	15.5	890911	341.85	183.71	187.22	3.08	0.1742	2.1857	4	9		N
1989 RN1	13.5	890911	26.07	337.88	330.05	6.24	0.1554	2.9054	3	6	E	N
1989 RN2	13.5	890911	36.41	312.82	349.74	11.12	0.2182	3.1645	25	6		M

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Goffin
(83) Beatrix Obs. 235 M 305.52366 Peri. 166.25999
H 8.89 G 0.30 Opp. 53 n 0.25992554 Node 27.23751
rms res. 1".0 (M-N) 1865-1988 e 0.0821745 Incl. 4.96887

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Goffin
(88) Thisbe Obs. 564 M 259.01375 Peri. 35.31120
H 7.05 G 0.17 Opp. 58 n 0.21412181 Node 276.27780
rms res. 1".0 (M-N) 1866-1988 e 0.1638413 Incl. 5.21868

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Goffin
(165) Loreley Obs. 162 M 175.14199 Peri. 351.66360
H 7.49 G 0.15 Opp. 37 n 0.17760365 Node 302.34514
rms res. 1".1 (M-N) 1876-1984 e 0.0731964 Incl. 11.23493

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Goffin
(626) Notburga Obs. 80 M 98.70290 Peri. 43.49592
H 8.99 G 0.15 Opp. 28 n 0.23876617 Node 341.30585
rms res. 1".1 (M-N) 1907-1988 e 0.2438989 Incl. 25.35580

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(2153) Akiyama Obs. 44 M 32.25498 Peri. 31.49781
H 11.9 G 0.25 Opp. 8 n 0.17962175 Node 47.48455
rms res. 1".17 (M-P) 1955-1988 e 0.1683899 Incl. 1.18940

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(2174) Asmodeus Obs. 53 M 176.13686 Peri. 4.85876
H 13.3 G 0.25 Opp. 5 n 0.24411975 Node 359.65944
rms res. 0".93 (M-P) 1975-1987 e 0.2735786 Incl. 8.11575

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(2362) Mark Twain Obs. 20 M 2.72581 Peri. 350.19465
H 13.6 G 0.25 Opp. 8 n 0.30299794 Node 8.64900
rms res. 1".30 (M-P) 1950-1986 e 0.1924933 Incl. 3.95102

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(2666) Gramme Obs. 23 M 248.03946 Peri. 201.59113
H 11.8 G 0.25 Opp. 7 n 0.17250825 Node 200.57457
rms res. 1".16 (M-P) 1934-1987 e 0.2095878 Incl. 13.40718

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(2708) Burns Obs. 39 M 144.28273 Peri. 326.51844
H 11.98 G 0.32 Opp. 9 n 0.18131928 Node 111.63871
rms res. 1".09 (M-P) 1951-1989 e 0.1681514 Incl. 2.76928

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(2731) Cucula Obs. 37 M 72.83107 Peri. 127.68349
H 10.90 G 0.15 Opp. 8 n 0.17488842 Node 151.00093
rms res. 0".85 (M-P) 1964-1987 e 0.2078788 Incl. 13.24979

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(2760) Kacha Obs. 47 M 275.68580 Peri. 159.13240
H 10.04 G 0.15 Opp. 7 n 0.12430372 Node 352.50864
rms res. 1".02 (M-P) 1952-1987 e 0.1231599 Incl. 13.42425

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(2815) Soma Obs. 32 M 35.98719 Peri. 237.27186
H 13.12 G 0.25 Opp. 6 n 0.29533639 Node 119.42762
rms res. 1".38 (M-P) 1955-1984 e 0.1682886 Incl. 5.70590

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(2863) Ben Mayer Obs. 27 M 157.52778 Peri. 223.12730
H 12.31 G 0.15 Opp. 6 n 0.17538040 Node 120.33269
rms res. 1".43 (M-P) 1975-1989 e 0.1956159 Incl. 1.97076

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(2904) Millman Obs. 35 M 316.86448 Peri. 332.04337
H 11.70 G 0.15 Opp. 4 n 0.23478266 Node 79.30605
rms res. 1".26 (M-P) 1960-1988 e 0.1387805 Incl. 15.40384

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(2962) 1940 YF Obs. 30 M 241.06262 Peri. 118.42844
H 11.39 G 0.15 Opp. 5 n 0.23948569 Node 53.97042
rms res. 1".01 (M-P) 1931-1983 e 0.0379296 Incl. 15.67505

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3008) Nojiri Obs. 71 M 339.84607 Peri. 302.58892
H 11.88 G 0.15 Opp. 5 n 0.17497850 Node 168.34977
rms res. 1".36 (M-P) 1938-1985 e 0.1459466 Incl. 0.80024

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3014) 1979 TM Obs. 27 M 302.14492 Peri. 179.48336
H 13.18 G 0.25 Opp. 5 n 0.27120492 Node 140.31201
rms res. 1".13 (M-P) 1957-1986 e 0.2279548 Incl. 0.98630

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3015) Candy Obs. 30 M 191.11645 Peri. 304.09907
H 11.15 G 0.15 Opp. 6 n 0.15725274 Node 37.93284
rms res. 1".16 (M-P) 1974-1986 e 0.1603480 Incl. 17.40922

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3016) 1981 EK Obs. 98 M 353.25232 Peri. 319.32344
H 12.22 G 0.15 Opp. 8 n 0.20633506 Node 128.53228
rms res. 0".93 (M-P) 1933-1988 e 0.0456012 Incl. 2.89238

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3018) Godiva Obs. 48 M 326.46244 Peri. 71.37233
H 12.92 G 0.25 Opp. 6 n 0.27049944 Node 228.08078
rms res. 1".37 (M-P) 1977-1989 e 0.1874802 Incl. 4.73634

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3023) Heard Obs. 25 M 211.21005 Peri. 343.68219
H 13.75 G 0.43 Opp. 5 n 0.29871865 Node 230.19811
rms res. 1".65 (M-P) 1979-1988 e 0.0851418 Incl. 3.99243

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3080) Moisseiev Obs. 27 M 303.59011 Peri. 306.24680
H 11.67 G 0.15 Opp. 5 n 0.23365982 Node 47.89211
rms res. 1".43 (M-P) 1935-1986 e 0.1952655 Incl. 13.84572

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3104) Durer Obs. 22 M 261.20566 Peri. 243.87743
H 11.17 G 0.15 Opp. 5 n 0.19304866 Node 161.80523
rms res. 1".38 (M-P) 1955-1984 e 0.0859344 Incl. 24.18370

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3113) Chizhevskij Obs. 22 M 311.15923 Peri. 196.16969
H 13.17 G 0.25 Opp. 6 n 0.26061768 Node 185.52796
rms res. 1".45 (M-P) 1963-1989 e 0.0745546 Incl. 4.96612

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
(3187) 1977 TO3 Obs. 44 M 136.95471 Peri. 104.53461
H 13.2 G 0.25 Opp. 7 n 0.28568929 Node 311.90797
rms res. 1".19 (M-P) 1958-1989 e 0.0581871 Incl. 2.75534

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Green
(4169) 1980 FO3 Obs. 22 M 341.12762 Peri. 19.67785
H 11.0 G 0.25 Opp. 8 n 0.15799377 Node 356.64914
rms res. 0".8 (M-P) 1964-1989 e 0.1697418 Incl. 10.21425

(4181)* 1938 DK1 = 1980 EK = 1988 BO
Discovered 1938 Feb. 24 by Y. Vaisala at Turku.
Id. B. G. Marsden (MPC 12948), T. Kobayashi (ibid.)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M 110.92077	(1950.0)	P	Q	
n 0.23360926	Peri. 339.27406	-0.65969690	-0.74215854	
a 2.6110149	Node 151.60048	+0.71976601	-0.66922356	
e 0.1328653	Incl. 14.40540	+0.21618715	-0.03661328	
P 4.22	H 12.2	G 0.25		

Residuals in seconds of arc

380222	062	0.1-	3.1+	800315	095	0.7-	3.6-	890407	809	0.2+	1.1-
380225	062	0.3+	0.3+	860801	413	1.3-	1.8-	890411	809	0.4+	1.2-
380307	062	1.3+	1.2-	860801	413	1.4+	0.5+	890413	809	0.4+	0.8-
380330	062	1.0+	0.3+	880123	897	0.8+	1.3-	890505	801	1.5-	0.5+
380404	062	2.2+	0.3+	880123	897	0.2-	0.6-				
380420	062	4.4-	2.3+	890405	809	0.0	1.2-				

(4182)* 1951 JQ = 1951 LE = 1976 UP3 = 1985 TX1

Discovered 1951 May 2 in the course of the Yerkes-McDonald Asteroid Survey.

Id. O. Kippes (d, MPC 1968), C. M. Bardwell (MPC 11735)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bardwell

M 14.30010	(1950.0)	P	Q	
n 0.21037066	Peri. 29.50434	+0.35282867	+0.92540835	
a 2.7999220	Node 261.44952	-0.88351323	+0.28082241	
e 0.1328083	Incl. 8.04036	-0.30808490	+0.25447623	
P 4.69	H 12.2	G 0.25		

Residuals in seconds of arc

510502	711	4.2-	3.9+	Y	850916	675	0.3+	1.0+	851015	688	0.5+	1.5-
510503	711	0.2-	1.8-	Y	850919	095	0.6+	0.0	851018	095	0.7+	0.1-
510602	760	3.0+	0.9-		850921	095	0.5+	2.2+	880129	413	0.6-	0.0
510602	760	1.7+	0.9-		851011	675	2.1-	0.9+	880129	413	0.7+	0.5+
761026	095	0.2+	0.2+		851013	675	1.6-	0.0	890709	801	0.1-	0.7-
850916	675	0.8+	0.0		851015	688	0.0	2.0-	890729	801	0.3+	0.7+

(4183)* 1959 LM = 1986 VT7 = 1987 MB

Discovered 1959 June 5 by C. Hoffmeister on plates taken at the Boyden Observatory, Bloemfontein.

Id. C. M. Bardwell (k, MPC 12139), B. G. Marsden (ibid.)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bardwell

M 334.90584	(1950.0)	P	Q	
n 0.35352236	Peri. 235.12843	-0.98072170	-0.16380278	
a 1.9808798	Node 295.23469	+0.19426846	-0.87613729	
e 0.6369423	Incl. 6.76483	-0.02108814	-0.45337854	
P 2.79	H 14.6	G 0.25		

Residuals in seconds of arc

590605	074	3.1-	0.6+		870707	688	(4.1- | 0.4+)	870919	691	0.2+	0.2+
590605	074	(15.0+ | 0.4+)		870721	691	0.3+	1.1-	880707	675	0.4-	0.5+
590609	074	2.8-	3.0-		870721	691	0.0	0.9-	880707	675	0.6-	0.1+
590609	074	(14.5+ | 1.5+)		870721	691	0.0	1.3-	880707	675	0.6-	0.3+
590610	074	9.4-	1.1+		870722	691	0.2+	0.4+	880707	675	0.9-	0.3+
590610	074	6.8+	1.0-		870722	691	0.2+	0.1+	880708	675	0.4-	0.2+
590611	074	(13.9- | 8.6+)		870722	691	0.5+	0.6+	880708	675	0.7-	0.2+
590611	074	9.5+	1.3-		870723	801	2.4-	0.0	880708	675	0.6-	0.0
861109	675	3.9-	1.6-		870724	688	1.6-	0.3+	880708	675	0.7-	0.1+
861109	675	4.8+	2.0-		870724	688	1.7-	0.3+	880822	675	0.2-	1.2+
870624	675	1.4+	1.6+		870729	801	0.2-	0.7-	880822	675	0.2-	1.2+
870624	675	0.5+	1.4+		870814	691	0.9+	0.7+	880822	675	0.2-	1.1+
870702	688	0.5+	0.8-		870814	691	0.9+	0.4-	881019	675	0.3+	0.8-
870702	688	0.8+	1.1-		870817	691	0.8+	0.1+	881019	675	0.2+	0.6-
870703	688	0.3-	0.1+		870817	691	0.9+	0.7+	881019	675	0.2+	0.4-
870703	688	3.0-	1.3+		870817	691	0.8+	0.5+	881020	675	0.0	0.9-
870706	474	0.0	0.5+		870919	691	0.0	0.2-	881020	675	0.7+	0.5-
870706	474	0.4+	0.5+		870919	691	0.2+	0.3-	881020	675	0.2+	0.9-

(4184)* 1969 TJ1 = 1969 VB = 1982 YO1 = 1982 YT1 = 1983 AK3 = 1986 XK2

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

Id. H. Oishi (d, MPC 9018; unpublished), T. Furuta (k, MPC 11632)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Oishi

M 259.35127	(1950.0)	P	Q	
n 0.23807321	Peri. 34.91870	+0.45739220	-0.88590845	
a 2.5782738	Node 28.09699	+0.77396250	+0.35383695	
e 0.0363700	Incl. 9.43342	+0.43792057	+0.29994272	
P 4.14	H 12.9	G 0.25		

Residuals in seconds of arc

691008	095	(7.2-	0.2-)	730930	675	0.0	1.0+	830109	095	1.2-	1.3+
691013	095	0.1-	0.9+	731004	675	1.3+	1.7-	861201	010	0.3-	1.6-
691016	095	0.0	2.0-	731004	675	1.3+	0.3-	861202	010	(6.0+	4.4-)
691104	095	(6.7-	2.9+)	731005	675	0.1+	1.4+	880417	046	(3.6-	2.6-)
730929	675	0.2-	0.9-	731005	675	0.5-	0.5+	880417	046	1.7-	2.4-
730929	675	0.7-	0.9-	821223	095	0.1+	0.5+				
730930	675	0.0	0.2+	821224	095	1.8+	0.8-				

(4185)* 1975 ED = 1982 KD = 1988 BT

Discovered 1975 Mar. 4 by T. M. Smirnova at the Crimean Astrophysical Observatory.

Id. S. Nakano (MPC 13156)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M	88.02897		(1950.0)		P		Q
n	0.29851021	Peri.	320.54231		-0.69607802		+0.71691822
a	2.2173279	Node	265.30622		-0.64845990		-0.65095627
e	0.0983542	Incl.	2.22980		-0.30818038		-0.24956805
P	3.30	H	13.3	G	0.25		

Residuals in seconds of arc

750304	095	0.1-	2.4+	880123	552	0.2-	1.0-	890729	675	(1.6+	3.7-)
750314	095	1.6+	1.9-	880123	552	0.0	1.6-	890801	675	0.2-	1.0-
750317	095	0.7-	1.4+	880208	399	1.6+	0.0	890801	675	(5.9+	1.2+)
820521	688	0.1-	1.0-	880208	399	0.8-	0.7-	890801	675	0.0	0.7+
820521	688	0.6-	1.1-	880208	399	0.2-	0.2-	890801	675	(7.3+	2.7+)
880118	071	1.6-	1.7-	880214	552	1.4-	0.0	890901	801	1.1+	0.5-
880118	071	(11.1+	2.4-)	880214	552	3.0-	0.7-	890903	801	0.9-	2.1-
880118	071	3.4+	2.7-	890729	675	1.5+	2.8-				

(4186)* 1977 DT1 = 1979 PM = 1983 GE2 = 1985 QB = 1988 CX5

Discovered 1977 Feb. 18 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Id. A. Lowe (k, MPC 14471), C. M. Bardwell (ibid.)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bardwell

M	196.18639		(1950.0)		P		Q
n	0.17976685	Peri.	268.57109		+0.54993128		-0.80086007
a	3.1093025	Node	144.52062		+0.83090343		+0.55338151
e	0.0600597	Incl.	24.10688		-0.08470588		+0.22889312
P	5.48	H	11.5	G	0.25		

Residuals in seconds of arc

770218	381	0.3+	0.5+	850820	688	0.1+	0.5-	880312	888	0.3-	3.3-
770218	381	0.1-	0.5+	850820	688	0.3-	0.2-	880312	888	1.0+	0.6-
770219	381	0.2+	0.8+	850914	688	0.5-	1.7+	890504	801	0.0	0.2-
770219	381	0.0	0.7+	850914	688	1.4+	2.8+	890505	801	0.6-	0.0
790801	095	0.6-	0.2+	880214	809	0.7-	1.1+	890603	801	(3.0+	5.4-)
830410	095	1.5+	0.4-	880214	809	0.8-	1.5+	890604	801	1.0+	0.5-
830412	095	1.7-	2.8+	880214	809	0.3+	0.9+				

(4187)* 1978 GR3 = 1988 CT6

Discovered 1978 Apr. 11 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. A. Lowe (MPC 13162)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bardwell

M	62.65330		(1950.0)		P		Q
n	0.18535528	Peri.	23.16739		-0.95309723		+0.30265662
a	3.0464876	Node	174.44852		-0.28104353		-0.88234976
e	0.1168121	Incl.	1.27549		-0.11233967		-0.36035799
P	5.32	H	12.4	G	0.25		

Residuals in seconds of arc

780411	095	0.2-	0.4+	880118	809	1.1+	0.2+	880126	809	0.7- 0.4+
780505	095	0.4-	0.3+	880118	809	0.5+	0.1+	880128	809	0.3- 0.2-
830305	095	0.3+	1.0+	880120	809	0.2-	0.4+	880128	809	0.2+ 0.0
830315	095	3.2-	1.3-	880120	809	0.2-	0.3+	880130	809	0.2- 0.2-
830318	095	1.2-	1.8+	880122	809	0.4-	0.2-	880130	809	0.5+ 0.2-
830318	095	0.9+	1.5-	880122	809	0.3-	0.2-	880215	046	0.4- 0.1-
830320	095	1.3+	0.8-	880124	809	0.5-	0.4+	880215	046	0.3- 0.4+
830409	095	2.8+	2.4-	880124	809	0.0	0.3+	880216	046	0.2+ 2.2-
850823	095	1.4+	3.2-	880126	809	1.1-	0.2+	880216	046	1.2- 3.0-

(4188)* 1979 HX4 = 1969 PV = 1973 YH = 1976 OH = 1980 TP11 = 1984 YD5

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

Id. S. Nakano (MPC 13684)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M	201.48038		(1950.0)	P	Q
n	0.27624681	Peri.	227.42633	+0.99544159	-0.05973922
a	2.3349157	Node	135.84403	+0.08083968	+0.94212778
e	0.1504482	Incl.	6.12652	-0.05060619	+0.32988857
P	3.57	H	12.9	G 0.25	

Residuals in seconds of arc

690813	095	1.9+	1.0-	841228	095	0.8-	0.0	890217	809	0.5+ 0.5+
731219	095	1.8-	2.3+	890211	809	0.4-	0.2+	890217	809	0.6+ 0.2+
760727	095	0.7-	0.5-	890211	809	0.3-	0.1+	890218	809	0.3+ 0.4+
760729	095	1.0-	3.8+	890211	809	0.4-	0.0	890218	809	0.3- 0.4+
790425	095	1.0-	0.5+	890213	809	0.5-	0.4-	890301	809	0.9+ 0.2-
790428	095	0.7+	1.1-	890213	809	0.3-	0.4-	890301	809	0.9+ 0.1-
790430	095	0.2-	1.8+	890213	809	0.1-	0.4-	890301	809	0.9+ 0.0
801008	095	0.4+	0.1+	890217	809	0.3+	0.4+			

(4189)* 1979 SV9 = A923 RC = 1965 UR1 = 1986 TG5

Discovered 1979 Sept. 22 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Id. S. Nakano (MPC 11639)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M	355.20404		(1950.0)	P	Q
n	0.28218372	Peri.	126.03070	+0.76286955	+0.64617229
a	2.3020499	Node	193.76137	-0.61911311	+0.72018195
e	0.1355574	Incl.	5.34712	-0.18635718	+0.25258528
P	3.49	H	13.5	G 0.25	

Residuals in seconds of arc

230911	024	1.0-	3.7-	791111	095	2.9+	0.3+	861010	046	0.8- 0.5-
651019	330	5.9+	1.7+	861001	010	0.4+	2.7-	861010	046	0.6- 0.9-
790922	095	1.0-	3.5+	861001	010	1.9+	3.5-	861104	095	2.5- 3.2+
790928	095	1.9-	1.2+	861003	095	1.7-	0.7+	890709	801	1.5+ 0.7+
791016	095	0.2+	2.5+	861008	095	1.7-	1.6-	890729	801	1.7- 0.9+

(4190)* 1980 JH = 1981 UP11

Discovered 1980 May 11 by L. Brozek at Klet.

Id. T. Furuta (JAM 1946)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M	18.73762		(1950.0)	P	Q
n	0.23341291	Peri.	115.28044	+0.68392773	+0.72611118
a	2.6124789	Node	198.44259	-0.72354945	+0.66269350
e	0.1687603	Incl.	12.92283	-0.09337586	+0.18330268
P	4.22	H	12.9	G 0.25	

Residuals in seconds of arc

800511 046	1.4-	1.6+	811022 095	3.4-	0.1+	890804 657	0.1+	0.3-
800511 046	0.4+	0.9+	811024 095	3.0+	1.9+	890805 657	0.2+	0.2+
800512 046	0.0	0.3+	811028 095	0.2+	0.0	890805 046	1.5-	1.6-
800512 046	0.6-	0.7+	880420 413	0.3+	0.7+	890805 046	0.0	0.7+
800513 046	2.3+	0.7-	880420 413	0.1-	0.4-	890808 657	0.0	0.3-
800513 046	1.6-	0.3+	890730 801	2.0+	1.3+	890808 657	0.5-	0.4+
800517 095	1.0+	1.7-	890731 801	0.5+	0.7+	890826 657	0.6-	1.4-

(4191)* 1980 KH = 1984 DG1 = 1988 BD5

Discovered 1980 May 22 by H. Debehogne at the European Southern Observatory.

Id. H. Debehogne (MPC 13680), R. H. McNaught (ibid.)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Marsden

M 41.78202		(1950.0)	P	Q
n 0.23074461	Peri.	39.45114	+0.00368293	+0.98662464
a 2.6325806	Node	231.38552	-0.96206862	-0.04095929
e 0.1433529	Incl.	12.03843	-0.27278269	+0.15777880
P 4.27	H	12.8	G 0.25	

Residuals in seconds of arc

800522 809	0.6-	0.4+	800526 809	0.4-	0.4-	800611 809	0.8+	2.2+
800522 809	0.1+	0.6-	800526 809	0.4-	0.4-	800611 809	0.6+	3.2+
800522 809	0.8-	0.4+	800531 809	0.6-	0.2-	800612 809	1.0+	0.2-
800523 809	0.1-	0.2-	800531 809	0.2-	0.1-	800612 809	0.3+	0.1-
800523 809	0.4-	0.7-	800531 809	0.1+	0.6-	800612 809	0.8-	0.0
800523 809	0.2-	0.6-	800601 809	1.2-	0.4-	840225 809	0.4+	0.3+
800524 809	0.0	0.3-	800601 809	0.1+	0.4-	840225 809	0.4+	0.3+
800524 809	0.4-	0.0	800602 809	1.1+	0.5-	840225 809	0.3+	0.3+
800524 809	0.4-	0.5-	800603 809	0.2+	1.1-	880128 413	0.3-	0.3+
800524 809	0.7-	0.3+	800603 809	0.2-	0.3+	880128 413	0.7-	0.3+
800524 809	1.2-	0.5-	800603 809	0.5+	0.9-	880223 413	0.2-	0.2-
800524 809	0.9+	0.0	800603 809	0.2-	0.4-	880223 413	0.5+	0.4+
800524 809	0.0	0.4-	800603 809	1.0+	0.2+	880312 413	0.1+	0.0
800524 809	1.3-	0.0	800603 809	0.3+	0.2-	880312 413	0.1+	0.2-
800525 809	0.5-	1.0+	800604 809	0.1+	0.4-	890630 801	0.2-	0.8+
800525 809	0.6-	1.0+	800604 809	0.2+	0.2-	890729 801	0.1-	0.0
800525 809	0.5+	0.5-	800604 809	1.3+	0.1+			
800525 809	0.9+	0.4-	800611 809	1.0+	1.1+			

(4192)* 1981 DH = 1949 PD = 1949 PX = 1954 LB = 1972 TK5 = 1978 SA6 = 1980 BZ3 = 1989 QC

Discovered 1989 Feb. 28 by H. Debehogne and G. De Sanctis at the European Southern Observatory.

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M 14.23419		(1950.0)	P	Q
n 0.17241711	Peri.	112.47744	+0.82958369	+0.55836124
a 3.1970479	Node	213.58058	-0.51545716	+0.76243426
e 0.1745032	Incl.	0.50348	-0.21469702	+0.32699652
P 5.72	H	11.2	G 0.25	

Residuals in seconds of arc

490803 094	(25.6-	75.3+)X	810228 809	0.1-	0.2+	810303 809	1.4+	0.1+
490815 078	5.3-	8.1+ Y	810301 809	0.7-	0.4-	810304 809	0.8+	0.0
540605 760	(9.6-	13.3-)X	810301 809	0.4-	0.5-	810304 809	0.6+	0.2-
721006 095	7.8+	3.6+	810301 809	0.1-	0.1-	810304 809	0.5+	0.2-
780928 095	1.9-	1.1+	810302 809	1.0-	0.4+	890828 403	0.0	2.0-
781004 095	3.1-	1.0+	810302 809	0.9-	0.6+	890828 403	1.4-	4.4-
800122 095	1.8-	0.5+	810302 809	0.7-	1.0+	890829 403	2.3+	2.2-
810228 809	0.2-	0.0	810303 809	1.5+	0.0	890829 403	0.0	2.1-
810228 809	0.1-	0.2+	810303 809	1.4+	0.1+			

(4193)* 1981 SM1 = 1975 RJ2

Discovered 1981 Sept. 26 by B. A. Skiff and N. G. Thomas at the Anderson Mesa Station of the Lowell Observatory.

Id. L. D. Schmadel (MPC 7362), T. Urata (NOC 1359)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Green

M	156.71710	(1950.0)	P	Q	
n	0.17734400	Peri. 249.25042	+0.95807973	-0.28529979	
a	3.1375576	Node 127.31719	+0.27358631	+0.88388810	
e	0.1850483	Incl. 1.88901	+0.08505151	+0.37060201	
P	5.56	H 12.1	G 0.25		

Residuals in seconds of arc

750909	808	0.6+	0.4+	811027	095	1.2+	2.3+	890209	809	0.6-	0.4-
750909	808	1.0-	1.1+	811102	688	(0.1-	2.9-)	890209	809	0.3-	0.3-
810903	095	(2.8+	2.8+)	811102	688	2.0+	2.3-	890209	809	0.2-	0.1-
810907	688	0.0	2.1-	811102	095	1.8-	2.6+	890211	809	0.2-	0.3-
810926	688	0.7+	0.9-	811120	688	0.4-	1.3-	890211	809	0.0	0.3-
810926	688	1.7-	1.7-	811120	688	1.2-	0.8-	890211	809	0.3+	0.3-
811004	688	0.3+	1.6-	830118	801	0.1+	1.9+	890211	809	0.1+	0.5-
811004	688	0.6+	1.0+	861101	801	0.3-	0.5+	890211	809	0.2+	0.5-
811006	095	2.1+	0.2+	871121	801	0.4-	2.1+	890211	809	0.3+	0.3-
811007	095	0.3-	0.4+	890208	809	0.4-	0.4-	890212	809	0.2-	0.2+
811021	095	(1.1+	2.9+)	890208	809	0.3-	0.4-	890212	809	0.2+	0.3+
811026	095	(1.3-	4.4+)	890208	809	0.3-	0.5-	890212	809	0.5+	0.5+

(4194)* 1982 RE = 1931 BH = 1967 ES = 1971 DV1 = 1972 HR1 = 1972 KC = 1989 CK8

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

Id. D. W. E. Green, B. G. Marsden (d)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Green

M	50.59098	(1950.0)	P	Q	
n	0.22241302	Peri. 355.89364	-0.88055288	-0.47089938	
a	2.6979211	Node 155.78497	+0.43846045	-0.85237349	
e	0.0421030	Incl. 7.51867	+0.17994184	-0.22740537	
P	4.43	H 12.1	G 0.25		

Residuals in seconds of arc

310117	690	(90.9-	36.7+)	820922	688	0.3-	0.4+	890226	809	0.6+	0.7-
310119	690	(0.2+	19.9-)	820922	688	(4.5+	1.1-)	890226	809	1.0+	0.6-
670309	095	0.1-	1.9+	890208	809	0.0	0.7+	890226	809	1.3+	0.7-
670404	095	0.9-	1.4+	890208	809	0.3+	0.6+	890227	809	0.2-	0.2-
710220	095	1.1+	2.8-	890208	809	0.4+	0.7+	890227	809	0.2+	0.2-
720419	805	0.4+	0.1-	890209	809	0.0	0.6+	890227	809	0.4+	0.2-
720419	805	0.5+	0.1+	890209	809	0.1+	0.9+	890228	809	0.6-	0.5-
720419	805	0.2+	1.1-	890209	809	0.3+	0.9+	890228	809	0.6-	0.5-
720517	095	(3.2-	3.5-)	890210	809	0.3-	0.7+	890228	809	0.7-	0.5-
820915	688	(1.7+	3.5-)	890210	809	0.3-	1.0+	890302	809	0.5-	0.6-
820916	095	1.3-	2.5+	890210	809	0.4-	1.0+	890302	809	0.3-	0.8-
820919	095	0.0	1.1-	890212	809	0.2-	0.6+	890302	809	0.3-	1.0-
820921	688	1.6+	1.1+	890212	809	0.1+	0.4+				
820921	095	1.2-	0.7-	890212	809	0.2+	0.4+				

(4195)* 1982 SK8 = 1963 TC = 1968 UN = 1989 CZ1

Discovered 1982 Sept. 19 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Id. S. Nakano (MPC 13686, MPC 14348)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M	146.91925	(1950.0)	P	Q
n	0.20663313	Peri. 216.43999	+0.82417414	-0.56633516
a	2.8335839	Node 178.05385	+0.52767384	+0.76712796
e	0.0698011	Incl. 2.05202	+0.20566311	+0.30129584
P	4.77	H 12.2	G 0.25	

Residuals in seconds of arc

631013	760(19.9-	44.0-)X	890210	872	(2.8+	1.9-)	890227	809	0.2-	0.1+
681022	095	4.0+	0.1-	890210	872	(2.6+	0.9+)	890227	809	0.3-	0.2+
681026	095	3.6-	1.3-	890211	809	0.4+	0.3-	890227	399	0.6+	1.1+
820919	095	(0.3+	4.5+)	890211	809	0.6+	0.2-	890227	399	0.4-	0.6-
820919	095	0.3-	0.7+	890211	809	0.7+	0.1-	890301	809	0.1+	0.2+
820921	095	1.3-	1.3-	890212	809	0.1-	0.0	890301	809	0.1-	0.3+
820927	095	0.9+	2.4+	890212	809	0.0	0.4-	890301	809	0.1-	0.6+
871022	095	0.5-	0.1-	890212	809	0.3+	0.5-	890302	809	0.6-	0.7+
871027	095	0.5+	0.3+	890213	049	0.8-	0.5- Y	890302	809	0.2-	0.6+
890209	809	0.3-	0.2-	890213	049	(0.8+	3.0+)Y	890302	809	0.3-	0.6+
890209	809	0.0	0.2-	890214	809	1.4+	0.2+	890303	809	0.0	0.2-
890209	809	0.1+	0.1+	890214	809	0.8+	0.2+	890303	809	0.0	0.2+
890210	809	0.0	0.5-	890214	872	1.3-	0.1+	890303	809	0.2-	0.1+
890210	809	0.1+	0.2-	890214	872	(2.1+	2.7-)				
890210	809	0.0	0.1-	890227	809	0.0	0.1+				

(4196)* 1982 SA13 = 1975 TO5 = 1975 VV7 = 1981 NN

Discovered 1982 Sept. 16 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Id. B. G. Marsden (MPC 13585)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Marsden

M	317.18143	(1950.0)	P	Q
n	0.12775103	Peri. 202.91655	+0.98122993	-0.19276982
a	3.9044491	Node 168.19429	+0.18066129	+0.90938115
e	0.0688389	Incl. 1.47186	+0.06744862	+0.36859968
P	7.72	H 10.9	G 0.25	

Residuals in seconds of arc

751014	095	0.8+	1.9-	820918	095	1.8+	0.1+	890729	801	0.4-	1.4-
751106	095	0.1-	0.9-	820920	095	0.6+	0.5+	890730	801	1.3+	0.8-
810702	805	0.6+	0.3+	820926	095	0.6-	0.1+	890901	801	1.1-	0.0
810702	805	0.6-	0.3-	821015	095	2.3-	0.6+	890904	801	0.8+	0.1+
820916	095	1.1+	1.2+	821022	095	2.1-	0.9+				

(4197)* 1982 TA

Discovered 1982 Oct. 11 by E. F. Helin and E. M. Shoemaker at Palomar.

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Marsden

M	336.44658	(1950.0)	P	Q
n	0.28306948	Peri. 119.15327	-0.62243743	-0.78187832
a	2.2972452	Node 9.58192	+0.62434631	-0.52313401
e	0.7729542	Incl. 12.20271	+0.47197811	-0.33911222
P	3.48	H 14.9	G 0.25	

Residuals in seconds of arc

820720	413	(7.8+ 3.6+)	821017	489	(9.0+ 3.1-)	821115	474	0.3- 0.6+
820720	413	0.4+ 0.1-	821018	323	0.2- 0.4-	821115	474	0.4- 1.2+
821011	675	2.5- 1.0-	821019	675	1.8+ 1.1+	830416	474	2.3- 1.5+
821011	675	(5.0+ 0.2-)	821019	474	1.0+ 1.0+	830416	474	2.5- 1.2+
821011	675	(7.9+ 0.2+)	821019	474	1.7+ 1.3+	830522	474	1.4+ 1.7-
821012	675	2.3- 0.1+	821019	323	0.8- 1.1+	830522	474	1.4+ 2.0-
821012	675	2.6+ 0.4+	821020	801	1.1- 0.6+	830612	474	0.2+ 0.1+
821012	675	(3.2- 0.4-)	821020	675	0.4- 0.0	830612	474	2.2+ 0.0
821012	675	2.2+ 1.4+	821020	323	1.6- 0.1-	850920	691	0.3- 0.1+
821013	675	1.4- 0.2-	821021	688	0.9+ 2.7-	850920	691	0.7- 0.2-
821013	675	(2.9+ 1.0+)	821021	688	(3.8+ 1.0-)	850920	691	1.5- 0.9-
821013	688	2.5+ 1.9-	821022	695	1.9+ 0.0	850921	691	0.9- 0.7+
821013	688	1.5+ 1.2-	821022	801	0.6- 1.7-	850921	691	0.9- 1.0+
821013	675	(3.2- 1.7-)	821022	413	0.4- 1.4+	850921	691	0.5- 1.4+
821013	675	(6.0+ 0.0)	821022	413	0.5+ 1.7+	850923	675	0.2- 0.8+
821016	474	0.1+ 0.2-	821023	695	0.4+ 0.0	850923	675	0.5- 0.5+
821016	474	1.9+ 0.1+	821024	695	2.7- 0.3-	850924	675	0.2+ 0.4+
821016	372	0.9+ 1.0+ Y	821024	688	0.4+ 1.3-	850924	675	0.3- 3.0-
821016	372	0.8- 1.2+ Y	821024	688	0.4- 1.6-	890905	675	0.2+ 0.6+
821017	688	1.3+ 1.3-	821107	675	0.8+ 0.3+	890905	675	0.6- 0.0
821017	675	2.1- 0.2-	821107	046	(4.2- 0.8-)	890907	675	1.2+ 0.4+
821017	688	0.4+ 2.3-	821107	046	(4.9+ 0.2-)	890921	568	0.5- 0.4-
821017	675	(8.1- 2.2-)	821110	801	0.5+ 0.7-	890921	568	0.7+ 0.7-
821017	675	0.5- 0.9-	821112	675	1.6- 0.4+	890922	568	0.8- 1.4+
821017	489	2.6- 1.8+	821112	675	(1.3+ 3.1-)	890922	568	0.8- 0.8+
821017	489	(3.0+ 1.6-)	821115	688	1.9+ 0.1+			
821017	489	(5.4- 0.4+)	821115	688	(5.3+ 0.8-)			

(4198)* 1983 CK1 = 1978 GA2 = 1981 UY7 = 1987 YG1

Discovered 1983 Feb. 11 by N. G. Thomas at the Anderson Mesa Station of the Lowell Observatory.

Id. A. Lowe (k, MPC 12964), B. G. Marsden (ibid.)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5

				Marsden
M	58.49118	(1950.0)	P	Q
n	0.17798326	Peri. 50.43202	-0.92952615	-0.36665019
a	3.1300404	Node 108.02684	+0.32434842	-0.86369204
e	0.1068772	Incl. 2.37191	+0.17544011	-0.34583767
P	5.54	H 12.9	G 0.25	

Residuals in seconds of arc

780407	095	0.4- 2.1+	830219	688	0.8- 1.9+	890406	675	1.3- 2.2-
811030	381	0.1+ 0.1-	871222	033	0.5- 0.8-	890406	675	(1.3- 3.5-)
811030	381	1.7+ 1.1-	871225	033	0.0 0.5+	890408	675	1.3+ 1.2-
830211	688	0.7+ 1.4+	871225	033	0.1- 0.2-	890408	675	1.3- 1.6-
830211	688	0.2+ 1.0-	880111	033	0.8- 0.1-			
830219	688	1.6+ 0.2+	880111	033	0.7- 0.5-			

(4199)* 1983 RX2 = 1976 YM1

Discovered 1983 Sept. 1 by H. Debehogne at the European Southern Observatory.

Id. W. Landgraf (MPC 8534)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5

				Bardwell
M	193.57967	(1950.0)	P	Q
n	0.25605448	Peri. 277.34733	+0.97646197	+0.19058183
a	2.4561099	Node 71.70614	-0.13061751	+0.89512247
e	0.1360357	Incl. 6.10634	-0.17164230	+0.40303142
P	3.85	H 13.2	G 0.25	

Residuals in seconds of arc

761216	095	1.3+	0.5-	830906	809	0.1-	0.9-	830911	809	0.0	0.2-
761218	095	0.3+	0.3-	830906	809	0.6+	0.2-	830912	809	0.2+	0.4-
761220	095	1.4-	0.5+	830906	809	0.8+	0.4-	830912	809	1.0-	0.7-
830901	809	0.5-	0.5-	830907	809	1.1+	0.2-	830913	809	1.3-	1.4-
830901	809	1.6-	0.6-	830907	809	0.8+	0.1-	830913	809	0.5-	0.4-
830901	809	0.2-	0.0	830907	809	1.1+	0.1-	830913	809	0.2-	0.1+
830902	809	0.1-	0.0	830908	809	0.2-	0.6+	870827	095	0.4+	3.7+
830902	809	0.8-	0.3-	830908	809	0.4-	0.5+	870903	095	1.0-	0.8-
830902	809	0.5-	0.2+	830908	809	0.9-	1.0+	870922	095	0.7+	2.3-
830903	809	1.1-	0.1+	830909	809	1.1+	0.3+	890210	888	2.3+	0.7+
830903	809	1.1-	0.1-	830909	809	0.8+	0.0	890210	888	0.3+	2.2+
830903	809	0.8-	0.2+	830909	809	0.8+	0.5-	890213	888	1.3-	0.4+
830904	809	0.9-	0.2+	830910	809	1.0+	0.3+	890213	888	0.8-	0.5+
830904	809	0.8-	0.1-	830910	809	0.9+	0.1+				
830904	809	0.9-	0.6+	830910	809	1.4+	0.3-				

(4200)* 1983 WA = 1976 JP3 = 3076 P-L

Discovered 1983 Nov. 28 by Y. Banno and T. Urata at the Karasuyama Observatory.

Id. K. Hurukawa (k, MPC 10029), H. Oishi (MPC 14191)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Oishi

M	70.07111	(1950.0)	P	Q	
n	0.21878810	Peri.	240.61771	-0.52829056	-0.84061559
a	2.7276392	Node	241.75220	+0.81840191	-0.46667237
e	0.2221765	Incl.	7.79494	+0.22611370	-0.27492242
P	4.50	H	13.5	G 0.25	

Residuals in seconds of arc

600924	675	1.7+	0.4+	831201	688	0.9-	0.3+	831209	372	1.3-	2.1+
600925	675	0.1+	0.3-	831201	889	2.3-	0.5-	831209	372	1.7+	1.0+
600927	675	0.0	0.3-	831201	889	0.3+	1.6+	831227	552	2.1-	0.1+
600928	675	0.8+	0.0	831202	372	0.5-	2.5-	831227	552	1.2+	0.2+
600929	675	2.5-	0.0	831202	372	(3.5-	0.7-)	890205	888	0.8+	0.1+
760503	809	0.3-	1.5-	831205	688	0.5-	0.5-	890205	888	0.0	0.5+
831128	688	(4.7+	1.8+)	831205	688	1.0-	2.0-	890310	888	1.2-	0.5+
831128	688	0.2+	0.6-	831205	372	1.5+	0.2+	890310	888	1.3-	0.3+
831128	889	1.1+	0.9+	831205	372	1.6-	1.4+	890311	801	1.5+	0.4+
831128	889	(4.2-	0.9-)	831206	688	2.1+	0.2-	890329	888	0.1+	1.6-
831128	372	2.0+	0.9-	831206	552	1.4+	0.1-	890329	888	0.2+	0.2+
831128	372	2.3-	1.0-	831206	552	1.1+	0.0	890401	888	0.4+	0.2+
831130	372	2.3-	0.1-	831207	372	0.8+	2.4-	890401	888	0.3-	0.4-
831130	372	0.8+	1.6+	831209	688	1.1+	0.5-				
831201	688	0.5+	0.0	831209	688	0.9-	0.4+				

(4201)* 1984 JA1 = 1950 LR = 1967 JH = 1969 UB = 1974 SR2 = 1975 WX

Discovered 1984 May 3 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory.

Id. S. Nakano (MPC 12001)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M	331.44463	(1950.0)	P	Q	
n	0.17575181	Peri.	15.61000	-0.29193220	+0.94752274
a	3.1564785	Node	237.57933	-0.89317033	-0.31880308
e	0.2289087	Incl.	8.87915	-0.34208530	+0.02377495
P	5.61	H	11.1	G 0.25	

Residuals in seconds of arc

500608	760	0.1-	1.4+	890209	809	0.3-	0.0	890226	809	0.8-	0.4-
500608	760	0.1-	0.6+	890211	809	0.3-	0.2-	890226	809	0.6-	0.4-
670505	095	0.6+	1.0+	890211	809	0.5-	0.1-	890226	809	0.5-	0.5-
691016	095	0.4+	0.4-	890211	809	0.6-	0.3-	890227	809	0.4+	0.2+
740920	095	1.8-	4.3+	890212	809	0.1-	0.7-	890227	809	0.5+	0.2+
740922	095	1.7-	0.5-	890212	809	0.2-	0.5-	890228	809	0.4+	0.3+
751128	095	2.7+	1.3+	890212	809	0.2-	0.6-	890228	809	0.4+	0.3+
840503	688	0.8-	0.5-	890217	809	1.3-	0.1+	890228	809	0.5+	0.3+
840503	688	0.2-	0.7-	890217	809	1.1-	0.1+	890301	809	0.6+	0.6+
840530	491	1.3+	1.4-	890217	809	0.9-	0.1+	890301	809	0.7+	0.7+
840531	491	1.2+	1.5+	890218	809	0.4+	0.6-	890301	809	0.8+	0.7+
890207	809	0.1-	0.6+	890218	809	0.7+	0.2-	890302	809	1.2+	0.1+
890207	809	0.1-	0.6+	890219	809	0.1+	0.2-	890302	809	1.4+	0.1+
890207	809	0.2-	0.5+	890219	809	0.2+	0.6-	890302	809	1.4+	0.1-
890208	809	0.9-	0.7+	890224	809	0.5-	0.3-	890303	809	0.6+	0.6+
890208	809	0.8-	0.7+	890224	809	0.8-	0.5-	890303	809	0.4+	0.7+
890208	809	0.5-	0.6+	890225	809	0.0	0.1+	890303	809	0.1+	0.6+
890209	809	0.9-	0.3+	890225	809	0.1-	0.0	890509	801	1.9+	0.8+
890209	809	0.8-	0.0	890225	809	0.3-	0.1-				

(4202)* 1985 CB2 = 1977 TU6 = 1980 DF5 = 1986 LG1 = 1987 QJ10

Discovered 1985 Feb. 12 by H. Debehogne at the European Southern Observatory.

Id. I. A. Filippova (k), S. Nakano

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M	190.40420	(1950.0)	P	Q
n	0.18748684	Peri. 141.27900	+0.26994133	+0.95718653
a	3.0233530	Node 144.03307	-0.92174912	+0.28827197
e	0.0840376	Incl. 10.25161	-0.27840660	-0.02632923
P	5.26	H 11.2	G 0.25	

Residuals in seconds of arc

771008	095	1.0-	1.4+	850218	809	0.2-	0.2-	850225	809	0.1-	0.5-
800221	095	2.0+	3.4+	850218	809	0.0	0.2-	850225	809	0.2-	0.3-
850212	809	0.1+	0.4+	850219	809	1.4-	1.4-	850226	809	0.1-	0.3-
850212	809	0.0	0.9+	850219	809	1.2-	1.0-	850226	809	0.3-	0.4-
850212	809	0.0	1.1+	850219	809	1.1-	1.0-	850226	809	0.1+	0.1-
850214	809	0.3-	0.0	850220	809	0.6-	0.1-	850227	809	(2.6-	0.6-)
850214	809	0.0	0.3-	850220	809	0.3-	0.1-	850227	809	(2.6-	0.4-)
850214	809	0.1+	0.2-	850220	809	0.1+	0.1-	850228	809	0.6+	0.2-
850216	809	0.4+	0.9+	850221	809	0.5+	0.8-	850228	809	0.1+	0.3-
850216	809	0.2+	1.1+	850221	809	0.9+	0.8-	860608	688	0.4+	0.2+
850216	809	0.2+	1.3+	850221	809	1.0+	0.8-	860608	688	1.1-	0.2-
850217	809	0.1+	0.5-	850224	809	0.0	0.1-	870826	095	1.0+	0.7-
850217	809	0.2+	0.6-	850224	809	0.3-	0.1-	870901	095	0.5+	0.7-
850217	809	0.4+	0.5-	850224	809	0.2-	0.0	870922	095	0.3+	1.2-
850218	809	0.2-	0.2-	850225	809	0.1+	0.4-	870925	095	0.6-	0.2-

(4203)* 1985 FD3 = 1982 QU

Discovered 1985 Mar. 26 by C. S. Shoemaker at Palomar.

Id. W. Landgraf (MPC 11505)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Marsden

M	333.72592		(1950.0)		P		Q				
n	0.23451225	Peri.	260.29061		-0.44245279		+0.88300070				
a	2.6043081	Node	340.90413		-0.51174182		-0.39206090				
e	0.1348277	Incl.	28.61306		-0.73644813		-0.25806592				
P	4.20	H	12.2	G	0.25						

Residuals in seconds of arc

820818	801	1.0-	0.7+	850526	675	0.0	0.5-	861030	474	1.3-	0.2+
850326	675	0.2+	0.0	850527	675	0.1-	0.0	861030	474	0.0	0.5+
850411	675	0.1+	2.0+	850527	675	0.2-	0.0	890309	801	1.0-	0.2-
850415	675	0.9+	0.5-	860713	474	0.2+	0.3+	890310	801	1.7+	0.8+
850526	675	0.1+	0.3-	860713	474	0.1+	0.1+				
850526	675	0.2-	0.4-	860909	474	0.1+	0.4-				

(4204)* 1985 JG1 = 1978 JK2 = 1979 SO3 = 1988 CO6 = 1988 DK1

Discovered 1985 May 11 by C. S. Shoemaker at Palomar.

Id. T. Kobayashi (MPC 12950), S. Nakano (d), F. N. Bowman (d)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M	139.14065		(1950.0)		P		Q				
n	0.28841895	Peri.	322.91022		-0.99495482		+0.08977453				
a	2.2687511	Node	222.30885		-0.06839695		-0.93354959				
e	0.0858384	Incl.	3.81461		-0.07339452		-0.34702404				
P	3.42	H	13.2	G	0.25						

Residuals in seconds of arc

780509	095	2.1+	3.2+	861005	095	0.3+	2.3-	880310	897	0.1-	0.9-
790924	095	2.3-	1.5+	861010	095	2.7+	1.1+	880312	897	1.5+	0.7-
850511	675	0.6+	3.2-	880210	033	1.3+	1.4-	880312	897	0.5+	1.6-
850515	675	0.4+	0.2-	880211	033	1.0+	0.7-	880314	033	0.1-	1.0+
850524	675	1.3-	0.5-	880219	897	2.8-	0.8-	880314	033	0.5+	0.5+
850524	675	1.2-	0.9-	880219	897	3.5-	2.4+				
860911	095	0.5+	3.5-	880310	897	0.4+	0.7-				

(4205)* 1985 YP = 1986 AF = 1986 CF

Discovered 1985 Dec. 18 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Id. F. N. Bowman (d, MPC 10610), C. S. Shoemaker (d, ibid.)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Marsden

M	294.43677		(1950.0)		P		Q				
n	0.43440883	Peri.	109.78760		+0.86196355		-0.42124237				
a	1.7266472	Node	276.00213		+0.28924926		+0.86559675				
e	0.1491931	Incl.	16.47775		+0.41635766		+0.27073442				
P	2.27	H	14.8	G	0.25						

Residuals in seconds of arc

851218	688	(4.7+	1.3+)	860514	691	0.0	0.2+	870825	801	0.0	0.4-
851218	688	0.8-	1.5-	860514	691	0.2+	0.0	870826	552	0.7-	0.5-
851218	675	1.2-	1.4+	860514	691	0.4-	0.0	870826	552	0.8-	0.6+
860107	675	0.5+	0.5+	870523	691	0.5-	0.2+	870829	054	0.7+	0.4+
860107	675	0.8+	0.4-	870523	691	0.4-	0.1-	880114	688	0.2-	0.8+
860110	675	1.5+	0.4-	870523	691	0.0	0.4+	880114	688	0.3+	0.9+
860116	675	0.8+	0.9-	870524	691	0.1+	0.8+	890604	474	1.0+	0.2+
860205	675	1.7-	2.5-	870524	691	0.5+	0.8+	890604	474	0.1-	0.5+
860205	675	0.1-	1.7+	870524	691	0.2+	0.5+	890608	474	0.9-	0.7-
860511	691	0.2-	0.2+	870624	691	0.0	0.6-	890608	474	1.4-	0.7-
860511	691	0.6-	0.4-	870624	691	0.2+	0.8-	890629	474	0.6+	0.3+
860511	691	0.2+	0.2-	870624	691	0.0	0.5-	890629	474	1.3+	0.1-
860512	691	0.2+	0.2-	870723	801	0.4+	1.3-				
860512	691	2.0-	2.0+	870820	054	0.3+	0.4-				

(4206)* 1986 QL = 1982 TZ1 = 1982 UH11 = 1989 AM7

Discovered 1986 Aug. 25 by H. Debehogne at La Silla.

Id. C. M. Bardwell (MPC 12132), D. W. E. Green

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Green

M	266.91268	(1950.0)	P	Q	
n	0.20368953	Peri. 33.91628	+0.23516676	+0.97176866	
a	2.8608181	Node 249.69153	-0.89615263	+0.20920294	
e	0.0182129	Incl. 1.16289	-0.37630714	+0.10908622	
P	4.84	H 12.1	G 0.25		

Residuals in seconds of arc

821014	095	2.4-	0.4-	860903	809	1.4+	0.4+	890209 809	0.2+ 0.8-
821024	095	1.9+	0.7-	860903	809	1.3+	0.3+	890209 809	0.2+ 0.9-
860825	809	0.4+	0.9+	860905	809	0.6+	0.9+	890210 809	0.1+ 0.3-
860825	809	0.8+	1.0+	860905	809	0.6+	1.0+	890210 809	0.4+ 0.2-
860825	809	1.1+	1.0+	860905	809	0.8+	1.0+	890210 809	0.5+ 0.3-
860826	809	0.6-	0.5+	860906	809	0.5+	0.9+	890210 872	0.5- 0.3-
860826	809	0.6-	0.4+	860906	809	0.7+	0.8+	890210 872	0.5- 0.0
860826	809	0.8-	0.4+	860906	809	0.9+	0.9+	890211 809	0.8+ 1.1-
860826	809	0.3-	0.5+	860907	809	0.9+	0.9+	890211 809	0.9+ 0.8-
860826	809	0.3-	0.6+	860907	809	0.1+	0.5+	890211 809	1.0+ 0.8-
860826	809	0.1-	0.5+	860907	809	0.0	0.0	890212 809	0.4- 1.2-
860827	809	0.7-	1.2+	860908	809	1.1+	0.1+	890212 809	0.2- 1.2-
860827	809	0.1-	1.1+	860908	809	0.7+	0.1-	890212 809	0.3- 1.1-
860827	809	0.3+	1.2+	860908	809	0.4+	0.2-	890214 809	0.2- 1.1-
860828	809	0.1+	0.3+	860909	809	0.6+	1.0+	890214 809	0.1- 1.0-
860828	809	0.3+	0.9+	860909	809	0.6+	0.7+	890214 872	(7.4+ 3.1-)
860828	809	0.6+	1.2+	860909	809	0.3+	0.4+	890214 872	(2.6+ 3.7-)
860829	809	0.3-	0.1+	860910	809	0.8+	1.0+	890227 809	0.0 0.9-
860829	809	0.3+	0.4+	860910	809	1.2+	1.3+	890227 809	0.3- 0.8-
860829	809	0.7+	0.1+	860910	809	1.2+	1.2+	890227 809	0.1- 0.7-
860830	095	1.1+	1.7+	860911	809	1.3+	0.5+	890227 399	0.8- 0.0
860831	809	0.6-	0.6+	860911	809	1.7+	0.5+	890227 399	0.4+ 1.4-
860831	809	0.4+	0.6+	860911	809	1.8+	0.5+	890301 809	0.9- 0.6-
860831	809	0.9+	0.7+	860912	809	0.5+	0.9+	890301 809	1.0- 0.3-
860901	809	0.5+	0.6+	860912	809	0.8+	0.9+	890301 809	0.7- 0.1-
860901	809	0.4+	0.7+	860912	809	1.0+	0.9+	890302 809	0.5+ 0.2-
860901	809	0.5+	0.5+	890110	033	(1.7-	3.1+)	890302 809	0.4+ 0.1-
860902	809	0.6+	0.2+	890111	033	0.1-	0.2-	890302 809	0.6+ 0.2-
860902	809	0.4+	0.4+	890112	033	0.0	0.5+	890303 809	0.3+ 0.1-
860902	809	0.7+	0.2+	890207	872	(4.2-	1.2-)	890303 809	0.4+ 0.0
860903	809	1.5+	0.0	890209	809	0.4+	0.6-	890303 809	0.4+ 0.1+

(4207)* 1986 RO2 = 1931 BF = 1971 ST2 = 1987 XF

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

Id. E. Bowell (k, MPC 12791), B. G. Marsden (ibid.)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Marsden

M	81.35534	(1950.0)	P	Q	
n	0.18779795	Peri. 214.06337	-0.41721745	-0.89549796	
a	3.0200131	Node 261.02832	+0.86482838	-0.33881360	
e	0.0487610	Incl. 9.02588	+0.27928742	-0.28859789	
P	5.25	H 11.2	G 0.25		

Residuals in seconds of arc

310115	690	2.1-	0.4+	871215	400	1.6-	0.1-	890212	809	1.1-	0.5-
310116	690	0.8+	1.6-	871215	400	0.7+	0.4-	890212	809	0.8-	0.5-
310117	690	0.5-	1.7-	890207	809	0.2-	0.4+	890217	809	0.6-	0.8-
710927	095	1.7+	0.9+	890207	809	0.2-	0.5+	890217	809	0.5-	0.6-
821223	095	1.3+	1.3-	890207	809	0.1-	0.4+	890217	809	0.3-	0.4-
860905	688	0.2-	0.5-	890208	809	0.2+	0.1+	890218	809	0.4-	0.6-
860905	688	1.3-	1.7-	890208	809	0.4+	0.0	890218	809	0.4-	0.7-
860909	095	0.3+	0.6+	890208	809	0.1+	0.1-	890219	809	0.3-	0.4-
860911	688	1.2+	0.3-	890209	809	0.3-	0.0	890219	809	0.2-	0.5-
860911	688	0.8+	0.0	890209	809	0.2-	0.0	890225	809	1.5+	1.2+
861004	688	0.1-	0.8-	890209	809	0.1+	0.2-	890225	809	1.6+	1.2+
861004	688	0.6+	0.9-	890211	809	0.9-	0.1-	890225	809	1.7+	1.0+
871124	688	0.8-	1.7+	890211	809	0.5-	0.2+	890226	809	0.9+	0.4+
871124	688	0.6-	0.4+	890211	809	0.7-	0.1+	890226	809	1.1+	0.4+
871215	400	0.4-	1.0+	890212	809	1.1-	0.7-	890226	809	1.2+	0.4+

(4208)* 1986 RQ2 = 1983 CS3

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

Id. S. Nakano (MPC 11348)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M	171.95750	(1950.0)	P	Q	
n	0.17210237	Peri.	224.32161	+0.96351468	-0.21780093
a	3.2009446	Node	147.29895	+0.24200180	+0.95720617
e	0.0886484	Incl.	16.73570	-0.11434415	+0.19057572
P	5.73	H	11.5	G 0.25	

Residuals in seconds of arc

830214	809	0.2+	0.1-	861004	688	0.4+	0.5-	890213	809	0.2+	0.2-
830214	809	0.2-	0.5-	871222	688	0.6-	0.2-	890213	809	0.2+	0.3-
830214	809	1.0-	0.7-	871222	688	0.6+	0.2+	890226	809	0.2+	0.3-
830216	809	0.3+	0.7-	890209	809	0.2-	0.6+	890226	809	0.4+	0.3-
830216	809	0.3+	0.0	890209	809	0.3-	0.6+	890226	809	0.5+	0.2-
830216	809	0.3+	0.6+	890209	809	0.3-	0.9+	890227	809	0.2-	0.2-
860818	095	0.9-	2.0-	890210	809	0.8-	0.4+	890227	809	0.1-	0.1-
860906	688	1.1-	1.2+	890210	809	0.6-	0.2+	890227	809	0.0	0.1-
860906	688	0.4-	0.3-	890210	809	0.6-	0.4+	890228	809	0.1+	0.3-
860907	095	(3.4+	10.0-)	890211	809	0.5+	0.4+	890228	809	0.0	0.0
860911	688	0.0	0.6+	890211	809	0.5+	0.6+	890228	809	0.3+	0.2+
860911	688	1.4+	2.7+	890211	809	0.5+	0.6+				
861004	688	0.4+	1.1-	890213	809	0.0	0.4-				

(4209)* 1986 TG4 = 1986 WD5 = 1969 SB = 1978 EL8 = 1989 CO4

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

Id. S. Nakano (MPC 14790)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M	196.42714	(1950.0)	P	Q	
n	0.17616837	Peri.	16.84733	+0.96352691	+0.19421047
a	3.1515008	Node	329.98405	-0.26761139	+0.69978706
e	0.0928750	Incl.	21.59552	+0.00020943	+0.68744481
P	5.59	H	10.9	G 0.25	

Residuals in seconds of arc

690919	808	0.2-	1.8+	890208	809	1.1-	1.2-	890217	809	0.1-	0.3+
690920	808	0.1+	0.5+	890208	809	1.1-	1.2-	890217	809	0.3-	0.5+
780305	095	2.9-	1.6+	890208	809	0.9-	1.1-	890226	809	0.3-	0.1+
860829	095	0.0	1.1+	890209	809	0.8-	0.4-	890226	809	0.0	0.2+
860906	095	1.2-	1.7-	890209	809	0.3-	0.4-	890226	809	0.2-	0.2+
861002	095	0.3+	0.8+	890209	809	0.3-	0.4-	890227	809	0.0	0.5-
861004	675	2.0-	0.5-	890210	809	0.4-	0.6-	890227	809	0.3+	0.5-
861004	675	1.5+	0.7-	890210	809	0.3-	0.5-	890227	809	0.7+	0.7-
861005	675	0.9-	0.7+	890210	809	0.1-	0.5-	890228	809	1.0+	1.0+
861005	675	2.4+	0.3+	890212	809	0.3+	0.0	890228	809	0.9+	0.9+
861127	010	2.4-	0.8-	890212	809	0.4+	0.1-	890228	809	1.1+	1.0+
861127	010	0.6-	0.0	890212	809	0.3+	0.0	890302	809	0.8+	0.7+
861127	010	1.0+	0.0	890213	809	0.1-	0.1-	890302	809	0.9+	0.7+
890207	809	0.6-	0.1-	890213	809	0.0	0.0	890302	809	1.4+	0.7+
890207	809	0.3-	0.1-	890213	809	0.2+	0.0	890303	809	1.0+	0.8+
890207	809	0.2-	0.2+	890214	809	0.5+	0.3-	890303	809	1.2+	0.9+
890207	046	(3.9+	1.8+)	890214	809	0.2+	0.1+	890303	809	1.1+	0.7+
890207	046	(3.9+	0.9+)	890217	809	0.3-	0.1+				

(4210)* 1987 DY5 = 1951 EL = 1979 QZ5 = 1982 DE5 = 1982 DJ6

Discovered 1987 Feb. 21 by H. Debehogne at the European Southern Observatory.

Id. C. M. Bardwell (MPC 13312)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bardwell

M	231.14494	(1950.0)	P	Q	
n	0.19074096	Peri.	290.18213	-0.00069205	-0.99798825
a	2.9888680	Node	159.54569	+0.97178730	-0.01562349
e	0.0779541	Incl.	10.45187	+0.23585794	+0.06144399
P	5.17	H	11.9	G 0.25	

Residuals in seconds of arc

510313	024	0.7+	5.2+	870226	809	0.8-	0.4+	870304	809	0.1-	0.0
790830	809	0.8+	3.0-	870226	809	0.5-	0.4+	870304	809	0.1-	0.2-
790830	809	1.0+	2.9-	870227	809	0.1+	0.3-	870305	809	0.1+	0.4-
820222	010	1.4+	0.5+	870227	809	0.2+	0.1-	870305	809	0.2+	0.5-
820227	010	0.3-	0.3+	870227	809	0.2+	0.2-	870305	809	0.2+	0.4-
870221	809	0.7-	0.8-	870227	809	0.5-	0.2-	870305	809	0.5-	0.6-
870221	809	0.4-	0.9-	870227	809	0.5-	0.1+	870305	809	0.4-	0.6-
870221	809	0.4-	0.8-	870227	809	0.1-	0.2+	870305	809	0.3-	0.6-
870222	809	1.3-	0.4-	870228	809	0.6-	0.4+	870306	809	0.4+	0.2-
870222	809	0.9-	0.5-	870228	809	0.4-	0.2+	870306	809	0.5+	0.0
870222	809	1.0-	0.1-	870228	809	0.2+	0.1+	870306	809	0.5+	0.1+
870223	809	0.9-	0.6-	870301	809	0.2+	0.1-	870306	809	0.2-	0.2-
870223	809	0.8-	0.7-	870301	809	0.4+	0.1-	870306	809	0.0	0.1-
870223	809	0.9-	0.7-	870301	809	0.6+	0.2-	870306	809	0.1+	0.2+
870224	809	0.0	0.3+	870302	809	0.2-	0.4-	870307	809	0.2+	0.6-
870224	809	0.0	0.1+	870302	809	0.0	0.2-	870307	809	0.4+	0.2-
870224	809	0.2+	0.1-	870302	809	0.1+	0.2-	870307	809	1.0+	0.4-
870225	809	0.3-	0.1-	870302	809	0.4+	0.5-	870308	809	1.0+	0.3-
870225	809	0.1-	0.1-	870302	809	0.2+	0.1-	870308	809	1.0+	0.2-
870225	809	0.0	0.5-	870302	809	0.3+	0.1-	870308	809	1.2+	0.2-
870225	809	0.3-	0.3-	870303	809	0.5-	0.2+	890708	675	1.0+	0.0
870225	809	0.0	0.2-	870303	809	0.4-	0.3+	890708	675	3.0-	0.6-
870225	809	0.1+	0.1-	870303	809	0.0	0.1-	890801	675	0.4+	2.2-
870226	809	1.0-	0.4+	870304	809	0.1-	0.0	890801	675	0.9+	2.1-

(4211)* 1987 RT = 1935 SQ = 1970 RG = 1975 NL

Discovered 1987 Sept. 12 by H. Debehogne at the European Southern Observatory.

Id. B. G. Marsden (MPC 13585)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Marsden

M	128.25694	(1950.0)	P	Q
n	0.17217598	Peri. 319.20402	+0.95822855	+0.28597259
a	3.2000321	Node 24.17996	-0.25964657	+0.87599856
e	0.1970430	Incl. 0.58878	-0.11992372	+0.38838924
P	5.72	H 12.1	G 0.25	

Residuals in seconds of arc

350921	078	(23.4+	12.4-)X	870917	809	0.2-	0.2-	870926	809	0.6+	0.6+
350928	754	(59.1+	0.4-)	870917	809	0.3-	0.3-	870926	809	0.5+	0.5+
350928	754	(58.8+	0.2-)	870917	809	0.2-	0.3-	870926	809	0.5+	0.3-
351001	754	(57.6+	2.0+)	870918	809	0.4+	0.3-	870927	809	0.1+	0.4+
700909	095	0.7+	1.7-	870918	809	0.5+	0.2-	870927	809	0.1+	0.4+
750711	095	0.6-	1.7-	870918	809	0.6+	0.2-	870927	809	0.1+	0.3+
750713	095	0.9+	0.9-	870918	809	0.8+	0.1-	870929	809	0.6+	0.1+
870826	095	0.1+	0.2+	870918	809	0.7+	0.2-	870929	809	1.3+	0.4+
870912	809	1.6-	0.0	870918	809	0.8+	0.2-	871001	809	0.5+	0.9+
870912	809	1.2-	0.2+	870919	809	0.5-	0.0	871001	809	0.8+	0.8+
870912	809	1.2-	0.2+	870919	809	0.3-	0.0	871001	809	0.7+	0.7+
870914	809	0.1+	0.1+	870919	809	0.3-	0.0	871002	809	0.8+	0.5+
870914	809	0.1+	0.2+	870919	809	0.1-	0.1+	871002	809	0.9+	0.4+
870914	809	0.3+	0.2-	870919	809	0.1-	0.1+	871002	809	1.0+	0.5+
870916	809	0.9-	1.9-	870919	809	0.1+	0.0	881201	054	0.9-	0.5-
870916	809	0.3+	1.5-	870922	095	0.9-	2.1-	881211	399	1.5+	1.2-
870916	809	0.4-	0.8-	870923	809	0.3+	0.9+	881211	399	0.4+	0.6+
870916	809	1.4-	0.2-	870923	809	0.1+	0.8+	881211	399	0.6-	0.3-
870916	809	1.4-	0.0	870923	809	0.2+	0.8+	881211	399	0.1-	0.3+
870916	809	1.6-	0.6+	870924	809	0.3+	0.6+	881212	054	1.3-	0.0
870917	809	0.6-	0.2-	870924	809	0.5+	0.3+	881213	054	1.1+	1.0-
870917	809	0.4-	0.3-	870924	809	0.3+	0.4+				
870917	809	0.3-	0.3-	870925	095	1.4-	0.5+				

(4212)* 1987 SB2 = 1948 WJ = 1978 EB4 = 1982 YD1

Discovered 1987 Sept. 28 by K. Suzuki and T. Urata at Toyota.

Id. T. Urata (MPC 12456)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M	133.27374	(1950.0)	P	Q
n	0.17707809	Peri. 344.80888	+0.99011073	-0.10292323
a	3.1406979	Node 21.79110	+0.13970681	+0.78518404
e	0.2538243	Incl. 14.88001	-0.01275718	+0.61064952
P	5.57	H 11.3	G 0.25	

Residuals in seconds of arc

481122	012	(10.7+	8.7-)	871002	881	1.7-	0.5-	871028	881	1.7+	0.2+
481126	012	0.6-	0.2+	871002	881	2.2-	1.5-	871111	026	0.1+	0.2+
780306	095	2.4+	0.3-	871018	881	0.4-	0.7+	871112	026	0.6-	0.6-
821223	095	1.2+	1.5-	871018	881	0.3+	1.0+	890206	881	2.2-	1.1+
870928	881	0.3+	0.3+	871022	881	0.3-	0.4+	890206	881	2.2-	0.7-
870928	881	0.3+	0.4+	871022	881	0.6+	0.3-	890213	881	0.7+	0.2-
871001	026	0.3+	0.5+	871027	881	0.4+	0.0	890213	881	2.3+	1.1+
871001	881	0.7+	0.4+	871027	881	0.5+	0.2+	890311	801	0.9-	0.7+
871001	881	0.6-	0.9-	871027	026	(11.1-	0.4+)				

(4213)* 1987 ST4 = 1969 UA = 1969 VL = 1973 YH3 = 1980 TY11 = 1982 FK2 = 1984 YQ1 = 1989 CS7

Discovered 1987 Sept. 25 by P. Jensen at Brorfelde.

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Marsden

M 81.86506		(1950.0)	P	Q
n 0.26705996	Peri.	217.96812	-0.35672479	-0.93247300
a 2.3881606	Node	252.99509	+0.87099322	-0.30993003
e 0.0771069	Incl.	3.41327	+0.33781392	-0.18557340
P 3.69	H	13.2	G 0.25	

Residuals in seconds of arc

691016	095	1.8-	0.5-		820327	046	(13.9- | 3.0+)	870920	095	0.8+	0.3-
691105	095	1.7+	0.9-		820327	046	(9.6- | 3.2+)	870925	054	1.8-	0.4+
731225	095	0.0	3.6-		841217	095	1.8-	0.9+	870925	054	0.9-	0.6+
801010	095	0.6+	3.3+		870827	095	0.2+	0.1-	890208	046	1.3+	1.2+
820326	046	0.0	0.8-		870902	095	1.1+	0.3+	890208	046	0.6+	1.3+
820326	046	0.4-	0.7+		870916	095	0.3+	1.0-				

(4214)* 1987 UX4 = 1953 TB1 = 1972 TQ4 = 1972 VP = 1976 YT2 = 1977 AD = 1981 AF1 = 1985 FX

Discovered 1987 Oct. 22 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M 137.64857		(1950.0)	P	Q
n 0.26205453	Peri.	82.88618	-0.11153959	-0.99365471
a 2.4184750	Node	13.54347	+0.88558948	-0.10599206
e 0.1312633	Incl.	3.54127	+0.45087714	-0.03762974
P 3.76	H	12.8	G 0.25	

Residuals in seconds of arc

531008	760	0.5+	0.8+		761216	095	1.2+	2.5+	850321	688	0.3-	0.1+
531008	760	2.0-	0.6+		770113	095	1.1-	1.0+	850321	688	1.3+	0.5+
531010	760	2.9+	2.4-		810101	688	0.3-	1.4-	871022	095	1.2-	0.4+
531010	760	1.2-	0.1-		810101	688	0.3+	1.6-	871027	095	0.0	0.7+
721005	095	0.7+	0.1-		810110	688	1.3-	0.1+	871121	095	0.4-	1.3+
721108	095	1.4+	2.4-		810110	688	1.1-	0.3-				

(4215)* 1987 VE1 = 1987 UH = 1976 YW3 = 1982 KO = 1989 EW8

Discovered 1987 Nov. 14 by S. Ueda and H. Kaneda at Kushiro.

Id. T. Kobayashi (MPC 14353; unpublished)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M 52.89807		(1950.0)	P	Q
n 0.26224824	Peri.	277.25059	-0.95568499	-0.27967639
a 2.4172839	Node	246.54328	+0.29377271	-0.88578073
e 0.0610735	Incl.	5.75005	+0.01907371	-0.37036957
P 3.76	H	12.2	G 0.25	

Residuals in seconds of arc

761218	095	0.5-	4.1+		871115	399	0.9+	1.4-	890302	413	0.4-	0.1-
820521	688	0.8-	0.6-		871120	399	1.6-	1.4+	890302	413	0.4+	0.8-
820521	688	0.1-	0.0		871120	399	1.5-	0.2+	890308	399	0.0	0.1-
820528	688	1.1+	0.9-		871120	399	1.4-	0.9-	890308	399	0.3+	0.6-
820528	688	0.8-	1.2-		871120	399	2.1-	1.3-	890308	399	1.1-	0.5+
871019	887	1.5+	0.5-		871120	399	3.0-	1.8-	890311	399	1.6-	0.7+
871019	887	1.4+	0.1-		871128	399	1.6+	1.4-	890311	399	0.6+	0.7-
871114	399	0.5+	0.7+	Y	871128	399	1.4+	1.8-	890428	399	0.7-	0.1+
871114	399	0.3+	0.3-	Y	890226	399	0.2-	0.7-	890428	399	0.5+	1.5-
871114	399	0.6+	0.9+	Y	890226	399	0.6+	0.3-	890428	399	0.3+	0.8-
871115	399	1.7+	2.3-		890226	399	0.4+	0.5-				
871115	399	2.4+	1.2-		890226	399	0.6-	0.1-				

(4216)* 1988 AF5 = 1974 FC = 1978 LK = 1985 JS = 1986 UO2
Discovered 1988 Jan. 14 by H. Debehogne at the European Southern Observatory.
Id. B. G. Marsden (MPC 13457)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Marsden

M	55.38542	(1950.0)	P	Q
n	0.27257158	Peri. 48.48991	-0.33033930	+0.94340095
a	2.3558574	Node 202.27300	-0.88747550	-0.32109583
e	0.1722744	Incl. 4.46485	-0.32134589	-0.08301873
P	3.62	H 14.0	G 0.25	

Residuals in seconds of arc

740322	805	0.6-	0.0	880115	809	0.2+	0.3-	880123	809	0.0	0.3-
740323	805	0.1-	0.1+	880115	809	0.5+	0.3-	880126	809	0.8-	0.2-
780609	095	0.7+	0.4+	880117	809	0.1+	0.2-	880126	809	0.5-	0.5-
850511	675	(2.7-	7.9+)	880117	809	0.1+	0.2-	890729	675	0.1+	0.2-
850513	675	0.1+	0.2-	880117	809	0.6+	0.4-	890729	675	2.2+	0.4+
861027	010	(1.7+	10.6-)	880119	809	0.8-	0.2+	890731	801	0.5-	0.3+
861027	010	(0.1-	8.0-)	880119	809	0.2-	0.1+	890801	801	0.7+	0.7-
880114	809	0.9+	0.3-	880119	809	0.1+	0.1+	890801	675	2.7-	0.4-
880114	809	1.3+	0.1+	880121	809	1.3-	0.3+	890801	675	0.7-	0.9-
880114	809	1.5+	0.6+	880121	809	1.4-	0.2+	890826	801	0.9+	0.1+
880115	809	0.2+	0.7-	880123	809	0.4-	0.4+	890901	801	0.2-	0.2-

(4217)* 1988 BO2 = 1944 RL = 1951 RY1 = 1970 AA
Discovered 1988 Jan. 24 by C. S. Shoemaker at Palomar.
Id. C. M. Bardwell (MPC 13040)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bardwell

M	296.88736	(1950.0)	P	Q
n	0.27992634	Peri. 348.08080	+0.95809616	+0.28438363
a	2.3144095	Node 354.98627	-0.21977594	+0.65296698
e	0.2121151	Incl. 23.12104	-0.18371251	+0.70196871
P	3.52	H 12.5	G 0.25	

Residuals in seconds of arc

440913	062	0.5-	0.2-	880124	675	0.2-	1.0+	880319	675	0.0	1.5-
440913	062	1.3+	1.0-	880124	675	0.1-	1.1+	890331	474	0.1-	1.4-
440920	062	0.9+	1.5-	880216	675	0.1+	0.3-	890331	474	0.8-	1.5-
440920	062	1.8+	0.2-	880217	675	0.6+	0.0	890401	474	1.9-	0.9-
510905	711	0.2-	0.1-	880317	675	0.3+	0.9-	890401	474	1.7-	1.1-
700104	095	0.4+	2.8-	880318	675	0.2+	1.2-				

(4218)* 1988 BK3 = 1955 MJ = 1979 SX4 = 1985 FM2 = 1986 UC2
Discovered 1988 Jan. 16 by H. Debehogne at the European Southern Observatory.
Id. C. M. Bardwell (MPC 13468)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bardwell

M	84.95197	(1950.0)	P	Q
n	0.29267258	Peri. 36.40430	-0.41447634	+0.90910539
a	2.2467152	Node 209.17602	-0.85381069	-0.40429997
e	0.1452699	Incl. 4.90402	-0.31498679	-0.10034402
P	3.37	H 14.1	G 0.25	

Residuals in seconds of arc

550622 760	0.9-	0.8-	880116 809	0.2+	0.4+	880123 809	0.3+	0.1+
550622 760	1.2+	0.5+	880117 809	0.0	0.5-	880125 809	0.1-	0.4-
790923 095	2.0+	4.7+	880117 809	0.1-	0.3-	880125 809	0.4+	0.2-
850324 688	0.2-	0.6-	880117 809	0.0	0.4-	880127 809	0.3+	0.3+
850324 688	0.7-	0.7+	880119 809	0.7-	0.2-	880127 809	0.2+	0.4+
861027 010	0.2-	2.9-	880119 809	0.0	0.2-	880129 809	1.0+	0.8+
861027 010	2.8-	0.5-	880121 809	0.3-	0.5+	880129 809	1.0+	0.6+
880116 809	0.5-	0.1-	880121 809	0.3+	0.2+	890827 801	0.3-	0.5-
880116 809	0.1+	0.3+	880123 809	0.3-	0.0	890904 801	0.6+	0.0

(4219)* 1988 DB = 1978 SS4 = 1986 VH8

Discovered 1988 Feb. 19 by M. Inoue and O. Muramatsu at the Kobuchizawa Observatory.

Id. S. Nakano (MPC 12946)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M 109.56321		(1950.0)	P	Q
n 0.25424553	Peri.	65.75352	-0.89898282	+0.43662277
a 2.4677462	Node	140.11079	-0.41881246	-0.83390917
e 0.1214522	Incl.	3.08407	-0.12816403	-0.33757377
P 3.88	H	13.0	G 0.25	

Residuals in seconds of arc

780927 095	0.9-	1.2+	880221 386	0.2-	0.7+	880312 386	2.9+	2.0-
781003 095	0.9+	1.1-	880221 386	0.4-	0.4+	890804 386	1.6+	1.4-
861104 675	0.2+	0.5-	880224 386	0.9-	1.1+	890804 386	0.6+	1.4+
861104 675	0.1+	0.2-	880224 386	0.4-	1.9-	890904 801	2.1-	1.1-
880219 386	0.7-	1.9+	880224 386	1.0-	3.1-			
880219 386	0.2+	2.5+	880312 386	0.1+	0.6-			

(4220)* 1988 DN = 1986 RB17

Discovered 1988 Feb. 22 by R. H. McNaught at Siding Spring.

Id. L. I. Chernykh (MPC 14792; corr. MPC 14977)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bardwell

M 166.42079		(1950.0)	P	Q
n 0.20990154	Peri.	231.76807	-0.04434782	-0.99581919
a 2.8040923	Node	220.99354	+0.95037452	-0.01741410
e 0.1934501	Incl.	6.99257	+0.30793108	-0.08967101
P 4.70	H	13.1	G 0.25	

Residuals in seconds of arc

810920 413	0.1-	0.4-	880216 809	0.6-	1.4-	880223 809	1.3+	1.3+
810920 413	0.3-	0.2+	880216 809	0.1-	1.4-	880223 809	1.1+	1.7+
810920 413	0.3+	0.5+	880216 809	0.2-	2.0-	880223 809	0.9+	0.9+
840425 413	0.3-	0.4-	880219 413	1.9-	0.9+	880223 413	1.1-	0.1+
840425 413	0.1-	1.0-	880219 413	(5.4+	2.1-)	880223 413	1.4+	0.7-
860907 095	1.2+	0.0	880221 809	0.8+	1.6+	880225 413	0.3-	0.1-
860911 095	1.0-	0.7-	880221 809	0.5+	1.7+	880225 413	1.7+	1.1-
861005 095	0.4+	1.5-	880221 809	0.5+	1.5+	880310 413	1.4-	0.1+
880213 809	0.2+	0.5-	880222 413	2.0-	0.4+	880310 413	0.4+	1.5-
880215 809	1.5-	1.2-	880222 413	0.1+	1.6-			

(4221)* 1988 EJ = 1954 GD = 1984 JH1

Discovered 1988 Mar. 13 by J. Alu at Palomar.

Id. S. Nakano (MPC 13160)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M 101.57874		(1950.0)	P	Q
n 0.23234278	Peri.	37.46054	-0.71093029	+0.70219941
a 2.6204945	Node	187.51748	-0.69527939	-0.71005579
e 0.1237666	Incl.	17.18474	-0.10566315	-0.05231415
P 4.24	H	12.6	G 0.25	

Residuals in seconds of arc

540402	760	0.2+	1.8-		850819	675	1.9-	2.9+		890827	801	0.4+	1.1-
540402	760	0.3-	0.6-		850819	675	0.1+	3.3+		890903	801	0.4+	1.2+
840504	688	0.3-	0.3+		880313	675	0.9-	0.7+		890906	675	0.4+	2.0-
840504	688	0.2-	0.7-		880315	675	1.7+	0.1+		890906	675	0.3+	0.8-
840602	688	0.8+	1.2+		880407	675	0.4-	1.1+		890908	675	0.5+	2.9-
840602	688	0.8-	0.7-		880407	675	0.2+	2.1+		890908	675	0.1-	1.4+

(4222)* 1988 EK1 = 1988 KL = 1950 TF4 = 1952 HN = 1968 QL1 = 1972 XQ1
= 1979 SL6 = 1983 XC1

Discovered 1988 Mar. 13 by E. F. Helin at Palomar.

Id. S. Nakano (k, MPC 13469), E. F. Helin (d, ibid.), B. G. Marsden (ibid.)
C. M. Bardwell (ibid.)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bardwell

M	225.02811	(1950.0)	P	Q	
n	0.27065134	Peri.	216.80588	+0.44805292	-0.89352694
a	2.3669873	Node	206.61210	+0.83499605	+0.42996112
e	0.2971412	Incl.	3.74968	+0.31942163	+0.12939488
P	3.64	H	12.2	G 0.25	

Residuals in seconds of arc

501008	711	3.6+	2.3-	Y	880218	413	0.7-	1.1-		880511	413	2.1-	1.1+
501009	711	1.9-	1.6+	Y	880218	413	0.7-	0.4-		880517	675	0.5-	1.9-
520416	078	(17.3- | 13.2+)	Y	880313	675	0.2-	0.6+		880520	675	(26.0- | 14.3+)
680828	095	0.3+	0.1-		880315	675	1.3+	1.0-		890603	675	0.3-	0.6+
721201	095	3.2-	3.2-		880410	675	(29.0+	23.5-)		890603	675	0.7-	0.6+
790923	095	0.6+	0.3+		880410	675	(27.3+	22.7-)		890605	675	0.3-	0.6+
831209	704	1.1+	0.9+		880415	054	0.2+	0.8-		890605	675	0.5-	1.1+
831209	704	1.5+	3.7+		880511	413	1.7+	0.1-					

(4223)* 1988 JM = 1948 VA = 1953 TG = 1958 TO = 1961 FA = 1969 XE
= 1980 XF3

Discovered 1988 May 7 by T. Seki at Geisei.

Id. E. Goffin (MPC 13444)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M	343.47610	(1950.0)	P	Q	
n	0.18884038	Peri.	82.92402	+0.97774720	+0.13479967
a	3.0088889	Node	269.23629	-0.18845871	+0.90100242
e	0.1019802	Incl.	9.25106	+0.09216138	+0.41233929
P	5.22	H	11.6	G 0.25	

Residuals in seconds of arc

481101	020	(38.4-	1.4+)	X	610319	839	1.0-	0.9+		880518	372	0.3-	0.2-
481103	020	(42.1+	28.5+)	X	691201	095	1.1-	3.4-		880518	372	1.3+	0.0
531013	062	0.8+	0.9+		801210	095	1.3+	1.1+		880522	372	1.9+	0.3+
531013	062	0.5+	1.3+		880507	372	3.3-	1.0-		880522	372	0.1-	1.1+
531013	062	1.4+	1.9+		880507	372	(5.0-	1.9+)		890803	372	0.1-	0.6+
531013	062	1.2+	0.6+		880508	372	1.4-	1.3+		890803	372	0.3+	1.0+
581013	760	2.7-	0.3-		880508	372	0.5+	1.0+		890827	372	0.5+	0.0
581013	760	1.7-	0.3-		880512	372	2.0+	1.2-		890827	372	0.2+	0.9-
610319	839	0.8-	1.0+		880512	372	1.5+	1.5-		890903	801	0.9-	2.1-

(4224)* 1988 KG = 1950 YB = 1961 AH = 1977 GB1 = 1978 JX2 = 1982 FD1

Discovered 1988 May 19 by E. F. Helin at Palomar.

Id. S. Nakano (MPC 13452)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M	332.00838	(1950.0)	P	Q	
n	0.19772994	Peri.	180.22132	+0.93432426	-0.34867955
a	2.9180166	Node	200.66429	+0.32731768	+0.92144156
e	0.1852166	Incl.	12.08741	+0.14107200	+0.17137099
P	4.98	H	11.1	G 0.25	

Residuals in seconds of arc

501231	711	0.6-	1.8-	Y	820327	046	0.1-	0.7-	890808	657	0.5+ 0.8-
610110	690	(5.9+	7.7-)	Y	880519	675	0.3-	0.0	890826	657	1.9- 0.3+
610110	690	(7.7-	4.7-)	Y	880521	675	1.6-	0.4+	890827	801	1.0- 0.5-
770410	381	1.0+	0.7-		880615	675	0.4-	0.4-	890903	801	0.1- 0.7+
770410	381	1.3+	0.1+		880617	675	0.3-	1.8+	890903	657	0.6+ 0.2-
780509	095	1.2+	0.8-		890804	657	0.9+	0.9-	890905	675	0.6- 1.8-
820323	046	0.7-	2.3-		890805	657	0.6+	2.5+	890905	675	1.8+ 1.6-
820323	046	1.5-	1.8-		890805	657	0.2-	0.5+	890907	675	0.5+ 0.8-
820326	046	0.6-	0.0		890807	657	0.8-	0.8+	890907	675	1.6+ 2.3-
820326	046	0.7-	0.0		890807	657	0.8-	1.6-			
820327	046	1.3+	1.2-		890808	657	0.8+	0.1+			

(4225)* 1989 BN = 1982 BC = 1983 GO2 = 1983 JL

Discovered 1989 Jan. 31 by T. Hioki and N. Kawasato at Okutama.

Id. T. Kobayashi (MPC 14477)

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano

M	246.53772	(1950.0)	P	Q	
n	0.29377346	Peri.	258.12610	+0.76142356	+0.64604707
a	2.2410988	Node	61.60457	-0.56856541	+0.70515813
e	0.1081437	Incl.	3.48373	-0.31139611	+0.29219036
P	3.35	H	13.2	G 0.25	

Residuals in seconds of arc

820116	688	(5.1-	16.4-)	890131	877	1.3+	2.2+	890205	888	(10.5-	5.0-)
820116	688	0.0	0.8-	890131	046	(1.2+	4.0-)	890207	888	0.4-	0.1+
830411	095	0.9+	0.0	890131	046	(1.8+	5.2-)	890207	888	0.5-	0.0
830506	688	0.1+	0.1-	890201	046	(2.3+	4.3-)	890210	888	0.2-	0.1+
830506	688	1.2-	0.7-	890201	046	(2.3+	4.4-)	890210	888	0.1+	0.3-
870827	095	1.2+	0.6+	890203	877	0.8-	0.3+	890213	888	0.4-	0.3+
870902	095	0.5-	1.1-	890203	877	1.1+	0.6+	890213	888	0.0	0.2-
870922	095	0.3-	0.3-	890204	877	1.8+	0.3+	890214	888	(6.0-	3.5-)
890130	046	0.5-	2.5-	890204	877	0.6-	0.3-	890214	888	0.1-	0.7+
890130	046	(0.7+	5.3-)	890204	877	0.2+	2.6-	890214	888	(4.0-	3.7-)
890131	877	1.2-	0.5+	890205	888	(7.1-	5.6-)	890214	888	0.2+	0.8+

(4226)* 1989 RE = 1931 TY2 = 1965 SJ = 1970 SD1 = 1970 WT = 1975 WQ = 1978 JM = 1982 BF12 = 1983 ED2

Discovered 1989 Sept. 1 by E. W. Elst at Haute Provence.

Id. B. G. Marsden, E. Goffin

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Marsden

M	0.96402	(1950.0)	P	Q	
n	0.20344033	Peri.	129.66124	+0.94998600	+0.30827017
a	2.8631538	Node	212.47327	-0.30737148	+0.89468479
e	0.2570247	Incl.	5.33929	-0.05522109	+0.32327794
P	4.84	H	11.5	G 0.25	

Residuals in seconds of arc

311010	690	(34.1-	66.2-)	X	751128	095	0.9+	0.1-	890901	511	1.0+ 1.1+
311011	690	(70.6+	26.8-)	X	751202	095	1.5-	1.6-	890903	511	1.0+ 1.0-
650921	095	0.4-	2.6+		780505	095	1.3-	0.6-	890903	511	0.5- 0.3-
650923	095	0.3-	0.2-		820120	095	0.5+	1.7-	890907	511	0.7- 1.9-
650927	095	0.7+	1.9-		830311	381	0.6-	0.7-	890907	511	0.3- 2.6-
700930	095	1.9-	1.6+		830311	381	0.2+	1.0-			
701126	095	2.2+	1.0-		890901	511	0.6+	1.3+			

1969 LB = 1976 SP2 = 1984 DW1 = 1987 RW3
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Marsden
M 103.82755 (1950.0) P Q
n 0.17984867 Peri. 76.06177 +0.74288896 -0.66770487
a 3.1083656 Node 325.79065 +0.57661737 +0.67455459
e 0.0770605 Incl. 4.87866 +0.34004176 +0.31487507
P 5.48 H 12.0 G 0.25
Residuals in seconds of arc

690608	808	1.6-	0.5-	760929	095	0.1+	2.8+	870923	095	0.2+	2.4-
690609	808	0.9+	0.2-	840226	095	0.0	0.0	871023	095	2.6+	1.6+
690617	808	0.7+	0.7+	870903	095	1.4-	0.9-				
760924	095	1.4-	0.4-	870917	095	0.2-	0.8-				

1972 HL = 5059 T-2
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi
M 43.71617 (1950.0) P Q
n 0.18086392 Peri. 57.85142 -0.00529565 +0.98764567
a 3.0967163 Node 212.96228 -0.98672929 -0.03057821
e 0.2536049 Incl. 16.72915 -0.16228760 +0.15369128
P 5.45 H 12.5 G 0.25
Residuals in seconds of arc

720418	095	1.4-	0.1+	730924	675	1.0-	0.9+	730930	675	0.2-	0.9+
720509	095	0.3+	0.5-	730924	675	0.1-	1.4+	730930	675	0.5-	0.9+
720512	095	1.6+	0.2+	730925	675	0.6-	0.3-	731004	675	0.8-	0.1-
730919	675	(6.5+	2.2+)	730925	675	0.2+	1.0-	731004	675	0.3-	1.7-
730920	675	0.6+	0.1-	730929	675	1.0+	0.1+	731005	675	1.8+	0.9-
730920	675	1.5+	0.6+	730929	675	0.5+	0.9+	731005	675	0.6-	1.4-

1974 VS = 1977 HC1 = 1978 SA = 1979 VN2 = 1979 YM1 = 1987 KL4
Id. A. Lowe (k, d), N. S. Chernykh (d), C. M. Bardwell
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Bardwell
M 70.84248 (1950.0) P Q
n 0.20200385 Peri. 298.95398 +0.98063951 +0.19244575
a 2.8767170 Node 49.97467 -0.15913876 +0.89093608
e 0.0775728 Incl. 2.70993 -0.11410966 +0.41133627
P 4.88 H 12.0 G 0.25
Residuals in seconds of arc

741112	095	1.3+	0.5+	780927	809	1.0-	0.1+	791223	095	3.0-	1.2+
741117	095	0.8+	3.8+	780928	809	0.4-	0.6+	870530	413	2.0+	0.3+
770424	675	0.1+	1.6+	780929	809	0.2-	0.0	870530	413	0.2+	0.1-
770425	675	0.3-	1.6+	791114	095	0.3-	1.7-				

1976 GX3 = 1987 QB10
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Filippova
M 255.55202 (1950.0) P Q
n 0.28344938 Peri. 97.41540 +0.24445979 +0.96963066
a 2.2951921 Node 186.74844 -0.91280160 +0.22751930
e 0.1324024 Incl. 3.64481 -0.32715846 +0.08972938
P 3.48 H 12.8 G 0.25
Residuals in seconds of arc

760402	095	0.0	0.0	760502	095	0.1+	0.6-	870901	095	2.9-	0.4-
760405	095	0.3-	0.2+	870826	095	2.7+	2.2+	870925	095	0.2+	2.1-

1976 UK2 = 1978 EO6 = 1986 GY2 = 1987 SY11 = 1988 YL
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 213.65471 (1950.0) P Q
n 0.26317584 Peri. 309.35617 +0.89085522 +0.45282948
a 2.4116053 Node 23.78539 -0.38410287 +0.79355020
e 0.0787508 Incl. 5.17320 -0.24257362 +0.40647699
P 3.75 H 13.5 G 0.25
Residuals in seconds of arc

761024	381	1.0+	0.1-	860404	095	0.5-	0.4-	881217	888	2.1-	0.3-
761024	381	0.2-	0.7-	870827	095	1.1+	1.9+	881217	888	2.4-	0.9-
761026	095	1.8+	2.0-	870902	095	0.1+	0.9+	890129	888	2.5+	3.2+
761118	381	0.3-	1.1-	870926	809	1.8-	0.6+	890129	888	3.1+	3.6+
761118	381	0.1-	1.0-	870926	809	1.5-	0.7+				
780306	095	0.7-	1.6-	870926	809	0.5-	1.1+				

1977 RD2 = 1982 SP5 = 1987 RS2
Id. I. A. Filippova (k), S. Nakano
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 117.95045 (1950.0) P Q
n 0.19547835 Peri. 338.01247 +0.88265760 -0.46805940
a 2.9403869 Node 49.96809 +0.43911826 +0.78869126
e 0.1905941 Incl. 3.20797 +0.16760284 +0.39860569
P 5.04 H 12.5 G 0.25
Residuals in seconds of arc

770908	095	0.0	0.5-	820916	095	0.5-	1.7+	870925	095	0.9-	1.0-
770910	095	0.9-	0.2-	870901	095	1.0-	0.7-				
770918	095	1.0+	0.0	870922	095	2.1+	0.7+				

1977 RD3 = 1987 UA5
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 239.71809 (1950.0) P Q
n 0.30009173 Peri. 294.89195 +0.99541056 +0.07530675
a 2.2095351 Node 60.83754 -0.04298389 +0.90313469
e 0.1857199 Incl. 3.87729 -0.08549977 +0.42270158
P 3.28 H 14.0 G 0.25
Residuals in seconds of arc

770910	095	0.3-	0.1+	770922	095	1.0-	0.1+	871027	095	0.5-	0.9-
770918	095	1.4+	0.2-	871022	095	0.3+	0.9+	871121	095	0.2+	0.0

1978 RX5 = 1970 GZ = 1985 SY6
Id. H. Oishi, L. D. Schmadel, W. Landgraf
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Oishi
M 89.31882 (1950.0) P Q
n 0.28104700 Peri. 293.46625 +0.81618975 +0.57529465
a 2.3082576 Node 31.49029 -0.48557156 +0.73322747
e 0.1233168 Incl. 5.88696 -0.31313665 +0.36251007
P 3.51 H 14.2 G 0.25
Residuals in seconds of arc

700410	805	0.3+	1.1+	780927	095	1.7-	0.3-	781101	049	0.7+	0.9+
700410	805	0.6+	0.5+	781003	095	0.3-	0.9+	850922	095	1.3+	2.4-
700410	805	0.2+	0.6+	781007	095	0.9-	1.8+				
780913	095	0.4-	1.0+	781101	049	0.3+	0.1+				

1981 EA7 = 1972 TO6
Id. L. D. Schmadel (MPC 10380)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M	6.76596	(1950.0)	P	Q	
n	0.28996097	Peri.	89.28919	+0.99485356	-0.02200350
a	2.2607005	Node	271.96814	-0.01939638	+0.91672566
e	0.2160798	Incl.	5.67949	+0.09944933	+0.39891091
P	3.40	H	15.2	G 0.25	

Residuals in seconds of arc

721006	095	0.7-	1.9+	810209	413	0.5-	0.4+	810409	413	0.7-	1.8+
791122	675	0.8+	0.2-	810306	413	1.5+	1.0-	810409	413	0.5+	1.6+
791124	675	0.9-	0.5-	810308	413	0.1-	0.2-	810501	413	1.1-	0.8-
791125	675	0.5+	0.1-	810308	413	1.1+	0.4+	810503	413	2.2-	1.0+
791126	675	0.9-	0.3+	810312	413	1.0+	0.7-	890827	688	0.0-	0.3+
791127	675	0.3+	0.1+	810312	413	1.4+	0.5+	890827	688	0.1-	0.1+

1981 EK8
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M	42.64133	(1950.0)	P	Q	
n	0.27115592	Peri.	353.48970	+0.10431933	+0.99031630
a	2.3640500	Node	282.47012	-0.90814681	+0.05730336
e	0.1422641	Incl.	5.38319	-0.40544648	+0.12645137
P	3.63	H	15.3	G 0.25	

Residuals in seconds of arc

780707	675	0.1+	0.4-	810307	413	1.7+	0.1+	810407	413	0.4+	0.9-
780708	675	0.4-	0.3+	810311	413	0.4-	0.5+	810407	413	(4.8+	2.5-)
780709	675	0.2+	0.3+	810311	413	0.6+	1.0-	810410	413	1.2-	1.4+
810202	413	0.5-	0.5+	810315	413	0.2+	0.2-	810429	413	0.1+	1.2-
810214	413	0.4-	0.0-	810315	413	1.7-	1.4+	890827	688	0.0+	0.0-
810301	413	0.4+	0.3+	810405	413	1.9-	1.3+	890827	688	0.0-	0.1+
810301	413	1.5+	0.9-	810406	413	0.7-	0.2+	890827	688	0.0-	0.0+
810307	413	0.3+	0.3+	810406	413	1.5+	1.6-				

1981 EV8
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M	0.91432	(1950.0)	P	Q	
n	0.28436701	Peri.	134.48387	+0.96989150	+0.23818204
a	2.2902518	Node	211.83816	-0.24168969	+0.91572487
e	0.1943339	Incl.	5.52520	-0.02994270	+0.32360049
P	3.47	H	15.6	G 0.25	

Residuals in seconds of arc

780509	675	1.4-	0.7+	810307	413	1.0+	0.1-	810412	413	1.9+	1.6-
780510	675	1.2+	1.2-	810311	413	0.1+	1.2-	810430	413	1.0+	2.1+
810209	413	0.7-	0.3+	810315	413	2.1-	0.7+	810502	413	0.2-	0.1-
810213	413	2.0+	0.5-	810315	413	0.7-	0.1-	890827	688	0.2-	0.1+
810301	413	(3.3-	2.4+)	810406	413	1.5+	1.3-	890827	688	0.0+	0.1+
810301	413	1.4-	0.5+	810412	413	1.9-	2.1+	890827	688	0.0+	0.1+

1981 EE14
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Bowell

M	28.74131	(1950.0)	P	Q	
n	0.27362404	Peri.	85.37809	+0.45251411	+0.88984976
a	2.3498125	Node	211.73473	-0.85578331	+0.41495039
e	0.1099269	Incl.	6.36321	-0.25073074	+0.18969337
P	3.60	H	15.5	G 0.25	

Residuals in seconds of arc

780705	675	0.3+	0.3+	810308	413	0.3-	1.0+	810501	413	1.4+	1.1-
780706	675	0.5-	0.7+	810308	413	0.9+	0.0-	810503	413	0.9-	1.1-
810212	413	0.7-	0.1+	810312	413	1.6-	0.8+	890827	688	0.2+	0.4-
810212	413	0.6+	0.1-	810312	413	1.1+	1.0-	890827	688	0.0+	0.4-
810301	413	0.4-	0.1-	810408	413	1.6-	1.1+	890827	688	0.1+	0.3-
810306	413	(4.9+	2.8-)	810409	413	0.7-	0.1+				
810306	413	1.8+	0.2-	810409	413	0.2+	0.5-				

1981 EP19 = 1989 RF1

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Nakano	
M 335.26873		(1950.0)		P	Q
n 0.29274667	Peri.	220.11102		+0.90310275	-0.42921535
a 2.2463406	Node	165.28958		+0.40626172	+0.84386286
e 0.1086252	Incl.	3.02524		+0.13912882	+0.32197774
P 3.37	H	15.0	G	0.25	

Residuals in seconds of arc

810202	413	0.3+	2.0-	810311	413	0.9-	1.1+	810502	413	0.3+	0.5+
810213	413	0.5-	0.4+	810311	413	0.4-	0.0	810503	413	0.3-	0.0
810302	413	1.2-	0.3-	810316	413	2.7+	1.2-	890903	511	0.5-	0.7-
810303	413	1.7-	0.8+	810329	413	1.1-	0.5+	890903	511	0.4-	1.0+
810303	413	0.8+	1.3-	810408	413	0.9+	0.3-	890907	511	1.3-	2.4-
810307	413	1.3-	0.8+	810408	413	0.5+	0.9-	890907	511	3.0+	0.0
810307	413	1.1+	0.9-	810411	413	(5.2+	2.8-)				

1981 EX28

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Bowell	
M 73.37973		(1950.0)		P	Q
n 0.27707198	Peri.	320.33392		-0.21041421	+0.97273124
a 2.3302775	Node	297.31834		-0.86669852	-0.23178377
e 0.0963482	Incl.	6.30478		-0.45228258	-0.00837932
P 3.56	H	14.7	G	0.25	

Residuals in seconds of arc

810202	413	0.7-	0.6+	810311	413	0.6+	0.5-	880220	413	1.5-	0.2+
810214	413	1.1+	0.1-	810315	413	1.7-	0.5+	880220	413	2.4+	0.4-
810301	413	1.2+	1.0+	810315	413	0.3+	0.6+	880313	413	0.1-	0.8-
810307	413	0.5-	0.1-	810429	413	0.6-	1.1-	880313	413	1.1-	0.2-
810307	413	2.2+	0.1-	821104	413	0.3+	0.1+	890827	688	0.3-	0.6+
810311	413	1.2-	1.1+	840108	675	0.1-	0.3+	890827	688	0.3-	0.4+

1981 GN1 = 1981 GP1 = 1982 SE5

Id. K. Hurukawa (d, MPC 13604), S. Nakano (ibid.); 1981 GN1 = 1950 QG1 (MPC 13604) is invalid

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Nakano	
M 28.25307		(1950.0)		P	Q
n 0.27792044	Peri.	129.46906		+0.60116593	+0.79908793
a 2.3255370	Node	177.44808		-0.77560668	+0.58574271
e 0.1280733	Incl.	9.84895		-0.19244171	+0.13551368
P 3.55	H	13.5	G	0.25	

Residuals in seconds of arc

810209	413	1.4-	0.2+	810307	413	0.4+	0.2-	810329	413	0.5+	0.3+
810213	413	0.3+	1.2-	810307	413	0.7-	0.7+	810329	413	1.2+	0.3-
810302	413	2.1-	1.5+	810311	413	0.3-	0.4+	810401	801	1.9+	1.9+
810302	413	0.6-	0.5-	810311	413	0.0	0.5+	810407	413	1.9+	0.7-
810303	413	1.4-	0.8+	810316	413	0.4+	0.9-	810407	413	0.8-	0.6+
810303	413	0.4+	0.7-	810316	413	0.2-	0.0	810407	801	1.2-	1.9-

810408	413	0.6-	1.2+	810426	413	0.2-	1.6-	890901	511	1.2+	0.6+
810408	413	1.6+	0.5-	810502	413	0.0	0.3-	890901	511	1.1+	0.1+
810411	413	0.9-	0.9+	810503	413	0.3-	0.4-	890903	511	2.2-	0.2+
810411	413	1.4+	1.2-	820916	095	0.4+	1.6-	890903	511	0.3-	0.0

1981 QE3 = 1981 TO = 1970 QJ1 = 1987 UO4 = 1989 AY8
Id. T. Urata (d, MPC 6880), C. M. Bardwell

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Bardwell	
M 168.01216		(1950.0)		P	Q
n 0.17741181	Peri.	264.09283	+0.90773483		+0.41758472
a 3.1367643	Node	71.21935	-0.36598935		+0.83536010
e 0.1830392	Incl.	2.45189	-0.20510796		+0.35748638
P 5.56	H	12.5	G	0.25	

Residuals in seconds of arc

700831	095	0.7+	1.4-	810902	809	0.3-	1.7+	810918	809	0.2+	0.4-
810824	809	1.3-	0.1-	810902	809	0.3-	1.8+	810918	809	0.4+	0.6-
810824	809	0.6-	0.3+	810902	809	0.9-	2.0+	810918	809	0.3+	0.5-
810824	809	0.3-	0.0	810903	809	0.3-	1.6+	810920	809	1.6+	0.9-
810825	809	0.1-	0.3+	810903	809	0.3-	1.4+	810920	809	1.3+	0.9-
810825	809	0.4-	0.0	810903	809	0.4+	1.1+	810920	809	1.5+	0.9-
810825	809	0.0	0.1+	810904	809	0.5-	0.6+	810921	809	0.5+	0.8-
810826	809	1.0-	0.1+	810904	809	1.0-	0.1+	810921	809	0.6+	1.1-
810826	809	0.6-	0.1+	810904	809	1.1-	0.1+	810921	809	0.1+	0.9-
810826	809	0.1-	0.3+	810905	809	0.1+	1.0+	810926	688	1.0+	2.1-
810827	809	0.3-	0.2+	810905	809	0.4-	0.3+	810926	688	0.1-	0.6+
810827	809	0.4-	0.3-	810905	809	0.5-	0.4+	811004	688	(0.5+	5.1-)
810827	809	0.3-	0.1-	810905	095	0.6-	0.4-	811004	688	(3.2+	4.7-)
810828	809	0.6-	0.2+	810906	809	0.4+	1.7+	871022	095	0.9-	1.8-
810828	809	0.1-	0.3-	810906	809	0.5+	1.1+	871027	095	2.1+	1.1-
810828	809	0.1+	0.0	810906	809	0.0	0.3+	890104	877	0.1+	2.9+
810831	809	0.1+	1.1+	810907	809	0.3+	0.9-	890104	877	0.6+	2.6+
810831	809	0.3+	0.2+	810907	809	0.2+	0.8-				
810831	809	0.0	0.2-	810907	809	0.1+	0.8-				

1982 FG3 = 1936 TE = 1985 AH = 1987 SW17

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)		Nakano	
M 174.94443		(1950.0)		P	Q
n 0.28952966	Peri.	121.96878	+0.43810726		-0.89855633
a 2.2629495	Node	302.02703	+0.81415133		+0.40873274
e 0.1506784	Incl.	1.73457	+0.38107695		+0.15979382
P 3.40	H	13.5	G	0.25	

Residuals in seconds of arc

361013	053	4.4-	14.7+ X	820327	809	1.2-	1.8+	820331	809	0.8+	0.0
361014	053	1.3+	5.7- X	820328	809	0.5-	0.4+	820331	809	0.6+	0.1-
820321	809	2.5-	0.8-	820328	809	0.1+	0.5+	820331	809	0.6+	0.1+
820321	809	1.9-	0.8-	820328	809	0.3+	0.3+	820401	809	0.7+	0.6+
820321	809	1.7-	1.2-	820329	809	0.6+	0.1-	820401	809	1.2+	0.6+
820324	809	1.4+	0.6-	820329	809	0.4+	0.2-	820401	809	0.9+	0.6+
820324	809	1.7+	0.6-	820329	809	0.6+	0.2-	850111	046	2.1-	1.1-
820324	809	2.1+	0.4-	820330	809	0.3-	0.0	850111	046	1.4+	2.0-
820326	809	0.8+	0.0	820330	809	0.3-	0.2+	870918	095	0.7+	3.1-
820326	809	1.3+	0.0	820330	809	0.4+	0.1-	870920	095	0.1+	1.5-
820326	809	1.6+	0.0	820331	809	0.9-	0.4-	871002	095	1.5+	0.9-
820327	809	2.1-	2.0+	820331	809	0.6-	0.3+				
820327	809	1.7-	1.6+	820331	809	0.3-	0.7+				

1982 SG4 = 1982 SP4 = 1987 RS3
Id. S. Nakano (d, MPC 13582), D. W. E. Green (d), B. G. Marsden
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Marsden

M	60.17252	(1950.0)	P	Q
n	0.18970024	Peri. 246.12554	-0.02518105	-0.99706663
a	2.9997955	Node 205.63605	+0.96715586	-0.00600493
e	0.0821525	Incl. 9.61673	+0.25293371	-0.07630253
P	5.20	H 12.0	G 0.25	

Residuals in seconds of arc

820920	095	2.8-	0.8+	820928	095	1.9+	0.4+	870926	095	0.7+	1.6+
820922	095	2.5+	1.2-	870902	095	0.8-	0.4+				
820926	095	1.6-	0.1-	870917	095	0.1+	2.0-				

1983 BM = A918 EM = 1972 TS5 = 1989QA
Id. T. Furuta (k, MPC 15065), K. Ichikawa (ibid.), S. Nakano
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Ichikawa

M	157.90029	(1950.0)	P	Q
n	0.22753596	Peri. 211.51856	-0.99231099	+0.08463083
a	2.6572773	Node 332.89324	-0.02087526	-0.83367765
e	0.1017135	Incl. 11.43219	-0.12199639	-0.54572814
P	4.33	H 12.2	G 0.25	

Residuals in seconds of arc

180308	024	1.6+	2.5+	830210	095	1.6+	1.3+	830305	330	1.9-	1.2+
721006	095	0.1-	0.4-	830211	688	0.2+	2.1-	830305	095	0.2-	2.0+
830115	095	1.1+	2.9+	830211	688	0.1+	1.3-	830315	095	1.0-	1.8+
830122	688	0.5+	2.2-	830218	330	0.6+	1.4-	890822	403	1.9-	0.7+
830122	688	0.4+	1.3-	830219	688	1.3+	1.7-	890822	403	0.6+	0.9+
830208	330	3.2-	1.6+	830219	688	0.3+	0.7-	890828	403	0.2-	1.2+

1984 SR2 = 1989 CF8
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano

M	167.75473	(1950.0)	P	Q
n	0.29685287	Peri. 66.28997	+0.92457170	-0.37633088
a	2.2255776	Node 315.75340	+0.31105484	+0.83576224
e	0.1551563	Incl. 4.89317	+0.22002739	+0.39984564
P	3.32	H 14.0	G 0.25	

Residuals in seconds of arc

840925	688	0.7-	0.9+	890209	809	0.0	0.5-	890228	809	0.0	0.2+
840925	688	2.6+	0.6+	890209	809	0.1+	0.4-	890228	809	0.6-	0.3+
840928	688	2.7-	0.6+	890209	809	0.2+	0.4-	890228	809	1.4-	0.6+
840928	688	0.1+	0.4+	890211	809	0.4-	0.0	890301	809	0.5+	0.3+
841026	688	0.0	2.2-	890211	809	0.1+	0.1-	890301	809	0.4+	0.4+
841026	688	0.3+	0.2+	890211	809	0.3-	0.0	890301	809	0.4+	0.6+
890208	809	0.6-	0.6-	890212	809	1.4-	0.4+	890302	809	1.8+	0.3+
890208	809	0.1-	0.6-	890212	809	1.0-	0.4+	890302	809	1.7+	0.3+
890208	809	0.2+	0.6-	890212	809	0.6-	0.3+	890302	809	1.6+	0.3+

1985 TY1 = 1951 WZ1 = 1981 UB9 = 1989 RA2
Id. S. Nakano, T. Kobayashi
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 342.41768 (1950.0) P Q
n 0.22921476 Peri. 114.96080 +0.99018465 -0.05280473
a 2.6442866 Node 248.28540 +0.00470665 +0.93795610
e 0.0859529 Incl. 8.00681 +0.13968613 +0.34270981
P 4.30 H 13.5 G 0.25
Residuals in seconds of arc

511129	711(21.3+	13.9+)Y	850921 095	0.3-	2.1+	890901 511	1.5-	1.5+
511129	711	0.1- 5.4+ Y	851015 688	0.3-	4.0-	890903 511	0.3-	1.6+
811030	381	0.8+ 1.5-	851015 688	0.6-	0.8-	890903 511	2.1+	1.2-
811030	381	0.0 2.6-	851018 095	0.6+	0.7+	890905 511	0.5-	1.2-
850919	095	0.7+ 0.1+	890901 511	0.2+	1.1+	890905 511	0.7-	0.6+

1985 UV4 = 1931 RO = 1958 TH = 1972 YO1 = 1989 RO1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 291.09469 (1950.0) P Q
n 0.22060443 Peri. 261.55453 +0.13857081 -0.99035183
a 2.7126521 Node 180.48504 +0.95457673 +0.13388212
e 0.2123568 Incl. 8.00819 +0.26378287 +0.03576083
P 4.47 H 13.0 G 0.25
Residuals in seconds of arc (or two decimals in units of degrees)

310915	024(0.04-	0.08-)X	851109 095	1.7+	0.9-	890905 511	0.8-	0.4+
581009	024	0.6+ 2.8-	851111 095	0.7+	1.1-	890906 511	0.1+	0.5+
721230	095	0.2+ 0.8+	851120 095	2.9-	2.9+	890906 511	0.8+	0.8+
851022	095	0.3+ 0.2+	890905 511	0.8-	0.9+			

1986 RP1 = 1977 QT3 = 1977 RD9 = 1985 JR1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Oishi
M 285.57597 (1950.0) P Q
n 0.21625009 Peri. 110.32692 +0.43566041 +0.90007378
a 2.7489450 Node 185.52128 -0.85432292 +0.41061386
e 0.0159843 Incl. 4.88728 -0.28342963 +0.14581990
P 4.56 H 12.8 G 0.25
Residuals in seconds of arc

770823	095	3.0- 2.1+	860829 095	1.7+	2.3+	860905 046	0.5-	1.9-
770909	095	2.0+ 0.6+	860904 046	1.1-	2.6-	860905 046	0.1+	0.3-
850514	675	0.1+ 0.3+	860904 046	0.6+	0.1-			

1986 TO3 = 1964 VS1 = 1983 VZ3 = 1989 QJ
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi
M 331.35642 (1950.0) P Q
n 0.31065659 Peri. 52.35091 +0.89924788 -0.43735381
a 2.1591476 Node 333.58098 +0.39494673 +0.82024219
e 0.1066974 Incl. 1.11452 +0.18807003 +0.36867925
P 3.17 H 13.7 G 0.25
Residuals in seconds of arc

641109	330	0.1+ 2.1+	861009 046	1.5-	1.8-	890829 400	0.9-	4.7+
641127	330	0.8- 3.0+	861009 046	1.5-	2.9-	890907 400	0.2-	2.4-
831108	381	0.9- 2.9+	861010 046	2.9+	2.5-	890907 400	1.6+	1.5-
861004	046	2.4- 1.0-	861010 046	3.9+	2.5-	890907 400	0.9+	1.0-
861004	046	1.3- 0.9-	861104 095	3.0+	0.1-	890923 400	4.9-	0.0
861005	046	1.2+ 0.8+	890829 400	0.5-	4.1+	890923 400	(2.9-	6.7-)
861005	046	0.9+ 0.2+	890829 400	0.2+	3.4+			

1987 CJ = 1966 CZ
Id. L. D. Schmadel
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Bardwell
M 196.28318 (1950.0) P Q
n 0.18852340 Peri. 346.43056 -0.79108888 -0.60709822
a 3.0122666 Node 155.70598 +0.57682267 -0.78112436
e 0.0483139 Incl. 10.48947 +0.20360255 -0.14586463
P 5.23 H 13.0 G 0.25
Residuals in seconds of arc

660214	330	0.4-	2.0-	870227	809	0.2+	0.1-	870304	399	1.7+	1.9-
870202	809	1.2-	0.2+	870227	809	0.4+	0.4-	870305	809	0.3-	0.7-
870202	809	0.5-	1.0+	870227	809	0.4+	0.1-	870305	809	0.6-	0.7-
870202	809	0.8+	0.5+	870227	809	0.5+	0.1-	870305	809	0.7-	0.7-
870202	809	0.3-	0.2-	870227	809	0.4+	0.2-	870306	809	0.8-	1.4-
870202	809	0.7-	1.1-	870301	809	0.7-	0.1+	870306	809	0.8-	1.2-
870204	809	1.2+	0.6-	870301	809	0.4-	0.0	870306	809	0.4-	1.0-
870204	809	1.1+	1.0-	870301	809	0.1-	0.1+	870308	809	0.2-	0.8-
870205	809	1.4-	0.5+	870301	809	0.4-	0.2+	870308	809	0.1-	0.8-
870205	809	0.8+	1.2-	870301	809	0.3-	0.3+	870308	809	0.0	0.8-
870223	054	1.8+	0.1-	870301	809	0.3-	0.5+	870330	054	0.2-	1.2+
870224	809	0.2+	0.5+	870302	054	(4.3+	2.9-)	870424	033	0.2-	1.0+
870224	809	0.2+	0.4+	870303	688	1.5+	0.6+	870424	033	0.1-	1.5+
870224	809	0.3+	0.5+	870303	809	0.8-	0.3-	870427	033	0.3-	0.9+
870224	054	0.3-	1.4+	870303	688	0.4+	0.3-	870427	033	1.2-	0.4+
870225	809	0.0	0.8+	870303	809	0.7-	0.3-	870429	033	0.7+	0.9+
870225	809	0.0	0.7+	870303	809	0.9-	0.3-	870429	033	0.8-	1.0+
870225	809	0.0	0.6+	870304	809	0.3-	0.7-	890902	809	0.7+	1.5-
870226	809	0.1-	0.7+	870304	809	0.2-	0.7-	890902	809	0.2+	2.6-
870226	809	0.1-	0.3+	870304	809	0.4-	0.2-	890904	809	0.2+	2.3-
870226	809	0.1+	0.3+	870304	399	1.5+	1.3-	890904	809	(1.7+	5.4-)
870227	809	0.0	0.2-	870304	399	1.0+	1.5-				

1987 PL = 1981 GT1 = 1982 RP
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Marsden
M 160.90037 (1950.0) P Q
n 0.19018564 Peri. 27.65437 +0.77229370 +0.61870484
a 2.9946893 Node 293.38490 -0.60796303 +0.65404544
e 0.0971591 Incl. 9.03299 -0.18423732 +0.43523428
P 5.18 H 12.5 G 0.25
Residuals in seconds of arc

810408	413	0.9+	0.7-	870806	010	1.9-	2.5-	870902	095	1.5-	4.2+
810408	413	0.8-	0.1-	870806	010	2.2+	1.3-	870916	095	1.3-	1.1+
820915	688	2.6+	2.0-	870806	010	1.4+	0.7-	870920	095	0.5-	1.2+
820915	688	0.8-	1.7-	870827	095	0.1-	1.0+				

1987 QL = 1953 QL = 1970 QL
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 250.20605 (1950.0) P Q
n 0.29070932 Peri. 141.83835 +0.49745050 +0.86613460
a 2.2568236 Node 157.86519 -0.82417107 +0.48932169
e 0.1986842 Incl. 7.39816 -0.27071210 +0.10185842
P 3.39 H 13.5 G 0.25
Residuals in seconds of arc

530816	024(47.6-	0.3+)		700831	095	2.0-	8.4+	870901	095	0.1-	1.3-
700828	095	1.2+	3.8-	870824	675	1.2+	1.2+	870922	095	1.0+	0.7-
700829	095	1.0+	5.0-	870826	675	1.4-	1.2+	870925	095	0.8-	0.1+

1987 QL1 = 1965 QE = 1976 QL = 1980 VA2
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
M 213.42695 (1950.0) P Q
n 0.26914604 Peri. 16.68606 +0.77762812 +0.62567205
a 2.3758046 Node 304.41871 -0.58504602 +0.68404875
e 0.2445361 Incl. 4.30186 -0.23025130 +0.37498241
P 3.66 H 13.5 G 0.25
Residuals in seconds of arc (or two decimals in units of degrees)

650827	330	1.6-	0.8-	760927	675	(0.11-	0.02+)	
760826	095	1.1-	1.6-	801106	330	0.5-	0.2+	
760827	675	1.6+	0.3-	801110	330	0.3+	0.4+	
760828	675	1.4+	1.0+	870822	046	3.3-	0.3+	
760830	675	1.0+	3.2+	870822	046	3.8-	0.0	
870826	095	2.3+	0.9-					
870901	095	1.9+	0.4+					
870922	095	0.8+	0.2+					
870925	095	1.1+	1.8-					

1987 QO9 = 1950 NT1 = 1954 JM = 1962 EG = 1978 RA1 = 1979 YL7
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 182.08296 (1950.0) P Q
n 0.21443438 Peri. 182.20799 +0.71027904 +0.69964896
a 2.7644408 Node 133.06253 -0.64416702 +0.69039147
e 0.0923850 Incl. 6.08344 -0.28381778 +0.18398629
P 4.60 H 12.5 G 0.25
Residuals in seconds of arc

500714	760	(65.7+	21.9+)X	620309	033	0.6-	0.4+	
540510	760	1.8-	1.2+	620309	033	0.2-	0.3+	
540510	760	3.2+	0.4-	780901	095	0.2+	0.7+	
620308	033	1.3-	0.6+	780907	095	1.4-	3.1+	
620309	033	1.0-	0.2-	791223	095	2.8+	0.2+	
870821	809	2.6-	0.9+					
870821	809	1.6-	1.6+					
870826	095	0.0	1.2-					
870922	095	0.7-	2.9-					
870925	095	4.8+	1.7-					

1987 QU10 = 1977 QB5 = 1982 QF2 = 1982 RB3
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 162.64845 (1950.0) P Q
n 0.20072383 Peri. 233.05103 +0.86148091 +0.50405829
a 2.8889340 Node 96.60422 -0.44398278 +0.80642236
e 0.2253014 Incl. 3.54651 -0.24643444 +0.30920579
P 4.91 H 12.5 G 0.25
Residuals in seconds of arc (or two decimals in units of degrees)

770822	095	1.8-	0.6+	820816	095	1.5+	1.9-	
770907	095	1.0+	2.4+	820913	095	0.5-	0.9-	
770912	095	(0.17+	0.00+)	870827	095	0.7+	0.7-	
870902	095	0.4-	1.1-					
870922	095	0.2-	1.8+					

1987 QW10 = 1980 TJ1 = 1984 YR2 = 1984 YK3
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 229.87091 (1950.0) P Q
n 0.28071652 Peri. 212.98140 +0.81166169 +0.57900982
a 2.3100689 Node 111.44861 -0.51634414 +0.77294728
e 0.1456869 Incl. 4.75506 -0.27311907 +0.25942268
P 3.51 H 13.5 G 0.25
Residuals in seconds of arc

801005	809	0.1+	0.4-	841227	095	12.0-	1.8+	
801005	809	0.1+	0.2-	870827	095	1.6+	0.3-	
841223	095	11.7+	1.4-	870902	095	1.5-	0.2+	
870903	095	0.5-	2.6+					
870922	095	0.2+	1.9-					

1987 QQ11 = 1969 EN = 1971 QJ2 = 1974 CP = 1984 BE1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Marsden
M 39.43056 (1950.0) P Q
n 0.18894425 Peri. 135.80008 -0.04168198 -0.99165539
a 3.0077920 Node 316.15603 +0.86084062 +0.02633398
e 0.0731495 Incl. 10.14341 +0.50716471 -0.12619869
P 5.22 H 12.0 G 0.25

Residuals in seconds of arc

690312	095	0.7+	1.4-	840124	381	0.7+	0.1-	870916	095	0.7-	0.4-
710819	808	0.1+	0.2-	840124	381	0.1+	0.3-	870920	095	0.1+	0.0
740214	095	0.8-	0.4+	870827	095	1.8+	1.1-				
740218	095	0.8-	0.7+	870902	095	1.2-	0.9+				

1987 RZ2 = 1969 AW = 1972 TA4 = 1980 DJ5 = 1980 FD10 = 1982 TF3 = 1988 XZ3

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano

M	153.63266		(1950.0)	P	Q
n	0.19375937	Peri.	275.38727	+0.92152748	+0.38348976
a	2.9577521	Node	62.07500	-0.32327073	+0.84469395
e	0.0721461	Incl.	3.95969	-0.21513516	+0.37340023
P	5.09	H	12.0	G 0.25	

Residuals in seconds of arc

690115	095	0.5+	0.7+	800316	095	1.2-	0.6+	870922	095	0.6+	2.4+
721005	095	2.6+	6.9-	821015	095	3.5-	2.4+	870925	095	0.1+	2.7+
721013	095	4.4+	5.9-	821021	095	2.4-	2.1+	881201	054	0.6-	5.1+
800221	095	1.5+	0.6+	870901	095	2.0-	3.6+				

1987 RO3 = 1975 VX3 = 1979 UR1

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Marsden

M	186.79789		(1950.0)	P	Q
n	0.24347964	Peri.	134.15798	+0.97710903	+0.20722658
a	2.5399694	Node	213.96682	-0.21134506	+0.91970309
e	0.2495590	Incl.	4.94033	-0.02431467	+0.33347169
P	4.05	H	14.5	G 0.25	

Residuals in seconds of arc

751102	095	0.3+	1.2-	791023	010	0.1+	1.5+	870917	095	0.2+	1.2-
791019	010	0.7-	0.4+	870902	095	0.2-	1.5+	870926	095	0.3+	1.0-

1987 RP3 = 1978 VK13 = 1985 DP2

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Marsden

M	158.31504		(1950.0)	P	Q
n	0.21700330	Peri.	83.52418	+0.99582684	-0.04849652
a	2.7425803	Node	279.23594	+0.01276346	+0.91280675
e	0.0658308	Incl.	4.49238	+0.09036590	+0.40550206
P	4.54	H	12.5	G 0.25	

Residuals in seconds of arc

781101	095	0.1-	0.2+	850227	675	0.5-	0.4+	870917	095	2.3-	3.7-
850224	675	2.3-	0.5+	850227	675	1.3+	0.7-	870926	095	0.5+	0.4+
850224	675	1.3+	0.6-	870902	095	0.7+	1.2+	871023	095	1.6+	1.7+

1987 RR3 = 1951 WB = 1960 OG = 1970 LR = 1980 JT

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Marsden

M	340.98491		(1950.0)	P	Q
n	0.18878296	Peri.	294.05822	-0.94254218	-0.31440653
a	3.0095048	Node	227.82976	+0.33401687	-0.89376855
e	0.0272309	Incl.	8.76765	-0.00685360	-0.31988486
P	5.22	H	11.0	G 0.25	

Residuals in seconds of arc

511129	760	0.2+	0.6+	600723	839	0.2-	0.3+	870902	095	0.9-	0.5-
511129	760	0.1-	0.7+	600723	839	0.3+	0.7-	870917	095	0.3+	0.5+
511203	760	1.3-	0.5-	700611	095	0.0	1.1+	870926	095	0.5+	0.1-
511203	760	1.0+	0.1+	800510	095	(2.2+	8.8+)				

1987 RX3 = 1953 PT = 1973 EJ = 1981 SP3
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 240.94389 (1950.0) P Q
n 0.17628531 Peri. 312.82634 -0.30731299 +0.94866325
a 3.1501132 Node 299.13450 -0.84614354 -0.30838087
e 0.0801441 Incl. 4.91327 -0.43543063 -0.07027997
P 5.59 H 11.5 G 0.25
Residuals in seconds of arc
530811 024 1.2+ 2.5- 730309 029 0.6- 0.1+ 870923 095 1.9+ 1.4+
730307 029 0.5+ 0.3- 810925 095 0.4- 0.9+ 870926 095 2.0- 2.1-
730307 029 0.5- 1.3- 870903 095 0.0 1.3+

1987 SQ3 = 1953 RP = 1953 RP1 = 1989 CH8
Id. D. W. E. Green, B. G. Marsden (d, MPC 7055)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Green
M 180.63131 (1950.0) P Q
n 0.26118675 Peri. 44.49006 +0.99076062 -0.11189627
a 2.4238337 Node 321.73883 +0.06115631 +0.87294518
e 0.1326054 Incl. 7.10869 +0.12105080 +0.47481148
P 3.77 H 13.0 G 0.25
Residuals in seconds of arc
530905 024 0.1- 1.6- 890208 809 0.6- 0.1+ 890211 809 0.9- 0.1+
530909 760 1.5+ 3.7- 890208 809 0.5- 0.2+ 890211 809 0.6- 0.1+
530909 760 2.1+ 0.9- 890208 809 0.4- 0.0 890213 809 0.5- 0.0
870925 054 0.1+ 0.9+ 890209 809 0.1- 0.5+ 890213 809 0.4- 0.0
870925 054 0.0 0.2+ 890209 809 0.1+ 0.6+ 890213 809 0.4- 0.0
870929 054 0.5- 1.8+ 890209 809 0.1+ 0.5+ 890303 809 1.2+ 0.7-
870929 054 1.1- 0.5- 890210 809 0.1- 0.1+ 890303 809 1.3+ 0.5-
870930 054 1.0- 0.7+ 890210 809 0.0 0.1+ 890303 809 1.2+ 0.2-
870930 054 0.4- 0.5- 890210 809 0.3+ 0.2+
871001 054 1.4- 0.8+ 890211 809 0.8- 0.1+

1987 SE7 = 1977 QX4 = 1977 RK4
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Marsden
M 226.79166 (1950.0) P Q
n 0.29807354 Peri. 53.37669 +0.98256438 +0.17002962
a 2.2194973 Node 296.72372 -0.18579422 +0.88291509
e 0.1916988 Incl. 4.83054 -0.00691060 +0.43766524
P 3.31 H 15.0 G 0.25
Residuals in seconds of arc
770821 095 0.8- 1.3+ 870917 095 1.6- 0.2+ 870926 095 0.2- 0.2-
770909 095 0.5+ 0.8- 870920 675 0.2- 1.5+
870902 095 1.9+ 2.7- 870920 675 0.5+ 0.6+

1987 SS17 = 1981 SP2
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Marsden
M 163.83812 (1950.0) P Q
n 0.17666323 Peri. 328.56117 +0.84755823 +0.53070080
a 3.1456192 Node 359.38145 -0.45835023 +0.73076647
e 0.1664894 Incl. 6.94317 -0.26750721 +0.42934488
P 5.58 H 12.5 G 0.25
Residuals in seconds of arc
810920 809 0.5+ 0.5+ 810922 809 0.2+ 0.5- 870918 095 1.3+ 0.1-
810920 809 0.0 0.5+ 810922 809 0.4- 0.7- 870926 095 1.3- 0.6-
810920 809 0.0 0.8+ 810922 809 0.2- 0.6- 871002 095 0.0 0.7+

1987 ST17 = 1983 RJ5 = 1983 RO7
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 196.76202 (1950.0) P Q
n 0.26022597 Peri. 142.06809 +0.98829834 -0.10879263
a 2.4297960 Node 224.55030 +0.07315987 +0.95312623
e 0.1551703 Incl. 8.76602 +0.13384325 +0.28233765
P 3.79 H 13.5 G 0.25
Residuals in seconds of arc
830901 095 0.1- 1.4- 870918 095 0.9+ 0.5+ 870926 095 1.5- 0.9-
830911 095 0.0 1.4+ 870920 095 0.4- 0.3+ 871002 095 1.0+ 0.0

1987 SV17 = 1932 BC = 1937 RT = 1977 ST = 1984 YW5
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Marsden
M 210.83739 (1950.0) P Q
n 0.29633225 Peri. 98.73158 +0.92227570 -0.38482599
a 2.2281836 Node 283.90775 +0.33829566 +0.84902607
e 0.1535925 Incl. 2.14217 +0.18698548 +0.36202719
P 3.33 H 14.0 G 0.25
Residuals in seconds of arc
320127 024 0.6+ 1.6+ 770921 095 0.2- 0.8+ 870920 095 0.1- 0.2+
370913 020 (0.8+ 36.2-)X 841229 095 0.2- 1.1- 870926 095 0.5+ 1.5-
770918 095 1.3- 1.9+ 870918 095 0.4+ 1.0- 871002 095 0.5+ 0.3+

1987 UU4 = 1973 UP1 = 1980 TC13
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 151.13280 (1950.0) P Q
n 0.28133664 Peri. 50.87467 -0.13893419 -0.98671907
a 2.3066731 Node 47.32846 +0.86954899 -0.16222000
e 0.1638400 Incl. 6.57266 +0.47390067 +0.00837564
P 3.50 H 13.5 G 0.25
Residuals in seconds of arc
731026 095 0.8+ 3.3+ 801017 095 4.8- 0.5- 871027 095 1.6+ 0.3-
801010 095 2.3+ 4.7- 871022 095 0.2+ 4.2+ 871121 095 0.1- 2.3-

1987 UF5 = 1978 WV4
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 169.35654 (1950.0) P Q
n 0.21490537 Peri. 317.99601 +0.97239998 -0.21849020
a 2.7604003 Node 54.80374 +0.23170285 +0.86304653
e 0.1666732 Incl. 5.74884 +0.02742384 +0.45542587
P 4.59 H 12.5 G 0.25
Residuals in seconds of arc
781129 675 0.4- 0.1- 871022 095 0.2+ 1.5- 871121 095 0.0 0.3-
781130 675 0.4+ 0.1+ 871027 095 0.2- 1.8+

1987 WJ1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Nakano
M 130.24506 (1950.0) P Q
n 0.17684507 Peri. 359.14871 +0.84959885 -0.52318440
a 3.1434561 Node 32.67653 +0.48461151 +0.72436965
e 0.1437236 Incl. 7.10538 +0.20816693 +0.44896178
P 5.57 H 12.5 G 0.25
From 16 observations 1987 Oct. 27-1988 Jan. 12, mean residual 0".7.

1987 WU2 = 1989 AS5

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)	Marsden
M 142.34844	(1950.0)	P	Q
n 0.20408507	Peri. 58.50657	+0.98697830	-0.09117366
a 2.8571262	Node 306.39453	+0.01619435	+0.87598355
e 0.2857854	Incl. 9.47572	+0.16003618	+0.47364563
P 4.83	H 12.5	G 0.25	

Residuals in seconds of arc

870827 095	2.2+	5.9-	871117 010	1.4-	0.2-	890110 413	1.5+	0.6+
870902 095	1.5-	3.1+	871117 010	0.6-	0.5+	890111 033	0.8-	0.2-
870916 095	0.4-	1.5+	890104 413	0.1+	0.6-	890111 033	0.5-	0.2-
870920 095	0.2+	1.2+	890104 413	2.1+	1.2-			
871117 010	1.4+	0.8-	890110 413	2.7-	0.7+			

1988 JV

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)	Bardwell
M 303.28938	(1950.0)	P	Q
n 0.23254537	Peri. 319.84935	+0.61080209	-0.74875759
a 2.6189776	Node 90.91281	+0.77632119	+0.50238573
e 0.1507357	Incl. 14.92102	+0.15571195	+0.43240103
P 4.24	H 11.5	G 0.25	

Residuals in seconds of arc

880509 675	1.0+	1.2+	880613 675	0.1+	1.3-	890905 474	2.1+	0.3-
880514 675	1.1-	0.1+	880717 675	0.3+	0.3+	890909 474	1.9-	0.4+
880609 675	0.7-	0.1-	880718 675	0.8+	1.5+	890909 474	2.1-	0.7+
880611 675	0.3-	1.5-	890905 474	1.9+	0.9-			

1989 AO6 = 1987 SQ14

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5		(J-P)	Nakano
M 118.05747	(1950.0)	P	Q
n 0.18461501	Peri. 88.19599	+0.69816816	-0.70863957
a 3.0546321	Node 316.90880	+0.58307464	+0.64543327
e 0.0947868	Incl. 8.58137	+0.41543372	+0.28503660
P 5.34	H 11.5	G 0.25	

Residuals in seconds of arc

870923 095	0.9-	0.7-	890111 033	0.2+	0.0	890202 033	0.4-	0.0
870925 095	0.7+	0.6-	890111 033	0.6+	0.2+	890203 033	0.4-	0.3-
871025 095	0.2+	1.2+	890114 033	0.4+	0.4+	890205 033	0.4-	0.4-

1989 CL = 1931 TE1 = 1954 XG = 1965 WT = 1981 QK1 = 1981 QY1 = 1987 TF

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5			Green
M 82.82406	(1950.0)	P	Q
n 0.17613410	Peri. 302.18806	+0.18750799	-0.98164829
a 3.1519096	Node 136.96085	+0.91744063	+0.16238631
e 0.1821947	Incl. 2.91832	+0.35091800	+0.09998658
P 5.60	H 11.0	G 0.25	

Residuals in seconds of arc

311006 024	2.4-	0.4+	890129 046	0.9+	0.5-	890204 220	(2.5-	4.6-)
311012 024	(7.9+	11.0+)	890130 046	(11.2-	1.8+)	890204 399	0.9-	0.8-
311016 024	(12.2-	7.4-)	890130 046	0.7-	0.1+	890204 399	(3.2-	2.0-)
541201 024	(5.9+	2.3+)	890131 046	1.4-	1.2+	890204 399	0.3+	1.2-
651126 330	3.0+	3.1+	890131 046	0.5+	0.9-	890205 220	(2.5-	3.1-)
810826 801	(13.4+	8.4+)	890202 046	(3.0-	2.5-)	890205 220	(2.2-	3.0-)
810830 688	1.1+	1.6-	890202 046	2.1-	0.0	890208 809	0.2+	0.2+
810830 688	0.3+	2.4-	890203 399	0.7-	2.1-	890208 809	0.1+	0.2+
871014 046	0.6-	0.4-	890203 399	(0.4-	3.3-)	890208 809	0.0	0.1+
871014 046	0.4-	1.6-	890203 399	1.2+	1.3-	890209 809	0.5+	0.5+
890129 046	0.6-	0.8+	890203 399	1.2-	1.0-	890209 809	0.3+	0.7+

890209 809 0.4+ 0.5+ 890211 809 0.3- 0.6+ 890214 809 1.1- 0.8-
890210 809 0.4+ 0.4- 890211 399 (0.6- 3.3+) 890225 809 1.5+ 0.8+
890210 809 0.8+ 0.3- 890211 809 0.5- 0.7+ 890225 809 1.6+ 0.6+
890210 809 0.0 0.3- 890212 809 0.4- 0.7- 890225 809 1.3+ 0.7+
890211 809 0.5- 0.8- 890212 809 0.4- 0.6- 890303 809 0.0 0.2+
890211 809 0.4- 0.7+ 890212 809 0.0 0.8- 890303 809 0.4+ 0.1-
890211 399 (3.2+ 1.0+) 890213 809 0.2- 0.7+ 890303 809 0.0 0.3+
890211 809 0.6- 0.6- 890213 809 0.0 0.4+ 890303 809 0.4+ 0.2-
890211 399 0.2+ 0.1+ 890213 809 0.2- 0.6+ 890303 809 0.3+ 0.0
890211 809 0.2- 0.8- 890214 809 0.9- 0.4- 890303 809 0.2- 0.4+

1989 CH4 = 1976 UO2 = 1979 QY7
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 23.23974 (1950.0) P Q
n 0.26651541 Peri. 226.86552 -0.96640645 +0.25642139
a 2.3914173 Node 327.98058 -0.22516994 -0.87753605
e 0.1666919 Incl. 1.89263 -0.12392363 -0.40518952
P 3.70 H 13.5 G 0.25
Residuals in seconds of arc
761024 381 0.4+ 0.4- 890208 809 1.2- 0.7- 890211 399 1.4- 2.1+
761024 381 0.2- 0.1- 890208 809 1.1- 0.6- 890212 809 0.1+ 0.2+
761026 095(28.9+ 1.6+) 890208 809 0.9- 0.7- 890212 809 0.5+ 0.4+
790826 095 1.6- 3.8+ 890209 809 0.9- 0.1+ 890212 809 0.4+ 0.3+
890204 399 (3.1+ 3.4-) 890209 809 0.7- 0.1+ 890213 049 1.2+ 0.0
890204 399 2.5+ 0.7- 890209 809 0.5- 0.1+ 890213 049 0.0 1.5+
890204 399 0.8+ 0.3+ 890210 809 1.1- 0.3+ 890213 809 1.6+ 0.4-
890205 399 0.9+ 0.5- 890210 809 0.9- 0.4+ 890213 809 1.9+ 0.4-
890207 399 0.1- 0.6- 890210 809 0.8- 0.4+ 890213 809 2.0+ 0.4-
890207 399 0.6+ 0.2+ 890211 399 0.1- 1.0+ 890214 809 (4.6+ 0.6-)
890207 399 1.2- 0.4+ 890211 399 0.0 0.5+ 890214 809 (4.6+ 0.6-)

1989 EO1 = 1966 UK = 1975 FJ = 1982 FA1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Green
M 37.60375 (1950.0) P Q
n 0.28055750 Peri. 203.17802 -0.99313325 -0.10402039
a 2.3109417 Node 330.69571 +0.11692739 -0.86777712
e 0.0462711 Incl. 6.27959 +0.00378479 -0.48594508
P 3.51 H 14.0 G 0.25
Residuals in seconds of arc
661018 095 0.0 0.1+ 890213 809 0.7+ 0.1- 890301 809 0.1- 0.3-
750317 095 0.8+ 1.7+ 890213 809 1.0+ 0.0 890301 372 1.4+ 1.9+
820323 801 (7.5+ 2.5-) 890226 809 0.6+ 0.0 890301 372 (0.7+ 3.0+)
890211 809 0.1- 0.4+ 890226 809 0.4+ 0.1+ 890303 809 0.1- 0.6-
890211 809 0.2- 0.3+ 890226 809 0.9+ 0.1- 890303 809 0.1+ 0.3-
890211 809 0.0 0.2+ 890227 809 0.6- 0.4- 890305 372 (3.5- 0.7-)
890212 809 0.5- 0.2+ 890227 809 0.6- 0.1- 890305 372 0.1+ 0.4-
890212 809 0.4- 0.1+ 890227 809 0.7- 0.3- 890310 372 1.9- 1.1-
890212 809 0.0 0.3+ 890301 809 0.1- 0.5- 890310 372 1.2- 0.3-
890213 809 0.3+ 0.1- 890301 809 0.1- 0.4-

1989 EX1 = 1950 LB = 1950 LP = 1979 OB13
Id. D. W. E. Green, B. H. Potter (d, MPC 491)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Green
M 7.32994 (1950.0) P Q
n 0.27496892 Peri. 82.46533 -0.76509175 +0.63337214
a 2.3421489 Node 136.73795 -0.63712753 -0.71850046
e 0.1617493 Incl. 9.75150 -0.09329053 -0.28739662
P 3.58 H 13.5 G 0.25

Residuals in seconds of arc

500604	024	3.7+	3.7-	890212	809	0.5-	0.2+	890228	809	0.0	0.1+
500607	760	1.2-	3.1+	890212	809	0.2-	0.6+	890228	809	0.1-	0.5+
500607	760	1.7-	1.7-	890212	809	0.1+	0.6+	890228	809	0.0	0.5+
790726	675	0.8-	3.7+	890214	809	0.3-	0.9+	890302	809	0.2-	0.5+
790727	675	0.6+	2.2+	890214	809	0.4-	0.9+	890302	809	0.3-	0.8+
890207	809	0.8-	0.1-	890217	809	0.5-	0.1-	890302	809	0.4-	0.8+
890207	809	0.2-	0.1-	890217	809	0.4-	0.0	890303	809	0.6-	0.2-
890207	809	0.1-	0.1+	890217	809	0.6-	0.1-	890303	809	0.4-	0.1-
890208	809	1.0-	0.1-	890218	809	0.1-	0.4+	890303	809	0.2-	0.1+
890208	809	0.8-	0.1-	890218	809	0.1-	0.3+	890305	046	2.0+	1.6-
890208	809	0.6-	0.2-	890223	809	0.2-	0.6+	890305	046	2.8+	2.8-
890209	809	1.0-	0.0	890223	809	0.2+	0.7+	890306	046	1.5+	1.2-
890209	809	0.4-	0.0	890224	809	0.1-	0.6+	890306	046	2.2+	2.5-
890209	809	0.2-	0.0	890224	809	0.2+	0.6+	890307	046	2.8+	1.4-
890210	809	0.7-	1.0+	890226	809	0.2+	0.5+	890307	046	1.6+	1.7-
890210	809	0.4-	0.6+	890226	809	0.3+	0.5+				
890210	809	0.6-	0.7+	890226	809	0.7+	0.8+				

1989 FW = 1972 LY = 1980 BF1 = 1980 DD2 = 1983 YO

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Kobayashi	
M	1.79725	(1950.0)		P	Q
n	0.22535049	Peri.	120.21780	-0.64403215	+0.73698872
a	2.6744247	Node	108.22272	-0.75488296	-0.56878993
e	0.1499430	Incl.	12.47068	-0.12399317	-0.36513784
P	4.37	H	13.0	G 0.25	

Residuals in seconds of arc

720613	095	0.8-	2.6-	831230	675	0.1+	1.0-	890331	675	0.1-	0.1+
800123	095	2.1-	3.4-	840108	675	0.4-	1.6+	890403	675	0.8+	0.1+
800220	095	1.4+	2.2-	890329	675	0.1+	1.9+	890403	675	0.3+	0.9+
831229	033	0.2+	0.1-	890329	675	0.1-	1.1+				
831230	033	0.3+	0.0	890331	675	0.5+	0.5+				

1989 JA

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Marsden	
M	35.45849	(1950.0)		P	Q
n	0.41853376	Peri.	231.61036	+0.36108415	+0.90370518
a	1.7700372	Node	61.04688	-0.75238462	+0.42808651
e	0.4843198	Incl.	15.24457	-0.55094066	+0.00767399
P	2.35	H	16.5	G 0.25	

From 34 observations 1989 Apr. 6-Sept. 25, mean residual 0".9.

1989 MD = 1964 VD2 = 1980 XR1 = 1985 VH1

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P)				Bardwell	
M	327.08130	(1950.0)		P	Q
n	0.18655786	Peri.	330.47577	+0.76081017	+0.64873021
a	3.0333875	Node	349.02362	-0.57555569	+0.66180981
e	0.0989681	Incl.	5.36555	-0.29983919	+0.37570851
P	5.28	H	12.5	G 0.25	

Residuals in seconds of arc

641111	330	1.1-	2.5+	890630	474	1.2+	0.5-	890708	474	0.2-	0.6-
801210	095	0.8+	2.0-	890701	474	1.5-	0.3-	890708	474	0.8+	0.8-
851107	688	1.2-	1.1-	890701	474	1.4-	0.0	890901	474	0.1-	1.2+
851107	688	2.0+	0.5-	890702	474	0.0	0.2+	890901	474	0.0	0.9+
890630	474	1.7+	0.4-	890702	474	0.6-	0.4+				

1989 NE1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Marsden
M 17.13930 (1950.0) P Q
n 0.23969669 Peri. 258.47893 +0.42829522 +0.89347707
a 2.5666238 Node 37.82084 -0.71909359 +0.42755864
e 0.2546543 Incl. 12.73144 -0.54723634 +0.13744935
P 4.11 H 13.5 G 0.25
Residuals in seconds of arc

760328	413	0.6-	2.2+	890723	474	0.6+ 1.1+	890729	474 0.6- 0.0
760328	413	1.7+	1.0-	890723	474	0.5+ 0.0	890811	413 0.1- 0.3-
850905	413	0.4-	0.8+	890727	413	1.3- 0.9-	890902	474 0.7+ 0.7+
850905	413	0.7-	0.8+	890728	474	0.6- 1.3-	890902	474 0.8+ 1.5+
890708	474	0.7-	0.1+	890728	474	0.1- 1.0-	890904	413 2.1+ 0.4-
890708	474	0.2-	0.1-	890729	474	0.1- 0.0		

1989 NH1 = 1986 TV1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi
M 15.82858 (1950.0) P Q
n 0.30390129 Peri. 183.74630 +0.55333702 +0.82819971
a 2.1910268 Node 119.87049 -0.76149602 +0.54622710
e 0.2031443 Incl. 5.88433 -0.33755288 +0.12538419
P 3.24 H 15.0 G 0.25
Residuals in seconds of arc

861006	688	0.7+	1.7-	890706	675	0.8- 1.0-	890710	675 0.5- 0.5-
861007	688	1.7+	1.1+	890707	675	0.6+ 2.4+	890802	675 0.3+ 0.3-
861007	688	2.4-	0.6+	890707	675	1.5+ 1.9+	890802	675 0.3- 0.1+
890706	675	0.2-	2.8-	890710	675	0.6- 0.3+		

1989 OG = 1938 UZ
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Marsden
M 356.21147 (1950.0) P Q
n 0.26915320 Peri. 345.49123 +0.95844501 +0.28511520
a 2.3757624 Node 357.86979 -0.22908985 +0.74914605
e 0.2759184 Incl. 14.99407 -0.17000294 +0.59790427
P 3.66 H 13.5 G 0.25
Residuals in seconds of arc

381022	062	0.4-	1.8-	850511	413	1.2- 0.5+	890811	413 0.2+ 0.5+
381023	062	0.5+	1.6+	890727	413	0.9- 0.1+	890812	413 0.5+ 0.1-
850417	413	1.7+	0.5+	890727	413	0.5+ 0.1+	890903	413 0.1- 0.3+
850417	413	1.0+	0.1-	890803	413	0.7- 0.1+	890903	413 0.0 0.6+
850511	413	1.2-	0.8-	890803	413	0.4+ 1.0-	890904	413 0.1+ 0.4-

1989 PC
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Marsden
M 0.38536 (1950.0) P Q
n 0.20361906 Peri. 201.08285 +0.84230871 +0.42645610
a 2.8614838 Node 129.23643 -0.41322047 +0.90358096
e 0.3056744 Incl. 25.18682 -0.34607064 -0.04094672
P 4.84 H 12.5 G 0.25
Residuals in seconds of arc

840801	413	0.2+	0.8+	890729	675	0.8+ 0.7-	890809	675 1.2+ 0.4+
840801	413	0.4+	1.3+	890729	675	(0.7- 3.4-)	890811	675 1.2- 0.2+
851215	413	0.4+	0.1+	890729	675	0.2+ 0.5+	890811	675 0.9- 0.3-
851215	413	0.6-	0.6+	890729	675	0.3- 2.0-	890905	675 0.8- 1.3-
890708	675	1.1-	0.1+	890801	675	0.2+ 0.6-	890905	675 1.2+ 0.6+
890708	675	0.9+	0.8-	890801	675	(5.7+ 3.5+)	890907	675 1.1+ 0.4-
890708	675	1.4+	2.1-	890801	675	1.1- 1.8+	890907	675 0.0 0.8+
890710	675	0.9-	0.8+	890801	675	(6.1+ 6.1+)		
890710	675	1.1-	0.7+	890809	675	0.5+ 0.7+		

1989 QE = 1931 EN = 1950 RB1 = 1964 CB = 1979 YN2 = 1987 FO1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 27.25370 (1950.0) P Q
n 0.17658624 Peri. 340.76948 +0.71048607 +0.69770356
a 3.1465333 Node 334.24286 -0.61477901 +0.55195087
e 0.1358470 Incl. 12.18973 -0.34242709 +0.45668368
P 5.58 H 11.0 G 0.25
Residuals in seconds of arc

310310	754	2.9-	4.8+		890825	400	0.2+	0.1-	890906	511	(4.2- 4.1-)
310312	754	(16.5-	3.0+)		890826	400	(3.6+	3.7-)	890906	511	(3.9- 3.3-)
500911	711	6.5+	3.8-	Y	890826	400	1.3-	1.2-	890908	511	(4.9- 1.3-)
640215	760	(52.5-	23.4+)	X	890829	400	0.4+	2.0+	890908	511	3.1- 0.9-
791224	095	2.5+	1.0-		890829	400	0.4-	2.1+	890923	400	1.4- 0.0
870322	033	1.1+	1.6-		890830	552	0.6+	0.1+	890923	400	1.6- 0.7+
870322	033	0.8+	1.7-		890830	552	0.9+	0.1+	890923	400	1.7- 0.7+
890825	400	1.5+	0.3+		890831	552	0.3-	0.2-			
890825	400	0.4-	0.7+		890831	552	1.1-	0.3-			

1989 QF
Epoch 1989 Sept. 11.0 ET = JDE 2447780.5 Nakano
M 79.16632 (1950.0) P Q
n 0.80149513 Peri. 239.59278 -0.72193318 +0.69171681
a 1.1478068 Node 344.14834 -0.60940249 -0.64820024
e 0.4078064 Incl. 3.87269 -0.32778208 -0.31837760
P 1.23 H 18.5 G 0.25
From 12 observations 1989 Aug. 31-Sept. 8.

1989 RC
Epoch 1989 Aug. 22.0 ET = JDE 2447760.5 Marsden
M 2.87468 (1950.0) P Q
n 0.28091262 Peri. 180.57567 +0.76995945 +0.63272262
a 2.3089891 Node 139.77936 -0.58489732 +0.75158182
e 0.5115979 Incl. 7.35019 -0.25506385 +0.18651234
P 3.51 H 17.5 G 0.25
From 11 observations 1989 Aug. 9-Sept. 22.

1989 RS1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Marsden
M 2.55119 (1950.0) P Q
n 0.28170309 Peri. 180.82825 +0.99608781 +0.08743659
a 2.3046677 Node 174.10948 -0.08033857 +0.95636134
e 0.4794306 Incl. 7.16646 -0.03680747 +0.27879713
P 3.50 H 18.0 G 0.25
From 7 observations 1989 July 7-Sept. 20, mean residual 1".3.

1989 RD2 = 1978 PD4 = 1978 QC1 = 1982 VU4 = 1982 XE2 = 1982 XL2
Id. E. Goffin, H. Oishi (d, MPC 12360), B. G. Marsden (d)
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Marsden
M 9.45181 (1950.0) P Q
n 0.26869006 Peri. 165.82606 +0.88562698 +0.46425437
a 2.3784965 Node 166.49413 -0.43071726 +0.83042021
e 0.2416281 Incl. 2.82758 -0.17363033 +0.30801000
P 3.67 H 14.5 G 0.25

Residuals in seconds of arc

780809	095	0.4+	1.8+	821213	381	1.0-	0.2-	890902	511	0.9+	1.9-
780831	095	1.0-	0.0	821214	381	0.5-	0.1-	890906	511	0.7-	0.4-
821114	381	0.9-	1.3+	821214	381	1.9+	1.0-	890906	511	0.4-	0.3-
821114	381	0.4+	0.0	821214	381	0.7-	0.1+	890907	511	0.0	0.5+
821213	381	1.0-	0.4-	821214	381	0.5+	1.2+	890907	511	1.7+	1.2+
821213	381	1.4+	0.7-	890902	511	0.8-	1.0-				

3523 P-L = 1958 DJ1 = 1989 QB

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Kobayashi
M 332.92969		(1950.0)	P	Q
n 0.23614460	Peri.	50.94089	+0.93208997	-0.35367271
a 2.5922927	Node	329.53689	+0.26591241	+0.81479151
e 0.0462950	Incl.	8.87939	+0.24596521	+0.45938047
P 4.17	H	12.5	G 0.25	

Residuals in seconds of arc

580224	760	2.1+	0.8-	601025	675	0.3-	0.6+	890829	400	(4.9+	0.0)
580224	760	1.4-	1.8+	601026	675	1.3+	0.8-	890905	511	(4.5-	1.7-)
601017	675	1.0-	0.1-	601026	675	0.5-	1.1+	890905	511	(3.8-	2.0-)
601022	675	0.3-	0.2-	890825	400	1.3-	0.6+	890906	511	0.6-	2.4-
601022	675	0.6-	0.3-	890825	400	1.2+	0.3+	890906	511	1.5-	0.4-
601022	675	0.4+	0.2-	890825	400	1.3+	0.4+	890908	511	2.9-	0.9+
601024	675	0.1+	1.6-	890826	400	2.4+	1.1+	890908	511	1.1+	1.0+
601024	675	0.4+	1.0+	890826	400	(0.5-	4.0+)				
601025	675	1.2+	0.6+	890829	400	(3.8+	0.3-)				

1107 T-2 = 1978 VA2

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Kobayashi
M 220.65241		(1950.0)	P	Q
n 0.21644420	Peri.	34.21479	+0.64889339	+0.75991772
a 2.7472958	Node	276.27459	-0.70638391	+0.58297883
e 0.1882208	Incl.	2.20484	-0.28277047	+0.28750783
P 4.55	H	14.0	G 0.25	

Residuals in seconds of arc

730919	675	1.1-	1.4+	730925	675	0.9-	2.1+	731004	675	1.0+	3.2-
730919	675	1.0-	2.0+	730929	675	1.1+	0.7+	731005	675	1.4-	0.6-
730920	675	2.3-	0.6+	730929	675	2.0+	0.1-	731005	675	1.3-	0.4-
730924	675	0.8+	1.3+	730930	675	0.4+	0.2+	781101	010	1.2+	1.0+
730924	675	0.1-	0.8+	730930	675	0.9+	0.7-	781101	010	1.4-	0.2-
730925	675	0.3+	1.0-	731004	675	1.9+	3.5-				

2069 T-2 = 1968 UG2 = 1978 QP3 = 1983 RF5

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Kobayashi
M 144.00088		(1950.0)	P	Q
n 0.18945573	Peri.	42.20890	-0.45210370	+0.88952951
a 3.0023700	Node	201.17350	-0.85931651	-0.45416443
e 0.0643053	Incl.	10.50850	-0.23911791	-0.04971850
P 5.20	H	12.0	G 0.25	

Residuals in seconds of arc

681023	095	1.3-	6.2+	730930	675	0.0	1.8-	731005	675	0.5-	0.5-
730925	675	0.7-	0.7-	730930	675	1.1+	2.4-	780827	808	0.2-	0.0
730925	675	0.9-	0.8-	731004	675	1.0+	1.0-	780827	808	1.9-	1.0+
730929	675	1.0+	0.2+	731004	675	1.2+	0.9-	830901	095	2.4+	0.8+
730929	675	1.6+	0.1-	731005	675	0.6-	1.0-	830911	095	2.3-	1.9+

2086 T-2 = 1965 DD = 1976 JB1 = 1981 EP48 = 1986 AL2
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi
M 224.18510 (1950.0) P Q
n 0.18637259 Peri. 174.31419 -0.96322672 -0.26809447
a 3.0353914 Node 350.07985 +0.24223463 -0.83767083
e 0.2480659 Incl. 5.95684 +0.11626124 -0.47584971
P 5.29 H 13.0 G 0.25
Residuals in seconds of arc

650225	330	1.8-	0.1-	730925	675	1.1-	0.5-	731004	675	1.0+	1.7-
650304	330	2.0+	0.7-	730925	675	2.2-	0.0	731005	675	1.3+	0.5-
730919	675	0.2-	1.4+	730929	675	0.7-	0.4+	731005	675	0.6+	0.2-
730919	675	0.6+	1.3+	730929	675	0.6+	0.4-	760502	095	0.3+	1.5-
730920	675	1.6-	0.7-	730930	675	0.6+	0.2-	810301	095	0.5-	1.5+
730924	675	1.2-	0.6+	730930	675	0.4+	0.3-	860112	688	0.5+	0.6-
730924	675	1.5+	1.0+	731004	675	1.2+	0.8-	860112	688	0.5+	0.3-

2272 T-2 = 1975 EJ
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi
M 122.61823 (1950.0) P Q
n 0.29357994 Peri. 162.45937 -0.97476502 -0.22301946
a 2.2420836 Node 4.68704 +0.18777669 -0.84282531
e 0.0932260 Incl. 6.86786 +0.12071897 -0.48980386
P 3.36 H 13.5 G 0.25
Residuals in seconds of arc

730925	675	0.3-	1.3-	730930	675	0.3+	0.0	731005	675	0.8-	1.5-
730925	675	0.1-	0.3-	730930	675	0.7+	1.1-	731005	675	0.3+	0.6-
730929	675	1.3-	2.7+	731004	675	0.3+	0.1+	750304	095	0.5+	0.3-
730929	675	0.2+	1.5+	731004	675	0.7+	0.6+	750314	095	0.5-	0.3+

3025 T-2 = 1975 EY4 = 1980 RF2 = 1987 SB10
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi
M 199.92260 (1950.0) P Q
n 0.28231615 Peri. 255.17398 +0.95685572 -0.28842689
a 2.3013300 Node 121.57869 +0.27992672 +0.88259750
e 0.1847646 Incl. 2.36614 +0.07789837 +0.37125676
P 3.49 H 15.0 G 0.25
Residuals in seconds of arc

730919	675	3.2-	1.2+	730929	675	1.2+	0.1-	800915	511	(23.5+	16.0+)
730919	675	3.5-	0.6+	730930	675	1.4+	0.5-	800915	511	(22.5+	14.5+)
730920	675	0.8-	1.1+	730930	675	0.3+	0.5-	800915	511	(23.0+	13.8+)
730924	675	2.9+	0.5+	731004	675	0.4+	0.1-	870929	033	1.6-	0.5+
730924	675	0.9+	0.5+	731004	675	0.8-	0.1+	870929	033	1.2-	0.2+
730925	675	1.0+	1.0-	731005	675	1.7-	0.9-	870930	033	0.2+	0.5+
730925	675	1.1+	1.0-	731005	675	0.4-	2.9-	870930	033	0.2+	0.4+
730929	675	1.2+	1.2+	750315	095	0.4+	1.1+	871001	033	1.3+	0.7+

3285 T-2 = 1982 BE6 = 1988 XT2
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi
M 121.07898 (1950.0) P Q
n 0.26838796 Peri. 319.67581 +0.96312899 -0.26358955
a 2.3802763 Node 55.68703 +0.26056582 +0.86402690
e 0.2304980 Incl. 3.74021 +0.06699249 +0.42892663
P 3.67 H 14.0 G 0.25

Residuals in seconds of arc

730929	675	0.4-	1.8+	731005	675	0.7+	0.5+	881211	400	0.2-	0.1-
730929	675	1.0-	0.6-	731005	675	0.5+	0.2+	881212	872	0.7+	0.5-
730930	675	0.4-	2.4-	820126	381	0.6-	0.4-	881212	872	(0.6-	3.4-)
730930	675	0.6-	0.8-	820126	381	0.8+	1.2+	881212	872	(0.6+	3.4-)
731004	675	1.0+	1.1+	881211	400	(0.3-	3.2+)				
731004	675	0.2+	0.6+	881211	400	0.2-	0.0				

4170 T-2 = 1979 OK = 1985 DC4 = 1986 NF

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Kobayashi
M 173.00722		(1950.0)	P	Q
n 0.28957307	Peri.	310.74485	-0.17844509	-0.98224609
a 2.2627189	Node	149.38879	+0.93351154	-0.18759632
e 0.1243036	Incl.	6.52659	+0.31098804	-0.00049410
P 3.40	H	13.5	G 0.25	

Residuals in seconds of arc

730919	675	1.0-	0.7-	730925	675	0.2+	0.3-	850220	675	0.9-	0.9-
730919	675	0.0	0.2-	730925	675	1.1+	0.6-	850222	675	0.4-	3.4-
730920	675	2.2-	0.7+	730929	675	1.6+	2.5-	860707	010	2.8-	0.5+
730924	675	1.0+	1.8+	730929	675	1.1+	3.5-	860708	010	2.9+	0.8-
730924	675	0.6-	1.4+	790721	809	0.1-	2.3-				

5030 T-2 = 1989 EN4

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Kobayashi
M 61.96699		(1950.0)	P	Q
n 0.08287399	Peri.	156.03690	+0.07632417	-0.98079393
a 5.2102337	Node	289.18395	+0.88130438	+0.15055575
e 0.1353548	Incl.	10.95553	+0.46634451	-0.12400095
P 11.89	H	12.0	G 0.25	

Residuals in seconds of arc

730920	675	0.4-	0.4+	730929	675	0.9+	0.5+	890302	809	1.4-	0.5+
730920	675	0.3+	0.2-	730929	675	0.9-	0.4+	890303	809	1.3+	0.7-
730924	675	0.8+	0.1-	730930	675	0.2+	0.0	890303	809	1.0+	0.0
730924	675	1.2+	0.5+	730930	675	0.2+	0.4+	890303	809	0.9+	0.2-
730925	675	1.0-	1.2-	890302	809	0.7-	0.3+				
730925	675	0.3-	0.1-	890302	809	1.1-	0.0				

5061 T-2 = 1986 PF4

Epoch 1989 Oct. 1.0 ET = JDE 2447800.5				Kobayashi
M 337.82131		(1950.0)	P	Q
n 0.30031712	Peri.	27.17123	+0.86714495	+0.49005110
a 2.2084250	Node	303.20727	-0.47407257	+0.75737902
e 0.2364955	Incl.	6.10173	-0.15269195	+0.43154020
P 3.28	H	15.0	G 0.25	

Residuals in seconds of arc

730919	675	(5.8+	0.7-)	730929	675	0.5+	0.2-	860806	046	0.0	1.7+
730920	675	0.3-	0.9-	730929	675	0.2+	0.6-	860807	046	0.4-	0.5-
730920	675	0.8+	0.9+	730930	675	0.6-	0.3+	860807	046	0.8-	0.7-
730924	675	0.9-	1.7+	730930	675	0.3-	1.2+	860904	046	1.7+	1.1-
730924	675	0.4-	1.3+	731004	675	1.0+	0.8-	860904	046	1.6+	1.1-
730925	675	0.3-	0.3+	731004	675	0.4-	0.9-	860905	046	0.3-	1.1-
730925	675	0.3-	0.7-	860806	046	1.5-	1.7+	860905	046	0.5+	0.4-

5066 T-2 = 1982 YF2 = 1986 TU15 = 1986 UF1
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Ichikawa
M 218.00047 (1950.0) P Q
n 0.23060442 Peri. 201.84486 +0.34380075 -0.92525580
a 2.6336527 Node 228.44055 +0.89012246 +0.37549184
e 0.1325227 Incl. 12.37188 +0.29913718 -0.05392204
P 4.27 H 13.0 G 0.25
Residuals in seconds of arc

730919	675	(4.5+ 2.2+)	730929	675	0.5+ 0.0	731005	675	0.8+ 0.8-
730920	675	0.4- 0.4+	730929	675	0.6+ 0.2-	821221	095	0.0 0.1-
730920	675	0.1+ 1.3+	730930	675	0.1+ 0.7+	861007	095	0.3+ 1.6-
730924	675	0.7+ 0.6+	730930	675	0.3- 1.5+	861029	054	1.2- 0.0
730924	675	0.3- 0.8+	731004	675	0.9- 0.0	861029	054	0.8+ 1.6+
730925	675	0.2- 1.3-	731004	675	0.1- 0.5-			
730925	675	0.9- 1.2-	731005	675	0.3+ 1.2-			

5148 T-2 = 1987 SS14
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 (J-P) Nakano
M 227.77349 (1950.0) P Q
n 0.28320855 Peri. 39.02216 +0.97307727 +0.21355704
a 2.2964977 Node 308.42767 -0.22927823 +0.85859157
e 0.2180296 Incl. 6.35286 -0.02349718 +0.46606213
P 3.48 H 14.0 G 0.25
Residuals in seconds of arc

730919	675	(6.4+ 0.3+)	730925	675	2.6- 1.8+	731005	675	1.4+ 0.7-
730920	675	0.7+ 0.5-	730929	675	1.9- 0.3+	731005	675	1.4+ 1.0-
730920	675	3.6+ 0.8-	730929	675	1.5- 1.1+	870923	095	1.0- 0.1+
730924	675	0.4- 0.4-	730930	675	1.1+ 0.4+	870925	095	0.8+ 0.5+
730924	675	1.0- 0.3+	730930	675	0.9+ 0.4-			
730925	675	1.8- 0.2+	731004	675	0.4+ 0.7-			

5482 T-2 = 1980 TZ4
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi
M 240.23036 (1950.0) P Q
n 0.28200439 Peri. 5.28719 +0.76769198 +0.63506396
a 2.3030258 Node 314.90277 -0.59225766 +0.65208182
e 0.2054197 Incl. 6.94861 -0.24470368 +0.41410514
P 3.50 H 14.5 G 0.25
Residuals in seconds of arc

730929	675	0.6- 0.5-	731004	675	0.1+ 0.5+	801007	675	0.3+ 1.2+
730929	675	0.2- 0.6-	731004	675	1.0- 0.1+	801008	675	2.0+ 1.5-
730930	675	0.8+ 0.4-	731005	675	0.6- 1.0+	801009	675	1.9- 0.3+
730930	675	0.5+ 0.4+	731005	675	0.6+ 0.4+	801010	675	0.2+ 0.9-

5485 T-2 = 1982 AJ
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi
M 70.18997 (1950.0) P Q
n 0.26773317 Peri. 133.56931 +0.31185779 -0.94609071
a 2.3841556 Node 298.06931 +0.84059852 +0.31766320
e 0.0893387 Incl. 5.69133 +0.44287565 +0.06326502
P 3.68 H 14.0 G 0.25
Residuals in seconds of arc

730929	675	0.5+ 1.1-	731004	675	2.1- 0.3-	820116	046	0.3+ 0.9-
730929	675	0.2+ 0.8-	731005	675	0.2- 0.2+	820116	046	2.7+ 0.2+
730930	675	0.9+ 0.1+	731005	675	0.3- 0.5+	820118	046	1.7+ 1.4+
730930	675	1.4+ 0.4+	820115	046	1.5- 0.7-	820118	046	3.7- 0.4-
731004	675	0.7- 0.8+	820115	046	0.5+ 0.3+			

3100 T-3 = 3704 T-2
Epoch 1989 Oct. 1.0 ET = JDE 2447800.5 Kobayashi

M 197.13161	(1950.0)	P	Q
n 0.25985524	Peri. 81.23456	-0.61366830	+0.78916232
a 2.4321017	Node 150.86348	-0.74319245	-0.56656508
e 0.1241668	Incl. 2.96446	-0.26660118	-0.23712202
P 3.79	H 15.0	G 0.25	

Residuals in seconds of arc

730919	675	0.6-	0.3+	771007	675	0.9+	0.3-	771017	675	0.8-	1.0+
730919	675	0.6-	0.8+	771011	675	0.5+	0.7+	771017	675	0.4+	1.2+
730920	675	1.4+	0.6-	771011	675	1.3-	0.3+	771021	675	1.1+	0.0
730924	675	0.2+	0.4-	771012	675	0.3-	1.9-	771021	675	0.3+	1.5+
730924	675	1.0-	0.2+	771012	675	0.6-	0.9-	771022	675	1.0-	1.4-
730925	675	0.8+	0.0	771016	675	0.1-	0.7-	771022	675	1.1+	0.6-
730925	675	0.1-	0.2-	771016	675	0.3-	1.1+				

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NEW NAMES OF MINOR PLANETS.

(3185) Clintford = 1953 VY1

Discovered 1953 Nov. 11 at the Goethe Link Observatory, Indiana University.

Named in honor of Clinton B. Ford, secretary of the American Association of Variable Star Observers since 1948 and president in 1961, the year of his retirement from a career in industry. In 1965 he helped found what is now called the Ford Observatory in southern California, an amateur facility with a 0.46-m telescope dedicated to observing variable stars. Since joining the AAVSO at the age of 16 Ford has made more than 60 000 observations, drawn up over 800 new finding charts, and encouraged and assisted many hundreds of amateur observers in monitoring variables. He has also taught classes in astronomy at Brown University and Smith College. In 1987 he received the Amateur Achievement Award of the Astronomical Society of the Pacific for his contributions to science and to the fostering of interest in amateur astronomy. Name proposed by F. K. Edmondson, following a suggestion by A. G. Fraknoi, who also prepared the citation.

(3203) Huth = 1938 SL

Discovered 1938 Sept. 18 by C. Hoffmeister at Sonneberg.

Named in memory of Hans Huth (1925-1988), an assiduous observer who obtained more than 100 000 patrol plates at the Sonneberg Observatory. Huth was also known for his bibliographic catalogue of variable stars.

(3694) Sharon = 1984 SH5

Discovered 1984 Sept. 27 by A. Grossman at Palomar.

Named in honor of Sharon Rachel Vinick, a great source of joy and inspiration to the discoverer.

(3909) Gladys = 1988 JD1

Discovered 1988 May 15 by K. W. Zeigler at the Anderson Mesa Station of the Lowell Observatory.

Named in memory of the discoverer’s mother, Gladys Marie Zeigler (1921-1988), who encouraged him as a youth to pursue his interest in astronomy despite all obstacles. Her continued encouragement was directly responsible for the discovery of this minor planet.

(3939) Huruhata = 1953 GO

Discovered 1953 Apr. 7 by K. Reinmuth at Heidelberg.

Named in memory of Masaaki Huruhata (1912-1988), director of the Tokyo Astronomical Observatory from 1968 to 1973, known for his work on variable stars and the photoelectric photometry of the zodical light and airglow. One of his early research projects involved the light variation of (433) Eros in 1930-1931. He served as president of IAU Commission 21 (1967-1970), vice president of the Astronomical Society of Japan (1961-1963) and a member of the science council of Japan (1969-1972). Following his retirement he carried out many photographic observations of variable stars at his home and served as an advisor to amateur astronomers in the Variable Star Observers League in Japan. Name proposed by S. Nakano, who found the identifications involving this minor planet, following a suggestion by Y. Kushida, M. Inoue and O. Muramatsu. Citation prepared by S. Sakuma.

(3987) Wujek = 1986 EL1

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

Named in honor of Joseph H. Wujek, staff engineer in the Advanced Technology Group of Apple Computer, Inc. An electrical engineer by training, Wujek has worked on NASA's Orbiting Geophysical Observatory, the U.S.A.-U.S.S.R. Apollo-Soyuz mission and as a guest engineer at the Very Large Array of the National Radio Astronomy Observatory. His professional interests include ethics in engineering, space technology, engineering reliability, computing and the social implications of technology. In 1989 he was honored as "Volunteer of the Year" by the Astronomical Society of the Pacific. A member of the Board of Advisors of Lowell Observatory, he has given freely of his time and expertise, particularly by coordinating the donation of much-needed computer hardware and software from Apple Computer.

(4104) Alu = 1989 ED

Discovered 1989 Mar. 5 by E. F. Helin at Palomar.

Named for Jeff Alu, a talented musician and composer, as well as a participant in the Palomar Planet Crossing Asteroid Survey. He has shared the long cold winter nights at Palomar and the pleasure of discovery. Jeff has himself found several near-earth asteroids, as well as main-belt objects. This name is endorsed by Brian P. Roman, a fellow PCAS member and good friend.

(4117) Wilke = 1982 SU3

Discovered 1982 Sept. 24 by F. Borngen at Tautenburg.

Named in memory of Alfred Wilke (1893-1972), an optician of the highest rank, who constructed a workshop and observatory at Falkensee, near Berlin. Right up to his death he made optics by the thousands for astronomical institutes and popular and school observatories, as well as for numerous amateurs. Among his works are the 0.50-m Schmidt cameras for both Sonneberg and Babelsberg, the 0.70-m Cassegrain reflector for Potsdam and the 0.70-m and 0.54-m Cassegrains for Babelsberg. Name proposed by the discoverer following a suggestion by M. Gressman, who also prepared the citation.

(4128) UKSTU = 1988 BM5

Discovered 1988 Jan. 28 by R. H. McNaught at Siding Spring.

Named after the U.K. Schmidt Telescope Unit at the Royal Observatory Edinburgh and the 1.2-m U.K. Schmidt Telescope at Siding Spring. In association with ESO, UKSTU has been undertaking a multicolor survey and atlas of the southern sky since operations commenced in 1973. The high quality and faint limits of the survey material resulted in major discoveries in the morphology of galaxies. A significant proportion of quasars with redshifts greater than 4 were discovered in UKSTU material.

Other programs utilizing the telescope include the UCAS survey for faint minor planets and the LUKAS survey extending to even fainter limits. The discovery images of this minor planet and those subsequently identified at earlier oppositions were all on 1.2-m U.K. Schmidt plates archived at Siding Spring and Edinburgh. In June 1988 control of the telescope passed from ROE to the Anglo-Australian Observatory.

(4129) Richelen = 1988 DM

Discovered 1988 Feb. 22 by R. H. McNaught at Siding Spring.

Named in honor of Richard A. Keen and Helen C. Duran, friends of the discoverer, on the occasion of their wedding. Richard has been a research meteorologist, more recently turning to writing and popularization of meteorology. His interests in amateur astronomy include visual photometry of comets and studies of the brightness of lunar eclipses. Helen is a nurse specializing in hospice care.

(4130) Ramanujan = 1988 DQ1

Discovered 1988 Feb. 17 by R. Rajamohan at the Vainu Bappu Observatory, Kavalur.

Named in memory of Srinivasa Ramanujan (1887-1920), the Indian mathematical genius who has been classed with Euler and Jacobi and is regarded as one of the truly great algorists in the history of mathematics. His work on the theory of partitions, done in Cambridge in collaboration with Hardy, won him worldwide recognition, and he became the first Indian mathematician to be elected a fellow of the Royal Society. The Hardy-Ramanujan theory led to the circle method, which is today one of the most powerful tools in analytic number theory. Ramanujan gave an analytic expression for pi that has been used on powerful digital computers to generate accurate values to seventeen million decimal places. Terminally ill, he returned to India in 1919 and spent his last year in Madras on further mathematical investigations, which he recorded in a notebook. This notebook was subsequently lost, eventually to be retrieved as it was about to be incinerated in Cambridge following the death of the mathematician Watson. G. E. Andrews resurrected the notebook in 1976 and by making it available for wide study caused a revival of interest in Ramanujan's work. Citation prepared by D. C. V. Mallik.

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EPHEMERIDES.

Comet Okazaki-Levy-Rudenko (1989r) Elements MPC 15215

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1989	10 01	14 40.25	+30 47.5	1.474	1.066	46.3	42.8	8.1
1989	10 06	14 35.08	+30 19.9					
1989	10 11	14 29.58	+29 49.2	1.376	0.921	42.0	46.5	7.3
1989	10 16	14 23.50	+29 11.8					
1989	10 21	14 16.58	+28 21.3	1.235	0.791	39.7	53.6	6.4
1989	10 26	14 08.59	+27 08.2					
1989	10 31	13 59.37	+25 17.3	1.050	0.691	39.4	65.8	5.5
1989	11 05	13 48.89	+22 26.0					
1989	11 10	13 37.38	+18 01.8	0.832	0.644	40.2	83.3	4.7
1989	11 15	13 25.32	+11 21.2					
1989	11 20	13 13.24	+01 33.0	0.624	0.665	41.5	100.0	4.2
1989	11 25	13 01.45	-11 59.9					
1989	11 30	12 49.72	-28 44.4	0.517	0.748	48.1	100.9	4.3
1989	12 05	12 36.98	-46 12.9					
1989	12 10	12 20.43	-61 32.0	0.582	0.869	61.1	83.0	5.2

1989 12 15	11 52.2	-73 26.5					
1989 12 20	10 40.6	-81 56.5	0.766	1.009	69.2	65.7	6.5

Comet Helin-Roman (1989s) Elements MPC 15215

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1989 10 01		17 13.24	-31 42.4	1.399	1.462	72.9	40.9	14.4
1989 10 11		17 11.64	-35 35.6					
1989 10 21		17 13.18	-38 29.1	1.953	1.605	55.0	30.5	15.5
1989 10 31		17 16.92	-40 49.7					
1989 11 10		17 22.24	-42 52.0	2.417	1.778	40.1	21.0	16.4
1989 11 20		17 28.74	-44 44.2					
1989 11 30		17 36.13	-46 31.9	2.771	1.970	29.2	14.2	17.2

1989 QF a,e,i = 1.15, 0.41, 4 Elements MPC 15255

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 10 01		22 39.71	-04 31.1	0.385	1.354	152.3	20.1	18.0
1989 10 11		22 33.39	-04 46.0					
1989 10 21		22 33.73	-04 35.2	0.579	1.444	131.2	31.2	19.3
1989 10 31		22 38.72	-04 04.5					
1989 11 10		22 47.09	-03 17.1	0.804	1.515	114.8	36.4	20.2
1989 11 20		22 57.90	-02 15.9					
1989 11 30		23 10.54	-01 03.2	1.044	1.567	101.0	38.2	20.9

1989 RS1 a,e,i = 2.30, 0.48, 7 Elements MPC 15255

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 10 01		23 09.74	-12 08.2	0.219	1.204	155.7	20.0	16.0
1989 10 06		23 26.28	-13 17.8					
1989 10 11		23 42.30	-14 02.8	0.244	1.217	151.1	23.3	16.3
1989 10 16		23 57.53	-14 23.9					
1989 10 21		00 11.78	-14 23.5	0.281	1.240	146.9	26.0	16.8
1989 10 26		00 25.01	-14 04.2					
1989 10 31		00 37.29	-13 28.8	0.329	1.271	142.9	28.1	17.2
1989 11 05		00 48.73	-12 40.1					
1989 11 10		00 59.45	-11 41.1	0.390	1.309	139.0	29.7	17.7
1989 11 15		01 09.56	-10 34.2					
1989 11 20		01 19.16	-09 21.7	0.461	1.354	135.0	31.0	18.2
1989 11 25		01 28.38	-08 05.1					
1989 11 30		01 37.31	-06 45.7	0.544	1.403	130.8	32.1	18.6
1989 12 05		01 46.05	-05 24.6					
1989 12 10		01 54.66	-04 03.0	0.638	1.457	126.3	33.0	19.1
1989 12 15		02 03.19	-02 41.6					
1989 12 20		02 11.67	-01 21.2	0.744	1.513	121.7	33.6	19.5
1989 12 25		02 20.14	-00 02.1					
1989 12 30		02 28.64	+01 15.3	0.861	1.572	116.8	33.9	19.9

(4197) 1982 TA a,e,i = 2.30, 0.77, 12 Elements MPC 15225

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 10 01		00 49.79	+05 08.0	0.492	1.492	173.8	4.2	14.6
1989 10 06		00 33.94	+05 07.7					
1989 10 11		00 13.38	+05 04.9	0.377	1.369	167.5	9.1	14.0
1989 10 16		23 47.14	+04 59.3					
1989 10 21		23 14.31	+04 49.7	0.290	1.241	143.4	28.6	13.8
1989 10 26		22 34.49	+04 34.5					
1989 10 31		21 48.37	+04 12.3	0.240	1.108	112.8	55.7	13.8
1989 11 05		20 58.01	+03 42.0					
1989 11 10		20 06.40	+03 03.1	0.229	0.971	78.5	88.1	14.5
1989 11 15		19 16.47	+02 14.8					
1989 11 20		18 30.41	+01 15.0	0.258	0.833	46.8	120.1	16.3

1989 RC a,e,i = 2.31, 0.51, 7 Elements MPC 15255

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	10 01	01 05.31	-20 09.9	0.283	1.264	155.1	19.5	16.1
1989	10 11	01 07.33	-18 44.2					
1989	10 21	01 08.58	-16 45.7	0.413	1.373	151.7	20.1	17.2
1989	10 31	01 10.59	-14 25.8					
1989	11 10	01 14.25	-11 53.7	0.591	1.498	141.4	24.3	18.2
1989	11 20	01 19.79	-09 17.1					
1989	11 30	01 27.13	-06 41.0	0.820	1.631	128.8	28.1	19.2
1989	12 10	01 36.13	-04 08.1					
1989	12 20	01 46.55	-01 40.6	1.097	1.766	116.0	30.1	20.1

1989 JA a,e,i = 1.77, 0.48, 15 Elements MPC 15253

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	10 01	04 06.44	-07 46.8	0.482	1.333	124.2	38.4	16.9
1989	10 06	03 55.79	-06 50.0					
1989	10 11	03 43.88	-05 48.3	0.493	1.404	138.0	28.4	16.8
1989	10 16	03 31.09	-04 41.5					
1989	10 21	03 17.83	-03 30.2	0.520	1.475	152.0	18.5	16.8
1989	10 26	03 04.61	-02 15.5					
1989	10 31	02 51.91	-00 58.7	0.568	1.545	163.0	10.8	16.8
1989	11 05	02 40.20	+00 18.8					
1989	11 10	02 29.79	+01 35.6	0.640	1.614	163.2	10.2	17.1
1989	11 15	02 20.89	+02 50.5					
1989	11 20	02 13.55	+04 02.8	0.735	1.680	154.0	14.9	17.7
1989	11 25	02 07.78	+05 12.4					
1989	11 30	02 03.50	+06 19.1	0.851	1.745	143.4	19.7	18.2
1989	12 05	02 00.62	+07 23.3					
1989	12 10	01 59.03	+08 25.1	0.984	1.807	133.2	23.4	18.7
1989	12 15	01 58.58	+09 24.6					
1989	12 20	01 59.14	+10 22.2	1.131	1.867	123.8	26.0	19.2
1989	12 25	02 00.61	+11 18.1					
1989	12 30	02 02.88	+12 12.5	1.289	1.925	115.1	27.5	19.6
1990	01 04	02 05.87	+13 05.6					
1990	01 09	02 09.49	+13 57.5	1.455	1.980	107.0	28.3	19.9

Periodic Comet Tempel 2 (1987g) Elements MPC 11522

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1989	10 01	06 42.03	+15 23.7	3.258	3.359	87.1	17.3	20.7
1989	10 11	06 45.54	+15 12.1					
1989	10 21	06 47.06	+15 02.6	3.052	3.452	105.4	16.1	20.6
1989	10 31	06 46.45	+14 56.4					
1989	11 10	06 43.63	+14 54.4	2.869	3.542	125.9	13.1	20.4
1989	11 20	06 38.68	+14 57.2					
1989	11 30	06 31.81	+15 05.2	2.750	3.628	148.5	8.2	20.2
1989	12 10	06 23.44	+15 18.0					
1989	12 20	06 14.23	+15 35.0	2.737	3.710	170.2	2.6	20.1
1989	12 30	06 04.88	+15 55.3					
1990	01 09	05 56.16	+16 18.2	2.850	3.788	159.9	5.1	20.3

Periodic Comet Churyumov-Gerasimenko (1988i) Elements MPC 11502

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1989	10 01	10 24.20	+15 21.7	2.482	1.763	35.3	19.2	19.8
1989	10 11	10 45.96	+13 29.3					
1989	10 21	11 06.00	+11 41.2	2.490	1.908	44.2	21.4	20.2
1989	10 31	11 24.42	+09 59.6					
1989	11 10	11 41.22	+08 26.3	2.459	2.056	54.9	23.2	20.6
1989	11 20	11 56.40	+07 02.9					
1989	11 30	12 09.92	+05 50.8	2.386	2.204	67.4	24.4	20.8

1989 12 10	12 21.64	+04 51.5						
1989 12 20	12 31.43	+04 06.0	2.278	2.352	82.0	24.5	21.0	
1989 12 30	12 39.10	+03 35.6						
1990 01 09	12 44.43	+03 21.2	2.149	2.498	98.9	22.9	21.1	
1990 01 19	12 47.20	+03 23.3						
1990 01 29	12 47.24	+03 41.7	2.025	2.641	118.5	19.1	21.1	
1990 02 08	12 44.49	+04 15.3						
1990 02 18	12 39.09	+05 01.3	1.945	2.781	140.7	13.0	21.1	
1990 02 28	12 31.43	+05 55.3						
1990 03 10	12 22.21	+06 51.4	1.950	2.917	163.9	5.4	21.0	

Periodic Comet Wild 2 (1989t) Elements MPC 12125

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1989 10 21	03 44.67	+15 24.3	2.742	3.634	149.3	8.0	20.8
1989 10 31	03 37.97	+14 54.9					
1989 11 10	03 29.93	+14 22.3	2.555	3.538	172.0	2.2	20.5
1989 11 20	03 21.15	+13 48.7					
1989 11 30	03 12.39	+13 17.2	2.490	3.439	161.6	5.2	20.3
1989 12 10	03 04.42	+12 50.8					
1989 12 20	02 57.90	+12 32.3	2.541	3.338	138.0	11.4	20.3
1989 12 30	02 53.31	+12 23.5					
1990 01 09	02 50.93	+12 25.5	2.678	3.233	116.1	15.9	20.2
1990 01 19	02 50.82	+12 37.9					
1990 01 29	02 52.94	+13 00.2	2.858	3.125	96.4	18.3	20.2
1990 02 08	02 57.17	+13 31.0					
1990 02 18	03 03.34	+14 08.8	3.045	3.015	78.9	18.8	20.2
1990 02 28	03 11.28	+14 52.2					
1990 03 10	03 20.84	+15 39.4	3.209	2.903	63.3	17.8	20.2
1990 03 20	03 31.86	+16 29.0					
1990 03 30	03 44.23	+17 19.6	3.334	2.788	49.3	15.8	20.1
1990 04 09	03 57.85	+18 09.5					
1990 04 19	04 12.63	+18 57.6	3.409	2.671	36.6	13.0	19.9

Periodic Comet Tuttle-Giacobini-Kresak Elements MPC 12135

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		m2
1989 11 10	10 42.02	+05 30.9	1.655	1.564	-2.41	+7.7	21.1
1989 11 20	11 14.10	+03 02.2					
1989 11 30	11 49.05	+00 19.6	1.392	1.402	-2.79	+10.6	20.7
1989 12 10	12 27.23	-02 33.2					
1989 12 20	13 08.88	-05 29.9	1.197	1.256	-3.45	+12.3	20.3
1989 12 30	13 53.86	-08 20.6					
1990 01 09	14 41.46	-10 52.4	1.089	1.142	-3.69	+11.0	20.0
1990 01 19	15 30.48	-12 53.1					
1990 01 29	16 19.32	-14 14.1	1.071	1.077	-3.25	+7.6	19.9
1990 02 08	17 06.37	-14 53.5					
1990 02 18	17 50.44	-14 55.4	1.115	1.076	-2.52	+5.0	20.0
1990 02 28	18 30.81	-14 27.2					
1990 03 10	19 07.16	-13 37.5	1.183	1.140	-1.92	+3.8	20.2
1990 03 20	19 39.50	-12 34.3					
1990 03 30	20 07.96	-11 24.3	1.241	1.253	-1.50	+3.4	20.4
1990 04 09	20 32.72	-10 13.6					
1990 04 19	20 53.95	-09 06.8	1.268	1.398	-1.26	+3.2	20.6
1990 04 29	21 11.74	-08 08.1					
1990 05 09	21 26.10	-07 21.4	1.260	1.560	-1.16	+2.9	20.7
1990 05 19	21 36.99	-06 50.2					
1990 05 29	21 44.25	-06 37.9	1.224	1.728	-1.20	+2.1	20.7
1990 06 08	21 47.72	-06 47.7					
1990 06 18	21 47.29	-07 21.7	1.181	1.897	-1.38	+0.6	20.6
1990 06 28	21 42.97	-08 20.7					

1990 07 08	21 35.12	-09 42.3	1.167	2.065	-1.63	-1.3	20.4
1990 07 18	21 24.55	-11 20.3					
1990 07 28	21 12.44	-13 05.6	1.226	2.228	-1.78	-2.8	20.4
1990 08 07	21 00.31	-14 47.5					
1990 08 17	20 49.52	-16 17.7	1.389	2.386	-1.71	-3.0	20.8

Periodic Comet Schwassmann-Wachmann 3 Elements MPC 12122

Date ET	R. A. (1950) Decl.	Delta	r	Variation		m2
1989 11 10	11 32.14 +13 38.3	2.794	2.443	-1.14	+6.0	20.6
1989 11 20	11 48.41 +12 23.7					
1989 11 30	12 05.02 +11 10.3	2.398	2.275	-0.72	+8.0	20.0
1989 12 10	12 22.01 +09 58.7					
1989 12 20	12 39.49 +08 49.8	1.996	2.101	-1.02	+10.8	19.2
1989 12 30	12 57.58 +07 44.2					
1990 01 09	13 16.43 +06 42.5	1.603	1.921	-1.49	+14.8	18.4
1990 01 19	13 36.31 +05 45.0					
1990 01 29	13 57.56 +04 51.6	1.235	1.735	-2.23	+21.0	17.4
1990 02 08	14 20.72 +04 01.3					
1990 02 18	14 46.64 +03 11.4	0.906	1.546	-3.49	+30.6	16.2
1990 02 28	15 16.60 +02 17.8					
1990 03 10	15 52.62 +01 12.2	0.633	1.358	-5.69	+45.8	14.8
1990 03 20	16 37.78 -00 17.5					
1990 03 30	17 35.85 -02 24.5	0.436	1.182	-8.91	+63.4	13.4
1990 04 09	18 49.10 -05 09.6					
1990 04 19	20 12.84 -07 54.9	0.366	1.036	-8.27	+50.4	12.5
1990 04 29	21 34.02 -09 41.4					
1990 05 09	22 42.15 -10 10.6	0.443	0.949	-2.99	+14.2	12.5
1990 05 19	23 35.94 -09 42.1					
1990 05 29	00 18.45 -08 41.9	0.589	0.947	-0.85	-4.4	13.1
1990 06 08	00 52.80 -07 28.9					
1990 06 18	01 21.10 -06 16.1	0.731	1.032	-0.41	-12.5	14.0
1990 06 28	01 44.51 -05 13.0					
1990 07 08	02 03.56 -04 25.2	0.832	1.176	-0.38	-16.2	14.8
1990 07 18	02 18.53 -03 56.1					
1990 07 28	02 29.32 -03 47.6	0.885	1.352	-0.54	-18.9	15.5
1990 08 07	02 35.74 -03 59.7					
1990 08 17	02 37.53 -04 31.2	0.903	1.539	-0.88	-21.4	16.1
1990 08 27	02 34.42 -05 19.2					
1990 09 06	02 26.46 -06 17.5	0.917	1.728	-1.39	-23.5	16.7
1990 09 16	02 14.22 -07 17.8					
1990 09 26	01 58.90 -08 09.2	0.975	1.914	-1.84	-23.0	17.3
1990 10 06	01 42.38 -08 41.6					
1990 10 16	01 26.65 -08 49.5	1.122	2.095	-1.92	-19.3	18.0
1990 10 26	01 13.33 -08 32.3					
1990 11 05	01 03.35 -07 53.2	1.372	2.269	-1.66	-14.7	18.7
1990 11 15	00 56.91 -06 57.6					
1990 11 25	00 53.82 -05 49.9	1.707	2.437	-1.32	-10.9	19.5

Periodic Comet Parker-Hartley (1987 XXXVI) Elements MPC 14460

Date ET	R. A. (1950) Decl.	Delta	r	Elong.	Phase	m2
1989 11 10	12 46.07 -08 56.8	5.452	4.654	33.1	6.7	18.4
1989 11 20	12 54.21 -09 49.6					
1989 11 30	13 01.83 -10 39.3	5.285	4.697	49.0	9.1	18.3
1989 12 10	13 08.82 -11 25.3					
1989 12 20	13 15.05 -12 06.8	5.058	4.739	65.7	10.9	18.3
1989 12 30	13 20.41 -12 43.4					
1990 01 09	13 24.74 -13 14.1	4.792	4.780	83.4	11.8	18.2
1990 01 19	13 27.94 -13 38.4					
1990 01 29	13 29.87 -13 55.5	4.513	4.820	102.3	11.5	18.1

1990 02 08	13 30.46	-14 04.7						
1990 02 18	13 29.67	-14 05.6	4.256	4.859	122.5	9.9	18.0	
1990 02 28	13 27.52	-13 57.9						
1990 03 10	13 24.13	-13 41.5	4.060	4.897	143.8	6.9	17.9	
1990 03 20	13 19.72	-13 17.2						
1990 03 30	13 14.56	-12 46.2	3.960	4.934	165.7	2.9	17.9	
1990 04 09	13 09.06	-12 10.4						
1990 04 19	13 03.59	-11 32.2	3.978	4.970	169.9	2.0	18.0	
1990 04 29	12 58.54	-10 54.1						
1990 05 09	12 54.25	-10 18.7	4.115	5.005	148.7	6.0	18.1	
1990 05 19	12 50.95	-09 48.0						
1990 05 29	12 48.81	-09 23.7	4.352	5.039	128.0	9.1	18.2	
1990 06 08	12 47.90	-09 06.7						
1990 06 18	12 48.21	-08 57.5	4.656	5.072	108.6	10.9	18.4	
1990 06 28	12 49.70	-08 55.9						
1990 07 08	12 52.30	-09 01.8	4.993	5.104	90.5	11.5	18.6	
1990 07 18	12 55.89	-09 14.5						
1990 07 28	13 00.40	-09 33.3	5.330	5.135	73.5	10.9	18.7	
1990 08 07	13 05.70	-09 57.5						
1990 08 17	13 11.70	-10 26.4	5.641	5.164	57.3	9.5	18.9	
1990 08 27	13 18.31	-10 59.3						
1990 09 06	13 25.43	-11 35.2	5.905	5.193	41.5	7.4	19.0	

2069 T-2 a,e,i = 3.00, 0.06, 11 Elements MPC 15256

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 10 01	02 39.77	+12 51.1	2.285	3.163	145.6	10.3	16.9
1989 10 11	02 34.35	+11 53.3					
1989 10 21	02 27.56	+10 49.0	2.188	3.169	168.4	3.6	16.5
1989 10 31	02 20.06	+09 42.7					
1989 11 10	02 12.65	+08 39.6	2.204	3.175	166.2	4.3	16.6
1989 11 20	02 06.10	+07 44.7					
1989 11 30	02 01.01	+07 01.8	2.335	3.180	143.1	10.7	16.9
1989 12 10	01 57.80	+06 33.2					
1989 12 20	01 56.67	+06 19.4	2.555	3.184	121.7	15.2	17.3

2570 P-L a,e,i = 3.16, 0.12, 6 Elements MPC 12698

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 10 21	04 31.74	+15 15.7	2.742	3.544	138.0	10.8	18.5
1989 10 31	04 27.00	+14 46.9					
1989 11 10	04 20.64	+14 16.8	2.595	3.542	160.0	5.5	18.2
1989 11 20	04 13.16	+13 47.3					
1989 11 30	04 05.24	+13 20.5	2.561	3.538	171.0	2.5	18.0
1989 12 10	03 57.60	+12 58.8					
1989 12 20	03 50.94	+12 43.9	2.647	3.534	150.0	8.0	18.3
1989 12 30	03 45.79	+12 37.3					
1990 01 09	03 42.50	+12 39.5	2.835	3.528	128.1	12.7	18.7

1974 VS a,e,i = 2.88, 0.08, 3 Elements MPC 15239

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 10	05 59.50	+25 07.2	2.052	2.858	137.1	13.6	16.5
1989 11 20	05 54.24	+25 18.3					
1989 11 30	05 46.61	+25 27.4	1.926	2.873	160.1	6.7	16.2
1989 12 10	05 37.35	+25 32.7					
1989 12 20	05 27.50	+25 33.5	1.908	2.889	174.6	1.8	15.9
1989 12 30	05 18.17	+25 30.1					
1990 01 09	05 10.43	+25 24.2	2.006	2.904	150.8	9.5	16.4
1990 01 19	05 04.98	+25 17.8					
1990 01 29	05 02.21	+25 12.8	2.201	2.920	128.6	15.3	16.8

1978 RX5 a,e,i = 2.31, 0.12, 6 Elements MPC 15240

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	10 01	06 15.60	+27 25.2	2.050	2.340	93.8	25.3	18.6
1989	10 11	06 24.55	+27 52.3					
1989	10 21	06 30.86	+28 22.1	1.832	2.367	110.1	23.3	18.4
1989	10 31	06 34.08	+28 55.9					
1989	11 10	06 33.82	+29 33.6	1.639	2.393	129.3	18.7	18.0
1989	11 20	06 29.88	+30 13.6					
1989	11 30	06 22.33	+30 52.2	1.505	2.418	151.4	11.2	17.6
1989	12 10	06 11.80	+31 24.3					
1989	12 20	05 59.50	+31 44.9	1.465	2.442	171.4	3.5	17.3

(3925) 1977 SS2 a,e,i = 3.17, 0.19, 16 Elements MPC 13846

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 10	06 56.73	+03 21.0	2.290	2.914	120.0	17.1	15.9
1989	11 20	06 55.08	+02 40.3					
1989	11 30	06 51.09	+02 10.9	2.134	2.949	138.8	12.7	15.7
1989	12 10	06 45.06	+01 56.0					
1989	12 20	06 37.56	+01 58.1	2.061	2.985	155.6	7.8	15.4
1989	12 30	06 29.33	+02 18.0					
1990	01 09	06 21.29	+02 54.7	2.095	3.021	156.3	7.5	15.5
1990	01 19	06 14.28	+03 45.3					
1990	01 29	06 08.96	+04 45.9	2.236	3.058	140.1	11.9	15.8

1978 SU5 a,e,i = 2.31, 0.05, 6 Elements MPC 10536

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 10	07 00.69	+17 29.4	1.615	2.302	122.4	21.3	18.3
1989	11 20	07 00.56	+16 48.8					
1989	11 30	06 57.02	+16 12.4	1.426	2.292	142.9	15.0	17.8
1989	12 10	06 50.24	+15 42.0					
1989	12 20	06 40.88	+15 18.8	1.316	2.281	165.4	6.3	17.3
1989	12 30	06 30.05	+15 03.7					
1990	01 09	06 19.25	+14 57.1	1.309	2.271	164.4	6.7	17.3
1990	01 19	06 09.99	+14 58.7					
1990	01 29	06 03.39	+15 07.8	1.404	2.262	141.8	15.6	17.8

3060 T-2 a,e,i = 2.44, 0.16, 3 Elements MPC 14967

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	06 55.56	+24 13.0	1.279	2.159	144.5	15.4	17.9
1989	12 10	06 49.81	+24 41.7					
1989	12 20	06 41.00	+25 12.4	1.162	2.134	168.1	5.5	17.4
1989	12 30	06 30.31	+25 40.8					
1990	01 09	06 19.47	+26 03.1	1.145	2.113	166.2	6.4	17.3
1990	01 19	06 10.27	+26 17.8					
1990	01 29	06 04.11	+26 26.0	1.225	2.095	142.6	16.6	17.8
1990	02 08	06 01.80	+26 29.6					
1990	02 18	06 03.48	+26 30.2	1.377	2.080	122.2	23.7	18.3

(3906) 1987 KE1 a,e,i = 2.93, 0.07, 26 Elements MPC 13677

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	06 53.74	-07 49.2	2.171	2.930	132.5	14.4	15.7
1989	12 10	06 47.61	-07 58.9					
1989	12 20	06 39.89	-07 44.4	2.073	2.944	146.5	10.6	15.5
1989	12 30	06 31.32	-07 03.7					
1990	01 09	06 22.81	-05 57.8	2.072	2.957	148.8	9.9	15.5
1990	01 19	06 15.25	-04 30.7					
1990	01 29	06 09.37	-02 48.1	2.176	2.971	136.8	13.1	15.7
1990	02 08	06 05.65	-00 56.7					
1990	02 18	06 04.30	+00 57.3	2.366	2.985	119.9	16.7	16.0

1985 UJ3 a,e,i = 2.32, 0.24, 1 Elements MPC 13475

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 02.65	+22 06.3	1.638	2.496	142.7	13.9	17.8
1989	12 10	06 54.24	+22 21.6					
1989	12 20	06 43.55	+22 38.2	1.572	2.542	167.5	4.8	17.4
1989	12 30	06 31.74	+22 53.5					
1990	01 09	06 20.28	+23 05.6	1.618	2.586	166.8	5.0	17.5
1990	01 19	06 10.47	+23 14.1					
1990	01 29	06 03.27	+23 20.0	1.776	2.627	142.5	13.2	18.0
1990	02 08	05 59.16	+23 24.3					
1990	02 18	05 58.21	+23 28.0	2.016	2.665	121.1	18.5	18.5

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

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 08.74	+45 26.0	1.591	2.419	138.4	15.7	17.2
1989	12 10	06 59.61	+46 09.0					
1989	12 20	06 47.19	+46 29.8	1.526	2.449	154.1	10.1	16.9
1989	12 30	06 33.14	+46 21.3					
1990	01 09	06 19.61	+45 42.0	1.560	2.480	153.7	10.1	17.0
1990	01 19	06 08.51	+44 37.0					
1990	01 29	06 01.03	+43 15.2	1.693	2.511	137.8	15.3	17.4
1990	02 08	05 57.64	+41 45.6					
1990	02 18	05 58.14	+40 15.4	1.904	2.543	119.7	19.7	17.8

(3932) 1984 SC5 a,e,i = 2.57, 0.17, 15 Elements MPC 13849

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 08.57	+38 44.3	2.131	2.959	140.4	12.3	16.9
1989	12 10	06 59.88	+39 04.7					
1989	12 20	06 48.81	+39 12.5	2.028	2.970	159.8	6.6	16.6
1989	12 30	06 36.44	+39 03.4					
1990	01 09	06 24.18	+38 35.9	2.036	2.980	160.0	6.5	16.6
1990	01 19	06 13.39	+37 52.2					
1990	01 29	06 05.08	+36 57.1	2.158	2.987	140.7	12.0	17.0
1990	02 08	05 59.82	+35 56.1					
1990	02 18	05 57.72	+34 54.1	2.368	2.992	120.3	16.6	17.3

1981 EY20 a,e,i = 2.94, 0.11, 1 Elements MPC 10384

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 04.19	+23 49.2	2.170	3.013	142.5	11.5	18.2
1989	12 10	06 57.76	+23 58.7					
1989	12 20	06 49.45	+24 08.5	2.068	3.033	166.2	4.4	17.8
1989	12 30	06 40.07	+24 16.6					
1990	01 09	06 30.64	+24 21.7	2.081	3.052	169.0	3.5	17.8
1990	01 19	06 22.18	+24 23.2					
1990	01 29	06 15.51	+24 21.8	2.210	3.071	145.3	10.5	18.2
1990	02 08	06 11.19	+24 18.5					
1990	02 18	06 09.44	+24 14.2	2.430	3.089	123.6	15.4	18.6

1977 QW2 a,e,i = 2.39, 0.21, 5 Elements MPC 10153

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 12.31	+14 50.4	2.014	2.833	139.0	13.2	18.5
1989	12 10	07 05.44	+14 43.1					
1989	12 20	06 56.49	+14 43.5	1.899	2.850	161.9	6.2	18.1
1989	12 30	06 46.25	+14 51.0					
1990	01 09	06 35.80	+15 04.5	1.896	2.865	167.8	4.2	18.0
1990	01 19	06 26.24	+15 22.7					
1990	01 29	06 18.48	+15 44.2	2.010	2.877	145.5	11.2	18.4
1990	02 08	06 13.17	+16 07.6					
1990	02 18	06 10.56	+16 31.9	2.217	2.885	123.8	16.5	18.8

1988 JL a,e,i = 1.95, 0.10, 24 Elements MPC 13469

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	07 24.67	+29 06.1	1.194	2.038	138.2	18.8	17.3
1989 12 10	07 17.02	+32 04.5					
1989 12 20	07 04.77	+35 07.3	1.106	2.058	159.8	9.5	16.8
1989 12 30	06 49.02	+37 55.2					
1990 01 09	06 32.01	+40 10.7	1.125	2.075	159.6	9.5	16.9
1990 01 19	06 16.46	+41 45.7					
1990 01 29	06 04.67	+42 43.1	1.248	2.091	138.6	18.1	17.4
1990 02 08	05 57.98	+43 12.0					
1990 02 18	05 56.59	+43 22.1	1.442	2.105	118.8	24.3	17.9

1984 UX2 a,e,i = 2.69, 0.20, 12 Elements MPC 12202

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	07 22.56	+38 49.4	2.009	2.818	137.7	13.6	17.2
1989 12 10	07 15.10	+39 44.2					
1989 12 20	07 04.88	+40 28.4	1.926	2.856	156.7	7.8	16.9
1989 12 30	06 52.92	+40 55.7					
1990 01 09	06 40.67	+41 02.3	1.950	2.892	159.7	6.8	16.9
1990 01 19	06 29.59	+40 48.5					
1990 01 29	06 20.86	+40 18.1	2.085	2.927	142.4	11.9	17.3
1990 02 08	06 15.21	+39 36.5					
1990 02 18	06 12.83	+38 49.0	2.308	2.961	122.7	16.3	17.6

4829 T-2 a,e,i = 2.44, 0.01, 4 Elements MPC 14970

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	07 17.52	+19 11.1	1.585	2.416	138.8	15.6	16.7
1989 12 10	07 12.16	+19 28.9					
1989 12 20	07 04.01	+19 54.2	1.458	2.413	162.3	7.1	16.2
1989 12 30	06 53.93	+20 24.4					
1990 01 09	06 43.21	+20 56.2	1.434	2.411	171.9	3.3	16.0
1990 01 19	06 33.33	+21 26.8					
1990 01 29	06 25.53	+21 54.5	1.519	2.409	147.6	12.6	16.5
1990 02 08	06 20.70	+22 18.9					
1990 02 18	06 19.20	+22 39.8	1.691	2.407	125.9	19.4	16.9

1974 SF a,e,i = 2.36, 0.24, 5 Elements MPC 12447

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	07 21.86	+14 09.8	1.393	2.216	136.6	17.8	18.3
1989 12 10	07 15.37	+13 58.8					
1989 12 20	07 06.09	+13 59.9	1.324	2.272	159.5	8.7	17.9
1989 12 30	06 55.11	+14 12.2					
1990 01 09	06 43.95	+14 33.7	1.355	2.327	168.9	4.7	17.8
1990 01 19	06 34.07	+15 01.4					
1990 01 29	06 26.61	+15 32.8	1.493	2.382	147.4	12.9	18.4
1990 02 08	06 22.23	+16 05.4					
1990 02 18	06 21.10	+16 37.4	1.717	2.435	126.3	19.1	19.0

1973 SR3 a,e,i = 2.45, 0.19, 2 Elements MPC 14943

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	07 24.75	+25 18.2	1.812	2.629	138.0	14.5	18.1
1989 12 10	07 18.12	+25 42.1					
1989 12 20	07 08.88	+26 06.6	1.710	2.663	161.7	6.7	17.7
1989 12 30	06 57.93	+26 27.9					
1990 01 09	06 46.56	+26 42.6	1.718	2.695	171.7	3.0	17.6
1990 01 19	06 36.11	+26 49.5					
1990 01 29	06 27.71	+26 49.3	1.840	2.725	147.8	11.1	18.1
1990 02 08	06 22.10	+26 43.9					
1990 02 18	06 19.55	+26 35.2	2.055	2.753	125.8	16.9	18.6

5557 P-L a,e,i = 3.13, 0.14, 1 Elements MPC 9301

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	07 18.24	+23 43.7	2.404	3.217	139.3	11.5	18.8
1989 12 10	07 13.11	+23 55.3					
1989 12 20	07 05.96	+24 08.5	2.240	3.192	162.4	5.3	18.4
1989 12 30	06 57.40	+24 21.2					
1990 01 09	06 48.29	+24 31.4	2.188	3.166	172.9	2.2	18.1
1990 01 19	06 39.60	+24 37.9					
1990 01 29	06 32.21	+24 40.5	2.254	3.140	149.0	9.3	18.5
1990 02 08	06 26.85	+24 39.8					
1990 02 18	06 23.91	+24 36.7	2.418	3.114	126.9	14.7	18.8

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

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	07 29.26	+23 13.9	1.838	2.644	136.8	14.8	18.8
1989 12 10	07 22.23	+23 16.3					
1989 12 20	07 12.50	+23 20.2	1.712	2.661	160.9	6.9	18.3
1989 12 30	07 00.92	+23 23.1					
1990 01 09	06 48.76	+23 22.6	1.695	2.674	173.3	2.5	18.1
1990 01 19	06 37.40	+23 17.8					
1990 01 29	06 28.02	+23 09.6	1.796	2.684	148.2	11.2	18.6
1990 02 08	06 21.45	+22 59.3					
1990 02 18	06 18.01	+22 48.3	1.991	2.689	125.6	17.4	19.0

(3979) 1983 VV1 a,e,i = 3.11, 0.04, 3 Elements MPC 14173

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	07 21.05	+26 06.7	2.154	2.969	138.9	12.6	16.5
1989 12 10	07 15.95	+26 21.6					
1989 12 20	07 08.63	+26 36.7	2.020	2.970	161.7	6.0	16.1
1989 12 30	06 59.79	+26 49.0					
1990 01 09	06 50.42	+26 56.3	1.994	2.972	172.2	2.6	15.9
1990 01 19	06 41.61	+26 57.3					
1990 01 29	06 34.32	+26 52.5	2.084	2.974	149.2	9.8	16.3
1990 02 08	06 29.28	+26 42.9					
1990 02 18	06 26.85	+26 30.3	2.270	2.976	127.4	15.3	16.7

1977 EH7 a,e,i = 2.24, 0.08, 8 Elements MPC 13600

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	07 28.41	+34 13.6	1.219	2.055	137.2	19.0	17.6
1989 12 10	07 23.31	+34 47.3					
1989 12 20	07 14.10	+35 12.9	1.112	2.058	158.1	10.3	17.2
1989 12 30	07 01.93	+35 22.0					
1990 01 09	06 48.82	+35 08.6	1.096	2.064	165.7	6.8	17.0
1990 01 19	06 37.02	+34 32.7					
1990 01 29	06 28.33	+33 39.8	1.178	2.071	146.3	15.3	17.5
1990 02 08	06 23.81	+32 37.5					
1990 02 18	06 23.62	+31 32.2	1.338	2.080	126.1	22.6	18.0

1988 RB a,e,i = 2.60, 0.21, 12 Elements MPC 13682

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	07 25.12	+14 50.2	2.225	3.014	136.0	13.1	16.8
1989 12 10	07 18.84	+14 18.9					
1989 12 20	07 10.55	+13 53.7	2.102	3.039	158.5	6.8	16.5
1989 12 30	07 00.94	+13 35.2					
1990 01 09	06 50.93	+13 23.4	2.091	3.062	169.1	3.5	16.3
1990 01 19	06 41.52	+13 17.8					
1990 01 29	06 33.57	+13 17.9	2.199	3.083	148.6	9.6	16.7
1990 02 08	06 27.73	+13 22.5					
1990 02 18	06 24.30	+13 30.5	2.406	3.101	126.8	14.8	17.1

1987 DA6 a,e,i = 2.19, 0.08, 4 Elements MPC 13306

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 28.05	+26 21.7	1.375	2.204	137.3	17.7	16.7
1989	12 10	07 22.95	+26 30.1					
1989	12 20	07 14.25	+26 38.7	1.232	2.184	160.5	8.7	16.2
1989	12 30	07 02.82	+26 43.0					
1990	01 09	06 50.26	+26 39.0	1.186	2.165	172.4	3.5	15.8
1990	01 19	06 38.46	+26 25.3					
1990	01 29	06 29.12	+26 03.6	1.245	2.145	148.2	14.0	16.3
1990	02 08	06 23.39	+25 37.2					
1990	02 18	06 21.68	+25 09.2	1.386	2.126	126.4	22.0	16.8

1982 VE4 a,e,i = 2.21, 0.15, 4 Elements MPC 11736

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 31.90	+21 21.7	1.726	2.529	135.9	15.8	17.5
1989	12 10	07 26.03	+21 46.4					
1989	12 20	07 17.24	+22 17.0	1.587	2.533	159.7	7.7	17.0
1989	12 30	07 06.28	+22 49.9					
1990	01 09	06 54.40	+23 21.1	1.554	2.534	174.5	2.1	16.7
1990	01 19	06 43.06	+23 47.5					
1990	01 29	06 33.57	+24 08.0	1.635	2.533	149.4	11.4	17.2
1990	02 08	06 26.92	+24 22.8					
1990	02 18	06 23.56	+24 33.0	1.810	2.529	126.8	18.2	17.6

1979 ML3 a,e,i = 2.60, 0.10, 3 Elements MPC 6305

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 27.98	+18 21.4	2.009	2.806	136.2	14.1	18.0
1989	12 10	07 22.83	+18 16.5					
1989	12 20	07 15.28	+18 17.4	1.853	2.794	159.3	7.2	17.5
1989	12 30	07 05.96	+18 23.0					
1990	01 09	06 55.87	+18 31.7	1.803	2.782	173.7	2.2	17.2
1990	01 19	06 46.15	+18 42.1					
1990	01 29	06 37.88	+18 53.1	1.869	2.769	150.4	10.1	17.6
1990	02 08	06 31.89	+19 04.1					
1990	02 18	06 28.64	+19 14.6	2.032	2.754	128.2	16.4	18.0

1942 DC a,e,i = 2.40, 0.16, 3 Elements MPC 14341

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 27.59	+19 04.0	1.345	2.169	136.5	18.3	16.7
1989	12 10	07 24.40	+19 12.5					
1989	12 20	07 17.85	+19 30.9	1.192	2.140	159.0	9.5	16.1
1989	12 30	07 08.60	+19 57.2					
1990	01 09	06 57.97	+20 27.8	1.132	2.113	175.1	2.3	15.6
1990	01 19	06 47.67	+20 59.0					
1990	01 29	06 39.32	+21 27.9	1.173	2.089	150.8	13.3	16.1
1990	02 08	06 34.20	+21 53.2					
1990	02 18	06 32.90	+22 14.2	1.298	2.068	129.1	21.8	16.6

1982 SL1 a,e,i = 2.20, 0.17, 5 Elements MPC 13685

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 34.37	+13 58.6	1.255	2.063	133.6	20.2	17.4
1989	12 10	07 29.35	+13 40.5					
1989	12 20	07 20.98	+13 36.3	1.165	2.102	156.2	10.9	17.0
1989	12 30	07 10.23	+13 45.8					
1990	01 09	06 58.67	+14 07.1	1.166	2.143	170.7	4.2	16.8
1990	01 19	06 48.00	+14 36.5					
1990	01 29	06 39.66	+15 10.9	1.271	2.183	150.4	12.9	17.4
1990	02 08	06 34.58	+15 46.8					
1990	02 18	06 33.05	+16 21.6	1.462	2.222	129.1	20.2	17.9

1967 KB a,e,i = 2.55, 0.25, 3 Elements MPC 13852

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	07 39.06	+25 29.2	2.401	3.174	134.8	12.7	18.1
1989 12 10	07 33.34	+25 50.3					
1989 12 20	07 25.35	+26 12.7	2.249	3.183	158.0	6.6	17.7
1989 12 30	07 15.65	+26 33.5					
1990 01 09	07 05.14	+26 49.6	2.208	3.189	174.6	1.7	17.4
1990 01 19	06 54.87	+26 59.1					
1990 01 29	06 45.81	+27 01.6	2.290	3.191	151.7	8.4	17.8
1990 02 08	06 38.78	+26 58.1					
1990 02 18	06 34.22	+26 50.1	2.475	3.191	129.0	13.9	18.2

1983 WF1 a,e,i = 3.18, 0.31, 21 Elements MPC 9687

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	07 39.21	+22 51.4	2.046	2.826	134.4	14.4	16.5
1989 12 10	07 34.10	+24 11.2					
1989 12 20	07 26.52	+25 36.5	1.954	2.889	157.8	7.4	16.2
1989 12 30	07 17.12	+27 01.5					
1990 01 09	07 06.92	+28 20.1	1.974	2.953	173.5	2.2	16.0
1990 01 19	06 57.07	+29 27.6					
1990 01 29	06 48.62	+30 21.8	2.114	3.016	151.4	9.0	16.6
1990 02 08	06 42.40	+31 02.9					
1990 02 18	06 38.83	+31 32.5	2.355	3.078	129.3	14.4	17.0

1977 RO7 a,e,i = 2.40, 0.18, 4 Elements MPC 12568

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	07 42.33	+16 03.1	2.055	2.816	132.4	15.0	18.0
1989 12 10	07 37.27	+16 01.8					
1989 12 20	07 29.74	+16 08.8	1.902	2.826	155.3	8.4	17.7
1989 12 30	07 20.30	+16 23.0					
1990 01 09	07 09.88	+16 42.6	1.854	2.834	174.2	2.0	17.3
1990 01 19	06 59.62	+17 05.3					
1990 01 29	06 50.57	+17 29.1	1.925	2.839	153.3	9.0	17.7
1990 02 08	06 43.64	+17 52.6					
1990 02 18	06 39.31	+18 14.7	2.097	2.842	130.7	15.3	18.1

2480 T-3 a,e,i = 2.40, 0.13, 8 Elements MPC 12574

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989 11 30	07 47.05	+32 40.7	1.811	2.590	133.4	16.1	17.6
1989 12 10	07 42.41	+33 19.5					
1989 12 20	07 34.41	+33 57.0	1.643	2.568	154.7	9.4	17.2
1989 12 30	07 23.62	+34 26.5					
1990 01 09	07 11.26	+34 41.6	1.575	2.544	167.5	4.8	16.9
1990 01 19	06 58.91	+34 38.7					
1990 01 29	06 48.16	+34 18.2	1.618	2.519	149.9	11.3	17.2
1990 02 08	06 40.27	+33 43.7					
1990 02 18	06 35.90	+33 00.5	1.755	2.492	128.4	18.1	17.5

1984 UT a,e,i = 2.78, 0.23, 16 Elements MPC 9590

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1989 11 30	07 40.90	+03 29.1	1.417	2.172	-1.89	+7.7	16.3
1989 12 10	07 38.03	+01 32.9					
1989 12 20	07 32.19	-00 06.3	1.310	2.194	-2.05	+8.1	16.0
1989 12 30	07 24.06	-01 21.1					
1990 01 09	07 14.79	-02 06.2	1.288	2.221	-2.11	+8.6	15.9
1990 01 19	07 05.75	-02 20.3					
1990 01 29	06 58.23	-02 06.0	1.360	2.252	-1.99	+8.7	16.1
1990 02 08	06 53.20	-01 29.7					
1990 02 18	06 51.17	-00 39.4	1.516	2.288	-1.76	+8.1	16.6

2168 T-2 a,e,i = 2.94, 0.12, 2 Elements MPC 15083

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 43.08	+19 04.3	2.041	2.807	132.9	14.9	18.5
1989	12 10	07 39.07	+19 07.4					
1989	12 20	07 32.65	+19 16.9	1.905	2.830	155.6	8.3	18.2
1989	12 30	07 24.38	+19 31.3					
1990	01 09	07 15.17	+19 48.2	1.871	2.854	177.5	0.9	17.8
1990	01 19	07 06.09	+20 05.4					
1990	01 29	06 58.16	+20 21.3	1.953	2.878	155.3	8.2	18.3
1990	02 08	06 52.22	+20 34.9					
1990	02 18	06 48.75	+20 45.8	2.138	2.902	132.8	14.5	18.7

1978 VO8 a,e,i = 3.05, 0.15, 3 Elements MPC 10157

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 43.75	+20 36.6	1.948	2.718	133.0	15.4	17.9
1989	12 10	07 40.96	+20 50.3					
1989	12 20	07 35.56	+21 11.0	1.772	2.697	155.3	8.8	17.4
1989	12 30	07 28.00	+21 36.6					
1990	01 09	07 19.13	+22 04.1	1.694	2.678	179.6	0.1	16.8
1990	01 19	07 10.08	+22 30.2					
1990	01 29	07 02.00	+22 52.6	1.730	2.660	156.0	8.7	17.3
1990	02 08	06 55.93	+23 10.1					
1990	02 18	06 52.50	+23 22.7	1.865	2.645	133.5	15.7	17.7

(4102) 1988 TE3 a,e,i = 3.02, 0.07, 10 Elements MPC 14610

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 44.10	+08 08.0	2.068	2.801	129.5	15.8	16.1
1989	12 10	07 41.05	+07 43.0					
1989	12 20	07 35.71	+07 30.7	1.906	2.801	149.9	10.1	15.7
1989	12 30	07 28.53	+07 32.8					
1990	01 09	07 20.28	+07 49.4	1.839	2.802	165.6	5.0	15.4
1990	01 19	07 11.93	+08 19.0					
1990	01 29	07 04.45	+08 58.8	1.883	2.804	154.4	8.7	15.6
1990	02 08	06 58.70	+09 45.1					
1990	02 18	06 55.23	+10 34.1	2.028	2.807	134.1	14.7	16.0

1985 SL3 a,e,i = 2.27, 0.19, 5 Elements MPC 14194

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 57.19	+24 35.8	1.686	2.445	130.6	17.8	18.4
1989	12 10	07 52.19	+24 43.0					
1989	12 20	07 43.95	+24 53.8	1.559	2.480	153.8	10.1	18.0
1989	12 30	07 33.16	+25 04.1					
1990	01 09	07 21.02	+25 10.1	1.531	2.513	177.0	1.2	17.6
1990	01 19	07 09.04	+25 09.1					
1990	01 29	06 58.64	+25 00.9	1.617	2.544	154.9	9.4	18.1
1990	02 08	06 50.92	+24 46.7					
1990	02 18	06 46.39	+24 28.9	1.804	2.572	132.0	16.6	18.6

1984 UA a,e,i = 2.57, 0.17, 12 Elements MPC 13692

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 50.50	+10 42.5	2.283	3.002	128.9	14.8	17.9
1989	12 10	07 45.95	+10 03.5					
1989	12 20	07 39.15	+09 33.3	2.114	3.008	150.3	9.3	17.6
1989	12 30	07 30.55	+09 13.2					
1990	01 09	07 20.93	+09 03.9	2.047	3.013	166.8	4.3	17.3
1990	01 19	07 11.24	+09 04.7					
1990	01 29	07 02.42	+09 14.5	2.098	3.015	154.1	8.2	17.5
1990	02 08	06 55.31	+09 31.0					
1990	02 18	06 50.43	+09 51.9	2.255	3.015	132.8	13.9	17.9

(4054) 1983 TL a,e,i = 3.04, 0.18, 5 Elements MPC 14465

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 51.26	+27 53.0	1.937	2.701	132.3	15.7	17.0
1989	12 10	07 47.63	+28 21.3					
1989	12 20	07 41.23	+28 51.4	1.812	2.733	154.3	9.0	16.7
1989	12 30	07 32.62	+29 18.8					
1990	01 09	07 22.83	+29 39.1	1.788	2.766	172.5	2.7	16.4
1990	01 19	07 13.08	+29 49.2					
1990	01 29	07 04.55	+29 48.5	1.877	2.800	154.8	8.6	16.8
1990	02 08	06 58.22	+29 38.2					
1990	02 18	06 54.60	+29 20.7	2.066	2.835	133.1	14.7	17.3

2535 P-L a,e,i = 3.15, 0.16, 2 Elements MPC 9069

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 50.88	+19 24.9	2.507	3.242	131.2	13.2	18.1
1989	12 10	07 46.96	+19 35.6					
1989	12 20	07 40.98	+19 52.1	2.360	3.272	153.8	7.6	17.8
1989	12 30	07 33.36	+20 12.6					
1990	01 09	07 24.83	+20 34.9	2.318	3.301	177.6	0.7	17.4
1990	01 19	07 16.24	+20 56.6					
1990	01 29	07 08.43	+21 16.2	2.397	3.329	157.6	6.5	17.8
1990	02 08	07 02.15	+21 32.7					
1990	02 18	06 57.88	+21 45.6	2.585	3.356	134.9	12.0	18.2

1986 CP1 a,e,i = 2.66, 0.12, 4 Elements MPC 10944

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 52.64	+26 17.6	1.730	2.498	131.8	17.1	18.0
1989	12 10	07 50.21	+26 49.1					
1989	12 20	07 44.61	+27 25.7	1.554	2.475	153.7	10.1	17.5
1989	12 30	07 36.24	+28 03.1					
1990	01 09	07 26.06	+28 35.6	1.473	2.452	173.4	2.7	17.0
1990	01 19	07 15.44	+28 58.3					
1990	01 29	07 05.86	+29 08.8	1.501	2.431	155.3	9.7	17.4
1990	02 08	06 58.65	+29 07.5					
1990	02 18	06 54.59	+28 56.4	1.625	2.412	133.2	17.4	17.8

1133 T-2 a,e,i = 2.91, 0.03, 1 Elements MPC 15076

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 52.45	+19 17.9	2.090	2.835	130.8	15.3	17.1
1989	12 10	07 49.25	+19 20.2					
1989	12 20	07 43.55	+19 29.3	1.924	2.837	153.1	9.0	16.7
1989	12 30	07 35.80	+19 43.7					
1990	01 09	07 26.79	+20 01.1	1.857	2.840	176.9	1.1	16.3
1990	01 19	07 17.57	+20 18.9					
1990	01 29	07 09.19	+20 35.1	1.906	2.843	157.8	7.5	16.6
1990	02 08	07 02.62	+20 48.6					
1990	02 18	06 58.43	+20 58.8	2.059	2.846	135.1	14.2	17.0

1982 XV a,e,i = 2.21, 0.06, 2 Elements MPC 12000

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 56.37	+18 53.4	1.504	2.265	129.8	19.5	17.0
1989	12 10	07 53.90	+19 03.9					
1989	12 20	07 47.98	+19 25.6	1.336	2.253	152.1	11.8	16.5
1989	12 30	07 39.00	+19 56.5					
1990	01 09	07 28.00	+20 32.5	1.258	2.240	177.0	1.3	15.9
1990	01 19	07 16.46	+21 08.7					
1990	01 29	07 06.04	+21 41.2	1.287	2.227	157.0	9.9	16.4
1990	02 08	06 58.19	+22 07.8					
1990	02 18	06 53.77	+22 27.9	1.410	2.213	133.9	18.8	16.8

1978 QG2 a,e,i = 2.23, 0.18, 4 Elements MPC 14344

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 59.12	+15 23.2	1.897	2.625	128.3	17.2	18.3
1989	12 10	07 55.23	+15 18.0					
1989	12 20	07 48.47	+15 23.0	1.720	2.623	150.8	10.5	17.9
1989	12 30	07 39.27	+15 37.5					
1990	01 09	07 28.49	+15 59.7	1.639	2.618	173.2	2.5	17.4
1990	01 19	07 17.33	+16 26.6					
1990	01 29	07 07.06	+16 55.6	1.673	2.609	157.2	8.4	17.7
1990	02 08	06 58.83	+17 24.1					
1990	02 18	06 53.35	+17 50.5	1.812	2.598	134.0	15.9	18.1

1987 QW2 a,e,i = 3.21, 0.14, 1 Elements MPC 14197

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 53.31	+22 25.2	2.919	3.645	131.2	11.8	18.3
1989	12 10	07 49.43	+22 39.8					
1989	12 20	07 43.65	+22 58.1	2.743	3.651	153.7	6.8	18.0
1989	12 30	07 36.35	+23 18.2					
1990	01 09	07 28.12	+23 37.9	2.674	3.656	177.2	0.8	17.6
1990	01 19	07 19.72	+23 55.0					
1990	01 29	07 11.90	+24 08.2	2.728	3.660	158.0	5.8	17.9
1990	02 08	07 05.37	+24 17.0					
1990	02 18	07 00.61	+24 21.4	2.894	3.663	135.3	11.0	18.2

(3947) Swedenborg a,e,i = 3.11, 0.15, 5 Elements MPC 14007

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 56.12	+17 12.3	2.445	3.164	129.4	13.9	17.1
1989	12 10	07 52.39	+17 02.4					
1989	12 20	07 46.52	+16 58.9	2.291	3.192	151.8	8.4	16.8
1989	12 30	07 38.96	+17 01.0					
1990	01 09	07 30.39	+17 07.4	2.239	3.219	174.1	1.8	16.5
1990	01 19	07 21.68	+17 16.3					
1990	01 29	07 13.69	+17 26.5	2.307	3.245	158.8	6.3	16.8
1990	02 08	07 07.20	+17 36.7					
1990	02 18	07 02.69	+17 45.9	2.485	3.271	136.2	12.1	17.2

1980 FY4 a,e,i = 2.33, 0.17, 5 Elements MPC 14781

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 01.08	+12 53.5	1.689	2.416	127.1	19.0	18.5
1989	12 10	07 57.49	+12 41.0					
1989	12 20	07 50.89	+12 41.4	1.555	2.452	149.2	11.8	18.1
1989	12 30	07 41.82	+12 54.8					
1990	01 09	07 31.28	+13 19.4	1.512	2.487	170.5	3.7	17.8
1990	01 19	07 20.54	+13 52.0					
1990	01 29	07 10.90	+14 29.2	1.581	2.520	157.7	8.5	18.1
1990	02 08	07 03.47	+15 07.5					
1990	02 18	06 58.86	+15 44.1	1.752	2.552	135.3	15.8	18.6

(4045) 1953 RG a,e,i = 3.22, 0.12, 21 Elements MPC 14462

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 52.96	-04 09.7	2.203	2.854	122.3	17.0	16.2
1989	12 10	07 50.34	-05 42.6					
1989	12 20	07 45.49	-07 00.6	2.040	2.852	138.4	13.2	15.9
1989	12 30	07 38.79	-07 58.2					
1990	01 09	07 30.91	-08 31.3	1.962	2.851	149.1	10.2	15.7
1990	01 19	07 22.72	-08 38.1					
1990	01 29	07 15.13	-08 19.6	1.983	2.852	145.8	11.2	15.8
1990	02 08	07 09.01	-07 39.6					
1990	02 18	07 04.95	-06 44.1	2.097	2.855	132.0	14.9	16.0

4136 T-2 a,e,i = 2.92, 0.21, 7 Elements MPC 14969

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 05.56	+29 42.5	2.462	3.180	129.3	13.9	18.7
1989	12 10	08 01.59	+30 21.8					
1989	12 20	07 55.14	+31 02.7	2.319	3.215	151.1	8.5	18.4
1989	12 30	07 46.65	+31 40.9					
1990	01 09	07 36.87	+32 11.8	2.278	3.249	169.2	3.3	18.1
1990	01 19	07 26.82	+32 31.9					
1990	01 29	07 17.52	+32 40.0	2.357	3.281	156.0	7.0	18.4
1990	02 08	07 09.88	+32 36.5					
1990	02 18	07 04.49	+32 23.6	2.544	3.312	134.4	12.3	18.8

1981 JH a,e,i = 2.22, 0.19, 4 Elements MPC 9683

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 09.24	+24 29.9	1.898	2.622	127.9	17.3	18.1
1989	12 10	08 05.51	+25 01.9					
1989	12 20	07 58.62	+25 40.5	1.731	2.632	150.6	10.6	17.7
1989	12 30	07 48.96	+26 21.5					
1990	01 09	07 37.45	+26 59.2	1.660	2.639	173.5	2.4	17.2
1990	01 19	07 25.38	+27 28.7					
1990	01 29	07 14.17	+27 47.2	1.705	2.642	157.5	8.2	17.6
1990	02 08	07 05.08	+27 54.3					
1990	02 18	06 58.93	+27 51.9	1.856	2.643	134.3	15.5	18.0

1987 FA a,e,i = 2.23, 0.16, 1 Elements MPC 11745

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 03.25	+19 14.5	1.172	1.944	128.3	23.5	16.3
1989	12 10	08 02.21	+19 09.3					
1989	12 20	07 57.14	+19 16.1	1.055	1.970	150.0	14.5	15.8
1989	12 30	07 48.56	+19 33.1					
1990	01 09	07 37.73	+19 56.0	1.018	1.999	174.8	2.6	15.3
1990	01 19	07 26.46	+20 19.7					
1990	01 29	07 16.60	+20 40.5	1.078	2.031	159.6	9.8	15.8
1990	02 08	07 09.67	+20 56.2					
1990	02 18	07 06.43	+21 06.3	1.229	2.064	136.9	19.1	16.4

(3957) 1933 OD a,e,i = 3.10, 0.19, 6 Elements MPC 14165

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 00.12	+13 37.5	2.903	3.591	127.6	12.6	18.1
1989	12 10	07 56.59	+13 34.7					
1989	12 20	07 51.21	+13 39.5	2.724	3.607	149.6	7.9	17.9
1989	12 30	07 44.33	+13 51.8					
1990	01 09	07 36.48	+14 10.2	2.648	3.622	170.8	2.5	17.5
1990	01 19	07 28.37	+14 33.3					
1990	01 29	07 20.70	+14 59.0	2.694	3.635	160.1	5.3	17.7
1990	02 08	07 14.15	+15 25.6					
1990	02 18	07 09.23	+15 51.5	2.854	3.647	137.8	10.5	18.1

1982 BE1 a,e,i = 2.55, 0.19, 6 Elements MPC 10529

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	07 59.58	+14 53.0	1.341	2.098	128.0	21.7	16.7
1989	12 10	07 59.03	+15 07.3					
1989	12 20	07 55.03	+15 38.5	1.210	2.117	149.4	13.7	16.2
1989	12 30	07 47.99	+16 25.5					
1990	01 09	07 38.92	+17 24.0	1.161	2.141	173.0	3.2	15.8
1990	01 19	07 29.28	+18 27.7					
1990	01 29	07 20.64	+19 30.1	1.215	2.168	160.6	8.7	16.1
1990	02 08	07 14.37	+20 26.1					
1990	02 18	07 11.27	+21 13.0	1.362	2.199	138.1	17.5	16.7

1980 FU a,e,i = 2.29, 0.11, 7 Elements MPC 11837

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 11.46	+29 02.9	1.685	2.420	128.0	18.7	18.4
1989	12 10	08 09.17	+29 29.2					
1989	12 20	08 03.26	+29 59.6	1.498	2.398	149.5	12.0	17.9
1989	12 30	07 54.00	+30 28.8					
1990	01 09	07 42.31	+30 50.0	1.400	2.375	169.8	4.2	17.4
1990	01 19	07 29.66	+30 57.2					
1990	01 29	07 17.77	+30 47.9	1.412	2.350	157.0	9.4	17.7
1990	02 08	07 08.26	+30 23.4					
1990	02 18	07 02.14	+29 47.8	1.522	2.325	134.6	17.6	18.1

1977 FT a,e,i = 1.93, 0.10, 20 Elements MPC 13463

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 09.98	-09 14.4	1.297	1.945	116.1	27.1	17.6
1989	12 10	08 08.16	-11 51.2					
1989	12 20	08 02.65	-14 03.4	1.184	1.969	130.3	22.4	17.3
1989	12 30	07 53.82	-15 38.9					
1990	01 09	07 42.69	-16 27.2	1.131	1.993	140.8	18.2	17.1
1990	01 19	07 30.80	-16 23.1					
1990	01 29	07 19.87	-15 28.9	1.155	2.015	140.6	18.1	17.2
1990	02 08	07 11.43	-13 54.3					
1990	02 18	07 06.39	-11 53.4	1.254	2.036	130.2	21.8	17.5

1987 RC1 a,e,i = 3.22, 0.13, 1 Elements MPC 14197

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 05.25	+21 48.9	2.939	3.634	128.3	12.3	17.3
1989	12 10	08 02.02	+22 02.5					
1989	12 20	07 56.82	+22 20.7	2.745	3.634	150.6	7.6	17.0
1989	12 30	07 49.97	+22 41.8					
1990	01 09	07 42.00	+23 03.5	2.654	3.634	174.3	1.5	16.6
1990	01 19	07 33.63	+23 23.3					
1990	01 29	07 25.61	+23 39.5	2.685	3.632	161.2	5.0	16.8
1990	02 08	07 18.70	+23 51.1					
1990	02 18	07 13.44	+23 57.8	2.831	3.629	138.2	10.5	17.1

(3961) 1962 OB a,e,i = 2.62, 0.15, 13 Elements MPC 14167

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 17.81	+28 29.2	2.338	3.030	126.5	15.2	17.4
1989	12 10	08 14.16	+28 38.3					
1989	12 20	08 07.75	+28 49.4	2.145	3.028	148.5	9.8	17.0
1989	12 30	07 58.92	+28 58.8					
1990	01 09	07 48.40	+29 02.5	2.050	3.024	170.3	3.1	16.6
1990	01 19	07 37.25	+28 57.3					
1990	01 29	07 26.60	+28 41.9	2.075	3.018	159.7	6.5	16.8
1990	02 08	07 17.55	+28 17.0					
1990	02 18	07 10.87	+27 44.8	2.212	3.010	136.9	13.0	17.2

1982 SL a,e,i = 2.20, 0.20, 3 Elements MPC 7470

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 19.17	+16 05.1	1.393	2.107	123.8	22.9	17.8
1989	12 10	08 17.20	+15 51.9					
1989	12 20	08 11.54	+15 52.3	1.269	2.154	145.7	14.9	17.4
1989	12 30	08 02.61	+16 05.4					
1990	01 09	07 51.45	+16 28.3	1.226	2.201	170.1	4.4	17.0
1990	01 19	07 39.60	+16 56.6					
1990	01 29	07 28.70	+17 26.1	1.288	2.247	162.4	7.6	17.3
1990	02 08	07 20.17	+17 53.3					
1990	02 18	07 14.84	+18 16.3	1.450	2.291	139.1	16.4	17.9

1978 RZ a,e,i = 2.91, 0.08, 3 Elements MPC 14945

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 12.92	+18 47.9	2.211	2.902	125.9	16.0	17.8
1989	12 10	08 10.71	+19 00.1					
1989	12 20	08 05.98	+19 20.8	2.037	2.918	148.0	10.3	17.4
1989	12 30	07 59.05	+19 48.6					
1990	01 09	07 50.55	+20 20.3	1.956	2.934	172.1	2.6	17.0
1990	01 19	07 41.42	+20 52.7					
1990	01 29	07 32.66	+21 22.5	1.992	2.949	163.2	5.5	17.2
1990	02 08	07 25.26	+21 47.6					
1990	02 18	07 19.94	+22 06.9	2.139	2.964	140.0	12.4	17.7

1981 EC25 a,e,i = 2.17, 0.17, 4 Elements MPC 10541

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 23.65	+24 47.7	1.626	2.333	124.7	20.3	18.3
1989	12 10	08 21.11	+25 14.0					
1989	12 20	08 14.95	+25 48.3	1.480	2.366	146.9	13.1	17.9
1989	12 30	08 05.50	+26 26.1					
1990	01 09	07 53.72	+27 00.7	1.422	2.397	170.5	3.9	17.5
1990	01 19	07 41.06	+27 26.2					
1990	01 29	07 29.17	+27 39.0	1.474	2.425	160.6	7.7	17.7
1990	02 08	07 19.52	+27 38.8					
1990	02 18	07 13.04	+27 28.1	1.630	2.451	137.5	15.8	18.3

1978 TP2 a,e,i = 2.31, 0.15, 4 Elements MPC 13600

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 14.36	+13 58.8	1.348	2.071	124.4	23.2	17.7
1989	12 10	08 13.87	+13 50.9					
1989	12 20	08 09.77	+13 59.3	1.214	2.100	145.5	15.4	17.3
1989	12 30	08 02.38	+14 24.3					
1990	01 09	07 52.64	+15 03.2	1.158	2.132	169.0	5.0	16.8
1990	01 19	07 42.00	+15 50.9					
1990	01 29	07 32.07	+16 41.6	1.203	2.165	163.1	7.6	17.1
1990	02 08	07 24.34	+17 30.1					
1990	02 18	07 19.74	+18 12.6	1.346	2.199	140.3	16.7	17.6

1972 RU3 a,e,i = 2.20, 0.14, 5 Elements MPC 8785

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 22.95	+25 31.8	1.605	2.316	125.0	20.4	18.2
1989	12 10	08 20.92	+26 10.9					
1989	12 20	08 15.23	+26 58.8	1.459	2.345	146.9	13.3	17.8
1989	12 30	08 06.18	+27 50.2					
1990	01 09	07 54.69	+28 37.7	1.399	2.373	169.5	4.3	17.4
1990	01 19	07 42.22	+29 14.0					
1990	01 29	07 30.44	+29 35.1	1.449	2.398	160.0	8.1	17.7
1990	02 08	07 20.89	+29 40.4					
1990	02 18	07 14.53	+29 32.5	1.601	2.422	137.3	16.1	18.2

1988 UP a,e,i = 3.16, 0.16, 2 Elements MPC 13862

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 14.51	+20 53.1	2.753	3.427	126.0	13.5	17.1
1989	12 10	08 11.66	+21 09.2					
1989	12 20	08 06.70	+21 31.3	2.576	3.451	148.2	8.6	16.8
1989	12 30	07 59.93	+21 57.6					
1990	01 09	07 51.91	+22 25.2	2.498	3.475	172.1	2.2	16.4
1990	01 19	07 43.37	+22 51.5					
1990	01 29	07 35.13	+23 14.1	2.541	3.497	163.4	4.6	16.6
1990	02 08	07 27.97	+23 31.7					
1990	02 18	07 22.48	+23 43.6	2.700	3.518	140.3	10.3	17.0

(3966) 1976 SD3 a,e,i = 3.24, 0.03, 4 Elements MPC 14169

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 13.74	+24 22.6	2.454	3.146	126.9	14.5	17.3
1989	12 10	08 11.62	+24 43.5					
1989	12 20	08 07.11	+25 09.8	2.265	3.147	148.6	9.4	16.9
1989	12 30	08 00.48	+25 38.8					
1990	01 09	07 52.35	+26 06.9	2.173	3.149	171.2	2.7	16.5
1990	01 19	07 43.53	+26 30.6					
1990	01 29	07 35.00	+26 47.4	2.198	3.150	162.2	5.5	16.7
1990	02 08	07 27.69	+26 56.0					
1990	02 18	07 22.31	+26 56.7	2.334	3.153	139.6	11.7	17.1

1977 SN a,e,i = 2.37, 0.24, 5 Elements MPC 14012

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 21.88	+21 51.8	2.237	2.912	124.6	16.2	18.3
1989	12 10	08 18.95	+22 20.1					
1989	12 20	08 13.27	+22 56.8	2.046	2.920	147.0	10.6	18.0
1989	12 30	08 05.10	+23 38.9					
1990	01 09	07 55.08	+24 22.2	1.949	2.925	171.1	3.0	17.5
1990	01 19	07 44.18	+25 01.9					
1990	01 29	07 33.55	+25 34.3	1.972	2.926	162.4	5.9	17.7
1990	02 08	07 24.32	+25 57.5					
1990	02 18	07 17.33	+26 11.4	2.109	2.925	138.7	12.9	18.1

1975 TE a,e,i = 2.24, 0.22, 4 Elements MPC 14011

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 27.39	+25 23.7	1.641	2.340	124.0	20.5	18.3
1989	12 10	08 25.00	+25 57.2					
1989	12 20	08 18.98	+26 38.9	1.505	2.385	146.0	13.3	18.0
1989	12 30	08 09.68	+27 23.6					
1990	01 09	07 58.05	+28 04.4	1.456	2.429	169.2	4.4	17.6
1990	01 19	07 45.53	+28 34.7					
1990	01 29	07 33.71	+28 50.9	1.518	2.470	161.0	7.5	17.8
1990	02 08	07 24.07	+28 52.7					
1990	02 18	07 17.51	+28 42.5	1.685	2.509	138.1	15.2	18.4

1988 RA5 a,e,i = 2.47, 0.17, 4 Elements MPC 14953

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 21.86	+20 27.8	2.014	2.696	124.3	17.6	17.5
1989	12 10	08 19.41	+20 50.3					
1989	12 20	08 14.08	+21 22.2	1.850	2.725	146.5	11.5	17.1
1989	12 30	08 06.15	+22 00.9					
1990	01 09	07 56.36	+22 42.1	1.776	2.752	171.0	3.2	16.7
1990	01 19	07 45.74	+23 21.1					
1990	01 29	07 35.52	+23 54.0	1.819	2.777	163.3	5.8	16.9
1990	02 08	07 26.84	+24 18.5					
1990	02 18	07 20.54	+24 34.5	1.972	2.800	139.7	13.2	17.4

(3941) Haydn a,e,i = 2.93, 0.02, 2 Elements MPC 14005

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1989	11 30	08 15.92	+17 35.3	2.181	2.862	125.0	16.4	17.7
1989	12 10	08 14.23	+17 35.1					
1989	12 20	08 10.00	+17 43.9	1.989	2.863	146.6	10.9	17.4
1989	12 30	08 03.49	+18 00.6					
1990	01 09	07 55.28	+18 23.1	1.889	2.863	170.4	3.3	17.0
1990	01 19	07 46.28	+18 48.4					
1990	01 29	07 37.51	+19 13.7	1.903	2.865	164.5	5.3	17.1
1990	02 08	07 30.00	+19 36.4					
1990	02 18	07 24.52	+19 55.1	2.028	2.866	141.3	12.5	17.5