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EDITORIAL NOTICE.

The next MPCs will be published on or about 1982 Feb. 8. No MPCs will
 be issued in January.

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ERRATA.

MPC Line
 3083 33 For 1951 YK1 read 1951 YK2
 6419 24 Add The double designation 1976 GB8 = 1976 JP1 is by
 B. G. Marsden (MPC 4927).

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CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Mag.	N Obs.
505	1938 11	09.92458	02 16 11.16	-01 46 28.3	JO 23		1 008
1936 YF	1936 12	21.14520	07 49 42.11	+25 41 24.9	MPC 3232	15.0	2 020
1936 YF	1936 12	21.18364	07 49 40.06	+25 41 24.4	MPC 3232		2 020
1981 UA	1981 11	04.32882	03 06 49.08	+55 36 29.5	MPC 6448		675
1981 UA	1981 11	05.40312	03 04 02.14	+56 06 51.8	MPC 6448		675
1981 UA	1981 11	05.48646	03 03 48.46	+56 09 08.0	MPC 6448		675
1981 VA *	1981 11	04.32187	02 55 05.36	+56 36 03.1	MPC 6448	16.5	675
1981 VA	1981 11	04.33576	02 55 01.79	+56 34 17.4	MPC 6448		675
1981 VA	1981 11	05.39791	02 51 12.01	+54 18 45.1	MPC 6448		675
1981 VA	1981 11	05.40833	02 51 09.76	+54 17 26.8	MPC 6448		675
1981 VA	1981 11	05.48125	02 50 54.35	+54 08 11.3	MPC 6448		675
1981 VA	1981 11	05.49166	02 50 52.32	+54 06 55.6	MPC 6448		675

Note 1: see note 1 in next section. 2: erroneously designated 1936 YL.

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DELETED OBSERVATIONS.

The following observations are to be deleted.

Object	Date	UT	R. A. (1950)	Decl.	Reference	N Obs.
A916 GC *	1916 04	11.21493	13 10 42.8	+00 05 20	AN 208	786
A924 NE *	1924 07	07.91619	21 18 11.9	-21 13.8	AN 226	078
A924 NE	1924 07	08.92800	21 17 46.1	-21 21.1	AN 226	078
A924 NF *	1924 07	07.91619	21 18 38.1	-20 37.9	AN 226	078
A924 NF	1924 07	08.92800	21 18 02.4	-20 40.5	AN 226	078

1938 VB	*	1938 11 03.92458	02 16 11.16	-01 46 28.3	MPC 4350	1 008
1946 SG		1946 10 24.97792	01 33 15.54	+08 34 58.3	IAU 1075	012
1977 RP	*	1977 09 09.53438	23 01 32.97	-14 56 14.2	MPC 6249	323
1981 QG		1981 09 03.31389	00 04 28.84	+00 36 15.9	MPC 6264	688

Note 1: this observation belongs to (505); the date was given incorrectly in JO 23 (see RI 1879).

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IDENTIFICATION CHANGES.

Continuation to MPC 6425.

Object	Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
A906 VL	*	1906 11 12.03649	02 05 56.80	+10 51 46.8	A906 UD		045
A908 DC	*	1908 02 29.06701	08 02 18.5	+29 10 02	A908 BF		803
1926 CE	*	1926 02 06.86355	06 28.5	+21 38	1926 AF	14	024
1927 FE	*	1927 03 21.88468	10 23.8	+07 56.1	1927 DC	14.0	012
1928 FT	*	1928 03 16.92271	09 15 41.71	+20 08 01.7	1928 DP	15.5	024
1928 FT		1928 03 18.84076	09 14 55.90	+20 09 42.3	1928 DP	15.0	024
1929 CJ1	*	1929 02 11.98071	09 50.9	+05 51	1929 CA1	13.9	024
1931 JU	*	1931 05 09.88184	15 04 41.51	-14 51 23.3	1082	13.4	078
1931 JU		1931 05 09.93787	15 04 38.72	-14 51 11.0	1082		078
1931 RJ1	*	1931 09 08.21250	21 22.0	-28 59	1931 PD		690
1931 RJ1		1931 09 11.23610	21 20.3	-28 49	1931 PD		690
1934 CP1	*	1934 02 15.21848	08 42 05.50	+36 20 45.2	1227	16	754
1934 CP1		1934 02 15.23272	08 42 04.74	+36 20 42.9	1227	16	754
1935 DK	*	1935 02 26.89	09 06.4	+12 15	1935 BG		012
1935 EU	*	1935 03 04.01335	09 02 41.31	+12 32 21.9	1935 BG		012
1935 EV	*	1935 03 07.00286	09 00 42.38	+12 17 50.8	1935 BG		012
1935 EW	*	1935 03 09.00143	08 59 37.07	+12 21 10.4	1935 BG		012
1938 CQ	*	1938 02 05.97493	07 17 50.78	+20 55 23.5	1442	14.8	024
1938 CR	*	1938 02 05.97493	07 18 26.59	+20 30 02.1	1937 YD	14.8	024
1938 QQ	*	1938 08 25.03668	22 55.6	-04 39	1295	15.1	024
1940 TO	*	1940 10 06.99	01 50.0	+08 40	1003	13.1	094
1942 FT	*	1942 03 19.82	10 05.6	+13 50	1942 ER		062
1942 XX	*	1942 12 07.94	05 04.4	+23 02	1249	13.0	186
1943 EJ1	*	1943 03 01.99939	11 31 09.48	+02 07 15.1	1062		020
1943 EJ1		1943 03 04.026	11 29.2	+02 21	1062	14.0	031
1943 EJ1		1943 03 05.014	11 28.4	+02 26	1062		031
1948 EB1	*	1948 03 08.90	09 19.2	+20 28	1948 CD		008
1950 JV	*	1950 05 13.36184	15 59.1	-17 08	1047	16.2	760
1951 AX1	*	1951 01 14.00	08 46.6	+20 12	1285	14.0	020
1951 UA1	*	1951 10 25.92542	00 27.2	+13 36	1951 SV	13.5	094
1952 HE4	*	1952 04 26.8706	14 07.7	-08 54	1952 HR1	12.5	094
1953 UZ	*	1953 10 29.83354	00 11 47.70	-02 25 23.8	1953 TO		020
1953 VW3	*	1953 11 10.10138	00 27 36.33	-04 29 52.5	1953 VT	14.5	760
1953 VW3		1953 11 10.14652	00 27 35.98	-04 29 25.7	1953 VT		760
1954 AP	*	1954 01 03.00	07 30.6	+12 16	1436		020
1954 GN	*	1954 04 08.11673	12 03 39.82	-21 11 38.3	1138	14.8	839
1954 UG3	*	1954 10 23.10736	23 22 34.56	-04 38 55.7	1954 SN	16.3	760
1954 UG3		1954 10 23.15529	23 22 33.64	-04 39 09.1	1954 SN		760
1955 RN1	*	1955 09 13.18	21 04.5	-15 49	1282	16.0	760
1955 SW2	*	1955 09 19.34	01 55.3	+18 04	1169	16.3	760
1955 YH	*	1955 12 19.712	04 52.0	+18 43	1955 XD1	13.3	210
1956 AE1	*	1956 01 13.41	08 37.0	+19 07	1007	15.9	760
1956 SK	*	1956 09 28.08126	21 45 01.76	-22 10 47.7	1956 RO	15.9	760
1956 SK		1956 09 28.12432	21 45 00.89	-22 10 47.1	1956 RO		760
1957 YW	*	1957 12 17.80	03 24.8	+30 36	1226		020

1957	YX	*	1957	12	22.13707	03	13	48.85	+29	32	38.4	1226	16.9	760	
1958	TQ1	*	1958	10	09.95847	01	24	04.29	+10	08	51.5	1225	14.1	024	
1959	SS	*	1959	09	30.90218	23	40	12.04	-24	29	34.4	1048	13.6	024	
1959	XK	*	1959	12	01.97444	04	10	14.39	+26	39	30.1	1491	13.9	024	
1962	HG	*	1962	04	28.90625	14	34	16.86	-29	46	27.3	1064	14.9	076	
1964	EB	*	1964	03	09.07043	11	37	14.18	+06	53	44.8	1439		012	
1967	EC1	*	1967	03	15.87070	11	39	36.90	+05	51	21.1	1144		020	
1967	EC1		1967	03	15.88424	11	39	35.95	+05	51	33.1	1144		020	
1967	EC1		1967	03	17.89380	11	38	28.33	+06	01	01.4	1144		020	
1967	EC1		1967	03	17.90832	11	38	27.16	+06	01	13.9	1144		020	
1967	GT	*	1967	04	12.85966	11	25	39.06	+07	59	44.6	1144		020	
1967	GT		1967	04	12.89360	11	25	38.39	+07	59	48.8	1144		020	
1969	ME	*	1969	06	19.89931	19	27	40.34	-28	43	14.7	1152	15.0	076	
1969	OE1	*	1969	07	17.92510	20	00	35.39	-24	35	28.2	1029		095	
1970	HN	*	1970	04	29.92847	15	57	28.00	-29	19	41.9	1197	13.1	076	
1971	DD2	*	1971	02	20.84505	07	59	12.87	+20	10	36.4	1971	BQ1	16.0	095
1971	UO4	*	1971	10	20.90774	00	23	07.27	-06	17	01.1	1492		095	
1973	FL2	*	1973	03	25.86120	09	29	32.65	+06	38	48.2	1314		095	
1974	HR3	*	1974	04	21.34123	17	45	26.09	-33	44	02.4	1974	FW1	18.0	805
1974	HR3		1974	04	22.34327	17	45	20.72	-33	51	38.0	1974	FW1		805
1974	HR3		1974	04	24.33900	17	45	08.56	-34	06	18.1	1974	FW1		805
1974	HR3		1974	04	25.31882	17	44	59.54	-34	13	35.5	1974	FW1		805
1976	NP	*	1976	07	01.94646	19	34	32.10	-12	56	56.0	1395		095	

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IDENTIFICATIONS.

The following list of identifications with numbered minor planets continues that on MPC 6426-6429. The identifications are by L. D. Schmadel unless otherwise noted.

Note		Note		Note		
A898	VE = (1093)	A899	KB = (1102)	A900	UD = (1409)	
A901	DB = (1308)	A902	GB = (1142)	A902	UA = (1442)	
A904	NA = (1281)	A904	TA = (1117)	A904	TB = (1062)	
A904	XA = (1100)	A905	AA = (1278)	A905	SB = (1415)	
A905	SE = (1488)	A906	DD = (1049)	A906	HD = (1271)	
A906	KA = (1063)	A906	OA = (1127)	A906	UD = (1421)	
A906	YF = (1115)	A906	YG = (1075)	A907	GK = (1365)	
A907	GU = (1262)	A907	GV = (1201)	A907	JF = (1028)	
A907	VF = (1097)	A908	BD = (1133)	A908	BF = (1242)	
A908	FD = (1321)	A908	TD = (1244)	2	A908	TE = (1051)
A908	UB = (1323)	A908	XA = (1112)	A908	YC = (1304)	
A908	YD = (1464)	A908	YF = (1348)	A909	BE = (1125)	
A909	GF = (1216)	A910	LB = (1353)	A910	VB = (1031)	
A911	KC = (1484)	A911	MD = (1001)	A911	RA = (1154)	
A912	BB = (1196)	A912	VN = (1074)	A913	VB = (1270)	
A914	BB = (1074)	A914	SD = (1062)	3	A914	TB = (1416)
A914	TG = (1275)	A915	BD = (1219)	A915	CA = (1251)	
A915	QA = (1085)	A915	RN = (1145)	A916	AC = (1479)	
A916	QB = (1353)	A916	QD = (1469)	A916	UE = (1015)	
A916	VA = (1390)	A916	WF = (1083)	A916	WH = (1075)	
A916	YD = (1493)	A917	DD = (1098)	A917	DF = (1107)	
A917	FA = (1110)	A917	GB = (1062)	A917	RA = (1088)	4
A917	TA = (1004)	A917	UB = (1392)	A917	UE = (1087)	
A917	UF = (1099)	A917	UH = (1105)	A917	XD = (1421)	
A918	EF = (1488)	A918	EK = (1121)	A918	EL = (1487)	
A918	FA = (1447)	A918	KA = (1212)	A919	SE = (1186)	
A919	SH = (1309)	A919	UC = (1289)	A920	EB = (1241)	

A920	FA	=	(1351)		A920	GB	=	(1063)		A921	TF	=	(1199)	
A921	UD	=	(1332)		A922	HA	=	(1140)		A922	NA	=	(1291)	
A922	SA	=	(1330)		A923	CB	=	(1467)		A923	QA	=	(1025)	
A924	BH	=	(1244)		A924	EK	=	(1442)		A924	GC	=	(1200)	
A924	JA	=	(1137)		A924	KC	=	(1107)		A924	LB	=	(1032)	
A924	TB	=	(1350)		1925	CA	=	(1351)	4	1925	QE	=	(1109)	
1925	QF	=	(1181)		1925	RF	=	(1354)		1925	RL	=	(1494)	
1925	SE	=	(1277)		1925	SF	=	(1249)		1925	UB	=	(1463)	
1925	WJ	=	(1463)		1925	WK	=	(1284)		1925	XF	=	(1044)	
1926	AF	=	(1350)		1926	EA	=	(1313)		1927	DC	=	(1463)	
1927	FC	=	(1171)		1927	UL	=	(1247)		1928	BE	=	(1381)	
1928	DP	=	(1190)		1928	DX	=	(1372)	5	1928	DJ1	=	(1259)	
1928	FB	=	(1393)		1928	FJ	=	(1130)		1928	FT	=	(1482)	
1928	QN	=	(1496)		1928	RE	=	(1496)		1928	SC	=	(1352)	
1928	SR	=	(1285)		1928	UD	=	(1225)		1929	CA1	=	(1297)	
1929	CD1	=	(1251)		1929	EJ	=	(1297)		1929	GA	=	(1237)	
1929	JH	=	(1356)		1929	JJ	=	(1356)		1929	NB	=	(1277)	
1929	QE	=	(1336)	6	1929	RT	=	(1411)		1929	RY	=	(1304)	
1929	SS	=	(1424)		1929	TH	=	(1296)		1929	TJ	=	(1292)	
1929	TT	=	(1394)		1929	UB	=	(1424)		1929	UL	=	(1390)	
1929	UQ	=	(1383)		1929	VH	=	(1350)	7	1929	XD	=	(1243)	
1929	XF	=	(1427)		1930	CA	=	(1282)		1930	DO	=	(1340)	
1930	FA1	=	(1366)		1930	HQ	=	(1332)		1930	KN	=	(1268)	
1930	KO	=	(1256)		1930	LA	=	(1267)		1930	MB	=	(1199)	
1930	OD	=	(1325)		1930	OE	=	(1184)		1930	OM	=	(1398)	
1930	ON	=	(1211)		1930	UL	=	(1481)		1930	UD1	=	(1426)	
1930	VA	=	(1240)		1930	WC	=	(1264)		1930	XC	=	(1336)	
1930	XG	=	(1240)		1930	XV	=	(1396)		1931	AR	=	(1159)	
1931	BE	=	(1254)		1931	DK	=	(1417)		1931	DU	=	(1112)	
1931	DW	=	(1284)		1931	FA	=	(1330)		1931	GK	=	(1397)	
1931	HC	=	(1421)		1931	HF	=	(1296)		1931	JQ	=	(1082)	
1931	LC	=	(1142)		1931	RJ1	=	(1366)		1931	TB	=	(496)	8
1931	TP	=	(1354)		1931	TJ2	=	(1251)		1931	TM2	=	(1423)	
1931	TN2	=	(496)	9	1931	TA3	=	(1442)		1931	TM3	=	(1356)	
1931	TM3	=	(1051)		1931	TV3	=	(1375)		1931	TX3	=	(1443)	
1931	VJ1	=	(1167)		1932	BP	=	(1047)		1932	CG1	=	(1381)	
1932	EK	=	(1364)		1932	KG	=	(1292)	10	1932	KJ	=	(1291)	
1932	LC	=	(1294)		1932	RE	=	(1295)		1932	VC	=	(1332)	
1933	HJ	=	(1426)		1933	HM	=	(1348)	11	1933	QB1	=	(1282)	
1933	RF	=	(1282)		1933	SL	=	(1485)		1933	SG1	=	(1379)	
1933	UY1	=	(1394)		1933	VB	=	(1255)		1933	WB	=	(1422)	12
1933	XE	=	(1456)		1934	CL1	=	(1227)		1934	EE	=	(1423)	
1934	HF	=	(1415)		1934	JL	=	(1304)		1934	NU	=	(1436)	
1934	PA1	=	(1252)		1934	XG	=	(1457)		1935	BG	=	(1258)	
1935	CZ	=	(1290)	13	1935	KL	=	(1257)		1935	QE1	=	(1259)	
1935	QH1	=	(2476)	14	1936	BB	=	(1040)		1936	FJ1	=	(1135)	
1936	FL1	=	(1457)		1936	FU1	=	(1308)		1936	RG	=	(1023)	
1936	SC	=	(1423)		1936	XE	=	(1357)		1937	BD	=	(1372)	15
1937	CG	=	(1033)		1937	FB	=	(1003)		1937	LN	=	(1142)	
1937	NO	=	(1428)	16	1937	VH	=	(1169)		1937	XB	=	(1032)	
1938	CR	=	(1442)		1938	EE	=	(1463)	17	1938	ES	=	(1481)	
1938	QF	=	(1295)		1938	SJ1	=	(1041)		1938	YA	=	(1190)	
1938	YL	=	(1281)		1939	JE	=	(1320)		1939	LD	=	(1481)	
1939	LG	=	(1482)	18	1939	RP	=	(1336)		1940	TA	=	(1003)	
1941	BW	=	(1285)	11	1941	ME	=	(1365)		1941	WF	=	(1481)	
1941	WD1	=	(1146)		1941	YG	=	(1047)		1942	ED	=	(1330)	
1942	ER	=	(1331)		1942	EE1	=	(1337)		1942	FR	=	(1088)	
1942	GS	=	(1142)		1942	GW	=	(1340)		1942	GY	=	(1152)	
1942	XG	=	(1039)		1942	XP	=	(1048)		1942	XV	=	(1249)	

1943 ED1 = (1363)	11	1943 EH1 = (1062)		1943 YD = (1457)	
1944 QE = (1312)		1944 QK = (1372)	15	1946 KA = (1147)	
1946 KC = (1194)		1946 OH = (1199)		1946 UF = (1423)	
1947 KB = (1105)		1947 SA = (1032)		1947 XG = (1219)	
1948 AC = (1242)		1948 EB1 = (1397)		1948 GJ = (1385)	11
1948 KG = (1142)	19	1948 OE = (1432)		1948 PU = (1127)	
1948 QG = (1350)		1948 QO = (1022)		1948 RN1 = (1126)	
1948 SH = (1332)	11	1948 TJ2 = (1289)		1949 BK = (1448)	
1949 HO = (1352)		1949 HP = (1426)		1949 HY = (1317)	20
1949 HA1 = (1317)	20	1949 JJ = (1262)		1949 KX = (1044)	
1949 KZ = (1431)		1949 OP1 = (1469)	11	1949 QU1 = (1228)	
1949 QV1 = (1389)		1949 RB = (1046)		1949 SU = (1141)	
1949 SW = (1406)		1949 UQ = (1041)	21	1949 UX = (1041)	21
1949 UA1 = (1081)		1949 YL = (1046)		1949 YN = (1259)	
1949 YO = (1126)		1949 YY = (1350)		1950 BU = (1100)	
1950 DQ = (1474)		1950 DC1 = (1200)		1950 EJ = (1357)	
1950 EM = (1488)		1950 FD = (1463)		1950 JF = (1047)	
1950 JK = (1090)		1950 JQ = (1209)		1950 PW = (1423)	
1950 PB1 = (1473)		1950 QJ = (1465)		1950 QU = (1413)	
1950 QX = (1167)		1950 QY = (1057)		1950 QH1 = (1098)	11
1950 RL = (1284)		1950 TO2 = (1396)		1950 TU3 = (1482)	
1950 UK = (1466)		1950 UN = (1008)		1951 AC = (1229)	
1951 AH = (1082)		1951 CM1 = (1285)		1951 CQ1 = (1041)	
1951 DJ = (1124)		1951 EX = (1333)		1951 EP1 = (1438)	
1951 EW1 = (1372)	22	1951 GL = (1393)		1951 JB = (1306)	
1951 JR = (1265)		1951 KF = (1432)		1951 LS = (1326)	
1951 PB = (1277)		1951 QJ = (1233)	23	1951 RP1 = (1233)	23
1951 RU1 = (1499)		1951 SV = (1494)		1951 TQ = (1328)	
1951 TT = (1328)		1951 WU = (1320)		1951 YM2 = (1363)	
1952 BM = (1099)		1952 BE1 = (1098)		1952 BV1 = (1018)	
1952 DH = (1216)		1952 DF1 = (1466)		1952 FJ = (1071)	
1952 HE4 = (1089)		1952 KD = (1343)		1952 LD = (1078)	
1952 OC = (1346)		1952 QY = (1069)		1953 AC = (1017)	
1953 AH = (1180)		1953 CN = (1290)	13	1953 FC = (1223)	
1953 GD = (1494)		1953 OA = (1122)		1953 QD = (1342)	
1953 TY = (1446)		1953 UJ = (1439)		1953 VK = (1175)	
1953 VK3 = (1405)		1953 VW3 = (1088)		1953 XF1 = (1270)	
1954 CQ = (1436)		1954 EQ = (1238)		1954 GK = (1138)	
1954 JO = (1243)		1954 KJ = (1142)		1954 MH = (1496)	
1954 MU = (1142)		1954 SO = (1095)		1954 TF = (1228)	
1954 TG = (1287)		1954 UJ = (1286)		1954 UG1 = (1007)	
1954 UQ1 = (1158)		1954 UR1 = (1430)		1954 UY1 = (1044)	
1954 UG3 = (1095)		1954 YA = (1440)		1954 YB = (1264)	
1954 YF = (1012)		1955 DT = (1080)		1955 HP = (1222)	
1955 LA = (1481)		1955 MP = (1329)		1955 PC = (1220)	
1955 SK1 = (1169)	24	1955 SO1 = (1282)		1955 SR1 = (1169)	24
1955 XK = (1458)		1955 XB1 = (1389)		1955 YH = (1058)	
1956 AK = (1007)		1956 AT = (1041)		1956 AD1 = (1095)	
1956 BA = (1348)		1956 EM1 = (1306)		1956 JD = (1479)	
1956 JF = (1259)		1956 PB = (1241)		1956 SK = (1063)	
1956 TE = (1393)	25	1957 EJ = (1401)		1957 HH = (1090)	
1957 HP = (1439)		1957 HT = (1430)		1957 KQ = (1306)	
1957 LQ = (1236)		1957 OC = (1022)		1957 OY = (1200)	
1957 UT = (1493)		1957 UF1 = (1180)		1957 WN = (1226)	
1957 WE1 = (1396)		1957 WD2 = (1003)		1957 XD = (1260)	
1957 YT = (1344)		1958 BB = (1142)		1958 FO = (1135)	
1958 OC = (1011)		1958 TB = (1225)		1958 TG1 = (1158)	
1958 UP = (1044)		1959 CJ = (1144)		1959 EZ = (1330)	
1959 EF1 = (1207)		1959 GY = (1481)		1959 SK = (1048)	

1959 UK = (1280)	1959 WD = (1477)	1959 XJ = (1491)
1960 CA = (1288)	1960 WQ = (1102)	1961 AF = (1030)
1961 AM = (1079)	1961 AN = (1280)	1961 XL = (1493)
1961 XU = (1238)	1962 EB = (1283)	1962 HF = (1064)
1962 QH = (1003)	1962 SB = (1194)	1962 TD = (1217)
1962 UB = (1315)	1962 VF = (1430)	1962 WA = (1160)
1962 XM = (1412)	1963 HD = (1341)	1963 KF = (1276)
1963 MF = (1108)	1964 FC = (1439) 26	1964 GD = (1321)
1964 JG = (1448)	1964 JH = (1236)	1964 PG = (1181)
1964 TB = (1030)	1964 TC = (1310)	1964 TS = (1230)
1964 UD = (1328)	1964 UE = (1230)	1964 VA2 = (1294) 27
1964 WA = (1257)	1964 XE = (1265)	1964 XF = (1294) 27
1965 AA = (1191)	1965 AL1 = (1066)	1965 CB = (1075)
1965 EA = (1446)	1965 HB = (1267)	1965 JE = (1267)
1965 WA = (1236)	1965 WG = (1057)	1965 WK = (1208)
1966 BG = (1457)	1966 CY = (1265)	1966 FM = (1265)
1966 XB = (1136)	1967 EF = (1242)	1967 EH = (1433)
1967 EV = (1144)	1969 MD = (1152)	1969 OU = (1029)
1969 TJ4 = (1035)	1970 HL = (1197)	1970 JA = (1008)
1971 BE = (1088)	1971 BD2 = (1176) 28	1971 DD2 = (1034)
1971 KG = (1254)	1971 KX = (1125)	1971 OQ = (1250)
1971 UF2 = (1335)	1971 VR = (1492)	1971 YJ = (1082)
1971 YK = (1114)	1972 CB = (1077)	1972 GC = (1158)
1972 VD1 = (1395)	1972 VP1 = (1303)	1973 AW4 = (1309)
1973 FM = (1314)	1973 FQ1 = (1432)	1974 HU2 = (1047)
1974 HH3 = (1358)	1974 HR3 = (1323)	1974 KM = (1323)
1974 KO = (1323)	1974 PJ = (1067)	1974 QC3 = (1067)
1974 WK = (1004)	1974 XR = (1254)	1975 FE = (1219)
1975 FT = (1329)	1975 HH = (1230)	1975 LS = (1081)
1975 QE = (1483)	1975 RP1 = (1491)	1975 VG8 = (1069)
1976 AJ = (1265)	1976 AL = (1045)	1976 HZ = (1494)
1976 NK = (1395)	1976 SD = (1311)	1976 WK = (1451)
1977 EU = (1105)	1977 FL = (1407)	1977 HF = (1415)
1977 UM = (1021)	1977 UN = (1493) 29	1978 AD = (1203)
1978 BG = (1097)		

Note 1: independently found by E. Bowell. 2: the identification (760) = A908 TD (Veroff. Astron. Rechen-Inst. 9, 20) is invalid. 3: the identification (822) = A914 SD (AN 203, 380) is invalid. 4: the identification A912 RA = A917 RA and 1925 CA = A917 SE (JO 35, 158) are invalid. 5: contrary to MPC 1172 and 1227. 6: contrary to MPC 740. 7: the identification (1448) = 1929 VH (MPC 2805) is invalid. 8: the double designation 1931 TB = 1931 TN2 is by O. Kippes (MPC 1330). 9 = 1 + 8. 10: contrary to RI 1370. 11: contrary to MPC 1701-1702. 12: the identification 1949 GK = 1933 WB (NAZ 9, 9) is invalid. 13: contrary to MPC 1275. 14: identification by S. Nakano. 15: contrary to MPC 1226 and 1231. 16: this replaces the erroneous original discovery identification (1428) = 1937 ND. 17: this observation was published as (1463) = 1938 CB in BAB 2, 234. 18: an approximate version of this observation was published as (1482) on RI 997. 19: the identification 1953 NB = 1948 KG (MPC 2808) is invalid. 20: the double designation 1949 HY = 1949 HA1 is by O. Kippes (MPC 445). 21: the double designation 1949 UQ = 1949 UX is by O. Kippes (MPC 1278). 22: contrary to MPC 1176. 23: the double designation 1951 QJ = 1951 RP1 is by O. Kippes (MPC 1968). 24: the double designation 1955 SK1 = 1955 SR1 was found independently by S. Kanda and O. Kippes (MPC 1453). 25: the double designation 1956 TE = 1956 UQ (MPC 1750, 1752) is invalid. 26: the identification 1941 WA = 1964 FC (MPC 2807) is invalid. 27: the double designation 1964 VA2 = 1964 XF is by C. M. Bardwell. 28: the identification 1976 SM2 = 1971 BD2 (NOC 1067) is invalid. 29: the identification (1493) = 1977 UH (MPC 5067) is invalid.

ROMAN NUMERAL DESIGNATIONS OF COMETS.

The following tabulation continues that on MPC 5660. Comet 1979 XI refers to a belated discovery (cf. IAUC 3640, 3647). Comet 1980p does not exist.

Comet	T	Name	Year/letter	Ref.
1979 XI	1979 Aug. 30.9	Howard-Koomen-Michels		IAUC 3647
1980 I	1980 Apr. 11.1	P/Honda-Mrkos-Pajdusakova	1980c	IAUC 3472
1980 II	Apr. 19.9	Torres	1980e	MPC 5836
1980 III	May 19.5	P/Russell 2	1980o	MPC 5639
1980 IV	June 22.4	Cernis-Petrauskas	1980k	MPC 5640
1980 V	Sept. 3.4	P/Lovas	1980s	MPC 5975
1980 VI	Sept. 24.7	P/Forbes	1980a	IAUC 3460
1980 VII	Oct. 5.1	P/Wild 3	1980d	MPC 5413
1980 VIII	Oct. 29.8	P/Reinmuth 1	1979j	IAUC 3417
1980 IX	Nov. 25.4	P/Brooks 2	1980f	IAUC 3486
1980 X	Dec. 5.2	P/Stephan-Oterma	1980g	IAUC 3488
1980 XI	Dec. 6.6	P/Encke		IAUC 3526
1980 XII	Dec. 9.7	Meier	1980q	MPC 5975
1980 XIII	Dec. 14.7	P/Tuttle	1980h	IAUC 3493
1980 XIV	Dec. 24.6	P/Harrington	1980m	IAUC 3513
1980 XV	Dec. 29.5	Bradfield	1980t	MPC 5837

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OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

- 020 Nice. Observer B. Milet.
 046 Klet. Observer Z. Vavrova.
 062 Turku. Measured by V. Laiho, K. Alikoski and L. Oterma.
 084 Pulkovo. Observers N. V. Fatchikhin, N. M. Bronnikova, L. S. Koroleva, T. P. Kiseleva, O. P. Bykov, A. A. Kiselev, I. I. Kumkova and S. S. Smirnov. From Kiev Komet. Tsirk. No. 280.
 097 Wise Observatory. Observer Y. Sheffer.
 474 Mt. John University Observatory. Observers A. C. Gilmore and P. M. Kilmartin (assisted by R. McIntosh).
 500 These observations are from the satellite P78-1.
 675 Palomar. 1.2-m Schmidt. Observer J. Gibson.
 688 Lowell Observatory, Anderson Mesa station. Observer B. A. Skiff. Measured by E. Bowell.
 707 Chamberlin Observatory field station. Observers Elizabeth and Edgar Everhart. Measured by Edgar Everhart.
 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 Vaisala 1						
/1939 IV	1939 01	18.99058	09 47 52.19	+12 02 06.1		1 062
/1939 IV	1939 01	19.04449	09 47 52.27	+12 02 34.3		1 062
/1939 IV	1939 02	08.79927	09 44 40.35	+15 58 24.0		062
/1939 IV	1939 02	12.88625	09 43 19.52	+16 54 09.6		062
/1939 IV	1939 03	14.92147	09 37 42.79	+23 03 56.8		062
/1939 IV	1939 03	17.93273	09 38 20.68	+23 28 56.6		062
/1939 IV	1939 03	19.01329	09 38 38.95	+23 37 06.4		062
/1939 IV	1939 03	19.84057	09 38 54.81	+23 43 12.0		062

/1939 IV	1939 03	21.86661	09 39	39.13	+23 56	51.6	062
/1939 IV	1939 03	22.80870	09 40	03.10	+24 02	44.0	062
/1939 IV	1939 03	23.80897	09 40	30.54	+24 08	35.5	062
/1939 IV	1939 03	26.82907	09 42	06.63	+24 24	09.4	062
/1939 IV	1939 04	07.81482	09 51	44.95	+24 53	17.8	062
/1939 IV	1939 04	09.84971	09 53	52.53	+24 53	13.6	062
/1939 IV	1939 04	10.93469	09 55	03.86	+24 52	34.7	062
/1939 IV	1939 04	14.93850	09 59	46.35	+24 46	54.2	062
/1939 IV	1939 04	17.94074	10 03	37.39	+24 39	05.2	062
/1939 IV	1939 04	21.94539	10 09	08.95	+24 24	19.1	062
/1960 IV	1960 03	19.83522	08 39	14.07	+24 16	46.0	062
/1960 IV	1960 03	21.82072	08 40	34.93	+24 28	00.7	062

Periodic Comet Smirnova-Chernykh

/1975 VII	1981 11	02.29814	03 49	58.62	+16 44	59.2	801
/1975 VII	1981 11	25.21964	03 35	06.91	+16 14	17.8	18.5T 801
/1975 VII	1981 11	27.21672	03 33	47.58	+16 11	46.0	707

Periodic Comet Gunn

/1976 III	1980 12	07.43404	09 55	24.71	+23 40	41.8	801
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Comet Howard-Koomen-Michels (1979 XI)

/1979 XI	1979 08	30.789	10 26	47	+08 45	51	500
/1979 XI	1979 08	30.796	10 26	80	+08 45	5	500
/1979 XI	1979 08	30.802	10 27	22	+08 47	8	500
/1979 XI	1979 08	30.809	10 27	36	+08 48	6	500
/1979 XI	1979 08	30.816	10 27	43	+08 49	8	500
/1979 XI	1979 08	30.856	10 29	07	+08 54	8	500
/1979 XI	1979 08	30.867	10 29	67	+08 56	9	500
/1979 XI	1979 08	30.885	10 30	28	+09 00	7	500

Periodic Comet Stephan-Oterma

/1980 X	1980 12	05.50819	05 31	35.93	+21 58	53.6	2 474
/1980 X	1980 12	05.52309	05 31	35.92	+21 59	23.1	11.0N 474

Periodic Comet Encke

/1980 XI	1980 11	03.42918	12 56	11.88	+32 01	43.1	801
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Comet Bowell (1980b)

/1980b	1981 04	25.20764	12 11	51.52	+00 53	34.2	707
/1980b	1981 06	02.26563	12 08	15.68	+01 06	12.8	707

Periodic Comet Reinmuth 2

/1980n	1981 11	25.25738	05 33	30.55	+29 44	53.1	801
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Comet Panther (1980u)

/1980u	1981 02	27.05697	19 35	38.96	+75 57	47.4	084
/1980u	1981 02	27.16060	19 35	47.62	+76 04	13.9	084
/1980u	1981 02	28.13331	19 37	14.88	+77 04	57.1	084
/1980u	1981 03	01.74496	19 39	56.13	+78 47	08.2	084
/1980u	1981 03	01.75466	19 39	57.18	+78 47	46.8	084
/1980u	1981 03	02.10590	19 40	37.36	+79 10	11.9	084
/1980u	1981 03	02.11379	19 40	38.36	+79 10	47.1	084
/1980u	1981 03	02.11960	19 40	38.78	+79 11	00.9	084
/1980u	1981 03	02.12964	19 40	39.60	+79 11	41.2	084
/1980u	1981 03	02.71561	19 41	47.64	+79 49	29.1	084
/1980u	1981 03	03.14463	19 42	43.30	+80 17	08.8	084
/1980u	1981 03	07.06200	19 55	31.62	+84 35	07.8	084
/1980u	1981 03	07.08018	19 55	37.50	+84 36	24.2	084

/1980u	1981 03 16.76180	07 22 11.52	+84 18 14.4		084
/1980u	1981 03 16.76737	07 22 13.48	+84 17 54.0		084
/1980u	1981 03 17.80375	07 26 36.74	+83 06 45.3		084
/1980u	1981 03 21.79789	07 36 48.18	+78 33 51.3		084
/1980u	1981 04 02.78354	07 52 51.38	+65 36 36.5		084
/1980u	1981 04 11.83226	08 02 21.26	+56 57 25.6		084
/1980u	1981 04 22.89809	08 13 20.12	+47 55 20.6		084
/1980u	1981 04 22.91472	08 13 20.95	+47 54 35.7		084
/1980u	1981 04 24.81608	08 15 12.53	+46 31 25.2		084
/1980u	1981 11 18.48751	10 45 02.05	-16 18 31.4		675
/1980u	1981 11 18.51807	10 45 02.03	-16 18 55.8		675
/1980u	1981 12 09.51493	10 41 33.38	-20 44 32.9	3	707

Comet Elias (1981c)

/1981c	1981 05 04.66351	10 28 43.40	-67 34 46.1	15.9N	474
/1981c	1981 05 04.68576	10 28 42.89	-67 34 17.0		474
/1981c	1981 07 01.35361	10 46 44.70	-48 32 49.5		474
/1981c	1981 07 01.41993	10 46 47.55	-48 31 44.4		474
/1981c	1981 08 05.35693	11 14 09.51	-41 05 52.3	17.4N	474
/1981c	1981 08 05.37881	11 14 10.54	-41 05 38.7		474

Comet Bus (1981d)

/1981d	1981 07 04.30740	11 58 19.87	+00 04 01.9		474
/1981d	1981 07 04.32782	11 58 18.62	+00 03 59.5		474

Periodic Comet Gehrels 2

/1981f	1981 10 31.26206	01 50 46.70	+11 55 56.0		801
/1981f	1981 11 23.11810	01 42 00.79	+09 36 50.3		801

Periodic Comet Kearns-Kwee

/1981h	1981 07 29.40208	04 09 21.97	+29 01 45.2	19 N	707
/1981h	1981 09 26.0882	05 59 38.00	+33 09 41.8		097
/1981h	1981 10 31.30791	06 44 30.75	+33 56 14.5		801
/1981h	1981 11 25.29105	06 54 27.72	+34 07 26.4	16 T	801
/1981h	1981 11 27.30861	06 54 17.26	+34 07 11.3	4	707

Periodic Comet Slaughter-Burnham

/1981i	1981 10 31.23894	00 46 33.95	+13 47 01.6		801
/1981i	1981 11 23.08066	00 41 32.92	+13 36 46.4		801
/1981i	1981 11 29.14208	00 42 24.47	+13 41 19.4		707

Periodic Comet Swift-Gehrels

/1981j	1981 09 21.79773	22 07 28.32	+03 22 46.2	16.0T	046
/1981j	1981 10 29.75062	22 13 02.52	+09 30 00.7		020
/1981j	1981 11 02.95466	22 18 43.71	+10 16 59.3		801
/1981j	1981 11 15.07535	22 40 39.95	+12 43 00.5		707
/1981j	1981 11 23.00532	22 59 04.22	+14 25 24.3		801
/1981j	1981 12 01.75435	23 22 39.02	+16 21 56.1		020

Periodic Comet Howell

/1981k	1981 09 02.74104	00 34 54.21	-07 56 18.2	5	474
/1981k	1981 09 23.54942	00 17 23.14	-09 26 19.1	15.1N	474
/1981k	1981 09 23.56157	00 17 22.45	-09 26 21.4		474
/1981k	1981 09 26.30208	00 14 55.46	-09 34 15.8		688
/1981k	1981 09 26.33681	00 14 53.41	-09 34 21.3		688
/1981k	1981 11 02.07843	23 55 40.66	-08 51 44.8		801
/1981k	1981 11 17.14619	23 57 47.85	-07 27 57.0		675
/1981k	1981 11 17.15279	23 57 48.03	-07 27 55.0		675
/1981k	1981 11 23.05678	00 00 04.67	-06 48 04.4	6	801

Note 1: near edge of plate. 2: slightly trailed. 3: measurement difficult.
 4: tail 60" long in p.a. 270 . 5: faint image, poor seeing. 6: very
 weak image, poor measurement.

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OBSERVATIONS MADE AT TAUTENBURG BY BORNGEN, DILL, KIRSCH, LOCHNO,
 STREITBERGER AND ZIENER. REDUCTIONS BY BORNGEN AND KIRSCH.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
205	1981 09	03.10313	03 27 56.08	+18 33 24.4	16.3	033
205	1981 09	03.11701	03 27 56.54	+18 33 22.6		033
584	1974 10	11.94792	01 44 25.40	+34 03 17.5		033
584	1974 10	11.98819	01 44 23.28	+34 03 09.6	9.8R	033
1118	1979 10	27.02569	01 46 21.28	+31 58 09.4		033
1118	1979 10	27.05903	01 46 19.48	+31 58 02.1	13.8R	033
1118	1979 10	28.03125	01 45 27.67	+31 54 34.8		033
1342	1981 09	02.92361	21 44 40.44	-01 04 56.9	16.0	033
1342	1981 09	02.95868	21 44 38.12	-01 04 57.8		033
1471	1974 10	11.94792	01 46 01.89	+33 09 57.1		033
1471	1974 10	11.98819	01 45 59.42	+33 09 59.5	14.0R	033
2459	1981 09	02.92361	21 51 29.05	+00 37 20.3	17.7	033
2459	1981 09	02.95868	21 51 27.54	+00 37 07.3		033
1974 TQ1	1974 10	11.94792	01 44 40.08	+32 26 59.7		033
1974 TQ1 *	1974 10	11.98819	01 44 37.64	+32 26 50.4	16.5R	033
1974 TR1 *	1974 10	11.98819	01 47 23.38	+33 04 54.7	17.1R	033
1974 TS1	1974 10	11.94792	01 50 30.04	+32 16 50.6		033
1974 TS1 *	1974 10	11.98819	01 50 27.88	+32 16 40.1	16.3R	033
1974 TT1	1974 10	11.94792	01 53 59.40	+34 14 17.7		033
1974 TT1 *	1974 10	11.98819	01 53 57.37	+34 14 16.3	15.1R	033
1974 TU1	1974 10	11.94792	01 56 12.26	+34 14 10.3		033
1974 TU1 *	1974 10	11.98819	01 56 09.78	+34 14 15.5	17.9R	033
1976 DM *	1976 02	29.05208	12 19 34.27	+13 32 53.4	18.0	033
1976 DN *	1976 02	29.05208	12 21 20.74	+11 03 09.1	16.8	033
1976 DO *	1976 02	29.05208	12 21 41.37	+13 58 07.7	18.2	033
1976 DP *	1976 02	29.05208	12 24 46.40	+12 40 00.7	18.4	033
1976 DQ *	1976 02	29.05208	12 25 54.76	+13 57 51.3	17.8	033
1976 DR *	1976 02	29.05208	12 27 25.36	+12 36 08.3	17.6	033
1977 QR2	1981 07	30.97622	21 42 24.81	-11 09 56.9	18.5	033
1977 QR2	1981 07	30.99149	21 42 24.09	-11 09 59.4		033
1977 QR2	1981 08	06.99271	21 36 46.25	-11 36 13.0	18.7	033
1977 QR2	1981 08	07.02049	21 36 44.75	-11 36 19.7		033
1979 DV *	1979 02	25.95104	12 31 13.97	+13 56 15.6	19.2	033
1979 DV	1979 02	25.96493	12 31 13.44	+13 56 19.1		033
1979 DW *	1979 02	25.95104	12 31 22.57	+13 01 29.2	19.6	033
1979 DW	1979 02	25.96493	12 31 22.07	+13 01 35.7		033
1979 DX *	1979 02	25.95104	12 36 57.19	+14 41 14.7	18.7	033
1979 DX	1979 02	25.96493	12 36 56.75	+14 41 20.1		033
1979 DY *	1979 02	25.95104	12 38 04.05	+12 58 28.4	18.5	033
1979 DY	1979 02	25.96493	12 38 03.53	+12 58 31.7		033
1979 DZ *	1979 02	25.95104	12 38 27.10	+13 47 34.4	19.3	033
1979 DZ	1979 02	25.96493	12 38 26.71	+13 47 41.7		033
1979 DA1 *	1979 02	25.95104	12 41 21.28	+14 01 57.2	19.5	033
1979 DA1	1979 02	25.96493	12 41 20.93	+14 02 06.1		033
1979 DB1 *	1979 02	25.95104	12 41 33.90	+12 29 33.4	18.0	033
1979 DB1	1979 02	25.96493	12 41 33.47	+12 29 39.1		033
1979 DC1 *	1979 02	25.95104	12 42 30.91	+12 21 30.0	19.2	033
1979 DC1	1979 02	25.96493	12 42 30.47	+12 21 34.8		033
1979 FV3	1979 03	22.95417	12 30 48.60	+12 32 50.3		033

1979	FV3	*	1979	03	22.97917	12	30	47.02	+12	32	54.7	16.4V	033
1979	FW3		1979	03	22.95417	12	30	50.60	+12	36	50.9		033
1979	FW3	*	1979	03	22.97917	12	30	48.72	+12	36	53.0	17.9V	033
1979	FX3		1979	03	22.95417	12	31	06.41	+12	24	41.4		033
1979	FX3	*	1979	03	22.97917	12	31	05.21	+12	24	51.0	17.4V	033
1979	FY3		1979	03	22.95417	12	33	02.09	+14	14	48.3		033
1979	FY3	*	1979	03	22.97917	12	33	00.18	+14	14	51.7	16.9V	033
1979	FZ3		1979	03	22.95417	12	34	12.34	+14	23	19.4		033
1979	FZ3	*	1979	03	22.97917	12	34	11.20	+14	23	26.3	18.3V	033
1979	FA4		1979	03	22.95417	12	35	33.84	+14	23	15.8		033
1979	FA4	*	1979	03	22.97917	12	35	32.75	+14	23	25.5	18.0V	033
1979	FB4		1979	03	22.95417	12	36	29.12	+13	43	19.1		033
1979	FB4	*	1979	03	22.97917	12	36	27.97	+13	43	27.8	16.6V	033
1979	FC4		1979	03	22.95417	12	36	45.68	+13	39	32.2		033
1979	FC4	*	1979	03	22.97917	12	36	43.96	+13	39	37.1	18.3V	033
1979	FD4		1979	03	22.95417	12	37	30.82	+13	06	01.9		033
1979	FD4	*	1979	03	22.97917	12	37	29.78	+13	06	08.3	18.5V	033
1979	FE4		1979	03	22.95417	12	37	39.34	+14	20	41.9		033
1979	FE4	*	1979	03	22.97917	12	37	38.35	+14	20	52.2	18.2V	033
1979	FF4		1979	03	22.95417	12	42	41.55	+14	14	23.7		033
1979	FF4	*	1979	03	22.97917	12	42	40.51	+14	14	31.0	17.3V	033
1979	UF2	*	1979	10	27.05903	01	46	18.32	+32	34	14.5	17.1R	033
1979	UG2	*	1979	10	27.05903	01	46	31.09	+33	03	21.5	15.3R	033
1979	UH2		1979	10	27.02569	01	56	16.42	+34	27	08.8		033
1979	UH2	*	1979	10	27.05903	01	56	14.83	+34	26	55.9	16.8R	033
1979	UJ2		1979	10	27.02569	01	57	49.26	+32	19	10.6		033
1979	UJ2	*	1979	10	27.05903	01	57	46.74	+32	19	13.8	14.3R	033
1979	UJ2		1979	10	28.03125	01	56	33.01	+32	20	32.0		033
1980	DK1	*	1980	02	21.01840	12	31	01.31	+12	01	49.0		033
1980	DK1		1980	02	22.00278	12	30	44.69	+12	05	27.0		033
1980	DK1		1980	02	22.04410	12	30	43.79	+12	05	37.1	19.1	033
1980	DL1	*	1980	02	21.01840	12	33	05.09	+11	58	28.1		033
1980	DL1		1980	02	22.00278	12	32	39.95	+12	04	35.0		033
1980	DL1		1980	02	22.04410	12	32	38.83	+12	04	50.4	18.3	033
1980	DM1	*	1980	02	21.06806	12	48	13.46	+13	45	19.2	14.7R	033
1980	DM1		1980	02	22.08299	12	47	49.55	+13	52	03.3		033
1980	DN1	*	1980	02	21.06806	12	52	57.40	+12	24	01.5	15.0R	033
1980	DN1		1980	02	22.08299	12	52	34.13	+12	32	34.9		033
1980	DO1	*	1980	02	21.06806	12	53	22.51	+12	04	32.3	16.6R	033
1980	DO1		1980	02	22.08299	12	52	57.70	+12	08	23.8		033
1980	DP1	*	1980	02	21.06806	12	55	21.90	+12	55	51.6	16.2R	033
1980	DP1		1980	02	22.08299	12	55	17.03	+13	05	01.6		033
1980	DQ1	*	1980	02	21.06806	12	56	51.27	+14	12	20.4	16.8R	033
1980	DQ1		1980	02	22.08299	12	56	31.59	+14	17	30.2		033
1980	DR1	*	1980	02	21.06806	12	57	19.79	+12	18	29.3	15.6R	033
1980	DR1		1980	02	22.08299	12	56	50.74	+12	23	24.4		033
1980	DS1	*	1980	02	22.08299	12	54	28.13	+11	33	46.2	16.4R	033
1981	OL	*	1981	07	30.97622	21	37	28.63	-10	56	55.7	19.2	033
1981	OL		1981	07	30.99149	21	37	27.80	-10	56	58.7		033
1981	OM	*	1981	07	30.97622	21	40	28.10	-11	52	20.7	17.0	033
1981	OM		1981	07	30.99149	21	40	27.47	-11	52	23.6		033
1981	OM		1981	08	06.99271	21	35	12.88	-12	22	37.4	16.9	033
1981	OM		1981	08	07.02049	21	35	11.45	-12	22	45.3		033
1981	ON	*	1981	07	30.97622	21	41	39.02	-12	50	29.8	18.6	033
1981	ON		1981	07	30.99149	21	41	38.31	-12	50	30.6		033
1981	OO	*	1981	07	30.97622	21	41	47.82	-12	36	48.0	19.0	033
1981	OO		1981	07	30.99149	21	41	46.95	-12	36	47.8		033
1981	OP	*	1981	07	30.97622	21	44	03.10	-09	49	05.5	15.8	033

1981 OP		1981 07 30.99149	21 44 02.38	-09 49 05.4			033
1981 OQ	*	1981 07 30.97622	21 45 16.30	-11 33 47.4	17.7		033
1981 OQ		1981 07 30.99149	21 45 15.73	-11 33 53.5			033
1981 OQ		1981 08 06.99271	21 40 29.90	-12 23 34.9	17.3		033
1981 OQ		1981 08 07.02049	21 40 28.65	-12 23 47.5			033
1981 RX	*	1981 09 02.92361	21 46 54.05	-01 11 58.7	18.7		033
1981 RX		1981 09 02.95868	21 46 52.50	-01 12 05.9			033
1981 RY	*	1981 09 02.92361	21 47 47.58	-00 40 50.8	18.5		033
1981 RY		1981 09 02.95868	21 47 45.83	-00 41 06.2			033
1981 RZ	*	1981 09 02.92361	21 50 03.46	-00 03 58.0	18.0		033
1981 RZ		1981 09 02.95868	21 50 01.25	-00 03 53.1			033
1981 RA1	*	1981 09 02.92361	21 52 27.12	-00 23 15.4	17.4		033
1981 RA1		1981 09 02.95868	21 52 25.47	-00 23 29.4			033
1981 RB1	*	1981 09 03.02569	01 10 13.85	+13 32 59.3	18.0		033
1981 RB1		1981 09 03.04444	01 10 13.39	+13 33 03.6			033
1981 RC1	*	1981 09 03.02569	01 16 42.14	+11 31 16.5	17.2		033
1981 RC1		1981 09 03.04444	01 16 41.34	+11 31 31.6			033
1981 RD1	*	1981 09 03.02569	01 19 10.64	+13 38 17.6	19.4		033
1981 RD1		1981 09 03.04444	01 19 10.17	+13 38 24.1			033
1981 RE1	*	1981 09 03.02569	01 20 39.60	+13 00 20.7	19.6		033
1981 RE1		1981 09 03.04444	01 20 39.23	+13 00 20.9			033
1981 RF1	*	1981 09 03.05104	02 04 51.63	+16 15 43.1	18.5		033
1981 RF1		1981 09 03.08681	02 04 52.36	+16 15 43.3			033
1981 RG1	*	1981 09 03.05104	02 13 39.31	+13 54 02.6	17.8		033
1981 RG1		1981 09 03.08681	02 13 40.01	+13 54 18.4			033
1981 RH1	*	1981 09 03.10313	03 25 41.33	+16 45 11.0	19.4		033
1981 RH1		1981 09 03.11701	03 25 41.96	+16 45 11.7			033
1981 SJ2	*	1981 09 23.82917	21 36 18.75	-01 16 32.4	19.0		033
1981 SJ2		1981 09 23.92188	21 36 16.83	-01 17 10.2			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.
439	1981 10	07.97137	00 24 43.09	+08 45 09.9		046
439	1981 10	07.98560	00 24 42.54	+08 45 00.6		046
794	1981 10	23.88392	23 46 16.63	-05 24 48.5		046
794	1981 10	23.89799	23 46 16.36	-05 24 50.1		046
1111	1981 10	23.88392	23 38 52.02	-07 15 33.0		046
1111	1981 10	23.89799	23 38 51.74	-07 15 35.8		046
1157	1981 10	23.92194	01 38 02.76	+22 21 10.0		046
1157	1981 10	23.93488	01 38 02.15	+22 21 06.9		046
1157	1981 10	25.88925	01 36 23.13	+22 14 32.0		046
1157	1981 10	25.90348	01 36 22.50	+22 14 29.3		046
1518	1981 10	23.88392	23 38 44.60	-06 12 40.9		046
1518	1981 10	23.89799	23 38 43.97	-06 12 40.2		046
1544	1981 10	23.88392	23 38 06.30	-07 04 58.8		046
1544	1981 10	23.89799	23 38 05.90	-07 04 58.3		046
1858	1981 10	05.99834	23 26 39.39	-00 45 07.7		046
2389	1981 10	23.92194	01 35 07.02	+22 28 22.6	16.4	046
2389	1981 10	23.93488	01 35 06.38	+22 28 20.8		046
2437	1981 10	25.96824	02 59 25.75	+16 55 24.8	16.0	046
2437	1981 10	25.98242	02 59 24.88	+16 55 19.5		046
2479	1981 10	07.97137	00 33 16.11	+08 12 57.3		046
2479	1981 10	07.98560	00 33 15.27	+08 12 52.2		046
1980 PP	1981 10	23.92194	01 44 43.05	+22 58 22.2	15.8	046
1980 PP	1981 10	23.93488	01 44 42.42	+22 58 18.3		046
1980 PP	1981 10	25.88925	01 43 07.08	+22 47 24.4		046
1980 PP	1981 10	25.90348	01 43 06.40	+22 47 19.4		046
1980 PV	1981 10	25.93259	02 06 40.65	+25 31 35.6	16.8	046

1980 PV	1981 10	25.94677	02 06	39.92	+25 31	32.4		046
1981 QH	1981 09	21.88170	23 52	35.62	-02 09	40.0		046
1981 QH	1981 09	21.89582	23 52	34.72	-02 09	41.3		046
1981 QK	1981 10	05.97803	23 42	03.53	-00 39	01.7		046
1981 RQ	1981 09	21.86058	23 48	21.65	+10 09	24.3		046
1981 RU	1981 10	07.97137	00 34	56.86	+07 27	26.7		046
1981 RU	1981 10	07.98560	00 34	56.19	+07 27	21.0		046
1981 RU	1981 10	25.78630	00 21	41.62	+05 43	23.4		046
1981 RU	1981 10	25.80053	00 21	41.04	+05 43	20.3		046
1981 SF	1981 09	21.86058	23 42	00.71	+09 48	15.9		046
1981 SM	1981 10	07.97137	00 25	21.88	+09 06	13.1		046
1981 SM	1981 10	07.98560	00 25	21.18	+09 06	18.3		046
1981 SM	1981 10	25.78630	00 11	40.26	+07 31	56.8	1	046
1981 SM	1981 10	25.80053	00 11	39.54	+07 31	52.9	1	046
1981 SO	1981 10	07.97137	00 30	31.92	+08 03	58.3		046
1981 SO	1981 10	07.98560	00 30	30.96	+08 03	56.9		046
1981 SO	1981 10	25.78630	00 15	08.43	+07 21	16.9		046
1981 SO	1981 10	25.80053	00 15	07.99	+07 21	15.3		046
1981 SW1 *	1981 09	25.97899	00 36	28.75	+09 17	10.8		046
1981 SW1	1981 09	25.99462	00 36	28.15	+09 17	05.1		046
1981 SW1	1981 10	06.07016	00 28	38.37	+07 55	15.2		046
1981 SW1	1981 10	06.08446	00 28	37.74	+07 55	06.3		046
1981 SW1	1981 10	07.97137	00 27	11.42	+07 39	04.4		046
1981 SW1	1981 10	07.98560	00 27	10.92	+07 39	00.8		046
1981 TK	1981 10	23.83525	00 04	34.44	+12 24	45.9		046
1981 TK	1981 10	23.84943	00 04	33.22	+12 24	57.4		046
1981 TK	1981 11	03.90604	23 51	49.78	+14 48	35.0		046
1981 TK	1981 11	03.92016	23 51	48.94	+14 48	46.6		046
1981 UG *	1981 10	23.83525	00 04	33.03	+11 18	33.4		046
1981 UG *	1981 10	23.84943	00 04	32.48	+11 18	36.8	17.6	046
1981 UH *	1981 10	23.92194	01 41	01.49	+20 50	01.7	16.4	046
1981 UH	1981 10	23.93488	01 41	00.77	+20 50	00.9		046
1981 UH	1981 10	25.88925	01 39	04.86	+20 46	10.0		046
1981 UH	1981 10	25.90348	01 39	04.03	+20 46	08.9		046
1981 UJ *	1981 10	23.92194	01 41	20.52	+21 54	33.3	16.8	046
1981 UJ	1981 10	23.93488	01 41	19.95	+21 54	31.6		046
1981 UJ	1981 10	25.88925	01 39	29.38	+21 48	09.4		046
1981 UJ	1981 10	25.90348	01 39	28.32	+21 48	06.7		046
1981 UK *	1981 10	23.92194	01 45	56.76	+22 36	52.3	17.0	046
1981 UK	1981 10	23.93488	01 45	55.86	+22 36	49.7		046
1981 UK	1981 10	25.88925	01 44	05.25	+22 26	49.6		046
1981 UK	1981 10	25.90348	01 44	04.38	+22 26	43.6		046
1981 UL *	1981 10	25.93259	02 07	32.82	+26 48	50.2	16.7	046
1981 UL	1981 10	25.94677	02 07	32.02	+26 48	44.1		046
1981 UM *	1981 10	25.96824	02 54	30.67	+15 58	35.1	17.0	046
1981 UM	1981 10	25.98242	02 54	29.99	+15 58	30.3		1 046
1981 UN *	1981 10	25.96824	02 56	05.44	+18 18	35.2	16.8	046
1981 UN	1981 10	25.98242	02 56	04.89	+18 18	33.5		046
1981 UO *	1981 10	25.96824	02 58	49.44	+15 19	26.9	17.0	046
1981 UO	1981 10	25.98242	02 58	48.90	+15 19	22.9		046
1981 UP *	1981 10	25.96824	03 00	41.24	+16 47	00.5	17.4	046
1981 UP	1981 10	25.98242	03 00	40.92	+16 47	53.1		046
1981 UQ *	1981 10	25.96824	03 06	47.05	+16 01	15.0	16.8	046
1981 UQ	1981 10	25.98242	03 06	46.27	+16 01	10.3		046
1981 UR *	1981 10	23.88392	23 41	13.28	-05 53	58.7	17.0	046
1981 UR	1981 10	23.89799	23 41	12.34	-05 54	05.6		046

Note 1: near edge of plate.

OBSERVATIONS MADE AT TURKU BY Y. VAISALA AND L. OTERMA. MEASURED BY
M.-O. SNARE.

Object	Date	UT	R. A. (1950)			Decl.	Mag.	N	Obs.
1579	1942 11	05.92291	03 24 14.15	+10 01 15.0				062	
1579	1942 11	05.95624	03 24 12.70	+10 01 04.9				062	
1942 EQ	1942 03	14.96081	12 12 14.93	+15 55 15.4		15.6		062	
1942 EQ	1942 03	14.98118	12 12 14.07	+15 55 22.7				062	
1942 EQ	1942 03	17.93302	12 10 00.55	+16 14 09.4				062	
1942 EQ	1942 03	17.93927	12 10 00.20	+16 14 12.0				062	
1942 EJ1	1942 03	14.96081	12 18 52.16	+15 58 54.6		16.2		062	
1942 EJ1	1942 03	14.98118	12 18 51.11	+15 59 00.6				062	
1942 EJ1	1942 03	17.93927	12 16 11.54	+16 22 54.5				062	
1942 EO1 *	1942 03	14.94727	11 49 45.00	+15 00 35.0		16.5		062	
1942 EO1	1942 03	14.95410	11 49 44.54	+15 00 42.7				062	
1942 EO1	1942 03	14.96764	11 49 43.93	+15 00 43.7				062	
1942 EO1	1942 03	14.97447	11 49 43.57	+15 00 46.2				062	
1942 EP1 *	1942 03	14.95410	11 56 44.20	+12 51 33.9		16.5	3	062	
1942 EP1	1942 03	14.97447	11 56 43.18	+12 51 44.8			3	062	
1942 EP1	1942 03	17.93302	11 53 51.60	+13 12 11.9				062	
1942 VR	1942 11	05.90913	03 15 08.30	+17 05 28.4				2 062	
1942 VR	1942 11	05.94304	03 15 05.91	+17 05 22.5				2 062	
1942 VV	1942 11	05.97615	04 03 32.06	+15 17 44.5		16.1		062	
1942 VV	1942 11	06.01422	04 03 30.17	+15 17 28.8				062	
1942 VZ *	1942 11	05.92291	03 12 58.79	+11 34 37.2		16.2		062	
1942 VZ	1942 11	05.95624	03 12 56.95	+11 34 30.7				062	
1942 VA1 *	1942 11	05.97615	04 03 12.06	+16 17 21.8		16.3		062	
1942 VA1	1942 11	06.01422	04 03 10.41	+16 17 02.2				062	
1944 RK *	1944 09	15.87965	23 11 15.67	-04 46 47.4		15.6	2	062	
1944 RK	1944 09	15.90731	23 11 14.61	-04 46 57.8				2 062	

Note 1: near plate edge. 2: very faint. 3 = 1 + 2.

OBSERVATION MADE AT THE WISE OBSERVATORY BY Y. SHEFFER.

Object	Date	UT	R. A. (1950)			Decl.	Obs.
169	1981 09	01.8611	00 29 48.51	+03 11 23.3		097	

OBSERVATIONS MADE AT GEISEI BY T. SEKI. IN PART FROM NIHONDAIRA OBS. CIRC.
NOS. 1240 AND 1245.

Object	Date	UT	R. A. (1950)			Decl.	Mag.	Obs.
778	1981 10	29.75243	09 10 43.04	+24 47 28.9		14.5	372	
778	1981 10	29.76250	09 10 43.79	+24 47 26.7			372	
1279	1981 09	26.81615	01 13 58.39	+14 24 50.6		16.5	372	
1279	1981 09	26.82292	01 13 58.11	+14 24 52.1			372	
2419	1981 09	26.69809	00 08 16.36	-02 16 42.1		17	372	
2419	1981 09	26.70799	00 08 15.79	-02 16 45.2			372	
1975 VD2	1981 10	23.66944	03 40 25.15	+17 33 01.3		18	372	
1975 VD2	1981 10	23.68889	03 40 24.45	+17 33 01.6			372	
1975 VD2	1981 10	26.68368	03 38 20.21	+17 26 50.1		18	372	
1975 VD2	1981 10	26.71250	03 38 18.80	+17 26 45.1			372	
1975 WO1	1981 10	29.75243	09 09 22.30	+24 41 04.7		16.5	372	
1975 WO1	1981 10	29.76250	09 09 22.99	+24 41 05.5			372	
1976 QG1	1981 09	26.67153	23 52 58.67	-01 41 19.8		17	372	
1976 QG1	1981 09	26.68368	23 52 58.08	-01 41 19.9			372	
1977 QL2	1981 09	26.64375	22 46 45.91	-02 57 31.7		17	372	
1977 QL2	1981 09	26.65556	22 46 45.30	-02 57 29.3			372	
1980 KJ	1981 09	26.81615	01 14 27.90	+14 08 16.3		16	372	
1980 KJ	1981 09	26.82292	01 14 27.56	+14 08 11.6			372	
1980 LD	1981 09	26.75868	01 28 20.00	-08 06 50.3		16.5	372	
1980 LD	1981 09	26.76771	01 28 19.62	-08 06 51.8			372	
1980 LO	1981 10	29.72187	03 48 35.31	+13 23 40.5		17	372	

1980 LO	1981 10 29.73507	03 48 34.85	+13 23 37.9		372
1980 OH	1981 10 29.69132	03 38 05.48	+17 12 34.8	17.5	372
1980 OH	1981 10 29.70556	03 38 04.86	+17 12 34.4		372
1981 SA	1981 10 23.64688	03 55 14.26	+18 06 48.2	17	372
1981 SA	1981 10 23.84167	03 55 06.02	+18 07 11.1		372
1981 SA	1981 10 24.73437	03 54 29.15	+18 08 55.6		372
1981 SA	1981 10 24.84167	03 54 24.43	+18 09 08.1		372
1981 UC	1981 11 09.82406	03 26 58.61	+17 07 16.7	16	372
1981 UC	1981 11 09.83021	03 26 58.01	+17 07 13.8		372
1981 UD	1981 10 29.73507	03 49 24.83	+13 24 44.6		372
1981 UE	1981 10 29.76250	09 08 50.71	+24 44 20.3		372
1981 UE	1981 11 09.84115	09 11 06.23	+25 46 12.6	17	372
1981 UE	1981 11 09.85052	09 11 06.64	+25 46 15.2		372
1981 VW *	1981 11 09.80382	03 36 12.14	+13 48 37.7	17	372
1981 VW	1981 11 09.81354	03 36 11.76	+13 48 36.5		372

OBSERVATION MADE WITH THE 1.2-M U.K. SCHMIDT TELESCOPE AT SIDING SPRING.
 MEASURED BY R. EBERST. FROM MINOR PLANETS (PUBLICATION OF THE BRITISH
 ASTRONOMICAL ASSOCIATION TERRESTRIAL PLANETS SECTION MINOR PLANETS GROUP)
 NO. 1.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
843	1974 07	12.4085	14 31 53.47	-26 23 41.7	17.5	413

OBSERVATIONS MADE AT SYDNEY BY D. S. KING, N. R. LOMB, W. H. ROBERTSON AND
 K. P. SIMS. MEASURED BY J. CLOSE, D. TEALE AND R. SKEERS.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
3	1981 03 03.75613	14 31 00.47	-05 24 57.8	420	
3	1981 03 09.71344	14 30 08.42	-04 50 32.5	420	
3	1981 03 16.72342	14 28 07.60	-04 05 26.3	420	
3	1981 04 09.63250	14 14 23.48	-01 10 36.7	420	
3	1981 04 15.61899	14 09 48.99	-00 27 04.9	420	
3	1981 05 25.48098	13 42 23.84	+02 37 30.1	420	
3	1981 06 09.43689	13 37 56.37	+02 42 10.8	420	
11	1981 05 05.78735	19 57 27.78	-17 27 14.5	420	
11	1981 06 03.72735	20 11 08.46	-17 04 26.8	420	
11	1981 06 10.71350	20 10 49.25	-17 13 34.9	420	
11	1981 06 29.65304	20 02 37.14	-18 10 46.1	420	
11	1981 07 09.63222	19 54 42.01	-18 56 28.3	420	
11	1981 07 30.55067	19 35 35.52	-20 42 25.8	420	
11	1981 08 20.47257	19 22 53.29	-22 07 16.6	420	
11	1981 08 27.45436	19 21 32.58	-22 26 57.6	420	
11	1981 09 02.45414	19 21 42.01	-22 40 08.8	420	
11	1981 09 15.39966	19 26 05.68	-22 56 48.7	420	
11	1981 09 22.39261	19 30 35.59	-22 59 08.1	420	
11	1981 09 28.38409	19 35 30.96	-22 57 20.5	420	
18	1981 06 03.78480	21 51 39.71	-05 47 54.8	420	
18	1981 07 29.66981	22 16 17.97	-06 49 52.0	420	
18	1981 08 25.58231	22 00 18.80	-12 09 12.0	420	
18	1981 09 01.54359	21 55 14.00	-13 43 17.8	420	
18	1981 09 18.50288	21 46 19.52	-17 01 43.8	420	
18	1981 09 28.47617	21 45 04.87	-18 22 57.3	420	
18	1981 10 06.44022	21 46 42.73	-19 05 17.5	420	
18	1981 10 22.41046	21 56 51.74	-19 31 30.3	420	
39	1981 03 04.75796	14 32 59.52	-04 56 12.8	420	
39	1981 03 12.71755	14 32 18.01	-04 14 45.4	420	
39	1981 06 02.45400	13 44 43.96	+02 17 12.3	420	
39	1981 06 24.39586	13 43 18.43	+01 31 23.8	420	
51	1981 01 13.45102	04 01 29.23	+06 09 52.7	420	

148	1981 07 29.64787	21 36 56.88	-07 56 49.2	420
148	1981 08 25.54536	21 16 34.45	-14 18 37.2	420
148	1981 09 01.51343	21 11 40.56	-15 57 49.8	420
148	1981 09 18.47069	21 03 40.68	-19 27 37.9	420
148	1981 09 22.46460	21 02 50.45	-20 08 26.8	420

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

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
843	1981 08 05.51098	16 16 33.91	-33 54 27.9	17.8		474	
843	1981 08 05.54038	16 16 35.41	-33 54 21.8			474	
1557	1981 08 05.63558	21 03 11.00	-28 42 22.7	15	1	474	
1557	1981 08 05.65728	21 03 09.68	-28 42 23.7		1	474	
2382	1981 04 03.36088	10 58 51.66	-36 12 52.3			474	
2382	1981 04 03.39416	10 58 49.94	-36 12 29.5			474	
2438	1981 07 01.46351	17 45 14.66	-29 37 48.1	15		474	
2438	1981 07 01.49649	17 45 12.62	-29 37 50.1			474	
2447	1981 08 29.57685	21 43 35.33	-14 47 42.6	15.0		474	
2447	1981 08 29.59838	21 43 34.50	-14 47 56.9			474	
2486	1981 08 04.56829	20 02 24.80	-32 37 43.2	16.3		474	
2486	1981 08 04.59086	20 02 23.34	-32 37 43.2			474	
2486	1981 08 31.43551	19 41 27.83	-31 19 09.7	16.7		474	
2486	1981 08 31.48910	19 41 26.60	-31 18 55.0			474	
1940 GG	1981 08 04.44850	17 54 46.00	-29 05 39.5	17.9	2	474	
1940 GG	1981 08 04.49722	17 54 44.70	-29 05 39.5		2	474	
1951 RL	1981 08 03.66073	19 51 47.74	-33 47 29.4	17.0		474	
1951 RL	1981 08 03.68671	19 51 46.00	-33 47 20.7			474	
1951 RL	1981 08 30.45242	19 33 17.49	-30 44 55.8	16.9		474	
1951 RL	1981 08 30.47499	19 33 17.16	-30 44 44.0			474	
1965 UB1	1981 08 30.55485	20 55 29.63	-28 22 07.8	16.7		474	
1965 UB1	1981 08 30.57661	20 55 28.42	-28 22 04.3			474	
1965 UB1	1981 08 31.38019	20 54 47.08	-28 19 26.7	16.4	1	474	
1965 UB1	1981 08 31.40484	20 54 45.66	-28 19 22.4			474	
1965 UB1	1981 09 01.35124	20 53 58.21	-28 16 05.4	16.1		474	
1965 UB1	1981 09 01.37265	20 53 57.14	-28 16 01.3		1	474	
1965 UB1	1981 09 06.47499	20 50 14.88	-27 54 15.0	16.8		474	
1965 UB1	1981 09 06.50010	20 50 13.85	-27 54 08.0			474	
1967 JO	1981 07 01.54661	17 51 49.22	-29 44 01.7	18		474	
1967 JO	1981 07 01.57416	17 51 47.74	-29 44 00.6			474	
1976 GN3	1981 08 05.63558	21 01 27.11	-28 39 47.9	17	3	474	
1976 GN3	1981 08 05.65728	21 01 25.79	-28 39 52.0		3	474	
1976 GN3	1981 08 30.50381	20 39 46.51	-29 19 08.3	17.4		474	
1976 GN3	1981 08 30.52534	20 39 45.61	-29 19 07.2			474	
1976 QF1	1981 08 31.46456	19 59 09.63	-28 11 39.4	16		474	
1976 QF1	1981 08 31.51259	19 59 08.58	-28 11 33.0			474	
1977 PW1	1981 08 05.41284	14 43 04.76	-23 08 31.6	18.5		474	
1977 PW1	1981 08 05.48106	14 43 07.50	-23 08 30.6			474	
1978 PB4	1981 08 03.60946	19 00 59.42	-24 05 03.1	18.1	1	474	
1978 PB4	1981 08 03.63133	19 00 58.44	-24 04 59.8			474	
1978 TA	1981 08 05.57707	18 57 13.00	-46 57 38.5	17.3		474	
1978 TA	1981 08 05.60705	18 57 10.82	-46 57 18.8			474	
1978 TA	1981 08 30.40358	18 42 06.98	-41 42 10.2	17.3		474	
1978 TA	1981 08 30.42510	18 42 06.86	-41 41 53.4			474	
1979 DE	1981 08 30.61654	22 08 47.50	-20 51 50.3		4	474	
1979 DE	1981 08 30.63957	22 08 46.48	-20 52 00.8		4	474	
1980 EG	1981 09 01.41756	20 10 45.67	-33 16 21.5	17.4		474	
1980 EG	1981 09 01.44209	20 10 44.89	-33 16 21.3			474	
1981 GD1	1981 04 30.40498	11 45 44.20	-01 36 54.2	19.9		474	
1981 GD1	1981 04 30.49974	11 45 42.83	-01 36 36.0			474	

1981 PV *	1981 08 05.63558	21 03 09.24	-28 44 54.2	18	1 474
1981 PV	1981 08 05.65728	21 03 07.68	-28 44 50.1		1 474
1981 QA	1981 08 31.33157	20 45 15.51	-01 34 22.9	14.7	474
1981 QA	1981 08 31.33910	20 45 17.08	-01 34 39.3		474
1981 QA	1981 08 31.59118	20 46 08.43	-01 43 48.8		1 474
1981 QA	1981 08 31.60090	20 46 10.43	-01 44 09.1		1 474
1981 QA	1981 09 01.52809	20 49 32.54	-02 17 51.7		1 474
1981 QA	1981 09 01.53575	20 49 34.17	-02 18 08.5		1 474
1981 QB	1981 09 29.38608	21 10 33.46	-56 45 21.7		5 474
1981 QB	1981 10 17.46152	21 28 31.35	-71 21 03.4	18.3	1 474
1981 QB	1981 10 17.48304	21 28 33.96	-71 21 45.9		1 474
1981 QJ1	1981 09 23.46493	20 42 46.29	-26 16 22.8	18.6	474
1981 QJ1	1981 09 23.48715	20 42 45.91	-26 16 14.6		1 474

Note 1: slightly trailed image. 2: faint image; poor focus. 3: near edge of film. 4: trailed image. 5: very faint image.

OBSERVATIONS MADE AT THE OSSERVATORIO S. VITTORE.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1007	1981 10 31.90000	02 06 12.01	+17 22 42.3		15.3	552
1007	1981 10 31.91736	02 06 11.10	+17 22 37.8		15.3	552
1007	1981 11 01.91875	02 05 17.66	+17 17 47.7		15.3	552
1007	1981 11 01.94583	02 05 16.13	+17 17 40.0		15.3	552
1007	1981 11 02.88403	02 04 26.56	+17 13 06.6		15.3	552
1007	1981 11 02.90625	02 04 25.34	+17 13 00.0		15.3	552
1007	1981 11 06.91597	02 00 58.70	+16 53 21.7		15.3	552
1007	1981 11 06.94097	02 00 57.43	+16 53 15.9		15.3	552
1007	1981 11 06.96111	02 00 56.33	+16 53 08.6		15.3	552
1007	1981 11 07.90208	02 00 09.66	+16 48 31.4		15.3	552
1007	1981 11 07.92500	02 00 08.46	+16 48 24.8		15.3	552
2150	1979 06 23.97431	17 04 30.08	+19 07 33.5			552
2150	1979 06 23.99028	17 04 29.33	+19 07 36.3			552
2332	1980 12 08.85556	02 30 04.98	+10 32 32.5			552
2332	1980 12 08.87153	02 30 05.48	+10 32 30.0			552
2347	1981 01 09.90000	06 06 00.19	+28 14 12.0			552
2347	1981 01 09.91667	06 05 58.87	+28 14 06.9			552
2487	1981 11 02.88403	02 04 08.34	+17 14 24.6		15.8	552
2487	1981 11 02.90625	02 04 06.98	+17 14 19.2		15.8	552
2487	1981 11 06.91597	02 00 29.47	+16 59 19.1		15.8	552
2487	1981 11 06.94097	02 00 28.11	+16 59 15.3		15.8	552
2487	1981 11 06.96111	02 00 27.00	+16 59 09.4		15.8	552
2487	1981 11 07.90208	01 59 38.25	+16 55 36.7		15.8	552
2487	1981 11 07.92500	01 59 37.09	+16 55 32.1		15.8	552
2487	1981 11 08.97222	01 58 44.17	+16 51 39.9		16.0	552
2487	1981 11 08.98681	01 58 43.42	+16 51 34.0		16.0	552
2487	1981 11 14.87847	01 54 13.07	+16 29 58.4		16.1	552
2487	1981 11 14.89861	01 54 12.15	+16 29 55.0		16.1	552
2487	1981 11 15.87917	01 53 33.23	+16 26 32.7		16.1	552
2487	1981 11 15.90139	01 53 31.42	+16 26 28.5		16.1	552
2487	1981 11 16.88958	01 52 52.97	+16 23 07.3		16.2	552
2487	1981 11 16.91111	01 52 52.11	+16 23 03.7		16.2	552
2487	1981 11 17.88819	01 52 15.98	+16 19 49.1		16.2	552
2487	1981 11 17.90833	01 52 15.19	+16 19 44.7		16.2	552
2487	1981 11 20.90625	01 50 35.21	+16 10 20.2		16.3	552
2487	1981 11 20.92847	01 50 34.45	+16 10 17.0		16.3	552
2487	1981 11 20.94792	01 50 33.77	+16 10 14.3		16.3	552
1979 MM9 *	1979 06 29.94028	17 00 56.37	+19 13 10.9		16.8	552
1979 MM9	1979 06 29.95625	17 00 55.67	+19 13 16.7			552
1980 YT *	1980 12 30.86736	05 17 56.17	+26 54 11.9		16.5	552
1980 YT	1980 12 30.88264	05 17 55.24	+26 54 06.7			552

1980 YT	1981 01 08.89722	05 11 42.57	+25 56 54.8	552
1980 YT	1981 01 08.91181	05 11 41.77	+25 56 57.1	552

OBSERVATIONS MADE AT THE CATANIA OBSERVATORY'S SERRA LA NAVE STATION.
COMMUNICATED BY V. ZAPPALA.

Object	Date	UT	R. A. (1950)	Decl.	N Obs.
2291	1980 09	12.91458	22 18 01.9	-03 47 32	1 559
2291	1980 09	12.94097	22 18 01.0	-03 47 48	1 559
2291	1980 09	14.80347	22 16 54.5	-04 07 58	1 559
2291	1980 09	14.82986	22 16 53.5	-04 08 16	1 559
1980 RX	1980 09	06.89514	22 27 20.5	-03 15 08	1 559
1980 RX	1980 09	06.92292	22 27 19.1	-03 15 10	1 559

Note 1: observatory code 559, Long. and Parallax 14.98, -338, -259 (see MPC 4766).

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

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N Obs.
516	1960 10	17.17917	00 12 00.69	+15 31 29.2		1 675
516	1960 10	17.23681	00 11 57.83	+15 31 12.9		1 675
516	1960 10	22.17778	00 08 10.18	+15 08 02.5		1 675
516	1960 10	22.29097	00 08 05.11	+15 07 30.0		1 675
516	1960 10	24.21256	00 06 43.43	+14 58 26.8		1 675
516	1960 10	25.20486	00 06 02.82	+14 53 45.5		1 675
516	1960 10	26.37951	00 05 15.92	+14 48 13.7		1 675
654	1957 04	30.19861	11 11 49.0	-29 03 11		2 675
654	1957 04	30.22639	11 11 49.3	-29 02 47		2 675
654	1957 04	30.23368	11 11 49.4	-29 02 39	13	2 675
1950 GG *	1950 04	13.35972	14 28 53.8	+26 47 22	15.5	2 675
1950 GG	1950 04	13.37083	14 28 53.0	+26 47 17		2 675
1950 GG	1950 04	13.40208	14 28 50.4	+26 47 05		2 675
1953 CP *	1953 02	14.33264	09 52 53.4	+47 26 16	16	2 675
1953 CP	1953 02	14.34028	09 52 52.5	+47 26 10		2 675
1953 CP	1953 02	14.36806	09 52 49.6	+47 26 08		2 675
1953 CQ *	1953 02	14.33264	09 54 25.4	+48 04 32	18	2 675
1953 CQ	1953 02	14.34028	09 54 24.2	+48 04 28		2 675
1953 CQ	1953 02	14.36806	09 54 20.6	+48 04 16		2 675
1954 GM *	1954 04	02.18125	09 28 44.0	-18 21 23		2 675
1954 GM	1954 04	02.21250	09 28 44.1	-18 20 57		2 675
1954 GM	1954 04	02.21944	09 28 44.3	-18 20 46	16.5	2 675
1955 FA2 *	1955 03	25.31181	11 52 01.1	+39 11 00		2 675
1955 FA2	1955 03	25.34653	11 51 58.0	+39 10 38		2 675
1955 FA2	1955 03	25.35417	11 51 57.0	+39 10 31	17.5	2 675
1955 FB2 *	1955 03	25.31181	12 19 41.2	+40 58 38		2 675
1955 FB2	1955 03	25.34653	12 19 39.7	+40 58 54		2 675
1955 FB2	1955 03	25.35417	12 19 39.0	+40 59 00	17	2 675
1981 PB	1981 11	17.13196	22 37 34.53	-07 01 55.6		3 675
1981 PB	1981 11	17.17223	22 37 37.90	-07 01 29.2		3 675
1981 QA	1981 11	17.21598	00 21 30.83	-11 25 10.3		3 675
1981 QA	1981 11	18.27571	00 23 24.79	-11 12 06.4		3 675
1981 TR *	1981 10	09.45071	06 23 30.57	+07 33 28.3	18	3 675
1981 TR	1981 10	09.49168	06 23 32.82	+07 33 08.8		3 675
1981 VA	1981 11	07.13821	02 46 08.97	+50 47 29.4		3 675
1981 VA	1981 11	07.52155	02 45 06.26	+50 02 52.6		3 675
1981 VA	1981 11	17.10487	02 31 17.73	+35 04 19.4		3 675
1981 VA	1981 11	18.25140	02 30 27.21	+33 42 23.0		3 675
1981 VA	1981 11	18.47432	02 30 16.86	+33 26 52.5		3 675
1981 VA	1981 12	03.26494	02 27 31.10	+21 37 03.7		4 675
1981 VA	1981 12	04.29550	02 27 41.55	+21 05 09.4		4 675
1981 VG	1981 11	18.32709	02 16 03.06	+10 24 27.9		3 675

1981 XB * 1981 12 07.43959 07 06 38.51 +12 00 06.8 18 8 675
 1981 XB 1981 12 07.51946 07 06 37.85 +11 59 54.6 8 675
 Note 1: observer T. Gehrels, measured by C. J. van Houten and I. van Houten-Groeneveld. 2: identified by J. Dengel, H. Hartl and R. Weinberger on Sky Survey prints. 3: observer J. Gibson. 4: observers E. Helin and R. S. Dunbar. 5: beginning and end of trail. 8 = 3 + 5.

OBSERVATIONS MADE AT THE LOWELL OBSERVATORY'S ANDERSON MESA STATION BY B. A. SKIFF. MEASURED BY E. BOWELL.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
28	1981 09	26.19931	22 51 43.52	-12 57 41.0			688
28	1981 09	26.26458	22 51 40.95	-12 58 03.1			688
28	1981 10	04.29236	22 46 55.04	-13 37 29.2			688
28	1981 10	04.34028	22 46 53.60	-13 37 41.4			688
35	1981 09	26.19931	22 59 01.85	-07 40 34.3			688
35	1981 09	26.26458	22 58 59.08	-07 40 44.5			688
35	1981 10	04.29236	22 53 47.49	-07 57 41.8			688
35	1981 10	04.34028	22 53 45.75	-07 57 47.3			688
89	1981 11	24.37500	07 20 03.37	+38 12 39.7			688
89	1981 11	24.42569	07 20 01.71	+38 12 43.1			688
102	1981 11	05.30972	02 11 57.37	+11 54 27.5			688
102	1981 11	05.35417	02 11 55.16	+11 54 07.1			688
102	1981 11	20.14931	02 02 45.26	+10 17 55.6			688
102	1981 11	20.19792	02 02 43.83	+10 17 40.0			688
114	1981 09	25.31250	00 05 03.30	-01 48 01.4			688
114	1981 09	25.35069	00 05 01.45	-01 48 16.7			688
114	1981 09	26.22014	00 04 20.11	-01 54 00.2			688
114	1981 09	26.28479	00 04 16.91	-01 54 25.6			688
128	1981 09	26.30208	00 19 08.15	-09 08 49.9			688
128	1981 09	26.33681	00 19 06.32	-09 08 59.8			688
254	1981 09	25.31250	23 49 15.12	-05 40 30.7			688
254	1981 09	25.35069	23 49 12.64	-05 40 39.0			688
254	1981 09	26.22014	23 48 18.96	-05 43 53.5			688
254	1981 09	26.28479	23 48 14.78	-05 44 07.5			688
271	1981 11	24.12847	02 11 37.82	+18 39 22.1			688
271	1981 11	24.17014	02 11 36.21	+18 39 13.2			688
271	1981 12	02.18021	02 07 22.49	+18 11 36.8			688
271	1981 12	02.23785	02 07 20.86	+18 11 25.9			688
286	1981 09	28.42014	01 30 45.50	-10 27 59.2			688
286	1981 09	28.45486	01 30 44.18	-10 28 18.8			688
286	1981 10	04.37778	01 27 04.39	-11 20 06.1			688
286	1981 10	04.41181	01 27 02.96	-11 20 22.9			688
314	1981 11	24.20764	03 36 17.13	+01 06 17.1			688
314	1981 11	24.24236	03 36 15.52	+01 06 11.3			688
314	1981 12	02.27986	03 30 22.69	+00 47 40.5			688
314	1981 12	02.31319	03 30 21.28	+00 47 37.3			688
317	1981 09	26.19931	22 55 50.76	-08 05 37.5			688
317	1981 09	26.26458	22 55 47.92	-08 05 57.8			688
317	1981 10	04.29236	22 51 02.89	-08 41 17.0			688
317	1981 10	04.34028	22 51 01.43	-08 41 28.7			688
383	1981 11	02.25208	02 30 04.16	+11 06 13.7			688
383	1981 11	02.30139	02 30 01.71	+11 06 03.6			688
383	1981 11	05.30972	02 27 34.81	+10 56 30.3			688
383	1981 11	05.35417	02 27 32.59	+10 56 22.1			688
383	1981 11	20.14931	02 16 30.21	+10 17 51.6			688
383	1981 11	20.19792	02 16 28.22	+10 17 46.9			688
416	1981 10	04.37778	01 35 12.69	-03 39 41.7			688
416	1981 10	04.41181	01 35 10.90	-03 39 47.3			688
452	1981 11	24.35000	07 06 52.72	+22 29 38.0			688

452	1981	11	24.40069	07	06	51.71	+22	29	43.4	688
603	1981	09	25.29514	23	43	18.05	+01	44	52.0	688
603	1981	09	25.32917	23	43	16.07	+01	44	43.8	688
640	1981	11	24.12847	02	23	12.18	+17	27	17.3	688
640	1981	11	24.17014	02	23	10.67	+17	27	01.3	688
640	1981	12	02.18021	02	18	54.47	+16	36	10.3	688
640	1981	12	02.23785	02	18	52.76	+16	35	49.3	688
645	1981	09	25.29514	23	39	12.79	-03	01	48.6	688
645	1981	09	25.32917	23	39	11.10	-03	01	54.2	688
700	1981	11	20.14931	02	21	07.14	+04	43	59.8	688
700	1981	11	20.19792	02	21	04.46	+04	43	56.0	688
718	1981	11	20.14931	01	58	14.38	+12	03	56.2	688
718	1981	11	20.19792	01	58	12.47	+12	03	48.8	688
749	1981	09	26.30208	00	17	52.67	-07	37	00.3	688
749	1981	09	26.33681	00	17	50.39	-07	37	15.8	688
794	1981	09	25.31250	00	02	14.49	-03	01	13.8	688
794	1981	09	25.35069	00	02	12.71	-03	01	28.6	688
794	1981	09	26.22014	00	01	35.35	-03	07	21.2	688
794	1981	09	26.28479	00	01	32.39	-03	07	47.1	688
847	1981	11	24.35000	06	53	01.08	+23	05	16.6	688
847	1981	11	24.40069	06	52	59.66	+23	05	16.1	688
874	1981	11	24.20764	03	28	58.96	+07	39	22.2	688
874	1981	11	24.24236	03	28	57.33	+07	39	13.9	688
874	1981	12	02.27986	03	23	09.69	+07	10	10.2	688
874	1981	12	02.31319	03	23	08.28	+07	10	04.0	688
876	1981	11	24.20764	03	26	51.83	+01	01	20.1	688
876	1981	11	24.24236	03	26	50.19	+01	01	16.9	688
876	1981	12	02.27986	03	20	50.40	+00	53	16.6	688
876	1981	12	02.31319	03	20	48.95	+00	53	16.3	688
922	1981	11	20.14931	01	56	33.49	+08	30	15.5	688
922	1981	11	20.19792	01	56	31.90	+08	30	00.2	688
967	1981	11	24.35000	06	55	24.20	+23	35	40.3	688
967	1981	11	24.40069	06	55	22.40	+23	35	49.6	688
974	1981	11	24.35000	07	10	40.21	+22	53	06.2	688
974	1981	11	24.40069	07	10	39.26	+22	53	16.7	688
1043	1981	09	26.19931	23	08	36.25	-08	25	18.5	688
1043	1981	09	26.26458	23	08	33.80	-08	25	43.0	688
1043	1981	10	04.29236	23	04	06.48	-09	12	15.7	688
1043	1981	10	04.34028	23	04	05.01	-09	12	30.7	688
1111	1981	09	25.31250	23	55	32.41	-05	22	16.1	688
1111	1981	09	25.35069	23	55	30.63	-05	22	29.5	688
1111	1981	09	26.22014	23	54	52.46	-05	27	25.8	688
1111	1981	09	26.28479	23	54	49.44	-05	27	47.2	688
1162	1981	09	25.29514	23	44	57.53	-03	30	38.6	688
1162	1981	09	25.32917	23	44	56.36	-03	30	47.0	688
1171	1981	11	24.35000	06	59	38.35	+20	16	25.9	688
1171	1981	11	24.40069	06	59	37.28	+20	16	27.3	688
1178	1981	09	26.19931	22	58	14.92	-06	27	47.4	3 688
1178	1981	09	26.26458	22	58	12.18	-06	28	10.4	688
1178	1981	10	04.29236	22	53	10.71	-07	13	15.3	688
1178	1981	10	04.34028	22	53	08.92	-07	13	30.1	3 688
1286	1981	11	24.14931	03	33	23.28	+10	37	36.5	688
1286	1981	11	24.19097	03	33	21.19	+10	37	25.6	688
1305	1981	09	26.19931	23	12	22.99	-08	34	00.9	688
1305	1981	09	26.26458	23	12	20.23	-08	34	16.7	688
1305	1981	10	04.29236	23	07	11.67	-09	00	40.7	688
1305	1981	10	04.34028	23	07	09.86	-09	00	48.7	688
1403	1981	09	28.42014	01	15	17.82	-04	21	15.2	688
1403	1981	09	28.45486	01	15	16.65	-04	21	40.3	688

1403	1981	10	04.37778	01	11	54.97	-05	30	02.7		688
1403	1981	10	04.41181	01	11	53.56	-05	30	24.7		688
1483	1981	11	24.14931	03	34	58.11	+17	29	47.2		688
1483	1981	11	24.19097	03	34	55.64	+17	29	42.6		688
1484	1981	11	24.14931	03	30	55.41	+11	17	50.9		688
1484	1981	11	24.19097	03	30	52.93	+11	17	53.2		688
1487	1981	10	04.29236	22	44	57.02	-11	18	21.7		688
1487	1981	10	04.34028	22	44	55.77	-11	18	26.2	1	688
1506	1981	11	24.12847	02	00	25.59	+16	13	14.4		688
1506	1981	11	24.17014	02	00	24.16	+16	12	54.6		688
1518	1981	09	25.31250	00	04	11.08	-06	09	32.7		688
1518	1981	09	25.35069	00	04	08.41	-06	09	38.2		688
1518	1981	09	26.22014	00	03	12.09	-06	11	41.4		688
1518	1981	09	26.28479	00	03	07.66	-06	11	50.9		688
1518	1981	09	26.30208	00	03	06.51	-06	11	51.0		688
1518	1981	09	26.33681	00	03	04.10	-06	11	57.1		688
1544	1981	09	26.22014	23	58	38.21	-05	53	08.0		688
1544	1981	09	26.28479	23	58	34.38	-05	53	26.5		688
1559	1981	11	24.12847	02	16	39.57	+18	53	02.0		688
1559	1981	11	24.17014	02	16	37.48	+18	52	51.1		688
1559	1981	12	02.18021	02	10	49.02	+18	16	24.9		688
1559	1981	12	02.23785	02	10	46.80	+18	16	09.6		688
1576	1981	09	25.29514	23	42	17.97	-02	12	55.8		688
1576	1981	09	25.32917	23	42	16.37	-02	13	06.4		688
1578	1981	11	02.25208	02	41	06.53	+14	59	53.2	14.8 1	688
1578	1981	11	02.30139	02	41	04.34	+14	59	43.7		688
1578	1981	11	24.12847	02	26	20.05	+13	55	03.9		688
1578	1981	11	24.17014	02	26	18.60	+13	54	58.3		688
1578	1981	12	02.18021	02	22	10.46	+13	37	01.6		688
1578	1981	12	02.23785	02	22	08.86	+13	36	55.0		688
1603	1981	11	24.20764	03	36	44.60	+05	38	15.3		688
1603	1981	11	24.24236	03	36	42.68	+05	38	13.7		688
1603	1981	12	02.27986	03	29	51.66	+05	35	22.4		688
1603	1981	12	02.31319	03	29	50.05	+05	35	23.0		688
1665	1981	11	24.20764	03	33	51.24	+06	56	03.0	14.8	688
1665	1981	11	24.24236	03	33	48.88	+06	56	11.4		688
1665	1981	12	02.27986	03	25	27.20	+07	32	20.8	15.0	688
1665	1981	12	02.31319	03	25	25.16	+07	32	31.4		688
1674	1981	11	02.25208	02	17	54.60	+10	03	25.0		688
1674	1981	11	02.30139	02	17	52.27	+10	03	14.9		688
1674	1981	11	05.30972	02	15	28.70	+09	52	54.2		688
1674	1981	11	05.35417	02	15	26.50	+09	52	44.0		688
1674	1981	11	20.14931	02	04	46.43	+09	10	34.8		688
1674	1981	11	20.19792	02	04	44.52	+09	10	28.1		688
1696	1981	09	25.31250	00	09	29.58	-02	38	46.0		688
1696	1981	09	25.35069	00	09	27.06	-02	38	56.0		688
1696	1981	09	26.22014	00	08	33.35	-02	42	27.7		688
1696	1981	09	26.28479	00	08	29.18	-02	42	43.0		688
1723	1981	11	24.20764	03	36	53.79	+02	55	51.1		688
1723	1981	11	24.24236	03	36	52.09	+02	55	46.8		688
1723	1981	12	02.31319	03	30	35.40	+02	43	10.9		688
1764	1981	11	24.35000	07	08	13.36	+20	03	18.8		688
1773	1981	11	24.14931	03	29	55.37	+16	21	31.4		688
1773	1981	11	24.19097	03	29	52.92	+16	21	27.9		688
1782	1981	11	20.14931	01	57	17.39	+10	01	02.8		688
1782	1981	11	20.19792	01	57	15.65	+10	00	54.6		688
1840	1981	11	02.25208	02	36	30.23	+15	19	50.2		688
1840	1981	11	02.30139	02	36	27.64	+15	19	42.1		688
1840	1981	11	05.30972	02	33	49.81	+15	09	50.8		688

1840	1981	11	05.35417	02	33	47.50	+15	09	41.0		688
1840	1981	11	24.12847	02	18	50.08	+14	11	34.5		688
1840	1981	11	24.17014	02	18	48.47	+14	11	29.3		688
1840	1981	12	02.18021	02	14	03.53	+13	53	10.6		688
1840	1981	12	02.23785	02	14	01.75	+13	53	01.8	3	688
1858	1981	09	25.29514	23	34	33.03	+00	09	25.0		688
1858	1981	09	25.32917	23	34	31.35	+00	09	14.0		688
1877	1981	09	26.19931	22	55	54.90	-09	02	26.7		688
1877	1981	09	26.26458	22	55	52.13	-09	02	22.5		688
1877	1981	10	04.29236	22	50	47.87	-08	52	19.5		688
1877	1981	10	04.34028	22	50	46.44	-08	52	14.9		688
1948	1981	11	02.25208	02	21	58.51	+16	40	00.0		688
1948	1981	11	05.30972	02	18	57.81	+16	30	03.4		688
1948	1981	11	05.35417	02	18	55.23	+16	29	54.6		688
1960	1981	11	24.12847	02	00	48.84	+17	27	18.1		688
1960	1981	11	24.17014	02	00	47.12	+17	27	14.0		688
1999	1981	09	26.19931	23	06	25.92	-12	23	22.4		688
1999	1981	09	26.26458	23	06	23.51	-12	23	43.7		688
1999	1981	10	04.29236	23	01	48.06	-13	05	43.1		688
1999	1981	10	04.34028	23	01	46.48	-13	05	57.2		688
2020	1981	11	24.20764	03	46	34.04	+02	50	51.6	16.8	688
2020	1981	11	24.24236	03	46	32.26	+02	50	46.9		688
2020	1981	12	02.27986	03	40	07.13	+02	38	34.4	16.8	688
2020	1981	12	02.31319	03	40	05.61	+02	38	33.0		688
2032	1981	09	26.19931	22	51	44.41	-08	56	07.3		688
2032	1981	09	26.26458	22	51	41.97	-08	56	18.6		688
2032	1981	10	04.29236	22	47	23.68	-09	15	46.8		688
2032	1981	10	04.34028	22	47	22.40	-09	15	53.1		688
2087	1981	09	26.26458	22	52	31.94	-10	38	51.5		688
2087	1981	10	04.29236	22	47	07.40	-11	06	30.3		688
2087	1981	10	04.34028	22	47	05.77	-11	06	36.0		688
2103	1981	11	24.35000	06	55	44.89	+26	48	19.7	16.5	688
2103	1981	11	24.40069	06	55	43.71	+26	48	19.2		688
2197	1981	11	02.25208	02	20	57.72	+12	43	39.0		688
2197	1981	11	05.30972	02	18	28.61	+12	33	29.6	16.2	688
2197	1981	11	05.35417	02	18	26.36	+12	33	21.0		688
2197	1981	11	20.14931	02	07	22.30	+11	49	00.5		688
2197	1981	11	20.19792	02	07	20.33	+11	48	54.0		688
2197	1981	11	24.12847	02	04	52.24	+11	39	27.8		688
2197	1981	11	24.17014	02	04	50.87	+11	39	22.9		688
2197	1981	12	02.18021	02	00	41.86	+11	24	45.7	16.8	688
2197	1981	12	02.23785	02	00	40.31	+11	24	41.3		688
2226	1981	11	24.35000	07	18	07.94	+24	57	33.5	17.2	688
2311	1981	11	20.14931	02	11	34.27	+05	00	10.4		688
2311	1981	11	20.19792	02	11	32.65	+05	00	02.6		688
2312	1981	11	24.35000	07	15	02.79	+26	01	56.1	17.0	688
2419	1981	09	25.31250	00	09	27.60	-02	03	27.0		688
2419	1981	09	26.22014	00	08	41.19	-02	12	07.3		688
2419	1981	09	26.28479	00	08	37.80	-02	12	45.3		688
2470	1981	11	20.14931	01	57	01.94	+08	50	15.5		688
2470	1981	11	20.19792	01	56	59.92	+08	50	08.7		688
2481	1981	09	25.29514	23	42	08.49	-03	15	44.9	16.5	688
2481	1981	09	25.32917	23	42	06.76	-03	15	51.3		688
2489	1981	09	25.29514	23	45	05.64	-04	10	50.7	16.8	688
2489	1981	09	25.32917	23	45	04.07	-04	10	59.1		688
1976 QG1	1981	09	25.29514	23	54	01.69	-01	33	37.0	16.5	688
1976 QG1	1981	09	25.31250	23	54	00.81	-01	33	43.7	16.8	688
1976 QG1	1981	09	25.32917	23	54	00.04	-01	33	49.0		688
1976 QG1	1981	09	25.35069	23	53	59.06	-01	33	55.2		688

1976 QG1	1981 09 26.22014	23 53 19.55	-01 38 49.0	16.5	688
1976 QG1	1981 09 26.28479	23 53 16.52	-01 39 10.6		688
1976 WB1	1981 11 24.20764	03 39 55.97	+04 31 27.4	16.8	688
1976 WB1	1981 11 24.24236	03 39 54.13	+04 31 24.7		688
1977 NR	1981 11 24.12847	02 19 48.86	+16 59 41.4	17.0	1 688
1977 NR	1981 11 24.17014	02 19 47.30	+16 59 34.7		688
1977 NR	1981 12 02.18021	02 15 22.63	+16 36 16.3	17.0	688
1977 NR	1981 12 02.23785	02 15 21.18	+16 36 10.4		688
1980 FN3	1981 09 25.29514	23 54 16.07	-01 01 49.1	16.2	688
1980 FN3	1981 09 25.31250	23 54 15.24	-01 01 58.8	16.5	688
1980 FN3	1981 09 25.32917	23 54 14.51	-01 02 07.6		688
1980 FN3	1981 09 25.35069	23 54 13.48	-01 02 21.1		688
1980 FN3	1981 09 26.22014	23 53 36.63	-01 10 43.6	16.0	688
1980 FN3	1981 09 26.28479	23 53 33.61	-01 11 20.9		688
1980 LD	1981 09 28.42014	01 27 12.56	-08 16 26.9	16.5	688
1980 LD	1981 09 28.45486	01 27 11.10	-08 16 39.4		688
1980 LD	1981 10 04.37778	01 22 55.91	-08 49 02.3	16.5	688
1980 LD	1981 10 04.41181	01 22 54.40	-08 49 11.0		688
1980 LM	1981 11 24.14931	03 25 00.62	+11 53 24.5	16.8	688
1980 LM	1981 11 24.19097	03 24 57.76	+11 53 24.1		1 688
1980 LO	1981 11 24.14931	03 24 05.50	+11 29 29.6	17.2	688
1980 LO	1981 11 24.19097	03 24 02.85	+11 29 21.1		1 688
1980 MA	1981 11 24.35000	06 57 31.44	+26 07 48.0	15.8	688
1980 MA	1981 11 24.40069	06 57 30.25	+26 08 13.1		1 688
1980 OB	1981 11 24.35000	06 56 26.13	+26 10 58.3	17.5	2 688
1980 OB	1981 11 24.40069	06 56 24.31	+26 10 55.7		3 688
1980 OH	1981 11 24.14931	03 17 57.24	+16 10 07.6	16.8	688
1980 OH	1981 11 24.19097	03 17 55.23	+16 10 01.3		688
1980 PN	1981 11 24.35000	07 11 35.91	+21 41 38.7	17.0	688
1980 PN	1981 11 24.40069	07 11 34.85	+21 41 40.3		688
1980 RR	1981 11 24.37500	07 21 53.79	+40 10 32.3	17.0	688
1980 RR	1981 11 24.42569	07 21 52.85	+40 10 47.5		688
1980 RX	1981 11 24.27639	04 58 50.34	+36 25 37.8	17.0	688
1980 RX	1981 11 24.31181	04 58 48.17	+36 25 35.1		688
1981 QD	1981 09 25.29514	23 36 56.20	+00 32 43.2	17.0	688
1981 QD	1981 09 25.32917	23 36 54.17	+00 32 33.3		688
1981 QE	1981 09 25.29514	23 40 17.10	-00 58 42.2	16.5	688
1981 QE	1981 09 25.32917	23 40 15.39	-00 58 54.7		688
1981 QF	1981 09 25.29514	23 45 09.18	+00 56 34.1	17.0	688
1981 QF	1981 09 25.32917	23 45 07.59	+00 56 29.5		688
1981 QG	1981 09 25.29514	23 48 31.39	-00 54 11.0	17.0	688
1981 QG	1981 09 25.32917	23 48 29.78	-00 54 20.5		688
1981 QH	1981 09 25.29514	23 49 30.57	-02 20 03.5	16.0	688
1981 QH	1981 09 25.31250	23 49 29.59	-02 20 05.3		688
1981 QH	1981 09 25.32917	23 49 28.65	-02 20 09.3		688
1981 QH	1981 09 25.35069	23 49 27.60	-02 20 11.7		688
1981 QH	1981 09 26.22014	23 48 41.15	-02 22 46.5	16.0	688
1981 QH	1981 09 26.28479	23 48 37.63	-02 22 57.7		688
1981 QJ	1981 09 25.29514	23 57 36.28	-01 09 11.0	16.2	688
1981 QJ	1981 09 25.31250	23 57 35.32	-01 09 16.1	16.8	688
1981 QJ	1981 09 25.32917	23 57 34.71	-01 09 20.0		688
1981 QJ	1981 09 25.35069	23 57 33.53	-01 09 25.5		688
1981 QJ	1981 09 26.22014	23 56 54.49	-01 13 16.6	16.2	688
1981 QJ	1981 09 26.28479	23 56 51.50	-01 13 34.1		688
1981 QK	1981 09 25.29514	23 52 00.13	-00 41 01.1	16.2	688
1981 QK	1981 09 25.31250	23 51 58.96	-00 41 00.5	16.5	688
1981 QK	1981 09 25.32917	23 51 57.96	-00 41 01.0		688
1981 QK	1981 09 26.22014	23 51 04.91	-00 41 04.1	16.2	688
1981 QK	1981 09 26.28479	23 51 00.80	-00 41 04.1		688

1981 QP	1981 09	28.42014	01 28	11.74	-07 39	45.9	16.8	688
1981 QP	1981 09	28.45486	01 28	09.79	-07 39	57.4		688
1981 QP	1981 10	04.37778	01 22	44.14	-08 03	58.9	16.8	688
1981 QP	1981 10	04.41181	01 22	42.36	-08 04	04.2		688
1981 QB1	1981 09	26.19931	22 51	38.63	-06 49	35.5	16.0	3 688
1981 QB1	1981 09	26.26458	22 51	36.10	-06 49	51.5		688
1981 QB1	1981 10	04.29236	22 47	24.73	-07 15	41.7	16.2	688
1981 QB1	1981 10	04.34028	22 47	23.49	-07 15	49.8		688
1981 QC1	1981 09	26.19931	22 56	25.50	-08 07	51.4	16.0	688
1981 QC1	1981 09	26.26458	22 56	23.54	-08 08	33.8		688
1981 QC1	1981 10	04.29236	22 53	26.87	-09 28	03.2	16.2	688
1981 QC1	1981 10	04.34028	22 53	26.03	-09 28	27.9		688
1981 QD2	1981 09	26.19931	22 53	46.08	-13 34	27.1	16.8	688
1981 QD2	1981 09	26.26458	22 53	42.96	-13 34	32.1		688
1981 QD2	1981 10	04.29236	22 48	54.56	-13 35	00.3	16.8	688
1981 QD2	1981 10	04.34028	22 48	53.09	-13 34	57.8		688
1981 QE2	1981 09	26.19931	23 01	57.38	-12 37	46.8	17.0	688
1981 QE2	1981 09	26.26458	23 01	55.66	-12 38	17.7		688
1981 QE2	1981 10	04.29236	22 59	31.86	-13 32	06.3	17.0	688
1981 QE2	1981 10	04.34028	22 59	31.14	-13 32	23.2		688
1981 QF2	1981 09	26.19931	22 56	09.52	-09 45	27.0	17.0	688
1981 QF2	1981 10	04.29236	22 51	41.72	-10 13	23.1	17.0	2 688
1981 QF2	1981 10	04.34028	22 51	40.46	-10 13	31.5		688
1981 QG2	1981 09	26.19931	23 03	41.61	-08 40	38.3	16.8	3 688
1981 QG2	1981 09	26.26458	23 03	39.29	-08 40	53.1		688
1981 QG2	1981 10	04.29236	22 59	23.41	-09 07	39.1	16.8	688
1981 QG2	1981 10	04.34028	22 59	22.20	-09 07	42.6		688
1981 QH2	1981 09	26.19931	23 04	55.87	-09 25	32.8	16.8	3 688
1981 QH2	1981 09	26.26458	23 04	53.69	-09 26	00.5		688
1981 QH2	1981 10	04.29236	23 01	30.27	-10 14	49.2	17.0	688
1981 QH2	1981 10	04.34028	23 01	29.34	-10 15	02.5		688
1981 QJ2	1981 09	26.19931	23 13	22.36	-10 10	09.7	16.5	688
1981 QJ2	1981 09	26.26458	23 13	19.73	-10 10	41.7		688
1981 QJ2	1981 10	04.29236	23 09	22.51	-11 07	11.1	16.8	688
1981 QJ2	1981 10	04.34028	23 09	21.31	-11 07	24.8		688
1981 QK2	* 1981 08	30.30278	23 00	11.99	-14 11	00.4	16.8	4 688
1981 QK2	1981 08	30.33889	23 00	10.26	-14 11	30.1		2 688
1981 RE	1981 09	25.29514	23 41	38.96	-01 13	54.1	15.8	688
1981 RE	1981 09	25.32917	23 41	37.40	-01 14	08.6		688
1981 RF	1981 09	25.31250	23 50	27.99	-07 37	07.9		688
1981 RF	1981 09	25.35069	23 50	26.10	-07 37	22.7		688
1981 RF	1981 09	26.22014	23 49	46.13	-07 42	26.2	16.5	688
1981 RF	1981 09	26.28479	23 49	42.85	-07 42	49.3		688
1981 RG	1981 09	26.22014	00 06	56.44	-06 23	59.1	17.0	688
1981 RG	1981 09	26.28479	00 06	53.03	-06 24	20.9		688
1981 RG	1981 09	26.30208	00 06	52.35	-06 24	24.0	16.8	688
1981 RG	1981 09	26.33681	00 06	50.23	-06 24	37.1		688
1981 RH	1981 09	26.30208	00 16	25.98	-12 33	33.2	16.8	688
1981 RH	1981 09	26.33681	00 16	24.05	-12 34	00.0		688
1981 SC	1981 09	26.22014	23 55	41.25	-01 45	30.2	16.8	688
1981 SC	1981 09	26.28479	23 55	37.12	-01 45	31.6		688
1981 SP	1981 09	25.29514	23 34	15.98	-02 10	12.4	16.8	1 688
1981 SP	1981 09	25.32917	23 34	14.56	-02 10	32.7		688
1981 ST	1981 09	25.31250	23 54	53.34	-02 20	06.3	16.2	688
1981 ST	1981 09	25.35069	23 54	51.82	-02 20	28.1		688
1981 ST	1981 09	26.22014	23 54	18.21	-02 28	54.5	16.0	688
1981 ST	1981 09	26.28479	23 54	15.61	-02 29	31.1		688
1981 SC1	1981 08	30.30278	23 04	14.24	-13 14	47.3	16.8	688
1981 SC1	1981 08	30.33889	23 04	12.44	-13 15	00.7		688

1981	ST1	*	1981	09	26.19931	22	51	05.60	-06	26	53.4	16.5	C	688
1981	ST1		1981	09	26.26458	22	51	02.91	-06	27	00.6			688
1981	ST1		1981	10	04.29236	22	46	51.16	-06	36	56.4	16.2		688
1981	ST1		1981	10	04.34028	22	46	49.85	-06	36	57.9		1	688
1981	SU1	*	1981	09	26.19931	23	01	28.60	-07	09	59.2	17.2	6	688
1981	SU1		1981	09	26.26458	23	01	25.39	-07	10	23.5			688
1981	SU1		1981	10	04.29236	22	55	38.44	-07	50	39.3	17.2	2	688
1981	SU1		1981	10	04.34028	22	55	36.85	-07	50	50.8			688
1981	SV1	*	1981	09	28.42014	01	20	08.40	-11	08	14.0	16.8	5	688
1981	SV1		1981	09	28.45486	01	20	05.85	-11	07	51.4			688
1981	SX1	*	1981	09	25.29514	23	32	38.32	+00	31	43.1	16.8	5	688
1981	SX1		1981	09	25.32917	23	32	36.63	+00	31	40.7		1	688
1981	SY1	*	1981	09	25.29514	23	37	40.97	+02	35	48.9	16.5	5	688
1981	SY1		1981	09	25.32917	23	37	38.70	+02	35	38.9			688
1981	SZ1	*	1981	09	25.29514	23	50	55.67	+02	38	17.3	16.8	5	688
1981	SZ1		1981	09	25.32917	23	50	54.00	+02	38	01.6			688
1981	SA2	*	1981	09	25.31250	00	00	57.85	-03	31	03.6	16.8	7	688
1981	SA2		1981	09	25.35069	00	00	55.65	-03	31	10.8		1	688
1981	SA2		1981	09	26.22014	00	00	10.05	-03	33	58.8	16.5		688
1981	SA2		1981	09	26.28479	00	00	06.26	-03	34	09.5			688
1981	SB2	*	1981	09	26.22014	23	50	26.88	-05	12	23.3	17.2	8	688
1981	SB2		1981	09	26.28479	23	50	23.67	-05	12	24.8			688
1981	SC2	*	1981	09	26.30208	00	03	45.95	-11	35	25.5	17.0	7	688
1981	SC2		1981	09	26.33681	00	03	43.85	-11	35	29.8			688
1981	SD2		1981	09	25.31250	00	11	10.20	-06	17	46.5	16.8		688
1981	SD2		1981	09	25.35069	00	11	07.97	-06	17	52.6			688
1981	SD2		1981	09	26.22014	00	10	16.39	-06	19	48.8	17.0		688
1981	SD2		1981	09	26.28479	00	10	12.28	-06	19	58.9			688
1981	SD2	*	1981	09	26.30208	00	10	11.19	-06	19	58.6	16.8	7	688
1981	SD2		1981	09	26.33681	00	10	08.96	-06	20	03.3			688
1981	SE2		1981	09	26.22014	00	12	48.80	-05	47	18.6	16.8		688
1981	SE2		1981	09	26.28479	00	12	45.56	-05	47	40.5			688
1981	SE2	*	1981	09	26.30208	00	12	44.67	-05	47	43.0	16.8	7	688
1981	SE2		1981	09	26.33681	00	12	42.72	-05	47	55.7			688
1981	SF2		1981	09	26.22014	00	13	53.17	-06	01	58.8	16.8		688
1981	SF2		1981	09	26.28479	00	13	49.32	-06	02	23.9		1	688
1981	SF2	*	1981	09	26.30208	00	13	48.54	-06	02	28.0	16.8	7	688
1981	SF2		1981	09	26.33681	00	13	46.30	-06	02	43.8			688
1981	SG2	*	1981	09	26.30208	00	25	49.20	-09	26	45.8	16.8	7	688
1981	SG2		1981	09	26.33681	00	25	46.75	-09	26	52.5			688
1981	SH2	*	1981	09	26.30208	00	26	30.95	-07	29	59.9	16.8	7	688
1981	SH2		1981	09	26.33681	00	26	28.17	-07	29	50.3			688
1981	TN	*	1981	10	04.29236	22	44	26.69	-10	28	47.5	16.8	7	688
1981	TN		1981	10	04.34028	22	44	25.37	-10	28	54.2			688
1981	TO	*	1981	10	04.29236	22	52	47.05	-11	10	32.7	16.8	7	688
1981	TO		1981	10	04.34028	22	52	45.87	-11	10	36.6			688
1981	TP	*	1981	10	04.29236	23	07	15.14	-06	32	46.5	17.0	7	688
1981	TP		1981	10	04.34028	23	07	13.84	-06	32	50.5			688
1981	TQ	*	1981	10	04.29236	23	09	41.66	-12	36	15.1	17.2	7	688
1981	TQ		1981	10	04.34028	23	09	39.42	-12	36	19.4			688
1981	TS	*	1981	10	04.37778	01	24	40.63	-03	58	30.7	17.0	7	688
1981	TS		1981	10	04.41181	01	24	38.39	-03	58	32.3			688
1981	UC		1981	11	24.14931	03	11	14.10	+16	41	36.4	15.8		688
1981	UC		1981	11	24.19097	03	11	11.53	+16	41	33.0			688
1981	VC	*	1981	11	02.25208	02	16	06.03	+14	25	48.6	17.2	6	688
1981	VC		1981	11	02.30139	02	16	03.51	+14	25	37.6			688
1981	VC		1981	11	05.30972	02	13	37.54	+14	15	07.2	17.2	1	688
1981	VC		1981	11	05.35417	02	13	35.49	+14	14	59.8			688
1981	VD	*	1981	11	02.25208	02	19	43.76	+11	47	51.2	16.8	5	688

1981 VD	1981 11 02.30139	02 19 40.42	+11 47 43.8		688
1981 VD	1981 11 05.30972	02 16 19.81	+11 40 20.1	16.8	688
1981 VD	1981 11 05.35417	02 16 16.86	+11 40 14.3		688
1981 VD	1981 11 20.14931	02 01 26.16	+11 11 08.6	17.0	688
1981 VD	1981 11 20.19792	02 01 23.49	+11 11 04.4		688
1981 VE *	1981 11 02.25208	02 20 59.13	+13 33 37.5	16.8 5	688
1981 VE	1981 11 02.30139	02 20 56.25	+13 33 42.5		688
1981 VE	1981 11 05.30972	02 17 54.33	+13 38 01.9	16.5	688
1981 VE	1981 11 05.35417	02 17 51.42	+13 38 06.2		688
1981 VF *	1981 11 02.25208	02 24 42.40	+15 44 45.0	16.2 5	688
1981 VF	1981 11 02.30139	02 24 39.03	+15 44 43.5		688
1981 VF	1981 11 05.30972	02 21 30.75	+15 42 24.3	16.2	688
1981 VF	1981 11 05.35417	02 21 27.86	+15 42 22.4		688
1981 VF	1981 11 24.12847	02 06 04.84	+15 32 06.6	16.8	688
1981 VF	1981 11 24.17014	02 06 03.27	+15 32 06.9		688
1981 VF	1981 12 02.18021	02 02 51.31	+15 35 54.7	17.0	688
1981 VF	1981 12 02.23785	02 02 50.28	+15 35 58.0		688
1981 VG *	1981 11 02.25208	02 28 17.50	+11 05 46.1	14.8 5	688
1981 VG	1981 11 02.30139	02 28 15.08	+11 05 36.8		688
1981 VG	1981 11 05.30972	02 25 47.67	+10 56 36.0	14.5	688
1981 VG	1981 11 05.35417	02 25 45.49	+10 56 28.2		688
1981 VG	1981 11 20.14931	02 14 52.97	+10 21 08.7	15.0	688
1981 VG	1981 11 20.19792	02 14 51.03	+10 21 04.4		688
1981 VH *	1981 11 02.25208	02 30 19.11	+15 37 01.0	17.0 5	688
1981 VH	1981 11 02.30139	02 30 15.97	+15 36 47.3		688
1981 VH	1981 11 05.30972	02 27 05.79	+15 20 09.0	17.0 1	688
1981 VH	1981 11 05.35417	02 27 02.99	+15 19 56.9		688
1981 VJ *	1981 11 02.25208	02 32 05.64	+10 28 36.4	16.8 5	688
1981 VJ	1981 11 05.30972	02 29 13.30	+10 08 51.6	16.8 3	688
1981 VJ	1981 11 05.35417	02 29 10.61	+10 08 34.5		688
1981 VJ	1981 11 20.14931	02 17 06.93	+08 50 18.9	17.0	688
1981 VJ	1981 11 20.19792	02 17 04.99	+08 50 08.8		688
1981 VK *	1981 11 02.25208	02 32 15.82	+15 19 53.0	17.2 6	688
1981 VK	1981 11 05.30972	02 29 42.78	+15 08 31.7	17.0	688
1981 VK	1981 11 05.35417	02 29 40.66	+15 08 21.3		688
1981 VK	1981 11 24.12847	02 15 59.35	+14 04 47.7	17.5	688
1981 VK	1981 11 24.17014	02 15 57.86	+14 04 40.0		3 688
1981 VL *	1981 11 02.25208	02 34 08.84	+17 24 23.1	16.8 5	688
1981 VL	1981 11 02.30139	02 34 05.66	+17 24 17.2		688
1981 VL	1981 11 05.30972	02 30 56.96	+17 18 30.1	16.8 1	688
1981 VL	1981 11 05.35417	02 30 54.00	+17 18 23.5		688
1981 VL	1981 11 24.12847	02 14 07.60	+16 41 17.7	17.2	688
1981 VL	1981 11 24.17014	02 14 06.07	+16 41 14.9		688
1981 VL	1981 12 02.18021	02 09 52.26	+16 32 11.0	17.5 1	688
1981 VL	1981 12 02.23785	02 09 51.11	+16 32 08.7		688
1981 VM *	1981 11 02.25208	02 34 36.17	+11 56 52.9	16.8 5	688
1981 VM	1981 11 02.30139	02 34 32.96	+11 56 40.5		3 688
1981 VM	1981 11 05.30972	02 31 35.94	+11 47 04.5	16.8	688
1981 VM	1981 11 05.35417	02 31 33.06	+11 46 55.9		1 688
1981 VN *	1981 11 02.25208	02 35 58.89	+15 48 45.9	16.5 5	688
1981 VN	1981 11 02.30139	02 35 55.23	+15 48 55.5		688
1981 VN	1981 11 05.30972	02 32 22.29	+15 58 09.5	16.5	688
1981 VN	1981 11 05.35417	02 32 18.95	+15 58 16.1		688
1981 VN	1981 11 24.12847	02 12 05.57	+16 52 27.4	17.0	688
1981 VN	1981 11 24.17014	02 12 03.09	+16 52 34.3		688
1981 VN	1981 12 02.18021	02 05 45.45	+17 17 03.3	17.0 1	688
1981 VN	1981 12 02.23785	02 05 43.06	+17 17 13.6		688
1981 VO *	1981 11 02.25208	02 36 51.88	+10 21 17.7	16.0 5	688
1981 VO	1981 11 02.30139	02 36 49.07	+10 21 09.1		688

1981 VO	1981 11 05.30972	02 33 59.05	+10 13 08.1	16.2	688
1981 VO	1981 11 05.35417	02 33 56.40	+10 13 01.2		688
1981 VO	1981 11 20.14931	02 21 30.18	+09 46 02.6	16.8	688
1981 VO	1981 11 20.19792	02 21 28.16	+09 46 02.6		688
1981 VP *	1981 11 02.25208	02 37 16.84	+16 49 49.0	16.8	5 688
1981 VP	1981 11 02.30139	02 37 14.31	+16 49 21.7		688
1981 VP	1981 11 05.30972	02 34 51.03	+16 24 27.6	16.8	688
1981 VP	1981 11 05.35417	02 34 48.70	+16 24 01.6		688
1981 VQ *	1981 11 02.25208	02 37 58.50	+17 02 12.7	16.5	5 688
1981 VQ	1981 11 02.30139	02 37 55.56	+17 01 55.3		688
1981 VQ	1981 11 05.30972	02 34 59.52	+16 43 46.8	16.2	688
1981 VQ	1981 11 05.35417	02 34 56.87	+16 43 29.6		688
1981 VQ	1981 11 24.12847	02 19 26.71	+14 58 06.7	17.0	688
1981 VQ	1981 11 24.17014	02 19 25.23	+14 57 55.3		688
1981 VQ	1981 12 02.18021	02 15 23.73	+14 24 47.2	17.5	688
1981 VQ	1981 12 02.23785	02 15 22.29	+14 24 36.6		1 688
1981 VR *	1981 11 02.25208	02 39 20.13	+14 35 13.5	16.8	5 688
1981 VR	1981 11 02.30139	02 39 17.82	+14 35 03.6		688
1981 VR	1981 11 05.30972	02 36 53.26	+14 25 11.2	16.8	1 688
1981 VR	1981 11 05.35417	02 36 51.06	+14 25 02.8		688
1981 VS *	1981 11 05.30972	02 11 52.05	+09 27 31.1	14.8	4 688
1981 VS	1981 11 05.35417	02 11 50.30	+09 27 02.4		688
1981 VS	1981 11 20.14931	02 04 24.19	+07 09 04.3	15.5	688
1981 VS	1981 11 20.19792	02 04 23.01	+07 08 41.5		688
1981 VT *	1981 11 05.30972	02 11 58.28	+10 04 47.6	17.0	4 688
1981 VT	1981 11 05.35417	02 11 56.04	+10 04 32.0		1 688
1981 VU	1981 11 02.25208	02 40 49.07	+14 10 09.1	16.8	688
1981 VU	1981 11 02.30139	02 40 46.31	+14 09 53.5		688
1981 VU *	1981 11 05.30972	02 38 07.71	+13 52 43.7	16.8	4 688
1981 VU	1981 11 05.35417	02 38 05.11	+13 52 28.6		688
1981 VU	1981 11 24.12847	02 23 39.48	+12 18 47.8	17.2	688
1981 VU	1981 11 24.17014	02 23 37.74	+12 18 38.7		688
1981 WA	1981 11 24.12847	02 18 41.62	+16 26 55.2	16.0	688
1981 WA	1981 11 24.17014	02 18 40.33	+16 26 33.8		688
1981 WA	1981 12 02.18021	02 15 13.58	+15 17 32.8	16.2	688
1981 WA	1981 12 02.23785	02 15 12.36	+15 17 04.4		688
1981 WC	1981 11 24.14931	03 20 27.08	+15 45 44.2	16.0	688
1981 WC	1981 11 24.19097	03 20 24.65	+15 45 52.6		688
1981 WD *	1981 11 20.14931	01 57 39.83	+11 25 25.9	16.8	4 688
1981 WD	1981 11 20.19792	01 57 37.92	+11 25 01.8		688
1981 WE *	1981 11 20.14931	01 57 49.64	+10 02 03.4	16.8	4 688
1981 WE	1981 11 20.19792	01 57 48.12	+10 01 38.6		688
1981 WF *	1981 11 20.14931	02 11 04.67	+07 07 33.6	17.0	4 688
1981 WF	1981 11 20.19792	02 11 03.00	+07 07 14.4		688
1981 WG *	1981 11 20.14931	02 11 07.76	+08 55 17.3	17.5	4 688
1981 WG	1981 11 20.19792	02 11 06.47	+08 54 53.5		3 688
1981 WH *	1981 11 20.14931	02 18 59.17	+04 13 18.9	15.8	4 688
1981 WH	1981 11 20.19792	02 18 57.80	+04 13 19.0		688
1981 WJ *	1981 11 20.14931	02 20 35.83	+10 32 09.8	17.0	4 688
1981 WJ	1981 11 20.19792	02 20 33.38	+10 31 57.5		688
1981 WK *	1981 11 20.14931	02 21 03.95	+09 28 49.5	16.8	4 688
1981 WK	1981 11 20.19792	02 21 02.04	+09 28 46.5		688
1981 WO *	1981 11 24.12847	02 03 18.17	+18 44 16.7	17.0	4 688
1981 WO	1981 11 24.17014	02 03 16.17	+18 44 13.3		688
1981 WO	1981 12 02.18021	01 58 24.70	+18 38 05.2	17.2	688
1981 WO	1981 12 02.23785	01 58 22.80	+18 38 04.2		688
1981 WP *	1981 11 24.12847	02 12 39.60	+19 11 11.0	17.0	A 688
1981 WP	1981 11 24.17014	02 12 37.83	+19 11 09.6		688
1981 WP	1981 12 02.18021	02 07 42.73	+19 06 24.6	17.2	688

1981 WP		1981 12 02.23785	02 07 40.88	+19 06 24.3			688
1981 WQ	*	1981 11 24.12847	02 18 13.11	+12 06 54.4	17.0	A	688
1981 WQ		1981 11 24.17014	02 18 10.78	+12 06 55.3			688
1981 WQ		1981 12 02.23785	02 11 39.40	+12 13 18.0	17.5		688
1981 WR	*	1981 11 24.14931	03 09 38.18	+10 32 51.8	16.8	4	688
1981 WR		1981 11 24.19097	03 09 35.69	+10 32 48.1			688
1981 WS	*	1981 11 24.14931	03 16 30.12	+12 32 00.1	17.2	B	688
1981 WS		1981 11 24.19097	03 16 27.33	+12 31 57.4			688
1981 WT	*	1981 11 24.14931	03 19 35.74	+14 29 16.4	16.0	4	688
1981 WT		1981 11 24.19097	03 19 33.59	+14 29 11.2			688
1981 WU	*	1981 11 24.14931	03 19 53.70	+11 41 48.7	16.5	4	688
1981 WU		1981 11 24.19097	03 19 51.21	+11 41 41.8			688
1981 WV	*	1981 11 24.14931	03 21 15.75	+12 38 46.3	15.8	4	688
1981 WV		1981 11 24.19097	03 21 13.08	+12 38 35.5			688
1981 WW	*	1981 11 24.14931	03 25 43.68	+15 36 47.4	16.5	4	688
1981 WW		1981 11 24.19097	03 25 41.16	+15 36 45.0			688
1981 WX	*	1981 11 24.14931	03 26 05.69	+16 01 55.3	17.0	4	688
1981 WX		1981 11 24.19097	03 26 03.85	+16 01 50.7			688
1981 WY	*	1981 11 24.14931	03 29 17.39	+13 41 41.4	16.8	4	688
1981 WY		1981 11 24.19097	03 29 14.55	+13 41 43.1			688
1981 WZ	*	1981 11 24.14931	03 29 37.17	+17 12 00.4	16.0	4	688
1981 WZ		1981 11 24.19097	03 29 35.07	+17 11 39.9			688
1981 WA1	*	1981 11 24.14931	03 31 55.23	+14 39 52.0	17.2	4	688
1981 WA1		1981 11 24.19097	03 31 52.98	+14 39 47.7		1	688
1981 WB1	*	1981 11 24.14931	03 32 17.19	+11 16 09.1	16.2	4	688
1981 WB1		1981 11 24.19097	03 32 14.77	+11 15 54.1			688
1981 WC1	*	1981 11 24.14931	03 32 21.25	+15 47 38.8	16.5	4	688
1981 WC1		1981 11 24.19097	03 32 18.54	+15 47 39.2			688
1981 WD1	*	1981 11 24.14931	03 34 53.73	+10 30 14.2	16.8	4	688
1981 WD1		1981 11 24.19097	03 34 51.22	+10 30 00.6			688
1981 WE1	*	1981 11 24.20764	03 26 14.28	+06 47 38.7	16.5	4	688
1981 WE1		1981 11 24.24236	03 26 12.75	+06 47 23.3			688
1981 WF1	*	1981 11 24.20764	03 42 37.34	+03 30 23.1	16.8	4	688
1981 WF1		1981 11 24.24236	03 42 35.19	+03 30 29.9			688
1981 WF1		1981 12 02.27986	03 34 27.28	+04 04 13.0	17.2		688
1981 WF1		1981 12 02.31319	03 34 25.22	+04 04 21.7			688
1981 WG1	*	1981 11 24.20764	03 45 08.38	+04 20 26.4	17.0	4	688
1981 WG1		1981 11 24.24236	03 45 06.31	+04 20 23.6			688
1981 WG1		1981 12 02.27986	03 38 21.30	+04 12 49.2	16.8		688
1981 WG1		1981 12 02.31319	03 38 19.72	+04 12 50.6			688
1981 WH1	*	1981 11 24.20764	03 49 44.24	+03 20 54.8	16.8	4	688
1981 WH1		1981 11 24.24236	03 49 42.19	+03 20 51.1			688
1981 WJ1	*	1981 11 24.20764	03 51 16.48	+06 03 29.9	17.2	4	688
1981 WJ1		1981 11 24.24236	03 51 14.93	+06 03 27.0			688
1981 WJ1		1981 12 02.27986	03 21 05.50	+05 55 26.0	16.5		688
1981 WJ1		1981 12 02.31319	03 21 04.34	+05 55 15.3			688
1981 WK1	*	1981 11 24.27639	05 12 31.74	+36 45 27.9	16.8	4	688
1981 WK1		1981 11 24.31181	05 12 29.21	+36 45 30.4			688
1981 WL1	*	1981 11 24.35000	06 56 57.22	+25 05 14.6	16.5	4	688
1981 WL1		1981 11 24.40069	06 56 55.68	+25 05 07.9			688
1981 WM1	*	1981 11 24.35000	07 05 11.89	+25 32 45.4	17.2	4	688
1981 WM1		1981 11 24.40069	07 05 11.25	+25 32 31.2			688
1981 XA	*	1981 12 02.27986	03 39 07.59	+06 54 48.2	16.2	4	688
1981 XA		1981 12 02.31319	03 39 04.55	+06 55 38.7			688
1981 XC	*	1981 12 02.18021	02 15 48.87	+19 19 05.5	16.5	4	688
1981 XC		1981 12 02.23785	02 15 47.00	+19 18 57.0			688
1981 XD	*	1981 12 02.18021	02 17 24.10	+19 36 36.0	16.2	4	688
1981 XD		1981 12 02.23785	02 17 22.20	+19 36 27.6			688

1981 XE * 1981 12 02.18021 02 23 14.86 +14 56 53.3 16.8 4 688
 1981 XE 1981 12 02.23785 02 23 13.07 +14 56 41.2 688
 Note 1: right ascension uncertain. 2: declination uncertain. 3 = 1 + 2.
 4: discoverer Bowell. 5: discoverer Skiff. 6 = 1 + 5. 7: discoverer
 N. G. Thomas. 8 = 1 + 7. A = 4 + 1. B = 4 + 3. C = 5 + 7.

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

Object	Date	UT	R. A. (1950)	Decl.	N Obs.
223	1929 12	03.18750	04 40 05.37	+23 21 27.9	690
317	1959 03	06.30903	10 36 45.87	+09 15 47.5	690
317	1959 03	08.29236	10 34 52.17	+09 28 26.8	1 690
317	1959 03	09.28472	10 33 55.88	+09 34 45.0	690
496	1931 10	09.19722	23 20 04.71	-01 06 13.1	690
496	1931 10	11.16319	23 18 48.02	-01 19 44.3	690
822	1931 10	09.19722	23 30 15.31	-02 34 27.9	690
822	1931 10	11.16319	23 28 46.39	-02 45 03.0	690
1003	1959 03	06.30903	10 38 50.01	+09 33 33.4	690
1003	1959 03	08.29236	10 37 21.28	+09 43 19.9	690
1003	1959 03	09.28472	10 36 37.48	+09 48 08.8	690
1074	1929 11	27.20278	04 39 47.12	+22 52 12.6	690
1074	1929 12	03.18750	04 34 24.33	+22 43 38.1	690
1539	1959 03	06.30903	10 39 50.14	+09 11 09.6	690
1539	1959 03	08.29236	10 38 23.11	+09 20 25.3	690
1539	1959 03	09.28472	10 37 40.13	+09 25 01.4	690
1576	1931 10	09.19722	23 33 18.30	-03 15 05.8	690
1576	1931 10	11.16319	23 32 10.10	-03 22 59.7	690
1929 WK	1929 11	27.20278	04 21 42.42	+23 39 23.8	690
1929 WK	1929 12	03.18750	04 17 10.27	+23 14 19.9	690
1929 WN	1929 11	27.20278	04 31 54.11	+23 48 48.8	690
1929 WN	1929 12	03.18750	04 25 02.69	+23 24 25.5	690
1929 XJ	1929 12	03.18750	04 28 27.11	+27 12 48.6	690
1931 TP2	1931 10	09.19722	23 24 58.46	-01 53 06.5	690
1931 TP2	1931 10	11.16319	23 23 55.83	-01 56 47.0	690
1931 XO	1931 12	05.24410	03 26 59.48	+16 45 57.0	690
1931 XO	1931 12	08.18750	03 24 55.58	+16 42 08.9	690
1959 EO	1959 03	06.30903	10 35 50.55	+08 32 13.8	690
1959 EO	1959 03	08.29236	10 34 17.85	+08 42 53.7	690
1959 EO	1959 03	09.28472	10 33 31.96	+08 48 08.9	690

Note 1: right ascension and declination uncertain.

OBSERVATIONS MADE AT THE STEWARD OBSERVATORY'S KITT PEAK STATION (CODE 693), AT THE WHIPPLE OBSERVATORY (CODE 696) AND AT THE LUNAR AND PLANETARY LABORATORY'S CATALINA STATION (CODE 691) BY D. J. THOLEN, R. A. TUCKER AND R. ULICH (WITH ASSISTANCE FROM R. WITWER).

Object	Date	UT	R. A. (1950)	Decl.	N Obs.
1981 VB	1981 11	03.3576	02 22 05.1	+05 49 29	1 691
1981 VB	1981 11	04.1826	02 21 23.8	+05 45 17	1 691
1981 VB	1981 11	04.2799	02 21 18.9	+05 44 49	1 691
1981 VB	1981 11	04.3576	02 21 15.0	+05 44 25	1 691
1981 VB	1981 11	04.4542	02 21 09.9	+05 43 53	1 691
1981 VB	1981 11	05.2972	02 20 28.5	+05 39 47	1 691
1981 VB	1981 11	05.3278	02 20 26.8	+05 39 34	1 691
1981 VB	1981 11	19.1948	02 10 01.89	+04 44 31.0	2 696
1981 VB	1981 11	19.2230	02 10 00.94	+04 44 25.5	2 696
1981 VB	1981 11	19.3394	02 09 56.23	+04 44 07.3	2 696
1981 VB	1981 11	26.2998	02 05 54.0	+04 28 04	3 693

Note 1: these observations replace those on MPC 6453. 2: Whipple Observatory, Mt. Hopkins, observatory code 696, Long. and Parallax 249.12, -363, -223 (see MPC 4766). 3: poor seeing.

OBSERVATIONS MADE AT THE LINCOLN LABORATORY ETS, NEW MEXICO, BY L. G. TAFF.

Object	Date	UT	R. A. (1950)			Decl.	Obs.		
102	1981	10	31.29675	02	15	51.55	+12 33 10.3	704	
149	1981	10	24.24182	01	14	16.40	+06 27 46.0	704	
178	1981	10	24.24964	01	16	11.43	+06 32 02.0	704	
379	1981	10	26.39948	01	44	45.50	+09 04 19.3	704	
379	1981	10	31.36791	01	41	04.23	+08 41 11.0	704	
383	1981	10	31.30509	02	31	39.05	+11 12 32.5	704	
428	1981	10	26.32334	01	42	53.77	+13 54 39.7	704	
429	1981	10	24.31970	00	59	01.57	+11 27 37.7	704	
520	1981	10	26.39289	01	30	25.33	+06 58 48.3	704	
642	1981	10	24.32397	01	18	04.43	+12 13 46.0	704	
718	1981	10	31.29396	02	12	59.00	+12 55 22.8	704	
789	1981	10	30.22413	02	04	14.40	+17 49 15.4	704	
806	1981	10	27.31593	02	03	49.58	+07 38 20.0	704	
806	1981	10	31.35757	02	00	22.60	+07 34 32.7	704	
922	1981	10	31.32068	02	10	22.73	+10 45 21.7	704	
927	1981	10	27.25036	01	29	40.40	+17 19 38.7	704	
1007	1981	10	30.23396	02	07	41.80	+17 30 37.8	704	
1007	1981	10	30.39623	02	07	32.52	+17 29 50.8	704	
1007	1981	10	31.21141	02	06	49.08	+17 25 57.8	704	
1084	1981	10	26.40791	01	26	27.17	+06 50 57.7	704	
1121	1981	10	30.24428	01	51	12.00	+18 41 48.4	704	
1150	1981	10	26.40189	01	30	29.17	+09 13 31.7	704	
1512	1981	10	26.34225	01	36	34.17	+12 55 27.3	704	
1540	1981	10	31.35552	02	09	17.80	+06 57 48.3	704	
1615	1981	10	24.25281	01	09	04.57	+05 03 59.0	704	
1660	1981	10	27.40578	01	54	44.27	+12 08 01.7	704	
1660	1981	10	30.30080	01	52	02.85	+11 20 08.8	704	
1664	1981	10	31.36430	01	42	21.78	+08 11 11.0	704	
1674	1981	10	31.32352	02	19	27.13	+10 10 15.7	704	
1960	1981	10	30.40689	02	24	09.40	+18 22 44.3	704	
2014	1981	10	26.39475	01	41	54.37	+07 03 45.3	704	
2073	1981	10	27.32923	01	57	01.70	+07 45 40.8	704	
2073	1981	10	31.36019	01	53	28.40	+07 30 11.3	704	
2184	1981	10	27.25952	01	38	02.70	+16 28 11.3	704	
2487	1981	10	30.23830	02	07	35.98	+17 27 33.0	704	
2487	1981	10	30.39869	02	07	26.20	+17 26 57.2	704	
2487	1981	10	31.21434	02	06	39.73	+17 24 07.8	704	
1981 US	*	1981	10	26.32085	01	33	48.67	+13 22 46.0	704
1981 US		1981	10	26.41286	01	33	41.77	+13 23 06.0	704
1981 US		1981	10	27.19499	01	32	44.53	+13 25 46.7	704
1981 US		1981	10	30.16483	01	29	10.90	+13 35 35.7	704
1981 US		1981	10	31.23303	01	27	56.20	+13 39 03.7	704
1981 UT	*	1981	10	26.32826	01	24	33.80	+12 39 32.0	704
1981 UT		1981	10	26.42110	01	24	28.07	+12 39 10.3	704
1981 UT		1981	10	27.26654	01	23	38.83	+12 35 36.7	704
1981 UT		1981	10	30.16748	01	20	53.55	+12 23 39.0	704
1981 UT		1981	10	31.19383	01	19	57.15	+12 19 24.5	704
1981 UU	*	1981	10	26.33154	01	41	19.40	+13 08 12.3	704
1981 UU		1981	10	26.41789	01	41	15.33	+13 06 54.3	704
1981 UU		1981	10	27.28439	01	40	37.96	+12 54 23.2	704
1981 UU		1981	10	30.16123	01	38	36.37	+12 12 46.0	704
1981 UV	*	1981	10	26.39707	01	27	20.32	+08 42 55.8	704
1981 UV		1981	10	26.41001	01	27	19.85	+08 42 48.5	704
1981 UV		1981	10	27.19908	01	26	54.83	+08 33 44.3	704
1981 UV		1981	10	30.17005	01	25	23.38	+08 00 21.8	704
1981 UV		1981	10	31.19701	01	24	53.70	+07 49 05.8	704

1981 UW	*	1981	10	27.25413	01	23	41.63	+14	32	25.3	704
1981 UX	*	1981	10	27.31870	01	45	56.30	+09	21	51.0	704
1981 UX		1981	10	30.17194	01	42	51.97	+09	24	22.0	704
1981 UX		1981	10	31.20086	01	41	46.53	+09	25	20.7	704
1981 UY	*	1981	10	27.40907	01	45	53.70	+11	59	43.0	704
1981 UZ	*	1981	10	30.21902	01	44	02.00	+12	25	00.2	704
1981 UZ		1981	10	31.23615	01	43	02.60	+12	25	47.0	704
1981 UA1	*	1981	10	30.22933	01	55	58.52	+17	06	24.3	704
1981 UA1		1981	10	30.39358	01	55	48.93	+17	05	18.0	704
1981 UA1		1981	10	31.20617	01	55	05.86	+16	56	39.4	704
1981 UB1	*	1981	10	30.32494	02	04	41.82	+10	53	23.6	704
1981 UB1		1981	10	30.40145	02	04	38.12	+10	53	03.0	704
1981 UB1		1981	10	31.28376	02	03	56.18	+10	49	09.0	704
1981 UC1	*	1981	10	30.32819	01	54	26.33	+09	30	00.0	704
1981 UC1		1981	10	30.40412	01	54	21.65	+09	29	41.5	704
1981 UC1		1981	10	31.21966	01	53	34.33	+09	26	22.8	704
1981 UD1	*	1981	10	30.38828	02	09	51.24	+17	08	03.2	704
1981 UD1		1981	10	30.40980	02	09	50.10	+17	07	49.0	704
1981 UD1		1981	10	31.22427	02	09	09.73	+16	58	57.5	704
1981 UE1	*	1981	10	31.28955	02	21	30.40	+12	43	33.8	704
1981 UE1		1981	10	31.37408	02	21	25.63	+12	43	25.3	704
1981 UF1	*	1981	10	31.31606	02	11	26.63	+13	26	39.3	704
1981 UF1		1981	10	31.38091	02	11	23.00	+13	25	57.3	704
1981 VT		1981	10	31.30018	02	15	03.55	+10	22	01.3	704
1981 VT		1981	10	31.37587	02	15	00.37	+10	21	11.7	704

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

Object	Date	UT	R. A. (1950)	Decl.	Obs.
1551	1953 04	05.17259	12 16 17.93	+04 50 01.0	760
1551	1953 04	05.21358	12 16 15.78	+04 50 15.2	760
2424	1964 04	11.18613	11 28 43.24	+11 04 37.5	760
1953 EC1	1953 03	10.28057	11 12 13.82	+15 39 15.3	760
1953 EC1	1953 03	10.31947	11 12 11.79	+15 39 31.6	760
1953 ED1	1953 03	14.10350	09 44 18.67	+09 01 17.0	760
1953 GA1	1953 04	05.17259	12 23 13.45	-00 38 54.1	760
1953 GA1	1953 04	05.21358	12 23 09.66	-00 39 09.5	760
1953 GB1	1953 04	05.17259	12 31 44.55	-02 20 04.9	760
1953 GB1	1953 04	05.21358	12 31 41.19	-02 19 40.1	760
1953 GC1	1953 04	05.17259	12 29 58.07	-02 05 53.7	760
1953 GC1	1953 04	05.21358	12 29 55.26	-02 05 44.6	760
1953 GF1	1953 04	14.15523	13 11 52.98	+13 20 28.8	760
1953 LC	1953 06	04.21700	16 30 02.11	-26 17 10.8	760
1953 NK	1953 07	10.15241	16 14 08.05	-18 08 05.0	760
1964 TL	1964 10	04.27657	02 15 23.69	+10 25 44.6	760
1964 VT	1964 11	06.09672	01 50 33.50	+08 26 01.3	760
1964 VT	1964 11	06.14013	01 50 31.49	+08 25 54.7	760

OBSERVATIONS MADE AT THE OAK RIDGE OBSERVATORY BY R. E. MC CROSKY, C.-Y. SHAO, G. SCHWARTZ AND J. BULGER (WITH ASSISTANCE FROM C. M. BARDWELL, D. W. E. GREEN AND B. G. MARSDEN).

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
761	1981 11	24.12278	00 35 02.84	+03 54 04.7	16.5		801
883	1981 10	31.34356	05 41 34.84	+27 58 19.7			801
1518	1981 11	03.12692	23 35 13.42	-05 34 57.5	16		801
1696	1981 11	03.16238	23 39 36.94	-03 54 29.0			801
1791	1981 11	24.15269	00 51 02.16	+04 10 46.0			801
1947	1977 10	11.24310	02 35 31.56	-00 10 11.2			801
1951	1980 06	14.22686	13 54 10.44	+59 17 18.3		1	801

2100		1981 07 28.20669	00 04 53.95	+53 58 38.7		801
2115		1978 04 09.30279	14 18 36.86	-20 52 40.0		801
2449		1981 06 29.23971	19 03 36.84	+33 54 44.7		801
2475		1981 06 01.27718	16 58 23.57	-13 32 21.3		801
2479		1981 11 03.19608	00 11 58.69	+05 56 48.8		801
2480		1981 05 24.15117	12 10 46.58	-00 18 20.4		801
2480		1981 05 25.17958	12 10 53.88	-00 20 32.7		801
2492		1981 04 07.19407	10 14 51.75	+11 35 06.0		801
2495		1981 10 24.96961	20 02 21.83	-02 29 29.6		801
1943	EO	1981 11 02.16641	00 27 10.14	+03 55 14.8	2	801
1950	FC	1981 11 02.14230	00 07 43.13	+14 57 37.8		801
1964	TA1	1981 08 26.22604	22 56 50.12	-08 14 09.7	3	801
1964	TA1	1981 11 02.97455	22 27 55.54	-09 41 38.0		801
1964	TX1	1981 11 02.21943	01 53 52.44	+08 57 46.9		801
1964	TX1	1981 11 24.19382	01 40 07.97	+08 30 35.9		801
1964	VY	1981 11 02.19409	00 40 49.31	+02 13 08.6		801
1970	PL	1981 11 02.39859	06 36 27.49	+28 53 13.9		801
1970	PL	1981 11 03.34365	06 36 30.10	+28 54 31.2		801
1970	PL	1981 11 24.40674	06 29 24.67	+29 24 11.5		801
1974	FG	1981 05 23.11594	11 50 40.47	+00 57 09.4		801
1975	BX	1981 11 24.30858	06 04 04.36	-04 17 30.1		801
1975	DA	1981 11 03.22369	00 14 58.90	+30 43 34.7		801
1975	VD2	1981 11 03.27142	03 32 32.12	+17 09 20.9		801
1976	WB1	1981 10 25.30784	04 03 49.14	+06 01 01.7		801
1976	WB1	1981 11 23.23258	03 40 46.83	+04 32 58.9		801
1976	YX1	1981 11 03.24912	00 38 36.14	+04 21 57.6		801
1977	ET1	1981 06 02.13934	15 38 33.58	-10 42 40.2		801
1977	NR	1981 11 01.30558	02 41 05.40	+18 28 32.1		801
1977	NR	1981 11 23.18650	02 20 27.63	+17 02 56.2		801
1977	PA2	1981 10 31.34356	05 41 28.10	+28 03 55.4		801
1977	PA2	1981 11 23.26201	05 26 28.70	+27 36 12.0		801
1977	QR2	1981 10 31.96810	21 20 32.36	-13 51 24.5		801
1977	QR2	1981 11 23.97509	21 45 23.37	-12 07 17.1		801
1978	RO1	1981 09 29.16252	21 53 57.62	-11 58 50.3	4	801
1978	VV6	1981 11 03.12692	23 36 51.11	-05 20 40.5		801
1979	DK	1981 10 25.06816	23 26 39.96	+08 09 03.7		801
1979	MZ3	1981 11 25.37729	07 28 16.11	+20 29 13.5		801
1980	FN3	1981 10 31.21635	23 42 27.06	-04 37 52.3		801
1980	FN3	1981 11 01.03333	23 42 38.65	-04 38 41.5		801
1980	KJ	1981 11 01.17367	00 47 50.27	+08 53 20.4	5	801
1980	LO	1981 11 02.26766	03 45 32.81	+13 06 34.4		801
1980	LO	1981 11 23.20884	03 24 59.99	+11 33 01.2		801
1980	LP	1981 11 02.32870	06 16 00.12	+18 08 45.4		801
1980	LP	1981 11 03.29863	06 15 54.00	+18 09 24.5		801
1980	LP	1981 11 23.33387	06 06 31.52	+18 32 35.2		801
1980	OB	1981 11 26.23712	06 55 21.53	+26 11 31.2		801
1980	OC	1981 11 02.34876	06 08 39.01	+24 00 45.8		801
1980	OC	1981 11 03.35900	06 08 31.86	+24 00 43.2		801
1980	OC	1981 11 23.28667	06 00 15.95	+23 59 16.1		801
1980	OH	1981 09 29.38321	03 52 15.87	+17 58 45.4		801
1980	OH	1981 10 25.27965	03 41 08.28	+17 22 09.4		801
1980	OH	1981 11 02.24211	03 35 27.86	+17 04 26.8		801
1980	PV	1981 11 01.22535	02 01 24.20	+24 59 22.6		801
1981	PA	1981 08 08.18714	22 38 33.00	-03 42 08.1	6	801
1981	PA	1981 10 29.99213	21 23 52.58	+03 32 40.2	16.5	801
1981	QA	1981 11 23.03418	00 31 51.80	-10 11 41.3		801
1981	RU	1981 11 24.10002	00 12 43.68	+04 00 42.0		801
1981	SC	1981 11 03.01350	23 26 15.77	-01 13 16.2		801

1981 UA	1981 11	02.10536	03 12	17.84	+54 29	49.3	7	801
1981 UC	1981 10	25.27965	03 42	41.53	+17 30	20.9		801
1981 UF	1981 11	01.30558	02 39	42.68	+18 15	44.4	17	801
1981 VA	1981 11	08.08736	02 43	49.08	+48 58	17.1		801
1981 VA	1981 11	09.24669	02 41	18.72	+46 50	36.6		801
1981 VA	1981 11	23.15038	02 28	06.11	+28 41	25.9		801
1981 VV *	1981 11	02.26766	03 45	28.57	+13 21	05.6	18.5	801
1981 VX *	1981 11	02.19409	00 42	15.23	+02 07	38.9	18.5	801
1981 VY *	1981 11	03.12692	23 36	30.30	-05 26	47.2	19	801
1981 WL *	1981 11	25.21964	03 34	33.76	+16 21	28.4	19	801
1981 WM *	1981 11	25.21964	03 35	52.54	+16 19	35.4	17.5	801
1981 WN *	1981 11	25.25738	05 33	09.24	+30 01	51.2	19	801
1981 WN1 *	1981 11	23.20884	03 25	15.35	+11 21	37.5	17	801
1981 XA	1981 12	05.09082	03 34	51.98	+08 05	23.6		801
1981 XA	1981 12	05.13395	03 34	48.07	+08 06	29.6	7	801
4579 P-L	1981 11	25.07156	00 32	51.99	+01 18	10.2		801

Note 1: weak solution. 2: double exposure. 3: correction to MPC 6410. 4: image overlaps that of bright star. 5: on star trail. 6: correction to MPC 6268. 7: unguided exposure; image trailed.

OBSERVATIONS MADE AT TOKAI BY T. FURUTA. FROM NIHONDAIRA OBS. CIRC. NOS. 1240, 1250 AND 1254.

Object	Date	UT	R. A. (1950)			Decl.	Mag.	Obs.
2437	1981 10	29.70799	02 55	58.37	+16 30	47.3	16.5	879
2437	1981 10	29.72135	02 55	57.70	+16 30	40.5		879
2470	1981 10	29.67396	02 13	35.95	+09 54	44.4	16.5	879
2470	1981 10	29.68785	02 13	35.21	+09 54	39.6		879
1976 WB1	1981 11	18.59475	03 44	51.94	+04 41	38.6	17	879
1976 WB1	1981 11	18.60694	03 44	51.11	+04 41	36.2		879
1977 NR	1981 10	29.60451	02 43	58.87	+18 38	25.3	17	879
1977 NR	1981 10	29.61840	02 43	57.88	+18 38	22.9		879
1977 NR	1981 11	18.52535	02 24	04.18	+17 20	01.6	17	879
1977 NR	1981 11	18.54306	02 24	03.39	+17 19	56.5		879
1980 LM	1981 11	21.55313	03 27	50.07	+11 54	40.5	16.5	879
1980 LM	1981 11	21.57014	03 27	49.01	+11 54	41.8		879
1980 LO	1981 11	21.55313	03 26	37.80	+11 39	19.3	17	879
1980 LO	1981 11	21.57014	03 26	36.77	+11 39	15.2		879
1980 PP	1981 10	29.56042	01 40	10.50	+22 25	55.4	16.5	879
1980 PP	1981 10	29.57708	01 40	09.64	+22 25	50.3		879
1981 SA	1981 10	29.63715	03 50	50.06	+18 18	04.7	16.5	879
1981 SA	1981 10	29.65035	03 50	49.21	+18 18	06.9		879
1981 SA	1981 11	21.66319	03 30	03.72	+18 52	26.7	15.5	879
1981 SA	1981 11	21.67674	03 30	03.01	+18 52	26.6		879
1981 UC	1981 11	18.56319	03 17	09.24	+16 51	09.0	15.5	879
1981 UC	1981 11	18.57708	03 17	08.21	+16 51	08.3		879
1981 UF	1981 10	29.61840	02 42	26.60	+18 25	31.5		879
1981 UF	1981 11	18.52535	02 22	46.8	+17 07	24	16.5	879
1981 UF	1981 11	18.54306	02 22	45.93	+17 07	20.4		879
1981 UF	1981 11	21.50938	02 20	10.7	+16 55	45	17	879
1981 UF	1981 11	21.52431	02 20	09.84	+16 55	39.3		879
1981 WA *	1981 11	18.52535	02 21	55.71	+17 20	02.6	15.5	879
1981 WA	1981 11	18.54306	02 21	55.18	+17 19	52.2		879
1981 WA	1981 11	21.50938	02 20	07.93	+16 51	23.3	15.5	879
1981 WA	1981 11	21.52431	02 20	07.38	+16 51	17.0		879
1981 WB *	1981 11	28.58854	04 34	33.15	+17 06	45.3	16.5	879
1981 WB	1981 11	28.60451	04 34	32.23	+17 06	39.3		879
1981 WC *	1981 11	28.62986	03 16	29.78	+15 59	58.5	16.5	879
1981 WC	1981 11	28.64392	03 16	28.87	+15 59	59.3		879

ORBITAL ELEMENTS OF ONE-OPPOSITION MINOR PLANETS.

The orbit computers are E = E. Bowell, M = B. G. Marsden. For further information see MPC 5833.

Planet	B(1,0)	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1981 PA	14.5	811003	315.81	107.86	322.32	21.75	0.3591	2.3681	91	8		M
1981 PB	17.0	810913	21.75	302.95	357.69	4.85	0.2782	2.1321	104	8		M
1981 QD	15.3	810824	4.93	9.86	327.97	2.68	0.2060	2.4218	26	6		E
1981 QF	15.4	810824	350.12	21.58	341.51	3.67	0.2459	2.5655	26	6		E
1981 QG	13.8	810824	0.64	359.57	350.22	1.29	0.1495	3.0500	26	5		E
1981 QP	14.2	810913	28.98	250.30	78.40	9.37	0.1330	2.4305	35	6		E
1981 QC1	14.0	810913	8.82	165.49	168.30	12.15	0.1956	2.6671	36	0		M
1981 QJ1	14.0	810913	268.24	84.39	338.54	19.76	0.1112	3.0459	24	0		M
1981 QD2	14.9	810913	338.91	326.78	49.20	3.55	0.1719	2.2835	35	6		E
1981 QE2	15.5	810913	13.56	173.79	151.76	7.56	0.2257	2.2989	35	6		E
1981 QF2	14.4	810913	358.35	226.66	122.38	1.97	0.1358	2.4561	35	5		E
1981 QH2	15.6	810913	356.02	199.56	154.70	4.37	0.1934	2.2000	35	6		E
1981 QJ2	15.2	810913	352.81	207.51	152.23	5.93	0.1874	2.2935	35	6		E
1981 RF	15.0	810913	357.84	239.32	117.46	3.42	0.1894	2.4333	27	8		E
1981 SA	12.0	811003	93.62	250.99	56.29	18.15	0.0600	3.2040	56	0		M
1981 SC	14.5	811003	276.29	95.94	2.71	14.87	0.1176	2.5988	38	6		M
1981 SM	14.5	811003	329.53	109.10	300.28	3.33	0.1317	2.4369	33	0		M
1981 SO	14.5	811003	18.35	356.80	350.31	6.03	0.1195	2.3012	33	0		M
1981 ST	13.0	811003	339.59	208.72	175.48	16.13	0.0664	3.1219	13	0		M
1981 SW1	14.5	811003	5.92	144.01	217.72	5.27	0.1479	2.5306	15	8		M
1981 TK	15.0	811003	345.65	27.16	7.92	24.46	0.2496	2.3536	29	8		M
1981 UA	16.5	811023	3.06	20.77	17.05	27.00	0.3295	2.3219	15	6		M
1981 UC	15.5	811112	42.55	283.94	66.54	2.89	0.1947	2.2305	32	0		M
1981 US		811112	22.92	343.25	21.83	11.42	0.1583	2.2050	5	5	1	M
1981 UT		811112	350.03	54.81	352.14	2.99	0.1094	2.2282	5	5		M
1981 UU		811112	351.72	192.96	217.38	8.99	0.1870	2.1598	4	4	1	M
1981 UV		811112	0.63	187.64	206.84	7.80	0.2829	2.5747	5	5		M
1981 UX		811112	33.34	320.72	34.06	12.61	0.0928	2.5480	4	3		M
1981 VB	14.0	811112	62.08	167.50	160.78	5.92	0.0841	2.7462	13	0		M
1981 VF	15.0	811112	31.21	320.26	31.81	4.88	0.2509	2.3710	30	8		M
1981 VK	13.7	811112	46.99	308.20	24.48	0.82	0.2245	3.1919	22	5		E
1981 VL	15.5	811112	13.09	2.17	23.95	3.78	0.1575	2.3261	30	8		M
1981 VN	14.0	811112	351.35	14.67	39.58	15.96	0.1065	2.6214	30	8		M
1981 VO	14.1	811023	31.15	259.22	87.64	3.50	0.2362	2.6555	18	6		E
1981 VQ	15.0	811112	46.17	94.49	242.35	2.27	0.2135	2.4631	30	8		M
1981 VU	15.2	811112	5.66	194.36	201.66	2.21	0.1834	2.5125	22	6		E
1981 WA	13.0	811112	17.80	145.67	233.19	13.52	0.1574	2.9762	15	8		M

Note 1: e assumed.

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ORBITAL ELEMENTS BY S. NAKANO, SUMOTO, AND T. URATA, SHIMIZU, JAPAN.

The following orbital elements are from NOC 1237-1239, 1241-1242, 1246-1249, 1251, 1253 and 1255-1256. The identifications are by T. Urata unless otherwise stated.

(2496)* 1953 TC1 = 1969 TX4 = 1972 RB3 = 1972 TN = 1974 CV = 1974 EK

Discovered 1953 Oct. 8 at the Goethe Link Observatory, Indiana University. The identification 1953 TC1 = 1955 EE (MPC 1740) is invalid.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	293.62910		(1950.0)		P		Q
n	0.30821255	Peri.	291.22653	-0.07022013			-0.99752027
a	2.1705469	Node	162.79807	+0.92101042			-0.06665679
e	0.0338372	Incl.	0.91777	+0.38315655			-0.02258713
P	3.20	B(1,0)	14.5				

Residuals in seconds of arc

531008	760	1.3-	0.4-	531015	760	1.6-	2.3+	720908	095	2.0-	0.8-
531008	760	1.1-	0.4-	531015	760	2.8+	0.2-	721004	095	3.4+	0.2+
531010	760	0.8+	1.9-	691014	095	0.1-	0.1+	740214	095	2.7-	2.2+
531010	760	0.4+	0.4+	720904	095	0.6-	0.5-	740315	095	2.4+	3.3-

(2497)* 1977 PZ1 = 1969 RX = 1973 QP1

Discovered 1977 Aug. 14 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	109.71299		(1950.0)		P		Q
n	0.24342194	Peri.	346.04360	+0.38592301			+0.91888437
a	2.5403656	Node	306.59466	-0.83626831			+0.31094971
e	0.2320707	Incl.	5.85806	-0.38951090			+0.24282051
P	4.05	B(1,0)	14.1				

Residuals in seconds of arc

690910	095	1.6+	2.6-	810805	046	0.5-	2.1+	810811	046	4.4+	2.0-
730829	095	0.2-	1.3-	810805	046	0.5-	0.7-	810812	046	0.7+	0.5-
730902	095	0.1+	0.3+	810805	372	0.8+	2.5+	810812	046	0.8-	0.2+
770814	095	0.1-	0.6+	810806	046	0.5-	2.0-	810905	801	1.0-	1.7+
770821	095	2.2-	1.3+	810808	801	0.5-	1.8+	810930	801	0.3-	0.2+
770909	095	0.2+	1.4+	810808	046	3.2-	0.6+	811001	801	0.9-	0.0
810726	688	0.4+	2.3-	810808	046	1.8-	0.7+				
810726	688	1.9+	1.7-	810810	046	2.0+	0.9-				

(2498)* 1977 QM3 = 1977 RP3 = 1972 RE3 = 1975 EA1

Discovered 1977 Aug. 23 by N. S. Chernykh at the Crimean Astrophysical Observatory. The double designation 1977 QM3 = 1977 RP3 is by O. Kippes (MPC 5347).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	7.41592		(1950.0)		P		Q
n	0.19772117	Peri.	1.10109	+0.89264205			+0.45065279
a	2.9181029	Node	332.10633	-0.41371463			+0.81015811
e	0.0812300	Incl.	1.23835	-0.17897030			+0.37490786
P	4.98	B(1,0)	13.1				

Residuals in seconds of arc

720904	095	0.1-	0.2+	770912	095	0.2-	1.2+	810605	801	0.7+	0.7-
750306	095	2.4+	1.2-	770918	095	0.5+	0.5-	810609	688	0.2+	0.5+
750315	095	1.7-	3.1+	810604	688	(1.5-	11.2-)				
770823	095	1.0-	0.7+	810604	688	0.9-	0.3+				

(2499)* 1978 VJ7 = 1975 EX2 = 1975 EN3 = 1977 RE5

Discovered 1978 Nov. 7 by E. Helin and S. J. Bus at Palomar.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	81.02027		(1950.0)		P		Q
n	0.18061663	Peri.	45.47708	-0.53279957			+0.84623710
a	3.0995422	Node	192.32895	-0.77994063			-0.49230020
e	0.1256474	Incl.	0.72958	-0.32835535			-0.20377265
P	5.46	B(1,0)	13.1				

Residuals in seconds of arc

750308	095	1.3-	0.6-	781129	675	0.2-	0.1-	810505	688	0.2+	0.8-
750314	095	1.0+	0.1-	781130	675	0.9-	0.9-	810603	801	0.0	0.7-
770909	095	0.4+	1.1-	810430	372	1.9-	1.8+	810604	688	0.4+	1.8-
781105	675	0.6-	0.0	810430	372	0.6-	2.3+	810604	688	0.4+	1.6-
781106	675	0.0	0.6-	810504	879	1.2-	0.0	810605	801	1.6+	0.5-
781107	675	1.9+	0.1-	810504	879	0.0	0.2-				
781108	675	0.1+	0.8-	810505	688	0.3+	0.9-				

1978 RR5 = 1978 TD = 1978 UE2 = 1972 GZ1 = 1976 GP1

The double designation 1978 RR5 = 1978 UE2 is by C. M. Bardwell (MPC 6287).

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

M	319.62880		(1950.0)		P		Q
n	0.23431676	Peri.	19.37403	+0.88205076		-0.46981150	
a	2.6057616	Node	8.90172	+0.39624171		+0.69887279	
e	0.1756186	Incl.	13.28070	+0.25490971		+0.53930880	
P	4.21	B(1,0)	13.5				

Residuals in seconds of arc

720409	805	0.2+	0.1-	760402	095	0.7-	2.5+	781008	095	0.9+	1.3+
720409	805	0.4+	1.4-	760404	095	2.5+	0.1-	781012	026	3.6-	0.6+
720410	805	0.8-	1.5+	780906	095	3.6-	1.0+	781028	330	4.3+	0.1+
720410	805	0.5+	0.4+	781002	095	1.1+	0.1-	781101	095	0.0	0.3+
760401	095	0.1-	0.4-	781004	095	0.4-	0.9-				

1978 TM7 = 1980 CU

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

M	309.34067		(1950.0)		P		Q
n	0.25705938	Peri.	341.17816	+0.05206984		-0.98993090	
a	2.4497096	Node	105.66977	+0.93284713		+0.00116374	
e	0.0499163	Incl.	7.85736	+0.35648979		+0.14154670	
P	3.83	B(1,0)	13.0				

Residuals in seconds of arc

781002	095	0.2+	0.1-	800219	046	0.4+	0.4+	800222	046	(1.0-	9.8+)Y
781008	095	0.2-	0.6-	800220	046	0.2+	0.9+	800223	046	(4.7-	18.7+)Y
781101	095	0.0	0.7+	800221	046	0.1-	0.6+	800223	046	(3.0-	17.7+)Y
800215	046	1.2-	1.1-	800221	046	0.5+	0.6-				
800215	046	0.1+	0.2-	800222	046	(1.4-	10.2+)Y				

1978 UQ2 = 1974 TE1 = 1974 WM

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

M	335.54498		(1950.0)		P		Q
n	0.25257325	Peri.	14.68163	+0.42441476		-0.89818136	
a	2.4786318	Node	50.34232	+0.81497158		+0.32375003	
e	0.1263812	Incl.	8.56366	+0.39458006		+0.29741582	
P	3.90	B(1,0)	13.5				

Residuals in seconds of arc

741010	808	0.3-	0.5-	741119	095	4.7+	3.1-	781103	330	0.7-	1.3+
741010	808	0.2-	0.5-	781009	095	2.8-	0.1+	781107	330	1.5+	0.3+
741012	808	1.9-	1.1+	781030	330	0.9+	0.3+				
741012	808	0.5-	0.4-	781101	095	0.8-	1.5+				

1979 FG2 = A909 DA = 1952 BK = 1962 BB = 1975 AW = 1976 KW = 1976 LA

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

M	270.88973		(1950.0)		P		Q
n	0.29636155	Peri.	238.22156	+0.30718337		+0.95145767	
a	2.2280367	Node	49.68032	-0.86436451		+0.28737020	
e	0.0657542	Incl.	1.43916	-0.39813612		+0.11021196	
P	3.33	B(1,0)	14.5				

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

090218	024	(4.1-	26.5+)Y	750104	330	0.0	0.1+	790323	095	2.0-	0.9+	
520128	711	5.5+	5.0-	Y	760526	095	0.9+	1.7+	790329	095	0.8+	0.3+
520130	760	3.4-	3.1-		760602	808	1.4-	1.3-	790420	095	4.3+	3.3+
520130	760	3.2-	3.8+		760602	808	1.1-	3.5-	790425	095	0.7-	0.1+
620128	760	(0.03+	0.01-)X	760606	808	0.3+	1.3-					

1979 FJ2 = 1976 YU4

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

M	130.09413		(1950.0)		P		Q
n	0.17897838	Peri.	191.04930	+0.39387949		+0.91779706	
a	3.1184339	Node	102.16214	-0.83931899		+0.38133977	
e	0.1577624	Incl.	2.93625	-0.37470332		+0.11058275	
P	5.51	B(1,0)	12.5				

Residuals in seconds of arc

761218	095	1.8-	0.3-	790323	095	0.5+	0.5+	790420	095	0.0	0.0
761220	095	2.0+	0.3+	790329	095	0.5-	0.5-				

1979 FT2 = 1976 MN

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

M	359.56622		(1950.0)		P		Q
n	0.30329206	Peri.	170.09758	-0.77462121		+0.62741817	
a	2.1939643	Node	49.06644	-0.58716702		-0.66683744	
e	0.0570196	Incl.	6.03489	-0.23494013		-0.40208739	
P	3.25	B(1,0)	14.5				

Residuals in seconds of arc

760628	808	0.1+	0.4-	760701	808	1.1+	0.3-	790430	095	1.0+	0.3+
760628	808	0.2+	0.3-	790329	095	0.3-	0.2+	790501	095	0.7-	0.6+
760701	808	1.5-	1.0+	790425	095	0.0	1.0-				

1979 KX = 1973 DF

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

M	309.72114		(1950.0)		P		Q
n	0.17804636	Peri.	62.63562	+0.18614061		-0.98238563	
a	3.1293071	Node	16.66116	+0.87993484		+0.15923935	
e	0.1870571	Incl.	3.28642	+0.43711137		+0.09778195	
P	5.54	B(1,0)	13.5				

Residuals in seconds of arc

730227	029	0.6-	1.2+	790331	095	0.5-	0.6-	790523	809	0.4+	0.1+
730227	029	0.8+	1.6-	790519	809	0.3-	0.0				
730309	029	0.1-	0.6+	790521	809	0.4+	0.5+				

1979 OM15 = 1974 SD2

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

M	177.04693		(1950.0)		P		Q
n	0.17771420	Peri.	153.19181	+0.96993619		+0.24335044	
a	3.1332051	Node	192.72434	-0.22493214		+0.89318710	
e	0.1914017	Incl.	0.54269	-0.09289414		+0.37814993	
P	5.55	B(1,0)	13.5				

Residuals in seconds of arc

740919	095	0.5-	1.6+	790721	095	0.1+	0.0	790820	095	0.2+	0.5-
740922	095	0.5+	1.5-	790730	095	0.3-	0.5+				

1979 QU2 = 1955 VA1 = 1975 VJ1 = 1975 XZ6 = 1978 JZ1

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

M	199.20253		(1950.0)		P		Q
n	0.20165090	Peri.	204.64195		+0.99314268		+0.11448555
a	2.8800729	Node	148.75575		-0.09825186		+0.92711895
e	0.0830028	Incl.	2.61653		-0.06335766		+0.35685223
P	4.89	B(1,0)	13.0				

Residuals in seconds of arc

551114	839	0.4-	1.0+	790822	809	1.0+	0.1+	790826	809	0.1+	0.3-
751102	095	2.6-	3.7-	790822	809	0.4+	0.4+	790826	809	0.4-	0.1-
751202	330	(17.5+	3.3+)	790822	809	0.0	0.4+	790826	095	0.1-	0.7-
751222	330	2.9+	1.4+	790823	809	0.3+	0.1-	790830	809	0.3+	0.3-
780506	095	0.5-	1.6-	790823	809	0.2+	0.5+	790830	809	0.1+	0.8-
790730	095	1.0-	0.2-	790826	809	0.8-	0.4+				

1980 TD4 = 1976 GF8 = 1976 JE1

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

M	228.76671		(1950.0)		P		Q
n	0.30401877	Peri.	333.89376		+0.95014000		+0.31163170
a	2.1904667	Node	7.97204		-0.27049221		+0.84114678
e	0.1599347	Incl.	4.52365		-0.15513844		+0.44199296
P	3.24	B(1,0)	15.0				

Residuals in seconds of arc

760401	808	0.2+	1.9-	801007	675	0.5-	0.2-	801010	675	0.5+	0.5+
760401	808	1.5+	0.9-	801008	675	0.2+	0.0	801105	675	1.1+	2.3-
760502	095	2.2-	1.1+	801009	675	0.8-	0.0	801107	675	0.4+	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.

Comet Machholz (1978 XIII)

Epoch 1978 July 31.0 ET = JDE 2443720.5

T 1978 Aug. 13.67320 ET

q	1.7715877		(1950.0)		P		Q
z	-0.0002349	Peri.	224.76181		+0.18828341		+0.67520800
	+/-0.0000517	Node	289.98453		+0.96859410		-0.24774533
e	1.0004161	Incl.	130.63365		-0.16240326		-0.69477795

From 36 observations 1978 Sept. 14-1979 Aug. 2, mean residual 1".1.

Periodic Comet Wild 3 (1980 VII)

Epoch 1980 Oct. 8.0 ET = JDE 2444520.5

T 1980 Oct. 5.18036 ET

q	2.2875181		(1950.0)		P		Q
n	0.14312146	Peri.	179.33167		-0.31889527		+0.91323013
a	3.6196469	Node	72.04793		-0.87077008		-0.17663988
e	0.3680273	Incl.	15.46121		-0.37425294		-0.36716357

From 36 observations 1980 Apr. 11-Aug. 11, mean residual 1".7.

Comet Meier (1980 XII)

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

T 1980 Dec. 9.65001 ET

q	1.5195502		(1950.0)		P		Q
z	+0.0035162	Peri.	87.96420		+0.11192101		-0.90482943
	+/-0.0000231	Node	24.73754		-0.53532595		-0.40318410
e	0.9946570	Incl.	100.98059		+0.83719759		-0.13684403

From 55 observations 1980 Nov. 6-1981 June 3, mean residual 1".6.

Comet Bradfield (1980 XV)

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

T 1980 Dec. 29.54165 ET

q	(1950.0)	P	Q
z +0.0010581	Peri. 358.28553	-0.43722604	+0.66886888
+/-0.0000200	Node 114.64650	+0.83277280	+0.04868394
e 0.9997251	Incl. 138.58821	+0.33959219	+0.74178453

From 33 observations 1980 July 18-1981 Aug. 27, mean residual 1".8.

Comet Panther (1980u)

Epoch 1981 Feb. 5.0 ET = JDE 2444640.5

T 1981 Jan. 27.32296 ET

q	(1950.0)	P	Q
z +0.0006192	Peri. 105.60341	-0.17669326	-0.86135661
+/-0.0000089	Node 331.29916	-0.16229214	+0.50276825
e 0.9989738	Incl. 82.64193	+0.97079387	-0.07272457

From 98 observations 1980 Oct. 9-1981 Dec. 9, mean residual 1".2.

Periodic Comet Howell (1981k)

T 1981 May 4.38152 ET

q	(1950.0)	P	Q
n 0.16600990	Peri. 214.62791	+0.33907644	+0.93606361
a 3.2787884	Node 75.35076	-0.83966621	+0.34612846
e 0.5072750	Incl. 5.56799	-0.42424970	+0.06308723
P 5.94			

From 37 observations 1981 Aug. 29-Nov. 23.

Comet Bus (1981d)

T 1981 July 30.70162 ET

q	(1950.0)	P	Q
Peri. 189.81629		-0.96755016	-0.21525015
Node 23.55358		-0.20349011	+0.97426937
e 1.0	Incl. 160.65973	-0.14979476	+0.06683233

From 22 observations 1981 Apr. 26-July 4.

Comet Elias (1981c)

T 1981 Aug. 18.30731 ET

q	(1950.0)	P	Q
Peri. 310.25111		-0.66730286	-0.74212042
Node 176.00601		+0.01708163	+0.06926458
e 1.0	Incl. 115.31799	-0.74459056	+0.66667811

From 13 observations 1981 Apr. 3-Aug. 5.

(2500)* 1926 GC = 1927 TA = 1946 FB = 1981 VD

Discovered 1926 Apr. 2 by K. Reinmuth at Heidelberg. The identifications 1926 GC = 1946 FB and 1926 GC = 1981 VD are by A. Patry (MPC 1361) and E. Bowell, respectively. The identifications 1926 GC = 1937 RL = 1941 WE = 1950 NCl = 1953 JD (MPC 2326) are invalid.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	(1950.0)	P	Q
n 0.29397038	Peri. 159.91374	-0.88489694	+0.45701904
a 2.2400979	Node 47.61427	-0.44224478	-0.76373903
e 0.0992352	Incl. 6.99488	-0.14620862	-0.45589066
P 3.35	B(1,0) 14.0		

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

260402	024	1.1+	3.4-	271003	024	(0.03-	0.05-)X	811105	688	0.3-	0.1+
260407	024	1.3-	0.9+	460326	012	0.8-	0.6+	811105	688	0.8+	0.8+
260413	024	1.3-	0.9-	460401	012	0.8+	1.4-	811120	688	1.6-	0.4-
260414	024	2.7+	3.0+	460402	012	(96.6+	50.0-)	811120	688	2.3-	0.8-
260415	024	0.6-	1.6+	811102	688	1.0+	0.4+				
260415	024	(7.8-	0.2-)	811102	688	2.0+	0.3+				

(2501)* 1942 GD = 1957 FC = 1969 PU = 1972 GE2 = 1973 SZ5 = 1974 YF
= 1981 UF

Discovered 1942 Apr. 14 by L. Oterma at Turku. The identifications are by T. Urata (NOC 1252).

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

M	231.82528		(1950.0)		P		Q
n	0.26181741	Peri.	227.22296		-0.52631640		+0.85021626
a	2.4199398	Node	11.03608		-0.76216303		-0.46593678
e	0.1983426	Incl.	3.32613		-0.37695962		-0.24502086
P	3.76	B(1,0)	13.5				

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

420324	078	(77.6-	48.0-)X	420519	078	(0.01-	0.08-)X	811029	879	0.6-	1.2-
420410	078	(19.6+	42.2+)X	570321	012	0.8-	0.6+	811029	879	0.6+	0.6-
420414	062	0.6+	0.3+	690810	805	0.2-	0.0	811101	801	1.5+	0.3-
420414	062	0.4-	0.5-	690816	805	0.2-	0.2-	811118	879	1.7-	0.6- Y
420417	062	0.2+	0.6-	720410	805	0.2+	0.3-	811118	879	0.1-	0.0
420421	078	(0.03-	0.03+)X	720410	805	0.1-	0.8-	811121	879	0.9+	1.8+ Y
420504	062	0.7-	0.9-	730928	095	1.2+	1.1-	811121	879	0.2-	0.5-
420505	078	(15.3+	7.5-)X	741218	330	0.1-	0.0				

(2502)* 1943 EO = 1943 FF = 1933 GC = 1953 DG = 1971 SY3

Discovered 1943 Mar. 3 by Y. Vaisala at Turku. The double designation 1943 EO = 1943 FF is by L. Oterma (MPC 4654).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	312.67930		(1950.0)		P		Q
n	0.19535911	Peri.	128.52386		-0.79433985		-0.60236757
a	2.9415774	Node	14.98167		+0.41817532		-0.63606294
e	0.2206627	Incl.	17.70038		+0.44062865		-0.48226264
P	5.05	B(1,0)	12.5				

Residuals in seconds of arc

330414	024	2.0+	4.3+	430325	062	0.7+	0.4-	810926	688	0.8-	1.3-
330420	024	0.9+	0.3-	530217	210	(10.5+	25.7+)X	810929	801	0.6+	2.8+
430303	062	0.3-	0.9+	710926	805	0.5+	1.5+	811004	688	1.0+	1.1-
430303	062	1.5-	0.9-	710927	805	2.7-	1.0-	811004	688	1.9-	1.2-
430308	062	1.5-	0.7+	810926	688	1.5+	0.4-	811102	801	0.8-	3.9+

(2503)* 1965 UB1 = 1978 SG5

Discovered 1965 Oct. 16 at the Purple Mountain Observatory. The identification is by O. Kippes (MPC 6196).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	63.46029		(1950.0)		P		Q
n	0.30368646	Peri.	15.49590		+0.89120455		-0.45292547
a	2.1920599	Node	11.53099		+0.40187614		+0.76308875
e	0.2135991	Incl.	7.11463		+0.21035689		+0.46103587
P	3.25	B(1,0)	15.5				

Residuals in seconds of arc

651016	330	0.7-	2.0-	781003	095	0.5-	0.5+	810831	474	0.4-	0.4+
651020	330	0.6+	1.0-	781007	095	0.1+	1.3+	810901	474	1.1-	2.6-
651024	330	1.4+	0.8+	810830	474	1.5+	2.2+	810901	474	0.6-	3.0-
780913	095	1.6-	1.0-	810830	474	1.4+	1.3+	810906	474	0.6-	0.5+
780927	095	1.0-	0.7+	810831	474	0.7+	0.9+	810906	474	0.8-	0.1+

(2504)* 1967 JO = 1980 CD

Discovered 1967 May 6 by C. U. Cesco and A. R. Klemola at the Yale-Columbia Southern Station, El Leoncito. The identification is by E. Bowell (MPC 5279).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	184.07794	(1950.0)	P	Q
n	0.21480350	Peri. 157.15216	-0.97419526	-0.22537847
a	2.7612675	Node 9.84621	+0.19451802	-0.86570783
e	0.0883099	Incl. 4.08141	+0.11448287	-0.44693902
P	4.59	B(1,0) 13.5		

Residuals in seconds of arc

670506	808	1.1-	1.0-	781008	095	0.2+	1.2-	800316	688	0.5-	0.3-
670510	808	0.8-	0.1+	800211	688	0.0	0.4+	800321	688	0.6+	0.3+
670531	808	0.1+	0.0	800211	688	1.1-	0.3+	800414	688	0.7+	0.3-
670602	808	2.1+	0.9-	800314	688	0.8+	1.0-	810701	474	0.5-	1.0-
670613	808	0.3+	0.3+	800314	688	0.2-	1.4-	810701	474	1.0+	0.9-
760503	809	1.1-	0.7+	800316	688	0.6-	1.5+				

(2505)* 1975 UJ = 1975 VT8 = 1935 QJ1 = 1940 LM = 1951 JY = 1957 OL
 = 1968 HG1 = 1969 RF = 1973 FO = 1973 FK2 = 1978 EX
 = 1979 HY2 = 1981 VR

Discovered 1975 Oct. 31 at the Purple Mountain Observatory. The key identification 1975 UJ = 1981 VR is by E. Bowell. The double designation 1975 UJ = 1975 VT8 is by H. Oishi (JAM 735).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	167.09998	(1950.0)	P	Q
n	0.17597456	Peri. 210.75335	-0.00423536	+0.99950650
a	3.1538144	Node 59.02054	-0.90988431	+0.00906062
e	0.1643394	Incl. 2.08056	-0.41484045	-0.03007756
P	5.60	B(1,0) 12.0		

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

350819	078(0.06-	0.01+)X	690908	095	1.4+	1.8+	780305	095	0.9+	0.5+	
400603	078(48.1-	73.2+)X	690913	095	0.6+	3.2-	790425	095	0.2+	1.2+	
400607	078(50.6+	95.6+)X	730326	095	1.3+	0.0	790430	095	0.5-	0.1-	
400610	078(0.03+	0.00-)X	730331	049	2.0-	0.8-	811102	688	1.5+	1.6-	
400612	078(0.00+	0.03+)X	730331	049	0.8-	1.1-	811102	688	3.2+	1.8-	
510508	711(50.8+	2.4+)Y	751031	330	0.1-	0.5-	811105	688	0.4-	0.5-	
570726	839	0.6-	1.9-	751107	095	1.5-	4.3+	811105	688	0.7-	0.1-
680427	095	0.8-	0.4-	751109	381	2.3-	0.1+				
680522	095	2.2+	1.5+	751109	381	2.0-	0.6+				

(2506)* 1976 QG1 = 1934 CA = 1959 EO = 1962 WW1 = 1974 EG

Discovered 1976 Aug. 26 by N. S. Chernykh at the Crimean Astrophysical Observatory. The key identifications 1976 QG1 = 1959 EO = 1974 EG are by T. Urata (NOC 1174).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	339.17617	(1950.0)	P	Q
n	0.19957638	Peri. 283.55988	+0.03191018	-0.99944069
a	2.8999909	Node 164.60099	+0.93092447	+0.02607671
e	0.0230897	Incl. 2.15884	+0.36381500	+0.02093615
P	4.94	B(1,0) 13.0		

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

340205	024(0.03- 0.04+)X	790329	095	0.2-	2.9-	810926	372	1.3-	0.9-
590306	690 0.6- 0.7-	790425	095	0.4-	1.6-	810926	372	1.6-	3.1+
590308	690 0.6+ 0.6-	810830	688	0.1+	1.7-	810929	801	1.2+	0.5+
590309	690 0.4- 1.2-	810830	688	1.1+	0.8-	810930	801	0.7-	3.2+
621130	760(0.03- 0.00-)X	810925	688	2.1+	2.2-	811001	801	0.6-	1.6+
740313	095 2.0- 0.8-	810925	688	1.3+	3.0-	811006	046	1.5-	0.5+
760826	095 0.9- 0.3+	810925	688	1.5+	2.7-	811006	046	2.7-	0.7-
760924	095 0.9+ 1.1+	810925	688	2.0+	1.6-	811006	801	1.0-	0.9+
760928	095(16.2- 20.5-)	810925	046	1.2+	0.8-	811007	046	1.1-	0.6+
760928	095 2.7- 3.5-	810925	046	2.8+	0.8+	811007	046	0.5-	2.0-
760928	095 3.2+ 2.1+	810926	688	0.9+	1.8-				
790323	095 0.4- 2.5-	810926	688	1.1+	1.6-				

(2507)* 1976 WB1 = 1932 CF1 = 1974 FD1 = 1980 PD

Discovered 1976 Nov. 18 at the El Leoncito Station of the Felix Aguilar Observatory, University of Cuyo.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	243.84027	(1950.0)		P	Q
n	0.21262092	Peri.	100.35829	-0.62826304	+0.76574794
a	2.7801318	Node	129.81454	-0.76531517	-0.57649194
e	0.0822756	Incl.	10.31459	-0.13992227	-0.28510900
P	4.64	B(1,0)	13.0		

Residuals in seconds of arc

320213	754 0.4+ 0.3-	761123	808	0.4-	0.6+	800907	688	1.0-	1.2-
320213	754 0.6- 0.9-	761123	808	0.0	0.8+	811025	801	1.1+	0.0
740321	095 0.0 0.1-	761126	808	0.3+	0.1+	811118	879	0.9-	0.5-
761118	808 0.3- 1.6+	761126	808	0.1+	0.3-	811118	879	3.4-	1.4-
761118	808 0.3- 1.2+	800719	688	0.2-	0.1-	811123	801	0.4-	1.3+
761119	808 0.9- 0.5+	800806	688	0.9+	1.0-	811124	688	2.2+	2.2-
761119	808 0.1- 1.3+	800904	688	0.8+	1.2-	811124	688	2.6+	1.9-

(2508)* 1977 ET1 = 1956 RF = 1967 RP = 1978 RJ

Discovered 1977 Mar. 13 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	65.37863	(1950.0)		P	Q
n	0.27042064	Peri.	118.41640	+0.63721742	+0.77040739
a	2.3683333	Node	191.24000	-0.73894048	+0.60314108
e	0.1266402	Incl.	6.08134	-0.21890849	+0.20662353
P	3.64	B(1,0)	15.0		

Residuals in seconds of arc

560905	760 2.2+ 0.6-	770325	095	0.2+	1.0+	781009	095	1.2-	0.2+
560905	760 1.6- 3.8-	780901	095	0.9+	1.3+	810602	801	0.3+	1.9+
670911	095 0.4+ 3.0+	780907	095	0.6+	1.2+	810627	801	0.3-	0.8-
770313	095 0.9+ 1.0+	780928	095	1.2-	1.7+	810628	801	0.1+	0.3-
770322	095 0.1+ 1.3+	781004	095	1.2-	0.3+				

(2509)* 1977 NG = 1931 TP2 = 1935 SF = 1950 OJ = 1975 AD1 = 1981 ST1

Discovered 1977 July 14 by N. S. Chernykh at the Crimean Astrophysical Observatory. The key identification 1977 NG = 1981 ST1 is by E. Bowell.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	97.71571	(1950.0)		P	Q
n	0.25599831	Peri.	347.55338	+0.87472108	+0.48442148
a	2.4564692	Node	343.44971	-0.44026135	+0.78214527
e	0.1908279	Incl.	2.83759	-0.20256598	+0.39189870
P	3.85	B(1,0)	15.0		

Residuals in seconds of arc

311009	690	0.5+	0.4-	770714	095	1.1+	0.2-	810926	688	0.1-	1.2-
311011	690	1.7-	0.1+	770719	095	1.1+	0.3+	810926	688	0.4-	1.4-
350924	012	0.9+	0.8+	770722	095	0.7-	0.1+	811004	688	0.6+	0.0
500717	078(13.4+	4.2+)	Y	770814	095	2.3-	1.2+	811004	688	0.0	0.2+
750112	330	0.2-	1.5+	770819	095	0.6+	0.3+				

(2510)* 1979 TH = 1942 VQ = 1952 TA = 1969 TK6 = 1981 AD4 = 1981 CD

Discovered 1979 Oct. 10 at the Purple Mountain Observatory.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	344.18019	(1950.0)	P	Q	
n	0.29147567	Peri.	208.89137	+0.65962702	+0.74622004
a	2.2528616	Node	102.53239	-0.67066856	+0.63827375
e	0.1961807	Incl.	5.27289	-0.33925782	+0.18910916
P	3.38	B(1,0)	13.5		

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

421105	062	1.4+	1.0+	790924	095	0.5+	1.4-	810101	688	0.1+	1.2-
421105	062	0.2-	0.8+	791010	330	1.3+	0.6+	810202	046	1.5-	1.6+
521012	760	0.5-	0.1+	791015	330	0.6-	3.1+	810202	046	0.4-	0.5+
521012	760	1.3-	0.5+	791019	330	0.3-	0.3+	810209	046	0.6+	1.2+
521017	760(0.23-	0.10-)	X	791026	330	0.3-	0.3-	810209	046	3.9+	1.4-
691015	095	0.4+	4.4-	810101	688	3.1-	0.4-				

(2511)* 1980 LM = 1934 CK = 1965 AD = 1974 VE2 = 1979 BS

Discovered 1980 June 11 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	208.48390	(1950.0)	P	Q	
n	0.28287475	Peri.	189.56249	+0.08069259	+0.98692451
a	2.2982993	Node	85.15965	-0.90494056	+0.13121980
e	0.1038249	Incl.	8.04957	-0.41781727	-0.09360222
P	3.48	B(1,0)	14.0		

Residuals in seconds of arc

340214	012(21.7+	17.3+)	X	800516	675	2.1-	1.2-	811121	879	2.8-	1.6+
650101	330	0.2-	1.8+	800610	675	1.4-	1.2-	811121	879	1.3-	3.5+
741115	095	0.1+	0.4+	800611	675	0.5-	0.2+	811124	688	2.6+	2.6-
790124	095	0.0	0.7+	800612	675	3.1+	4.3+	811124	688	1.2+	2.3-
800507	675	1.7-	1.8-	800618	675	3.2+	1.3+				

1977 QB1 = 1981 VJ

The identification is by E. Bowell.

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

M	121.65846	(1950.0)	P	Q	
n	0.25901560	Peri.	144.28474	+0.86583760	+0.50027349
a	2.4373598	Node	185.71113	-0.47416187	+0.81589069
e	0.2255512	Incl.	4.14253	-0.15967393	+0.28991171
P	3.81	B(1,0)	14.5		

Residuals in seconds of arc

770819	095	0.1-	1.1+	770912	095	0.4-	1.6+	811105	688	0.6-	1.0+
770820	095	0.7+	1.1-	770919	095	0.5+	0.6-	811120	688	1.3-	0.9-
770822	095	0.7+	0.1-	811102	688	0.4+	1.8-	811120	688	0.3+	0.6+
770824	095	0.6-	0.5-	811105	688	1.0+	1.2+				

1978 TA

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

M	15.91165		(1950.0)		P		Q
n	0.27671620	Peri.	70.35735	+0.68103215			-0.71272070
a	2.3322791	Node	334.18128	+0.43873529			+0.58085016
e	0.2159277	Incl.	22.68994	+0.58626492			+0.39324584
P	3.56	B(1,0)	14.0				

Residuals in seconds of arc

780923	675	2.3-	1.6+	781010	688	2.2+	4.8-	790119	801	0.4-	0.3+
780924	675	1.7-	1.9+	781010	675	0.4+	1.1-	810805	474	0.6+	0.2-
781008	675	0.1-	0.2+	781101	675	0.1+	0.9+	810805	474	0.1+	0.7-
781008	675	0.2-	1.2+	781119	801	0.7+	0.1+	810830	474	0.4-	0.6+
781009	675	1.6+	0.4-	781127	801	0.8-	0.5+	810830	474	0.3-	0.2-
781009	675	1.6-	0.5-	781203	675	0.3+	0.6+				
781010	675	0.1+	0.0	781204	675	1.9+	0.8+				

1978 UJ2 = 1981 QQ1 = 1981 SC1

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

M	111.99979		(1950.0)		P		Q
n	0.30529387	Peri.	238.88127	+0.88382254			+0.46485258
a	2.1843633	Node	93.37161	-0.40923760			+0.82274389
e	0.2213252	Incl.	3.02204	-0.22667665			+0.32711552
P	3.23	B(1,0)	15.5				

Residuals in seconds of arc

781029	330	2.7-	0.6+	810830	688	1.3+	0.6-	810926	688	1.5+	0.8-
781101	095	0.7+	0.7+	810830	688	0.1+	0.1-	810926	688	1.3+	1.4-
781103	330	3.9+	0.5-	810831	704	0.8+	2.4+	811004	688	2.6+	0.8-
781107	330	3.5-	1.1-	810901	704	0.2-	2.3+	811004	688	2.2+	1.3-
810829	704	1.3-	2.2-	810902	704	1.8-	3.6+				
810830	704	2.7-	3.7+	810903	704	0.0	1.9+				

1980 EG = 1978 YC

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

M	288.11372		(1950.0)		P		Q
n	0.23775468	Peri.	19.53861	-0.37470200			-0.89159131
a	2.5805812	Node	93.14940	+0.81311137			-0.44779629
e	0.1277173	Incl.	14.75430	+0.44547536			+0.06740487
P	4.15	B(1,0)	13.5				

Residuals in seconds of arc

781229	801	0.2+	0.6-	800415	688	1.8-	1.2-	800510	688	1.4+	0.5+
800314	688	2.9-	0.8-	800416	688	0.7-	1.7+	800611	688	0.9+	0.3+
800314	688	0.0	0.2-	800419	688	0.0	0.7-	810901	474	0.0	1.6-
800414	688	0.1+	1.2-	800508	688	2.5+	1.0+	810901	474	0.0	0.3+

1980 RR

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

M	109.74248		(1950.0)		P		Q
n	0.21103576	Peri.	37.27210	+0.89666219			-0.44054546
a	2.7940417	Node	348.61714	+0.33356522			+0.73730032
e	0.1122140	Incl.	12.81590	+0.29108616			+0.51216006
P	4.67	B(1,0)	13.0				

Residuals in seconds of arc

800902	688	0.5+	0.2-	800907	688	0.0	1.8+	811124	688	0.9-	0.3-
800904	688	0.5-	1.4-	801002	688	0.0	0.2-	811124	688	0.9+	0.3+

1980 RX = 1938 UE

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

M	136.23126		(1950.0)		P		Q
n	0.18573759	Peri.	16.96409	+0.90371936			+0.41126907
a	3.0423118	Node	318.10756	-0.41055303			+0.75372203
e	0.0900012	Incl.	10.26141	-0.12139817			+0.51260204
P	5.31	B(1,0)	12.5				

Residuals in seconds of arc

381016	062	1.1-	1.8+	800906	559	0.0	2.1+	800917	688	0.7-	0.2-
800717	688	0.7-	0.6+	800906	559	0.6+	2.8+	801002	688	0.4+	1.5-
800717	688	0.7-	1.1-	800907	688	1.7+	0.8-	811124	688	0.3+	0.7-
800806	688	1.6-	0.8-	800907	688	0.4+	0.4-	811124	688	0.4-	1.2-
800806	688	0.3-	0.8-	800917	688	1.1+	1.3-				

1981 QA

Epoch 1981 Sept. 13.0 ET = JDE 2444860.5

M	6.46389		(1950.0)		P		Q
n	0.31236936	Peri.	154.24907	+0.83019563			+0.55708181
a	2.1512478	Node	171.80135	-0.53339576			+0.80466159
e	0.4484536	Incl.	8.41054	-0.16206223			+0.20537665
P	3.16	B(1,0)	17.0				

From 61 observations 1981 Aug. 21-Nov. 23.

1981 QB

Epoch 1981 Sept. 13.0 ET = JDE 2444860.5

M	341.36695		(1950.0)		P		Q
n	0.29378554	Peri.	248.07450	+0.65922116			-0.70388464
a	2.2410374	Node	154.04348	+0.68279447			+0.70769552
e	0.5185427	Incl.	37.18346	-0.31499074			+0.06093811
P	3.35	B(1,0)	17.0				

From 32 observations 1981 Aug. 28-Oct. 17.

1981 VA

Epoch 1981 Nov. 12.0 ET = JDE 2444920.5

M	18.04088		(1950.0)		P		Q
n	0.25575709	Peri.	59.40347	+0.52216702			+0.78105950
a	2.4580135	Node	246.01250	-0.85265137			+0.46959113
e	0.7437100	Incl.	22.01485	-0.01808951			+0.41161903
P	3.85	B(1,0)	18.0				

From 17 observations 1981 Nov. 4-Dec. 4.

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

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

(2512)* 1940 GG = 1943 DN = 1965 UC2 = 1965 VF = 1965 WY = 1970 ER
= 1972 XC1 = 1975 VP2 = 1977 FW

Discovered 1940 Apr. 3 by Y. Vaisala at Turku.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	318.98471		(1950.0)		P		Q
n	0.29319241	Peri.	13.90144	+0.12226688			-0.98703744
a	2.2440588	Node	69.15606	+0.89958968			+0.06596236
e	0.1211960	Incl.	6.38689	+0.41927223			+0.14630810
P	3.36	B(1,0)	14.0				

Residuals in seconds of arc

400403	062	0.7-	0.5-	651021	330	2.5+	0.1+	751102	095	1.9-	0.6+
400404	062	1.1-	0.3-	651101	760	0.1+	0.4+	751107	095	0.2+	1.0+
400412	062	1.4-	0.1-	651101	760	0.3-	1.9+	770322	095	1.1-	0.5-
400412	062	5.6-	1.1-	651120	760	1.2-	0.3+	770326	095	2.2+	0.1+
400428	062	3.8+	1.0-	651120	760	0.1+	1.8-	810804	474	0.1-	1.9-
430226	062	0.1-	0.1+	700307	095	2.0+	3.2+	810804	474	0.3+	1.8-
430301	062	2.7+	0.2-	721202	095	1.6-	7.2-				
430312	062	0.6+	1.0+	721206	095	0.1-	0.1-				

(2513)* 1950 SH = 1950 TK = 1950 TW2 = 1936 PC = 1943 RA = 1964 VO2
 = 1971 UH3 = 1974 QV = 1981 QO

Discovered 1950 Sept. 19 by S. Arend at Uccle. The key identification
 1950 SH = 1981 QO and the triple designation 1950 SH = 1950 TK = 1950 TW2
 (MPC 650, 1331) are by O. Kippes. The identification 1934 CY = 1936 PC
 (JO 35, 156) is invalid.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	89.56083		(1950.0)		P		Q
n	0.28512430	Peri.	97.37987		+0.99421518		+0.09297023
a	2.2861948	Node	257.29659		-0.10657002		+0.91625801
e	0.1810745	Incl.	3.16052		+0.01337921		+0.38965084
P	3.46	B(1,0)	14.0				

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

360815	094(0.07+ 0.09-)X	711029	095	4.9+	0.0	810904	046	1.1-	1.8-
360820	094(25.3- 13.2-)X	740821	095	1.4-	0.7-	810904	046	1.5-	0.9-
430904	024 1.6+ 2.0-	810827	026	2.6+	0.1+	810905	046	0.1-	0.6+
500919	012 1.7- 2.2-	810828	026	2.0+	1.1+	810905	046	1.2-	2.1-
501005	024 1.9- 1.8+	810829	026	0.2+	1.1-	810906	046	1.2-	0.4-
501013	760 1.7+ 0.5+	810830	026	4.6+	0.8+	810906	046	0.3-	0.7+
501013	760 1.4+ 3.0+	810902	704	1.8-	2.9+	810907	026	0.9-	1.6-
641112	330 5.1- 1.7-	810903	704	0.5-	2.8+				

(2514)* 1964 TA1 = 1938 SB = 1977 SL1

Discovered 1964 Oct. 8 at the Purple Mountain Observatory.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	54.94371		(1950.0)		P		Q
n	0.22840493	Peri.	12.41849		+0.98216457		-0.18801988
a	2.6505280	Node	358.41743		+0.16880164		+0.88439431
e	0.1014136	Incl.	2.34976		+0.08281765		+0.42719460
P	4.32	B(1,0)	13.5				

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

380917	024(0.00+ 0.04-)X	770922	095	1.0+	1.2-	810830	688	0.2+	0.9-
641008	330 1.2+ 0.7-	771007	095	0.7-	0.7-	810930	801	2.2-	0.9-
641030	330 0.8+ 0.4+	771013	095	0.5-	0.8+	811004	688	1.4+	0.2+
641101	330 0.5- 0.4+	771017	095	0.0	1.1-	811004	688	0.3+	0.4-
641109	330 1.4- 0.5-	810826	801	0.7+	1.5+	811102	801	2.7-	3.1+
770919	095 0.7+ 1.4+	810830	688	1.1+	0.8-				

(2515)* 1964 TX1 = 1953 VG1 = 1953 XO = 1977 AU1

Discovered 1964 Oct. 9 at the Purple Mountain Observatory. The key
 identification 1964 TX1 = 1977 AU1 was found independently by E. Bowell
 (MPC 4643). The double designation 1953 VG1 = 1953 XO was found by
 S. Kanda (NAZ 13, 3).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	41.11231		(1950.0)		P		Q
n	0.17512222	Peri.	352.68262		+0.66315322		-0.74617739
a	3.1640394	Node	55.75623		+0.69023566		+0.57932311
e	0.2108473	Incl.	4.07280		+0.28948667		+0.32803054
P	5.63	B(1,0)	14.0				

Residuals in seconds of arc

531106	760	1.3+	1.1+	641101	330	2.0+	0.6+	811006	801	0.8-	0.5+
531106	760	1.4-	0.2-	641110	330	0.4-	0.9-	811102	801	0.8+	0.6+
531202	024	0.1-	0.3-	770113	095	0.5+	0.6-	811124	801	0.5-	0.3-
641009	330	0.8-	1.2-	770120	095	0.6-	0.0				

(2516)* 1964 VY = 1964 VG2 = 1974 SH = 1976 GB6

Discovered 1964 Nov. 6 at the Goethe Link Observatory, Indiana University.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	45.17641		(1950.0)		P		Q
n	0.28637367	Peri.	312.59528		+0.24949010		-0.96824479
a	2.2795405	Node	122.95072		+0.89392406		+0.22391461
e	0.1644767	Incl.	1.09404		+0.37236333		+0.11119471
P	3.44	B(1,0)	15.0				

Residuals in seconds of arc

641106	760	0.5-	0.3+	740921	808	0.8+	1.1+	810926	688	2.6+	2.2-
641106	760	2.8-	2.2+	741010	808	1.2+	1.8+	810926	688	3.0-	1.5-
641111	330	0.3+	0.1+	741010	808	0.0	1.5+	811004	801	1.1-	2.4+
641127	330	1.0+	0.3+	741019	808	0.8-	1.7+	811004	688	2.3+	2.8-
641225	330	1.7+	0.6-	741019	808	0.5+	1.8+	811004	688	0.8+	0.8-
740919	095	4.6-	0.9-	760402	095	1.5+	3.6+	811102	801	0.3-	0.1-

(2517)* 1968 SB = 1972 HE = 1974 WA1 = 1977 FH1

Discovered 1968 Sept. 28 by P. Wild at Zimmerwald. The identifications are by T. Urata (NOC 1059).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	171.41232		(1950.0)		P		Q
n	0.17494987	Peri.	292.02996		+0.99645007		-0.07190595
a	3.1661170	Node	72.11521		+0.08356026		+0.90805936
e	0.1918502	Incl.	2.63678		-0.01024420		+0.41262297
P	5.63	B(1,0)	13.0				

Residuals in seconds of arc

680928	026	1.1-	1.2-	790731	095	1.2-	0.1-	810126	372	1.9-	1.5-
681012	026	0.0	0.7-	790819	095	1.0+	0.2+	810126	372	0.4+	0.1-
681017	026	0.5-	0.7-	790827	095	0.3+	0.3+	810201	801	0.8-	0.6+
681019	026	0.4-	0.2+	790924	095	0.1+	0.4-	810204	801	1.1-	1.2+
681126	026	0.6+	4.6+	801205	801	0.8-	1.1+	810205	688	1.4+	1.8-
720418	095	0.4-	0.6+	801230	688	0.1-	2.2-	810205	688	1.3+	1.1-
741118	095	2.0+	1.7+	801230	688	1.6+	0.1+	810302	801	0.0	1.1+
770325	095	2.0+	1.6+	810106	801	2.2-	0.9+				

(2518)* 1974 FG = 1974 HU = 1978 NA3

Discovered 1974 Mar. 22 by C. Torres at the University of Chile's Cerro El Roble Astronomical Station.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	99.95114		(1950.0)		P		Q
n	0.28093863	Peri.	38.10582		-0.44967899		+0.89210337
a	2.3088466	Node	205.26130		-0.84270426		-0.44009114
e	0.1725701	Incl.	5.92477		-0.29603771		-0.10232971
P	3.51	B(1,0)	14.5				

Residuals in seconds of arc

740322	805	1.0-	0.7+	780809	095	0.3-	0.4+	810405	474	0.5+	0.7+
740323	805	0.2-	1.4+	810330	688	2.8+	0.4+	810405	474	1.9+	0.3+
740422	805	0.2-	0.8-	810330	688	1.2+	0.2-	810408	801	0.2-	0.7-
740424	805	0.4+	1.0-	810403	474	2.4-	0.1-	810409	688	0.8-	0.0
740425	805	0.7+	1.0-	810403	474	3.1-	0.6-	810409	688	0.0	1.2-
780709	095	0.6-	0.3+	810404	474	0.7-	1.5+	810502	801	1.7+	1.0-
780711	095	0.8+	0.2-	810404	474	0.9-	1.7+	810523	801	0.4-	0.2-

(2519)* 1975 VD2 = 1958 RA = 1958 RK = 1964 TL = 1964 VT = 1977 BG
 Discovered 1975 Nov. 2 by T. Smirnova at the Crimean Astrophysical
 Observatory. The double designations 1958 RA = 1958 RK (MPC 1968) and
 1964 TL = 1964 VT (MPC 2808) are by O. Kippes.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	128.47108		(1950.0)		P		Q
n	0.17697528	Peri.	229.69604		+0.68345863		+0.72877768
a	3.1419141	Node	83.47176		-0.65622468		+0.63860364
e	0.1722901	Incl.	2.42518		-0.31977096		+0.24712039
P	5.57	B(1,0)	12.0				

Residuals in seconds of arc

580912	024	0.8-	1.7-	751109	381	2.1-	1.1+	790501	095	1.1+	1.5+
580914	760	3.6+	3.3+	751109	381	0.6+	1.1+	811023	372	0.3+	3.9-
580914	760	1.0-	0.8+	751128	381	0.4-	0.5+	811023	372	1.8+	1.3-
641004	760	1.8+	1.8-	751128	381	0.4-	0.2+	811026	372	0.5+	0.6+
641106	760	1.8-	1.8-	770120	095	1.6+	4.3+	811026	372	1.4-	0.6-
641106	760	3.0-	0.3-	790329	095	0.3-	1.7+	811103	801	0.7+	1.4+
751102	095	0.5-	2.4+	790425	095	0.4+	1.2+				
751107	095	0.9-	2.4+	790430	095	0.1+	0.0				

(2520)* 1976 QF1 = 1971 UP3 = 1979 DC

Discovered 1976 Aug. 26 by N. S. Chernykh at the Crimean Astrophysical
 Observatory.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	47.11528		(1950.0)		P		Q
n	0.17972689	Peri.	322.41969		+0.85779220		+0.51383994
a	3.1097633	Node	6.69702		-0.44120509		+0.74875490
e	0.0897433	Incl.	6.24751		-0.26368656		+0.41872975
P	5.48	B(1,0)	13.5				

Residuals in seconds of arc

711027	095	0.5-	1.2+	760928	095	1.7+	2.2-	790220	695	0.7-	1.8-
760826	095	2.1-	1.5-	790218	695	0.2-	0.1+	790301	801	0.4-	0.3+
760924	095	0.8-	1.1-	790218	695	0.1+	0.3-	810831	474	0.2-	0.4+
760928	095	2.2+	2.8+	790219	695	0.8+	0.9+	810831	474	0.1+	0.4+

(2521)* 1979 DK = 1951 EJ2 = 1971 OV1

Discovered 1979 Feb. 28 by P. Wild at Zimmerwild.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	266.82060		(1950.0)		P		Q
n	0.21093694	Peri.	245.36008		-0.96434094		-0.22932148
a	2.7949087	Node	281.16334		+0.26398419		-0.86916024
e	0.0885054	Incl.	7.73999		-0.01894454		-0.43814625
P	4.67	B(1,0)	13.0				

Residuals in seconds of arc

510311	711	2.2-	0.4+	Y	790324	026	0.1-	0.5-	810829	801	1.1+	0.7+
510313	711	2.6+	0.4+	Y	790419	026	0.8-	0.2+	810930	801	0.9-	0.4+
710725	095	0.1+	0.1+		790419	026	0.8+	0.2+	811025	801	1.0-	0.3+
790228	026	0.4+	1.0-		790424	026	0.6-	1.4+				
790324	026	0.0	0.5+		790424	026	0.1+	0.1-				

(2522)* 1980 PP = 1929 XJ = 1942 HF = 1976 UU3

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

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	303.50687		(1950.0)		P		Q
n	0.18782586	Peri.	236.41575		-0.84968366		-0.50477583
a	3.0197139	Node	272.83718		+0.52007369		-0.75458793
e	0.0498038	Incl.	8.77941		+0.08695421		-0.41928320
P	5.25	B(1,0)	13.0				

Residuals in seconds of arc

291203	690	0.2-	4.7+	800814	046	1.3-	0.4-	800903	046	1.7-	0.4-
420415	078	(5.4+	4.4-)X	800814	046	0.5+	0.5+	811023	046	0.9-	2.2-
761026	095	0.5+	0.4-	800818	046	0.4+	0.6-	811023	046	0.6-	1.8-
800806	046	0.3-	0.2-	800818	046	1.3+	0.4+	811025	046	1.1-	1.1-
800806	046	0.9+	0.2-	800902	046	0.2-	0.5+	811025	046	0.7-	1.3-
800807	046	1.3-	1.3+	800902	046	1.1+	0.5+	811029	879	2.3+	1.3+
800807	046	0.6-	0.2+	800903	046	0.1-	0.2+	811029	879	1.7+	2.2+

(2523)* 1980 PV = 1952 DW1 = 1977 UL = 1978 EO4

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

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	244.21291		(1950.0)		P		Q
n	0.18798656	Peri.	285.48783		-0.87010112		+0.46915681
a	3.0179927	Node	282.69577		-0.37159188		-0.82576462
e	0.0341228	Incl.	8.90723		-0.32379549		-0.31305698
P	5.24	B(1,0)	13.0				

Residuals in seconds of arc

520219	711	1.9+	3.7+	Y	800806	046	1.6-	0.5-	800818	046	0.6+	0.3-
771016	809	0.3-	0.8-		800807	046	0.1-	0.4-	811006	801	0.1+	1.1+
771017	809	1.5-	0.2-		800807	046	0.1+	0.0	811025	046	0.3-	1.0-
771020	809	1.2-	1.2-		800817	046	1.1-	1.5+	811025	046	0.3-	0.2-
780306	095	1.2+	0.0		800817	046	1.9+	0.6+	811101	801	0.2-	1.9+

(2524)* 1981 QB1 = 1931 PB = 1942 PE = 1948 RO1 = 1952 FE = 1954 UE2
= 1954 WH = 1956 AO = 1970 SH1 = 1973 AE4 = 1973 EF
= 1976 UM3

Discovered 1981 Aug. 28 by Z. Vavrova at Klet. The double designation

1954 UE2 = 1954 WH is by O. Kippes (NAZ 12, 23).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	93.69266		(1950.0)		P		Q
n	0.17845247	Peri.	21.93180		+0.52993413		+0.84802482
a	3.1245514	Node	280.06951		-0.77875561		+0.48435723
e	0.1504716	Incl.	0.28350		-0.33572239		+0.21506273
P	5.52	B(1,0)	12.5				

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

310806	078	(8.6+	1.4-)Y	730307	029	1.1+	0.6+	810903	704	0.5-	0.6+
310807	078	(20.2+	19.4+)Y	730307	029	0.1-	0.7+	810904	046	0.6-	1.5-
310810	078	(0.23-	0.00+)Y	730309	029	0.6+	0.7+	810904	046	0.2+	1.2-
420805	078	(87.4+	19.7+)X	761026	095	0.8-	1.9+	810905	046	1.5-	1.9-
480909	012	0.5-	2.5+	810828	046	0.6+	2.1-	810905	046	0.5-	1.7-
520323	020	(0.11+	0.02-)X	810828	046	0.4+	1.9-	810926	688	2.7+	1.3-
541028	760	(57.1-	3.8-)X	810829	704	2.1+	0.2-	810926	688	1.2+	2.9-
541117	760	(66.4+	29.6-)X	810829	704	0.3+	0.2-	811004	688	1.4-	2.9+
560114	760	(53.1+	16.9-)X	810830	704	0.7-	1.3+	811004	688	0.2+	2.7+
700930	095	0.6-	2.0-	810831	704	0.3+	2.1+				
730103	095	3.0-	5.2-	810901	704	0.4-	1.9+				

(2525)* 1981 VG = 1931 XO = 1936 RL = 1939 DA = 1953 RB1 = 1953 TO
= 1959 UO = 1975 RJ = 1977 BN

Discovered 1981 Nov. 2 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	68.78406		(1950.0)		P		Q
n	0.17786240	Peri.	286.10036		+0.97415513		-0.22063079
a	3.1314582	Node	86.66486		+0.22131254		+0.88939285
e	0.1967377	Incl.	2.77966		+0.04519436		+0.40037782
P	5.54	B(1,0)	12.0				

Residuals in seconds of arc

311205	690	1.3-	1.7+	591029	760	2.5-	0.2+	811102	688	1.7+	2.2-
311208	690	0.5-	2.0+	591029	760	2.5-	0.4+	811105	688	0.9+	1.2-
360913	078(32.0+	5.3-)	X	591109	760	1.5+	0.6+	811105	688	1.9+	1.2-
390215	024	0.5+	4.4-	750902	095	3.6-	2.4-	811118	675	0.5-	1.6+
390221	024	0.9-	2.3-	750905	095	2.1+	0.1+	811120	688	0.8+	0.4-
530907	024	2.5+	0.2-	770120	095	1.4-	0.8+	811120	688	0.4+	0.2+
531005	020(29.2+	23.8-)		811102	688	0.2+	2.0-				

1981 QG2 = 1975 NV = 1976 YG4

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

M	61.69082		(1950.0)		P		Q
n	0.17484758	Peri.	223.74943	+0.96156859		+0.27295944	
a	3.1673581	Node	120.38819	-0.24149409		+0.89218223	
e	0.1931233	Incl.	1.96962	-0.13063862		+0.35986665	
P	5.64	B(1,0)	13.5				

Residuals in seconds of arc

750711	095	0.4-	2.3+	810830	688	3.2+	2.7+	811004	688	1.4-	3.1-
750713	095	0.3+	1.1+	810830	688	1.8+	2.4+	811004	688	1.2+	1.2+
761218	095	0.2-	0.2+	810926	688	0.5-	0.2-				
761220	095	0.6+	0.7+	810926	688	1.6+	0.2+				

1981 RU = 1962 PC = 1972 TZ3 = 1977 XB

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

M	335.33592		(1950.0)		P		Q
n	0.21716680	Peri.	237.06598	-0.47717915		-0.87770127	
a	2.7412036	Node	241.49582	+0.82206442		-0.42808819	
e	0.1192593	Incl.	2.87333	+0.31066080		-0.21536243	
P	4.54	B(1,0)	13.5				

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

620801	760(0.08+	0.02-)	X	810922	046	0.1+	1.7+	811007	046	0.8+	1.2-
721005	095	1.3-	2.5+	810925	046	0.6+	0.7+	811007	046	1.5+	1.8-
771208	330	0.4+	0.9-	810925	046	2.0+	1.3+	811025	046	1.1+	2.0-
810905	801	2.9-	1.3-	811006	046	3.3-	1.2-	811025	046	0.7+	0.5-
810922	046	1.9+	0.2-	811006	046	2.9-	1.0-	811124	801	0.1+	0.5-

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NEW NAMES OF MINOR PLANETS.

(1806) Derice = 1971 LC

Discovered 1971 June 13 at the Perth Observatory.

Named in honor of the wife of Dennis Harwood, member of the astrometric team at the Perth Observatory.

(1978) Patrice = 1971 LD

Discovered 1971 June 13 at the Perth Observatory.

Named in honor of the daughter of Dennis Harwood, member of the astrometric team at the Perth Observatory.

(2167) Erin = 1971 LA

Discovered 1971 June 1 at the Perth Observatory.

Named in honor of the daughter of George Punko, member of the astrometric team at the Perth Observatory.

(2282) Andres Bello = 1974 FE

Discovered 1974 Mar. 22 by C. Torres at Cerro El Roble.

Named for Andres Bello, Venezuelan intellectual, first rector of the University of Chile, who helped establish the Observatorio Astronomico Nacional in Santiago in 1852. Bello persuaded the Chilean government to purchase the equipment brought to Chile by a U.S. Naval Observatory team headed by J. M. Gillis. This homage is made in 1981 to commemorate the bicentennial of Bello's birth.

(2285) Ron Helin = 1976 QB

Discovered 1976 Aug. 27 by S. J. Bus at Palomar.

Named in honor of Ronald P. Helin, husband of Eleanor F. Helin. His never-ending friendship and encouragement have been invaluable to the success of the Palomar planet-crossing asteroid survey.

(2308) Schilt = 1967 JM

Discovered 1967 May 6 by C. U. Cesco and A. R. Klemola at the Yale-Columbia Southern Station, El Leoncito.

Named in honor of Jan Schilt, Columbia University astronomer who has made significant contributions to the study of galactic structure and dynamics and the problems of stellar luminosity calibrations. The cooperative venture by Schilt at Columbia and Brouwer at Yale, together with the Argentine astronomers at San Juan, led to the establishment of the Yale-Columbia Southern Station in the early 1960s.

(2382) Nonie = 1977 GA

Discovered 1977 Apr. 13 at the Perth Observatory.

Named in honor of the daughter of Peter Jekabsons, member of the astrometric team at the Perth Observatory.

(2421) Nininger = 1979 UD

Discovered 1979 Oct. 17 by E. Bowell at the Anderson Mesa station of the Lowell Observatory.

Named on the occasion of the 95th birthday, 1982 Jan. 17, of Harvey Harlow Nininger, celebrated U.S. meteoriticist. Through field investigations and publicity he was responsible for the recovery of some 200 separate meteorite falls and finds, and his resulting 3000 samples are more than those of any other individual prior to the exploration of the Antarctic blue-ice fields. The author of many popular and technical works, he conducted much of his research at the Arizona meteorite crater, not far from Flagstaff. Name proposed by N. Sperling.

(2451) Dollfus = 1980 RQ

Discovered 1980 Sept. 2 by E. Bowell at the Anderson Mesa station of the Lowell Observatory.

Named in honor of Audouin Dollfus, astronomer at the Observatoire de Paris, Meudon. Dollfus is renowned for his fundamental work on planetary polarimetry and ground-based imaging, including studies of Saturn's rings, the Martian and lunar surfaces, and the Venus atmosphere. Recently he has worked on the polarimetric properties of minor planets.

(2452) Lyot = 1981 FE

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

Named in memory of the French astronomer Bernard Lyot (1897-1952). One of the outstanding experimental astronomers of the twentieth century, Lyot invented the solar coronagraph and the birefringent filter. He developed the study of the polarization of light from planets to a perfection that has hardly been surpassed.

(2459) Spellmann = 1980 LB1

Discovered 1980 June 11 by C. S. Shoemaker on films taken at Palomar by E. Helin and S. J. Bus.

Named in honor of the discoverer's father, Leonard Spellmann, who has been a never-failing source of encouragement and support.

* * * * *

EPHEMERIDES.

1981 QA		Elements MPC 6525						
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1981 12 02		00 47.43	-08 12.1	0.825	1.552	117.6	34.2	18.3
1981 12 12		01 04.50	-05 54.2					
1981 12 22		01 21.43	-03 35.3	1.084	1.668	107.5	34.2	19.1
1982 01 01		01 38.39	-01 18.3					
1982 01 11		01 55.46	+00 54.9	1.374	1.786	97.0	33.1	19.7
1982 01 21		02 12.65	+03 02.6					
1982 01 31		02 30.03	+05 03.8	1.688	1.902	86.5	31.1	20.2
1982 02 10		02 47.59	+06 57.4					
1982 02 20		03 05.32	+08 42.8	2.012	2.015	76.0	28.4	20.7

1981 VA		Elements MPC 6525						
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1981 12 02		02 27.35	+22 18.8	0.607	1.547	151.5	17.7	18.3
1981 12 07		02 28.34	+19 49.1					
1981 12 12		02 30.09	+17 53.9	0.770	1.657	141.4	21.8	19.0
1981 12 17		02 32.47	+16 25.5					
1981 12 22		02 35.39	+15 18.1	0.950	1.764	131.7	24.6	19.7
1981 12 27		02 38.78	+14 27.5					
1982 01 01		02 42.58	+13 50.1	1.143	1.868	122.7	26.3	20.3
1982 01 06		02 46.76	+13 23.4					
1982 01 11		02 51.25	+13 05.3	1.347	1.967	114.3	27.1	20.7

1981 QB		Elements MPC 6525						
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1981 12 02		02 59.61	-77 42.0	0.691	1.097	79.6	62.1	17.8
1981 12 12		03 51.90	-73 52.2					
1981 12 22		04 25.72	-68 41.9	0.684	1.162	86.3	57.7	17.8
1982 01 01		04 49.57	-62 05.5					
1982 01 11		05 08.55	-53 55.1	0.659	1.263	98.5	50.4	17.8
1982 01 21		05 25.29	-44 14.3					
1982 01 31		05 41.31	-33 30.2	0.676	1.386	111.7	41.3	17.8
1982 02 10		05 57.43	-22 37.7					
1982 02 20		06 13.91	-12 36.1	0.794	1.521	116.6	35.5	18.2
1982 03 02		06 30.91	-04 04.1					
1982 03 12		06 48.40	+02 46.8	1.022	1.659	110.8	34.0	18.9
1982 03 22		07 06.26	+08 04.4					
1982 04 01		07 24.41	+12 03.7	1.327	1.798	100.3	33.1	19.7
1982 04 11		07 42.71	+14 59.9					
1982 04 21		08 01.04	+17 06.2	1.674	1.933	88.7	31.3	20.3

Comet Elias (1981c)		Elements MPC 6519						
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	ml
1981 12 02		12 35.90	-34 53.1	5.352	4.815	52.5	9.3	15.5
1981 12 12		12 38.52	-34 51.3					
1981 12 22		12 39.85	-34 46.6	5.114	4.845	68.7	10.9	15.4
1982 01 01		12 39.71	-34 36.8					
1982 01 11		12 37.97	-34 19.2	4.828	4.879	87.2	11.6	15.3

1982 01 21	12 34.51	-33 51.0						
1982 01 31	12 29.32	-33 09.0	4.535	4.918	107.3	11.0	15.2	
1982 02 10	12 22.45	-32 10.1						
1982 02 20	12 14.14	-30 51.7	4.286	4.962	128.5	9.0	15.1	
1982 03 02	12 04.74	-29 12.5						
1982 03 12	11 54.74	-27 12.8	4.138	5.010	148.3	6.0	15.1	
1982 03 22	11 44.70	-24 55.5						
1982 04 01	11 35.15	-22 25.3	4.133	5.063	156.1	4.6	15.1	
1982 04 11	11 26.59	-19 48.7						
1982 04 21	11 19.33	-17 12.4	4.284	5.119	142.6	6.8	15.3	
1982 05 01	11 13.56	-14 42.4						
1982 05 11	11 09.37	-12 23.3	4.569	5.179	122.3	9.5	15.4	
1982 05 21	11 06.69	-10 17.8						
1982 05 31	11 05.43	-08 27.3	4.943	5.243	101.7	10.9	15.7	
1982 06 10	11 05.45	-06 52.0						
1982 06 20	11 06.60	-05 31.1	5.354	5.311	82.1	10.9	15.9	
1982 06 30	11 08.72	-04 23.4						
1982 07 10	11 11.65	-03 27.5	5.757	5.381	63.5	9.7	16.1	
1982 07 20	11 15.26	-02 41.8						
1982 07 30	11 19.42	-02 05.0	6.115	5.455	45.7	7.7	16.3	

Periodic Comet d'Arrest

Elements NK 396

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		NK	m2
1982 02 20		15 48.32	+01 37.2	2.199	2.500	-1.18	+4.7		20.9
1982 03 02		15 59.75	+02 38.9						
1982 03 12		16 10.08	+03 58.7	1.835	2.355	-1.50	+5.6		20.4
1982 03 22		16 19.00	+05 37.0						
1982 04 01		16 26.15	+07 33.4	1.509	2.208	-1.91	+6.5		19.8
1982 04 11		16 31.15	+09 45.3						
1982 04 21		16 33.61	+12 08.3	1.235	2.060	-2.45	+6.7		19.1
1982 05 01		16 33.18	+14 34.5						
1982 05 11		16 29.73	+16 51.9	1.024	1.912	-3.02	+5.2		18.6
1982 05 21		16 23.43	+18 45.6						
1982 05 31		16 14.96	+19 58.4	0.878	1.767	-3.40	+1.3		18.1
1982 06 10		16 05.60	+20 15.2						
1982 06 20		15 56.93	+19 26.4	0.787	1.630	-3.36	-2.3		17.9
1982 06 30		15 50.62	+17 28.3						
1982 07 10		15 48.04	+14 24.6	0.735	1.506	-3.05	-1.7		17.8
1982 07 20		15 50.00	+10 22.5						
1982 07 30		15 56.99	+05 30.6	0.707	1.402	-2.78	+4.6		17.8
1982 08 09		16 09.20	-00 00.2						
1982 08 19		16 26.70	-05 57.7	0.699	1.329	-2.77	+14.8		17.8
1982 08 29		16 49.63	-12 06.1						
1982 09 08		17 18.00	-18 05.0	0.722	1.293	-3.10	+24.3		17.9
1982 09 18		17 51.66	-23 31.1						
1982 09 28		18 30.09	-28 01.2	0.787	1.301	-3.68	+27.1		18.1
1982 10 08		19 12.03	-31 16.8						
1982 10 18		19 55.65	-33 09.0	0.903	1.352	-4.11	+20.7		18.4
1982 10 28		20 38.91	-33 40.0						
1982 11 07		21 20.02	-33 00.7	1.070	1.438	-3.95	+10.2		18.7
1982 11 17		21 57.98	-31 26.7						
1982 11 27		22 32.48	-29 13.8	1.285	1.550	-3.32	+1.9		19.2
1982 12 07		23 03.68	-26 36.0						
1982 12 17		23 32.02	-23 44.0	1.539	1.680	-2.62	-2.6		19.6
1982 12 27		23 58.00	-20 45.8						
1983 01 06		00 22.05	-17 47.3	1.827	1.820	-2.03	-4.4		20.0
1983 01 16		00 44.57	-14 52.3						
1983 01 26		01 05.91	-12 03.5	2.138	1.967	-1.60	-4.7		20.4

Periodic Comet Neujmin 3

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		NK 397
								m2
1982 03 12		15 00.61	-12 29.6	2.400	3.070	-1.04	+4.3	20.8
1982 03 22		15 01.52	-12 13.5					
1982 04 01		15 00.29	-11 48.2	2.092	2.961	-1.20	+4.9	20.3
1982 04 11		14 56.95	-11 14.6					
1982 04 21		14 51.73	-10 34.7	1.869	2.852	-1.32	+5.4	19.9
1982 05 01		14 45.11	-09 51.6					
1982 05 11		14 37.84	-09 09.8	1.748	2.746	-1.36	+5.7	19.6
1982 05 21		14 30.76	-08 33.9					
1982 05 31		14 24.78	-08 08.4	1.732	2.643	-1.29	+5.5	19.4
1982 06 10		14 20.60	-07 56.5					
1982 06 20		14 18.72	-08 00.0	1.799	2.543	-1.19	+5.1	19.3
1982 06 30		14 19.39	-08 19.0					
1982 07 10		14 22.67	-08 52.6	1.918	2.449	-1.10	+4.8	19.3
1982 07 20		14 28.46	-09 39.0					
1982 07 30		14 36.66	-10 36.1	2.061	2.361	-1.06	+4.5	19.3
1982 08 09		14 47.07	-11 41.5					
1982 08 19		14 59.53	-12 52.9	2.210	2.281	-1.05	+4.3	19.3
1982 08 29		15 13.91	-14 07.8					
1982 09 08		15 30.04	-15 23.8	2.354	2.212	-1.08	+4.0	19.3
1982 09 18		15 47.80	-16 38.5					
1982 09 28		16 07.10	-17 49.4	2.487	2.153	-1.13	+3.5	19.3
1982 10 08		16 27.78	-18 54.0					
1982 10 18		16 49.73	-19 50.2	2.610	2.108	-1.18	+2.6	19.3
1982 10 28		17 12.80	-20 35.7					
1982 11 07		17 36.82	-21 08.5	2.723	2.077	-1.23	+1.5	19.3
1982 11 17		18 01.60	-21 27.1					
1982 11 27		18 26.93	-21 30.3	2.826	2.061	-1.25	+0.2	19.4

Periodic Comet Gehrels 3

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong. Phase		IAUC 3097
								m2
1982 04 01		22 13.99	-09 57.1	5.278	4.541	38.7	7.9	21.2
1982 04 11		22 22.43	-09 07.7					
1982 04 21		22 30.32	-08 20.3	5.045	4.527	54.0	10.3	21.1
1982 05 01		22 37.56	-07 35.7					
1982 05 11		22 44.06	-06 54.6	4.764	4.513	69.7	12.1	20.9
1982 05 21		22 49.72	-06 18.0					
1982 05 31		22 54.42	-05 46.7	4.452	4.499	86.1	13.0	20.8
1982 06 10		22 58.06	-05 21.6					
1982 06 20		23 00.52	-05 03.6	4.135	4.483	103.6	12.7	20.6
1982 06 30		23 01.71	-04 53.3					
1982 07 10		23 01.56	-04 51.5	3.841	4.467	122.3	11.1	20.4
1982 07 20		23 00.05	-04 58.2					
1982 07 30		22 57.20	-05 13.5	3.602	4.451	142.5	8.0	20.3
1982 08 09		22 53.16	-05 36.5					
1982 08 19		22 48.17	-06 05.8	3.451	4.433	164.1	3.6	20.2
1982 08 29		22 42.56	-06 39.3					
1982 09 08		22 36.74	-07 14.4	3.413	4.415	173.3	1.5	20.1
1982 09 18		22 31.16	-07 48.6					
1982 09 28		22 26.25	-08 19.1	3.492	4.396	151.1	6.3	20.1
1982 10 08		22 22.38	-08 43.9					
1982 10 18		22 19.81	-09 01.5	3.674	4.377	129.7	10.1	20.2
1982 10 28		22 18.68	-09 11.0					
1982 11 07		22 19.05	-09 12.1	3.926	4.357	109.5	12.4	20.4
1982 11 17		22 20.89	-09 04.7					
1982 11 27		22 24.12	-08 49.1	4.212	4.337	90.6	13.2	20.5
1982 12 07		22 28.61	-08 25.9					
1982 12 17		22 34.22	-07 55.5	4.500	4.316	73.0	12.6	20.6

1982 12 27	22 40.82	-07 18.6						
1983 01 06	22 48.25	-06 35.8	4.761	4.294	56.3	11.0	20.7	
1983 01 16	22 56.39	-05 47.8						
1983 01 26	23 05.12	-04 55.2	4.973	4.272	40.5	8.6	20.8	

Periodic Comet Churyumov-Gerasimenko

Elements HBAA 1982, 75

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		m2
1982 04 21		22 43.53	-14 33.1	2.965	2.501	-0.85	-5.5	20.8
1982 05 01		23 00.35	-13 04.2					
1982 05 11		23 17.34	-11 32.6	2.616	2.356	-1.00	-7.1	20.3
1982 05 21		23 34.53	-09 58.7					
1982 05 31		23 51.97	-08 22.7	2.260	2.209	-1.21	-9.2	19.7
1982 06 10		00 09.72	-06 45.0					
1982 06 20		00 27.86	-05 05.7	1.909	2.060	-1.49	-11.9	19.0
1982 06 30		00 46.44	-03 25.1					
1982 07 10		01 05.57	-01 43.1	1.576	1.913	-1.90	-15.5	18.3
1982 07 20		01 25.35	+00 00.4					
1982 07 30		01 45.86	+01 45.6	1.272	1.769	-2.48	-20.2	17.5
1982 08 09		02 07.27	+03 33.5					
1982 08 19		02 29.69	+05 25.1	1.005	1.634	-3.33	-26.2	16.6
1982 08 29		02 53.24	+07 21.9					
1982 09 08		03 18.08	+09 26.1	0.782	1.511	-4.60	-33.5	15.8
1982 09 18		03 44.28	+11 40.2					
1982 09 28		04 11.78	+14 06.7	0.609	1.410	-6.42	-40.5	14.9
1982 10 08		04 40.45	+16 47.8					
1982 10 18		05 09.77	+19 43.9	0.487	1.340	-8.86	-42.9	14.2
1982 10 28		05 38.81	+22 53.2					
1982 11 07		06 06.33	+26 11.3	0.416	1.308	-11.59	-34.5	13.8
1982 11 17		06 30.56	+29 30.8					
1982 11 27		06 49.80	+32 42.0	0.391	1.318	-13.63	-18.0	13.7
1982 12 07		07 02.93	+35 33.0					
1982 12 17		07 09.67	+37 50.4	0.414	1.370	-13.63	-7.6	14.0
1982 12 27		07 11.30	+39 21.9					
1983 01 06		07 10.24	+40 02.4	0.489	1.457	-11.33	-5.2	14.6
1983 01 16		07 09.02	+39 55.7					
1983 01 26		07 09.73	+39 12.2	0.626	1.569	-8.25	-2.8	15.4
1983 02 05		07 13.27	+38 05.0					
1983 02 15		07 19.68	+36 44.1	0.826	1.699	-5.72	+0.7	16.4
1983 02 25		07 28.68	+35 16.4					
1983 03 07		07 39.68	+33 45.7	1.084	1.839	-3.98	+3.4	17.3
1983 03 17		07 52.19	+32 13.7					
1983 03 27		08 05.79	+30 41.1	1.390	1.985	-2.83	+5.0	18.2
1983 04 06		08 20.10	+29 08.0					
1983 04 16		08 34.85	+27 34.2	1.732	2.133	-2.07	+5.6	19.0
1983 04 26		08 49.87	+25 59.6					
1983 05 06		09 04.96	+24 24.2	2.098	2.281	-1.55	+5.7	19.7
1983 05 16		09 20.04	+22 47.9					
1983 05 26		09 35.04	+21 10.7	2.474	2.428	-1.20	+5.4	20.3

Periodic Comet Arend

Elements NK 399

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		m2
1982 05 11		21 22.21	-35 41.1	3.212	3.490	-0.70	-5.2	20.7
1982 05 21		21 28.26	-35 56.0					
1982 05 31		21 32.51	-36 19.5	2.851	3.386	-0.81	-6.1	20.4
1982 06 10		21 34.68	-36 51.7					
1982 06 20		21 34.48	-37 31.2	2.528	3.281	-0.94	-6.8	20.0
1982 06 30		21 31.67	-38 15.6					
1982 07 10		21 26.16	-39 00.5	2.271	3.174	-1.08	-7.1	19.6
1982 07 20		21 18.06	-39 39.8					

1982 07 30	21 07.86	-40 06.7	2.104	3.066	-1.18	-6.6	19.3
1982 08 09	20 56.45	-40 14.7					
1982 08 19	20 44.96	-39 59.8	2.040	2.958	-1.17	-5.8	19.2
1982 08 29	20 34.64	-39 21.0					
1982 09 08	20 26.54	-38 20.8	2.073	2.848	-1.07	-5.3	19.3
1982 09 18	20 21.32	-37 03.3					
1982 09 28	20 19.27	-35 33.2	2.177	2.739	-0.93	-5.3	19.5
1982 10 08	20 20.36	-33 54.4					
1982 10 18	20 24.34	-32 09.4	2.321	2.631	-0.83	-5.8	19.6
1982 10 28	20 30.92	-30 19.6					
1982 11 07	20 39.72	-28 25.5	2.476	2.524	-0.75	-6.4	19.7
1982 11 17	20 50.42	-26 26.8					
1982 11 27	21 02.73	-24 23.0	2.622	2.419	-0.71	-7.2	19.7
1982 12 07	21 16.36	-22 13.7					
1982 12 17	21 31.10	-19 58.0	2.745	2.318	-0.69	-8.1	19.6
1982 12 27	21 46.77	-17 35.5					
1983 01 06	22 03.21	-15 05.8	2.838	2.222	-0.69	-9.0	19.5
1983 01 16	22 20.33	-12 28.9					
1983 01 26	22 38.04	-09 44.6	2.898	2.133	-0.70	-9.9	19.4

1980 RR

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	MPC	Mag.
1981 12 02		07 18.36	+40 45.5	1.807	2.639	140.0	13.9	6524	16.7
1981 12 12		07 10.63	+41 24.2						
1981 12 22		07 00.10	+41 48.4	1.725	2.661	157.6	8.1		16.5
1982 01 01		06 48.01	+41 51.8						
1982 01 11		06 36.04	+41 32.1	1.747	2.683	157.7	8.0		16.5
1982 01 21		06 25.73	+40 51.6						
1982 01 31		06 18.25	+39 55.7	1.874	2.706	140.2	13.5		16.8
1982 02 10		06 14.17	+38 51.2						
1982 02 20		06 13.55	+37 43.4	2.084	2.729	121.1	18.1		17.2
1982 03 02		06 16.15	+36 36.1						
1982 03 12		06 21.56	+35 30.8	2.345	2.752	103.5	20.5		17.5
1982 03 22		06 29.32	+34 28.0						
1982 04 01		06 39.02	+33 27.1	2.628	2.776	87.8	21.1		17.8
1982 04 11		06 50.29	+32 27.2						
1982 04 21		07 02.77	+31 27.1	2.912	2.799	73.6	20.1		18.0

1979 FG2

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	MPC	Mag.
1981 12 02		09 46.31	+15 13.4	1.907	2.371	105.6	23.6	6516	18.3
1981 12 12		09 51.26	+14 57.1						
1981 12 22		09 53.45	+14 55.2	1.670	2.367	124.2	20.1		17.9
1982 01 01		09 52.56	+15 09.3						
1982 01 11		09 48.49	+15 39.2	1.482	2.362	145.9	13.5		17.5
1982 01 21		09 41.40	+16 22.4						
1982 01 31		09 31.88	+17 13.7	1.378	2.355	170.3	4.0		17.1
1982 02 10		09 21.10	+18 05.7						
1982 02 20		09 10.45	+18 51.3	1.382	2.348	163.6	6.8		17.2
1982 03 02		09 01.36	+19 25.0						
1982 03 12		08 54.92	+19 44.1	1.489	2.339	139.9	15.9		17.6
1982 03 22		08 51.67	+19 48.6						
1982 04 01		08 51.72	+19 39.3	1.669	2.329	119.4	22.0		18.0
1982 04 11		08 54.88	+19 17.7						
1982 04 21		09 00.76	+18 44.9	1.888	2.318	102.1	25.1		18.3
1982 05 01		09 08.96	+18 01.9						
1982 05 11		09 19.07	+17 09.4	2.120	2.306	87.3	25.9		18.5

1979 OM15						Elements MPC 6517		
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1981 12 02		09 54.32	+12 10.6	3.231	3.580	102.8	15.6	19.2
1981 12 12		09 55.94	+12 00.9					
1981 12 22		09 55.67	+12 01.3	2.973	3.601	122.7	13.3	19.0
1982 01 01		09 53.44	+12 12.2					
1982 01 11		09 49.32	+12 33.0	2.773	3.620	144.7	9.0	18.7
1982 01 21		09 43.55	+13 02.3					
1982 01 31		09 36.52	+13 37.6	2.668	3.638	168.4	3.1	18.4
1982 02 10		09 28.85	+14 15.6					
1982 02 20		09 21.21	+14 52.7	2.683	3.655	167.5	3.4	18.4
1982 03 02		09 14.27	+15 25.8					
1982 03 12		09 08.63	+15 52.5	2.818	3.670	144.2	9.1	18.8
1982 03 22		09 04.66	+16 11.6					
1982 04 01		09 02.58	+16 22.3	3.045	3.683	122.8	13.2	19.1
1982 04 11		09 02.42	+16 24.8					
1982 04 21		09 04.10	+16 19.4	3.328	3.695	103.6	15.3	19.3
1982 05 01		09 07.47	+16 06.5					
1982 05 11		09 12.33	+15 46.5	3.633	3.705	86.2	15.8	19.5

1980 TD4						Elements MPC 6518		
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1981 12 22		11 16.19	+08 47.5	2.105	2.518	103.1	22.4	19.1
1982 01 01		11 20.15	+08 27.5					
1982 01 11		11 21.55	+08 22.7	1.865	2.528	122.0	19.3	18.8
1982 01 21		11 20.14	+08 34.1					
1982 01 31		11 15.79	+09 01.3	1.672	2.535	143.8	13.3	18.4
1982 02 10		11 08.68	+09 41.7					
1982 02 20		10 59.36	+10 30.4	1.564	2.539	168.0	4.6	18.1
1982 03 02		10 48.75	+11 20.8					
1982 03 12		10 38.11	+12 05.6	1.566	2.541	165.6	5.6	18.1
1982 03 22		10 28.64	+12 38.9					
1982 04 01		10 21.32	+12 57.4	1.677	2.539	141.9	14.1	18.5
1982 04 11		10 16.73	+12 59.9					
1982 04 21		10 15.01	+12 47.1	1.867	2.535	120.9	19.9	18.8
1982 05 01		10 16.06	+12 20.4					
1982 05 11		10 19.63	+11 41.4	2.101	2.527	103.0	22.9	19.2
1982 05 21		10 25.35	+10 51.5					
1982 05 31		10 32.92	+09 52.0	2.350	2.517	87.4	23.7	19.4

1979 QU2						Elements MPC 6518		
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1981 12 22		11 10.27	+05 19.1	2.718	3.093	103.1	18.0	18.0
1982 01 01		11 13.19	+05 06.9					
1982 01 11		11 14.06	+05 08.1	2.458	3.100	122.6	15.5	17.8
1982 01 21		11 12.77	+05 23.6					
1982 01 31		11 09.33	+05 53.2	2.252	3.105	144.3	10.7	17.5
1982 02 10		11 03.94	+06 35.1					
1982 02 20		10 57.03	+07 26.0	2.136	3.110	167.9	3.8	17.1
1982 03 02		10 49.26	+08 21.3					
1982 03 12		10 41.45	+09 15.3	2.136	3.114	167.7	3.9	17.1
1982 03 22		10 34.40	+10 03.0					
1982 04 01		10 28.79	+10 40.7	2.249	3.117	144.5	10.7	17.5
1982 04 11		10 25.08	+11 05.9					
1982 04 21		10 23.47	+11 17.9	2.450	3.118	123.4	15.6	17.8
1982 05 01		10 24.00	+11 17.0					
1982 05 11		10 26.54	+11 04.0	2.705	3.119	104.8	18.2	18.1
1982 05 21		10 30.88	+10 40.0					
1982 05 31		10 36.83	+10 06.0	2.981	3.119	88.2	19.0	18.3

1979 FT2						Elements MPC		6517
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1981 12 22		11 20.31	+12 35.3	1.711	2.165	103.6	26.2	17.9
1982 01 01		11 28.35	+12 19.5					
1982 01 11		11 33.83	+12 21.1	1.479	2.152	120.5	23.2	17.5
1982 01 21		11 36.34	+12 41.4					
1982 01 31		11 35.50	+13 20.0	1.287	2.139	140.3	17.1	17.1
1982 02 10		11 31.21	+14 13.5					
1982 02 20		11 23.75	+15 15.2	1.166	2.127	161.8	8.4	16.7
1982 03 02		11 13.95	+16 15.1					
1982 03 12		11 03.23	+17 02.4	1.139	2.116	165.6	6.7	16.5
1982 03 22		10 53.18	+17 28.6					
1982 04 01		10 45.26	+17 29.9	1.210	2.106	144.6	15.9	16.9
1982 04 11		10 40.41	+17 06.5					
1982 04 21		10 38.95	+16 21.6	1.355	2.097	124.7	23.2	17.3
1982 05 01		10 40.80	+15 18.7					
1982 05 11		10 45.63	+14 01.1	1.544	2.088	107.9	27.4	17.7
1982 05 21		10 52.99	+12 31.7					
1982 05 31		11 02.46	+10 52.4	1.753	2.082	93.8	29.1	18.0

1971 TZ						Elements MPC		6467
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1981 12 22		11 37.24	-04 06.2	2.359	2.606	93.2	22.1	17.5
1982 01 01		11 43.84	-04 58.9					
1982 01 11		11 48.43	-05 38.3	2.107	2.616	110.3	20.6	17.2
1982 01 21		11 50.77	-06 02.0					
1982 01 31		11 50.65	-06 07.5	1.885	2.627	129.7	16.8	16.9
1982 02 10		11 48.04	-05 53.0					
1982 02 20		11 43.12	-05 17.9	1.725	2.638	151.6	10.3	16.5
1982 03 02		11 36.35	-04 23.9					
1982 03 12		11 28.52	-03 15.3	1.659	2.648	173.0	2.6	16.1
1982 03 22		11 20.61	-01 59.0					
1982 04 01		11 13.60	-00 42.8	1.704	2.659	158.5	7.9	16.5
1982 04 11		11 08.31	+00 25.8					
1982 04 21		11 05.21	+01 21.6	1.850	2.670	136.6	15.0	16.8
1982 05 01		11 04.53	+02 01.5					
1982 05 11		11 06.23	+02 24.5	2.066	2.681	117.1	19.6	17.2
1982 05 21		11 10.12	+02 31.2					
1982 05 31		11 15.96	+02 22.7	2.321	2.692	100.2	21.8	17.5

1979 QK2						Elements MPC		6414
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1982 01 11		12 30.39	-04 00.5	1.886	2.294	-1.28	+7.2	18.8
1982 01 21		12 38.27	-04 44.3					
1982 01 31		12 44.04	-05 13.1	1.612	2.251	-1.54	+8.7	18.3
1982 02 10		12 47.33	-05 24.2					
1982 02 20		12 47.82	-05 15.8	1.377	2.210	-1.86	+10.5	17.8
1982 03 02		12 45.30	-04 46.5					
1982 03 12		12 39.95	-03 57.2	1.208	2.168	-2.14	+12.3	17.3
1982 03 22		12 32.31	-02 51.9					
1982 04 01		12 23.45	-01 38.2	1.131	2.129	-2.25	+12.9	16.8
1982 04 11		12 14.76	-00 26.2					
1982 04 21		12 07.57	+00 34.2	1.153	2.091	-2.10	+11.9	17.2
1982 05 01		12 02.91	+01 15.9					
1982 05 11		12 01.36	+01 34.8	1.254	2.056	-1.83	+10.1	17.6
1982 05 21		12 03.01	+01 30.8					
1982 05 31		12 07.72	+01 05.2	1.405	2.023	-1.58	+8.7	17.9
1982 06 10		12 15.16	+00 20.4					
1982 06 20		12 24.96	-00 40.5	1.580	1.995	-1.40	+7.6	18.2

1979 MP1						Elements MPC		5846
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 01 11		12 48.88	-05 00.5	2.405	2.704	96.8	21.2	21.1
1982 01 21		12 54.56	-05 30.6					
1982 01 31		12 58.18	-05 47.0	2.128	2.693	114.7	19.4	20.7
1982 02 10		12 59.49	-05 48.3					
1982 02 20		12 58.30	-05 33.4	1.888	2.680	135.0	15.1	20.4
1982 03 02		12 54.54	-05 02.1					
1982 03 12		12 48.46	-04 15.8	1.719	2.665	157.8	8.1	20.0
1982 03 22		12 40.57	-03 18.2					
1982 04 01		12 31.70	-02 14.7	1.650	2.649	177.4	1.0	19.5
1982 04 11		12 22.91	-01 12.6					
1982 04 21		12 15.19	-00 18.5	1.693	2.631	153.5	9.8	20.0
1982 05 01		12 09.33	+00 22.1					
1982 05 11		12 05.82	+00 46.3	1.831	2.612	131.5	16.8	20.3
1982 05 21		12 04.83	+00 53.2					
1982 05 31		12 06.33	+00 43.3	2.029	2.591	112.4	21.2	20.6
1982 06 10		12 10.12	+00 18.0					
1982 06 20		12 15.94	-00 20.6	2.257	2.569	95.9	23.2	20.8

1980 RA						Elements MPC		6049
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 01 11		13 21.62	-20 04.5	2.625	2.700	83.7	21.2	19.7
1982 01 21		13 26.43	-21 54.5					
1982 01 31		13 29.03	-23 38.2	2.407	2.764	100.6	20.5	19.6
1982 02 10		13 29.08	-25 13.5					
1982 02 20		13 26.35	-26 37.6	2.206	2.824	119.2	17.8	19.4
1982 03 02		13 20.70	-27 46.6					
1982 03 12		13 12.30	-28 36.0	2.057	2.880	138.8	13.1	19.2
1982 03 22		13 01.67	-29 01.9					
1982 04 01		12 49.69	-29 02.1	1.995	2.931	155.0	8.3	19.0
1982 04 11		12 37.54	-28 37.8					
1982 04 21		12 26.37	-27 53.9	2.043	2.979	154.1	8.5	19.1
1982 05 01		12 17.13	-26 57.7					
1982 05 11		12 10.41	-25 57.8	2.195	3.023	138.1	12.9	19.4
1982 05 21		12 06.39	-25 01.1					
1982 05 31		12 05.04	-24 13.0	2.427	3.062	119.9	16.7	19.7
1982 06 10		12 06.13	-23 36.5					
1982 06 20		12 09.37	-23 12.9	2.706	3.097	103.0	18.6	20.0

(2460) 1980 TX4						Elements MPC		6298
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 01 11		12 48.34	-06 04.2	1.715	2.072	96.5	28.1	16.9
1982 01 21		12 58.20	-06 51.2					
1982 01 31		13 05.71	-07 20.5	1.507	2.091	112.4	25.8	16.6
1982 02 10		13 10.47	-07 30.1					
1982 02 20		13 12.15	-07 18.2	1.326	2.112	131.2	20.6	16.2
1982 03 02		13 10.54	-06 43.7					
1982 03 12		13 05.80	-05 48.1	1.200	2.134	153.2	12.1	15.8
1982 03 22		12 58.49	-04 35.9					
1982 04 01		12 49.65	-03 14.8	1.160	2.158	177.1	1.3	15.3
1982 04 11		12 40.67	-01 55.5					
1982 04 21		12 32.88	-00 47.7	1.220	2.183	157.6	10.1	15.9
1982 05 01		12 27.30	+00 01.3					
1982 05 11		12 24.50	+00 28.0	1.368	2.208	135.8	18.6	16.3
1982 05 21		12 24.60	+00 32.6					
1982 05 31		12 27.44	+00 16.8	1.578	2.233	117.4	23.8	16.8
1982 06 10		12 32.75	-00 16.6					
1982 06 20		12 40.14	-01 04.5	1.821	2.259	101.7	26.1	17.2

(2435) 4578 P-L		Elements MPC 6203							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 01 11		13 06.34	-05 57.0	2.413	2.644	92.4	21.8	20.5	
1982 01 21		13 13.05	-06 23.7						
1982 01 31		13 17.81	-06 36.5	2.130	2.633	109.9	20.6	20.2	
1982 02 10		13 20.31	-06 33.8						
1982 02 20		13 20.28	-06 14.4	1.875	2.619	129.7	16.9	19.8	
1982 03 02		13 17.55	-05 37.7						
1982 03 12		13 12.19	-04 44.5	1.682	2.602	152.1	10.3	19.4	
1982 03 22		13 04.57	-03 37.8						
1982 04 01		12 55.38	-02 23.3	1.584	2.581	175.5	1.8	18.9	
1982 04 11		12 45.69	-01 08.4						
1982 04 21		12 36.57	-00 01.0	1.597	2.557	158.0	8.5	19.2	
1982 05 01		12 29.05	+00 52.1						
1982 05 11		12 23.80	+01 27.0	1.711	2.530	135.2	16.3	19.6	
1982 05 21		12 21.16	+01 42.4						
1982 05 31		12 21.18	+01 38.6	1.892	2.500	115.4	21.5	19.9	
1982 06 10		12 23.72	+01 17.5						
1982 06 20		12 28.53	+00 41.4	2.105	2.467	98.4	24.1	20.1	

1978 RT		Elements MPC 5679							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 01 11		13 13.28	-06 15.7	3.159	3.320	90.7	17.2	19.0	
1982 01 21		13 18.36	-06 54.1						
1982 01 31		13 21.80	-07 23.5	2.843	3.293	108.7	16.5	18.7	
1982 02 10		13 23.40	-07 43.0						
1982 02 20		13 22.99	-07 52.0	2.558	3.266	128.5	13.7	18.4	
1982 03 02		13 20.51	-07 50.2						
1982 03 12		13 16.03	-07 37.9	2.338	3.238	150.2	8.8	18.1	
1982 03 22		13 09.84	-07 16.5						
1982 04 01		13 02.44	-06 48.1	2.215	3.210	173.5	2.0	17.6	
1982 04 11		12 54.53	-06 16.5						
1982 04 21		12 46.86	-05 45.5	2.207	3.181	162.9	5.3	17.8	
1982 05 01		12 40.17	-05 19.4						
1982 05 11		12 35.03	-05 01.6	2.307	3.152	140.5	11.8	18.1	
1982 05 21		12 31.79	-04 54.2						
1982 05 31		12 30.62	-04 58.4	2.487	3.123	120.2	16.3	18.3	
1982 06 10		12 31.50	-05 14.4						
1982 06 20		12 34.33	-05 41.5	2.715	3.093	102.2	18.7	18.6	

1980 VJ		Elements MPC 6106							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 01 11		13 19.68	-13 48.5	2.311	2.455	86.4	23.6	18.3	
1982 01 21		13 27.74	-14 57.6						
1982 01 31		13 33.77	-15 55.8	2.074	2.485	102.7	22.8	18.1	
1982 02 10		13 37.45	-16 41.4						
1982 02 20		13 38.47	-17 12.7	1.853	2.513	121.3	19.7	17.8	
1982 03 02		13 36.60	-17 27.2						
1982 03 12		13 31.86	-17 23.0	1.677	2.538	142.4	13.8	17.5	
1982 03 22		13 24.56	-16 58.8						
1982 04 01		13 15.37	-16 15.5	1.583	2.561	164.9	5.8	17.1	
1982 04 11		13 05.35	-15 16.8						
1982 04 21		12 55.67	-14 09.4	1.594	2.581	166.0	5.4	17.2	
1982 05 01		12 47.40	-13 01.2						
1982 05 11		12 41.35	-11 59.9	1.712	2.598	144.1	13.2	17.5	
1982 05 21		12 37.88	-11 10.8						
1982 05 31		12 37.09	-10 37.1	1.910	2.613	123.7	18.8	17.9	
1982 06 10		12 38.83	-10 19.8						
1982 06 20		12 42.84	-10 18.0	2.157	2.624	105.9	21.9	18.3	

1938 DW1						Elements MPC		6196
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 01 11		12 59.17	-12 04.6	1.808	2.084	91.7	28.1	18.0
1982 01 21		13 10.40	-13 42.0					
1982 01 31		13 19.74	-15 09.0	1.572	2.074	106.1	27.1	17.7
1982 02 10		13 26.78	-16 23.4					
1982 02 20		13 31.08	-17 22.7	1.357	2.067	122.8	23.7	17.3
1982 03 02		13 32.22	-18 03.6					
1982 03 12		13 30.00	-18 22.7	1.184	2.061	142.2	17.2	16.8
1982 03 22		13 24.56	-18 17.0					
1982 04 01		13 16.53	-17 45.4	1.080	2.058	163.5	7.9	16.4
1982 04 11		13 07.16	-16 51.0					
1982 04 21		12 57.97	-15 41.5	1.067	2.057	166.2	6.7	16.3
1982 05 01		12 50.45	-14 27.5					
1982 05 11		12 45.67	-13 20.3	1.146	2.059	145.4	16.2	16.7
1982 05 21		12 44.12	-12 27.7					
1982 05 31		12 45.86	-11 54.1	1.295	2.063	126.1	23.4	17.2
1982 06 10		12 50.66	-11 40.6					
1982 06 20		12 58.12	-11 45.9	1.489	2.069	109.9	27.5	17.6

1979 MS6						Elements MPC		5785
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1982 01 11		13 04.94	-13 10.6	2.021	2.247	-1.19	+5.6	18.4
1982 01 21		13 15.10	-14 27.5					
1982 01 31		13 23.32	-15 32.1	1.785	2.254	-1.38	+5.9	18.1
1982 02 10		13 29.22	-16 22.4					
1982 02 20		13 32.47	-16 56.0	1.569	2.262	-1.62	+6.7	17.7
1982 03 02		13 32.75	-17 10.2					
1982 03 12		13 30.01	-17 02.6	1.398	2.271	-1.87	+8.1	17.4
1982 03 22		13 24.47	-16 31.9					
1982 04 01		13 16.79	-15 39.2	1.302	2.282	-2.03	+9.6	17.0
1982 04 11		13 08.10	-14 29.2					
1982 04 21		12 59.66	-13 10.2	1.304	2.294	-1.97	+10.2	17.0
1982 05 01		12 52.66	-11 51.7					
1982 05 11		12 48.00	-10 43.0	1.404	2.308	-1.76	+9.4	17.4
1982 05 21		12 46.08	-09 49.9					
1982 05 31		12 46.98	-09 15.7	1.581	2.322	-1.50	+7.9	17.8
1982 06 10		12 50.54	-09 00.6					
1982 06 20		12 56.45	-09 03.3	1.806	2.337	-1.29	+6.5	18.2

1973 SO2						Elements MPC		5600
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 01 31		13 31.92	-10 25.8	1.807	2.274	105.2	24.7	18.6
1982 02 10		13 38.00	-11 15.4					
1982 02 20		13 41.57	-11 52.2	1.543	2.238	122.7	21.8	18.2
1982 03 02		13 42.21	-12 14.4					
1982 03 12		13 39.67	-12 20.3	1.324	2.201	143.0	15.8	17.7
1982 03 22		13 33.92	-12 08.6					
1982 04 01		13 25.38	-11 39.8	1.179	2.162	166.2	6.3	17.2
1982 04 11		13 15.05	-10 57.3					
1982 04 21		13 04.32	-10 07.2	1.130	2.123	168.2	5.6	17.0
1982 05 01		12 54.72	-09 18.1					
1982 05 11		12 47.55	-08 38.6	1.177	2.084	144.6	16.3	17.3
1982 05 21		12 43.54	-08 14.5					
1982 05 31		12 42.99	-08 09.1	1.295	2.045	124.2	24.2	17.7
1982 06 10		12 45.79	-08 22.9					
1982 06 20		12 51.64	-08 54.4	1.453	2.007	107.4	28.9	18.0
1982 06 30		13 00.20	-09 41.8					
1982 07 10		13 11.13	-10 42.5	1.628	1.971	93.5	31.0	18.2

1979 MO6						Elements MPC		6112
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 01 31		13 43.65	+03 11.9	2.634	3.071	107.0	17.9	20.0
1982 02 10		13 46.35	+03 51.8					
1982 02 20		13 46.88	+04 44.8	2.407	3.095	126.1	15.0	19.7
1982 03 02		13 45.14	+05 48.8					
1982 03 12		13 41.21	+07 00.0	2.242	3.117	146.1	10.2	19.5
1982 03 22		13 35.34	+08 13.3					
1982 04 01		13 28.02	+09 22.4	2.172	3.137	161.7	5.7	19.3
1982 04 11		13 19.95	+10 20.9					
1982 04 21		13 11.93	+11 03.8	2.213	3.154	155.3	7.6	19.4
1982 05 01		13 04.71	+11 27.9					
1982 05 11		12 58.90	+11 32.3	2.358	3.170	136.7	12.6	19.7
1982 05 21		12 54.89	+11 18.3					
1982 05 31		12 52.86	+10 47.9	2.580	3.183	117.9	16.3	19.9
1982 06 10		12 52.82	+10 03.7					
1982 06 20		12 54.65	+09 08.5	2.846	3.194	100.7	18.2	20.2
1982 06 30		12 58.20	+08 04.6					
1982 07 10		13 03.27	+06 53.9	3.128	3.203	85.0	18.4	20.4

1978 NC3						Elements MPC		5679
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 01 31		13 39.24	-11 59.9	3.009	3.370	103.0	16.6	18.2
1982 02 10		13 42.01	-12 00.9					
1982 02 20		13 42.90	-11 49.4	2.726	3.362	122.4	14.4	17.9
1982 03 02		13 41.79	-11 24.6					
1982 03 12		13 38.73	-10 46.5	2.498	3.352	143.8	10.1	17.6
1982 03 22		13 33.91	-09 56.1					
1982 04 01		13 27.72	-08 55.9	2.360	3.341	166.9	3.9	17.3
1982 04 11		13 20.76	-07 49.8					
1982 04 21		13 13.68	-06 42.7	2.336	3.329	169.4	3.2	17.2
1982 05 01		13 07.19	-05 39.6					
1982 05 11		13 01.88	-04 45.4	2.427	3.316	146.5	9.7	17.5
1982 05 21		12 58.17	-04 03.0					
1982 05 31		12 56.28	-03 34.3	2.608	3.302	125.5	14.5	17.8
1982 06 10		12 56.28	-03 19.7					
1982 06 20		12 58.13	-03 18.5	2.847	3.286	106.7	17.2	18.1
1982 06 30		13 01.70	-03 29.7					
1982 07 10		13 06.84	-03 51.7	3.110	3.270	89.9	18.1	18.3

(2403) 1979 SQ						Elements MPC		6103
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 01 31		13 42.53	-14 35.8	2.416	2.782	101.3	20.3	18.1
1982 02 10		13 46.83	-15 15.5					
1982 02 20		13 48.92	-15 43.7	2.138	2.763	119.6	18.1	17.8
1982 03 02		13 48.56	-15 58.6					
1982 03 12		13 45.65	-15 58.6	1.905	2.743	140.2	13.4	17.4
1982 03 22		13 40.29	-15 43.0					
1982 04 01		13 32.87	-15 11.7	1.752	2.722	162.7	6.3	17.0
1982 04 11		13 24.16	-14 27.1					
1982 04 21		13 15.10	-13 33.5	1.703	2.699	170.7	3.4	16.8
1982 05 01		13 06.74	-12 37.1					
1982 05 11		12 59.99	-11 44.7	1.762	2.676	148.4	11.4	17.1
1982 05 21		12 55.43	-11 01.7					
1982 05 31		12 53.37	-10 31.8	1.909	2.651	127.4	17.7	17.4
1982 06 10		12 53.87	-10 16.9					
1982 06 20		12 56.77	-10 17.0	2.111	2.625	109.1	21.5	17.7
1982 06 30		13 01.89	-10 31.3					
1982 07 10		13 08.96	-10 58.3	2.337	2.599	93.1	23.0	17.9

(2457) 1975 TU2

						Elements MPC		6297
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 01 31		13 38.80	-04 47.6	2.037	2.490	105.6	22.4	18.0
1982 02 10		13 44.78	-04 43.9					
1982 02 20		13 48.42	-04 23.8	1.795	2.483	123.6	19.4	17.7
1982 03 02		13 49.46	-03 47.4					
1982 03 12		13 47.79	-02 55.9	1.603	2.476	143.9	13.7	17.3
1982 03 22		13 43.53	-01 52.5					
1982 04 01		13 37.12	-00 42.6	1.491	2.470	165.0	6.0	16.9
1982 04 11		13 29.38	+00 26.3					
1982 04 21		13 21.31	+01 26.4	1.481	2.466	165.0	6.1	16.9
1982 05 01		13 13.99	+02 11.0					
1982 05 11		13 08.35	+02 35.6	1.572	2.463	144.2	13.9	17.3
1982 05 21		13 04.93	+02 39.2					
1982 05 31		13 04.02	+02 22.6	1.739	2.461	124.6	19.8	17.6
1982 06 10		13 05.60	+01 48.0					
1982 06 20		13 09.52	+00 58.4	1.955	2.461	107.6	23.2	17.9
1982 06 30		13 15.55	-00 03.6					
1982 07 10		13 23.42	-01 15.2	2.194	2.461	92.7	24.4	18.2

1976 YU3

						Elements MPC		6205
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 01 31		13 49.50	-13 22.7	2.163	2.530	100.2	22.5	18.7
1982 02 10		13 54.75	-13 48.5					
1982 02 20		13 57.55	-13 59.9	1.950	2.571	118.3	19.8	18.5
1982 03 02		13 57.66	-13 55.4					
1982 03 12		13 55.05	-13 34.6	1.779	2.613	139.1	14.4	18.2
1982 03 22		13 49.91	-12 57.9					
1982 04 01		13 42.73	-12 07.2	1.684	2.653	162.3	6.6	17.9
1982 04 11		13 34.33	-11 06.8					
1982 04 21		13 25.71	-10 02.8	1.693	2.693	173.4	2.5	17.7
1982 05 01		13 17.87	-09 01.7					
1982 05 11		13 11.65	-08 09.9	1.810	2.732	150.1	10.6	18.2
1982 05 21		13 07.52	-07 31.2					
1982 05 31		13 05.73	-07 07.9	2.016	2.770	129.1	16.5	18.6
1982 06 10		13 06.26	-07 00.1					
1982 06 20		13 08.94	-07 06.8	2.281	2.806	110.7	19.8	19.0
1982 06 30		13 13.56	-07 26.3					
1982 07 10		13 19.87	-07 56.9	2.575	2.841	94.4	20.9	19.3

(2356) Hiron

						Elements MPC		5843
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 01 31		13 45.18	-10 24.5	2.759	3.119	102.2	18.0	17.0
1982 02 10		13 49.50	-10 09.8					
1982 02 20		13 51.90	-09 40.4	2.488	3.116	121.1	15.8	16.7
1982 03 02		13 52.23	-08 55.6					
1982 03 12		13 50.48	-07 56.0	2.270	3.114	142.0	11.3	16.4
1982 03 22		13 46.80	-06 43.6					
1982 04 01		13 41.54	-05 21.9	2.138	3.112	164.3	5.0	16.1
1982 04 11		13 35.28	-03 56.1					
1982 04 21		13 28.71	-02 32.5	2.117	3.110	169.3	3.4	16.0
1982 05 01		13 22.56	-01 17.3					
1982 05 11		13 17.49	-00 15.4	2.208	3.109	147.7	10.0	16.3
1982 05 21		13 13.96	+00 30.2					
1982 05 31		13 12.27	+00 58.4	2.390	3.109	127.1	15.1	16.6
1982 06 10		13 12.50	+01 09.7					
1982 06 20		13 14.61	+01 05.5	2.630	3.108	108.7	18.0	16.9
1982 06 30		13 18.49	+00 47.8					
1982 07 10		13 23.97	+00 18.8	2.898	3.109	92.3	19.1	17.1

(2441) Hibbs

					Elements MPC 6289				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 01 31		14 00.61	-08 45.6	2.519	2.848	99.2	20.0	19.2	
1982 02 10		14 05.37	-08 53.3						
1982 02 20		14 08.03	-08 48.2	2.237	2.834	117.6	18.0	18.9	
1982 03 02		14 08.33	-08 29.7						
1982 03 12		14 06.15	-07 57.9	1.998	2.819	138.3	13.6	18.6	
1982 03 22		14 01.51	-07 13.9						
1982 04 01		13 54.70	-06 20.0	1.837	2.800	160.9	6.7	18.2	
1982 04 11		13 46.32	-05 20.7						
1982 04 21		13 37.21	-04 21.5	1.781	2.779	171.9	2.9	17.9	
1982 05 01		13 28.36	-03 28.5						
1982 05 11		13 20.68	-02 47.2	1.836	2.756	149.7	10.7	18.3	
1982 05 21		13 14.85	-02 21.0						
1982 05 31		13 11.31	-02 11.4	1.983	2.730	128.3	16.9	18.6	
1982 06 10		13 10.19	-02 18.3						
1982 06 20		13 11.43	-02 40.4	2.186	2.701	109.5	20.8	18.8	
1982 06 30		13 14.89	-03 15.8						
1982 07 10		13 20.34	-04 02.5	2.416	2.671	93.1	22.3	19.1	

1974 XX

					Elements MPC 5793				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 01 31		14 11.94	+06 24.6	3.007	3.342	101.3	16.8	17.9	
1982 02 10		14 15.55	+06 53.1						
1982 02 20		14 17.22	+07 31.7	2.773	3.367	119.1	14.9	17.7	
1982 03 02		14 16.83	+08 18.5						
1982 03 12		14 14.35	+09 10.1	2.589	3.391	137.8	11.4	17.5	
1982 03 22		14 09.92	+10 02.5						
1982 04 01		14 03.85	+10 50.7	2.489	3.415	154.0	7.4	17.3	
1982 04 11		13 56.64	+11 29.4						
1982 04 21		13 48.92	+11 54.3	2.492	3.438	156.6	6.7	17.3	
1982 05 01		13 41.41	+12 02.6						
1982 05 11		13 34.74	+11 53.0	2.603	3.459	142.5	10.2	17.5	
1982 05 21		13 29.39	+11 26.5						
1982 05 31		13 25.70	+10 44.7	2.802	3.480	124.7	13.9	17.8	
1982 06 10		13 23.80	+09 50.2						
1982 06 20		13 23.68	+08 45.6	3.062	3.500	107.3	16.1	18.0	
1982 06 30		13 25.28	+07 33.0						
1982 07 10		13 28.45	+06 14.8	3.351	3.519	91.0	16.8	18.2	

1975 NF

					Elements MPC 6048				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 01 31		14 11.24	-13 48.7	2.505	2.771	95.0	20.7	19.2	
1982 02 10		14 17.19	-14 27.3						
1982 02 20		14 21.13	-14 56.1	2.204	2.741	112.7	19.4	18.9	
1982 03 02		14 22.75	-15 14.2						
1982 03 12		14 21.80	-15 20.4	1.936	2.708	132.4	15.7	18.5	
1982 03 22		14 18.16	-15 13.9						
1982 04 01		14 11.94	-14 54.1	1.735	2.672	154.6	9.2	18.0	
1982 04 11		14 03.61	-14 22.1						
1982 04 21		13 53.94	-13 40.4	1.630	2.635	177.8	0.8	17.4	
1982 05 01		13 44.00	-12 53.8						
1982 05 11		13 34.92	-12 08.2	1.636	2.595	156.8	8.8	17.8	
1982 05 21		13 27.62	-11 29.4						
1982 05 31		13 22.75	-11 02.2	1.738	2.552	134.4	16.5	18.1	
1982 06 10		13 20.59	-10 49.3						
1982 06 20		13 21.15	-10 51.3	1.905	2.508	114.9	21.6	18.4	
1982 06 30		13 24.30	-11 08.0						
1982 07 10		13 29.82	-11 38.0	2.105	2.463	98.1	24.1	18.6	

1981 AD1		Elements MPC 5896							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 01 31		14 11.72	-14 14.1	2.830	3.073	94.8	18.6	18.1	
1982 02 10		14 16.85	-14 46.2						
1982 02 20		14 20.09	-15 08.7	2.547	3.069	112.8	17.3	17.9	
1982 03 02		14 21.19	-15 20.8						
1982 03 12		14 20.03	-15 21.9	2.300	3.063	132.8	13.8	17.6	
1982 03 22		14 16.62	-15 11.5						
1982 04 01		14 11.15	-14 50.0	2.123	3.057	154.8	8.0	17.2	
1982 04 11		14 04.09	-14 18.6						
1982 04 21		13 56.11	-13 40.1	2.046	3.051	177.6	0.8	16.7	
1982 05 01		13 48.04	-12 58.5						
1982 05 11		13 40.71	-12 18.4	2.083	3.043	158.2	7.1	17.2	
1982 05 21		13 34.80	-11 44.2						
1982 05 31		13 30.79	-11 19.3	2.220	3.036	136.4	13.3	17.4	
1982 06 10		13 28.91	-11 05.7						
1982 06 20		13 29.18	-11 04.3	2.430	3.027	116.8	17.4	17.7	
1982 06 30		13 31.53	-11 14.7						
1982 07 10		13 35.80	-11 36.0	2.680	3.018	99.4	19.4	18.0	

(2333) 1943 EP		Elements MPC 5684							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 01 31		14 14.74	-05 57.4	2.068	2.394	96.8	24.1	17.0	
1982 02 10		14 21.77	-06 44.2						
1982 02 20		14 26.44	-07 21.3	1.843	2.417	113.7	22.0	16.8	
1982 03 02		14 28.38	-07 49.1						
1982 03 12		14 27.36	-08 07.9	1.651	2.441	133.2	17.3	16.4	
1982 03 22		14 23.34	-08 18.7						
1982 04 01		14 16.52	-08 22.9	1.523	2.467	155.3	9.7	16.1	
1982 04 11		14 07.56	-08 22.9						
1982 04 21		13 57.43	-08 21.8	1.489	2.493	176.6	1.4	15.7	
1982 05 01		13 47.33	-08 23.1						
1982 05 11		13 38.43	-08 30.4	1.563	2.521	156.3	9.3	16.2	
1982 05 21		13 31.58	-08 46.1						
1982 05 31		13 27.30	-09 11.7	1.731	2.549	134.8	16.4	16.6	
1982 06 10		13 25.73	-09 47.6						
1982 06 20		13 26.76	-10 33.1	1.964	2.577	116.1	20.7	17.0	
1982 06 30		13 30.18	-11 27.2						
1982 07 10		13 35.73	-12 28.6	2.233	2.606	99.7	22.6	17.3	

(2360) 1975 VD3		Elements MPC 5893							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 01 31		14 24.97	-13 11.3	2.957	3.151	92.1	18.2	18.8	
1982 02 10		14 29.76	-13 37.4						
1982 02 20		14 32.66	-13 54.5	2.681	3.163	110.3	17.0	18.5	
1982 03 02		14 33.43	-14 02.0						
1982 03 12		14 31.96	-13 59.4	2.437	3.174	130.5	13.8	18.3	
1982 03 22		14 28.23	-13 46.7						
1982 04 01		14 22.43	-13 24.4	2.261	3.182	152.8	8.3	18.0	
1982 04 11		14 14.99	-12 54.1						
1982 04 21		14 06.54	-12 18.2	2.184	3.188	176.4	1.1	17.5	
1982 05 01		13 57.86	-11 40.4						
1982 05 11		13 49.78	-11 04.8	2.224	3.192	159.9	6.2	17.9	
1982 05 21		13 42.97	-10 35.3						
1982 05 31		13 37.94	-10 14.8	2.370	3.193	137.6	12.4	18.2	
1982 06 10		13 34.95	-10 05.1						
1982 06 20		13 34.06	-10 06.7	2.593	3.193	117.6	16.4	18.5	
1982 06 30		13 35.20	-10 19.5						
1982 07 10		13 38.24	-10 42.4	2.857	3.190	99.7	18.3	18.7	

1979 MM5						Elements MPC 5896			
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 01 31		14 22.99	-15 37.5	2.692	2.895	91.8	19.9	20.9	
1982 02 10		14 28.88	-16 08.8						
1982 02 20		14 32.82	-16 30.2	2.408	2.892	109.5	18.8	20.6	
1982 03 02		14 34.51	-16 40.7						
1982 03 12		14 33.75	-16 39.4	2.154	2.887	129.3	15.5	20.3	
1982 03 22		14 30.48	-16 25.5						
1982 04 01		14 24.79	-15 58.7	1.962	2.879	151.4	9.6	20.0	
1982 04 11		14 17.13	-15 20.1						
1982 04 21		14 08.18	-14 32.1	1.866	2.868	175.1	1.7	19.5	
1982 05 01		13 58.86	-13 39.0						
1982 05 11		13 50.15	-12 46.3	1.883	2.855	160.5	6.8	19.8	
1982 05 21		13 42.88	-11 59.4						
1982 05 31		13 37.65	-11 22.7	2.004	2.839	138.0	13.8	20.1	
1982 06 10		13 34.77	-10 59.0						
1982 06 20		13 34.30	-10 49.1	2.199	2.821	117.9	18.6	20.4	
1982 06 30		13 36.14	-10 53.0						
1982 07 10		13 40.12	-11 09.5	2.434	2.800	100.3	20.9	20.6	

1979 MF4						Elements MPC 6206			
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 01 31		14 14.63	-07 31.7	2.089	2.406	96.3	24.0	19.1	
1982 02 10		14 23.39	-07 44.9						
1982 02 20		14 30.19	-07 44.2	1.806	2.370	112.7	22.6	18.7	
1982 03 02		14 34.64	-07 28.6						
1982 03 12		14 36.40	-06 58.0	1.556	2.334	131.2	18.7	18.2	
1982 03 22		14 35.19	-06 13.2						
1982 04 01		14 30.94	-05 16.4	1.365	2.296	152.0	11.8	17.8	
1982 04 11		14 23.97	-04 12.2						
1982 04 21		14 15.01	-03 07.4	1.260	2.257	169.9	4.5	17.3	
1982 05 01		14 05.19	-02 10.1						
1982 05 11		13 55.86	-01 28.3	1.256	2.217	156.0	10.7	17.5	
1982 05 21		13 48.21	-01 07.2						
1982 05 31		13 43.13	-01 09.1	1.341	2.178	134.8	19.3	17.8	
1982 06 10		13 41.07	-01 33.4						
1982 06 20		13 42.06	-02 17.5	1.484	2.138	116.3	25.2	18.1	
1982 06 30		13 46.00	-03 18.3						
1982 07 10		13 52.61	-04 32.5	1.658	2.100	100.7	28.4	18.4	

1975 VF2						Elements MPC 6205			
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 01 31		14 22.60	-10 22.3	2.195	2.461	93.6	23.6	17.7	
1982 02 10		14 30.46	-10 55.9						
1982 02 20		14 36.09	-11 18.0	1.977	2.498	110.3	21.8	17.5	
1982 03 02		14 39.18	-11 28.2						
1982 03 12		14 39.50	-11 26.8	1.787	2.537	129.5	17.6	17.2	
1982 03 22		14 37.00	-11 14.2						
1982 04 01		14 31.83	-10 51.7	1.655	2.576	151.2	10.8	16.9	
1982 04 11		14 24.50	-10 22.0						
1982 04 21		14 15.83	-09 48.8	1.615	2.616	173.9	2.3	16.5	
1982 05 01		14 06.85	-09 16.7						
1982 05 11		13 58.63	-08 50.6	1.681	2.656	160.9	7.1	16.9	
1982 05 21		13 52.00	-08 34.2						
1982 05 31		13 47.53	-08 29.9	1.846	2.696	139.2	14.2	17.3	
1982 06 10		13 45.46	-08 38.5						
1982 06 20		13 45.78	-08 59.4	2.084	2.736	119.8	18.8	17.7	
1982 06 30		13 48.35	-09 31.4						
1982 07 10		13 52.94	-10 12.8	2.366	2.775	102.9	20.9	18.1	

(2417) 1964 CD				Elements MPC 6194				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 01 31		14 29.90	-11 40.3	2.965	3.148	91.4	18.2	18.3
1982 02 10		14 35.28	-11 59.9					
1982 02 20		14 38.78	-12 10.0	2.719	3.188	109.4	17.0	18.1
1982 03 02		14 40.21	-12 10.4					
1982 03 12		14 39.48	-12 01.3	2.504	3.226	129.3	13.8	17.9
1982 03 22		14 36.60	-11 43.1					
1982 04 01		14 31.74	-11 16.9	2.354	3.265	151.1	8.5	17.6
1982 04 11		14 25.32	-10 44.9					
1982 04 21		14 17.92	-10 09.9	2.302	3.302	173.5	2.0	17.3
1982 05 01		14 10.23	-09 35.2					
1982 05 11		14 03.01	-09 04.7	2.364	3.339	162.0	5.4	17.6
1982 05 21		13 56.87	-08 41.4					
1982 05 31		13 52.27	-08 27.3	2.533	3.375	140.2	11.1	17.9
1982 06 10		13 49.48	-08 23.8					
1982 06 20		13 48.56	-08 30.8	2.783	3.410	120.3	14.9	18.2
1982 06 30		13 49.50	-08 47.8					
1982 07 10		13 52.17	-09 13.8	3.081	3.444	102.3	16.8	18.5

(2397) 1938 DV				Elements MPC 6101				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 01 31		14 34.42	-05 44.2	3.068	3.259	92.2	17.6	16.9
1982 02 10		14 39.86	-05 31.6					
1982 02 20		14 43.51	-05 07.8	2.813	3.288	110.2	16.4	16.7
1982 03 02		14 45.19	-04 33.3					
1982 03 12		14 44.81	-03 49.2	2.592	3.316	129.7	13.3	16.5
1982 03 22		14 42.38	-02 57.5					
1982 04 01		14 38.04	-02 01.0	2.440	3.343	150.1	8.6	16.2
1982 04 11		14 32.16	-01 03.7					
1982 04 21		14 25.24	-00 09.9	2.385	3.369	166.0	4.1	16.1
1982 05 01		14 17.94	+00 35.7					
1982 05 11		14 10.95	+01 09.7	2.444	3.394	156.5	6.8	16.2
1982 05 21		14 04.88	+01 29.7					
1982 05 31		14 00.19	+01 34.9	2.606	3.418	137.0	11.7	16.5
1982 06 10		13 57.18	+01 25.9					
1982 06 20		13 55.96	+01 04.0	2.845	3.441	118.0	15.1	16.8
1982 06 30		13 56.52	+00 31.0					
1982 07 10		13 58.79	-00 11.1	3.129	3.462	100.5	16.8	17.1

1979 MR5				Elements MPC 5847				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 01 31		14 29.25	-16 48.0	2.388	2.583	90.0	22.4	21.5
1982 02 10		14 37.58	-17 32.6					
1982 02 20		14 44.02	-18 07.7	2.104	2.566	106.4	21.7	21.2
1982 03 02		14 48.21	-18 32.3					
1982 03 12		14 49.83	-18 45.1	1.843	2.546	125.0	18.6	20.8
1982 03 22		14 48.62	-18 45.1					
1982 04 01		14 44.51	-18 30.9	1.634	2.525	146.1	12.8	20.4
1982 04 11		14 37.74	-18 02.2					
1982 04 21		14 28.91	-17 20.2	1.508	2.502	169.4	4.3	19.9
1982 05 01		14 19.02	-16 28.0					
1982 05 11		14 09.29	-15 31.7	1.486	2.478	165.7	5.8	19.9
1982 05 21		14 00.86	-14 37.8					
1982 05 31		13 54.63	-13 52.8	1.567	2.452	142.7	14.5	20.3
1982 06 10		13 51.13	-13 21.3					
1982 06 20		13 50.48	-13 05.2	1.723	2.424	122.4	20.7	20.6
1982 06 30		13 52.63	-13 05.0					
1982 07 10		13 57.36	-13 19.3	1.922	2.395	105.0	24.2	20.9

1980 YH		R. A. (1950)		Decl.	Delta	r	Elements MPC		5892
Date	ET						Variation		Mag.
1982 01 31		14 38.61	+03	30.4	3.083	3.302	-0.60	+2.9	17.9
1982 02 10		14 44.22	+04	08.6					
1982 02 20		14 48.05	+04	58.5	2.839	3.326	-0.65	+3.4	17.7
1982 03 02		14 49.94	+05	58.6					
1982 03 12		14 49.77	+07	06.5	2.633	3.350	-0.72	+3.8	17.5
1982 03 22		14 47.55	+08	18.4					
1982 04 01		14 43.40	+09	29.8	2.497	3.373	-0.78	+4.1	17.3
1982 04 11		14 37.67	+10	34.8					
1982 04 21		14 30.86	+11	28.3	2.457	3.395	-0.81	+4.0	17.3
1982 05 01		14 23.59	+12	05.6					
1982 05 11		14 16.56	+12	23.7	2.521	3.416	-0.79	+3.7	17.4
1982 05 21		14 10.37	+12	22.0					
1982 05 31		14 05.51	+12	01.4	2.681	3.436	-0.74	+3.3	17.6
1982 06 10		14 02.29	+11	24.0					
1982 06 20		14 00.83	+10	32.9	2.910	3.455	-0.67	+2.9	17.9
1982 06 30		14 01.15	+09	30.8					
1982 07 10		14 03.17	+08	20.5	3.181	3.473	-0.60	+2.7	18.1

1967 UO		R. A. (1950)		Decl.	Delta	r	Elements MPC		6294
Date	ET						Elong.	Phase	Mag.
1982 01 31		14 40.06	-14	13.2	3.600	3.704	88.3	15.4	19.0
1982 02 10		14 44.88	-14	34.6					
1982 02 20		14 48.15	-14	48.6	3.280	3.684	106.5	14.9	18.8
1982 03 02		14 49.69	-14	54.9					
1982 03 12		14 49.36	-14	53.1	2.987	3.663	126.2	12.6	18.5
1982 03 22		14 47.13	-14	43.3					
1982 04 01		14 43.06	-14	25.7	2.757	3.641	147.7	8.4	18.2
1982 04 11		14 37.41	-14	01.1					
1982 04 21		14 30.59	-13	31.3	2.623	3.617	170.4	2.7	17.8
1982 05 01		14 23.17	-12	58.6					
1982 05 11		14 15.81	-12	26.0	2.603	3.593	166.3	3.8	17.9
1982 05 21		14 09.11	-11	56.8					
1982 05 31		14 03.64	-11	33.7	2.696	3.566	144.0	9.6	18.1
1982 06 10		13 59.74	-11	19.0					
1982 06 20		13 57.64	-11	13.7	2.877	3.539	123.4	13.9	18.4
1982 06 30		13 57.38	-11	18.3					
1982 07 10		13 58.95	-11	32.4	3.112	3.511	104.7	16.3	18.6

1981 AH1		R. A. (1950)		Decl.	Delta	r	Elements MPC		5897
Date	ET						Elong.	Phase	Mag.
1982 02 20		14 45.91	-06	15.2	2.472	2.950	109.3	18.4	17.7
1982 03 02		14 49.44	-05	43.4					
1982 03 12		14 50.79	-05	00.1	2.225	2.943	128.0	15.4	17.4
1982 03 22		14 49.86	-04	06.7					
1982 04 01		14 46.69	-03	06.0	2.041	2.937	148.0	10.4	17.1
1982 04 11		14 41.57	-02	02.3					
1982 04 21		14 34.99	-01	00.7	1.948	2.931	165.0	5.1	16.9
1982 05 01		14 27.68	-00	06.9					
1982 05 11		14 20.46	+00	34.2	1.963	2.925	158.3	7.3	17.0
1982 05 21		14 14.10	+00	59.1					
1982 05 31		14 09.23	+01	06.3	2.078	2.920	139.1	13.1	17.2
1982 06 10		14 06.26	+00	56.1					
1982 06 20		14 05.36	+00	30.1	2.268	2.916	120.3	17.5	17.5
1982 06 30		14 06.56	-00	09.4					
1982 07 10		14 09.75	-00	59.9	2.505	2.912	103.3	19.9	17.8
1982 07 20		14 14.78	-01	59.1					
1982 07 30		14 21.48	-03	04.8	2.761	2.909	88.1	20.4	18.0

(2394) 1973 SZ2

						Elements MPC		6057
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 02 20		14 55.90	-14 52.9	3.280	3.657	104.7	15.2	18.3
1982 03 02		14 57.52	-14 54.5					
1982 03 12		14 57.25	-14 48.0	3.024	3.678	124.4	12.9	18.1
1982 03 22		14 55.07	-14 33.5					
1982 04 01		14 51.07	-14 11.4	2.827	3.697	145.9	8.7	17.9
1982 04 11		14 45.51	-13 42.9					
1982 04 21		14 38.82	-13 09.7	2.724	3.714	168.5	3.1	17.6
1982 05 01		14 31.56	-12 34.4					
1982 05 11		14 24.34	-11 59.9	2.737	3.730	168.0	3.2	17.6
1982 05 21		14 17.77	-11 29.1					
1982 05 31		14 12.33	-11 04.8	2.863	3.745	145.8	8.8	17.9
1982 06 10		14 08.39	-10 48.7					
1982 06 20		14 06.11	-10 41.8	3.080	3.758	125.1	12.8	18.2
1982 06 30		14 05.57	-10 44.3					
1982 07 10		14 06.72	-10 55.7	3.356	3.770	106.3	15.0	18.5
1982 07 20		14 09.44	-11 15.3					
1982 07 30		14 13.63	-11 42.0	3.658	3.780	89.1	15.6	18.7

1966 PD

						Elements MPC		5321
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 02 20		14 57.87	-23 19.0	2.304	2.685	101.7	21.1	18.4
1982 03 02		15 02.28	-23 54.8					
1982 03 12		15 04.20	-24 20.6	2.024	2.663	120.0	18.9	18.1
1982 03 22		15 03.34	-24 34.8					
1982 04 01		14 59.52	-24 35.0	1.788	2.637	140.4	14.0	17.7
1982 04 11		14 52.90	-24 19.0					
1982 04 21		14 43.93	-23 45.6	1.631	2.607	162.6	6.6	17.3
1982 05 01		14 33.50	-22 55.4					
1982 05 11		14 22.80	-21 52.5	1.577	2.574	168.5	4.5	17.1
1982 05 21		14 13.05	-20 43.2					
1982 05 31		14 05.29	-19 35.4	1.630	2.538	146.6	12.7	17.4
1982 06 10		14 00.17	-18 36.1					
1982 06 20		13 57.96	-17 49.9	1.767	2.499	125.6	19.3	17.7
1982 06 30		13 58.65	-17 19.1					
1982 07 10		14 02.07	-17 04.2	1.955	2.457	107.3	23.3	17.9
1982 07 20		14 07.93	-17 03.9					
1982 07 30		14 16.00	-17 16.3	2.162	2.412	91.4	24.9	18.2

1981 AD

						Elements MPC		5892
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1982 02 20		15 07.78	+02 20.9	2.569	2.995	-0.69	+4.8	17.9
1982 03 02		15 10.79	+03 07.9					
1982 03 12		15 11.53	+04 04.0	2.352	3.018	-0.76	+5.4	17.6
1982 03 22		15 09.91	+05 05.9					
1982 04 01		15 05.94	+06 09.4	2.191	3.040	-0.85	+5.9	17.4
1982 04 11		14 59.90	+07 09.1					
1982 04 21		14 52.27	+07 59.1	2.117	3.059	-0.90	+6.0	17.2
1982 05 01		14 43.73	+08 34.0					
1982 05 11		14 35.13	+08 49.9	2.147	3.077	-0.90	+5.6	17.3
1982 05 21		14 27.24	+08 45.2					
1982 05 31		14 20.73	+08 20.5	2.277	3.093	-0.84	+5.0	17.5
1982 06 10		14 16.04	+07 37.9					
1982 06 20		14 13.37	+06 40.7	2.484	3.106	-0.75	+4.5	17.8
1982 06 30		14 12.77	+05 31.9					
1982 07 10		14 14.16	+04 14.6	2.739	3.118	-0.66	+4.1	18.1
1982 07 20		14 17.37	+02 51.4					
1982 07 30		14 22.24	+01 24.4	3.015	3.127	-0.59	+3.8	18.3

1978 QL2		Elements MPC 6049							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 02 20		15 09.28	-15 37.5	3.357	3.681	101.4	15.3	19.3	
1982 03 02		15 11.79	-15 40.5						
1982 03 12		15 12.48	-15 35.8	3.063	3.670	120.7	13.5	19.1	
1982 03 22		15 11.26	-15 23.5						
1982 04 01		15 08.12	-15 03.8	2.821	3.658	141.6	9.8	18.8	
1982 04 11		15 03.25	-14 37.4						
1982 04 21		14 56.98	-14 05.7	2.667	3.644	164.0	4.4	18.5	
1982 05 01		14 49.79	-13 30.6						
1982 05 11		14 42.31	-12 55.2	2.625	3.628	172.2	2.2	18.3	
1982 05 21		14 35.18	-12 22.2						
1982 05 31		14 28.98	-11 54.6	2.698	3.611	149.9	8.1	18.6	
1982 06 10		14 24.18	-11 34.7						
1982 06 20		14 21.06	-11 23.9	2.868	3.593	128.8	12.7	18.9	
1982 06 30		14 19.75	-11 22.8						
1982 07 10		14 20.27	-11 31.2	3.101	3.573	109.6	15.5	19.1	
1982 07 20		14 22.53	-11 48.4						
1982 07 30		14 26.43	-12 13.5	3.365	3.552	92.2	16.6	19.3	

(2400) 1972 KJ		Elements MPC 6102							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 02 20		15 05.78	-10 02.1	2.630	3.019	103.6	18.6	17.9	
1982 03 02		15 10.41	-09 37.0						
1982 03 12		15 12.98	-09 00.5	2.353	3.000	121.9	16.3	17.6	
1982 03 22		15 13.35	-08 13.2						
1982 04 01		15 11.45	-07 16.5	2.129	2.980	141.9	12.0	17.3	
1982 04 11		15 07.41	-06 13.4						
1982 04 21		15 01.58	-05 07.7	1.989	2.960	161.7	6.1	17.0	
1982 05 01		14 54.53	-04 04.5						
1982 05 11		14 47.05	-03 09.0	1.954	2.940	164.6	5.2	16.9	
1982 05 21		14 39.92	-02 25.9						
1982 05 31		14 33.91	-01 58.5	2.026	2.921	145.9	11.2	17.1	
1982 06 10		14 29.59	-01 48.0						
1982 06 20		14 27.27	-01 54.1	2.182	2.901	126.3	16.4	17.4	
1982 06 30		14 27.10	-02 15.3						
1982 07 10		14 29.07	-02 49.3	2.394	2.882	108.5	19.5	17.6	
1982 07 20		14 33.03	-03 33.9						
1982 07 30		14 38.85	-04 26.8	2.632	2.864	92.6	20.7	17.9	

1979 MR4		Elements MPC 5900							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 02 20		15 09.84	-17 47.4	2.047	2.432	100.7	23.5	18.0	
1982 03 02		15 16.31	-17 57.3						
1982 03 12		15 20.20	-17 54.8	1.820	2.453	118.3	20.9	17.7	
1982 03 22		15 21.24	-17 39.6						
1982 04 01		15 19.27	-17 11.2	1.633	2.472	138.5	15.5	17.4	
1982 04 11		15 14.42	-16 30.4						
1982 04 21		15 07.12	-15 38.9	1.518	2.491	161.3	7.4	17.0	
1982 05 01		14 58.18	-14 40.1						
1982 05 11		14 48.74	-13 39.7	1.503	2.509	173.8	2.5	16.8	
1982 05 21		14 39.92	-12 43.7						
1982 05 31		14 32.75	-11 57.9	1.592	2.526	150.7	11.3	17.3	
1982 06 10		14 27.89	-11 26.1						
1982 06 20		14 25.63	-11 09.8	1.768	2.541	129.8	17.9	17.7	
1982 06 30		14 26.01	-11 09.1						
1982 07 10		14 28.88	-11 22.3	2.001	2.555	111.6	21.7	18.0	
1982 07 20		14 33.98	-11 47.3						
1982 07 30		14 41.08	-12 21.8	2.262	2.568	95.6	23.2	18.4	

(2393) 1955 WB		Elements MPC 6057							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 02 20		15 13.99	-20 20.8	3.062	3.362	99.0	16.9	17.3	
1982 03 02		15 18.30	-20 25.2						
1982 03 12		15 20.72	-20 20.5	2.747	3.326	117.6	15.4	17.0	
1982 03 22		15 21.09	-20 05.9						
1982 04 01		15 19.32	-19 40.9	2.478	3.288	137.9	11.8	16.6	
1982 04 11		15 15.50	-19 05.5						
1982 04 21		15 09.90	-18 20.2	2.288	3.251	160.0	6.1	16.3	
1982 05 01		15 03.00	-17 26.8						
1982 05 11		14 55.50	-16 28.5	2.203	3.212	176.7	1.0	15.8	
1982 05 21		14 48.13	-15 29.4						
1982 05 31		14 41.63	-14 33.9	2.232	3.173	153.7	8.1	16.2	
1982 06 10		14 36.63	-13 46.2						
1982 06 20		14 33.48	-13 09.1	2.359	3.134	132.3	13.9	16.5	
1982 06 30		14 32.40	-12 44.1						
1982 07 10		14 33.43	-12 31.6	2.553	3.095	113.0	17.6	16.7	
1982 07 20		14 36.48	-12 30.7						
1982 07 30		14 41.43	-12 40.3	2.781	3.056	95.8	19.3	16.9	

(2343) Siding Spring		Elements MPC 5792							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 02 20		15 21.90	-18 40.1	2.563	2.868	97.7	20.0	19.8	
1982 03 02		15 26.96	-18 55.3						
1982 03 12		15 29.84	-19 01.8	2.268	2.845	115.8	18.3	19.5	
1982 03 22		15 30.26	-18 58.9						
1982 04 01		15 28.03	-18 46.1	2.012	2.819	136.1	14.2	19.1	
1982 04 11		15 23.15	-18 22.9						
1982 04 21		15 15.88	-17 49.6	1.829	2.790	158.8	7.5	18.7	
1982 05 01		15 06.77	-17 07.5						
1982 05 11		14 56.74	-16 19.8	1.748	2.757	176.9	1.1	18.2	
1982 05 21		14 46.83	-15 30.8						
1982 05 31		14 38.06	-14 45.7	1.779	2.721	153.0	9.8	18.6	
1982 06 10		14 31.26	-14 09.4						
1982 06 20		14 26.89	-13 44.9	1.904	2.682	130.9	16.6	18.9	
1982 06 30		14 25.16	-13 33.8						
1982 07 10		14 26.07	-13 36.2	2.090	2.640	111.6	21.0	19.2	
1982 07 20		14 29.42	-13 51.1						
1982 07 30		14 35.03	-14 16.7	2.304	2.595	94.8	22.9	19.4	

1981 CA		Elements MPC 6045							
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.	
1982 02 20		15 22.51	-05 18.0	3.210	3.529	-0.54	+3.7	17.1	
1982 03 02		15 25.65	-05 03.5						
1982 03 12		15 26.95	-04 41.9	2.921	3.514	-0.60	+4.1	16.9	
1982 03 22		15 26.29	-04 14.5						
1982 04 01		15 23.63	-03 43.0	2.683	3.497	-0.67	+4.5	16.6	
1982 04 11		15 19.10	-03 09.9						
1982 04 21		15 12.96	-02 38.3	2.527	3.480	-0.71	+4.8	16.3	
1982 05 01		15 05.67	-02 11.3						
1982 05 11		14 57.85	-01 52.4	2.478	3.460	-0.72	+4.9	16.2	
1982 05 21		14 50.17	-01 43.8						
1982 05 31		14 43.27	-01 47.3	2.541	3.440	-0.69	+4.7	16.4	
1982 06 10		14 37.68	-02 03.3						
1982 06 20		14 33.76	-02 31.2	2.698	3.418	-0.63	+4.4	16.6	
1982 06 30		14 31.69	-03 09.8						
1982 07 10		14 31.52	-03 57.6	2.918	3.395	-0.57	+4.1	16.9	
1982 07 20		14 33.18	-04 52.9						
1982 07 30		14 36.59	-05 54.0	3.170	3.371	-0.52	+3.8	17.0	

1980 VX		Elements MPC 5794							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 02 20		15 17.08	-20 38.1	1.950	2.309	98.2	25.1	18.8	
1982 03 02		15 24.70	-21 10.3						
1982 03 12		15 29.69	-21 31.8	1.725	2.329	115.2	22.7	18.5	
1982 03 22		15 31.71	-21 42.0						
1982 04 01		15 30.48	-21 39.6	1.534	2.348	134.8	17.6	18.2	
1982 04 11		15 25.99	-21 23.8						
1982 04 21		15 18.59	-20 54.1	1.407	2.366	157.3	9.5	17.8	
1982 05 01		15 09.06	-20 11.5						
1982 05 11		14 58.63	-19 19.8	1.373	2.382	177.1	1.2	17.4	
1982 05 21		14 48.62	-18 24.7						
1982 05 31		14 40.26	-17 33.0	1.443	2.397	154.3	10.6	17.9	
1982 06 10		14 34.40	-16 50.7						
1982 06 20		14 31.42	-16 21.6	1.602	2.411	132.8	18.0	18.3	
1982 06 30		14 31.38	-16 07.1						
1982 07 10		14 34.12	-16 06.9	1.820	2.423	114.3	22.5	18.7	
1982 07 20		14 39.34	-16 19.4						
1982 07 30		14 46.76	-16 42.5	2.070	2.433	98.3	24.4	19.1	

2533 P-L		Elements MPC 5523							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 02 20		15 13.49	-15 53.5	1.871	2.268	100.3	25.4	19.9	
1982 03 02		15 22.50	-16 19.0						
1982 03 12		15 29.33	-16 34.1	1.590	2.219	116.5	23.6	19.5	
1982 03 22		15 33.55	-16 38.7						
1982 04 01		15 34.70	-16 32.1	1.344	2.170	135.1	19.0	19.0	
1982 04 11		15 32.50	-16 14.4						
1982 04 21		15 26.94	-15 46.1	1.159	2.119	156.6	10.9	18.4	
1982 05 01		15 18.42	-15 08.7						
1982 05 11		15 08.00	-14 26.3	1.058	2.067	176.8	1.6	17.7	
1982 05 21		14 57.11	-13 44.5						
1982 05 31		14 47.40	-13 10.3	1.053	2.016	154.5	12.5	18.1	
1982 06 10		14 40.23	-12 49.8						
1982 06 20		14 36.42	-12 46.7	1.128	1.966	132.8	22.3	18.4	
1982 06 30		14 36.31	-13 01.8						
1982 07 10		14 39.84	-13 34.0	1.254	1.917	114.8	28.8	18.8	
1982 07 20		14 46.73	-14 20.5						
1982 07 30		14 56.67	-15 18.3	1.403	1.871	100.1	32.3	19.0	

1975 VB9		Elements MPC 6104							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 02 20		15 36.21	-25 31.3	2.925	3.132	92.8	18.4	19.7	
1982 03 02		15 40.93	-26 25.7						
1982 03 12		15 43.53	-27 16.0	2.650	3.141	110.6	17.2	19.5	
1982 03 22		15 43.78	-28 01.4						
1982 04 01		15 41.47	-28 40.4	2.409	3.148	130.2	14.0	19.2	
1982 04 11		15 36.60	-29 11.1						
1982 04 21		15 29.40	-29 31.2	2.236	3.153	151.1	8.9	18.9	
1982 05 01		15 20.35	-29 38.6						
1982 05 11		15 10.27	-29 32.7	2.161	3.156	168.1	3.8	18.7	
1982 05 21		15 00.11	-29 14.7						
1982 05 31		14 50.83	-28 47.8	2.199	3.157	156.9	7.2	18.9	
1982 06 10		14 43.26	-28 16.5						
1982 06 20		14 37.87	-27 45.7	2.339	3.155	136.5	12.8	19.1	
1982 06 30		14 34.94	-27 19.3						
1982 07 10		14 34.47	-27 00.1	2.554	3.151	117.2	16.7	19.4	
1982 07 20		14 36.34	-26 49.4						
1982 07 30		14 40.36	-26 47.6	2.810	3.145	99.7	18.6	19.7	

1979 OB						Elements MPC		5126
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1982 02 20		15 15.25	-15 07.6	1.931	2.318	-1.31	+4.0	19.8
1982 03 02		15 24.45	-15 11.8					
1982 03 12		15 31.62	-15 02.6	1.631	2.255	-1.61	+4.5	19.4
1982 03 22		15 36.34	-14 39.3					
1982 04 01		15 38.17	-14 01.3	1.368	2.190	-1.97	+5.5	18.8
1982 04 11		15 36.81	-13 08.8					
1982 04 21		15 32.18	-12 03.2	1.167	2.122	-2.33	+6.7	18.2
1982 05 01		15 24.59	-10 48.1					
1982 05 11		15 14.94	-09 30.1	1.050	2.054	-2.51	+7.3	17.7
1982 05 21		15 04.54	-08 17.7					
1982 05 31		14 54.97	-07 20.0	1.028	1.986	-2.39	+6.7	17.9
1982 06 10		14 47.66	-06 44.2					
1982 06 20		14 43.52	-06 33.1	1.084	1.919	-2.09	+5.5	18.1
1982 06 30		14 43.01	-06 46.8					
1982 07 10		14 46.18	-07 22.4	1.189	1.854	-1.81	+4.5	18.4
1982 07 20		14 52.79	-08 16.1					
1982 07 30		15 02.59	-09 23.7	1.315	1.792	-1.62	+3.9	18.6

1972 RV3						Elements MPC		6204
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 02 20		15 29.46	-15 09.2	2.318	2.625	96.8	22.0	19.9
1982 03 02		15 36.50	-15 21.6					
1982 03 12		15 41.43	-15 25.1	2.025	2.592	113.9	20.5	19.6
1982 03 22		15 43.91	-15 19.7					
1982 04 01		15 43.64	-15 05.4	1.766	2.556	133.2	16.6	19.2
1982 04 11		15 40.48	-14 42.8					
1982 04 21		15 34.51	-14 12.9	1.571	2.518	154.9	9.7	18.7
1982 05 01		15 26.14	-13 37.5					
1982 05 11		15 16.24	-13 00.2	1.470	2.478	175.0	2.0	18.2
1982 05 21		15 05.90	-12 25.3					
1982 05 31		14 56.36	-11 57.5	1.475	2.436	156.0	9.8	18.5
1982 06 10		14 48.69	-11 41.0					
1982 06 20		14 43.59	-11 38.2	1.571	2.392	134.0	17.8	18.8
1982 06 30		14 41.41	-11 50.0					
1982 07 10		14 42.20	-12 15.7	1.730	2.347	114.9	23.1	19.1
1982 07 20		14 45.81	-12 53.4					
1982 07 30		14 52.02	-13 41.2	1.919	2.301	98.6	25.9	19.3

(2361) 1976 GQ1						Elements MPC		5893
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 02 20		15 36.79	-19 12.9	2.811	3.046	94.1	18.9	18.1
1982 03 02		15 42.44	-19 34.9					
1982 03 12		15 46.04	-19 50.0	2.561	3.073	111.9	17.5	17.9
1982 03 22		15 47.41	-19 58.2					
1982 04 01		15 46.40	-19 59.3	2.344	3.100	131.7	13.9	17.6
1982 04 11		15 43.07	-19 53.2					
1982 04 21		15 37.64	-19 40.0	2.195	3.126	153.4	8.3	17.4
1982 05 01		15 30.58	-19 20.5					
1982 05 11		15 22.59	-18 56.3	2.144	3.153	176.4	1.2	16.9
1982 05 21		15 14.46	-18 29.9					
1982 05 31		15 07.00	-18 04.2	2.205	3.179	160.6	6.1	17.3
1982 06 10		15 00.92	-17 42.5					
1982 06 20		14 56.64	-17 27.1	2.369	3.205	138.9	12.0	17.7
1982 06 30		14 54.42	-17 19.6					
1982 07 10		14 54.31	-17 20.8	2.609	3.230	119.3	15.9	18.0
1982 07 20		14 56.23	-17 30.3					
1982 07 30		15 00.05	-17 47.5	2.895	3.255	101.6	17.8	18.3

1976 GJ3						Elements MPC		5600
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 02 20		15 42.54	-20 27.9	2.867	3.073	92.5	18.7	17.7
1982 03 02		15 48.11	-21 24.6					
1982 03 12		15 51.69	-22 18.4	2.589	3.075	110.1	17.7	17.4
1982 03 22		15 53.05	-23 09.4					
1982 04 01		15 51.95	-23 57.0	2.343	3.076	129.4	14.5	17.1
1982 04 11		15 48.35	-24 40.1					
1982 04 21		15 42.37	-25 17.2	2.163	3.078	150.5	9.2	16.8
1982 05 01		15 34.39	-25 46.6					
1982 05 11		15 25.11	-26 07.2	2.080	3.081	170.7	3.1	16.5
1982 05 21		15 15.42	-26 18.9					
1982 05 31		15 06.28	-26 23.4	2.108	3.083	160.7	6.2	16.7
1982 06 10		14 58.56	-26 23.5					
1982 06 20		14 52.86	-26 22.6	2.240	3.086	139.7	12.3	17.0
1982 06 30		14 49.53	-26 23.8					
1982 07 10		14 48.67	-26 29.7	2.451	3.090	120.2	16.5	17.3
1982 07 20		14 50.20	-26 41.3					
1982 07 30		14 53.98	-26 59.2	2.707	3.093	102.7	18.7	17.5

1979 UE						Elements MPC		5175
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1982 02 20		15 42.38	-11 53.9	2.598	2.850	-0.75	+6.3	17.8
1982 03 02		15 48.39	-12 20.5					
1982 03 12		15 52.36	-12 42.1	2.315	2.838	-0.86	+7.0	17.5
1982 03 22		15 54.02	-12 59.5					
1982 04 01		15 53.12	-13 13.4	2.066	2.826	-0.99	+7.9	17.2
1982 04 11		15 49.59	-13 24.9					
1982 04 21		15 43.53	-13 34.8	1.881	2.813	-1.10	+8.8	16.8
1982 05 01		15 35.32	-13 44.2					
1982 05 11		15 25.72	-13 54.3	1.792	2.799	-1.15	+9.4	16.4
1982 05 21		15 15.64	-14 06.5					
1982 05 31		15 06.12	-14 22.5	1.813	2.784	-1.10	+9.6	16.7
1982 06 10		14 58.11	-14 44.0					
1982 06 20		14 52.24	-15 12.0	1.936	2.769	-0.99	+9.1	17.0
1982 06 30		14 48.87	-15 47.2					
1982 07 10		14 48.12	-16 29.6	2.132	2.754	-0.87	+8.4	17.3
1982 07 20		14 49.87	-17 18.5					
1982 07 30		14 53.99	-18 13.2	2.367	2.738	-0.78	+7.5	17.6

1976 GM2						Elements MPC		6048
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 02 20		15 30.62	-17 07.5	2.453	2.740	96.0	21.0	18.1
1982 03 02		15 38.40	-17 27.3					
1982 03 12		15 44.20	-17 39.0	2.180	2.724	112.8	19.7	17.8
1982 03 22		15 47.74	-17 42.6					
1982 04 01		15 48.78	-17 38.2	1.942	2.710	131.6	16.0	17.5
1982 04 11		15 47.26	-17 26.3					
1982 04 21		15 43.28	-17 07.5	1.767	2.699	152.5	9.9	17.1
1982 05 01		15 37.23	-16 43.1					
1982 05 11		15 29.83	-16 15.4	1.683	2.690	174.7	2.0	16.7
1982 05 21		15 21.96	-15 47.5					
1982 05 31		15 14.61	-15 23.1	1.703	2.684	161.4	6.9	16.9
1982 06 10		15 08.69	-15 05.6					
1982 06 20		15 04.77	-14 57.4	1.821	2.680	140.0	14.1	17.3
1982 06 30		15 03.23	-14 59.9					
1982 07 10		15 04.16	-15 13.0	2.011	2.679	120.9	19.0	17.6
1982 07 20		15 07.47	-15 35.7					
1982 07 30		15 12.99	-16 06.7	2.246	2.681	104.1	21.5	17.9

1953 TX2		Elements MPC 6047							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 02 20		15 49.16	-16 21.4	2.653	2.862	91.9	20.2	19.9	
1982 03 02		15 55.51	-16 32.5						
1982 03 12		15 59.79	-16 36.4	2.381	2.867	109.3	19.1	19.6	
1982 03 22		16 01.76	-16 33.3						
1982 04 01		16 01.19	-16 23.3	2.136	2.870	128.8	15.7	19.3	
1982 04 11		15 58.00	-16 07.1						
1982 04 21		15 52.31	-15 45.1	1.953	2.871	150.5	9.9	19.0	
1982 05 01		15 44.49	-15 18.8						
1982 05 11		15 35.24	-14 50.2	1.863	2.868	173.0	2.5	18.6	
1982 05 21		15 25.46	-14 22.1						
1982 05 31		15 16.14	-13 57.9	1.885	2.863	161.2	6.6	18.8	
1982 06 10		15 08.19	-13 40.7						
1982 06 20		15 02.23	-13 32.7	2.010	2.856	139.0	13.5	19.1	
1982 06 30		14 58.63	-13 35.2						
1982 07 10		14 57.51	-13 48.1	2.211	2.845	118.9	18.2	19.4	
1982 07 20		14 58.79	-14 10.8						
1982 07 30		15 02.31	-14 41.9	2.454	2.832	101.3	20.6	19.7	

(2420) 1975 TN		Elements MPC 6195							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 02 20		15 45.01	-16 13.9	2.675	2.898	92.9	19.9	18.9	
1982 03 02		15 51.62	-15 50.9						
1982 03 12		15 56.21	-15 16.6	2.398	2.899	110.4	18.7	18.6	
1982 03 22		15 58.55	-14 31.0						
1982 04 01		15 58.45	-13 34.5	2.154	2.898	129.8	15.4	18.3	
1982 04 11		15 55.87	-12 28.3						
1982 04 21		15 50.95	-11 14.4	1.976	2.895	150.9	9.7	18.0	
1982 05 01		15 44.08	-09 56.4						
1982 05 11		15 35.92	-08 39.1	1.893	2.891	168.8	3.9	17.7	
1982 05 21		15 27.31	-07 27.9						
1982 05 31		15 19.15	-06 27.8	1.922	2.884	157.3	7.8	17.9	
1982 06 10		15 12.24	-05 42.7						
1982 06 20		15 07.16	-05 14.3	2.051	2.876	136.6	14.0	18.2	
1982 06 30		15 04.25	-05 02.7						
1982 07 10		15 03.63	-05 06.4	2.253	2.866	117.3	18.4	18.5	
1982 07 20		15 05.23	-05 23.1						
1982 07 30		15 08.93	-05 50.6	2.494	2.854	100.2	20.5	18.7	

(2467) 1966 PJ		Elements MPC 6417							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 02 20		15 31.44	-25 50.1	2.026	2.311	93.7	25.3	17.9	
1982 03 02		15 41.90	-26 53.2						
1982 03 12		15 50.33	-27 50.3	1.750	2.277	109.0	24.4	17.6	
1982 03 22		15 56.29	-28 40.9						
1982 04 01		15 59.27	-29 23.9	1.499	2.241	126.3	21.1	17.1	
1982 04 11		15 58.86	-29 57.1						
1982 04 21		15 54.85	-30 17.3	1.298	2.204	145.9	14.8	16.6	
1982 05 01		15 47.39	-30 20.4						
1982 05 11		15 37.26	-30 03.1	1.173	2.166	165.9	6.5	16.2	
1982 05 21		15 25.80	-29 24.5						
1982 05 31		15 14.73	-28 28.7	1.141	2.129	162.1	8.4	16.1	
1982 06 10		15 05.70	-27 23.8						
1982 06 20		14 59.83	-26 19.2	1.200	2.092	141.3	17.7	16.4	
1982 06 30		14 57.69	-25 23.0						
1982 07 10		14 59.33	-24 40.2	1.325	2.056	122.2	24.7	16.7	
1982 07 20		15 04.50	-24 12.2						
1982 07 30		15 12.85	-23 58.1	1.488	2.021	106.1	28.9	17.1	

1981 EY				Elements MPC 6307						
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.		
1982 02 20		15 50.22	-32 35.1	3.020	3.147	88.2	18.3	18.3		
1982 03 02		15 57.10	-33 46.5							
1982 03 12		16 01.99	-34 55.1	2.754	3.157	104.8	17.7	18.1		
1982 03 22		16 04.60	-36 00.3							
1982 04 01		16 04.66	-37 00.2	2.514	3.167	122.6	15.4	17.9		
1982 04 11		16 02.04	-37 52.6							
1982 04 21		15 56.80	-38 34.1	2.330	3.177	141.3	11.4	17.6		
1982 05 01		15 49.26	-39 01.1							
1982 05 11		15 40.10	-39 10.8	2.231	3.187	157.4	7.0	17.4		
1982 05 21		15 30.23	-39 02.1							
1982 05 31		15 20.72	-38 36.4	2.235	3.196	157.8	6.9	17.4		
1982 06 10		15 12.55	-37 57.8							
1982 06 20		15 06.43	-37 11.7	2.341	3.206	142.3	11.2	17.6		
1982 06 30		15 02.76	-36 23.7							
1982 07 10		15 01.69	-35 38.5	2.531	3.215	124.3	15.1	17.9		
1982 07 20		15 03.12	-34 59.4							
1982 07 30		15 06.89	-34 28.1	2.776	3.224	107.1	17.5	18.2		

(2335) James

				Elements MPC 5685						
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.		
1982 02 20		16 27.28	-40 51.8	2.432	2.453	79.5	23.3	18.7		
1982 03 02		16 37.01	-43 30.4							
1982 03 12		16 44.44	-46 14.5	2.238	2.517	94.4	23.2	18.6		
1982 03 22		16 48.91	-49 04.0							
1982 04 01		16 49.56	-51 56.8	2.060	2.576	109.8	21.4	18.4		
1982 04 11		16 45.42	-54 48.0							
1982 04 21		16 35.52	-57 29.1	1.926	2.630	124.5	18.4	18.2		
1982 05 01		16 19.27	-59 47.3							
1982 05 11		15 57.24	-61 28.2	1.864	2.678	135.3	15.4	18.1		
1982 05 21		15 31.62	-62 20.4							
1982 05 31		15 06.09	-62 20.7	1.891	2.722	137.1	14.7	18.2		
1982 06 10		14 44.32	-61 37.2							
1982 06 20		14 28.41	-60 24.7	2.002	2.760	129.3	16.6	18.4		
1982 06 30		14 18.92	-58 58.9							
1982 07 10		14 15.28	-57 32.5	2.182	2.794	116.9	18.9	18.7		
1982 07 20		14 16.55	-56 13.4							
1982 07 30		14 21.87	-55 06.0	2.405	2.822	103.6	20.5	18.9		

(2461) 1981 EC1

				Elements MPC 6299						
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.		
1982 02 20		15 51.32	-17 33.5	3.169	3.338	91.1	17.2	18.0		
1982 03 02		15 57.26	-17 45.3							
1982 03 12		16 01.49	-17 51.1	2.856	3.311	108.7	16.5	17.8		
1982 03 22		16 03.78	-17 51.1							
1982 04 01		16 03.96	-17 45.2	2.572	3.283	128.0	13.9	17.5		
1982 04 11		16 01.98	-17 33.8							
1982 04 21		15 57.89	-17 17.4	2.351	3.254	149.0	9.1	17.1		
1982 05 01		15 51.97	-16 56.6							
1982 05 11		15 44.70	-16 33.0	2.224	3.225	171.3	2.7	16.7		
1982 05 21		15 36.76	-16 08.5							
1982 05 31		15 28.93	-15 45.7	2.207	3.196	164.7	4.8	16.8		
1982 06 10		15 21.97	-15 27.1							
1982 06 20		15 16.48	-15 15.1	2.297	3.166	142.8	11.2	17.1		
1982 06 30		15 12.90	-15 11.3							
1982 07 10		15 11.43	-15 16.3	2.469	3.136	122.6	15.8	17.3		
1982 07 20		15 12.13	-15 29.9							
1982 07 30		15 14.92	-15 51.6	2.692	3.106	104.5	18.4	17.5		

1978 QB2		Elements MPC 5974							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 02 20		15 53.83	-10 20.6	3.031	3.221	92.0	17.9	17.9	
1982 03 02		15 59.96	-10 01.2						
1982 03 12		16 04.33	-09 33.2	2.740	3.209	109.3	17.0	17.6	
1982 03 22		16 06.75	-08 57.5						
1982 04 01		16 07.04	-08 15.1	2.481	3.196	128.1	14.2	17.3	
1982 04 11		16 05.16	-07 28.0						
1982 04 21		16 01.21	-06 38.6	2.287	3.182	147.8	9.7	17.0	
1982 05 01		15 55.46	-05 50.1						
1982 05 11		15 48.42	-05 06.2	2.185	3.168	164.1	5.0	16.8	
1982 05 21		15 40.74	-04 30.7						
1982 05 31		15 33.17	-04 06.6	2.191	3.153	157.9	7.0	16.8	
1982 06 10		15 26.45	-03 56.0						
1982 06 20		15 21.14	-03 59.5	2.299	3.137	139.0	12.3	17.1	
1982 06 30		15 17.66	-04 16.4						
1982 07 10		15 16.20	-04 45.4	2.485	3.121	120.1	16.4	17.3	
1982 07 20		15 16.80	-05 24.3						
1982 07 30		15 19.40	-06 11.2	2.718	3.104	102.7	18.6	17.6	

1981 AA		Elements MPC 6045							
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation	Mag.		
1982 02 20		16 09.33	+04 06.0	2.746	2.936	-0.56	+4.8	19.0	
1982 03 02		16 15.10	+04 53.1						
1982 03 12		16 18.82	+05 49.1	2.512	2.959	-0.62	+5.4	18.8	
1982 03 22		16 20.27	+06 51.7						
1982 04 01		16 19.25	+07 57.7	2.306	2.978	-0.70	+6.1	18.6	
1982 04 11		16 15.72	+09 02.2						
1982 04 21		16 09.78	+09 59.9	2.156	2.993	-0.78	+6.4	18.3	
1982 05 01		16 01.77	+10 44.7						
1982 05 11		15 52.31	+11 10.7	2.092	3.005	-0.83	+6.3	18.2	
1982 05 21		15 42.19	+11 13.9						
1982 05 31		15 32.33	+10 52.6	2.128	3.012	-0.82	+5.8	18.3	
1982 06 10		15 23.55	+10 07.8						
1982 06 20		15 16.48	+09 02.8	2.258	3.016	-0.75	+5.2	18.5	
1982 06 30		15 11.52	+07 41.7						
1982 07 10		15 08.81	+06 09.2	2.460	3.016	-0.66	+4.8	18.8	
1982 07 20		15 08.34	+04 29.1						
1982 07 30		15 09.98	+02 44.8	2.703	3.012	-0.58	+4.5	19.0	

(2450) 1978 RP		Elements MPC 6293							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 02 20		15 48.17	-17 14.2	2.521	2.738	91.9	21.2	17.2	
1982 03 02		15 56.55	-17 32.2						
1982 03 12		16 02.98	-17 42.9	2.260	2.741	108.4	20.1	16.9	
1982 03 22		16 07.18	-17 46.4						
1982 04 01		16 08.91	-17 43.3	2.028	2.746	126.8	16.9	16.6	
1982 04 11		16 08.05	-17 34.0						
1982 04 21		16 04.66	-17 19.3	1.853	2.753	147.4	11.3	16.3	
1982 05 01		15 59.01	-17 00.1						
1982 05 11		15 51.74	-16 38.3	1.762	2.762	169.6	3.8	16.0	
1982 05 21		15 43.65	-16 16.0						
1982 05 31		15 35.72	-15 56.2	1.777	2.772	166.3	5.0	16.0	
1982 06 10		15 28.86	-15 41.9						
1982 06 20		15 23.76	-15 35.2	1.893	2.784	144.6	12.2	16.4	
1982 06 30		15 20.88	-15 37.5						
1982 07 10		15 20.38	-15 49.1	2.089	2.797	124.8	17.4	16.7	
1982 07 20		15 22.23	-16 09.3						
1982 07 30		15 26.31	-16 37.0	2.337	2.812	107.3	20.2	17.1	

1979 OC		Elements MPC 5841							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 03 12		16 02.38	-26 22.7	1.817	2.309	106.8	24.3	18.2	
1982 03 22		16 09.05	-26 39.1						
1982 04 01		16 12.84	-26 44.6	1.574	2.290	124.2	21.2	17.8	
1982 04 11		16 13.41	-26 38.0						
1982 04 21		16 10.60	-26 17.4	1.377	2.270	144.2	15.0	17.3	
1982 05 01		16 04.55	-25 41.1						
1982 05 11		15 55.94	-24 48.6	1.256	2.251	166.8	5.9	16.9	
1982 05 21		15 45.88	-23 42.1						
1982 05 31		15 35.83	-22 27.0	1.230	2.232	167.8	5.5	16.8	
1982 06 10		15 27.25	-21 11.2						
1982 06 20		15 21.18	-20 02.6	1.301	2.213	145.2	15.2	17.1	
1982 06 30		15 18.24	-19 07.3						
1982 07 10		15 18.60	-18 28.1	1.446	2.195	125.1	22.3	17.5	
1982 07 20		15 22.08	-18 05.0						
1982 07 30		15 28.45	-17 56.6	1.636	2.178	108.2	26.3	17.9	
1982 08 09		15 37.35	-18 00.2						
1982 08 19		15 48.47	-18 12.5	1.846	2.162	93.7	27.9	18.1	

(2392) Jonathan Murray		Elements MPC 6056							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 03 12		16 15.72	-17 11.2	2.151	2.599	105.5	21.6	19.7	
1982 03 22		16 19.62	-17 04.6						
1982 04 01		16 20.81	-16 51.0	1.925	2.620	124.1	18.4	19.4	
1982 04 11		16 19.13	-16 30.8						
1982 04 21		16 14.61	-16 05.0	1.751	2.639	145.1	12.6	19.1	
1982 05 01		16 07.51	-15 34.8						
1982 05 11		15 58.50	-15 02.4	1.660	2.656	167.7	4.6	18.8	
1982 05 21		15 48.50	-14 30.6						
1982 05 31		15 38.62	-14 02.8	1.675	2.670	165.9	5.3	18.8	
1982 06 10		15 29.93	-13 42.4						
1982 06 20		15 23.20	-13 31.9	1.794	2.682	143.7	13.0	19.2	
1982 06 30		15 18.92	-13 32.4						
1982 07 10		15 17.27	-13 43.9	1.994	2.692	123.5	18.4	19.6	
1982 07 20		15 18.18	-14 05.4						
1982 07 30		15 21.50	-14 35.5	2.241	2.699	105.7	21.2	19.9	
1982 08 09		15 26.98	-15 12.2						
1982 08 19		15 34.37	-15 53.7	2.509	2.703	89.9	22.0	20.2	

1979 QL1		Elements MPC 6414							
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation	Phase	Mag.	
1982 03 12		15 59.21	-21 47.4	1.539	2.080	-1.82	+4.6	17.1	
1982 03 22		16 07.39	-22 08.3						
1982 04 01		16 12.55	-22 19.2	1.331	2.075	-2.17	+5.0	16.7	
1982 04 11		16 14.31	-22 19.8						
1982 04 21		16 12.47	-22 09.8	1.168	2.072	-2.56	+6.1	16.3	
1982 05 01		16 07.15	-21 48.8						
1982 05 11		15 59.09	-21 17.4	1.075	2.073	-2.81	+7.8	15.9	
1982 05 21		15 49.46	-20 38.2						
1982 05 31		15 39.85	-19 55.9	1.072	2.076	-2.73	+8.8	15.8	
1982 06 10		15 31.81	-19 16.8						
1982 06 20		15 26.41	-18 46.5	1.160	2.082	-2.40	+8.3	16.3	
1982 06 30		15 24.28	-18 28.7						
1982 07 10		15 25.53	-18 24.6	1.317	2.090	-2.03	+6.9	16.7	
1982 07 20		15 29.95	-18 33.2						
1982 07 30		15 37.26	-18 52.4	1.519	2.101	-1.72	+5.3	17.1	
1982 08 09		15 47.08	-19 19.5						
1982 08 19		15 59.04	-19 51.4	1.746	2.114	-1.51	+3.8	17.5	

1978 RH		Elements MPC 5602							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 03 12		16 18.02	-19 27.9	3.645	4.012	104.6	13.9	19.6	
1982 03 22		16 19.26	-19 27.6						
1982 04 01		16 18.68	-19 23.0	3.357	4.006	124.3	11.9	19.4	
1982 04 11		16 16.28	-19 14.3						
1982 04 21		16 12.13	-19 01.5	3.129	3.998	145.5	8.2	19.2	
1982 05 01		16 06.45	-18 45.0						
1982 05 11		15 59.64	-18 25.7	2.995	3.988	167.8	3.1	18.9	
1982 05 21		15 52.17	-18 04.6						
1982 05 31		15 44.65	-17 43.4	2.976	3.976	169.0	2.8	18.8	
1982 06 10		15 37.66	-17 23.9						
1982 06 20		15 31.69	-17 07.9	3.072	3.962	146.8	8.1	19.1	
1982 06 30		15 27.13	-16 57.1						
1982 07 10		15 24.22	-16 52.3	3.262	3.947	126.0	12.0	19.3	
1982 07 20		15 23.04	-16 53.9						
1982 07 30		15 23.61	-17 02.0	3.513	3.929	106.8	14.3	19.5	
1982 08 09		15 25.85	-17 16.1						
1982 08 19		15 29.65	-17 35.2	3.791	3.910	89.2	15.0	19.7	

1981 AE		Elements MPC 5896							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 03 12		16 19.43	-22 32.3	2.626	3.021	103.8	18.6	17.9	
1982 03 22		16 22.71	-22 50.6						
1982 04 01		16 23.59	-23 04.0	2.401	3.057	122.6	16.0	17.7	
1982 04 11		16 22.00	-23 12.1						
1982 04 21		16 18.00	-23 14.5	2.228	3.093	143.4	11.2	17.4	
1982 05 01		16 11.85	-23 10.7						
1982 05 11		16 04.11	-23 00.6	2.140	3.129	165.9	4.5	17.2	
1982 05 21		15 55.51	-22 45.1						
1982 05 31		15 46.92	-22 25.7	2.160	3.164	170.4	3.1	17.1	
1982 06 10		15 39.19	-22 05.4						
1982 06 20		15 32.99	-21 46.8	2.290	3.198	148.2	9.6	17.5	
1982 06 30		15 28.75	-21 32.5						
1982 07 10		15 26.68	-21 24.2	2.509	3.232	127.7	14.4	17.9	
1982 07 20		15 26.81	-21 22.8						
1982 07 30		15 29.03	-21 28.2	2.788	3.265	109.1	17.1	18.2	
1982 08 09		15 33.17	-21 39.9						
1982 08 19		15 39.03	-21 56.8	3.096	3.296	92.4	17.9	18.5	

(2299) 1941 SZ		Elements MPC 5641							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 03 12		16 14.13	-16 18.3	2.263	2.711	106.0	20.6	18.9	
1982 03 22		16 19.27	-16 03.7						
1982 04 01		16 22.08	-15 40.6	1.960	2.650	123.9	18.2	18.5	
1982 04 11		16 22.31	-15 09.6						
1982 04 21		16 19.80	-14 31.6	1.707	2.588	143.9	13.2	18.0	
1982 05 01		16 14.58	-13 47.9						
1982 05 11		16 07.03	-13 01.2	1.534	2.524	165.1	5.9	17.5	
1982 05 21		15 57.87	-12 14.9						
1982 05 31		15 48.13	-11 33.7	1.463	2.459	166.0	5.7	17.4	
1982 06 10		15 39.00	-11 02.1						
1982 06 20		15 31.53	-10 43.6	1.491	2.392	144.5	14.3	17.6	
1982 06 30		15 26.51	-10 40.3						
1982 07 10		15 24.40	-10 52.4	1.597	2.326	124.2	21.2	17.8	
1982 07 20		15 25.28	-11 18.5						
1982 07 30		15 29.12	-11 56.6	1.748	2.260	106.7	25.5	18.1	
1982 08 09		15 35.71	-12 44.0						
1982 08 19		15 44.81	-13 38.1	1.916	2.195	91.8	27.4	18.3	

(2331) 1936 EA					Elements MPC 5683				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 03 12		16 24.25	-23 54.4	2.047	2.460	102.4	23.2	18.0	
1982 03 22		16 29.31	-24 03.5						
1982 04 01		16 31.44	-24 04.9	1.848	2.509	120.6	20.0	17.8	
1982 04 11		16 30.45	-23 58.5						
1982 04 21		16 26.34	-23 43.5	1.691	2.555	141.4	14.2	17.5	
1982 05 01		16 19.37	-23 19.3						
1982 05 11		16 10.26	-22 46.2	1.612	2.600	164.6	5.9	17.2	
1982 05 21		15 59.98	-22 05.8						
1982 05 31		15 49.75	-21 21.5	1.636	2.643	171.0	3.4	17.2	
1982 06 10		15 40.72	-20 38.0						
1982 06 20		15 33.71	-19 59.6	1.767	2.683	148.0	11.6	17.6	
1982 06 30		15 29.24	-19 29.9						
1982 07 10		15 27.46	-19 10.7	1.982	2.721	127.3	17.3	18.1	
1982 07 20		15 28.28	-19 02.1						
1982 07 30		15 31.51	-19 03.3	2.252	2.757	109.1	20.4	18.4	
1982 08 09		15 36.88	-19 12.9						
1982 08 19		15 44.13	-19 28.9	2.549	2.790	93.0	21.2	18.7	

(2488) 1952 UT					Elements MPC 6472				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 03 12		16 21.83	-19 02.9	2.153	2.577	103.8	22.0	19.2	
1982 03 22		16 27.04	-19 24.8						
1982 04 01		16 29.71	-19 43.0	1.870	2.541	121.7	19.6	18.8	
1982 04 11		16 29.53	-19 57.7						
1982 04 21		16 26.26	-20 09.1	1.631	2.501	142.0	14.3	18.4	
1982 05 01		16 19.89	-20 16.7						
1982 05 11		16 10.80	-20 20.1	1.469	2.459	165.0	6.1	17.9	
1982 05 21		15 59.79	-20 19.3						
1982 05 31		15 48.08	-20 15.2	1.408	2.414	170.5	4.0	17.7	
1982 06 10		15 37.07	-20 10.4						
1982 06 20		15 27.98	-20 08.2	1.451	2.367	146.7	13.6	18.0	
1982 06 30		15 21.72	-20 11.9						
1982 07 10		15 18.71	-20 23.9	1.574	2.319	125.6	20.9	18.3	
1982 07 20		15 19.01	-20 44.9						
1982 07 30		15 22.50	-21 14.7	1.744	2.268	107.6	25.3	18.6	
1982 08 09		15 28.91	-21 52.1						
1982 08 19		15 37.95	-22 35.2	1.932	2.217	92.3	27.1	18.8	

(2492) 1977 NT					Elements MPC 6473				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 03 12		16 16.77	-21 45.2	2.413	2.830	104.5	19.9	17.6	
1982 03 22		16 22.13	-22 01.6						
1982 04 01		16 25.21	-22 12.6	2.141	2.806	122.3	17.5	17.3	
1982 04 11		16 25.79	-22 18.1						
1982 04 21		16 23.81	-22 17.9	1.920	2.783	142.3	12.8	16.9	
1982 05 01		16 19.34	-22 11.7						
1982 05 11		16 12.83	-21 59.5	1.777	2.762	164.2	5.7	16.6	
1982 05 21		16 04.95	-21 42.1						
1982 05 31		15 56.63	-21 21.2	1.735	2.743	172.6	2.7	16.3	
1982 06 10		15 48.91	-20 59.6						
1982 06 20		15 42.66	-20 40.4	1.797	2.726	150.2	10.7	16.7	
1982 06 30		15 38.52	-20 26.7						
1982 07 10		15 36.87	-20 20.4	1.946	2.711	129.8	16.8	17.0	
1982 07 20		15 37.78	-20 22.2						
1982 07 30		15 41.20	-20 32.1	2.153	2.698	111.7	20.5	17.3	
1982 08 09		15 46.95	-20 48.9						
1982 08 19		15 54.79	-21 11.2	2.391	2.688	95.8	22.0	17.5	

1976 GZ2		Elements MPC 6469							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 03 12		16 24.01	-19 14.8	2.589	2.978	103.2	19.0	17.4	
1982 03 22		16 28.04	-19 20.2						
1982 04 01		16 29.76	-19 20.6	2.355	3.003	121.7	16.4	17.1	
1982 04 11		16 29.06	-19 16.3						
1982 04 21		16 25.95	-19 07.7	2.171	3.028	142.2	11.7	16.9	
1982 05 01		16 20.65	-18 55.1						
1982 05 11		16 13.64	-18 39.5	2.069	3.054	164.5	5.1	16.6	
1982 05 21		16 05.60	-18 22.1						
1982 05 31		15 57.36	-18 04.7	2.072	3.079	171.9	2.7	16.5	
1982 06 10		15 49.78	-17 49.7						
1982 06 20		15 43.55	-17 39.1	2.185	3.105	149.7	9.5	16.9	
1982 06 30		15 39.18	-17 34.7						
1982 07 10		15 36.94	-17 37.4	2.388	3.131	129.1	14.6	17.2	
1982 07 20		15 36.88	-17 47.2						
1982 07 30		15 38.94	-18 03.8	2.652	3.156	110.6	17.5	17.5	
1982 08 09		15 42.98	-18 26.1						
1982 08 19		15 48.80	-18 52.9	2.948	3.181	93.9	18.5	17.8	

1941 UV		Elements MPC 6047							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 03 12		16 30.74	-22 32.3	2.495	2.859	101.2	19.9	18.7	
1982 03 22		16 34.96	-22 43.4						
1982 04 01		16 36.72	-22 49.4	2.239	2.868	119.6	17.6	18.4	
1982 04 11		16 35.84	-22 50.1						
1982 04 21		16 32.25	-22 45.0	2.029	2.874	140.3	12.9	18.1	
1982 05 01		16 26.09	-22 33.7						
1982 05 11		16 17.83	-22 15.8	1.897	2.878	163.0	5.9	17.8	
1982 05 21		16 08.21	-21 52.0						
1982 05 31		15 58.20	-21 24.0	1.871	2.880	173.0	2.5	17.6	
1982 06 10		15 48.85	-20 54.9						
1982 06 20		15 41.04	-20 28.1	1.955	2.879	149.8	10.2	18.0	
1982 06 30		15 35.40	-20 06.8						
1982 07 10		15 32.24	-19 53.2	2.129	2.875	128.6	16.0	18.3	
1982 07 20		15 31.64	-19 48.3						
1982 07 30		15 33.50	-19 51.9	2.362	2.869	109.8	19.4	18.6	
1982 08 09		15 37.63	-20 03.2						
1982 08 19		15 43.80	-20 21.0	2.622	2.861	93.1	20.7	18.9	

1978 PP3		Elements MPC 5845							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 03 12		16 33.38	-19 40.4	3.297	3.620	101.0	15.6	18.7	
1982 03 22		16 36.03	-19 41.9						
1982 04 01		16 36.74	-19 39.5	3.022	3.627	120.0	13.8	18.5	
1982 04 11		16 35.43	-19 33.3						
1982 04 21		16 32.12	-19 23.7	2.797	3.631	140.7	10.1	18.3	
1982 05 01		16 26.97	-19 10.7						
1982 05 11		16 20.34	-18 55.0	2.657	3.634	162.9	4.7	18.0	
1982 05 21		16 12.74	-18 37.5						
1982 05 31		16 04.82	-18 19.5	2.627	3.636	173.5	1.8	17.8	
1982 06 10		15 57.26	-18 02.8						
1982 06 20		15 50.65	-17 49.1	2.712	3.636	151.4	7.7	18.1	
1982 06 30		15 45.49	-17 40.1						
1982 07 10		15 42.09	-17 37.0	2.894	3.635	130.3	12.3	18.4	
1982 07 20		15 40.57	-17 40.1						
1982 07 30		15 40.97	-17 49.4	3.142	3.632	111.0	15.1	18.6	
1982 08 09		15 43.20	-18 04.5						
1982 08 19		15 47.14	-18 24.4	3.424	3.628	93.4	16.2	18.8	

1980 SH						Elements MPC		5677
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1982 03 12		16 30.87	-02 20.1	1.638	2.105	-1.40	-0.6	18.3
1982 03 22		16 38.94	+00 04.4					
1982 04 01		16 44.11	+02 47.5	1.450	2.115	-1.62	+0.5	18.0
1982 04 11		16 46.07	+05 43.8					
1982 04 21		16 44.59	+08 45.5	1.310	2.123	-1.90	+1.4	17.7
1982 05 01		16 39.71	+11 40.8					
1982 05 11		16 31.88	+14 15.6	1.239	2.128	-2.12	+1.2	17.5
1982 05 21		16 21.99	+16 16.2					
1982 05 31		16 11.31	+17 32.3	1.248	2.130	-2.14	-0.5	17.5
1982 06 10		16 01.29	+18 00.0					
1982 06 20		15 53.11	+17 42.2	1.331	2.130	-1.94	-2.1	17.8
1982 06 30		15 47.62	+16 45.7					
1982 07 10		15 45.20	+15 19.9	1.469	2.127	-1.65	-2.6	18.1
1982 07 20		15 45.87	+13 33.6					
1982 07 30		15 49.48	+11 34.1	1.639	2.122	-1.40	-2.2	18.3
1982 08 09		15 55.73	+09 27.7					
1982 08 19		16 04.32	+07 18.9	1.824	2.114	-1.21	-1.4	18.6

(2375) 1975 AA						Elements MPC		5978
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 03 12		16 29.20	-04 36.8	2.038	2.471	103.7	23.0	16.0
1982 03 22		16 36.00	-04 13.6					
1982 04 01		16 40.31	-03 46.2	1.826	2.479	119.7	20.5	15.8
1982 04 11		16 41.94	-03 18.0					
1982 04 21		16 40.78	-02 52.8	1.657	2.491	137.3	15.9	15.4
1982 05 01		16 36.92	-02 34.8					
1982 05 11		16 30.79	-02 28.8	1.557	2.507	154.7	9.9	15.2
1982 05 21		16 23.07	-02 38.2					
1982 05 31		16 14.72	-03 05.4	1.547	2.528	161.0	7.5	15.1
1982 06 10		16 06.80	-03 50.4					
1982 06 20		16 00.21	-04 51.3	1.635	2.551	147.5	12.4	15.4
1982 06 30		15 55.65	-06 05.0					
1982 07 10		15 53.50	-07 27.7	1.808	2.578	129.7	17.7	15.7
1982 07 20		15 53.86	-08 55.9					
1982 07 30		15 56.67	-10 26.6	2.041	2.608	112.8	21.0	16.1
1982 08 09		16 01.75	-11 57.4					
1982 08 19		16 08.87	-13 26.3	2.311	2.641	97.5	22.3	16.4

(2362) 1976 SH2						Elements MPC		5893
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 03 12		16 35.82	-24 58.4	2.051	2.424	99.7	23.8	19.0
1982 03 22		16 43.67	-25 35.0					
1982 04 01		16 49.08	-26 08.4	1.771	2.389	116.3	22.0	18.6
1982 04 11		16 51.65	-26 38.8					
1982 04 21		16 50.97	-27 05.6	1.528	2.351	135.3	17.5	18.2
1982 05 01		16 46.82	-27 27.1					
1982 05 11		16 39.30	-27 40.8	1.348	2.311	156.8	9.9	17.7
1982 05 21		16 29.00	-27 43.9					
1982 05 31		16 17.05	-27 34.3	1.258	2.269	173.7	2.8	17.2
1982 06 10		16 05.05	-27 13.5					
1982 06 20		15 54.57	-26 45.3	1.269	2.225	153.5	11.8	17.5
1982 06 30		15 46.88	-26 15.7					
1982 07 10		15 42.72	-25 50.5	1.365	2.181	132.1	20.2	17.8
1982 07 20		15 42.27	-25 33.3					
1982 07 30		15 45.45	-25 25.7	1.515	2.135	113.6	25.8	18.1
1982 08 09		15 51.96	-25 27.3					
1982 08 19		16 01.41	-25 36.5	1.691	2.090	98.1	28.6	18.4

2221 P-L						Elements MPC 6421			
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 03 12		16 28.78	-22 54.9	1.698	2.132	101.6	27.2	21.4	
1982 03 22		16 39.33	-23 05.4						
1982 04 01		16 47.39	-23 06.8	1.450	2.103	117.1	25.0	21.0	
1982 04 11		16 52.53	-22 59.4						
1982 04 21		16 54.31	-22 43.2	1.237	2.075	135.2	19.9	20.5	
1982 05 01		16 52.45	-22 18.0						
1982 05 11		16 47.05	-21 43.8	1.082	2.048	156.4	11.4	20.0	
1982 05 21		16 38.69	-21 01.2						
1982 05 31		16 28.52	-20 12.6	1.009	2.023	178.4	0.8	19.3	
1982 06 10		16 18.21	-19 22.9						
1982 06 20		16 09.36	-18 38.0	1.028	1.999	155.9	12.0	19.8	
1982 06 30		16 03.29	-18 03.4						
1982 07 10		16 00.73	-17 42.8	1.125	1.977	134.6	21.5	20.2	
1982 07 20		16 01.86	-17 36.6						
1982 07 30		16 06.55	-17 43.6	1.276	1.958	116.9	27.5	20.6	
1982 08 09		16 14.46	-18 00.9						
1982 08 19		16 25.21	-18 25.2	1.456	1.942	102.3	30.6	21.0	

1981 EK						Elements MPC 6306			
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 03 12		16 50.58	-19 22.0	2.637	2.930	97.0	19.7	18.4	
1982 03 22		16 56.39	-19 23.2						
1982 04 01		17 00.03	-19 20.2	2.374	2.934	114.6	18.0	18.1	
1982 04 11		17 01.30	-19 13.7						
1982 04 21		17 00.08	-19 04.3	2.149	2.939	134.2	14.2	17.8	
1982 05 01		16 56.36	-18 52.5						
1982 05 11		16 50.42	-18 38.7	1.992	2.943	155.8	8.1	17.5	
1982 05 21		16 42.75	-18 23.8						
1982 05 31		16 34.08	-18 08.9	1.934	2.946	176.1	1.3	17.1	
1982 06 10		16 25.36	-17 55.6						
1982 06 20		16 17.45	-17 45.7	1.984	2.949	157.4	7.6	17.5	
1982 06 30		16 11.12	-17 40.9						
1982 07 10		16 06.88	-17 42.5	2.133	2.951	136.1	13.8	17.8	
1982 07 20		16 04.97	-17 50.9						
1982 07 30		16 05.46	-18 05.8	2.353	2.953	116.8	17.9	18.1	
1982 08 09		16 08.23	-18 26.6						
1982 08 19		16 13.11	-18 51.8	2.612	2.954	99.5	19.7	18.4	

1979 ME8						Elements MPC 5847			
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 03 12		16 58.69	-19 54.3	2.082	2.385	95.0	24.5	20.5	
1982 03 22		17 06.97	-19 45.1						
1982 04 01		17 12.71	-19 29.8	1.858	2.412	111.6	22.7	20.3	
1982 04 11		17 15.60	-19 09.2						
1982 04 21		17 15.41	-18 44.4	1.662	2.438	130.6	18.2	20.0	
1982 05 01		17 12.03	-18 16.1						
1982 05 11		17 05.70	-17 45.5	1.524	2.462	152.1	11.1	19.6	
1982 05 21		16 56.96	-17 14.0						
1982 05 31		16 46.74	-16 43.4	1.475	2.484	173.3	2.7	19.3	
1982 06 10		16 36.29	-16 16.6						
1982 06 20		16 26.81	-15 56.0	1.530	2.505	158.9	8.4	19.6	
1982 06 30		16 19.28	-15 44.1						
1982 07 10		16 14.35	-15 41.9	1.680	2.523	137.3	15.9	20.0	
1982 07 20		16 12.26	-15 49.5						
1982 07 30		16 12.99	-16 05.8	1.899	2.540	118.1	20.7	20.4	
1982 08 09		16 16.37	-16 29.0						
1982 08 19		16 22.11	-16 57.4	2.155	2.554	101.3	22.9	20.7	

(2398) 1965 UD2

Date	ET	R.	A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 03 12		17	16.16	-21 05.3	2.553	2.753	90.9	21.2	19.2
1982 03 22		17	22.90	-21 12.8					
1982 04 01		17	27.37	-21 17.9	2.310	2.787	108.1	19.9	19.0
1982 04 11		17	29.32	-21 21.3					
1982 04 21		17	28.56	-21 23.6	2.092	2.818	127.4	16.5	18.7
1982 05 01		17	24.98	-21 24.8					
1982 05 11		17	18.75	-21 24.6	1.932	2.846	149.1	10.5	18.4
1982 05 21		17	10.28	-21 22.6					
1982 05 31		17	00.29	-21 18.5	1.863	2.872	172.5	2.6	18.1
1982 06 10		16	49.77	-21 12.6					
1982 06 20		16	39.77	-21 06.0	1.905	2.894	163.4	5.8	18.3
1982 06 30		16	31.23	-21 00.6					
1982 07 10		16	24.84	-20 58.3	2.052	2.912	140.9	12.7	18.7
1982 07 20		16	20.93	-21 00.3					
1982 07 30		16	19.63	-21 07.5	2.278	2.928	120.6	17.4	19.0
1982 08 09		16	20.84	-21 19.7					
1982 08 19		16	24.36	-21 36.2	2.549	2.941	102.6	19.6	19.3

Elements MPC 6102

(2365) 1980 YQ

Date	ET	R.	A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 03 12		17	13.54	-27 11.3	2.370	2.585	91.0	22.6	18.0
1982 03 22		17	22.42	-27 23.9					
1982 04 01		17	28.97	-27 32.8	2.131	2.610	107.3	21.4	17.7
1982 04 11		17	32.87	-27 38.3					
1982 04 21		17	33.88	-27 40.5	1.916	2.633	125.8	18.0	17.4
1982 05 01		17	31.82	-27 38.6					
1982 05 11		17	26.79	-27 31.3	1.754	2.656	146.7	12.1	17.1
1982 05 21		17	19.17	-27 17.2					
1982 05 31		17	09.70	-26 55.1	1.675	2.678	169.3	4.0	16.8
1982 06 10		16	59.47	-26 25.5					
1982 06 20		16	49.64	-25 50.4	1.702	2.699	165.9	5.3	16.9
1982 06 30		16	41.31	-25 13.4					
1982 07 10		16	35.24	-24 38.3	1.832	2.719	143.7	12.8	17.3
1982 07 20		16	31.84	-24 08.1					
1982 07 30		16	31.21	-23 44.6	2.041	2.737	123.7	18.0	17.6
1982 08 09		16	33.25	-23 28.3					
1982 08 19		16	37.71	-23 18.5	2.299	2.755	105.9	20.7	18.0

Elements MPC 5894

(2366) 1981 AC1

Date	ET	R.	A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 03 12		17	17.14	-24 12.0	2.315	2.526	90.4	23.2	19.4
1982 03 22		17	26.37	-24 23.4					
1982 04 01		17	33.40	-24 31.7	2.052	2.525	106.5	22.3	19.1
1982 04 11		17	37.91	-24 37.6					
1982 04 21		17	39.58	-24 41.7	1.810	2.522	124.8	19.1	18.7
1982 05 01		17	38.12	-24 43.8					
1982 05 11		17	33.49	-24 43.5	1.619	2.517	145.5	13.1	18.4
1982 05 21		17	25.93	-24 39.3					
1982 05 31		17	16.04	-24 29.9	1.507	2.509	168.7	4.5	17.9
1982 06 10		17	04.93	-24 15.0					
1982 06 20		16	53.87	-23 55.6	1.499	2.499	166.9	5.3	18.0
1982 06 30		16	44.18	-23 34.3					
1982 07 10		16	36.85	-23 14.5	1.592	2.487	144.0	13.9	18.3
1982 07 20		16	32.46	-22 59.2					
1982 07 30		16	31.21	-22 50.1	1.763	2.473	123.5	20.0	18.7
1982 08 09		16	33.03	-22 47.6					
1982 08 19		16	37.67	-22 51.0	1.979	2.457	105.8	23.3	19.0

Elements MPC 5895

1976 SR10						Elements MPC 5898			
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 04 01		17 39.62	+02 52.1	2.254	2.684	104.5	21.1	18.9	
1982 04 11		17 42.49	+04 04.2						
1982 04 21		17 42.81	+05 15.7	2.049	2.698	120.2	18.8	18.6	
1982 05 01		17 40.46	+06 22.0						
1982 05 11		17 35.50	+07 17.3	1.890	2.709	136.0	15.0	18.4	
1982 05 21		17 28.21	+07 55.8						
1982 05 31		17 19.16	+08 11.7	1.806	2.717	147.5	11.6	18.2	
1982 06 10		17 09.20	+08 01.3						
1982 06 20		16 59.30	+07 23.6	1.814	2.722	146.7	11.8	18.2	
1982 06 30		16 50.43	+06 20.7						
1982 07 10		16 43.35	+04 57.1	1.915	2.723	134.2	15.5	18.4	
1982 07 20		16 38.55	+03 18.6						
1982 07 30		16 36.27	+01 30.9	2.090	2.722	118.3	19.2	18.7	
1982 08 09		16 36.52	-00 21.1						
1982 08 19		16 39.15	-02 13.4	2.314	2.718	102.4	21.3	19.0	
1982 08 29		16 43.99	-04 03.2						
1982 09 08		16 50.81	-05 48.2	2.560	2.711	87.6	21.8	19.2	

1981 JR						Elements MPC 6189			
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.	
1982 04 01		17 33.15	-14 09.5	5.038	5.413	-0.32	-1.3	17.3	
1982 04 11		17 33.55	-13 36.3						
1982 04 21		17 32.69	-13 01.8	4.760	5.415	-0.34	-1.3	17.1	
1982 05 01		17 30.59	-12 26.9						
1982 05 11		17 27.39	-11 52.6	4.550	5.416	-0.36	-1.4	17.0	
1982 05 21		17 23.28	-11 19.7						
1982 05 31		17 18.49	-10 49.5	4.437	5.418	-0.37	-1.4	16.8	
1982 06 10		17 13.36	-10 22.9						
1982 06 20		17 08.22	-10 00.7	4.438	5.419	-0.37	-1.3	16.8	
1982 06 30		17 03.41	-09 43.7						
1982 07 10		16 59.23	-09 32.2	4.553	5.420	-0.36	-1.3	17.0	
1982 07 20		16 55.93	-09 26.1						
1982 07 30		16 53.68	-09 25.1	4.761	5.421	-0.34	-1.2	17.2	
1982 08 09		16 52.59	-09 28.8						
1982 08 19		16 52.71	-09 36.3	5.034	5.421	-0.32	-1.1	17.3	
1982 08 29		16 54.03	-09 46.7						
1982 09 08		16 56.50	-09 59.3	5.337	5.422	-0.30	-1.1	17.5	

(2445) 1935 TC						Elements MPC 6291			
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 04 01		17 41.33	-20 38.0	2.161	2.603	104.9	21.8	18.3	
1982 04 11		17 45.64	-20 45.9						
1982 04 21		17 47.26	-20 54.4	1.915	2.603	123.1	18.9	17.9	
1982 05 01		17 45.94	-21 04.1						
1982 05 11		17 41.61	-21 15.3	1.717	2.601	143.8	13.3	17.6	
1982 05 21		17 34.43	-21 27.4						
1982 05 31		17 24.92	-21 39.4	1.598	2.596	166.8	5.1	17.2	
1982 06 10		17 14.03	-21 50.3						
1982 06 20		17 02.93	-21 59.6	1.584	2.589	168.9	4.4	17.1	
1982 06 30		16 52.85	-22 08.0						
1982 07 10		16 44.85	-22 17.0	1.675	2.579	145.7	12.8	17.5	
1982 07 20		16 39.56	-22 28.1						
1982 07 30		16 37.29	-22 42.5	1.847	2.567	124.9	18.9	17.8	
1982 08 09		16 38.03	-23 00.5						
1982 08 19		16 41.58	-23 21.7	2.068	2.552	106.8	22.3	18.1	
1982 08 29		16 47.73	-23 45.2						
1982 09 08		16 56.15	-24 09.9	2.310	2.535	90.9	23.4	18.4	

(2510) 1979 TH				Elements MPC 6523				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 04 01		17 21.00	-17 41.1	1.518	2.080	109.7	26.9	16.6
1982 04 11		17 29.72	-17 42.1					
1982 04 21		17 35.74	-17 41.9	1.278	2.036	125.7	23.6	16.1
1982 05 01		17 38.60	-17 43.0					
1982 05 11		17 37.97	-17 47.7	1.084	1.994	144.4	17.1	15.6
1982 05 21		17 33.76	-17 57.8					
1982 05 31		17 26.30	-18 14.4	0.955	1.954	165.9	7.2	15.0
1982 06 10		17 16.62	-18 37.7					
1982 06 20		17 06.21	-19 06.9	0.910	1.917	168.7	5.9	14.8
1982 06 30		16 56.87	-19 41.5					
1982 07 10		16 50.19	-20 21.1	0.951	1.885	146.6	17.3	15.2
1982 07 20		16 47.16	-21 04.9					
1982 07 30		16 48.23	-21 52.3	1.058	1.858	127.3	25.8	15.6
1982 08 09		16 53.35	-22 41.4					
1982 08 19		17 02.21	-23 30.0	1.205	1.836	111.5	30.8	15.9
1982 08 29		17 14.41	-24 15.6					
1982 09 08		17 29.48	-24 55.5	1.375	1.821	98.5	33.2	16.3

(2431) 1978 PF3				Elements MPC 6201				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 04 01		17 21.70	-27 03.5	1.703	2.238	109.0	25.0	17.0
1982 04 11		17 30.70	-27 27.7					
1982 04 21		17 37.14	-27 49.5	1.443	2.181	125.1	22.2	16.5
1982 05 01		17 40.57	-28 09.0					
1982 05 11		17 40.68	-28 25.8	1.229	2.127	143.5	16.4	16.0
1982 05 21		17 37.34	-28 38.1					
1982 05 31		17 30.86	-28 43.1	1.084	2.078	164.3	7.6	15.4
1982 06 10		17 22.15	-28 38.2					
1982 06 20		17 12.63	-28 22.3	1.024	2.033	170.1	4.9	15.2
1982 06 30		17 04.00	-27 57.2					
1982 07 10		16 57.80	-27 27.2	1.053	1.994	148.9	15.3	15.5
1982 07 20		16 55.01	-26 57.1					
1982 07 30		16 56.12	-26 30.8	1.152	1.961	129.5	23.5	15.8
1982 08 09		17 01.08	-26 09.8					
1982 08 19		17 09.59	-25 53.5	1.297	1.936	113.4	28.7	16.2
1982 08 29		17 21.26	-25 40.2					
1982 09 08		17 35.63	-25 27.4	1.470	1.920	99.9	31.1	16.5

1926 FG				Elements MPC 6053				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 04 01		17 42.20	-15 52.0	2.403	2.827	104.7	20.0	17.6
1982 04 11		17 46.45	-15 31.6					
1982 04 21		17 48.33	-15 10.2	2.156	2.827	122.6	17.4	17.3
1982 05 01		17 47.69	-14 49.3					
1982 05 11		17 44.52	-14 30.3	1.958	2.826	142.4	12.6	17.0
1982 05 21		17 39.02	-14 14.8					
1982 05 31		17 31.62	-14 04.1	1.840	2.825	163.1	6.0	16.7
1982 06 10		17 23.05	-13 59.5					
1982 06 20		17 14.22	-14 01.6	1.824	2.824	167.2	4.6	16.6
1982 06 30		17 06.06	-14 10.9					
1982 07 10		16 59.41	-14 27.5	1.914	2.823	147.3	11.2	16.9
1982 07 20		16 54.85	-14 50.7					
1982 07 30		16 52.70	-15 19.6	2.089	2.821	127.2	16.6	17.2
1982 08 09		16 53.05	-15 52.9					
1982 08 19		16 55.81	-16 29.1	2.320	2.819	109.2	19.8	17.5
1982 08 29		17 00.83	-17 06.7					
1982 09 08		17 07.89	-17 44.3	2.579	2.817	93.0	20.9	17.8

(2456) 1966 BA1

				Elements MPC 6297				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 04 01		17 48.44	-37 11.4	5.284	5.586	102.5	10.1	18.1
1982 04 11		17 49.49	-37 31.9					
1982 04 21		17 49.04	-37 51.4	4.995	5.582	121.2	8.9	17.9
1982 05 01		17 47.09	-38 08.8					
1982 05 11		17 43.74	-38 22.9	4.763	5.578	140.3	6.6	17.8
1982 05 21		17 39.15	-38 32.3					
1982 05 31		17 33.61	-38 35.8	4.621	5.574	158.1	3.9	17.6
1982 06 10		17 27.48	-38 32.6					
1982 06 20		17 21.20	-38 22.5	4.587	5.570	163.8	2.9	17.5
1982 06 30		17 15.19	-38 05.8					
1982 07 10		17 09.89	-37 43.7	4.666	5.565	149.3	5.3	17.7
1982 07 20		17 05.59	-37 17.7					
1982 07 30		17 02.57	-36 49.4	4.846	5.560	130.6	8.0	17.8
1982 08 09		17 00.94	-36 20.6					
1982 08 19		17 00.76	-35 52.5	5.098	5.555	111.9	9.7	18.0
1982 08 29		17 02.03	-35 26.0					
1982 09 08		17 04.67	-35 01.8	5.391	5.549	93.8	10.4	18.1

1978 PP2

				Elements MPC 5844				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 04 01		17 53.82	-25 04.8	2.516	2.892	101.9	19.8	17.8
1982 04 11		17 58.85	-25 11.7					
1982 04 21		18 01.51	-25 18.5	2.263	2.896	119.8	17.5	17.5
1982 05 01		18 01.58	-25 25.3					
1982 05 11		17 59.01	-25 31.7	2.055	2.900	139.7	13.0	17.2
1982 05 21		17 53.91	-25 36.9					
1982 05 31		17 46.66	-25 39.5	1.924	2.904	161.7	6.3	16.9
1982 06 10		17 37.94	-25 38.4					
1982 06 20		17 28.67	-25 32.9	1.894	2.907	174.5	1.9	16.6
1982 06 30		17 19.86	-25 23.7					
1982 07 10		17 12.43	-25 12.4	1.972	2.910	152.2	9.4	17.0
1982 07 20		17 07.05	-25 01.0					
1982 07 30		17 04.13	-24 51.2	2.142	2.913	131.2	15.2	17.3
1982 08 09		17 03.79	-24 44.3					
1982 08 19		17 05.96	-24 40.6	2.374	2.915	112.5	18.7	17.6
1982 08 29		17 10.48	-24 39.8					
1982 09 08		17 17.11	-24 41.0	2.640	2.918	95.7	20.1	17.9

1978 RZ5

				Elements MPC 6049				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 04 01		17 49.97	-18 45.0	2.262	2.668	102.8	21.4	16.9
1982 04 11		17 56.37	-18 30.3					
1982 04 21		18 00.46	-18 14.2	2.002	2.650	119.9	19.2	16.6
1982 05 01		18 02.00	-17 58.2					
1982 05 11		18 00.86	-17 43.5	1.787	2.634	139.0	14.6	16.2
1982 05 21		17 57.09	-17 31.4					
1982 05 31		17 51.00	-17 22.6	1.643	2.619	160.0	7.6	15.8
1982 06 10		17 43.23	-17 17.8					
1982 06 20		17 34.67	-17 17.5	1.595	2.606	172.8	2.8	15.5
1982 06 30		17 26.38	-17 22.0					
1982 07 10		17 19.39	-17 31.7	1.649	2.595	152.8	10.3	15.9
1982 07 20		17 14.46	-17 46.5					
1982 07 30		17 12.07	-18 06.1	1.791	2.586	132.3	16.9	16.2
1982 08 09		17 12.42	-18 29.6					
1982 08 19		17 15.45	-18 55.7	1.994	2.579	114.1	21.0	16.5
1982 08 29		17 21.02	-19 23.2					
1982 09 08		17 28.86	-19 50.2	2.231	2.574	98.1	22.8	16.8

1981 LK			R. A. (1950)		Decl.	Delta	r	Elements MPC 6468		Mag.
Date	ET							Elong.	Phase	
1982 04 01			18 03.41	-28 09.1		5.341	5.597	99.7	10.1	17.1
1982 04 11			18 04.57	-28 34.6						
1982 04 21			18 04.38	-29 01.2		5.048	5.604	119.0	9.0	17.0
1982 05 01			18 02.81	-29 28.4						
1982 05 11			17 59.92	-29 55.5		4.809	5.611	139.1	6.8	16.8
1982 05 21			17 55.84	-30 21.6						
1982 05 31			17 50.76	-30 45.6		4.657	5.618	159.5	3.6	16.6
1982 06 10			17 45.00	-31 06.6						
1982 06 20			17 38.91	-31 23.9		4.617	5.624	171.6	1.5	16.4
1982 06 30			17 32.89	-31 37.1						
1982 07 10			17 27.33	-31 46.4		4.695	5.630	154.6	4.4	16.7
1982 07 20			17 22.58	-31 52.4						
1982 07 30			17 18.90	-31 55.9		4.879	5.636	134.4	7.4	16.9
1982 08 09			17 16.48	-31 57.9						
1982 08 19			17 15.42	-31 59.2		5.141	5.642	114.9	9.4	17.0
1982 08 29			17 15.74	-32 00.4						
1982 09 08			17 17.42	-32 02.2		5.448	5.647	96.2	10.2	17.2

1978 WM14			R. A. (1950)		Decl.	Delta	r	Elements MPC 6305		Mag.
Date	ET							Elong.	Phase	
1982 04 01			18 04.26	-18 22.9		3.480	3.775	99.4	15.1	18.9
1982 04 11			18 07.10	-18 03.3						
1982 04 21			18 08.13	-17 43.1		3.184	3.762	118.0	13.6	18.7
1982 05 01			18 07.25	-17 23.0						
1982 05 11			18 04.48	-17 03.6		2.935	3.748	138.1	10.4	18.4
1982 05 21			17 59.92	-16 45.5						
1982 05 31			17 53.84	-16 29.3		2.767	3.732	159.1	5.6	18.2
1982 06 10			17 46.70	-16 15.5						
1982 06 20			17 39.02	-16 04.7		2.705	3.715	172.1	2.1	17.9
1982 06 30			17 31.47	-15 57.4						
1982 07 10			17 24.65	-15 54.1		2.758	3.696	153.5	7.0	18.2
1982 07 20			17 19.09	-15 55.0						
1982 07 30			17 15.16	-16 00.3		2.911	3.676	132.7	11.7	18.4
1982 08 09			17 13.08	-16 09.5						
1982 08 19			17 12.92	-16 22.0		3.135	3.654	113.2	14.7	18.6
1982 08 29			17 14.66	-16 37.3						
1982 09 08			17 18.19	-16 54.1		3.396	3.632	95.3	16.0	18.8

1939 TM			R. A. (1950)		Decl.	Delta	r	Elements MPC 6110		Mag.
Date	ET							Elong.	Phase	
1982 04 01			17 59.97	-20 02.9		2.150	2.531	100.5	22.8	18.7
1982 04 11			18 06.84	-19 33.6						
1982 04 21			18 11.28	-19 01.0		1.887	2.513	117.4	20.8	18.4
1982 05 01			18 12.97	-18 26.4						
1982 05 11			18 11.75	-17 51.1		1.663	2.494	136.4	16.2	18.0
1982 05 21			18 07.56	-17 16.2						
1982 05 31			18 00.65	-16 43.0		1.506	2.474	157.6	9.0	17.6
1982 06 10			17 51.68	-16 12.9						
1982 06 20			17 41.59	-15 47.6		1.442	2.453	172.1	3.3	17.2
1982 06 30			17 31.62	-15 28.7						
1982 07 10			17 22.97	-15 17.7		1.481	2.431	152.9	11.0	17.5
1982 07 20			17 16.56	-15 15.4						
1982 07 30			17 12.98	-15 21.5		1.607	2.408	132.0	18.2	17.9
1982 08 09			17 12.45	-15 34.9						
1982 08 19			17 14.89	-15 54.0		1.792	2.385	113.6	22.9	18.2
1982 08 29			17 20.13	-16 16.6						
1982 09 08			17 27.89	-16 40.6		2.006	2.361	97.6	25.0	18.5

1938 GC		Elements MPC 6110							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 04 01		17 34.52	-14 47.6	1.327	1.875	106.5	30.7	17.2	
1982 04 11		17 47.30	-14 21.3						
1982 04 21		17 57.60	-13 51.0	1.120	1.843	120.2	28.1	16.7	
1982 05 01		18 04.91	-13 20.3						
1982 05 11		18 08.84	-12 53.7	0.948	1.817	136.3	22.6	16.2	
1982 05 21		18 09.10	-12 36.0						
1982 05 31		18 05.71	-12 32.1	0.827	1.798	155.0	13.8	15.7	
1982 06 10		17 59.30	-12 45.6						
1982 06 20		17 51.01	-13 18.0	0.776	1.786	169.9	5.7	15.3	
1982 06 30		17 42.54	-14 07.9						
1982 07 10		17 35.68	-15 11.4	0.804	1.781	155.8	13.6	15.6	
1982 07 20		17 31.78	-16 23.4						
1982 07 30		17 31.64	-17 38.7	0.903	1.784	136.8	22.9	16.1	
1982 08 09		17 35.46	-18 52.8						
1982 08 19		17 43.00	-20 01.8	1.053	1.794	120.7	29.0	16.5	
1982 08 29		17 53.90	-21 02.9						
1982 09 08		18 07.65	-21 53.3	1.238	1.812	107.2	32.1	17.0	

1980 CG		Elements MPC 5272							
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.	
1982 04 01		18 12.19	-12 56.8	2.415	2.729	-0.96	+1.3	18.6	
1982 04 11		18 18.96	-12 24.1						
1982 04 21		18 23.73	-11 50.0	2.105	2.672	-1.13	+1.3	18.2	
1982 05 01		18 26.18	-11 16.2						
1982 05 11		18 26.09	-10 45.3	1.829	2.612	-1.32	+1.4	17.8	
1982 05 21		18 23.30	-10 19.7						
1982 05 31		18 17.84	-10 02.4	1.615	2.551	-1.51	+1.6	17.3	
1982 06 10		18 10.05	-09 55.9						
1982 06 20		18 00.58	-10 02.2	1.489	2.488	-1.61	+1.8	16.9	
1982 06 30		17 50.43	-10 22.2						
1982 07 10		17 40.81	-10 55.5	1.464	2.424	-1.56	+2.1	17.0	
1982 07 20		17 32.80	-11 40.3						
1982 07 30		17 27.28	-12 34.1	1.531	2.359	-1.41	+2.4	17.2	
1982 08 09		17 24.79	-13 33.9						
1982 08 19		17 25.47	-14 37.0	1.662	2.293	-1.25	+2.6	17.4	
1982 08 29		17 29.32	-15 40.8						
1982 09 08		17 36.14	-16 42.9	1.826	2.228	-1.14	+2.6	17.7	

(2483) 1928 QB		Elements MPC 6470							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 04 01		18 22.76	-22 21.2	4.847	5.037	95.2	11.4	18.7	
1982 04 11		18 24.72	-22 14.4						
1982 04 21		18 25.27	-22 08.2	4.532	5.029	114.3	10.5	18.5	
1982 05 01		18 24.37	-22 02.5						
1982 05 11		18 22.04	-21 57.6	4.262	5.020	134.4	8.3	18.3	
1982 05 21		18 18.35	-21 53.2						
1982 05 31		18 13.50	-21 49.1	4.069	5.010	155.6	4.8	18.1	
1982 06 10		18 07.77	-21 45.1						
1982 06 20		18 01.50	-21 41.0	3.984	4.999	177.0	0.6	17.7	
1982 06 30		17 55.13	-21 36.6						
1982 07 10		17 49.08	-21 32.3	4.017	4.986	160.4	3.9	18.0	
1982 07 20		17 43.73	-21 28.2						
1982 07 30		17 39.42	-21 24.8	4.160	4.972	139.1	7.7	18.2	
1982 08 09		17 36.37	-21 22.3						
1982 08 19		17 34.72	-21 21.0	4.388	4.957	118.8	10.3	18.4	
1982 08 29		17 34.53	-21 21.0						
1982 09 08		17 35.78	-21 22.0	4.668	4.940	99.8	11.6	18.6	

(2354) 1978 PZ3

				Elements MPC 5842				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 04 01		18 14.31	-19 50.3	2.510	2.814	97.1	20.6	17.7
1982 04 11		18 20.98	-19 33.5					
1982 04 21		18 25.53	-19 16.2	2.230	2.794	114.0	19.2	17.4
1982 05 01		18 27.70	-18 59.6					
1982 05 11		18 27.32	-18 44.8	1.985	2.773	132.9	15.5	17.1
1982 05 21		18 24.33	-18 32.6					
1982 05 31		18 18.87	-18 23.7	1.805	2.752	153.9	9.3	16.7
1982 06 10		18 11.37	-18 18.1					
1982 06 20		18 02.55	-18 15.9	1.718	2.731	174.2	2.2	16.3
1982 06 30		17 53.37	-18 16.9					
1982 07 10		17 44.88	-18 21.3	1.736	2.709	158.8	7.8	16.5
1982 07 20		17 37.98	-18 29.1					
1982 07 30		17 33.35	-18 40.4	1.851	2.687	137.4	14.8	16.8
1982 08 09		17 31.36	-18 55.0					
1982 08 19		17 32.09	-19 12.1	2.036	2.666	118.1	19.6	17.1
1982 08 29		17 35.47	-19 30.7					
1982 09 08		17 41.30	-19 49.7	2.261	2.645	101.0	22.0	17.4

(2377) 1978 QT1

				Elements MPC 5979				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 04 01		18 18.61	-23 31.2	2.761	3.036	96.2	19.1	18.1
1982 04 11		18 24.42	-23 26.4					
1982 04 21		18 28.12	-23 22.2	2.488	3.034	113.7	17.7	17.8
1982 05 01		18 29.49	-23 19.1					
1982 05 11		18 28.41	-23 17.4	2.251	3.032	133.0	14.1	17.5
1982 05 21		18 24.88	-23 17.0					
1982 05 31		18 19.07	-23 17.1	2.082	3.029	154.4	8.3	17.2
1982 06 10		18 11.45	-23 17.0					
1982 06 20		18 02.71	-23 15.5	2.009	3.025	177.3	0.9	16.7
1982 06 30		17 53.72	-23 12.3					
1982 07 10		17 45.43	-23 07.6	2.046	3.020	159.7	6.7	17.1
1982 07 20		17 38.63	-23 02.5					
1982 07 30		17 33.90	-22 57.9	2.184	3.015	137.9	13.0	17.4
1982 08 09		17 31.56	-22 54.8					
1982 08 19		17 31.68	-22 53.6	2.395	3.009	118.2	17.2	17.7
1982 08 29		17 34.21	-22 54.2					
1982 09 08		17 38.96	-22 56.0	2.650	3.003	100.6	19.3	17.9

1973 UX5

				Elements MPC 6054				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 04 01		17 47.55	-22 30.0	1.456	1.947	103.4	30.0	18.5
1982 04 11		18 00.62	-22 29.3					
1982 04 21		18 11.33	-22 25.3	1.227	1.911	117.5	27.8	18.0
1982 05 01		18 19.17	-22 20.1					
1982 05 11		18 23.68	-22 16.0	1.030	1.878	134.1	22.7	17.5
1982 05 21		18 24.43	-22 14.6					
1982 05 31		18 21.27	-22 16.7	0.884	1.849	153.8	14.0	16.9
1982 06 10		18 14.58	-22 21.6					
1982 06 20		18 05.35	-22 27.9	0.809	1.824	176.5	1.9	16.2
1982 06 30		17 55.28	-22 34.0					
1982 07 10		17 46.36	-22 39.6	0.816	1.805	159.9	11.2	16.6
1982 07 20		17 40.26	-22 45.5					
1982 07 30		17 38.05	-22 52.8	0.896	1.790	138.9	21.9	17.0
1982 08 09		17 40.10	-23 01.8					
1982 08 19		17 46.23	-23 11.5	1.030	1.782	121.6	28.9	17.5
1982 08 29		17 56.07	-23 20.0					
1982 09 08		18 09.06	-23 24.8	1.196	1.780	107.5	32.7	17.9

1952 UZ1		Elements MPC 6305							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 04 01		18 04.19	-23 59.2	1.867	2.259	99.5	25.9	18.2	
1982 04 11		18 14.71	-23 54.6						
1982 04 21		18 22.87	-23 48.2	1.618	2.235	114.9	24.1	17.8	
1982 05 01		18 28.26	-23 41.5						
1982 05 11		18 30.56	-23 35.6	1.402	2.213	132.5	19.6	17.4	
1982 05 21		18 29.53	-23 31.3						
1982 05 31		18 25.16	-23 28.1	1.241	2.194	153.0	12.1	17.0	
1982 06 10		18 17.89	-23 25.0						
1982 06 20		18 08.62	-23 20.6	1.162	2.176	175.9	1.9	16.4	
1982 06 30		17 58.70	-23 14.1						
1982 07 10		17 49.67	-23 05.8	1.176	2.162	160.6	9.0	16.7	
1982 07 20		17 42.82	-22 57.2						
1982 07 30		17 39.05	-22 50.2	1.278	2.150	139.1	18.0	17.1	
1982 08 09		17 38.76	-22 45.7						
1982 08 19		17 41.90	-22 43.7	1.442	2.142	120.6	24.0	17.5	
1982 08 29		17 48.25	-22 43.3						
1982 09 08		17 57.44	-22 42.8	1.644	2.137	104.8	27.1	17.9	

1978 QN2		Elements MPC 5974							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 04 01		18 25.16	-24 51.8	2.740	2.994	94.8	19.4	18.0	
1982 04 11		18 31.60	-24 51.7						
1982 04 21		18 35.94	-24 52.7	2.469	2.993	112.0	18.1	17.8	
1982 05 01		18 37.93	-24 55.3						
1982 05 11		18 37.45	-24 59.9	2.231	2.992	131.0	14.8	17.5	
1982 05 21		18 34.42	-25 06.1						
1982 05 31		18 28.99	-25 12.8	2.056	2.990	152.2	9.1	17.1	
1982 06 10		18 21.58	-25 18.6						
1982 06 20		18 12.84	-25 21.9	1.975	2.988	174.6	1.8	16.7	
1982 06 30		18 03.65	-25 21.7						
1982 07 10		17 55.01	-25 17.8	2.003	2.985	161.8	6.1	17.0	
1982 07 20		17 47.77	-25 11.2						
1982 07 30		17 42.57	-25 03.4	2.132	2.982	139.9	12.7	17.3	
1982 08 09		17 39.81	-24 55.6						
1982 08 19		17 39.57	-24 48.8	2.339	2.978	120.1	17.1	17.6	
1982 08 29		17 41.81	-24 43.2						
1982 09 08		17 46.37	-24 38.7	2.591	2.974	102.3	19.3	17.9	

1978 PQ2		Elements MPC 5845							
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1982 04 01		18 15.26	-21 31.7	2.300	2.616	96.9	22.3	18.9	
1982 04 11		18 23.75	-21 17.8						
1982 04 21		18 30.18	-21 02.9	2.003	2.569	113.1	21.1	18.5	
1982 05 01		18 34.24	-20 48.1						
1982 05 11		18 35.66	-20 34.9	1.740	2.522	131.1	17.6	18.1	
1982 05 21		18 34.23	-20 23.9						
1982 05 31		18 29.94	-20 15.9	1.536	2.475	151.6	11.2	17.7	
1982 06 10		18 23.08	-20 10.7						
1982 06 20		18 14.31	-20 07.8	1.416	2.429	173.6	2.7	17.1	
1982 06 30		18 04.66	-20 06.8						
1982 07 10		17 55.41	-20 07.5	1.397	2.384	161.6	7.7	17.3	
1982 07 20		17 47.73	-20 10.4						
1982 07 30		17 42.58	-20 16.0	1.471	2.340	139.7	16.3	17.6	
1982 08 09		17 40.50	-20 24.4						
1982 08 19		17 41.64	-20 35.3	1.614	2.298	120.4	22.3	17.9	
1982 08 29		17 45.96	-20 47.8						
1982 09 08		17 53.20	-21 00.2	1.795	2.259	103.8	25.7	18.1	

(2409) Chapman

				Elements MPC 6108				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 04 01		18 10.96	-19 24.2	1.902	2.267	97.9	25.9	17.8
1982 04 11		18 21.44	-19 07.5					
1982 04 21		18 29.79	-18 49.2	1.629	2.223	113.0	24.6	17.4
1982 05 01		18 35.63	-18 31.3					
1982 05 11		18 38.59	-18 15.9	1.386	2.178	130.2	20.7	16.9
1982 05 21		18 38.35	-18 05.2					
1982 05 31		18 34.73	-18 00.9	1.195	2.134	150.1	13.7	16.3
1982 06 10		18 27.96	-18 03.8					
1982 06 20		18 18.69	-18 13.9	1.080	2.091	171.7	4.0	15.8
1982 06 30		18 08.13	-18 30.3					
1982 07 10		17 57.89	-18 51.9	1.057	2.048	161.9	8.8	15.9
1982 07 20		17 49.49	-19 17.4					
1982 07 30		17 44.15	-19 46.0	1.121	2.008	140.1	18.9	16.2
1982 08 09		17 42.54	-20 16.7					
1982 08 19		17 44.80	-20 48.2	1.246	1.970	121.2	26.1	16.5
1982 08 29		17 50.79	-21 18.9					
1982 09 08		18 00.17	-21 46.5	1.406	1.935	105.5	30.1	16.9

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				Elements MPC 5687				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 04 01		18 36.60	-26 19.2	2.608	2.830	92.3	20.7	19.9
1982 04 11		18 43.81	-26 21.9					
1982 04 21		18 48.85	-26 26.5	2.337	2.830	109.1	19.6	19.7
1982 05 01		18 51.43	-26 33.8					
1982 05 11		18 51.34	-26 44.0	2.092	2.828	128.0	16.3	19.3
1982 05 21		18 48.42	-26 56.6					
1982 05 31		18 42.72	-27 10.1	1.906	2.824	149.0	10.6	19.0
1982 06 10		18 34.58	-27 22.1					
1982 06 20		18 24.67	-27 30.1	1.808	2.817	171.4	3.1	18.6
1982 06 30		18 13.96	-27 31.8					
1982 07 10		18 03.61	-27 26.9	1.818	2.807	163.3	6.0	18.8
1982 07 20		17 54.68	-27 16.1					
1982 07 30		17 48.00	-27 01.8	1.932	2.796	141.1	13.2	19.1
1982 08 09		17 44.05	-26 46.1					
1982 08 19		17 42.95	-26 30.9	2.123	2.782	120.9	18.2	19.4
1982 08 29		17 44.67	-26 17.0					
1982 09 08		17 48.97	-26 04.5	2.360	2.766	102.9	20.8	19.7

(2355) Nei Monggol

				Elements MPC 5843				
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1982 04 01		18 29.88	-27 32.5	2.664	2.908	93.8	20.1	17.4
1982 04 11		18 37.84	-28 02.4					
1982 04 21		18 43.84	-28 36.3	2.379	2.887	110.4	19.0	17.1
1982 05 01		18 47.56	-29 15.2					
1982 05 11		18 48.77	-29 59.4	2.126	2.866	128.6	16.0	16.8
1982 05 21		18 47.28	-30 47.9					
1982 05 31		18 43.06	-31 38.7	1.933	2.847	148.5	10.7	16.4
1982 06 10		18 36.36	-32 28.2					
1982 06 20		18 27.76	-33 12.0	1.827	2.828	167.3	4.5	16.1
1982 06 30		18 18.14	-33 46.1					
1982 07 10		18 08.67	-34 08.2	1.827	2.809	161.5	6.6	16.2
1982 07 20		18 00.44	-34 18.1					
1982 07 30		17 54.37	-34 17.7	1.926	2.792	141.4	13.1	16.5
1982 08 09		17 51.02	-34 10.0					
1982 08 19		17 50.61	-33 57.6	2.102	2.776	122.2	18.0	16.7
1982 08 29		17 53.13	-33 42.7					
1982 09 08		17 58.38	-33 26.2	2.326	2.761	104.9	20.7	17.0