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The MINOR PLANET CIRCULARS/MINOR PLANETS AND COMETS are published, on behalf of Commission 20 of the International Astronomical Union, usually in batches on the date of each full moon, by:

Minor Planet Center  
 Smithsonian Astrophysical Observatory  
 Cambridge, MA 02138, U.S.A.

TWX 710-320-6842 ASTROGRAM CAM \*\* Brian G. Marsden, Director  
 Telephone 617-864-5758 \*\* Conrad M. Bardwell, Associate Director

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#### EDITORIAL NOTICE.

There has recently been a dramatic evolution of the procedures by which identifications of minor planets are established. Several astronomers are now using computers to search systematically for all the observations of a particular unnumbered object. The rapid publication of new observations and new preliminary orbits in the MPCs is therefore causing many people to make the same identifications simultaneously. This multiplication of effort is particularly wasteful when it results in independent computations of the same definitive orbit, for a differential orbit correction using observations over several decades and with allowance for full perturbations still entails a significant expenditure of both time and money. If an identifier who wishes to determine a final orbit considers this expense to be a problem, he should inform the Minor Planet Center by telex or telegram (to the TWX number above) of those new identifications for which a full orbit solution would be worthwhile; the Minor Planet Center will then inform him if it knows whether the same computation is being made (or has been made) elsewhere, and if any additional observations of the same object have been received. Final solutions with full perturbations are necessary when a minor planet is to be numbered. Except for the earth-approaching objects, minor planets to be numbered require good series of observations at each of three oppositions, or less extensive series of observations at four or even more oppositions. If a minor planet does not qualify for numbering, it is generally sufficient to ignore the perturbations by the inner planets; the waste due to multiplication of effort is not so consequential, and immediate communication to the Minor Planet Center is not so necessary. Nevertheless, because of the great number of possible identifications, it would be helpful if those identifiers involved in computerized searches would send to the Minor Planet Center only those cases of which they are reasonably certain: an identification consisting of a weak preliminary orbit and a single observation at a second opposition is always questionable. Finally, it is worth noting that one or two identifiers are still obtaining very useful results with little or no computerization; much of this work involves finding double designations and in generally pointing out errors in the MPCs, and these activities are certainly to be encouraged.

The Minor Planet Center has recognized for some time that the process of finding identifications would be easier if there were not misidentifications among the files of observations of numbered minor planets. H. Scholl, Astronomisches Rechen-Institut, Heidelberg, has kindly calculated for the Minor Planet Center series of osculating elements for most of the numbered minor planets at frequent intervals during the past century. The Minor Planet Center is currently utilizing these computations to check the observation files for misidentifications and other inconsistencies. The first results of this investigation are included on MPC 7792-7794.

The principal annoyance for identifiers, however, is the practice, common for observations made during the early 1960s and before, of giving only approximate positions. As noted on MPC 7515, IAU Commission 20 addressed this problem at its meetings last August. In this connection, it is gratifying to remark here that the accurate measurement of the unnumbered minor planets in the Turku collection is now essentially complete (cf. MPC 7734-7736 and earlier). Active from 1935 to 1957, the Turku program was the most extensive one in the world during most of the 1940s, and the important contribution of L. Oterma, both with the recent measurements and with the original observations, is greatly appreciated. The cooperation of the Lowell and Goethe Link observatories in measuring old plates on request is gratefully acknowledged, but completeness there and elsewhere would be very difficult to achieve. Anyone contemplating this task should note that accurate measurement of old plates is particularly desirable when the same unnumbered minor planet was observed on more than one night. Current observers are advised that, unless a new discovery is unusual enough to be mentioned on an IAU Circular, the Minor Planet Center records discoveries and issues designations only when accurate positions are provided.

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#### CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Mag.	N Obs.
114	1983 01	14.21834	06 35 14.63	+16 06 52.0	MPC 7652		704
114	1983 01	14.31625	06 35 09.38	+16 07 08.4	MPC 7652		704
133	1983 01	14.14580	06 31 02.70	+29 22 57.2	MPC 7652		704
133	1983 01	14.23470	06 30 58.06	+29 22 53.1	MPC 7652		704
191	1931 05	19.35764	16 17 45.76	-04 20 39.6	MPC 7757		690
191	1931 05	20.35417	16 16 58.68	-04 17 18.0	MPC 7757		690
191	1931 05	22.34028	16 15 24.13	-04 10 56.2	MPC 7757		690
297	1983 01	14.17240	07 11 19.14	+29 50 16.2	MPC 7652		704
297	1983 01	14.26627	07 11 13.94	+29 50 15.3	MPC 7652		704
511	1931 05	19.35764	16 22 08.86	-05 33 09.5	MPC 7757		690
511	1931 05	20.35417	16 21 23.72	-05 32 31.8	MPC 7757		690
511	1931 05	22.34028	16 19 53.14	-05 31 31.0	MPC 7757		690
539	1983 01	14.19706	07 09 17.90	+19 50 33.7	MPC 7652		704
539	1983 01	14.28037	07 09 12.85	+19 50 28.0	MPC 7652		704
598	1983 01	14.16258	06 34 06.27	+27 21 26.9	MPC 7652		704
598	1983 01	14.24681	06 34 01.21	+27 21 56.1	MPC 7652		704
645	1983 01	14.16604	06 48 14.68	+33 42 11.1	MPC 7652		704
645	1983 01	14.26052	06 48 09.23	+33 42 04.8	MPC 7652		704
718	1983 01	14.15330	05 57 37.58	+31 38 38.1	MPC 7652		704
718	1983 01	14.23805	05 57 33.24	+31 38 33.7	MPC 7652		704
731	1983 01	14.15644	06 45 21.08	+35 54 50.1	MPC 7652		704
731	1983 01	14.24083	06 45 16.01	+35 54 58.6	MPC 7652		704
949	1983 01	14.21524	07 57 08.02	+27 59 46.5	MPC 7653		704
949	1983 01	14.31364	07 57 01.73	+27 59 49.2	MPC 7653		704
1068	1983 01	14.18607	07 39 24.80	+25 10 23.0	MPC 7653		704
1068	1983 01	14.30507	07 39 17.78	+25 10 32.8	MPC 7653		704
1092	1983 01	14.15045	06 11 02.69	+27 09 24.3	MPC 7653		704
1092	1983 01	14.23164	06 10 58.76	+27 09 16.2	MPC 7653		704
1135	1983 01	14.21273	07 21 52.50	+28 19 17.8	MPC 7653		704
1135	1983 01	14.31079	07 21 45.94	+28 19 22.7	MPC 7653		704
1154	1983 01	14.17536	07 18 07.33	+24 59 39.0	MPC 7653		704
1154	1983 01	14.27045	07 18 02.48	+24 59 51.3	MPC 7653		704

1157	1983	01	14.15980	06	12	23.27	+34	22	06.5	MPC 7653		704
1157	1983	01	14.24405	06	12	19.29	+34	21	56.4	MPC 7653		704
1237	1983	01	14.20184	07	10	38.31	+34	23	15.7	MPC 7653		704
1237	1983	01	14.28315	07	10	32.33	+34	23	28.4	MPC 7653		704
1296	1983	01	14.16927	06	06	02.78	+17	16	03.4	MPC 7653		704
1296	1983	01	14.26335	06	05	57.95	+17	16	04.2	MPC 7653		704
1329	1983	01	13.30779	07	32	25.98	+14	27	48.2	MPC 7653		704
1527	1962	08	03.31313	22	22	10.75	-20	39	16.8	MPC 4189	1	760
1527	1962	08	03.33535	22	22	09.80	-20	39	19.7	MPC 4189	1	760
1557	1930	12	20.26042	05	05	29.19	+38	10	55.0	MPC 7757		690
1557	1930	12	24.18750	05	01	32.30	+38	01	24.0	MPC 7757		690
1557	1930	12	25.19896	05	00	33.97	+37	58	37.2	MPC 7757		690
1717	1930	12	20.26042	05	11	41.87	+35	17	04.0	MPC 7757		690
1717	1930	12	24.18750	05	07	04.80	+35	01	26.3	MPC 7757		690
1717	1930	12	25.19896	05	05	56.83	+34	56	55.4	MPC 7757		690
1811	1931	05	19.35764	16	19	07.58	-08	56	48.9	MPC 7757		690
1811	1931	05	20.35417	16	18	22.42	-08	53	20.3	MPC 7757		690
1811	1931	05	22.34028	16	16	51.91	-08	46	34.8	MPC 7757		690
1827	1931	11	02.92383	02	04	41.82	+13	24	35.1	MPC 4023		012
1827	1931	11	07.90117	02	00	33.18	+12	50	54.8	MPC 4023		012
1832	1976	12	20.82178	06	26	17.69	+34	39	48.2	MPC 4139	16.4	046
1832	1976	12	20.83608	06	26	16.78	+34	39	46.2	MPC 4139		046
1901	1975	10	10.49951	00	41	28.37	-31	13	11.3	MPC 4023	16.8	2 485
1901	1975	10	10.56722	00	41	25.14	-31	13	16.2	MPC 4023		2 485
1908	1952	10	12.09491	23	03	26.31	-08	35	45.6	MPC 1008		839
1908	1952	10	12.12885	23	03	25.27	-08	35	48.0	MPC 1008		839
1922	1949	06	01.83183	14	21	02.32	-02	26	05.1	MPC 266		078
1967	1983	01	14.22098	06	41	40.49	+28	38	27.2	MPC 7653		704
1967	1983	01	14.30803	06	41	34.51	+28	38	35.5	MPC 7653		704
2737	1983	01	14.20935	06	11	59.66	+36	25	24.6	MPC 7654		704
2737	1983	01	14.28669	06	11	55.56	+36	25	02.9	MPC 7654		704
1934 NF	1934	07	31.79019	19	24.3		-35	01		RI 1022	12.8	078
1936 SF	1936	10	16.86040	23	17.8		-14	07		RI 1494	13.1	3 078
1981 PL	1983	01	12.29239	07	12	06.24	+13	09	14.4	MPC 7654		704
1981 PL	1983	01	14.25726	07	10	04.93	+13	04	30.7	MPC 7654		704
1983 AY1 *	1983	01	13.22700	06	21	50.23	+24	11	18.6	MPC 7654		704
1983 AZ1 *	1983	01	13.30199	08	17	49.43	+11	50	37.3	MPC 7654		704
1983 AZ1	1983	01	14.22643	08	16	58.67	+11	54	29.2	MPC 7654		704
1983 AA2 *	1983	01	14.34862	09	00	17.09	+12	44	25.3	MPC 7654		704

Note 1: originally erroneously given as (1962). 2: originally erroneously given as (1910). 3: 1936 SF = (2326).

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#### IDENTIFICATION CHANGES.

Continuation to MPC 7725.

Object	Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	N	Obs.
A918 EM *	1918	03	08.90377	09 42 15	+14 06.5	A918 EB	14.5	024
1928 XG *	1928	12	05.07002	00 40 31.80	+05 03 23.4	1913	15.0	754
1930 QV *	1930	08	23.54187	22 31 12.61	-01 24 34.4	2119	14.3	1 389
1930 QV	1930	08	24.54031	22 30 33.97	-01 30 57.8	2119	14.6	1 389
1932 BQ *	1932	01	19.0	08 56.8	+18 39	1815	13.4	008
1934 XJ *	1934	12	05.11626	23 56 01.52	-01 03 18.9	2057	14.5	754
1934 XJ	1934	12	11.05856	23 59 47.67	-00 28 59.9	2057	15	754
1934 XJ	1934	12	11.07106	23 59 48.13	-00 28 55.4	2057	15	754

1937	BJ	*	1937	01	21.17356	08	49	44.04	+23	28	27.8	1847		14.1	020
1937	BJ		1937	01	21.20454	08	49	42.24	+23	28	41.0	1847			020
1939	YD	*	1939	12	18.78703	02	21	13.01	+14	20	04.6	2264			012
1941	WF1	*	1941	11	24.89243	02	07	42.10	+08	09	11.9	1882			020
1948	UL	*	1948	10	26.94994	01	15	09.52	+09	02	39.8	2276			012
1948	VQ	*	1948	11	08.93569	01	05	48.97	+08	15	08.3	2276			012
1955	FD2	*	1955	03	21.59966	12	26	25.04	+03	31	22.8	1955	FW	14.5	388
1955	GF	*	1955	04	12.51944	12	13	02.25	+07	18	02.2	1955	FU	15	388
1968	FR	*	1968	03	29.93766	12	48	40.65	-06	59	42.3	1969			020
1968	FR		1968	03	29.95497	12	48	40.01	-06	59	30.0	1969			020
1968	FR		1968	04	03.91054	12	45	24.07	-06	26	00.2	1969			020
1968	FR		1968	04	03.93893	12	45	23.56	-06	25	51.0	1969			020
1969	KH	*	1969	05	13.01338	14	16	06.07	-13	33	02.3	1827			020
1969	KH		1969	05	13.02793	14	16	05.77	-13	33	00.9	1827			020
1969	MF	*	1969	06	20.01086	18	53	50.86	-21	10	37.5	1822			020
1969	MF		1969	06	20.02402	18	53	50.16	-21	10	39.5	1822			020
1971	QK3	*	1971	08	23.74236	22	34	24.95	-10	06	45.9	1945			323
1971	QK3		1971	08	23.75903	22	34	24.18	-10	06	56.5	1945			323
1971	RD	*	1971	09	11.79848	20	32	29.28	-19	47	48.1	2016		16.0	095
1974	LF	*	1974	06	14.74444	18	30	54.51	-34	34	22.9	1832			323
1974	LF		1974	06	14.76111	18	30	53.69	-34	34	23.2	1832			323
1974	QQ3	*	1974	08	22.94432	22	31	12.94	-10	24	18.7	1924			095
1974	QQ3		1974	08	26.93712	22	28	19.00	-10	44	34.8	1924			095
1975	GP1	*	1975	04	09.24199	15	39	43.24	-16	42	48.6	2039			808
1975	GP1		1975	04	09.28772	15	39	42.42	-16	42	43.5	2039			808
1975	NX1	*	1975	07	13.94828	20	19	58.45	-21	45	57.5	1975	NR	16.5	095
1977	RF8	*	1977	09	07.84169	21	40	33.07	-16	20	00.1	2169		16.8	095
1978	TG9	*	1978	10	06.27544	22	27	01.54	-10	51	54.6	1808			805
1978	TG9		1978	10	08.19840	22	26	05.54	-10	59	52.2	1808			805
1978	TH9	*	1978	10	06.27544	22	28	21.82	-10	57	58.5	1824			805
1978	WY14*		1978	11	30.58047	02	52	25.70	+16	16	08.4	2355			330
1979	XX1	*	1979	12	11.76188	04	02	43.23	+18	52	19.7	1976			049
1979	XX1		1979	12	11.77642	04	02	42.35	+18	52	13.4	1976			049
1980	RE5	*	1980	09	15.04566	00	27	48.28	-01	54	18.4	2082		18.5	511
1980	RE5		1980	09	15.06009	00	27	47.65	-01	54	24.4	2082			511
1980	RE5		1980	09	15.07454	00	27	47.05	-01	54	30.4	2082			511
1981	ED17*		1981	03	04.04131	07	23	50.71	+31	51	48.7	2086			801
1981	JK3	*	1981	05	06.30347	14	19	52.34	-14	28	51.7	2016			675
1981	SK3	*	1981	09	25.26448	00	36	27.29	+17	27	28.9	1971			801

Note 1: the remark by Stracke (1938, 'Identifizierungsnachweis', p. 47) concerning 1930 QG should be ignored; identity with (1169) = 1930 QH (TAB 57) is also invalid.

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#### IDENTIFICATIONS.

The following list of identifications with numbered minor planets continues that on MPC 7517.

	Note		Note		Note
A903 VA = (2832)	3	A905 FB = (2832)	1	A918 EB = (468)	9
1929 AL = (2834)	1	1930 QM = (2836)	1	1944 RK = (2833)	1
1951 RH1 = (2836)	1	1952 BV = (2851)	1	1978 TH9 = (1808)	6
1980 VT1 = (2293)	6	1980 XY = (2132)	4		

Note 1: identification by L. D. Schmadel. 2: the double designation A903 UG = A903 VA (AN 164, 27) is invalid. 3 = 1 + 2. 4: identification by B. G. Marsden. 5: the identification (1094) = A918 EB (AN 238, 151) is invalid. 6: identification by C. M. Bardwell. 9 = 4 + 5.

## OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

- 046 Klet. Observers A. Mrkos and Z. Vavrova.  
 372 Geisei. Observer T. Seki. From Orient. Astron. Assoc. Comet Bull. No. 245.  
 491 Centro Astronomico de Yebes. Observers M. de Pascual, J. Garcia, C. Cabanas and F. Sanchez.  
 657 Climenhaga Observatory, University of Victoria. 0.25-m f/2 Schmidt. Observer and measurer J. Tatum.  
 675 Palomar. Observations of comets 1981 XV and 1982g by J. Gibson (1.2-m Schmidt). Observations of comet 1983c by C. Shoemaker and E. Shoemaker (0.46-m Schmidt).  
 688 Lowell Observatory, Anderson Mesa Station. Observer B. A. Skiff. Measured by E. Bowell.  
 707 Chamberlin Observatory field station. 0.40-m f/5.5 reflector. Observer E. Everhart.  
 801 Oak Ridge Observatory. Observers R. E. McCrosky and G. Schwartz (assisted by C. M. Bardwell and B. G. Marsden).

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
Comet Elias (1981 XV)							
/1981 XV	1983 02	16.41053	12 02 47.76	+11 39 11.2			801
/1981 XV	1983 04	02.22226	11 32 47.03	+18 38 02.9		1	675
/1981 XV	1983 04	03.36462	11 32 02.71	+18 46 41.4		2	675
Periodic Comet Swift-Gehrels							
/1981 XIX	1982 01	25.82203	02 29 18.69	+25 54 04.3			491
/1981 XIX	1982 01	26.82069	02 32 44.60	+25 59 27.1			491
Periodic Comet Kearns-Kwee							
/1981 XX	1982 01	25.94773	06 19 12.92	+30 26 28.6			491
/1981 XX	1982 01	26.85359	06 18 58.90	+30 20 25.2			491
Comet Bowell (1980b)							
/1980b	1982 05	21.06276	18 19 39.17	-22 16 31.4			491
/1980b	1982 05	22.08358	18 19 32.25	-22 16 51.3			491
/1980b	1982 06	18.00016	18 11 49.58	-22 29 38.2			491
/1980b	1982 06	18.97006	18 11 26.54	-22 30 11.1			491
/1980b	1982 07	13.94892	18 02 17.18	-22 44 40.6			491
/1980b	1982 07	14.96904	18 02 00.30	-22 45 15.3			491
/1980b	1982 08	13.87744	18 00 15.70	-23 01 27.4			491
Periodic Comet Grigg-Skjellerup							
/1982a	1982 06	18.95102	13 24 46.61	+38 52 05.2			491
/1982a	1982 06	19.05422	13 25 35.76	+38 51 32.3			491
Periodic Comet Churyumov-Gerasimenko							
/1982f	1983 03	04.78889	07 36 56.53	+34 06 00.6	13.0T		046
/1982f	1983 03	04.80330	07 36 57.26	+34 05 54.8			046
/1982f	1983 03	09.12986	07 42 05.19	+33 26 19.8			688
/1982f	1983 03	09.19167	07 42 09.36	+33 25 46.3			688
/1982f	1983 03	14.02084	07 48 11.48	+32 41 23.1			801
Comet Austin (1982g)							
/1982g	1983 04	02.17781	09 09 20.21	+37 50 16.5	20 T		675
/1982g	1983 04	03.30490	09 08 32.10	+37 37 42.1			675

## Periodic Comet Tempel 1

/1982j	1983	02	15.37681	13	08	08.35	+11	22	44.1		801
/1982j	1983	03	09.97385	13	12	03.23	+13	32	11.5	12.5T	046
/1982j	1983	03	09.98797	13	12	03.04	+13	32	17.5		046
/1982j	1983	03	10.96940	13	11	50.68	+13	38	45.9		046
/1982j	1983	03	10.97819	13	11	50.57	+13	38	52.0		046
/1982j	1983	03	14.35925	13	10	52.98	+14	01	16.6		801
/1982j	1983	03	17.27917	13	09	45.26	+14	20	05.3		657
/1982j	1983	03	20.28785	13	08	18.28	+14	38	58.7		657
/1982j	1983	04	04.22708	12	57	33.52	+15	46	15.6		657
/1982j	1983	04	05.30104	12	56	36.86	+15	48	36.6		657

## Periodic Comet Kopff

/1982k	1983	02	15.41206	14	58	39.85	-11	05	48.1		801
/1982k	1983	02	21.78993	15	06	33.26	-11	21	57.6	15.8T	372
/1982k	1983	02	21.80174	15	06	34.22	-11	21	58.9		372
/1982k	1983	04	16.39549	15	46	43.06	-10	49	41.8		707

## Periodic Comet Bowell-Skiff

/1983c	1983	02	15.26111	09	23	57.79	+18	31	25.9		675
/1983c	1983	02	21.74069	09	21	17.55	+18	19	20.2	16.5T	372
/1983c	1983	02	21.75313	09	21	17.30	+18	19	19.5		372
/1983c	1983	03	04.83347	09	18	28.85	+17	47	29.1	16.5T	046
/1983c	1983	03	04.84765	09	18	28.93	+17	47	26.5		046
/1983c	1983	03	17.21528	09	19	10.12	+16	54	14.0	17.0T	688

Note 1: well-condensed, faint coma; short tail. 2: poor seeing; diffuse.

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OBSERVATIONS MADE AT CAUSSOLS BY J.-L. HEUDIER AND C. POLLAS. REDUCED BY  
M. T. GACHARD, J. P. PERIE AND J. M. ROUSSEAU.

Object	Date	UT	R. A.	(1950)	Decl.	Obs.
1857	1978	09	08.12244	03 33	29.91 +22 14 13.4	010
1857	1978	09	09.10957	03 34	31.57 +22 16 45.9	010
2252	1978	09	08.12244	03 42	59.34 +22 59 23.5	010
2252	1978	09	09.10957	03 43	36.29 +23 03 43.3	010
2191	1978	09	08.12244	03 43	20.79 +25 04 14.6	010
1978 UH2	1978	09	08.12244	03 47	00.50 +21 37 32.8	010
1978 UH2	1978	09	09.10957	03 47	47.82 +21 35 21.8	010
1978 VD1	1978	09	08.12244	03 43	50.40 +22 29 11.7	010
1978 VD1	1978	09	09.10957	03 44	34.26 +22 34 52.4	010
1978 RN16*	1978	09	08.12244	03 34	47.15 +23 16 29.8	010
1978 RN16	1978	09	09.10957	03 35	05.88 +23 21 15.0	010
1978 RO16*	1978	09	08.12244	03 36	49.89 +26 11 04.6	010
1978 RO16	1978	09	09.10957	03 37	15.49 +26 12 16.4	010
1978 RP16*	1978	09	08.12244	03 39	34.83 +24 03 26.7	010
1978 RP16	1978	09	09.10957	03 40	03.89 +24 04 15.3	010
1978 RQ16*	1978	09	08.12244	03 40	06.67 +24 35 16.8	010
1978 RQ16	1978	09	09.10957	03 40	24.88 +24 41 42.7	010
1978 RR16*	1978	09	08.12244	03 41	03.31 +22 11 52.7	010
1978 RR16	1978	09	09.10957	03 41	38.91 +22 14 46.4	010
1978 RS16*	1978	09	08.12244	03 41	05.49 +22 52 26.6	010
1978 RS16	1978	09	09.10957	03 41	41.18 +22 55 10.9	010
1978 RT16*	1978	09	08.12244	03 43	38.04 +23 09 33.6	010
1978 RU16*	1978	09	08.12244	03 53	25.45 +23 32 32.7	010
1978 RU16	1978	09	09.10957	03 54	39.70 +23 45 34.6	010

## OBSERVATIONS MADE AT KLET BY A. MRKOS AND Z. VAVROVA.

Object	Date	UT	R. A.	(1950)	Decl.	Mag.	N	Obs.
431	1983	03	13.01297	12 29 51.93	-00 44 19.0			046
431	1983	03	13.02709	12 29 51.45	-00 44 15.6			046
431	1983	03	13.98005	12 29 14.08	-00 39 48.4			046
431	1983	03	13.99422	12 29 13.48	-00 39 45.2			046
871	1983	03	08.90777	10 46 38.71	+08 39 00.5			046
871	1983	03	08.92189	10 46 37.83	+08 39 06.4			046
871	1983	03	09.87009	10 45 45.39	+08 47 21.0			046
871	1983	03	09.88421	10 45 44.64	+08 47 27.6			046
871	1983	03	10.86604	10 44 50.53	+08 55 55.3			046
871	1983	03	10.88016	10 44 49.71	+08 56 03.0			046
871	1983	03	12.87125	10 43 01.69	+09 12 54.3			046
871	1983	03	12.88543	10 43 00.83	+09 13 01.8			046
871	1983	03	13.84365	10 42 09.96	+09 21 01.5			046
871	1983	03	13.85777	10 42 09.19	+09 21 08.4			046
894	1983	03	09.93844	11 08 44.72	-01 51 56.6			046
894	1983	03	09.95343	11 08 43.96	-01 51 48.9			046
894	1983	03	10.90140	11 08 04.72	-01 45 01.2			046
894	1983	03	10.91558	11 08 04.12	-01 44 55.8			046
894	1983	03	12.90603	11 06 41.60	-01 30 32.8			046
894	1983	03	12.92021	11 06 41.02	-01 30 26.0			046
894	1983	03	13.87906	11 06 01.06	-01 23 23.8			046
894	1983	03	13.89318	11 06 00.45	-01 23 18.8			046
962	1983	03	12.94289	11 44 33.91	+03 37 58.6			046
962	1983	03	12.95707	11 44 33.21	+03 38 04.0			046
1097	1983	03	13.01297	12 24 45.57	-00 50 48.9			046
1097	1983	03	13.02709	12 24 45.11	-00 50 44.6			046
1256	1983	03	10.93485	11 36 24.92	-02 45 49.9			046
1256	1983	03	10.95036	11 36 24.26	-02 45 45.9			046
1381	1983	03	04.84765	09 12 14.65	+19 31 38.6			046
1381	1983	03	04.83347	09 12 15.29	+19 31 39.0			046
1807	1983	03	10.93485	11 30 02.01	-02 17 36.5	16.7		046
1807	1983	03	10.95036	11 30 01.45	-02 17 28.6			046
1857	1983	03	09.93844	11 07 46.36	-01 59 00.2			046
1857	1983	03	09.95343	11 07 45.51	-01 58 51.3			046
1857	1983	03	10.90140	11 06 49.97	-01 52 04.8			046
1857	1983	03	10.91558	11 06 48.98	-01 51 58.6			046
1857	1983	03	12.90603	11 04 53.36	-01 37 28.3			046
1857	1983	03	12.92021	11 04 52.46	-01 37 22.0			046
1857	1983	03	13.87906	11 03 56.90	-01 30 15.7			046
1857	1983	03	13.89318	11 03 56.10	-01 30 11.3			046
1956	1983	03	08.90777	10 47 55.97	+07 59 48.5			046
1956	1983	03	08.92189	10 47 55.47	+07 59 53.1			046
1956	1983	03	09.87009	10 47 13.79	+08 04 30.4			046
1956	1983	03	09.88421	10 47 13.11	+08 04 36.1			046
1956	1983	03	10.86604	10 46 30.44	+08 09 24.2			046
1956	1983	03	12.87125	10 45 04.39	+08 18 55.0			046
1956	1983	03	12.88543	10 45 03.77	+08 18 59.8			046
2054	1983	03	04.94944	11 10 25.52	+00 10 51.7			046
2054	1983	03	04.96374	11 10 24.83	+00 10 53.6			046
2054	1983	03	08.98184	11 07 08.18	+00 27 43.4			046
2054	1983	03	08.99602	11 07 07.87	+00 27 47.4			046
2054	1983	03	09.93844	11 06 21.54	+00 31 50.8			046
2054	1983	03	09.95343	11 06 20.78	+00 31 57.2			046
2054	1983	03	10.90140	11 05 34.54	+00 36 01.0			046
2054	1983	03	10.91558	11 05 33.93	+00 36 04.2			046
2284	1983	03	04.87230	10 12 47.47	+12 53 28.2			046
2405	1983	03	13.01297	12 26 27.26	-00 01 43.5			046

2405	1983	03	13.02709	12	26	26.71	-00	01	40.8		046	
2419	1983	03	12.94289	11	36	53.87	+03	30	55.0		046	
2419	1983	03	12.95707	11	36	52.85	+03	31	06.1		046	
2419	1983	03	13.91240	11	36	01.46	+03	39	56.6		046	
2419	1983	03	13.92657	11	36	00.50	+03	40	06.0		046	
2485	1983	03	04.83347	09	20	35.94	+18	51	43.8		046	
2485	1983	03	04.84765	09	20	35.28	+18	51	46.2		046	
2557	1983	03	04.94944	11	12	04.21	+01	18	27.6		046	
2557	1983	03	04.96374	11	12	03.68	+01	18	30.6		046	
2559	1983	03	04.91194	11	13	31.03	+06	16	39.8		046	
2559	1983	03	04.92606	11	13	30.58	+06	16	39.2		046	
2559	1983	03	08.94405	11	09	41.75	+06	26	45.6		046	
2559	1983	03	08.95852	11	09	40.88	+06	26	49.6		046	
2559	1983	03	09.90366	11	08	47.66	+06	29	07.9		046	
2559	1983	03	09.91778	11	08	46.82	+06	29	09.1		046	
2586	1983	03	08.94405	11	06	48.16	+05	41	43.7		046	
2586	1983	03	08.95852	11	06	47.44	+05	41	52.0		046	
2586	1983	03	09.90366	11	05	55.79	+05	48	58.9		046	
2586	1983	03	09.91778	11	05	54.93	+05	49	06.3		046	
2719	1983	03	12.94289	11	37	37.73	+03	21	13.2		046	
2719	1983	03	12.95707	11	37	36.85	+03	21	18.8		046	
2719	1983	03	13.91240	11	36	39.13	+03	27	48.8		046	
2719	1983	03	13.92657	11	36	38.19	+03	27	54.1		046	
2857	1983	03	04.88648	10	16	56.30	+12	04	40.9		046	
2857	1983	03	08.85464	10	13	45.55	+12	35	39.4		046	
2857	1983	03	08.86882	10	13	44.86	+12	35	47.2		046	
2857	1983	03	09.83404	10	13	00.78	+12	42	59.1		046	
2857	1983	03	09.84816	10	12	59.99	+12	43	07.0		046	
1980	RM2	1983	03	12.94289	11	46	34.88	+02	32	10.4		046
1980	RM2	1983	03	12.95707	11	46	33.95	+02	32	11.3		046
1980	RM2	1983	03	13.91240	11	45	36.77	+02	34	05.7		046
1980	RM2	1983	03	13.92657	11	45	35.84	+02	34	09.2		046
1983	AG2	1983	03	04.83347	09	13	43.83	+16	29	38.2	16.0	046
1983	AG2	1983	03	04.84765	09	13	43.00	+16	29	24.9		046
1983	AG2	1983	03	05.80824	09	12	44.80	+16	14	39.7		046
1983	AG2	1983	03	05.82253	09	12	43.93	+16	14	27.2		046
1983	AG2	1983	03	08.80551	09	10	00.91	+15	29	28.7		046
1983	AG2	1983	03	08.81963	09	10	00.26	+15	29	15.5		046
1983	AG2	1983	03	09.79845	09	09	12.94	+15	14	48.6		046
1983	AG2	1983	03	09.80562	09	09	12.61	+15	14	42.9		046
1983	AG2	1983	03	12.83097	09	07	03.86	+14	30	44.4		046
1983	AG2	1983	03	12.84231	09	07	03.41	+14	30	35.5		046
1983	CA3	1983	03	12.90603	11	02	52.70	-03	08	05.8	16.6	046
1983	CA3	1983	03	12.92021	11	02	51.87	-03	08	04.0		046
1983	CA3	1983	03	13.87906	11	02	05.09	-03	02	49.4		046
1983	CA3	1983	03	13.89318	11	02	04.22	-03	02	44.2		046
1983	CB3	1983	03	09.93844	11	05	17.01	-02	02	58.6	16.8	1 046
1983	CB3	1983	03	09.95343	11	05	15.82	-02	02	56.9	1	046
1983	CB3	1983	03	10.90140	11	04	15.74	-01	59	43.5		046
1983	CB3	1983	03	10.91558	11	04	14.85	-01	59	41.6		046
1983	CB3	1983	03	12.90603	11	02	07.74	-01	52	43.7		046
1983	CB3	1983	03	12.92021	11	02	06.97	-01	52	43.1		046
1983	CB3	1983	03	13.87906	11	01	06.17	-01	49	12.7		046
1983	CB3	1983	03	13.89318	11	01	05.16	-01	49	11.9		046
1983	DC	1983	03	04.87230	10	18	21.52	+10	35	37.5		046
1983	DC	1983	03	04.88648	10	18	20.59	+10	35	44.1		046
1983	DC	1983	03	08.85464	10	14	48.19	+10	47	47.2		046
1983	DC	1983	03	08.86882	10	14	47.50	+10	47	49.9		046
1983	DC	1983	03	09.83404	10	13	58.25	+10	50	32.2		046



1983 DC		1983 03 09.84816	10 13 57.65	+10 50 40.4			046
1983 DG		1983 03 08.90777	10 54 20.74	+09 41 18.2	16.9		046
1983 DG		1983 03 08.92189	10 54 19.89	+09 41 18.6			046
1983 DG		1983 03 09.87009	10 53 18.33	+09 42 55.7		2	046
1983 DG		1983 03 09.88421	10 53 17.50	+09 42 58.5		2	046
1983 DG		1983 03 10.86604	10 52 13.46	+09 44 34.2		1	046
1983 DG		1983 03 10.88016	10 52 12.38	+09 44 34.5		1	046
1983 DG		1983 03 12.87125	10 50 04.22	+09 47 31.2		1	046
1983 DG		1983 03 12.88543	10 50 03.10	+09 47 32.3		1	046
1983 DG		1983 03 13.85777	10 49 01.73	+09 48 50.1			046
1983 EB	*	1983 03 04.83347	09 15 53.47	+18 24 47.3	17.0		046
1983 EB		1983 03 04.84765	09 15 52.74	+18 24 46.3			046
1983 EC	*	1983 03 04.87230	10 21 05.53	+11 43 14.2	17.4		046
1983 EC		1983 03 04.88648	10 21 04.94	+11 43 18.9			046
1983 ED	*	1983 03 08.90777	10 48 02.01	+08 43 57.2	17.0		046
1983 ED		1983 03 08.92189	10 48 01.22	+08 44 00.0			046
1983 ED		1983 03 09.87009	10 47 10.03	+08 46 54.0		2	046
1983 ED		1983 03 09.88421	10 47 09.35	+08 46 54.8		2	046
1983 ED		1983 03 10.86604	10 46 16.70	+08 49 52.5			046
1983 ED		1983 03 10.88016	10 46 15.94	+08 49 54.5			046
1983 ED		1983 03 12.87125	10 44 30.42	+08 55 40.5			046
1983 ED		1983 03 12.88543	10 44 29.44	+08 55 43.6			046
1983 ED		1983 03 13.84365	10 43 39.46	+08 58 23.3			046
1983 ED		1983 03 13.85777	10 43 38.95	+08 58 27.2			046
1983 EE	*	1983 03 08.90777	10 50 16.92	+08 19 16.4	16.8		046
1983 EE		1983 03 08.92189	10 50 16.16	+08 19 21.8			046
1983 EE		1983 03 10.86604	10 48 10.12	+08 19 41.6			046
1983 EE		1983 03 10.88016	10 48 09.35	+08 19 42.1			046
1983 EE		1983 03 12.87125	10 46 02.61	+08 19 55.1			046
1983 EE		1983 03 12.88543	10 46 01.81	+08 19 57.1			046
1983 EE		1983 03 13.84365	10 45 01.85	+08 19 59.5			046
1983 EE		1983 03 13.85777	10 45 01.04	+08 20 02.2			046
1983 EF	*	1983 03 09.83404	10 21 11.23	+11 42 48.2	17.4		046
1983 EF		1983 03 09.84816	10 21 10.40	+11 42 52.9			046
1983 EG	*	1983 03 09.87009	10 43 41.36	+08 06 15.5	17.5		046
1983 EG		1983 03 09.88421	10 43 40.41	+08 06 24.9			046
1983 EG		1983 03 10.86604	10 42 52.91	+08 14 51.9			046
1983 EG		1983 03 10.88016	10 42 51.94	+08 15 01.6			046
1983 EG		1983 03 12.87125	10 41 16.55	+08 32 05.9			046
1983 EG		1983 03 12.88543	10 41 15.66	+08 32 13.6			046
1983 EG		1983 03 13.84365	10 40 31.46	+08 40 16.0			046
1983 EG		1983 03 13.85777	10 40 30.49	+08 40 24.9			046
1983 EH	*	1983 03 09.90366	11 07 09.05	+08 38 46.9	17.0		046
1983 EH		1983 03 09.91778	11 07 08.25	+08 38 55.2			046
1983 EJ	*	1983 03 10.86604	10 42 23.62	+09 04 20.6	17.2		046
1983 EJ		1983 03 10.88016	10 42 22.95	+09 04 19.7			046
1983 EJ		1983 03 12.87125	10 40 47.31	+09 12 39.5			046
1983 EJ		1983 03 12.88543	10 40 46.39	+09 12 41.7			046
1983 EK	*	1983 03 10.93485	11 34 31.13	-02 07 51.8	17.2		046
1983 EK		1983 03 10.95036	11 34 30.46	-02 07 46.7			046
1983 EL	*	1983 03 12.90603	10 56 20.49	-00 59 10.3	16.8		046
1983 EL		1983 03 12.92021	10 56 19.54	-00 59 08.3			046
1983 EL		1983 03 13.87906	10 55 26.91	-00 53 05.9			046
1983 EL		1983 03 13.89318	10 55 25.91	-00 52 58.8			046
1983 EM	*	1983 03 12.94289	11 36 59.18	+02 16 18.9	16.0		046
1983 EM		1983 03 12.95707	11 36 58.62	+02 16 27.9			046
1983 EM		1983 03 13.91240	11 36 12.47	+02 27 41.8			046
1983 EM		1983 03 13.92657	11 36 11.75	+02 27 52.2			046
1983 EN	*	1983 03 12.97707	12 09 42.83	-02 28 01.9			046

1983 EN	1983 03	12.99137	12 09	42.01	-02 27	52.7		046
1983 EN	1983 03	13.94735	12 08	58.21	-02 18	52.9	17.4	046
1983 EN	1983 03	13.96153	12 08	57.23	-02 18	41.8		046
1983 EO *	1983 03	13.01297	12 31	04.59	-02 34	21.9	17.0	046
1983 EO	1983 03	13.02709	12 31	03.91	-02 34	16.4		046
1983 EO	1983 03	13.98005	12 30	27.96	-02 27	45.0		046
1983 EO	1983 03	13.99422	12 30	27.27	-02 27	38.6		046

Note 1: near edge of plate. 2: very faint.

OBSERVATIONS MADE AT THE CRIMEAN ASTROPHYSICAL OBSERVATORY BY N. S. CHERNYKH,  
L. I. CHERNYKH, L. G. KARACHKINA, T. M. SMIRNOVA AND L. V. ZHURAVLEVA  
(52ND REPORT).

Object	Date	UT	R. A. (1950)			Decl.	Mag.	N	Obs.
1979 UB5 *	1979 10	16.88311	01 26	56.79	+10 08	34.0	17.3	095	
2620	1980 10	08.97360	01 46	45.90	+06 59	02.1	17.5	1 095	
2442	1980 10	08.97360	01 46	49.78	+09 00	13.6		1 095	
1980 TP	1980 10	08.97360	01 47	34.15	+08 23	20.3	16.5	1 095	
1980 TP10*	1980 10	08.97360	01 47	41.15	+03 30	34.2	17.5	1 095	
1980 TQ10*	1980 10	08.97360	01 48	48.79	+05 09	29.0	17.0	1 095	
1980 TR10*	1980 10	08.97360	01 49	45.03	+02 21	02.4	17.5	1 095	
1980 TS10*	1980 10	08.97360	01 51	08.29	+08 37	47.8	16.5	095	
1980 TS	1980 10	08.97360	01 52	44.12	+09 09	49.4	16.5	1 095	
26	1980 10	08.97360	01 52	45.86	+09 29	46.6		1 095	
869	1980 10	08.97360	01 54	59.38	+02 18	18.8		095	
1980 TT10*	1980 10	08.97360	01 55	06.07	+03 39	45.3	17.5	095	
1980 TU10*	1980 10	08.97360	01 55	12.61	+04 38	57.1	17.0	095	
1980 TV10*	1980 10	08.97360	01 57	38.60	+06 03	43.0	17.0	095	
1980 TW10*	1980 10	08.97360	01 58	14.04	+05 00	50.4	17.5	095	
1980 TX10*	1980 10	08.97360	01 58	34.01	+08 00	32.0	16.5	095	
1980 TY10*	1980 10	08.97360	01 59	21.24	+06 46	33.2	17.5	095	
1980 TZ10*	1980 10	08.97360	02 00	18.75	+01 48	42.5	17.5	095	
1980 TA11*	1980 10	08.97360	02 00	35.55	+07 50	06.4	17.5	2 095	
1581	1980 10	08.97360	02 03	32.74	+08 55	02.2		095	
1980 TB11*	1980 10	08.97360	02 03	35.47	+01 39	56.4	17.5	095	
1980 TC11*	1980 10	08.97360	02 03	37.94	+03 24	55.1	17.0	095	
1980 TD11*	1980 10	08.97360	02 04	10.65	+01 52	21.8	17.5	095	
1209	1980 10	08.97360	02 04	46.96	+03 14	25.5		095	
1980 TE11*	1980 10	08.97360	02 04	51.05	+08 22	03.3	17.0	095	
1980 TF11*	1980 10	08.97360	02 05	25.04	+01 37	23.5	16.5	095	
1980 TG11*	1980 10	08.97360	02 06	32.86	+01 54	38.1	17.0	095	
1980 TH11*	1980 10	08.97360	02 07	11.80	+01 11	55.4	17.5	095	
1980 TJ11*	1980 10	08.97360	02 07	13.46	+08 27	12.4	16.5	095	
1514	1980 10	08.97360	02 07	36.54	+04 43	24.7		095	
1980 TK11*	1980 10	08.97360	02 08	15.66	+07 50	08.4	17.5	095	
2605	1980 10	08.97360	02 09	38.14	+04 33	13.0		095	
1854	1980 10	08.97360	02 10	12.76	+10 32	24.2		1 095	
1980 TL11*	1980 10	08.97360	02 10	29.39	+08 18	12.8	16.5	095	
1980 TM11*	1980 10	08.97360	02 11	31.66	+03 00	43.1	17.0	095	
2312	1980 10	08.97360	02 12	36.49	+09 09	43.5		1 095	
1974 ST	1980 10	08.97360	02 13	42.06	+09 51	50.4		1 095	
1980 UA	1980 10	08.97360	02 15	42.86	+09 29	53.6	17.0	1 095	
1980 TN11*	1980 10	08.97360	02 16	18.90	+06 55	42.0	17.0	095	
1980 TO11*	1980 10	08.97360	02 17	01.01	+05 53	18.6	17.0	095	
1141	1980 10	08.97360	02 22	08.93	+05 01	54.2		1 095	
1980 TP11*	1980 10	08.97360	02 22	49.64	+02 29	57.0	16.0	1 095	
1980 TQ11*	1980 10	08.97360	02 23	41.85	+07 28	13.2	17.5	1 095	
1436	1980 10	09.04443	03 23	53.41	+30 06	18.3		1 095	
1426	1980 10	09.04443	03 24	18.82	+30 42	30.8		1 095	
2632	1980 10	09.04443	03 25	49.48	+24 59	40.0		1 095	

382		1980	10	09.04443	03	26	48.13	+28	34	53.8		095
1351		1980	10	09.04443	03	28	06.62	+26	35	26.4		095
1244		1980	10	09.04443	03	30	37.24	+30	01	30.4		095
1980	TR11*	1980	10	09.04443	03	31	16.73	+28	57	39.8	16.5	095
608		1980	10	09.04443	03	31	54.15	+32	03	59.9		095
1622		1980	10	09.04443	03	35	15.46	+25	26	17.5		095
1780		1980	10	09.04443	03	43	09.76	+30	45	13.4		095
2098		1980	10	09.04443	03	45	03.02	+29	14	57.1		095
198		1980	10	09.04443	03	45	49.06	+32	01	00.4		095
1980	TS11*	1980	10	09.04443	03	47	28.76	+28	42	51.8	16.5	095
1980	TT11*	1980	10	09.04443	03	49	59.57	+32	11	55.9	17.0	2 095
1493		1980	10	09.04443	03	51	03.79	+24	10	42.0		1 095
2826		1980	10	09.04443	03	53	30.86	+25	54	55.0	16.5	095
1324		1980	10	09.04443	03	53	37.72	+27	07	03.3		095
2346		1980	10	09.04443	03	59	36.12	+24	15	58.3		1 095
1980	TU11*	1980	10	09.04443	04	01	43.79	+29	43	59.3	16.5	1 095
161		1980	10	09.04443	04	01	44.01	+26	59	22.7		1 095
1080		1980	10	09.04443	04	05	05.67	+26	05	27.1		1 095
1363		1980	10	10.95854	02	10	34.45	+13	21	08.4		1 095
1980	TV11*	1980	10	10.95854	02	12	12.19	+11	39	57.5	17.5	1 095
1980	TW11*	1980	10	10.95854	02	14	49.52	+14	01	10.4	17.5	1 095
1980	TX11*	1980	10	10.95854	02	15	06.78	+14	22	02.5	17.5	095
1980	TY11*	1980	10	10.95854	02	15	31.22	+17	50	05.8	17.5	095
1980	TZ11*	1980	10	10.95854	02	16	43.25	+15	28	48.3	17.5	095
1980	TA12*	1980	10	10.95854	02	16	48.91	+14	35	32.8	17.5	095
388		1980	10	10.95854	02	18	06.37	+19	57	16.6		3 095
1980	TB12*	1980	10	10.95854	02	18	14.29	+16	33	05.1	17.5	095
1980	TC12*	1980	10	10.95854	02	18	49.93	+15	41	20.4	17.5	095
1980	TD12*	1980	10	10.95854	02	20	22.32	+14	59	25.2	17.5	095
1980	TE12*	1980	10	10.95854	02	21	22.07	+17	48	46.2	17.5	095
1946		1980	10	10.95854	02	21	52.64	+17	27	47.9		095
1931	TK	1980	10	10.95854	02	22	29.57	+13	19	36.4	16.5	095
1980	TF12*	1980	10	10.95854	02	24	32.94	+15	55	09.8	17.0	095
1980	TG12*	1980	10	10.95854	02	25	18.60	+17	47	23.5	17.5	095
1980	TH12*	1980	10	10.95854	02	25	55.08	+14	41	34.6	18.0	095
1980	TJ12*	1980	10	10.95854	02	26	30.37	+15	10	45.5	18.0	095
1980	TK12*	1980	10	10.95854	02	26	39.16	+13	21	39.0	18.0	095
1980	TL12*	1980	10	10.95854	02	26	49.33	+14	48	19.7	18.0	095
1201		1980	10	10.95854	02	26	49.82	+12	58	20.0		095
2313		1980	10	10.95854	02	27	39.03	+15	47	45.4		095
1980	TM12*	1980	10	10.95854	02	28	44.53	+12	41	58.4	17.5	095
1980	TN12*	1980	10	10.95854	02	31	02.72	+13	26	26.9	17.0	095
1980	TO12*	1980	10	10.95854	02	31	13.38	+10	43	36.5	17.5	1 095
1980	TP12*	1980	10	10.95854	02	32	48.16	+18	45	33.5	16.5	1 095
1715		1980	10	10.95854	02	33	01.92	+12	58	10.4		095
1980	TQ12*	1980	10	10.95854	02	34	04.90	+13	14	14.3	17.5	095
1980	TR12*	1980	10	10.95854	02	34	35.36	+17	01	42.9	17.5	095
419		1980	10	10.95854	02	36	07.00	+16	59	43.7		095
1980	TS12*	1980	10	10.95854	02	36	11.92	+17	10	23.4	17.0	095
1980	TT12*	1980	10	10.95854	02	36	20.44	+13	50	57.1	17.0	095
2053		1980	10	10.95854	02	36	24.12	+10	46	57.8		095
1980	TU12*	1980	10	10.95854	02	36	58.00	+19	45	21.3	17.5	1 095
1980	TV12*	1980	10	10.95854	02	37	23.96	+19	42	52.4	17.5	1 095
1980	TW12*	1980	10	10.95854	02	38	01.63	+13	32	54.8	17.5	095
1980	TX12*	1980	10	10.95854	02	38	56.82	+16	21	27.8	17.0	095
1980	TY12*	1980	10	10.95854	02	38	59.98	+15	29	10.0	18.0	095
2591		1980	10	10.95854	02	39	02.18	+16	57	36.1		095
1980	TZ12*	1980	10	10.95854	02	39	48.42	+12	52	58.5	17.0	095
1980	TA13*	1980	10	10.95854	02	40	00.32	+12	48	26.5	17.5	095

1980	TB13*	1980	10	10.95854	02	41	49.75	+11	01	13.1	18.0	1	095
1941	UL	1980	10	10.95854	02	41	57.69	+12	18	04.4			095
1764		1980	10	10.95854	02	42	33.78	+12	54	41.9			095
1980	TC13*	1980	10	10.95854	02	42	40.61	+12	10	18.2	17.5		095
1980	TD13*	1980	10	10.95854	02	43	08.55	+19	23	16.9	17.0	1	095
1029		1980	10	10.95854	02	44	41.26	+16	16	12.5			095
1980	TE13*	1980	10	10.95854	02	47	10.23	+16	07	02.6	17.0	1	095
2293		1980	10	10.95854	02	48	07.05	+16	22	50.7			095
992		1980	10	10.95854	02	48	13.03	+15	02	17.4			095
1980	VU1	1980	10	10.95854	02	51	00.42	+14	30	35.3	17.0	1	095
720		1980	10	10.95854	02	51	20.22	+16	27	08.7			095
310		1980	10	11.01925	02	57	01.51	+17	47	20.7			095
1874		1980	10	11.01925	02	58	59.24	+10	05	24.7			095
1155		1980	10	11.01925	03	00	32.62	+16	51	20.7			095
738		1980	10	11.01925	03	00	35.30	+11	57	05.0			095
1223		1980	10	11.01925	03	01	04.56	+16	51	23.3			095
2010		1980	10	11.01925	03	01	51.31	+18	59	55.0			095
2675		1980	10	11.01925	03	02	36.02	+19	44	26.0			095
2776		1980	10	11.01925	03	02	39.18	+13	28	35.6	17.0		095
1579		1980	10	11.01925	03	03	42.47	+10	38	56.3			095
1445		1980	10	11.01925	03	08	12.94	+14	44	45.9			095
292		1980	10	11.01925	03	08	26.20	+14	51	21.4			095
1980	TF13*	1980	10	11.01925	03	08	28.70	+11	13	42.1	17.5	1	095
1980	VV1	1980	10	11.01925	03	08	58.04	+11	50	14.2	17.0		095
1722		1980	10	11.01925	03	11	23.81	+11	03	21.8			095
499		1980	10	11.01925	03	11	39.20	+19	33	26.8			095
2327		1980	10	11.01925	03	11	40.49	+13	00	57.1			095
2563		1980	10	11.01925	03	16	16.52	+15	24	12.6	17.5		095
2332		1980	10	11.01925	03	16	32.75	+10	09	59.8			095
1980	TG13*	1980	10	11.01925	03	18	26.76	+18	04	41.1	17.0		095
1980	TH13*	1980	10	11.01925	03	19	16.67	+13	16	23.1	17.5		095
1893		1980	10	11.01925	03	20	14.82	+11	43	44.2			095
1980	TJ13*	1980	10	11.01925	03	20	29.57	+18	01	29.5	17.0		095
1980	TK13*	1980	10	11.01925	03	21	03.02	+17	30	22.6	16.5		095
1156		1980	10	11.01925	03	23	40.40	+16	37	47.9			095
1193		1980	10	11.01925	03	24	39.98	+15	48	28.4			095
1980	TL13*	1980	10	11.01925	03	24	40.22	+16	42	45.9	16.5		095
529		1980	10	11.01925	03	27	10.96	+11	42	39.1			095
1259		1980	10	11.01925	03	30	30.78	+17	23	38.5			095
1980	TM13*	1980	10	12.92571	01	49	36.39	-04	17	04.0	17.0	1	095
1980	TN13*	1980	10	12.92571	01	52	38.82	-07	29	08.0	16.5		095
1689		1980	10	12.92571	01	53	15.49	-02	00	20.8			095
1980	TO13*	1980	10	12.92571	02	00	25.38	-00	49	00.7	17.0		095
1926		1980	10	12.92571	02	03	52.85	-08	06	42.9			095
1649		1980	10	12.92571	02	04	58.11	-01	53	47.2			095
1980	TP13*	1980	10	12.92571	02	08	15.21	+00	01	40.4	16.5	1	095
1980	TQ13*	1980	10	12.92571	02	11	11.87	-00	56	01.5	16.5		095
1980	TR13*	1980	10	12.92571	02	12	54.45	-00	58	24.1	16.5		095
1980	TS13*	1980	10	12.92571	02	19	06.58	+00	01	40.9	16.5	1	095
1980	TT13*	1980	10	12.92571	02	20	10.12	-02	23	35.7	16.5	1	095
1729		1980	10	12.99654	03	34	51.94	+21	26	37.5			095
1980	TU13*	1980	10	12.99654	03	34	56.50	+25	11	58.0	17.0	1	095
1980	TV13*	1980	10	12.99654	03	40	55.64	+24	24	45.6	17.0		095
1073		1980	10	12.99654	03	44	43.75	+20	05	17.3			095
1980	TW13*	1980	10	12.99654	03	44	45.90	+21	56	25.8	17.0		095
1493		1980	10	12.99654	03	49	30.63	+24	12	55.7			095
233		1980	10	12.99654	03	51	00.29	+19	32	09.1			095
1324		1980	10	12.99654	03	51	41.14	+27	08	47.3			095
2826		1980	10	12.99654	03	51	47.49	+26	08	38.2	16.5		095

1980	TX13*	1980	10	12.99654	03	52	57.42	+24	58	37.0	17.0	095
396		1980	10	12.99654	03	54	04.95	+21	36	34.0		095
2346		1980	10	12.99654	03	58	47.58	+24	05	54.7		095
161		1980	10	12.99654	04	00	05.26	+27	17	10.3		095
1980	TY13*	1980	10	12.99654	04	00	47.39	+26	20	04.6	17.0	095
2036		1980	10	12.99654	04	05	33.58	+26	15	11.2		095
1145		1980	10	12.99654	04	06	02.86	+28	54	11.8	1	095
1080		1980	10	12.99654	04	06	12.03	+26	29	56.8		095
2043		1980	10	12.99654	04	07	45.38	+25	19	24.5		095
10		1980	10	12.99654	04	08	26.26	+24	48	42.5		095
2353		1980	10	12.99654	04	10	00.32	+23	58	08.5		095
209		1980	10	12.99654	04	10	06.57	+28	36	57.1	1	095
376		1980	10	12.99654	04	11	32.48	+28	35	58.6	1	095
830		1980	10	12.99654	04	16	38.20	+26	14	30.2	1	095
1087		1980	10	12.99654	04	16	41.31	+26	28	29.7	1	095
1145		1980	10	13.06668	04	06	00.62	+28	54	17.3	1	095
1080		1980	10	13.06668	04	06	12.39	+26	30	19.7	1	095
2043		1980	10	13.06668	04	07	43.93	+25	19	23.9	1	095
10		1980	10	13.06668	04	08	24.66	+24	48	39.3	1	095
2353		1980	10	13.06668	04	09	58.64	+23	58	12.8	1	095
209		1980	10	13.06668	04	10	04.71	+28	37	01.2	1	095
376		1980	10	13.06668	04	11	30.18	+28	35	56.3		095
1980	TZ13*	1980	10	13.06668	04	12	01.14	+30	48	03.2	16.5	095
1980	VL1	1980	10	13.06668	04	12	20.00	+30	43	48.4	16.0	095
830		1980	10	13.06668	04	16	36.91	+26	14	32.5		095
1087		1980	10	13.06668	04	16	40.02	+26	28	46.5		095
768		1980	10	13.06668	04	19	59.16	+26	08	19.9		095
418		1980	10	13.06668	04	20	28.41	+25	01	04.5		095
1980	TA14*	1980	10	13.06668	04	22	00.42	+28	41	26.1	16.5	095
344		1980	10	13.06668	04	22	04.84	+23	38	12.1	1	095
1980	TB14*	1980	10	13.06668	04	23	27.84	+32	58	56.5	15.5	1 095
262		1980	10	13.06668	04	25	52.75	+23	34	30.5	1	095
1980	TC14*	1980	10	13.06668	04	28	33.74	+33	00	24.5	16.5	1 095
1587		1980	10	13.06668	04	30	28.10	+31	26	25.2		095
1980	XM	1980	10	13.06668	04	32	41.89	+29	39	44.9	16.5	095
2333		1980	10	13.06668	04	36	35.53	+26	06	13.9	16.0	095
1980	TD14*	1980	10	13.06668	04	37	13.43	+30	24	43.5	16.5	095
1980	TE14*	1980	10	13.06668	04	39	27.20	+32	48	43.7	16.5	1 095
1786		1980	10	13.06668	04	42	21.45	+31	22	52.3		095
1980	TF14*	1980	10	13.98822	02	51	58.91	+09	07	33.9	17.5	1 095
1680		1980	10	13.98822	02	52	08.03	+11	54	27.5		1 095
756		1980	10	13.98822	02	54	19.06	+11	18	14.8		1 095
1980	TG14*	1980	10	13.98822	02	54	56.43	+12	11	45.5	16.5	1 095
1874		1980	10	13.98822	02	57	22.01	+09	49	56.7		095
738		1980	10	13.98822	02	58	49.92	+11	46	46.8		095
2776		1980	10	13.98822	03	00	46.83	+13	12	21.0	17.0	095
1980	TH14*	1980	10	13.98822	03	01	17.08	+07	12	50.7	17.5	095
1579		1980	10	13.98822	03	02	16.47	+10	22	57.6		095
1980	VA	1980	10	13.98822	03	05	13.52	+12	07	31.6	17.5	095
1980	TJ14*	1980	10	13.98822	03	05	49.01	+12	04	43.5	17.5	2 095
1980	TK14*	1980	10	13.98822	03	05	52.70	+11	57	31.7	17.5	095
1980	TL14*	1980	10	13.98822	03	06	03.17	+09	43	36.8	17.5	095
292		1980	10	13.98822	03	06	03.18	+14	58	38.2		1 095
1980	TM14*	1980	10	13.98822	03	06	29.21	+09	00	59.6	17.0	095
1980	VV1	1980	10	13.98822	03	06	31.66	+11	50	24.0	17.0	095
1445		1980	10	13.98822	03	06	33.12	+14	38	01.2		1 095
1980	TF13	1980	10	13.98822	03	06	59.77	+11	20	41.4	17.5	095
1980	TN14*	1980	10	13.98822	03	07	06.31	+09	50	09.9	17.5	095
1980	TO14*	1980	10	13.98822	03	07	47.71	+06	57	46.6	17.5	2 095

1417		1980	10	13.98822	03	08	16.68	+07	19	56.0		095
1722		1980	10	13.98822	03	09	44.62	+10	46	48.0		095
2327		1980	10	13.98822	03	10	11.71	+12	44	40.0		095
1458		1980	10	13.98822	03	13	48.76	+06	17	54.8		095
2332		1980	10	13.98822	03	14	39.24	+10	09	07.8		095
2563		1980	10	13.98822	03	14	44.10	+15	17	06.5	17.5	1 095
1980	TP14*	1980	10	13.98822	03	15	05.09	+10	22	37.3	17.5	2 095
1982	BD3	1980	10	13.98822	03	15	10.95	+09	10	24.7	17.5	095
380		1980	10	13.98822	03	15	28.92	+09	39	23.8		095
1980	TQ14*	1980	10	13.98822	03	16	25.42	+11	23	28.7	17.5	095
1980	TR14*	1980	10	13.98822	03	17	30.34	+10	46	44.3	17.5	095
1980	TH13	1980	10	13.98822	03	17	30.71	+13	17	46.3	17.5	095
1893		1980	10	13.98822	03	18	21.32	+11	41	39.3		095
529		1980	10	13.98822	03	25	35.15	+11	42	38.8		1 095
2675		1980	10	15.98681	02	59	00.31	+19	41	41.8		1 095
2010		1980	10	15.98681	02	59	01.01	+18	55	00.0		1 095
571		1980	10	15.98681	03	01	59.52	+23	13	25.6		1 095
1980	TS14*	1980	10	15.98681	03	03	04.00	+17	31	34.4	17.5	1 095
1980	TT14*	1980	10	15.98681	03	04	16.98	+18	29	59.1	17.5	1 095
1980	TU14*	1980	10	15.98681	03	06	24.66	+22	11	12.3	16.5	095
1980	TV14*	1980	10	15.98681	03	07	23.83	+22	43	53.3	16.5	095
2037		1980	10	15.98681	03	08	55.84	+21	29	14.1		095
499		1980	10	15.98681	03	09	23.73	+19	23	43.3		095
478		1980	10	15.98681	03	09	33.10	+21	56	29.5		095
1980	TW14*	1980	10	15.98681	03	09	36.94	+24	18	45.1	17.5	1 095
1980	TX14*	1980	10	15.98681	03	12	04.33	+18	21	05.1	17.5	095
1980	TY14*	1980	10	15.98681	03	13	25.03	+24	16	22.7	17.0	095
1980	TZ14*	1980	10	15.98681	03	13	59.71	+23	43	40.0	17.0	095
1821		1980	10	15.98681	03	14	39.17	+21	23	55.2		095
2143		1980	10	15.98681	03	15	17.13	+24	07	01.5		095
1980	TJ13	1980	10	15.98681	03	17	46.02	+17	29	29.0	17.5	095
1980	TK13	1980	10	15.98681	03	18	17.09	+17	31	07.0	17.0	095
1980	TA15*	1980	10	15.98681	03	18	36.43	+21	49	37.4	17.5	095
1980	TB15*	1980	10	15.98681	03	18	42.71	+22	03	13.8	17.5	095
77		1980	10	15.98681	03	18	55.17	+20	55	12.3		095
1156		1980	10	15.98681	03	20	51.75	+16	26	46.1		1 095
1193		1980	10	15.98681	03	21	10.80	+15	51	48.4		1 095
2632		1980	10	15.98681	03	21	37.12	+25	14	48.0		1 095
1980	TL13	1980	10	15.98681	03	21	44.66	+15	47	53.8	16.5	1 095
1980	TC15*	1980	10	15.98681	03	24	15.45	+21	12	55.7	17.0	095
1980	TD15*	1980	10	15.98681	03	24	27.09	+20	20	51.0	17.0	095
1980	TE15*	1980	10	15.98681	03	26	49.52	+20	18	56.1	17.5	095
1259		1980	10	15.98681	03	27	53.12	+17	14	47.0		095
2224		1980	10	15.98681	03	28	18.05	+18	23	20.2		095
1676		1980	10	15.98681	03	28	38.54	+16	50	30.9		1 095
2113		1980	10	15.98681	03	29	40.04	+22	31	05.8		095
1622		1980	10	15.98681	03	30	26.89	+25	35	47.4		095
1980	TF15*	1980	10	15.98681	03	31	22.38	+18	37	12.1	17.0	095
2331		1980	10	15.98681	03	32	47.31	+22	45	01.8		095
1729		1980	10	15.98681	03	32	52.80	+21	24	28.4		095
1363		1980	10	17.89933	02	05	09.50	+12	50	06.5		1 095
1980	UO *	1980	10	17.89933	02	06	52.84	+14	32	48.7	17.5	1 095
1980	TV11	1980	10	17.89933	02	07	08.65	+11	16	47.3	17.5	1 095
1980	TW11	1980	10	17.89933	02	09	14.75	+13	43	17.8	17.5	1 095
1980	TZ11	1980	10	17.89933	02	11	21.08	+15	18	07.8	17.5	095
1980	UP *	1980	10	17.89933	02	11	36.90	+13	31	13.9	17.5	095
1980	TB12	1980	10	17.89933	02	13	30.30	+15	52	10.1	17.5	095
1946		1980	10	17.89933	02	14	39.90	+17	54	36.9		1 095
1931	TK	1980	10	17.89933	02	15	15.42	+13	55	41.4	16.5	095

1980	TF12	1980	10	17.89933	02	18	27.49	+15	23	14.4	17.0	095
1980	VN	1980	10	17.89933	02	18	56.59	+10	59	15.4		095
1980	TJ12	1980	10	17.89933	02	21	33.60	+14	49	10.9	18.0	095
1201		1980	10	17.89933	02	21	44.10	+12	11	09.5		095
2313		1980	10	17.89933	02	21	51.10	+15	12	06.0		095
1980	VO	1980	10	17.89933	02	22	09.36	+10	21	44.8	15.5	095
1980	TO12	1980	10	17.89933	02	25	31.55	+10	21	44.6	17.5	095
1980	TN12	1980	10	17.89933	02	26	05.25	+13	03	48.1	17.0	095
1715		1980	10	17.89933	02	26	09.44	+12	47	49.7		095
419		1980	10	17.89933	02	30	11.98	+16	24	30.5		095
1980	TT12	1980	10	17.89933	02	31	36.02	+13	44	26.7	17.0	095
1980	TX12	1980	10	17.89933	02	31	46.43	+15	51	44.3	17.0	095
1980	TW12	1980	10	17.89933	02	31	55.30	+13	00	59.7	17.5	095
2053		1980	10	17.89933	02	31	59.81	+09	53	07.7		1 095
2591		1980	10	17.89933	02	33	58.24	+16	37	56.6		095
1980	TY12	1980	10	17.89933	02	34	05.37	+16	04	38.3	18.0	095
1980	TZ12	1980	10	17.89933	02	34	42.98	+12	30	24.8	17.0	095
1980	TA13	1980	10	17.89933	02	34	57.84	+12	21	17.4	17.5	095
1980	TB13	1980	10	17.89933	02	36	17.60	+10	20	30.5	18.0	095
1980	TC13	1980	10	17.89933	02	36	48.93	+12	06	40.0	17.5	095
1941	UL	1980	10	17.89933	02	37	25.06	+11	58	05.9		095
1764		1980	10	17.89933	02	37	54.76	+12	29	05.8		095
1029		1980	10	17.89933	02	39	40.81	+15	58	59.1		095
1980	TD13	1980	10	17.89933	02	39	44.09	+18	44	03.2	17.0	1 095
1980	TE13	1980	10	17.89933	02	41	20.68	+16	05	55.9	17.0	1 095
1980	UQ *	1980	10	17.89933	02	42	13.62	+11	47	13.7	17.5	1 095
2293		1980	10	17.89933	02	43	34.95	+16	03	35.9		1 095
992		1980	10	17.89933	02	43	49.57	+14	22	55.2		1 095
720		1980	10	17.89933	02	46	28.69	+16	10	57.9		1 095
2675		1980	10	17.96876	02	57	21.50	+19	39	35.2		1 095
2010		1980	10	17.96876	02	57	43.91	+18	52	19.9		1 095
571		1980	10	17.96876	03	00	41.97	+23	20	06.3		1 095
1980	TS14	1980	10	17.96876	03	01	50.99	+17	23	19.8	17.5	1 095
1980	TU14	1980	10	17.96876	03	05	12.33	+22	06	12.6	16.5	095
1980	TV14	1980	10	17.96876	03	05	57.76	+22	34	14.6	16.5	095
2037		1980	10	17.96876	03	07	20.53	+21	29	55.0		095
478		1980	10	17.96876	03	08	22.23	+21	45	28.2		095
499		1980	10	17.96876	03	08	22.84	+19	19	16.8		095
1980	TY14	1980	10	17.96876	03	12	03.38	+24	23	09.1	17.0	1 095
1980	TZ14	1980	10	17.96876	03	12	50.22	+23	36	02.2	17.0	095
1821		1980	10	17.96876	03	12	59.94	+21	18	32.4		095
2143		1980	10	17.96876	03	13	46.36	+24	20	38.1		1 095
1980	TJ13	1980	10	17.96876	03	16	28.16	+17	15	45.5	17.5	095
1980	TB15	1980	10	17.96876	03	16	35.32	+22	16	19.5	17.5	095
1980	TK13	1980	10	17.96876	03	16	55.85	+17	30	36.0	17.0	095
1980	TA15	1980	10	17.96876	03	17	08.49	+21	54	30.1	17.5	095
77		1980	10	17.96876	03	17	43.61	+20	53	58.7		095
1156		1980	10	17.96876	03	19	31.58	+16	21	39.6		1 095
1193		1980	10	17.96876	03	19	38.64	+15	52	49.0		1 095
1980	UR *	1980	10	17.96876	03	19	43.67	+23	59	14.8	15.0	6 095
2632		1980	10	17.96876	03	20	13.11	+25	18	08.6		095
1980	TL13	1980	10	17.96876	03	20	26.71	+15	25	11.0	16.5	095
1980	US *	1980	10	17.96876	03	22	11.76	+19	55	12.9	17.5	095
1980	UT *	1980	10	17.96876	03	22	38.72	+20	18	28.4	17.5	095
1980	TC15	1980	10	17.96876	03	23	08.01	+21	19	04.2	17.0	095
1980	TD15	1980	10	17.96876	03	23	14.34	+20	12	00.1	17.0	095
1980	TE15	1980	10	17.96876	03	25	26.32	+20	18	59.9	17.5	095
1259		1980	10	17.96876	03	26	43.25	+17	10	50.7		095
1676		1980	10	17.96876	03	27	00.56	+16	48	09.6		095

2224		1980	10	17.96876	03	27	04.75	+18	20	20.7		095
2113		1980	10	17.96876	03	28	19.94	+22	34	52.3		095
1980	UU *	1980	10	17.96876	03	29	48.73	+16	05	50.1	17.0	1 095
1980	TF15	1980	10	17.96876	03	30	15.74	+18	24	01.2	17.0	095
1729		1980	10	17.96876	03	31	24.90	+21	22	25.5		095
2331		1980	10	17.96876	03	31	53.06	+22	40	47.5		095
1980	UV *	1980	10	18.04167	03	31	11.00	+19	13	05.1	17.0	1 095
1097		1980	10	18.04167	03	40	01.69	+17	06	19.9		095
1980	UW *	1980	10	18.04167	03	40	38.27	+17	43	08.3	17.5	095
1073		1980	10	18.04167	03	42	06.73	+19	59	48.5		095
301		1980	10	18.04167	03	42	19.17	+12	26	04.2		1 095
1980	VR1	1980	10	18.04167	03	42	20.51	+16	12	45.1	16.5	095
1980	UX *	1980	10	18.04167	03	43	02.17	+14	07	32.0	15.5	095
233		1980	10	18.04167	03	48	49.07	+19	08	16.5		095
2706		1980	10	18.04167	03	49	30.68	+19	29	33.8		095
1980	UY *	1980	10	18.04167	03	49	59.35	+15	58	47.2	17.5	095
396		1980	10	18.04167	03	51	26.35	+21	27	06.5		1 095
197		1980	10	18.04167	03	53	36.51	+12	21	25.8		1 095
510		1980	10	18.04167	03	54	57.07	+14	20	25.9		095
2603		1980	10	18.04167	03	55	05.64	+21	12	57.9		1 095
1980	UZ *	1980	10	18.04167	03	55	20.97	+17	51	29.6	17.0	095
2698		1980	10	18.04167	03	56	09.83	+16	35	49.9		095
1980	UA1 *	1980	10	18.04167	03	58	04.53	+16	42	15.6	16.5	095
1980	VM1	1980	10	18.04167	03	59	05.41	+18	17	47.7	17.0	095
1161		1980	10	18.04167	03	59	48.06	+15	03	49.0		095
1619		1980	10	18.04167	04	00	37.65	+16	41	57.8		095
1663		1980	10	18.04167	04	09	19.63	+14	44	03.3		1 095
772		1980	10	18.04167	04	12	25.40	+12	47	22.7		1 095
521		1980	11	30.83404	02	17	56.41	+00	42	27.3		1 095
1980	WM *	1980	11	30.83404	02	20	08.42	-02	04	27.4	17.0	1 095
1216		1980	11	30.83404	02	23	42.45	+02	25	31.3		1 095
1980	WN *	1980	11	30.83404	02	24	18.23	-03	51	54.7	17.0	095
1980	WO *	1980	11	30.83404	02	30	10.06	-00	38	26.5	17.0	095
2846		1980	11	30.83404	02	34	44.09	-00	39	21.2	16.5	095
1458		1980	11	30.83404	02	36	20.72	+01	28	05.1		095
2173		1980	11	30.83404	02	36	38.83	-01	51	37.8		095
1627		1980	11	30.83404	02	37	54.71	-01	37	04.3		095
787		1980	11	30.83404	02	38	42.13	-01	29	33.5		095
1980	WP *	1980	11	30.83404	02	39	21.89	+00	52	02.1	17.0	095
1980	WQ *	1980	11	30.83404	02	40	47.45	+00	30	30.0	17.0	095
1980	WR *	1980	11	30.83404	02	41	15.56	+01	03	49.8	17.0	095
1980	WS *	1980	11	30.83404	02	41	35.80	+01	47	28.2	17.0	095
653		1980	11	30.83404	02	44	48.34	-00	30	54.9		095
1980	WT *	1980	11	30.83404	02	47	23.27	-06	07	08.2	16.0	1 095
2567		1980	11	30.83404	02	56	34.17	+02	29	59.3		095
1980	WU *	1980	11	30.89723	04	22	02.30	+18	11	18.8	16.0	1 095
1980	WV *	1980	11	30.89723	04	23	50.25	+21	55	51.8	17.0	1 095
2248		1980	11	30.89723	04	23	58.32	+22	58	15.4		1 095
1980	WW *	1980	11	30.89723	04	24	26.92	+20	01	57.1	17.5	1 095
1980	WX *	1980	11	30.89723	04	24	35.83	+18	40	35.0	17.0	1 095
1980	WY *	1980	11	30.89723	04	25	46.11	+18	21	16.2	18.0	1 095
2628		1980	11	30.89723	04	26	33.66	+20	19	15.1		1 095
1980	WZ *	1980	11	30.89723	04	27	39.14	+14	58	26.3	16.5	1 095
1968		1980	11	30.89723	04	27	39.50	+21	25	19.6		1 095
1980	WA1 *	1980	11	30.89723	04	28	21.85	+17	51	15.9	18.0	1 095
1980	XW	1980	11	30.89723	04	28	32.18	+19	21	43.9	17.0	095
1083		1980	11	30.89723	04	28	45.40	+19	38	30.4		095
1980	WB1 *	1980	11	30.89723	04	28	47.44	+18	51	49.8	18.0	095
480		1980	11	30.89723	04	28	54.62	+14	40	00.7		1 095



431		1980	11	30.89723	04	30	03.00	+19	48	37.6		095
1980	WC1 *	1980	11	30.89723	04	30	28.02	+16	42	41.0	18.0	095
1980	WD1 *	1980	11	30.89723	04	31	17.81	+13	53	12.9	17.0	1 095
811		1980	11	30.89723	04	31	35.76	+17	43	11.8		095
1980	WE1 *	1980	11	30.89723	04	31	59.69	+22	10	43.6	17.0	095
1980	WF1 *	1980	11	30.89723	04	32	07.64	+15	22	27.0	16.0	095
1980	WG1 *	1980	11	30.89723	04	32	27.08	+19	25	30.0	18.0	095
1980	XX	1980	11	30.89723	04	32	29.65	+18	35	41.4	17.5	095
1980	WH1 *	1980	11	30.89723	04	33	27.00	+17	31	39.8	17.5	095
2132		1980	11	30.89723	04	33	46.52	+19	47	24.1		095
1980	WJ1 *	1980	11	30.89723	04	33	47.85	+18	51	26.4	18.0	095
1980	WK1 *	1980	11	30.89723	04	33	50.74	+22	41	23.5	18.0	1 095
1980	WL1 *	1980	11	30.89723	04	34	20.92	+20	25	49.0	18.0	095
1980	WM1 *	1980	11	30.89723	04	34	25.18	+23	12	25.2	17.0	1 095
1980	WN1 *	1980	11	30.89723	04	34	46.16	+20	46	45.0	18.0	095
2117		1980	11	30.89723	04	35	05.61	+22	49	34.4		1 095
1980	XZ	1980	11	30.89723	04	35	05.70	+18	36	14.4	16.5	095
1980	WO1 *	1980	11	30.89723	04	35	24.78	+19	03	01.3	18.0	095
1980	WP1 *	1980	11	30.89723	04	37	33.38	+18	28	42.7	18.0	095
2616		1980	11	30.89723	04	37	57.06	+19	27	59.0		095
1980	WQ1 *	1980	11	30.89723	04	38	04.02	+19	51	22.4	18.0	095
2225		1980	11	30.89723	04	38	07.04	+20	32	26.8		095
1886		1980	11	30.89723	04	38	15.36	+17	06	07.8		095
1980	WR1 *	1980	11	30.89723	04	38	31.68	+20	57	40.0	17.5	095
1505		1980	11	30.89723	04	38	47.10	+21	16	58.2		095
1980	WS1 *	1980	11	30.89723	04	39	34.58	+16	32	58.8	18.0	095
1980	WT1 *	1980	11	30.89723	04	39	55.12	+17	42	00.2	18.0	095
1980	WU1 *	1980	11	30.89723	04	42	18.59	+15	50	18.0	18.0	095
1980	WV1 *	1980	11	30.89723	04	42	49.14	+21	09	37.3	17.0	095
1980	WW1 *	1980	11	30.89723	04	42	58.80	+21	45	57.2	18.0	095
1982	FR	1980	11	30.89723	04	43	27.70	+17	26	00.7		095
95		1980	11	30.89723	04	44	37.43	+19	31	27.2		095
2310		1980	11	30.89723	04	45	56.76	+19	01	50.7		095
1980	WX1 *	1980	11	30.89723	04	46	15.55	+22	21	18.8	18.0	1 095
946		1980	11	30.89723	04	46	25.78	+22	27	04.0		095
1980	WY1 *	1980	11	30.89723	04	46	36.86	+19	34	36.8	17.5	095
1980	WZ1 *	1980	11	30.89723	04	46	37.20	+23	37	03.5	18.0	1 095
1980	WA2 *	1980	11	30.89723	04	46	48.85	+16	04	44.9	18.0	095
1980	WB2 *	1980	11	30.89723	04	47	17.56	+20	36	46.2	17.5	095
1980	WC2 *	1980	11	30.89723	04	48	09.08	+16	31	19.3	17.5	095
1980	WD2 *	1980	11	30.89723	04	48	26.12	+16	12	53.8	17.0	095
983		1980	11	30.89723	04	48	41.14	+21	51	23.4		095
1980	WE2 *	1980	11	30.89723	04	49	41.42	+17	20	44.3	17.5	095
1980	WF2 *	1980	11	30.89723	04	49	44.80	+22	55	45.4	16.5	1 095
1980	WG2 *	1980	11	30.89723	04	50	11.74	+20	07	57.0	18.0	095
2704		1980	11	30.89723	04	51	10.52	+16	44	20.3		095
1980	WH2 *	1980	11	30.89723	04	51	11.26	+18	37	07.7	17.5	095
1980	WJ2 *	1980	11	30.89723	04	51	26.75	+22	54	49.0	17.5	1 095
1980	WK2 *	1980	11	30.89723	04	51	59.80	+16	41	32.6	17.0	095
204		1980	11	30.89723	04	56	03.98	+13	40	46.6		1 095
1257		1980	11	30.89723	04	56	06.06	+18	42	32.2		095
1979	OM15	1980	11	30.89723	04	57	26.30	+21	57	43.7		095
16		1980	11	30.89723	04	57	28.30	+17	51	38.0		095
1980	WL2 *	1980	11	30.89723	04	57	34.05	+20	51	15.7	16.5	095
1980	WM2 *	1980	11	30.89723	04	57	52.26	+17	28	15.2	17.0	095
1980	WN2 *	1980	11	30.89723	04	58	24.64	+19	18	48.8	17.0	095
1980	WO2 *	1980	11	30.89723	05	00	00.28	+19	53	17.8	17.5	1 095
1980	WP2 *	1980	11	30.89723	05	00	46.67	+21	02	24.4	17.5	1 095
410		1980	11	30.89723	05	01	21.43	+16	35	27.7		1 095

1980	WQ2	*	1980	11	30.89723	05	02	16.42	+23	12	05.4	18.0	1	095
2692			1980	11	30.89723	05	02	43.63	+18	15	55.4			1 095
1980	WR2	*	1980	11	30.89723	05	02	58.14	+23	17	08.8	17.5	1	095
1256			1980	11	30.89723	05	03	03.55	+21	18	52.6			1 095
1980	WS2	*	1980	11	30.89723	05	05	11.10	+19	05	20.2	17.0	1	095
1426			1980	12	10.78613	02	28	41.65	+27	51	02.3			1 095
81			1980	12	10.78613	02	30	16.21	+26	07	16.9			1 095
2618			1980	12	10.78613	02	30	49.21	+25	02	42.6			1 095
1622			1980	12	10.78613	02	33	45.21	+23	14	23.8			1 095
1980	XM1	*	1980	12	10.78613	02	33	46.34	+27	54	43.0	17.0		095
2632			1980	12	10.78613	02	34	57.54	+24	24	45.4			095
1244			1980	12	10.78613	02	35	59.74	+24	21	48.0			095
1351			1980	12	10.78613	02	39	34.57	+25	58	38.4			095
1980	VX1		1980	12	10.78613	02	39	38.74	+26	32	35.1	17.0		095
1436			1980	12	10.78613	02	39	54.02	+24	18	18.7			095
1980	XN1	*	1980	12	10.78613	02	40	32.27	+31	29	11.0	17.0	1	095
382			1980	12	10.78613	02	41	01.00	+25	38	16.9			095
1980	XO1	*	1980	12	10.78613	02	41	42.33	+26	47	08.2	17.0		095
608			1980	12	10.78613	02	45	12.21	+27	58	19.0			095
1980	XP1	*	1980	12	10.78613	02	47	50.02	+24	02	19.4	17.0		095
2098			1980	12	10.78613	02	48	45.41	+27	07	11.2			095
1980	XQ1	*	1980	12	10.78613	02	50	12.41	+26	01	30.9	17.5		095
1324			1980	12	10.78613	02	53	39.97	+23	18	03.4		1	095
1980	XR1	*	1980	12	10.78613	02	54	46.96	+24	03	38.9	17.0		095
1980	XS1	*	1980	12	10.78613	02	55	07.49	+24	10	49.3	16.5		095
1780			1980	12	10.78613	02	56	05.60	+27	13	40.6			095
1980	XT1	*	1980	12	10.78613	02	57	46.28	+27	52	24.1	17.0		095
198			1980	12	10.78613	02	58	56.66	+24	25	25.2			095
161			1980	12	10.78613	03	01	11.25	+27	29	24.4			095
2826			1980	12	10.78613	03	03	19.93	+27	01	01.1	16.5		095
1980	XU1	*	1980	12	10.78613	03	03	28.66	+26	31	02.4	17.0		095
1980	XV1	*	1980	12	10.78613	03	05	54.61	+28	13	55.6	17.0		095
2036			1980	12	10.78613	03	07	24.87	+23	55	56.0		1	095
1980	XW1	*	1980	12	10.78613	03	10	37.10	+29	33	24.7	16.5	1	095
1980	XX1	*	1980	12	10.78613	03	10	53.78	+26	24	31.9	17.0	1	095
1145			1980	12	10.78613	03	11	23.38	+27	18	51.5			1 095
1980	XY1	*	1980	12	10.85974	04	15	03.56	+22	56	59.3	17.5	3	095
2248			1980	12	10.85974	04	15	12.66	+22	40	18.6			1 095
1980	WZ		1980	12	10.85974	04	17	07.96	+15	56	33.7	16.5	1	095
2628			1980	12	10.85974	04	17	29.16	+19	55	23.8			1 095
1083			1980	12	10.85974	04	17	40.84	+19	53	00.7			1 095
1980	XW		1980	12	10.85974	04	18	01.26	+18	35	37.6	17.0	1	095
1968			1980	12	10.85974	04	18	02.42	+21	15	46.0			1 095
1980	WE1		1980	12	10.85974	04	20	43.64	+22	39	12.9	17.5	1	095
431			1980	12	10.85974	04	21	21.67	+19	33	24.2			095
1980	XX		1980	12	10.85974	04	21	23.58	+18	53	46.9	17.5		095
1980	WF1		1980	12	10.85974	04	21	48.78	+15	34	38.0	16.0		095
811			1980	12	10.85974	04	22	38.12	+17	29	20.6			095
1980	WM1		1980	12	10.85974	04	23	46.22	+23	13	23.2	17.0	1	095
2132			1980	12	10.85974	04	24	00.86	+19	51	21.4			095
1980	WH1		1980	12	10.85974	04	24	43.42	+17	12	52.4	17.5		095
2117			1980	12	10.85974	04	25	37.82	+22	38	02.0		1	095
1980	XZ		1980	12	10.85974	04	26	09.52	+18	46	46.4	16.5		095
2616			1980	12	10.85974	04	26	24.72	+19	07	36.8			095
1980	XZ1	*	1980	12	10.85974	04	27	28.09	+18	53	58.4	17.5		095
1980	WR1		1980	12	10.85974	04	27	31.72	+20	38	46.0	17.5		095
1886			1980	12	10.85974	04	27	41.00	+17	30	19.4			095
1980	XA2	*	1980	12	10.85974	04	27	47.79	+17	03	37.0	17.5		095
1980	XB2	*	1980	12	10.85974	04	28	10.20	+22	05	14.2	17.5		095

2225		1980	12	10.85974	04	28	39.52	+20	24	13.4		095
1980	WS1	1980	12	10.85974	04	28	55.26	+16	37	25.2	17.5	095
1505		1980	12	10.85974	04	29	04.69	+20	17	13.4		095
1980	XC2 *	1980	12	10.85974	04	29	05.44	+21	02	24.6	17.5	095
1980	WQ1	1980	12	10.85974	04	29	07.54	+19	38	55.6	18.0	095
1980	XD2 *	1980	12	10.85974	04	29	42.93	+20	28	20.5	17.5	095
1980	WU1	1980	12	10.85974	04	30	38.62	+16	45	07.0	17.5	095
1980	WV1	1980	12	10.85974	04	31	30.88	+20	30	15.8	17.5	095
1982	FR	1980	12	10.85974	04	32	04.80	+17	23	52.9		095
1980	XE2 *	1980	12	10.85974	04	33	14.72	+16	48	29.7	17.5	095
1980	XF2 *	1980	12	10.85974	04	33	20.88	+20	02	36.4	17.5	095
95		1980	12	10.85974	04	35	50.39	+18	25	53.4		095
1980	XG2 *	1980	12	10.85974	04	35	55.13	+16	15	04.0	17.5	095
1980	XH2 *	1980	12	10.85974	04	36	45.81	+17	41	55.1	17.5	095
2310		1980	12	10.85974	04	37	12.28	+18	51	47.1		095
1980	WB2	1980	12	10.85974	04	37	13.78	+20	45	43.0	17.5	095
1980	WD2	1980	12	10.85974	04	37	20.58	+16	05	15.8	17.0	095
946		1980	12	10.85974	04	37	25.14	+22	15	29.5		095
1980	WA2	1980	12	10.85974	04	37	44.49	+16	01	52.3	17.5	095
1980	WY1	1980	12	10.85974	04	37	53.56	+18	56	14.6	17.5	095
1980	WJ2	1980	12	10.85974	04	40	03.10	+23	11	06.8	17.5	1 095
983		1980	12	10.85974	04	40	12.18	+21	04	50.2		095
1980	WE2	1980	12	10.85974	04	40	26.66	+16	43	25.6	17.5	1 095
1980	WF2	1980	12	10.85974	04	40	41.32	+22	50	31.2	16.5	1 095
2704		1980	12	10.85974	04	40	52.56	+16	06	38.6		095
1980	WK2	1980	12	10.85974	04	41	41.94	+17	12	14.0	17.0	095
1980	WH2	1980	12	10.85974	04	42	02.34	+18	28	40.6	17.5	095
1980	WG2	1980	12	10.85974	04	42	19.26	+20	12	02.6	18.0	095
1980	XJ2 *	1980	12	10.85974	04	43	12.34	+16	26	24.9	17.5	095
1980	XK2 *	1980	12	10.85974	04	44	17.73	+16	58	59.4	18.0	095
1257		1980	12	10.85974	04	45	49.50	+18	14	16.4		095
1980	XL2 *	1980	12	10.85974	04	45	49.85	+21	00	00.5	17.5	095
1980	WL2	1980	12	10.85974	04	46	04.58	+20	58	28.4	16.5	095
1980	XM2 *	1980	12	10.85974	04	46	08.42	+18	00	48.8	18.0	095
1980	WN2	1980	12	10.85974	04	47	31.96	+18	52	37.2	17.0	095
1980	WM2	1980	12	10.85974	04	47	36.84	+17	26	23.4	17.0	095
16		1980	12	10.85974	04	48	13.76	+17	39	55.4		095
1979	OM15	1980	12	10.85974	04	48	22.68	+21	42	29.8		095
1980	WP2	1980	12	10.85974	04	49	58.21	+20	35	31.2	17.5	095
1980	WO2	1980	12	10.85974	04	50	42.12	+19	46	05.7	17.0	095
1980	XN2 *	1980	12	10.85974	04	51	37.60	+21	15	14.5	17.5	1 095
410		1980	12	10.85974	04	51	51.60	+16	41	26.2		1 095
1980	WR2	1980	12	10.85974	04	52	17.78	+23	05	41.2	17.0	095
1980	XO2 *	1980	12	10.85974	04	52	22.62	+19	01	39.4	17.5	1 095
2692		1980	12	10.85974	04	52	32.76	+17	23	58.0		1 095
1256		1980	12	10.85974	04	55	43.10	+21	00	25.8		1 095
1980	WS2	1980	12	10.85974	04	56	02.26	+18	52	16.0	17.0	1 095
535		1980	12	10.85974	04	57	20.68	+21	09	47.4		1 095
580		1980	12	10.85974	04	57	44.72	+20	33	46.8		1 095
1330		1980	12	10.92988	05	22	30.90	+00	35	17.4		095
1980	XP2 *	1980	12	10.92988	05	22	54.22	+03	26	04.0	17.0	095
1980	XQ2 *	1980	12	10.92988	05	29	54.17	+04	28	21.6	17.5	095
1980	XR2 *	1980	12	10.92988	05	31	26.73	+06	51	31.6	17.0	095
1369		1980	12	10.92988	05	35	16.13	+03	51	19.7		095
1980	XS2 *	1980	12	10.92988	05	43	31.08	+00	10	00.8	16.5	1 095
1755		1980	12	10.92988	05	48	59.84	+08	20	29.5		1 095
1980	XT2 *	1980	12	10.92988	05	50	05.88	+02	36	49.3	17.5	095
1980	XU2 *	1980	12	10.92988	05	53	47.48	+07	15	12.2	17.0	1 095
993		1980	12	10.99863	07	00	18.99	+20	02	31.4		1 095

1153		1980	12	10.99863	07	01	45.57	+23	14	38.6		1	095
1980	XV2 *	1980	12	10.99863	07	03	46.35	+23	01	07.2	17.5	1	095
1297		1980	12	10.99863	07	04	55.49	+27	16	49.8		1	095
1980	XW2 *	1980	12	10.99863	07	05	22.55	+23	57	44.4	17.5	1	095
1980	XX2 *	1980	12	10.99863	07	05	43.26	+24	01	07.9	17.5	1	095
828		1980	12	10.99863	07	07	05.04	+24	08	01.5			095
1980	YB	1980	12	10.99863	07	07	30.42	+20	42	27.0	16.5		095
2250		1980	12	10.99863	07	09	46.57	+20	42	56.1			095
2674		1980	12	10.99863	07	10	43.32	+20	20	41.4		2	095
1064		1980	12	10.99863	07	11	50.20	+23	06	46.3			095
248		1980	12	10.99863	07	12	22.78	+19	16	53.0		1	095
492		1980	12	10.99863	07	13	04.83	+24	10	18.7			095
1980	XY2 *	1980	12	10.99863	07	13	47.57	+23	25	16.0	17.0		095
414		1980	12	10.99863	07	15	07.44	+19	30	34.7			095
1057		1980	12	10.99863	07	15	59.76	+20	36	35.6			095
1635		1980	12	10.99863	07	16	55.62	+19	40	03.7			095
1980	XZ2 *	1980	12	10.99863	07	17	09.07	+21	40	28.9	17.0		095
1980	XA3 *	1980	12	10.99863	07	18	15.97	+26	24	23.0	16.5		095
1980	XB3 *	1980	12	10.99863	07	18	29.81	+18	31	48.7	16.5		095
1980	XC3 *	1980	12	10.99863	07	19	02.71	+22	07	43.6	17.5	2	095
1980	XD3 *	1980	12	10.99863	07	19	47.81	+23	00	40.4	17.0		095
685		1980	12	10.99863	07	22	02.76	+18	13	58.0		1	095
1959		1980	12	10.99863	07	22	09.90	+23	19	37.4			095
1980	XE3 *	1980	12	10.99863	07	22	24.03	+21	38	52.5	16.5		095
1183		1980	12	10.99863	07	23	13.73	+26	26	11.3			095
408		1980	12	10.99863	07	23	41.24	+26	30	49.4			095
1980	XF3 *	1980	12	10.99863	07	24	09.96	+19	32	53.9	16.0		095
832		1980	12	10.99863	07	27	00.71	+21	19	02.9			095
884		1980	12	10.99863	07	29	18.91	+24	47	47.6			095
1003		1980	12	10.99863	07	32	00.70	+20	01	47.8			095
437		1980	12	10.99863	07	34	52.33	+18	18	33.8		1	095
2398		1980	12	10.99863	07	37	31.14	+22	29	46.4			095
1980	XG3 *	1980	12	10.99863	07	37	50.49	+25	21	43.2	16.5	1	095
656		1980	12	10.99863	07	39	55.82	+20	43	49.8		1	095
1027		1980	12	10.99863	07	39	57.45	+23	11	27.6		1	095
1302		1980	12	10.99863	07	43	00.57	+22	06	45.7		1	095
839		1980	12	11.06461	05	23	54.66	+41	55	58.4		1	095
654		1980	12	11.06461	05	29	55.66	+34	35	00.7		1	095
1980	XH3 *	1980	12	11.06461	05	39	17.74	+33	52	22.8	16.5	1	095
1265		1980	12	11.06461	05	40	37.95	+34	42	30.3		1	095
1182		1980	12	11.06461	05	45	42.58	+40	24	03.9			095
2015		1980	12	11.06461	05	46	35.96	+42	09	57.8			095
2646		1980	12	11.06461	05	57	55.44	+38	04	59.3			095
109		1980	12	11.06461	06	08	17.01	+38	58	45.5		1	095

Note 1: near edge of plate. 2: measurement uncertain. 3 = 1 + 2. 4: fast-moving object. 6 = 2 + 4.

OBSERVATIONS MADE AT GEISEI BY T. SEKI. FROM NIHONDAIRA OBS. CIRC. NOS. 1425 AND 1428.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.	
2846	1983	03	18.66111	12 29 45.38	+07 48 19.7	16 372	
2846	1983	03	18.67674	12 29 44.74	+07 48 27.0	372	
2857	1983	04	05.53611	10 01 51.46	+14 51 38.5	16 372	
2857	1983	04	05.57951	10 01 51.41	+14 51 44.6	372	
1932	CB1	1983	04	05.67604	14 27 22.74	+01 12 41.4	16 372
1932	CB1	1983	04	05.68507	14 27 22.43	+01 12 47.5	372
1983	AB	1983	03	08.68229	08 56 18.15	+22 35 46.8	17 372
1983	AB	1983	03	08.69340	08 56 17.89	+22 35 48.2	372

1983 CA	1983 02	21.69375	09 40	01.03	+23 39	19.6	16.5	372
1983 CA	1983 02	21.70382	09 40	00.45	+23 39	23.8		372
1983 CB	1983 03	08.73073	10 57	30.93	+10 58	06.6	17	372
1983 CB	1983 03	08.74167	10 57	30.28	+10 58	08.8		372
1983 CB	1983 03	11.74253	10 54	38.68	+10 57	57.3	17	372
1983 CB	1983 03	11.75139	10 54	38.13	+10 57	56.9		372
1983 CB	1983 03	14.73472	10 51	50.17	+10 57	09.5	17	372
1983 CB	1983 03	14.74653	10 51	49.58	+10 57	08.6		372
1983 CB	1983 04	02.55642	10 36	25.81	+10 36	02.7	17	372
1983 CB	1983 04	02.56806	10 36	25.30	+10 36	02.6		372
1983 GE *	1983 04	05.59097	12 39	33.81	-01 17	38.4	18	372
1983 GE	1983 04	05.60486	12 39	32.97	-01 17	30.8		372
1983 GE	1983 04	08.61632	12 36	56.16	-00 51	11.6	18	372
1983 GE	1983 04	08.63021	12 36	55.74	-00 51	02.7		372

OBSERVATIONS MADE AT HEMINGFORD ABBOTS BY A. YOUNG. MEASURED BY P. BIRTWHISTLE. COMMUNICATED BY G. M. HURST.

Object	Date	UT	R. A. (1950)		Decl.			Obs.
1620	1983 02	13.94444	11 27	50.31	+14 11	26.9		489
1620	1983 02	16.97813	11 22	53.58	+12 40	18.1		489
1620	1983 02	16.98715	11 22	52.49	+12 40	01.4		489
1982 XB	1983 01	09.94583	10 43	34.49	+45 19	49.9		489
1982 XB	1983 01	09.95278	10 43	36.03	+45 19	32.4		489

OBSERVATIONS MADE AT THE CENTRO ASTRONOMICO DE YEBES BY M. DE PASCUAL, J. GARCIA, C. CABANAS AND F. SANCHEZ.

Object	Date	UT	R. A. (1950)		Decl.			Obs.
2	1982 03	24.97370	13 20	40.24	+12 00	51.7		491
2	1982 03	24.97578	13 20	40.19	+12 00	54.5		491
2	1982 03	24.97786	13 20	40.11	+12 00	57.2		491
2	1982 03	25.06131	13 20	36.65	+12 02	44.1		491
2	1982 03	25.06339	13 20	36.57	+12 02	47.0		491
2	1982 03	25.06547	13 20	36.45	+12 02	49.5		491
3	1982 06	18.02128	18 12	46.77	-04 48	21.0		491
3	1982 06	18.03271	18 12	46.20	-04 48	20.9		491
3	1982 06	18.98357	18 11	57.10	-04 48	08.1		491
3	1982 06	18.99500	18 11	56.50	-04 48	08.3		491
6	1982 03	23.98313	12 00	40.46	+15 21	24.4		491
6	1982 03	23.98590	12 00	40.34	+15 21	25.7		491
6	1982 03	23.98867	12 00	40.18	+15 21	26.8		491
6	1982 03	24.96320	11 59	49.94	+15 29	19.8		491
6	1982 03	24.96597	11 59	49.80	+15 29	21.2		491
6	1982 03	24.96943	11 59	49.60	+15 29	22.9		491
6	1982 04	21.84501	11 40	18.77	+17 47	22.8		491
6	1982 04	21.84778	11 40	18.68	+17 47	22.6		491
6	1982 04	21.85055	11 40	18.59	+17 47	23.3		491
6	1982 04	22.85994	11 39	51.41	+17 49	02.6		491
6	1982 04	22.86271	11 39	51.35	+17 49	02.5		491
6	1982 04	22.86548	11 39	51.22	+17 49	02.7		491
6	1982 05	20.92251	11 36	29.50	+17 14	16.1		491
6	1982 05	20.92528	11 36	29.54	+17 14	15.7		491
6	1982 05	20.92805	11 36	29.59	+17 14	15.4		491
6	1982 05	21.92499	11 36	41.48	+17 10	36.2		491
6	1982 05	21.92776	11 36	41.50	+17 10	36.0		491
6	1982 05	21.93053	11 36	41.51	+17 10	34.6		491
7	1982 03	23.97355	11 52	16.35	-08 22	53.6		491
7	1982 03	23.97632	11 52	16.15	-08 22	51.9		491
7	1982 03	23.97909	11 52	16.02	-08 22	50.4		491
7	1982 03	25.05237	11 51	15.97	-08 15	37.5		491

7	1982 03 25.05514	11 51 15.83	-08 15 36.9	491
7	1982 03 25.05791	11 51 15.67	-08 15 35.7	491
7	1982 04 21.85367	11 30 59.54	-05 11 53.6	491
7	1982 04 21.85644	11 30 59.45	-05 11 52.6	491
7	1982 04 21.85921	11 30 59.39	-05 11 51.8	491
7	1982 04 22.86859	11 30 32.81	-05 06 14.8	491
7	1982 04 22.87206	11 30 32.74	-05 06 13.8	491
7	1982 04 22.87552	11 30 32.64	-05 06 12.7	491
20	1982 07 13.94892	18 10 00.08	-22 23 01.0	491
20	1982 07 14.96904	18 09 04.84	-22 23 18.6	491
25	1982 01 25.97318	07 08 57.09	-08 34 47.0	491
25	1982 01 25.97676	07 08 56.89	-08 34 45.9	491
25	1982 01 25.98082	07 08 56.68	-08 34 45.3	491
25	1982 01 26.87696	07 08 10.21	-08 30 51.4	491
25	1982 01 26.88112	07 08 09.98	-08 30 51.2	491
25	1982 01 26.88527	07 08 09.77	-08 30 49.3	491
39	1982 07 14.00178	20 36 56.46	-08 43 15.8	491
39	1982 07 14.00594	20 36 56.27	-08 43 17.0	491
39	1982 07 14.01010	20 36 56.09	-08 43 18.1	491
39	1982 07 15.02433	20 36 13.76	-08 48 04.0	491
39	1982 07 15.02883	20 36 13.57	-08 48 05.4	491
39	1982 07 15.03334	20 36 13.37	-08 48 06.6	491
40	1982 02 23.09658	10 34 02.75	+15 52 10.0	491
40	1982 02 23.10004	10 34 02.55	+15 52 11.1	491
40	1982 02 23.10351	10 34 02.35	+15 52 12.9	491
40	1982 02 23.96854	10 33 10.23	+15 58 14.0	491
40	1982 02 23.97200	10 33 10.05	+15 58 16.0	491
40	1982 02 23.97547	10 33 09.80	+15 58 17.0	491
40	1982 03 23.94539	10 08 48.03	+18 10 25.5	491
40	1982 03 23.94885	10 08 47.91	+18 10 26.0	491
40	1982 03 23.95231	10 08 47.78	+18 10 26.2	491
40	1982 03 24.93376	10 08 13.97	+18 12 18.9	491
40	1982 03 24.93584	10 08 13.89	+18 12 19.2	491
40	1982 03 24.93792	10 08 13.83	+18 12 19.3	491
40	1982 05 19.93806	10 21 06.38	+15 25 39.5	491
40	1982 05 20.91316	10 21 58.82	+15 19 08.7	491
40	1982 05 20.91766	10 21 59.02	+15 19 06.4	491
40	1982 05 21.91530	10 22 53.39	+15 12 23.2	491
40	1982 05 21.92014	10 22 53.66	+15 12 20.8	491
42	1982 05 21.06276	18 17 19.43	-21 45 41.4	491
42	1982 05 22.08538	18 17 01.66	-21 50 42.2	491
47	1982 03 23.92992	09 41 24.22	+17 21 09.2	491
47	1982 03 23.93477	09 41 24.12	+17 21 09.7	491
47	1982 03 23.93962	09 41 23.97	+17 21 09.6	491
47	1982 03 24.91714	09 40 56.78	+17 21 39.1	491
47	1982 03 24.92268	09 40 56.57	+17 21 38.8	491
47	1982 03 24.92822	09 40 56.45	+17 21 38.8	491
216	1982 02 22.95923	09 38 36.15	-04 51 28.1	491
216	1982 02 22.96615	09 38 35.83	-04 51 25.4	491
216	1982 02 22.97308	09 38 35.40	-04 51 23.0	491
216	1982 02 23.95026	09 37 48.90	-04 44 27.9	491
216	1982 02 23.95511	09 37 48.68	-04 44 25.9	491
216	1982 02 23.95996	09 37 48.42	-04 44 24.1	491
220	1982 05 21.06276	18 20 29.24	-23 14 01.6	491
264	1982 04 22.93560	11 22 05.16	+15 48 30.2	491
329	1982 05 20.98899	16 00 34.77	+03 20 07.1	491
329	1982 05 21.00077	16 00 34.14	+03 20 11.8	491
329	1982 05 21.98871	15 59 43.06	+03 26 15.3	491
329	1982 05 22.00013	15 59 42.35	+03 26 19.6	491

350	1982	02	23.06658	12	42	15.51	+32	40	10.4	491
350	1982	02	23.14968	12	42	12.85	+32	40	56.7	491
350	1982	02	23.23279	12	42	10.10	+32	41	42.5	491
351	1982	07	13.94892	17	59	19.20	-22	52	35.2	491
480	1982	06	17.93264	11	53	08.94	-13	18	50.7	491
480	1982	06	17.94095	11	53	09.26	-13	18	51.0	491
480	1982	06	18.92159	11	54	02.58	-13	15	04.3	491
480	1982	06	18.92990	11	54	03.07	-13	14	59.9	491
532	1982	01	25.98547	08	51	09.52	+27	15	00.7	491
532	1982	01	25.98824	08	51	09.40	+27	15	02.1	491
532	1982	01	25.99101	08	51	09.21	+27	15	03.8	491
532	1982	01	26.88926	08	50	20.23	+27	25	14.6	491
532	1982	01	26.89279	08	50	20.05	+27	25	16.4	491
532	1982	01	26.89618	08	50	19.85	+27	25	19.3	491
532	1982	02	22.86885	08	27	06.67	+31	27	21.5	491
532	1982	02	22.87162	08	27	06.56	+31	27	22.1	491
532	1982	02	22.87508	08	27	06.44	+31	27	23.8	491
532	1982	02	23.93746	08	26	26.13	+31	33	36.9	491
532	1982	02	23.94161	08	26	25.95	+31	33	38.6	491
532	1982	02	23.94577	08	26	25.78	+31	33	39.8	491
532	1982	03	24.85672	08	22	00.69	+32	45	57.7	491
532	1982	03	24.86087	08	22	00.80	+32	45	57.6	491
532	1982	05	20.96302	09	21	20.15	+28	52	10.3	491
532	1982	05	20.96787	09	21	20.60	+28	52	07.9	491
532	1982	05	20.97237	09	21	21.01	+28	52	06.6	491
532	1982	05	21.95546	09	22	51.50	+28	44	55.9	491
532	1982	05	21.95962	09	22	51.91	+28	44	54.3	491
532	1982	05	21.96377	09	22	52.22	+28	44	52.1	491
582	1982	03	23.92992	09	45	53.85	+17	36	24.5	491
582	1982	03	23.93477	09	45	53.88	+17	36	29.1	491
582	1982	03	23.93962	09	45	53.76	+17	36	33.5	491
582	1982	03	24.91714	09	45	46.88	+17	51	41.3	491
582	1982	03	24.92268	09	45	46.81	+17	51	46.8	491
582	1982	03	24.92822	09	45	46.80	+17	51	51.8	491
582	1982	05	20.94225	10	22	03.35	+23	11	52.8	491
582	1982	05	20.95402	10	22	04.12	+23	11	51.7	491
582	1982	05	21.94508	10	23	15.10	+23	10	13.7	491
582	1982	06	17.91325	10	59	06.35	+21	31	54.0	491
582	1982	06	17.92226	10	59	07.11	+21	31	51.3	491
582	1982	06	18.90185	11	00	31.57	+21	26	39.8	491
582	1982	06	18.91016	11	00	32.28	+21	26	36.5	491
654	1982	07	14.96904	18	10	56.90	-22	39	11.9	491
704	1982	02	22.95923	09	36	57.26	-05	34	28.2	491
704	1982	02	22.96615	09	36	56.93	-05	34	27.1	491
704	1982	02	22.97308	09	36	56.57	-05	34	25.9	491
704	1982	02	23.95020	09	36	08.97	-05	31	55.0	491
704	1982	02	23.95512	09	36	08.76	-05	31	54.2	491
704	1982	02	23.95996	09	36	08.50	-05	31	53.3	491
704	1982	03	24.86520	09	18	22.04	-03	48	36.3	491
704	1982	03	24.86936	09	18	21.94	-03	48	35.3	491
704	1982	03	24.87351	09	18	21.86	-03	48	34.4	491
729	1982	06	18.07426	20	05	57.81	-12	27	07.3	491
729	1982	06	18.08361	20	05	57.49	-12	27	10.9	491
729	1982	06	19.02859	20	05	29.55	-12	32	46.0	491
729	1982	06	19.03794	20	05	29.29	-12	32	49.5	491
729	1982	07	13.98252	19	47	20.16	-15	42	43.9	491
729	1982	07	13.99152	19	47	19.67	-15	42	49.3	491
729	1982	07	15.00331	19	46	26.54	-15	51	42.8	491
729	1982	07	15.01232	19	46	26.01	-15	51	47.8	491

747	1982 05 20.98899	16 06 01.96	+02 27 18.0	491
747	1982 05 21.00077	16 06 01.42	+02 27 18.8	491
747	1982 05 21.98871	16 05 17.00	+02 28 55.4	491
747	1982 05 22.00013	16 05 16.42	+02 28 56.2	491
1264	1982 06 18.05002	19 43 57.13	+10 18 46.4	491
1264	1982 06 18.05903	19 43 56.75	+10 18 53.1	491
1264	1982 06 19.01197	19 43 22.17	+10 30 19.5	491
1264	1982 06 19.01890	19 43 21.88	+10 30 25.4	491
1264	1982 07 13.96590	19 23 22.49	+13 53 56.1	491
1264	1982 07 13.97352	19 23 22.11	+13 53 57.7	491
1264	1982 07 14.98497	19 22 28.03	+13 57 47.3	491
1264	1982 07 14.99258	19 22 27.57	+13 57 49.3	491
1592	1982 01 26.02010	08 40 03.96	+25 04 13.1	491
1592	1982 01 26.99175	08 39 10.57	+25 09 51.1	491
1594	1982 04 21.95184	11 22 56.78	+17 38 25.6	491
1757	1982 01 26.02010	08 39 05.57	+25 53 43.1	491
1757	1982 01 26.99175	08 38 00.58	+25 57 53.2	491
1982 DV	1982 05 21.08700	18 14 03.09	-07 50 23.3	491
1982 DV	1982 05 21.09877	18 14 03.17	-07 50 09.5	491
1982 DV	1982 05 22.06765	18 14 25.88	-07 31 10.2	491
1982 DV	1982 06 18.02128	18 07 16.58	-04 02 01.8	491
1982 DV	1982 06 18.03271	18 07 16.11	-04 02 03.1	491
1982 DV	1982 06 18.98357	18 06 47.30	-04 03 41.4	491
1982 DV	1982 06 18.99500	18 06 46.86	-04 03 43.2	491

## OBSERVATIONS MADE AT THE OSSERVATORIO S. VITTORE.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
1620	1983 03 03.89271	10 28 01.31	-02 30 21.1	552	
1620	1983 03 03.89965	10 27 58.38	-02 31 02.8	552	
1620	1983 03 03.90660	10 27 55.62	-02 31 45.2	552	
1620	1983 03 03.91354	10 27 52.89	-02 32 27.9	552	
1620	1983 03 03.92049	10 27 50.15	-02 33 11.1	552	
1620	1983 03 03.92743	10 27 47.33	-02 33 53.5	552	
1620	1983 03 03.93437	10 27 44.70	-02 34 36.4	552	
1620	1983 03 03.94132	10 27 41.81	-02 35 18.9	552	
1620	1983 03 03.94826	10 27 39.16	-02 36 01.5	552	
1620	1983 03 03.95521	10 27 36.23	-02 36 44.4	552	
1981 PL	1983 01 11.88750	07 12 31.57	+13 10 10.9	552	
1981 PL	1983 01 11.90625	07 12 30.37	+13 10 07.6	552	

## OBSERVATIONS MADE WITH THE 0.46-M SCHMIDT TELESCOPE AT PALOMAR BY C.

SHOEMAKER, E. SHOEMAKER, B. BEHYMER, K. HERKENHOFF, R. KIRK, M. MARLEY,  
G. OJAKANGAS, C. POLANSKEY, D. RUDY AND S. SALYARDS.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
1727	1983 03 12.50694	13 44 54.47	+26 27 54.7	675			
1727	1983 03 15.46319	13 43 36.14	+27 32 48.7	675			
2511	1983 03 13.22222	11 39 50.21	+17 18 19.1	675			
2511	1983 03 15.39305	11 37 39.91	+17 32 38.2	675			
2583	1983 01 11.26528	07 19 52.92	+32 41 53.3	17	675		
2583	1983 01 11.29306	07 19 50.69	+32 42 00.6	675			
2583	1983 01 12.26527	07 18 34.97	+32 44 55.0	675			
2583	1983 01 12.28958	07 18 32.01	+32 44 59.0	675			
1980 MD	1983 01 10.19513	03 27 34.42	+09 54 13.8	675			
1980 MD	1983 01 10.24791	03 27 34.07	+09 54 25.5	675			
1981 PL	1983 01 10.28264	07 14 12.42	+13 14 27.5	15	675		
1981 PL	1983 01 10.30833	07 14 10.71	+13 14 23.0	675			
1981 PL	1983 01 11.30625	07 13 07.96	+13 11 44.6	675			
1981 PL	1983 01 12.30555	07 12 05.44	+13 09 09.8	675			
1981 PL	1983 02 10.34167	06 49 57.74	+12 35 39.1	15.5	675		



1981 PL	1983 02	15.18611	06 48	36.18	+12 36	05.7			675
1983 AA	1983 01	11.35833	08 02	19.47	+21 50	13.7			675
1983 AQ	1983 01	10.26527	07 42	42.23	+34 11	54.7			675
1983 AQ	1983 01	10.29583	07 42	40.03	+34 12	04.6			675
1983 AQ	1983 01	11.26528	07 41	27.79	+34 17	02.9	17.5		675
1983 AQ	1983 01	11.29306	07 41	25.40	+34 17	09.5			675
1983 AQ	1983 01	12.26527	07 40	12.74	+34 21	59.0			675
1983 AH1	1983 01	11.35833	08 24	42.23	+23 49	05.7			675
1983 AG2	1983 01	13.49236	10 35	58.92	+28 38	41.5			675
1983 AG2	1983 01	14.40694	10 34	54.56	+28 28	52.2			675
1983 AG2	1983 02	15.24166	09 39	16.09	+21 12	56.5			675
1983 AG2	1983 02	15.26111	09 39	13.95	+21 12	38.3			675
1983 AN2 *	1983 01	10.26527	07 49	18.39	+30 35	46.5		1	675
1983 AN2	1983 01	11.26528	07 48	21.54	+30 40	50.5	17		675
1983 AN2	1983 01	11.29306	07 48	19.54	+30 40	57.9			675
1983 AN2	1983 01	12.26527	07 47	23.65	+30 45	48.4			675
1983 AN2	1983 01	12.28958	07 47	22.39	+30 45	54.7			675
1983 AO2 *	1983 01	10.28264	06 59	25.12	+16 01	29.3	17	2	675
1983 AO2	1983 01	11.30625	06 58	31.94	+16 07	45.4			675
1983 AO2	1983 01	12.30555	06 57	40.48	+16 13	53.0			675
1983 AP2 *	1983 01	10.28264	07 05	54.68	+15 18	24.3	17.5	2	675
1983 AP2	1983 01	10.30833	07 05	52.83	+15 18	17.9			675
1983 AP2	1983 01	11.30625	07 04	49.60	+15 14	30.4			675
1983 AP2	1983 01	12.30555	07 03	46.64	+15 10	42.6			675
1983 AQ2 *	1983 01	10.38680	08 23	15.47	+25 44	05.4	17.5	3	675
1983 AQ2	1983 01	10.41527	08 23	13.80	+25 44	10.8			675
1983 AQ2	1983 01	11.35277	08 22	13.35	+25 46	03.5			675
1983 AQ2	1983 01	12.31458	08 21	10.30	+25 47	50.3			675
1983 AQ2	1983 01	12.34236	08 21	08.29	+25 47	56.3			675
1983 AR2 *	1983 01	10.38680	08 24	13.76	+31 55	58.5	17.5	3	675
1983 AR2	1983 01	10.41527	08 24	12.07	+31 56	06.0			675
1983 AR2	1983 01	11.31597	08 23	18.71	+32 00	12.1			675
1983 AR2	1983 01	11.35277	08 23	16.47	+32 00	23.0			675
1983 AR2	1983 01	12.31458	08 22	18.59	+32 04	36.9			675
1983 AR2	1983 01	12.34236	08 22	17.01	+32 04	44.5			675
1983 AS2 *	1983 01	10.38680	08 26	44.55	+33 10	56.0	17	3	675
1983 AS2	1983 01	10.41527	08 26	42.88	+33 11	06.9			675
1983 AS2	1983 01	11.31597	08 25	53.28	+33 16	13.6			675
1983 AS2	1983 01	11.35277	08 25	51.17	+33 16	26.0			675
1983 AS2	1983 01	12.31458	08 24	57.36	+33 21	47.7			675
1983 AS2	1983 01	12.34236	08 24	55.67	+33 21	56.6			675
1983 AT2 *	1983 01	10.38680	08 32	47.53	+30 04	17.4	17	3	675
1983 AT2	1983 01	10.41527	08 32	45.64	+30 04	25.6			675
1983 AT2	1983 01	11.31597	08 31	49.12	+30 08	16.1			675
1983 AT2	1983 01	11.35277	08 31	46.51	+30 08	25.2			675
1983 AT2	1983 01	12.31458	08 30	44.83	+30 12	24.3			675
1983 AT2	1983 01	12.34236	08 30	42.88	+30 12	33.1			675
1983 CD3 *	1983 02	11.37291	10 58	39.47	+30 05	06.0	16.5	4	675
1983 CD3	1983 02	11.39652	10 58	38.40	+30 05	16.8			675
1983 EA *	1983 03	13.22222	11 41	09.92	+21 37	30.9	17	4	675
1983 EA	1983 03	13.25000	11 41	06.37	+21 37	12.0			675
1983 EA	1983 03	15.39305	11 36	38.60	+21 10	22.2			675
1983 EA	1983 03	15.36319	11 36	42.49	+21 10	45.3			675
1983 EY *	1983 03	13.21111	11 49	15.52	+38 21	03.7	17.5	4	675
1983 EY	1983 03	13.23888	11 49	14.15	+38 21	34.8			675
1983 EY	1983 03	15.32638	11 47	38.46	+38 55	39.2			675
1983 EY	1983 03	15.34722	11 47	37.27	+38 55	57.2			675

Note 1: discoverers Behymer and Marley. 2: discoverer Salyards. 3: discoverers Herkenhoff and Ojakangas. 4: discoverer C. Shoemaker.

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

Object	Date	UT	R. A. (1950)		Decl.	Mag.	N	Obs.
2830	1982	12	06.34724	04 47 30.84	+42 02 55.6		1	675
2830	1982	12	06.46634	04 47 18.66	+42 03 49.4		1	675
2860	1983	02	20.20489	08 54 19.52	+29 35 37.7		1	675
2860	1983	02	21.38545	08 52 48.72	+29 23 55.7		1	675
1977 RC	1983	02	20.42502	11 38 32.71	+29 06 05.9	19	1	675
1977 RC	1983	04	02.20073	11 01 01.19	+35 41 14.7		1	675
1979 YB	1982	12	05.20349	03 12 07.44	+39 22 49.0		1	675
1979 YB	1982	12	06.26634	03 10 54.03	+38 56 15.5		1	675
1980 SH	1982	05	13.42403	16 29 40.97	+14 47 47.6		1	675
1980 SH	1982	05	14.33549	16 28 48.79	+14 59 34.4		1	675
1981 KE	1982	12	06.20416	01 28 28.61	-03 55 33.2		1	675
1981 LA	1982	09	29.50078	08 17 16.77	+18 12 36.2		1	675
1981 LA	1982	12	04.51599	10 38 04.38	+23 12 11.6		1	675
1981 LA	1982	12	05.47293	10 39 53.99	+23 22 16.8		1	675
1981 UW9	1982	12	06.38196	08 45 42.69	+37 09 03.9		1	675
1981 UW9	1982	12	06.51391	08 45 41.36	+37 09 47.0		1	675
1982 AN	1983	02	20.45766	12 09 24.03	-00 16 45.8		1	675
1982 AN	1983	02	21.49586	12 08 55.64	-00 11 20.0		3	675
1982 BB1	1983	02	20.51044	14 51 00.71	+03 27 59.2		1	675
1982 BB1	1983	02	21.48475	14 51 22.00	+03 35 42.9		1	675
1982 HR	1982	06	12.23758	14 55 54.76	-07 09 49.7		1	675
1982 HR	1982	06	13.21673	14 56 14.29	-07 18 52.1		1	675
1982 HS	1982	06	11.26293	13 24 58.58	-21 25 55.8		1	675
1982 HS	1982	06	12.24764	13 24 30.16	-21 43 27.5		1	675
1982 QR	1982	12	04.17085	22 40 27.69	+15 54 37.2		1	675
1982 QR	1982	12	05.11599	22 41 09.65	+15 53 27.9		1	675
1982 RA	1982	12	04.10696	20 34 17.53	+39 38 53.8		1	675
1982 RA	1983	01	24.10558	23 56 37.16	+59 45 23.1		1	675
1982 SA	1982	10	11.17431	23 18 08.11	+11 57 03.9		4	675
1982 SA	1982	10	11.20903	23 18 05.11	+11 57 22.6		4	675
1982 SA	1982	10	13.14444	23 15 22.41	+12 15 02.8		4	675
1982 SA	1982	10	13.17222	23 15 20.14	+12 15 16.0		4	675
1982 SA	1982	12	04.15141	23 13 17.87	+18 31 55.7		1	675
1982 SA	1982	12	05.13405	23 14 21.00	+18 39 47.4		1	675
1982 SU	1982	10	11.12708	23 46 40.31	-03 01 47.6		4	675
1982 SU	1982	10	11.16875	23 46 38.99	-03 02 27.4		4	675
1982 SU	1982	10	12.13125	23 45 58.64	-03 23 29.4		4	675
1982 SU	1982	10	12.17292	23 45 57.07	-03 24 20.2		4	675
1982 SU	1982	10	12.30556	23 45 51.03	-03 27 16.3		4	675
1982 SU	1982	10	12.32639	23 45 50.36	-03 27 39.0		4	675
1982 SU	1982	10	13.12292	23 45 18.93	-03 44 38.9		4	675
1982 SU	1982	10	13.14375	23 45 18.26	-03 45 02.4		4	675
1982 SV	1982	10	12.13125	23 37 40.04	-00 37 41.2		4	675
1982 SV	1982	10	12.17292	23 37 38.67	-00 38 42.3		4	675
1982 SV	1982	10	12.30556	23 37 34.33	-00 42 13.3		4	675
1982 SV	1982	10	12.32639	23 37 33.69	-00 42 44.3		4	675
1982 SV	1982	10	13.12292	23 37 12.79	-01 03 17.6		4	675
1982 SV	1982	10	13.14375	23 37 12.14	-01 03 47.1		4	675
1982 SW	1982	10	11.17431	23 25 04.70	+10 32 15.4		4	675
1982 SW	1982	10	11.19514	23 25 03.06	+10 32 18.9		4	675
1982 SW	1982	10	13.14444	23 22 46.20	+10 38 55.5		4	675
1982 SW	1982	10	13.17222	23 22 44.22	+10 39 00.7		4	675
1982 SH1	1982	12	06.15002	00 15 40.79	-13 24 41.7		1	675
1982 XB	1983	02	21.36947	10 55 02.66	+28 50 12.2		1	675
1983 CB	1983	04	02.26670	10 36 37.51	+10 36 36.0		1	675
1983 CB	1983	04	03.32295	10 35 55.19	+10 34 31.2		1	675
1983 EA	1983	04	01.26809	11 06 12.73	+16 50 06.2	16	1	675

1983 GA *	1983 04 02.17781	09 07 50.66	+38 12 16.3	17.0	1 675
1983 GA	1983 04 03.30490	09 08 10.31	+37 49 02.6		1 675
1983 GB *	1983 04 02.17781	09 10 09.92	+37 51 00.3	17.5	1 675
1983 GB	1983 04 03.30490	09 10 16.96	+37 41 21.0		1 675
1983 GD *	1983 04 02.26670	10 37 57.35	+10 05 03.8	16.5	1 675
1983 GD	1983 04 03.32295	10 37 24.85	+10 07 15.1		1 675
5550 P-L *	1960 10 17.31529	00 19 42.04	-01 03 37.3	18.4	5 675
5550 P-L	1960 10 22.26809	00 15 38.23	-01 08 43.0		5 675
5550 P-L	1960 10 25.30351	00 13 21.32	-01 10 31.2		5 675
5550 P-L	1960 10 26.31531	00 12 37.89	-01 10 51.7		5 675
5550 P-L	1960 10 26.35766	00 12 36.13	-01 10 53.7		5 675

Note 1: observer J. Gibson. 2: only one end of star trails measured. 3 =  
 1 + 2. 4: observers E. Helin and E. Shoemaker; measured by S. Swanson.  
 5: observer T. Gehrels; scanned and measured by C. J. van Houten and  
 I. van Houten-Groeneveld.

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.
5	1983 02 15.33958		10 55 58.57	+09 13 56.3			688
5	1983 02 15.37014		10 55 57.23	+09 14 12.0			688
18	1983 03 09.24931		10 46 01.99	+11 26 10.7			688
18	1983 03 09.28056		10 46 00.20	+11 26 27.9			688
18	1983 03 16.18542		10 39 57.02	+12 24 08.7			688
18	1983 03 16.22292		10 39 55.08	+12 24 25.7			688
71	1983 01 09.36319		09 41 53.47	+17 35 34.1			688
71	1983 01 09.44028		09 41 49.82	+17 35 19.0			688
101	1983 03 09.31250		12 24 46.01	-07 58 59.8			688
101	1983 03 09.34375		12 24 44.33	-07 58 57.5			688
169	1983 01 09.44028		09 38 56.08	+20 19 05.8			688
171	1983 03 09.24931		11 11 21.57	+09 07 51.8			688
171	1983 03 09.28056		11 11 20.09	+09 08 02.2			688
181	1983 03 09.15208		09 06 26.92	+17 46 05.1			688
181	1983 03 09.21528		09 06 25.26	+17 46 38.2			688
186	1983 03 16.25347		11 23 10.34	+13 43 36.0			688
186	1983 03 16.28403		11 23 08.33	+13 43 40.0			688
190	1983 03 10.20972		10 59 47.83	+04 45 12.2			688
190	1983 03 10.24028		10 59 46.69	+04 45 21.8			688
190	1983 03 16.23819		10 56 11.37	+05 16 12.7			688
190	1983 03 16.26875		10 56 10.26	+05 16 21.9			688
192	1983 01 09.36319		09 53 24.47	+18 38 45.2			688
192	1983 01 09.44028		09 53 21.16	+18 38 58.5			688
192	1983 03 09.15208		08 57 03.68	+20 44 40.8			688
192	1983 03 09.21528		08 57 01.09	+20 44 38.1			688
196	1983 02 19.34444		10 31 40.86	+20 22 44.3			688
196	1983 02 19.37569		10 31 39.29	+20 22 54.0			688
243	1983 02 15.32431		10 21 08.22	+10 03 38.9			688
243	1983 02 15.35486		10 21 06.62	+10 03 47.1			688
245	1983 02 18.13368		07 31 39.74	+28 09 38.2			688
245	1983 03 09.12986		07 27 49.39	+27 55 44.5			688
245	1983 03 09.19167		07 27 49.49	+27 55 39.6			688
254	1983 02 18.13368		07 51 51.22	+28 12 34.0			688
267	1983 03 09.15208		09 21 57.35	+24 04 47.5			688
267	1983 03 09.21528		09 21 54.81	+24 04 54.3			688
271	1983 01 09.36319		09 44 54.22	+15 36 52.8			688
271	1983 01 09.44028		09 44 51.70	+15 37 02.7			688
271	1983 03 09.15208		09 00 57.14	+18 05 46.3			688
271	1983 03 09.21528		09 00 55.06	+18 05 50.5			688
289	1983 03 10.27083		11 49 12.20	-00 04 07.5			688

289	1983	03	10.30139	11	49	10.85	-00	03	57.4	688
294	1983	03	09.24931	10	49	43.85	+11	27	35.2	688
294	1983	03	09.28056	10	49	42.47	+11	27	46.3	688
294	1983	03	16.18542	10	44	55.62	+12	01	39.3	688
294	1983	03	16.22292	10	44	54.09	+12	01	49.2	688
325	1983	01	09.36319	09	46	17.63	+20	35	34.7	688
325	1983	01	09.44028	09	46	14.94	+20	35	44.5	688
325	1983	03	09.15208	09	00	20.88	+21	47	59.0	688
325	1983	03	09.21528	09	00	18.67	+21	47	54.2	688
333	1983	02	19.28194	09	38	52.14	+16	52	56.7	688
333	1983	02	19.32778	09	38	49.82	+16	53	05.1	688
333	1983	03	17.17569	09	21	37.65	+17	46	42.2	688
333	1983	03	17.21528	09	21	36.58	+17	46	48.9	688
346	1983	03	16.25347	11	33	31.98	+16	40	58.1	688
346	1983	03	16.28403	11	33	30.41	+16	41	07.3	688
359	1983	03	09.24931	10	52	17.06	+11	28	25.6	688
359	1983	03	09.28056	10	52	15.31	+11	28	32.3	688
359	1983	03	16.18542	10	46	20.01	+11	50	44.9	688
359	1983	03	16.22292	10	46	18.06	+11	50	50.9	688
378	1983	03	16.30278	11	27	16.97	-06	00	45.6	688
378	1983	03	16.34028	11	27	15.22	-06	00	31.6	688
383	1983	02	15.32431	10	06	02.42	+15	05	11.1	688
383	1983	02	15.35486	10	06	00.87	+15	05	19.9	688
383	1983	02	19.28194	10	02	50.32	+15	24	05.8	688
383	1983	02	19.32778	10	02	47.92	+15	24	20.0	688
394	1983	02	18.13368	07	42	35.68	+28	27	16.8	688
394	1983	03	09.12986	07	35	27.96	+28	22	42.5	688
394	1983	03	09.19167	07	35	27.39	+28	22	37.7	688
406	1983	03	09.31250	12	27	52.90	-07	39	49.2	688
406	1983	03	09.34375	12	27	51.51	-07	39	43.2	688
421	1983	03	10.27083	11	47	58.36	-01	27	04.6	688
421	1983	03	10.30139	11	47	56.74	-01	26	51.1	688
460	1983	02	15.38542	11	17	14.93	-00	21	52.3	688
460	1983	02	15.41875	11	17	13.57	-00	21	43.0	688
460	1983	03	10.20972	10	59	42.68	+01	44	34.7	688
460	1983	03	10.24028	10	59	41.17	+01	44	46.0	688
460	1983	03	16.23819	10	54	55.96	+02	22	22.9	688
460	1983	03	16.26875	10	54	54.45	+02	22	34.5	688
499	1983	03	09.31250	12	41	15.43	-07	10	57.2	688
499	1983	03	09.34375	12	41	14.50	-07	10	51.3	688
515	1983	03	10.27083	11	54	26.94	+03	07	26.9	688
515	1983	03	10.30139	11	54	25.58	+03	07	36.6	688
541	1983	03	09.31250	12	17	55.66	-11	48	04.4	688
541	1983	03	09.34375	12	17	54.25	-11	47	59.1	688
600	1983	03	09.15208	08	56	40.95	+18	36	30.0	688
600	1983	03	09.21528	08	56	38.81	+18	36	49.2	688
613	1983	02	19.28194	09	55	44.20	+18	30	28.5	688
613	1983	02	19.32778	09	55	41.61	+18	30	34.7	688
645	1982	12	16.39306	07	15	17.06	+33	11	05.9	688
645	1982	12	16.43403	07	15	15.13	+33	11	12.2	688
651	1983	03	16.25347	11	35	29.87	+15	13	20.2	688
651	1983	03	16.28403	11	35	28.25	+15	13	25.6	688
688	1983	03	10.27083	11	53	59.97	+01	50	50.4	688
688	1983	03	10.30139	11	53	58.58	+01	51	04.8	688
710	1983	02	15.32431	10	13	22.69	+11	28	02.2	688
710	1983	02	15.35486	10	13	21.17	+11	28	11.4	688
725	1983	03	09.24931	10	45	50.72	+14	05	37.5	688
725	1983	03	09.28056	10	45	48.84	+14	05	46.5	688
725	1983	03	16.18542	10	39	50.47	+14	35	28.8	688

725	1983	03	16.22292	10	39	48.61	+14	35	37.1	688
731	1982	12	16.39306	07	13	45.47	+34	29	03.9	688
731	1982	12	16.43403	07	13	43.33	+34	29	15.2	688
745	1983	01	09.36319	09	59	55.27	+15	27	16.5	688
745	1983	01	09.44028	09	59	53.83	+15	27	43.4	688
757	1983	03	09.24931	11	05	35.17	+15	12	31.0	688
757	1983	03	09.28056	11	05	33.09	+15	12	36.0	688
757	1983	03	16.18542	10	58	21.21	+15	27	03.8	688
757	1983	03	16.22292	10	58	18.85	+15	27	07.2	688
759	1983	03	09.12986	07	17	37.65	+28	56	29.4	688
759	1983	03	09.19167	07	17	37.13	+28	56	07.4	688
800	1983	02	15.32431	10	19	55.85	+09	40	51.9	688
800	1983	02	15.35486	10	19	53.84	+09	41	00.1	688
806	1983	02	18.11667	07	12	17.58	+40	52	39.5	688
807	1983	03	16.25347	11	41	09.21	+13	57	01.0	688
807	1983	03	16.28403	11	41	07.83	+13	57	14.5	688
817	1983	02	19.34444	10	35	07.86	+17	54	45.6	688
817	1983	02	19.37569	10	35	06.14	+17	55	03.3	688
866	1983	02	18.13368	07	42	02.45	+27	41	56.4	688
866	1983	03	09.12986	07	36	11.51	+27	56	23.9	688
866	1983	03	09.19167	07	36	11.15	+27	56	23.8	688
868	1983	02	19.28194	09	45	52.16	+18	14	05.8	688
868	1983	02	19.32778	09	45	49.63	+18	14	22.5	688
869	1983	03	10.27083	11	49	41.80	+05	25	57.6	688
869	1983	03	10.30139	11	49	40.31	+05	26	12.7	688
871	1983	03	09.24931	10	46	19.93	+08	42	00.2	688
871	1983	03	09.28056	10	46	18.04	+08	42	17.8	688
871	1983	03	16.18542	10	40	08.84	+09	40	05.8	688
871	1983	03	16.22292	10	40	06.93	+09	40	23.5	688
883	1983	03	16.30278	11	45	39.52	-06	22	22.0	688
883	1983	03	16.34028	11	45	37.18	-06	22	07.2	688
889	1983	02	15.32431	10	25	26.67	+14	15	29.5	688
889	1983	02	15.35486	10	25	24.91	+14	15	46.2	688
894	1983	02	15.38542	11	23	11.03	-04	09	17.4	688
894	1983	02	15.41875	11	23	09.92	-04	09	07.8	688
950	1983	03	16.30278	11	33	40.13	-03	13	03.7	688
950	1983	03	16.34028	11	33	38.56	-03	12	10.1	688
955	1983	03	10.27083	11	53	15.64	-00	18	10.9	688
955	1983	03	10.30139	11	53	13.69	-00	18	08.0	688
962	1983	03	10.27083	11	46	35.69	+03	22	56.5	688
962	1983	03	10.30139	11	46	34.29	+03	23	06.1	688
963	1983	03	09.12986	07	12	45.99	+33	21	13.4	688
963	1983	03	09.19167	07	12	48.17	+33	20	56.3	688
971	1983	03	09.32847	13	10	52.98	+15	36	19.3	688
971	1983	03	09.35903	13	10	51.70	+15	36	32.8	688
1007	1983	02	15.32431	10	08	45.83	+09	54	02.4	688
1007	1983	02	15.35486	10	08	44.11	+09	54	10.1	688
1035	1983	03	09.24931	11	10	15.26	+13	30	50.4	688
1035	1983	03	09.28056	11	10	13.63	+13	30	54.7	688
1035	1983	03	16.18542	11	04	25.44	+13	42	22.9	688
1035	1983	03	16.22292	11	04	23.56	+13	42	25.1	688
1058	1983	03	16.30278	11	45	11.99	-03	09	06.3	688
1058	1983	03	16.34028	11	45	09.64	-03	08	49.3	688
1063	1983	02	19.34444	10	23	47.11	+19	24	03.5	688
1063	1983	02	19.37569	10	23	45.22	+19	24	17.6	688
1094	1983	02	15.32431	10	10	54.28	+11	07	01.3	688
1094	1983	02	15.35486	10	10	52.71	+11	07	24.0	688
1121	1983	03	10.27083	11	51	48.98	+01	31	08.3	688
1121	1983	03	10.30139	11	51	47.28	+01	31	14.3	688

1150	1983 02 15.38542	11 19 21.27	+01 32 10.3	688
1150	1983 02 15.41875	11 19 19.82	+01 32 20.9	688
1150	1983 03 10.20972	10 57 51.76	+03 56 31.9	688
1150	1983 03 10.24028	10 57 49.93	+03 56 44.5	688
1150	1983 03 16.23819	10 51 59.12	+04 37 56.6	688
1150	1983 03 16.26875	10 51 57.34	+04 38 07.8	688
1173	1983 03 09.31250	12 20 53.27	-11 09 55.9	688
1173	1983 03 09.34375	12 20 52.33	-11 09 52.5	688
1225	1983 01 09.36319	09 49 07.58	+18 20 07.3	688
1225	1983 01 09.44028	09 49 05.37	+18 20 21.3	688
1225	1983 03 09.15208	08 57 30.66	+21 07 14.3	688
1225	1983 03 09.21528	08 57 28.54	+21 07 11.2	688
1256	1983 03 16.30278	11 33 12.04	-02 24 03.0	688
1256	1983 03 16.34028	11 33 10.57	-02 23 52.8	688
1261	1983 02 15.33958	10 42 22.70	+12 19 19.8	688
1261	1983 02 15.37014	10 42 21.35	+12 19 28.2	688
1266	1983 01 09.36319	09 49 28.96	+16 21 18.5	688
1266	1983 01 09.44028	09 49 26.30	+16 21 16.0	688
1266	1983 03 09.15208	09 03 28.22	+16 04 17.4	688
1287	1983 03 16.30278	11 37 32.58	-04 51 26.4	688
1332	1983 03 10.27083	11 53 35.92	+01 54 06.1	688
1332	1983 03 10.30139	11 53 34.60	+01 54 13.5	688
1338	1983 01 09.44028	09 38 27.97	+16 59 21.2	688
1366	1983 02 19.34444	10 39 22.70	+20 03 47.5	688
1366	1983 02 19.37569	10 39 21.03	+20 03 55.1	688
1381	1983 01 09.36319	10 01 16.84	+16 46 44.2	688
1381	1983 01 09.44028	10 01 14.18	+16 46 57.4	688
1381	1983 03 09.15208	09 09 17.98	+19 34 40.8	688
1381	1983 03 09.21528	09 09 15.32	+19 34 41.5	688
1419	1983 03 09.31250	12 23 47.11	-08 31 16.4	688
1419	1983 03 09.34375	12 23 45.43	-08 31 03.2	688
1460	1983 02 19.34444	10 32 57.16	+21 11 55.7	688
1460	1983 02 19.37569	10 32 55.19	+21 12 07.1	688
1461	1983 03 09.32847	13 11 23.86	+15 16 50.6	688
1461	1983 03 09.35903	13 11 22.86	+15 17 03.9	688
1462	1983 03 17.21528	09 19 05.24	+16 49 02.2	688
1472	1983 02 19.28194	09 39 25.47	+21 47 33.3	688
1472	1983 02 19.32778	09 39 22.08	+21 47 46.0	688
1472	1983 03 09.21528	09 22 21.98	+22 36 00.9	688
1500	1983 02 18.13368	07 50 23.84	+33 02 44.8	688
1526	1983 03 10.20972	11 03 03.55	+04 08 38.1	688
1526	1983 03 10.24028	11 03 01.70	+04 08 45.4	1 688
1526	1983 03 16.23819	10 56 49.72	+04 31 32.0	688
1526	1983 03 16.26875	10 56 47.81	+04 31 37.8	688
1544	1983 03 09.24931	10 56 27.55	+12 40 57.1	16.0 688
1544	1983 03 09.28056	10 56 25.66	+12 41 06.9	688
1544	1983 03 16.18542	10 49 56.13	+13 13 00.6	688
1544	1983 03 16.22292	10 49 54.06	+13 13 10.7	688
1550	1983 03 09.12986	07 42 08.27	+32 21 01.0	688
1550	1983 03 09.19167	07 42 08.17	+32 20 51.0	688
1558	1983 03 16.25347	11 21 52.71	+17 39 31.0	688
1558	1983 03 16.28403	11 21 51.29	+17 39 41.0	688
1564	1983 02 15.38542	11 11 11.47	+00 27 48.9	688
1564	1983 02 15.41875	11 11 10.24	+00 28 01.4	688
1564	1983 03 10.20972	10 55 35.39	+02 59 36.2	688
1564	1983 03 10.24028	10 55 34.03	+02 59 49.2	688
1564	1983 03 16.23819	10 51 28.84	+03 41 49.3	688
1564	1983 03 16.26875	10 51 27.65	+03 42 01.8	688
1603	1983 02 15.33958	10 59 43.89	+12 34 39.5	688

1603	1983 02	15.37014	10 59	42.53	+12 34	53.5	688
1608	1983 03	16.18542	10 53	06.29	+08 20	13.6	688
1608	1983 03	16.22292	10 53	04.15	+08 20	24.1	688
1674	1983 02	19.28194	09 39	27.00	+17 14	04.1	688
1674	1983 02	19.32778	09 39	24.68	+17 14	16.4	688
1677	1983 03	16.23819	10 43	07.57	+04 30	36.9	688
1677	1983 03	16.26875	10 43	05.64	+04 30	38.9	688
1723	1983 03	17.17569	09 18	56.40	+15 36	45.3	688
1723	1983 03	17.21528	09 18	55.46	+15 37	02.2	688
1728	1983 03	16.30278	11 33	21.50	-08 18	43.1	688
1728	1983 03	16.34028	11 33	19.39	-08 18	26.4	688
1746	1983 03	16.30278	11 32	17.94	-03 15	04.9	688
1746	1983 03	16.34028	11 32	16.55	-03 14	56.5	688
1788	1983 02	15.32431	10 19	10.34	+10 16	58.0	688
1788	1983 02	15.35486	10 19	08.77	+10 17	06.6	688
1857	1983 02	15.38542	11 28	15.09	-04 06	34.3	688
1857	1983 02	15.41875	11 28	13.69	-04 06	28.4	688
1894	1983 02	15.32431	10 07	05.70	+10 14	18.1	688
1894	1983 02	15.35486	10 07	04.17	+10 14	26.3	688
1939	1983 02	19.28194	09 47	33.94	+14 41	44.2	688
1939	1983 02	19.32778	09 47	31.54	+14 41	57.7	688
1956	1983 03	09.24931	10 47	41.26	+08 01	32.5	688
1956	1983 03	09.28056	10 47	39.85	+08 01	44.6	688
1956	1983 03	16.18542	10 42	47.06	+08 34	13.9	688
1956	1983 03	16.22292	10 42	45.34	+08 34	23.9	688
1973	1983 02	15.41875	11 11	29.07	-00 25	00.9	688
1973	1983 03	10.20972	10 56	33.74	+01 52	39.7	688
1973	1983 03	10.24028	10 56	32.47	+01 52	55.8	688
1998	1983 01	09.36319	09 55	53.72	+20 55	20.5	688
1998	1983 01	09.44028	09 55	51.48	+20 55	31.1	688
1998	1983 03	09.15208	09 01	22.59	+22 29	49.1	688
1998	1983 03	09.21528	09 01	20.00	+22 29	41.4	688
2020	1983 02	15.32431	10 25	07.13	+10 40	42.8	688
2020	1983 02	15.35486	10 25	05.86	+10 40	56.4	688
2034	1983 03	09.24931	11 05	30.29	+15 43	33.3	688
2034	1983 03	09.28056	11 05	27.96	+15 43	36.6	688
2034	1983 03	16.18542	10 57	42.79	+15 48	03.4	688
2034	1983 03	16.22292	10 57	40.22	+15 48	03.0	688
2054	1983 03	10.20972	11 06	08.66	+00 33	02.3	688
2054	1983 03	10.24028	11 06	07.00	+00 33	09.8	688
2054	1983 03	16.23819	11 01	19.40	+00 59	32.1	688
2054	1983 03	16.26875	11 01	17.95	+00 59	42.0	688
2067	1983 02	15.33958	10 41	41.43	+08 38	27.8	688
2067	1983 02	15.37014	10 41	40.25	+08 38	36.6	688
2073	1983 03	09.24931	10 54	09.06	+12 02	30.0	688
2073	1983 03	09.28056	10 54	07.18	+12 02	40.8	688
2073	1983 03	16.18542	10 48	26.01	+12 35	07.9	688
2073	1983 03	16.22292	10 48	23.89	+12 35	20.1	688
2090	1983 02	19.28194	09 46	27.78	+18 00	26.5	688
2090	1983 02	19.32778	09 46	25.24	+18 00	30.7	688
2147	1983 02	15.32431	10 28	07.99	+11 33	14.6	688
2147	1983 02	15.35486	10 28	06.65	+11 33	26.8	688
2173	1983 03	10.27083	11 58	26.18	+00 49	01.5	688
2173	1983 03	10.30139	11 58	25.04	+00 49	12.0	688
2188	1983 02	15.32431	10 02	59.39	+12 29	50.7	688
2188	1983 02	15.35486	10 02	57.92	+12 30	00.3	688
2197	1983 01	09.36319	09 44	47.63	+17 17	49.3	688
2197	1983 01	09.44028	09 44	45.48	+17 18	02.8	688
2197	1983 03	09.15208	09 03	52.84	+20 35	13.3	688

17.0

3

16.8

2197	1983	03	09.21528	09	03	50.69	+20	35	16.4	688
2207	1983	03	10.27083	11	37	19.76	+04	37	16.1	688
2207	1983	03	10.30139	11	37	18.86	+04	37	22.3	688
2236	1983	02	19.34444	10	39	34.91	+18	14	30.9	688
2236	1983	02	19.37569	10	39	32.76	+18	14	40.0	688
2271	1983	02	15.33958	10	46	01.53	+09	34	20.1	688
2271	1983	02	15.37014	10	46	00.09	+09	34	31.2	688
2312	1983	02	15.33958	10	58	35.12	+13	55	44.8	688
2312	1983	02	15.37014	10	58	34.02	+13	55	52.3	688
2312	1983	03	16.18542	10	40	33.30	+15	38	23.0	688
2312	1983	03	16.22292	10	40	31.95	+15	38	28.9	688
2390	1983	03	16.30278	11	45	55.41	-07	46	41.4	688
2390	1983	03	16.34028	11	45	53.04	-07	46	34.1	688
2404	1983	03	09.15208	09	05	30.92	+18	43	04.3	17.0 688
2404	1983	03	09.21528	09	05	28.64	+18	43	12.9	688
2407	1983	02	15.32431	10	11	43.78	+12	00	14.6	688
2407	1983	02	15.35486	10	11	42.19	+12	00	22.2	688
2419	1983	03	10.27083	11	39	17.42	+03	06	09.2	688
2419	1983	03	10.30139	11	39	15.80	+03	06	24.3	2 688
2451	1983	02	15.32431	10	25	33.85	+09	52	11.1	688
2451	1983	02	15.35486	10	25	32.23	+09	52	17.7	688
2485	1983	01	09.36319	09	57	58.27	+14	56	16.9	688
2485	1983	01	09.44028	09	57	56.63	+14	56	33.8	688
2487	1983	03	10.27083	11	55	12.76	-00	08	00.7	688
2487	1983	03	10.30139	11	55	11.17	-00	07	48.3	2 688
2511	1983	03	16.25347	11	36	48.83	+17	38	00.3	688
2511	1983	03	16.28403	11	36	46.81	+17	38	11.3	688
2515	1983	02	19.28194	09	55	26.75	+18	58	46.2	17.5 688
2515	1983	02	19.32778	09	55	24.48	+18	58	57.0	688
2541	1983	02	19.28194	09	49	49.54	+17	52	40.8	688
2541	1983	02	19.32778	09	49	47.05	+17	52	52.8	688
2545	1983	01	09.36319	09	46	06.20	+16	20	22.2	688
2545	1983	01	09.44028	09	46	03.38	+16	20	21.0	688
2546	1982	12	16.39306	07	15	24.07	+32	31	29.1	688
2546	1982	12	16.43403	07	15	21.77	+32	31	29.8	688
2557	1983	02	15.38542	11	26	34.27	-00	42	12.4	688
2557	1983	02	15.41875	11	26	32.92	-00	42	01.0	688
2557	1983	03	10.20972	11	07	17.74	+01	59	54.0	688
2557	1983	03	10.24028	11	07	16.10	+02	00	08.3	688
2557	1983	03	16.23819	11	01	54.93	+02	47	52.0	688
2557	1983	03	16.26875	11	01	53.21	+02	48	05.6	688
2559	1983	03	10.20972	11	08	30.51	+06	29	50.4	688
2559	1983	03	10.24028	11	08	28.73	+06	29	55.4	688
2559	1983	03	16.23819	11	02	55.79	+06	43	44.2	688
2559	1983	03	16.26875	11	02	54.26	+06	43	47.6	688
2562	1983	02	15.32431	10	06	45.60	+15	11	04.2	688
2562	1983	02	15.35486	10	06	43.88	+15	11	07.5	688
2562	1983	02	19.28194	10	03	08.02	+15	18	02.3	688
2562	1983	02	19.32778	10	03	05.35	+15	18	08.7	688
2586	1983	03	10.20972	11	05	39.59	+05	51	15.4	688
2586	1983	03	10.24028	11	05	38.05	+05	51	29.5	1 688
2586	1983	03	16.23819	11	00	16.42	+06	35	52.7	688
2586	1983	03	16.26875	11	00	14.94	+06	36	06.0	688
2592	1983	03	10.20972	11	07	38.68	+04	16	06.3	688
2592	1983	03	10.24028	11	07	37.24	+04	16	15.1	688
2592	1983	03	16.23819	11	03	06.40	+04	47	06.4	688
2592	1983	03	16.26875	11	03	04.99	+04	47	16.6	688
2719	1983	03	10.27083	11	40	18.86	+03	03	04.4	688
2719	1983	03	10.30139	11	40	16.96	+03	03	17.1	688



2760		1983	02	18.11667	07	26	12.14	+36	18	08.3		688
2760		1983	03	09.12986	07	21	30.85	+34	55	31.2		688
2760		1983	03	09.19167	07	21	30.79	+34	55	11.7		688
2861		1983	02	15.38542	11	24	15.50	+00	42	57.4	17.0	688
2861		1983	02	15.41875	11	24	14.15	+00	43	07.2		688
2861		1983	03	10.20972	11	05	39.85	+03	11	46.5	16.8	688
2861		1983	03	10.24028	11	05	38.21	+03	12	00.2		688
2861		1983	03	16.23819	11	00	28.60	+03	55	13.8		688
2861		1983	03	16.26875	11	00	26.85	+03	55	28.0		688
1935	OK	1983	02	15.38542	11	15	39.41	-03	49	28.9	16.0	688
1935	OK	1983	02	15.41875	11	15	37.62	-03	49	32.8		688
1964	TR2	1983	02	19.28194	09	44	35.90	+18	01	59.6	17.5	3 688
1964	TR2	1983	02	19.32778	09	44	32.93	+18	02	11.7		688
1978	SY7	1983	02	19.32778	09	55	11.40	+18	53	05.2	16.5	688
1979	EE	1983	02	15.32431	10	10	07.68	+11	14	10.4	16.8	688
1979	EE	1983	02	15.35486	10	10	05.53	+11	14	01.9		688
1980	LE	1983	03	16.30278	11	38	21.18	-04	20	45.6	17.2	688
1980	LE	1983	03	16.34028	11	38	18.88	-04	20	33.6		688
1980	RR	1983	03	09.31250	12	30	45.95	-08	28	18.5	17.5	688
1980	RR	1983	03	09.34375	12	30	44.38	-08	28	17.7		688
1980	RM2	1983	03	10.27083	11	49	13.30	+02	26	52.9	16.8	688
1980	RM2	1983	03	10.30139	11	49	11.42	+02	26	56.0		688
1981	QC2	1983	02	19.34444	10	24	24.57	+18	35	22.3	16.8	688
1981	QC2	1983	02	19.37569	10	24	22.43	+18	35	31.2		688
1981	TM	1983	02	15.32431	10	23	41.28	+10	31	53.4	17.0	688
1981	TM	1983	02	15.35486	10	23	39.67	+10	32	10.0		688
1981	YB	1983	03	09.32847	13	00	02.36	+18	27	56.9	16.8	688
1981	YB	1983	03	09.35903	13	00	00.90	+18	28	10.9		688
1983	AB	1983	03	09.15208	08	56	08.81	+22	36	11.3	17.2	688
1983	AB	1983	03	09.21528	08	56	07.53	+22	36	14.6		688
1983	AN	1983	03	09.12986	07	24	46.24	+29	16	27.9	17.2	688
1983	AN	1983	03	09.19167	07	24	47.48	+29	16	24.3		688
1983	AO	1983	02	18.13368	07	32	33.45	+27	11	37.9		688
1983	AO	1983	03	09.12986	07	27	44.71	+27	40	19.0	16.8	688
1983	AO	1983	03	09.19167	07	27	44.63	+27	40	21.3		688
1983	AV	1983	03	09.12986	07	29	59.65	+33	47	57.9	17.0	688
1983	AV	1983	03	09.19167	07	30	00.72	+33	47	58.0		688
1983	AM2	1983	03	10.20972	10	59	30.29	+05	24	19.7	16.5	688
1983	AM2	1983	03	10.24028	10	59	28.47	+05	24	36.0		688
1983	AM2	1983	03	16.23819	10	53	42.03	+06	17	41.1	16.8	688
1983	AM2	1983	03	16.26875	10	53	40.48	+06	17	56.3		688
1983	BM	1983	02	19.28194	09	49	41.48	+15	28	45.7	16.2	688
1983	BM	1983	02	19.32778	09	49	38.36	+15	28	46.3		688
1983	BN	1983	02	19.28194	09	55	35.53	+19	25	34.0	16.8	688
1983	BN	1983	02	19.32778	09	55	32.88	+19	25	50.9		688
1983	CB	1983	03	09.24931	10	57	01.50	+10	58	05.8	16.2	688
1983	CB	1983	03	09.28056	10	56	59.57	+10	58	07.3		688
1983	CB	1983	03	16.18542	10	50	29.82	+10	56	35.9	16.8	688
1983	CB	1983	03	16.22292	10	50	27.89	+10	56	33.9		688
1983	CL	1983	03	09.15208	09	11	49.65	+19	35	05.0	16.8	688
1983	CL	1983	03	09.21528	09	11	46.94	+19	34	56.9		688
1983	CN	1983	03	09.15208	09	16	04.76	+21	35	25.3	17.2	688
1983	CN	1983	03	09.21528	09	16	01.45	+21	35	08.6		688
1983	CO	1983	02	19.28194	09	39	16.61	+18	38	27.8	17.0	688
1983	CO	1983	02	19.32778	09	39	14.19	+18	38	48.4		688
1983	CB1	1983	03	09.17222	09	32	00.60	+25	42	50.1	16.8	688
1983	CB1	1983	03	09.23403	09	31	58.13	+25	43	14.3		688
1983	CD1	1983	02	19.28194	09	41	56.01	+15	20	09.8	17.0	688
1983	CD1	1983	02	19.32778	09	41	53.87	+15	20	23.3		688

1983	CE1	1983	02	19.32778	09	47	28.56	+17	01	06.7	17.0	688
1983	CF1	1983	02	19.28194	09	48	33.94	+21	59	47.5	16.5	688
1983	CF1	1983	02	19.32778	09	48	31.55	+22	00	09.4		688
1983	CH1	1983	02	19.28194	09	46	12.69	+17	00	52.5	16.8	688
1983	CH1	1983	02	19.32778	09	46	10.24	+17	01	06.5		688
1983	CK1	1983	02	19.28194	09	55	08.99	+15	06	32.6	17.0	688
1983	CK1	1983	02	19.32778	09	55	06.56	+15	06	47.5		688
1983	CL1	1983	02	19.28194	09	55	57.66	+22	05	51.2	17.0	688
1983	CL1	1983	02	19.32778	09	55	54.17	+22	06	00.5		688
1983	CM1	1983	02	15.32431	10	06	08.85	+15	51	12.7	16.8	688
1983	CM1	1983	02	15.35486	10	06	07.25	+15	51	24.0		688
1983	CM1	1983	02	19.28194	10	02	47.81	+16	11	36.4	17.0	688
1983	CM1	1983	02	19.32778	10	02	45.43	+16	11	51.3		688
1983	CK2	* 1983	02	15.32431	10	06	52.63	+14	54	52.9	17.2	4 688
1983	CK2	1983	02	15.35486	10	06	50.95	+14	55	01.7		688
1983	CL2	* 1983	02	15.32431	10	07	48.68	+17	00	07.6	17.0	4 688
1983	CL2	1983	02	15.35486	10	07	46.97	+17	00	20.0		688
1983	CM2	* 1983	02	15.32431	10	13	14.50	+14	36	33.9	17.0	4 688
1983	CM2	1983	02	15.35486	10	13	12.89	+14	36	42.7		688
1983	CN2	* 1983	02	15.32431	10	14	15.32	+14	05	11.6	16.5	4 688
1983	CN2	1983	02	15.35486	10	14	13.42	+14	05	28.8		688
1983	CO2	* 1983	02	15.32431	10	17	21.33	+14	15	50.0	17.0	4 688
1983	CO2	1983	02	15.35486	10	17	19.68	+14	16	01.9		688
1983	CP2	* 1983	02	15.32431	10	18	23.07	+10	40	50.0	17.0	4 688
1983	CP2	1983	02	15.35486	10	18	21.54	+10	40	57.9		688
1983	CQ2	* 1983	02	15.32431	10	27	35.59	+09	35	33.6	17.0	4 688
1983	CQ2	1983	02	15.35486	10	27	34.04	+09	35	40.7		688
1983	CR2	* 1983	02	15.33958	10	44	59.39	+12	34	27.8	17.2	4 688
1983	CR2	1983	02	15.37014	10	44	58.00	+12	34	44.0		688
1983	CS2	* 1983	02	15.33958	10	46	50.34	+09	22	49.1	16.0	5 688
1983	CS2	1983	02	15.37014	10	46	48.89	+09	22	54.5		688
1983	CT2	* 1983	02	15.33958	10	48	38.83	+14	54	01.4	16.8	5 688
1983	CT2	1983	02	15.37014	10	48	37.38	+14	54	18.0		688
1983	CU2	* 1983	02	15.33958	10	50	08.34	+12	20	37.8	17.0	5 688
1983	CU2	1983	02	15.37014	10	50	06.71	+12	20	40.9		688
1983	CV2	* 1983	02	15.33958	10	52	39.08	+12	56	57.4	16.8	5 688
1983	CV2	1983	02	15.37014	10	52	37.72	+12	57	18.4		688
1983	CW2	* 1983	02	15.38542	11	05	34.11	-04	58	47.9	17.0	5 688
1983	CW2	1983	02	15.41875	11	05	32.69	-04	58	39.6		688
1983	CX2	* 1983	02	15.38542	11	16	20.95	+01	08	34.0	17.0	5 688
1983	CX2	1983	02	15.41875	11	16	19.80	+01	08	39.1		688
1983	CX2	1983	03	10.20972	10	59	28.39	+02	40	09.0	17.0	688
1983	CX2	1983	03	10.24028	10	59	26.93	+02	40	17.9		688
1983	CX2	1983	03	16.23819	10	54	54.72	+03	07	40.7	16.8	688
1983	CX2	1983	03	16.26875	10	54	53.38	+03	07	48.0		688
1983	CY2	* 1983	02	15.38542	11	16	51.71	+00	39	11.3	17.2	5 688
1983	CY2	1983	02	15.41875	11	16	50.24	+00	39	12.8		688
1983	CY2	1983	03	10.20972	10	58	09.01	+01	25	59.2	16.8	688
1983	CY2	1983	03	10.24028	10	58	07.50	+01	26	04.5		688
1983	CY2	1983	03	16.23819	10	53	06.14	+01	42	26.9	17.0	688
1983	CY2	1983	03	16.26875	10	53	04.68	+01	42	32.2		688
1983	CZ2	* 1983	02	15.38542	11	21	56.81	-00	26	25.3	17.0	5 688
1983	CZ2	1983	02	15.41875	11	21	55.26	-00	26	30.0		688
1983	CZ2	1983	03	10.20972	11	00	58.94	-00	20	52.1	16.8	688
1983	CZ2	1983	03	10.24028	11	00	57.04	-00	20	49.7		688
1983	CZ2	1983	03	16.23819	10	55	08.22	-00	09	50.7	16.8	688
1983	CZ2	1983	03	16.26875	10	55	06.44	-00	09	46.5		688
1983	CA3	* 1983	02	15.38542	11	22	34.52	-04	48	33.7	16.8	5 688
1983	CA3	1983	02	15.41875	11	22	33.14	-04	48	30.1		688

1983 CB3 *	1983 02 15.38542	11 26 25.97	-02 38 28.7	17.0	5	688
1983 CB3	1983 02 15.41875	11 26 24.53	-02 38 28.5			688
1983 DC	1983 02 15.33958	10 35 24.10	+09 32 32.5	16.8		688
1983 DC	1983 02 15.37014	10 35 22.36	+09 32 40.5			688
1983 DE	1983 03 09.24931	10 52 10.33	+13 13 33.2	17.2		688
1983 DE	1983 03 09.28056	10 52 08.38	+13 13 43.5			688
1983 DE	1983 03 16.18542	10 45 56.52	+13 49 18.7	17.5	3	688
1983 DE	1983 03 16.22292	10 45 54.13	+13 49 26.0		1	688
1983 DF	1983 03 09.24931	10 58 30.86	+13 40 30.3	17.0	3	688
1983 DF	1983 03 09.28056	10 58 29.14	+13 40 31.4			688
1983 DG	1983 03 09.24931	10 53 58.96	+09 41 53.7	16.8		688
1983 DG	1983 03 09.28056	10 53 56.92	+09 41 58.8			688
1983 DG	1983 03 16.18542	10 46 36.83	+09 51 35.8	17.0	1	688
1983 DG	1983 03 16.22292	10 46 34.51	+09 51 37.9			688
1983 DH	1983 03 09.24931	10 58 13.00	+12 30 46.3	16.5		688
1983 DH	1983 03 09.28056	10 58 11.05	+12 31 02.0			688
1983 DH	1983 03 16.18542	10 51 27.99	+13 20 51.5	16.8		688
1983 DH	1983 03 16.22292	10 51 25.73	+13 21 07.4			688
1983 DJ	1983 03 09.24931	11 04 50.14	+12 47 30.4	16.8		688
1983 DJ	1983 03 09.28056	11 04 47.92	+12 47 38.7			688
1983 DJ	1983 03 16.18542	10 57 26.35	+13 08 21.1	16.8		688
1983 DJ	1983 03 16.22292	10 57 23.79	+13 08 25.9			688
1983 DM *	1983 02 19.34444	10 24 54.63	+22 09 29.4	17.2	5	688
1983 DM	1983 02 19.37569	10 24 52.62	+22 09 39.1		1	688
1983 DN *	1983 02 19.34444	10 29 04.19	+20 54 10.4	16.8	5	688
1983 DN	1983 02 19.37569	10 29 02.29	+20 54 25.6			688
1983 DO *	1983 02 19.34444	10 29 56.57	+19 45 58.5	17.2	5	688
1983 DO	1983 02 19.37569	10 29 54.84	+19 46 25.3			688
1983 DP *	1983 02 19.34444	10 34 16.62	+23 56 14.9	16.8	8	688
1983 DP	1983 02 19.37569	10 34 14.64	+23 56 31.8			688
1983 DQ *	1983 02 19.34444	10 35 54.42	+17 55 47.6	15.8	4	688
1983 DQ	1983 02 19.37569	10 35 52.60	+17 56 00.4			688
1983 DR *	1983 02 19.34444	10 41 13.87	+17 51 33.2	17.0	5	688
1983 DR	1983 02 19.37569	10 41 12.23	+17 51 37.2			688
1983 EP *	1983 03 09.31250	12 39 14.98	-08 16 18.7	17.0	4	688
1983 EP	1983 03 09.34375	12 39 13.47	-08 16 09.8			688
1983 EQ *	1983 03 10.20972	10 58 23.27	+02 58 43.6	17.0	4	688
1983 EQ	1983 03 10.24028	10 58 21.18	+02 58 46.3			688
1983 EQ	1983 03 16.23819	10 51 44.93	+03 06 04.2	17.0		688
1983 EQ	1983 03 16.26875	10 51 43.06	+03 06 06.8			688
1983 ER *	1983 03 10.20972	10 59 28.91	+03 48 11.1	17.0	4	688
1983 ER	1983 03 10.24028	10 59 27.31	+03 48 20.9			688
1983 ER	1983 03 16.23819	10 54 27.02	+04 17 34.0	17.5		688
1983 ER	1983 03 16.26875	10 54 25.43	+04 17 41.8		1	688
1983 ES *	1983 03 10.20972	11 06 46.27	+02 44 35.9	17.0	4	688
1983 ES	1983 03 10.24028	11 06 44.90	+02 44 41.7		1	688
1983 ES	1983 03 16.23819	11 01 57.84	+03 05 00.7	17.0		688
1983 ES	1983 03 16.26875	11 01 56.22	+03 05 07.1			688
1983 ET *	1983 03 10.20972	11 09 24.07	+04 48 38.7	16.5	4	688
1983 ET	1983 03 10.24028	11 09 22.52	+04 48 53.2			688
1983 ET	1983 03 16.23819	11 04 39.70	+05 42 31.8	16.5		688
1983 ET	1983 03 16.26875	11 04 38.27	+05 42 46.8			688
1983 EU *	1983 03 10.27083	11 36 39.08	+00 46 46.4	16.5	6	688
1983 EU	1983 03 10.30139	11 36 37.39	+00 46 59.0			688
1983 EV *	1983 03 10.27083	11 47 33.53	+03 27 47.9	16.8	6	688
1983 EV	1983 03 10.30139	11 47 31.88	+03 27 53.4			688
1983 EW *	1983 03 10.27083	11 59 18.11	+00 54 30.3	16.8	6	688
1983 EW	1983 03 10.30139	11 59 16.58	+00 54 42.2			688

1983 EX *	1983 03 09.32847	13 06 11.94	+19 36 14.4	16.8	6 688
1983 EX	1983 03 09.35903	13 06 10.93	+19 36 25.1		688
1983 FA *	1983 03 16.30278	11 33 28.46	-02 23 58.4	17.0	4 688
1983 FA	1983 03 16.34028	11 33 26.44	-02 23 50.2		688
1983 FB *	1983 03 16.30278	11 41 55.78	-09 10 11.8	16.0	6 688
1983 FB	1983 03 16.34028	11 41 53.70	-09 09 57.6		688
1983 FC *	1983 03 16.30278	11 43 59.75	-06 43 19.5	15.8	6 688
1983 FC	1983 03 16.34028	11 43 57.33	-06 43 18.4		688
1983 FD *	1983 03 16.30278	11 46 47.76	-09 54 27.1	16.0	6 688
1983 FD	1983 03 16.34028	11 46 45.23	-09 54 21.5		688

Note 1: right ascension uncertain. 2: declination uncertain. 3 = 1 + 2. 4: discoverer Bowell. 5: discoverer N. G. Thomas. 6: discoverer E. Barr. 8 = 3 + 5.

OBSERVATIONS MADE AT THE LOWELL OBSERVATORY BY R. BURNHAM AND C. SLAUGHTER.  
MEASURED BY E. BOWELL.

Object	Date	UT	R. A. (1950)	Decl.	N	Obs.
233	1958 10 07.34444		00 41 35.75	+11 15 28.6		690
233	1958 10 08.34747		00 40 48.98	+11 06 51.0		690
233	1958 10 10.35594		00 39 16.14	+10 49 23.4		690
374	1958 10 07.34444		00 51 21.20	+11 34 49.6		690
374	1958 10 08.34747		00 50 34.46	+11 27 15.0		690
374	1958 10 10.35594		00 49 01.05	+11 11 56.5		690
1958 TH1	1958 10 07.34444		00 39 18.72	+16 50 55.8		690
1958 TH1	1958 10 08.34747		00 38 29.43	+16 48 00.2		690
1958 TH1	1958 10 10.35594		00 36 51.29	+16 41 44.2		690
1958 TJ1	1958 10 07.34444		00 44 36.25	+12 26 50.5		690
1958 TJ1	1958 10 08.34747		00 43 45.95	+12 23 44.8		690
1958 TJ1	1958 10 10.35594		00 42 05.51	+12 17 20.6		690
1958 TL1	1958 10 07.34444		00 50 55.30	+10 21 30.0		690
1958 TL1	1958 10 08.34747		00 50 17.65	+10 09 06.2		690
1958 TL1	1958 10 10.35594		00 49 02.46	+09 44 13.6		690
1958 TM1	1958 10 07.34444		00 55 46.90	+17 21 35.0	2	690
1958 TM1	1958 10 08.34747		00 55 00.20	+17 15 14.4		690
1958 TM1	1958 10 10.35594		00 53 28.23	+17 02 22.7		690

Note 2: declination uncertain.

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

Object	Date	UT	R. A. (1950)	Decl.	Obs.
2862	1983 01 13.29825		07 33 16.60	+15 16 33.5	704
2862	1983 01 14.25435		07 32 13.18	+15 17 50.1	704
1981 PL	1983 01 13.17180		07 11 11.94	+13 07 02.8	704
1981 PL	1983 01 13.17347		07 11 11.94	+13 06 59.6	704

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

Object	Date	UT	R. A. (1950)	Decl.	N	Obs.
402	1949 07 24.17102		18 00 13.38	-14 48 20.4		1 760
402	1949 07 24.20941		18 00 11.99	-14 48 20.1		1 760
402	1949 07 27.17306		17 58 30.06	-15 04 29.0		1 760
402	1949 07 27.20696		17 58 29.12	-15 04 42.4		1 760
402	1949 07 29.14970		17 57 29.20	-15 15 11.2		1 760
402	1949 07 29.20315		17 57 27.53	-15 15 27.8	1	760
402	1950 10 10.21000		00 31 10.48	-13 31 03.7		760
402	1950 10 10.23638		00 31 09.10	-13 31 13.8		760
402	1952 01 30.30829		08 45 21.35	+17 50 10.6		760
402	1952 01 30.34442		08 45 19.27	+17 50 34.4		760

402	1952	02	21.33263	08	27	30.43	+21	21	21.3	760
402	1952	02	27.30174	08	24	20.80	+22	06	38.2	760
2802	1962	05	05.29271	16	14	24.62	-07	02	25.1	760
2802	1962	05	05.33646	16	14	22.76	-07	02	17.9	760
2824	1950	08	14.21671	21	48	40.11	-11	58	49.7	760
2824	1950	08	14.27298	21	48	36.70	-11	58	58.1	760
1954 GF	1954	04	02.11457	11	53	35.76	-02	02	33.1	760
1954 GF	1954	04	02.21294	11	53	30.42	-02	01	57.5	760
1954 MC	1954	06	27.23146	16	45	37.47	-30	39	24.7	760
1954 UM	1954	10	22.17160	01	31	21.35	+08	05	12.1	2 760
1954 UM	1954	10	22.21534	01	31	18.95	+08	04	55.0	2 760
1954 UP	1954	10	22.17160	01	22	32.46	+10	52	12.5	760
1954 UP	1954	10	22.21534	01	22	30.29	+10	52	07.4	760
1954 UU	1954	10	22.17160	01	12	20.49	+11	22	30.3	760
1954 UV	1954	10	22.17160	01	13	15.52	+08	05	26.2	760
1954 UZ	1954	10	22.21534	01	31	53.20	+04	26	31.7	760
1954 UN1	1954	10	24.28272	01	31	32.89	+27	38	23.6	760
1954 UN1	1954	10	24.32716	01	31	30.50	+27	38	00.4	760
1954 WK	1954	11	17.16656	02	33	55.16	+15	57	03.0	760
1954 WK	1954	11	17.21447	02	33	52.62	+15	57	03.4	760
1955 MC	1955	06	16.14551	15	42	37.48	-14	01	17.5	760
1955 MC	1955	06	16.19134	15	42	35.70	-14	00	59.8	760
1955 QD	1955	08	20.10486	20	01	40.75	-05	52	45.7	760
1955 QD	1955	08	20.13542	20	01	39.57	-05	52	45.9	760
1956 RQ	1956	09	09.19620	22	35	49.78	-11	50	28.1	760
1956 RQ	1956	09	09.24064	22	35	47.52	-11	50	42.1	760
1956 TC	1956	10	05.22365	01	53	37.08	+04	31	06.3	760
1956 TC	1956	10	05.30141	01	53	32.97	+04	31	02.7	760
1956 UQ	1956	10	29.19926	01	30	40.34	+04	44	45.0	760
1956 UQ	1956	10	29.24556	01	30	37.93	+04	44	46.5	760
1957 EG	1957	03	04.06356	09	05	24.09	+15	23	50.5	760
1957 EG	1957	03	04.14986	09	05	20.28	+15	24	05.2	760
1957 UZ	1957	10	21.26650	03	33	26.20	+12	58	36.9	760
1957 UZ	1957	10	21.36285	03	33	22.26	+12	58	11.1	760
1957 UB1	1957	10	21.26650	03	16	02.25	+17	38	13.8	2 760
1957 UB1	1957	10	21.36285	03	15	58.23	+17	37	17.4	2 760
1957 UC1	1957	10	21.36285	03	13	19.97	+14	19	17.3	760
1957 UD1	1957	10	21.26650	03	10	08.00	+16	54	22.5	760
1957 UD1	1957	10	21.36285	03	10	04.03	+16	54	11.6	760
1958 GG	1958	04	08.13196	12	35	07.23	-06	05	12.3	760
1958 GG	1958	04	08.17500	12	35	05.01	-06	05	02.4	760
1958 RH	1958	09	14.17232	22	54	49.58	-00	49	54.8	760
1958 RH	1958	09	14.21457	22	54	46.88	-00	49	55.5	760
1959 LJ	1959	06	04.24028	16	08	12.23	-09	00	57.7	760
1959 LJ	1959	06	04.28472	16	08	10.08	-09	00	56.5	760
1960 XB	1960	12	15.09054	03	16	41.77	+10	47	30.1	760
1960 XB	1960	12	15.13221	03	16	40.03	+10	47	48.6	760
1961 TR1	1961	10	13.15001	00	51	20.65	+10	52	30.2	760
1961 TR1	1961	10	13.19376	00	51	17.74	+10	52	26.9	760
1961 UE	1961	10	17.20519	00	23	00.65	+08	31	37.3	760
1961 UE	1961	10	17.25206	00	22	58.93	+08	31	17.3	760
1962 WE	1962	11	23.23259	04	02	59.43	+17	39	45.6	2 760
1962 WE	1962	11	23.28815	04	02	55.63	+17	39	46.8	2 760
1962 WF	1962	11	24.18883	02	40	21.23	+21	22	25.0	760
1962 WF	1962	11	24.23258	02	40	19.07	+21	22	27.8	760
1965 SD	1965	09	26.11087	22	46	47.70	-17	38	07.1	760

Note 1: image difficult to interpret. 2: the approximate positions on MPC  
1196, 1175 and 2230 are somewhat in error.

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

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

Object	Date	UT	R. A. (1950)			Decl.	Mag.	N	Obs.
325	1983 02	14.20970	09 17	04.16	+21 49	01.3		801	
1620	1983 02	11.38752	11 30	56.18	+15 15	37.1		801	
1620	1983 02	20.27176	11 15	43.98	+10 37	07.6		801	
2852	1983 02	10.13549	06 11	26.59	+23 20	07.5		801	
2852	1983 02	11.08418	06 11	14.87	+23 20	42.9		801	
2860	1983 02	15.25700	09 01	08.89	+30 22	08.2		801	
1938 DN	1983 02	16.34226	11 17	16.45	+20 32	58.2	1	801	
1940 YF	1983 02	20.38931	14 45	14.78	-03 24	41.4		801	
1961 TA	1983 02	11.19360	07 23	39.19	+25 44	19.1		801	
1964 TR2	1983 02	19.19760	09 44	41.40	+18 01	38.8		801	
1972 AR	1983 01	19.32552	11 05	36.16	+16 41	59.1		801	
1972 AR	1983 02	11.33616	10 52	55.60	+18 06	28.6	19	801	
1972 UA	1983 02	16.17154	07 24	26.66	+19 01	44.1		801	
1975 QD	1983 03	14.24127	10 45	36.11	+22 33	53.4		801	
1975 WK1	1983 02	10.24245	09 34	19.57	+09 38	23.4		801	
1977 QB1	1983 02	16.24981	09 27	00.29	+10 34	51.0		801	
1977 QC5	1983 02	14.20970	09 17	03.66	+21 43	42.2		801	
1978 LB	1983 03	14.26017	11 05	09.85	+33 04	52.9		801	
1978 SY7	1983 02	10.27975	10 05	47.84	+18 27	45.5		801	
1978 UJ2	1983 02	14.24240	09 46	18.97	+17 20	56.8		801	
1978 VB5	1983 02	14.16786	06 46	44.27	+31 03	21.3		801	
1980 FN3	1983 02	16.28152	10 05	34.13	+08 06	45.2		801	
1980 RR	1983 03	14.31598	12 26	37.42	-08 23	00.0		801	
1980 RX	1983 02	20.21198	09 48	17.73	+10 49	24.4		801	
1980 RM2	1983 02	20.30855	12 04	26.01	+02 00	09.2		801	
1980 RM2	1983 03	14.27892	11 45	14.59	+02 34	54.6		801	
1980 RT2	1983 02	16.31589	10 16	32.15	+08 00	23.4		801	
1980 VN	1983 02	15.30838	11 22	30.84	+26 04	32.4		801	
1981 AE1	1983 02	20.36076	13 53	43.51	+17 11	36.6		801	
1981 AE1	1983 03	14.37740	13 49	39.41	+19 26	25.7		801	
1981 ET3	1983 02	14.27648	10 07	11.62	+19 16	33.7		801	
1981 LA	1983 02	20.41068	11 48	12.82	+49 49	41.3		801	
1981 LD	1983 02	10.21462	08 13	21.80	+24 26	35.0	2	801	
1981 QC2	1983 02	20.25823	10 23	24.59	+18 39	47.5		801	
1981 RU	1983 02	19.17546	08 46	29.03	+13 11	09.6		801	
1981 SJ1	1983 02	15.27774	09 06	29.90	+09 10	42.3		801	
1981 UL	1983 02	20.33258	12 10	23.80	-20 41	07.6		801	
1981 WW	1983 02	15.34560	11 21	38.05	+09 49	13.8		801	
1981 YB	1983 02	14.37036	13 10	26.87	+15 38	17.6		801	
1982 WA	1983 02	14.01076	04 15	36.11	+17 00	17.4		801	
1982 XA	1983 02	11.03269	03 48	47.77	+15 47	25.8		801	
1982 XB	1983 03	14.20867	10 43	10.86	+23 43	54.6		801	
1983 CC3 *	1983 02	14.24240	09 46	51.96	+17 16	53.0	18	801	
6558 P-L	1983 02	19.22312	09 49	22.58	+30 17	49.0		801	

Note 1: poor image. 2: measured in one direction only.

\* \* \* \* \*

## ORBITAL ELEMENTS OF ONE-OPPOSITION MINOR PLANETS.

The orbit computers and authors of double designations are B = C. M. Bardwell, b = F. N. Bowman, E = E. Bowell, h = K. Hurukawa, I = H. Oishi, M = B. G. Marsden. The columns headed Arc and O give the time span in

days covered by the observations and the number of observations utilized  
(0 means 10 or more).

Planet	B(1,0)	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1958 TH1	13.0	581004	352.67	70.76	315.05	8.06	0.2189	3.1818	3	3		M
1958 TJ1	13.0	581004	302.09	100.13	338.25	7.86	0.0625	3.0596	3	3		M
1958 TL1	13.5	581004	2.04	167.45	203.13	18.76	0.1788	3.1906	3	3	1	M
1958 TM1	11.5	581004	178.80	312.55	245.14	9.61	0.0453	2.9478	3	3	1	M
1977 EL5	14.3	770226	270.35	85.54	178.59	18.77	0.0356	3.1171	25	7	2	h
1977 NN	15.1	770805	2.88	351.86	316.88	4.78	0.1795	2.2444	31	3	2	I
1978 VD1	15.0	781019	39.49	345.37	11.26	5.63	0.1140	2.4171	56	7		M
1980 TK13	15.5	801008	21.54	316.74	43.96	2.80	0.2012	2.2577	7	3		B
1980 TL13	12.5	801008	122.38	49.97	219.55	30.86	0.1081	2.7905	7	3		B
1980 VA	16.5	801117	4.49	232.31	168.90	3.21	0.2638	2.2536	57	0	2	M
1980 VO	15.0	801117	9.04	347.51	38.23	9.98	0.3259	2.5487	53	0		M
1980 VL1	12.0	801117	62.61	98.68	252.60	20.53	0.0409	3.1920	75	5		M
1980 VM1	13.5	801117	335.87	28.36	65.41	4.88	0.2244	3.1487	70	5		M
1980 VR1	13.0	801117	346.61	13.30	53.08	17.73	0.0347	2.8652	53	5		B
1980 VU1	15.5	801028	17.66	184.99	185.01	2.10	0.2165	2.3946	31	3		B
1980 VX1	14.0	801117	339.69	83.13	359.74	7.34	0.2007	2.7897	34	3		B
1980 XM	12.5	801117	105.70	283.77	22.80	10.56	0.0996	2.9914	79	7		M
1980 XW	14.0	801207	116.57	63.46	235.00	6.30	0.1602	2.3558	10	3		M
1980 XX	16.0	801207	29.66	304.79	86.79	5.33	0.1468	2.2488	10	3		M
1980 XZ	12.5	801207	134.59	211.99	81.05	11.47	0.0332	3.1332	12	4		M
1980 YB	15.0	801227	345.38	10.22	105.66	4.78	0.0782	2.2592	29	6		M
1981 SB3	16.0	811003	23.01	35.29	293.66	5.63	0.2930	2.3451	9	3	2	M
1982 DB4	13.5	820220	200.25	225.14	98.55	2.84	0.2395	3.1347	7	6	2	M
1982 FS3	14.0	820401	27.44	336.64	183.68	11.52	0.1073	3.1340	36	0	2	M
1982 SU	15.0	820928	221.14	321.88	184.60	24.09	0.0809	1.8723	23	0		M
1982 SV	15.5	820928	324.74	243.32	189.20	21.91	0.3696	2.4165	48	0		M
1982 SW	16.0	820928	26.15	347.31	346.97	17.28	0.0484	1.9069	23	6		M
1982 SH1	17.5	820928	340.92	199.19	186.08	21.19	0.0872	1.9045	77	7		M
1982 XA	14.0	821217	8.07	195.42	220.74	4.55	0.1385	2.2681	65	0		M
1983 AB	15.0	830215	349.64	64.03	89.53	3.39	0.1505	2.3854	54	0		B
1983 AN	13.5	830215	37.41	349.83	87.97	7.25	0.1186	2.4055	59	9		M
1983 AV	14.0	830215	337.94	64.24	94.84	13.07	0.2038	2.6606	56	8		M
1983 AG2	14.0	830215	32.17	109.56	330.70	21.87	0.3364	2.3165	58	0		M
1983 AM2	14.0	830215	247.27	120.14	171.28	6.06	0.1946	2.2272	62	6		M
1983 AN2	14.0	830106	321.94	105.54	63.33	7.77	0.2234	3.0684	2	5	1	M
1983 AO2	13.5	830106	48.55	268.28	124.01	13.93	0.2306	3.2175	2	3	1	M
1983 AP2	16.0	830106	338.70	239.88	259.71	7.72	0.2211	2.4520	2	4	1	M
1983 AR2	14.0	830106	49.43	6.19	37.51	7.84	0.2161	2.8911	2	6	1	M
1983 AS2	13.5	830106	50.84	347.38	57.28	10.31	0.2009	3.0844	2	6		M
1983 AT2	15.0	830106	33.54	46.20	20.76	5.85	0.1853	2.3996	2	6		M
1983 BM	13.6	830126	332.10	200.27	333.20	11.02	0.0969	2.6443	28	6		E
1983 BN	13.2	830126	247.36	148.97	106.85	6.46	0.0187	2.7410	28	6		E
1983 CE	13.5	830215	329.45	59.31	121.94	14.08	0.1046	2.6499	26	1	2	M
1983 CN	14.0	830215	3.76	156.45	340.88	14.63	0.0256	2.5335	26	8		M
1983 CO	14.9	830215	338.15	52.46	122.53	6.26	0.1787	2.5897	8	8		E
1983 CY2	13.0	830215	77.67	111.26	326.03	9.10	0.0629	2.9933	29	6		E
1983 CZ2	15.1	830215	4.93	192.86	319.01	6.46	0.1735	2.4107	29	6		E
1983 CA3	13.0	830307	18.41	250.08	257.91	5.37	0.0399	2.7796	27	6		M
1983 CB3	15.0	830307	305.80	287.66	307.01	5.85	0.1281	2.2576	27	0		M
1983 DC	15.0	830307	31.97	136.83	338.17	2.76	0.1577	2.3958	23	0		B
1983 DE	14.7	830215	58.07	342.43	94.76	3.39	0.1940	2.3933	25	6		E
1983 DG	14.5	830215	303.58	233.27	353.92	7.92	0.1307	2.3896	25	0		M
1983 EA	15.5	830327	63.85	87.02	7.94	24.18	0.1347	1.8910	19	5		M
1983 ED	14.0	830307	324.78	223.13	350.80	4.46	0.1988	2.8264	5	0		B

1983 EE 14.5 830307 351.86 186.54 346.40 9.87 0.0950 2.4445 5 8 1 B  
 1983 EG 15.5 830307 344.21 19.97 163.39 5.05 0.1342 2.3785 4 8 1 B  
 Note 1: e assumed. 2: double designations 1977 EL5 = 1977 DD (h, JAM 1392);  
 1977 NN = 1977 PX (I, JAM 1391); 1980 VA = 1980 VL (M, MPC 5697); 1981  
 SB3 = SK3 (M); 1982 DB4 = 1982 DB6 (b); 1982 FS3 = 1982 HS2 (b); 1983 CE  
 = 1983 CB1 (b).

\* \* \* \* \*

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

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

(2760) 1980 TU6

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	359.69827		(1950.0)		P		Q
n	0.12487460	Peri.	160.23793		-0.89065437		-0.45368483
a	3.9641794	Node	352.56697		+0.37957657		-0.70548500
e	0.1262028	Incl.	13.44569		+0.25031263		-0.54448230
P	7.89	B(1,0)	11.0				

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

520219	711	(3.6+ 3.9+)Y	680327	095	(0.8+ 9.0-)	830116	688	0.7+	0.4+
520220	711	(0.2- 10.8+)Y	800908	095	0.2+ 0.2-	830121	688	0.1+	1.9-
520224	020	(0.10+ 0.04-)X	801008	095	0.1+ 0.1+	830121	688	0.1+	1.2-
520227	094	(2.8+ 25.7-)X	801012	095	1.9- 2.1+	830215	688	0.3-	0.0
520228	020	(0.08+ 0.06-)X	821216	691	0.5+ 1.1+ Y	830215	688	0.2-	0.3-
600227	760	1.3+ 0.8+	830112	688	0.3- 0.4+	830218	688	0.4-	1.3+
600227	760	0.5- 0.4+	830112	688	0.2+ 0.2-	830309	688	1.2-	1.0+
680225	095	1.1+ 1.3+	830116	688	0.2+ 1.6-	830309	688	0.2-	0.4-

(2865)\* 1935 OK = 1939 PA = 1947 NF = 1951 ML = 1972 QH

Discovered 1935 July 31 by C. Jackson at Johannesburg. The key identification 1935 OK = 1939 PA is by A. Patry (MPC 642).

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	327.07974		(1950.0)		P		Q
n	0.24056608	Peri.	295.16248		-0.21621425		+0.96411647
a	2.5604313	Node	321.32433		-0.78325787		-0.26547815
e	0.0739205	Incl.	14.27121		-0.58288807		-0.00088845
P	4.10	B(1,0)	12.5				

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

350731	078	0.6+ 1.5-	390811	020	(8.6- 1.2-)	800907	095	2.3-	3.0+
350820	078	1.3- 0.4+	390811	020	2.3+ 0.9+	830113	033	2.2+	0.3+
350824	078	0.3+ 0.9+	390817	020	(0.07- 0.01-)	830113	033	1.4+	0.5+
350905	078	1.6+ 1.3-	390817	020	(0.06- 0.01-)	830122	801	0.2-	1.0+
390808	020	1.3- 0.7-	390819	020	1.3- 1.2+	830215	688	1.4-	1.1-
390808	020	3.2- 3.6+	470715	078	(41.5+ 72.5-)X	830215	688	1.9-	0.7-
390810	020	2.3- 1.7-	510630	711	0.8+ 0.9- Y				
390810	020	4.4+ 0.7-	720818	095	2.9+ 3.2-				

(2866)\* 1961 TA = 1973 AR3 = 1981 RR2

Discovered 1961 Oct. 7 by S. Arend at Uccle.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	162.80561		(1950.0)		P		Q
n	0.19872494	Peri.	24.57431		+0.94554014		+0.31042829
a	2.9082682	Node	316.95324		-0.31730900		+0.81195417
e	0.2050557	Incl.	8.24760		-0.07258683		+0.49433257
P	4.96	B(1,0)	13.0				



## Residuals in seconds of arc

610914	012	4.1+	1.3+	810907	095	2.5+	0.6-	830116	688	2.7+	0.2+
610916	012	3.4-	0.1+	810927	095	(17.1-	3.9-)	830120	801	0.0	2.1+
611007	012	0.4-	0.5-	811003	095	1.6-	0.8-	830121	688	0.1+	0.3-
611011	012	1.3-	0.6+	830109	688	0.8-	1.2-	830121	688	0.3-	2.5-
730102	095	2.0+	0.9-	830112	801	0.6-	1.6+	830211	801	1.4-	1.9+
730104	095	2.0-	1.1+	830116	688	0.1+	1.5-				

(2867)\* 1969 VC = 1954 QL = 1979 FJ4 = 1980 VV1 = 1980 WB

Discovered 1969 Nov. 4 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	5.18369		(1950.0)		P		Q
n	0.27125508	Peri.	250.19352		+0.56624761		+0.81199803
a	2.3634738	Node	55.10373		-0.67679257		+0.55603838
e	0.1458601	Incl.	9.93459		-0.47044176		+0.17742748
P	3.63	B(1,0)	15.0				

## Residuals in seconds of arc

540821	839	2.7-	1.2-	790331	095	1.2-	2.8-	801129	688	0.7-	0.9-
540821	839	2.2+	0.2-	801011	095	4.5+	0.6-	801129	688	1.1+	0.7-
691104	095	1.5-	0.8+	801013	095	0.0	1.1+	801204	688	1.4-	0.8-
691111	095	1.8-	0.7-	801106	330	0.3+	0.6+	801204	688	1.9-	0.6+
691113	095	3.9+	2.9-	801110	330	2.0-	1.4+				

(2868)\* 1972 UA = 1981 QT2

Discovered 1972 Oct. 30 by P. Wild at Zimmerwald.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	109.94008		(1950.0)		P		Q
n	0.20891541	Peri.	260.52587		+0.77645408		-0.62399934
a	2.8129093	Node	138.01278		+0.61738275		+0.72524796
e	0.1766556	Incl.	7.55891		+0.12632339		+0.29092990
P	4.72	B(1,0)	14.5				

## Residuals in seconds of arc

721030	026	0.3-	0.0	810901	809	0.8+	0.4+	810906	809	0.9+	1.2+
721102	026	0.1+	1.2+	810901	809	1.1+	0.1-	810906	809	1.6+	1.8+
721103	026	0.2-	0.6-	810901	809	0.1+	0.0	810906	809	0.9+	0.2+
721107	026	0.9+	0.4-	810901	809	0.1+	0.4+	810906	809	1.4+	0.5+
721126	026	1.0-	1.1+	810901	809	0.1+	0.0	810906	809	2.5+	0.4+
810823	809	1.3-	0.6-	810902	809	0.6-	0.3-	810907	809	1.2+	1.1+
810823	809	0.7-	0.6-	810902	809	0.3-	0.6-	810907	809	1.3+	1.1+
810823	809	0.7-	0.5-	810902	809	0.1-	0.7-	810907	809	1.2+	0.9+
810824	809	0.7-	0.7-	810902	809	0.4+	0.5-	810907	809	0.5+	0.5+
810824	809	0.1-	0.5-	810902	809	0.3-	0.7-	810907	809	0.8+	0.9+
810824	809	0.4-	0.6-	810902	809	0.3+	0.8-	810907	809	0.6+	0.3+
810825	809	1.2+	0.9+	810903	809	0.8-	0.5-	810918	809	0.0	2.0-
810825	809	2.3+	0.8+	810903	809	0.3-	0.8-	810918	809	0.2-	1.6-
810825	809	2.2+	0.9+	810903	809	0.7-	0.0	810918	809	0.3-	2.0-
810827	809	0.5-	0.3-	810903	809	0.7-	0.5-	810920	809	2.3-	0.6-
810827	809	0.6-	0.1-	810903	809	1.1-	0.4-	810920	809	2.4-	0.6-
810827	809	0.1-	0.4-	810903	809	0.2-	0.7-	810920	809	2.1-	0.8-
810828	809	0.1+	0.2+	810905	809	1.1-	0.1+	810922	809	0.6-	0.8-
810828	809	0.4-	0.3-	810905	809	1.1-	0.4-	810922	809	0.4-	0.3-
810828	809	0.1+	0.0	810905	809	0.9-	1.1-	810922	809	1.3-	0.9-
810828	809	0.2+	0.2-	810905	809	0.3-	0.6+	821222	801	0.9-	1.4+
810828	809	0.0	0.8-	810905	809	0.7-	0.1-	830114	801	0.7+	0.1-
810828	809	0.1+	1.2-	810905	809	0.9-	0.2-	830121	688	0.5+	1.1-
810901	809	0.6+	1.3+	810906	809	0.6+	1.1+	830216	801	0.4-	1.6-

(2869)\* 1980 RM2 = 1967 RK = 1970 EM1

Discovered 1980 Sept. 7 by N. S. Chernykh at the Crimean Astrophysical Observatory. The key identification 1980 RM2 = 1970 EM1 is by L. D. Schmadel (MPC 7609).

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	303.84354		(1950.0)		P		Q
n	0.23046390	Peri.	296.74655		+0.40533720		+0.91409766
a	2.6347178	Node	357.09459		-0.73956622		+0.32064232
e	0.1766809	Incl.	12.85790		-0.53734864		+0.24822162
P	4.28	B(1,0)	13.0				

Residuals in seconds of arc

670908	095	1.1+	1.4-	801008	095	1.8-	1.4-	830312	046	1.7-	1.2-
700302	805	0.1-	0.5-	801012	095	0.8-	0.7-	830313	046	0.7-	1.7-
700302	805	0.3-	0.0	830220	801	0.5-	0.5+	830313	046	1.6-	0.0
700302	805	0.2+	0.3+	830310	688	1.3+	1.9-	830314	801	0.3+	2.5+
800907	095	1.9+	1.0+	830310	688	0.6+	2.4-				
800908	095	2.8+	1.7-	830312	046	0.8-	0.4-				

(2870)\* 1981 LD = 1959 RY = 1963 UP = 1963 VL

Discovered 1981 June 4 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	160.44174		(1950.0)		P		Q
n	0.26655852	Peri.	279.50709		+0.99341991		-0.08880351
a	2.3911547	Node	85.61265		+0.11051666		+0.90897922
e	0.2118492	Incl.	4.15971		-0.03004912		+0.40727227
P	3.70	B(1,0)	14.0				

Residuals in seconds of arc

590903	024	0.3-	0.3+	810604	688	0.6+	1.5-	810703	688	0.1+	0.6-
631022	760	2.6+	0.2+	810606	688	0.7-	0.9-	830109	688	1.9+	2.0-
631022	760	3.2+	0.0	810606	688	0.3-	1.0-	830109	801	0.8-	0.1-
631111	760	2.4-	0.8-	810609	688	0.8-	1.4-	830109	688	3.4-	0.5+
631111	760	2.0-	0.8-	810609	688	0.2-	1.3-	830210	801	2.1+	1.9-
810604	688	0.2+	0.5-	810703	688	1.9+	0.7+				

(2871)\* 1981 QC2 = 1954 UD2 = 1961 XS = 1971 SD2 = 1971 TB3

Discovered 1981 Aug. 30 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	200.91614		(1950.0)		P		Q
n	0.29051713	Peri.	334.72606		+0.99784516		-0.04551112
a	2.2578143	Node	28.00612		+0.06258634		+0.87646020
e	0.1397156	Incl.	5.77673		-0.01969751		+0.47931853
P	3.39	B(1,0)	14.0				

Residuals in seconds of arc

541025	760	0.4+	0.9+	711010	095	0.2-	0.3-	810926	688	0.7+	1.6-
541025	760	0.5-	0.5-	711011	095	0.6-	1.5+	811004	688	1.2-	1.0-
611208	760	1.0-	0.8-	810830	688	0.5+	0.7+	811004	688	0.5-	0.8-
611208	760	0.4-	0.6-	810830	688	1.0+	1.0+	830114	801	0.0	1.0+
710923	095	1.8+	1.8+	810926	688	1.2-	1.5-	830220	801	0.3+	1.6-

(2872)\* 1981 RU = 1972 TZ3 = 1977 XB

Discovered 1981 Sept. 5 at the Oak Ridge Observatory. The identification 1981 RU = 1962 PC (MPC 6530) is invalid.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	62.19262		(1950.0)		P		Q
n	0.21723254	Peri.	237.11392		-0.47782508		-0.87734959
a	2.7406451	Node	241.49007		+0.82175222		-0.42869365
e	0.1190553	Incl.	2.87374		+0.31049392		-0.21559093
P	4.54	B(1,0)	13.5				

Residuals in seconds of arc

721005	095	1.0-	2.8+	811006	046	3.2-	1.0-	830109	688	1.6+	0.5-
771208	330	0.2-	1.2+	811006	046	2.7-	0.8-	830109	688	0.3-	0.7-
810905	801	2.5-	1.3-	811007	046	0.9+	1.1-	830114	801	0.3+	2.3+
810922	046	2.2+	0.1-	811007	046	1.6+	1.7-	830122	688	0.2-	0.9-
810922	046	0.4+	1.8+	811025	046	1.1+	1.8-	830122	688	0.8-	1.7-
810925	046	0.8+	0.9+	811025	046	0.7+	0.3-	830219	801	1.0-	0.1+
810925	046	2.2+	1.4+	811124	801	0.2+	0.1-				

(2873)\* 1982 FR = 1935 KH = 1935 MH = 1938 GA = 1959 RA1

Discovered 1982 Mar. 28 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory. The 1980 observations were identified at the Crimean Astrophysical Observatory.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	94.97588		(1950.0)		P		Q
n	0.29179421	Peri.	167.79033		-0.02671656		+0.99451784
a	2.2512217	Node	100.61555		-0.92554747		+0.01360072
e	0.1580913	Incl.	5.90370		-0.37768782		-0.10367878
P	3.38	B(1,0)	14.0				

Residuals in seconds of arc

350524	078	1.1-	0.8-	801130	095	0.7-	0.9+	820414	688	0.2-	0.1+
350603	078	0.2-	0.5+	801210	095	0.3+	0.0	820414	688	2.0-	0.6-
350624	078	(3.7+	42.5-)X	820328	688	0.8+	0.3+	820526	688	2.0-	0.9+
380402	053	(5.1-	17.6-)X	820328	688	1.5+	1.4+	820526	688	1.3-	2.0-
380404	053	(27.5+	14.7+)X	820331	688	0.5+	1.0-				
590903	024	0.5+	0.8-	820331	688	1.5+	1.0-				

(2874)\* 1982 TH = 1962 WE = 1965 SD = 1972 TD2 = 1972 XF

Discovered 1982 Oct. 13 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	85.09232		(1950.0)		P		Q
n	0.29312692	Peri.	321.92563		+0.75564883		-0.64960375
a	2.2443931	Node	78.79880		+0.61989887		+0.66804023
e	0.1347354	Incl.	4.89618		+0.21147160		+0.36295621
P	3.36	B(1,0)	15.0				

Residuals in seconds of arc

621123	760	1.2-	1.7+	721206	095	0.4+	1.7-	821017	688	1.4-	0.5-
621123	760	0.6+	0.9+	820915	688	0.8+	0.9+	821021	688	1.0+	1.1-
650926	760	1.3-	2.8+	820915	688	0.9+	0.3+	821021	688	0.1+	1.7-
721008	095	0.5+	0.3+	821013	688	0.3+	0.8-				
721202	095	1.2-	2.0+	821013	688	0.4+	1.3-				

(2875)\* 1983 CL = 1955 EF = 1966 QQ = 1969 BG = 1981 UJ

Discovered 1983 Feb. 11 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	39.49297		(1950.0)		P		Q
n	0.21064947	Peri.	169.20771		-0.86171321		-0.50461034
a	2.7974509	Node	340.21332		+0.45303844		-0.71805537
e	0.0989313	Incl.	9.02328		+0.22848744		-0.47933797
P	4.68	B(1,0)	13.0				

## Residuals in seconds of arc

550314	760	1.1+	1.9+	811023	046	2.1+	0.3+	830215	688	0.6+	1.0+
550314	760	1.0-	2.1+	811025	046	0.5+	0.5+	830215	688	0.4-	0.8+
550323	760	1.2+	1.4+	811025	046	2.8-	0.7+	830219	688	1.6-	0.1-
550323	760	0.4+	1.6-	830211	688	0.4+	1.2-	830219	688	0.0	0.5-
660816	074	1.7-	3.7+	830211	688	1.2+	0.6-	830309	688	0.6+	0.3-
690120	095	1.5+	1.1+	830215	688	0.6+	0.3+	830309	688	2.8-	1.1-
811023	046	0.4-	0.4-	830215	688	0.4+	0.8+				

(2876)\* 6558 P-L = 1981 SC

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels. The identification is by O. Kippen (MPC 6889).

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	86.12908	(1950.0)	P	Q
n	0.23490782	Peri. 95.46183	-0.14043365	-0.99001637
a	2.6013836	Node 2.70184	+0.77614754	-0.11765645
e	0.1194430	Incl. 14.85126	+0.61471406	-0.07761795
P	4.20	B(1,0) 14.5		

## Residuals in seconds of arc

600924	675	0.8-	0.0	601026	675	0.2-	0.4+	811103	801	3.1-	1.2+
600926	675	0.8-	0.3-	810926	688	0.5+	0.7-	811220	801	3.9+	2.9-
600927	675	0.5+	1.0+	810926	688	2.0+	0.1+	830114	801	0.8-	1.2+
600928	675	0.7-	0.5+	810929	801	0.7+	1.0-	830122	688	0.3+	1.7-
601017	675	0.4-	0.7+	810930	801	2.3+	1.1-	830122	688	0.3-	1.1+
601022	675	0.5+	0.6+	811001	801	3.6-	1.4+	830219	801	1.3+	0.2+

1949 QC = 1970 GR1 = 1975 SG = 1980 WF1

The identification 1949 QC = 1970 GR1 is by L. D. Schmadel. The identification 1949 QC = 1951 AS (MPC 2807) is invalid.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	296.94791	(1950.0)	P	Q
n	0.22625664	Peri. 236.51495	+0.88739855	+0.43858799
a	2.6672846	Node 97.11143	-0.36103350	+0.85271551
e	0.2626809	Incl. 8.22740	-0.28666816	+0.28375485
P	4.36	B(1,0) 13.5		

## Residuals in seconds of arc

490822	078	0.3+	1.1-	490915	078	1.5+	0.1+	700411	805	1.2-	1.3-
490825	078	0.6+	1.3+	490920	078	2.6-	0.9+	750926	808	0.4+	0.8-
490828	078	2.1+	0.3-	700411	805	0.3-	0.6-	801130	095	1.3-	1.4-
490910	078	0.3-	2.0+	700411	805	0.2+	0.2-	801210	095	2.1+	1.3-

1955 QK = 1980 TJ13

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	341.92159	(1950.0)	P	Q
n	0.28035555	Peri. 129.89410	+0.96084849	+0.26970609
a	2.3120514	Node 214.59490	-0.27583869	+0.90951517
e	0.1400057	Incl. 6.41869	-0.02613791	+0.31629221
P	3.52	B(1,0) 15.0		

## Residuals in seconds of arc

550823	760	1.0+	0.2+	550913	760	1.7-	1.6-	801011	095	1.1+	3.8+
550823	760	0.2-	0.5+	550919	760	2.1+	0.3+	801015	095	1.4+	1.9-
550913	760	1.0-	1.3-	550919	760	2.0-	0.2+	801017	095	0.1-	0.2+

1972 KG = 1949 HF = 1965 SY = 1980 SB = 1983 EN

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	345.20046		(1950.0)		P		Q
n	0.25943629	Peri.	82.29635		-0.07861588		+0.99687107
a	2.4347242	Node	183.22900		-0.96247303		-0.07804690
e	0.1972437	Incl.	8.39355		-0.25974064		-0.01251964
P	3.80	B(1,0)	14.0				

Residuals in seconds of arc

490423	024	(64.0-	24.8+)	720610	095	0.5+	1.3+	830312	046	0.9-	1.3-
650923	330	0.0	0.3-	800916	046	0.2+	0.1-	830313	046	1.9+	0.1-
720517	095	1.9-	0.3-	800916	046	0.1+	0.5-	830313	046	2.6-	3.0+
720606	095	1.1+	0.7-	830312	046	1.2+	2.5-				

1978 SZ7 = 1983 AQ2

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	58.59629		(1950.0)		P		Q
n	0.29008476	Peri.	155.30691		-0.70358928		-0.71001233
a	2.2600617	Node	339.36835		+0.63746065		-0.61256467
e	0.0966202	Incl.	4.73108		+0.31401600		-0.34734278
P	3.40	B(1,0)	14.5				

Residuals in seconds of arc

780926	095	0.4+	0.4-	781101	095	0.3-	0.6-	830111	675	0.0	2.8+
781002	095	1.5+	2.3+	830110	675	1.2-	1.7-	830112	675	0.4+	0.4+
781008	095	0.5-	0.5+	830110	675	2.0+	0.4+	830112	675	0.8-	3.2+

1983 CB = 1966 FB = 1968 QE1 = 1971 BX1 = 1982 DQ2

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	301.86998		(1950.0)		P		Q
n	0.17222186	Peri.	278.22001		-0.01841779		+0.99770475
a	3.1994701	Node	350.00450		-0.70375180		-0.05923007
e	0.1182657	Incl.	22.05012		-0.71020714		+0.03281824
P	5.72	B(1,0)	12.0				

Residuals in seconds of arc

660317	760	(64.4-	41.0+)	X	830217	372	1.1+	0.9+	830311	372	2.4-	0.6+
680827	095	5.0+	4.8-		830217	372	0.5-	0.1+	830314	372	0.5-	2.2-
710130	095	2.6+	3.9+		830219	688	0.3+	1.9-	830314	372	0.7+	2.8-
820225	511	1.7-	0.7-		830219	688	0.0	2.2-	830316	688	3.2-	0.6-
820226	511	1.5+	0.5-		830308	372	0.7-	0.3-	830316	688	0.5-	1.6-
830211	372	0.5+	1.2-		830308	372	0.8-	1.9+	830402	675	0.6+	0.2-
830213	372	0.4-	0.1-		830309	688	1.0+	1.6-	830402	372	0.6+	0.3+
830215	372	0.6-	0.5+		830309	688	0.4-	0.1-	830402	372	0.2+	1.5+
830215	372	0.9-	0.6+		830311	372	1.8-	0.9+	830403	675	0.8+	0.4+

1983 CM1 = 1962 XV1 = 1973 AA2 = 1975 NR = 1976 UE5 = 1978 EY  
= 1979 HL2

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	238.00444		(1950.0)		P		Q
n	0.20538823	Peri.	222.69781		+0.71541901		+0.69640633
a	2.8450280	Node	93.06882		-0.62477109		+0.67383932
e	0.0596437	Incl.	3.24442		-0.31278864		+0.24689833
P	4.80	B(1,0)	13.0				

Residuals in seconds of arc

621204	033	1.2-	1.5+	780305	095	0.9-	2.8+	830215	688	0.2+	0.5-
621205	033	1.0+	1.6+	790424	095	0.2+	2.2-	830219	688	1.3-	0.5-
730101	095	0.9+	2.8+	830211	688	0.1-	1.6-	830219	688	1.0-	0.5+
750711	095	0.7-	0.6+	830211	688	0.0	0.7-				
761030	095	2.5+	5.5-	830215	688	0.3+	2.2-				

1983 CX2 = 1966 BJ = 1975 TC2 = 1975 VO

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	90.57734		(1950.0)		P		Q
n	0.18173559	Peri.	181.38876		-0.20658443		-0.97745602
a	3.0868125	Node	280.53488		+0.89807400		-0.17173712
e	0.0951939	Incl.	2.54286		+0.38831167		-0.12282542
P	5.42	B(1,0)	13.0				

Residuals in seconds of arc

660116	330	0.4+	1.0-	830215	688	1.6-	1.0+	830310	688	0.7-	0.1+
751003	095	0.4-	1.2-	830215	688	0.9+	0.0	830316	688	0.8+	0.4+
751101	095	0.3+	1.8+	830310	688	0.7-	0.4-	830316	688	1.6+	0.6-

1983 DJ = 1973 AV3 = 1978 TZ3

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	128.84073		(1950.0)		P		Q
n	0.30402914	Peri.	60.07630		+0.09278606		-0.99493852
a	2.1904169	Node	24.68881		+0.87867497		+0.06359796
e	0.1008330	Incl.	5.29911		+0.46831723		+0.07779873
P	3.24	B(1,0)	14.5				

Residuals in seconds of arc

730102	095	0.2-	2.1+	830219	688	3.2-	0.1-	830309	688	0.0	0.0
730104	095	0.8+	0.9+	830219	688	0.7-	0.4+	830316	688	2.0+	0.7+
781004	095	0.8+	1.5-	830309	688	1.2+	1.6-	830316	688	0.5-	0.1-

\* \* \* \* \*

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

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

(1832) Mrkos

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	114.03434		(1950.0)		P		Q
n	0.17194105	Peri.	88.03516		+0.82619450		-0.51998657
a	3.2029464	Node	303.23045		+0.35590055		+0.78007249
e	0.1171613	Incl.	15.02397		+0.43673499		+0.34799550
P	5.73	B(1,0)	11.6				

Residuals in seconds of arc

370205	754	0.4+	0.9+	720217	693	1.0+	1.3+	780407	095	3.9-	0.2-
370205	754	0.3-	0.8-	720217	693	1.1+	1.4+	810922	046	1.3-	1.6-
690811	095	(4.8+	1.0+)	720413	693	1.4+	1.6+	810922	046	0.7-	0.8-
690821	095	0.6+	0.6+	720414	693	1.0+	1.5+	830109	688	1.5+	0.3-
690902	029	0.6+	0.5+	750802	801	0.2-	0.1-	830109	688	2.2+	1.4-
690904	029	0.7+	0.7+	750819	801	0.3+	0.7+	830116	688	0.3+	0.9-
690918	029	0.1-	0.0	761220	046	0.2+	0.4-	830116	688	0.5+	1.6-
701124	029	0.5-	1.3+	761220	046	0.1+	0.0	830201	046	1.9-	1.0-
701221	029	1.2-	1.2+	761221	046	1.3-	0.7-	830201	046	0.2-	0.8+
710124	029	0.0	1.3+	761221	046	1.0-	0.8-	830215	688	1.7+	0.5-
720206	029	0.1+	0.3-	780401	046	(1.9+	6.7+)	830215	688	0.4+	0.1+
720206	029	0.5-	1.4-	780401	046	1.7-	0.4+				

(2082) Galahad

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	327.84937		(1950.0)		P		Q
n	0.19739667	Peri.	144.91420		-0.57425873		+0.81691907
a	2.9213001	Node	89.98027		-0.76280262		-0.51016042
e	0.1636435	Incl.	3.07102		-0.29725255		-0.26903453
P	4.99	B(1,0)	13.8				

## Residuals in seconds of arc

601017	675	0.0	1.2-	740620	808	0.3-	0.9+	830211	688	1.1+	1.8-
601022	675	0.4+	0.6-	740622	808	1.1-	1.6+	830215	688	0.9-	3.2-
601025	675	0.5+	0.6+	740622	808	0.1-	1.3+	830215	688	1.2-	1.8-
601026	675	0.5+	0.1-	780210	801	2.3+	2.5+	830219	688	0.9+	2.8-
740617	808	0.9-	0.5+	780213	801	2.4-	0.0	830219	688	1.0-	2.4-
740617	808	1.5-	1.0+	780313	801	2.1+	0.9+				
740620	808	1.4+	0.7+	830211	688	1.0-	0.3-				

(2147) Kharadze

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	110.12270		(1950.0)		P		Q
n	0.17453877	Peri.	288.19302		+0.28692056		-0.95264254
a	3.1710866	Node	144.63068		+0.93145849		+0.25287535
e	0.0645963	Incl.	10.02270		+0.22374464		+0.16889714
P	5.65	B(1,0)	13.0				

## Residuals in seconds of arc

660214	330	0.1+	0.3-	761129	809	0.2-	0.3+	780504	801	(4.2+	2.9+)
660224	330	0.1+	1.2-	761130	809	0.1+	0.4+	790519	809	0.2+	0.3+
761024	809	0.7+	0.2+	770121	801	0.6-	0.9+	790520	809	0.1-	0.0
761024	809	0.5-	0.2-	770129	809	0.4-	0.6-	790524	809	0.5+	0.1+
761025	809	0.6-	0.3+	770129	809	0.1-	0.2-	790622	801	(7.7-	0.2-)
761031	809	0.1-	0.4-	770326	809	0.3-	0.2-	790721	809	0.2+	0.9-
761031	809	1.5+	0.2+	770327	809	0.7+	0.3+	811202	511	1.5-	0.2+
761101	809	0.1-	0.1+	780110	809	0.8-	0.1+	811203	511	0.6-	0.3+
761101	809	0.0	0.5-	780309	801	2.2-	0.3-	811203	511	1.1+	0.8+
761102	809	0.2+	1.1-	780313	809	0.2-	0.1+	830215	688	0.8+	0.2+
761102	809	0.3+	0.3+	780409	801	1.3+	2.7+	830215	688	0.6+	0.6-
761129	809	0.1-	0.1+	780502	801	(9.9+	1.6+)				

(2877)\* 1969 TR2 = 1933 BS = 1952 SC1 = 1974 QL1 = 1975 WQ1 = 1980 TZ12

Discovered 1969 Oct. 8 by L. I. Chernykh at the Crimean Astrophysical Observatory. The key identification 1969 TR2 = 1980 TZ12 is by C. M. Bardwell.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	252.82584		(1950.0)		P		Q
n	0.18031341	Peri.	232.47585		+0.68297514		+0.72932585
a	3.1030161	Node	80.65211		-0.65656632		+0.63717564
e	0.1982228	Incl.	2.34411		-0.32010251		+0.24918065
P	5.47	B(1,0)	13.5				

## Residuals in seconds of arc

330129	024	0.0	0.6+	691016	095	3.0+	0.3-	801010	095	0.5-	0.1-
520918	760	0.4-	0.1+	691111	095	0.5+	0.5-	801017	095	0.7-	0.3+
520918	760	0.6-	1.9+	740822	095	0.3+	0.6-				
691008	095	1.5-	0.7-	751128	330	0.2-	1.0+				

(2878)\* 1980 RX = 1938 UE

Discovered 1980 Sept. 7 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	210.67529		(1950.0)		P		Q
n	0.18580499	Peri.	16.85255		+0.90291728		+0.41302186
a	3.0415699	Node	318.10772		-0.41202134		+0.75290875
e	0.0902188	Incl.	10.26301		-0.12238793		+0.51238789
P	5.30	B(1,0)	12.5				

## Residuals in seconds of arc

381016	062	0.4-	1.6+	800907	688	1.6+	0.8-	811124	688	1.0+	1.9-
800717	688	0.3-	0.2+	800907	688	0.3+	0.3-	811124	688	0.3+	2.4-
800717	688	0.3-	1.5-	800917	688	0.9+	1.2-	830112	801	0.1+	0.8-
800806	688	1.2-	1.0-	800917	688	1.0-	0.1-	830119	801	0.9-	0.3+
800806	688	0.0	1.0-	801002	688	0.3+	1.2-	830220	801	0.5+	0.1-
800906	559	0.1-	2.2+	811121	879	2.3-	2.9+				
800906	559	0.5+	2.9+	811121	879	1.1+	1.8+				

1974 ST = 1980 VE

The 1980 Crimean observation was identified at the Crimean Astrophysical Observatory.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	253.51197	(1950.0)	P	Q	
n	0.17497067	Peri.	192.89263	+0.46099204	+0.88650688
a	3.1658724	Node	104.57036	-0.81043395	+0.43889718
e	0.2293410	Incl.	2.36265	-0.36150123	+0.14654289
P	5.63	B(1,0)	13.5		

## Residuals in seconds of arc

740919	095	1.7-	3.1-	741010	808	1.2-	0.8+	801008	095	0.1-	1.5+
740921	808	0.4-	2.2+	741010	808	0.1-	0.0	801106	801	0.1+	1.1-
740921	808	0.1+	2.2+	741019	808	1.1-	0.7-				
740921	095	1.3+	4.4-	741019	808	1.0-	0.1+				

1977 QD5 = 1980 KC2 = 1980 MG = 1983 DH

The key identification 1977 QD5 = 1983 DH is by E. Bowell.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	331.49832	(1950.0)	P	Q	
n	0.29024770	Peri.	148.24387	-0.05217786	+0.99639281
a	2.2592158	Node	118.68800	-0.93142182	-0.02438582
e	0.1497431	Incl.	4.37528	-0.36018170	-0.08128165
P	3.40	B(1,0)	14.0		

## Residuals in seconds of arc

770822	095	1.6-	2.6-	800616	095	0.0	0.1+	830309	688	0.2-	0.1+
770907	095	2.3+	1.6+	830219	688	1.1-	0.7-	830316	688	0.8+	0.2+
770912	095	0.5-	0.2-	830219	688	0.2-	0.1+	830316	688	0.0	0.8+
800518	095	0.0	0.0	830309	688	0.1+	1.2-				

1977 RC

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	102.02987	(1950.0)	P	Q	
n	0.22053871	Peri.	283.24471	+0.50770038	-0.77227215
a	2.7131910	Node	129.45044	+0.84703790	+0.52841167
e	0.4593844	Incl.	29.64059	-0.15737572	+0.35267101
P	4.47	B(1,0)	15.5		

## Residuals in seconds of arc

770905	809	0.5-	0.5-	771004	809	0.9-	1.2+	771203	809	0.2-	2.6-
770906	809	0.5-	0.9+	771008	809	0.6+	1.3+	780107	809	1.0-	0.9-
770907	809	0.3+	1.3-	771009	809	0.2+	1.2+	780107	809	0.5+	1.8+
770907	809	0.1-	1.6-	771013	809	0.2+	0.2+	830220	675	0.2-	0.8+
770907	809	0.3+	1.3+	771112	809	0.4+	0.1+	830402	675	0.3+	1.2-
770911	809	0.1+	1.2-	771113	809	0.4+	0.5-				



1978 QK = 1951 JS = 1955 FU = 1955 FD2 = 1959 EE

The identification 1978 QK = 1959 EE is by L. D. Schmadel.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	300.57032		(1950.0)		P		Q	
n	0.23321127	Peri.	329.43267	-0.75666365			-0.65211889	
a	2.6139898	Node	169.46617	+0.63967936			-0.75324329	
e	0.1392338	Incl.	14.87005	+0.13516818			-0.08582249	
P	4.23	B(1,0)	14.0					

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

510503	711(0.05-	0.02-)Y	550422	760	1.0+	3.0+	780912	095	0.2+	0.3+
550321	388	0.5-	1.1-	590304	760(0.08-	0.01+)X	780928	095	1.8+	0.6-
550329	760	3.2-	0.2-	780831	095	0.1-	1.3+	781004	095	0.6-
550329	760	3.2-	1.1-	780905	095	0.6+	0.0			
550422	760	0.1+	1.4-	780907	095	2.3+	3.1-			

1978 RA6 = 1983 CL1

The identification is by E. Bowell.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	128.42843		(1950.0)		P		Q	
n	0.29076531	Peri.	42.38838	+0.39264435			-0.91874776	
a	2.2565338	Node	24.58016	+0.81464037			+0.32643117	
e	0.1221186	Incl.	5.74365	+0.42683893			+0.22213791	
P	3.39	B(1,0)	15.5					

Residuals in seconds of arc

780913	095	0.0	0.3-	781007	095	1.3-	0.6+	830219	688	2.6+	0.9-
780927	095	1.3+	0.1-	830211	688	1.5-	0.7+	830219	688	1.1-	0.0
781003	095	0.1+	0.3-	830211	688	0.0	0.2+				

1980 LE

The 1983 observations were identified by E. Bowell.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	323.24116		(1950.0)		P		Q	
n	0.26880364	Peri.	331.29204	+0.20366324			+0.97672410	
a	2.3778264	Node	310.37546	-0.88047628			+0.15266035	
e	0.1553753	Incl.	5.06934	-0.42811540			+0.15068129	
P	3.67	B(1,0)	14.5					

Residuals in seconds of arc

800614	688	0.3-	0.9-	800618	688	0.5-	1.7-	800717	688	0.3+	0.8-
800614	688	0.6-	0.6-	800618	688	0.8+	0.0	800804	688	0.7-	0.2-
800617	688	0.6+	1.0+	800705	688	0.1-	0.1-	830316	688	0.3-	1.1-
800617	688	0.9+	2.0+	800717	688	0.7+	0.1+	830316	688	0.3+	1.1+

1981 UW9 = 1943 VG = 1962 WH = 1968 TA

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	133.39198		(1950.0)		P		Q	
n	0.15522811	Peri.	342.23075	+0.97957053			-0.16165695	
a	3.4289146	Node	27.93210	+0.20108818			+0.78069355	
e	0.1093565	Incl.	14.79512	+0.00226316			+0.60364277	
P	6.35	B(1,0)	12.0					

Residuals in seconds of arc

431103	062	0.5-	0.3+	811023	330	0.0	1.2+	821206	675	0.1-	0.6-
431103	062	0.8+	1.0-	811028	330	0.6+	0.1+	821206	675	0.2-	0.6-
621124	760(38.6+	34.6-)X	811127	330	1.3-	0.2+					
681002	095	1.2+	1.2-	811201	330	1.1-	0.7+				

1981 XK2 = 1934 NF = 1944 MD = 1964 LA = 1974 ML = 1976 YU2

The key identification 1981 XK2 = 1976 YU2 is by S. Nakano and K. Hukurawa (JAM 1262).

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	302.10122		(1950.0)		P		Q
n	0.19687951	Peri.	183.51012	+0.02499183		+0.95736069	
a	2.9264194	Node	88.07053	-0.90999260		+0.14097776	
e	0.1883196	Incl.	16.73680	-0.41387060		-0.25216221	
P	5.01	B(1,0)	12.0				

Residuals in seconds of arc

340706	078	1.3-	0.9+	X	640611	760	(34.7-	14.9-)	X	811203	330	1.2-	1.5+
340710	078	(19.8-	30.2+)	X	740623	095	0.7+	2.3+		811219	330	0.6+	3.1+
340731	078	(85.7-	27.6+)	X	761216	095	1.1+	2.1-		811221	330	1.1-	0.8+
440625	078	(0.00-	0.03-)	X	761218	095	0.0	1.5-		811222	330	0.3-	2.6+
440714	078	(66.3+	43.3-)	X	761220	095	0.5+	0.9-					

1982 AN = 1969 VP2

The identification is by L. D. Schmadel.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	217.40520		(1950.0)		P		Q
n	0.17509930	Peri.	183.17317	+0.99414584		+0.10462996	
a	3.1643218	Node	170.69086	-0.09509383		+0.96574277	
e	0.0939324	Incl.	9.59251	-0.05129531		+0.23747309	
P	5.63	B(1,0)	13.5				

Residuals in seconds of arc

691115	095	0.1+	0.5-		820202	675	0.6-	0.1-		830220	675	0.6+	0.6-
811223	675	0.0	0.8+		820202	675	0.1+	0.4-		830221	675	0.7-	0.2+
820104	675	0.5+	0.5+		820203	675	0.0	0.1-					

1982 BB1 = 1980 VM2

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	198.17683		(1950.0)		P		Q
n	0.19293376	Peri.	242.11407	+0.69439840		-0.70834961	
a	2.9661841	Node	161.96645	+0.71462848		+0.69947837	
e	0.0866718	Incl.	24.15817	-0.08436225		+0.09471447	
P	5.11	B(1,0)	12.5				

Residuals in seconds of arc

801111	330	0.0	0.3-		820131	688	1.6-	0.7-		820221	688	0.8+	0.8+
820124	688	0.2-	1.3+		820131	688	1.1-	0.3+		830220	675	0.3-	0.1+
820124	688	0.8+	0.4-		820221	688	1.3+	1.2-		830221	675	0.4+	0.5-

1982 HR

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	71.47893		(1950.0)		P		Q
n	0.74046144	Peri.	301.61894	-0.65417055		-0.75630950	
a	1.2100438	Node	189.24926	+0.70882490		-0.60956025	
e	0.3226732	Incl.	2.68848	+0.26387147		-0.23755470	
P	1.33	B(1,0)	20.0				

From 21 observations 1982 Apr. 24-June 13, mean residual 0".8.

1982 QR = 1927 BE

The identification is by L. D. Schmadel.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	9.14505		(1950.0)		P		Q
n	0.17194228	Peri.	124.16465	+0.48934833		-0.80775857	
a	3.2029375	Node	293.17599	+0.63490605		+0.58839502	
e	0.0838436	Incl.	20.95218	+0.59785660		+0.03629590	
P	5.73	B(1,0)	13.0				

## Residuals in seconds of arc

270126	389	5.0-	2.5-	Y	820820	675	0.2+	0.4+	821106	675	0.6+	0.5+
270128	389	2.8+	3.3+	Y	820826	675	0.4-	0.4-	821107	675	0.1+	0.3+
270129	389	2.1+	1.0-	Y	820826	675	0.0	0.9-	821204	675	0.3-	0.2+
820820	675	0.1-	0.1+		820829	675	0.2+	0.1-	821205	675	0.2-	0.4+

## 1982 SA = 1974 SQ2

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	117.22443		(1950.0)		P		Q
n	0.36862620	Peri.	31.56432	+0.91995282			-0.38732603
a	1.9263984	Node	350.60856	+0.23515270			+0.66876514
e	0.1066216	Incl.	21.77841	+0.31367183			+0.63461148
P	2.67	B(1,0)	14.5				

## Residuals in seconds of arc

740920	095	2.4+	0.5-	820924	704	1.3-	1.0+	820928	675	0.9-	1.1+
740922	095	4.1+	5.4-	820924	704	0.7-	2.7+	820928	675	0.4+	0.2-
820920	675	0.5-	1.8-	820924	704	0.7-	1.5+	820929	675	0.0	1.2+
820920	675	4.4+	3.1+	820924	675	0.4+	0.3-	821011	675	0.4-	1.4+
820922	704	1.7+	0.6-	820924	704	3.7-	0.7+	821011	675	1.8+	0.5+
820922	704	1.7-	1.7+	820924	675	2.6+	0.7-	821013	675	1.0-	2.5+
820923	704	3.9+	5.2+	820925	704	1.6-	0.1-	821013	675	0.2+	0.6+
820923	704	3.0+	1.8-	820925	704	1.9-	0.0	821015	704	1.1-	1.6+
820923	704	0.3-	4.8-	820925	704	1.6-	2.0+	821204	675	0.4-	2.4-
820923	704	0.3+	2.3-	820925	704	1.7-	3.9+	821205	675	1.1-	1.9-
820924	704	1.8-	2.5-	820926	688	0.0	1.2-				
820924	704	2.4-	3.5-	820926	688	0.2+	0.6-				

## 1982 WA

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	44.36138		(1950.0)		P		Q
n	0.23276137	Peri.	208.89200	-0.21539366			-0.95982055
a	2.6173519	Node	254.02827	+0.92802082			-0.14386483
e	0.1864519	Incl.	10.78261	+0.30394559			-0.24093031
P	4.23	B(1,0)	15.0				

From 15 observations 1982 Nov. 19-1983 Feb. 14, mean residual 1".3.

## 1982 XB

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	108.03396		(1950.0)		P		Q
n	0.39556867	Peri.	16.55284	-0.01944239			-0.99768462
a	1.8378982	Node	74.59720	+0.90943045			-0.04473004
e	0.4467574	Incl.	3.87616	+0.41540130			+0.05123115
P	2.49	B(1,0)	20.5				

From 30 observations 1982 Dec. 14-1983 Mar. 14, mean residual 2".0.

## 5550 P-L = 1971 FA1 = 1977 TK4 = 1983 AP

The identifications 1983 AP = 1971 FA1 = 1977 TK4 are by L. D. Schmadel.

The double designation 1977 TK4 = 1977 UF1 (MPC 6840) is invalid.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	6.34811		(1950.0)		P		Q
n	0.23486833	Peri.	154.92161	-0.99252009			-0.09994613
a	2.6016804	Node	19.72610	+0.04256725			-0.82152879
e	0.1135818	Incl.	11.98774	+0.11441988			-0.56133876
P	4.20	B(1,0)	14.0				

## Residuals in seconds of arc

601017	675	1.0+	0.2-	710319	095	0.3-	0.4-	830116	688	3.0-	1.7-
601022	675	0.3-	0.3-	771007	095	0.8-	1.5+	830121	688	1.6-	0.7+
601025	675	1.1+	0.9-	830112	688	2.5-	2.1+	830121	688	0.8+	0.2+
601026	675	0.6-	0.1+	830112	688	1.8+	1.3+	830215	688	2.1+	2.7-
601026	675	0.6+	1.2-	830116	688	1.0+	1.3+	830215	688	2.3+	1.7-

\* \* \* \* \*

## ORBITAL ELEMENTS BY T. URATA, SHIMIZU, JAPAN.

The following orbital elements are from NOC 1423, 1424, 1429 and 1430. The identifications are by T. Urata.

(2832) 1975 EC1

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	79.28785		(1950.0)		P		Q
n	0.25286274	Peri.	348.54728		-0.87544191		-0.48283113
a	2.4767347	Node	162.53137		+0.44896047		-0.82908119
e	0.0848051	Incl.	4.16601		+0.17898590		-0.28195475
P	3.90	B(1,0)	13.7				

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

031114	024	0.3+	1.4-	400329	029	(1.5+	45.0-)	X	750308	095	0.0	1.9-
050326	024	2.4-	7.9-	520426	711	0.5+	4.7+	Y	750312	095	1.8+	3.9+
280222	024	(0.10-	0.02+)	X	691014	095	(24.2+	8.5+)	750315	095	5.1-	0.7+
280225	024	(22.9+	53.0+)	X	710218	095	2.6+	2.1+	790323	095	0.0	1.2-
280226	024	(0.04-	0.03+)	X	750306	095	0.5-	2.1+	790329	095	2.6+	1.9-

(2833) 1978 PC4

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	23.47053		(1950.0)		P		Q
n	0.20213208	Peri.	344.99973		+0.78650034		+0.61752193
a	2.8754946	Node	336.85737		-0.56417289		+0.71236170
e	0.0657792	Incl.	1.33532		-0.25124922		+0.33347785
P	4.88	B(1,0)	13.2				

Residuals in seconds of arc

330424	024	1.2+	0.6+	570321	024	2.5-	0.1-	820521	688	0.5-	0.5-
440915	062	1.7-	1.0-	691016	095	1.5+	2.8-	820521	688	0.3+	1.1-
440915	062	2.4+	4.0-	780809	095	0.7-	1.8+	820528	688	0.1-	2.5-
491015	024	0.9-	1.0+	780831	095	1.3-	0.3+	820528	688	0.9+	0.6-
491025	024	2.6+	0.1+	780905	095	1.1-	1.6+				

(2879)\* 1932 CB1 = 1928 JA = 1975 RG1 = 1978 EV6 = 1980 TN1

Discovered 1932 Feb. 14 by K. Reinmuth at Heidelberg. The identification 1932 CB1 = 1975 RG1 was independently suggested by E. Bowell.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	61.03615		(1950.0)		P		Q
n	0.21377774	Peri.	24.83560		-0.99059072		-0.09785907
a	2.7700933	Node	149.07885		+0.07192579		-0.96700715
e	0.1426863	Incl.	10.73045		+0.11643326		-0.23520368
P	4.61	B(1,0)	12.5				

Residuals in seconds of arc

280515	094	(21.2+	11.1+)	X	750903	095	2.3-	0.3+	830118	372	1.0-	0.0
320214	024	1.2+	2.3+	750906	095	1.0-	3.5+	830215	372	1.4-	0.4-	
320306	024	4.1-	0.7+	780306	095	0.8-	1.1+	830215	372	1.2-	0.8+	
320314	024	1.7+	0.1+	801005	809	1.3+	0.3+	830405	372	0.9+	1.0-	
320315	024	2.7+	1.7+	801005	809	1.1+	0.4+	830405	372	1.2+	0.5+	
320326	024	0.4-	1.3-	830118	372	1.8+	1.2-					

(2880)\* 1983 CA = 1935 RH = 1948 QK = 1951 LU = 1958 TK = 1967 GM  
 = 1971 UW1 = 1977 JK

Discovered 1983 Feb. 8 by T. Seki at Geisei.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	296.35105	(1950.0)		P		Q	
n	0.30139150	Peri.	246.34352	+0.26734448		+0.96151100	
a	2.2031736	Node	39.33615	-0.84356433		+0.26535092	
e	0.1678274	Incl.	5.74320	-0.46575332		+0.07131260	
P	3.27	B(1,0)	14.0				

Residuals in seconds of arc

350905	094(62.5+ 2.5-)X	770515	095	0.3-	0.5-	830215	372	0.4+	0.2-
480829	078 (4.2+ 86.0-)X	770518	095	0.1+	0.5-	830215	372	1.5+	1.6+
510608	711 0.8- 4.5+ Y	830208	372	0.4+	0.8- Y	830217	372	1.0+	1.1-
510608	711 3.6+ 0.4+ Y	830211	372	0.8+	0.1+	830217	372	1.4+	0.3+
581012	024 2.7- 3.7+	830211	372	0.7+	1.0+	830221	372	1.5-	0.2-
670413	095 6.3- 0.4+	830213	372	0.6+	0.8+	830221	372	0.2+	1.6+
711020	095 0.0 2.2-	830213	372	1.5+	1.4+				

\* \* \* \* \*

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

(2881)\* 1983 AA1 = 1983 AZ1 = 1936 FS1 = 1953 GQ = 1953 GP1 = 1968 UO2  
 = 1975 VL1 = 1978 RP5

Discovered 1983 Jan. 12 by B. Skiff at the Anderson Mesa Station of the Lowell Observatory. The double designations 1953 GQ = 1953 GP1 and 1983 AA1 = 1983 AZ1 are by O. Kippes (MPC 1227) and by F. N. Bowman (MPC 7767), respectively. The identifications 1983 AA1 = 1936 FS1 = 1953 GQ = 1968 UO2 = 1975 VL1 = 1978 RP5 were found independently by L. D. Schmadel and C. M. Bardwell. The indentifications 1983 AA1 = 1936 FS1 = 1953 GQ = 1975 VL1 were also found by K. Hurukawa (JAM 1392).

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	58.54189	(1950.0)		P		Q	
n	0.29243525	Peri.	326.18811	-0.75347190		-0.65740035	
a	2.2479306	Node	172.68392	+0.61960348		-0.71518959	
e	0.1538105	Incl.	4.61275	+0.21993550		-0.23733655	
P	3.37	B(1,0)	15.0				

Residuals in seconds of arc

360317	754 1.1- 1.5+	681023	095	1.6+	2.8-	830114	704	(0.5-	2.9+)
360322	754 0.9+ 1.3-	751102	095	(4.1-	8.8-)	830121	688	0.9-	2.3+
530407	210(11.8- 25.9-)X	780906	095	0.2-	1.6-	830121	688	0.6-	1.4+
530412	024 0.3+ 0.6-	830112	688	0.7-	1.5+	830122	688	0.3+	1.7-
530416	210(15.7+ 1.2+)X	830112	688	0.3-	1.8+	830122	688	0.6+	2.3-
530419	024 1.0- 2.6-	830113	704	(0.5+	4.1+)	830215	688	1.6+	3.4-

\* \* \* \* \*

EPHEMERIDES.

Periodic Comet Encke

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Elements MPC 7455	m2
1983	08 14	00 57.94	+13 56.0	2.280	2.935	121.2	17.2		21.1
1983	08 24	00 52.93	+14 10.1						
1983	09 03	00 44.79	+14 07.8	1.922	2.793	142.8	12.6		20.5
1983	09 13	00 33.37	+13 44.9						
1983	09 23	00 18.95	+12 58.6	1.656	2.639	165.5	5.5		19.9
1983	10 03	00 02.35	+11 48.5						
1983	10 13	23 44.90	+10 18.9	1.514	2.472	159.1	8.3		19.6
1983	10 23	23 28.30	+08 38.7						

1983 11 02	23 14.04	+06 59.3	1.499	2.291	132.7	18.6	19.7
1983 11 12	23 03.15	+05 31.1					
1983 11 22	22 56.12	+04 21.3	1.565	2.093	108.0	26.7	19.9
1983 12 02	22 52.91	+03 33.2					
1983 12 12	22 53.31	+03 07.8	1.650	1.876	87.0	31.6	19.9
1983 12 22	22 56.94	+03 04.5					
1984 01 01	23 03.46	+03 21.9	1.702	1.637	69.3	34.2	19.8
1984 01 11	23 12.62	+03 58.8					
1984 01 21	23 24.23	+04 53.9	1.684	1.371	54.5	35.8	19.4
1984 01 31	23 38.23	+06 06.1					
1984 02 10	23 54.73	+07 33.9	1.567	1.070	42.4	38.4	18.8
1984 02 20	00 13.92	+09 14.5	1.462	0.904	37.4	41.6	18.4
1984 02 25	00 24.59	+10 07.5					
1984 03 01	00 35.98	+10 59.9	1.318	0.728	33.1	48.0	17.8
1984 03 06	00 47.97	+11 47.7					
1984 03 11	01 00.15	+12 23.1	1.125	0.545	29.0	62.0	17.3
1984 03 16	01 11.35	+12 29.6					
1984 03 21	01 18.60	+11 32.9	0.876	0.385	22.6	96.5	17.0
1984 04 10	00 07.08	-08 45.1	0.640	0.486	23.3	125.2	17.7
1984 04 20	23 38.34	-14 11.7					
1984 04 30	23 26.29	-16 19.8	0.793	0.846	54.5	75.8	17.9
1984 05 10	23 20.00	-17 29.4					
1984 05 20	23 14.19	-18 31.8	0.868	1.174	76.9	57.1	18.3
1984 05 30	23 06.11	-19 47.7					
1984 06 09	22 53.90	-21 25.5	0.876	1.462	101.1	42.9	18.3
1984 06 19	22 36.37	-23 23.9					
1984 06 29	22 13.10	-25 32.0	0.882	1.719	129.6	27.1	18.2
1984 07 09	21 45.04	-27 30.0					
1984 07 19	21 14.93	-28 56.2	0.965	1.951	159.6	10.4	18.2
1984 07 29	20 46.31	-29 39.7					
1984 08 08	20 22.23	-29 44.0	1.172	2.161	162.6	8.1	18.8
1984 08 18	20 04.12	-29 21.5					
1984 08 28	19 51.99	-28 44.3	1.491	2.353	139.5	16.2	19.7
1984 09 07	19 45.12	-28 00.8					
1984 09 17	19 42.54	-27 15.5	1.887	2.529	118.8	20.4	20.5
1984 09 27	19 43.34	-26 30.3					
1984 10 07	19 46.79	-25 45.5	2.324	2.691	100.5	21.4	21.1

## Periodic Comet Wild 2 (1978 XI)

Date	ET	R. A. (1950)	Decl.	Delta	r	Elements MPC		7658
						Variation		m2
1983 09 03		04 42.79	+18 52.0	3.185	3.302	-0.68	-1.6	20.7
1983 09 13		04 49.46	+18 55.0					
1983 09 23		04 54.64	+18 53.7	2.794	3.195	-0.80	-1.6	20.3
1983 10 03		04 58.05	+18 48.2					
1983 10 13		04 59.35	+18 38.9	2.425	3.084	-0.94	-1.8	19.8
1983 10 23		04 58.29	+18 26.1					
1983 11 02		04 54.68	+18 09.8	2.110	2.970	-1.08	-2.1	19.3
1983 11 12		04 48.50	+17 50.6					
1983 11 22		04 40.06	+17 29.1	1.882	2.853	-1.18	-2.6	18.9
1983 12 02		04 29.99	+17 06.6					
1983 12 12		04 19.27	+16 45.1	1.767	2.733	-1.17	-3.0	18.6
1983 12 22		04 09.09	+16 27.5					
1984 01 01		04 00.54	+16 16.7	1.766	2.611	-1.06	-3.2	18.4
1984 01 11		03 54.48	+16 15.2					
1984 01 21		03 51.43	+16 24.2	1.850	2.487	-0.94	-3.1	18.3
1984 01 31		03 51.56	+16 43.5					
1984 02 10		03 54.84	+17 12.4	1.978	2.362	-0.86	-2.9	18.2

1984 02 20	04 01.11	+17 48.9							
1984 03 01	04 10.12	+18 31.0	2.113	2.237	-0.84	-2.7	18.1		
1984 03 11	04 21.68	+19 16.2							
1984 03 21	04 35.56	+20 02.1	2.232	2.112	-0.87	-2.4	18.0		
1984 03 31	04 51.60	+20 46.2							
1984 04 10	05 09.65	+21 26.0	2.322	1.991	-0.95	-2.0	17.8		
1984 04 20	05 29.56	+21 58.8							
1984 04 30	05 51.21	+22 22.1	2.381	1.874	-1.06	-1.3	17.6		
1984 05 10	06 14.48	+22 33.5							
1984 05 20	06 39.21	+22 30.4	2.410	1.765	-1.19	-0.1	17.4		
1984 05 30	07 05.24	+22 10.8							
1984 06 09	07 32.41	+21 32.8	2.418	1.669	-1.32	+1.5	17.1		

## Periodic Comet Taylor

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation	Elements MPC	7657	m2
1983 09 03		05 31.68	+06 31.4	2.206	2.217	-1.29	-8.2	20.2	
1983 09 13		05 48.39	+06 38.1						
1983 09 23		06 04.33	+06 40.9	1.936	2.148	-1.51	-9.1	19.8	
1983 10 03		06 19.27	+06 42.0						
1983 10 13		06 32.93	+06 44.4	1.674	2.088	-1.79	-10.2	19.3	
1983 10 23		06 44.98	+06 52.3						
1983 11 02		06 55.06	+07 10.4	1.429	2.038	-2.17	-11.4	18.9	
1983 11 12		07 02.75	+07 44.8						
1983 11 22		07 07.66	+08 42.2	1.216	1.999	-2.64	-12.5	18.4	
1983 12 02		07 09.46	+10 08.9						
1983 12 12		07 07.98	+12 09.4	1.057	1.974	-3.14	-13.4	18.1	
1983 12 22		07 03.50	+14 43.5						
1984 01 01		06 56.82	+17 43.9	0.982	1.962	-3.46	-14.5	17.9	
1984 01 11		06 49.27	+20 56.6						
1984 01 21		06 42.58	+24 04.9	1.011	1.965	-3.38	-15.4	18.0	
1984 01 31		06 38.26	+26 54.7						
1984 02 10		06 37.40	+29 18.3	1.136	1.981	-3.02	-14.8	18.2	
1984 02 20		06 40.47	+31 13.6						
1984 03 01		06 47.37	+32 41.5	1.329	2.011	-2.62	-12.6	18.7	
1984 03 11		06 57.74	+33 44.1						
1984 03 21		07 11.02	+34 23.8	1.564	2.054	-2.28	-9.6	19.1	
1984 03 31		07 26.61	+34 42.4						
1984 04 10		07 43.98	+34 41.7	1.822	2.107	-2.00	-6.4	19.5	
1984 04 20		08 02.59	+34 23.2						
1984 04 30		08 22.02	+33 48.4	2.092	2.171	-1.75	-3.6	20.0	
1984 05 10		08 41.92	+32 58.9						
1984 05 20		09 01.99	+31 56.3	2.364	2.242	-1.52	-1.4	20.4	

## Periodic Comet Tritton (1977 XIII)

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation	Elements MPC	7658	m2
1983 09 23		23 59.88	+12 29.3	1.188	2.178	-1.99	-16.8	20.3	
1983 10 03		23 49.52	+12 01.3						
1983 10 13		23 39.30	+11 17.1	1.089	2.047	-1.96	-18.2	19.8	
1983 10 23		23 30.81	+10 25.1						
1983 11 02		23 25.33	+09 35.3	1.078	1.920	-1.74	-17.5	19.5	
1983 11 12		23 23.72	+08 56.7						
1983 11 22		23 26.32	+08 36.2	1.126	1.799	-1.55	-15.6	19.3	
1983 12 02		23 33.04	+08 37.1						
1983 12 12		23 43.67	+09 00.5	1.199	1.688	-1.47	-13.8	19.2	
1983 12 22		23 57.85	+09 45.8						
1984 01 01		00 15.25	+10 50.6	1.276	1.591	-1.52	-12.4	19.0	
1984 01 11		00 35.61	+12 12.3						
1984 01 21		00 58.68	+13 46.8	1.350	1.515	-1.66	-11.2	19.0	

1984 01 31	01 24.24	+15 29.5							
1984 02 10	01 52.15	+17 15.4	1.424	1.465	-1.87	-9.6	18.9		
1984 02 20	02 22.16	+18 58.4							
1984 03 01	02 54.02	+20 32.4	1.507	1.445	-2.09	-7.0	19.0		
1984 03 11	03 27.43	+21 51.8							
1984 03 21	04 01.92	+22 51.4	1.611	1.458	-2.24	-3.5	19.2		
1984 03 31	04 37.01	+23 27.3							
1984 04 10	05 12.18	+23 37.7	1.743	1.502	-2.24	+0.6	19.5		
1984 04 20	05 46.87	+23 22.0							
1984 04 30	06 20.64	+22 41.8	1.909	1.573	-2.08	+4.2	19.9		
1984 05 10	06 53.16	+21 39.4							
1984 05 20	07 24.18	+20 18.3	2.105	1.666	-1.82	+6.7	20.3		

## Periodic Comet Smirnova-Chernykh (1975 VII)

Elements MPC 7454

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1983 10 13		10 45.84	+13 30.7	4.278	3.587	41.1	10.5	18.7
1983 10 23		10 57.30	+12 33.1					
1983 11 02		11 08.21	+11 39.0	4.051	3.578	55.2	13.2	18.6
1983 11 12		11 18.45	+10 49.6					
1983 11 22		11 27.91	+10 05.9	3.785	3.572	70.1	15.1	18.4
1983 12 02		11 36.46	+09 29.2					
1983 12 12		11 43.94	+09 00.8	3.493	3.566	86.2	16.0	18.2
1983 12 22		11 50.18	+08 41.8					
1984 01 01		11 55.01	+08 33.1	3.198	3.562	103.7	15.6	18.0
1984 01 11		11 58.24	+08 35.7					
1984 01 21		11 59.73	+08 49.6	2.928	3.559	122.9	13.4	17.8
1984 01 31		11 59.39	+09 14.5					
1984 02 10		11 57.23	+09 48.7	2.715	3.558	143.6	9.5	17.7
1984 02 20		11 53.40	+10 29.7					
1984 03 01		11 48.22	+11 13.8	2.593	3.558	164.4	4.3	17.6
1984 03 11		11 42.17	+11 56.5					
1984 03 21		11 35.87	+12 33.4	2.584	3.559	166.0	3.9	17.6
1984 03 31		11 29.92	+13 00.9					
1984 04 10		11 24.92	+13 16.5	2.688	3.561	145.9	9.1	17.7
1984 04 20		11 21.29	+13 19.0					
1984 04 30		11 19.28	+13 08.6	2.882	3.565	125.7	13.3	17.8
1984 05 10		11 19.02	+12 46.1					
1984 05 20		11 20.46	+12 12.8	3.137	3.571	107.3	15.7	18.0
1984 05 30		11 23.51	+11 30.0					
1984 06 09		11 28.01	+10 39.0	3.420	3.577	90.6	16.5	18.2
1984 06 19		11 33.80	+09 41.1					
1984 06 29		11 40.71	+08 37.3	3.706	3.585	75.3	15.9	18.4
1984 07 09		11 48.60	+07 28.7					
1984 07 19		11 57.30	+06 16.0	3.976	3.595	61.0	14.3	18.6
1984 07 29		12 06.71	+05 00.1					
1984 08 08		12 16.73	+03 41.7	4.213	3.605	47.4	12.0	18.7
1984 08 18		12 27.25	+02 21.6					
1984 08 28		12 38.20	+01 00.2	4.406	3.617	34.3	9.0	18.8

## Periodic Comet Crommelin

Elements MPC 7454

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1983 11 02		19 51.45	+12 07.1	1.775	1.959	-0.18	-6.2	21.6
1983 11 12		20 00.13	+10 33.9					
1983 11 22		20 12.08	+09 14.2	1.730	1.701	-0.27	-4.3	20.7
1983 12 02		20 27.28	+08 08.9					
1983 12 12		20 45.82	+07 18.0	1.640	1.437	-0.48	-2.1	19.4
1983 12 22		21 07.91	+06 40.4					
1984 01 01		21 33.88	+06 12.9	1.496	1.172	-0.86	+0.9	17.9



1984	01	11	22	04.26	+05	50.3	1.404	1.045	-1.17	+4.0	17.0
1984	01	16	22	21.29	+05	37.8					
1984	01	21	22	39.64	+05	22.3	1.301	0.928	-1.53	+8.0	16.1
1984	01	26	22	59.41	+05	01.4					
1984	01	31	23	20.63	+04	32.4	1.190	0.829	-1.96	+14.1	15.2
1984	02	05	23	43.33	+03	52.3					
1984	02	10	00	07.47	+02	57.9	1.076	0.760	-2.41	+23.2	14.4
1984	02	15	00	32.96	+01	46.5					
1984	02	20	00	59.69	+00	16.5	0.969	0.735	-2.83	+35.3	13.9
1984	02	25	01	27.56	-01	31.7					
1984	03	01	01	56.47	-03	35.7	0.878	0.758	-3.20	+48.2	13.9
1984	03	06	02	26.36	-05	50.8					
1984	03	11	02	57.20	-08	11.3	0.816	0.826	-3.61	+58.4	14.3
1984	03	16	03	28.90	-10	30.4					
1984	03	21	04	01.26	-12	41.2	0.788	0.924	-4.07	+62.9	15.0
1984	03	26	04	34.00	-14	37.5					
1984	03	31	05	06.69	-16	15.0	0.800	1.040	-4.45	+60.5	15.8
1984	04	05	05	38.85	-17	31.2					
1984	04	10	06	09.97	-18	26.4	0.850	1.167	-4.55	+52.7	16.7
1984	04	15	06	39.62	-19	02.2					
1984	04	20	07	07.51	-19	21.7	0.936	1.299	-4.32	+42.7	17.6
1984	04	25	07	33.49	-19	28.3					
1984	04	30	07	57.53	-19	25.9	1.054	1.432	-3.86	+33.3	18.5
1984	05	05	08	19.70	-19	17.5					
1984	05	10	08	40.13	-19	05.8	1.200	1.564	-3.32	+25.7	19.3
1984	05	20	09	16.35	-18	40.2	1.367	1.696	-2.84	+20.7	20.1
1984	05	30	09	47.49	-18	18.7					
1984	06	09	10	14.72	-18	06.0	1.751	1.954	-2.03	+12.9	21.6

1972 KG		a,e,i = 2.43, 0.20, 8					Elements MPC		7835
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1983	04	16	11 43.46	+03 04.0	1.319	2.245	150.0	12.9	16.7
1983	04	26	11 39.22	+04 14.8					
1983	05	06	11 37.82	+05 02.2	1.428	2.202	128.4	21.0	17.0
1983	05	16	11 39.38	+05 25.1					
1983	05	26	11 43.78	+05 24.8	1.589	2.161	110.3	26.1	17.3
1983	06	05	11 50.73	+05 03.8					
1983	06	15	11 59.92	+04 24.5	1.771	2.122	95.3	28.5	17.5

1980 XM		a,e,i = 2.99, 0.10, 11					Elements MPC		7829
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation	Phase	Mag.	
1983	04	16	13 49.76	-12 58.3	2.003	3.004	-0.98	+8.8	16.3
1983	04	26	13 40.87	-12 42.0					
1983	05	06	13 32.43	-12 25.2	2.011	2.984	-0.95	+8.9	16.5
1983	05	16	13 25.25	-12 11.5					
1983	05	26	13 19.94	-12 04.5	2.123	2.964	-0.86	+8.5	16.8
1983	06	05	13 16.82	-12 06.5					
1983	06	15	13 16.00	-12 18.6	2.312	2.944	-0.77	+7.8	17.1
1983	06	25	13 17.44	-12 41.3					
1983	07	05	13 20.98	-13 14.0	2.544	2.924	-0.69	+7.0	17.3

1949 QC		a,e,i = 2.67, 0.26, 8					Elements MPC		7834
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1983	04	16	14 03.00	-00 04.0	1.954	2.942	167.8	4.1	17.3
1983	04	26	13 54.13	+00 39.0					
1983	05	06	13 45.43	+01 10.4	1.941	2.895	156.8	7.9	17.4
1983	05	16	13 37.73	+01 26.7					

1983 05 26	13 31.73	+01 26.2	2.029	2.846	136.0	14.3	17.6
1983 06 05	13 27.85	+01 08.8					
1983 06 15	13 26.28	+00 35.8	2.190	2.795	116.5	19.0	17.9
1983 06 25	13 27.03	-00 10.9					
1983 07 05	13 29.96	-01 09.2	2.389	2.742	99.2	21.5	18.1

1982 BB1		a,e,i = 2.97, 0.09, 24				Elements MPC 7840		
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 04 16		14 41.32	+12 22.3	2.297	3.218	152.1	8.4	17.0
1983 04 26		14 34.40	+13 44.1					
1983 05 06		14 27.18	+14 45.5	2.316	3.221	148.6	9.4	17.1
1983 05 16		14 20.35	+15 23.4					
1983 05 26		14 14.57	+15 36.9	2.433	3.222	134.2	13.0	17.3
1983 06 05		14 10.31	+15 27.7					
1983 06 15		14 07.83	+14 58.7	2.623	3.223	117.7	16.2	17.5
1983 06 25		14 07.26	+14 13.3					
1983 07 05		14 08.57	+13 15.1	2.857	3.223	101.8	18.0	17.7
1983 07 15		14 11.65	+12 07.4					
1983 07 25		14 16.36	+10 52.9	3.110	3.222	87.1	18.4	17.9

1980 VR1		a,e,i = 2.87, 0.03, 18				Elements MPC 7829		
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983 04 16		16 14.51	-21 06.5	2.126	2.962	-0.97	+7.5	17.3
1983 04 26		16 08.42	-21 41.7					
1983 05 06		16 00.19	-22 13.2	1.988	2.963	-1.06	+8.4	17.0
1983 05 16		15 50.46	-22 39.9					
1983 05 26		15 40.18	-23 01.5	1.955	2.964	-1.06	+9.0	16.7
1983 06 05		15 30.36	-23 18.8					
1983 06 15		15 21.91	-23 33.7	2.036	2.965	-0.98	+9.0	17.1
1983 06 25		15 15.54	-23 48.6					
1983 07 05		15 11.63	-24 05.8	2.209	2.965	-0.87	+8.5	17.4
1983 07 15		15 10.29	-24 27.0					
1983 07 25		15 11.47	-24 53.0	2.444	2.964	-0.78	+7.7	17.7
1983 08 04		15 15.01	-25 23.9					
1983 08 14		15 20.68	-25 59.3	2.710	2.963	-0.71	+6.8	18.0
1983 08 24		15 28.28	-26 38.5					
1983 09 03		15 37.58	-27 20.4	2.981	2.962	-0.66	+5.9	18.2
1983 09 13		15 48.41	-28 04.0					
1983 09 23		16 00.60	-28 48.0	3.238	2.960	-0.64	+5.1	18.3

(2867) 1969 VC		a,e,i = 2.36, 0.15, 10				Elements MPC 7831		
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 04 16		18 56.02	-27 09.7	1.658	2.116	102.5	27.6	18.4
1983 04 26		19 07.79	-27 56.2					
1983 05 06		19 17.25	-28 51.7	1.427	2.092	117.3	25.4	18.0
1983 05 16		19 23.88	-29 58.6					
1983 05 26		19 27.22	-31 17.8	1.232	2.070	134.2	20.5	17.5
1983 06 05		19 26.88	-32 47.9					
1983 06 15		19 22.68	-34 23.9	1.096	2.052	152.9	13.1	17.1
1983 06 25		19 14.97	-35 56.9					
1983 07 05		19 04.78	-37 16.3	1.038	2.038	165.4	7.2	16.8
1983 07 15		18 53.75	-38 12.8					
1983 07 25		18 43.95	-38 42.0	1.069	2.028	153.1	13.1	17.0
1983 08 04		18 37.05	-38 45.7					
1983 08 14		18 34.09	-38 29.2	1.177	2.021	134.6	20.9	17.4
1983 08 24		18 35.44	-37 58.3					
1983 09 03		18 40.85	-37 17.3	1.339	2.019	117.9	26.2	17.8
1983 09 13		18 49.84	-36 28.8					
1983 09 23		19 01.86	-35 33.6	1.534	2.021	103.6	28.9	18.1

1955 QK		a,e,i = 2.31, 0.14, 6				Elements MPC		7834
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 05 06		19 58.43	-13 28.3	1.676	2.173	105.4	26.6	18.4
1983 05 16		20 06.36	-12 18.1					
1983 05 26		20 11.77	-11 11.0	1.441	2.143	120.7	24.0	18.0
1983 06 05		20 14.35	-10 10.0					
1983 06 15		20 13.85	-09 18.8	1.246	2.115	138.3	18.7	17.5
1983 06 25		20 10.24	-08 41.0					
1983 07 05		20 03.80	-08 19.7	1.113	2.088	157.4	10.8	17.1
1983 07 15		19 55.23	-08 16.8					
1983 07 25		19 45.78	-08 32.1	1.062	2.064	166.8	6.4	16.8
1983 08 04		19 36.87	-09 02.6					
1983 08 14		19 29.88	-09 43.8	1.101	2.043	150.2	14.3	17.1
1983 08 24		19 25.84	-10 30.1					
1983 09 03		19 25.24	-11 16.2	1.215	2.025	130.9	22.1	17.5
1983 09 13		19 28.19	-11 58.1					
1983 09 23		19 34.49	-12 32.3	1.379	2.010	114.1	27.1	17.8
1983 10 03		19 43.74	-12 56.5					
1983 10 13		19 55.55	-13 09.0	1.573	1.999	99.6	29.5	18.2

1981 EK4		a,e,i = 2.66, 0.19, 12				Elements MPC		7138
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983 07 25		00 50.60	+13 36.8	1.748	2.224	-1.36	-12.0	18.6
1983 08 04		00 56.69	+15 37.9					
1983 08 14		01 00.38	+17 32.0	1.524	2.201	-1.64	-13.5	18.2
1983 08 24		01 01.31	+19 16.2					
1983 09 03		00 59.18	+20 46.3	1.340	2.182	-1.96	-15.6	17.8
1983 09 13		00 53.95	+21 57.1					
1983 09 23		00 46.02	+22 43.3	1.221	2.168	-2.21	-18.1	17.4
1983 10 03		00 36.32	+23 01.6					
1983 10 13		00 26.22	+22 52.2	1.189	2.158	-2.20	-19.9	17.2
1983 10 23		00 17.32	+22 21.0					
1983 11 02		00 10.89	+21 37.4	1.249	2.153	-1.97	-19.5	17.5
1983 11 12		00 07.71	+20 51.8					
1983 11 22		00 08.08	+20 13.2	1.388	2.153	-1.68	-17.3	17.9
1983 12 02		00 11.82	+19 46.9					
1983 12 12		00 18.64	+19 35.9	1.581	2.157	-1.44	-14.5	18.2
1983 12 22		00 28.10	+19 40.6					
1984 01 01		00 39.78	+19 59.8	1.805	2.167	-1.29	-11.9	18.6

(2639) 1940 GN		a,e,i = 2.45, 0.19, 10				Elements MPC		6890
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 07 25		01 06.21	-06 06.3	1.972	2.479	107.8	23.0	18.0
1983 08 04		01 10.03	-06 28.1					
1983 08 14		01 11.26	-07 05.2	1.793	2.519	125.4	19.1	17.7
1983 08 24		01 09.74	-07 55.5					
1983 09 03		01 05.47	-08 55.3	1.665	2.558	145.1	13.1	17.4
1983 09 13		00 58.69	-09 58.9					
1983 09 23		00 50.05	-10 58.7	1.620	2.596	162.9	6.5	17.2
1983 10 03		00 40.46	-11 47.0					
1983 10 13		00 31.02	-12 17.4	1.679	2.632	158.3	8.1	17.4
1983 10 23		00 22.79	-12 26.5					
1983 11 02		00 16.53	-12 13.9	1.839	2.666	138.6	14.2	17.8
1983 11 12		00 12.69	-11 41.4					
1983 11 22		00 11.40	-10 52.0	2.078	2.698	119.0	18.7	18.2
1983 12 02		00 12.55	-09 48.9					
1983 12 12		00 15.93	-08 35.1	2.362	2.729	101.1	20.7	18.5
1983 12 22		00 21.25	-07 12.9					
1984 01 01		00 28.22	-05 44.4	2.663	2.757	85.0	20.8	18.8

1980 YL		a,e,i = 2.25, 0.12, 7					Elements MPC		7449
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1983 07 25	00	56.12	-04 14.1	1.624	2.184	109.5	26.0	17.9	
1983 08 04	01	02.91	-04 13.5						
1983 08 14	01	07.18	-04 29.8	1.403	2.157	125.7	22.4	17.5	
1983 08 24	01	08.56	-05 02.7						
1983 09 03	01	06.78	-05 50.2	1.227	2.131	144.6	15.9	17.1	
1983 09 13	01	01.79	-06 48.0						
1983 09 23	00	54.04	-07 48.0	1.124	2.106	163.8	7.6	16.6	
1983 10 03	00	44.47	-08 40.5						
1983 10 13	00	34.46	-09 15.6	1.112	2.082	161.4	8.8	16.6	
1983 10 23	00	25.55	-09 26.1						
1983 11 02	00	18.98	-09 09.5	1.192	2.060	141.0	17.7	17.0	
1983 11 12	00	15.52	-08 26.8						
1983 11 22	00	15.41	-07 21.5	1.342	2.041	121.6	24.4	17.3	
1983 12 02	00	18.53	-05 57.7						
1983 12 12	00	24.57	-04 19.2	1.532	2.023	104.9	28.1	17.7	
1983 12 22	00	33.15	-02 29.3						
1984 01 01	00	43.88	-00 30.9	1.741	2.008	90.6	29.3	18.0	

(2715) 1938 US		a,e,i = 2.74, 0.15, 7					Elements MPC		7143
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1983 07 25	00	55.72	+10 21.9	1.861	2.329	104.2	25.0	16.8	
1983 08 04	01	02.43	+10 53.1						
1983 08 14	01	06.86	+11 07.1	1.651	2.335	120.5	22.0	16.4	
1983 08 24	01	08.74	+11 01.7						
1983 09 03	01	07.93	+10 35.5	1.482	2.343	139.7	16.2	16.1	
1983 09 13	01	04.49	+09 48.2						
1983 09 23	00	58.86	+08 42.2	1.381	2.355	161.9	7.6	15.7	
1983 10 03	00	51.81	+07 22.7						
1983 10 13	00	44.36	+05 57.7	1.376	2.370	173.8	2.6	15.5	
1983 10 23	00	37.70	+04 37.0						
1983 11 02	00	32.73	+03 28.8	1.475	2.388	150.4	11.9	16.0	
1983 11 12	00	30.10	+02 38.9						
1983 11 22	00	30.07	+02 09.9	1.660	2.408	129.1	18.6	16.4	
1983 12 02	00	32.62	+02 01.6						
1983 12 12	00	37.55	+02 12.5	1.903	2.430	110.6	22.3	16.8	
1983 12 22	00	44.61	+02 40.0						
1984 01 01	00	53.47	+03 21.2	2.176	2.455	94.3	23.5	17.2	

(2491) 1977 CB		a,e,i = 1.88, 0.05, 23					Elements MPC		6473
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1983 07 25	00	55.31	-15 01.4	1.322	1.957	113.0	28.5	16.2	
1983 08 04	01	05.08	-17 30.1						
1983 08 14	01	12.12	-20 29.7	1.161	1.948	127.1	24.5	15.8	
1983 08 24	01	15.87	-23 53.9						
1983 09 03	01	15.90	-27 30.7	1.058	1.938	139.2	19.9	15.5	
1983 09 13	01	11.98	-31 01.9						
1983 09 23	01	04.54	-34 05.1	1.030	1.926	142.7	18.4	15.4	
1983 10 03	00	54.69	-36 20.5						
1983 10 13	00	44.15	-37 35.3	1.076	1.914	134.7	21.7	15.6	
1983 10 23	00	34.89	-37 47.0						
1983 11 02	00	28.37	-37 02.1	1.182	1.902	121.8	26.3	15.9	
1983 11 12	00	25.40	-35 30.9						
1983 11 22	00	26.15	-33 24.6	1.325	1.888	108.6	29.7	16.2	
1983 12 02	00	30.32	-30 52.8						
1983 12 12	00	37.46	-28 03.0	1.488	1.875	96.5	31.5	16.5	
1983 12 22	00	47.09	-25 00.8						
1984 01 01	00	58.77	-21 50.5	1.658	1.861	85.5	31.8	16.7	

1981 JC2		a,e,i = 3.16, 0.04, 19					Elements MPC		7011
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.	
1983 07 25	01	08.17	+22 06.7	2.995	3.271	-0.74	-0.6	17.9	
1983 08 04	01	11.79	+22 39.8						
1983 08 14	01	13.59	+23 00.6	2.733	3.274	-0.82	-0.6	17.6	
1983 08 24	01	13.43	+23 07.0						
1983 09 03	01	11.29	+22 56.6	2.508	3.276	-0.91	-0.9	17.4	
1983 09 13	01	07.28	+22 27.7						
1983 09 23	01	01.71	+21 39.3	2.353	3.278	-0.97	-1.3	17.1	
1983 10 03	00	55.10	+20 32.6						
1983 10 13	00	48.14	+19 10.7	2.299	3.279	-0.98	-1.7	16.9	
1983 10 23	00	41.59	+17 39.3						
1983 11 02	00	36.11	+16 05.2	2.360	3.280	-0.92	-1.8	17.1	
1983 11 12	00	32.22	+14 35.2						
1983 11 22	00	30.25	+13 15.0	2.527	3.280	-0.84	-1.6	17.4	
1983 12 02	00	30.30	+12 08.4						
1983 12 12	00	32.34	+11 17.2	2.771	3.280	-0.75	-1.3	17.7	
1983 12 22	00	36.24	+10 41.9						
1984 01 01	00	41.80	+10 21.6	3.055	3.280	-0.67	-1.0	17.9	

(2793) 1977 QV		a,e,i = 3.16, 0.04, 22					Elements MPC		7456
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1983 07 25	01	22.13	+13 18.4	3.020	3.303	97.1	17.8	17.4	
1983 08 04	01	24.35	+14 29.0						
1983 08 14	01	24.67	+15 33.2	2.748	3.302	114.7	16.2	17.2	
1983 08 24	01	22.93	+16 29.7						
1983 09 03	01	19.04	+17 16.9	2.518	3.301	134.1	12.7	16.9	
1983 09 13	01	13.08	+17 52.9						
1983 09 23	01	05.33	+18 16.3	2.363	3.299	154.7	7.5	16.6	
1983 10 03	00	56.32	+18 26.5						
1983 10 13	00	46.80	+18 24.2	2.315	3.296	167.7	3.7	16.4	
1983 10 23	00	37.62	+18 12.2						
1983 11 02	00	29.58	+17 54.3	2.383	3.294	152.2	8.1	16.7	
1983 11 12	00	23.29	+17 35.3						
1983 11 22	00	19.15	+17 19.7	2.555	3.290	131.2	13.1	16.9	
1983 12 02	00	17.29	+17 10.8						
1983 12 12	00	17.69	+17 11.0	2.797	3.287	111.4	16.2	17.2	
1983 12 22	00	20.20	+17 21.4						
1984 01 01	00	24.60	+17 42.2	3.074	3.283	93.4	17.4	17.4	

1964 VM1		a,e,i = 2.87, 0.07, 3					Elements MPC		5599
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1983 07 25	01	09.25	+04 39.1	2.295	2.715	103.3	21.4	18.0	
1983 08 04	01	14.12	+05 05.3						
1983 08 14	01	16.92	+05 19.1	2.047	2.705	120.4	18.8	17.6	
1983 08 24	01	17.45	+05 20.0						
1983 09 03	01	15.57	+05 07.6	1.843	2.695	140.0	13.9	17.3	
1983 09 13	01	11.33	+04 42.8						
1983 09 23	01	05.07	+04 07.9	1.714	2.687	162.2	6.6	16.9	
1983 10 03	00	57.39	+03 26.7						
1983 10 13	00	49.17	+02 44.6	1.686	2.680	173.3	2.5	16.7	
1983 10 23	00	41.43	+02 07.5						
1983 11 02	00	35.04	+01 40.6	1.767	2.674	150.1	10.7	17.1	
1983 11 12	00	30.68	+01 27.2						
1983 11 22	00	28.72	+01 29.2	1.939	2.669	128.5	16.8	17.5	
1983 12 02	00	29.24	+01 46.6						
1983 12 12	00	32.14	+02 18.3	2.171	2.665	109.4	20.4	17.8	
1983 12 22	00	37.24	+03 02.9						
1984 01 01	00	44.25	+03 58.4	2.432	2.662	92.4	21.7	18.1	

(2762) Fowler		a,e,i = 2.33, 0.15, 5				Elements MPC		7238
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 07 25		01 13.86	+12 40.8	2.159	2.528	99.2	23.4	19.2
1983 08 04		01 19.51	+13 41.1					
1983 08 14		01 23.07	+14 30.9	1.892	2.501	115.5	21.5	18.9
1983 08 24		01 24.20	+15 08.2					
1983 09 03		01 22.64	+15 30.6	1.660	2.472	134.2	17.0	18.5
1983 09 13		01 18.27	+15 35.5					
1983 09 23		01 11.30	+15 21.4	1.492	2.442	155.6	9.8	18.0
1983 10 03		01 02.31	+14 48.2					
1983 10 13		00 52.30	+13 58.8	1.417	2.410	172.2	3.2	17.6
1983 10 23		00 42.55	+12 59.5					
1983 11 02		00 34.29	+11 58.5	1.449	2.377	153.1	10.9	17.9
1983 11 12		00 28.47	+11 04.2					
1983 11 22		00 25.63	+10 23.2	1.573	2.343	131.0	18.6	18.3
1983 12 02		00 25.88	+09 59.1					
1983 12 12		00 29.12	+09 53.1	1.757	2.308	111.5	23.4	18.6
1983 12 22		00 35.06	+10 04.8					
1984 01 01		00 43.37	+10 32.5	1.969	2.273	94.8	25.5	18.8

(2686) 1981 JW1		a,e,i = 3.00, 0.06, 9				Elements MPC		7014
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 07 25		01 12.91	+15 14.5	2.824	3.138	98.4	18.7	18.2
1983 08 04		01 16.87	+15 44.7					
1983 08 14		01 19.01	+16 03.1	2.556	3.131	115.7	16.9	17.9
1983 08 24		01 19.16	+16 08.0					
1983 09 03		01 17.26	+15 58.0	2.327	3.124	135.2	13.2	17.6
1983 09 13		01 13.36	+15 32.0					
1983 09 23		01 07.75	+14 49.9	2.170	3.117	156.6	7.3	17.3
1983 10 03		01 00.93	+13 53.7					
1983 10 13		00 53.60	+12 46.8	2.116	3.109	173.4	2.1	17.0
1983 10 23		00 46.56	+11 35.0					
1983 11 02		00 40.55	+10 24.5	2.176	3.100	154.3	8.0	17.3
1983 11 12		00 36.16	+09 21.0					
1983 11 22		00 33.76	+08 29.2	2.339	3.092	132.3	13.7	17.6
1983 12 02		00 33.50	+07 51.6					
1983 12 12		00 35.35	+07 29.3	2.574	3.082	112.1	17.2	17.9
1983 12 22		00 39.20	+07 21.9					
1984 01 01		00 44.83	+07 28.2	2.844	3.073	93.9	18.6	18.1

1981 JG		a,e,i = 3.16, 0.05, 17				Elements MPC		7011
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983 07 25		01 10.41	+21 01.5	2.727	3.017	-0.87	-1.2	17.5
1983 08 04		01 15.18	+21 39.7					
1983 08 14		01 18.09	+22 05.1	2.470	3.016	-0.98	-1.3	17.3
1983 08 24		01 18.94	+22 15.4					
1983 09 03		01 17.67	+22 08.3	2.247	3.015	-1.09	-1.6	17.0
1983 09 13		01 14.32	+21 41.6					
1983 09 23		01 09.18	+20 54.3	2.090	3.015	-1.18	-2.1	16.7
1983 10 03		01 02.78	+19 47.4					
1983 10 13		00 55.84	+18 24.1	2.031	3.015	-1.19	-2.6	16.4
1983 10 23		00 49.20	+16 50.6					
1983 11 02		00 43.63	+15 14.4	2.084	3.016	-1.12	-2.7	16.7
1983 11 12		00 39.72	+13 43.0					
1983 11 22		00 37.85	+12 22.8	2.243	3.018	-1.01	-2.5	17.0
1983 12 02		00 38.14	+11 17.6					
1983 12 12		00 40.57	+10 29.4	2.477	3.020	-0.90	-2.0	17.3
1983 12 22		00 44.98	+09 58.3					
1984 01 01		00 51.16	+09 43.1	2.754	3.023	-0.80	-1.6	17.5

(2788) 1981 EL		a,e,i = 2.56, 0.10, 3			Elements MPC		7452	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 07 25	01	21.51	+07 48.8	2.419	2.771	99.3	21.2	18.8
1983 08 04	01	26.36	+08 22.2					
1983 08 14	01	29.21	+08 44.3	2.155	2.758	116.3	19.2	18.5
1983 08 24	01	29.82	+08 54.0					
1983 09 03	01	28.00	+08 50.4	1.928	2.744	135.8	14.8	18.2
1983 09 13	01	23.73	+08 33.3					
1983 09 23	01	17.24	+08 03.6	1.771	2.728	158.1	7.9	17.8
1983 10 03	01	09.07	+07 23.9					
1983 10 13	01	00.04	+06 38.4	1.714	2.711	177.7	0.8	17.3
1983 10 23	00	51.18	+05 52.9					
1983 11 02	00	43.48	+05 13.5	1.769	2.694	153.5	9.5	17.8
1983 11 12	00	37.71	+04 44.9					
1983 11 22	00	34.37	+04 30.6	1.921	2.675	131.0	16.2	18.1
1983 12 02	00	33.61	+04 31.6					
1983 12 12	00	35.38	+04 47.8	2.137	2.655	111.1	20.2	18.4
1983 12 22	00	39.51	+05 18.3					
1984 01 01	00	45.73	+06 01.2	2.384	2.635	93.6	21.9	18.7

1979 QK2		a,e,i = 2.37, 0.18, 2			Elements MPC		6829	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 07 25	01	21.99	+08 37.6	2.010	2.388	98.9	24.9	19.0
1983 08 04	01	27.87	+09 03.6					
1983 08 14	01	31.36	+09 14.5	1.811	2.428	115.7	22.1	18.7
1983 08 24	01	32.22	+09 09.0					
1983 09 03	01	30.29	+08 46.4	1.646	2.467	135.3	16.7	18.4
1983 09 13	01	25.58	+08 07.0					
1983 09 23	01	18.50	+07 12.9	1.546	2.505	158.1	8.6	18.1
1983 10 03	01	09.75	+06 08.8					
1983 10 13	01	00.34	+05 01.2	1.544	2.541	176.9	1.2	17.8
1983 10 23	00	51.45	+03 57.9					
1983 11 02	00	44.05	+03 05.7	1.653	2.576	152.8	10.2	18.4
1983 11 12	00	38.87	+02 29.2					
1983 11 22	00	36.26	+02 10.7	1.856	2.608	130.5	16.7	18.8
1983 12 02	00	36.24	+02 09.9					
1983 12 12	00	38.68	+02 25.7	2.122	2.639	110.9	20.4	19.2
1983 12 22	00	43.31	+02 55.9					
1984 01 01	00	49.84	+03 38.2	2.418	2.667	93.6	21.6	19.5

(2745) 1976 SR10		a,e,i = 2.29, 0.19, 22			Elements MPC		7231	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 07 25	01	01.04	-09 07.2	1.676	2.237	109.9	25.3	18.0
1983 08 04	01	10.05	-10 47.6					
1983 08 14	01	16.97	-12 56.6	1.447	2.193	125.1	22.2	17.5
1983 08 24	01	21.42	-15 33.0					
1983 09 03	01	23.01	-18 31.5	1.275	2.149	140.1	17.5	17.1
1983 09 13	01	21.49	-21 41.9					
1983 09 23	01	16.99	-24 47.9	1.182	2.105	148.7	14.3	16.8
1983 10 03	01	10.09	-27 31.3					
1983 10 13	01	01.86	-29 34.9	1.177	2.063	143.1	16.9	16.8
1983 10 23	00	53.81	-30 47.8					
1983 11 02	00	47.34	-31 07.9	1.247	2.023	128.9	22.4	17.0
1983 11 12	00	43.53	-30 38.9					
1983 11 22	00	42.93	-29 28.8	1.369	1.986	113.9	27.1	17.3
1983 12 02	00	45.60	-27 46.2					
1983 12 12	00	51.34	-25 38.5	1.517	1.952	100.4	29.8	17.5
1983 12 22	00	59.80	-23 12.3					
1984 01 01	01	10.57	-20 32.5	1.675	1.921	88.6	30.8	17.7

1981 DM1		a,e,i = 2.68, 0.14, 11					Elements MPC		7357
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.	
1983 07 25	01	23.74	+14 21.9	2.750	3.034	-0.75	-1.9	18.6	
1983 08 04	01	28.36	+14 43.3						
1983 08 14	01	31.14	+14 52.2	2.473	3.024	-0.85	-2.1	18.3	
1983 08 24	01	31.89	+14 47.1						
1983 09 03	01	30.48	+14 26.4	2.232	3.012	-0.96	-2.5	18.0	
1983 09 13	01	26.90	+13 49.2						
1983 09 23	01	21.37	+12 55.5	2.059	2.999	-1.04	-3.0	17.6	
1983 10 03	01	14.35	+11 47.6						
1983 10 13	01	06.53	+10 29.5	1.987	2.983	-1.07	-3.3	17.1	
1983 10 23	00	58.75	+09 07.4						
1983 11 02	00	51.85	+07 48.2	2.031	2.967	-1.02	-3.2	17.6	
1983 11 12	00	46.54	+06 38.3						
1983 11 22	00	43.27	+05 42.6	2.180	2.948	-0.92	-2.9	17.9	
1983 12 02	00	42.24	+05 03.3						
1983 12 12	00	43.48	+04 41.2	2.401	2.928	-0.82	-2.4	18.2	
1983 12 22	00	46.86	+04 35.6						
1984 01 01	00	52.18	+04 44.8	2.659	2.907	-0.73	-2.0	18.4	

1982 HB2		a,e,i = 2.18, 0.07, 5					Elements MPC		7011
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.	
1983 07 25	01	30.09	+05 08.1	1.955	2.330	-1.02	-7.9	18.9	
1983 08 04	01	36.94	+05 44.5						
1983 08 14	01	41.53	+06 08.1	1.728	2.336	-1.19	-9.1	18.6	
1983 08 24	01	43.51	+06 17.9						
1983 09 03	01	42.58	+06 13.4	1.530	2.340	-1.40	-10.5	18.2	
1983 09 13	01	38.59	+05 54.7						
1983 09 23	01	31.71	+05 23.4	1.393	2.344	-1.58	-11.9	17.8	
1983 10 03	01	22.52	+04 43.2						
1983 10 13	01	12.02	+03 59.7	1.348	2.345	-1.64	-12.4	17.3	
1983 10 23	01	01.55	+03 19.9						
1983 11 02	00	52.39	+02 50.6	1.410	2.345	-1.52	-11.6	17.8	
1983 11 12	00	45.56	+02 36.3						
1983 11 22	00	41.64	+02 39.4	1.565	2.343	-1.31	-10.2	18.2	
1983 12 02	00	40.76	+03 00.0						
1983 12 12	00	42.80	+03 36.6	1.781	2.340	-1.11	-8.8	18.6	
1983 12 22	00	47.49	+04 27.5						
1984 01 01	00	54.48	+05 30.1	2.028	2.335	-0.97	-7.6	18.9	

1981 EW5		a,e,i = 2.56, 0.15, 13					Elements MPC		7139
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.	
1983 07 25	01	13.36	+19 17.0	1.954	2.305	-1.39	-3.1	18.9	
1983 08 04	01	22.48	+20 16.1						
1983 08 14	01	29.70	+21 00.5	1.707	2.279	-1.64	-3.2	18.5	
1983 08 24	01	34.67	+21 27.3						
1983 09 03	01	37.06	+21 32.9	1.487	2.256	-1.94	-3.9	18.1	
1983 09 13	01	36.60	+21 13.4						
1983 09 23	01	33.35	+20 25.9	1.318	2.235	-2.22	-5.2	17.7	
1983 10 03	01	27.70	+19 09.3						
1983 10 13	01	20.48	+17 26.7	1.229	2.217	-2.34	-6.6	17.2	
1983 10 23	01	12.92	+15 26.4						
1983 11 02	01	06.30	+13 20.7	1.240	2.203	-2.21	-6.7	17.4	
1983 11 12	01	01.71	+11 22.8						
1983 11 22	00	59.85	+09 43.5	1.349	2.191	-1.94	-5.5	17.8	
1983 12 02	01	00.96	+08 28.5						
1983 12 12	01	04.97	+07 39.8	1.529	2.183	-1.66	-4.1	18.2	
1983 12 22	01	11.66	+07 16.0						
1984 01 01	01	20.66	+07 14.1	1.749	2.178	-1.44	-2.9	18.5	



(2724) Orlov		a,e,i = 2.92, 0.12, 4				Elements MPC		7145
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 07 25	01	33.41	+07 24.3	2.448	2.757	96.7	21.5	17.1
1983 08 04	01	39.38	+07 41.3					
1983 08 14	01	43.39	+07 45.4	2.218	2.780	113.4	19.5	16.9
1983 08 24	01	45.23	+07 35.9					
1983 09 03	01	44.74	+07 12.8	2.022	2.804	132.5	15.4	16.6
1983 09 13	01	41.91	+06 36.6					
1983 09 23	01	36.93	+05 49.2	1.891	2.828	154.1	8.9	16.3
1983 10 03	01	30.27	+04 54.4					
1983 10 13	01	22.62	+03 57.0	1.857	2.852	175.2	1.7	16.0
1983 10 23	01	14.88	+03 03.1					
1983 11 02	01	07.90	+02 18.2	1.934	2.877	157.6	7.6	16.4
1983 11 12	01	02.43	+01 46.4					
1983 11 22	00	58.96	+01 30.2	2.114	2.901	135.3	13.8	16.8
1983 12 02	00	57.68	+01 29.9					
1983 12 12	00	58.63	+01 44.7	2.368	2.926	115.2	17.7	17.1
1983 12 22	01	01.68	+02 13.0					
1984 01 01	01	06.61	+02 52.8	2.661	2.950	97.2	19.3	17.4

1981 EO7		a,e,i = 2.60, 0.11, 13				Elements MPC		7444
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983 07 25	01	19.29	+14 21.3	2.062	2.411	-1.24	-2.1	19.1
1983 08 04	01	27.69	+14 44.9					
1983 08 14	01	34.18	+14 51.6	1.811	2.395	-1.44	-2.3	18.7
1983 08 24	01	38.43	+14 39.0					
1983 09 03	01	40.17	+14 04.7	1.592	2.379	-1.68	-3.0	18.3
1983 09 13	01	39.23	+13 06.9					
1983 09 23	01	35.69	+11 45.8	1.430	2.365	-1.88	-3.9	17.9
1983 10 03	01	29.97	+10 04.3					
1983 10 13	01	22.84	+08 09.3	1.357	2.354	-1.97	-4.6	17.4
1983 10 23	01	15.40	+06 11.2					
1983 11 02	01	08.79	+04 21.3	1.391	2.344	-1.87	-4.3	17.8
1983 11 12	01	03.98	+02 49.4					
1983 11 22	01	01.61	+01 41.7	1.522	2.336	-1.65	-3.4	18.1
1983 12 02	01	01.93	+00 59.9					
1983 12 12	01	04.93	+00 43.2	1.722	2.330	-1.42	-2.5	18.5
1983 12 22	01	10.43	+00 48.9					
1984 01 01	01	18.12	+01 13.2	1.958	2.327	-1.24	-2.0	18.9

(2807) 1969 TH6		a,e,i = 2.79, 0.18, 8				Elements MPC		7463
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 07 25	01	38.75	+06 32.6	2.650	2.932	95.8	20.2	18.4
1983 08 04	01	44.12	+07 09.5					
1983 08 14	01	47.71	+07 37.5	2.355	2.897	112.4	18.9	18.1
1983 08 24	01	49.26	+07 55.8					
1983 09 03	01	48.56	+08 04.0	2.093	2.861	131.3	15.4	17.7
1983 09 13	01	45.45	+08 01.8					
1983 09 23	01	40.01	+07 49.7	1.895	2.825	152.8	9.3	17.4
1983 10 03	01	32.58	+07 29.5					
1983 10 13	01	23.78	+07 03.9	1.791	2.788	176.3	1.3	16.8
1983 10 23	01	14.53	+06 37.3					
1983 11 02	01	05.83	+06 14.3	1.800	2.750	159.0	7.4	17.1
1983 11 12	00	58.60	+05 59.5					
1983 11 22	00	53.54	+05 56.3	1.913	2.712	136.0	14.7	17.4
1983 12 02	00	50.98	+06 06.4					
1983 12 12	00	51.05	+06 30.3	2.100	2.674	115.3	19.4	17.7
1983 12 22	00	53.64	+07 07.4					
1984 01 01	00	58.54	+07 56.4	2.325	2.636	97.3	21.7	17.9

1978 RU1		a,e,i = 2.84, 0.03, 2				Elements MPC		5977
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 07 25		01 37.70	+10 00.3	2.567	2.838	94.8	20.9	18.8
1983 08 04		01 43.70	+10 29.0					
1983 08 14		01 47.85	+10 46.2	2.315	2.844	111.3	19.4	18.5
1983 08 24		01 49.91	+10 51.1					
1983 09 03		01 49.72	+10 42.9	2.092	2.850	130.2	15.7	18.2
1983 09 13		01 47.19	+10 21.2					
1983 09 23		01 42.46	+09 46.9	1.932	2.855	151.6	9.6	17.9
1983 10 03		01 35.91	+09 01.9					
1983 10 13		01 28.20	+08 10.0	1.865	2.861	175.1	1.7	17.5
1983 10 23		01 20.18	+07 16.5					
1983 11 02		01 12.76	+06 27.1	1.911	2.866	160.7	6.6	17.8
1983 11 12		01 06.74	+05 47.0					
1983 11 22		01 02.70	+05 20.0	2.062	2.871	137.8	13.3	18.2
1983 12 02		01 00.90	+05 07.9					
1983 12 12		01 01.42	+05 10.8	2.290	2.877	117.2	17.7	18.5
1983 12 22		01 04.17	+05 28.0					
1984 01 01		01 08.92	+05 57.8	2.561	2.882	98.9	19.7	18.8

(2690) 1938 DG1		a,e,i = 3.03, 0.12, 11				Elements MPC		7017
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 07 25		01 33.96	-00 04.7	2.394	2.746	99.2	21.4	16.6
1983 08 04		01 41.07	-00 20.0					
1983 08 14		01 46.37	-00 50.3	2.141	2.732	115.3	19.6	16.3
1983 08 24		01 49.60	-01 35.5					
1983 09 03		01 50.57	-02 34.8	1.927	2.720	133.3	15.7	16.0
1983 09 13		01 49.16	-03 45.7					
1983 09 23		01 45.48	-05 03.4	1.780	2.709	152.3	9.9	15.6
1983 10 03		01 39.88	-06 21.7					
1983 10 13		01 32.98	-07 33.0	1.727	2.700	164.0	5.9	15.5
1983 10 23		01 25.67	-08 29.5					
1983 11 02		01 18.86	-09 05.8	1.779	2.693	151.4	10.1	15.6
1983 11 12		01 13.39	-09 18.9					
1983 11 22		01 09.88	-09 08.7	1.925	2.688	131.9	15.9	15.9
1983 12 02		01 08.63	-08 37.4					
1983 12 12		01 09.72	-07 48.0	2.138	2.684	113.3	19.7	16.2
1983 12 22		01 13.08	-06 43.9					
1984 01 01		01 18.48	-05 28.4	2.386	2.683	96.5	21.4	16.5

1978 WH14		a,e,i = 3.04, 0.16, 2				Elements MPC		5972
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983 07 25		01 36.70	+08 24.7	2.570	2.854	-0.86	-4.9	18.3
1983 08 04		01 43.27	+08 54.6					
1983 08 14		01 48.13	+09 13.8	2.286	2.824	-0.99	-5.6	18.0
1983 08 24		01 51.02	+09 21.3					
1983 09 03		01 51.74	+09 16.4	2.034	2.794	-1.13	-6.3	17.6
1983 09 13		01 50.12	+08 58.7					
1983 09 23		01 46.23	+08 28.9	1.843	2.765	-1.27	-7.2	17.3
1983 10 03		01 40.36	+07 48.9					
1983 10 13		01 33.06	+07 02.3	1.742	2.737	-1.33	-7.7	16.8
1983 10 23		01 25.22	+06 14.4					
1983 11 02		01 17.76	+05 30.8	1.751	2.710	-1.29	-7.6	17.0
1983 11 12		01 11.60	+04 57.0					
1983 11 22		01 07.41	+04 37.1	1.863	2.685	-1.17	-7.0	17.3
1983 12 02		01 05.59	+04 32.8					
1983 12 12		01 06.25	+04 44.6	2.052	2.662	-1.04	-6.2	17.6
1983 12 22		01 09.34	+05 11.3					
1984 01 01		01 14.65	+05 51.3	2.283	2.640	-0.93	-5.5	17.9

2563 P-L		a,e,i = 3.20, 0.15, 2				Elements MPC 6207		
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 07 25		01 47.80	+09 50.5	3.082	3.287	92.5	18.0	18.9
1983 08 04		01 52.48	+10 10.4					
1983 08 14		01 55.46	+10 20.3	2.832	3.314	109.7	16.7	18.7
1983 08 24		01 56.59	+10 19.6					
1983 09 03		01 55.75	+10 08.2	2.613	3.341	129.0	13.6	18.5
1983 09 13		01 52.94	+09 46.0					
1983 09 23		01 48.31	+09 14.1	2.457	3.367	150.4	8.5	18.3
1983 10 03		01 42.19	+08 34.4					
1983 10 13		01 35.11	+07 49.8	2.399	3.392	173.4	1.9	17.9
1983 10 23		01 27.75	+07 04.5					
1983 11 02		01 20.80	+06 22.6	2.457	3.416	162.4	5.0	18.2
1983 11 12		01 14.88	+05 48.0					
1983 11 22		01 10.50	+05 23.7	2.627	3.439	139.6	10.7	18.5
1983 12 02		01 07.93	+05 11.1					
1983 12 12		01 07.26	+05 10.7	2.882	3.462	118.5	14.5	18.8
1983 12 22		01 08.49	+05 22.2					
1984 01 01		01 11.47	+05 44.4	3.185	3.483	99.4	16.2	19.1

(2741) 1975 XG		a,e,i = 2.61, 0.19, 10				Elements MPC 7229		
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 07 25		01 47.84	+04 15.3	2.555	2.822	94.5	21.0	17.6
1983 08 04		01 53.76	+04 05.2					
1983 08 14		01 57.76	+03 41.2	2.326	2.854	111.3	19.3	17.4
1983 08 24		01 59.62	+03 02.8					
1983 09 03		01 59.19	+02 10.8	2.127	2.884	130.3	15.5	17.1
1983 09 13		01 56.40	+01 06.7					
1983 09 23		01 51.41	-00 06.0	1.993	2.913	151.2	9.6	16.8
1983 10 03		01 44.61	-01 22.2					
1983 10 13		01 36.64	-02 35.7	1.956	2.939	167.9	4.1	16.6
1983 10 23		01 28.34	-03 39.8					
1983 11 02		01 20.59	-04 29.0	2.032	2.963	155.4	8.0	16.9
1983 11 12		01 14.13	-04 59.9					
1983 11 22		01 09.54	-05 11.3	2.212	2.986	134.2	13.7	17.2
1983 12 02		01 07.08	-05 04.2					
1983 12 12		01 06.83	-04 40.7	2.466	3.006	114.2	17.4	17.5
1983 12 22		01 08.69	-04 03.1					
1984 01 01		01 12.49	-03 14.2	2.758	3.024	96.1	18.9	17.8

(2658) 1980 CK		a,e,i = 3.05, 0.30, 9				Elements MPC 6942		
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 07 25		01 51.67	+14 57.0	3.702	3.835	89.8	15.4	19.1
1983 08 04		01 55.50	+15 14.7					
1983 08 14		01 57.87	+15 23.7	3.383	3.810	107.4	14.7	18.9
1983 08 24		01 58.62	+15 23.2					
1983 09 03		01 57.65	+15 12.2	3.092	3.783	126.7	12.3	18.6
1983 09 13		01 54.90	+14 50.0					
1983 09 23		01 50.47	+14 16.4	2.864	3.753	148.1	8.1	18.3
1983 10 03		01 44.62	+13 32.3					
1983 10 13		01 37.75	+12 39.5	2.733	3.722	171.1	2.4	18.0
1983 10 23		01 30.44	+11 41.3					
1983 11 02		01 23.32	+10 41.6	2.722	3.688	164.6	4.1	18.0
1983 11 12		01 17.00	+09 45.1					
1983 11 22		01 12.00	+08 55.7	2.828	3.652	141.3	9.7	18.3
1983 12 02		01 08.67	+08 16.5					
1983 12 12		01 07.17	+07 49.3	3.025	3.614	119.5	13.7	18.5
1983 12 22		01 07.56	+07 34.8					
1984 01 01		01 09.75	+07 32.4	3.274	3.574	99.7	15.7	18.7

1974 OA1		a,e,i = 2.59, 0.20, 14				Elements MPC		7152
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 07 25	01	31.99	+17 56.0	1.807	2.121	93.1	28.6	17.1
1983 08 04	01	42.36	+20 22.2					
1983 08 14	01	50.91	+22 45.8	1.583	2.102	106.1	27.6	16.7
1983 08 24	01	57.22	+25 05.4					
1983 09 03	02	00.77	+27 18.7	1.383	2.088	120.8	24.5	16.4
1983 09 13	02	01.06	+29 21.5					
1983 09 23	01	57.77	+31 08.0	1.227	2.079	137.3	19.1	16.0
1983 10 03	01	50.97	+32 30.7					
1983 10 13	01	41.29	+33 21.8	1.137	2.075	152.9	12.7	15.7
1983 10 23	01	30.17	+33 36.9					
1983 11 02	01	19.43	+33 17.6	1.131	2.077	156.0	11.2	15.6
1983 11 12	01	10.88	+32 32.0					
1983 11 22	01	05.78	+31 33.0	1.213	2.084	142.4	16.8	15.9
1983 12 02	01	04.63	+30 32.8					
1983 12 12	01	07.42	+29 40.7	1.367	2.097	125.4	22.5	16.3
1983 12 22	01	13.77	+29 02.0					
1984 01 01	01	23.17	+28 38.6	1.569	2.115	109.8	26.0	16.7

1981 JA		a,e,i = 3.14, 0.12, 2				Elements MPC		6193
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 07 25	01	53.03	+10 15.2	3.315	3.486	91.2	16.9	19.2
1983 08 04	01	57.50	+10 34.5					
1983 08 14	02	00.40	+10 44.6	3.040	3.496	108.4	16.0	19.0
1983 08 24	02	01.54	+10 45.0					
1983 09 03	02	00.83	+10 35.3	2.795	3.504	127.6	13.2	18.8
1983 09 13	01	58.23	+10 15.5					
1983 09 23	01	53.84	+09 46.2	2.612	3.511	149.0	8.5	18.5
1983 10 03	01	47.95	+09 09.2					
1983 10 13	01	41.03	+08 26.8	2.526	3.516	171.9	2.3	18.1
1983 10 23	01	33.68	+07 42.8					
1983 11 02	01	26.59	+07 01.1	2.556	3.521	164.0	4.5	18.3
1983 11 12	01	20.39	+06 25.5					
1983 11 22	01	15.59	+05 59.2	2.701	3.525	141.0	10.2	18.6
1983 12 02	01	12.50	+05 43.9					
1983 12 12	01	11.30	+05 40.6	2.934	3.527	119.7	14.0	18.9
1983 12 22	01	11.99	+05 49.0					
1984 01 01	01	14.46	+06 08.2	3.218	3.528	100.2	15.9	19.1

1981 JA3		a,e,i = 3.00, 0.07, 10				Elements MPC		7016
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 07 25	01	52.88	+04 39.4	2.696	2.933	93.1	20.2	18.0
1983 08 04	01	58.93	+05 13.0					
1983 08 14	02	03.25	+05 37.6	2.423	2.920	109.4	19.1	17.7
1983 08 24	02	05.58	+05 53.1					
1983 09 03	02	05.71	+05 59.4	2.178	2.908	127.8	15.9	17.4
1983 09 13	02	03.49	+05 56.9					
1983 09 23	01	58.96	+05 46.8	1.991	2.896	148.7	10.4	17.0
1983 10 03	01	52.38	+05 31.0					
1983 10 13	01	44.30	+05 12.5	1.895	2.885	170.9	3.1	16.7
1983 10 23	01	35.52	+04 55.1					
1983 11 02	01	26.97	+04 42.9	1.910	2.874	162.9	5.8	16.8
1983 11 12	01	19.55	+04 39.3					
1983 11 22	01	13.97	+04 46.8	2.034	2.863	140.2	12.8	17.1
1983 12 02	01	10.63	+05 06.6					
1983 12 12	01	09.70	+05 38.7	2.239	2.853	119.3	17.5	17.4
1983 12 22	01	11.16	+06 22.2					
1984 01 01	01	14.81	+07 15.8	2.492	2.844	100.7	19.9	17.7

(2694) Pino Torinese		a,e,i = 2.31, 0.10, 2			Elements MPC 7018			
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 11.04	+14 56.7	2.025	2.482	104.6	23.3	18.5
1983 08 24		02 15.18	+15 21.2					
1983 09 03		02 16.77	+15 32.4	1.806	2.496	122.3	20.0	18.2
1983 09 13		02 15.55	+15 28.9					
1983 09 23		02 11.48	+15 09.7	1.633	2.509	143.1	13.9	17.9
1983 10 03		02 04.77	+14 34.9					
1983 10 13		01 56.02	+13 46.3	1.538	2.520	166.7	5.2	17.5
1983 10 23		01 46.23	+12 48.3					
1983 11 02		01 36.59	+11 47.4	1.550	2.529	168.0	4.7	17.5
1983 11 12		01 28.25	+10 51.0					
1983 11 22		01 22.10	+10 05.5	1.670	2.537	144.1	13.2	17.9
1983 12 02		01 18.60	+09 35.2					
1983 12 12		01 17.92	+09 21.8	1.873	2.543	122.6	19.0	18.3
1983 12 22		01 19.94	+09 25.2					
1984 01 01		01 24.41	+09 43.6	2.125	2.547	103.8	22.0	18.7
1984 01 11		01 31.04	+10 15.3					
1984 01 21		01 39.55	+10 57.8	2.396	2.549	87.4	22.7	19.0

2525 P-L		a,e,i = 3.19, 0.14, 3			Elements MPC 4932			
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 07.00	+10 47.9	2.295	2.765	106.9	20.5	17.6
1983 08 24		02 10.75	+11 07.4					
1983 09 03		02 12.28	+11 15.8	2.074	2.776	124.8	17.4	17.3
1983 09 13		02 11.40	+11 12.7					
1983 09 23		02 08.15	+10 58.4	1.905	2.789	145.3	11.8	17.0
1983 10 03		02 02.76	+10 34.3					
1983 10 13		01 55.74	+10 02.7	1.820	2.804	168.1	4.2	16.7
1983 10 23		01 47.90	+09 27.6					
1983 11 02		01 40.15	+08 53.6	1.843	2.820	167.8	4.3	16.7
1983 11 12		01 33.40	+08 25.6					
1983 11 22		01 28.36	+08 07.6	1.974	2.838	144.8	11.6	17.1
1983 12 02		01 25.47	+08 01.7					
1983 12 12		01 24.90	+08 09.1	2.191	2.858	123.7	16.6	17.5
1983 12 22		01 26.65	+08 29.3					
1984 01 01		01 30.53	+09 01.0	2.463	2.879	105.0	19.3	17.8
1984 01 11		01 36.35	+09 42.8					
1984 01 21		01 43.86	+10 32.9	2.760	2.901	88.2	19.8	18.1

1981 EH14		a,e,i = 2.67, 0.18, 15			Elements MPC 7587			
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation	Mag.	
1983 08 14		01 53.03	+17 35.1	1.688	2.217	-1.68	-1.2	18.5
1983 08 24		02 00.53	+17 25.8					
1983 09 03		02 05.57	+16 53.3	1.474	2.206	-1.96	-1.5	18.1
1983 09 13		02 07.81	+15 55.1					
1983 09 23		02 07.13	+14 30.4	1.306	2.201	-2.24	-2.5	17.6
1983 10 03		02 03.70	+12 40.6					
1983 10 13		01 58.06	+10 31.3	1.214	2.199	-2.40	-3.5	17.2
1983 10 23		01 51.22	+08 13.0					
1983 11 02		01 44.40	+05 58.9	1.223	2.202	-2.33	-3.7	17.3
1983 11 12		01 38.78	+04 01.8					
1983 11 22		01 35.31	+02 31.1	1.333	2.209	-2.07	-2.8	17.7
1983 12 02		01 34.46	+01 30.3					
1983 12 12		01 36.38	+00 59.1	1.520	2.220	-1.77	-1.8	18.1
1983 12 22		01 40.95	+00 54.3					
1984 01 01		01 47.90	+01 11.3	1.754	2.235	-1.50	-1.2	18.5
1984 01 11		01 56.95	+01 45.9					
1984 01 21		02 07.77	+02 33.6	2.010	2.253	-1.31	-0.9	18.9

1981 JB2		a,e,i = 3.16, 0.05, 15				Elements MPC		7011
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation	Mag.	
1983 08 14		02 20.28	+05 05.9	2.617	3.049	-0.67 -7.4	17.4	
1983 08 24		02 22.72	+05 25.3					
1983 09 03		02 23.05	+05 37.1	2.377	3.055	-0.76 -8.2	17.2	
1983 09 13		02 21.12	+05 41.6					
1983 09 23		02 16.93	+05 40.2	2.190	3.062	-0.84 -9.0	16.9	
1983 10 03		02 10.69	+05 34.5					
1983 10 13		02 02.84	+05 26.8	2.090	3.069	-0.89 -9.5	16.6	
1983 10 23		01 54.10	+05 20.2					
1983 11 02		01 45.29	+05 17.8	2.102	3.076	-0.88 -9.4	16.6	
1983 11 12		01 37.28	+05 22.4					
1983 11 22		01 30.80	+05 36.0	2.228	3.084	-0.82 -8.9	16.9	
1983 12 02		01 26.30	+05 59.8					
1983 12 12		01 24.04	+06 33.7	2.444	3.092	-0.73 -8.1	17.2	
1983 12 22		01 24.03	+07 17.4					
1984 01 01		01 26.15	+08 09.8	2.717	3.100	-0.64 -7.3	17.5	
1984 01 11		01 30.23	+09 09.7					
1984 01 21		01 36.06	+10 15.8	3.012	3.108	-0.58 -6.5	17.8	

(2733) 1938 DQ		a,e,i = 2.35, 0.14, 10				Elements MPC		7150
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 10.95	+00 11.2	1.863	2.395	109.1	23.6	17.8
1983 08 24		02 16.72	-00 24.4					
1983 09 03		02 20.07	-01 16.1	1.628	2.365	125.8	20.2	17.4
1983 09 13		02 20.67	-02 22.7					
1983 09 23		02 18.33	-03 40.6	1.444	2.334	144.3	14.5	17.0
1983 10 03		02 13.13	-05 03.8					
1983 10 13		02 05.48	-06 23.6	1.339	2.303	160.3	8.4	16.6
1983 10 23		01 56.33	-07 29.8					
1983 11 02		01 46.87	-08 13.3	1.331	2.272	155.6	10.4	16.6
1983 11 12		01 38.41	-08 28.3					
1983 11 22		01 32.05	-08 13.3	1.417	2.241	136.8	17.6	16.9
1983 12 02		01 28.45	-07 30.8					
1983 12 12		01 27.89	-06 24.8	1.571	2.211	117.9	23.2	17.2
1983 12 22		01 30.32	-05 00.3					
1984 01 01		01 35.51	-03 21.9	1.764	2.181	101.3	26.2	17.5
1984 01 11		01 43.16	-01 33.3					
1984 01 21		01 52.97	+00 22.2	1.972	2.154	86.8	27.1	17.8

(2873) 1982 FR		a,e,i = 2.25, 0.16, 6				Elements MPC		7833
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 23.17	+06 19.3	1.789	2.266	104.5	25.7	17.6
1983 08 24		02 28.50	+06 15.8					
1983 09 03		02 31.07	+05 58.0	1.605	2.301	121.7	21.9	17.3
1983 09 13		02 30.60	+05 26.6					
1983 09 23		02 26.98	+04 43.3	1.462	2.336	142.0	15.3	17.0
1983 10 03		02 20.43	+03 51.9					
1983 10 13		02 11.53	+02 57.6	1.395	2.369	163.8	6.8	16.7
1983 10 23		02 01.33	+02 07.6					
1983 11 02		01 51.09	+01 28.8	1.429	2.401	164.7	6.3	16.8
1983 11 12		01 42.07	+01 06.5					
1983 11 22		01 35.24	+01 03.4	1.568	2.431	143.0	14.2	17.2
1983 12 02		01 31.11	+01 19.4					
1983 12 12		01 29.85	+01 52.9	1.788	2.459	122.3	19.8	17.7
1983 12 22		01 31.34	+02 41.1					
1984 01 01		01 35.31	+03 41.1	2.055	2.485	104.1	22.6	18.1
1984 01 11		01 41.46	+04 50.3					
1984 01 21		01 49.49	+06 06.2	2.343	2.508	88.0	23.1	18.4

(2653) 1964 VP		a,e,i = 2.44, 0.08, 5			Elements MPC 6941			
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 16.32	+13 41.1	2.135	2.572	103.8	22.5	17.7
1983 08 24		02 21.46	+13 51.6					
1983 09 03		02 24.32	+13 48.4	1.886	2.558	121.2	19.7	17.4
1983 09 13		02 24.60	+13 30.4					
1983 09 23		02 22.18	+12 57.2	1.681	2.544	141.4	14.2	17.0
1983 10 03		02 17.12	+12 09.1					
1983 10 13		02 09.83	+11 08.5	1.553	2.528	164.4	6.1	16.6
1983 10 23		02 01.12	+10 00.3					
1983 11 02		01 52.07	+08 51.2	1.528	2.512	170.3	3.8	16.4
1983 11 12		01 43.81	+07 48.7					
1983 11 22		01 37.36	+06 59.6	1.612	2.495	146.4	12.7	16.8
1983 12 02		01 33.36	+06 27.8					
1983 12 12		01 32.11	+06 15.1	1.782	2.478	124.6	19.1	17.2
1983 12 22		01 33.62	+06 21.0					
1984 01 01		01 37.71	+06 43.4	2.004	2.460	105.8	22.6	17.5
1984 01 11		01 44.12	+07 19.9					
1984 01 21		01 52.58	+08 07.9	2.246	2.443	89.4	23.8	17.7

(2662) 4021 P-L		a,e,i = 2.44, 0.16, 3			Elements MPC 6943			
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 09.98	+15 07.3	1.767	2.249	104.7	25.8	18.6
1983 08 24		02 17.21	+16 03.6					
1983 09 03		02 22.09	+16 49.3	1.525	2.216	120.7	23.0	18.2
1983 09 13		02 24.19	+17 22.9					
1983 09 23		02 23.18	+17 42.5	1.322	2.185	139.5	17.3	17.7
1983 10 03		02 18.98	+17 46.4					
1983 10 13		02 11.87	+17 33.4	1.186	2.156	161.5	8.4	17.2
1983 10 23		02 02.72	+17 04.9					
1983 11 02		01 52.88	+16 25.0	1.142	2.129	172.1	3.7	16.9
1983 11 12		01 43.89	+15 41.0					
1983 11 22		01 37.15	+15 01.5	1.196	2.105	149.0	14.0	17.3
1983 12 02		01 33.51	+14 33.7					
1983 12 12		01 33.35	+14 21.9	1.331	2.085	127.8	21.9	17.7
1983 12 22		01 36.63	+14 27.7					
1984 01 01		01 43.05	+14 50.0	1.516	2.069	109.9	26.5	18.1
1984 01 11		01 52.25	+15 27.0					
1984 01 21		02 03.85	+16 15.7	1.725	2.056	94.8	28.5	18.4

1982 JA		a,e,i = 2.42, 0.12, 9			Elements MPC 7011			
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation	Mag.	
1983 08 14		02 26.28	+02 58.4	1.898	2.367	-1.05	-8.7	17.8
1983 08 24		02 31.40	+02 56.7					
1983 09 03		02 33.90	+02 43.0	1.704	2.393	-1.20	-9.9	17.5
1983 09 13		02 33.49	+02 18.3					
1983 09 23		02 30.08	+01 45.3	1.552	2.419	-1.37	-11.1	17.2
1983 10 03		02 23.82	+01 07.6					
1983 10 13		02 15.24	+00 30.6	1.476	2.445	-1.49	-11.7	16.9
1983 10 23		02 05.30	+00 00.7					
1983 11 02		01 55.18	-00 16.7	1.502	2.470	-1.48	-11.3	17.0
1983 11 12		01 46.08	-00 17.6					
1983 11 22		01 39.00	-00 00.3	1.633	2.495	-1.33	-10.0	17.4
1983 12 02		01 34.48	+00 34.3					
1983 12 12		01 32.74	+01 24.2	1.847	2.519	-1.14	-8.7	17.8
1983 12 22		01 33.72	+02 26.8					
1984 01 01		01 37.18	+03 39.3	2.111	2.542	-0.97	-7.6	18.2
1984 01 11		01 42.85	+04 59.4					
1984 01 21		01 50.42	+06 24.9	2.397	2.564	-0.85	-6.6	18.5

1982 BH		a,e,i = 1.82, 0.05, 21					Elements MPC		7020
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1983 08 14		02 44.67	+04 22.3	1.395	1.859	99.9	32.5	17.3	
1983 08 24		02 51.73	+05 58.1						
1983 09 03		02 55.67	+07 33.1	1.201	1.871	115.4	29.1	16.9	
1983 09 13		02 55.79	+09 08.6						
1983 09 23		02 51.44	+10 46.0	1.033	1.881	135.0	22.2	16.5	
1983 10 03		02 42.24	+12 24.8						
1983 10 13		02 28.36	+14 01.6	0.924	1.891	159.3	10.7	16.0	
1983 10 23		02 11.05	+15 31.8						
1983 11 02		01 52.53	+16 50.2	0.911	1.899	171.9	4.2	15.7	
1983 11 12		01 35.47	+17 55.7						
1983 11 22		01 22.09	+18 52.2	1.003	1.905	146.2	16.8	16.3	
1983 12 02		01 13.48	+19 45.3						
1983 12 12		01 09.86	+20 40.7	1.174	1.910	124.2	25.2	16.8	
1983 12 22		01 10.82	+21 42.2						
1984 01 01		01 15.74	+22 50.8	1.386	1.913	106.4	29.5	17.3	
1984 01 11		01 24.03	+24 06.9						
1984 01 21		01 35.16	+25 29.3	1.612	1.914	91.7	30.9	17.7	

1981 DJ2		a,e,i = 2.79, 0.14, 15					Elements MPC		7358
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.	
1983 08 14		02 10.74	+20 04.7	1.950	2.389	-1.38	-0.7	18.4	
1983 08 24		02 17.77	+20 09.0						
1983 09 03		02 22.43	+19 54.9	1.731	2.395	-1.58	-0.8	18.1	
1983 09 13		02 24.41	+19 20.2						
1983 09 23		02 23.58	+18 23.6	1.552	2.403	-1.78	-1.4	17.7	
1983 10 03		02 20.07	+17 05.0						
1983 10 13		02 14.31	+15 26.9	1.446	2.414	-1.92	-2.3	17.4	
1983 10 23		02 07.14	+13 35.3						
1983 11 02		01 59.66	+11 39.6	1.440	2.428	-1.90	-2.9	17.2	
1983 11 12		01 52.98	+09 50.1						
1983 11 22		01 48.05	+08 16.4	1.543	2.445	-1.72	-2.7	17.7	
1983 12 02		01 45.46	+07 04.1						
1983 12 12		01 45.44	+06 15.7	1.735	2.463	-1.48	-2.0	18.1	
1983 12 22		01 47.99	+05 50.4						
1984 01 01		01 52.90	+05 45.5	1.984	2.484	-1.27	-1.4	18.5	
1984 01 11		01 59.91	+05 57.9						
1984 01 21		02 08.75	+06 23.9	2.262	2.507	-1.11	-1.0	18.8	

1981 JZ		a,e,i = 3.21, 0.08, 18					Elements MPC		6189
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.	
1983 08 14		02 33.05	+01 08.1	2.886	3.275	-0.56	-6.4	17.8	
1983 08 24		02 35.43	+01 09.0						
1983 09 03		02 35.85	+01 02.3	2.647	3.289	-0.62	-7.0	17.5	
1983 09 13		02 34.16	+00 49.4						
1983 09 23		02 30.38	+00 32.2	2.459	3.303	-0.68	-7.6	17.3	
1983 10 03		02 24.66	+00 13.3						
1983 10 13		02 17.38	-00 04.1	2.356	3.317	-0.73	-7.9	17.1	
1983 10 23		02 09.12	-00 16.4						
1983 11 02		02 00.62	-00 20.4	2.364	3.330	-0.73	-7.8	17.0	
1983 11 12		01 52.63	-00 13.8						
1983 11 22		01 45.84	+00 04.8	2.488	3.343	-0.69	-7.4	17.3	
1983 12 02		01 40.73	+00 35.4						
1983 12 12		01 37.58	+01 17.1	2.706	3.355	-0.62	-6.7	17.6	
1983 12 22		01 36.50	+02 08.7						
1984 01 01		01 37.40	+03 08.6	2.986	3.367	-0.55	-6.1	17.9	
1984 01 11		01 40.17	+04 15.2						
1984 01 21		01 44.62	+05 27.1	3.290	3.378	-0.50	-5.5	18.1	



1979 MR5		a,e,i = 2.32, 0.14, 2			Elements MPC		5847	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 13.96	+16 08.4	1.530	2.023	103.5	29.1	20.1
1983 08 24		02 22.58	+17 00.2					
1983 09 03		02 28.51	+17 37.5	1.346	2.035	119.0	25.7	19.8
1983 09 13		02 31.26	+17 58.6					
1983 09 23		02 30.56	+18 01.8	1.194	2.052	137.8	19.2	19.4
1983 10 03		02 26.38	+17 45.8					
1983 10 13		02 19.16	+17 10.6	1.104	2.071	160.2	9.4	19.0
1983 10 23		02 09.97	+16 19.6					
1983 11 02		02 00.27	+15 19.4	1.103	2.093	174.0	2.8	18.8
1983 11 12		01 51.63	+14 19.1					
1983 11 22		01 45.36	+13 27.9	1.201	2.117	150.5	13.3	19.3
1983 12 02		01 42.15	+12 52.3					
1983 12 12		01 42.24	+12 35.2	1.380	2.144	129.3	20.8	19.8
1983 12 22		01 45.47	+12 37.0					
1984 01 01		01 51.51	+12 55.5	1.614	2.172	111.2	25.0	20.3
1984 01 11		01 59.99	+13 28.1					
1984 01 21		02 10.52	+14 11.8	1.876	2.202	95.6	26.4	20.7

1978 TT2		a,e,i = 2.88, 0.02, 3			Elements MPC		7657	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 36.44	+13 39.6	2.596	2.933	99.2	19.9	18.4
1983 08 24		02 41.09	+14 02.3					
1983 09 03		02 43.71	+14 15.9	2.339	2.932	116.6	17.9	18.1
1983 09 13		02 44.09	+14 19.8					
1983 09 23		02 42.08	+14 13.7	2.122	2.931	136.4	13.7	17.8
1983 10 03		02 37.75	+13 57.9					
1983 10 13		02 31.35	+13 33.1	1.978	2.930	158.8	7.1	17.5
1983 10 23		02 23.46	+13 01.7					
1983 11 02		02 14.89	+12 26.9	1.937	2.929	177.0	1.0	17.0
1983 11 12		02 06.57	+11 53.1					
1983 11 22		01 59.40	+11 24.9	2.012	2.927	153.1	8.8	17.5
1983 12 02		01 54.05	+11 05.8					
1983 12 12		01 50.94	+10 58.3	2.186	2.925	130.7	14.8	17.9
1983 12 22		01 50.23	+11 03.4					
1984 01 01		01 51.85	+11 20.6	2.426	2.923	110.7	18.3	18.2
1984 01 11		01 55.66	+11 48.9					
1984 01 21		02 01.45	+12 26.9	2.700	2.920	92.9	19.7	18.4

(2856) 1933 GB		a,e,i = 3.03, 0.01, 10			Elements MPC		7774	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 40.67	+17 01.0	2.748	3.045	97.2	19.3	17.6
1983 08 24		02 44.94	+17 47.8					
1983 09 03		02 47.23	+18 27.9	2.484	3.044	114.5	17.6	17.3
1983 09 13		02 47.29	+19 00.6					
1983 09 23		02 44.99	+19 24.9	2.259	3.044	134.1	13.7	17.0
1983 10 03		02 40.35	+19 39.7					
1983 10 13		02 33.62	+19 44.4	2.105	3.043	156.0	7.7	16.7
1983 10 23		02 25.33	+19 38.9					
1983 11 02		02 16.29	+19 24.6	2.053	3.042	174.6	1.8	16.3
1983 11 12		02 07.41	+19 04.5					
1983 11 22		01 59.64	+18 42.7	2.118	3.042	155.0	7.9	16.7
1983 12 02		01 53.67	+18 23.6					
1983 12 12		01 49.94	+18 10.7	2.286	3.041	132.7	13.8	17.0
1983 12 22		01 48.65	+18 06.9					
1984 01 01		01 49.75	+18 13.0	2.525	3.040	112.5	17.4	17.3
1984 01 11		01 53.11	+18 29.5					
1984 01 21		01 58.49	+18 55.4	2.800	3.039	94.5	18.8	17.6

(2542) Calpurnia		a,e,i = 3.12, 0.09, 5				Elements MPC		6636
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 40.30	+11 04.2	3.062	3.373	99.0	17.3	18.0
1983 08 24		02 44.03	+11 04.1					
1983 09 03		02 45.98	+10 54.8	2.787	3.367	116.9	15.5	17.7
1983 09 13		02 45.98	+10 36.2					
1983 09 23		02 43.96	+10 08.7	2.555	3.359	136.9	11.8	17.4
1983 10 03		02 40.00	+09 33.5					
1983 10 13		02 34.32	+08 52.3	2.401	3.351	158.8	6.2	17.1
1983 10 23		02 27.41	+08 08.3					
1983 11 02		02 19.88	+07 25.1	2.354	3.342	173.0	2.1	16.9
1983 11 12		02 12.47	+06 46.7					
1983 11 22		02 05.90	+06 16.9	2.426	3.332	152.2	7.9	17.2
1983 12 02		02 00.73	+05 58.2					
1983 12 12		01 57.38	+05 52.0	2.599	3.321	130.2	13.1	17.5
1983 12 22		01 56.04	+05 58.6					
1984 01 01		01 56.71	+06 17.0	2.842	3.310	110.0	16.2	17.7
1984 01 11		01 59.33	+06 46.1					
1984 01 21		02 03.75	+07 24.1	3.118	3.298	91.7	17.4	18.0

(2791) 1977 CA		a,e,i = 2.40, 0.17, 31				Elements MPC		7456
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 45.92	+44 21.0	2.297	2.469	87.4	24.2	17.3
1983 08 24		02 55.46	+47 25.2					
1983 09 03		03 03.09	+50 32.3	2.056	2.432	99.3	24.2	17.1
1983 09 13		03 08.01	+53 40.3					
1983 09 23		03 09.25	+56 45.0	1.843	2.394	111.0	23.0	16.8
1983 10 03		03 05.63	+59 40.2					
1983 10 13		02 55.94	+62 15.4	1.673	2.355	121.6	21.1	16.5
1983 10 23		02 39.65	+64 17.0					
1983 11 02		02 17.83	+65 30.7	1.561	2.316	128.8	19.5	16.2
1983 11 12		01 53.82	+65 46.2					
1983 11 22		01 32.42	+65 04.7	1.516	2.278	129.7	19.5	16.1
1983 12 02		01 17.34	+63 38.5					
1983 12 12		01 10.14	+61 45.0	1.535	2.240	124.0	21.4	16.2
1983 12 22		01 10.48	+59 41.4					
1984 01 01		01 17.19	+57 39.5	1.608	2.202	114.2	24.0	16.3
1984 01 11		01 29.08	+55 46.6					
1984 01 21		01 45.08	+54 06.0	1.720	2.166	103.1	26.3	16.5

(2616) 1970 QV		a,e,i = 2.16, 0.08, 1				Elements MPC		6880
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 30.00	+13 26.1	1.557	2.009	100.7	29.7	16.8
1983 08 24		02 39.73	+14 01.2					
1983 09 03		02 46.93	+14 22.2	1.362	2.017	115.8	26.8	16.4
1983 09 13		02 51.10	+14 28.0					
1983 09 23		02 51.85	+14 18.1	1.196	2.027	134.1	20.8	16.0
1983 10 03		02 48.97	+13 52.5					
1983 10 13		02 42.63	+13 12.4	1.086	2.039	156.2	11.4	15.6
1983 10 23		02 33.64	+12 21.6					
1983 11 02		02 23.32	+11 26.6	1.060	2.052	177.1	1.4	15.1
1983 11 12		02 13.31	+10 35.7					
1983 11 22		02 05.17	+09 57.2	1.133	2.066	153.8	12.2	15.7
1983 12 02		01 59.92	+09 36.3					
1983 12 12		01 58.05	+09 35.3	1.291	2.082	131.9	20.6	16.2
1983 12 22		01 59.58	+09 53.5					
1984 01 01		02 04.21	+10 28.3	1.506	2.098	113.3	25.5	16.7
1984 01 11		02 11.58	+11 16.6					
1984 01 21		02 21.30	+12 15.1	1.750	2.115	97.4	27.5	17.1

(2725) 1978 VG3		a,e,i = 3.03, 0.15, 16				Elements MPC		7146
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 50.03	+03 46.6	2.462	2.801	98.8	20.9	16.7
1983 08 24		02 55.71	+04 04.9					
1983 09 03		02 59.42	+04 15.9	2.189	2.773	115.2	19.2	16.4
1983 09 13		03 00.85	+04 20.2					
1983 09 23		02 59.79	+04 19.4	1.953	2.745	133.9	15.3	16.0
1983 10 03		02 56.14	+04 15.4					
1983 10 13		02 50.01	+04 10.8	1.784	2.719	154.6	9.1	15.6
1983 10 23		02 41.87	+04 09.1					
1983 11 02		02 32.50	+04 13.9	1.712	2.694	169.7	3.8	15.3
1983 11 12		02 22.89	+04 28.2					
1983 11 22		02 14.16	+04 54.4	1.752	2.671	153.2	9.6	15.6
1983 12 02		02 07.18	+05 33.3					
1983 12 12		02 02.59	+06 24.6	1.891	2.649	131.6	16.1	15.9
1983 12 22		02 00.67	+07 27.2					
1984 01 01		02 01.43	+08 39.3	2.099	2.630	112.0	20.3	16.2
1984 01 11		02 04.74	+09 59.1					
1984 01 21		02 10.36	+11 24.9	2.342	2.613	94.6	22.0	16.4

(2728) 1979 ST9		a,e,i = 2.46, 0.17, 3				Elements MPC		7147
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 46.41	+16 12.0	1.984	2.321	96.1	25.7	17.4
1983 08 24		02 54.14	+16 36.8					
1983 09 03		02 59.47	+16 49.2	1.784	2.358	112.2	23.3	17.2
1983 09 13		03 02.03	+16 48.5					
1983 09 23		03 01.59	+16 34.1	1.612	2.395	131.2	18.4	16.9
1983 10 03		02 58.07	+16 06.0					
1983 10 13		02 51.72	+15 24.9	1.498	2.432	153.5	10.5	16.6
1983 10 23		02 43.22	+14 33.5					
1983 11 02		02 33.59	+13 36.5	1.477	2.469	177.7	0.9	16.1
1983 11 12		02 24.07	+12 40.2					
1983 11 22		02 15.87	+11 51.4	1.566	2.505	157.0	8.9	16.7
1983 12 02		02 09.85	+11 15.1					
1983 12 12		02 06.50	+10 54.5	1.753	2.540	134.3	16.1	17.1
1983 12 22		02 05.94	+10 50.1					
1984 01 01		02 08.02	+11 00.9	2.009	2.575	114.3	20.4	17.5
1984 01 11		02 12.52	+11 24.9					
1984 01 21		02 19.13	+11 59.7	2.300	2.607	96.8	22.0	17.9

(2680) 1975 NF		a,e,i = 2.40, 0.21, 2				Elements MPC		7012
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 38.08	+15 54.2	1.522	1.943	98.1	31.1	17.6
1983 08 24		02 48.88	+16 59.2					
1983 09 03		02 57.08	+17 52.4	1.353	1.973	112.4	28.2	17.3
1983 09 13		03 02.16	+18 32.9					
1983 09 23		03 03.72	+18 59.9	1.208	2.007	130.1	22.5	16.9
1983 10 03		03 01.51	+19 12.3					
1983 10 13		02 55.68	+19 09.0	1.112	2.045	151.5	13.5	16.6
1983 10 23		02 46.96	+18 50.3					
1983 11 02		02 36.66	+18 19.1	1.096	2.087	175.1	2.3	16.2
1983 11 12		02 26.42	+17 41.0					
1983 11 22		02 17.86	+17 04.0	1.179	2.131	159.0	9.6	16.7
1983 12 02		02 12.04	+16 35.0					
1983 12 12		02 09.51	+16 18.9	1.353	2.178	136.7	18.1	17.3
1983 12 22		02 10.31	+16 17.6					
1984 01 01		02 14.17	+16 30.7	1.593	2.225	117.5	23.1	17.8
1984 01 11		02 20.72	+16 56.4					
1984 01 21		02 29.57	+17 32.4	1.870	2.274	101.0	25.1	18.2

(2476) 1976 JF2		a,e,i = 3.02, 0.11, 11				Elements MPC		6466
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 50.75	+04 52.8	2.383	2.720	98.3	21.6	16.8
1983 08 24		02 56.82	+04 58.6					
1983 09 03		03 00.82	+04 55.1	2.152	2.732	114.7	19.6	16.5
1983 09 13		03 02.47	+04 42.9					
1983 09 23		03 01.61	+04 23.7	1.957	2.746	133.4	15.4	16.2
1983 10 03		02 58.23	+03 59.7					
1983 10 13		02 52.50	+03 34.0	1.829	2.760	153.9	9.1	15.9
1983 10 23		02 44.96	+03 11.0					
1983 11 02		02 36.39	+02 54.7	1.798	2.776	168.2	4.2	15.7
1983 11 12		02 27.74	+02 49.0					
1983 11 22		02 20.01	+02 56.7	1.877	2.793	153.1	9.2	16.0
1983 12 02		02 13.95	+03 18.7					
1983 12 12		02 10.08	+03 54.4	2.054	2.812	132.2	15.0	16.4
1983 12 22		02 08.62	+04 42.6					
1984 01 01		02 09.55	+05 41.0	2.302	2.831	112.7	18.7	16.7
1984 01 11		02 12.73	+06 47.5					
1984 01 21		02 17.95	+08 00.2	2.587	2.851	95.2	20.1	17.0

1973 SM2		a,e,i = 2.20, 0.20, 5				Elements MPC		7453
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 44.84	+16 13.0	1.433	1.846	96.4	33.1	18.4
1983 08 24		02 56.21	+17 32.6					
1983 09 03		03 04.87	+18 41.5	1.276	1.883	110.4	30.1	18.1
1983 09 13		03 10.26	+19 39.2					
1983 09 23		03 11.88	+20 24.8	1.139	1.925	127.8	24.3	17.8
1983 10 03		03 09.42	+20 56.5					
1983 10 13		03 02.92	+21 12.1	1.045	1.969	149.1	15.1	17.4
1983 10 23		02 53.11	+21 10.1					
1983 11 02		02 41.41	+20 51.3	1.028	2.016	172.4	3.8	17.1
1983 11 12		02 29.65	+20 20.4					
1983 11 22		02 19.70	+19 45.4	1.108	2.064	159.8	9.5	17.5
1983 12 02		02 12.77	+19 14.6					
1983 12 12		02 09.47	+18 54.3	1.279	2.112	137.4	18.4	18.1
1983 12 22		02 09.80	+18 48.0					
1984 01 01		02 13.44	+18 55.7	1.516	2.160	118.1	23.7	18.6
1984 01 11		02 19.97	+19 16.3					
1984 01 21		02 28.92	+19 47.6	1.790	2.208	101.6	25.9	19.1

1981 CB1		a,e,i = 2.32, 0.15, 6				Elements MPC		5972
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983 08 14		02 43.28	+13 23.3	1.866	2.239	-1.28	-8.6	18.2
1983 08 24		02 52.54	+14 17.8					
1983 09 03		02 59.78	+15 04.6	1.610	2.205	-1.55	-9.7	17.8
1983 09 13		03 04.53	+15 43.3					
1983 09 23		03 06.34	+16 13.7	1.383	2.171	-1.88	-11.3	17.4
1983 10 03		03 04.83	+16 35.0					
1983 10 13		02 59.85	+16 46.5	1.209	2.138	-2.21	-13.4	16.9
1983 10 23		02 51.72	+16 48.2					
1983 11 02		02 41.34	+16 41.0	1.117	2.107	-2.37	-15.3	16.3
1983 11 12		02 30.15	+16 27.9					
1983 11 22		02 19.89	+16 14.5	1.125	2.078	-2.23	-15.7	16.6
1983 12 02		02 12.05	+16 06.8					
1983 12 12		02 07.58	+16 09.8	1.224	2.051	-1.92	-14.4	16.9
1983 12 22		02 06.88	+16 26.6					
1984 01 01		02 09.86	+16 57.4	1.386	2.028	-1.63	-12.4	17.3
1984 01 11		02 16.24	+17 41.2					
1984 01 21		02 25.61	+18 35.8	1.580	2.007	-1.44	-10.5	17.7

(2499) Brunk a,e,i = 3.10, 0.13, 1 Elements MPC 6515

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		03 02.74	+16 58.9	3.246	3.436	92.1	17.1	18.7
1983 08 24		03 07.22	+17 15.4					
1983 09 03		03 09.97	+17 24.4	2.974	3.446	109.6	16.0	18.5
1983 09 13		03 10.80	+17 25.6					
1983 09 23		03 09.60	+17 18.6	2.733	3.456	129.2	13.0	18.3
1983 10 03		03 06.38	+17 03.3					
1983 10 13		03 01.26	+16 39.9	2.558	3.464	151.0	8.0	18.0
1983 10 23		02 54.61	+16 09.6					
1983 11 02		02 47.00	+15 34.4	2.482	3.471	174.5	1.6	17.6
1983 11 12		02 39.11	+14 57.0					
1983 11 22		02 31.71	+14 21.1	2.526	3.477	161.5	5.2	17.9
1983 12 02		02 25.43	+13 50.1					
1983 12 12		02 20.77	+13 26.9	2.683	3.482	138.4	10.8	18.2
1983 12 22		02 18.04	+13 13.4					
1984 01 01		02 17.32	+13 10.2	2.925	3.485	117.2	14.5	18.5
1984 01 11		02 18.59	+13 17.2					
1984 01 21		02 21.72	+13 33.5	3.213	3.488	98.0	16.2	18.7

1976 YJ3 a,e,i = 2.38, 0.18, 4 Elements MPC 7606

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 55.94	+19 17.6	2.357	2.614	93.0	22.8	19.0
1983 08 24		03 03.69	+19 49.5					
1983 09 03		03 09.54	+20 12.1	2.072	2.582	108.9	21.7	18.6
1983 09 13		03 13.13	+20 24.4					
1983 09 23		03 14.10	+20 25.2	1.812	2.548	127.3	18.3	18.2
1983 10 03		03 12.20	+20 13.0					
1983 10 13		03 07.37	+19 46.7	1.606	2.513	148.7	11.9	17.8
1983 10 23		02 59.91	+19 06.0					
1983 11 02		02 50.53	+18 12.5	1.488	2.476	172.7	2.9	17.3
1983 11 12		02 40.33	+17 10.4					
1983 11 22		02 30.66	+16 06.5	1.480	2.437	161.8	7.3	17.4
1983 12 02		02 22.70	+15 08.2					
1983 12 12		02 17.33	+14 22.0	1.574	2.398	138.0	16.0	17.8
1983 12 22		02 15.02	+13 52.0					
1984 01 01		02 15.82	+13 39.3	1.742	2.357	117.0	21.8	18.1
1984 01 11		02 19.59	+13 43.4					
1984 01 21		02 26.05	+14 02.2	1.947	2.316	99.1	24.8	18.3

1981 EA11 a,e,i = 2.68, 0.20, 11 Elements MPC 7615

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		02 50.77	+24 10.9	1.855	2.155	92.7	28.0	18.4
1983 08 24		03 01.30	+26 05.3					
1983 09 03		03 09.69	+27 54.7	1.655	2.170	106.6	26.5	18.1
1983 09 13		03 15.39	+29 38.1					
1983 09 23		03 17.93	+31 13.6	1.479	2.190	122.7	22.7	17.8
1983 10 03		03 16.91	+32 38.0					
1983 10 13		03 12.14	+33 46.1	1.348	2.215	141.1	16.4	17.5
1983 10 23		03 04.00	+34 31.8					
1983 11 02		02 53.47	+34 50.3	1.290	2.243	158.5	9.3	17.2
1983 11 12		02 42.10	+34 40.0					
1983 11 22		02 31.69	+34 05.4	1.328	2.275	158.3	9.2	17.3
1983 12 02		02 23.73	+33 15.5					
1983 12 12		02 19.13	+32 20.5	1.460	2.309	140.9	15.6	17.7
1983 12 22		02 18.19	+31 29.6					
1984 01 01		02 20.73	+30 48.4	1.668	2.347	122.4	20.7	18.1
1984 01 11		02 26.41	+30 19.5					
1984 01 21		02 34.78	+30 03.2	1.924	2.386	105.7	23.4	18.5

1981 DQ		a,e,i = 2.58, 0.07, 13					Elements MPC		7357
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.	
1983 08 14	02	48.26	+21 41.8	2.140	2.431	-1.22	-0.5	18.6	
1983 08 24	02	57.44	+21 56.3						
1983 09 03	03	04.58	+21 56.8	1.893	2.425	-1.41	-0.3	18.3	
1983 09 13	03	09.29	+21 41.5						
1983 09 23	03	11.26	+21 09.0	1.672	2.420	-1.62	-0.5	18.0	
1983 10 03	03	10.30	+20 17.8						
1983 10 13	03	06.43	+19 07.6	1.505	2.416	-1.82	-1.2	17.6	
1983 10 23	03	00.07	+17 40.1						
1983 11 02	02	52.03	+15 59.8	1.425	2.413	-1.91	-2.0	17.1	
1983 11 12	02	43.42	+14 14.6						
1983 11 22	02	35.53	+12 34.3	1.454	2.412	-1.81	-2.3	17.4	
1983 12 02	02	29.40	+11 07.4						
1983 12 12	02	25.73	+10 00.3	1.586	2.412	-1.60	-1.8	17.8	
1983 12 22	02	24.86	+09 15.4						
1984 01 01	02	26.76	+08 52.1	1.791	2.413	-1.37	-1.2	18.2	
1984 01 11	02	31.29	+08 48.2						
1984 01 21	02	38.15	+09 00.2	2.037	2.416	-1.19	-0.7	18.5	

(2697) 1969 TC3		a,e,i = 3.56, 0.09, 4					Elements MPC		7611
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1983 08 14	02	59.36	+20 31.9	3.051	3.246	91.9	18.2	16.7	
1983 08 24	03	05.16	+21 01.9						
1983 09 03	03	09.23	+21 24.5	2.779	3.246	108.7	17.1	16.5	
1983 09 13	03	11.35	+21 39.1						
1983 09 23	03	11.34	+21 44.7	2.537	3.247	127.5	14.2	16.2	
1983 10 03	03	09.18	+21 40.8						
1983 10 13	03	04.96	+21 26.8	2.355	3.249	148.6	9.2	15.9	
1983 10 23	02	59.03	+21 02.7						
1983 11 02	02	51.95	+20 29.9	2.268	3.251	171.0	2.7	15.6	
1983 11 12	02	44.46	+19 50.8						
1983 11 22	02	37.38	+19 09.2	2.295	3.255	163.9	4.8	15.7	
1983 12 02	02	31.45	+18 29.4						
1983 12 12	02	27.21	+17 55.3	2.433	3.260	141.2	10.9	16.0	
1983 12 22	02	25.02	+17 29.8						
1984 01 01	02	24.96	+17 14.6	2.658	3.266	120.2	15.1	16.3	
1984 01 11	02	27.02	+17 10.1						
1984 01 21	02	31.06	+17 15.7	2.934	3.272	101.3	17.2	16.6	

2540 P-L		a,e,i = 2.75, 0.19, 7					Elements MPC		5980
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1983 08 14	02	48.40	+13 58.2	2.176	2.499	96.3	23.8	18.7	
1983 08 24	02	57.42	+14 06.7						
1983 09 03	03	04.64	+14 02.4	1.903	2.462	111.7	22.4	18.4	
1983 09 13	03	09.66	+13 44.4						
1983 09 23	03	12.18	+13 12.3	1.660	2.426	129.6	18.6	18.0	
1983 10 03	03	11.94	+12 26.2						
1983 10 13	03	08.88	+11 27.5	1.475	2.392	150.1	12.0	17.5	
1983 10 23	03	03.29	+10 19.4						
1983 11 02	02	55.83	+09 07.4	1.375	2.360	170.7	3.9	17.1	
1983 11 12	02	47.52	+07 58.5						
1983 11 22	02	39.63	+07 00.8	1.380	2.331	159.5	8.5	17.2	
1983 12 02	02	33.28	+06 20.1						
1983 12 12	02	29.32	+06 00.2	1.482	2.305	137.4	16.8	17.6	
1983 12 22	02	28.22	+06 01.6						
1984 01 01	02	30.04	+06 22.4	1.652	2.282	117.7	22.4	17.9	
1984 01 11	02	34.70	+06 59.8						
1984 01 21	02	41.92	+07 50.1	1.861	2.262	100.8	25.3	18.2	

(2611) Boyce		a,e,i = 3.04, 0.05, 3			Elements MPC		6828	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14		03 16.57	+15 51.1	3.054	3.204	89.2	18.4	17.9
1983 08 24		03 22.56	+16 12.6					
1983 09 03		03 26.85	+16 27.2	2.775	3.203	106.0	17.6	17.6
1983 09 13		03 29.22	+16 34.7					
1983 09 23		03 29.46	+16 35.1	2.520	3.200	124.8	14.9	17.4
1983 10 03		03 27.47	+16 28.4					
1983 10 13		03 23.27	+16 14.6	2.321	3.197	145.9	10.1	17.1
1983 10 23		03 17.13	+15 54.7					
1983 11 02		03 09.53	+15 30.0	2.213	3.193	169.1	3.4	16.7
1983 11 12		03 01.19	+15 02.9					
1983 11 22		02 52.96	+14 36.6	2.220	3.189	166.4	4.2	16.8
1983 12 02		02 45.66	+14 14.5					
1983 12 12		02 39.94	+13 59.5	2.342	3.184	143.0	10.7	17.1
1983 12 22		02 36.26	+13 53.7					
1984 01 01		02 34.80	+13 58.0	2.553	3.179	121.5	15.3	17.4
1984 01 11		02 35.58	+14 12.4					
1984 01 21		02 38.49	+14 35.9	2.816	3.173	102.1	17.7	17.7

1970 PA		a,e,i = 2.59, 0.20, 12			Elements MPC		7366	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 09 03		03 15.21	+34 03.3	1.598	2.079	103.4	28.2	16.8
1983 09 13		03 24.18	+35 53.7					
1983 09 23		03 30.17	+37 34.8	1.415	2.082	117.8	25.2	16.4
1983 10 03		03 32.59	+39 03.2					
1983 10 13		03 30.99	+40 13.5	1.267	2.090	134.3	20.0	16.1
1983 10 23		03 25.38	+40 58.5					
1983 11 02		03 16.45	+41 11.0	1.180	2.103	150.9	13.3	15.8
1983 11 12		03 05.64	+40 46.1					
1983 11 22		02 55.00	+39 46.1	1.175	2.121	157.3	10.3	15.7
1983 12 02		02 46.43	+38 20.0					
1983 12 12		02 41.25	+36 41.1	1.262	2.144	144.9	15.3	16.0
1983 12 22		02 40.02	+35 02.9					
1984 01 01		02 42.63	+33 34.5	1.428	2.170	127.4	21.1	16.4
1984 01 11		02 48.73	+32 21.1					
1984 01 21		02 57.79	+31 23.9	1.650	2.201	110.8	24.7	16.9
1984 01 31		03 09.29	+30 41.6					
1984 02 10		03 22.81	+30 11.6	1.904	2.234	96.0	26.1	17.2

(2742) Gibson		a,e,i = 2.91, 0.07, 3			Elements MPC		7229	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 09 03		03 25.82	+14 48.2	2.260	2.725	106.6	20.8	17.6
1983 09 13		03 30.02	+14 50.4					
1983 09 23		03 31.85	+14 43.7	2.024	2.722	124.6	17.7	17.3
1983 10 03		03 31.12	+14 28.4					
1983 10 13		03 27.77	+14 05.3	1.839	2.719	145.2	12.1	17.0
1983 10 23		03 22.06	+13 35.9					
1983 11 02		03 14.52	+13 02.6	1.739	2.717	167.8	4.4	16.6
1983 11 12		03 05.98	+12 29.1					
1983 11 22		02 57.51	+11 59.5	1.748	2.717	166.0	5.0	16.7
1983 12 02		02 50.10	+11 37.9					
1983 12 12		02 44.56	+11 27.4	1.865	2.717	143.1	12.6	17.0
1983 12 22		02 41.41	+11 29.7					
1984 01 01		02 40.82	+11 44.6	2.065	2.719	122.1	17.8	17.4
1984 01 11		02 42.77	+12 11.2					
1984 01 21		02 47.10	+12 47.7	2.317	2.721	103.6	20.6	17.7
1984 01 31		02 53.55	+13 32.2					
1984 02 10		03 01.89	+14 22.4	2.589	2.725	87.2	21.2	17.9

(2606) Odessa		a,e,i = 2.76, 0.26, 12				Elements MPC		6826
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 09 03		03 34.03	+14 08.0	2.922	3.326	104.8	17.1	17.8
1983 09 13		03 36.48	+13 40.3					
1983 09 23		03 36.92	+13 03.1	2.632	3.296	123.7	14.7	17.5
1983 10 03		03 35.22	+12 16.6					
1983 10 13		03 31.36	+11 21.7	2.398	3.263	144.6	10.2	17.2
1983 10 23		03 25.54	+10 20.6					
1983 11 02		03 18.16	+09 16.2	2.257	3.228	165.9	4.3	16.9
1983 11 12		03 09.87	+08 13.0					
1983 11 22		03 01.46	+07 15.6	2.232	3.191	163.5	5.1	16.8
1983 12 02		02 53.76	+06 28.3					
1983 12 12		02 47.46	+05 54.4	2.323	3.152	141.3	11.3	17.1
1983 12 22		02 43.07	+05 35.4					
1984 01 01		02 40.86	+05 31.4	2.502	3.110	119.8	15.9	17.3
1984 01 11		02 40.90	+05 41.2					
1984 01 21		02 43.12	+06 02.9	2.731	3.067	100.5	18.4	17.5
1984 01 31		02 47.36	+06 34.3					
1984 02 10		02 53.44	+07 13.3	2.974	3.021	83.2	18.9	17.7

(2482) Perkin		a,e,i = 2.93, 0.07, 3				Elements MPC		6469
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 09 03		03 32.25	+15 35.1	2.421	2.852	104.9	20.0	17.2
1983 09 13		03 36.36	+15 41.2					
1983 09 23		03 38.21	+15 39.5	2.167	2.839	122.9	17.3	16.8
1983 10 03		03 37.60	+15 30.1					
1983 10 13		03 34.45	+15 13.4	1.963	2.828	143.5	12.1	16.5
1983 10 23		03 28.96	+14 50.4					
1983 11 02		03 21.57	+14 23.0	1.843	2.816	166.2	4.8	16.1
1983 11 12		03 13.04	+13 53.8					
1983 11 22		03 04.37	+13 26.7	1.831	2.805	168.2	4.1	16.1
1983 12 02		02 56.55	+13 05.3					
1983 12 12		02 50.43	+12 53.0	1.931	2.795	145.0	11.7	16.4
1983 12 22		02 46.58	+12 51.9					
1984 01 01		02 45.25	+13 02.5	2.119	2.785	123.6	17.1	16.7
1984 01 11		02 46.46	+13 24.4					
1984 01 21		02 50.10	+13 56.3	2.360	2.776	104.6	20.1	17.0
1984 01 31		02 55.92	+14 36.3					
1984 02 10		03 03.70	+15 22.6	2.623	2.768	87.9	20.9	17.3

1943 EM		a,e,i = 2.61, 0.13, 15				Elements MPC		7665
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 09 03		03 43.09	+03 26.1	2.493	2.915	104.6	19.6	17.8
1983 09 13		03 46.09	+02 59.4					
1983 09 23		03 46.81	+02 25.9	2.261	2.923	122.3	16.9	17.5
1983 10 03		03 45.08	+01 47.8					
1983 10 13		03 40.87	+01 08.2	2.080	2.929	141.6	12.2	17.2
1983 10 23		03 34.40	+00 31.2					
1983 11 02		03 26.14	+00 01.3	1.984	2.933	159.1	6.9	17.0
1983 11 12		03 16.83	-00 16.7					
1983 11 22		03 07.41	-00 19.5	1.997	2.935	157.8	7.3	17.0
1983 12 02		02 58.82	-00 05.4					
1983 12 12		02 51.84	+00 25.6	2.119	2.936	139.2	12.7	17.3
1983 12 22		02 47.00	+01 11.8					
1984 01 01		02 44.53	+02 10.4	2.326	2.935	119.3	17.0	17.6
1984 01 11		02 44.46	+03 18.8					
1984 01 21		02 46.68	+04 34.4	2.584	2.932	100.8	19.2	17.8
1984 01 31		02 50.98	+05 54.6					
1984 02 10		02 57.14	+07 17.6	2.859	2.927	84.1	19.6	18.1



1977 SS1		a,e,i = 3.21, 0.12, 18			Elements MPC		7459	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 09 03		03 42.41	+21 46.5	2.435	2.810	101.1	20.6	17.2
1983 09 13		03 46.57	+22 57.6					
1983 09 23		03 48.35	+24 06.8	2.189	2.811	118.7	18.3	16.9
1983 10 03		03 47.49	+25 13.1					
1983 10 13		03 43.79	+26 15.0	1.988	2.815	138.6	13.6	16.6
1983 10 23		03 37.34	+27 09.9					
1983 11 02		03 28.57	+27 54.8	1.868	2.820	159.9	7.0	16.3
1983 11 12		03 18.27	+28 27.2					
1983 11 22		03 07.59	+28 46.6	1.855	2.827	167.6	4.3	16.1
1983 12 02		02 57.73	+28 54.9					
1983 12 12		02 49.75	+28 55.9	1.955	2.836	147.6	10.7	16.5
1983 12 22		02 44.37	+28 54.7					
1984 01 01		02 41.90	+28 55.5	2.148	2.846	126.7	16.1	16.8
1984 01 11		02 42.35	+29 01.4					
1984 01 21		02 45.56	+29 14.0	2.401	2.859	107.8	19.1	17.1
1984 01 31		02 51.24	+29 33.6					
1984 02 10		02 59.12	+29 59.6	2.680	2.872	91.0	20.1	17.4

(2800) 4585 P-L		a,e,i = 3.15, 0.14, 3			Elements MPC		7459	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 09 03		03 43.81	+16 39.1	3.012	3.368	101.9	17.0	18.9
1983 09 13		03 46.41	+16 41.6					
1983 09 23		03 47.01	+16 37.7	2.767	3.390	120.6	14.8	18.7
1983 10 03		03 45.49	+16 27.6					
1983 10 13		03 41.87	+16 11.6	2.572	3.410	141.5	10.5	18.5
1983 10 23		03 36.35	+15 50.4					
1983 11 02		03 29.34	+15 25.4	2.464	3.430	164.3	4.5	18.2
1983 11 12		03 21.43	+14 58.5					
1983 11 22		03 13.39	+14 32.5	2.470	3.449	170.6	2.7	18.1
1983 12 02		03 05.95	+14 09.9					
1983 12 12		02 59.76	+13 53.6	2.596	3.466	147.5	8.8	18.5
1983 12 22		02 55.31	+13 45.2					
1984 01 01		02 52.83	+13 45.8	2.818	3.483	125.5	13.3	18.8
1984 01 11		02 52.40	+13 55.3					
1984 01 21		02 53.97	+14 13.3	3.103	3.498	105.6	15.7	19.0
1984 01 31		02 57.38	+14 38.5					
1984 02 10		03 02.47	+15 09.7	3.414	3.513	87.5	16.3	19.3

(2736) Ops		a,e,i = 2.29, 0.08, 7			Elements MPC		7151	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 09 03		03 37.62	+26 00.3	1.787	2.216	101.2	26.5	18.1
1983 09 13		03 45.15	+26 26.5					
1983 09 23		03 49.79	+26 41.0	1.584	2.234	117.7	23.4	17.8
1983 10 03		03 51.14	+26 42.1					
1983 10 13		03 48.93	+26 27.8	1.415	2.253	137.4	17.4	17.4
1983 10 23		03 43.26	+25 56.2					
1983 11 02		03 34.71	+25 06.2	1.314	2.273	160.3	8.4	17.1
1983 11 12		03 24.37	+23 59.5					
1983 11 22		03 13.77	+22 41.7	1.310	2.292	172.1	3.4	16.9
1983 12 02		03 04.42	+21 21.3					
1983 12 12		02 57.49	+20 07.2	1.413	2.311	148.7	12.8	17.4
1983 12 22		02 53.68	+19 06.7					
1984 01 01		02 53.13	+18 23.1	1.602	2.330	127.0	19.7	17.8
1984 01 11		02 55.70	+17 57.2					
1984 01 21		03 01.07	+17 47.3	1.846	2.348	108.3	23.4	18.2
1984 01 31		03 08.86	+17 50.7					
1984 02 10		03 18.73	+18 04.4	2.115	2.366	92.1	24.6	18.6

1982 GG		a,e,i = 2.26, 0.18, 6				Elements MPC		7359
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983 09 03		03 46.93	+20 09.0	1.738	2.162	-1.29	-6.7	18.0
1983 09 13		03 53.62	+20 55.1					
1983 09 23		03 57.30	+21 34.3	1.555	2.203	-1.50	-7.1	17.7
1983 10 03		03 57.59	+22 06.2					
1983 10 13		03 54.20	+22 29.6	1.405	2.244	-1.76	-8.0	17.4
1983 10 23		03 47.26	+22 42.9					
1983 11 02		03 37.34	+22 44.5	1.323	2.284	-1.94	-9.4	17.1
1983 11 12		03 25.59	+22 34.2					
1983 11 22		03 13.60	+22 14.5	1.341	2.323	-1.91	-10.3	17.0
1983 12 02		03 02.93	+21 50.3					
1983 12 12		02 54.82	+21 27.7	1.466	2.361	-1.68	-10.0	17.5
1983 12 22		02 49.95	+21 12.0					
1984 01 01		02 48.45	+21 06.2	1.678	2.398	-1.41	-8.7	18.0
1984 01 11		02 50.18	+21 11.5					
1984 01 21		02 54.79	+21 27.3	1.944	2.432	-1.19	-7.2	18.4
1984 01 31		03 01.87	+21 51.9					
1984 02 10		03 11.09	+22 23.4	2.234	2.465	-1.03	-5.8	18.7

1981 EC9		a,e,i = 2.42, 0.14, 6				Elements MPC		7614
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 09 03		03 28.82	+26 48.4	1.658	2.124	102.9	27.6	18.4
1983 09 13		03 38.19	+27 53.8					
1983 09 23		03 44.92	+28 50.5	1.440	2.107	118.1	24.8	18.0
1983 10 03		03 48.49	+29 37.1					
1983 10 13		03 48.44	+30 10.6	1.257	2.094	136.2	19.3	17.5
1983 10 23		03 44.63	+30 27.5					
1983 11 02		03 37.38	+30 23.7	1.136	2.085	156.8	10.8	17.1
1983 11 12		03 27.70	+29 56.5					
1983 11 22		03 17.24	+29 07.4	1.102	2.079	168.7	5.3	16.9
1983 12 02		03 07.83	+28 03.3					
1983 12 12		03 01.01	+26 54.1	1.165	2.077	150.2	13.6	17.2
1983 12 22		02 57.72	+25 50.2					
1984 01 01		02 58.22	+24 58.4	1.310	2.079	129.6	21.4	17.7
1984 01 11		03 02.37	+24 22.0					
1984 01 21		03 09.78	+24 00.9	1.509	2.085	111.8	26.0	18.1
1984 01 31		03 19.97	+23 53.1					
1984 02 10		03 32.54	+23 55.6	1.737	2.095	96.6	27.9	18.4

1981 EZ2		a,e,i = 2.54, 0.10, 9				Elements MPC		7138
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983 09 03		03 45.39	+20 02.5	2.411	2.783	-0.94	-0.9	18.6
1983 09 13		03 50.27	+19 55.8					
1983 09 23		03 52.83	+19 39.1	2.151	2.776	-1.07	-1.0	18.3
1983 10 03		03 52.84	+19 11.9					
1983 10 13		03 50.15	+18 33.9	1.935	2.768	-1.21	-1.3	18.0
1983 10 23		03 44.87	+17 45.6					
1983 11 02		03 37.40	+16 48.4	1.797	2.759	-1.31	-1.9	17.6
1983 11 12		03 28.46	+15 45.5					
1983 11 22		03 19.09	+14 41.8	1.766	2.748	-1.31	-2.3	17.4
1983 12 02		03 10.37	+13 42.8					
1983 12 12		03 03.24	+12 53.7	1.851	2.735	-1.21	-2.2	17.8
1983 12 22		02 58.38	+12 18.3					
1984 01 01		02 56.11	+11 58.0	2.028	2.721	-1.06	-1.9	18.1
1984 01 11		02 56.50	+11 52.7					
1984 01 21		02 59.42	+12 00.8	2.262	2.707	-0.94	-1.6	18.4
1984 01 31		03 04.64	+12 20.1					
1984 02 10		03 11.91	+12 48.1	2.518	2.690	-0.84	-1.2	18.6

(2836) 1978 YQ		a,e,i = 3.00, 0.09, 10				Elements MPC		7656
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 09 03		03 49.67	+29 00.3	2.686	2.995	97.8	19.5	17.3
1983 09 13		03 54.11	+29 54.0					
1983 09 23		03 56.22	+30 42.7	2.446	3.013	115.2	17.5	17.0
1983 10 03		03 55.78	+31 25.3					
1983 10 13		03 52.63	+31 59.4	2.246	3.031	134.6	13.6	16.8
1983 10 23		03 46.88	+32 22.5					
1983 11 02		03 38.94	+32 31.8	2.119	3.048	155.2	7.9	16.5
1983 11 12		03 29.53	+32 25.5					
1983 11 22		03 19.68	+32 04.2	2.097	3.066	166.5	4.3	16.4
1983 12 02		03 10.48	+31 30.8					
1983 12 12		03 02.88	+30 50.2	2.188	3.082	150.3	9.1	16.7
1983 12 22		02 57.57	+30 08.2					
1984 01 01		02 54.84	+29 29.7	2.379	3.099	129.5	14.2	17.0
1984 01 11		02 54.76	+28 58.3					
1984 01 21		02 57.20	+28 36.0	2.637	3.115	110.1	17.3	17.3
1984 01 31		03 01.91	+28 23.0					
1984 02 10		03 08.63	+28 18.8	2.928	3.130	92.5	18.4	17.5

1981 JQ		a,e,i = 2.54, 0.17, 6				Elements MPC		6816
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983 09 03		03 47.73	+20 21.6	2.200	2.578	-1.09	-5.3	18.3
1983 09 13		03 54.06	+21 01.2					
1983 09 23		03 58.11	+21 35.9	1.923	2.542	-1.29	-5.8	17.9
1983 10 03		03 59.49	+22 05.6					
1983 10 13		03 57.87	+22 29.5	1.685	2.506	-1.52	-6.8	17.5
1983 10 23		03 53.14	+22 46.4					
1983 11 02		03 45.52	+22 54.9	1.517	2.470	-1.70	-8.1	17.1
1983 11 12		03 35.65	+22 53.8					
1983 11 22		03 24.71	+22 44.0	1.448	2.433	-1.73	-9.4	16.6
1983 12 02		03 14.11	+22 28.1					
1983 12 12		03 05.22	+22 10.9	1.489	2.397	-1.59	-9.7	17.0
1983 12 22		02 59.08	+21 57.5					
1984 01 01		02 56.21	+21 52.1	1.620	2.361	-1.38	-8.9	17.4
1984 01 11		02 56.74	+21 57.0					
1984 01 21		03 00.51	+22 12.6	1.808	2.327	-1.21	-7.8	17.7
1984 01 31		03 07.23	+22 37.9					
1984 02 10		03 16.58	+23 11.2	2.021	2.294	-1.10	-6.5	17.9

(2747) 1980 DW		a,e,i = 3.11, 0.11, 6				Elements MPC		7232
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 09 03		03 57.15	+26 01.1	2.989	3.267	96.9	17.9	17.9
1983 09 13		04 01.03	+26 33.8					
1983 09 23		04 02.80	+27 01.4	2.736	3.286	114.8	16.1	17.6
1983 10 03		04 02.29	+27 23.3					
1983 10 13		03 59.40	+27 38.0	2.523	3.304	134.8	12.4	17.4
1983 10 23		03 54.23	+27 44.2					
1983 11 02		03 47.13	+27 40.6	2.386	3.321	156.6	6.8	17.1
1983 11 12		03 38.69	+27 26.5					
1983 11 22		03 29.75	+27 03.0	2.356	3.337	171.9	2.4	16.9
1983 12 02		03 21.18	+26 32.4					
1983 12 12		03 13.83	+25 58.6	2.445	3.352	153.1	7.6	17.2
1983 12 22		03 08.32	+25 25.7					
1984 01 01		03 04.99	+24 57.3	2.638	3.367	131.1	12.7	17.5
1984 01 11		03 03.99	+24 35.8					
1984 01 21		03 05.25	+24 22.5	2.902	3.381	110.9	15.8	17.8
1984 01 31		03 08.61	+24 17.6					
1984 02 10		03 13.88	+24 20.6	3.202	3.393	92.6	16.9	18.1

1975 PA		a, e, i = 2.42, 0.23, 2				Elements MPC		7155
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 09 03		04 00.30	+22 26.5	1.806	2.172	96.9	27.5	19.0
1983 09 13		04 08.42	+23 04.0					
1983 09 23		04 13.66	+23 33.9	1.629	2.224	113.2	24.5	18.8
1983 10 03		04 15.64	+23 56.1					
1983 10 13		04 14.04	+24 09.6	1.479	2.276	132.6	18.8	18.5
1983 10 23		04 08.87	+24 13.2					
1983 11 02		04 00.53	+24 05.4	1.389	2.328	155.4	10.2	18.2
1983 11 12		03 49.95	+23 45.7					
1983 11 22		03 38.55	+23 16.1	1.393	2.380	176.2	1.6	17.8
1983 12 02		03 27.84	+22 40.9					
1983 12 12		03 19.14	+22 06.0	1.507	2.431	154.0	10.2	18.5
1983 12 22		03 13.31	+21 37.0					
1984 01 01		03 10.65	+21 17.5	1.716	2.481	131.7	17.2	18.9
1984 01 11		03 11.13	+21 09.2					
1984 01 21		03 14.49	+21 11.8	1.988	2.529	112.2	21.1	19.4
1984 01 31		03 20.35	+21 23.9					
1984 02 10		03 28.37	+21 43.5	2.292	2.576	95.2	22.4	19.8

(2644) 1973 SO2		a, e, i = 2.17, 0.17, 3				Elements MPC		6892
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 09 03		04 04.20	+23 13.7	1.825	2.174	95.9	27.5	18.6
1983 09 13		04 12.53	+23 52.2					
1983 09 23		04 18.06	+24 23.6	1.631	2.212	112.0	24.9	18.4
1983 10 03		04 20.36	+24 47.8					
1983 10 13		04 19.03	+25 03.8	1.462	2.249	131.3	19.5	18.0
1983 10 23		04 13.97	+25 09.8					
1983 11 02		04 05.49	+25 04.0	1.351	2.285	154.0	11.0	17.7
1983 11 12		03 54.43	+24 44.8					
1983 11 22		03 42.23	+24 13.5	1.333	2.319	175.6	1.9	17.3
1983 12 02		03 30.52	+23 34.2					
1983 12 12		03 20.80	+22 53.3	1.424	2.351	154.5	10.4	17.9
1983 12 22		03 14.08	+22 17.6					
1984 01 01		03 10.76	+21 51.6	1.609	2.380	131.8	17.9	18.3
1984 01 11		03 10.82	+21 37.7					
1984 01 21		03 14.01	+21 35.8	1.857	2.408	112.2	22.2	18.8
1984 01 31		03 19.92	+21 44.4					
1984 02 10		03 28.19	+22 01.7	2.136	2.432	95.2	23.8	19.1

1982 HS		a, e, i = 2.35, 0.31, 25				Elements MPC		7461
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983 09 03		04 25.75	+23 28.2	2.506	2.718	-0.61	-6.8	19.2
1983 09 13		04 30.14	+24 40.6					
1983 09 23		04 32.05	+25 53.4	2.279	2.768	-0.71	-7.1	19.0
1983 10 03		04 31.11	+27 06.1					
1983 10 13		04 27.01	+28 17.4	2.080	2.815	-0.83	-7.7	18.7
1983 10 23		04 19.67	+29 24.5					
1983 11 02		04 09.30	+30 23.1	1.949	2.858	-0.94	-8.5	18.4
1983 11 12		03 56.57	+31 08.6					
1983 11 22		03 42.64	+31 37.9	1.923	2.897	-0.96	-9.3	18.3
1983 12 02		03 28.92	+31 50.7					
1983 12 12		03 16.74	+31 50.2	2.021	2.933	-0.89	-9.5	18.6
1983 12 22		03 07.15	+31 41.9					
1984 01 01		03 00.65	+31 31.6	2.225	2.965	-0.76	-9.0	18.9
1984 01 11		02 57.36	+31 24.2					
1984 01 21		02 57.14	+31 22.8	2.500	2.993	-0.65	-8.0	19.3
1984 01 31		02 59.66	+31 28.6					
1984 02 10		03 04.60	+31 41.9	2.806	3.017	-0.58	-6.9	19.6