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 =====

ERRATA.

MPC Line
 6349 - 6 For double designation read identification
 6474 3 Add The double designation 1954 QG = 1954 UE1 (MPC 1855 is invalid.
 6509 -19 to -17 The codes 693 and 691 should be interchanged.
 6514 -18 Arc for 1981 VB, for 13 read 23
 6516 - 7 Add The double designations A909 BH = A909 DA (AN 180, 200) and 1952 BK = 1952 DN (MPC 1850) are invalid.
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CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Mag.	N Obs.
197	1950 02	20.06424	07 36 08.66	+29 32 58.2	MPC 2795		1 760
356	1950 07	10.86071	19 33 05.20	-32 54 26.9	MPC 2404	12.8	2 078
722	1946 09	28.89840	23 39 32.81	-11 18 51.9	MPC 3218		020
1953 TU	1953 10	07.27253	00 43 47.39	+09 06 40.5	MPC 4303		3 760
1960 WN	1960 11	22.20858	03 40 43.76	+15 33 14.6	MPC 4731		4 760
1960 WN	1960 11	22.25199	03 40 41.68	+15 32 57.6	MPC 4731		4 760
1960 WO	1960 11	22.20858	03 38 04.86	+08 17 23.4	MPC 4731		4 760
1960 WO	1960 11	22.25199	03 38 01.90	+08 17 36.2	MPC 4731		4 760
1977 QQ4 *	1977 08	18.90121	21 26 17.94	-11 58 00.3	MPC 5193	15.8	095
1981 PF	1981 08	31.34861	21 53 16.44	-15 54 19.5	MPC 6255		675
1981 WE1	1981 12	02.27986	03 21 05.50	+05 55 26.0	MPC 6508	16.5	5 688
1981 WE1	1981 12	02.31319	03 21 04.34	+05 55 15.3	MPC 6508		5 688

Note 1: see also MPC 6580. 2: originally erroneously given as 1950 NC1. 3: originally erroneously given as (1353). 4: the accurate positions of 1960 WN and 1960 WO were originally erroneously interchanged. 5: originally erroneously given as 1981 WJ1.
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DELETED OBSERVATIONS.

The following observations are to be deleted.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Obs.
1936 BF *	1936 01	22.97032	08 06 30.15	+31 41 58.6	MPC 3230	020
1936 BF	1936 01	22.99941	08 06 28.17	+31 42 04.9	MPC 3230	020
1936 CC	1936 02	10.78839	07 46 10.01	+31 28 09.6	MPC 3230	020
1936 CC	1936 02	10.82163	07 46 08.54	+31 28 03.1	MPC 3230	020
1947 DC *	1947 02	20.21526	09 46 26.38	+11 58 39.8	MPC 516	754

1952 RO	*	1952 09 15.75	22 56.0	-16 56	MPC 4352	210
1955 MC1	*	1955 06 16.92219	16 57 23.24	-21 06 36.5	MPC 1754	020
1980 GA		1980 06 11.26181	13 31 08.79	-10 46 29.5	MPC 5402	688
1981 SR		1981 10 05.99834	23 28 04.71	+00 37 02.0	MPC 6439	046
1981 SR		1981 10 06.01275	23 28 04.02	+00 37 06.2	MPC 6439	046

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IDENTIFICATION CHANGES.

Continuation to MPC6482-6483.

Object	Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
A924 FB	*	1924 03 27.95534	11 20 25.37	+04 01 58.7	A924 EL	14	024
A924 FB		1924 04 07.97111	11 12 03.38	+04 39 50.1	A924 EL	14	024
1927 UO	*	1927 10 26.14557	23 47 38.67	-06 15 12.1	1927 RC	14.8	754
1927 UO		1927 10 27.06692	23 47 10.24	-06 16 23.5	1927 RC	14.6	754
1930 UH1	*	1930 10 23.06270	03 47.1	+26 35	961	13.6	094
1933 DJ	*	1933 02 20.93500	08 28 10.15	+18 04 46.1	1933 BQ	15	024
1933 VF	*	1933 11 15.88048	01 53.2	+08 21	1933 UF	13.6	094
1934 JN	*	1934 05 07.82698	14 52.4	-25 55	1934 HD	12.7	078
1935 CA1	*	1935 02 07.04	09 23.8	+11 34	1935 BE		012
1935 DL	*	1935 02 26.89	09 06.3	+11 58	1935 BE		012
1936 BG	*	1936 01 23.04130	09 31 03.10	+12 12 50.1	1936 DL	13	020
1936 BG		1936 01 23.07974	09 31 01.29	+12 12 52.8	1936 DL		020
1936 DR	*	1936 02 24.96644	09 03 10.69	+13 32 54.2	1936 DL	12.5	020
1936 DR		1936 02 25.00245	09 03 09.60	+13 33 05.2	1936 DL		020
1936 FX1	*	1936 03 22.06	13 16.2	+02 23	752		012
1937 AZ	*	1937 01 08.03663	08 57 03.66	+21 41 49.6	1937 AG		020
1937 CM	*	1937 02 06.85399	08 26 47.11	+21 29 26.6	1937 AG		020
1938 FQ	*	1938 03 27.95903	11 49.2	+02 54	1938 DB2	15.2	062
1939 CJ1	*	1939 02 08.90181	09 30 42.12	+15 57 38.4	1939 BQ		020
1939 CJ1		1939 02 08.93158	09 30 40.83	+15 57 41.7	1939 HQ		020
1939 CJ1		1939 02 19.04172	09 20 02.80	+16 22 36.6	1939 BQ		020
1939 CJ1		1939 03 10.90952	09 05 03.35	+16 45 52.0	1939 BQ		020
1939 CJ1		1939 03 12.89228	09 03 33.11	+16 46 11.1	1939 BQ		020
1939 CJ1		1939 03 12.93615	09 03 31.93	+16 46 19.8	1939 BQ		020
1941 MH	*	1941 06 21.934	18 30.0	-22 15	552	13.3	078
1941 XE	*	1941 12 15.802	04 55.3	+11 13	397		080
1942 OE	*	1942 07 16.92951	20 17 02.24	+02 07 48.9	1942 OB		020
1942 OE		1942 07 16.97591	20 17 00.74	+02 07 40.0	1942 OB		020
1942 XY	*	1942 12 04.78604	23 28 46.59	-07 17 42.0	1942 WA	13.0	024
1942 XY		1942 12 04.81590	23 28 47.91	-07 17 34.9	1942 WA		024
1945 KB	*	1945 05 17.94361	15 34 11.51	-17 35 27.4	131	11.8	024
1946 UQ	*	1946 10 20.81449	01 29 20.0	+10 34 35	377		085
1947 QE	*	1947 08 18.14470	22 59 30	-10 00.2	1947 QB		086
1947 QF	*	1947 08 26.08240	23 02 20	-10 06.4	1947 QB		086
1947 WC	*	1947 11 16.10	05 22.4	+16 15	505		020
1948 EC1	*	1948 03 05.77281	09 36 39.4	+12 06 02	778	13.5	085
1948 ED1	*	1948 03 05.83103	09 52 05.6	+02 06 59	386		085
1948 GM	*	1948 04 08.86701	12 23.0	+01 57	811	13.8	094
1948 MK	*	1948 06 30.859	19 25.9	-31 36	303	13.0	078
1948 OJ	*	1948 07 30.851	20 39.3	-20 22	462	13.5	078
1948 PB1	*	1948 08 08.98118	22 15.3	-01 40	696	13.0	094
1948 VP	*	1948 11 08.00	04 40.3	+20 14	379		020
1949 CO	*	1949 02 04.06642	10 43 01.03	+15 35 02.2	331		012
1949 SS1	*	1949 09 19.88672	23 51 10.77	+06 30 43.3	545		983
1949 UG1	*	1949 10 17.87764	01 33.1	+03 51	1949 SG1	12.8	094

1949	YD1	*	1949	12	23.12069	09	13	13.22	+15	58	23.4	465			012
1950	BQ1	*	1950	01	20.18053	04	10	47.41	+25	49	26.8	1950	BN		760
1950	BR1	*	1950	01	22.07254	10	15	57.54	+13	28	39.3	333			012
1950	FQ	*	1950	03	18.81838	10	32	44.9	+06	59	16	661		12.3	085
1950	NT1	*	1950	07	14.31385	21	18.8		-14	31		851		16.7	760
1950	PC1	*	1950	08	03.83381	20	50	01	-17	03.2		851		14.0	078
1950	RH1	*	1950	09	09.25140	22	06	21.8	-11	05	32	1950	QB1	15.4	711
1950	RH1		1950	09	09.29650	22	06	20.3	-11	05	56	1950	QB1	16.0	711
1951	HB	*	1951	04	30.91246	14	17	05.75	-28	12	07.7	1951	GB	16.0	074
1952	BJ2	*	1952	01	30.34442	08	45.7		+22	23		949		15.2	760
1952	DL3	*	1952	02	24.97520	08	26	27.34	+09	58	21.9	840			012
1952	DM3	*	1952	02	29.9238	10	37.9		+16	03		328		11.9	094
1952	HF4	*	1952	04	26.21460	14	17	44.2	-25	02	14	430		16.0	711
1953	EW1	*	1953	03	10.19757	09	28	58.69	+18	35	38.7	1953	CK	16.0	760
1953	EW1		1953	03	10.23646	09	28	56.92	+18	35	44.1	1953	CK		760
1953	OQ	*	1953	07	16.10	21	06.2		-05	24		234			020
1953	PB1	*	1953	08	13.00	23	09.6		-06	45		300			020
1953	RO1	*	1953	09	02.96547	22	50	08.72	-08	28	56.7	1953	PM	14.5	020
1953	WA	*	1953	11	30.65556	05	24	10.35	+38	27	22.9	390			388
1954	UH3	*	1954	10	25.90461	01	18	05.71	+07	26	00.9	1954	TA		012
1954	YL	*	1954	12	20.52500	04	43	00.43	+25	00	17.6	880			388
1955	KO	*	1955	05	26.68194	17	19	09.77	-22	47	56.3	951		13.6	388
1955	MK1	*	1955	06	18.26495	17	32	53.47	-14	22	45.4	1955MV		15.6	760
1955	MK1		1955	06	18.28856	17	32	52.41	-14	22	42.5	1955MV			760
1955	RO1	*	1955	09	15.92245	22	35	35.48	+02	56	10.4	950		14.0	020
1955	RO1		1955	09	19.00	22	33.0		+02	13		950		15.0	020
1955	SX2	*	1955	09	17.27	00	10.7		+09	16		798		16.7	760
1955	TD1	*	1955	10	11.65694	02	28	15.80	+26	09	10.6	955		14.5	388
1957	BH1	*	1957	01	21.96256	08	18	24.62	+29	21	36.1	706		14.8	020
1957	BJ1	*	1957	01	31.69444	10	50	25.08	+06	01	56.4	667			388
1957	UQ1	*	1957	10	24.90	00	14.6		+07	27		999			020
1959	AD	*	1959	01	09.05	05	57.6		+24	21		946		15.0	760
1960	EG	*	1960	03	04.28841	12	00	10.34	-08	04	28.4	378			839
1963	GF	*	1963	04	15.25	13	53.9		+01	44		629		16.0	760
1963	SE1	*	1963	09	22.15	23	31.0		+00	41		142		16.2	760
1964	PO	*	1964	08	01.77150	20	48	56.30	-17	36	11.1	811			210
1964	PO		1964	08	01.79000	20	48	55.45	-17	36	22.6	811			210
1964	PO		1964	08	01.80800	20	48	54.77	-17	36	30.8	811			210
1966	TQ	*	1966	10	13.93451	00	49	11.33	+11	50	10.3	829			020
1966	TQ		1966	10	13.95737	00	49	10.73	+11	50	08.9	829			020
1967	CF	*	1967	02	06.97955	09	57	02.16	+13	13	07.4	1000			020
1967	CF		1967	02	07.00309	09	57	01.41	+13	13	11.0	1000			020
1967	ED1	*	1967	03	08.89941	09	28	15.79	+12	54	08.3	1000			095
1969	RM2	*	1969	09	11.03878	00	33	16.93	+11	15	46.3	992			020
1969	RM2		1969	09	11.04986	00	33	15.92	+11	15	41.9	992			020
1969	RM2		1969	09	13.01982	00	31	53.56	+11	04	17.9	992			020
1969	RM2		1969	09	13.02986	00	31	52.58	+11	04	21.7	992			020
1970	ER3	*	1970	03	04.33820	11	41	52.17	+10	58	11.8	750			805
1970	ER3		1970	03	04.34859	11	41	51.48	+10	58	13.2	750			805
1970	ER3		1970	03	04.35898	11	41	50.80	+10	58	14.5	750			805
1970	SP1	*	1970	09	29.82890	22	10	24.71	-06	32	30.2	1970	QN1	16.0	095
1971	BD4	*	1971	01	18.82334	05	19	14.01	+26	12	15.1	1970	XJ	16.0	095
1971	SZ3	*	1971	09	22.88735	23	35	21.10	-13	03	30.3	1971	QH1	16.0	095
1971	TF3	*	1971	10	10.78301	01	20	02.10	+05	36	26.5	1971	SB2	16.5	095
1971	TF3		1971	10	11.86116	01	19	09.30	+05	24	32.4	1971	SB2	16.5	095
1976	YV7		1976	12	20.95308	06	15	57.85	+20	43	32.1	1976	YV3	17.5	095
1977	EE2	*	1977	03	13.82256	09	34	45.18	+19	31	38.0	1977	ES	17.5	095
1977	FN3	*	1977	03	17.87761	09	18	29.12	+26	26	07.8	943			095

IDENTIFICATIONS.

The following list of identifications with numbered minor planets continues that on MPC 6483-6486. The identifications are by L. D. Schmadel unless otherwise noted.

	Note		Note		Note
A899 KA = (578)		A899 LE = (178)		A899 NE = (803)	1
A899 CD = (326)		A899 PD = (444)		A900 MC = (117)	
A900 VA = (177)		A901 BA = (907)		A901 VC = (404)	
A902 EC = (844)		A902 ED = (925)		A902 UK = (410)	
A904 PB = (914)		A904 SC = (819)		A904 VE = (761)	
A905 CF = (800)		A905 JC = (770)		A905 VH = (368)	
A905 YA = (848)		A906 EA = (551)		A906 FG = (974)	
A906 VE = (2319)		A906 XB = (811)		A907 CA = (918)	
A907 GJ = (672)		A907 JA = (871)		A907 JB = (598)	
A907 UE = (728)		A907 VM = (2432)		A908 AL = (150)	
A908 SB = (2475)		A908 WC = (2430)		A908 WF = (865)	
A909 DK = (655)		A909 GJ = (235)		A910 BA = (984)	
A910 HA = (2506)		A910 JD = (676)		A910 LA = (886)	
A910 NB = (133)		A911 FA = (595)	2	A911 FC = (632)	
A912 CA = (909)		A912 CC = (226)		A912 HE = (177)	
A912 JD = (2501)	3	A912 YA = (757)		A913 EF = (537)	
A913 GC = (683)		A913 MF = (857)		A913 SB = (852)	
A913 SC = (907)		A913 UE = (953)		A914 RA = (217)	
A914 WC = (758)		A914 YA = (977)		A915 FA = (715)	
A915 FD = (803)		A915 JC = (986)	4	A915 PD = (458)	
A915 RL = (263)		A915 RM = (355)		A915 VD = (923)	
A915 WH = (996)		A916 GB = (906)		A916 GG = (271)	
A916 KD = (979)		A916 LB = (394)		A916 NA = (886)	
A916 UG = (396)		A916 WC = (914)		A917 BA = (263)	
A917 DC = (972)		A917 DE = (627)		A917 KD = (688)	
A917 UD = (886)		A917 UG = (805)	5	A917 YC = (980)	
A918 EE = (559)		A918 RF = (354)		A918 TA = (764)	
A918 UB = (120)		A918 WC = (903)	6	A919 AB = (222)	
A919 GB = (952)		A919 SF = (947)		A919 UD = (947)	
A919 XA = (977)		A920 HH = (319)		A921 UA = (232)	
A922 AB = (967)		A922 SB = (173)		A922 XA = (332)	
A923 FA = (137)		A923 RP = (850)	7	A923 XB = (979)	
A924 BD = (910)	8	A924 EL = (902)		1925 AD = (502)	
1925 FB = (868)		1925 RG = (801)		1925 VH = (559)	
1926 EF = (777)		1926 GP = (2308)		1926 GZ = (2333)	10
1926 XE = (2407)		1927 AB = (711)		1927 AC = (696)	
1927 CV = (103)		1927 DB = (903)		1927 ED = (566)	
1927 OB = (351)		1927 SC = (657)		1927 UO = (367)	
1927 WD = (863)		1927 YA = (311)		1928 DK = (827)	
1928 DM = (2311)		1928 DH1 = (301)		1928 FS = (555)	
1928 HC = (566)		1929 EK = (502)	11	1929 JE = (2422)	12
1929 LC = (811)		1929 NE = (294)		1929 NG = (474)	9
1929 RJ1 = (627)		1929 RN1 = (627)		1929 TV = (2459)	
1929 UE = (662)		1929 W = (2336)		1929 WJ = (2361)	
1929 WF1 = (2320)		1930 DZ = (744)		1930 DA1 = (974)	
1930 FS = (518)		1930 FW = (212)		1930 FX = (525)	
1930 FY = (853)		1930 GJ = (853)		1930 HP = (363)	
1930 HR = (796)		1930 KK = (236)		1930 KR = (936)	
1930 MG = (826)		1930 MO = (912)		1930 QU = (2316)	
1930 XS = (155)		1930 XT = (961)		1930 YG = (443)	
1930 YH = (296)		1930 YJ = (443)	13	1931 AS = (366)	
1931 CF = (757)		1931 CH = (587)	14	1931 DA = (401)	
1931 DP = (2320)		1931 FP = (220)		1931 HD = (392)	

1931 MB = (854)		1931 MD = (2501)	3	1931 MF = (414)	
1931 OD = (355)		1931 PD = (605)		1931 RZ = (2326)	
1931 TR2 = (2301)		1931 TN3 = (113)		1931 UR = (491)	
1931 XN = (2331)		1932 RP = (2421)		1932 TA = (470)	
1932 WJ = (848)		1933 SD1 = (227)		1933 UF = (755)	
1933 XF = (846)		1934 AC = (848)		1934 CM1 = (848)	15
1934 GO = (962)		1934 JK = (530)		1934 JN = (327)	
1934 NE1 = (530)		1934 NF1 = (601)		1934 PV = (820)	
1934 VR = (2324)		1935 BE = (2345)		1935 ES = (913)	
1935 FU = (849)		1935 GP = (377)		1935 JE = (2332)	
1935 OG = (2501)	3	1935 PC = (299)		1935 QV = (870)	
1935 QK1 = (968)		1935 SJ1 = (855)		1935 WD = (500)	
1936 BG = (748)		1936 DR = (876)		1936 EB = (484)	
1936 FG1 = (156)		1936 FH1 = (752)	16	1936 FK1 = (865)	
1936 FM1 = (713)		1936 HF = (2422)		1936 NF = (2494)	
1936 NG = (772)		1936 RJ = (661)		1936 RO = (383)	
1937 GE = (2438)		1937 JG = (525)		1937 NB = (523)	
1937 TL = (373)		1937 WO = (515)		1937 YH = (515)	
1938 AG = (758)		1938 DX = (2501)	3	1938 FQ = (2383)	17
1938 GL = (2383)	17	1938 XC = (255)		1938 YC = (597)	
1939 BV = (765)		1939 CJ1 = (765)	18	1939 GN = (235)	
1939 HJ = (2333)		1940 RV = (969)		1940 WN = (2459)	
1940 WP = (731)		1941 BG = (2460)		1941 FB1 = (469)	
1941 KA = (655)		1941 MG = (552)		1941 SM1 = (2455)	
1941 SF2 = (2326)		1941 WA1 = (397)	19	1941 XC = (617)	
1942 DF = (2391)		1942 EF = (2367)		1942 EN1 = (2209)	20
1942 EP1 = (2013)	20	1942 FQ = (385)		1942 JL = (2393)	
1942 NB = (913)		1942 OE = (483)		1942 WA = (491)	
1942 XY = (269)		1943 FB = (309)		1943 FC = (501)	21
1943 MB = (417)		1943 ME = (355)		1943 PB = (918)	
1943 QD = (577)		1943 QF = (846)		1943 TB = (2423)	
1944 BB = (2301)		1944 FC = (102)		1944 QJ = (638)	
1945 KA = (131)		1945 VJ = (798)		1946 DB = (462)	
1946 GC = (937)		1946 KB = (701)		1946 LB = (187)	22
1946 LC = (602)	23	1946 MA = (220)		1946 MB = (175)	22
1946 OD = (175)	22	1946 OJ = (389)		1946 QD = (978)	
1946 SH = (722)		1946 SJ = (910)		1946 UK = (229)	
1946 UL = (428)		1946 UN = (302)		1946 UO = (510)	
1946 UP = (377)		1947 BB = (574)		1947 CH = (716)	
1947 FE = (374)		1947 FH = (328)		1947 LE = (565)	
1947 QD = (794)		1947 QE = (622)		1947 RC = (943)	
1947 RF = (602)		1947 SB = (297)		1947 XB = (458)	
1947 XE = (404)		1947 XF = (505)		1948 AB = (663)	
1948 CA = (778)		1948 CB = (634)		1948 CF = (839)	
1948 DD = (720)		1948 ED = (302)		1948 EE = (872)	
1948 EW = (386)	15	1948 GL = (811)		1948 JD = (607)	
1948 JE = (214)		1948 LL = (417)		1948 LM = (609)	
1948 MA = (303)		1948 MC = (417)		1948 OG = (462)	
1948 PO = (696)		1948 PS = (2474)		1948 QC = (133)	
1948 TO = (449)		1948 TW = (584)		1948 TQ1 = (122)	
1948 TT1 = (862)		1948 VJ = (901)		1948 WQ = (188)	
1948 XM = (379)		1949 CB = (409)		1949 CM = (331)	
1949 DD = (530)		1949 HQ = (325)		1949 MO = (168)	
1949 OE = (428)		1949 OE1 = (125)		1949 PF = (991)	
1949 PM = (650)		1949 QB = (693)		1949 QY1 = (650)	
1949 QG2 = (214)	15	1949 SG1 = (425)		1949 UJ = (629)	
1949 UK = (904)		1949 UO = (681)		1949 UW = (448)	
1949 UB1 = (846)		1949 WG = (230)		1949 WH = (791)	

1949 WJ = (421)	1949 WK = (565)	1949 YF = (126)
1949 YH = (545)	1949 YJ = (647)	1949 YP = (191)
1949 YR = (723)	1949 YS = (431)	1949 YT = (862)
1949 YU = (465)	1950 BQ = (400)	1950 BC1 = (400)
1950 BN1 = (701)	1950 BP1 = (333)	1950 BQ1 = (376)
1950 CB = (400)	1950 CC = (555)	1950 DY = (197) 24
1950 EO = (2422)	1950 ET = (620) 25	1950 GD = (805)
1950 HM = (661)	1950 HO = (2422)	1950 HS = (620) 25
1950 LT = (806)	1950 NM = (2407)	1950 NS1 = (851)
1950 PA1 = (851)	1950 QW = (556)	1950 RC = (600)
1950 RH1 = (251)	1950 TL4 = (744)	1950 XH = (214)
1950 XR = (2372)	1950 XT = (352)	1950 XV = (263)
1951 AB1 = (664)	1951 AC1 = (285)	1951 AV1 = (397)
1951 CX = (748)	1951 CY = (113)	1951 EE2 = (2416)
1951 HB = (649)	1951 JE = (903)	1951 JJ = (917)
1951 LP = (398)	1951 NA = (713)	1951 OB = (1000)
1951 OE = (104)	1951 UR = (795) 26	1951 UV = (423)
1951 VE = (700)	1951 XG = (962)	1952 BC = (622)
1952 BQ = (876)	1952 BM1 = (840) 27	1952 BW1 = (839)
1952 BE2 = (954)	1952 DC = (577)	1952 DN = (949)
1952 DD2 = (959)	1952 DL2 = (869)	1952 DG3 = (328)
1952 FD1 = (641)	1952 HY = (892)	1952 HU1 = (417)
1952 HO2 = (430)	1952 KC = (529)	1952 MM = (2460)
1952 MO = (903)	1952 OF = (301)	1952 ON = (392)
1952 QC1 = (398)	1952 UQ1 = (2371)	1952 WF = (663)
1952 YF = (456)	1952 YH = (803)	1953 EZ = (871)
1953 EO1 = (387)	1953 EW1 = (2501)	1953 FN1 = (251) 28
1953 GJ1 = (236)	1953 GK1 = (507)	1953 GT1 = (991)
1953 JG = (797)	1953 OO = (214) 15	1953 PP = (485)
1953 PU = (2331)	1953 QE = (131)	1953 RE = (234)
1953 RF1 = (589)	1953 RO1 = (300)	1953 TQ = (385)
1953 VE = (750)	1953 VR = (608)	1953 VS = (517)
1953 VD2 = (361)	1953 XW = (2352)	1953 YB = (390)
1953 YC = (857)	1954 DB = (940)	1954 EM = (591)
1954 FA = (340)	1954 KH = (583)	1954 ME = (590)
1954 MG = (415)	1954 OE = (467)	1954 RD = (681)
1954 UT1 = (636)	1954 UC3 = (116)	1954 UH3 = (417)
1954 YC = (880)	1955 DU = (431)	1955 FB = (501)
1955 FN1 = (713)	1955 HV = (983)	1955 LB = (913)
1955 MG1 = (951)	1955 MK1 = (239)	1955 PB = (856)
1955 QO1 = (856)	1955 SN = (798)	1955 SU2 = (950)
1955 TY = (955)	1955 UD = (2439)	1956 EA1 = (479)
1956 EB1 = (335)	1956 EN1 = (587)	1956 UJ = (239) 29
1957 BB1 = (667)	1957 DA = (706)	1957 LP = (536)
1957 MG = (797)	1957 OT = (163)	1957 QC = (826)
1957 QE = (939)	1957 SH = (999)	1957 UB = (553)
1957 UU = (939)	1957 UL1 = (748)	1957 WM1 = (2349)
1957 YC = (583)	1958 AC = (170)	1958 AF = (763) 30
1958 BM = (957)	1958 DB1 = (2407)	1958 HJ = (597)
1958 LA = (856)	1958 QA = (2416)	1958 RN = (314)
1958 XO = (359)	1958 XQ = (927)	1959 AA = (946)
1959 EQ = (937)	1959 ED1 = (455)	1959 EE1 = (928)
1959 EG1 = (159)	1959 GV = (625)	1959 JS = (475)
1959 VL = (535)	1959 WA = (997)	1959 WB = (462)
1960 FJ = (378)	1960 OF = (959)	1960 PA = (647)
1960 WD = (993)	1960 WN = (849)	1960 WU = (903)
1960 WV = (414)	1961 AD = (300)	1961 AK = (904)
1961 CF = (660)	1961 GF = (715)	1961 JH = (737) 31

1961 VC1 = (1960)	1961 WE = (905)	1961 WF = (288)
1961 XY = (629)	1962 AC = (629)	1962 BA = (448)
1962 GB = (137)	1962 KA = (1166)	1962 MA = (856)
1962 NB = (617)	1962 TP = (378)	1962 UC = (378)
1962 VC = (826)	1962 WN = (583)	1962 XP = (1551)
1963 DF = (390)	1963 GE = (629)	1963 HE = (739)
1963 ME = (908)	1963 SA = (142)	1964 WB = (926)
1965 GA = (367)	1965 GC = (267)	1966 BD = (978)
1966 BH = (2379)	1966 BU = (909)	1966 DF = (955)
1966 DR = (627)	1966 DS = (530)	1966 TG = (970) 32
1966 VA = (986)	1967 ED = (1000)	1967 GE = (2380)
1967 RN = (997)	1968 DG = (2367)	1968 DB1 = (765)
1968 KS = (2316)	1968 OS = (104)	1968 XA = (749)
1969 FM = (609)	1969 FN = (823)	1969 TA4 = (992)
1969 TH4 = (2374)	1970 AM1 = (802) 33	1970 EP1 = (901)
1970 ER2 = (750)	1970 FH = (750)	1970 GC1 = (875)
1970 GQ1 = (865)	1970 GS1 = (801)	1970 SN1 = (232)
1970 SP1 = (305)	1970 WQ = (561)	1970 YC = (2367)
1971 BD4 = (427)	1971 QJ = (2312)	1971 UK4 = (875)
1971 YL = (559)	1972 BM = (745)	1972 BN = (357)
1972 CD = (785)	1972 JG = (576)	1972 RL3 = (2317)
1972 TJ = (436)	1972 TY1 = (750)	1972 XL2 = (712)
1972 YR1 = (262)	1972 YS1 = (110)	1973 BD = (665)
1973 EO = (2388)	1973 WH = (952)	1974 LB = (309) 34
1974 OA = (2380)	1974 PL = (476)	1974 QB3 = (807)
1974 VG3 = (950)	1974 XU = (428)	1974 YC = (507)
1975 AH = (910)	1975 CF = (2312)	1975 FB = (2424)
1975 FO = (2316)	1975 FY = (482)	1975 GO1 = (2444)
1975 JH = (2378)	1975 JP = (2315)	1975 LE = (416)
1975 VY1 = (2332)	1975 VL9 = (2380)	1975 VB10 = (404)
1975 WC1 = (2298)	1975 WG1 = (2405)	1975 XM = (791)
1975 XN = (746)	1975 YG = (534)	1975 YL = (2380)
1975 YP = (820)	1976 AK = (673)	1976 HY = (244)
1976 JU1 = (2430)	1976 JP2 = (2318)	1976 MJ = (337)
1976 OD1 = (2316)	1976 QP1 = (2366)	1976 WJ = (874)
1976 WM = (921)	1976 WA1 = (638)	1976 YY2 = (2307)
1976 YV7 = (2343)	1977 AU2 = (2409) 20	1977 CF = (515)
1977 CG = (996)	1977 ES = (2462)	1977 FD = (750)
1977 FH = (891)	1977 FM = (527)	1977 FU = (943)
1977 FV1 = (2405)	1977 FG3 = (802)	1977 VY1 = (485)
1977 XJ = (2378)	1978 BA = (750)	1978 NW1 = (2298)
1979 DD = (475)	1979 ST = (835)	1980 QB = (2313)

Note 1: the identification (803) = A899 JA (KP 1917, 92) is invalid. 2: contrary to AN 187, 463. 3: identification independently found by S. Nakano. 4: the identification (1210) = A915 JC (RI 2442) is invalid. 5: the identification (1649) = A917 UG (BAB 4, 204) is invalid. 6: contrary to KP 1932, 136. 7: contrary to KP 1926, 85. 8: contrary to Verbff. Astron. Rechen-Inst. 9, 35. 9: contrary to KP 1931, 107. 10: the identification (1010) = 1926 GZ (BZ 8, 38) is invalid. 11: contrary to MPC 5659. 12: the identification (1564) = 1929 JE (JO 35, 156) is invalid. 13: the identification (2415) = 1930 YJ (MPC 6222) is invalid. 14: contrary to MPC 749. 15: contrary to MPC 1701-1702. 16: the observations were published as (752) in Pulkovo Circ. No. 24, p. 65. 17: the double designation 1938 DL2 = 1938 GL, by O. Kippes (MPC 1330), is valid for the Mar. 27 observation, redesignated on MPC 6574. 18: the identification of (765) with some of the observations formerly attributed to 1939 BQ (see MPC 6574) was already known on RI 2122. 19: an accurate version of this observation was published as (397) on MPC 3212. 20: identifica-

tion by E. Bowell. 21: an accurate version of the observation was published as (501) in Turku Informo No. 32. 22: accurate versions of the observations were published under their permanent numbers on IAUC 1078. 23: contrary to MPC 542. 24: accurate versions of the observations were published as (197) on MPC 2795; the first is erroneous and is replaced on MPC 6573. 25: the double designation 1950 ET = 1950 HS is by O. Kippes (MPC 1745). 26: the observation was published as (795) in Publ. Kiev Obs. No. 6, p. 103. 27: the double designation 1952 BM1 = 1952 DO (MPC 1968) is invalid. 28: the double designation 1953 ES = 1953 FN1 (MPC 1176) is invalid. 29: an accurate version of the observation was published as (239) on MPC 2236. 30: the identification 1941 WA = 1958 AF (MPC 2807) is invalid. 31: contrary to MPC 4355. 32: the observation was published as (970) in Byull. Inst. Teor. Astron. 11, 555. 33: contrary to MPC 4357. 34: the observations were published as (309) on MPC 4130.

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OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

010 Caussols. Observer K. Tomita. Reduced by M. Rousseau and Perie.
 049 Kvistaberg. Observer T. Oja. Measured by G. Hahn. Communicated by H. Rickman.
 474 Mt. John University Observatory. Observers A. C. Gilmore and P. M. Kilmartin (assisted by R. McIntosh).
 491 Centro Astronomico de Yebes. Observers M. de Pascual, J. Garcia and C. Cabanas.
 494 Stakenbridge. Observer B. Manning. Communicated by G. M. Hurst.
 675 Palomar. 1.2-m Schmidt. Observer J. Gibson.
 688 Lowell Observatory, Anderson Mesa station. Observer B. A. Skiff. Measured by E. Bowell.
 801 Oak Ridge Observatory. Observers R. E. McCrosky, C.-Y. Shao, D. W. E. Green and G. Schwartz (assisted by C. M. Bardwell and B. G. Marsden).

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
Periodic Comet Schwassmann-Wachmann 1							
/1974 II	1978	10 31.08472	07 32 07.47	+27 00 45.3	17.5T	1	010
Periodic Comet Smirnova-Chernykh							
/1975 VII	1981	11 26.14321	03 34 30.31	+16 13 06.7			801
/1975 VII	1981	11 29.14353	03 32 32.15	+16 09 25.4			801
/1975 VII	1981	12 30.17113	03 17 00.52	+15 51 05.0			801
Periodic Comet Encke							
/1977 XI	1978	07 31.19454	22 29 39.49	-11 32 49.1			801
Periodic Comet Clark							
/1978g	1978	07 01.10505	11 19 23.51	+11 15 22.5		2	801
Periodic Comet Stephan-Oterma							
/1980 X	1981	03 02.85117	06 47 15.36	+44 04 15.0			491
/1980 X	1981	03 04.87656	06 51 14.15	+43 57 35.3			491
Comet Meier (1980 XII)							
/1980 XII	1981	04 03.97722	15 40 37.74	+23 12 25.4			491
/1980 XII	1981	04 07.03023	15 28 03.46	+22 56 22.6			491

Periodic Comet Borrelly										
/1980i	1981	05	12.18300	06	21	49.90	+40	33	17.4	675
/1980i	1981	05	13.18266	06	25	38.05	+40	38	43.6	675
Periodic Comet Reinmuth 2										
/1980n	1981	12	30.22836	05	00	12.91	+28	09	35.4	801
Comet Panther (1980u)										
/1980u	1981	03	02.88202	19	42	09.00	+80	00	13.2	491
/1980u	1981	03	04.89941	19	47	06.77	+82	11	51.4	491
/1980u	1981	04	03.94527	07	54	07.17	+64	26	15.6	491
/1980u	1981	04	06.93535	07	57	18.16	+61	30	03.8	491
/1980u	1981	04	07.06278	07	57	26.37	+61	22	41.3	491
/1980u	1981	04	09.93478	08	00	24.94	+58	40	42.3	491
Periodic Comet Finlay										
/1981e	1981	08	10.48023	05	59	50.11	+24	03	34.3	3 675
/1981e	1981	08	11.48370	06	03	01.34	+24	05	45.0	3 675
/1981e	1981	09	10.47747	07	25	39.51	+23	44	01.9	4 675
Periodic Comet Gehrels 2										
/1981f	1981	12	20.12600	01	47	00.09	+08	45	08.5	801
/1981f	1981	12	31.02034	01	54	05.18	+09	01	34.7	801
Comet Gonzalez (1981g)										
/1981g	1981	11	27.58935	17	09	01.81	-77	36	01.7	17.3N 474
/1981g	1981	11	27.61123	17	09	04.32	-77	36	06.0	474
Periodic Comet Kearns-Kwee										
/1981h	1981	12	30.33598	06	35	21.56	+32	59	50.4	801
Periodic Comet Slaughter-Burnham										
/1981i	1981	11	19.85448	00	41	29.18	+13	35	50.1	049
/1981i	1981	11	26.81113	00	41	57.93	+13	39	05.6	049
/1981i	1981	12	20.03963	00	52	21.48	+14	28	27.0	801
Periodic Comet Swift-Gehrels										
/1981j	1981	11	28.7729	23	14	15.48	+15	41	54.3	12.5T 494
/1981j	1981	11	28.7899	23	14	18.21	+15	42	06.9	494
/1981j	1981	12	19.94704	00	20	01.63	+20	19	12.2	801
Periodic Comet Howell										
/1981k	1981	09	22.21424	00	18	36.16	-09	22	19.7	688
/1981k	1981	10	19.28335	23	59	00.68	-09	38	36.0	675
/1981k	1981	10	20.36634	23	58	33.34	-09	36	08.6	675
/1981k	1981	12	21.00260	00	19	21.18	-03	05	03.2	5 801
Periodic Comet Vaisala 1										
/1981l	1981	12	07.47953	07	06	17.07	+11	56	01.9	20.5T 675
/1981l	1981	12	18.33474	07	00	08.55	+12	10	49.9	675
/1981l	1981	12	18.36946	07	00	07.21	+12	10	54.0	675
/1981l	1981	12	18.39724	07	00	05.94	+12	10	56.8	675
/1981l	1981	12	31.18602	06	49	59.99	+12	47	49.0	2 801
Periodic Comet Grigg-Skjellerup										
/1982a	1982	01	15.28683	07	12	47.75	-20	35	52.8	19 T 675
/1982a	1982	01	16.31669	07	11	13.04	-20	46	14.8	675

Note 1: fantail 15" long, 20" wide. 2: inkdot measured. 3: weak, diffuse image. 4: very weak image. 5: weak image.

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OBSERVATIONS MADE AT CAUSSOLS BY H. R. CHEMIN, J.-L. HEUDIER AND C. POLLAS.
REDUCED BY M. ROUSSEAU AND PERIE.

Object	Date	UT	R. A. (1950)			Decl.			Mag.	Obs.
218	1979 04	22.91446	12 31	41.56	+08 09	27.8		12.6	010	
218	1979 04	24.89872	12 30	41.41	+08 24	35.0			010	
278	1979 03	04.06394	12 33	03.43	+09 16	41.3		13.4	010	
278	1979 03	04.12395	12 33	01.14	+09 16	59.0			010	
349	1979 03	04.01243	10 56	11.76	+17 10	25.7		11.4	010	
349	1979 03	05.07732	10 55	16.76	+17 14	06.0			010	
468	1979 03	04.97511	08 24	35.66	+19 51	10.0		15.3	010	
487	1979 03	04.01243	10 56	35.83	+18 57	22.5		13.1	010	
487	1979 03	05.07732	10 55	41.79	+19 04	59.1			010	
567	1979 10	20.03332	01 28	45.69	+01 03	09.0		15.0	010	
601	1979 09	27.05090	01 18	52.85	-02 06	50.3		14.0	010	
638	1979 03	04.06394	12 25	00.16	+10 16	33.8		13.8	010	
638	1979 03	04.12395	12 24	57.99	+10 17	00.6			010	
731	1979 03	04.06394	12 19	45.60	+10 35	24.4		15.1	010	
731	1979 03	04.12395	12 19	43.11	+10 35	40.2			010	
759	1979 03	04.97511	08 24	37.63	+20 48	00.2		16.2	010	
938	1979 03	04.97511	08 31	58.52	+19 52	03.6		17.3	010	
1323	1979 04	22.91446	12 41	27.12	+12 06	14.3		14.5	010	
1831	1979 09	27.05090	01 32	04.57	+00 47	55.8		15.7	010	
1858	1979 03	04.97511	08 23	45.36	+17 39	34.5		16.5	010	
1902	1979 04	22.91446	12 32	03.96	+09 33	35.0		16.7	010	
1902	1979 04	24.89872	12 31	01.38	+09 35	16.7			010	
1979 EG *	1979 03	04.06394	12 22	13.93	+10 11	53.4		17.1	010	
1979 EG	1979 03	04.12395	12 22	11.33	+10 12	23.9			010	

OBSERVATIONS MADE AT LEIDEN BY G. PELS, VAN GENDEREN, VAN KUILENBURG,
ALPHENAAR, MEIJS, DE VOS AND DE WAARD. COMMUNICATED BY A. A.
SCHOENMAKER.

Object	Date	UT	R. A. (1950)			Decl.			Obs.
1	1957 01	06.74186	00 55	35.20	-03 02	49.2		013	
1	1957 01	06.74293	00 55	35.24	-03 02	48.4		013	
1	1957 12	01.13994	08 12	28.55	+25 41	26.4		013	
1	1957 12	01.14100	08 12	28.55	+25 41	26.8		013	
1	1957 12	01.14715	08 12	28.55	+25 41	28.6		013	
1	1957 12	01.14832	08 12	28.54	+25 41	29.0		013	
1	1957 12	16.06414	08 09	09.13	+27 13	14.8		013	
1	1957 12	16.06525	08 09	09.10	+27 13	15.4		013	
1	1957 12	16.07082	08 09	08.94	+27 13	17.5		013	
1	1958 01	28.92928	07 31	09.81	+31 50	41.0		013	
1	1958 01	28.93034	07 31	09.75	+31 50	41.2		013	
1	1958 01	28.93476	07 31	09.50	+31 50	42.1		013	
1	1958 01	28.93609	07 31	09.43	+31 50	42.5		013	
1	1958 02	06.94729	07 23	42.05	+32 18	27.1		013	
1	1958 02	06.94835	07 23	42.00	+32 18	27.3		013	
1	1958 03	14.85483	07 17	37.86	+32 17	46.9		013	
1	1958 03	14.85589	07 17	37.88	+32 17	46.7		013	
1	1958 03	14.86031	07 17	37.99	+32 17	46.1		013	
1	1958 03	16.83478	07 18	28.63	+32 14	02.4		013	
1	1958 03	16.83584	07 18	28.65	+32 14	02.3		013	
1	1958 03	16.83963	07 18	28.75	+32 14	01.9		013	

1	1958	03	16.84078	07	18	28.79	+32	14	01.6	013
1	1958	03	17.87103	07	18	57.86	+32	11	57.9	013
1	1958	03	17.87209	07	18	57.89	+32	11	57.9	013
1	1958	03	17.87559	07	18	57.97	+32	11	57.5	013
1	1958	03	17.87680	07	18	58.02	+32	11	57.3	013
1	1958	03	22.83092	07	21	42.86	+32	00	58.7	013
1	1958	03	22.83198	07	21	42.90	+32	00	58.4	013
1	1958	03	22.83677	07	21	43.07	+32	00	57.8	013
1	1958	03	22.83793	07	21	43.11	+32	00	57.6	013
1	1958	03	23.83322	07	22	21.05	+31	58	33.3	013
1	1958	03	23.83429	07	22	21.08	+31	58	33.0	013
1	1958	03	23.83854	07	22	21.24	+31	58	32.3	013
1	1958	03	23.83970	07	22	21.28	+31	58	32.3	013
1	1958	04	12.84579	07	39	57.67	+30	56	44.9	013
1	1958	04	12.84685	07	39	57.74	+30	56	44.8	013
1	1958	04	13.84208	07	41	03.03	+30	53	01.0	013
1	1958	04	13.84314	07	41	03.10	+30	53	00.6	013
1	1963	03	04.86658	11	15	24.63	+23	18	31.3	013
1	1963	03	04.86935	11	15	24.47	+23	18	32.6	013
1	1963	03	04.87142	11	15	24.37	+23	18	32.8	013
1	1963	03	04.88527	11	15	23.61	+23	18	38.0	013
1	1963	03	04.88735	11	15	23.52	+23	18	38.6	013
1	1968	03	29.00016	14	23	58.80	+00	11	42.0	013
1	1968	03	29.00449	14	23	58.64	+00	11	43.0	013
1	1968	04	24.87830	14	02	17.55	+01	29	45.4	013
1	1968	04	24.88800	14	02	17.00	+01	29	46.4	013
1	1968	04	26.86626	14	00	31.71	+01	32	21.8	013
1	1968	04	26.87405	14	00	31.29	+01	32	22.6	013
1	1968	04	26.88029	14	00	30.95	+01	32	22.9	013
1	1968	04	26.88306	14	00	30.81	+01	32	23.2	013
1	1979	10	21.90459	00	54	11.40	-09	42	49.8	013
1	1979	10	21.90874	00	54	11.19	-09	42	50.1	013
1	1979	10	21.92052	00	54	10.62	-09	42	51.2	013
1	1979	10	21.92467	00	54	10.40	-09	42	51.7	013
1	1979	10	21.93506	00	54	09.91	-09	42	52.8	013
1	1979	10	21.94753	00	54	09.27	-09	42	53.6	013
1	1979	10	22.90116	00	53	23.73	-09	44	18.8	013
1	1979	10	22.90463	00	53	23.56	-09	44	19.1	013
1	1979	10	22.91502	00	53	23.05	-09	44	20.1	013
1	1979	10	22.91848	00	53	22.89	-09	44	20.3	013
1	1979	10	25.90059	00	51	04.39	-09	47	39.3	013
1	1979	10	25.90613	00	51	04.14	-09	47	39.8	013
1	1979	10	26.89163	00	50	19.87	-09	48	23.0	013
1	1979	10	26.89648	00	50	19.64	-09	48	23.2	013
1	1979	10	26.90963	00	50	19.03	-09	48	23.8	013
1	1979	10	26.91448	00	50	18.82	-09	48	23.9	013
1	1979	10	26.92348	00	50	18.40	-09	48	24.3	013
1	1979	10	26.92729	00	50	18.24	-09	48	24.5	013
1	1979	10	26.93630	00	50	17.82	-09	48	24.8	013
1	1979	10	26.93976	00	50	17.67	-09	48	25.1	013
1	1979	10	27.87886	00	49	36.34	-09	48	55.9	013
1	1979	10	27.88197	00	49	36.19	-09	48	55.8	013
1	1979	10	27.88994	00	49	35.84	-09	48	56.1	013
1	1979	10	27.89340	00	49	35.69	-09	48	56.2	013
1	1979	10	27.89825	00	49	35.47	-09	48	56.4	013
1	1979	10	27.90136	00	49	35.34	-09	48	56.5	013
1	1979	10	27.90906	00	49	34.97	-09	48	56.6	013
1	1979	10	27.91210	00	49	34.84	-09	48	56.7	013

OBSERVATIONS MADE AT ZIMMERWALD BY P. WILD.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
1981 RG1	1981 11	01.89861	01 36 45.59	+16 44 11.5	16.5		026
1981 RG1	1981 11	02.93611	01 35 45.41	+16 42 51.9			026
1981 RG1	1981 11	07.03125	01 32 04.75	+16 37 35.8			026
1981 RG1	1981 11	16.77465	01 25 25.07	+16 26 21.8		1	026

Note 1: observation doubtful.

OBSERVATIONS MADE AT BERGEDORF BY W. BAADE. MEASURED BY W. DIECKVOSS.

Object	Date	UT	R. A. (1950)	Decl.		N	Obs.
1009	1923 11	09.76007	01 21 54.84	+17 48 06.1		1	029
1009	1923 11	09.82169	01 21 57.28	+17 46 07.7			029
1009	1923 11	11.77848	01 23 27.22	+16 42 35.4			029

Note 1: star trace diffuse, large coma, bright reference stars.

OBSERVATIONS MADE AT TAUTENBURG BY F. BORNGEN AND K. KIRSCH. COMMUNICATED BY S. MARX.

Object	Date	UT	R. A. (1950)	Decl.	Mag.		Obs.
1664	1981 11	03.90903	01 38 41.05	+07 59 56.5	16.2		033
1664	1981 11	03.93819	01 38 39.21	+07 59 51.0			033
2014	1981 11	03.90903	01 35 02.88	+05 02 37.3	15.7		033
2014	1981 11	03.93819	01 35 01.58	+05 02 14.4			033
1981 VF1 *	1981 11	03.90903	01 29 57.28	+05 21 02.5	19.5		033
1981 VF1	1981 11	03.93819	01 29 55.74	+05 21 05.5			033
1981 VG1 *	1981 11	03.90903	01 30 03.01	+07 33 30.7	17.8		033
1981 VG1	1981 11	03.93819	01 30 01.83	+07 33 23.9			033
1981 VH1 *	1981 11	03.90903	01 30 08.02	+05 59 51.4	19.3		033
1981 VH1	1981 11	03.93819	01 30 06.68	+05 59 39.0			033
1981 VJ1 *	1981 11	03.90903	01 30 27.49	+07 21 52.5	17.7		033
1981 VJ1	1981 11	03.93819	01 30 26.36	+07 21 43.0			033
1981 VK1 *	1981 11	03.90903	01 30 37.76	+05 09 11.8	17.9		033
1981 VK1	1981 11	03.93819	01 30 36.12	+05 09 17.2			033
1981 VL1 *	1981 11	03.90903	01 30 50.15	+08 05 22.3	19.5		033
1981 VL1	1981 11	03.93819	01 30 48.67	+08 05 12.7			033
1981 VM1 *	1981 11	03.90903	01 30 58.83	+05 12 01.5	17.0		033
1981 VM1	1981 11	03.93819	01 30 57.49	+05 11 47.0			033
1981 VN1 *	1981 11	03.90903	01 31 11.68	+07 46 47.1	16.9		033
1981 VN1	1981 11	03.93819	01 31 11.30	+07 46 33.0			033
1981 VO1 *	1981 11	03.90903	01 31 13.86	+05 22 44.9	19.2		033
1981 VO1	1981 11	03.93819	01 31 12.26	+05 22 36.8			033
1981 VP1 *	1981 11	03.90903	01 31 20.77	+07 11 16.9	19.5		033
1981 VP1	1981 11	03.93819	01 31 19.58	+07 11 03.1			033
1981 VQ1 *	1981 11	03.90903	01 31 24.73	+06 36 08.3	18.9		033
1981 VQ1	1981 11	03.93819	01 31 23.18	+06 36 09.0			033
1981 VR1 *	1981 11	03.90903	01 31 26.24	+06 24 37.3	19.5		033
1981 VR1	1981 11	03.93819	01 31 24.90	+06 24 28.6			033
1981 VS1 *	1981 11	03.90903	01 31 37.60	+05 30 04.0	19.9		033
1981 VS1	1981 11	03.93819	01 31 36.23	+05 29 59.5			033
1981 VT1 *	1981 11	03.90903	01 31 40.05	+07 50 44.8	18.7		033
1981 VT1	1981 11	03.93819	01 31 38.66	+07 50 43.1			033
1981 VU1 *	1981 11	03.90903	01 31 51.79	+06 22 09.5	19.3		033
1981 VU1	1981 11	03.93819	01 31 50.26	+06 22 09.1			033
1981 VV1 *	1981 11	03.90903	01 31 54.33	+06 19 08.5	19.4		033
1981 VV1	1981 11	03.93819	01 31 52.99	+06 18 59.0			033
1981 VW1 *	1981 11	03.90903	01 32 21.58	+06 21 58.8	16.7		033
1981 VW1	1981 11	03.93819	01 32 20.37	+06 21 52.3			033
1981 VX1 *	1981 11	03.90903	01 32 43.19	+05 04 02.4	17.9		033
1981 VX1	1981 11	03.93819	01 32 41.50	+05 03 57.5			033
1981 VY1 *	1981 11	03.90903	01 33 50.01	+06 20 33.6	17.3		033

1981 VY1		1981	11	03.93819	01	33	48.76	+06	20	28.0		033
1981 VZ1	*	1981	11	03.90903	01	34	00.61	+05	24	00.1	17.5	033
1981 VZ1		1981	11	03.93819	01	33	59.35	+05	23	49.5		033
1981 VA2	*	1981	11	03.90903	01	34	04.11	+05	33	23.5	19.6	033
1981 VA2		1981	11	03.93819	01	34	02.69	+05	33	19.7		033
1981 VB2	*	1981	11	03.90903	01	34	28.96	+07	02	55.5	17.7	033
1981 VB2		1981	11	03.93819	01	34	27.19	+07	03	01.1		033
1981 VC2	*	1981	11	03.90903	01	34	30.21	+05	10	39.7	17.0	033
1981 VC2		1981	11	03.93819	01	34	29.01	+05	10	32.1		033
1981 VD2	*	1981	11	03.90903	01	36	43.02	+05	43	48.3	18.3	033
1981 VD2		1981	11	03.93819	01	36	41.68	+05	43	33.1		033
1981 VE2	*	1981	11	03.90903	01	37	26.56	+06	41	53.4	19.3	033
1981 VE2		1981	11	03.93819	01	37	25.33	+06	41	46.5		033
1981 VF2	*	1981	11	03.90903	01	37	51.80	+05	32	34.0	19.6	033
1981 VF2		1981	11	03.93819	01	37	50.21	+05	32	24.9		033
1981 VG2	*	1981	11	03.90903	01	38	20.56	+05	51	58.2	17.2	033
1981 VG2		1981	11	03.93819	01	38	19.30	+05	51	52.7		033
1981 VH2	*	1981	11	03.90903	01	38	21.01	+06	49	39.2	17.6	033
1981 VH2		1981	11	03.93819	01	38	19.47	+06	49	36.2		033
1981 VJ2	*	1981	11	03.90903	01	38	30.17	+05	50	56.2	17.6	033
1981 VJ2		1981	11	03.93819	01	38	28.81	+05	50	51.1		033
1981 VK2	*	1981	11	03.90903	01	38	37.91	+06	56	49.7	19.9	033
1981 VK2		1981	11	03.93819	01	38	36.38	+06	56	42.5		033
1981 VL2	*	1981	11	03.90903	01	39	01.92	+07	16	07.0	16.4	033
1981 VL2		1981	11	03.93819	01	39	00.54	+07	15	56.3		033
1981 VM2	*	1981	11	03.90903	01	40	06.27	+07	51	51.0	19.6	033
1981 VM2		1981	11	03.93819	01	40	04.95	+07	51	44.8		033
1981 VN2	*	1981	11	03.90903	01	40	17.29	+07	43	56.1	17.6	033
1981 VN2		1981	11	03.93819	01	40	15.44	+07	44	02.4		033
1981 VO2	*	1981	11	03.90903	01	40	39.01	+05	56	35.8	18.2	033
1981 VO2		1981	11	03.93819	01	40	37.70	+05	56	38.6		033
1981 VP2	*	1981	11	03.90903	01	40	40.38	+05	32	47.0	16.3	033
1981 VP2		1981	11	03.93819	01	40	39.21	+05	32	43.9		033
1981 VQ2	*	1981	11	03.90903	01	40	45.63	+05	58	32.2	19.1	033
1981 VQ2		1981	11	03.93819	01	40	44.22	+05	58	34.5		033
1981 VR2	*	1981	11	03.90903	01	40	50.06	+08	08	57.7	17.8	033
1981 VR2		1981	11	03.93819	01	40	48.90	+08	08	35.3		033
1981 VS2	*	1981	11	03.90903	01	41	10.67	+07	20	23.3	17.4	033
1981 VS2		1981	11	03.93819	01	41	09.18	+07	20	17.7		033
1981 VT2	*	1981	11	03.90903	01	41	33.23	+07	36	06.3	19.6	033
1981 VT2		1981	11	03.93819	01	41	31.67	+07	36	07.0		033
1981 VU2	*	1981	11	03.90903	01	41	34.08	+05	46	58.5	19.5	033
1981 VU2		1981	11	03.93819	01	41	32.42	+05	46	59.5		033
1981 W2	*	1981	11	03.90903	01	41	41.86	+07	40	12.3	18.8	033
1981 W2		1981	11	03.93819	01	41	40.61	+07	40	05.9		033
1981 VW2	*	1981	11	03.90903	01	41	59.30	+05	20	07.2	19.2	033
1981 VW2		1981	11	03.93819	01	41	58.00	+05	20	01.6		033
1981 VX2	*	1981	11	03.90903	01	42	24.10	+05	59	50.7	17.8	033
1981 VX2		1981	11	03.93819	01	42	22.69	+05	59	43.0		033
1981 VY2	*	1981	11	03.90903	01	42	25.29	+05	11	43.4	17.6	033
1981 VY2		1981	11	03.93819	01	42	24.38	+05	11	32.1		033
1981 VZ2	*	1981	11	03.90903	01	42	34.19	+06	49	13.3	19.9	033
1981 VZ2		1981	11	03.93819	01	42	32.58	+06	49	04.7		033

OBSERVATIONS MADE AT KLET BY A. MRKOS, Z. VAVROVA, M. MAHROVA AND L. BROZEK.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
267	1981	11	23.93334	04 00 08.99	+18 41 04.0		046
267	1981	11	23.94752	04 00 08.11	+18 41 03.4		046
297	1981	11	17.77096	01 18 45.66	+18 50 22.0		046

297	1981	11	17.78578	01	18	45.18	+18	50	18.2	046
1157	1981	11	17.77096	01	20	08.20	+20	42	44.4	046
1157	1981	11	17.78578	01	20	07.70	+20	42	41.2	046
1261	1981	11	23.93334	04	00	20.55	+20	15	04.7	046
1261	1981	11	23.94752	04	00	19.67	+20	15	03.7	046
1286	1981	11	23.89822	03	33	34.96	+10	38	45.6	046
1286	1981	11	23.91234	03	33	34.35	+10	38	41.7	046
1484	1981	11	23.89822	03	31	10.12	+11	17	39.6	046
1484	1981	11	23.91234	03	31	09.22	+11	17	39.7	046
1673	1981	12	20.83160	05	00	49.10	+18	12	31.5	046
1673	1981	12	20.84583	05	00	48.50	+18	12	29.6	046
1760	1981	11	23.94752	03	54	05.29	+18	38	29.0	046
1815	1981	12	28.83344	05	36	17.47	+21	42	31.6	046
1815	1981	12	28.85207	05	36	16.68	+21	42	32.4	046
1911	1981	11	23.86367	02	33	21.70	+17	03	57.0	046
1911	1981	11	23.87779	02	33	21.13	+17	03	54.0	046
1911	1981	11	28.86558	02	30	30.38	+16	48	14.9	046
1911	1981	11	28.87964	02	30	29.84	+16	48	11.7	046
2104	1981	12	28.75988	04	45	07.38	+19	02	54.6	046
2104	1981	12	28.77406	04	45	06.67	+19	02	49.6	046
2195	1981	12	28.75988	04	44	51.86	+19	50	44.5	046
2195	1981	12	28.77406	04	44	50.98	+19	50	45.7	046
2404	1981	12	20.83160	04	58	50.61	+20	46	06.4	046
2404	1981	12	20.84583	04	58	49.98	+20	46	06.7	046
2405	1981	12	28.83344	05	33	49.58	+21	09	30.9	046
2405	1981	12	28.85207	05	33	48.89	+21	09	31.2	046
2437	1981	11	17.80963	02	37	48.22	+14	20	06.0	046
2437	1981	11	17.82381	02	37	47.34	+14	19	59.8	046
2437	1981	11	23.86367	02	33	06.77	+13	44	32.3	046
2437	1981	11	23.87779	02	33	06.12	+13	44	28.0	046
2437	1981	11	28.90742	02	29	59.97	+13	19	31.9	046
2437	1981	11	28.92171	02	29	59.34	+13	19	27.9	046
2511	1981	11	17.84596	03	31	57.23	+11	57	14.7	046
2511	1981	11	17.86014	03	31	56.31	+11	57	11.5	046
2511	1981	11	23.89822	03	25	16.70	+11	53	30.1	16.6 046
2511	1981	11	23.91234	03	25	15.66	+11	53	30.1	046
2523	1981	11	17.73399	01	49	02.35	+23	19	43.4	046
2523	1981	11	17.74823	01	49	01.66	+23	19	35.7	046
2523	1981	11	23.80351	01	45	30.70	+22	41	39.9	046
2523	1981	11	23.81763	01	45	30.35	+22	41	33.4	046
1978 LB	1981	12	28.87308	05	46	39.68	+25	45	49.4	17.8 046
1978 LB	1981	12	28.88726	05	46	38.81	+25	45	52.8	046
1980 LO	1981	11	23.89822	03	24	19.88	+11	30	24.6	046
1980 LO	1981	11	23.91234	03	24	18.99	+11	30	21.9	046
1980 MA	1981	12	28.90936	06	27	24.55	+30	03	17.1	046
1980 MA	1981	12	28.92348	06	27	23.55	+30	03	21.6	046
1981 SN	1981	10	06.07016	00	32	27.97	+07	57	53.5	046
1981 SN	1981	10	06.08446	00	32	27.39	+07	57	43.7	046
1981 SN	1981	10	07.97137	00	31	01.02	+07	41	21.3	046
1981 SN	1981	10	07.98560	00	31	00.38	+07	41	13.5	046
1981 SK2 *	1981	09	22.91615	00	41	56.35	+08	18	25.5	17.0 046
1981 SK2	1981	09	22.93027	00	41	55.81	+08	18	15.5	046
1981 SK2	1981	09	25.97899	00	40	28.80	+07	43	41.0	046
1981 SK2	1981	09	25.99462	00	40	28.38	+07	43	32.1	046
1981 SL2 *	1981	09	25.97899	00	39	25.32	+09	20	47.2	17.5 046
1981 SL2	1981	09	25.99462	00	39	24.60	+09	20	40.1	046
1981 TJ	1981	09	22.91615	00	39	53.35	+09	40	53.5	16.7 046
1981 TJ	1981	09	22.93027	00	39	52.61	+09	40	48.7	046
1981 TJ	1981	09	25.97899	00	37	35.78	+09	23	00.6	046

1981 TJ	1981 09	25.99462	00 37	35.12	+09 22	55.0		046
1981 TJ	1981 10	07.97137	00 28	19.26	+08 05	01.3		046
1981 TJ	1981 10	07.98560	00 28	18.32	+08 04	54.6		046
1981 TT *	1981 10	06.07016	00 32	16.00	+05 47	06.3		046
1981 TT	1981 10	06.08446	00 32	15.18	+05 46	55.2		046
1981 TW	1981 09	25.86389	23 35	09.50	+00 06	43.7	16.6	046
1981 TW	1981 09	25.87801	23 35	09.16	+00 06	36.6		046
1981 TW	1981 10	05.99834	23 28	04.71	-00 37	02.0		046
1981 TW	1981 10	06.01275	23 28	04.02	-00 37	06.2		046
1981 UH	1981 11	17.77096	01 19	59.81	+19 40	19.1		046
1981 UH	1981 11	17.78578	01 19	59.22	+19 40	18.0		046
1981 UH	1981 11	20.82154	01 18	19.12	+19 31	13.4		046
1981 UL	1981 11	17.73399	01 48	27.80	+23 16	19.4		046
1981 UL	1981 11	17.74823	01 48	27.26	+23 16	10.5		046
1981 UL	1981 11	23.80351	01 44	55.44	+22 15	22.7		046
1981 UL	1981 11	23.81763	01 44	55.16	+22 15	15.4		046
1981 UN	1981 11	17.80963	02 33	26.89	+16 07	27.1		046
1981 UN	1981 11	17.82381	02 33	26.15	+16 07	23.3		046
1981 UN	1981 11	23.86367	02 28	26.71	+15 34	36.5		046
1981 UN	1981 11	23.87779	02 28	26.05	+15 34	31.5		046
1981 UN	1981 11	28.86558	02 25	03.48	+15 10	43.1		046
1981 UN	1981 11	28.87964	02 25	02.92	+15 10	39.0		046
1981 UQ	1981 11	17.80963	02 43	26.47	+14 04	41.7		046
1981 UQ	1981 11	17.82381	02 43	25.59	+14 04	39.9		046
1981 UQ	1981 11	23.86367	02 37	49.23	+13 36	51.4		046
1981 UQ	1981 11	23.87779	02 37	48.45	+13 36	47.7		046
1981 UQ	1981 11	28.90742	02 33	47.17	+13 17	02.0		046
1981 UQ	1981 11	28.92171	02 33	46.29	+13 16	55.9		046
1981 WU	1981 11	17.84596	03 25	55.14	+12 00	37.5	17.2	046
1981 WU	1981 11	17.86014	03 25	54.61	+12 00	35.2		046
1981 WV	1981 11	17.84596	03 27	50.05	+13 07	56.2	16.7	046
1981 WV	1981 11	17.86014	03 27	49.40	+13 07	53.5		046
1981 WV	1981 11	23.89822	03 21	30.86	+12 39	49.8		046
1981 WV	1981 11	23.91234	03 21	29.99	+12 39	45.8		046
1981 WV	1981 11	28.94243	03 16	31.25	+12 19	20.8		046
1981 WV	1981 11	28.95642	03 16	30.73	+12 19	18.6		046
1981 WB1	1981 11	17.84596	03 38	15.68	+11 57	08.1	17.0	046
1981 WB1	1981 11	17.86014	03 38	15.13	+11 57	02.4		046
1981 WB1	1981 11	23.89822	03 32	30.79	+11 17	39.4		046
1981 WB1	1981 11	23.91234	03 32	30.06	+11 17	35.6		046
1981 WB1	1981 12	20.75729	03 15	17.67	+09 48	01.2		046
1981 WB1	1981 12	20.77216	03 15	17.42	+09 48	00.7		046
1981 WD1	1981 11	23.89822	03 35	09.35	+10 31	40.4	16.7	046
1981 WD1	1981 11	23.91234	03 35	08.35	+10 31	36.7		046
1981 WN1	1981 11	23.89822	03 24	28.73	+11 21	13.6	16.8	046
1981 WN1	1981 11	23.91234	03 24	27.42	+11 21	11.1		046
1981 WT1 *	1981 11	17.80963	02 33	51.51	+13 44	38.1		046
1981 WT1	1981 11	17.82381	02 33	50.98	+13 44	33.6		046
1981 WT1	1981 11	23.86367	02 29	50.63	+13 06	35.5		046
1981 WT1	1981 11	23.87779	02 29	50.17	+13 06	30.8		046
1981 WT1	1981 11	28.90742	02 26	58.03	+12 37	52.0		046
1981 WT1	1981 11	28.92171	02 26	57.55	+12 37	45.8		046
1981 WU1 *	1981 11	17.80963	02 36	53.47	+15 22	26.6		046
1981 WU1	1981 11	17.82381	02 36	53.09	+15 22	26.2		046
1981 WV1 *	1981 11	17.80963	02 39	28.36	+17 32	41.5	17.3	046
1981 WV1	1981 11	17.82381	02 39	27.62	+17 32	37.5		046
1981 WV1	1981 11	23.86367	02 34	45.46	+17 09	49.9		046
1981 WV1	1981 11	23.87779	02 34	44.83	+17 09	44.7		046
1981 WV1	1981 11	28.86558	02 31	18.66	+16 52	12.5		046

1981	WV1		1981	11	28.87964	02	31	18.07	+16	52	09.2		046
1981	WW1	*	1981	11	17.80963	02	42	37.73	+13	08	55.3	16.9	046
1981	WW1		1981	11	17.82381	02	42	37.20	+13	08	55.8		046
1981	WW1		1981	11	23.86367	02	37	54.26	+12	55	39.2		046
1981	WW1		1981	11	23.87779	02	37	53.45	+12	55	35.8		046
1981	WW1		1981	11	28.90742	02	34	24.63	+12	46	53.0		046
1981	WW1		1981	11	28.92171	02	34	23.76	+12	46	50.0		046
1981	WX1	*	1981	11	17.84596	03	29	33.39	+11	30	57.7	16.7	046
1981	WX1		1981	11	17.86014	03	29	32.37	+11	30	59.5		046
1981	WY1	*	1981	11	23.86367	02	27	22.81	+13	42	28.4	17.3	046
1981	WY1		1981	11	23.87779	02	27	22.17	+13	42	31.3		046
1981	WZ1	*	1981	11	23.86367	02	28	53.66	+13	20	32.4	16.9	046
1981	WZ1		1981	11	23.87779	02	28	52.76	+13	20	28.4		046
1981	WZ1		1981	11	28.90742	02	26	07.54	+12	50	19.0		046
1981	WZ1		1981	11	28.92171	02	26	07.14	+12	50	17.6		046
1981	WA2	*	1981	11	23.86367	02	36	46.52	+17	08	04.7	17.2	046
1981	WA2		1981	11	23.87779	02	36	46.03	+17	08	00.8		046
1981	WB2	*	1981	11	23.93334	03	52	10.80	+16	45	44.7	16.7	046
1981	WB2		1981	11	23.94752	03	52	09.76	+16	45	44.3		046
1981	WC2	*	1981	11	23.93334	03	53	58.69	+20	04	59.2	16.9	046
1981	WC2		1981	11	23.94752	03	53	57.60	+20	04	58.8		046
1981	WD2	*	1981	11	23.93334	03	55	35.48	+17	06	22.2	16.8	046
1981	WD2		1981	11	23.94752	03	55	34.72	+17	06	22.6		046
1981	WE2	*	1981	11	23.93334	04	00	10.45	+18	46	57.2	17.0	046
1981	WE2		1981	11	23.94752	04	00	09.63	+18	46	59.5		046
1981	WF2	*	1981	11	23.93334	04	00	55.20	+17	59	10.8	17.4	046
1981	WF2		1981	11	23.94752	04	00	54.40	+17	59	07.2		046
1981	WG2	*	1981	11	23.93334	04	01	57.35	+18	48	10.5	17.0	046
1981	WG2		1981	11	23.94752	04	01	56.56	+18	48	09.6		046
1981	WH2	*	1981	11	23.93334	04	03	09.52	+18	26	57.2	17.1	046
1981	WH2		1981	11	23.94752	04	03	08.72	+18	26	49.8		046
1981	WM2	*	1981	11	28.86558	02	31	03.94	+16	47	23.1		046
1981	WM2		1981	11	28.87964	02	31	03.33	+16	47	19.1		046
1981	YB		1981	12	20.75729	03	16	30.95	+11	57	15.7	16.0	046
1981	YB		1981	12	20.77216	03	16	30.38	+11	57	23.8		046
1981	YB		1981	12	28.71831	03	13	25.60	+13	03	44.8		046
1981	YB		1981	12	28.73249	03	13	25.48	+13	03	54.9		046
1981	YB		1981	12	30.86370	03	12	57.66	+13	22	18.8		046
1981	YH		1981	12	20.90266	05	52	37.00	+26	56	36.5	16.8	046
1981	YH		1981	12	20.91684	05	52	36.08	+26	56	34.6		046
1981	YH		1981	12	28.87308	05	44	18.96	+26	24	51.4		046
1981	YH		1981	12	28.88726	05	44	17.87	+26	24	48.4		046
1981	YO	*	1981	12	20.83160	04	56	46.27	+19	10	29.3	16.8	046
1981	YO		1981	12	20.84583	04	56	45.48	+19	10	30.8		046
1981	YO		1981	12	28.75988	04	49	34.31	+19	18	39.9		046
1981	YO		1981	12	28.77406	04	49	33.61	+19	18	40.7		046
1981	YP	*	1981	12	20.86806	05	12	42.18	+26	38	41.2	17.2	046
1981	YP		1981	12	20.88229	05	12	41.53	+26	38	43.2		046
1981	YQ	*	1981	12	20.86806	05	16	48.98	+27	50	50.6	17.0	046
1981	YQ		1981	12	20.88229	05	16	48.10	+27	50	52.6		046
1981	YQ		1981	12	28.79397	05	08	17.14	+27	54	23.1		046
1981	YQ		1981	12	28.80809	05	08	16.27	+27	54	23.2		046
1981	YR	*	1981	12	20.90266	05	52	12.30	+23	36	31.3	16.8	1 046
1981	YR		1981	12	20.91684	05	52	11.35	+23	36	32.2		1 046
1981	YR		1981	12	28.87308	05	44	30.86	+23	42	16.8		046
1981	YR		1981	12	28.88726	05	44	29.74	+23	42	16.8		046
1981	YS	*	1981	12	20.90266	05	55	41.48	+26	44	40.2	16.6	046
1981	YS		1981	12	20.91684	05	55	40.73	+26	44	46.5		046
1981	YS		1981	12	28.87308	05	47	17.52	+27	35	09.1		046

1981 YS		1981 12 28.88726	05 47 16.71	+27 35 14.3			046
1981 YT	*	1981 12 28.79397	05 08 27.06	+26 27 39.1	16.8		046
1981 YT		1981 12 28.80809	05 08 26.28	+26 27 36.0			046
1981 YU	*	1981 12 28.79397	05 11 12.53	+27 36 11.5	17.0		046
1981 YU		1981 12 28.80809	05 11 11.91	+27 36 17.9			046
1981 YV	*	1981 12 28.83344	05 30 03.88	+24 03 33.2	17.0		046
1981 YV		1981 12 28.85207	05 30 02.71	+24 03 33.4			046
1981 YW	*	1981 12 28.90936	06 34 00.90	+28 34 45.4	16.0		046
1981 YW		1981 12 28.92348	06 33 59.99	+28 34 46.6			046

Note 1: near edge of plate.

OBSERVATIONS MADE AT THE CRIMEAN ASTROPHYSICAL OBSERVATORY BY L. V. ZHURAVLEVA.

Object	Date	UT	R. A. (1950)	Decl.		Obs.
1981 RN1	1969 05	07.94230	14 25 37.74	-14 42 44.2		095
1981 RN1	1969 05	19.91744	14 14 47.54	-14 38 43.8		095
1981 RN1	* 1981 09	09.01749	01 58 56.24	-00 44 12.0		095
1981 RN1	1981 09	28.98696	01 46 03.36	-00 23 49.2		095
1981 RN1	1981 10	06.02667	01 39 25.24	-00 15 19.7		095
1981 RN1	1981 10	26.85897	01 18 32.46	+00 31 20.6		095
1981 RN1	1981 11	02.80339	01 12 31.60	+00 56 42.4		095
1981 RN1	1981 11	25.73253	01 00 53.88	+02 57 50.6		095

OBSERVATIONS MADE AT GEISEI BY T. SEKI.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1981 SA	1981 11	27.73698	03 24 25.34	+18 59 52.5	16	372
1981 UC	1981 11	18.56181	03 17 09.38	+16 51 08.3	15.5	372
1981 UC	1981 11	27.69688	03 07 46.71	+16 36 27.9	15.5	372

OBSERVATIONS MADE AT MT. JOHN UNIVERSITY OBSERVATORY BY A. C. GILMORE. MEASURED BY P. M. KILMARTIN. ASSISTED BY R. MC INTOSH.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
435	1981 07	04.30740	11 57 53.23	+00 18 40.9		1	474
435	1981 07	04.32782	11 57 54.20	+00 18 35.6			474
2100	1981 10	30.40228	20 46 56.72	-29 07 25.7			474
2100	1981 10	30.42566	20 46 58.74	-29 07 40.8			474
2503	1981 10	29.45216	21 12 58.77	-20 07 54.4			474
2503	1981 10	29.48220	21 13 01.05	-20 07 32.8			474
1979 DE	1981 10	30.45216	21 49 28.49	-24 11 21.6			474
1979 DE	1981 10	30.54684	21 49 30.05	-24 11 11.6			474
1980 GA	1981 10	29.51976	23 44 50.48	-29 54 40.1			474
1980 GA	1981 10	29.54609	23 44 49.45	-29 54 25.4			474
1980 LD	1981 10	30.58434	01 03 21.84	-10 15 30.2			474
1980 LD	1981 10	30.60205	01 03 21.15	-10 15 31.8			474
1981 QB	1981 10	28.44696	22 09 09.87	-76 35 50.0			474
1981 QB	1981 10	28.47381	22 09 18.02	-76 36 26.0			474
1981 QB	1981 11	27.53721	02 27 37.75	-78 56 12.6			474
1981 QB	1981 11	27.56308	02 27 48.37	-78 55 49.0			474
1981 QC	1981 10	20.39061	00 57 59.00	-37 09 01.8		2	474
1981 QC	1981 10	20.40161	00 57 58.07	-37 08 52.3		2	474
1981 QC	1981 10	20.45723	00 57 53.38	-37 08 05.6			474
1981 QC	1981 10	20.46723	00 57 52.57	-37 07 54.9			474
1981 QJ1	1981 10	17.39337	20 43 34.56	-23 36 53.1			474
1981 QJ1	1981 10	17.42228	20 43 35.19	-23 36 40.5			474
1981 QJ1	1981 10	18.41615	20 43 54.45	-23 29 31.5			474
1981 QJ1	1981 10	19.37412	20 44 14.28	-23 22 35.9	19.0		474
1981 QJ1	1981 10	19.40520	20 44 14.94	-23 22 21.1			474
1981 QJ1	1981 10	28.38978	20 48 15.87	-22 15 49.1			474
1981 QJ1	1981 10	28.41536	20 48 16.68	-22 15 36.5			474

1981 VA 1981 11 27.48322 02 27 16.15 +25 12 25.9 17 1 474
 1981 VA 1981 11 27.50509 02 27 15.93 +25 11 27.9 474
 Note 1: trailed image. 2: image at extreme edge of plate.

OBSERVATIONS MADE AT HEMINGFORD ABBOTS (CODE 489) BY A. YOUNG AND AT
 STAKENBRIDGE (CODE 494) BY B. MANNING. MEASURED BY MANNING. COMMUNI-
 CATED BY G. M. HURST.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
2100	1981 08	20.9181	21 39 33.46	+29 56 04.4	14.5	494
2100	1981 08	20.9260	21 39 30.93	+29 55 17.6	14.5	494
2100	1981 08	25.9212	21 15 15.15	+20 57 35.8	14.0	494
2100	1981 09	02.9552	20 46 04.25	+06 43 50.3		489
2100	1981 09	02.9608	20 46 03.20	+06 43 16.8		489

OBSERVATIONS MADE WITH THE 0.8-M HAMBURG SCHMIDT AT THE GERMAN-SPANISH AS-
 TRONOMICAL CENTRE, CALAR ALTO, BY L. KOHOUTEK (ASSISTED BY M. L. ROTH).
 MEASURED BY M. DIECKVOSS.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1981 WO1 *	1981 11	21.00556	05 47 03.72	+11 30 50.2	16	493
1981 WO1	1981 11	23.97674	05 44 33.02	+10 19 14.1		493
1981 WO1	1981 12	03.01111	05 34 55.44	+06 40 48.1		493
1981 WO1	1981 12	04.00417	05 33 43.35	+06 17 15.1		493
1981 WO1	1981 12	05.00694	05 32 29.33	+05 53 40.0		493
1981 WO1	1981 12	05.04444	05 32 26.41	+05 52 47.5		493

OBSERVATIONS MADE WITH THE LIEGE SCHMIDT TELESCOPE AT HAUTE PROVENCE BY
 F. DOSSIN.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1706	1981 12	04.01875	03 54 33.88	+22 08 52.8	16.5	511
1706	1981 12	04.05277	03 54 31.51	+22 08 44.2		511
2069	1981 12	04.01875	03 46 34.23	+23 56 26.4	15.5	511
2069	1981 12	04.05277	03 46 32.27	+23 56 26.0		511
2307	1981 12	04.01875	04 02 31.39	+21 54 30.1	16.5	511
2307	1981 12	04.05277	04 02 29.65	+21 54 22.8		511
1981 XF *	1981 12	04.01875	03 45 45.46	+21 47 35.5	18.5	511
1981 XF	1981 12	04.05277	03 45 43.07	+21 47 32.7		511
1981 XG *	1981 12	04.01875	03 45 46.20	+21 24 51.9	18.0	511
1981 XG	1981 12	04.05277	03 45 44.36	+21 24 49.0		511
1981 XH *	1981 12	04.01875	03 45 47.38	+21 30 45.5	17.5	511
1981 XH	1981 12	04.05277	03 45 45.11	+21 30 42.4		511
1981 XJ *	1981 12	04.01875	03 46 34.24	+21 22 19.2	18.5	511
1981 XJ	1981 12	04.05277	03 46 31.90	+21 22 16.6		511
1981 XK *	1981 12	04.01875	03 47 05.65	+20 19 30.2	18.5	511
1981 XK	1981 12	04.05277	03 47 04.09	+20 19 27.1		511
1981 XL *	1981 12	04.01875	03 47 39.68	+20 58 59.7	18.0	511
1981 XL	1981 12	04.05277	03 47 37.98	+20 58 42.8		511
1981 XM *	1981 12	04.01875	03 47 43.38	+21 59 52.3	18.5	511
1981 XM	1981 12	04.05277	03 47 41.33	+21 59 50.6		511
1981 XN *	1981 12	04.01875	03 47 49.13	+22 33 37.2	18.0	511
1981 XN	1981 12	04.05277	03 47 46.99	+22 33 31.6		511
1981 XO *	1981 12	04.01875	03 48 54.37	+22 37 38.5	18.0	511
1981 XO	1981 12	04.05277	03 48 52.48	+22 37 33.3		511
1981 XP *	1981 12	04.01875	03 49 57.41	+20 41 48.1	18.0	511
1981 XP	1981 12	04.05277	03 49 55.63	+20 41 40.9		511
1981 XQ *	1981 12	04.01875	03 50 32.00	+23 11 35.4	18.5	511
1981 XQ	1981 12	04.05277	03 50 29.68	+23 11 39.2		511
1981 XR *	1981 12	04.01875	03 50 34.22	+22 27 12.0	17.0	511
1981 XR	1981 12	04.05277	03 50 32.40	+22 27 06.2		511
1981 XS *	1981 12	04.01875	03 51 06.60	+21 05 05.8	19.0	511

1981 XS		1981 12 04.05277	03 51 04.47	+21 05 05.1		511
1981 XT	*	1981 12 04.01875	03 51 42.75	+20 21 38.8	18.0	511
1981 XT		1981 12 04.05277	03 51 40.50	+20 21 40.3		511
1981 XU	*	1981 12 04.01875	03 51 44.83	+20 44 58.0	18.0	511
1981 XU		1981 12 04.05277	03 51 42.87	+20 44 58.8		511
1981 XV	*	1981 12 04.01875	03 51 52.57	+21 15 24.9	17.5	511
1981 XV		1981 12 04.05277	03 51 50.61	+21 15 13.9		511
1981 XW	*	1981 12 04.01875	03 52 00.11	+21 21 20.9	18.0	511
1981 XW		1981 12 04.05277	03 51 57.99	+21 21 11.1		511
1981 XX	*	1981 12 04.01875	03 52 45.11	+23 27 32.4	16.5	511
1981 XX		1981 12 04.05277	03 52 43.00	+23 27 30.8		511
1981 XY	*	1981 12 04.01875	03 52 51.92	+20 58 52.8	18.0	511
1981 XY		1981 12 04.05277	03 52 49.92	+20 58 55.1		511
1981 XZ	*	1981 12 04.01875	03 52 59.88	+22 53 50.0	19.0	511
1981 XZ		1981 12 04.05277	03 52 57.48	+22 53 52.7		511
1981 XA1	*	1981 12 04.01875	03 53 00.52	+21 38 33.6	19.0	511
1981 XA1		1981 12 04.05277	03 52 58.61	+21 38 18.4		511
1981 XB1		1981 12 04.01875	03 53 27.84	+22 51 37.5	17.5	511
1981 XB1		1981 12 04.05277	03 53 26.00	+22 51 37.0		511
1981 XC1	*	1981 12 04.01875	03 54 25.46	+21 07 56.5	19.0	511
1981 XC1		1981 12 04.05277	03 54 23.74	+21 07 52.0		511
1981 XD1	*	1981 12 04.01875	03 54 54.37	+20 44 26.0	18.0	511
1981 XD1		1981 12 04.05277	03 54 52.41	+20 44 28.5		511
1981 XE1	*	1981 12 04.01875	03 54 56.39	+22 45 04.1	19.0	511
1981 XE1		1981 12 04.05277	03 54 54.27	+22 44 47.7		511
1981 XF1	*	1981 12 04.01875	03 54 56.90	+20 42 38.8	18.5	511
1981 XF1		1981 12 04.05277	03 54 54.87	+20 42 28.1		511
1981 XG1	*	1981 12 04.01875	03 55 11.97	+20 49 39.2	16.5	511
1981 XG1		1981 12 04.05277	03 55 09.65	+20 49 25.7		511
1981 XH1	*	1981 12 04.01875	03 55 26.07	+20 49 04.7	19.0	511
1981 XH1		1981 12 04.05277	03 55 24.38	+20 48 58.4		511
1981 XJ1	*	1981 12 04.01875	03 55 42.08	+20 32 59.1	17.0	511
1981 XJ1		1981 12 04.05277	03 55 39.82	+20 32 59.2		511
1981 XK1	*	1981 12 04.01875	03 55 42.44	+22 46 33.2	18.5	511
1981 XK1		1981 12 04.05277	03 55 40.39	+22 46 26.6		511
1981 XL1		1981 12 04.01875	03 56 10.41	+22 35 43.1	17.0	511
1981 XL1		1981 12 04.05277	03 56 08.28	+22 35 24.3		511
1981 XM1	*	1981 12 04.01875	03 57 23.20	+22 25 42.1	17.5	511
1981 XM1		1981 12 04.05277	03 57 21.02	+22 25 25.1		511
1981 XN1	*	1981 12 04.01875	03 57 24.42	+21 46 04.1	19.0	511
1981 XN1		1981 12 04.05277	03 57 22.54	+21 46 00.8		511
1981 XO1	*	1981 12 04.01875	03 57 43.33	+21 07 22.1	18.0	511
1981 XO1		1981 12 04.05277	03 57 41.43	+21 07 09.6		511
1981 XP1	*	1981 12 04.01875	03 58 13.59	+20 52 41.6	18.0	511
1981 XP1		1981 12 04.05277	03 58 11.05	+20 52 46.4		511
1981 XQ1	*	1981 12 04.01875	03 58 14.36	+21 44 05.1	18.0	511
1981 XQ1		1981 12 04.05277	03 58 12.44	+21 43 59.4		511
1981 XR1	*	1981 12 04.01875	03 58 36.95	+23 37 36.4	17.5	511
1981 XR1		1981 12 04.05277	03 58 34.49	+23 37 33.7		511
1981 XS1	*	1981 12 04.01875	03 59 20.29	+24 11 51.5	17.0	511
1981 XS1		1981 12 04.05277	03 59 18.22	+24 11 47.0		511
1981 XT1	*	1981 12 04.01875	03 59 47.47	+21 09 36.7	17.0	511
1981 XT1		1981 12 04.05277	03 59 45.30	+21 09 36.4		511
1981 XU1	*	1981 12 04.01875	04 00 20.92	+21 56 21.7	18.5	511
1981 XU1		1981 12 04.05277	04 00 18.62	+21 56 14.3		511
1981 XV1	*	1981 12 04.01875	04 00 56.63	+21 56 36.6	17.5	511
1981 XV1		1981 12 04.05277	04 00 54.34	+21 56 36.9		511
1981 XW1	*	1981 12 04.01875	04 01 14.66	+21 11 12.7	18.0	511
1981 XW1		1981 12 04.05277	04 01 12.18	+21 11 08.4		511

1981 XX1 *	1981 12 04.01875	04 01 35.74	+23 07 06.1	18.0	511
1981 XX1	1981 12 04.05277	04 01 33.52	+23 06 57.9		511
1981 XY1 *	1981 12 04.01875	04 01 35.92	+21 36 39.6	18.5	511
1981 XY1	1981 12 04.05277	04 01 34.09	+21 36 32.8		511
1981 XZ1 *	1981 12 04.01875	04 02 45.01	+23 37 36.9	18.0	511
1981 XZ1	1981 12 04.05277	04 02 43.30	+23 37 16.6		511
1981 XA2 *	1981 12 04.01875	04 02 49.20	+23 44 55.0	18.0	511
1981 XA2	1981 12 04.05277	04 02 47.16	+23 44 33.7		511

OBSERVATIONS MADE AT THE OSSERVATORIO S. VITTORE.

Object	Date	UT	R. A. (1950)	Decl.	N	Obs.
1007	1981 11 08.97222	01 59 17.33	+16 43 19.8			552
1007	1981 11 08.98681	01 59 16.63	+16 43 14.8			552
1007	1981 11 14.87847	01 54 48.94	+16 14 50.7			552
1007	1981 11 14.89861	01 54 48.09	+16 14 46.3			552
1007	1981 11 15.87917	01 54 07.26	+16 10 13.6			552
1007	1981 11 15.90139	01 54 06.39	+16 10 07.2			552
1007	1981 11 16.88958	01 53 26.56	+16 05 36.8			552
1007	1981 11 16.91111	01 53 25.72	+16 05 30.5			552
1007	1981 11 17.88819	01 52 47.81	+16 01 06.6			552
1007	1981 11 17.90833	01 52 47.09	+16 01 01.7			552
1007	1981 11 20.90625	01 50 58.96	+15 47 56.9			552
1007	1981 11 20.92847	01 50 58.09	+15 47 52.7			552
1007	1981 11 20.94792	01 50 57.47	+15 47 46.6			552
1007	1981 11 22.90486	01 49 54.27	+15 39 40.3			552
1007	1981 11 22.92500	01 49 53.60	+15 39 35.7			552
1007	1981 11 26.94861	01 48 02.57	+15 24 14.8			552
2487	1981 11 01.91875	02 05 02.50	+17 17 57.2		1	552
2487	1981 11 22.90486	01 49 38.16	+16 04 36.9			552
2487	1981 11 22.92500	01 49 37.62	+16 04 33.1			552
2487	1981 11 26.94861	01 48 07.79	+15 54 30.9			552

Note 1: correction to MPC 6447.

OBSERVATIONS MADE AT BURGSOLMS OBSERVATORY (CODE 554) BY F. FREVERT AND AT REINTAL (CODE 556) BY F. SEILER.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
170	1981 09 05.90287	22 21 32.29	+06 00 44.2		554
170	1981 09 05.91319	22 21 31.71	+06 00 43.8		554
170	1981 09 05.92361	22 21 31.07	+06 00 42.6		554
170	1981 09 06.96181	22 20 30.20	+05 58 45.9		554
170	1981 09 06.96875	22 20 29.77	+05 58 44.5		554
170	1981 09 06.97569	22 20 29.38	+05 58 43.0		554
219	1981 09 04.97535	22 38 03.33	+07 18 58.1		554
219	1981 09 04.98264	22 38 03.04	+07 18 52.6		554
219	1981 09 04.98993	22 38 02.78	+07 18 46.7		554
219	1981 09 06.92604	22 36 55.62	+06 53 31.1		554
219	1981 09 06.93472	22 36 55.31	+06 53 24.0		554
219	1981 09 06.94861	22 36 54.81	+06 53 13.2		554
485	1981 09 04.92922	21 38 02.96	+00 21 36.2		554
485	1981 09 04.93889	21 38 02.59	+00 21 32.0		554
485	1981 09 04.94861	21 38 02.15	+00 21 27.5		554
485	1981 09 04.95833	21 38 01.73	+00 21 22.0		554
485	1981 09 06.86250	21 36 44.08	+00 06 12.8		554
485	1981 09 06.87222	21 36 43.67	+00 06 07.0		554
485	1981 09 06.88194	21 36 43.29	+00 06 03.3		554
485	1981 09 06.89306	21 36 42.90	+00 05 57.1		554
485	1981 09 06.90139	21 36 42.55	+00 05 52.8		554
665	1981 09 05.93611	22 25 29.33	+05 55 56.4		554
665	1981 09 05.96250	22 25 28.02	+05 55 53.2		554

665	1981 09 06.98958	22 24 38.01	+05 53 30.5	554
665	1981 09 06.99653	22 24 37.68	+05 53 29.7	554
665	1981 09 07.00694	22 24 37.19	+05 53 28.1	554
836	1981 10 24.93750	03 03 10.61	+13 42 46.7	556
836	1981 10 24.94444	03 03 10.32	+13 42 44.4	556
836	1981 10 24.95139	03 03 09.99	+13 42 39.7	556
836	1981 10 24.95833	03 03 09.66	+13 42 36.5	556
836	1981 10 24.96528	03 03 09.30	+13 42 33.1	556
836	1981 10 24.97222	03 03 09.02	+13 42 29.0	556
836	1981 10 24.97917	03 03 08.61	+13 42 25.2	556
836	1981 10 24.98611	03 03 08.28	+13 42 23.2	556
836	1981 11 03.95139	02 54 38.14	+12 16 48.2	556
836	1981 11 03.95833	02 54 37.76	+12 16 45.9	556
836	1981 11 03.96528	02 54 37.38	+12 16 42.4	556
836	1981 11 03.97917	02 54 36.58	+12 16 37.2	556
836	1981 11 04.00000	02 54 35.52	+12 16 26.3	556
836	1981 11 04.01389	02 54 34.68	+12 16 19.3	556
836	1981 11 20.75000	02 40 23.66	+10 10 07.0	556
836	1981 11 20.75694	02 40 23.40	+10 10 02.6	556
836	1981 11 20.77083	02 40 22.76	+10 09 59.4	556
836	1981 11 20.78472	02 40 22.19	+10 09 51.5	556
836	1981 11 20.79861	02 40 21.42	+10 09 47.4	556
836	1981 11 20.80556	02 40 21.13	+10 09 44.6	556
1043	1981 09 18.80556	23 13 20.72	-07 36 03.8	556
1043	1981 09 18.81250	23 13 20.42	-07 36 06.7	556
1043	1981 09 18.81944	23 13 20.26	-07 36 11.8	556
1043	1981 09 18.82639	23 13 19.90	-07 36 13.0	556
1043	1981 09 18.83333	23 13 19.66	-07 36 17.7	556
1043	1981 09 18.84028	23 13 19.36	-07 36 19.3	556
1165	1981 09 18.84722	23 49 32.83	+08 13 11.9	556
1165	1981 09 18.85417	23 49 32.45	+08 13 09.3	556
1165	1981 09 18.86111	23 49 32.24	+08 13 07.3	556
1165	1981 10 24.88889	23 31 43.09	+02 46 29.6	556
1165	1981 10 24.90278	23 31 42.93	+02 46 21.0	556
1165	1981 10 24.90972	23 31 42.82	+02 46 18.9	556
1165	1981 10 24.91667	23 31 42.78	+02 46 14.7	556
1165	1981 10 24.92361	23 31 42.77	+02 46 12.3	556
1165	1981 10 24.93056	23 31 42.64	+02 46 09.8	556

OBSERVATIONS MADE AT MADONNA DI DOSSOBUONO, VERONA, BY L. LUCIANO.

Object	Date	UT	R. A. (1950)	Decl.	N	Obs.
20	1981 03 04.92014	10 39 07.26	+07 32 36.3	1	560	
20	1981 03 04.93194	10 39 06.78	+07 32 40.6	1	560	
97	1981 02 26.87153	07 50 00.03	+12 33 03.6	1	560	
97	1981 02 26.89236	07 50 00.56	+12 33 15.3	1	560	
97	1981 03 04.87847	07 49 59.96	+13 23 04.2	1	560	
97	1981 03 04.89931	07 50 00.05	+13 23 13.5	1	560	
194	1981 05 08.96875	14 44 33.38	+11 29 09.7	1	560	
194	1981 05 09.00347	14 44 31.37	+11 29 23.9	1	560	
194	1981 05 29.94792	14 28 49.18	+12 34 09.6	1	560	
863	1981 05 29.91319	13 51 50.19	+24 00 44.7	1	560	
863	1981 05 29.96181	13 51 49.12	+24 00 20.1	1	560	
1007	1981 11 15.89375	01 54 06.82	+16 10 10.1	1	560	
1007	1981 11 15.91111	01 54 06.16	+16 10 04.3	1	560	
1007	1981 11 16.88194	01 53 27.04	+16 05 39.3	1	560	
1007	1981 11 16.90278	01 53 26.21	+16 05 32.9	1	560	
2487	1981 11 15.89375	01 53 31.88	+16 26 28.7	1	560	
2487	1981 11 15.91111	01 53 31.22	+16 26 25.5	1	560	

2487 1981 11 16.88194 01 52 53.45 +16 23 09.8 1 560
 2487 1981 11 16.90278 01 52 52.45 +16 23 05.7 1 560
 Note 1: observatory code 560, Long. and Parallax 10.93, -300, -302 (see
 MPC 4766).

OBSERVATIONS MADE WITH THE 0.46-M SCHMIDT AT PALOMAR BY S. J. BUS.
 SCANNED AND MEASURED BY C. SHOEMAKER.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
50	1981 05	05.32153	14 40 47.76	-12 21 41.7		675
50	1981 05	06.29375	14 39 56.89	-12 17 19.2		675
91	1981 05	05.32153	14 23 08.59	-16 00 22.3		675
91	1981 05	05.33125	14 23 08.04	-16 00 18.0		675
91	1981 05	06.29375	14 22 15.54	-15 56 32.9		675
91	1981 05	06.30347	14 22 14.98	-15 56 30.0		675
167	1981 05	05.32153	14 34 09.12	-12 08 35.8		675
167	1981 05	06.29375	14 33 21.46	-12 04 24.4		675
315	1981 05	05.32153	14 35 00.65	-11 16 04.2		675
315	1981 05	06.29375	14 34 00.93	-11 10 39.4		675
393	1981 05	05.32153	14 23 05.68	-10 39 34.0		675
393	1981 05	06.29375	14 22 17.59	-10 27 57.4		675
401	1981 05	05.32153	14 35 29.64	-16 13 56.0		675
401	1981 05	05.33125	14 35 29.22	-16 13 54.9		675
401	1981 05	06.29375	14 34 44.13	-16 11 48.7		675
401	1981 05	06.30347	14 34 43.67	-16 11 49.0		675
448	1981 05	05.33125	14 37 43.63	-17 18 35.8		675
448	1981 05	06.30347	14 36 51.68	-17 17 48.8		675
644	1981 05	05.32153	14 28 51.69	-13 08 58.4		675
644	1981 05	05.33125	14 28 51.10	-13 08 57.0		675
644	1981 05	06.29375	14 27 59.79	-13 04 55.7		675
644	1981 05	06.30347	14 27 59.20	-13 04 53.5		675
821	1981 05	05.36528	15 01 35.10	-14 17 39.6		675
821	1981 05	06.33750	15 00 50.36	-14 11 04.9		675
951	1981 05	05.37500	14 47 27.30	-19 27 36.5		675
951	1981 05	06.34792	14 46 25.86	-19 21 44.7		675
1008	1981 05	05.33125	14 16 31.30	-18 13 35.9		675
1008	1981 05	06.30347	14 15 43.25	-18 11 27.7		675
1188	1981 05	05.33125	14 19 06.45	-18 53 11.3		675
1188	1981 05	06.30347	14 18 01.84	-18 49 19.9		675
1207	1981 05	05.33125	14 27 58.44	-20 38 04.7		675
1207	1981 05	06.30347	14 27 07.41	-20 36 18.2		675
1438	1981 05	05.37500	15 05 07.03	-17 56 08.3		675
1439	1981 05	05.37500	15 04 35.93	-18 37 29.1	17	675
1439	1981 05	06.34792	15 03 56.14	-18 35 33.8	17	675
1808	1981 05	05.33125	14 14 15.81	-14 51 15.2	18	675
1808	1981 05	06.30347	14 13 27.08	-14 47 31.7	18	675
1841	1981 05	05.36528	14 57 42.56	-16 57 32.3		675
1841	1981 05	05.37500	14 57 42.35	-16 57 29.0		675
1841	1981 05	06.34792	14 56 58.08	-16 55 02.4		675
1841	1981 05	06.33750	14 56 58.37	-16 55 06.0		675
1882	1981 05	05.36528	14 58 15.38	-10 54 48.1		675
1882	1981 05	06.33750	14 57 30.97	-10 48 55.9		675
2016	1981 05	06.30347	14 19 52.34	-14 28 51.7		675
2178	1981 05	06.30347	14 10 43.31	-15 49 35.0		675
2228	1981 05	05.36528	14 40 03.21	-12 42 59.7	17.5	675
2228	1981 05	06.33750	14 39 19.56	-12 39 35.2	17.5	675
2387	1981 05	05.32153	14 40 06.72	-12 24 30.9	16.5	675
2387	1981 05	05.36528	14 40 04.33	-12 24 29.2	16.5	675
2387	1981 05	06.29375	14 39 16.19	-12 23 30.1	16.5	675
2387	1981 05	06.33750	14 39 13.86	-12 23 28.4	16.5	675

2411		1981	05	05.32153	14	33	34.89	-11	45	51.7	15.5	675	
2411		1981	05	05.36528	14	33	32.03	-11	45	40.3	16	675	
2411		1981	05	06.29375	14	32	37.69	-11	41	22.8	15.5	675	
2425		1981	05	05.36528	14	52	16.76	-14	05	46.7	15.5	675	
2425		1981	05	05.37500	14	52	16.37	-14	05	44.6	15.5	675	
2425		1981	05	06.34792	14	51	23.51	-14	05	21.5	15.5	675	
2425		1981	05	06.33750	14	51	24.02	-14	05	22.7	15.5	675	
2454		1981	05	06.34792	15	00	39.73	-20	14	50.9	18	675	
2458		1981	05	05.32153	14	23	44.07	-11	02	24.6	17	675	
2458		1981	05	06.29375	14	22	59.44	-10	58	49.7	17	675	
1977	EB2	1981	05	05.32153	14	34	59.70	-14	52	14.3	16	675	
1977	EB2	1981	05	05.33125	14	34	59.06	-14	52	14.5	16	675	
1977	EB2	1981	05	05.36528	14	34	56.91	-14	52	05.9	16.5	675	
1977	EB2	1981	05	06.29375	14	34	04.30	-14	49	37.9	16	675	
1977	EB2	1981	05	06.30347	14	34	03.69	-14	49	36.0	16	675	
1977	EB2	1981	05	06.33750	14	34	01.54	-14	49	28.5	16.5	675	
1981	JA	1981	05	05.36528	14	54	36.66	-14	09	19.4	17	675	
1981	JA	1981	05	05.37500	14	54	36.21	-14	09	17.1	17	675	
1981	JA	1981	05	06.33750	14	53	50.82	-14	05	51.4	17	675	
1981	JA	1981	05	06.34792	14	53	50.41	-14	05	49.7	17	675	
1981	JE	1981	05	05.33125	14	10	01.06	-16	58	58.5	17	675	
1981	JE	1981	05	06.30347	14	09	08.12	-16	52	29.4	17	675	
1981	JG	1981	05	05.33125	14	19	12.86	-16	49	46.8	17.5	675	
1981	JG	1981	05	06.30347	14	18	31.93	-16	42	13.3	17.5	675	
1981	JH	1981	05	05.32153	14	30	50.14	-14	14	21.2	16.5	675	
1981	JH	1981	05	05.33125	14	30	49.66	-14	14	18.5	16.5	675	
1981	JH	1981	05	06.29375	14	29	46.07	-14	11	55.8	16.5	675	
1981	JH	1981	05	06.30347	14	29	45.35	-14	11	54.1	16.5	675	
1981	JJ	1981	05	05.32153	14	33	33.40	-15	14	58.6	17.5	675	
1981	JJ	1981	05	05.33125	14	33	32.86	-15	14	54.5	17.5	675	
1981	JJ	1981	05	06.29375	14	32	47.11	-15	11	44.3	17.5	675	
1981	JJ	1981	05	06.30347	14	32	46.72	-15	11	43.2	17.5	675	
1981	JM	1981	05	05.36528	14	48	33.64	-12	28	46.5	17	675	
1981	JM	1981	05	06.33750	14	47	47.77	-12	25	19.3	17	675	
1981	JN	1981	05	05.36528	14	55	30.36	-13	00	43.0	16	675	
1981	JN	1981	05	06.33750	14	54	40.59	-12	51	47.0	16	675	
1981	JO	1981	05	05.37500	14	55	20.80	-16	55	57.9	17.5	675	
1981	JO	1981	05	06.34792	14	54	23.78	-16	47	27.3	17.5	675	
1981	JP	1981	05	05.36528	14	57	14.29	-10	33	27.0	15.5	675	
1981	JP	1981	05	06.33750	14	56	17.70	-10	29	11.0	15.5	675	
1981	JQ	1981	05	05.37500	15	02	52.90	-19	45	33.5	16.5	675	
1981	JQ	1981	05	06.34792	15	01	52.21	-19	44	11.6	16.5	675	
1981	JW1	*	1981	05	05.32153	14	16	06.38	-15	18	40.5	16.5	675
1981	JW1		1981	05	05.33125	14	16	06.07	-15	18	36.2	17	675
1981	JW1		1981	05	06.29375	14	15	23.69	-15	11	59.0	16.5	675
1981	JX1	*	1981	05	05.32153	14	21	08.02	-15	05	28.4	18	675
1981	JX1		1981	05	06.29375	14	20	09.02	-15	02	44.9	18	675
1981	JY1	*	1981	05	05.32153	14	23	01.22	-12	32	00.3	17	675
1981	JY1		1981	05	06.29375	14	22	03.38	-12	26	53.9	17	675
1981	JZ1	*	1981	05	05.32153	14	28	31.89	-09	35	51.4	17	675
1981	JZ1		1981	05	06.29375	14	27	45.99	-09	28	48.3	17	675
1981	JA2	*	1981	05	05.32153	14	28	57.44	-16	56	32.0	16.5	675
1981	JA2		1981	05	05.33125	14	28	56.68	-16	56	26.2	17	675
1981	JA2		1981	05	06.29375	14	27	59.22	-16	50	34.3	16.5	675
1981	JA2		1981	05	06.30347	14	27	58.82	-16	50	31.2	17	675
1981	JB2	*	1981	05	05.32153	14	29	12.25	-13	37	21.8	17	675
1981	JB2		1981	05	05.33125	14	29	11.68	-13	37	23.0	17	675
1981	JB2		1981	05	06.29375	14	28	20.99	-13	37	11.2	17	675
1981	JB2		1981	05	06.30347	14	28	20.47	-13	37	11.0	17	675

1981	JC2	*	1981	05	05.32153	14	30	43.78	-16	58	15.1	16.5	675
1981	JC2		1981	05	05.33125	14	30	43.31	-16	58	08.1	17	675
1981	JC2		1981	05	06.29375	14	30	01.92	-16	49	11.0	16.5	675
1981	JC2		1981	05	06.30347	14	30	01.47	-16	49	07.0	17	675
1981	JD2	*	1981	05	05.32153	14	31	59.60	-14	23	20.0	17	675
1981	JD2		1981	05	05.33125	14	31	58.90	-14	23	17.7	17	675
1981	JD2		1981	05	06.29375	14	30	56.91	-14	20	11.4	17	675
1981	JD2		1981	05	06.30347	14	30	56.27	-14	20	08.3	17	675
1981	JE2	*	1981	05	05.32153	14	33	08.17	-13	02	39.2	17.5	675
1981	JE2		1981	05	06.29375	14	32	07.99	-12	59	27.2	17.5	675
1981	JF2	*	1981	05	05.33125	14	27	04.87	-19	54	14.3	18	675
1981	JF2		1981	05	06.30347	14	26	12.70	-19	50	52.0	18	675
1981	JG2	*	1981	05	05.33125	14	37	44.39	-17	44	27.5	16.5	675
1981	JG2		1981	05	05.37500	14	37	41.17	-17	44	11.6	16.5	675
1981	JG2		1981	05	06.30347	14	36	40.81	-17	38	59.5	16.5	675
1981	JG2		1981	05	06.34792	14	36	37.71	-17	38	44.7	16.5	675
1981	JH2	*	1981	05	05.36528	14	34	52.79	-12	52	26.0	17	675
1981	JJ2	*	1981	05	05.36528	14	37	01.27	-10	25	31.9	18	675
1981	JK2	*	1981	05	05.36528	14	39	54.42	-14	57	04.3	18	675
1981	JL2	*	1981	05	05.36528	14	51	35.24	-12	11	19.8	17.5	675
1981	JM2	*	1981	05	05.36528	14	55	21.91	-16	07	35.6	17.5	675
1981	JM2		1981	05	05.37500	14	55	21.40	-16	07	29.5	17.5	675
1981	JM2		1981	05	06.33750	14	54	27.95	-16	02	35.9	18	675
1981	JM2		1981	05	06.34792	14	54	27.21	-16	02	28.2	17.5	675
1981	JN2		1981	05	05.37500	14	43	16.37	-21	42	44.8	18	675
1981	JN2	*	1981	05	06.34792	14	42	16.94	-21	36	44.5	18	675
1981	JO2		1981	05	05.37500	14	44	13.80	-18	19	45.5	18	675
1981	JO2	*	1981	05	06.34792	14	43	08.22	-18	19	42.5	18	675
1981	JP2		1981	05	05.37500	14	46	57.37	-19	04	23.8	17.5	675
1981	JP2	*	1981	05	06.34792	14	46	00.64	-18	58	44.6	17.5	675
1981	JQ2	*	1981	05	06.34792	14	48	57.97	-20	54	54.3	18	675
1981	JR2		1981	05	05.37500	14	52	52.99	-17	59	25.8	18	675
1981	JR2	*	1981	05	06.34792	14	51	49.56	-17	57	22.8	18	675
1981	JS2		1981	05	05.37500	14	55	04.96	-19	45	23.3	18	675
1981	JS2	*	1981	05	06.34792	14	54	05.62	-19	42	25.1	18	675
1981	JT2		1981	05	05.37500	14	55	25.11	-18	25	03.7	18	675
1981	JT2	*	1981	05	06.34792	14	54	33.03	-18	24	07.8	18	675
1981	JU2		1981	05	05.37500	14	57	08.45	-18	02	37.1	16.5	675
1981	JU2	*	1981	05	06.34792	14	56	14.49	-17	56	13.6	16.5	675
1981	JV2		1981	05	05.37500	15	03	39.30	-19	37	43.2	18	675
1981	JV2	*	1981	05	06.34792	15	02	47.06	-19	35	17.7	18	675
1981	JW2		1981	05	05.36528	14	33	30.98	-15	14	43.4	18	675
1981	JW2	*	1981	05	06.33750	14	32	44.85	-15	11	31.7	18	675
1981	JY2		1981	05	05.36528	14	41	39.10	-14	24	49.4	17.5	675
1981	JY2		1981	05	05.37500	14	41	38.68	-14	24	47.6	17.5	675
1981	JY2	*	1981	05	06.33750	14	40	44.40	-14	19	08.3	17.5	675
1981	JZ2		1981	05	05.36528	14	50	04.15	-11	08	43.5	18	675
1981	JZ2	*	1981	05	06.33750	14	49	05.77	-11	05	04.4	18	675
1981	JA3		1981	05	05.37500	14	50	50.50	-17	01	27.4	17	675
1981	JA3	*	1981	05	06.33750	14	49	59.30	-16	59	49.1	17	675
1981	JA3		1981	05	06.34792	14	49	58.76	-16	59	46.9	17	675
1981	JB3		1981	05	05.37500	14	54	27.91	-14	56	18.9	17	675
1981	JB3	*	1981	05	06.33750	14	53	25.75	-14	55	57.1	17	675
1981	JB3		1981	05	06.34792	14	53	25.04	-14	55	56.0	17	675
1981	JD3		1981	05	05.36528	14	55	29.84	-09	54	48.3	18	675
1981	JD3	*	1981	05	06.33750	14	54	28.66	-09	48	57.4	18	675
1981	JE3		1981	05	05.37500	14	59	06.60	-15	55	05.3	17.5	675
1981	JE3	*	1981	05	06.33750	14	58	17.18	-15	50	48.9	18	675
1981	JE3		1981	05	06.34792	14	58	16.70	-15	50	47.4	17.5	675

1981 JF3	1981 05 05.36528	15 01 11.92	-12 58 40.0	17.5	675
1981 JF3 *	1981 05 06.33750	15 00 25.46	-12 55 48.9	17.5	675
1981 JG3	1981 05 05.36528	15 02 12.96	-12 27 55.7	17	675
1981 JG3 *	1981 05 06.33750	15 01 25.31	-12 24 36.5	17	675
1981 JH3 *	1981 05 05.36528	14 47 26.11	-12 36 08.3		675
1981 JH3	1981 05 06.37750	14 46 32.03	-12 31 56.8		675
1981 JJ3 *	1981 05 05.36528	14 55 21.43	-16 56 05.6		675

OBSERVATIONS MADE WITH THE 1.2-M SCHMIDT TELESCOPE AT PALOMAR.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
2525	1981 11 17.23439	02 16 47.18	+10 26 35.6			4	675
2525	1981 11 18.32709	02 16 03.06	+10 24 27.9			4	675
1975 EE3	1981 08 22.23613	20 23 56.60	+10 30 02.0			4	675
1975 EE3	1981 08 23.22641	20 23 08.72	+10 12 46.7			4	675
1978 EO8 *	1978 03 15.38715	11 38 09.51	+01 59 00.0			3	675
1978 EO8	1978 03 16.45035	11 37 13.63	+02 05 24.0			3	675
1978 FC	1978 03 30.23820	12 24 21.21	-05 36 47.7			3	675
1979 MU2	1977 02 11.34427	09 23 24.14	+12 19 07.0			3	675
1979 MU2	1977 02 12.31980	09 22 39.84	+12 23 34.8			3	675
1979 MU2	1977 02 14.24705	09 21 12.43	+12 32 40.6			3	675
1979 MB6	1978 03 15.38715	11 41 53.55	+04 28 56.8			3	675
1979 MB6	1978 03 16.42431	11 40 53.67	+04 36 37.9			3	675
1979 MS8	1977 02 13.39549	09 49 01.88	+11 26 01.6			3	675
1979 MS8	1977 02 14.39514	09 48 12.45	+11 30 27.5			3	675
1980 HB	1981 08 23.26495	19 36 15.68	+10 27 18.7			4	675
1980 HB	1981 08 23.29134	19 36 14.93	+10 26 58.9			4	675
1980 HB	1981 09 21.18057	19 33 35.28	+04 18 05.1			4	675
1980 LB	1981 12 23.48613	07 34 28.10	+17 00 38.4			4	675
1980 PS	1981 10 20.20141	02 06 27.23	+47 43 59.7			4	675
1980 PS	1981 10 20.31043	02 06 18.62	+47 43 52.2			4	675
1980 PS	1981 12 23.09793	01 18 32.84	+38 39 18.2			4	675
1980 XU *	1980 12 14.32535	05 34 53.38	+19 44 28.2			3	675
1981 QA	1981 12 17.14655	01 13 13.33	-04 42 45.5			4	675
1981 QA	1981 12 17.19030	01 13 17.63	-04 42 08.3			4	675
1981 QM	1981 11 17.13196	22 38 22.64	-08 17 29.1			4	675
1981 QM	1981 11 17.17223	22 38 26.50	-08 17 11.3			4	675
1981 UG1 *	1981 10 23.33750	03 03 08.75	+45 39 13.8			A	675
1981 UG1	1981 10 23.37917	03 03 06.75	+45 39 12.8			A	675
1981 UH1 *	1981 10 23.33750	03 12 01.97	+42 13 41.5			A	675
1981 UH1	1981 10 23.37917	03 11 59.35	+42 14 04.4			A	675
1981 UJ1 *	1981 10 23.33750	03 14 15.84	+45 30 38.1			A	675
1981 UJ1	1981 10 23.37917	03 14 13.64	+45 30 41.0			A	675
1981 UK1 *	1981 10 23.33750	03 20 16.54	+44 46 19.9			A	675
1981 UK1	1981 10 23.37917	03 20 14.56	+44 46 28.1			A	675
1981 UL1 *	1981 10 23.33750	03 24 14.33	+45 12 43.4			A	675
1981 UL1	1981 10 23.37917	03 24 12.28	+45 12 53.5			A	675
1981 UM1 *	1981 10 23.33750	03 24 59.31	+42 23 59.9			A	675
1981 UM1	1981 10 23.37917	03 24 57.02	+42 24 04.9			A	675
1981 UN1 *	1981 10 23.33750	03 31 25.24	+42 50 52.6			A	675
1981 UN1	1981 10 23.37917	03 31 24.47	+42 50 53.6			A	675
1981 UO1 *	1981 10 25.25278	22 14 55.19	-06 11 52.2		19	9	675
1981 UO1	1981 10 25.29444	22 14 56.09	-06 11 51.3			9	675
1981 UO1	1981 10 26.19931	22 15 23.19	-06 11 31.5			9	675
1981 UO1	1981 10 26.24097	22 15 24.26	-06 11 29.1			9	675
1981 UP1 *	1981 10 25.25278	22 16 08.98	-05 25 42.4		19	9	675
1981 UP1	1981 10 25.29444	22 16 10.18	-05 25 36.9			9	675
1981 UP1	1981 10 26.19931	22 16 47.86	-05 22 50.1			9	675
1981 UP1	1981 10 26.24097	22 16 49.35	-05 22 41.4			9	675
1981 UQ1 *	1981 10 25.25278	22 21 54.75	-05 43 49.0		19	9	675

1981 UQ1	1981 10	25.29444	22 21	56.27	-05 43	52.0	9	675
1981 UQ1	1981 10	26.19931	22 22	35.28	-05 45	35.8	9	675
1981 VA	1981 11	07.52085	02 45	06.26	+50 02	52.6	C	675
1981 VA	1981 12	06.20487	02 28	07.60	+20 10	17.5	4	675
1981 VA	1981 12	06.28751	02 28	08.49	+20 08	02.5	4	675
1981 VA	1981 12	18.23266	02 33	08.46	+16 07	05.3	4	675
1981 VA	1981 12	23.15488	02 36	07.94	+15 05	03.4	4	675
1981 WL2 *	1981 11	25.13472	02 22	15.44	+28 21	11.7	1	675
1981 WL2	1981 11	25.18681	02 22	09.01	+28 22	02.8	1	675
1981 WL2	1981 12	02.14306	02 09	21.55	+30 04	23.8	5	675
1981 WL2	1981 12	03.24583	02 07	35.90	+30 18	54.2	A	675
1981 WL2	1981 12	03.25625	02 07	34.88	+30 19	02.2	A	675
1981 WL2	1981 12	03.39097	02 07	21.79	+30 20	45.5	A	675
1981 WL2	1981 12	03.40139	02 07	20.94	+30 20	52.7	A	675
1981 WL2	1981 12	07.27223	02 01	54.29	+31 08	29.6	4	675
1981 WL2	1981 12	23.23196	01 50	17.63	+33 48	27.2	4	675
1981 WL2	1982 01	04.14863	01 52	08.16	+35 29	50.3	4	675
1981 XA	1981 12	23.26391	03 14	33.88	+15 50	01.6	4	675
4017 P-L *	1960 09	24.37573	00 19	49.91	+04 16	43.8	17.5	7 675
4017 P-L	1960 09	25.42780	00 18	41.18	+04 21	00.9	7	675
4017 P-L	1960 09	26.30558	00 17	44.04	+04 24	32.9	7	675
4017 P-L	1960 09	28.32780	00 15	30.96	+04 32	32.0	7	675
4017 P-L	1960 09	28.36808	00 15	28.25	+04 32	41.8	7	675
4017 P-L	1960 10	17.27085	23 56	31.06	+05 43	06.8	7	675
4017 P-L	1960 10	22.22293	23 52	48.67	+06 01	58.9	7	675

Note 1: observer C. Kowal. 2: plates scanned and measured by C. Atallah under the direction of S. J. Bus. 3 = 1 + 2. 4: observer J. Gibson. 5: observer Saha, measured by Kowal. 6: observer R. S. Dunbar. 7: observer T. Gehrels, plates scanned and measured by C. J. van Houten and I. van Houten-Groeneveld. 8: measured by L. Quimby, coordinated by E. Helin and J. Child, World Space Foundation. 9 = 1 + 8. A = 6 + 8. B: correction to MPC 6498. C = 4 + B.

OBSERVATIONS MADE AT THE LOWELL OBSERVATORY'S ANDERSON MESA STATION BY E. BOWELL, B. A. SKIFF AND N. G. THOMAS. MEASURED BY BOWELL.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
50	1981 06	09.22014	14 15 44.39	-10 18 41.0			688
50	1981 06	09.27014	14 15 42.98	-10 18 34.6			688
76	1981 11	02.18611	00 47 45.70	+05 18 57.0			688
76	1981 11	02.22847	00 47 44.28	+05 18 46.0			688
76	1981 11	20.12292	00 40 43.76	+04 23 46.0			688
76	1981 11	20.17361	00 40 43.04	+04 23 40.1			688
91	1981 06	09.22014	14 00 39.10	-14 13 40.4			688
91	1981 06	09.27014	14 00 38.25	-14 13 36.0			688
92	1981 09	02.15625	18 45 07.00	-26 23 42.1			688
101	1982 01	16.24028	06 46 19.29	+36 08 35.4			688
101	1982 01	16.27431	06 46 17.02	+36 08 30.7			688
102	1981 12	02.15139	01 59 19.91	+09 30 06.9			688
102	1981 12	02.20903	01 59 19.38	+09 29 58.3			688
106	1981 11	02.11458	00 32 59.96	-01 42 28.1			688
106	1981 11	02.16250	00 32 58.54	-01 42 29.5			688
106	1981 11	20.12292	00 28 14.22	-01 21 12.6			688
106	1981 11	20.17361	00 28 14.00	-01 21 05.1			688
114	1981 10	05.32917	23 57 13.09	-02 51 57.2			688
114	1981 10	05.37014	23 57 11.20	-02 52 11.9			688
116	1981 08	30.20278	21 17 43.96	-21 02 05.7			688
116	1981 08	30.24444	21 17 42.07	-21 02 12.8			688
127	1981 08	30.20278	21 31 12.57	-26 43 19.1			688
127	1981 08	30.24444	21 31 10.38	-26 43 22.1			688

127	1981	09	25.18611	21	15	43.10	-26	19	45.7	688
127	1981	09	25.27431	21	15	41.44	-26	19	29.9	688
128	1981	09	22.21424	00	22	32.72	-08	50	10.6	688
131	1982	01	16.25764	07	11	32.93	+28	10	11.6	688
131	1982	01	16.29167	07	11	30.55	+28	10	17.2	688
167	1981	06	09.22014	14	12	50.87	-10	24	44.2	688
167	1981	06	09.27014	14	12	49.91	-10	24	41.3	688
190	1982	01	16.17257	05	56	02.68	+15	04	43.3	688
190	1982	01	16.22014	05	56	01.00	+15	04	48.4	688
212	1981	07	25.24236	19	30	34.00	-23	53	25.2	688
212	1981	07	25.27639	19	30	32.25	-23	53	25.7	688
237	1981	08	30.20278	21	30	23.88	-28	51	16.5	688
237	1981	08	30.24444	21	30	21.93	-28	51	24.4	688
242	1981	12	18.13472	02	24	07.71	+07	16	55.9	688
242	1981	12	18.20903	02	24	06.91	+07	16	47.0	688
254	1981	10	05.32917	23	39	31.85	-06	11	36.3	688
254	1981	10	05.37014	23	39	29.46	-06	11	42.7	688
271	1981	12	18.10972	02	03	46.89	+17	34	57.9	688
271	1981	12	18.18542	02	03	46.36	+17	34	46.4	688
271	1981	12	30.08785	02	05	27.98	+17	27	28.6	688
271	1981	12	30.15347	02	05	29.10	+17	27	29.8	688
274	1981	12	30.11181	03	17	57.04	+15	51	51.9	688
274	1981	12	30.17708	03	17	55.68	+15	51	52.4	688
274	1982	01	16.09028	03	15	33.53	+16	03	59.5	688
274	1982	01	16.14861	03	15	33.59	+16	04	04.7	688
290	1981	11	03.08715	22	49	21.71	-14	00	03.4	3 688
311	1981	11	02.11458	00	25	23.87	-01	48	44.3	688
311	1981	11	02.16250	00	25	22.41	-01	48	49.7	688
325	1981	09	07.38403	01	44	12.34	+17	17	09.1	688
325	1981	09	07.46285	01	44	11.09	+17	17	25.5	688
349	1981	08	30.20278	21	35	38.31	-26	49	23.4	688
349	1981	08	30.24444	21	35	36.14	-26	49	25.5	688
349	1981	09	25.18611	21	20	43.71	-26	15	38.8	688
349	1981	09	25.27431	21	20	42.19	-26	15	21.0	688
368	1982	01	16.17257	05	53	59.64	+15	29	22.1	688
383	1981	12	02.15139	02	10	11.25	+10	03	23.2	688
383	1981	12	02.20903	02	10	09.77	+10	03	22.9	688
401	1981	06	09.22014	14	13	55.81	-15	13	29.3	688
401	1981	06	09.27014	14	13	54.76	-15	13	27.2	688
429	1981	09	07.38403	01	27	11.15	+17	24	49.0	688
429	1981	09	07.46285	01	27	10.18	+17	24	37.9	688
432	1981	12	20.22569	05	52	59.49	+23	20	33.0	688
432	1981	12	20.30000	05	52	54.18	+23	20	51.0	688
432	1981	12	30.13264	05	41	34.41	+23	56	52.4	688
432	1981	12	30.19722	05	41	30.00	+23	57	06.4	688
452	1981	12	20.31667	06	50	09.93	+23	20	18.3	688
452	1981	12	20.35000	06	50	08.17	+23	20	22.8	688
459	1982	01	16.24028	06	59	38.84	+40	18	56.0	688
459	1982	01	16.27431	06	59	36.49	+40	18	55.6	688
471	1982	01	16.11389	04	56	10.39	+25	27	12.9	688
471	1982	01	16.19653	04	56	08.40	+25	27	39.7	688
515	1981	12	02.34444	05	51	25.09	+21	21	51.4	688
515	1981	12	02.36667	05	51	24.03	+21	21	51.1	688
532	1982	01	14.39479	09	00	41.89	+25	00	16.3	688
532	1982	01	14.40174	09	00	41.57	+25	00	21.5	688
532	1982	01	14.40729	09	00	41.31	+25	00	25.0	688
532	1982	01	14.41424	09	00	40.98	+25	00	30.5	688
539	1981	09	25.12153	20	13	11.13	-12	12	15.0	688
539	1981	09	25.20972	20	13	12.56	-12	12	14.0	688

541	1981	12	20.31667	06	29	51.66	+22	16	53.8	688
541	1981	12	20.35000	06	29	49.65	+22	16	51.7	688
556	1981	12	30.08785	02	17	37.65	+19	19	22.0	688
556	1981	12	30.15347	02	17	38.81	+19	19	13.0	688
560	1981	12	20.19444	04	41	05.31	+15	35	23.1	688
560	1981	12	20.24236	04	41	02.64	+15	35	32.8	688
561	1981	11	02.11458	00	37	50.34	+02	37	52.2	688
561	1981	11	02.16250	00	37	48.88	+02	37	40.7	688
561	1981	11	02.18611	00	37	48.23	+02	37	36.0	688
561	1981	11	02.22847	00	37	46.78	+02	37	28.4	688
561	1981	11	20.12292	00	31	24.90	+01	56	52.8	688
561	1981	11	20.17361	00	31	24.25	+01	56	49.6	688
562	1981	11	24.29444	05	50	53.65	+25	57	55.6	688
562	1981	11	24.32917	05	50	52.00	+25	58	02.9	688
562	1981	12	02.34444	05	44	10.80	+26	22	27.6	688
562	1981	12	02.36667	05	44	09.56	+26	22	31.7	688
562	1981	12	20.22569	05	26	57.01	+27	06	31.6	688
562	1981	12	20.30000	05	26	52.58	+27	06	40.4	688
562	1981	12	30.13264	05	17	40.78	+27	23	06.9	688
562	1981	12	30.19722	05	17	37.32	+27	23	11.9	688
562	1982	01	16.11389	05	05	28.00	+27	41	05.3	688
562	1982	01	16.19653	05	05	25.27	+27	41	09.5	688
570	1981	09	25.12153	20	18	30.43	-17	23	28.5	688
570	1981	09	25.20972	20	18	30.69	-17	23	30.8	688
598	1981	07	25.24236	19	14	08.75	-29	27	11.0	688
598	1981	07	25.27639	19	14	06.71	-29	27	22.6	688
598	1981	09	02.15625	18	53	42.66	-31	28	27.5	688
603	1981	10	05.30833	23	34	16.43	+01	08	56.2	688
603	1981	10	05.34931	23	34	14.26	+01	08	47.7	688
635	1981	12	18.13472	02	16	35.04	+02	32	36.7	688
635	1981	12	18.20903	02	16	34.68	+02	32	39.7	688
640	1981	12	18.10972	02	14	02.79	+15	14	17.9	688
640	1981	12	18.18542	02	14	02.04	+15	13	58.4	688
640	1981	12	30.08785	02	13	51.34	+14	33	45.1	688
640	1981	12	30.15347	02	13	51.75	+14	33	35.0	688
644	1981	06	09.22014	14	05	15.30	-11	21	00.2	688
644	1981	06	09.27014	14	05	14.28	-11	20	55.8	688
645	1981	10	05.30833	23	31	36.22	-03	28	29.9	688
645	1981	10	05.34931	23	31	34.50	-03	28	35.3	688
657	1981	07	25.24236	19	20	31.79	-23	24	06.7	688
657	1981	07	25.27639	19	20	29.76	-23	24	03.1	688
669	1981	09	25.16181	20	51	54.77	-11	36	46.7	688
669	1981	09	25.25069	20	51	54.62	-11	37	13.3	688
697	1981	11	02.18611	00	40	06.92	+07	44	22.5	688
697	1981	11	02.22847	00	40	05.02	+07	44	27.5	688
700	1981	12	02.15139	02	11	53.48	+04	44	34.2	688
700	1981	12	02.20903	02	11	51.28	+04	44	37.8	688
700	1981	12	18.13472	02	05	47.87	+05	24	39.2	688
700	1981	12	18.20903	02	05	47.15	+05	24	55.9	688
703	1981	12	20.38403	07	46	17.47	+16	58	23.1	688
703	1981	12	20.40069	07	46	16.41	+16	58	22.9	688
710	1981	11	24.29444	05	49	18.18	+21	23	35.9	688
710	1981	11	24.32917	05	49	16.46	+21	23	32.5	688
710	1981	12	02.34444	05	43	22.12	+21	21	00.8	688
710	1981	12	02.36667	05	43	21.17	+21	21	01.6	688
726	1981	12	20.19444	04	44	17.08	+14	43	35.5	688
726	1981	12	20.24236	04	44	14.37	+14	43	14.0	688
730	1981	12	20.31667	06	38	38.51	+23	05	56.9	688
730	1981	12	20.35000	06	38	36.44	+23	06	04.1	688

736	1981	12	20.38403	07	51	29.21	+17	20	31.6	688
736	1981	12	20.40069	07	51	28.32	+17	20	33.3	688
743	1981	12	30.08785	02	29	40.66	+13	41	36.6	688
743	1981	12	30.15347	02	29	41.22	+13	41	34.7	688
761	1981	11	02.11458	00	42	05.95	+04	21	58.6	688
761	1981	11	02.16250	00	42	04.34	+04	21	50.8	688
761	1981	11	02.18611	00	42	03.55	+04	21	46.7	688
761	1981	11	02.22847	00	42	02.09	+04	21	39.6	688
761	1981	11	20.12292	00	35	29.03	+03	53	58.8	688
761	1981	11	20.17361	00	35	28.53	+03	53	58.6	688
769	1981	11	03.08715	22	42	54.32	-15	04	55.1	688
769	1981	11	03.09965	22	42	54.44	-15	04	51.8	688
773	1982	01	16.24028	06	43	13.25	+38	13	37.2	688
773	1982	01	16.27431	06	43	10.97	+38	13	28.7	688
794	1981	10	05.32917	23	55	19.70	-04	04	34.5	688
794	1981	10	05.37014	23	55	18.05	-04	04	49.8	688
847	1981	12	20.31667	06	33	52.28	+23	00	13.3	688
847	1981	12	20.35000	06	33	50.33	+23	00	13.3	688
848	1981	11	02.18611	00	47	19.46	+05	14	29.2	688
848	1981	11	02.22847	00	47	18.12	+05	14	19.0	688
848	1981	11	20.12292	00	41	46.93	+04	31	38.4	688
848	1981	11	20.17361	00	41	46.56	+04	31	35.5	688
861	1981	11	03.08715	22	36	37.24	-17	47	48.3	688
861	1981	11	03.09965	22	36	37.49	-17	47	45.9	688
866	1981	12	02.15139	02	08	56.51	+03	29	06.0	688
866	1981	12	02.20903	02	08	54.85	+03	29	12.1	688
866	1981	12	18.13472	02	04	35.41	+04	13	35.6	688
866	1981	12	18.20903	02	04	34.93	+04	13	52.3	688
872	1981	09	25.16181	20	59	23.40	-09	34	46.4	688
872	1981	09	25.25069	20	59	22.73	-09	35	10.1	688
874	1981	12	18.15972	03	14	00.86	+06	36	01.1	688
874	1981	12	18.23264	03	13	58.80	+06	35	56.5	688
916	1982	01	16.24028	06	39	54.05	+36	31	27.1	688
916	1982	01	16.27431	06	39	51.55	+36	31	15.6	688
922	1981	12	02.15139	01	52	13.84	+07	40	50.6	688
922	1981	12	02.20903	01	52	13.04	+07	40	40.4	688
974	1981	12	20.31667	06	52	57.33	+24	29	36.6	688
975	1981	11	03.08715	22	37	20.24	-11	06	06.2	688
975	1981	11	03.09965	22	37	20.34	-11	06	03.9	688
1001	1982	01	16.17257	05	56	50.83	+19	04	29.5	688
1001	1982	01	16.22014	05	56	48.87	+19	04	23.2	688
1017	1981	12	18.15972	03	21	32.15	+08	27	35.0	688
1017	1981	12	18.23264	03	21	29.35	+08	27	43.0	688
1017	1982	01	16.09028	03	15	17.83	+10	08	06.7	688
1017	1982	01	16.14861	03	15	18.32	+10	08	25.0	688
1030	1981	11	02.18611	00	52	34.90	+01	03	09.5	688
1030	1981	11	02.22847	00	52	33.54	+01	02	55.3	688
1030	1981	11	20.12292	00	45	39.34	-00	17	37.8	688
1030	1981	11	20.17361	00	45	38.56	-00	17	47.4	688
1047	1981	12	02.15139	01	51	32.15	+05	57	01.6	688
1047	1981	12	02.20903	01	51	31.57	+05	57	21.7	2 688
1081	1981	08	30.20278	21	21	37.14	-21	38	21.3	688
1081	1981	08	30.24444	21	21	35.27	-21	38	27.5	688
1090	1981	09	28.39861	04	42	44.09	-07	18	38.9	688
1090	1981	09	28.47500	04	42	46.88	-07	19	33.0	2 688
1092	1981	09	07.38403	01	19	54.53	+15	44	24.9	688
1092	1981	09	07.46285	01	19	52.30	+15	44	27.5	2 688
1095	1981	12	18.15972	03	02	18.27	+05	05	50.0	688
1111	1981	10	05.32917	23	48	26.32	-06	14	46.8	688

1111	1981	10	05.37014	23	48	24.61	-06	14	58.9	688
1147	1981	12	30.08785	02	28	19.14	+17	03	31.8	688
1147	1981	12	30.15347	02	28	19.41	+17	03	25.0	688
1162	1981	10	05.30833	23	39	07.13	-04	04	26.0	688
1162	1981	10	05.34931	23	39	05.76	-04	04	33.4	688
1171	1981	12	20.31667	06	43	19.56	+20	52	30.3	688
1171	1981	12	20.35000	06	43	17.93	+20	52	34.5	688
1189	1981	11	24.29444	06	02	52.58	+27	09	31.2	688
1189	1981	11	24.32917	06	02	50.96	+27	09	26.2	688
1189	1981	12	02.34444	05	56	19.99	+26	48	13.6	688
1189	1981	12	02.36667	05	56	18.71	+26	48	08.9	688
1189	1981	12	20.22569	05	38	59.35	+25	46	56.8	688
1189	1981	12	20.30000	05	38	54.82	+25	46	40.2	688
1189	1981	12	30.13264	05	29	35.37	+25	06	55.3	688
1189	1981	12	30.19722	05	29	31.83	+25	06	39.7	688
1189	1982	01	16.11389	05	17	26.70	+23	58	13.5	688
1189	1982	01	16.19653	05	17	24.01	+23	57	55.0	688
1235	1981	11	03.08715	22	37	08.40	-12	30	02.7	688
1235	1981	11	03.09965	22	37	08.43	-12	29	44.0	688
1267	1981	11	03.08715	22	37	44.92	-11	37	58.4	688
1267	1981	11	03.09965	22	37	45.20	-11	37	55.2	688
1286	1981	12	02.26319	03	27	11.36	+10	04	04.1	688
1286	1981	12	02.29653	03	27	09.81	+10	03	57.5	688
1286	1981	12	18.15972	03	17	39.14	+09	20	24.9	688
1286	1981	12	18.23264	03	17	37.05	+09	20	17.2	688
1286	1982	01	16.09028	03	13	27.25	+09	23	51.1	688
1286	1982	01	16.14861	03	13	27.76	+09	23	57.3	688
1291	1981	12	20.19444	04	43	18.80	+13	30	38.7	688
1291	1981	12	20.24236	04	43	16.55	+13	30	31.9	688
1294	1981	08	30.20278	21	21	04.14	-29	11	48.0	688
1294	1981	08	30.24444	21	21	02.02	-29	11	56.3	688
1307	1982	01	16.17257	05	51	00.82	+18	09	00.8	688
1307	1982	01	16.22014	05	50	58.74	+18	08	59.2	688
1335	1981	11	02.11458	00	30	42.93	+00	33	10.8	688
1335	1981	11	02.16250	00	30	41.49	+00	33	01.0	688
1335	1981	11	20.12292	00	30	19.98	+00	20	38.1	688
1335	1981	11	20.17361	00	30	20.76	+00	20	42.5	688
1343	1981	09	02.15625	18	37	46.92	-31	30	18.2	688
1412	1981	07	25.24236	19	16	00.54	-28	15	34.9	688
1412	1981	07	25.27639	19	15	58.38	-28	15	43.2	688
1461	1982	01	16.29167	07	07	19.49	+24	06	58.2	688
1468	1982	01	16.25764	07	09	56.97	+27	53	11.2	688
1468	1982	01	16.29167	07	09	54.19	+27	53	07.4	688
1483	1981	12	02.26319	03	27	09.97	+17	15	59.7	688
1483	1981	12	02.29653	03	27	07.74	+17	15	56.8	688
1483	1981	12	20.17153	03	13	32.75	+16	57	12.2	688
1483	1981	12	20.26319	03	13	29.68	+16	57	12.5	688
1483	1981	12	30.11181	03	09	19.91	+16	58	23.0	688
1483	1981	12	30.17708	03	09	18.72	+16	58	25.6	688
1484	1981	12	02.26319	03	23	06.12	+11	27	03.8	688
1484	1981	12	02.29653	03	23	04.15	+11	27	06.2	688
1484	1981	12	20.17153	03	09	00.42	+12	04	55.4	688
1484	1981	12	20.26319	03	08	56.88	+12	05	10.4	688
1484	1981	12	30.11181	03	04	01.44	+12	37	11.4	688
1484	1981	12	30.17708	03	03	59.74	+12	37	27.5	688
1484	1982	01	16.09028	03	01	04.26	+13	50	11.6	688
1484	1982	01	16.14861	03	01	04.25	+13	50	29.9	688
1486	1981	11	24.29444	06	02	31.65	+23	34	05.1	688
1486	1981	11	24.32917	06	02	29.80	+23	34	05.1	688

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1486	1981	12	02.34444	05	54	36.79	+23	33	58.0		688
1486	1981	12	02.36667	05	54	35.51	+23	33	57.6		688
1486	1981	12	20.22569	05	33	19.89	+23	25	43.9		688
1486	1981	12	20.30000	05	33	14.51	+23	25	41.0		688
1486	1981	12	30.13264	05	21	57.30	+23	16	36.8		688
1486	1981	12	30.19722	05	21	53.03	+23	16	33.3		688
1486	1982	01	16.11389	05	08	01.80	+23	00	55.0		688
1486	1982	01	16.19653	05	07	58.93	+23	00	52.3		688
1487	1981	11	03.09965	22	38	19.28	-11	39	11.9		688
1492	1981	12	18.15972	03	10	39.41	+08	21	44.4	17.0	688
1492	1981	12	18.23264	03	10	36.69	+08	21	48.1		688
1504	1981	08	30.20278	21	38	31.32	-27	55	11.7	2	688
1518	1981	10	05.32917	23	53	31.44	-06	27	12.5		688
1518	1981	10	05.37014	23	53	28.81	-06	27	15.5		688
1522	1981	08	30.20278	21	16	31.57	-24	59	00.6		688
1522	1981	08	30.24444	21	16	29.24	-24	59	07.2		688
1544	1981	10	05.32917	23	50	21.88	-06	31	29.0		688
1544	1981	10	05.37014	23	50	19.75	-06	31	38.5		688
1558	1982	01	16.17257	05	50	50.00	+19	40	20.7		688
1558	1982	01	16.22014	05	50	48.01	+19	40	29.6		688
1559	1981	12	18.10972	02	04	30.71	+17	23	08.4		688
1559	1981	12	18.18542	02	04	29.46	+17	22	53.5		688
1559	1981	12	30.08785	02	04	40.47	+17	05	39.6		688
1559	1981	12	30.15347	02	04	41.20	+17	05	36.9		688
1562	1981	12	18.13472	02	20	11.36	+06	42	00.4		688
1562	1981	12	18.20903	02	20	10.32	+06	42	10.2		688
1576	1981	10	05.34931	23	35	16.11	-03	01	56.3		688
1578	1981	12	30.08785	02	17	41.37	+13	23	40.2		688
1578	1981	12	30.15347	02	17	41.83	+13	23	44.0		688
1582	1982	01	16.25764	07	05	37.98	+26	41	44.3		688
1582	1982	01	16.29167	07	05	36.17	+26	41	52.4		688
1603	1981	12	18.15972	03	19	32.76	+06	01	48.0		688
1603	1981	12	18.23264	03	19	30.49	+06	02	01.4		688
1606	1981	10	05.30833	23	27	07.93	-01	06	24.1	3	688
1606	1981	10	05.34931	23	27	07.17	-01	06	46.0		688
1645	1981	09	25.12153	20	05	15.01	-19	17	45.3		688
1645	1981	09	25.20972	20	05	16.05	-19	17	43.3		688
1652	1982	01	16.17257	05	48	41.73	+21	13	56.0		688
1652	1982	01	16.22014	05	48	39.24	+21	13	54.1		688
1665	1981	12	18.15972	03	13	11.81	+09	19	19.5	15.2	688
1665	1981	12	18.23264	03	13	09.28	+09	19	57.0		688
1665	1981	12	30.11181	03	09	37.17	+11	04	53.4		688
1665	1981	12	30.17708	03	09	36.69	+11	05	31.8		688
1665	1982	01	16.09028	03	13	55.19	+13	57	42.8		688
1665	1982	01	16.14861	03	13	56.98	+13	58	22.7	2	688
1674	1981	12	02.15139	01	58	39.29	+08	52	59.0		688
1674	1981	12	02.20903	01	58	37.85	+08	52	55.7		688
1686	1982	01	16.11389	04	54	26.12	+23	23	21.8		688
1686	1982	01	16.19653	04	54	23.88	+23	23	16.0		688
1696	1981	10	05.32917	23	59	18.81	-03	16	22.6	1	688
1696	1981	10	05.37014	23	59	16.23	-03	16	29.1	3	688
1723	1981	12	18.15972	03	20	38.61	+02	48	52.0		688
1723	1981	12	18.23264	03	20	36.23	+02	49	00.8		688
1764	1981	12	20.31667	06	52	31.02	+20	21	49.9		688
1764	1981	12	20.35000	06	52	29.33	+20	21	52.4		688
.773	1981	12	02.26319	03	21	52.74	+16	08	09.9		688
1773	1981	12	02.29653	03	21	50.81	+16	08	07.0		688
1773	1981	12	20.17153	03	08	19.41	+15	53	22.9		688
1773	1981	12	20.26319	03	08	16.37	+15	53	23.8		688

1773	1981	12	30.11181	03	04	16.51	+15	57	37.2	688
1773	1981	12	30.17708	03	04	15.32	+15	57	42.3	688
1773	1982	01	16.09028	03	03	42.35	+16	27	37.4	17.0 688
1773	1982	01	16.14861	03	03	42.92	+16	27	45.9	688
1791	1981	11	02.18611	00	59	32.61	+05	35	30.5	688
1791	1981	11	02.22847	00	59	31.11	+05	35	16.2	688
1809	1981	12	20.31667	06	52	10.08	+22	45	42.5	688
1809	1981	12	20.35000	06	52	08.29	+22	45	47.2	688
1812	1981	11	20.12292	00	43	43.19	-01	55	29.3	688
1812	1981	11	20.17361	00	43	42.78	-01	55	37.2	688
1815	1981	11	24.29444	06	04	15.86	+21	19	04.7	688
1815	1981	11	24.32917	06	04	14.61	+21	19	05.0	688
1815	1981	12	02.34444	05	59	03.34	+21	23	44.5	688
1817	1982	01	16.24028	06	56	10.33	+36	53	47.6	3 688
1817	1982	01	16.27431	06	56	07.41	+36	54	04.9	688
1834	1981	12	02.34444	05	38	07.74	+25	08	56.6	688
1834	1981	12	02.36667	05	38	06.57	+25	08	54.4	688
1834	1982	01	16.11389	05	02	11.44	+22	53	29.2	688
1834	1982	01	16.19653	05	02	09.12	+22	53	14.8	688
1840	1981	12	18.10972	02	08	58.99	+13	36	47.3	688
1840	1981	12	18.18542	02	08	58.13	+13	36	44.5	688
1840	1981	12	30.08785	02	09	16.41	+13	44	18.7	688
1840	1981	12	30.15347	02	09	17.08	+13	44	24.9	2 688
1842	1982	01	16.17257	05	57	35.15	+16	48	07.1	688
1842	1982	01	16.22014	05	57	32.56	+16	48	13.8	688
1858	1981	10	05.30833	23	27	06.96	-00	41	51.9	688
1858	1981	10	05.34931	23	27	05.22	-00	42	03.4	688
1897	1981	09	25.18611	21	32	26.60	-22	08	10.6	688
1897	1981	09	25.27431	21	32	26.03	-22	07	54.5	688
1899	1981	11	02.11458	00	45	25.92	-01	30	24.7	1 688
1899	1981	11	02.16250	00	45	23.74	-01	30	26.0	688
1907	1981	12	20.38403	07	29	17.54	+18	00	24.2	688
1907	1981	12	20.40069	07	29	16.84	+18	00	25.4	688
1911	1981	12	18.10972	02	23	03.90	+16	01	42.7	688
1911	1981	12	18.18542	02	23	02.82	+16	01	34.8	688
1911	1981	12	30.08785	02	21	50.14	+15	48	13.4	688
1911	1981	12	30.15347	02	21	50.12	+15	48	11.0	688
1928	1981	11	02.11458	00	37	24.48	+00	40	21.6	688
1928	1981	11	02.16250	00	37	23.40	+00	40	08.9	688
1928	1981	11	02.18611	00	37	22.94	+00	40	06.5	688
1928	1981	11	02.22847	00	37	22.01	+00	39	56.8	688
1928	1981	11	20.12292	00	35	54.71	+00	07	00.5	688
1928	1981	11	20.17361	00	35	55.04	+00	07	00.5	688
1929	1981	12	18.10972	02	15	49.51	+11	21	24.5	688
1929	1981	12	18.18542	02	15	48.41	+11	21	37.8	688
1929	1981	12	30.08785	02	15	43.20	+12	10	05.7	688
1929	1981	12	30.15347	02	15	43.64	+12	10	24.6	688
1952	1981	12	18.13472	02	16	58.40	+03	53	15.9	688
1952	1981	12	18.20903	02	16	57.59	+03	53	47.0	688
1978	1981	08	30.20278	21	26	30.49	-25	37	28.0	688
1978	1981	08	30.24444	21	26	28.80	-25	37	27.6	688
1978	1981	09	25.18611	21	22	09.35	-24	00	02.5	688
1978	1981	09	25.27431	21	22	10.77	-23	59	25.5	688
1991	1981	09	07.38403	01	39	32.67	+17	32	50.7	688
2005	1981	07	25.24236	19	06	28.07	-22	25	09.3	688
2005	1981	07	25.27639	19	06	26.07	-22	25	04.4	688
2017	1981	12	18.13472	02	18	46.90	+07	03	14.8	17.2 688
2017	1981	12	18.20903	02	18	46.71	+07	03	21.9	688
2051	1981	12	20.17153	03	17	01.64	+17	11	48.0	688

2051	1981	12	20.26319	03	16	59.48	+17	11	41.9	688
2051	1981	12	30.11181	03	14	08.16	+16	59	17.7	688
2151	1981	12	30.17708	03	14	07.40	+16	59	15.4	688
2070	1981	12	18.10972	02	24	18.95	+18	23	53.4	688
2070	1981	12	18.18542	02	24	17.63	+18	24	10.8	3 688
2070	1981	12	30.15347	02	26	58.87	+18	25	13.9	688
2094	1981	12	30.08785	02	19	57.17	+18	54	12.6	688
2094	1981	12	30.15347	02	19	57.81	+18	54	03.2	688
2100	1981	09	25.12153	20	17	03.91	-17	44	03.0	2 688
2103	1981	12	20.31667	06	38	03.88	+26	30	17.3	688
2103	1981	12	20.35000	06	38	02.02	+26	30	14.4	688
2109	1981	12	18.13472	02	28	52.41	+02	18	26.8	688
2109	1981	12	18.20903	02	28	52.63	+02	18	46.3	688
2137	1981	09	25.12153	20	26	28.82	-19	32	36.3	688
2137	1981	09	25.20972	20	26	28.25	-19	32	26.4	688
2151	1981	11	02.11458	00	34	22.03	-00	08	46.1	688
2151	1981	11	02.16250	00	34	19.83	-00	08	40.3	688
2151	1981	11	20.12292	00	24	53.25	+00	56	21.8	688
2151	1981	11	20.17361	00	24	52.39	+00	56	35.5	688
2160	1981	11	02.11458	00	32	36.22	-00	43	00.0	688
2160	1981	11	02.16250	00	32	35.13	-00	43	10.4	688
2162	1981	11	20.12292	00	44	26.67	-00	48	23.5	688
2162	1981	11	20.17361	00	44	26.54	-00	48	18.0	688
2220	1981	11	24.29444	05	56	57.95	+22	28	40.0	688
2220	1981	11	24.32917	05	56	56.42	+22	28	41.6	688
2220	1981	12	02.34444	05	50	49.01	+22	33	20.2	688
2220	1981	12	02.36667	05	50	47.87	+22	33	23.4	3 688
2220	1982	01	16.11389	05	14	49.15	+22	47	46.4	688
2220	1982	01	16.19653	05	14	46.68	+22	47	47.7	688
2251	1981	09	25.16181	20	56	33.74	-09	42	10.3	688
2251	1981	09	25.25069	20	56	33.69	-09	42	38.0	688
2254	1982	01	16.11389	04	54	32.89	+29	58	13.8	688
2254	1982	01	16.19653	04	54	30.87	+29	57	54.0	688
2273	1981	12	02.26319	03	08	59.69	+17	34	17.3	16.8 688
2273	1981	12	02.29653	03	08	57.90	+17	34	10.5	688
2273	1981	12	20.17153	02	58	19.82	+16	54	56.0	688
2273	1981	12	20.26319	02	58	18.05	+16	54	51.1	688
2281	1981	11	24.29444	06	09	01.65	+21	29	04.4	688
2281	1981	11	24.32917	06	08	59.67	+21	29	01.7	688
2281	1981	12	02.34444	06	01	22.29	+21	23	29.3	688
2291	1981	09	28.39861	04	35	11.14	-04	50	40.7	688
2291	1981	09	28.47500	04	35	12.13	-04	51	28.8	688
2291	1981	11	02.27708	04	29	53.82	-10	57	47.4	688
2291	1981	11	02.32569	04	29	52.22	-10	58	14.9	688
2294	1981	09	25.12153	20	23	58.41	-13	47	29.5	688
2294	1981	09	25.20972	20	23	59.65	-13	47	22.5	688
2302	1982	01	16.25764	06	49	56.85	+30	02	04.7	688
2302	1982	01	16.29167	06	49	54.58	+30	01	55.6	688
2311	1981	12	02.15139	02	05	58.58	+04	39	24.1	688
2311	1981	12	02.20903	02	05	57.27	+04	39	21.8	688
2316	1981	12	20.31667	06	27	11.50	+21	00	59.6	1 688
2316	1981	12	20.35000	06	27	09.43	+21	01	02.4	688
2419	1981	10	05.32917	00	01	02.28	-03	36	05.8	16.8 688
2419	1981	10	05.37014	00	01	00.13	-03	36	26.9	688
2425	1981	06	09.22014	14	25	52.18	-14	13	39.1	688
2425	1981	06	09.27014	14	25	50.95	-14	13	44.4	688
2433	1981	07	26.16563	14	04	20.74	-02	52	36.7	16.8 1 688
2433	1981	07	26.17813	14	04	21.49	-02	52	43.4	3 688
2437	1981	12	18.10972	02	26	13.87	+12	33	10.8	688

2437	1981	12	18.18542	02	26	14.38	+12	33	09.7		688
2437	1981	12	30.15347	02	30	26.44	+12	43	19.4		688
2443	1981	08	30.20278	21	34	25.23	-22	04	51.8		688
2443	1981	08	30.24444	21	34	23.50	-22	05	05.6		688
2443	1981	09	25.18611	21	21	25.76	-23	32	24.4		688
2443	1981	09	25.27431	21	21	24.33	-23	32	31.3		688
2470	1981	12	02.15139	01	50	54.06	+08	33	56.4		688
2470	1981	12	02.20903	01	50	52.76	+08	33	54.7		688
2471	1981	11	02.18611	00	46	15.52	+06	34	56.9		688
2471	1981	11	02.22847	00	46	13.78	+06	34	53.3		688
2481	1981	10	05.30833	23	35	09.26	-03	37	49.3	17.0	688
2481	1981	10	05.34931	23	35	07.95	-03	37	50.8		3 688
2489	1981	10	05.30833	23	38	03.15	-04	49	55.5	17.0	688
2489	1981	10	05.34931	23	38	01.56	-04	50	03.6		688
2500	1981	12	02.15139	01	52	55.05	+11	03	14.2	17.2	688
2500	1981	12	02.20903	01	52	53.30	+11	03	14.3		688
2505	1981	11	24.12847	02	23	00.21	+13	27	35.9	17.0	688
2505	1981	11	24.17014	02	22	58.49	+13	27	31.3		688
2506	1981	10	05.30833	23	46	40.41	-02	27	47.3	16.8	688
2506	1981	10	05.32917	23	46	39.50	-02	27	52.3	16.8	688
2506	1981	10	05.34931	23	46	38.60	-02	27	59.1		688
2506	1981	10	05.37014	23	46	37.73	-02	28	05.5		688
2507	1981	12	02.27986	03	33	04.91	+04	24	18.2	17.0	688
2507	1981	12	02.31319	03	33	03.44	+04	24	17.2		688
2507	1981	12	18.15972	03	22	02.16	+04	37	50.9		688
2507	1981	12	18.23264	03	21	59.74	+04	38	00.2		688
2516	1981	11	02.11458	00	40	52.53	+02	13	23.0	17.0	688
2516	1981	11	02.16250	00	40	50.89	+02	13	12.9		688
2516	1981	11	02.18611	00	40	50.14	+02	13	08.6	17.0	688
2516	1981	11	02.22847	00	40	48.44	+02	12	59.3		688
2516	1981	11	20.12292	00	35	15.16	+01	48	55.2	17.2	688
2516	1981	11	20.17361	00	35	15.09	+01	48	57.9		688
2519	1981	11	24.14931	03	15	02.50	+16	16	21.8	16.8	688
2519	1981	11	24.19097	03	15	00.42	+16	16	16.5		688
2519	1981	12	02.26319	03	08	52.28	+15	58	08.7	16.8	688
2519	1981	12	02.29653	03	08	50.75	+15	58	05.7		688
2519	1981	12	20.17153	02	59	06.03	+15	33	18.3	17.2	688
2519	1981	12	20.26319	02	59	03.95	+15	33	15.5		688
2519	1981	12	30.11181	02	56	34.69	+15	31	22.8		688
2519	1981	12	30.17708	02	56	34.03	+15	31	24.5		688
2525	1981	12	02.15139	02	08	51.97	+10	09	22.9	16.0	688
2525	1981	12	02.20903	02	08	50.59	+10	09	22.8		688
1964 TR2	1981	11	02.11458	00	31	58.13	+03	50	49.0	16.8	1 688
1964 TR2	1981	11	02.16250	00	31	56.59	+03	50	44.7		688
1974 KB	1981	07	25.24236	19	10	44.88	-25	29	24.9	16.5	688
1974 KB	1981	07	25.27639	19	10	42.71	-25	29	22.0		3 688
1974 QL	1982	01	16.25764	07	00	15.39	+29	53	05.6	17.2	688
1974 QL	1982	01	16.29167	07	00	13.38	+29	53	01.5		688
1976 YX1	1981	11	02.11458	00	39	09.20	+04	25	05.5	16.8	688
1976 YX1	1981	11	02.16250	00	39	07.77	+04	24	55.3		688
1976 YX1	1981	11	02.18611	00	39	06.94	+04	24	52.3	17.0	688
1976 YX1	1981	11	02.22847	00	39	05.56	+04	24	45.2		1 688
1976 YX1	1981	11	20.12292	00	34	05.60	+03	56	37.3	17.0	688
1976 YX1	1981	11	20.17361	00	34	05.34	+03	56	37.8		688
1976 YP7	1981	12	20.31667	06	46	48.73	+19	27	36.5	17.0	688
1978 PA	1982	01	16.17257	05	40	41.33	+14	02	39.4	16.8	3 688
1979 FR2	1981	11	24.29444	05	45	04.81	+27	00	01.9	16.8	688
1979 FR2	1981	11	24.32917	05	45	03.00	+27	00	08.9		688
1979 FR2	1981	12	02.34444	05	37	36.84	+27	21	06.6	16.5	688

1979	FR2	1981	12	02.36667	05	37	35.45	+27	21	09.6		688
1979	FR2	1982	01	16.11389	04	54	41.15	+27	49	45.5	16.8	688
1979	FR2	1982	01	16.19653	04	54	38.72	+27	49	44.4		688
1980	FN3	1981	10	05.30833	23	47	40.64	-02	32	37.1	16.5	688
1980	FN3	1981	10	05.32917	23	47	39.96	-02	32	44.8	16.5	688
1980	FN3	1981	10	05.34931	23	47	39.03	-02	32	55.5		688
1980	FN3	1981	10	05.37014	23	47	38.29	-02	33	06.7		688
1980	KJ	1981	09	07.38403	01	23	18.28	+15	33	56.6	16.5	688
1980	LB	1981	12	20.38403	07	37	34.61	+16	16	41.0	16.8	688
1980	LB	1981	12	20.40069	07	37	33.70	+16	16	52.2		688
1980	LB	1982	01	16.25764	07	07	21.07	+22	43	21.5	17.0	688
1980	LO	1981	12	02.26319	03	16	43.52	+11	04	26.4	17.2	2 688
1980	LO	1981	12	02.29653	03	16	41.59	+11	04	15.4		3 688
1980	LO	1981	12	30.11181	03	03	28.37	+10	52	50.9	17.5	3 688
1980	LO	1981	12	30.17708	03	03	27.98	+10	53	02.3		688
1980	OB	1981	12	20.31667	06	32	56.37	+26	12	12.0	17.2	1 688
1980	OC	1981	11	24.29444	05	59	34.30	+23	59	00.9	17.0	2 688
1980	OC	1981	11	24.32917	05	59	32.83	+23	59	01.2		688
1980	OC	1981	12	20.22569	05	36	17.43	+23	45	55.1	16.5	1 688
1980	OC	1981	12	20.30000	05	36	13.01	+23	45	51.8		688
1980	OC	1981	12	30.13264	05	27	02.35	+23	36	20.7	17.0	688
1980	OC	1981	12	30.19722	05	26	59.26	+23	36	19.3		688
1980	OC	1982	01	16.11389	05	15	03.98	+23	19	17.6	17.2	3 688
1980	OC	1982	01	16.19653	05	15	01.38	+23	19	13.4		688
1980	OH	1981	12	02.26319	03	11	53.56	+15	51	50.3	17.2	3 688
1980	OH	1981	12	02.29653	03	11	52.33	+15	51	46.0		688
1980	OH	1981	12	20.17153	03	01	46.82	+15	24	40.8	17.2	688
1980	OH	1981	12	20.26319	03	01	44.45	+15	24	35.8		688
1980	PG	1982	01	16.24028	07	00	31.62	+38	41	18.2	16.8	688
1980	PG	1982	01	16.27431	07	00	29.20	+38	41	05.0		688
1981	LD	1981	07	25.24236	19	09	51.68	-26	06	15.6	16.5	688
1981	LD	1981	07	25.27639	19	09	49.58	-26	06	23.4		688
1981	LD	1981	09	02.15625	18	53	55.52	-27	05	45.4	16.8	688
1981	OH	1981	09	25.18611	21	35	45.50	-25	50	51.0	16.8	688
1981	OH	1981	09	25.27431	21	35	46.75	-25	51	25.7		688
1981	PK	1981	09	25.14167	20	48	14.61	+01	34	51.5	16.5	688
1981	PK	1981	09	25.23056	20	48	15.51	+01	34	40.1		688
1981	PL	1981	09	25.14167	20	46	31.37	-03	39	42.4	16.5	688
1981	PL	1981	09	25.23056	20	46	30.53	-03	40	02.2		688
1981	QD	1981	10	05.30833	23	29	30.84	-00	00	29.4	17.0	1 688
1981	QD	1981	10	05.34931	23	29	29.24	-00	00	35.7		688
1981	QE	1981	10	05.30833	23	33	26.66	-01	54	09.9	16.8	688
1981	QE	1981	10	05.34931	23	33	25.20	-01	54	20.5		688
1981	QF	1981	10	05.34931	23	37	30.12	+00	36	13.5		688
1981	QG	1981	09	03.31389	00	04	29.15	+00	36	16.7		1 688
1981	QG	1981	10	05.30833	23	41	24.83	-01	34	50.4	17.2	688
1981	QG	1981	10	05.32917	23	41	24.18	-01	34	52.5	17.0	688
1981	QG	1981	10	05.34931	23	41	23.60	-01	34	59.5		688
1981	QG	1981	10	05.37014	23	41	22.36	-01	35	04.6		688
1981	QH	1981	10	05.30833	23	41	00.32	-02	46	50.4	16.2	688
1981	QH	1981	10	05.32917	23	40	59.31	-02	46	49.8	16.2	688
1981	QH	1981	10	05.34931	23	40	58.41	-02	46	54.6		688
1981	QH	1981	10	05.37014	23	40	57.23	-02	46	56.0		688
1981	QJ	1981	10	05.32917	23	50	16.74	-01	51	39.9	17.0	1 688
1981	QJ	1981	10	05.37014	23	50	15.27	-01	51	49.1		688
1981	QK	1981	10	05.30833	23	42	37.40	-00	39	23.4	16.5	688
1981	QK	1981	10	05.34931	23	42	35.01	-00	39	21.8		688
1981	QL	1981	10	05.32917	23	54	23.30	-00	59	42.3	15.5	688

1981 QL	1981 10 05.37014	23 54 21.85	-00 59 55.6		688
1981 QC2	1981 11 03.08715	22 38 52.67	-12 24 43.6	16.8	688
1981 QC2	1981 11 03.09965	22 38 53.10	-12 24 35.4		688
1981 RF	1981 10 05.32917	23 43 15.26	-08 26 53.8	16.8	688
1981 RF	1981 10 05.37014	23 43 13.74	-08 27 02.6		688
1981 RK	1981 09 25.16181	20 54 19.69	-09 09 41.2	16.2	688
1981 RK	1981 09 25.25069	20 54 20.76	-09 09 43.1		688
1981 SH	1981 10 05.30833	23 34 52.30	-01 15 06.1	16.8	688
1981 SH	1981 10 05.34931	23 34 50.52	-01 15 31.3		688
1981 SQ	1981 10 05.30833	23 28 44.61	-01 44 55.9	17.2	688
1981 SQ	1981 10 05.34931	23 28 43.33	-01 45 06.3		688
1981 ST	1981 10 05.30833	23 48 38.55	-03 54 09.0	16.5 3	688
1981 ST	1981 10 05.32917	23 48 38.38	-03 54 17.4	16.5	688
1981 ST	1981 10 05.34931	23 48 37.38	-03 54 27.4		688
1981 ST	1981 10 05.37014	23 48 36.92	-03 54 40.1		688
1981 SF1	1981 11 02.11458	00 35 12.35	+02 09 23.8	17.2	688
1981 SF1	1981 11 02.16250	00 35 11.01	+02 09 09.7		688
1981 SF1	1981 11 02.18611	00 35 10.39	+02 09 02.0	17.0	688
1981 SF1	1981 11 02.22847	00 35 09.44	+02 08 46.9		688
1981 SG1	1981 11 20.12292	00 28 21.73	+04 01 21.3	17.2	688
1981 SG1	1981 11 20.17361	00 28 22.01	+04 01 28.8		688
1981 SH1	1981 11 02.18611	00 41 28.73	+08 19 33.2	16.8	688
1981 SH1	1981 11 02.22847	00 41 27.50	+08 19 43.1		688
1981 SJ1	1981 11 02.11458	00 43 37.35	-01 03 43.7	17.0	688
1981 SJ1	1981 11 02.16250	00 43 35.83	-01 03 56.9	1	688
1981 SK1	1981 11 02.11458	00 44 56.22	+04 49 24.0	16.5	688
1981 SK1	1981 11 02.16250	00 44 54.60	+04 49 12.6		688
1981 SK1	1981 11 02.18611	00 44 53.93	+04 49 09.6	16.5	688
1981 SK1	1981 11 02.22847	00 44 52.60	+04 48 58.9		688
1981 SK1	1981 11 20.12292	00 38 59.58	+04 00 29.7	16.8	688
1981 SK1	1981 11 20.17361	00 38 59.16	+04 00 25.7		688
1981 SL1	1981 11 02.18611	00 49 03.73	+01 33 27.0	16.0	688
1981 SL1	1981 11 02.22847	00 49 02.45	+01 33 10.9		688
1981 SL1	1981 11 20.12292	00 46 20.36	+00 25 46.6	16.0	688
1981 SL1	1981 11 20.17361	00 46 20.61	+00 25 42.1		688
1981 SM1	1981 11 02.18611	00 49 39.54	+02 13 34.4	16.8	688
1981 SM1	1981 11 02.22847	00 49 38.33	+02 13 28.1		688
1981 SM1	1981 11 20.12292	00 44 15.88	+01 51 04.6	17.0	688
1981 SM1	1981 11 20.17361	00 44 15.48	+01 51 05.8		688
1981 SN1	1981 11 02.18611	00 56 51.31	+02 03 30.4	17.0	688
1981 SN1	1981 11 02.22847	00 56 50.29	+02 03 23.8		688
1981 SP1	1981 11 02.11458	00 45 38.78	+01 05 40.3	16.8	688
1981 SP1	1981 11 02.16250	00 45 36.98	+01 05 42.9		688
1981 SP1	1981 11 02.18611	00 45 36.22	+01 05 44.7	17.0	688
1981 SP1	1981 11 02.22847	00 45 34.42	+01 05 48.4		688
1981 SQ1	1981 11 02.18611	00 55 48.47	+03 49 38.0	17.0	688
1981 SQ1	1981 11 02.22847	00 55 47.28	+03 49 30.6		688
1981 SY1	1981 10 05.30833	23 28 57.70	+01 50 21.4	17.0	688
1981 SY1	1981 10 05.34931	23 28 55.73	+01 50 11.4		688
1981 SZ1	1981 10 05.30833	23 41 33.80	+01 15 21.0	16.8	688
1981 SZ1	1981 10 05.34931	23 41 31.84	+01 15 01.4		688
1981 SB2	1981 10 05.30833	23 41 53.78	-05 18 04.7	17.2 1	688
1981 SB2	1981 10 05.32917	23 41 52.64	-05 18 05.7	17.0	688
1981 SB2	1981 10 05.34931	23 41 52.10	-05 18 02.0	1	688
1981 SB2	1981 10 05.37014	23 41 50.61	-05 18 04.1		688
1981 SD2	1981 10 05.32917	00 01 25.35	-06 33 59.4	17.0	688
1981 SD2	1981 10 05.37014	00 01 22.87	-06 34 02.4		688
1981 SF2	1981 10 05.32917	00 05 36.07	-06 56 28.2	17.0	688

1981 SF2	1981 10 05.37014	00 05 34.02	-06 56 39.4						688
1981 SM2 *	1981 09 25.12153	20 27 38.86	-13 18 21.3			17.0	4		688
1981 SM2	1981 09 25.20972	20 27 40.11	-13 18 13.1						688
1981 TG	1981 10 05.30833	23 23 35.22	-00 36 15.1			16.8			688
1981 TG	1981 10 05.34931	23 23 33.40	-00 36 33.7						688
1981 TM	1981 11 02.27708	04 12 31.46	-07 00 48.7			16.5			688
1981 TM	1981 11 02.32569	04 12 29.45	-07 01 09.6						688
1981 TM	1981 11 24.22500	03 53 01.77	-08 34 53.4			16.5			688
1981 TM	1981 11 24.25903	03 52 59.79	-08 34 56.2						688
1981 TS *	1981 09 28.45486	01 30 56.89	-03 48 05.9			16.8			688
1981 TU	1981 10 05.30833	23 22 18.85	-03 32 24.5			17.2	4		688
1981 TU *	1981 10 05.34931	23 22 17.70	-03 32 46.8					3	688
1981 TV	1981 10 05.30833	23 24 14.28	-00 13 41.5			16.5	4		688
1981 TV *	1981 10 05.34931	23 24 13.19	-00 14 07.1						688
1981 TW	1981 10 05.30833	23 28 31.33	-00 34 15.3			17.0	4		688
1981 TW *	1981 10 05.34931	23 28 29.60	-00 34 24.4						688
1981 TX	1981 10 05.30833	23 32 37.81	+01 28 50.9			17.0	5		688
1981 TX *	1981 10 05.34931	23 32 36.73	+01 28 30.6						688
1981 TY	1981 10 05.30833	23 43 41.12	+01 29 17.2			17.0	6		688
1981 TY *	1981 10 05.34931	23 43 39.82	+01 29 05.5						688
1981 TZ	1981 10 05.30833	23 46 41.21	+00 22 28.3			16.8	4		688
1981 TZ	1981 10 05.34931	23 46 39.05	+00 22 28.1						688
1981 TA1 *	1981 10 05.30833	23 40 27.32	-04 30 43.2			17.2	3		688
1981 TA1	1981 10 05.32917	23 40 26.39	-04 30 44.5			17.2	4		688
1981 TA1 *	1981 10 05.37014	23 40 24.58	-04 30 47.8					1	688
1981 TB1	1981 10 05.32917	00 03 57.04	-03 52 51.2			17.2	4		688
1981 TB1	1981 10 05.37014	00 03 55.35	-03 53 00.7						688
1981 UC	1981 12 02.26319	03 03 50.82	+16 31 17.7			16.2			688
1981 UC	1981 12 02.29653	03 03 49.14	+16 31 15.6						688
1981 UC	1981 12 20.17153	02 55 09.97	+16 33 31.8			16.8			688
1981 UC	1981 12 20.26319	02 55 08.76	+16 33 39.4						688
1981 UC	1981 12 30.11181	02 55 23.27	+16 52 08.8			17.2			688
1981 VJ	1981 12 02.15139	02 11 05.75	+08 16 08.2			17.2			688
1981 VJ	1981 12 02.20903	02 11 04.73	+08 16 03.3						688
1981 VO	1981 12 02.15139	02 14 54.44	+09 45 23.6			17.2			688
1981 VO	1981 12 02.20903	02 14 52.98	+09 45 24.9						688
1981 VS	1981 12 02.15139	02 02 14.71	+05 57 07.0			16.2			688
1981 VS	1981 12 02.20903	02 02 14.53	+05 56 53.8						688
1981 VS	1981 12 18.13472	02 06 15.71	+05 25 55.7			16.5			688
1981 VS	1981 12 18.20903	02 06 17.73	+05 25 56.7						688
1981 VZ *	1981 11 02.18611	00 41 15.64	+07 28 34.7			17.2	7		688
1981 VZ	1981 11 02.22847	00 41 13.92	+07 28 16.9						688
1981 VA1 *	1981 11 02.18611	00 52 17.78	+06 34 33.2			17.2	7		688
1981 VA1	1981 11 02.22847	00 52 16.25	+06 34 31.2						688
1981 VB1 *	1981 11 02.18611	00 55 39.68	+03 42 19.2			16.5	7		688
1981 VB1	1981 11 02.22847	00 55 38.28	+03 42 10.3						688
1981 VC1 *	1981 11 02.18611	00 58 59.78	+03 50 56.0			16.2	7		688
1981 VC1	1981 11 02.22847	00 58 58.15	+03 50 54.1						688
1981 VD1 *	1981 11 02.18611	01 00 01.23	+03 28 22.1			16.8	7		688
1981 VD1	1981 11 02.22847	00 59 59.58	+03 28 15.0						688
1981 VE1 *	1981 11 02.27708	04 12 34.84	-07 21 37.7			16.8	7		688
1981 VE1	1981 11 02.32569	04 12 33.37	-07 22 04.6						688
1981 VE1	1981 11 24.22500	03 57 45.22	-09 13 23.9			16.8			688
1981 VE1	1981 11 24.25903	03 57 43.46	-09 13 24.6						688
1981 WA	1981 12 18.10972	02 13 12.16	+13 33 21.0			16.8			688
1981 WA	1981 12 18.18542	02 13 12.32	+13 32 56.5						688
1981 WA	1981 12 30.08785	02 16 00.58	+12 47 31.1			17.0			688
1981 WA	1981 12 30.15347	02 16 02.08	+12 47 20.5						688
1981 WC	1981 12 02.26319	03 13 34.87	+16 11 56.6			16.5			688

1981 WC	1981 12 02.29653	03 13 33.27	+16 12 03.3		688
1981 WC	1981 12 20.17153	03 04 26.45	+17 20 13.9	16.8	688
1981 WC	1981 12 20.26319	03 04 25.05	+17 20 38.9		688
1981 WD	1981 12 02.15139	01 51 47.03	+10 08 28.2	17.0	688
1981 WD	1981 12 02.20903	01 51 45.81	+10 08 09.3		688
1981 WE	1981 12 02.15139	01 53 46.19	+08 34 30.7	16.8	688
1981 WE	1981 12 02.20903	01 53 45.51	+08 34 10.6		688
1981 WH	1981 12 02.15139	02 15 47.82	+04 39 46.0	16.5	688
1981 WH	1981 12 02.20903	02 15 47.57	+04 39 59.1		688
1981 WH	1981 12 18.13472	02 19 41.21	+06 13 11.1	16.8	688
1981 WH	1981 12 18.20903	02 19 43.45	+06 13 45.0		688
1981 WJ	1981 12 02.15139	02 13 08.76	+09 51 40.6	17.0	1 688
1981 WJ	1981 12 02.20903	02 13 07.06	+09 51 32.1		688
1981 WK	1981 12 02.15139	02 15 02.96	+09 17 13.4	16.8	688
1981 WK	1981 12 02.20903	02 15 01.60	+09 17 15.3		688
1981 WR	1981 12 02.26319	03 02 12.91	+10 24 58.0	17.0	1 688
1981 WR	1981 12 20.17153	02 52 15.15	+10 46 04.5	17.5	688
1981 WR	1981 12 20.26319	02 52 13.52	+10 46 19.9		688
1981 WT	1981 12 02.26319	03 13 15.92	+14 13 51.6	16.5	688
1981 WT	1981 12 02.29653	03 13 14.41	+14 13 48.2		688
1981 WT	1981 12 20.17153	03 03 44.06	+14 02 24.3	16.8	688
1981 WT	1981 12 20.26319	03 03 42.27	+14 02 25.6		688
1981 WT	1981 12 30.11181	03 01 58.51	+14 12 09.3	16.8	688
1981 WT	1981 12 30.17708	03 01 58.28	+14 12 17.5		688
1981 WT	1982 01 16.09028	03 05 18.40	+14 54 59.4	17.0	688
1981 WT	1982 01 16.14861	03 05 19.79	+14 55 12.9		688
1981 WU	1981 12 02.26319	03 13 06.33	+11 26 48.0	16.8	688
1981 WU	1981 12 02.29653	03 13 04.53	+11 26 43.0		688
1981 WU	1981 12 20.17153	03 05 05.16	+11 37 07.6	17.0	688
1981 WU	1981 12 20.26319	03 05 04.32	+11 37 21.2		688
1981 WU	1981 12 30.11181	03 05 35.81	+12 07 58.2	17.0	688
1981 WU	1981 12 30.17708	03 05 36.64	+12 08 17.4		688
1981 WV	1981 12 02.26319	03 13 28.66	+12 07 37.0	16.0	688
1981 WV	1981 12 02.29653	03 13 26.82	+12 07 30.5		688
1981 WV	1981 12 20.17153	03 02 08.81	+11 36 15.9	16.5	688
1981 WV	1981 12 20.26319	03 02 06.67	+11 36 14.5		688
1981 WV	1981 12 30.11181	03 00 24.09	+11 43 51.5	16.5	688
1981 WV	1981 12 30.17708	03 00 23.86	+11 43 59.7		688
1981 WW	1981 12 02.26319	03 18 10.65	+15 31 27.6	16.8	688
1981 WW	1981 12 02.29653	03 18 08.89	+15 31 26.8		688
1981 WW	1981 12 20.17153	03 07 57.91	+15 42 44.9	17.0	688
1981 WW	1981 12 20.26319	03 07 56.19	+15 42 54.2		688
1981 WW	1981 12 30.11181	03 06 54.60	+16 04 40.7	17.2	688
1981 WW	1981 12 30.17708	03 06 54.66	+16 04 51.3		688
1981 WY	1981 12 02.26319	03 20 21.33	+13 42 55.6	17.2	688
1981 WY	1981 12 02.29653	03 20 19.16	+13 42 56.5		688
1981 WY	1981 12 20.17153	03 06 26.44	+14 06 36.9	17.2	688
1981 WY	1981 12 20.26319	03 06 23.47	+14 06 48.5		688
1981 WZ	1981 12 02.26319	03 23 23.88	+16 09 14.6	16.0	688
1981 WZ	1981 12 02.29653	03 23 22.33	+16 08 58.5		688
1981 WZ	1981 12 20.17153	03 13 17.59	+14 11 38.3	16.5	688
1981 WZ	1981 12 20.26319	03 13 15.40	+14 11 09.3		688
1981 WZ	1981 12 30.11181	03 10 44.01	+13 25 14.7	16.5	688
1981 WZ	1981 12 30.17708	03 10 43.37	+13 24 59.7		688
1981 WZ	1982 01 16.09028	03 12 03.80	+12 41 12.9	16.5	688
1981 WZ	1982 01 16.14861	03 12 04.68	+12 41 08.0		688
1981 WA1	1981 12 02.26319	03 25 09.03	+14 21 59.4	17.2	1 68P
1981 WA1	1981 12 02.29653	03 25 07.13	+14 21 57.7		688
1981 WB1	1981 12 02.26319	03 25 10.32	+10 32 44.9	16.8	688

1981	WB1	1981	12	02.29653	03	25	08.61	+10	32	36.8		688	
1981	WB1	1981	12	30.11181	03	14	48.87	+09	55	57.0	17.0	688	
1981	WB1	1981	12	30.17708	03	14	49.12	+09	56	05.6		688	
1981	WC1	1981	12	02.26319	03	24	20.22	+15	51	51.5	16.8	688	
1981	WC1	1981	12	02.29653	03	24	18.61	+15	51	45.8		688	
1981	WC1	1981	12	20.17153	03	12	42.07	+16	16	21.7	17.0	688	
1981	WC1	1981	12	20.26319	03	12	40.02	+16	16	34.3		688	
1981	WC1	1981	12	30.11181	03	10	30.27	+16	40	53.0	17.5	688	
1981	WC1	1981	12	30.17708	03	10	29.83	+16	41	04.6		688	
1981	WEI	1981	12	18.15972	03	15	23.76	+05	06	34.4	17.2	3 688	
1981	WEI	1981	12	18.23264	03	15	22.98	+05	06	30.4		688	
1981	WL1	1981	12	20.31667	06	33	17.42	+23	51	33.3	16.2	688	
1981	WL1	1981	12	20.35000	06	33	14.96	+23	51	27.0		688	
1981	WM1	1981	12	20.31667	06	45	59.12	+23	07	34.7	16.8	688	
1981	WM1	1981	12	20.35000	06	45	56.93	+23	07	21.9		688	
1981	WP1	*	1981	11	24.29444	05	58	33.84	+25	19	41.8	17.0	9 688
1981	WP1		1981	11	24.32917	05	58	31.83	+25	19	49.7		3 688
1981	WP1		1981	12	02.34444	05	50	41.94	+25	53	01.8	17.0	688
1981	WP1		1981	12	02.36667	05	50	40.25	+25	53	06.9		688
1981	WP1		1981	12	20.22569	05	29	33.56	+26	52	52.7	16.8	688
1981	WP1		1981	12	20.30000	05	29	28.43	+26	53	04.8		688
1981	WP1		1981	12	30.13264	05	18	23.09	+27	14	05.5	17.0	688
1981	WP1		1982	01	16.11389	05	05	06.30	+27	35	04.8	17.5	3 688
1981	WP1		1982	01	16.19653	05	05	03.64	+27	35	10.3		688
1981	WQ1	*	1981	11	24.29444	06	03	12.28	+27	28	44.8	16.8	7 688
1981	WQ1		1981	11	24.32917	06	03	10.73	+27	28	54.3		688
1981	WQ1		1981	12	02.34444	05	56	41.18	+28	03	59.8	16.5	688
1981	WQ1		1981	12	20.22569	05	36	33.10	+29	02	53.2	16.2	688
1981	WQ1		1981	12	30.13264	05	25	17.71	+29	18	09.1	16.5	688
1981	WQ1		1981	12	30.19722	05	25	13.57	+29	18	12.3		688
1981	WR1	*	1981	11	24.29444	06	05	01.82	+24	56	30.4	16.8	7 688
1981	WR1		1981	11	24.32917	06	04	59.92	+24	56	33.8		688
1981	WR1		1981	12	02.36667	05	57	05.29	+25	10	58.1	16.8	2 688
1981	WR1		1981	12	20.22569	05	35	36.07	+25	30	59.5	16.8	688
1981	WR1		1981	12	30.13264	05	23	59.38	+25	33	19.4	17.0	688
1981	WR1		1981	12	30.19722	05	23	54.97	+25	33	20.3		688
1981	WR1		1982	01	16.11389	05	09	38.51	+25	28	50.7	17.2	688
1981	WR1		1982	01	16.19653	05	09	35.33	+25	28	54.0		688
1981	WJ2	*	1981	11	24.35000	06	52	28.14	+19	57	38.8	17.2	7 688
1981	WJ2		1981	11	24.40069	06	52	27.02	+19	57	37.1		688
1981	WJ2		1981	12	20.31667	06	33	18.53	+19	30	15.6	16.8	688
1981	WJ2		1981	12	20.35000	06	33	16.43	+19	30	14.4		688
1981	WK2		1981	11	02.18611	00	50	29.58	+02	20	43.3	17.0	688
1981	WK2		1981	11	02.22847	00	50	28.00	+02	20	35.0		3 688
1981	WK2	*	1981	11	20.12292	00	43	06.00	+02	01	57.5	17.0	7 688
1981	WK2		1981	11	20.17361	00	43	05.31	+02	01	58.5		688
1981	XA		1981	10	05.38889	04	28	56.96	-05	09	04.7	17.2	688
1981	XA		1981	10	05.42569	04	28	57.83	-05	09	01.0		3 688
1981	XA		1981	12	20.17153	03	16	54.37	+14	32	36.7	16.5	688
1981	XA		1981	12	20.26319	03	16	49.49	+14	34	53.5		688
1981	XC		1981	12	18.10972	02	11	38.19	+18	50	02.9	17.0	688
1981	XC		1981	12	18.18542	02	11	38.04	+18	49	58.2		688
1981	XC		1981	12	30.08785	02	13	52.47	+18	49	55.3	17.2	688
1981	XC		1981	12	30.15347	02	13	53.71	+18	49	59.0		688
1981	XD		1981	12	18.10972	02	13	08.63	+19	10	03.3	16.5	688
1981	XD		1981	12	18.18542	02	13	08.42	+19	09	59.6		688
1981	XD		1981	12	30.08785	02	15	29.88	+19	11	37.5	16.8	688
1981	XD		1981	12	30.15347	02	15	31.26	+19	11	40.4		688
1981	YA	*	1981	12	18.13472	02	10	58.34	+01	25	05.0	16.5	7 688

1981 YA		1981 12 18.20903	02 10 57.81	+01 25 47.5		2 688
1981 YB	*	1981 12 20.17153	03 16 49.62	+11 52 31.4	15.8	7 688
1981 YB		1981 12 20.26319	03 16 46.29	+11 53 15.4		688
1981 YB		1981 12 30.11181	03 13 06.63	+13 15 46.8	15.5	688
1981 YB		1981 12 30.17708	03 13 05.66	+13 16 21.2		688
1981 YB		1982 01 16.09028	03 14 26.81	+15 48 25.5	16.5	2 688
1981 YB		1982 01 16.14861	03 14 27.88	+15 49 00.6		688
1981 YC	*	1981 12 20.17153	03 18 43.30	+15 49 17.8	16.8	7 688
1981 YC		1981 12 20.26319	03 18 40.38	+15 47 58.3		1 688
1981 YC		1981 12 30.11181	03 15 44.13	+13 40 06.4	16.8	688
1981 YC		1981 12 30.17708	03 15 43.47	+13 39 20.3		688
1981 YC		1982 01 16.09028	03 19 15.46	+11 19 44.2	17.2	688
1981 YC		1982 01 16.14861	03 19 16.93	+11 19 26.0		688
1981 YD		1981 11 24.29444	05 52 25.00	+23 01 34.5	17.0	688
1981 YD		1981 11 24.32917	05 52 23.28	+23 01 35.2		1 688
1981 YD		1981 12 02.34444	05 45 48.53	+23 12 53.7	16.8	688
1981 YD		1981 12 02.36667	05 45 47.30	+23 12 56.1		1 688
1981 YD		1981 12 20.22569	05 27 01.18	+23 33 53.1	16.5	688
1981 YD		1981 12 20.30000	05 26 56.13	+23 33 57.5		688
1981 YD	*	1981 12 30.13264	05 16 42.35	+23 41 39.7	16.5	7 688
1981 YD		1981 12 30.19722	05 16 38.51	+23 41 43.5		688
1981 YD		1982 01 16.11389	05 04 24.18	+23 52 49.7	17.2	688
1981 YD		1982 01 16.19653	05 04 21.67	+23 52 55.2		688
1981 YE		1981 12 20.22569	05 41 59.15	+27 47 21.0	16.8	688
1981 YE		1981 12 20.30000	05 41 53.71	+27 47 26.4		688
1981 YE	*	1981 12 30.13264	05 30 22.19	+27 51 39.0	17.0	7 688
1981 YE		1981 12 30.19722	05 30 17.77	+27 51 38.5		688
1981 YE		1982 01 16.11389	05 14 44.62	+27 43 18.2	17.2	688
1981 YE		1982 01 16.19653	05 14 41.23	+27 43 13.8		688
1981 YF		1981 12 20.22569	05 51 36.72	+29 29 35.4	17.2	1 688
1981 YF	*	1981 12 30.13264	05 39 57.17	+29 26 40.6	17.2	7 688
1981 YF		1981 12 30.19722	05 39 52.82	+29 26 38.1		688
1981 YG		1981 12 20.22569	05 51 58.00	+27 30 39.1	16.8	688
1981 YG		1981 12 20.30000	05 51 52.79	+27 30 04.9		688
1981 YG	*	1981 12 30.13264	05 40 46.07	+26 10 16.8	17.0	7 688
1981 YG		1981 12 30.19722	05 40 41.79	+26 09 45.9		688
1981 YH		1981 12 20.22569	05 53 20.18	+26 59 06.9	16.5	688
1981 YH		1981 12 20.30000	05 53 15.30	+26 58 50.4		688
1981 YH	*	1981 12 30.13264	05 43 03.19	+26 19 29.0	16.8	1 688
1981 YH		1981 12 30.19722	05 42 59.37	+26 19 13.5		688
1982 BC	*	1982 01 16.25764	06 50 01.18	+27 03 33.5	17.2	7 688
1982 BC		1982 01 16.29167	06 49 59.19	+27 03 52.7		688
1982 BD	*	1982 01 16.25764	06 54 46.91	+28 13 15.8	17.0	8 688
1982 BD		1982 01 16.29167	06 54 44.53	+28 13 12.8		688
1982 BE	*	1982 01 16.25764	07 01 54.68	+24 49 18.4	17.2	7 688
1982 BE		1982 01 16.29167	07 01 52.78	+24 49 26.8		1 688
1982 BF	*	1982 01 16.25764	07 04 18.17	+24 30 01.0	16.5	7 688
1982 BF		1982 01 16.29167	07 04 16.28	+24 30 08.9		688
1982 BG	*	1982 01 16.25764	07 13 30.45	+29 23 36.7	17.0	7 688
1982 BG		1982 01 16.29167	07 13 28.05	+29 23 41.5		1 688

Note 1: right ascension uncertain. 2: declination uncertain. 3 = 1 + 2. 4:
discoverer N. G. Thomas. 5 = 4 + 1. 6 = 4 + 2. 7: discoverer Howell.
8 = 7 + 1. 9 = 7 + 2.

OBSERVATIONS MADE AT THE LOWELL OBSERVATORY. MEASURED BY E. BOWELL.

Object	Date	UT	R. A. (1950)	Decl.	N Obs.
42	1931 01	11.30069	08 41 12.94	+26 02 49.4	690
42	1931 01	12.28750	08 40 16.17	+26 08 57.0	690

42	1931	01	13.28681	08	39	17.79	+26	15	05.4	690
133	1948	09	07.27984	22	38	17.64	-04	24	57.1	690
133	1948	09	08.27984	22	37	29.69	-04	27	53.1	690
133	1948	09	09.27984	22	36	42.19	-04	30	49.9	690
190	1959	02	01.33202	09	39	16.65	+08	40	05.5	690
190	1959	02	02.33175	09	38	38.55	+08	44	14.1	690
190	1959	02	11.25000	09	32	48.47	+09	23	34.8	690
338	1959	01	31.27552	09	36	20.10	+09	19	48.0	2 690
338	1959	02	01.28475	09	35	29.19	+09	21	56.0	2 690
338	1959	02	01.33202	09	35	26.40	+09	22	07.7	690
338	1959	02	02.33175	09	34	35.52	+09	24	18.8	690
338	1959	02	07.28988	09	30	17.78	+09	36	00.3	690
338	1959	02	11.25000	09	26	48.91	+09	46	13.5	1 690
346	1931	01	11.30069	08	23	25.99	+25	19	41.5	690
346	1931	01	12.28750	08	22	32.55	+25	25	43.2	690
346	1931	01	13.28681	08	21	37.65	+25	31	48.0	690
370	1959	01	31.27552	09	17	39.18	+10	03	59.1	690
370	1959	02	01.28475	09	16	33.43	+10	05	33.6	690
370	1959	02	02.27897	09	15	28.30	+10	07	11.1	690
370	1959	02	07.28988	09	09	57.87	+10	16	18.5	690
375	1948	09	07.27984	23	02	10.41	-02	15	19.4	690
375	1948	09	08.27984	23	01	14.96	-02	15	21.3	690
375	1948	09	09.27984	23	00	19.68	-02	15	24.5	690
398	1930	11	26.17361	03	25	33.51	+30	38	14.4	690
398	1930	12	13.19236	03	13	42.89	+28	00	13.6	690
398	1930	12	14.20069	03	13	16.00	+27	50	43.9	690
398	1930	12	16.19444	03	12	29.12	+27	32	12.5	690
427	1961	01	13.21875	06	53	48.56	+24	28	38.8	690
427	1961	01	13.23958	06	53	47.45	+24	28	38.8	690
514	1959	02	01.33202	09	44	37.64	+08	54	41.5	3 690
514	1959	02	02.33175	09	43	51.03	+08	57	35.0	3 690
514	1959	02	11.25000	09	36	39.76	+09	26	17.2	690
570	1959	01	31.27552	09	28	40.60	+12	22	06.8	690
570	1959	02	01.28475	09	27	56.82	+12	25	31.4	690
570	1959	02	01.33202	09	27	54.82	+12	25	40.8	690
570	1959	02	02.27897	09	27	13.50	+12	28	54.5	690
570	1959	02	02.33175	09	27	11.12	+12	29	05.1	690
570	1959	02	07.28988	09	23	31.89	+12	46	18.0	690
570	1959	02	11.25000	09	20	36.09	+13	00	16.2	690
586	1959	02	01.33202	09	38	39.14	+11	30	28.1	690
586	1959	02	02.33175	09	37	51.72	+11	34	12.8	690
586	1959	02	11.25000	09	30	35.56	+12	09	26.3	690
735	1930	12	13.19236	03	19	56.86	+29	37	02.6	690
735	1930	12	14.20069	03	19	07.40	+29	39	02.8	690
735	1930	12	16.19444	03	17	36.02	+29	42	44.3	690
834	1959	01	31.27552	09	24	55.69	+11	04	48.7	690
834	1959	02	01.28475	09	24	10.28	+11	08	44.6	690
834	1959	02	01.33202	09	24	08.16	+11	08	55.2	690
834	1959	02	02.27897	09	23	25.19	+11	12	38.9	690
834	1959	02	02.33175	09	23	22.78	+11	12	51.5	690
834	1959	02	07.28988	09	19	34.33	+11	32	55.6	690
860	1931	01	11.30069	08	27	09.18	+22	56	46.0	690
860	1931	01	12.28750	08	26	11.23	+22	56	50.1	690
860	1931	01	13.28681	08	25	11.74	+22	56	51.5	690
909	1959	02	01.28475	09	30	13.54	+10	40	32.5	690
909	1959	02	01.33202	09	30	11.60	+10	40	53.2	690
909	1959	02	02.27897	09	29	34.01	+10	47	19.7	690
909	1959	02	02.33175	09	29	31.94	+10	47	42.2	690

909	1959	02	07.28988	09	26	11.95	+11	22	01.1	690
909	1959	02	11.25000	09	23	30.60	+11	49	54.2	690
917	1930	11	26.17361	03	15	22.39	+27	21	16.2	690
917	1930	12	14.20069	03	01	12.31	+25	58	08.3	690
917	1930	12	16.19444	03	00	17.58	+25	49	31.3	690
1065	1930	12	13.19236	03	24	33.57	+32	56	02.9	690
1065	1930	12	14.20069	03	23	46.04	+32	49	01.1	1 690
1065	1930	12	16.19444	03	22	19.64	+32	34	56.0	690
1066	1930	11	26.17361	03	29	56.81	+28	04	46.9	690
1066	1930	12	13.19236	03	15	34.75	+26	51	26.2	690
1066	1930	12	14.20069	03	15	00.75	+26	47	03.8	690
1079	1961	01	13.21875	06	59	18.41	+24	01	01.1	690
1079	1961	01	13.23958	06	59	17.14	+24	01	01.9	690
1109	1948	09	07.27984	23	05	59.58	+00	45	51.4	688
1109	1948	09	08.27984	23	05	15.77	+00	41	28.2	1 688
1109	1948	09	09.27984	23	04	31.24	+00	36	58.7	688
1268	1948	09	07.27984	22	40	56.15	-09	43	53.5	690
1268	1948	09	08.27984	22	40	19.47	-09	46	47.6	690
1268	1948	09	09.27984	22	39	43.13	-09	49	41.0	690
1280	1961	01	13.21875	07	02	14.87	+23	58	23.6	690
1280	1961	01	13.23958	07	02	13.84	+23	58	23.1	690
1415	1948	09	07.27984	22	41	59.24	-06	51	54.1	1 690
1415	1948	09	08.27984	22	40	58.85	-06	56	19.0	690
1415	1948	09	09.27984	22	39	59.02	-07	00	42.2	690
1501	1930	11	26.17361	03	14	16.39	+27	49	20.0	690
1501	1930	12	13.19236	03	01	43.53	+27	26	25.2	690
1501	1930	12	14.20069	03	01	17.23	+27	24	51.0	690
1501	1930	12	16.19444	03	00	32.99	+27	21	45.6	690
1619	1931	01	11.30069	08	38	44.72	+28	07	13.6	690
1619	1931	01	12.28750	08	37	39.28	+28	14	03.8	690
1619	1931	01	13.28681	08	36	31.90	+28	20	48.1	690
1650	1948	09	07.27984	22	36	15.18	-05	35	50.3	690
1927	1930	12	13.19236	03	25	33.31	+33	11	34.5	690
1927	1930	12	14.20069	03	24	36.83	+33	10	44.3	690
1927	1930	12	16.19444	03	22	50.67	+33	08	40.8	690
2103	1930	12	13.19236	03	24	48.02	+27	41	42.5	690
2103	1930	12	14.20069	03	24	06.50	+27	36	33.9	690
2103	1930	12	16.19444	03	22	47.97	+27	26	32.7	690
2126	1931	01	11.30069	08	40	44.97	+25	34	37.9	690
2126	1931	01	12.28750	08	39	39.38	+25	35	40.2	690
2126	1931	01	13.28681	08	38	31.71	+25	36	37.2	690
2179	1930	11	26.17361	03	16	28.12	+29	31	11.3	1 690
2179	1930	12	13.19236	03	02	29.65	+28	58	19.1	690
2179	1930	12	14.20069	03	01	51.88	+28	56	02.2	690
2179	1930	12	16.19444	03	00	43.10	+28	51	27.6	690
1930 XJ	1930	12	13.19236	03	21	20.98	+33	07	20.0	690
1930 XJ	1930	12	14.20069	03	20	38.57	+33	02	57.7	690
1930 XJ	1930	12	16.19444	03	19	20.57	+32	54	03.9	690
1930 XK	1930	12	13.19236	03	21	26.92	+29	18	51.4	690
1930 XK	1930	12	14.20069	03	20	41.02	+29	14	56.9	690
1930 XK	1930	12	16.19444	03	19	17.08	+29	07	12.3	2 690
1930 XP	1930	12	13.19236	03	26	16.34	+28	49	40.1	690
1930 XP	1930	12	14.20069	03	25	37.73	+28	39	27.2	1 690
1930 XP	1930	12	16.19444	03	24	25.72	+28	19	46.0	690
1931 AM	1931	01	11.30069	08	22	34.61	+25	58	34.6	690
1931 AM	1931	01	12.28750	08	21	36.85	+25	58	03.7	1 690
1931 AM	1931	01	13.28681	08	20	37.23	+25	57	28.5	1 690
1948 RA	1948	09	07.27984	22	42	02.06	-06	37	55.1	690

1948 RA	1948 09 08.27984	22 41 00.47	-06 41 28.7	690
1948 RA	1948 09 09.27984	22 39 59.47	-06 45 00.3	690
1948 RB	1948 09 07.27984	22 42 20.83	-06 32 19.0	690
1948 RB	1948 09 08.27984	22 41 35.93	-06 37 17.1	690
1948 RB	1948 09 09.27984	22 40 50.54	-06 42 13.5	1 690
1948 RC	1948 09 07.27984	22 47 18.88	-02 43 28.0	690
1948 RC	1948 09 08.27984	22 46 25.37	-02 41 18.4	1 690
1948 RC	1948 09 09.27984	22 45 32.10	-02 39 13.4	690
1948 RE	1948 09 07.27984	22 56 27.43	-01 59 50.2	690
1948 RE	1948 09 08.27984	22 55 34.94	-02 06 36.7	690
1948 RE	1948 09 09.27984	22 54 42.68	-02 13 25.8	690
1948 RF	1948 09 07.27984	22 57 20.04	-08 44 59.4	690
1948 RG	1948 09 07.27984	23 01 05.07	-06 41 32.9	690
1948 RP	1948 09 07.27984	23 16 49.42	+00 29 52.0	1 690
1948 RP	1948 09 08.27984	23 15 47.09	+00 27 15.8	3 690
1948 RP	1948 09 09.27984	23 14 43.60	+00 24 27.7	690
1959 CB	1959 01 31.27552	09 30 51.47	+10 40 19.0	690
1959 CB	1959 02 01.28475	09 29 54.21	+10 46 34.5	690
1959 CB	1959 02 01.33202	09 29 51.41	+10 46 52.7	690
1959 CB	1959 02 02.33175	09 28 53.92	+10 53 10.1	690
1959 CB	1959 02 07.28988	09 24 01.61	+11 25 37.8	690
1959 CB	1959 02 11.25000	09 20 05.21	+11 52 34.6	690
1959 CC1	1959 01 31.27552	09 22 18.71	+11 12 10.7	690
1959 CC1	1959 02 01.28475	09 21 13.73	+11 16 22.4	690
1959 CC1	1959 02 01.33202	09 21 10.61	+11 16 33.2	690
1959 CC1	1959 02 02.27897	09 20 09.12	+11 20 35.3	690
1959 CC1	1959 02 02.33175	09 20 05.61	+11 20 47.7	690
1959 CC1	1959 02 07.28988	09 14 36.43	+11 42 49.5	1 690
1961 AO	1961 01 13.21875	07 09 47.32	+20 00 33.2	690
1961 AO	1961 01 13.23958	07 09 46.23	+20 00 35.1	690

Note 1: right ascension uncertain. 2: declination uncertain. 3 = 1 + 2.

OBSERVATIONS MADE WITH THE STEWARD OBSERVATORY'S TELESCOPE ON KITT PEAK
(CODE 691) BY S. TAPIA AND R. WITWER AND AT THE LUNAR AND PLANETARY
LABORATORY'S CATALINA STATION (CODE 693) BY D. THOLEN.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
339	1981 12 21.1419	01 09 21.43	-010907.2		693
339	1981 12 23.1323	01 10 14.96	-010157.9		693
339	1981 12 23.1590	01 10 15.65	-010151.8		693
1981 VB	1981 12 02.3326	02 03 15.6	+042101		691
1981 VB	1981 12 02.3896	02 03 14.2	+042100		691
1981 VB	1981 12 04.2090	02 02 37.1	+042012		691
1981 VB	1981 12 04.2576	02 02 36.1	+042009		691
1981 VB	1981 12 19.2122	02 00 36.75	+043449.8		693
1981 VB	1981 12 19.2406	02 00 36.75	+043452.7		693
1981 VB	1981 12 20.1432	02 00 40.38	+043656.4		693
1981 VB	1981 12 21.1595	02 00 45.65	+043922.1		693
1981 VB	1981 12 23.1514	02 01 00.70	+044436.5		693

OBSERVATIONS MADE AT THE LINCOLN LABORATORY ETS, NEW MEXICO, UNDER THE DIREC-
TION OF L. G. TAFF.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
8	1981 12 21.24449	05 46 57.17	+18 50 50.7		704
110	1981 12 25.22786	07 01 04.40	+28 57 19.3		704
241	1981 12 31.25259	07 07 30.23	+20 43 40.3		704
419	1981 12 31.25487	07 06 02.13	+17 56 45.0		704
432	1981 12 21.34619	05 51 40.70	+23 24 53.0		704
432	1981 12 21.34970	05 51 40.55	+23 25 00.0		704
515	1981 12 21.37103	05 34 37.17	+21 26 15.3		704

541		1981	12	24.32412	06	25	59.13	+22	12	22.7	704
847		1981	12	24.32091	06	29	54.57	+22	59	16.0	704
851		1981	12	29.28589	06	46	27.80	+19	59	57.7	704
962		1981	12	24.25607	06	21	29.48	+20	15	15.0	704
996		1981	12	23.38550	05	54	18.10	+24	26	34.7	704
1076		1981	12	31.24826	07	15	51.72	+18	22	24.0	704
1171		1981	12	24.25969	06	39	49.93	+20	59	56.3	704
1189		1981	12	22.19979	05	37	02.15	+25	39	15.3	704
1189		1981	12	23.21422	05	36	02.80	+25	35	16.0	704
1307		1981	12	23.29099	06	14	29.10	+18	37	49.7	704
1461		1981	12	30.35802	07	22	24.87	+22	24	49.0	704
1464		1981	12	23.38200	06	10	24.67	+25	01	41.7	704
1486		1981	12	21.36467	05	31	57.27	+23	24	54.3	704
1558		1981	12	23.27980	06	09	56.40	+18	25	13.7	704
1609		1981	12	24.25125	06	24	20.60	+17	46	36.0	704
1764		1981	12	29.28383	06	44	53.97	+20	32	10.7	704
1815		1981	12	21.35626	05	42	53.00	+21	37	05.3	704
2213		1981	12	29.31888	06	43	14.77	+18	40	34.0	704
2213		1981	12	30.19174	06	42	10.67	+18	44	01.0	704
2213		1981	12	31.19166	06	40	56.93	+18	47	54.3	704
2336		1981	12	30.35490	07	23	03.23	+23	24	35.0	704
2336		1981	12	31.18165	07	22	21.83	+23	26	54.3	704
2336		1982	01	01.22049	07	21	28.17	+23	29	44.0	704
2500		1981	10	31.37156	02	21	49.73	+11	52	42.0	704
2525		1981	10	31.30863	02	29	53.15	+11	11	55.3	704
2525		1981	10	31.37818	02	29	49.53	+11	11	40.7	704
1980	MA	1981	12	24.37500	06	32	34.55	+29	36	27.5	704
1980	MA	1981	12	24.38422	06	32	33.93	+29	36	30.7	704
1980	MA	1981	12	25.15121	06	31	42.03	+29	41	15.7	704
1980	MA	1981	12	27.18259	06	29	22.45	+29	53	24.5	704
1980	MA	1981	12	29.18057	06	27	06.03	+30	04	50.3	704
1980	MA	1981	12	30.15748	06	25	59.20	+30	10	13.8	704
1980	MA	1981	12	31.16460	06	24	50.60	+30	15	40.0	704
1980	MA	1982	01	01.16354	06	23	42.87	+30	20	52.7	704
1980	MA	1982	01	01.16596	06	23	42.75	+30	20	52.0	704
1981	YX	* 1981	12	22.19238	05	37	22.63	+28	17	59.0	704
1981	YY	* 1981	12	23.28554	06	04	03.37	+20	04	00.0	704
1981	YZ	* 1981	12	23.37783	06	13	51.00	+22	50	35.3	704
1981	YA1	* 1981	12	24.36724	06	31	49.53	+27	33	19.3	704
1981	YA1		12	25.16343	06	30	54.67	+27	30	16.3	704
1981	YA1		12	27.17959	06	28	34.13	+27	22	38.0	704
1981	YA1		12	29.15890	06	26	17.67	+27	14	42.0	704
1981	YA1		12	30.16037	06	25	08.77	+27	10	38.7	704
1981	YA1		12	31.16655	06	24	00.00	+27	06	26.7	704
1981	YA1		01	01.17058	06	22	52.23	+27	02	09.3	704
1981	YB1	* 1981	12	25.28788	07	02	24.17	+25	05	43.7	704
1981	YB1		12	27.21695	07	00	22.00	+25	07	49.0	704
1981	YB1		12	29.22675	06	58	11.90	+25	10	05.7	704
1981	YB1		12	31.19627	06	56	03.13	+25	12	03.7	704
1981	YB1		01	01.17563	06	54	58.43	+25	12	58.0	704
1981	YC1	* 1981	12	29.22941	06	55	33.97	+28	31	38.3	704
1981	YC1		12	30.16578	06	54	25.73	+28	36	49.7	704
1981	YC1		12	31.16963	06	53	12.70	+28	42	15.0	704
1981	YC1		01	01.20748	06	51	56.50	+28	47	43.3	704
1981	YD1	* 1981	12	29.25036	06	51	59.35	+29	19	56.0	704
1981	YD1		12	30.16800	06	51	02.10	+29	21	08.3	704
1981	YD1		12	31.17252	06	49	59.37	+29	22	15.7	704
1981	YD1		01	01.19163	06	48	55.47	+29	23	25.0	704
1981	YE1	* 1981	12	30.23287	06	56	32.97	+18	30	24.3	704

1981 YE1	1981	12	31.21271	06	55	31.38	+18	28	41.8	704
1981 YE1	1982	01	01.21857	06	54	30.50	+18	27	22.7	704
1981 YF1 *	1981	12	31.29088	06	10	23.33	+21	56	19.7	704

OBSERVATIONS MADE AT THE GOETHE LINK OBSERVATORY, MEASURED AND REDUCED AT INDIANA UNIVERSITY.

Object	Date	UT	R. A. (1950)			Decl.			N	Obs.
1342	1953	08	16.14433	19	56	39.34	-24	31	04.1	760
1342	1953	08	16.19016	19	56	36.33	-24	30	50.6	760
1353	1953	10	07.27253	00	42	12.90	+09	34	44.7	760
1353	1953	10	07.32183	00	42	10.66	+09	34	20.6	760
1718	1953	10	08.30761	01	31	33.29	+10	44	20.6	760
1718	1953	10	08.34998	01	31	31.32	+10	43	57.3	760
2461	1955	10	20.17363	01	23	50.77	+04	35	33.0	760
2461	1955	10	20.21461	01	23	48.86	+04	35	22.5	760
2461	1955	11	10.08751	01	10	18.02	+03	25	49.2	760
2461	1955	11	10.12362	01	10	16.90	+03	25	44.7	760
2494	1954	10	24.28272	01	27	37.43	+27	01	19.6	760
2494	1954	10	24.32716	01	27	35.22	+27	01	04.0	760
1953 EG1	1953	03	14.10350	09	36	34.81	+06	07	40.6	760
1953 EG1	1953	03	14.18960	09	36	31.57	+06	08	11.3	760
1953 OG	1953	07	19.33818	21	23	39.43	-26	07	38.9	760
1953 TS	1953	10	07.27253	00	50	29.30	+14	14	01.0	760
1953 TW	1953	10	07.27253	00	38	41.26	+10	03	01.6	760
1953 TW	1953	10	07.32183	00	38	38.63	+10	02	54.3	760
1953 TX	1953	10	07.27253	00	30	31.88	+10	57	00.4	760
1953 TX	1953	10	07.32183	00	30	29.33	+10	56	37.0	760
1953 TJ1	1953	10	08.20934	01	11	04.32	+09	01	22.1	1 760
1953 TJ1	1953	10	08.25795	01	11	01.70	+09	01	09.1	1 760
1953 TN1	1953	10	08.20934	01	07	08.08	+04	21	16.7	760
1953 TN1	1953	10	08.25795	01	07	04.77	+04	21	15.4	760
1953 TR1	1953	10	08.20934	00	58	31.69	+07	03	00.0	760
1953 TS1	1953	10	08.34998	01	53	27.94	+11	20	33.8	760
1953 TW1	1953	10	09.15556	23	46	15.90	+00	35	22.1	760
1953 TW1	1953	10	09.20068	23	46	13.50	+00	35	19.4	760
1953 TX1	1953	10	09.15556	23	49	42.15	-04	19	01.9	760
1953 TX1	1953	10	09.20068	23	49	40.06	-04	19	05.4	760
1953 TY1	1953	10	09.20068	23	43	24.17	-06	01	10.0	760
1953 TZ1	1953	10	09.15556	23	32	50.57	-00	34	38.2	760
1953 TZ1	1953	10	09.20068	23	32	48.57	-00	34	41.8	760
1953 TD2	1953	10	09.25900	02	10	53.35	+04	31	48.3	1 760
1953 TD2	1953	10	09.30761	02	10	51.05	+04	31	21.5	1 760
1953 TF2	1953	10	10.19965	00	41	19.65	+08	47	23.6	760
1953 TF2	1953	10	10.24758	00	41	17.11	+08	47	03.6	760
1962 PC	1962	08	01.15443	20	07	57.73	-16	25	23.8	760
1962 PC	1962	08	01.19783	20	07	55.47	-16	25	21.0	760
1963 UH	1963	10	18.18407	01	29	55.38	+09	06	26.2	760
1963 UH	1963	10	18.22643	01	29	52.73	+09	06	07.3	760

Note 1: poor approximate positions (MPC 1042-1043).

OBSERVATIONS MADE AT THE U.S. NAVAL OBSERVATORY, WASHINGTON, BY E. C. BOWER.
RE-REDUCTION BY L. K. KRISTENSEN OF OBSERVATIONS IN A.J. 36, 36, 1926.

Object	Date	UT	R. A. (1950)			Decl.			Obs.	
1009	1923	11	11.16069	01	22	57.30	+17	02	40.2	786
1009	1923	11	14.08426	01	25	23.03	+15	28	50.2	786
1009	1923	11	15.06686	01	26	15.88	+14	57	47.6	786
1009	1923	11	18.11979	01	29	12.12	+13	23	30.7	786
1009	1923	11	29.13688	01	42	20.89	+08	22	59.9	786
1009	1923	12	02.07780	01	46	28.40	+07	15	48.7	786

1009	1923	12	04.06647	01	49	23.68	+06	33	46.4	786
1009	1923	12	13.05688	02	03	50.02	+03	58	52.0	786

OBSERVATIONS MADE AT THE OAK RIDGE OBSERVATORY BY R. E. MC CROSKY, C.-Y.

SHAO AND G. SCHWARTZ (WITH ASSISTANCE FROM C. M. BARDWELL, D. W. E. GREEN AND B. G. MARSDEN).

Object	Date	UT	R. A. (1950)			Decl.			Mag.	N	Obs.
280	1978	07	01.29932	21	56	00.80	-21	43	03.2		801
280	1978	07	07.27843	21	54	07.14	-22	00	09.6		801
1040	1978	08	09.26455	23	08	01.55	+16	42	45.1		801
1125	1978	07	01.26500	20	20	45.61	-20	53	59.2		801
1450	1978	08	10.23733	22	51	58.59	-15	05	06.3		801
1450	1978	08	14.22025	22	49	12.46	-15	28	25.6		801
1791	1981	12	20.06861	00	54	49.96	+04	09	35.1		801
1824	1981	04	07.22088	11	29	01.99	+04	09	27.8		801
1824	1981	04	08.15172	11	28	28.00	+04	12	20.8	1	801
2039	1977	09	12.27034	23	48	50.61	-04	58	08.4		801
2060	1981	11	25.18102	03	10	23.34	+14	57	25.9	19.5	801
2066	1978	07	08.10286	12	21	22.00	+01	52	29.2		801
2079	1978	07	31.32199	01	05	04.05	+08	30	37.4		801
2079	1978	08	14.27538	01	06	20.81	+09	43	36.2	5	801
2117	1978	07	02.13140	14	16	00.02	-13	19	14.8		801
2117	1978	07	07.09355	14	17	08.04	-13	29	12.5		801
2262	1978	11	26.96207	22	39	36.72	-05	01	59.2		801
2382	1978	09	29.28936	05	15	47.44	+27	54	20.9		801
2449	1978	07	01.13843	12	12	38.88	+15	28	07.6		801
2491	1980	07	07.23663	18	30	56.99	-04	06	36.2		801
2506	1981	11	03.05431	23	33	31.48	-04	04	47.5		801
2523	1981	11	24.22449	01	45	17.26	+22	39	04.2		801
1950 FC	1981	11	25.03419	00	01	06.29	+13	18	53.8		801
1950 FC	1981	11	26.03874	00	01	05.82	+13	15	51.9		801
1964 TC2	1981	04	07.24601	11	52	21.88	-02	22	22.7	3	801
1970 PL	1981	12	21.12850	06	01	16.44	+29	32	37.7		801
1973 SO2	1981	02	06.08301	04	52	58.38	+25	58	19.3		801
1974 QL	1981	12	21.20804	07	24	56.45	+30	08	49.5		801
1974 QL	1981	12	21.29744	07	24	51.69	+30	08	50.0		801
1975 BX	1981	12	31.15147	05	26	38.92	-01	51	32.9		801
1975 DA	1981	11	24.06823	00	08	39.34	+27	49	07.6		801
1975 DA	1981	12	20.00723	00	16	56.07	+25	12	49.6		801
1976 YX1	1981	11	24.12278	00	34	03.76	+03	57	11.6		801
1976 YP7	1981	12	21.15241	06	46	04.82	+19	28	23.6		801
1976 YP7	1981	12	30.35722	06	37	36.58	+19	37	37.9		801
1977 FZ	1981	12	31.38185	09	14	29.33	+16	30	47.7		801
1977 PA2	1981	12	20.20212	04	54	56.46	+25	59	42.8		801
1977 PA2	1981	12	31.05493	04	43	55.90	+25	08	32.2	5	801
1977 QP4	1981	12	31.22329	08	27	20.89	+18	56	17.1		801
1977 RE8 *	1977	09	12.27034	23	48	18.66	-05	11	56.8	18.5	801
1977 TB1	1981	12	21.36089	07	51	42.26	+24	06	06.2		801
1978 PQ4 *	1978	08	14.22025	22	49	48.65	-15	00	30.3	17	4 801
1978 SP	1981	09	30.09576	21	08	21.06	-16	30	38.8		801
1978 VV6	1981	11	25.99799	23	48	55.79	-02	57	52.4		801
1979 KC	1981	12	21.23897	08	10	55.52	+13	55	29.9		801
1979 KN	1981	11	26.26769	06	44	16.86	+12	00	00.5	4	801
1979 KN	1981	12	20.28248	06	27	35.67	+12	24	52.6		801
1979 MX2	1981	12	31.29236	09	12	22.40	+10	38	37.1		801
1979 MZ3	1981	12	21.18000	07	14	02.10	+20	47	21.1		801
1980 GC	1981	06	02.19490	17	07	02.15	+04	19	33.7		801
1980 KN	1981	11	01.00325	21	52	43.66	-15	41	39.8	7	801
1980 LB	1981	11	25.41689	07	53	52.09	+11	16	31.0		801

1980 LB	1981 12	20.40407	07 37	33.19	+16 16	58.9		801
1980 LD	1981 11	26.08042	00 51	54.28	-09 36	26.5		801
1980 LO	1981 11	24.28003	03 23	57.42	+11 29	05.5		801
1980 LO	1981 11	25.14396	03 23	07.95	+11 26	00.7		801
1980 LP	1981 12	30.28382	05 27	10.88	+19 56	49.7		801
1980 LP	1981 12	31.09608	05 26	21.74	+19 58	54.4		801
1980 LP	1981 12	31.32591	05 26	07.55	+19 59	28.8		801
1980 MA	1981 12	20.36133	06 37	02.36	+29 10	47.1		801
1980 OB	1981 12	20.33984	06 32	54.48	+26 12	11.0		801
1980 DC	1981 12	20.22707	05 36	17.00	+23 45	58.5		801
1980 DC	1981 12	31.12116	05 26	11.37	+23 35	20.1	5	801
1980 OF	1981 12	30.19980	04 46	04.36	+33 33	44.2		801
1980 OH	1981 11	24.25550	03 17	52.01	+16 09	52.2		801
1980 OH	1981 11	25.11838	03 17	11.75	+16 07	50.0		801
1980 OH	1981 11	26.11580	03 16	25.68	+16 05	28.3		801
1980 PG	1981 12	20.38044	07 33	18.70	+39 56	33.4		801
1980 PS	1981 12	30.99091	01 21	09.74	+37 27	34.4		801
1980 RR	1981 12	30.38128	06 49	58.96	+41 52	53.0		801
1980 VN	1981 12	21.32686	07 32	46.56	+43 15	52.2		801
1981 EU	1981 04	07.22088	11 27	21.45	+04 27	30.8	18.5	801
1981 GM1	1981 04	03.16176	11 32	17.89	+03 52	49.7		801
1981 GP1 *	1981 04	07.22088	11 30	08.48	+04 25	21.1	18.5	7 801
1981 QA	1981 12	21.03297	01 19	47.77	-03 48	50.4		8 801
1981 SC	1981 12	20.96767	23 40	34.04	+03 10	55.1		8 801
1981 TK	1981 12	29.96738	00 15	13.00	+25 12	12.4		801
1981 TK	1981 12	30.06958	00 15	21.61	+25 13	21.9		801
1981 WL	1981 11	26.14321	03 33	41.69	+16 19	58.6		6 801
1981 WL	1981 11	29.14353	03 30	54.32	+16 15	29.4		801
1981 WM	1981 11	26.14321	03 34	53.95	+16 18	54.6		801
1981 WM	1981 11	29.14353	03 31	46.08	+16 17	02.3		801
1981 WM	1981 12	20.17640	03 15	08.10	+16 22	33.8		801
1981 WM	1981 12	21.07470	03 14	42.66	+16 23	46.5		801
1981 WN1	1981 11	24.28003	03 24	02.87	+11 21	06.5		801
1981 WN1	1981 11	25.14396	03 23	05.39	+11 20	47.8		801
1981 WO1	1981 12	31.07750	05 00	52.61	-01 58	55.2		801
1981 WS1 *	1981 11	24.25550	03 18	24.63	+16 25	02.3	18	801
1981 WS1	1981 11	25.11838	03 17	28.01	+16 23	46.7		801
1981 WS1	1981 11	26.11580	03 16	23.17	+16 22	19.8		801
1981 YJ *	1981 12	20.25517	05 39	26.60	+21 49	51.8	18	801
1981 YK *	1981 12	30.28382	05 27	25.55	+19 41	50.7	17	801
1981 YK	1981 12	31.09608	05 26	41.91	+19 37	15.8		801
1981 YK	1981 12	31.32591	05 26	29.18	+19 35	59.6		801
1981 YL *	1981 12	30.38128	06 49	08.14	+42 06	04.7	17.5	801
1981 YM *	1981 12	30.38128	06 49	49.69	+42 11	35.4	17	5 801
1981 YN *	1981 12	31.05493	04 44	27.65	+25 00	39.2	17	801

Note 1: trailed image. 2: very faint image. 3 = 1 + 2. 4: near edge of plate. 5: poor measure. 6 = 2 + 4. 7 = 2 + 5. 8: doubtful image.

OBSERVATIONS MADE AT THE EUROPEAN SOUTHERN OBSERVATORY BY G. DE SANCTIS AND H. DEBEHOGNE. REDUCED BY DE SANCTIS AND V. ZAPPALA.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
200	1981 02	26.12874	08 50 32.30	+18 39 05.3	809
200	1981 02	26.13566	08 50 31.96	+18 39 05.4	809
200	1981 02	26.14328	08 50 31.62	+18 39 05.3	809
200	1981 02	27.25968	08 49 44.20	+18 39 10.2	809
200	1981 02	27.26521	08 49 43.96	+18 39 10.2	809
200	1981 02	28.11981	08 49 09.20	+18 39 10.0	809
200	1981 02	28.12674	08 49 08.94	+18 39 10.2	809
200	1981 02	28.13366	08 49 08.64	+18 39 10.2	809

200	1981	03	01.06999	08	48	31.64	+18	39	04.7	809
200	1981	03	01.07692	08	48	31.35	+18	39	04.6	809
200	1981	03	01.08384	08	48	31.05	+18	39	04.7	809
200	1981	03	03.06384	08	47	16.98	+18	38	39.4	809
200	1981	03	03.07076	08	47	16.73	+18	38	39.2	809
200	1981	03	03.07770	08	47	16.47	+18	38	39.2	809
200	1981	03	04.06595	08	46	41.71	+18	38	18.5	809
200	1981	03	04.07288	08	46	41.46	+18	38	18.6	809
200	1981	03	04.07980	08	46	41.21	+18	38	18.2	809
200	1981	03	05.08192	08	46	07.48	+18	37	51.4	809
200	1981	03	05.08884	08	46	07.32	+18	37	51.1	809
200	1981	03	05.09576	08	46	07.15	+18	37	51.5	809
200	1981	03	06.07793	08	45	35.62	+18	37	19.8	809
200	1981	03	06.08473	08	45	35.39	+18	37	19.9	809
200	1981	03	06.09166	08	45	35.16	+18	37	19.5	809
200	1981	03	07.02036	08	45	06.98	+18	36	45.4	809
200	1981	03	07.02729	08	45	06.78	+18	36	45.0	809
200	1981	03	07.03421	08	45	06.56	+18	36	44.6	809
200	1981	03	08.01348	08	44	38.20	+18	36	04.3	809
200	1981	03	08.02041	08	44	38.04	+18	36	03.7	809
200	1981	03	08.02734	08	44	37.81	+18	36	03.7	809
200	1981	03	09.03775	08	44	10.19	+18	35	17.4	809
200	1981	03	09.04469	08	44	10.09	+18	35	17.7	809
200	1981	03	09.05161	08	44	10.01	+18	35	17.2	809
200	1981	03	13.03169	08	42	37.98	+18	31	17.7	809
200	1981	03	13.04068	08	42	37.86	+18	31	17.1	809
214	1981	02	26.12874	08	49	45.82	+19	51	55.4	809
214	1981	02	26.13566	08	49	45.50	+19	51	55.6	809
214	1981	02	26.14328	08	49	45.17	+19	51	55.8	809
214	1981	02	27.25968	08	48	57.73	+19	53	00.1	809
214	1981	02	27.26521	08	48	57.45	+19	53	00.2	809
214	1981	02	28.11981	08	48	22.77	+19	53	44.7	809
214	1981	02	28.12674	08	48	22.44	+19	53	45.1	809
214	1981	02	28.13366	08	48	22.19	+19	53	44.9	809
214	1981	03	01.06999	08	47	45.25	+19	54	28.1	809
214	1981	03	01.07692	08	47	44.92	+19	54	27.8	809
214	1981	03	01.08384	08	47	44.67	+19	54	27.9	809
214	1981	03	03.06384	08	46	31.00	+19	55	37.7	809
214	1981	03	03.07076	08	46	30.77	+19	55	37.7	809
214	1981	03	03.07770	08	46	30.47	+19	55	38.1	809
214	1981	03	04.06595	08	45	56.02	+19	56	02.7	809
214	1981	03	04.07288	08	45	55.79	+19	56	03.1	809
214	1981	03	04.07980	08	45	55.53	+19	56	03.2	809
214	1981	03	05.08192	08	45	22.27	+19	56	21.0	809
214	1981	03	05.08884	08	45	22.03	+19	56	21.5	809
214	1981	03	05.09576	08	45	21.80	+19	56	21.5	809
214	1981	03	06.07793	08	44	50.85	+19	56	32.4	809
214	1981	03	06.08473	08	44	50.62	+19	56	32.4	809
214	1981	03	06.09166	08	44	50.39	+19	56	32.4	809
214	1981	03	07.02036	08	44	22.79	+19	56	36.7	809
214	1981	03	07.02729	08	44	22.56	+19	56	36.7	809
214	1981	03	07.03421	08	44	22.36	+19	56	36.9	809
214	1981	03	08.01348	08	43	54.72	+19	56	35.5	809
214	1981	03	08.02041	08	43	54.51	+19	56	35.1	809
214	1981	03	08.02734	08	43	54.32	+19	56	35.2	809
214	1981	03	09.03775	08	43	27.54	+19	56	27.0	809
214	1981	03	09.04469	08	43	27.35	+19	56	26.8	809
214	1981	03	09.05161	08	43	27.16	+19	56	26.9	809
214	1981	03	13.03169	08	41	59.56	+19	54	47.4	809

214	1981 03 13.04068	08 41 59.38	+19 54 47.0	809
523	1981 03 04.31520	11 03 40.66	-01 12 33.8	809
523	1981 03 04.32220	11 03 40.34	-01 12 31.4	809
523	1981 03 04.32981	11 03 39.96	-01 12 29.6	809
984	1981 03 04.31520	11 02 13.75	-01 14 51.9	809
984	1981 03 04.32220	11 02 13.42	-01 14 50.5	809
984	1981 03 04.32981	11 02 13.03	-01 14 48.8	809
984	1981 03 05.24328	11 01 26.26	-01 11 45.6	809
984	1981 03 05.25125	11 01 25.83	-01 11 44.1	809
984	1981 03 05.25921	11 01 25.45	-01 11 42.6	809
984	1981 03 06.25718	11 00 34.21	-01 08 17.8	809
984	1981 03 06.26411	11 00 33.83	-01 08 16.6	809
984	1981 03 06.27103	11 00 33.46	-01 08 15.1	809
1800	1981 02 26.12874	08 55 15.67	+19 58 31.6	809
1800	1981 02 26.13566	08 55 15.35	+19 58 32.8	809
1800	1981 02 26.14328	08 55 15.03	+19 58 34.2	809
1800	1981 02 28.11981	08 53 45.68	+20 07 18.4	809
1800	1981 02 28.12674	08 53 45.33	+20 07 21.5	809
1800	1981 02 28.13366	08 53 45.10	+20 07 21.6	809
1800	1981 03 01.06999	08 53 04.67	+20 11 19.9	809
1800	1981 03 01.07692	08 53 04.37	+20 11 21.2	809
1800	1981 03 01.08384	08 53 04.10	+20 11 22.5	809
1800	1981 03 03.06384	08 51 42.66	+20 19 18.3	809
1800	1981 03 03.07076	08 51 42.42	+20 19 21.7	809
1800	1981 03 03.07770	08 51 42.11	+20 19 23.1	809
2450	1981 02 26.12874	08 53 33.89	+18 55 32.4	809
2450	1981 02 26.13566	08 53 33.70	+18 55 33.3	809
2450	1981 02 26.14328	08 53 33.38	+18 55 34.8	809
2450	1981 02 28.11981	08 52 18.30	+19 01 32.0	809
2450	1981 02 28.12674	08 52 18.06	+19 01 33.5	809
2450	1981 02 28.13366	08 52 17.77	+19 01 35.0	809
2450	1981 03 01.06999	08 51 43.76	+19 04 15.7	809
2450	1981 03 01.07692	08 51 43.50	+19 04 17.1	809
2450	1981 03 01.08384	08 51 43.23	+19 04 18.1	809
2450	1981 03 03.06384	08 50 34.53	+19 09 41.9	809
2450	1981 03 03.07076	08 50 34.31	+19 09 43.2	809
2450	1981 03 03.07770	08 50 34.04	+19 09 44.2	809
2450	1981 03 04.06595	08 50 01.56	+19 12 17.3	809
2450	1981 03 04.07288	08 50 01.34	+19 12 18.2	809
2450	1981 03 04.07980	08 50 01.09	+19 12 19.2	809
2450	1981 03 05.08192	08 49 29.35	+19 14 48.4	809
2450	1981 03 05.08884	08 49 29.15	+19 14 49.6	809
2450	1981 03 05.09576	08 49 28.91	+19 14 50.4	809
2450	1981 03 06.07793	08 48 59.11	+19 17 10.3	809
2450	1981 03 06.08473	08 48 58.89	+19 17 11.2	809
2450	1981 03 06.09166	08 48 58.68	+19 17 12.3	809
2450	1981 03 07.02036	08 48 31.73	+19 19 18.7	809
2450	1981 03 07.02729	08 48 31.53	+19 19 19.7	809
2450	1981 03 07.03421	08 48 31.33	+19 19 20.6	809
2450	1981 03 08.01348	08 48 04.07	+19 21 28.2	809
2450	1981 03 08.02041	08 48 03.91	+19 21 29.1	809
2450	1981 03 08.02734	08 48 03.70	+19 21 29.9	809
2450	1981 03 09.03775	08 47 36.95	+19 23 35.4	809
2450	1981 03 09.04469	08 47 36.76	+19 23 36.3	809
2450	1981 03 09.05161	08 47 36.59	+19 23 37.1	809
2450	1981 03 13.03169	08 46 05.22	+19 30 45.7	809
2450	1981 03 13.04068	08 46 05.02	+19 30 46.4	809
1981 CM	1981 02 26.12874	08 53 52.92	+18 32 18.3	809
1981 CM	1981 02 26.13566	08 53 52.66	+18 32 20.9	809

1981	CM	1981	02	26.14328	08	53	52.41	+18	32	23.4	809
1981	CM	1981	02	28.11981	08	52	40.23	+18	42	07.5	809
1981	CM	1981	02	28.12674	08	52	39.96	+18	42	09.8	809
1981	CM	1981	02	28.13366	08	52	39.69	+18	42	12.2	809
1981	CM	1981	03	01.06999	08	52	06.94	+18	46	40.4	809
1981	CM	1981	03	01.07692	08	52	06.65	+18	46	43.2	809
1981	CM	1981	03	01.08384	08	52	06.41	+18	46	44.2	809
1981	CM	1981	03	03.06384	08	51	00.06	+18	55	54.1	809
1981	CM	1981	03	03.07076	08	50	59.83	+18	55	56.7	809
1981	CM	1981	03	03.07770	08	50	59.62	+18	55	57.7	809
1981	CM	1981	03	04.06595	08	50	28.08	+19	00	23.9	809
1981	CM	1981	03	04.07288	08	50	27.84	+19	00	24.7	809
1981	CM	1981	03	04.07980	08	50	27.63	+19	00	27.7	809
1981	CM	1981	03	05.08192	08	49	56.80	+19	04	50.1	809
1981	CM	1981	03	05.08884	08	49	56.60	+19	04	51.9	809
1981	CM	1981	03	05.09576	08	49	56.35	+19	04	53.9	809
1981	CM	1981	03	06.07793	08	49	27.29	+19	09	04.5	809
1981	CM	1981	03	06.08473	08	49	27.05	+19	09	06.3	809
1981	CM	1981	03	06.09166	08	49	26.85	+19	09	08.0	809
1981	CM	1981	03	07.02036	08	49	00.51	+19	12	59.4	809
1981	CM	1981	03	07.02729	08	49	00.36	+19	13	01.1	809
1981	CM	1981	03	07.03421	08	49	00.15	+19	13	02.7	809
1981	CM	1981	03	08.01348	08	48	33.41	+19	17	00.6	809
1981	CM	1981	03	08.02041	08	48	33.23	+19	17	02.2	809
1981	CM	1981	03	08.02734	08	48	33.01	+19	17	03.5	809
1981	CM	1981	03	09.03775	08	48	06.63	+19	21	02.3	809
1981	CM	1981	03	09.04469	08	48	06.44	+19	21	04.1	809
1981	CM	1981	03	09.05161	08	48	06.25	+19	21	05.9	809
1981	EC2 *	1981	03	04.31520	10	56	47.00	-01	48	05.9	809
1981	EC2	1981	03	04.32220	10	56	46.49	-01	48	05.9	809
1981	EC2	1981	03	04.32981	10	56	46.09	-01	48	05.7	809
1981	EC2	1981	03	05.24328	10	55	50.77	-01	47	12.0	809
1981	EC2	1981	03	05.25125	10	55	50.16	-01	47	10.7	809
1981	EC2	1981	03	05.25921	10	55	49.73	-01	47	10.6	809
1981	EC2	1981	03	06.25718	10	54	49.25	-01	46	06.6	809
1981	EC2	1981	03	06.26411	10	54	48.75	-01	46	05.9	809
1981	EC2	1981	03	06.27103	10	54	48.35	-01	46	06.1	809
1981	EC2	1981	03	07.21670	10	53	51.30	-01	44	59.9	809
1981	EC2	1981	03	07.22328	10	53	50.91	-01	44	59.9	809
1981	EC2	1981	03	07.23021	10	53	50.51	-01	44	59.2	809
1981	EC2	1981	03	08.26626	10	52	48.13	-01	43	42.8	809
1981	EC2	1981	03	08.27318	10	52	47.65	-01	43	42.1	809
1981	EC2	1981	03	08.28012	10	52	47.25	-01	43	41.5	809
1981	EC2	1981	03	09.27737	10	51	47.66	-01	42	23.3	809
1981	EC2	1981	03	09.28431	10	51	47.26	-01	42	22.3	809
1981	EC2	1981	03	09.29123	10	51	46.88	-01	42	22.1	809
1981	EC2	1981	03	10.31690	10	50	45.99	-01	40	55.7	809
1981	EC2	1981	03	10.32382	10	50	45.56	-01	40	55.6	809
1981	EC2	1981	03	10.33110	10	50	45.09	-01	40	55.2	809
1981	EC2	1981	03	12.30867	10	48	49.45	-01	37	58.0	809
1981	EC2	1981	03	12.31559	10	48	49.08	-01	37	57.8	809
1981	EC2	1981	03	12.32252	10	48	48.72	-01	37	58.0	809
1981	EC2	1981	03	14.29627	10	46	55.96	-01	34	48.2	809
1981	EC2	1981	03	14.30319	10	46	55.63	-01	34	47.4	809
1981	EC2	1981	03	14.31013	10	46	55.21	-01	34	46.9	809
1981	ED2 *	1981	03	05.24328	10	54	57.78	-01	41	52.1	809
1981	ED2	1981	03	05.25125	10	54	57.41	-01	41	51.2	809
1981	ED2	1981	03	05.25921	10	54	56.97	-01	41	49.0	809
1981	ED2	1981	03	06.25718	10	54	07.28	-01	38	43.8	809

1981	ED2	1981	03	06.26411	10	54	07.05	-01	38	42.5	809	
1981	ED2	1981	03	06.27103	10	54	06.61	-01	38	40.9	809	
1981	ED2	1981	03	07.21670	10	53	19.87	-01	35	42.8	809	
1981	ED2	1981	03	07.22328	10	53	19.47	-01	35	41.7	809	
1981	ED2	1981	03	07.23021	10	53	19.21	-01	35	41.3	809	
1981	ED2	1981	03	08.26626	10	52	28.00	-01	32	22.0	809	
1981	ED2	1981	03	08.27318	10	52	27.67	-01	32	21.4	809	
1981	ED2	1981	03	08.28012	10	52	27.35	-01	32	20.2	809	
1981	ED2	1981	03	09.27737	10	51	38.35	-01	29	05.1	809	
1981	ED2	1981	03	09.28431	10	51	38.04	-01	29	04.0	809	
1981	ED2	1981	03	09.29123	10	51	37.72	-01	29	03.0	809	
1981	ED2	1981	03	10.31690	10	50	47.75	-01	25	40.8	809	
1981	ED2	1981	03	10.32382	10	50	47.38	-01	25	38.6	809	
1981	ED2	1981	03	10.33110	10	50	47.04	-01	25	38.4	809	
1981	ED2	1981	03	12.30867	10	49	12.01	-01	19	00.9	809	
1981	ED2	1981	03	12.31559	10	49	11.63	-01	18	59.3	809	
1981	ED2	1981	03	12.32252	10	49	11.29	-01	18	57.8	809	
1981	EE2	*	1981	03	05.24328	10	55	40.94	-02	37	43.2	809
1981	EE2		1981	03	05.25125	10	55	40.59	-02	37	39.6	809
1981	EE2		1981	03	05.25921	10	55	40.18	-02	37	34.4	809
1981	EE2		1981	03	06.25718	10	54	53.22	-02	27	59.6	809
1981	EE2		1981	03	06.26411	10	54	52.86	-02	27	54.7	809
1981	EE2		1981	03	06.27103	10	54	52.53	-02	27	50.8	809
1981	EE2		1981	03	09.27737	10	52	32.07	-01	58	33.4	809
1981	EE2		1981	03	09.28431	10	52	31.84	-01	58	29.2	809
1981	EE2		1981	03	09.29123	10	52	31.44	-01	58	25.2	809
1981	EE2		1981	03	10.31690	10	51	44.19	-01	48	19.2	809
1981	EE2		1981	03	10.32382	10	51	43.89	-01	48	15.7	809
1981	EE2		1981	03	10.33110	10	51	43.56	-01	48	10.7	809
1981	EE2		1981	03	12.30867	10	50	13.93	-01	28	35.4	809
1981	EE2		1981	03	12.31559	10	50	13.60	-01	28	31.5	809
1981	EE2		1981	03	12.32252	10	50	13.29	-01	28	27.8	809
1981	EE2		1981	03	14.29627	10	48	46.04	-01	08	51.0	809
1981	EE2		1981	03	14.30319	10	48	45.80	-01	08	47.5	809
1981	EE2		1981	03	14.31013	10	48	45.46	-01	08	43.2	809
1981	EF2	*	1981	03	05.24328	10	55	47.16	-01	34	25.1	809
1981	EF2		1981	03	05.25125	10	55	46.64	-01	34	23.7	809
1981	EF2		1981	03	05.25921	10	55	46.16	-01	34	22.2	809
1981	EF2		1981	03	06.25718	10	54	46.94	-01	30	37.9	809
1981	EF2		1981	03	06.26411	10	54	46.46	-01	30	36.7	809
1981	EF2		1981	03	06.27103	10	54	46.09	-01	30	34.3	809
1981	EF2		1981	03	07.21670	10	53	50.22	-01	26	57.7	809
1981	EF2		1981	03	07.22328	10	53	49.85	-01	26	56.9	809
1981	EF2		1981	03	07.23021	10	53	49.39	-01	26	55.0	809
1981	EF2		1981	03	08.26626	10	52	48.19	-01	22	52.7	809
1981	EF2		1981	03	08.27318	10	52	47.72	-01	22	50.9	809
1981	EF2		1981	03	08.28012	10	52	47.27	-01	22	49.9	809
1981	EF2		1981	03	09.27737	10	51	48.70	-01	18	50.9	809
1981	EF2		1981	03	09.28431	10	51	48.35	-01	18	49.2	809
1981	EF2		1981	03	09.29123	10	51	47.86	-01	18	47.8	809
1981	EF2		1981	03	10.31690	10	50	47.81	-01	14	37.7	809
1981	EF2		1981	03	10.32382	10	50	47.42	-01	14	36.7	809
1981	EF2		1981	03	10.33110	10	50	46.93	-01	14	35.1	809
1981	EF2		1981	03	12.30867	10	48	52.64	-01	06	23.3	809
1981	EF2		1981	03	12.31559	10	48	52.23	-01	06	21.5	809
1981	EF2		1981	03	12.32252	10	48	51.90	-01	06	19.8	809
1981	EF2		1981	03	14.29627	10	46	59.89	-00	57	59.0	809
1981	EF2		1981	03	14.30319	10	46	59.51	-00	57	56.8	809
1981	EF2		1981	03	14.31013	10	46	58.97	-00	57	54.9	809

OBSERVATIONS MADE AT THE EUROPEAN SOUTHERN OBSERVATORY. PLATES TAKEN BY H. DEBEHOGNE AND R. R. DE F. MOURAO, SCANNED AND MEASURED BY W. LANDGRAF.

Object	Date	UT	R. A. (1950)		Decl.		Mag.	N	Obs.
1981 RJ1 *	1981 09	04.20913	23 04	00.81	-13 58	04.9	17.4		809
1981 RJ1	1981 09	04.21447	23 04	00.51	-13 58	05.3			809
1981 RJ1	1981 09	04.21973	23 04	00.20	-13 58	05.2			809
1981 RK1 *	1981 09	04.20913	23 05	29.93	-14 05	17.0	20	1	809
1981 RK1	1981 09	04.21447	23 05	29.70	-14 05	19.8		1	809
1981 RK1	1981 09	04.21973	23 05	29.52	-14 05	23.4		1	809
1981 RL1 *	1981 09	04.20913	23 06	05.10	-14 14	06.9	17.3		809
1981 RL1	1981 09	04.21447	23 06	04.91	-14 14	07.3			809
1981 RL1	1981 09	04.21973	23 06	04.50	-14 14	07.3			809
1981 RM1 *	1981 09	04.38043	01 24	49.40	-13 56	30.1	17.3		809
1981 RM1	1981 09	04.38510	01 24	49.22	-13 56	31.9			809
1981 RM1	1981 09	04.38822	01 24	49.22	-13 56	33.0			809
1981 RM1	1981 09	04.39292	01 24	49.12	-13 56	34.6			809

Note 1: measurement uncertain.

OBSERVATIONS MADE AT LA PLATA BY N. CAMINO AND N. GONZALEZ ZERBO. REDUCED BY R. B. ORELLANA.

Object	Date	UT	R. A. (1950)		Decl.		O - C	Obs.
1	1979 09	01.34965	01 29	19.67	-06 02	02.4	0.0 0	839
1	1979 09	01.35590	01 29	19.57	-06 02	05.0	0.0 0	839
1	1979 09	01.36215	01 29	19.45	-06 02	06.7	0.0 0	839
1	1979 09	01.36840	01 29	19.32	-06 02	07.8	0.0 0	839
1	1979 10	17.21145	00 58	02.87	-09 33	17.5	0.0 0	839
1	1979 10	17.21631	00 58	02.62	-09 33	17.8	0.0 0	839
1	1979 10	17.22118	00 58	02.35	-09 33	18.7	0.0 0	839
5	1980 08	08.06319	19 21	01.68	-18 59	13.4	0.1- 0	839
5	1980 08	08.07361	19 21	01.31	-18 59	14.4	0.1- 0	839
5	1980 08	08.08403	19 21	00.91	-18 59	15.8	0.1- 0	839
7	1979 06	27.06632	15 04	35.17	-19 32	06.1	0.0 0	839
7	1979 06	27.07257	15 04	35.02	-19 32	04.9	0.0 0	839
7	1979 06	27.07882	15 04	34.88	-19 32	03.8	0.0 0	839
7	1979 06	27.08507	15 04	34.74	-19 32	02.0	0.0 0	839
16	1979 06	28.30972	21 13	31.68	-13 54	17.1	0.1- 0	839
16	1979 06	28.31528	21 13	31.57	-13 54	17.4	0.1- 0	839
16	1979 06	28.32083	21 13	31.50	-13 54	18.0	0.1- 0	839
16	1979 06	28.32639	21 13	31.42	-13 54	18.5	0.1- 0	839
16	1979 09	20.08750	20 26	15.63	-18 33	14.7	0.0 1-	839
16	1979 09	20.09514	20 26	15.62	-18 33	15.3	0.0 1-	839
16	1979 09	20.10278	20 26	15.58	-18 33	15.7	0.0 1-	839
20	1979 10	20.05312	22 53	50.33	-06 30	15.0	0.0 0	839
20	1979 10	20.06215	22 53	50.15	-06 30	16.6	0.0 0	839
20	1979 10	20.07118	22 53	49.97	-06 30	17.9	0.0 0	839
23	1979 08	19.24444	23 06	18.64	-21 49	18.1	0.1+ 0	839
23	1979 08	19.25625	23 06	18.11	-21 49	22.8	0.1+ 0	839
23	1979 10	09.01319	22 26	10.23	-24 21	36.3	0.0 0	839
23	1979 10	09.02708	22 26	09.81	-24 21	34.9	0.0 0	839
25	1979 03	01.11597	10 59	17.54	-19 24	54.3	0.0 0	839
25	1979 03	01.12847	10 59	16.84	-19 24	49.0	0.0 0	839
25	1979 03	01.13958	10 59	16.26	-19 24	44.3	0.0 0	839
26	1979 06	28.21285	18 39	12.62	-27 55	20.2	0.0 1+	839
26	1979 06	28.22118	18 39	12.13	-27 55	21.1	0.0 1+	839
26	1979 06	28.22951	18 39	11.62	-27 55	21.8	0.0 1+	839
35	1980 05	18.23333	17 42	50.48	-35 58	41.3	0.0 1-	839
35	1980 05	18.25138	17 42	49.74	-35 58	44.4	0.0 1-	839
37	1979 06	28.27326	20 43	02.93	-22 35	19.0	0.0 0	839
37	1979 06	28.28438	20 43	02.53	-22 35	21.1	0.0 0	839

37	1979	06	28.29549	20	43	02.14	-22	35	23.5	0.0	0	839
37	1979	09	12.05451	19	47	51.86	-24	37	45.6	0.0	0	839
37	1979	09	12.07257	19	47	51.69	-24	37	44.2	0.0	0	839
38	1979	03	31.20312	12	07	16.72	-12	24	37.1	0.0	0	839
38	1979	03	31.21562	12	07	16.07	-12	24	33.3	0.0	0	839
38	1979	03	31.22604	12	07	15.50	-12	24	30.2	0.0	0	839
38	1980	05	18.28437	18	39	48.74	-27	46	42.0	0.0	1+	839
38	1980	05	18.31562	18	39	47.85	-27	46	41.5	0.0	1+	839
44	1979	10	26.10764	23	56	30.03	-05	48	20.4	0.0	0	839
44	1979	10	26.11250	23	56	29.83	-05	48	21.3	0.0	0	839
44	1979	10	26.11736	23	56	29.67	-05	48	22.1	0.0	0	839
45	1979	09	01.25556	23	08	58.64	-08	21	21.7	0.0	0	839
45	1979	09	01.26736	23	08	58.04	-08	21	26.9	0.0	0	839
45	1979	10	17.01458	22	41	27.77	-12	22	52.7	0.0	0	839
45	1979	10	17.05486	22	41	27.25	-12	22	57.6	0.0	0	839
47	1979	10	13.04930	21	59	11.19	-14	39	02.8	0.0	1-	839
47	1979	10	13.06319	21	59	11.19	-14	39	00.5	0.0	1-	839
47	1979	10	13.08472	21	59	11.19	-14	38	57.8	0.0	1-	839
77	1979	08	21.02152	18	52	53.25	-25	58	45.3	0.0	0	839
77	1979	08	21.06944	18	52	52.75	-25	58	43.7	0.0	0	839
78	1979	09	12.13194	20	29	22.42	-22	23	49.6	0.0	0	839
89	1979	03	29.12188	11	50	36.62	-20	47	15.2	0.0	0	839
89	1979	03	29.13229	11	50	36.00	-20	47	13.0	0.0	0	839
89	1979	03	29.14168	11	50	35.42	-20	47	11.0	0.0	0	839
89	1980	08	08.14756	19	01	17.90	-29	29	58.7	0.0	0	839
89	1980	08	08.15312	19	01	17.61	-29	29	55.0	0.0	0	839
89	1980	08	08.15868	19	01	17.32	-29	29	52.0	0.0	0	839
97	1979	09	12.00625	20	19	44.11	-13	23	11.6	0.0	0	839
97	1979	09	12.01944	20	19	43.85	-13	23	16.3	0.0	0	839
97	1979	09	12.03125	20	19	43.64	-13	23	20.8	0.0	0	839
101	1979	04	24.17261	12	39	01.52	-14	48	10.1	0.0	0	839
101	1979	04	24.18645	12	39	00.79	-14	48	06.3	0.0	0	839
101	1979	04	24.20004	12	39	00.06	-14	48	02.7	0.0	0	839
103	1979	09	01.29410	23	58	14.58	-05	33	30.1	0.0	0	839
103	1979	09	01.30243	23	58	14.23	-05	33	33.8	0.0	0	839
103	1979	09	01.31076	23	58	13.88	-05	33	36.7	0.0	0	839
104	1979	06	28.27326	20	45	16.77	-21	56	39.6	0.0	1-	839
104	1979	06	28.28438	20	45	16.45	-21	56	41.2	0.0	1-	839
104	1979	06	28.29549	20	45	16.18	-21	56	42.9	0.0	1-	839
104	1979	09	21.01736	19	56	11.16	-24	19	25.2	0.1-	1+	839
104	1979	09	21.06250	19	56	11.23	-24	19	23.9	0.1-	1+	839
106	1979	06	13.95174	14	08	52.79	-11	16	07.0	0.0	1+	839
106	1979	06	13.98958	14	08	52.11	-11	16	07.4	0.0	1+	839
106	1980	08	02.10381	18	08	12.66	-27	31	52.3	0.0	1-	839
106	1980	08	02.12777	18	08	11.99	-27	31	51.7	0.0	1-	839
110	1979	06	24.07083	15	00	40.90	-18	02	16.9	0.0	0	839
110	1979	06	24.08333	15	00	40.62	-18	02	17.2	0.0	0	839
117	1979	09	14.04236	19	53	06.05	-33	15	28.8	0.0	1+	839
117	1979	09	14.06458	19	53	05.85	-33	15	20.0	0.0	1+	839
118	1979	06	14.97361	14	06	56.05	-13	26	56.1	0.2-	0	839
118	1979	06	14.99583	14	06	55.67	-13	26	56.4	0.2-	0	839
124	1979	09	02.32535	01	12	12.36	+07	50	38.7	0.0	0	839
124	1979	09	02.35382	01	12	11.76	+07	50	33.4	0.0	0	839
131	1979	06	12.95139	14	01	49.55	-10	29	13.5	0.0	1+	839
131	1979	06	12.97153	14	01	49.43	-10	29	16.8	0.0	1+	839
134	1979	08	19.05069	18	23	56.61	-36	23	29.6	0.0	0	839
134	1979	08	19.07083	18	23	56.27	-36	23	22.8	0.0	0	839
139	1980	09	04.11597	21	54	47.38	-21	47	25.5	0.0	1+	839
139	1980	09	04.13819	21	54	46.23	-21	47	27.6	0.0	1+	839

146	1979	10	16.12013	23	52	12.87	-21	28	18.8	0.1-	0	839
146	1979	10	16.13819	23	52	12.14	-21	28	17.8	0.1-	0	839
163	1979	09	14.10173	20	09	00.18	-17	29	41.7	0.1+	0	839
163	1979	09	14.13437	20	08	59.70	-17	29	46.4	0.1+	0	839
164	1979	09	16.22951	00	25	10.59	-54	36	02.5	0.0	0	839
164	1979	09	16.23646	00	25	10.24	-54	36	02.3	0.0	0	839
164	1979	09	16.24340	00	25	09.83	-54	36	02.0	0.0	0	839
164	1979	10	13.11979	24	01	30.83	-50	13	34.5	0.0	0	839
164	1979	10	13.12534	24	01	30.61	-50	13	28.2	0.0	0	839
164	1979	10	13.13090	24	01	30.42	-50	13	22.6	0.0	0	839
183	1979	09	14.22951	23	12	34.27	-26	53	43.3	0.0	0	839
183	1979	09	14.24410	23	12	33.64	-26	54	01.1	0.0	0	839
183	1979	10	16.05104	22	58	37.61	-33	59	59.3	0.1-	0	839
183	1979	10	16.07326	22	58	37.49	-34	00	07.0	0.1-	0	839
198	1979	06	15.02604	14	23	53.47	-22	02	54.2	0.0	0	839
198	1979	06	15.04618	14	23	52.96	-22	02	46.2	0.0	0	839
234	1979	10	17.24097	01	06	13.00	-19	38	54.1	0.1-	0	839
234	1979	10	17.25347	01	06	12.45	-19	38	59.0	0.1-	0	839
306	1979	09	14.19757	22	18	19.47	-15	23	01.0	0.2-	0	839
306	1979	09	14.20938	22	18	19.00	-15	23	06.4	0.2-	0	839
306	1979	09	21.17882	22	14	40.69	-16	09	30.9	0.1-	1-	839
306	1979	09	21.19618	22	14	40.15	-16	09	36.7	0.1-	1-	839
323	1979	10	16.16423	02	57	45.83	-37	18	16.4	0.0	0	839
323	1979	10	16.17673	02	57	45.13	-37	18	15.8	0.0	0	839
336	1979	05	31.97813	13	21	34.73	-10	33	48.5	0.2-	1+	839
336	1979	05	31.99340	13	21	34.65	-10	33	44.1	0.2-	1+	839
336	1979	06	01.00868	13	21	34.63	-10	33	40.3	0.2-	1+	839
337	1979	06	27.98333	14	36	26.70	-26	01	01.9	0.1-	0	839
337	1979	06	28.00555	14	36	26.62	-26	00	58.2	0.1-	0	839
344	1979	06	24.01910	14	45	58.67	-30	34	23.8	0.0	0	839
344	1979	06	24.02640	14	45	58.45	-30	34	27.5	0.0	0	839
344	1979	06	24.03299	14	45	58.25	-30	34	30.9	0.0	0	839
344	1979	06	24.03993	14	45	58.05	-30	34	34.7	0.0	0	839
345	1979	03	31.25521	12	13	51.03	-09	08	41.7	0.0	0	839
345	1979	03	31.26597	12	13	50.45	-09	08	34.8	0.0	0	839
346	1980	09	12.04236	20	35	49.08	-28	22	05.8	0.0	0	839
346	1980	09	12.06736	20	35	48.66	-28	22	05.8	0.0	0	839
352	1979	07	05.32847	21	18	56.40	-10	36	09.1	0.1-	0	839
352	1979	07	05.35208	21	18	55.86	-10	36	06.5	0.1-	0	839
354	1979	09	14.10173	20	13	28.84	-17	52	14.0	0.0	0	839
354	1979	09	14.13437	20	13	28.42	-17	52	24.6	0.0	0	839
360	1979	10	17.17152	00	24	59.85	-13	50	20.6	0.0	0	839
360	1979	10	17.18958	00	24	59.14	-13	50	25.3	0.0	0	839
380	1979	06	28.12361	17	32	51.56	-22	08	16.0	0.0	1+	839
380	1979	06	28.16111	17	32	49.37	-22	08	21.5	0.0	1+	839
386	1980	09	05.07326	22	16	51.52	-04	42	52.7	0.0	0	839
386	1980	09	05.08437	22	16	51.05	-04	43	01.6	0.0	0	839
388	1979	08	19.12188	19	41	21.32	-28	54	05.0	0.0	0	839
388	1979	08	19.13715	19	41	20.78	-28	54	03.5	0.0	0	839
404	1979	09	16.17708	22	21	12.72	-30	33	53.0	0.0	1-	839
404	1979	09	16.19722	22	21	11.76	-30	33	57.3	0.0	1-	839
410	1979	09	28.16493	00	04	40.28	-18	37	23.4	0.0	0	839
410	1979	09	28.18229	00	04	39.34	-18	37	26.6	0.0	0	839
411	1979	09	19.15694	23	48	49.46	-24	31	31.8	0.0	0	839
411	1979	09	19.18472	23	48	48.07	-24	31	41.5	0.0	0	839
419	1979	06	01.04542	14	08	58.25	-12	47	16.6	0.0	0	839
419	1979	06	01.05156	14	08	58.11	-12	47	15.1	0.0	0	839
422	1979	09	14.19757	22	22	04.47	-15	38	48.9	0.3-	2-	839
422	1979	09	14.20938	22	22	03.87	-15	38	47.0	0.3-	2-	839

422	1979	09	21.17882	22	17	31.27	-15	16	59.5	0.4-	2-	839
422	1979	09	21.19618	22	17	30.71	-15	16	55.5	0.4-	2-	839
464	1979	10	23.17986	02	13	10.28	-04	48	31.0	0.0	0	839
464	1979	10	23.19444	02	13	09.49	-04	48	33.0	0.0	0	839
464	1979	10	26.14028	02	10	36.16	-04	55	06.4	0.0	0	839
464	1979	10	26.15556	02	10	35.32	-04	55	08.4	0.0	0	839
465	1979	09	15.15417	21	29	31.94	-11	20	26.3	0.0	1+	839
465	1979	09	16.11111	21	29	03.28	-11	22	28.2	0.1+	1+	839
498	1979	08	21.07604	18	54	15.70	-29	24	32.5	0.1+	1-	839
498	1979	08	21.08715	18	54	15.71	-29	24	34.7	0.1+	1-	839
501	1979	10	20.09236	22	57	37.45	-06	22	11.0	0.0	0	839
501	1979	10	20.11736	22	57	36.70	-06	22	02.4	0.0	0	839
521	1979	06	28.12361	17	33	01.97	-22	42	07.7	0.1-	2-	839
521	1979	06	28.16111	17	32	59.79	-22	42	11.8	0.1-	2-	839
532	1979	09	14.16771	21	51	04.39	-29	29	51.5	0.0	0	839
532	1979	09	14.18090	21	51	03.88	-29	29	53.4	0.0	0	839
535	1979	09	20.14444	21	37	39.53	-24	04	04.2	0.0	0	839
535	1979	09	20.17292	21	37	38.66	-24	04	04.8	0.0	0	839
554	1980	09	04.07048	21	22	25.19	-12	31	34.7	0.0	1-	839
554	1980	09	04.08402	21	22	24.50	-12	31	38.2	0.0	1-	839
556	1979	03	29.04898	11	41	30.48	-07	24	40.7	0.6-	4+	839
556	1979	03	29.07118	11	41	29.29	-07	24	32.3	0.6-	4+	839
556	1979	04	21.04861	11	26	38.47	-05	17	14.9	0.6-	5+	839
556	1979	04	21.07644	11	26	37.80	-05	17	07.8	0.6-	5+	839
556	1979	04	24.11250	11	25	38.57	-05	03	40.3	0.6-	3+	839
556	1979	04	24.12991	11	25	38.20	-05	03	36.2	0.6-	3+	839
593	1979	08	29.23055	23	05	46.90	-32	44	41.4	0.1+	1-	839
593	1979	08	29.26388	23	05	45.04	-32	44	54.6	0.1+	1-	839
602	1979	07	05.25764	20	22	26.70	-34	43	39.2	0.1-	1-	839
602	1979	07	05.27847	20	22	25.55	-34	43	40.2	0.1-	1-	839
618	1979	08	21.02152	18	51	16.41	-24	55	25.2	0.0	1+	839
618	1979	08	21.06944	18	51	16.04	-24	55	31.6	0.0	1+	839
628	1979	08	21.18333	21	07	28.21	-25	28	23.7	0.0	0	839
628	1979	08	21.20208	21	07	27.25	-25	28	31.5	0.0	0	839
639	1979	04	21.12674	12	20	37.79	-15	20	30.1	0.1-	0	839
639	1979	04	21.15278	12	20	36.78	-15	20	21.7	0.1-	0	839
640	1979	06	26.98646	14	53	17.40	-14	48	12.5	0.2-	0	839
640	1979	06	27.02813	14	53	17.11	-14	48	02.6	0.2-	0	839
683	1979	03	01.19097	11	33	18.43	-26	03	47.8	0.0	0	839
683	1979	03	01.21356	11	33	17.34	-26	03	49.3	0.0	0	839
690	1979	03	08.11458	11	11	53.82	-11	20	34.5	0.0	0	839
690	1979	03	08.14409	11	11	52.51	-11	20	26.7	0.0	0	839
690	1979	03	25.14236	11	00	02.78	-09	53	26.0	0.1-	0	839
690	1979	03	25.17013	11	00	01.79	-09	53	17.0	0.1-	0	839
720	1979	09	12.13194	20	32	00.63	-22	09	41.4	0.1+	1+	839
762	1980	09	05.14861	22	16	38.87	-00	03	24.0	0.0	0	839
762	1980	09	05.18750	22	16	37.00	-00	03	30.2	0.0	0	839
770	1979	09	15.22708	00	19	07.79	-04	47	54.7	0.0	0	839
770	1979	09	15.25868	00	19	05.94	-04	48	03.2	0.0	0	839
770	1979	10	17.10243	23	49	01.51	-06	29	26.0	0.0	0	839
770	1979	10	17.13368	23	48	59.88	-06	29	26.9	0.0	0	839
895	1979	02	20.98819	08	25	10.07	-13	46	10.9	0.1-	1-	839
895	1979	03	08.00694	08	16	51.05	-12	48	55.8	0.1-	0	839
895	1979	03	08.02951	08	16	50.57	-12	48	50.6	0.1-	0	839
924	1979	09	21.09861	20	42	33.41	-17	04	51.0	0.0	0	839
924	1979	09	21.12847	20	42	33.27	-17	05	00.1	0.0	0	839
976	1979	03	31.06944	11	44	12.10	-09	26	01.3	0.2+	1-	839
976	1979	03	31.09895	11	44	10.80	-09	25	48.8	0.2+	1-	839
1621	1979	09	15.15417	21	33	22.59	-11	53	48.5	0.0	0	839

1715		1979	06	15.99548	14	31	44.81	-25	26	01.4	0.0	0	839
1715		1979	06	16.03304	14	31	44.30	-25	26	11.5	0.0	0	839
1979	MN9 *	1979	06	28.12361	17	28	19.40	-23	24	43.5			839
1979	MN9	1979	06	28.16111	17	28	17.68	-23	24	35.0			839
1979	ST4 *	1979	09	19.06111	19	24	53.01	-29	32	23.4			839
1979	ST4	1979	09	19.08263	19	24	52.74	-29	32	20.3			839

OBSERVATIONS MADE AT TOKAI BY T. FURUTA. IN PART FROM NIHONDAIRA OBS. CIRC.
NO. 1254.

Object	Date	UT	R. A. (1950)			Decl.			Mag.	Obs.	
207	1979	10	20.61887	01	12	25.89	+06	51	07.6	879	
207	1979	10	20.63102	01	12	25.14	+06	51	04.3	879	
2271	1981	11	28.58854	04	35	31.51	+17	09	42.3	15.5 879	
2271	1981	11	28.60451	04	35	30.47	+17	09	42.9	879	
2271	1981	11	29.50972	04	34	38.17	+17	08	12.6	16 879	
2271	1981	11	29.52361	04	34	39.17	+17	08	10.7	879	
2283	1981	11	28.55833	04	21	41.15	+12	31	51.3	879	
2283	1981	11	28.57188	04	21	40.21	+12	31	47.0	879	
2519	1981	11	18.56319	03	19	39.51	+16	30	18.6	879	
2519	1981	11	18.57708	03	19	38.83	+16	30	16.6	879	
1975	VW3	1982	01	02.73090	08	11	35.78	+33	26	03.2	16.5 879
1975	VW3	1982	01	02.74549	08	11	35.05	+33	26	07.7	879
1980	LB	1982	01	02.59688	07	23	18.54	+19	27	59.1	16.5 879
1980	LB	1982	01	02.60833	07	23	17.81	+19	28	10.5	879
1980	OH	1981	11	29.47951	03	13	53.93	+15	57	50.5	17 879
1980	OH	1981	11	29.49236	03	13	53.26	+15	57	49.4	879
1980	RX	1981	11	21.62049	05	01	20.95	+36	28	04.4	17 879
1980	RX	1981	11	21.63438	05	01	20.44	+36	28	02.8	879
1980	VF1 *	1980	11	08.55747	02	55	16.01	+09	49	31.5	17 879
1980	VF1	1980	11	08.57049	02	55	15.01	+09	49	33.7	879
1981	UC	1981	11	28.66007	03	06	53.89	+16	35	13.9	16 879
1981	UC	1981	11	28.67083	03	06	53.48	+16	35	11.8	879
1981	WA	1981	11	28.49167	02	16	37.53	+15	48	11.8	16.5 879
1981	WA	1981	11	28.50590	02	16	37.19	+15	48	04.4	879
1981	WA	1981	11	29.44826	02	16	13.81	+15	40	00.4	16.5 879
1981	WA	1981	11	29.46181	02	16	13.53	+15	39	55.6	879
1981	WB	1981	11	29.50972	04	33	39.93	+17	00	47.1	17 879
1981	WB	1981	11	29.52361	04	33	38.92	+17	00	42.2	879
1981	WC	1981	11	29.47951	03	15	47.32	+16	02	43.2	16.5 879
1981	WC	1981	11	29.49236	03	15	46.74	+16	02	44.1	879
1982	BA *	1982	01	17.52292	07	57	22.76	+10	28	17.6	16.5 879

* * * * *

ORBITAL ELEMENTS OF ONE-OPPOSITION MINOR PLANETS.

The orbit computers and authors of double designations are B = C. M. Bardwell, b = F. N. Bowman, E = E. Bowell, I = H. Oishi, M = B. G. Marsden, o = M. Okumura, P = O. Kippes, W = J. G. Williams. See also MPC 5833.

Planet	B(1,0)	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1930	XK	14.0	301210	57.40	352.15	4.76	6.61	0.1145	2.2158	3	3	B
1931	AM	13.0	310119	1.07	160.44	317.33	12.17	0.0881	3.0172	2	3	1 B
1948	RA	14.5	480906	359.65	11.23	330.67	3.98	0.0310	2.1775	2	3	1 M
1948	RC	14.0	480906	359.26	15.61	328.89	9.09	0.2990	2.8596	2	3	1 M
1948	RE	14.5	480906	1.04	122.35	220.45	2.69	0.1058	2.2712	2	3	B

1948	RG	13.5	480906	359.39	190.84	153.80	1.26	0.1433	3.0555	2	3	1	B
1959	CC1		590201	249.38	13.55	247.54	2.50	0.1463	2.1803	7	6		B
1969	TC3	12.0	691006	53.94	25.22	275.24	3.58	0.0917	3.4868	5	3		M
1974	FW1	14.5	740423	248.81	83.39	289.71	9.59	0.1104	2.7008	35	6	3	O
1979	HW1	13.0	790507	307.53	113.60	165.77	10.84	0.3024	3.0811	11	3	3	M
1981	CM	13.5	810225	147.04	211.60	134.69	10.91	0.0889	3.0058	28	0		M
1981	EU	14.5	810317	52.03	314.89	151.74	1.24	0.1621	3.0843	36	0		M
1981	EC2		810225	40.57	149.71	320.85	11.34	0.1433	2.6904	10	0		M
1981	ED2		810225	72.51	118.92	308.78	9.09	0.2074	3.1524	7	0		M
1981	EE2		810225	72.96	241.43	190.96	12.53	0.1544	2.6804	9	0		M
1981	EF2		810225	252.26	333.64	300.28	6.55	0.0273	2.4290	9	0		M
1981	JE	13.5	810516	297.14	55.49	249.73	4.19	0.1796	2.4989	3	4		B
1981	JG	14.0	810516	16.65	327.81	231.31	8.92	0.1782	3.0879	3	4		B
1981	JH	15.0	810516	299.16	251.16	46.37	4.05	0.1050	2.1773	3	5	1	B
1981	JJ	13.5	810516	2.92	183.36	37.46	1.28	0.1195	3.1317	3	6	1	B
1981	JM	13.0	810516	50.52	27.21	136.64	2.33	0.1198	3.1096	32	7		B
1981	JN	13.0	810516	76.71	277.13	215.56	13.10	0.1591	2.6163	32	8		B
1981	JQ	14.0	810516	73.70	98.64	34.42	6.58	0.1996	2.5893	32	6		B
1981	OH	15.0	810804	346.19	201.38	138.97	14.87	0.2328	2.3257	61	8		M
1981	PK	14.0	810804	337.30	82.11	274.98	11.86	0.2729	2.5878	53	8		M
1981	PL	12.5	810804	264.40	171.57	258.60	10.19	0.1443	2.5779	53	0		M
1981	QC	14.5	810913	331.82	332.66	65.51	25.60	0.2197	2.3429	50	0		B
1981	QD	15.5	810913	11.17	8.26	327.88	2.66	0.2091	2.4179	36	0	3	M
1981	QF	15.5	810913	356.13	19.59	341.40	3.63	0.2456	2.5543	36	9	3	M
1981	QG	14.0	811003	19.10	342.99	349.76	1.19	0.1890	3.0626	36	0		M
1981	QJ	14.0	811003	342.43	359.59	28.45	1.05	0.1903	3.1266	36	0		M
1981	QM	15.0	811003	16.57	120.67	194.08	3.08	0.3306	2.3957	81	9		W
1981	QJ1	14.0	811003	276.26	81.17	338.45	19.84	0.1197	3.0724	59	0		B
1981	QE2	15.5	810913	13.44	174.00	151.75	7.56	0.2254	2.2978	35	0	3	M
1981	RF	15.0	811003	3.26	238.96	117.49	3.42	0.1896	2.4334	36	0		M
1981	RG1	15.0	811112	25.94	353.56	6.68	6.48	0.1905	2.2750	75	6		M
1981	SC	14.5	811023	281.19	95.79	2.71	14.85	0.1181	2.5988	86	7		B
1981	SN	15.0	811003	2.96	149.63	216.42	4.98	0.1641	2.4619	15	8		M
1981	ST	13.0	811003	348.05	199.57	175.36	15.41	0.0766	3.1050	13	0		M
1981	SH1	15.7	811003	350.33	22.50	9.63	5.11	0.3144	2.4996	37	6		E
1981	SM1	13.5	811112	4.59	250.89	127.32	1.89	0.1858	3.1394	55	8		M
1981	SW1	14.5	811003	5.92	144.01	217.72	5.27	0.1479	2.5306	12	6	2	M
1981	SD2	15.0	811003	352.90	337.08	35.66	6.17	0.1302	2.3547	10	8		M
1981	TJ	14.0	811003	6.08	133.07	229.75	4.54	0.0882	2.8025	15	8		M
1981	TK	15.5	811003	345.69	27.09	7.92	24.47	0.2494	2.3532	85	0		M
1981	TM	13.4	811023	52.95	187.99	150.09	16.96	0.1675	2.5320	50	6		E
1981	TW	13.0	811003	0.61	50.45	307.50	2.20	0.0522	3.0170	10	6	1	M
1981	UC	15.5	811112	42.38	284.08	66.58	2.87	0.1949	2.2282	67	0		M
1981	UL	14.0	811112	301.92	214.13	257.54	11.86	0.1298	2.6083	29	6		M
1981	UN	14.5	811112	27.72	128.02	244.42	1.84	0.0932	2.2326	37	0	3	M
1981	VB	14.0	811112	59.65	170.69	160.67	5.91	0.0798	2.7457	50	9		M
1981	VO	14.0	811112	35.14	259.80	88.02	3.46	0.2350	2.6443	30	8		M
1981	VS	13.5	811202	359.42	203.60	206.58	8.93	0.2891	2.7713	43	8		M
1981	WA	13.0	811202	16.73	152.35	233.29	13.36	0.1556	2.9766	42	0		M
1981	WC	14.0	811202	23.29	307.04	64.57	9.53	0.3360	3.0710	26	0		M
1981	WH	14.9	811202	2.45	272.56	136.09	4.03	0.2833	2.3733	28	6		E
1981	WL	16.0	811112	309.21	39.50	83.48	4.03	0.1729	2.8331	4	3	1	M
1981	WM	15.0	811202	341.21	4.32	77.59	5.03	0.0638	2.3844	26	5		M
1981	WR	14.6	811202	333.19	335.87	112.04	4.41	0.0787	2.2752	26	5		E
1981	WT	13.0	811202	345.67	326.06	111.77	2.77	0.1767	3.0852	53	0		M
1981	WU	15.0	811202	19.51	244.90	147.00	3.13	0.1679	2.2525	42	0		M
1981	WZ	12.5	811202	318.39	240.28	232.50	14.80	0.1444	3.1463	53	0		M
1981	WA1	15.0	811202	348.33	243.48	193.39	5.37	0.1559	2.2668	42	0		M
1981	WC1	14.0	811202	44.79	259.18	73.48	6.66	0.3843	2.7568	36	8		M

1981 WE1	14.5	811202	15.71	189.61	201.24	10.57	0.2794	2.7752	24 6	E
1981 WN1	14.5	811112	299.64	21.40	94.51	6.10	0.0344	2.1539	2 5	M
1981 WO1	15.5	811202	319.47	248.90	234.85	19.22	0.0842	1.7946	40 7	M
1981 WS1	16.0	811112	356.34	345.86	70.14	4.00	0.0276	2.1812	2 3 1	M
1981 WT1		811112	26.47	152.39	220.29	9.06	0.0914	3.0203	11 6	M
1981 WV1	13.5	811112	46.45	26.57	329.33	1.28	0.0412	2.8909	11 6	M
1981 WL2	17.0	811222	38.65	339.38	42.61	26.91	0.0930	1.8259	40 0	M
1981 XA	15.5	811202	348.96	3.02	76.44	21.02	0.2034	2.0094	79 9	M
1981 XC	13.6	811202	63.77	321.57	5.89	4.56	0.1794	2.3917	28 6	M
1981 XD	13.3	811202	60.53	324.21	9.09	4.82	0.1655	2.3504	28 6	M
1981 YB	12.5	811222	11.03	331.52	79.37	15.41	0.1414	2.6051	27 0	M
1981 YC	14.3	811222	145.30	33.93	245.09	21.79	0.0834	1.8639	27 6	E
1981 YE	14.1	811222	271.02	145.36	45.36	3.94	0.1273	2.3759	27 6	E
1981 YH	15.5	811222	329.15	206.34	284.38	7.47	0.1602	2.7492	10 8	M
1981 YA1		811222	41.49	101.31	291.51	8.42	0.2122	2.5953	8 7	M
1981 YB1		811222	177.59	314.93	326.43	2.08	0.0404	2.4985	7 5 1	M
1981 YC1		811222	44.66	319.63	72.80	6.50	0.2091	2.3098	3 4	M
1981 YD1		811222	177.74	276.16	4.37	4.19	0.0161	2.7718	3 4 1	M

Note 1: e assumed. 2: correction to MPC 6514. 3: double designations 1974
 FW1 = 1974 HO3 (I, JAM 974); 1979 HW1 = 1979 JD (P); 1981 QD = 1981 SR
 (M); 1981 QF = 1981 SS (b); 1981 QE2 = 1981 RS (E); 1981 UN = 1981 XE (M).

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ORBITAL ELEMENTS BY L. D. SCHMADEL, ASTRONOMISCHES RECHEN-INSTITUT.

(10) Hygiea

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M 289.67378		(1950.0)		P		Q
n 0.17751866	Peri.	317.98821		-0.48163028		+0.87394890
a 3.1354993	Node	283.12433		-0.78515138		-0.46333145
e 0.1195655	Incl.	3.83629		-0.38931939		-0.14675590
P 5.55	B(1,0)	10.7				

From 634 observations at 41 oppositions 1901-1980, mean residual 1".9.

(829) Academia

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M 284.02998		(1950.0)		P		Q
n 0.23791140	Peri.	41.29793		+0.83238830		-0.55385068
a 2.5794427	Node	352.26053		+0.46287527		+0.71412271
e 0.0991036	Incl.	8.31348		+0.30475598		+0.42811001
P 4.14	B(1,0)	12.0				

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

140228	024	0.4+	1.3-	520423	711	(4.2+ 8.0-)	Y	660921	012	0.4-	1.3-
160831	024	(16.3+ 3.9+)		520427	760	0.5+ 0.7+		661018	095	2.3+	0.4+
160902	024	0.1-	1.7+	530706	078	0.5+ 1.6-		690508	076	2.3+	0.2+
291122	024	0.4+	1.3+	560411	330	0.1-	1.1-	690512	805	1.2-	0.6-
291205	024	5.0-	0.6-	570804	839	(1.1+ 5.6-)	X	730503	076	0.5+	1.0+
310420	024	3.5-	0.7-	581211	690	(1.9+ 17.8-)	X	740822	095	3.1+	2.5-
390210	062	(5.5+ 12.3+)	X	581213	690	(0.03+ 0.00)	X	770421	076	0.4-	0.8+
390213	062	(25.7- 10.8+)	X	600306	760	1.9-	0.3-	780710	414	0.1-	0.0
390311	029	(0.01+ 0.03+)	X	600325	839	1.8-	0.4-	780710	414	0.2-	0.4-
410926	078	(0.00 0.29-)	X	600325	839	1.8-	0.4-	780725	414	1.0-	0.1-
430226	062	(0.02+ 0.01-)	X	600327	760	(0.03- 0.01-)	X	780725	414	0.8-	0.3+
440514	078	(0.01+ 0.04-)	X	600420	760	(0.11- 0.02+)	X	780728	414	1.3-	0.0
480502	078	(0.02+ 0.00)	X	610612	076	0.2-	3.3+	780728	414	1.7-	0.6-
510108	711	(2.2- 16.7-)	Y	621119	388	(0.03- 0.16+)	X	780730	414	0.5-	0.9-
520416	078	(0.01+ 0.00)	X	640316	760	(0.04- 0.02+)	X	780730	414	0.3-	0.7-
520420	020	(0.11+ 0.04+)	X	660919	095	1.5+	0.6-				

(2526)* 1979 KX = 1973 DF = 1971 SZ2

Discovered 1979 May 19 by R. M. West at the European Southern Observatory. The key identification 1979 KX = 1973 DF is by T. Urata (MPC 6517). The identification 1979 KX = 1971 SZ2 is by R. M. West.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	309.60231		(1950.0)		P		Q
n	0.17802971	Peri.	62.71719		+0.18466164		-0.98266469
a	3.1294959	Node	16.66583		+0.88017917		+0.15791538
e	0.1871527	Incl.	3.28575		+0.43724673		+0.09712284
P	5.54	B(1,0)	13.5				

Residuals in seconds of arc

710927	095	0.1+	0.3-	730227	029	0.8+	1.8-	790519	809	0.3-	0.5-
711012	095	0.0	0.1-	730309	029	0.2-	0.8+	790521	809	0.2+	0.2+
730227	029	0.6-	1.1+	790331	095	0.4-	0.3-	790523	809	0.1-	0.1-

(2527)* 1981 RE = 1950 RE1 = 1954 TA = 1954 UT = 1962 WU1 = 1977 RK1
= 1980 KC

Discovered 1981 Sept. 3 by N. G. Thomas at the Lowell Observatory's Anderson Mesa station. The identifications are by L. D. Schmadel.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	79.84705		(1950.0)		P		Q
n	0.25460389	Peri.	177.63147		+0.99781627		-0.06586963
a	2.4654301	Node	186.15171		+0.05982274		+0.93262019
e	0.1853784	Incl.	2.61401		+0.02799882		+0.35479680
P	3.87	B(1,0)	14.5				

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

500914	711	(1.0+	2.1-)Y	800522	809	0.6+	1.1-	810921	046	(4.0-	1.7+)Y
541003	012	0.0	1.0+	800522	809	0.7+	0.5-	810921	046	(5.7-	0.2-)Y
541022	760	(0.02+	0.01+)X	800522	809	0.2+	0.5-	810922	046	0.5-	0.2-
621130	760	3.6-	1.6-	800523	809	1.1+	1.1-	810922	046	0.5+	0.0
621130	760	1.2+	0.6-	800523	809	0.7+	0.9-	810925	688	0.1+	2.3-
621203	760	2.3+	0.5-	800524	809	1.4-	4.0-	810925	688	1.2+	2.3-
621203	760	(0.03+	0.00-)	800524	809	2.9-	1.3-	810925	046	1.6-	0.5-
770908	095	1.1-	1.1+	810830	688	0.4+	0.4+	810925	046	1.3-	0.5-
800521	809	1.2-	2.2+	810830	688	0.7+	1.5+	811005	046	0.3-	0.6+
800521	809	0.1-	1.6+	810903	688	1.4+	0.0	811005	046	0.7+	1.2+
800521	809	1.1 +	1.2+	810903	688	0.9+	1.0-				

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ORBITAL ELEMENTS BY S. NAKANO, SUMOTO, JAPAN.

The identifications are by T. Urata unless otherwise stated.

(2528)* 1953 TF1 = 1933 BQ = 1936 SK = 1942 VJ = 1970 SL1 = 1970 WE1
= 1975 RQ

Discovered 1953 Oct. 8 at the Goethe Link Observatory, Indiana University. The identifications 1953 TF1 = 1933 BQ = 1936 SK = 1942 VJ are by S. Nakano.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	77.92752		(1950.0)		P		Q
n	0.17719018	Peri.	185.69939		+0.97763685		+0,21028274
a	3.1393732	Node	162.16098		-0.19258557		+0.90039362
e	0.1813776	Incl.	0.50745		-0.08448070		+0.38088384
P	5.56	B(1,0)	12.8				

Residuals in seconds of arc

330129	024	0.4+	1.6 +	531010	760	0.4+	0.3-	701126	095	1.7+	1.1-
360917	078	(51.1+	44.5-)X	531015	760	1.7+	0.8-	750903	095	3.5-	0.4-
421105	062	(51.6+	24.1-)X	531015	760	4.4+	2.1+	750906	095	1.6+	0.7-
531008	760	0.7-	1.5+	531030	760	0.3-	0.9-	750909	808	1.4+	0.7+
531008	760	3.0-	0.2-	531030	760	3.0-	0.2-	750909	808	0.2+	1.5+
531010	760	0.2+	1.4-	700930	095	1.5-	0.8+				

(2529)* 1977 QL2 = 1953 TK1 = 1969 TX2 = 1973 TO

Discovered 1977 Aug. 21 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	103.71375		(1950.0)		P		Q
n	0.24445545	Peri.	114.78999		+0.78526011		+0.61818376
a	2.5332005	Node	207.06725		-0.59212484		+0.73331541
e	0.0970394	Incl.	4.39403		-0.18098270		+0.28301474
P	4.03	B(1,0)	14.3				

Residuals in seconds of arc

531008	760	0.6+	0.3-	770909	095	0.3-	0.1-	810901	704	2.3+	2.8-
531008	760	1.1-	1.8+	810829	046	2.3+	0.6-	810921	801	0.1+	2.8+
691009	095	1.4-	0.5+	810829	046	3.0-	1.9-	810926	372	1.3-	3.3-
731001	095	5.1+	6.2-	810829	801	2.2-	0.4-	810926	372	3.8-	3.8+
770821	095	1.1-	0.4+	810830	704	1.4+	3.2+				
770823	095	1.0-	1.1+	810831	704	3.2+	0.8-				

(2530)* 1978 NC3 = 1963 UN = 1968 QC1 = 1973 SM3

Discovered 1978 July 9 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	240.44557		(1950.0)		P		Q
n	0.18735578	Peri.	153.72387		+0.98911104		+0.13605114
a	3.0247628	Node	198.71315		-0.14562920		+0.95984954
e	0.1214493	Incl.	10.07402		+0.02124801		+0.24531397
P	5.26	B(1,0)	13.0				

Residuals in seconds of arc

631022	760	0.9+	2.4+	780709	095	0.9-	0.5+	810128	372	0.5-	1.0-
631022	760	1.4-	0.3-	780711	095	0.4-	0.1-	810210	801	1.2+	0.2 +
680827	095	0.3-	0.8+	780809	095	0.7+	1.1+				
730924	095	1.8+	5.5-	810128	372	1.2-	1.6-				

(2531)* 1980 LD = A916 FE = 1931 AP = 1942 EQ = 1963 FK = 1974 KH

Discovered 1980 June 11 by E. Bowell at the Anderson Mesa station of the Lowell Observatory. The identifications 1980 LD = A916 FE = 1931 AP = 1942 EQ are by S. Nakano. The identification 1980 LD = 1942 EQ was found independently by E. Bowell.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	306.14280		(1950.0)		P		Q
n	0.18869832	Peri.	29.03384		-0.67768136		-0.71150555
a	3.0103988	Node	104.31230		+0.63220015		-0.69274773
e	0.0523514	Incl.	11.05278		+0.37559412		-0.11773034
P	5.22	B(1,0)	12.0				

Residuals in seconds of arc

160327	094(92.4-	33.6+)X	800614	688	0.0	1.5-	800804	688	0.1+	0.9+
310111	690 (2.4-	0.7-)X	800614	688	0.0	2.6-	800902	688	3.0+	6.2+
310113	690(55.3-	4.6+)X	800617	688	0.7-	2.1-	810830	688	0.1-	2.0-
420322	012(65.3-	34.0+)X	800618	688	1.2-	0.7-	810830	688	0.3-	1.8-
630328	760(50.7+	52.9+)X	800705	688	0.5-	1.2-	810926	372	0.5+	0.8+
740524	095 0.9+	2.4+	800717	688	0.9+	0.3+	810926	372	0.4+	2.5+
800611	688 0.6-	0.2+	800717	688	0.3-	0.7-	811004	801	0.6-	1.0+

(2532)* 1980 TU5 = 1951 WY = 1958 RD = 1962 XS = 1969 TX3 = 1973 YG1

Discovered 1980 Oct. 9 by C. S. Shoemaker on plates taken at Palomar by E. Helin and S. J. Bus.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M 199.06762	(1950.0)	P	Q
n 0.26971108	Peri. 7.27308	+0.99048511	+0.13618734
a 2.3724853	Node 344.85650	-0.12976896	+0.87634490
e 0.1720178	Incl. 4.34794	-0.04581763	+0.46203098
P 3.65	B(1,0) 13.9		

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

511129	711 1.2-	4.5+ Y	691011	095	3.3+	2.1-	801008	675	3.0-	1.2+
580913	024 1.8+	0.8-	691014	095	5.0+	1.7-	801009	675	1.6-	3.2+
581008	024 3.6-	1.8-	731220	095	0.4-	0.5+	801105	675	1.6-	0.8+
621202	760(0.06+	0.00+)X	731221	095	1.6+	6.2-	801107	675	0.1-	0.7+

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

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

(2533)* A905 VA = 1948 RB = 1952 KW = 1954 UD3 = 1961 AO = 1965 XC
= 1970 QG1 = 1972 BD = 1976 YT = 1981 SK1

Discovered 1905 Nov. 3 by M. Wolf at Heidelberg. The key identifications A905 VA = 1965 XC = 1981 SK1 are by E. Bowell. The identification 1969 TC3 = 1972 BD (MPC 4090) is invalid.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M 25.15148	(1950.0)	P	Q
n 0.18125277	Peri. 218.85032	+0.48869599	-0.87239504
a 3.0922857	Node 201.90047	+0.80706316	+0.45645838
e 0.1748162	Incl. 1.56004	+0.33139897	+0.17485031
P 5.44	B(1,0) 12.5		

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

051104	024(13.0+	3.4+)	610113	690	3.1+	2.7-	811004	688	1.3+	1.1+
051120	024 2.3-	0.5+	651213	330	0.6+	3.0+	811004	688	0.5+	0.4+
051130	024 2.1-	7.3+	651218	330	0.2-	0.3+	811102	688	0.7-	4.4-
480907	690 1.8+	0.3+	700831	095	1.6-	0.9+	811102	688	1.2-	4.3-
480908	690 3.2+	0.5+	720117	095	3.8-	2.0-	811102	688	0.6+	1.6-
480909	690 (5.9-	1.6+)	761216	095	2.0+	1.2+	811102	688	1.8+	2.2-
520524	711(0.08-	0.00+)Y	761218	095	1.6-	0.2+	811120	688	0.8-	2.2-
520524	711(0.08-	0.00-)Y	761220	095	0.6+	0.1+	811120	688	0.6-	2.3-
541030	330 0.2-	11.7+	810926	688	1.0+	1.6+				
610113	690 2.3+	2.4-	810926	688	2.8-	0.6+				

(2534)* 1931 VD = 1936 PP = 1950 AC = 1952 MQ = 1957 HM = 1969 OL
 = 1970 RL = 1975 NF1 = 1976 YK = 1981 QL

Discovered 1931 Nov. 2 by E. Delporte at Uccle. The key identification
 1931 VD = 1981 QL is by E. Bowell. The identification 1973 FR1 = 1969 OL
 (NOC 994) is invalid.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	51.28235	(1950.0)	P	Q
n	0.17749535	Peri. 203.28439	+0.98178162	-0.18998904
a	3.1357738	Node 167.66662	+0.17646191	+0.90578853
e	0.1831819	Incl. 0.80576	+0.07047021	+0.37874964
P	5.55	B(1,0) 12.5		

Residuals in seconds of arc

311031	690	2.2-	3.3-	500115	760	1.3-	2.2+	750712	095	0.2+	0.7+
311102	022(76.4-	12.1+)X		500116	760	1.5+	0.4-	750713	095	0.5+	1.6+
311102	012	2.6+	4.8+	500116	760	1.5+	1.5-	761216	095	4.2-	1.3-
311103	690	2.3-	1.5-	520628	839	0.3-	0.2-	761218	095	1.5+	1.0-
311106	690	1.5-	1.5-	520628	839	0.4-	0.1-	761220	095	1.8+	0.2+
311107	012	0.1-	4.8+	570424	076(47.8-	52.5-)X		810830	688	0.1-	3.1-
311111	012	1.1+	0.3+	690717	095	0.2-	1.1-	810830	688	1.8-	3.8-
311117	012	(0.2+	9.4-)	700909	095	3.1+	2.7+	811005	688	0.7-	1.1+
360813	078(68.7+	43.7-)X		750711	095	2.2-	1.9+	811005	688	3.1+	0.7-

(2535)* 1939 DH = 1949 EF = 1954 UN = 1959 CB = 1964 TR = 1969 AZ
 = 1977 QQ4 = 1981 WV

Discovered 1939 Feb. 17 by Y. Vaisala at Turku. The key identification
 1939 DH = 1981 WV is by E. Bowell.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	21.77198	(1950.0)	P	Q
n	0.29409853	Peri. 308.57112	-0.51495419	-0.85718129
a	2.2394471	Node 172.41091	+0.80388096	-0.48609310
e	0.0797653	Incl. 3.42959	+0.29765344	-0.17015797
P	3.35	B(1,0) 13.5		

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

390215	062	1.5+	0.6+	590203	024	0.4+	0.8+	811124	688	0.7-	0.6-
390217	062	0.8-	1.7+	590207	690	0.1-	0.1+	811128	046	1.9-	3.0+
390222	094(75.8+	25.0+)X		590211	690	1.9+	0.3+	811128	046	2.6+	4.0+
390322	062	1.6+	0.1-	641014	760(48.4+	2.2-)X		811202	688	0.6-	0.5-
490304	094(22.3-	99.6+)X		690115	095	2.3-	2.7+	811202	688	0.5-	0.4-
541022	760(0.12+	0.00-)X		770818	095	1.3-	5.7+	811220	688	0.6+	0.1-
590131	690	2.1+	1.9-	811117	046	3.6-	0.3-	811220	688	0.4+	0.7-
590201	690	1.1+	0.1+	811117	046	0.4+	1.1+	811230	688	0.7+	1.0-
590201	690	1.5+	0.5+	811123	046	0.7-	1.3-	811230	688	0.5-	0.7+
590202	690	(1.1-	1.0-)Y	811123	046	0.3-	1.6-				
590202	690	0.4+	1.0+	811124	688	0.2-	0.4-				

(2536)* 1939 PJ = 1943 YB = 1943 YC = 1949 KV = 1967 PC = 1974 QQ
 = 1981 RK

Discovered 1939 Aug. 15 by G. Neujmin at Simeis. The key identifica-
 tions 1939 PJ = 1974 QQ = 1981 RK are by E. Bowell. The double designation
 1943 YB = 1943 YC was suggested on MPC 1276.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	75.59006	(1950.0)	P	Q
n	0.28151286	Peri. 89.85753	+0.99294054	-0.08323826
a	2.3057058	Node 274.91668	+0.04232877	+0.91416921
e	0.2282447	Incl. 4.86530	+0.11080328	+0.39669388
P	3.50	B(1,0) 14.5		

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

390815	094	5.4+	2.5-	431229	119	(12.5-	18.8+)	X	740912	095	2.6	2.1-
390822	094	3.2-	3.0+	490531	760	0.8-	0.1+		810904	688	0.5-	0.6+
390905	094	4.5-	0.9+	490531	760	0.5+	0.0		810904	688	0.7-	0.2-
390911	094	2.2+	2.5-	670814	095	1.9+	0.3-		810925	688	0.5-	0.0
390915	094	1.7-	3.0-	740820	095	1.5-	3.7-		810925	688	0.6-	0.2-
391011	094	(55.6-	22.3+)	X	740821	095	1.8+	0.8+				
431227	119	(0.03+	0.01+)	X	740910	095	0.2+	5.2+				

(2537)* 1951 RL = 1977 QP2

Discovered 1951 Sept. 4 by K. Reinmuth at Heidelberg. The identification was found independently by C. M. Bardwell, O. Kippes and B. G. Marsden (MPC 5414).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	48.40573		(1950.0)		P		Q
n	0.22766263	Peri.	18.21781		+0.98915726		+0.11151386
a	2.6562863	Node	334.78467		-0.14628381		+0.80573302
e	0.1724295	Incl.	12.96281		+0.01299833		+0.58168629
P	4.33	B(1,0)	13.5				

Residuals in seconds of arc

510904	024	1.6+	0.1+	770821	095	0.3-	0.4-		810803	474	2.1-	1.9+
510905	024	2.8-	0.4+	770823	095	0.1+	0.0		810830	474	1.7+	2.2-
510906	024	2.8+	0.6-	770909	095	0.4-	1.2+		810830	474	2.2+	1.6-
511004	024	1.3-	0.2-	810803	474	1.4-	1.0+					

(2538)* 1954 UD = 1969 EK1 = 1976 GN7 = 1979 DQ = 1979 FW2 = 1981 WQ1

Discovered 1954 Oct. 30 by S. Arend at Uccle. The key identification 1954 UD = 1981 WQ1 is by E. Bowell. The identification 1932 CK = 1954 UD (MPC 2567) is invalid.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	77.48722		(1950.0)		P		Q
n	0.29415278	Peri.	28.14417		+0.20722718		-0.97621836
a	2.2391718	Node	49.96919		+0.88119290		+0.15799202
e	0.1295950	Incl.	4.77025		+0.42491877		+0.148446 09
P	3.35	B(1,0)	14.5				

Residuals in seconds of arc

541028	760	3.7+	1.0+	541117	760	3.9-	1.1+		811124	688	1.4+	1.6-
541028	760	5.1+	0.2-	541118	210	(43.1+	3.2-)	X	811124	688	0.4+	1.8-
541030	012	0.8+	1.9+	690313	095	0.2-	2.0+		811202	688	0.1+	1.8-
541116	760	1.3-	1.0+	760404	095	1.0-	1.0-		811220	688	2.0-	1.2-
541116	760	2.3-	0.2-	790227	330	1.8+	0.3+		811230	688	0.5-	0.8+
541117	760	3.9-	0.5+	790331	095	0.7+	1.3+		811230	688	0.4+	0.4-

(2539)* 1964 TS2 = 1974 QC = 1981 SF1

Discovered 1964 Oct. 8 at the Purple Mountain Observatory. The key identification 1964 TS2 = 1981 SF1 is by E. Bowell.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	67.64227		(1950.0)		P		Q
n	0.28973572	Peri.	214.40373		+0.67771235		-0.73516229
a	2.2618720	Node	192.95496		+0.68926707		+0.64249434
e	0.1692638	Incl.	3.98209		+0.25615790		+0.21618840
P	3.40	B(1,0)	15.5				

Residuals in seconds of arc

641008	330	2.6+	3.3+	740817	808	0.3-	1.1-		811004	688	1.8+	0.2-
641030	330	4.3-	2.0+	740818	808	0.8+	1.9-		811102	688	0.6+	2.2-
641101	330	2.1-	1.6+	740818	808	0.6+	0.7-		811102	688	0.7-	0.6-
740816	808	0.3-	1.2+	810926	688	0.0	1.8+		811102	688	0.7-	0.6-
740816	808	0.6+	1.0+	810926	688	1.9-	1.9-		811102	688	1.8+	1.8-
740817	808	0.4+	1.1+	811004	688	0.0	0.6-					

(2540)* 1971 TH2 = 1950 ED = 1957 JQ = 1960 FK = 1968 UZ = 1980 LN
= 1981 UQ

Discovered 1971 Oct. 13 by L. I. Chernykh at the Crimean Astrophysical Observatory. The identification 1980 LN = 1981 UQ was found independently by C. M. Bardwell.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	51.14876		(1950.0)		P		Q
n	0.30282280	Peri.	260.57396		+0.11081457		-0.99384040
a	2.1962259	Node	183.06451		+0.92023098		+0.10305529
e	0.0513038	Incl.	1.26471		+0.37535991		+0.04075376
P	3.25	B(1,0)	14.5				

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

500308	024	0.1+	1.7+	711015	095	0.7-	1.9+	811025	046	0.1-	1.9-
500322	024	1.1-	2.7-	711020	095	1.3-	1.1-	811025	046	0.4+	2.7-
570501	839	1.8+	0.3-	800610	675	(5.2-	1.9-)	811117	046	0.7-	0.2-
600328	760	(0.03-	0.01-)	800611	675	0.9+	0.4+	811117	046	0.9-	2.1+
681022	095	3.9+	1.3-	800612	675	2.0+	0.6+	811123	046	0.8+	1.4-
681026	095	1.0-	2.6-	800618	675	0.5-	1.7-	811123	046	0.5+	1.5-
711013	095	0.8+	1.0+	800619	675	1.4+	0.2-	811128	046	2.4+	1.7-
711014	095	0.4-	1.6+	800620	675	0.8-	0.4+	811128	046	0.9-	4.8-

(2541)* 1973 DE = 1951 WE2 = 1976 UQ5 = 1978 EX5 = 1981 WW1

Discovered 1973 Feb. 27 by L. Kohoutek at Bergedorf.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	56.44048		(1950.0)		P		Q
n	0.19606453	Peri.	326.82468		+0.72204953		-0.68969560
a	2.9345174	Node	76.88230		+0.64627189		+0.64430894
e	0.0823485	Incl.	3.20483		+0.24693544		+0.33043299
P	5.03	B(1,0)	13.5				

Residuals in seconds of arc

511129	711	0.7-	0.1+	Y	761030	095	4.5+	2.3-	811123	046	0.7-	2.1-
730227	029	0.6+	0.7+		780306	095	1.9+	4.4-	811128	046	1.0+	0.4-
730227	029	0.8-	0.0		811117	046	2.6-	0.2-	811128	046	3.3-	2.1-
730309	029	0.0	0.3-		811117	046	0.1+	2.3+				
730321	029	0.8+	0.3-		811123	046	1.7+	0.3-				

(2542)* 1980 CF = 1972 XN2 = 1976 OE

Discovered 1980 Feb. 11 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory. The identifications 1980 CF = 1972 XN2 and 1980 CF = 1976 OE are by E. Bowell and C. M. Bardwell, respectively (MPC 5352).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	141.14894		(1950.0)		P		Q
n	0.17864159	Peri.	36.26528		-0.99804925		+0.04329704
a	3.1223458	Node	146.13217		-0.05590319		-0.94052267
e	0.0876214	Incl.	4.62943		+0.02779446		-0.33696062
P	5.52	B(1,0)	12.5				

Residuals in seconds of arc

721202	095	1.3-	4.7-		800314	688	0.9+	1.6+	800420	801	0.8-	3.2+
721206	095	2.7+	0.7+		800314	688	0.5-	0.7-	800508	688	0.4-	1.4+
760727	095	0.3-	2.5+		800316	688	0.4+	1.3-	810505	688	2.0+	0.4-
800211	688	0.7+	0.6+		800316	688	0.3-	1.0-	810505	688	2.2-	0.0
800211	688	1.2-	1.2-		800321	688	0.1-	0.2-	810508	688	1.1-	2.2-
800313	688	0.3-	0.1-		800321	688	0.4+	0.5-	810508	688	1.5+	2.0-
800313	688	0.7+	0.3-		800414	688	0.2+	0.7-	810627	801	0.9-	1.1-

(2543)* 1980 LJ = 1943 UB = 1948 QP = 1959 SL = 1976 YQ6 = 1981 RN1

Discovered 1980 June 1 by H. Debehogne at the European Southern Observatory. The identification 1981 RN1 = 1976 YQ6 is by G. R. Kastel', whose search ephemeris enabled L. V. Zhuravleva to locate the 1969 observations.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	85.40043	(1950.0)	P	Q
n	0.18169914	Peri. 287.21776	+0.82469189	+0.53979228
a	3.0872192	Node 40.56096	-0.36765265	+0.73849042
e	0.2909903	Incl. 15.04954	-0.42978461	+0.40404973
P	5.42	B(1,0) 12.5		

Residuals in seconds of arc

431029	024	0.1+	3.1-	800601	809	0.5-	0.4+	800611	809	2.7+	1.5-
480829	078(78.3+	30.3+)X		800601	809	0.5-	0.2-	800612	809	0.4+	1.1-
590930	024	1.8+	1.4+	800601	809	0.3-	0.4-	800612	809	0.2+	1.2-
690507	095	0.9+	1.3+	800602	809	0.8-	0.1+	800612	809	0.3-	1.8-
690519	095	0.5-	4.6+	800602	809	0.4+	0.5+	800613	809	0.9+	1.0-
761220	095	6.8+	1.0-	800602	809	0.5-	0.6+	800613	809	1.0-	0.8-
800524	809	0.7-	0.5-	800604	809	0.2-	0.7+	800613	809	1.1-	1.3-
800524	809	0.5-	0.6-	800604	809	0.4+	0.1-	810909	095	0.9-	1.1+
800525	809	1.6-	0.9-	800604	809	0.2+	0.2+	810928	095	1.0-	0.3+
800525	809	0.2-	1.0-	800605	809	0.5+	0.6-	811006	095	2.0-	0.0
800526	809	1.5-	0.1-	800605	809	0.2+	0.9-	811026	095	1.7+	1.1-
800526	809	1.0-	0.2-	800605	809	0.3+	0.0	811102	095	1.2+	1.1-
800601	809	0.7-	0.2+	800611	809	0.0	1.1-	811125	095	2.2-	3.1-
800601	809	0.1+	0.0	800611	809	0.3+	0.3-				

(2544)* 1980 PS = A917 CA = 1950 BK1 = 1979 BP

Discovered 1980 Aug. 6 by Z. Vavrova at the Klet Observatory.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	281.66164	(1950.0)	P	Q
n	0.26960409	Peri. 261.26637	-0.83264048	+0.45720466
a	2.3731129	Node 305.33333	-0.22011921	-0.79104154
e	0.2407649	Incl. 22.52542	-0.50819029	-0.40646914
P	3.66	B(1,0) 14.0		

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

170213	024(0.04-	0.02+)X		800806	046	2.1-	0.3+	801006	801	2.2-	0.1+
170214	024	1.3-	4.8-	800807	046	3.1-	1.5+	811020	675	0.2+	0.3-
170215	024	0.9+	4.6+	800807	046	0.1-	0.4+	811020	675	0.1+	0.0
170223	024	3.4+	3.9+	800814	046	0.1+	0.1+	811223	675	0.2+	0.4-
500125	094(18.6+	6.1+)X		800814	046	0.6+	1.7+	811230	801	1.3-	0.7-
790124	095	0.9+	1.3+	800818	046	1.7+	0.3+				
800806	046	0.2+	0.2+	800818	046	0.8+	0.6+				

1965 UU1 = 1980 DR1

The identification is by E. Bowell.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	316.02620	(1950.0)	P	Q
n	0.22815911	Peri. 358.28954	+0.65866219	-0.72676051
a	2.6524368	Node 50.45561	+0.69328200	+0.48549778
e	0.1805593	Incl. 14.63950	+0.29244517	+0.48591261
P	4.32	B(1,0) 12.5		

Residuals in seconds of arc

651019	330	0.1+	0.3+	651123	330	1.2-	0.1+	800221	033	0.1+	0.1-
651023	330(17.6+	8.8-)		651126	330	1.0+	0.4-	800222	033	0.0	0.1+
651120	330	0.4-	0.9-	651130	330	0.4+	1.0+				

1971 TJ2 = 1973 AD1 = 1974 HD2 = 1979 HZ2

The key identification 1971 TJ2 = 1979 HZ2 is by E. Bowell.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	26.27338		(1950.0)		P		Q
n	0.19928708	Peri.	357.27820	+0.51420563			-0.85651438
a	2.9028025	Node	61.77387	+0.78780542			+0.45119878
e	0.0622384	Incl.	2.89166	+0.33905041			+0.25060484
P	4.95	B(1,0)	13.0				

Residuals in seconds of arc

711013	095	2.7+	1.9-	730101	095	0.7-	2.4+	790425	095	0.1+	1.1+
711014	095	0.5-	2.1+	730102	095	0.6+	3.1-	790430	095	0.9+	1.1+
711015	095	0.1+	0.9+	740424	805	1.5-	6.5-				
711020	095	0.5-	4.8-	740425	805	1.2-	0.6+				

1978 LB

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	260.73122		(1950.0)		P		Q
n	0.17376454	Peri.	153.77756	-0.50647538			+0.80670166
a	3.1805054	Node	84.38147	-0.83507045			-0.37093405
e	0.1284404	Incl.	17.81602	-0.21480227			-0.46004386
P	5.67	B(1,0)	12.5				

Residuals in seconds of arc

780511	330	0.0	1.8-	780609	046	0.1-	1.5+	780630	046	1.8+	0.7-
780606	046	1.0+	0.1+	780611	046	0.3+	1.0+	780630	046	1.3+	1.2-
780606	046	0.7-	3.2-	780611	046	0.7+	3.0+	811228	046	0.5+	0.6-
780608	046	0.4+	1.5+	780629	046	0.7+	1.0-	811228	046	0.6-	0.1+
780609	095	0.4-	0.2-	780629	046	1.9-	0.2-				

1978 PA

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	161.03944		(1950.0)		P		Q
n	0.37390913	Peri.	255.71275	+0.90004930			-0.12633348
a	1.9082101	Node	110.15392	+0.23318580			+0.94813422
e	0.1102455	Incl.	26.37711	-0.36815165			+0.29168707
P	2.64	B(1,0)	15.0				

Residuals in seconds of arc

780811	809	1.4-	0.7+	780813	809	0.4-	0.1+	780904	809	0.1+	0.4+
780811	809	0.1-	1.1-	780814	809	0.5-	0.1+	780910	809	0.8+	2.0+
780812	809	0.1-	0.5-	780815	809	0.5-	1.0+	780923	809	1.2+	2.4+
780812	809	0.6-	0.8+	780903	809	0.5+	2.0+	820116	688	0.2+	0.6-

1979 FR2 = 1979 GP = 1956 JB = 1969 TC5 = 1973 UK1

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	20.48492		(1950.0)		P		Q
n	0.25713693	Peri.	80.54590	-0.66318478			-0.74525191
a	2.4492170	Node	51.22994	+0.64712657			-0.61738400
e	0.0772379	Incl.	5.09039	+0.37604939			-0.25186620
P	3.83	B(1,0)	14.0				

Residuals in seconds of arc

560504	760(78.8-	24.3+)X		790406	808	0.1-	0.8-	811202	688	0.1+	0.9-
691014	095	2.2+	2.2-	790425	095	0.3-	0.1-	811202	688	0.5+	1.0-
731026	095	2.2-	1.3+	790430	095	0.2+	0.5-	820116	688	0.3-	0.9-
790329	095	0.6+	0.9+	811124	688	0.9+	0.6-	820116	688	1.4-	0.1-
790406	808	1.2-	0.1-	811124	688	0.5+	0.3+				

1979 MU2

The 1977 observations were identified by C. Atallah.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	191.14650		(1950.0)		P		Q
n	0.17967491	Peri.	151.79871	+0.68197186		+0.73066311	
a	3.1103693	Node	161.13921	-0.68840001		+0.65620298	
e	0.1580128	Incl.	5.74129	-0.24702185		+0.18849158	
P	5.49	B(1,0)	16.0				

Residuals in seconds of arc

770211	675	2.3+	5.7+	790625	413	0.0	0.0	790726	675	1.9-	0.3-
770212	675	1.7+	2.6-	790629	413	1.5+	0.1-	790727	675	0.9+	1.5+
770214	675	3.7-	2.0-	790724	413	1.8-	1.5-	790728	413	0.5-	0.5-
790623	413	0.7+	0.2-	790725	675	0.3-	3.1+	790823	675	0.4+	1.2+
790624	413	1.5-	1.2-	790726	675	2.3+	0.1+				

1979 MB6

The 1978 observations were identified by C. Atallah.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	289.56443		(1950.0)		P		Q
n	0.29569136	Peri.	210.43237	+0.99951503		-0.00325120	
a	2.2314020	Node	149.70690	+0.01384660		+0.93720865	
e	0.1942568	Incl.	3.51998	-0.02789223		+0.34875403	
P	3.33	B(1,0)	17.0				

Residuals in seconds of arc

780315	675	0.9-	0.3+	790625	413	0.5+	0.4-	790727	675	0.7+	0.7-
780316	675	0.9+	0.0	790629	413	0.8-	0.1-	790727	675	2.9+	1.4+
790623	413	1.4+	0.1-	790724	413	1.3-	0.7-	790823	675	0.2-	0.5-
790624	413	1.0-	0.9-	790726	675	2.1-	1.6+				

1980 LB

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	95.87522		(1950.0)		P		Q
n	0.17738219	Peri.	263.57959	+0.74100734		-0.23928205	
a	3.1371135	Node	108.70181	+0.38372370		+0.91766096	
e	0.3376484	Incl.	41.48250	-0.55105738		+0.31724194	
P	5.56	B(1,0)	12.5				

Residuals in seconds of arc

800611	688	0.4+	0.2+	800619	801	3.8-	2.3+	811220	688	0.8+	1.0-
800611	688	0.0	2.3-	800705	688	0.1-	4.4-	811220	688	2.0+	3.8-
800614	688	1.7-	1.2-	800705	688	2.2+	1.2-	811220	801	0.4-	0.9+
800614	688	2.1-	3.0-	800714	688	0.1-	0.9+	811223	675	0.9-	0.4-
800617	688	0.4-	0.6-	800808	688	0.6+	2.8-	820102	879	0.6+	1.8-
800617	688	1.4-	1.7+	801206	474	1.8+	2.5+	820102	879	1.8+	0.5-
800618	688	0.2+	0.4+	801206	474	1.1+	0.6+	820116	688	1.8+	1.5-
800618	688	0.7-	0.3+	811125	801	0.3-	0.2-				

4017 P-L = 1978 TG6

The identification is by E. Bowell.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	305.90586		(1950.0)		P		Q
n	0.21985113	Peri.	22.47640	+0.92901949		-0.37001765	
a	2.7188450	Node	359.21969	+0.29501592		+0.74574338	
e	0.2583214	Incl.	13.23627	+0.22335709		+0.55403406	
P	4.48	B(1,0)	15.5				

Residuals in seconds of arc

600924	675	0.2-	0.6-	600928	675	0.3-	0.3-	601022	675	0.1+	0.1-
600925	675	0.0	0.1+	600928	675	0.5+	0.1+	781002	095	0.6-	0.9+
600926	675	0.3+	0.4+	601017	675	0.5-	0.5+	781008	095	0.6+	1.0-

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

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

(2545)* 1933 BB = 1948 RP = 1948 TA = 1953 DB = 1968 QO = 1973 AS4
= 1973 CF = 1973 EG = 1978 SY2

Discovered 1933 Jan. 26 by E. Delporte at Uccle. The double designation 1948 RP = 1948 TA is by O. Kippes (NAZ 12, 22). The identification 1943 BB = 1948 RP = 1948 TA was published on JC 178.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	5.28342	(1950.0)	P	Q
n	0.29610739	Peri. 105.24335	+0.37755745	-0.92381130
a	2.2293070	Node 322.37680	+0.80465561	+0.36121281
e	0.1261184	Incl. 5.96381	+0.45823544	+0.12687783
P	3.33	B(1,0) 14.0		

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

330126	012	3.1-	1.0-	480909	690	0.6-	0.7+	730307	029	1.5-	0.7-
330127	012	3.7+	2.8+	481008	062	0.3+	0.7-	730309	029	1.0-	0.8-
330203	012	(0.05-	0.05+)	481008	062	0.0	1.2+	780926	095	0.3-	1.7+
330215	012	0.1+	0.5+	530219	760	6.9-	1.3-	781002	095	1.5-	1.4+
330216	012	0.4+	0.3+	530219	760	4.0-	3.0+	781005	095	0.3-	0.5-
330218	012	4.1+	2.2+	680827	095	0.6+	7.5-	781008	095	0.4+	0.2-
330220	012	5.5+	6.6+	730103	095	4.9+	4.6-	810803	801	2.0-	1.5+
480907	690	(8.4-	1.1-)	730203	095	1.2+	3.6-	810804	688	0.7+	0.2-
480908	690	1.7+	2.9+	730307	029	0.1+	0.3-	810804	688	0.8+	0.4+

(2546)* 1950 FC = 1937 AG = 3516 P-L

Discovered 1950 Mar. 23 by E. L. Johnson at Johannesburg. The identification 1950 FC = 3516 P-L is by C. J. van Houten (MPC 5275). Contrary to MPC 3775, the identification 1950 FC = 1937 AG by O. Kippes (MPC 2808) is valid, but the identification 1950 FC = 1934 PA (ibid.) is not.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	262.20181	(1950.0)	P	Q
n	0.23449954	Peri. 232.92538	-0.98100888	+0.14654043
a	2.6044022	Node 315.09864	-0.06244654	-0.85887484
e	0.1858240	Incl. 10.37082	-0.18363555	-0.49077480
P	4.20	B(1,0) 13.5		

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

370108	020	(89.2-	42.8-)X	500416	078	1.7-	1.5+	601024	675	0.9+	1.5-
370121	020	(0.23+	0.02+)X	500422	078	0.0	1.0-	601024	675	1.1+	0.3-
370129	020	(31.9-	3.5+)X	500505	078	2.5+	0.6-	601025	675	0.2+	1.1-
370206	020	(0.24+	0.01-)X	601017	675	0.0	0.2+	601025	675	0.4-	0.8-
370213	062	(29.7-	95.4-)X	601017	675	0.4-	0.5-	810925	801	0.4-	3.5+
370214	062	(0.5+	39.1-)X	601017	675	0.7+	0.1+	810929	801	0.5-	0.3+
500323	078	1.0-	2.6+	601022	675	0.1+	0.4+	811102	801	1.4+	0.0
500327	078	0.4+	0.6+	601022	675	0.7-	0.2-	811125	801	2.2-	0.5+
500409	078	0.2+	1.8-	601022	675	0.4+	0.2+	811126	801	1.8-	0.8+

(2547)* 1964 TC2 = 1953 UO = 1975 TR = 1975 VG = 1977 DD4

Discovered 1964 Oct. 9 at the Purple Mountain Observatory. The key identification 1964 TC2 = 1977 DD4 was found independently by H. Oishi (JAM 735) and E. Bowell (MPC 5686).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	315.01285	(1950.0)	P	Q
n	0.26757060	Peri. 16.51172	+0.99645405	-0.08114019
a	2.3851212	Node 348.07609	+0.05971339	+0.86838427
e	0.1281178	Incl. 6.18549	+0.05927595	+0.48920857
P	3.68	B(1,0) 14.5		

Residuals in seconds of arc

531018	760	(39.0+	0.9+)	751003	095	0.0	2.2+	770219	381	2.2-	0.2+
531018	760	0.5+	1.7+	751101	095	(3.9-	5.3+)	810228	801	0.6+	0.6+
641009	330	0.5-	1.7-	770218	381	0.9+	0.5-	810407	801	0.0	0.6+
641030	330	0.6-	0.5-	770218	381	1.6+	0.2+				
641109	330	0.2+	0.7-	770219	381	0.2-	0.2-				

(2548)* 1975 DA = 1949 CE = 1966 BM = 1976 OQ

Discovered 1975 Feb. 16 at the El Leoncito Station of the Felix Aguilar Observatory, University of Cuyo. The key identification 1975 DA = 1976 OQ is by T. Urata (NOC 1069). The identification 1975 DA = 1966 BM is by E. Bowell.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	215.88375		(1950.0)			P		Q	
n	0.23059005	Peri.	291.33417	-0.59366954				+0.75740061	
a	2.6337568	Node	299.30892	-0.57298302				-0.63506147	
e	0.0995158	Incl.	18.16494	-0.56501941				-0.15179342	
P	4.27	B(1,0)	13.5						

Residuals in seconds of arc

490201	012	(6.8-	32.7+)	750219	808	1.9+	0.1+	750412	808	0.3+	0.1-
490203	012	2.8+	1.1+	750219	808	0.9+	0.8-	750412	808	0.5-	0.2+
660120	330	2.3-	0.3-	750307	808	0.6-	1.0-	750415	808	0.1+	0.5+
660128	330	2.5-	0.5+	750307	808	0.6-	0.7-	750415	808	1.5-	1.7+
750216	808	0.1+	0.7-	750307	808	0.3-	0.3+	760727	095	0.0	1.0-
750216	808	0.6+	0.6-	750307	808	2.3-	0.3+	760728	095	1.1+	0.7-
750217	808	1.1+	0.7+	750308	808	0.2+	0.8-	760801	095	1.8-	0.0
750217	808	0.5+	0.1-	750308	808	0.4-	0.8-	811103	801	0.0	0.0
750218	808	1.6+	0.4-	750308	808	0.2+	0.2+	811124	801	2.6+	0.2-
750218	808	0.7-	0.3-	750308	808	0.0	0.2-	811220	801	0.2+	0.7+

(2549)* 1976 UB

Discovered 1976 Oct. 23 at the Harvard College Observatory's Agassiz Station.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	2.75672		(1950.0)			P		Q	
n	0.17340273	Peri.	206.22010	+0.75686413				-0.65357220	
a	3.1849217	Node	194.59138	+0.59979529				+0.69474845	
e	0.1846781	Incl.	0.06001	+0.25961952				+0.30027981	
P	5.68	B(1,0)	14.0						

Residuals in seconds of arc

760925	801	0.5-	0.9+	761117	801	0.9-	0.1+	780201	801	0.5-	0.3+
761023	801	0.9-	0.3-	761216	801	1.1+	0.2+	780202	801	0.1+	0.7+
761026	095	1.0+	0.6-	770113	801	1.4+	0.6+	780204	801	0.8-	1.1+
761027	801	0.0	0.6-	770219	801	1.4-	0.3+	810801	801	0.4+	2.3+
761027	801	0.2-	0.9-	780111	801	0.8+	0.0	810808	801	1.0-	0.8-
761029	801	0.3+	0.6+	780131	801	0.9+	0.8-				

(2550)* 1976 UP20 = 1970 QT = 1970 RV

Discovered 1976 Oct. 21 at the El Leoncito Station of the Felix Aguilar Observatory, University of Cuyo.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	349.81866		(1950.0)			P		Q	
n	0.17338779	Peri.	247.13178	+0.69784673				-0.71308336	
a	3.1851047	Node	158.16027	+0.70536761				+0.66790915	
e	0.1783552	Incl.	10.41426	+0.12436426				+0.21309502	
P	5.68	B(1,0)	12.5						

Residuals in seconds of arc

700828	095	4.6-	1.9-	761024	808	0.8-	1.0-	761122	808	0.7-	0.5-
700829	095	0.2+	0.4+	761024	808	0.1-	0.3-	810803	688	0.5+	1.0+
700830	095	0.5+	1.2-	761111	808	0.4-	0.0	810803	688	0.1-	1.4-
700909	095	3.8+	2.8+	761111	808	0.2+	0.3-	810826	801	0.4-	0.3+
761021	808	1.4+	0.6+	761118	808	1.2-	0.0	810929	801	0.1-	0.2+
761021	808	1.5+	1.1+	761118	808	0.0	0.2+				

(2551)* 1976 YX1 = 1955 BV

Discovered 1976 Dec. 16 by L. I. Chernykh at the Crimean Astrophysical Observatory. The identification is by E. Bowell (MPC 5321).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	38.10820		(1950.0)		P		Q
n	0.17754880	Peri.	30.58226		+0.75194907		-0.65921796
a	3.1351445	Node	10.65875		+0.60250851		+0.68598296
e	0.1905076	Incl.	0.64049		+0.26749969		+0.30799197
P	5.55	B(1,0)	13.0				

Residuals in seconds of arc

550121	330	0.1-	1.3+	810926	688	1.9-	0.6-	811102	688	0.9-	1.6-
550125	330	1.3+	0.0	810929	801	1.0-	1.1+	811103	801	0.7-	2.9+
761216	095	0.5+	1.1-	811004	688	0.7+	0.0	811120	688	1.2+	1.2-
761218	095	0.7+	1.9-	811004	688	2.2+	1.2+	811120	688	1.2+	0.1-
761220	095	1.1+	0.7-	811102	688	0.6+	0.9-	811124	801	0.3-	1.9+
770113	095	1.3-	3.0-	811102	688	1.5+	2.9-				
810926	688	1.1-	1.3+	811102	688	0.0	1.8-				

(2552)* 1978 SP = 1975 TV4 = 1975 VZ9

Discovered 1978 Sept. 24 by A. Mrkos at the Klet Observatory. The identification 1978 SP = 1975 TV4 was suggested by T. Urata (MPC 5602).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	111.15793		(1950.0)		P		Q
n	0.31334556	Peri.	343.26375		+0.83357972		+0.55238049
a	2.1467774	Node	343.20342		-0.50497278		+0.75865211
e	0.1883254	Incl.	0.90096		-0.22393601		+0.34543128
P	3.15	B(1,0)	15.5				

Residuals in seconds of arc

751014	095	0.8+	0.8+	781004	095	1.6+	2.1+	781105	046	0.4+	2.0-
751102	095	1.1+	5.9+	781007	046	0.5+	0.4-	810726	688	0.3+	2.0-
751106	095	2.6-	3.2-	781007	046	0.3-	0.2-	810726	688	0.8-	2.0+
780901	095	0.9+	0.6+	781008	095	0.9+	1.4+	810731	046	0.8-	0.3-
780905	095	0.3+	0.7+	781008	046	1.2-	0.6-	810731	046	1.5+	1.1+
780907	095	0.1-	0.4+	781008	046	0.1-	0.2+	810802	801	0.4+	0.0
780912	095	0.4+	1.4+	781009	095	0.4+	1.6+	810806	046	0.1+	1.2-
780924	046	0.7-	2.4-	781009	046	0.4+	1.0+	810806	046	0.4+	0.0
780924	046	2.4-	0.1-	781009	046	1.0-	0.0	810827	801	1.2-	0.2-
780925	046	2.8-	4.4-	781031	046	1.5-	1.4-	810930	801	0.4+	0.1+
780925	046	0.4+	1.6-	781031	046	2.2+	0.1-				
780928	095	2.5+	2.4+	781105	046	0.0	1.9-				

(2553)* 1979 FS2 = 1940 CK = 1954 UA1 = 1956 AU = 1968 HT = 1978 EV1

Discovered 1979 Mar. 29 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	63.56292		(1950.0)		P		Q
n	0.18187121	Peri.	247.83754		+0.98710578		-0.13909444
a	3.0852717	Node	120.07861		+0.15829661		+0.92170596
e	0.0591435	Incl.	5.25230		-0.02375639		+0.36209233
P	5.42	B(1,0)	12.5				

Residuals in seconds of arc

400210	024	1.1-	1.0+	541022	760(22.8-	24.1+)X	790329	095	1.2-	0.6-	
400301	024	0.3-	0.5+	560107	024	0.1-	0.4-	790425	095	0.0	0.6+
400307	024	1.8-	0.5+	680422	095	2.0+	1.4-	790430	095	0.9-	1.1+
400308	024	2.6+	2.9-	780305	095	0.9+	1.4+				

(2554)* 1980 OB = 1931 AB = 1970 RE = 1976 GK8 = 1976 HV

Discovered by 1980 July 17 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	255.96211		(1950.0)		P		Q
n	0.28943016	Peri.	333.03591		-0.01274718		+0.99703046
a	2.2634636	Node	296.15008		-0.90142307		-0.04432939
e	0.1444596	Incl.	4.85337		-0.43275160		+0.06296964
P	3.41	B(1,0)	14.5				

Residuals in seconds of arc

310111	024(78.5+	47.3-)X	760426	808	0.4-	0.9-	801002	688	0.1-	0.8+	
700902	095	0.5-	1.1+	800717	688	0.9+	2.5-	811124	688	0.4-	1.7-
760405	808	0.5+	1.0-	800717	688	0.2+	2.3-	811124	688	1.6-	5.3-
760405	808	0.1+	1.7-	800719	688	0.9+	0.5-	811126	801	0.9-	0.1-
760423	808	0.4-	0.6-	800806	688	0.4+	0.7-	811220	688	0.7+	1.6-
760423	808	1.4-	0.0	800904	688	1.5+	1.5-	811220	801	0.5+	0.8-
760426	808	0.9-	1.4-	800907	688	0.3-	1.4-				

(2555)* 1980 OC = 1961 US = 1971 UZ2 = 1976 YQ

Discovered 1980 July 17 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	114.08541		(1950.0)		P		Q
n	0.20292336	Peri.	87.76560		+0.97995778		-0.19861944
a	2.8680146	Node	283.69036		+0.17594255		+0.89891464
e	0.0853288	Incl.	0.90033		+0.09341827		+0.39051603
P	4.86	B(1,0)	13.0				

Residuals in seconds of arc

611018	760	2.8-	5.0+	800902	688	0.9+	2.2-	811220	688	0.7+	1.3-
611018	760	1.1-	4.5+	800904	688	0.7+	1.9-	811220	801	1.5-	2.7+
711028	095	3.3+	8.1-	800907	688	0.6+	1.9-	811220	688	1.4+	0.9-
761216	095	3.3-	2.5+	800911	688	0.7-	1.0-	811230	688	4.0-	3.3-
761218	095	1.0-	2.3 +	801002	688	0.5-	1.2+	811230	688	1.4+	1.1-
761220	095	1.9+	1.7 +	811102	801	0.5-	2.4+	811231	801	4.3+	2.3-
800717	688	0.9-	0.8-	811103	801	0.1-	2.6+	820116	688	0.1-	0.2+
800717	688	0.8+	0.3-	811123	801	0.7-	2.5+	820116	688	0.3+	0.
800719	688	1.7+	0.9 +	811124	688	0.7-	2.6-				
800808	688	0.0	0.4-	811124	688	0.0	2.1-				

(2556)* 1981 CS = 1951 WK2 = 1972 HV = 1976 SN1

Discovered 1981 Feb. 8 by N. G. Thomas at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	195.15095		(1950.0)		P		Q
n	0.30995246	Peri.	345.05883		-0.36049725		-0.93192945
a	2.1624164	Node	126.05672		+0.86066578		-0.34860470
e	0.0375084	Incl.	2.79066		+0.35957772		-0.09991128
P	3.18	B(1,0)	15.0				

Residuals in seconds of arc

511129	711	1.1-	5.0+	Y	810101	688	0.5-	0.5-	810205	688	2.7+	0.3-
720418	095	1.4+	2.9+		810101	688	0.6-	0.2-	810208	688	0.2-	0.2-
760924	095	0.7-	2.3+		810110	688	0.2-	0.5+	810208	688	0.5-	0.2+
760928	095	1.6+	3.2-		810110	688	0.9+	0.5-				
790730	095	0.4-	1.5-		810205	688	1.6-	1.1-				

(2557)* 1981 SL1 = 1956 VF = 1963 TE = 1970 PN = 1970 QN1 = 1976 GX4

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

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	85.42409	(1950.0)	P	Q
n	0.27367254	Peri.	188.90365	+0.95749528
a	2.3495349	Node	187.88508	+0.27071743
e	0.1564276	Incl.	6.06805	+0.09957344
P	3.60	B(1,0)	13.5	+0.28292721

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

561103	760	(0.04+ 0.01-)X	700831	095	1.1-	2.3+	811102	688	1.5+	0.9-
631013	760	0.1-	760402	095	0.6-	1.8-	811102	688	0.2+	1.1-
631013	760	1.0+	810926	688	1.1+	0.6-	811120	688	0.3+	0.4-
631016	760	1.7+	810926	688	1.5-	3.0-	811120	688	0.0	1.0-
631016	760	4.1-	811004	688	0.7+	1.4-				
700808	095	1.1+	811004	688	0.1-	1.1+				

(2558)* 1981 SP1 = A915 TC = 1968 UR1 = 1971 QH1 = 1977 JH = 1978 VS7

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

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	129.41624	(1950.0)	P	Q
n	0.29882585	Peri.	281.89001	+0.84224907
a	2.2157662	Node	45.79104	-0.45298411
e	0.1559806	Incl.	5.15400	-0.29227026
P	3.30	B(1,0)	15.0	+0.35299282

Residuals in seconds of arc

151015	024	2.4-	3.4+	781105	675	0.3-	0.7+	811004	688	1.1+	1.9-
151017	024	(36.6+ 4.7+)		781106	675	0.5+	0.7+	811004	688	2.3+	0.2+
681023	095	2.2+	0.3+	781107	675	1.0-	1.2+	811102	688	0.6-	1.4-
710820	095	0.8-	1.6+	781108	675	0.3-	1.1+	811102	688	0.6+	2.1-
710824	095	0.7+	3.2+	810926	688	1.5-	0.9-	811102	688	3.2+	2.0-
770515	095	1.5-	2.5-	810926	688	3.0-	2.8-	811102	688	1.3+	1.2-

(2559)* 1981 UH = 1930 XJ = 1948 RF = 1976 SC7

Discovered 1981 Oct. 23 by A. Mrkos at the Klet Observatory.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	30.05341	(1950.0)	P	Q
n	0.21181037	Peri.	85.39455	+0.24348492
a	2.7872199	Node	350.39563	+0.81743610
e	0.1555621	Incl.	8.86943	+0.52202807
P	4.65	B(1,0)	13.5	+0.10865047

Residuals in seconds of arc

301213	690	0.0	2.2-	480909	690	2.6-	0.9-	811025	046	0.3+	0.6+
301214	690	0.0	0.1+	760925	095	0.9+	1.7+	811117	046	0.1-	1.0-
301216	690	2.4+	1.5-	811023	046	1.1-	0.3+	811117	046	0.6-	0.5+
480907	690	1.5+	0.1+	811023	046	0.0	1.0+	811120	046	0.1-	0.2+
480908	690	1.8+	1.9-	811025	046	0.3-	0.1-				

1980 GA = 1969 KC = 1978 VZ14

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	241.77246		(1950.0)		P		Q
n	0.26885818	Peri.	140.71192		-0.94108542		+0.10579204
a	2.3775049	Node	48.59448		-0.29326712		-0.72824729
e	0.2076793	Incl.	25.35548		+0.16838237		-0.67709964
P	3.67	B(1,0)	13.5				

Residuals in seconds of arc

690516	095	2.9+	3.5+	800416	688	0.5+	1.7-	800510	688	0.1-	2.1+
781101	095	0.8-	2.0-	800417	801	0.2-	0.7+	811029	474	2.7+	0.6-
800414	688	1.5+	1.1-	800417	801	1.5-	0.1-	811029	474	1.9+	0.9-
800415	688	1.0-	2.8-	800419	688	0.6-	2.3-				
800416	801	2.6-	0.5-	800508	688	0.6-	0.5+				

1980 OF

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	133.92729		(1950.0)		P		Q
n	0.17973362	Peri.	18.52407		+0.87031069		+0.47494158
a	3.1096920	Node	312.40212		-0.47121486		+0.72603007
e	0.1598865	Incl.	10.16690		-0.14323359		+0.49730355
P	5.48	B(1,0)	13.5				

Residuals in seconds of arc

800717	688	0.5+	0.6+	800907	688	1.8+	0.1-	801002	688	0.5-	0.5+
800717	688	0.8-	0.7-	800907	688	1.6+	1.1-	801004	688	2.0-	1.8+
800806	688	0.4-	0.1+	800917	688	0.4-	1.0-	811230	801	0.0	0.3-

1981 SA = 1927 JC = 1938 HB = 1975 XT

The identification 1981 SA = 1927 JC was suggested by H. Oishi (JAM 931).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	148.64879		(1950.0)		P		Q
n	0.17188631	Peri.	250.91013		+0.56550626		+0.78294286
a	3.2036328	Node	56.29362		-0.58960290		+0.60357102
e	0.0604956	Incl.	18.15699		-0.57668976		+0.15067349
P	5.73	B(1,0)	12.0				

Residuals in seconds of arc

270501	094(19.4-	42.6-)X	810927	372	0.9-	0.6+	811024	372	2.0+	1.3-	
270504	094(17.9-	30.8-)X	811002	372	1.4+	1.9-	811024	372	0.8+	0.9-	
270507	094(41.4+	20.3-)X	811003	372	1.3+	0.3+	811029	879	0.6-	0.5-	
380423	062 (3.8+	94.5+)X	811003	372	1.4+	1.8+	811029	879	3.6-	0.3+	
380428	062(80.4-	66.8+)X	811009	372	0.7-	1.4-	811121	879	1.1-	1.1+	
751201	095	0.2+	0.0	811010	372	0.3-	1.2-	811121	879	0.1-	0.0
810926	372	1.7-	0.2-	811023	372	1.4+	1.2-	811127	372	0.2	+ 0.6-
810926	372	1.9-	1.3+	811023	372	0.9+	1.0-				

1981 SH = 1951 WN2 = 1951 YS = 1971 TF3

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	45.99711		(1950.0)		P		Q
n	0.29251911	Peri.	236.28618		+0.43516442		-0.90018614
a	2.2475054	Node	187.97490		+0.86166154		+0.42193786
e	0.1573242	Incl.	7.13368		+0.26109638		+0.10785806
P	3.37	B(1,0)	15.0				

Residuals in seconds of arc

511126	672	1.8-	0.4-	810922	046	4.7+	1.5-	811005	688	0.3-	1.7-
511126	672	2.1-	0.6-	810922	046	1.3+	2.0-	811005	046	2.3-	1.8+
511223	711	3.4+	2.7-	810925	046	0.2+	4.3-	811005	046	2.7-	0.5+
711010	095	0.2-	4.3+	810925	046	1.9+	0.7+				
711011	095	0.4-	4.7+	811005	688	1.3-	1.6-				

1981 SJ1 = 1976 QW

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	11.99853		(1950.0)		P		Q
n	0.21289982	Peri.	265.38168	+0.17845197			-0.98385539
a	2.7777088	Node	174.28500	+0.94804352			+0.16823912
e	0.0987376	Incl.	7.81743	+0.26337877			+0.06102590
P	4.63	B(1,0)	13.5				

Residuals in seconds of arc

760826	095	0.5-	1.3+	810926	688	1.5-	0.2+	811102	688	0.3-	0.3-
760827	675	0.4+	1.3-	811004	688	1.6+	0.9-	811102	688	0.3+	0.6+
810926	688	1.0-	0.0	811004	688	1.0+	0.3+				

1981 WW = 1954 NW = 1977 TC3

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	111.59345		(1950.0)		P		Q
n	0.26086862	Peri.	271.24755	+0.99290545			+0.10071657
a	2.4258039	Node	82.97454	-0.06680060			+0.91221937
e	0.2233192	Incl.	3.65128	-0.09836894			+0.39712969
P	3.78	B(1,0)	14.5				

Residuals in seconds of arc

540709	760	2.0-	0.4-	811202	688	0.5+	0.4-	811230	688	1.9+	0.2-
771007	095	0.0	0.4+	811202	688	0.6+	0.5-	811230	688	1.3+	0.5-
811124	688	1.6-	0.5+	811220	688	0.7+	1.4-				
811124	688	0.3-	0.2+	811220	688	0.8+	1.0-				

1981 WY = 1951 ND = 1977 KT

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	176.94500		(1950.0)		P		Q
n	0.30127782	Peri.	218.69695	+0.45818086			+0.87881980
a	2.2037321	Node	78.93949	-0.77798200			+0.46898344
e	0.2101612	Incl.	7.80116	-0.42990033			+0.08792208
P	3.27	B(1,0)	14.0				

Residuals in seconds of arc

510702	078	(5.2+	3.5-)Y	811124	688	2.5-	0.4-	811220	688	2.1+	0.1+
510704	711	0.1-	0.5- Y	811124	688	0.3-	1.5+	811220	688	1.8+	0.5-
770519	095	0.2+	0.5+	811202	688	0.0	0.2+				
770523	095	0.1-	0.6-	811202	688	0.8-	0.2+				

1981 WP1 = 1977 SH3

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	136.65669		(1950.0)		P		Q
n	0.27050346	Peri.	287.43875	+0.99065660			+0.05925303
a	2.3678546	Node	69.30362	+0.00038868			+0.89945587
e	0.1520904	Incl.	7.54526	-0.13637940			+0.43297599
P	3.64	B(1,0)	14.5				

Residuals in seconds of arc

770923	095	1.0+	0.2+	811202	688	1.2+	0.5-	811230	688	1.5-	1.2-
771008	095	1.5-	0.3-	811202	688	1.5-	0.7-	820116	688	1.2+	0.3+
811124	688	1.9+	0.4-	811220	688	3.7-	1.0-	820116	688	1.0+	1.0+
811124	688	0.1+	1.6-	811220	688	1.6+	0.7-				

1981 WR1 = 1934 QC = 1951 WW1 = 1957 OD = 1957 OB1 = 1964 TP

= 1977 NP

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	174.94294		(1950.0)		P		Q
n	0.29708487	Peri.	265.96232	+0.84702768			+0.52935668
a	2.2244188	Node	62.06942	-0.46343396			+0.77987412
e	0.1391861	Incl.	3.12891	-0.26033262			+0.33403270
P	3.32	B(1,0)	14.0				

Residuals in seconds of arc

340831	078	(12.2+ 2.7-)X	641014	760	(0.03+ 0.02+)X	811202	688	0.4-	1.9+
340908	078	(4.0- 0.4+)X	770714	095	0.3+ 4.3-	811220	688	2.0+	1.0-
511129	711	1.5+ 3.2- Y	770719	095	0.7- 6.5+	811230	688	0.1-	1.1-
511129	711	1.5- 2.6+ Y	770722	095	0.2- 0.6-	811230	688	1.2-	0.6-
570724	760	(2.3+ 96.7+)X	811124	688	0.8+ 0.2+	820116	688	0.4+	1.8-
570725	076	0.3+ 2.3-	811124	688	0.6+ 0.5-	820116	688	2.1-	2.9+

1981 YD = 1963 FB = 1965 UK2 = 1971 FZ = 1971 JA

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	27.19690	(1950.0)	P	Q
n	0.25381535	Peri. 47.40673	-0.62503596	-0.77881657
a	2.4705387	Node 81.35402	+0.69963603	-0.58885998
e	0.1317731	Incl. 3.05427	+0.34617837	-0.21607559
P	3.88	B(1,0) 13.5		

Residuals in seconds of arc

630322	760	(0.04- 0.01+)X	811124	688	4.9- 3.0-	811230	688	1.8+	0.0
651018	330	0.5+ 1.0-	811202	688	0.9- 0.6-	811230	688	2.1+	0.6+
710319	095	1.5- 1.0+	811202	688	0.1- 0.0	820116	688	1.1+	0.1+
710514	095	0.7+ 3.1-	811220	688	1.4+ 1.2 +	820116	688	0.3-	1.6+
811124	688	2.5- 0.6-	811220	688	1.7+ 1.3 +				

* * * * *

NEW NAMES OF MINOR PLANETS.

(2139) Makharadze = 1970 MC

Discovered 1970 June 30 by T. Smirnova at the Crimean Astrophysical Observatory.

Named in honor of the friendship between the Georgian and Ukrainian peoples. Makharadze is the Georgian twin city of Genichesk in the Ukraine.

(2140) Kemerovo = 1970 PE

Discovered 1970 Aug. 3 by T. Smirnova at the Crimean Astrophysical Observatory.

Named for the regional center of the Kemerovo district of Russia, an important industrial center of Siberia.

(2171) Kiev = 1973 QD1

Discovered 1973 Aug. 28 by T. Smirnova at the Crimean Astrophysical Observatory.

Named on the occasion of the 1500th anniversary of this city, the capital of the Ukraine and one of the largest industrial, cultural and scientific centers of the U.S.S.R.

(2248) Kanda = 1933 DE

Discovered 1933 Feb. 27 by K. Reinmuth at Heidelberg.

Named in memory of Shigeru Kanda (1894-1974), a staff member of the Tokyo Astronomical Observatory from 1920 to 1943 and a leading source of inspiration and encouragement to amateur astronomers in Japan. He published papers on observations of minor planets, comets and variable stars, identifications of minor planets, orbits of comets, and the history of Japanese and Chinese astronomy. He wrote several popular books on astronomy and in 1926 began publication of the "Kanda Circular" for amateur astronomers. After leaving the Tokyo Observatory he founded the Kanda Astronomical Society, which later became the Japan Astronomy Study Group. Name proposed by T. Urata, who found the identifications for this planet.

(2249) Yamamoto = 1942 GA

Discovered 1942 Apr. 6 by K. Reinmuth at Heidelberg.

Named in memory of Issei Yamamoto (1889-1959), professor of astronomy at Kyoto University, director of the Kwasan Observatory, and first president of the IAU commission on the zodiacal light. The most well-known popularizer of astronomy in Japan, he founded the Oriental Astronomical Association in 1920 and was a source of encouragement for many amateur astronomers in Japan. Name proposed by S. Nakano, who determined the orbit for this planet.

(2250) Stalingrad = 1972 HN

Discovered 1972 Apr. 18 by T. Smirnova at the Crimean Astrophysical Observatory.

Named in commemoration of the fierce battle for the city. The victory by the defenders was an important turning point in World War II.

(2310) Olshaniya = 1974 SU4

Discovered 1974 Sept. 26 by L. Zhuravleva at the Crimean Astrophysical Observatory.

Named in honor of Konstantin Olshanskij and the other daring fighters who entered the occupied city of Nikolaev in March 1944.

(2314) Field = 1977 VD

Discovered 1977 Nov. 12 at the Harvard College Observatory's Agassiz Station.

Named in honor of George B. Field, director of the Harvard College Observatory and Smithsonian Astrophysical Observatory since 1973. A well-known theoretician who has made significant contributions in many areas of astrophysics, most notably concerning processes in the interstellar medium and intergalactic medium, he is currently also serving as chairman of the U.S. Astronomy Survey committee on the needs of astronomy in the 1980s.

(2328) Robeson = 1972 HW

Discovered 1972 Apr. 19 by T. Smirnova at the Crimean Astrophysical Observatory.

Named in memory of the American singer and actor Paul Robeson (1898-1976).

(2341) Aoluta = 1976 YU1

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

Named on the occasion of the centennial, in 1981, of the founding of the Astronomical Observatory of Leningrad University. The first part of the name is an acronym for that institution.

(2345) Fucik = 1974 OS

Discovered 1974 July 25 by T. Smirnova at the Crimean Astrophysical Observatory.

Named in memory of Julius Fucik (1903-1943), a Czechoslovak national hero and writer.

(2349) Kurchenko = 1970 OG

Discovered 1970 July 30 by T. Smirnova at the Crimean Astrophysical Observatory.

Named in memory of Nadezhda Kurchenko (1950-1970), an airline stewardess killed in a clash with two armed bandits.

(2358) Bahner = 1929 RE

Discovered 1929 Sept. 2 by K. Reinmuth at Heidelberg.

Named in honor of Klaus Bahner, staff member of the Heidelberg Konigstuhl Observatory who has made outstanding contributions to the design of large telescopes. The design of the 1.2-m, 2.2-m and 3.5-m large telescopes of the Max-Planck-Institut fur Astronomie is mainly due to his efforts. Name proposed by L. D. Schmadel; endorsed by O. Kippes, who found the identifications for this planet.

(2365) Interkosmos = 1980 YQ

Discovered 1980 Dec. 30 by Z. Vavrova at the Klet Observatory.

Named for the eastern European organization for space exploration.

(2367) Praha = 1981 AK1

Discovered 1981 Jan. 8 by A. Mrkos at the Klet Observatory.

Named for the capital of Czechoslovakia, which has a longstanding astronomical tradition going back to the time of Tycho Brahe and Johannes Kepler.

(2371) Diraitrov = 1975 VR3

Discovered 1975 Nov. 2 by T. Smirnova at the Crimean Astrophysical Observatory.

Named in memory of Georgij Mikhailovich Dimitrov (1882-1949), founder and leader of the Bulgarian Patriotic Front and chairman of the council of ministers of Bulgaria.

(2390) Nezarka = 1980 PA1

Discovered 1980 Aug. 14 by Z. Vavrova at the Klet Observatory.

Named for a small river running through the town of Veseli in southern Bohemia where the discoverer lives.

(2401) Aehlita = 1975 VM2

Discovered 1975 Nov. 2 by T. Smirnova at the Crimean Astrophysical Observatory.

Named for the heroine in one of the novels of Aleksej Nikolaevich Tolstoj (1883-1945). In the book of the same name Aehlita was a Martian girl who fell in love with an earth man who went to Mars in a space ship.

(2403) Sumava = 1979 SQ

Discovered 1979 Sept. 25 by A. Mrkos at the Klet Observatory.

Named for the mountains on the southern border of Bohemia in the vicinity of the Klet Observatory.

(2404) Antarctica = 1980 TE

Discovered 1980 Oct. 1 by A. Mrkos at the Klet Observatory.

Named for the southernmost continent, in honor of the third Soviet Antarctic Expedition, in which the discoverer participated.

(2422) Perovskaya = 1968 HK1

Discovered 1968 Apr. 28 by T. Smirnova at the Crimean Astrophysical Observatory.

Named in memory of Sofya Lvovna Perovskaya (1853-1881), executed for organizing the attempt on the life of Tsar Alexander II on 1881 Mar. 1.

(2423) Ibarruri = 1972 NC

Discovered 1972 July 14 by L. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of Ruben Ibarruri (1920-1942), who died valiantly in the battle of Stalingrad.

(2432) Soomana = 1981 FA

Discovered 1981 Mar. 30 by E. Bowell at the Anderson Mesa station of the Lowell Observatory.

In the Hopi Indian language of northern Arizona, Soomana means 'star girl'. A Hopi child is traditionally named by its father's mother or sister 20 days after birth. The name donor draws on a name that reflects on her clan, in this case the Sun clan. Name proposed by Michael Lomatewama and Ekkehart Malotki.

(2433) Sootiyo = 1981 GJ

Discovered 1981 Apr. 5 by E. Bowell at the Anderson Mesa station of the Lowell Observatory.

In the Hopi Indian language, Sootiya means 'star boy'. The tradition and proposers are as for (2432) Soomana.

(2438) Oleshko = 1975 VO2

Discovered 1975 Nov. 2 by T. Smirnova at the Crimean Astrophysical Observatory.

Named in memory of Valentina Iosifovna Oleshko (1924-1943), who organized an underground resistance group at Lampovo, near Leningrad.

(2442) Corbett = 1980 TO

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

Named for Jim Corbett, hunter, writer and a great friend of animals, born in Nainital, India.

(2447) Kronstadt = 1973 QY1

Discovered 1973 Aug. 31 by T. Smirnova at the Crimean Astrophysical Observatory.

Named for the town, situated on Kotlin Island in the Gulf of Finland, that played an integral part in the defense of Leningrad in World War II.

(2469) Tajdikistan = 1970 HA

Discovered 1970 Apr. 27 by T. Smirnova at the Crimean Astrophysical Observatory.

Named for the Tajdik Soviet Socialist Republic.

(2474) Ruby = 1979 PB

Discovered 1979 Aug. 14 by Z. Vavrova at the Klet Observatory.

Named for the discoverer's dog, which lives at the Klet Observatory.

(2475) Semenov = 1972 TF2

Discovered 1972 Oct. 8 by L. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of Pavel Afanes'evich Semenov (1912-1942), a fighter in the International Brigade in Spain during 1937-1938 and one of the valiant defenders who perished in the battle of Stalingrad.

(2478) Tokai = 1981 JC

Discovered 1981 May 4 by T. Furuta at Tokai.

Named by the discoverer for the city in which he lives.

EPHEMERIDES.

(2532) 1980 TU5

					Elements MPC 6633				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 01 11		10 44.37	+10 26.8	1.956	2.708	131.3	15.8,	17.9	
1982 01 21		10 40.09	+10 46.2						
1982 01 31		10 33.27	+11 17.9	1.804	2.726	154.5	8.9	17.6	
1982 02 10		10 24.43	+11 57.9						
1982 02 20		10 14.44	+12 40.8	1.753	2.742	178.3	0.6	17.0	
1982 03 02		10 04.36	+13 20.8						
1982 03 12		09 55.32	+13 52.8	1.819	2.754	155.5	8.6	17.6	
1982 03 22		09 48.17	+14 13.6						
1982 04 01		09 43.48	+14 21.9	1.987	2.765	132.8	15.4	18.0	
1982 04 11		09 41.44	+14 17.7						
1982 04 21		09 41.98	+14 01.8	2.222	2.773	113.0	19.5	18.3	
1982 05 01		09 44.89	+13 35.2						
1982 05 11		09 49.88	+12 59.0	2.489	2.778	95.7	21.2	18.6	
1982 05 21		09 56.62	+12 14.0						
1982 05 31		10 04.84	+11 21.1	2.763	2.780	80.4	21.1	18.8	

1979 MB6

					Elements MPC 6639				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 03 12		16 27.19	-17 35.7	2.075	2.490	102.7	22.9	21.1	
1982 03 22		16 33.59	-17 30.7						
1982 04 01		16 37.52	-17 18.5	1.799	2.457	120.1	20.6	20.7	
1982 04 11		16 38.65	-16 59.7						
1982 04 21		16 36.73	-16 35.1	1.565	2.421	139.8	15.5	20.2	
1982 05 01		16 31.72	-16 05.5						
1982 05 11		16 23.92	-15 32.7	1.402	2.383	161.8	7.6	19.8	
1982 05 21		16 14.05	-14 59.0						
1982 05 31		16 03.23	-14 28.0	1.336	2.343	170.6	4.1	19.5	
1982 06 10		15 52.82	-14 03.5						
1982 06 20		15 44.07	-13 49.2	1.372	2.300	148.5	13.3	19.8	
1982 06 30		15 37.90	-13 47.4						
1982 07 10		15 34.85	-13 59.0	1.488	2.257	127.6	20.9	20.1	
1982 07 20		15 35.01	-14 23.1						
1982 07 30		15 38.31	-14 58.0	1.653	2.212	109.7	25.6	20.4	
1982 08 09		15 44.50	-15 41.3						
1982 08 19		15 53.29	-16 30.3	1.839	2.167	94.4	27.8	20.6	

1981 AT

					Elements MPC 5896				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 04 01		18 39.18	-27 03.9	2.259	2.498	91.8	23.6	19.3	
1982 04 11		18 47.95	-27 00.1						
1982 04 21		18 54.30	-26 57.4	2.027	2.525	108.0	22.2	19.1	
1982 05 01		18 57.88	-26 57.0						
1982 05 11		18 58.46	-26 59.1	1.819	2.551	126.4	18.6	18.8	
1982 05 21		18 55.85	-27 03.5						
1982 05 31		18 50.10	-27 08.4	1.662	2.575	147.4	12.3	18.4	
1982 06 10		18 41.61	-27 11.4						
1982 06 20		18 31.15	-27 09.8	1.589	2.596	170.2	3.8	18.1	
1982 06 30		18 19.86	-27 01.5						
1982 07 10		18 09.07	-26 46.4	1.621	2.616	164.7	5.9	18.2	
1982 07 20		17 59.91	-26 26.2						
1982 07 30		17 53.26	-26 03.5	1.755	2.633	142.3	13.6	18.6	
1982 08 09		17 49.55	-25 40.9						
1982 08 19		17 48.85	-25 19.8	1.966	2.648	122.2	18.9	19.0	
1982 08 29		17 51.02	-25 01.1						
1982 09 08		17 55.79	-24 44.3	2.223	2.660	104.5	21.5	19.4	

1981 AQ		Elements MPC 5892							
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.	
1982 04 01		18 38.35	-15 03.9	2.363	2.583	-0.90	+1.9	18.9	
1982 04 11		18 46.08	-14 47.4						
1982 04 21		18 51.63	-14 32.7	2.119	2.601	-1.02	+2.0	18.6	
1982 05 01		18 54.74	-14 22.0						
1982 05 11		18 55.19	-14 17.5	1.898	2.617	-1.16	+2.1	18.3	
1982 05 21		18 52.85	-14 21.0						
1982 05 31		18 47.73	-14 33.7	1.728	2.631	-1.32	+2.3	18.0	
1982 06 10		18 40.16	-14 56.1						
1982 06 20		18 30.77	-15 27.3	1.641	2.643	-1.42	+2.7	17.6	
1982 06 30		18 20.49	-16 05.6						
1982 07 10		18 10.45	-16 48.7	1.660	2.652	-1.40	+3.0	17.7	
1982 07 20		18 01.71	-17 34.2						
1982 07 30		17 55.11	-18 20.2	1.782	2.660	-1.27	+3.2	18.1	
1982 08 09		17 51.16	-19 05.3						
1982 08 19		17 50.03	-19 48.7	1.983	2.665	-1.12	+3.0	18.4	
1982 08 29		17 51.70	-20 29.5						
1982 09 08		17 55.97	-21 06.9	2.231	2.668	-0.98	+2.6	18.8	

(2376) 1977 QG3

(2376) 1977 QG3		Elements MPC 5979							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 04 21		18 53.91	-24 37.8	2.723	3.179	107.9	17.5	17.1	
1982 05 01		18 57.07	-24 47.0						
1982 05 11		18 58.01	-24 59.9	2.455	3.161	126.4	14.9	16.8	
1982 05 21		18 56.62	-25 16.4						
1982 05 31		18 52.91	-25 35.9	2.245	3.143	146.8	10.2	16.5	
1982 06 10		18 47.11	-25 56.7						
1982 06 20		18 39.66	-26 16.9	2.122	3.125	168.6	3.7	16.1	
1982 06 30		18 31.27	-26 34.2						
1982 07 10		18 22.79	-26 47.1	2.106	3.107	167.6	4.0	16.1	
1982 07 20		18 15.11	-26 55.2						
1982 07 30		18 09.00	-26 58.8	2.197	3.089	145.8	10.7	16.4	
1982 08 09		18 05.01	-26 59.0						
1982 08 19		18 03.41	-26 56.9	2.373	3.072	125.4	15.6	16.7	
1982 08 29		18 04.29	-26 53.4						
1982 09 08		18 07.57	-26 48.9	2.604	3.055	107.1	18.4	16.9	
1982 09 18		18 13.05	-26 43.2						
1982 09 28		18 20.54	-26 35.8	2.861	3.039	90.5	19.2	17.1	

(2381) 1976 AF

(2381) 1976 AF		Elements MPC 6046							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 04 21		19 06.41	-08 30.3	2.625	3.011	102.8	19.0	17.4	
1982 05 01		19 09.55	-07 53.5						
1982 05 11		19 10.55	-07 21.0	2.360	2.998	120.2	16.9	17.1	
1982 05 21		19 09.29	-06 55.2						
1982 05 31		19 05.73	-06 38.6	2.142	2.983	139.1	12.9	16.8	
1982 06 10		19 00.04	-06 33.4						
1982 06 20		18 52.59	-06 41.4	2.001	2.966	157.6	7.5	16.5	
1982 06 30		18 43.99	-07 03.3						
1982 07 10		18 35.06	-07 38.5	1.961	2.947	162.6	5.9	16.4	
1982 07 20		18 26.65	-08 24.8						
1982 07 30		18 19.58	-09 19.6	2.028	2.926	146.2	11.1	16.6	
1982 08 09		18 14.46	-10 19.5						
1982 08 19		18 11.65	-11 21.5	2.183	2.904	126.7	16.2	16.9	
1982 08 29		18 11.30	-12 23.0						
1982 09 08		18 13.40	-13 21.7	2.397	2.879	108.4	19.4	17.1	
1982 09 18		18 17.79	-14 16.2						
1982 09 28		18 24.30	-15 05.1	2.640	2.853	91.8	20.6	17.4	