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Cambridge, MA 02138, U.S.A.

TWX 710-320-6842 ASTROGRAM CAM ** Brian G. Marsden, Director
Telephone 617-495-7244/7440/7444 ** Conrad M. Bardwell, Associate Director

ERRATA.

MPC	Line	
7607	2	For 1980 EZ read 1980 EZ1
9081	10	Add by E. Bowell
9125	13-14	Add a note to the observations of P/Kowal-Mrkos on 1984 05 02 to the effect that they were originally attributed to a minor planet 1984 JD (MPC 8836).

* * * * *

IDENTIFICATION CHANGES.

Continuation to MPC 9173-9174.

Object		Date	UT	R. A. (1950)	Decl.	Old desig.	Obs.
A906 WC	*	1906 11 20.16283		04 18 59.8	+15 59.3	A906 VK	803
A916 SC	*	1916 09 20.92266		23 59 52.72	-00 33 43.6	A916 SA	024

* * * * *

IDENTIFICATIONS.

The following list of identifications with numbered minor planets continues that on MPC 8961.

	Note		Note		Note
1957 EP = (3118)	1	1977 UR = (2255)	2	1984 GS = (3035)	3

Note 1: identification by K. Hurukawa. 2: by B. G. Marsden. 3: by F. N. Bowman.

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OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

010 Caussols. 0.9-m Schmidt. Observer A. Barthelemy. Reduction by R. Chemin.
017 Hoher List. 0.30-m f/5 astrograph. Observer M. Geffert.
046 Klet. Observer A. Mrkos.
056 Skalnate Pleso. Observer P. Rychtarcik. Communicated by J. Svoren.
071 Bulgarian National Observatory. 2-m reflector. Observers V. Shkodrov and T. Bonev.
372 Geisei. Observer T. Seki.
391 Sendai Observatory, Ayashi Station. 0.2-m reflector. Observer M. Koishikawa. Measured by S. Kasahara.
397 Sapporo Science Center. 0.6-m reflector. Observer K. Watanabe.

Long. and Parallax 141.48, -312, -289; see MPC 7757.
413 Siding Spring. Observer M. Hartley. 1.2-m Schmidt.
474 Mt. John University Observatory. Observer A. C. Gilmore. Measured by P. M. Kilmartin (assisted by R. McIntosh and W. M. Kissling).
559 Catania. 0.41-m Schmidt. Communicated by W. Ferreri.
657 Victoria. Observers D. D. Balam and J. B. Tatum.
675 Palomar. Nov. 2-3 and 15-16 observations by J. Gibson, 1.2-m Schmidt. Nov. 4-5 observations by Gibson, 1.5-m reflector and CCD. Nov. 21-24 observations by C. Shoemaker and E. Shoemaker, 0.46-m Schmidt.
688 Lowell Observatory, Anderson Mesa Station. Observer B. A. Skiff. Measured by E. Bowell and S. J. Bus.
695 Kitt Peak. 4-m reflector. Observer M. J. S. Belton.
707 Chamberlin Observatory field station. 0.40-m f/5.5 reflector. Observers E. Everhart and S. Innes.
801 Oak Ridge Observatory. Observers R. E. McCrosky, G. Schwartz and C.-Y. Shao (assisted by C. M. Bardwell, D. W. E. Green and B. G. Marsden).
808 El Leoncito. 0.5-m double astrograph. Communicated by J. G. Sanguin.
809 European Southern Observatory. Observer H. E. Pedersen. ESO/MPI 2.2-m reflector + CCD, no filter. 5-min exposures.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
		Periodic Comet Encke					
/1980 XI	1984	05 26.76214	23 09 06.27	-19 20 54.7			474
/1980 XI	1984	05 30.68242	23 05 25.38	-19 53 40.0			474
/1980 XI	1984	05 30.70834	23 05 23.97	-19 53 53.0			474
		Comet Bowell (1982 I)					
/1982 I	1984	10 19.07138	23 12 11.22	-06 47 18.7			801
		Periodic Comet Gunn					
/1982 X	1984	09 23.31675	02 56 09.33	+09 17 45.8		1	801
/1982 X	1984	10 21.30687	02 40 36.36	+08 17 00.9			801
		Periodic Comet Tempel 2					
/1982d	1983	08 06.01528	02 37 13.91	-00 27 52.6			559
/1982d	1983	08 06.03125	02 37 15.64	-00 27 54.8			559
/1982d	1983	08 07.06389	02 39 02.50	-00 30 58.1			559
/1982d	1983	08 08.05000	02 40 42.67	-00 34 04.5			559
/1982d	1983	08 08.06250	02 40 43.85	-00 34 07.9			559
/1982d	1983	08 10.07569	02 44 01.46	-00 41 04.9			559
/1982d	1983	08 10.08472	02 44 02.27	-00 41 05.9			559
/1982d	1983	08 11.04406	02 45 33.47	-00 44 45.2			559
/1982d	1983	08 11.05625	02 45 34.59	-00 44 48.6			559
/1982d	1983	08 12.08507	02 47 09.85	-00 48 49.9			559
/1982d	1983	08 12.09340	02 47 10.47	-00 48 54.4			559
		Periodic Comet Halley					
/1982i	1984	10 24.36263	06 42 09.88	+12 23 50.6			809
/1982i	1984	10 24.36671	06 42 09.81	+12 23 50.3			809
/1982i	1984	10 30.52010	06 39 45.20	+12 17 14.3	22	N	695
/1982i	1984	11 25.06285	06 23 26.44	+11 57 43.6			071
/1982i	1984	11 25.94286	06 22 42.01	+11 57 23.9			071
/1982i	1984	11 26.07411	06 22 35.19	+11 57 24.6			071
/1982i	1984	11 29.71944	06 19 23.40	+11 56 05.4	20	T	372
		Periodic Comet Kopff					
/1982k	1983	08 04.80660	16 06 25.29	-17 53 35.2			559
/1982k	1983	08 04.82257	16 06 26.93	-17 53 46.4			559

/1982k	1983	08	07.82361	16 12 09.10	-18 27 40.2			559
/1982k	1983	08	11.82465	16 20 12.47	-19 11 57.3			559
/1982k	1983	08	11.83090	16 20 13.28	-19 12 03.1			559
			Periodic Comet Johnson					
/1983h	1984	10	03.34972	04 21 31.27	+04 44 54.5		2	801
/1983h	1984	10	25.27147	04 13 34.91	+03 33 18.8		3	801
			Comet Cernis (1983l)					
/1983l	1984	01	03.45218	23 35 15.97	-30 57 51.7			474
/1983l	1984	01	03.45704	23 35 15.97	-30 57 51.4			474
/1983l	1984	09	23.55858	21 52 16.62	-66 46 03.8	16.6N		474
/1983l	1984	09	23.57385	21 52 14.36	-66 46 02.2			474
			Periodic Comet Crommelin					
/1983n	1984	03	24.04067	04 21 13.55	-13 55 16.5			808
			Comet Shoemaker (1983p)					
/1983p	1984	05	30.62050	23 01 13.55	-33 14 23.7			474
/1983p	1984	05	30.64990	23 01 13.04	-33 14 55.1			474
/1983p	1984	08	26.40904	20 21 03.76	-58 41 05.9			474
/1983p	1984	08	26.43693	20 20 59.25	-58 41 11.7			474
/1983p	1984	09	23.43821	19 23 27.85	-58 10 12.9			474
/1983p	1984	09	23.49747	19 23 22.73	-58 09 59.6	17.0N		474
			Periodic Comet Clark					
/1983w	1984	08	25.48624	20 36 05.23	-39 07 25.1			474
/1983w	1984	08	25.49932	20 36 05.29	-39 07 18.2			474
			Periodic Comet Neujmin 1					
/1984c	1984	08	25.46170	18 16 05.86	-40 59 08.3			474
/1984c	1984	08	25.47131	18 16 06.61	-40 58 57.9			474
/1984c	1984	09	23.52351	19 11 43.49	-31 25 27.6			474
/1984c	1984	09	23.53520	19 11 45.07	-31 25 13.5			474
/1984c	1984	10	18.97078	20 15 27.47	-21 53 32.7			801
			Periodic Comet Wolf-Harrington					
/1984g	1984	10	05.48794	08 17 37.19	+15 13 49.2			657
			Periodic Comet Faye					
/1984h	1984	10	25.39287	08 45 59.85	+08 09 41.3			801
			Comet Austin (1984i)					
/1984i	1984	10	19.21562	04 53 12.00	+49 30 02.1		4	657
/1984i	1984	10	22.32535	04 16 52.63	+49 11 26.1		4	657
			Periodic Comet Takamizawa					
/1984j	1984	09	20.53242	21 12 49.80	-24 44 13.3			474
/1984j	1984	10	18.08393	21 36 05.76	-23 17 36.3			801
			Periodic Comet Arend-Rigaux					
/1984k	1984	10	25.36773	07 03 26.34	-02 07 13.6			801
			Periodic Comet Shoemaker 1					
/1984q	1984	10	17.09492	22 55 18.13	+19 56 20.1			801
/1984q	1984	10	19.24375	22 54 01.59	+20 09 52.5			657
/1984q	1984	10	20.15149	22 53 32.75	+20 15 18.4			657
/1984q	1984	10	22.31441	22 52 32.09	+20 27 51.5			657
/1984q	1984	10	28.74148	22 50 44.11	+21 01 41.0	11.7T		046

/1984q	1984	10	28.75039	22	50	44.06	+21	01	43.4			046
/1984q	1984	10	29.74837	22	50	36.36	+21	06	37.3			046
/1984q	1984	10	29.75699	22	50	36.54	+21	06	40.5			046
			Comet Shoemaker (1984r)									
/1984r	1984	11	02.17120	03	11	30.86	+17	39	56.2			675
/1984r	1984	11	02.47606	03	11	05.05	+17	38	12.6			675
/1984r	1984	11	03.34377	03	09	52.06	+17	33	16.0			675
/1984r	1984	11	04.32147	03	08	29.59	+17	27	37.1			675
/1984r	1984	11	05.34222	03	07	03.33	+17	21	42.1			675
/1984r	1984	11	15.22780	02	53	11.26	+16	22	18.2			675
/1984r	1984	11	15.27780	02	53	07.14	+16	21	59.6			675
/1984r	1984	11	16.35141	02	51	37.81	+16	15	23.3			675
/1984r	1984	11	21.29456	02	44	53.08	+15	44	51.7		5	675
/1984r	1984	11	24.34653	02	40	49.18	+15	25	59.4		5	675
			Comet Shoemaker (1984s)									
/1984s	1984	11	15.17257	02	01	46.56	+09	47	57.2			707
/1984s	1984	11	15.28422	02	01	49.86	+09	44	12.6			675
/1984s	1984	11	16.14672	02	02	19.01	+09	14	55.2			675
/1984s	1984	11	22.53889	02	06	55.62	+05	26	50.2			391
/1984s	1984	11	22.60972	02	06	58.85	+05	24	13.0			391
/1984s	1984	11	23.57674	02	07	52.92	+04	48	22.0	12	T	391
/1984s	1984	11	23.62049	02	07	55.11	+04	46	43.2			391
			Comet Levy-Rudenko (1984t)									
/1984t	1984	11	14.95970	18	47	21.9	+10	09	45			801
/1984t	1984	11	15.12317	18	47	17.41	+10	15	00.7			675
/1984t	1984	11	16.09797	18	46	53.76	+10	46	23.6			675
/1984t	1984	11	16.44053	18	46	45.39	+10	57	24.9	10	T	372
/1984t	1984	11	17.08576	18	46	29.97	+11	18	07.1			707
/1984t	1984	11	17.36895	18	46	23.51	+11	27	12.8	10	T	397
/1984t	1984	11	17.39236	18	46	22.74	+11	27	59.1	10.5	T	391
/1984t	1984	11	17.40017	18	46	22.36	+11	28	14.5	10	T	372
/1984t	1984	11	17.40764	18	46	22.40	+11	28	27.1			391
/1984t	1984	11	17.97806	18	46	08.7	+11	46	46			801
/1984t	1984	11	18.37882	18	45	59.34	+11	59	38.1	10.5	T	391
/1984t	1984	11	18.39965	18	45	58.77	+12	00	16.6			391
/1984t	1984	11	18.42049	18	45	58.39	+12	00	57.4			391
/1984t	1984	11	20.06424	18	45	20.06	+12	53	35.1			688
/1984t	1984	11	20.09132	18	45	19.44	+12	54	27.2			688
/1984t	1984	11	20.36270	18	45	13.14	+13	03	12.2			397
/1984t	1984	11	20.76806	18	45	04.18	+13	16	08.8			010
/1984t	1984	11	22.39757	18	44	26.24	+14	08	18.6	11	T	391
/1984t	1984	11	22.42535	18	44	25.69	+14	09	12.9			391
/1984t	1984	11	23.37674	18	44	03.52	+14	39	37.9	11	T	391
/1984t	1984	11	23.39826	18	44	03.03	+14	40	20.8			391
/1984t	1984	11	23.42813	18	44	02.40	+14	41	16.6			391
/1984t	1984	11	24.08958	18	43	47.03	+15	02	26.3			675
/1984t	1984	11	24.11389	18	43	46.34	+15	03	10.4			675
/1984t	1984	11	26.36145	18	42	54.12	+16	15	02.3	10	T	397
/1984t	1984	11	26.73958	18	42	45.4	+16	27	10			017
/1984t	1984	11	26.74792	18	42	45.2	+16	27	26			017
/1984t	1984	11	26.82222	18	42	43.3	+16	29	50			017
/1984t	1984	11	29.35687	18	41	42.44	+17	51	02.0	9.5	T	397
/1984t	1984	11	29.36447	18	41	42.48	+17	51	17.4			397
/1984t	1984	12	01.71713	18	40	43.00	+19	06	47.9			056
/1984t	1984	12	01.74340	18	40	42.43	+19	07	31.5			056

Periodic Comet Shoemaker 2

/1984u	1984	11	18.25347	03	09	18.39	+16	07	14.8		15.0	T	688
/1984u	1984	11	18.30625	03	09	13.90	+16	09	32.8				688
/1984u	1984	11	21.32708	03	05	39.47	+18	16	51.2		14.5	T	675
/1984u	1984	11	21.34444	03	05	38.12	+18	17	31.5				675
/1984u	1984	11	27.20278	02	59	45.31	+21	56	39.7		15.0	T 6	688
/1984u	1984	11	27.24861	02	59	42.86	+21	58	03.1				688
/1984u	1984	11	28.68056	02	58	30.3	+22	46	11		16	T	372

Comet Hartley (1984v)

/1984v	1984	11	17.62186	05	06	26.98	-10	25	16.9		15	T	413
/1984v	1984	11	23.73112	05	01	12.41	-11	43	45.8				413
/1984v	1984	12	01.59227	04	54	00.07	-13	18	37.3		17	N	474
/1984v	1984	12	01.61403	04	53	58.68	-13	18	49.1				474
/1984v	1984	12	04.69721	04	51	03.50	-13	53	41.3				413

Note 1: image weak and diffuse. 2: image probably real, inkdot measured. 3: image weak, inkdot measured. 4: comet image very large, diffuse and ill defined. 5: nucleus not well defined. 6: declination uncertain.

* * * * *

OBSERVATIONS MADE AT SONNEBERG.

Plates taken by B. Fuhrmann, measured and reduced by P. Kroll using five AGK3 reference stars and dependences. Contact: P. Kroll, Robert-Koch-Strasse 11, DDR-7144 Schkeuditz, Democratic Republic of Germany.

Object	Date	UT	R. A. (1950)	Decl.	N	Obs.
20	1981	03 29.9202	10 21 41.31	+09 27 23.4		031
206	1981	01 30.9597	09 55 14.06	+12 12 29.3		031
243	1983	02 18.0216	10 18 53.16	+10 15 17.7	1	031
708	1981	04 02.8597	09 50 21.22	+14 17 41.8		031
744	1981	02 27.9243	10 01 03.45	+14 08 13.1		031

Note 1: weak image; remeasurement of observation on MPC 8327.

OBSERVATIONS MADE AT TAUTENBURG BY F. BORNGEN AND K.-H. MAU.

Plates taken with the 1.35-m (134/200/400 cm) Schmidt. Reductions by Borngen and Kirsch, using the SAO Catalog. Contact: S. Marx, Karl Schwarz-schild Observatorium, DDR-6901 Tautenburg, Democratic Republic of Germany.

Object		Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
993		1984	09 27.95972	00 53 15.43	+05 21 03.0	17.2	033
993		1984	09 27.98125	00 53 14.42	+05 20 56.0		033
1448		1984	09 28.03125	02 09 32.64	+09 02 14.3	16.8	033
1448		1984	09 28.07153	02 09 31.00	+09 02 09.8		033
1962		1984	09 27.95972	00 54 43.30	+05 37 14.4	16.3	033
1962		1984	09 27.98125	00 54 42.33	+05 37 09.5		033
1968		1984	09 28.03125	02 06 14.48	+07 30 44.3	17.0	033
1968		1984	09 28.07153	02 06 12.86	+07 30 36.4		033
2734		1984	09 28.03125	02 15 29.24	+08 43 01.6	17.5	033
2734		1984	09 28.07153	02 15 27.71	+08 43 00.9		033
1973	UL5	1984	09 27.95972	00 55 39.00	+06 09 59.1	18.3	033
1973	UL5	1984	09 27.98125	00 55 38.02	+06 09 54.2		033
1984	SX1	1984	09 27.95972	00 53 08.35	+07 34 05.5	17.0	033
1984	SX1	1984	09 27.98125	00 53 07.44	+07 33 54.2		033
1984	SD2	1984	09 27.95972	00 55 09.09	+07 28 38.4	17.6	033
1984	SD2	1984	09 27.98125	00 55 07.74	+07 28 39.3		033
1984	SX3 *	1984	09 27.95972	00 52 08.06	+05 26 12.6	18.1	033
1984	SX3	1984	09 27.98125	00 52 07.03	+05 26 07.8		033
1984	SY3 *	1984	09 27.95972	00 52 19.30	+07 21 41.8	18.2	033
1984	SY3	1984	09 27.98125	00 52 18.01	+07 21 36.8		033

1984	SZ3	*	1984	09	27.95972	00	53	11.32	+07	32	17.6	17.3	033
1984	SZ3		1984	09	27.98125	00	53	10.10	+07	32	09.1		033
1984	SA4	*	1984	09	27.95972	01	01	17.91	+06	10	58.8	18.9	033
1984	SA4		1984	09	27.98125	01	01	16.73	+06	10	48.1		033
1984	SB4	*	1984	09	27.95972	01	02	11.22	+05	37	37.3	18.4	033
1984	SB4		1984	09	27.98125	01	02	10.07	+05	37	25.1		033
1984	SC4	*	1984	09	28.03125	02	06	23.20	+06	45	32.7	18.6	033
1984	SC4		1984	09	28.07153	02	06	21.61	+06	45	35.7		033
1984	SD4	*	1984	09	28.03125	02	09	33.73	+08	00	58.8	17.3	033
1984	SD4		1984	09	28.07153	02	09	32.54	+08	00	44.0		033
1984	SE4	*	1984	09	28.03125	02	12	58.22	+09	36	49.8	17.2	033
1984	SE4		1984	09	28.07153	02	12	56.72	+09	36	41.7		033
1984	SF4	*	1984	09	28.03125	02	13	22.97	+07	30	51.7	18.7	033
1984	SF4		1984	09	28.07153	02	13	21.62	+07	30	35.9		033
1984	SG4	*	1984	09	28.03125	02	14	44.71	+08	20	24.6	18.6	033
1984	SG4		1984	09	28.07153	02	14	43.07	+08	20	08.9		033
1984	SH4	*	1984	09	28.03125	02	09	52.28	+08	13	03.0	18.1	033
1984	SH4		1984	09	28.07153	02	09	50.86	+08	12	51.7		033
1984	TB		1984	09	27.95972	00	56	57.94	+05	55	37.8	17.9	033
1984	TB		1984	09	27.98125	00	56	56.88	+05	55	32.8		033
1984	TD		1984	09	27.95972	00	57	46.80	+06	18	59.8	18.0	033
1984	TD		1984	09	27.98125	00	57	45.87	+06	18	53.7		033
1984	UN2		1984	09	27.95972	00	56	54.59	+06	18	48.3	18.8	033
1984	UN2		1984	09	27.98125	00	56	53.53	+06	18	42.0		033
6560	P-L		1984	09	28.03125	02	15	23.89	+08	26	53.0	18.0	033
6560	P-L		1984	09	28.07153	02	15	22.32	+08	26	43.0		033

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

Plates with the 0.6-m Maksutov reflector. Contact: A. Mrkos, Department of Astronomy and Astrophysics, Charles University, Svedska 8, C-15000 Prague 5, Czechoslovakia.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N Obs.
120	1984 09	01.91898	23 24 24.53	-02 39 39.5		046
120	1984 09	01.93345	23 24 23.82	-02 39 42.7		046
263	1984 10	28.87800	01 27 42.31	+09 31 19.1		046
263	1984 10	28.89218	01 27 41.74	+09 31 14.7		046
263	1984 10	29.82204	01 26 59.64	+09 26 38.4		046
263	1984 10	29.83622	01 26 58.99	+09 26 34.4		046
263	1984 10	30.92036	01 26 10.61	+09 21 11.2		046
263	1984 10	30.93461	01 26 10.00	+09 21 05.5		046
276	1984 10	17.91863	02 06 56.69	+12 51 04.9		046
276	1984 10	17.92934	02 06 56.27	+12 50 58.3		046
276	1984 10	18.88061	02 06 16.39	+12 41 34.1		046
276	1984 10	18.89485	02 06 15.80	+12 41 25.2		046
280	1984 10	18.93715	02 29 17.11	+19 59 53.9		046
280	1984 10	18.95133	02 29 16.38	+19 59 52.2		046
292	1984 10	20.98472	02 47 14.34	+13 21 11.7		046
292	1984 10	21.00411	02 47 13.20	+13 21 13.7		046
295	1984 10	18.93715	02 30 23.15	+19 04 20.3		046
295	1984 10	18.95133	02 30 22.40	+19 04 16.6		046
309	1984 10	28.96862	02 49 57.20	+20 44 10.4		046
309	1984 10	28.98274	02 49 56.29	+20 44 07.6		046
309	1984 10	29.94113	02 49 01.05	+20 41 21.3		046
309	1984 10	29.95531	02 49 00.22	+20 41 18.6		046
309	1984 10	30.99126	02 48 00.05	+20 38 13.3		046
309	1984 10	31.00544	02 47 59.18	+20 38 10.9		046
361	1984 10	17.84838	00 58 38.03	+06 05 43.1		046
361	1984 10	17.86262	00 58 37.39	+06 05 42.0		046
523	1984 10	06.05829	01 32 52.83	+15 58 02.8		046

636		1984	10	28.87800	01	28	29.06	+07	37	30.3	046
636		1984	10	28.89218	01	28	28.32	+07	37	29.0	046
636		1984	10	29.82204	01	27	41.04	+07	36	21.6	046
636		1984	10	29.83622	01	27	40.32	+07	36	20.6	046
636		1984	10	30.92036	01	26	45.87	+07	35	02.8	046
636		1984	10	30.93461	01	26	45.12	+07	35	01.9	046
650		1984	10	17.91863	02	03	50.53	+13	08	58.5	046
650		1984	10	17.92934	02	03	49.95	+13	08	54.4	046
650		1984	10	18.88061	02	03	03.88	+13	02	48.6	046
650		1984	10	18.89485	02	03	02.83	+13	02	43.9	046
650		1984	10	28.92291	01	54	38.12	+11	56	14.7	046
650		1984	10	28.93749	01	54	37.38	+11	56	08.2	046
650		1984	10	29.86521	01	53	51.39	+11	49	58.5	046
650		1984	10	29.87934	01	53	50.62	+11	49	52.7	046
650		1984	10	30.88542	01	53	01.24	+11	43	11.2	046
650		1984	10	30.89977	01	53	00.58	+11	43	06.2	046
659		1984	09	01.91898	23	22	17.85	-04	23	42.7	046
659		1984	09	01.93345	23	22	17.36	-04	23	46.0	046
905		1984	10	28.96862	02	56	33.83	+17	37	05.5	046
905		1984	10	28.98274	02	56	32.89	+17	37	06.6	046
905		1984	10	29.94113	02	55	30.88	+17	37	25.9	046
905		1984	10	29.95531	02	55	30.04	+17	37	28.7	046
905		1984	10	30.99126	02	54	22.02	+17	37	41.9	1 046
905		1984	10	31.00544	02	54	21.03	+17	37	41.6	046
1013		1984	10	28.87800	01	22	19.67	+08	35	21.7	046
1013		1984	10	28.89218	01	22	18.81	+08	35	21.1	046
1013		1984	10	29.82204	01	21	23.67	+08	34	18.4	046
1013		1984	10	29.83622	01	21	22.73	+08	34	17.0	046
1013		1984	10	30.92036	01	20	18.96	+08	33	04.8	046
1013		1984	10	30.93461	01	20	18.09	+08	33	03.7	046
1058		1984	10	17.91863	01	56	04.74	+13	41	00.7	046
1058		1984	10	17.92934	01	56	04.06	+13	40	54.6	046
1058		1984	10	28.92291	01	45	13.53	+12	09	25.7	046
1058		1984	10	28.93749	01	45	12.74	+12	09	19.2	046
1058		1984	10	29.86521	01	44	21.20	+12	01	44.3	046
1058		1984	10	29.87934	01	44	20.39	+12	01	36.7	046
1058		1984	10	30.88542	01	43	25.00	+11	53	27.7	046
1058		1984	10	30.89977	01	43	24.17	+11	53	20.5	046
1311		1984	10	28.96862	02	53	21.91	+18	31	37.2	046
1311		1984	10	28.98274	02	53	21.10	+18	31	32.2	046
1311		1984	10	29.94113	02	52	26.62	+18	26	34.1	046
1311		1984	10	29.95531	02	52	25.82	+18	26	32.5	046
1311		1984	10	30.99126	02	51	26.27	+18	21	06.3	046
1311		1984	10	31.00544	02	51	25.37	+18	21	01.4	046
1503		1984	10	16.83488	00	19	37.58	+20	23	50.6	046
1503		1984	10	16.85002	00	19	36.68	+20	23	47.0	046
1503		1984	10	17.79514	00	18	46.43	+20	19	09.5	046
1503		1984	10	17.80943	00	18	45.62	+20	19	05.8	046
1523		1984	09	01.91898	23	14	01.84	-02	07	48.2	046
1523		1984	09	01.93345	23	14	01.02	-02	07	51.0	046
1635		1984	10	17.91863	01	55	29.42	+10	36	26.4	046
1635		1984	10	17.92934	01	55	28.75	+10	36	24.5	046
1635		1984	10	18.88061	01	54	42.44	+10	31	31.8	046
1635		1984	10	18.89485	01	54	41.51	+10	31	32.1	046
1635		1984	10	28.92291	01	46	28.24	+09	40	01.2	046
1635		1984	10	28.93749	01	46	27.65	+09	39	58.1	046
1635		1984	10	29.86521	01	45	43.08	+09	35	18.3	046
1635		1984	10	29.87934	01	45	42.41	+09	35	15.6	046
1635		1984	10	30.88542	01	44	54.50	+09	30	11.7	046

1635		1984	10	30.89977	01	44	53.75	+09	30	07.6		046
2080		1984	10	28.82968	02	20	54.54	+15	50	21.7		046
2080		1984	10	28.84420	02	20	53.49	+15	50	18.6		046
2080		1984	10	29.90172	02	19	41.98	+15	47	19.4		046
2080		1984	10	29.91747	02	19	40.94	+15	47	17.5		046
2080		1984	10	30.95804	02	18	30.51	+15	44	17.1		046
2080		1984	10	30.97228	02	18	29.39	+15	44	14.5		046
2283		1984	10	17.84838	01	04	25.55	+06	04	59.3		046
2283		1984	10	17.86262	01	04	24.83	+06	04	52.8		046
2683		1984	10	28.96862	02	50	41.13	+18	27	22.4		046
2683		1984	10	28.98274	02	50	40.40	+18	27	19.2		046
2683		1984	10	29.94113	02	49	51.14	+18	24	08.8		046
2683		1984	10	29.95531	02	49	50.45	+18	24	07.4		046
2683		1984	10	30.99126	02	48	56.61	+18	20	34.9		046
2683		1984	10	31.00544	02	48	55.79	+18	20	33.0		046
2713		1984	10	28.82968	02	19	34.63	+15	46	10.4		046
2713		1984	10	28.84420	02	19	33.89	+15	46	07.6		046
2713		1984	10	29.90172	02	18	38.76	+15	41	48.9		046
2713		1984	10	29.91747	02	18	37.85	+15	41	46.1		046
2713		1984	10	30.95804	02	17	43.54	+15	37	30.0		046
2713		1984	10	30.97228	02	17	42.74	+15	37	26.9		046
2884		1984	10	28.87800	01	24	47.65	+08	07	08.4		046
2884		1984	10	28.89218	01	24	47.11	+08	07	05.2		046
2884		1984	10	29.82204	01	24	05.64	+08	03	52.5		046
2884		1984	10	29.83622	01	24	05.00	+08	03	48.7		046
2884		1984	10	30.92036	01	23	17.21	+08	00	05.2		046
2884		1984	10	30.93461	01	23	16.51	+08	00	01.6		046
1942	RN	1984	09	01.91898	23	24	32.10	-03	18	57.2		046
1942	RN	1984	09	01.93345	23	24	31.43	-03	19	04.5		046
1979	SS11	1984	10	28.92291	01	45	55.80	+11	11	05.0		046
1979	SS11	1984	10	28.93749	01	45	54.95	+11	11	01.8		046
1979	SS11	1984	10	29.86521	01	45	09.14	+11	07	23.4		046
1979	SS11	1984	10	29.87934	01	45	08.35	+11	07	18.7		046
1979	SS11	1984	10	30.88542	01	44	18.82	+11	03	21.4		046
1979	SS11	1984	10	30.89977	01	44	17.95	+11	03	17.3		046
1984	QO	1984	09	01.91898	23	13	23.80	-04	46	08.7		046
1984	QO	1984	09	01.93345	23	13	22.80	-04	46	09.6		046
1984	QP	1984	09	01.91898	23	23	10.28	-03	27	58.0		046
1984	QP	1984	09	01.93345	23	23	09.56	-03	27	58.2		046
1984	SX1	1984	09	27.96178	00	53	08.60	+07	34	02.7	16.5	046
1984	SX1	1984	09	27.97590	00	53	07.95	+07	33	57.2		046
1984	SB2	1984	10	28.87800	01	25	02.31	+07	07	11.8		046
1984	SB2	1984	10	28.89218	01	25	01.89	+07	06	57.1		046
1984	SB2	1984	10	29.82204	01	24	27.96	+06	47	44.5	2	046
1984	SB2	1984	10	29.83622	01	24	27.68	+06	47	28.3		046
1984	SB2	1984	10	30.92036	01	23	48.51	+06	25	13.7		046
1984	SH2	1984	09	01.91898	23	13	51.39	-03	09	06.5		046
1984	SH2	1984	09	01.93345	23	13	50.78	-03	09	11.1		046
1984	SZ3	1984	09	29.94850	00	51	21.13	+07	18	29.5		046
1984	SZ3	1984	09	29.96285	00	51	20.29	+07	18	24.1		046
1984	SZ3	1984	09	30.95041	00	50	24.98	+07	11	27.4		046
1984	SZ3	1984	09	30.96481	00	50	24.12	+07	11	22.1		046
1984	UC *	1984	10	17.84838	01	02	49.78	+02	49	56.8	17.0	046
1984	UC	1984	10	17.86262	01	02	49.16	+02	49	56.3		046
1984	UD *	1984	10	17.91863	01	57	07.44	+12	19	34.0	16.6	046
1984	UD	1984	10	17.92934	01	57	06.75	+12	19	36.6		046
1984	UD	1984	10	18.88061	01	56	10.84	+12	21	10.3		046
1984	UD	1984	10	18.89485	01	56	09.97	+12	21	15.0		046

1984	UD		1984	10	28.92291	01	46	03.34	+12	36	10.6	16.5	046
1984	UD		1984	10	28.93749	01	46	02.59	+12	36	12.7		046
1984	UD		1984	10	29.86521	01	45	07.37	+12	37	28.7		046
1984	UD		1984	10	29.87934	01	45	06.42	+12	37	30.7		046
1984	UD		1984	10	30.88542	01	44	06.70	+12	38	54.9		046
1984	UD		1984	10	30.89977	01	44	06.09	+12	38	57.0		046
1984	UE	*	1984	10	17.91863	01	58	13.75	+15	45	55.2	16.5	046
1984	UE		1984	10	17.92934	01	58	12.61	+15	45	50.8		046
1984	UF	*	1984	10	17.91863	01	58	37.93	+10	09	55.7	16.7	046
1984	UF		1984	10	17.92934	01	58	37.26	+10	09	52.9		046
1984	UG	*	1984	10	20.98472	02	56	52.39	+15	32	35.9	17.0	046
1984	UG		1984	10	21.00411	02	56	51.40	+15	32	31.2		046
1984	US		1984	10	28.96862	02	47	48.30	+19	21	36.5	15.0	046
1984	US		1984	10	28.98274	02	47	47.34	+19	21	40.1		046
1984	US		1984	10	29.94113	02	46	40.36	+19	25	48.9		046
1984	US		1984	10	29.95531	02	46	39.27	+19	25	53.4		046
1984	US		1984	10	30.99126	02	45	26.06	+19	30	15.7		046
1984	US		1984	10	31.00544	02	45	25.01	+19	30	19.3		046
1984	UT		1984	10	30.99126	02	49	30.17	+21	33	07.8	16.2	046
1984	UT		1984	10	31.00544	02	49	29.55	+21	32	57.3		046
1984	UU		1984	10	29.94113	02	53	58.21	+21	19	19.3	16.6	046
1984	UU		1984	10	29.95531	02	53	57.53	+21	19	15.0		046
1984	UU		1984	10	30.99126	02	53	07.36	+21	13	16.0		046
1984	UU		1984	10	31.00544	02	53	06.54	+21	13	10.2		046
1984	UA1	*	1984	10	28.82968	02	13	19.01	+15	51	06.8	17.0	046
1984	UA1		1984	10	28.84420	02	13	17.77	+15	51	07.7		046
1984	UA1		1984	10	29.90172	02	12	13.30	+15	52	06.7		046
1984	UA1		1984	10	29.91747	02	12	12.34	+15	52	09.1		046
1984	UA1		1984	10	30.95804	02	11	09.02	+15	53	04.9		046
1984	UA1		1984	10	30.97228	02	11	08.19	+15	53	05.2		046
1984	UB1	*	1984	10	28.82968	02	14	39.49	+15	13	27.1	16.7	046
1984	UB1		1984	10	28.84420	02	14	38.41	+15	13	23.6		046
1984	UB1		1984	10	29.90172	02	13	38.40	+15	12	10.6		046
1984	UB1		1984	10	29.91747	02	13	37.53	+15	12	09.4		046
1984	UB1		1984	10	30.95804	02	12	38.67	+15	10	55.2		046
1984	UB1		1984	10	30.97228	02	12	37.75	+15	10	54.4		046
1984	UC1	*	1984	10	28.82968	02	14	55.35	+16	25	24.2	2	046
1984	UC1		1984	10	28.84420	02	14	54.24	+16	25	24.9	16.8	046
1984	UC1		1984	10	29.90172	02	13	50.92	+16	18	55.5		046
1984	UC1		1984	10	29.91747	02	13	49.79	+16	18	48.8		046
1984	UC1		1984	10	30.95804	02	12	47.02	+16	12	15.4		046
1984	UC1		1984	10	30.97228	02	12	46.44	+16	12	13.0		046
1984	UD1	*	1984	10	28.82968	02	17	46.77	+14	27	03.7	16.9	046
1984	UD1		1984	10	28.84420	02	17	45.72	+14	27	02.8		046
1984	UD1		1984	10	29.90172	02	16	57.88	+14	19	07.1		046
1984	UD1		1984	10	29.91747	02	16	57.07	+14	19	04.5		046
1984	UD1		1984	10	30.95804	02	16	10.02	+14	11	09.4		046
1984	UD1		1984	10	30.97228	02	16	09.48	+14	11	02.6		046
1984	UE1	*	1984	10	28.82968	02	18	56.09	+14	46	25.7	16.8	046
1984	UE1		1984	10	28.84420	02	18	55.21	+14	46	23.4		046
1984	UE1		1984	10	29.90172	02	17	53.52	+14	43	21.3		046
1984	UE1		1984	10	29.91747	02	17	52.60	+14	43	20.0		046
1984	UE1		1984	10	30.95804	02	16	52.11	+14	40	18.8		046
1984	UE1		1984	10	30.97228	02	16	51.38	+14	40	15.2		046
1984	UF1	*	1984	10	28.82968	02	20	08.54	+14	51	08.7	16.7	046
1984	UF1		1984	10	28.84420	02	20	07.70	+14	51	02.5		046
1984	UF1		1984	10	29.90172	02	19	08.38	+14	44	58.6		046
1984	UF1		1984	10	29.91747	02	19	07.50	+14	44	55.2		046

1984	UF1		1984	10	30.95804	02	18	09.21	+14	38	54.3		046
1984	UF1		1984	10	30.97228	02	18	08.38	+14	38	49.8		046
1984	UG1	*	1984	10	28.87800	01	21	30.15	+08	32	47.4	17.1	046
1984	UG1		1984	10	28.89218	01	21	29.27	+08	32	41.6		046
1984	UG1		1984	10	29.82204	01	20	49.73	+08	29	06.7		046
1984	UG1		1984	10	29.83622	01	20	49.01	+08	29	01.5		046
1984	UG1		1984	10	30.92036	01	20	03.45	+08	24	51.2		046
1984	UG1		1984	10	30.93461	01	20	02.85	+08	24	47.6		046
1984	UH1	*	1984	10	28.92291	01	46	12.75	+11	02	13.1	17.2	046
1984	UH1		1984	10	28.93749	01	46	11.96	+11	02	12.6		046
1984	UJ1	*	1984	10	28.92291	01	47	27.91	+12	13	18.5	16.8	046
1984	UJ1		1984	10	28.93749	01	47	27.11	+12	13	21.5		046
1984	UJ1		1984	10	29.86521	01	46	33.29	+12	14	44.0		046
1984	UJ1		1984	10	29.87934	01	46	32.35	+12	14	46.4		046
1984	UJ1		1984	10	30.88542	01	45	34.47	+12	16	20.0		046
1984	UJ1		1984	10	30.89977	01	45	33.73	+12	16	22.0		046
1984	UK1	*	1984	10	28.92291	01	50	49.41	+13	10	50.3	17.0	046
1984	UK1		1984	10	28.93749	01	50	48.79	+13	10	45.7		046
1984	UK1		1984	10	29.86521	01	49	57.41	+13	04	12.9		046
1984	UK1		1984	10	29.87934	01	49	56.56	+13	04	04.9		046
1984	UK1		1984	10	30.88542	01	49	00.75	+12	57	00.2		046
1984	UK1		1984	10	30.89977	01	49	00.04	+12	56	53.4		046
1984	UL1	*	1984	10	28.92291	01	51	12.52	+11	00	08.8	17.0	046
1984	UL1		1984	10	28.93749	01	51	11.96	+11	00	06.4		046
1984	UL1		1984	10	29.86521	01	50	30.21	+10	55	42.7		046
1984	UL1		1984	10	29.87934	01	50	29.34	+10	55	38.3		046
1984	UL1		1984	10	30.88542	01	49	44.24	+10	50	53.1		046
1984	UL1		1984	10	30.89977	01	49	43.48	+10	50	50.5		046
1984	UM1	*	1984	10	28.92291	01	54	23.20	+12	38	01.8	16.8	046
1984	UM1		1984	10	28.93749	01	54	22.45	+12	37	55.8		046
1984	UM1		1984	10	29.86521	01	53	33.96	+12	32	09.1		046
1984	UM1		1984	10	29.87934	01	53	33.33	+12	32	05.1		046
1984	UM1		1984	10	30.88542	01	52	41.20	+12	25	47.2		046
1984	UM1		1984	10	30.89977	01	52	40.76	+12	25	43.3		046
1984	UN1	*	1984	10	28.96862	02	52	43.75	+21	05	44.2	16.8	046
1984	UN1		1984	10	28.98274	02	52	43.27	+21	05	39.8	1	046
1984	UN1		1984	10	29.94113	02	51	57.44	+21	01	36.0		046
1984	UN1		1984	10	29.95531	02	51	56.75	+21	01	31.6		046
1984	UN1		1984	10	30.99126	02	51	06.80	+20	57	01.1		046
1984	UN1		1984	10	31.00544	02	51	06.08	+20	56	57.5		046
1984	UO1	*	1984	10	28.98274	02	49	22.95	+21	05	11.0	1	046
1984	UO1		1984	10	29.94113	02	48	20.06	+21	04	41.0		046
1984	UO1		1984	10	29.95531	02	48	19.06	+21	04	41.1		046
1984	UO1		1984	10	30.99126	02	47	10.13	+21	04	03.3		046
1984	UO1		1984	10	31.00544	02	47	09.29	+21	04	01.4		046
1984	UD2	*	1984	10	29.82204	01	18	28.52	+09	05	08.5	17.0	046
1984	UD2		1984	10	29.83622	01	18	27.72	+09	05	08.1		046
1984	UD2		1984	10	30.92036	01	17	28.14	+09	04	19.0		046
1984	UD2		1984	10	30.93461	01	17	27.24	+09	04	19.1		046
1984	UB3		1984	10	29.86521	01	49	37.15	+12	14	30.0		046
1984	UB3		1984	10	29.87934	01	49	36.39	+12	14	25.3		046
1984	UB3		1984	10	30.88542	01	48	48.79	+12	09	42.0		046
1984	UB3		1984	10	30.89977	01	48	48.11	+12	09	37.8		046
1984	UD3		1984	10	28.92291	01	51	30.80	+10	18	30.6	16.8	046
1984	UD3		1984	10	28.93749	01	51	30.23	+10	18	21.4		046
1984	UD3		1984	10	29.86521	01	50	43.77	+10	09	44.2		046
1984	UD3		1984	10	29.87934	01	50	42.85	+10	09	36.9		046

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

OBSERVATIONS MADE AT BRORFELDE BY K. AUGUSTESEN, P. JENSEN AND H. J. FOGH OLSEN.

Observations made with the 0.45-m (45/77/150 cm) Schmidt. Contact: H. J. Fogh Olsen, Copenhagen University Observatory, Brorfelde, DK-4340 Tollose, Denmark.

Object		Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1543		1984 11	25.93056	02 24 00.97	+30 08 56.3	16.4	054
1955 RS		1984 11	25.95133	04 58 17.32	+42 25 19.7	16.3	054
1955 RS		1984 11	30.94230	04 51 50.72	+42 38 18.4	16.2	054
1977 TO3		1984 11	25.90914	01 57 44.54	+17 06 41.8	16.7	054
1984 SA		1984 10	26.89931	00 05 50.71	+10 53 09.2	16.5	054
1984 SJ4	*	1984 09	30.01458	00 20 19.41	+14 57 10.4	16.5	054
1984 SK4	*	1984 09	24.95278	00 24 41.55	+15 19 13.2	17.0	054
1984 UJ3	*	1984 10	23.97199	00 07 24.44	+11 15 36.5	16.5	054
1984 UJ3		1984 10	26.89931	00 06 30.28	+10 53 50.8	16.5	054
1984 UK3	*	1984 10	26.89931	00 05 40.48	+10 53 10.6	16.5	054
1984 WD	*	1984 11	25.93056	02 26 19.47	+28 57 09.2	16.5	054
1984 WE	*	1984 11	25.93056	02 27 33.98	+28 01 33.7	16.5	054
1984 WF	*	1984 11	25.93056	02 33 17.61	+28 14 36.2	17.0	054
1984 WG	*	1984 11	25.93056	02 34 05.14	+29 05 21.4	16.5	054
1984 WH	*	1984 11	25.95133	05 06 59.75	+40 37 35.5	16.3	054
1984 WH		1984 11	30.94230	05 01 05.58	+41 18 46.8	16.2	054

OBSERVATIONS MADE AT GEISEI BY T. SEKI.

Copied in part from Nihondaira Obs. Circ. No. 1483. Contact: T. Seki, Kamimachi 2-9-35, Kochi, Japan.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
1984 QE	1984 10	21.51493	22 47 11.82	-15 01 26.2		1	372
1984 QE	1984 10	21.53542	22 47 12.13	-15 01 16.7		1	372
1984 UA	1984 10	28.68854	02 02 15.54	+22 28 52.3	17		372
1984 UA	1984 10	28.72049	02 02 13.89	+22 28 37.0			372
1984 UA	1984 10	31.57465	01 59 40.55	+22 01 19.7	17		372
1984 UA	1984 10	31.58368	01 59 39.96	+22 01 15.8			372
1984 UA	1984 11	02.73646	01 57 46.64	+21 40 20.7	18		372
1984 UA	1984 11	03.73542	01 56 55.43	+21 30 32.3	18		372
1984 VA	1984 11	12.44062	03 02 26.30	+16 59 19.5	16.5		372
1984 VA	1984 11	12.45312	03 02 25.66	+16 59 18.3			372
1984 WC *	1984 11	27.63907	03 00 45.4	+21 57 47	15		372
1984 WC	1984 11	28.70417	02 59 59.23	+21 46 00.5	15		372
1984 WC	1984 11	28.71632	02 59 58.73	+21 45 56.6			372
1984 WC	1984 11	29.57187	02 59 23.47	+21 36 25.1	16		372
1984 WC	1984 11	30.69132	02 58 38.50	+21 24 08.4	16		372

Note 1: measured by T. Urata.

OBSERVATIONS MADE AT YATSUGATAKE OBSERVATORY BY A. TERUNUMA.

Measured by T. Urata. Copied from Nihondaira Obs. Circ. No. 1483. Contact: T. Urata, Nishitaka-cho 8-23, Shimizu, Shizuoka 424, Japan.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
2394	1981 02	06.76667	10 49 14.84	+08 36 11.6	17	386
2394	1981 02	06.80914	10 49 13.04	+08 36 23.7		386

OBSERVATIONS MADE AT MOUNT JOHN UNIVERSITY OBSERVATORY.

Plates taken with the 0.6-m f/14 Cassegrain reflector by A. C. Gilmore, measured by P. M. Kilmartin. Computational support from R. McIntosh and W. M. Kissling. Reductions using field plates from the Carter Observatory, AGK3, SAO Catalog and Cape Photographic Catalogue. Contact: A. C. Gilmore, P.O. Box 57, Lake Tekapo, New Zealand.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
2063	1984 08	25.73277	03 22 50.78	-36 38 50.9			474
2063	1984 08	25.74770	03 22 58.08	-36 38 59.6			474
3122	1984 08	25.43404	16 03 55.44	-46 11 26.7			474
3122	1984 08	25.44411	16 03 57.12	-46 11 03.0			474
1964 XA	1984 06	01.67235	18 15 58.26	-51 50 41.1		1	474
1964 XA	1984 06	01.71564	18 15 54.67	-51 50 59.1			474
1980 XM	1984 08	26.46633	20 59 01.38	-32 30 24.6			474
1980 XM	1984 08	26.48485	20 59 00.52	-32 30 22.8			474
1981 AA	1983 10	05.43101	20 43 40.29	-41 10 06.6			474
1981 AA	1983 10	05.45300	20 43 40.81	-41 10 03.9			474
1982 DA	1984 09	20.68936	04 42 59.72	-16 34 52.7			474
1982 RA	1984 05	31.67233	23 32 29.67	-48 16 02.7			474
1982 RA	1984 05	31.72466	23 32 36.33	-48 15 43.9			474
1983 LF	1984 05	29.72536	22 33 01.57	-06 00 46.7			474
1983 LF	1984 05	29.75626	22 33 02.97	-06 00 30.7			474
1983 LF	1984 07	26.54896	22 41 13.25	-00 00 27.5			474
1983 LF	1984 07	26.56296	22 41 12.81	-00 00 25.6			474
1983 LF	1984 08	25.63601	22 16 46.05	+00 11 33.8			474
1983 LF	1984 08	25.64943	22 16 45.23	+00 11 32.4			474
1984 KD	1984 07	25.72870	03 26 35.91	-40 48 12.0			474
1984 KD	1984 07	25.74387	03 26 35.13	-40 48 02.6			474
1984 QA	1984 09	20.55429	22 51 19.01	-24 24 21.9			474
1984 QA	1984 09	20.57594	22 51 15.69	-24 24 39.7			474
1984 QA	1984 09	21.50695	22 49 06.47	-24 36 54.9			474
1984 QA	1984 09	21.52895	22 49 03.30	-24 37 10.5			474
1984 QA	1984 09	23.59874	22 44 43.68	-24 59 37.7	17.6		474
1984 QA	1984 09	23.62119	22 44 40.95	-24 59 50.2			474

Note 1: on star trail.

OBSERVATIONS MADE AT THE OSSERVATORIO S. VITTORE.

Plates taken with the 0.45-m reflector by G. Sassi and G. Vacchi, blinked by Vacchi, measured by V. Goretti and E. Colombini, reduced by Colombini using a least-squares plate-constants solution with five SAO or AGK3 reference stars. Contact: E. Colombini, Via S. Vittore 44, I-40136 Bologna, Italy.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1428	1984 07	31.86458	18 44 22.52	-20 42 42.4	16.6	552
1428	1984 07	31.88819	18 44 21.44	-20 42 52.9		552
2235	1980 12	01.95764	04 53 46.63	+01 09 18.7		552
2235	1980 12	01.97639	04 53 45.65	+01 09 10.7		552
2235	1980 12	09.92083	04 47 23.40	+00 21 03.5		552
2235	1980 12	09.93611	04 47 22.72	+00 20 58.5		552
2235	1980 12	09.95278	04 47 21.91	+00 20 52.8		552
2235	1980 12	29.88889	04 33 22.41	-00 38 08.5		552
2235	1980 12	29.90417	04 33 21.80	-00 38 08.2		552
2235	1981 01	08.86042	04 28 56.63	-00 34 24.5		552
2235	1981 01	08.87569	04 28 56.24	-00 34 23.3		552
2235	1981 01	26.83819	04 27 05.92	+00 16 53.6		552
2235	1981 01	26.85486	04 27 05.89	+00 16 57.8		552
3104	1984 07	29.91597	19 09 51.11	+04 00 37.5	16.5	552
3104	1984 07	29.93958	19 09 50.20	+04 00 26.4		552
1938 SL	1984 10	29.81944	00 26 49.33	-03 54 52.1	15.8	552
1938 SL	1984 10	29.83681	00 26 48.85	-03 54 47.2		552
1969 DA	1984 07	30.88472	18 17 50.01	-19 40 46.8	16.0	552
1969 DA	1984 07	30.90972	18 17 49.26	-19 40 44.0		552
1979 SF9	1984 10	29.89583	01 14 49.84	+03 54 41.1	16.2	552
1979 SF9	1984 10	29.92639	01 14 48.53	+03 54 33.5		552

1982 FK 1984 10 30.88750 00 44 48.25 +07 40 03.8 15.5 552
1982 FK 1984 10 30.90903 00 44 47.37 +07 40 03.7 552

OBSERVATIONS MADE AT CATANIA.

Plates with the 0.41-m (41/61/122 cm) Schmidt, reduced using the AGK3 (when possible) or SAO Catalog. Contact: W. Ferreri, Osservatorio Astronomico di Torino, I-10025 Pino Torinese, Italy.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
2	1983 08	07.93550	18 24 52.25	+18 22 39.9	559
2	1983 08	07.95556	18 24 51.68	+18 22 27.0	559
90	1983 08	06.97326	23 11 23.22	-08 52 45.9	559
90	1983 08	06.99618	23 11 22.66	-08 52 49.8	559
90	1983 08	07.97326	23 10 57.60	-08 56 19.2	559
90	1983 08	07.99618	23 10 57.01	-08 56 24.1	559
90	1983 08	11.00799	23 09 32.21	-09 07 44.8	559
90	1983 08	11.03021	23 09 31.57	-09 07 49.3	559
367	1983 08	08.01424	22 50 41.76	-12 10 04.7	559
367	1983 08	08.03229	22 50 41.23	-12 10 17.9	559
367	1983 08	09.95660	22 49 16.52	-12 21 38.2	559
367	1983 08	09.97535	22 49 15.83	-12 21 50.0	559
367	1983 08	12.00590	22 47 41.01	-12 34 09.5	559
367	1983 08	12.02743	22 47 39.94	-12 34 24.0	559
480	1983 08	07.85556	18 28 03.15	+02 16 43.2	559
480	1983 08	07.88125	18 28 02.36	+02 16 39.3	559
1075	1983 08	04.05035	21 29 59.17	-25 35 09.4	559
1075	1983 08	04.06840	21 29 58.34	-25 35 17.0	559
1075	1983 08	05.01806	21 29 14.98	-25 42 36.2	559
1075	1983 08	05.04583	21 29 13.67	-25 42 50.2	559
1075	1983 08	05.93993	21 28 32.49	-25 49 39.7	559
1075	1983 08	05.95521	21 28 31.73	-25 49 45.2	559
1075	1983 08	07.90000	21 27 00.80	-26 04 20.8	559
1075	1983 08	07.91701	21 27 00.01	-26 04 28.3	559
1075	1983 08	09.92500	21 25 24.64	-26 19 09.6	559
1075	1983 08	09.94028	21 25 23.92	-26 19 16.6	559
2468	1983 08	05.97326	23 33 12.34	+06 39 00.6	559
2468	1983 08	05.99549	23 33 12.09	+06 39 01.7	559
2468	1983 08	07.01111	23 33 04.91	+06 39 32.9	559
2468	1983 08	07.04583	23 33 04.64	+06 39 33.3	559
2585	1983 08	10.04618	00 43 46.28	-00 34 24.9	559
2585	1983 08	10.06654	00 43 47.01	-00 34 27.7	559
2660	1983 08	10.97813	22 00 13.46	+07 24 52.8	559
2660	1983 08	10.99618	22 00 12.66	+07 24 47.0	559
2660	1983 08	11.97535	21 59 31.20	+07 19 10.3	559
2660	1983 08	11.99479	21 59 30.27	+07 19 03.9	559
2675	1983 08	06.97326	23 15 18.75	-07 57 19.7	559
2675	1983 08	06.99618	23 15 18.08	-07 57 23.0	559
2675	1983 08	07.97326	23 14 53.41	-07 59 18.9	559
2675	1983 08	07.99618	23 14 52.81	-07 59 22.0	559
2675	1983 08	11.00799	23 13 24.70	-08 06 16.8	559
2675	1983 08	11.03021	23 13 23.96	-08 06 20.6	559
2831	1983 08	03.98125	21 45 26.82	-21 25 08.0	559
2831	1983 08	04.00903	21 45 25.51	-21 25 21.1	559
2831	1983 08	04.97292	21 44 42.07	-21 32 35.7	559
2831	1983 08	04.99306	21 44 41.17	-21 32 44.9	559
2831	1983 08	06.93958	21 43 10.04	-21 47 18.5	559
2831	1983 08	06.96250	21 43 08.89	-21 47 28.1	559
2831	1983 08	10.02118	21 40 37.37	-22 09 56.1	559
2831	1983 08	10.03299	21 40 36.70	-22 10 02.0	559

OBSERVATIONS MADE AT THE OSSERVATORIO CHAONIS BY C. R. BAUR AND J. M. BAUR.

Plates taken with the 0.40-m f/4.5 reflector, blinked by G. Carniel, measured and reduced by J. M. Baur using four or five SAO or AGK3 reference stars. Contact: J. M. Baur, Via Zara 20, I-33083 Chions, Italy.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1972 RU2	1984 11	27.96388	04 44 19.81	+33 18 56.1	16.8	567
1972 RU2	1984 11	27.97153	04 44 19.17	+33 18 54.4		567
1983 TB	1984 11	27.99583	05 31 23.68	+39 59 36.1	15.7	567
1983 TB	1984 11	28.00694	05 31 20.18	+39 59 39.9		567
1983 TB	1984 11	28.01805	05 31 16.74	+39 59 44.0		567

OBSERVATION MADE AT MAUNA KEA BY D. J. THOLEN.

Observation made using the encoders at the Infrared Telescope Facility. Contact: D. J. Tholen, Institute for Astronomy, 2680 Woodlawn Drive, Honolulu, HI 96822, U.S.A.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
1984 KD	1984 09	04.54306	02 37 33.68	-37 14 23.0	568

OBSERVATION MADE AT VICTORIA BY D. D. BALAM.

Film (Kodak 2415 emulsion) taken with a 0.25-m f/2 Schmidt (Celestron 10). Measurements on single-coordinate engine. Eight reference stars from SAO Catalog, least-squares plate-constants solution (Tatum 1982, J. Roy. Astron. Soc. Canada 76, 97). Contact: J. B. Tatum, Dept of Physics, University of Victoria, P.O. Box 1700, Victoria, BC, V8W 2Y2, Canada.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
1942 RN	1984 09	19.25780	23 11 06.17	-05 51 48.2	657

OBSERVATIONS MADE AT PALOMAR.

Palomar-Leiden Survey plates taken with the 1.2-m Schmidt by T. Gehrels, scanned and measured by C. J. van Houten and I. van Houten-Groeneveld at Leiden. Computational support from the late P. Herget. Contact: C. J. van Houten, Sterrewacht, Huygens Laboratorium, Wassenaarseweg 78, 2300 RA Leiden 2405, The Netherlands.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
2055 P-L *	1960 09	24.45000	00 41 38.62	+10 56 00.5	19.4	675
2055 P-L	1960 09	26.37010	00 39 40.94	+10 50 49.9		675
2055 P-L	1960 09	28.45140	00 37 31.64	+10 44 45.9		675
2055 P-L	1960 09	29.44510	00 36 29.73	+10 41 41.8		675
2055 P-L	1960 10	17.30420	00 18 39.34	+09 35 46.7		675
2055 P-L	1960 10	22.27920	00 14 24.81	+09 16 37.1		675
2055 P-L	1960 10	25.37570	00 12 01.71	+09 05 11.5		675
2091 P-L *	1960 09	24.45000	00 38 14.09	+10 34 41.0	18.1	675
2091 P-L	1960 09	26.37010	00 36 36.59	+10 23 07.9		675
2091 P-L	1960 10	17.30420	00 19 06.25	+07 53 55.7		675
2091 P-L	1960 10	22.27920	00 15 50.59	+07 18 39.4		675
2091 P-L	1960 10	25.37570	00 14 07.90	+06 58 03.4		675
2091 P-L	1960 10	26.36840	00 13 38.44	+06 51 42.4		675
2093 P-L *	1960 09	24.45000	00 56 28.27	+11 29 44.6	18.0	675
2093 P-L	1960 09	26.37010	00 55 09.93	+11 17 38.4		675
2093 P-L	1960 09	28.45140	00 53 43.07	+11 04 02.2		675
2093 P-L	1960 09	29.44510	00 53 01.16	+10 57 27.6		675
2093 P-L	1960 10	22.27920	00 37 11.94	+08 13 39.4		675
2093 P-L	1960 10	25.37570	00 35 22.05	+07 52 00.3		675
2093 P-L	1960 10	26.36840	00 34 48.62	+07 45 11.4		675
2103 P-L *	1960 09	24.45000	00 38 21.90	+06 36 52.1	18.7	675
2103 P-L	1960 09	26.30558	00 36 52.06	+06 26 05.2		675
2103 P-L	1960 09	28.36808	00 35 10.86	+06 13 52.2		675
2103 P-L	1960 10	17.30420	00 20 12.35	+04 19 58.3		675
2103 P-L	1960 10	22.26809	00 16 50.12	+03 52 33.3		675

2103	P-L		1960	10	22.27920	00	16	49.54	+03	52	29.1	675
2103	P-L		1960	10	25.30351	00	14	57.90	+03	36	51.9	675
2103	P-L		1960	10	26.32573	00	14	22.28	+03	31	49.3	675
2103	P-L		1960	10	26.35766	00	14	21.13	+03	31	38.9	675
2594	P-L	*	1960	09	24.46184	00	46	10.85	+02	20	25.0	19.0 675
2594	P-L		1960	09	26.37988	00	44	44.65	+02	09	39.0	675
2594	P-L		1960	09	28.43822	00	43	10.56	+01	58	04.8	675
2594	P-L		1960	09	29.39514	00	42	26.57	+01	52	40.4	675
2594	P-L		1960	10	17.31529	00	28	59.96	+00	17	42.6	675
2594	P-L		1960	10	22.26809	00	25	45.77	-00	04	01.3	675
2594	P-L		1960	10	25.30351	00	23	57.65	-00	15	51.5	675
2594	P-L		1960	10	26.35766	00	23	22.21	-00	19	41.7	675
2631	P-L	*	1960	09	24.41183	00	35	58.84	+02	31	39.0	17.4 675
2631	P-L		1960	09	24.46184	00	35	56.44	+02	31	25.7	675
2631	P-L		1960	09	26.31530	00	34	34.37	+02	23	27.5	675
2631	P-L		1960	09	27.40836	00	33	45.06	+02	18	43.0	675
2631	P-L		1960	09	28.39725	00	33	00.34	+02	14	23.8	675
2631	P-L		1960	10	17.31529	00	19	05.80	+00	56	13.5	675
2631	P-L		1960	10	22.26809	00	15	59.05	+00	39	39.9	675
2631	P-L		1960	10	25.30351	00	14	16.28	+00	30	50.3	675
2631	P-L		1960	10	26.35766	00	13	42.81	+00	28	01.5	675
3040	P-L	*	1960	09	24.27708	00	20	09.56	+18	28	17.7	17.7 675
3040	P-L		1960	09	24.36250	00	20	04.90	+18	28	00.7	675
3040	P-L		1960	09	25.36042	00	19	13.68	+18	24	49.7	675
3040	P-L		1960	09	25.46250	00	19	08.19	+18	24	30.0	675
3040	P-L		1960	09	26.24514	00	18	28.60	+18	21	48.6	675
3040	P-L		1960	09	26.40208	00	18	20.02	+18	21	14.1	675
3040	P-L		1960	09	27.44444	00	17	26.27	+18	17	20.9	675
3040	P-L		1960	09	28.40764	00	16	36.82	+18	13	31.9	675
3040	P-L		1960	09	28.46181	00	16	33.87	+18	13	19.1	675
3040	P-L		1960	10	17.17917	00	02	20.50	+16	25	42.0	675
3040	P-L		1960	10	17.33750	00	02	14.61	+16	24	37.0	675
3040	P-L		1960	10	22.17778	23	59	43.04	+15	51	28.9	675
3040	P-L		1960	10	24.21256	23	58	50.83	+15	37	37.3	675
3040	P-L		1960	10	25.20486	23	58	28.17	+15	30	53.9	675
3040	P-L		1960	10	26.28264	23	58	05.34	+15	23	41.3	675
3524	P-L	*	1960	10	17.23681	00	27	16.07	+15	35	10.0	17.7 675
3524	P-L		1960	10	22.12083	00	22	45.72	+15	21	27.8	675
3524	P-L		1960	10	22.17778	00	22	42.69	+15	21	17.9	675
3524	P-L		1960	10	22.29097	00	22	36.44	+15	20	58.6	675
3524	P-L		1960	10	24.21256	00	20	57.56	+15	15	19.3	675
3524	P-L		1960	10	24.30972	00	20	52.54	+15	15	02.0	675
3524	P-L		1960	10	25.20486	00	20	08.39	+15	12	22.6	675
3524	P-L		1960	10	25.32778	00	20	02.18	+15	12	01.9	675
3524	P-L		1960	10	26.28264	00	19	16.19	+15	09	11.4	675
3524	P-L		1960	10	26.37951	00	19	11.45	+15	08	52.9	675
4016	P-L	*	1960	09	24.37573	00	18	42.76	+05	29	52.7	17.2 675
4016	P-L		1960	09	25.42780	00	17	48.86	+05	25	59.8	675
4016	P-L		1960	09	26.30558	00	17	04.02	+05	22	45.0	675
4016	P-L		1960	09	28.32780	00	15	20.23	+05	15	05.9	675
4016	P-L		1960	09	28.36808	00	15	18.14	+05	14	56.0	675
4016	P-L		1960	10	17.27085	00	00	23.18	+04	02	58.4	675
4016	P-L		1960	10	22.22293	23	57	17.16	+03	46	44.2	675
4016	P-L		1960	10	24.35836	23	56	05.74	+03	40	25.8	675
4016	P-L		1960	10	26.32573	23	55	05.32	+03	35	00.1	675
4069	P-L	*	1960	09	24.37573	00	31	15.25	+07	17	40.5	18.7 675
4069	P-L		1960	09	25.42780	00	30	31.78	+07	10	45.9	675
4069	P-L		1960	09	26.30558	00	29	55.54	+07	04	54.8	675
4069	P-L		1960	09	28.36808	00	28	29.41	+06	51	02.3	675

4069	P-L		1960	10	17.30420	00	15	52.15	+04	41	09.1	675
4069	P-L		1960	10	22.22293	00	13	05.58	+04	09	28.8	675
4069	P-L		1960	10	22.27920	00	13	03.72	+04	09	10.6	675
4069	P-L		1960	10	24.35836	00	11	59.26	+03	56	22.7	675
4069	P-L		1960	10	26.32573	00	11	02.13	+03	44	40.9	675
4122	P-L	*	1960	09	24.37573	00	35	02.33	+04	51	30.6	17.3 675
4122	P-L		1960	09	25.42780	00	34	14.38	+04	46	01.0	675
4122	P-L		1960	09	26.30558	00	33	34.29	+04	41	24.6	675
4122	P-L		1960	09	28.36808	00	31	58.92	+04	30	25.5	675
4122	P-L		1960	10	17.31529	00	17	51.28	+02	50	02.1	675
4122	P-L		1960	10	22.22293	00	14	46.07	+02	27	09.4	675
4122	P-L		1960	10	22.26809	00	14	44.43	+02	26	57.5	675
4122	P-L		1960	10	24.35836	00	13	32.71	+02	17	59.2	675
4122	P-L		1960	10	25.30351	00	13	02.13	+02	14	05.4	675
4122	P-L		1960	10	26.32573	00	12	29.86	+02	09	59.9	675
4122	P-L		1960	10	26.35766	00	12	28.88	+02	09	51.7	675
4237	P-L	*	1960	09	24.37573	00	26	55.55	+05	06	28.9	19.3 675
4237	P-L		1960	09	25.42780	00	25	55.64	+05	01	00.5	675
4237	P-L		1960	09	26.30558	00	25	05.62	+04	56	24.5	675
4237	P-L		1960	09	28.36808	00	23	06.83	+04	45	25.9	675
4237	P-L		1960	10	17.27085	00	06	02.47	+03	05	01.9	675
4237	P-L		1960	10	22.22293	00	02	26.23	+02	42	31.5	675
4237	P-L		1960	10	26.32573	23	59	52.78	+02	26	10.0	675
4601	P-L	*	1960	09	24.41183	00	25	48.91	-02	02	06.9	18.2 675
4601	P-L		1960	09	26.31530	00	24	18.06	-02	11	32.1	675
4601	P-L		1960	09	27.40836	00	23	25.21	-02	16	55.6	675
4601	P-L		1960	09	28.39725	00	22	37.36	-02	21	45.2	675
4601	P-L		1960	10	17.28198	00	08	01.25	-03	40	57.1	675
4601	P-L		1960	10	22.23406	00	04	50.10	-03	55	00.9	675
4601	P-L		1960	10	25.25350	00	03	06.65	-04	01	45.2	675
4601	P-L		1960	10	26.31531	00	02	32.83	-04	03	46.3	675
4650	P-L	*	1960	09	24.33613	00	12	23.81	+00	52	10.1	18.2 675
4650	P-L		1960	09	24.41183	00	12	19.43	+00	51	45.4	675
4650	P-L		1960	09	25.32502	00	11	28.01	+00	46	57.6	675
4650	P-L		1960	09	26.27573	00	10	34.47	+00	41	56.4	675
4650	P-L		1960	09	28.32780	00	08	38.97	+00	31	10.5	675
4650	P-L		1960	10	17.28198	23	52	43.64	-00	56	14.1	675
4650	P-L		1960	10	22.15559	23	49	35.95	-01	12	36.6	675
4650	P-L		1960	10	22.23406	23	49	33.06	-01	12	52.7	675
4650	P-L		1960	10	24.18787	23	48	27.01	-01	18	28.9	675
4650	P-L		1960	10	25.25350	23	47	53.06	-01	21	18.6	675
4650	P-L		1960	10	26.26113	23	47	22.59	-01	23	47.8	675
4657	P-L	*	1960	09	24.35002	00	11	35.04	-00	09	19.6	17.5 675
4657	P-L		1960	09	24.41183	00	11	32.04	-00	09	38.2	675
4657	P-L		1960	09	26.28543	00	10	06.99	-00	19	10.9	675
4657	P-L		1960	09	27.34237	00	09	18.68	-00	24	32.4	675
4657	P-L		1960	09	28.33822	00	08	33.48	-00	29	34.6	675
4657	P-L		1960	10	17.28198	23	55	34.82	-01	53	46.2	675
4657	P-L		1960	10	22.23406	23	52	59.70	-02	09	45.6	675
4657	P-L		1960	10	25.25350	23	51	39.11	-02	17	53.0	675
4657	P-L		1960	10	26.31531	23	51	13.42	-02	20	25.6	675
5557	P-L		1960	09	24.46184	00	38	39.29	+04	44	17.9	675
5557	P-L		1960	09	26.37988	00	37	16.69	+04	36	01.2	675
5557	P-L		1960	09	28.36808	00	35	50.26	+04	27	20.4	675
5557	P-L	*	1960	10	17.31529	00	22	25.96	+03	05	08.7	20.0 675
5557	P-L		1960	10	22.26809	00	19	20.62	+02	45	53.4	675
5557	P-L		1960	10	25.30351	00	17	35.71	+02	34	58.5	675
5557	P-L		1960	10	26.35766	00	17	00.96	+02	31	19.6	675

6092	P-L	*	1960	09	24.33613	23	51	39.07	+04	11	35.1	18.1	675
6092	P-L		1960	09	25.32502	23	50	52.56	+04	03	02.2		675
6092	P-L		1960	09	26.27573	23	50	08.04	+03	54	48.1		675
6092	P-L		1960	10	17.21390	23	36	13.74	+01	03	49.3		675
6092	P-L		1960	10	22.15559	23	33	58.78	+00	29	46.6		675
6092	P-L		1960	10	24.18787	23	33	11.90	+00	16	49.0		675
6092	P-L		1960	10	26.26113	23	32	29.61	+00	04	12.8		675
6519	P-L	*	1960	09	24.41183	00	14	05.90	-01	00	01.0	18.4	675
6519	P-L		1960	09	26.28543	00	12	38.40	-01	08	00.5		675
6519	P-L		1960	09	26.31530	00	12	37.02	-01	08	08.7		675
6519	P-L		1960	09	27.34237	00	11	48.77	-01	12	30.0		675
6519	P-L		1960	09	27.40836	00	11	45.67	-01	12	47.4		675
6519	P-L		1960	09	28.33822	00	11	02.09	-01	16	42.6		675
6519	P-L		1960	09	28.39725	00	10	59.34	-01	16	58.6		675
6519	P-L		1960	10	17.28198	23	57	10.68	-02	27	11.5		675
6519	P-L		1960	10	22.23406	23	54	11.31	-02	40	39.4		675
6519	P-L		1960	10	25.25350	23	52	33.57	-02	47	31.3		675
6519	P-L		1960	10	26.31531	23	52	01.39	-02	49	39.6		675
6536	P-L	*	1960	09	24.35002	00	06	01.74	-00	08	10.6	16.8	675
6536	P-L		1960	09	26.28543	00	04	36.01	-00	17	55.0		675
6536	P-L		1960	09	27.34237	00	03	49.16	-00	23	12.2		675
6536	P-L		1960	09	28.33822	00	03	05.26	-00	28	09.8		675
6536	P-L		1960	10	17.21390	23	50	50.92	-01	49	58.2		675
6536	P-L		1960	10	17.28198	23	50	48.71	-01	50	12.8		675
6536	P-L		1960	10	22.15559	23	48	31.76	-02	05	06.6		675
6536	P-L		1960	10	22.23406	23	48	29.70	-02	05	20.1		675
6536	P-L		1960	10	24.18787	23	47	43.22	-02	10	20.7		675
6536	P-L		1960	10	26.26113	23	46	59.18	-02	15	02.6		675
6543	P-L	*	1960	09	24.35002	00	09	15.56	-02	37	52.9	17.2	675
6543	P-L		1960	09	26.28543	00	07	48.79	-02	46	47.1		675
6543	P-L		1960	09	27.34237	00	07	01.51	-02	51	33.7		675
6543	P-L		1960	09	28.33822	00	06	17.22	-02	56	00.8		675
6543	P-L		1960	10	17.28198	23	54	00.70	-04	02	44.2		675
6543	P-L		1960	10	22.23406	23	51	42.83	-04	12	39.6		675
6543	P-L		1960	10	25.25350	23	50	33.65	-04	16	53.2		675
6543	P-L		1960	10	26.31531	23	50	12.06	-04	18	01.9		675
6563	P-L	*	1960	09	24.35002	00	04	52.24	-00	45	23.6	17.4	675
6563	P-L		1960	09	26.28543	00	03	08.85	-00	51	58.9		675
6563	P-L		1960	09	28.33822	00	01	19.59	-00	58	52.0		675
6563	P-L		1960	10	17.21390	23	46	17.99	-01	50	44.2		675
6563	P-L		1960	10	22.15559	23	43	15.78	-01	58	54.3		675
6563	P-L		1960	10	24.18787	23	42	09.55	-02	01	26.6		675
6563	P-L		1960	10	26.26113	23	41	07.46	-02	03	28.8		675
6624	P-L	*	1960	09	24.35002	23	58	22.24	-05	37	16.6	18.5	675
6624	P-L		1960	09	26.28543	23	56	32.88	-05	46	25.7		675
6624	P-L		1960	09	27.34237	23	55	33.35	-05	51	15.0		675
6624	P-L		1960	09	28.33822	23	54	37.81	-05	55	39.8		675
6624	P-L		1960	10	17.22501	23	39	57.25	-06	48	56.0		675
6624	P-L		1960	10	22.16324	23	37	31.26	-06	51	14.6		675
6624	P-L		1960	10	24.23753	23	36	43.09	-06	50	38.6		675
6624	P-L		1960	10	26.27157	23	36	03.77	-06	49	08.3		675
6787	P-L	*	1960	09	24.35002	00	07	22.20	-00	35	04.0	18.1	675
6787	P-L		1960	09	26.28543	00	05	26.66	-00	48	01.0		675
6787	P-L		1960	09	27.34237	00	04	23.59	-00	55	00.9		675
6787	P-L		1960	09	28.33822	00	03	24.73	-01	01	34.4		675
6787	P-L		1960	10	17.21390	23	47	17.50	-02	45	53.7		675
6787	P-L		1960	10	22.15559	23	44	19.91	-03	04	04.4		675
6787	P-L		1960	10	26.27157	23	42	22.91	-03	15	34.1		675

OBSERVATION MADE WITH THE 1.2-M SCHMIDT AT PALOMAR.

Plate taken by C. Kowal, scanned and measured by P. Garnavich. Contact: P. Garnavich, Space Telescope Science Institute, Homewood Campus, Baltimore, MD 21218, U.S.A.

Object	Date	UT	R. A. (1950)	Decl.	Daily mot.	Mag.	Obs.
1982 KF4 *	1982 05	21.20000	13 00 24.98	+28 14 50.8	0.3- 18-	16	675

OBSERVATIONS MADE WITH THE 1.2-M SCHMIDT AT PALOMAR BY E. HELIN AND R. S. DUNBAR.

Contact: E. Helin, Jet Propulsion Laboratory, Pasadena, CA 91109, U.S.A.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
1983 RD	1984 01	04.26736	04 37 00.26	-01 32 45.3	675
1983 RD	1984 01	04.27778	04 37 00.54	-01 32 33.0	675
1983 RD	1984 01	07.24028	04 38 11.60	-00 33 30.2	675
1983 RD	1984 01	07.25417	04 38 11.89	-00 33 17.6	675
1984 SE	1984 09	22.32199	23 55 59.26	+03 34 04.6	675
1984 SE	1984 09	22.34282	23 55 58.23	+03 33 39.0	675
1984 SF	1984 09	22.32199	00 09 56.73	+06 46 28.8	675
1984 SF	1984 09	22.34282	00 09 54.37	+06 46 49.2	675
1984 SG	1984 09	22.32199	00 11 49.52	+04 24 29.7	675
1984 SG	1984 09	22.34282	00 11 47.40	+04 24 45.3	675
1984 SG	1984 09	24.35556	00 08 14.36	+04 46 22.0	675

OBSERVATIONS MADE AT PALOMAR BY C. SHOEMAKER AND E. SHOEMAKER.

Four-minute exposures with the 0.46-m Schmidt telescope. Film pairs scanned by C. Shoemaker with a stereomicroscope; measured by her with a Mann comparator at the U.S. Geological Survey. Reference stars from the SAO Catalog. Contact: C. Shoemaker, P.O. Box 984, Flagstaff, AZ 86002, U.S.A.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
2099	1984 10	27.20903	01 32 02.33	+20 13 07.9		675
2099	1984 10	27.44034	01 32 04.41	+20 00 15.1		675
3001	1984 10	25.42569	01 56 18.91	+45 36 45.5	16.5	675
3001	1984 10	26.38402	01 55 08.56	+45 32 42.7		675
3001	1984 10	27.31458	01 54 00.54	+45 28 21.8		675
1931 VP	1984 10	25.16319	23 44 15.58	-05 46 26.6	16.5	675
1931 VP	1984 10	26.18056	23 43 25.13	-05 24 03.7		675
1931 VP	1984 10	27.13681	23 42 41.17	-05 03 10.2		675
1931 VP	1984 10	27.17569	23 42 39.25	-05 02 18.9		675
1984 SV3 *	1984 09	26.34375	23 45 18.12	+07 29 19.1	17	675
1984 SV3	1984 09	26.38056	23 45 16.40	+07 28 12.8		675
1984 SV3	1984 09	29.28958	23 43 09.48	+06 01 03.7		675
1984 SV3	1984 09	29.32917	23 43 07.72	+05 59 53.3		675
1984 SW3 *	1984 09	27.42917	01 29 24.93	+30 45 58.1	16	675
1984 SW3	1984 09	28.47708	01 28 48.68	+30 50 39.3		675
1984 SW3	1984 10	23.30277	01 09 11.03	+30 24 50.8	15	675
1984 SW3	1984 10	26.24583	01 06 54.18	+30 05 12.4		675
1984 UT	1984 11	21.29456	02 33 48.13	+16 38 11.0		675
1984 UT	1984 11	24.34653	02 32 00.35	+15 56 44.7	16	675
1984 UL2 *	1984 10	23.30277	01 27 10.75	+33 59 15.7	15.5	675
1984 UL2	1984 10	23.41944	01 27 03.35	+33 58 36.6		675
1984 UL2	1984 10	27.30972	01 23 08.45	+33 33 29.5		675
1984 UM2 *	1984 10	23.44722	03 02 28.20	+39 30 39.5	16	675
1984 UM2	1984 10	25.46527	03 00 42.83	+39 38 06.6		675
1984 UM2	1984 10	26.42430	02 59 50.69	+39 41 03.8		675
1984 UM2	1984 10	27.36458	02 58 58.37	+39 43 33.5		675
1984 UR2 *	1984 10	25.46527	03 00 16.09	+36 04 05.1	17	675
1984 UR2	1984 10	26.42430	02 59 18.80	+36 05 15.7		675
1984 WB *	1984 11	21.40417	05 08 28.56	+24 18 27.4	15.5	675
1984 WB	1984 11	24.40625	05 04 41.62	+23 15 40.6		675

OBSERVATIONS MADE AT THE LOWELL OBSERVATORY'S ANDERSON MESA STATION.
Plates with the 0.33-m photographic telescope. Observers B. A. Skiff and N. G. Thomas. Measured by E. Bowell, S. J. Bus and Skiff using a PDS scanning microdensitometer. SAO reference stars, global solutions.
Contact: E. L. G. Bowell, Lowell Observatory, P.O. Box 1269, Flagstaff, AZ 86002, U.S.A.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N Obs.
24	1984 10	29.36528	02 42 37.42	+15 52 52.5		688
24	1984 10	29.39306	02 42 36.04	+15 52 45.3		688
24	1984 10	31.31389	02 41 03.23	+15 46 04.8		688
24	1984 10	31.34444	02 41 01.85	+15 45 59.1		688
26	1984 10	26.13403	23 27 57.54	-07 06 49.1		688
26	1984 10	26.22292	23 27 55.63	-07 06 49.5		688
37	1984 10	26.26389	01 21 35.99	+10 35 28.9		688
37	1984 10	26.31667	01 21 33.01	+10 35 16.9		688
37	1984 10	31.25243	01 17 20.50	+10 17 48.1		688
37	1984 10	31.28333	01 17 18.93	+10 17 41.6		688
47	1984 10	26.08958	22 53 26.31	-07 35 16.6		688
65	1984 10	23.23958	00 52 38.61	+02 05 04.8		688
65	1984 10	23.33889	00 52 34.87	+02 04 41.8		688
83	1984 10	26.26389	01 35 23.12	+10 05 58.2		688
83	1984 10	26.31667	01 35 19.89	+10 05 46.2		688
83	1984 10	31.25243	01 30 36.70	+09 48 03.5		688
83	1984 10	31.28333	01 30 34.78	+09 47 58.2		688
109	1984 10	26.08958	22 43 23.27	-08 29 41.7		688
120	1984 10	26.08958	22 52 03.31	-04 41 16.5		688
144	1984 10	29.36528	02 52 17.72	+10 52 19.2		688
144	1984 10	29.39306	02 52 16.15	+10 52 16.0		688
144	1984 10	31.31389	02 50 29.56	+10 49 28.2		688
144	1984 10	31.34444	02 50 27.88	+10 49 26.0		688
159	1984 10	23.22083	00 41 09.68	-03 55 52.5		688
159	1984 10	23.31944	00 41 05.76	-03 56 15.0		688
159	1984 10	29.15694	00 37 34.89	-04 15 53.9		688
159	1984 10	29.23194	00 37 32.24	-04 16 07.1		688
162	1984 10	26.40694	04 00 39.13	+23 14 46.3		688
162	1984 10	26.44444	04 00 37.70	+23 14 47.2		688
180	1984 10	26.31667	01 11 18.48	+08 57 14.9		688
180	1984 10	31.25243	01 07 22.50	+08 32 59.0		688
180	1984 10	31.28333	01 07 20.99	+08 32 49.4		688
187	1984 10	26.40694	03 49 25.25	+27 54 19.8		688
187	1984 10	26.44444	03 49 23.50	+27 54 21.3		688
195	1984 10	26.40694	03 55 37.78	+27 51 31.9		688
195	1984 10	26.44444	03 55 36.15	+27 51 34.1		688
236	1984 10	23.23958	00 54 56.85	+02 13 46.9		688
236	1984 10	23.33889	00 54 53.03	+02 13 02.4		688
246	1984 10	29.25069	00 49 55.39	-09 21 23.8		688
246	1984 10	29.28073	00 49 54.30	-09 21 31.8		688
262	1984 10	26.38819	02 56 04.78	+17 12 38.5		688
262	1984 10	26.42569	02 56 02.56	+17 12 43.2		688
262	1984 10	31.32917	02 51 14.15	+17 22 13.0		688
262	1984 10	31.35972	02 51 12.16	+17 22 13.6		688
263	1984 10	26.26389	01 29 43.49	+09 44 39.9		688
263	1984 10	26.31667	01 29 40.91	+09 44 23.8		688
263	1984 10	31.25243	01 25 56.19	+09 19 34.2		688
263	1984 10	31.28333	01 25 54.83	+09 19 24.3		688
276	1984 10	29.32326	01 58 47.29	+10 56 42.8		688
276	1984 10	29.35000	01 58 46.09	+10 56 26.5		688
276	1984 10	31.26806	01 57 24.55	+10 37 11.5		688
276	1984 10	31.29861	01 57 23.12	+10 36 52.4		688

291		1984	10	26.26389	01	19	18.59	+05	53	16.1			688
291		1984	10	26.31667	01	19	15.48	+05	52	56.3			688
291		1984	10	31.25243	01	14	46.07	+05	23	51.9			688
291		1984	10	31.28333	01	14	44.44	+05	23	40.4			688
292		1984	10	29.36528	02	38	05.81	+13	33	05.8			688
292		1984	10	29.39306	02	38	03.86	+13	33	07.4			688
292		1984	10	31.31389	02	35	52.97	+13	35	38.3			688
292		1984	10	31.34444	02	35	51.03	+13	35	40.9			688
308		1984	10	26.26389	01	15	18.33	+05	10	18.0			688
308		1984	10	26.31667	01	15	15.91	+05	09	59.8			688
308		1984	10	31.25243	01	11	43.50	+04	42	56.7			688
308		1984	10	31.28333	01	11	42.19	+04	42	46.3			688
309		1984	10	26.38819	02	52	23.82	+20	51	09.7		15.2	688
309		1984	10	26.42569	02	52	21.71	+20	51	03.8			688
309		1984	10	31.35972	02	47	38.50	+20	37	07.1			688
310		1984	10	26.15625	23	19	58.45	-00	55	27.7			688
310		1984	10	26.24514	23	19	56.78	-00	55	47.1			688
321		1984	10	23.23958	01	03	33.71	+05	22	39.8			688
321		1984	10	23.33889	01	03	28.92	+05	22	17.6			688
321		1984	10	29.26597	00	59	04.71	+05	01	20.1			688
321		1984	10	29.29583	00	59	03.41	+05	01	14.7			688
344		1984	10	31.32917	03	09	42.06	+16	04	41.0			688
344		1984	10	31.35972	03	09	39.76	+16	04	41.2			688
344		1984	11	01.31319	03	08	33.24	+16	05	42.9			688
344		1984	11	01.35556	03	08	30.27	+16	05	45.9			688
355		1984	09	28.18264	22	09	47.63	-12	26	41.0			688
361		1984	10	23.23958	00	54	43.94	+05	58	06.6			688
361		1984	10	23.33889	00	54	39.66	+05	57	58.4			688
361		1984	10	29.26597	00	50	38.14	+05	50	51.8			688
361		1984	10	29.29583	00	50	36.96	+05	50	50.3			688
366		1984	10	26.08958	22	52	00.25	-04	22	40.3			688
385		1983	11	04.23333	01	48	09.32	+28	04	04.3			688
385		1983	11	04.27917	01	48	06.55	+28	03	56.3			688
385		1983	11	07.20764	01	45	20.17	+27	53	38.9			688
385		1983	11	07.25069	01	45	18.01	+27	53	28.9			688
419		1984	10	29.26597	01	03	28.92	+09	33	53.5			688
419		1984	10	29.29583	01	03	27.72	+09	33	42.0			688
450		1983	11	28.17083	03	04	23.73	+28	14	39.0			688
450		1983	11	28.23125	03	04	20.34	+28	14	32.6			688
450		1983	12	05.15694	02	58	33.51	+27	59	23.3			688
450		1983	12	05.18125	02	58	32.33	+27	59	20.0			688
454		1983	11	28.19306	03	23	35.14	+22	56	00.9			688
454		1983	11	28.25417	03	23	31.40	+22	55	54.3			688
477		1984	10	26.40694	04	05	48.72	+26	46	09.0			688
477		1984	10	26.44444	04	05	46.71	+26	46	11.5			688
508		1984	10	29.32326	01	58	49.38	+07	40	11.5			688
508		1984	10	29.35000	01	58	47.92	+07	40	08.7			688
508		1984	10	31.26806	01	57	10.07	+07	38	19.8			688
508		1984	10	31.29861	01	57	08.44	+07	38	18.0			688
510		1984	10	29.32326	02	03	00.88	+09	30	44.2			688
510		1984	10	29.35000	02	02	59.44	+09	30	31.3			688
510		1984	10	31.26806	02	01	22.02	+09	14	54.3			688
510		1984	10	31.29861	02	01	20.37	+09	14	39.2			688
526		1984	10	23.23958	00	51	05.63	+02	34	46.5			688
526		1984	10	23.33889	00	51	01.37	+02	34	21.8			688
540		1984	10	29.36528	02	40	53.44	+12	37	08.3			688
540		1984	10	29.39306	02	40	51.69	+12	36	54.4			688
540		1984	10	31.31389	02	38	55.85	+12	22	30.4			688
540		1984	10	31.34444	02	38	54.07	+12	22	17.0			688

549	1983	11	28.08542	01	54	00.62	+18	21	12.4		688
549	1983	11	28.12500	01	53	59.45	+18	21	00.4		688
550	1983	12	05.15694	03	04	56.12	+26	02	44.4		688
550	1983	12	05.18125	03	04	54.95	+26	02	31.9		688
583	1984	10	26.15625	23	23	18.60	+07	14	28.3		688
583	1984	10	26.24514	23	23	16.57	+07	14	00.8		688
636	1984	10	26.26389	01	30	45.32	+07	41	06.3		688
636	1984	10	26.31667	01	30	42.45	+07	41	01.5		688
636	1984	10	31.25243	01	26	29.60	+07	34	39.2		688
636	1984	10	31.28333	01	26	28.02	+07	34	36.6		688
650	1984	10	26.27917	01	56	51.19	+12	13	58.0		688
650	1984	10	26.33958	01	56	47.92	+12	13	33.3		688
650	1984	10	29.32326	01	54	18.00	+11	53	35.8	15.5	688
650	1984	10	29.35000	01	54	16.56	+11	53	24.2		688
650	1984	10	31.26806	01	52	42.68	+11	40	42.3		688
650	1984	10	31.29861	01	52	41.00	+11	40	29.4		688
680	1983	11	28.08542	01	55	02.22	+11	58	42.0		688
680	1983	11	28.12500	01	55	00.67	+11	58	42.7		688
700	1984	10	23.19861	23	53	57.53	-12	08	27.8	16.2	688
700	1984	10	23.25556	23	53	55.49	-12	08	27.6		688
700	1984	10	29.10347	23	50	55.53	-12	06	33.9		688
700	1984	10	29.17917	23	50	53.43	-12	06	30.4		688
701	1984	10	26.11181	23	01	35.10	+02	58	03.3		688
701	1984	10	26.20069	23	1	34.06	+02	57	38.8		688
717	1984	10	26.40694	03	53	26.86	+22	43	23.6		688
717	1984	10	26.44444	03	53	25.43	+22	43	20.5		688
735	1984	10	29.36528	02	51	28.79	+14	51	32.2		688
735	1984	10	29.39306	02	51	26.56	+14	51	44.8		688
735	1984	10	31.31389	02	48	58.79	+15	06	35.9		688
735	1984	10	31.34444	02	48	56.47	+15	06	50.2		688
828	1984	09	28.18264	22	03	45.66	-12	32	02.8		688
834	1984	10	29.32326	02	11	50.57	+10	11	38.8		688
834	1984	10	29.35000	02	11	49.28	+10	11	32.1		688
834	1984	10	31.26806	02	10	21.83	+10	02	36.0		688
834	1984	10	31.29861	02	10	20.33	+10	02	28.4		688
841	1984	10	26.38819	03	03	41.34	+22	32	21.6	16.8	688
841	1984	10	26.42569	03	03	39.08	+22	32	17.9		688
841	1984	10	31.32917	02	58	32.79	+22	22	50.0		688
841	1984	10	31.35972	02	58	30.58	+22	22	44.5		688
844	1984	10	26.11181	23	13	36.62	-01	55	16.6		688
844	1984	10	26.20069	23	13	35.04	-01	55	15.7		688
892	1984	10	23.19861	00	02	27.68	-06	32	01.2		688
892	1984	10	23.25556	00	02	26.22	-06	32	23.9		688
892	1984	10	29.10347	00	00	08.67	-07	09	55.8		688
892	1984	10	29.17917	00	00	07.11	-07	10	23.5		688
905	1984	10	26.38819	02	59	16.15	+17	35	44.6		688
905	1984	10	26.42569	02	59	13.72	+17	35	46.4		688
905	1984	10	31.32917	02	53	59.64	+17	37	44.6		688
905	1984	10	31.35972	02	53	57.47	+17	37	42.3		688
953	1983	11	28.19306	03	13	11.85	+22	31	24.9		688
953	1983	11	28.25417	03	13	08.43	+22	31	19.3		688
953	1983	12	05.15694	03	07	08.42	+22	19	32.9		688
953	1983	12	05.18125	03	07	07.23	+22	19	30.3		688
954	1983	11	28.19306	03	11	21.65	+16	12	39.8		688
954	1983	11	28.25417	03	11	18.81	+16	12	30.7		688
956	1984	10	29.36528	02	45	13.61	+10	43	56.6	16.0	688
956	1984	10	29.39306	02	45	11.86	+10	43	42.3		688
956	1984	10	31.31389	02	43	16.88	+10	28	19.6		688
956	1984	10	31.34444	02	43	15.01	+10	28	05.2		688

958	1984	10	26.38819	02	51	34.18	+23	39	24.5		16.5	688
958	1984	10	26.42569	02	51	32.66	+23	39	21.6			688
958	1984	10	31.32917	02	47	59.81	+23	30	43.6		3	688
959	1984	10	29.32326	02	09	16.71	+09	47	43.2			688
959	1984	10	29.35000	02	09	15.34	+09	47	40.0			688
959	1984	10	31.26806	02	07	41.56	+09	43	19.3			688
959	1984	10	31.29861	02	07	39.95	+09	43	15.9			688
968	1984	10	26.26389	01	28	31.10	+09	53	02.1			688
968	1984	10	26.31667	01	28	28.61	+09	52	37.2			688
968	1984	10	31.25243	01	24	52.51	+09	13	57.3			688
968	1984	10	31.28333	01	24	51.27	+09	13	42.4			688
993	1984	10	29.15694	00	30	35.64	+02	38	02.4		17.0	688
1013	1984	10	26.26389	01	24	57.31	+08	38	34.8			688
1013	1984	10	26.31667	01	24	54.04	+08	38	30.6			688
1013	1984	10	31.25243	01	19	59.61	+08	32	45.4			688
1013	1984	10	31.28333	01	19	57.79	+08	32	42.7			688
1058	1984	10	26.27917	01	47	45.19	+12	31	20.2			688
1058	1984	10	26.33958	01	47	41.46	+12	30	49.5			688
1072	1983	11	28.08542	02	16	11.79	+16	24	01.5			688
1072	1983	11	28.12500	02	16	10.30	+16	24	02.0			688
1097	1984	10	29.15694	00	18	20.76	-00	34	45.0			688
1097	1984	10	29.23194	00	18	19.01	-00	34	52.9			688
1133	1984	10	23.19861	00	04	50.45	-07	46	08.1		15.5	688
1133	1984	10	23.25556	00	04	48.86	-07	45	53.5			688
1133	1984	10	29.10347	00	02	48.78	-07	15	59.5			688
1133	1984	10	29.17917	00	02	47.53	-07	15	33.3			688
1142	1984	10	29.36528	02	52	20.18	+13	27	47.2			688
1142	1984	10	29.39306	02	52	18.85	+13	27	41.0			688
1142	1984	10	31.31389	02	50	51.16	+13	20	51.5		16.5	688
1142	1984	10	31.34444	02	50	49.87	+13	20	43.8			688
1143	1984	10	26.08958	22	47	55.05	-04	37	50.9			688
1147	1984	10	26.08958	22	31	03.46	-02	51	32.9			688
1199	1984	10	26.27917	01	57	31.71	+17	21	18.5		1	688
1199	1984	10	26.33958	01	57	28.65	+17	20	52.3		1	688
1201	1984	10	26.08958	22	32	26.10	-04	31	12.1			688
1236	1984	10	29.36528	02	43	16.02	+11	06	01.6			688
1236	1984	10	29.39306	02	43	13.87	+11	06	09.6			688
1236	1984	10	31.31389	02	40	50.96	+11	16	47.8			688
1236	1984	10	31.34444	02	40	48.73	+11	16	58.3			688
1243	1983	11	28.08542	01	59	53.02	+19	41	40.1			688
1243	1983	11	28.12500	01	59	51.81	+19	41	22.5			688
1264	1983	11	28.12500	01	56	28.95	+19	52	05.6			688
1290	1984	10	26.11181	22	59	15.69	+02	26	37.6			688
1290	1984	10	26.20069	22	59	15.56	+02	26	31.3			688
1299	1984	10	23.22083	00	45	21.38	-02	44	22.7			688
1299	1984	10	23.31944	00	45	17.42	-02	45	00.4			688
1299	1984	10	29.15694	00	41	49.80	-03	18	47.2			688
1299	1984	10	29.23194	00	41	47.24	-03	19	10.9			688
1307	1984	10	29.26597	00	54	36.53	+09	34	21.5			688
1307	1984	10	29.29583	00	54	35.15	+09	34	08.3			688
1311	1984	10	26.38819	02	55	45.41	+18	44	28.1			688
1311	1984	10	26.42569	02	55	43.32	+18	44	18.3			688
1311	1984	10	31.32917	02	51	06.69	+18	19	18.4			688
1311	1984	10	31.35972	02	51	04.98	+18	19	07.6			688
1325	1983	12	05.15694	03	13	10.12	+28	05	42.5			688
1325	1983	12	05.18125	03	13	08.91	+28	05	39.4			688
1328	1984	11	01.31319	03	11	31.65	+17	22	05.5			688
1328	1984	11	01.35556	03	11	29.72	+17	21	52.9			688
1345	1984	10	23.19861	23	42	06.46	-12	30	12.3			688

1345		1984	10	23.25556	23	42	05.16	-12	30	18.1		688
1361		1984	10	29.25069	00	59	41.11	-13	16	29.8	16.5	688
1361		1984	10	29.28073	00	59	40.06	-13	16	40.5		688
1368		1984	10	26.13403	23	32	59.95	-08	03	58.6		688
1368		1984	10	26.22292	23	32	57.23	-08	03	34.2		688
1482		1984	10	23.23958	01	03	36.73	+03	01	27.8		688
1482		1984	10	23.33889	01	03	32.18	+03	01	07.5	3	688
1482		1984	10	29.26597	00	59	13.15	+02	41	09.3		688
1482		1984	10	29.29583	00	59	11.80	+02	41	03.8		688
1486		1984	10	26.38819	03	06	44.66	+17	38	56.0		688
1486		1984	10	26.42569	03	06	42.34	+17	38	46.8		688
1486		1984	10	31.32917	03	01	33.29	+17	17	47.0		688
1486		1984	10	31.35972	03	01	31.26	+17	17	36.9		688
1508		1984	10	23.19861	23	46	39.16	-07	38	43.4		688
1508		1984	10	23.25556	23	46	35.25	-07	38	22.5		688
1535		1984	10	26.38819	03	12	48.15	+23	44	43.0	1	688
1535		1984	10	26.42569	03	12	46.54	+23	44	36.1		688
1535		1984	10	31.32917	03	08	51.29	+23	26	07.8	3	688
1535		1984	10	31.35972	03	08	49.85	+23	26	01.2		688
1541		1983	12	05.15694	03	02	08.44	+23	26	32.4		688
1541		1983	12	05.18125	03	02	07.28	+23	26	25.8		688
1559		1984	09	28.18264	22	04	13.27	-10	37	28.7		688
1562		1984	10	23.19861	23	55	40.32	-07	50	54.9		688
1562		1984	10	23.25556	23	55	38.35	-07	51	02.4		688
1562		1984	10	29.10347	23	52	50.21	-08	02	06.0		688
1562		1984	10	29.17917	23	52	48.29	-08	02	12.8		688
1588		1984	10	26.29792	02	09	53.91	-03	36	53.0		688
1588		1984	10	26.35833	02	09	50.77	-03	37	02.8		688
1641		1983	11	04.23333	02	00	30.31	+26	10	04.5		688
1641		1983	11	04.27917	02	00	27.74	+26	09	54.9		688
1641		1983	11	07.20764	01	57	53.90	+25	58	05.4		688
1641		1983	11	07.25069	01	57	51.76	+25	57	55.2		688
1652		1984	10	26.40694	03	45	38.67	+21	51	06.5		688
1652		1984	10	26.44444	03	45	36.48	+21	50	58.7		688
1669		1984	10	26.13403	23	14	17.77	-05	21	05.7	16.8	688
1669		1984	10	26.22292	23	14	16.12	-05	21	12.9		688
1671		1984	10	26.26389	01	23	19.72	+04	39	43.1	15.5	688
1671		1984	10	26.31667	01	23	17.22	+04	39	21.1		688
1671		1984	10	31.25243	01	19	45.82	+04	06	31.3		688
1671		1984	10	31.28333	01	19	44.49	+04	06	19.3		688
1675		1983	11	28.08542	02	06	06.57	+17	20	17.4		688
1675		1983	11	28.12500	02	06	04.81	+17	20	18.0		688
1680		1984	10	23.19861	00	00	26.05	-06	22	49.9		688
1680		1984	10	23.25556	00	00	24.17	-06	22	56.5		688
1680		1984	10	29.10347	23	57	30.87	-06	30	31.6		688
1680		1984	10	29.17917	23	57	28.85	-06	30	35.6		688
1684		1984	10	23.22083	00	24	01.35	-02	59	13.3	16.8	688
1684		1984	10	23.31944	00	23	57.83	-02	59	30.7		688
1684		1984	10	29.15694	00	20	47.83	-03	14	09.6	16.5	688
1684		1984	10	29.23194	00	20	45.50	-03	14	18.3		688
1699		1984	10	26.38819	03	13	37.43	+20	54	53.0		688
1699		1984	10	26.42569	03	13	35.12	+20	54	42.7		688
1699		1984	10	31.32917	03	08	26.97	+20	32	02.2		688
1699		1984	10	31.35972	03	08	24.76	+20	31	51.5		688
1715		1984	10	26.40694	03	57	43.48	+24	39	54.3		688
1715		1984	10	26.44444	03	57	41.38	+24	39	56.9		688
1745		1984	10	26.13403	23	28	29.99	-08	15	34.3		688
1745		1984	10	26.22292	23	28	28.10	-08	15	36.3		688
1752		1984	10	26.40694	04	02	08.55	+21	35	44.6		688

1752	1984	10	26.44444	04	02	06.79	+21	35	35.0			688
1757	1984	10	26.38819	03	06	50.07	+17	57	50.6			688
1757	1984	10	26.42569	03	06	47.76	+17	57	44.9			688
1757	1984	10	31.32917	03	01	52.75	+17	45	38.7			688
1784	1984	10	29.15694	00	40	13.75	+01	48	59.6			688
1784	1984	10	29.23194	00	40	10.67	+01	48	43.0			688
1798	1983	11	28.19306	03	18	07.88	+21	38	15.0			688
1798	1983	12	05.15694	03	11	09.89	+21	41	10.2			688
1798	1983	12	05.18125	03	11	08.69	+21	41	11.4			688
1814	1984	10	26.13403	23	15	58.38	-06	30	14.8			688
1814	1984	10	26.22292	23	15	56.57	-06	30	07.3			688
1841	1984	11	01.31319	03	14	37.37	+18	11	59.7			688
1841	1984	11	01.35556	03	14	35.49	+18	11	55.1			688
1854	1984	10	26.26389	01	22	53.53	+06	07	03.5	16.8		688
1854	1984	10	26.31667	01	22	50.76	+06	06	40.1			688
1854	1984	10	31.25243	01	18	53.91	+05	32	51.3			688
1854	1984	10	31.28333	01	18	52.44	+05	32	38.2			688
1868	1984	10	23.23958	00	58	08.29	+05	38	43.7			688
1868	1984	10	23.33889	00	58	05.59	+05	38	12.9			688
1868	1984	10	29.26597	00	55	34.97	+05	08	36.1			688
1868	1984	10	29.29583	00	55	34.22	+05	08	27.3			688
1907	1984	10	26.13403	23	16	25.56	-07	14	47.6			688
1907	1984	10	26.22292	23	16	24.13	-07	14	56.9			688
1953	1984	10	29.32326	02	00	40.74	+09	30	21.3			688
1953	1984	10	29.35000	02	00	39.24	+09	30	16.1			688
1953	1984	10	31.26806	01	59	07.75	+09	23	54.2			688
1953	1984	10	31.29861	01	59	06.17	+09	23	47.8			688
1983	1984	10	26.13403	23	13	12.90	-10	21	27.3			688
1986	1984	10	26.26389	01	23	41.86	+05	27	33.9			688
1986	1984	10	26.31667	01	23	39.53	+05	27	18.9			688
1986	1984	10	31.25243	01	20	17.95	+05	06	45.4			688
1986	1984	10	31.28333	01	20	16.80	+05	06	36.6			688
2016	1983	11	28.19306	03	10	20.42	+18	39	49.4			688
2016	1983	11	28.25417	03	10	17.42	+18	39	39.0			688
2088	1984	10	26.15625	23	33	03.81	-01	00	22.6			688
2088	1984	10	26.24514	23	33	01.42	-01	00	22.5			688
2094	1984	10	26.15625	23	41	44.99	+06	38	26.1	17.2		688
2094	1984	10	26.24514	23	41	42.25	+06	37	55.7			688
2132	1984	10	26.13403	23	25	31.63	-12	41	29.5			688
2132	1984	10	26.22292	23	25	29.91	-12	41	21.4			688
2195	1984	10	23.22083	00	38	42.58	-05	16	05.4			688
2195	1984	10	23.31944	00	38	37.96	-05	16	18.1			688
2195	1984	10	29.15694	00	34	41.43	-05	23	42.5			688
2195	1984	10	29.23194	00	34	38.50	-05	23	45.0			688
2203	1984	09	28.18264	22	09	12.42	-13	51	38.3			688
2225	1984	10	26.13403	23	08	40.46	-10	19	18.9			688
2225	1984	10	26.22292	23	08	39.24	-10	19	16.4			688
2239	1984	10	26.27917	01	56	30.11	+15	43	25.3	16.2	1	688
2239	1984	10	26.33958	01	56	27.05	+15	43	21.5			688
2248	1984	09	28.18264	22	11	01.52	-13	07	38.5	17.0		688
2249	1984	10	29.32326	02	09	15.05	+07	26	10.6	17.0		688
2249	1984	10	29.35000	02	09	13.79	+07	26	03.5			688
2249	1984	10	31.26806	02	07	48.35	+07	18	05.8			688
2249	1984	10	31.29861	02	07	46.84	+07	17	58.2			688
2270	1983	11	28.19306	03	17	38.53	+17	08	52.9	16.5	3	688
2270	1983	11	28.25417	03	17	35.33	+17	08	44.3		3	688
2280	1984	10	29.36528	02	40	10.34	+08	19	07.4	16.5		688
2280	1984	10	29.39306	02	40	08.67	+08	19	01.2			688
2280	1984	10	31.31389	02	38	11.35	+08	12	00.5			688

2280		1984	10	31.34444	02	38	09.40	+08	11	53.4			688
2283		1984	10	23.23958	00	59	39.88	+05	18	57.3			688
2283		1984	10	23.33889	00	59	34.76	+05	18	04.8			688
2283		1984	10	29.26597	00	54	48.33	+04	30	55.4			688
2283		1984	10	29.29583	00	54	46.90	+04	30	42.4			688
2287		1984	10	29.36528	02	59	56.02	+09	11	01.5			688
2287		1984	10	29.39306	02	59	54.06	+09	10	56.4			688
2287		1984	10	31.31389	02	57	48.05	+09	04	54.5			688
2287		1984	10	31.34444	02	57	46.06	+09	04	49.5			688
2296		1984	10	23.23958	01	03	02.50	+06	01	25.6			688
2296		1984	10	23.33889	01	02	58.20	+06	01	00.7			688
2296		1984	10	29.26597	00	58	54.33	+05	37	48.4			688
2296		1984	10	29.29583	00	58	53.15	+05	37	42.6			688
2297		1984	10	26.26389	01	20	21.67	+06	18	59.5			688
2297		1984	10	26.31667	01	20	19.43	+06	18	46.5			688
2297		1984	10	31.25243	01	16	58.88	+05	58	56.2			688
2297		1984	10	31.28333	01	16	57.69	+05	58	47.3			688
2308		1984	10	23.22083	00	38	03.46	-03	50	00.6			688
2308		1984	10	23.31944	00	37	57.97	-03	49	52.3			688
2308		1984	10	29.15694	00	33	09.49	-03	39	29.8			688
2308		1984	10	29.23194	00	33	05.81	-03	39	20.0			688
2328		1984	10	23.22083	00	38	18.12	-00	16	21.6			688
2328		1984	10	23.31944	00	38	13.46	-00	17	05.5			688
2328		1984	10	29.15694	00	34	09.64	-01	00	01.2			688
2328		1984	10	29.23194	00	34	06.63	-01	00	31.0			688
2333		1984	10	29.32326	01	54	38.01	+08	55	43.2		1	688
2333		1984	10	29.35000	01	54	36.17	+08	55	39.8			688
2333		1984	10	31.26806	01	52	39.72	+08	53	51.4			688
2333		1984	10	31.29861	01	52	37.76	+08	53	49.2			688
2351		1984	10	26.15625	23	22	45.88	+00	07	34.1			688
2351		1984	10	26.24514	23	22	44.82	+00	07	31.0			688
2359		1984	10	26.26389	01	17	31.91	+08	11	51.6	17.2		688
2359		1984	10	26.31667	01	17	29.02	+08	11	29.0			688
2359		1984	10	31.25243	01	13	34.25	+07	37	56.1	17.0		688
2359		1984	10	31.28333	01	13	32.80	+07	37	41.7			688
2375		1984	10	26.29792	02	12	50.65	-07	44	07.3			688
2375		1984	10	26.35833	02	12	48.02	-07	44	17.4			688
2397		1984	09	28.18264	22	02	43.39	-15	26	34.6	17.0	3	688
2424		1984	10	26.40694	03	48	40.67	+25	02	09.4			688
2437		1984	10	26.08958	22	34	59.53	-05	52	15.0			688
2450		1984	10	29.32326	02	02	48.85	+08	45	09.3			688
2450		1984	10	29.35000	02	02	47.44	+08	45	03.9			688
2450		1984	10	31.26806	02	01	20.84	+08	37	35.8			688
2450		1984	10	31.29861	02	01	19.37	+08	37	29.4			688
2500		1984	10	26.13403	23	28	07.21	-11	12	34.7			688
2538		1984	10	23.22083	00	31	14.52	-01	48	33.7			688
2538		1984	10	23.31944	00	31	09.21	-01	48	42.9			688
2538		1984	10	29.15694	00	26	40.13	-01	53	34.8			688
2538		1984	10	29.23194	00	26	36.71	-01	53	36.2			688
2560		1984	09	28.18264	22	11	31.84	-13	26	17.1			688
2567		1984	09	28.18264	22	11	00.58	-16	41	23.5			688
2599		1984	10	26.11181	23	14	48.44	+02	21	24.0			688
2599		1984	10	26.20069	23	14	46.49	+02	21	46.8			688
2622		1984	10	26.29792	02	19	11.66	-03	43	16.6			688
2622		1984	10	26.35833	02	19	08.76	-03	43	33.4			688
2627		1984	10	29.32326	01	58	02.92	+07	55	02.9			688
2627		1984	10	29.35000	01	58	01.50	+07	54	54.6			688
2627		1984	10	31.26806	01	56	31.33	+07	47	32.6			688
2627		1984	10	31.29861	01	56	29.83	+07	47	25.8			688

2633	1984	10	29.32326	02	14	52.09	+10	40	18.8		1	688
2633	1984	10	29.35000	02	14	50.15	+10	40	13.4			688
2633	1984	10	31.26806	02	12	47.02	+10	33	47.3		3	688
2633	1984	10	31.29861	02	12	44.78	+10	33	42.7			688
2667	1984	10	26.38819	03	07	53.01	+16	30	48.5			688
2667	1984	10	26.42569	03	07	51.25	+16	30	43.8			688
2667	1984	10	31.32917	03	03	57.87	+16	18	21.5			688
2667	1984	10	31.35972	03	03	56.39	+16	18	14.8			688
2677	1984	10	23.23958	01	08	12.91	+05	22	05.0		3	688
2677	1984	10	23.33889	01	08	08.38	+05	21	23.7		3	688
2677	1984	10	29.26597	01	04	15.27	+04	42	09.6			688
2677	1984	10	29.29583	01	04	14.04	+04	42	01.1			688
2680	1983	11	28.08542	02	14	06.49	+16	46	01.0			688
2680	1983	11	28.12500	02	14	05.03	+16	45	54.1			688
2683	1984	10	26.38819	02	52	51.88	+18	35	39.6	17.0		688
2683	1984	10	26.42569	02	52	49.72	+18	35	31.8			688
2683	1984	10	31.35972	02	48	37.38	+18	19	16.5	17.0		688
2723	1984	10	29.36528	02	56	47.02	+13	34	50.0	17.2		688
2723	1984	10	29.39306	02	56	45.57	+13	34	41.9			688
2723	1984	10	31.31389	02	55	14.87	+13	27	08.0			688
2723	1984	10	31.34444	02	55	13.56	+13	27	00.3			688
2729	1984	10	29.32326	01	56	50.93	+09	11	27.8			688
2729	1984	10	29.35000	01	56	49.62	+09	11	21.5			688
2729	1984	10	31.26806	01	55	13.22	+09	04	48.1			688
2729	1984	10	31.29861	01	55	11.64	+09	04	42.0			688
2736	1983	11	28.19306	03	07	53.27	+21	51	55.7	16.5		688
2736	1983	11	28.25417	03	07	49.83	+21	51	25.3			688
2740	1984	10	26.15625	23	35	11.98	+00	11	01.1			688
2740	1984	10	26.24514	23	35	10.46	+00	10	31.0			688
2769	1984	10	23.22083	00	33	05.82	-00	12	57.0			688
2769	1984	10	23.31944	00	33	01.99	-00	13	17.9			688
2814	1984	10	29.36528	02	44	41.90	+12	17	37.6	17.0		688
2814	1984	10	29.39306	02	44	40.53	+12	17	28.1			688
2814	1984	10	31.31389	02	43	02.99	+12	09	05.2			688
2814	1984	10	31.34444	02	43	01.56	+12	08	58.1			688
2856	1983	11	28.08542	01	55	45.70	+18	30	26.7			688
2856	1983	11	28.12500	01	55	44.24	+18	30	23.0			688
2884	1984	10	26.26389	01	26	47.00	+08	16	34.3			688
2884	1984	10	26.31667	01	26	44.45	+08	16	22.8			688
2884	1984	10	31.25243	01	23	02.94	+07	58	58.6			688
2884	1984	10	31.28333	01	23	01.52	+07	58	51.6			688
2887	1984	10	23.19861	23	59	08.93	-07	33	29.2			688
2887	1984	10	23.25556	23	59	07.21	-07	33	34.6		1	688
2887	1984	10	29.17917	23	56	30.74	-07	39	31.5			688
2905	1984	10	26.13403	23	20	49.89	-05	58	50.0			688
2905	1984	10	26.22292	23	20	48.01	-05	58	44.4			688
2924	1984	10	26.13403	23	08	10.98	-09	55	27.9			688
2924	1984	10	26.22292	23	08	09.98	-09	55	27.5			688
2939	1984	10	26.40694	03	49	09.21	+25	19	25.7	17.5		688
2939	1984	10	26.44444	03	49	07.19	+25	19	23.6			688
2951	1983	11	28.17083	02	51	03.81	+27	25	24.2			688
2951	1983	11	28.23125	02	51	00.43	+27	25	20.8			688
2951	1983	12	05.15694	02	45	08.87	+27	16	17.4			688
2951	1983	12	05.18125	02	45	07.63	+27	16	15.8			688
2967	1983	12	05.15694	02	54	58.12	+28	55	50.3	16.5		688
2967	1983	12	05.18125	02	54	56.84	+28	55	51.8			688
3009	1983	11	28.08542	02	15	36.67	+19	28	31.7	17.2		688
3009	1983	11	28.12500	02	15	34.92	+19	28	22.8			688
3132	1984	10	26.13403	23	22	34.75	-10	21	27.5	17.2		688

3132		1984	10	26.22292	23	22	33.47	-10	21	27.5			688
3134		1984	10	26.40694	04	07	19.56	+25	00	13.9		16.0	688
3134		1984	10	26.44444	04	07	18.41	+25	00	08.4			688
3135		1983	12	05.15694	03	05	16.97	+27	41	13.1		17.5	688
3135		1983	12	05.18125	03	05	15.81	+27	41	02.6			688
1938	SL	1984	10	23.22083	00	29	56.15	-04	38	03.5		16.5	688
1938	SL	1984	10	23.31944	00	29	52.41	-04	37	29.8			688
1938	SL	1984	10	29.15694	00	27	04.14	-03	59	37.5		16.5	688
1938	SL	1984	10	29.23194	00	27	02.09	-03	59	05.9			688
1949	QC	1984	10	29.25069	00	54	11.37	-09	41	23.8		16.5	688
1949	QC	1984	10	29.28073	00	54	10.33	-09	41	17.9			688
1972	KG	1984	10	29.15694	00	26	02.96	-00	36	45.1		17.5	688
1972	KG	1984	10	29.23194	00	26	00.61	-00	37	12.7			688
1973	SD3	1984	10	23.23958	00	53	30.35	+05	02	40.5		16.8	688
1973	SD3	1984	10	23.33889	00	53	26.49	+05	02	15.7			1 688
1973	SD3	1984	10	29.26597	00	49	45.46	+04	37	59.7		17.2	688
1973	SD3	1984	10	29.29583	00	49	44.56	+04	37	51.5			688
1973	SX3	1984	10	23.19861	00	02	17.97	-06	30	57.9		16.8	688
1973	SX3	1984	10	23.25556	00	02	16.27	-06	30	56.0			688
1973	SX3	1984	10	29.10347	23	59	33.40	-06	24	15.6		16.8	688
1973	SX3	1984	10	29.17917	23	59	31.52	-06	24	08.8			688
1974	QO2	1984	10	26.13403	23	18	18.64	-10	38	37.9		16.8	688
1974	QO2	1984	10	26.22292	23	18	18.87	-10	38	27.8			688
1974	SO2	1984	10	26.11181	22	58	09.50	+01	05	58.8		17.5	688
1974	SO2	1984	10	26.20069	22	58	08.39	+01	05	35.1			688
1976	GQ3	1984	10	26.26389	01	14	38.40	+04	24	13.1		17.2	688
1976	GQ3	1984	10	26.31667	01	14	36.35	+04	23	44.7			688
1976	GQ3	1984	10	31.25243	01	11	38.30	+03	40	49.9		17.0	688
1976	GQ3	1984	10	31.28333	01	11	37.04	+03	40	33.3			688
1978	RH	1984	10	29.36528	02	42	34.36	+12	16	46.0		16.0	688
1978	RH	1984	10	29.39306	02	42	33.00	+12	16	39.9			688
1978	RH	1984	10	31.31389	02	41	03.93	+12	10	17.9		15.8	688
1978	RH	1984	10	31.34444	02	41	02.57	+12	10	11.7			688
1979	MO6	1984	10	26.29792	02	10	33.12	-10	39	01.2		16.8	688
1979	MO6	1984	10	26.35833	02	10	29.96	-10	39	11.4			688
1979	SF9	1984	10	26.26389	01	17	26.56	+04	10	21.6		17.0	688
1979	SF9	1984	10	26.31667	01	17	24.20	+04	10	07.6			688
1979	SF9	1984	10	31.25243	01	13	53.79	+03	49	11.4		16.5	688
1979	SF9	1984	10	31.28333	01	13	52.62	+03	49	03.0			688
1979	SX9	1984	10	29.32326	02	06	35.58	+11	34	13.0		17.0	688
1979	SX9	1984	10	29.35000	02	06	34.11	+11	34	08.3			688
1979	SX9	1984	10	31.26806	02	04	56.05	+11	27	13.2		17.0	688
1979	SX9	1984	10	31.29861	02	04	54.37	+11	27	06.3			688
1979	SA12	1984	09	28.18264	22	03	29.89	-12	19	13.4		17.2	688
1980	LE	1984	10	26.15625	23	28	01.38	+04	08	24.6		17.8	688
1980	LE	1984	10	26.24514	23	28	00.15	+04	08	08.7			688
1980	PH	1984	10	26.11181	22	55	48.68	-01	14	56.4		17.2	688
1980	PH	1984	10	26.20069	22	55	49.33	-01	14	55.4			688
1980	RJ2	1984	10	26.08958	22	43	50.94	-04	23	42.3		16.8	688
1980	SG	1984	10	26.38819	03	05	48.76	+22	14	12.7		17.0	688
1980	SG	1984	10	26.42569	03	05	46.30	+22	14	15.3			688
1980	SG	1984	10	31.32917	03	00	38.28	+22	18	16.1		16.8	688
1980	SG	1984	10	31.35972	03	00	36.13	+22	18	17.5			688
1980	VO	1984	10	23.22083	00	28	11.70	-05	05	43.6		16.0	688
1980	VO	1984	10	23.31944	00	28	07.21	-05	04	48.2			688
1980	VO	1984	10	29.15694	00	24	42.58	-04	05	16.3		16.0	688
1980	VO	1984	10	29.23194	00	24	40.16	-04	04	28.3			688
1981	CK	1984	10	23.23958	00	58	58.34	+06	44	54.8		17.5	1 688
1981	CK	1984	10	23.33889	00	58	53.61	+06	44	25.5			3 688

1981	EP		1984	10	23.19861	00	02	19.35	-09	58	03.2	17.0	688
1981	EP		1984	10	29.10347	23	59	59.93	-10	40	23.8	2	688
1981	EP		1984	10	29.17917	23	59	58.38	-10	40	53.3		688
1981	WY		1984	10	29.25069	00	39	33.81	-08	58	44.5	16.5	688
1981	WY		1984	10	29.28073	00	39	32.63	-08	58	36.3		688
1981	XF2		1984	10	29.32326	01	54	46.62	+06	26	58.7	16.5 1	688
1981	XF2		1984	10	29.35000	01	54	44.60	+06	26	49.8		688
1981	XF2		1984	10	31.26806	01	52	46.22	+06	20	40.4	16.2	688
1981	XF2		1984	10	31.29861	01	52	44.33	+06	20	34.4		688
1982	BY1		1984	10	29.32326	02	07	02.14	+10	55	21.2	17.5	688
1982	BY1		1984	10	29.35000	02	07	00.23	+10	55	12.6		688
1982	BY1		1984	10	31.26806	02	05	01.95	+10	47	06.3	17.2	688
1982	BY1		1984	10	31.29861	02	04	59.82	+10	46	59.4		688
1982	DJ		1984	10	26.40694	03	55	33.37	+26	43	06.0	17.0	688
1982	DJ		1984	10	26.44444	03	55	31.62	+26	43	12.4		688
1982	FK		1984	10	23.23958	00	50	20.98	+07	48	21.3	15.8	688
1982	FK		1984	10	23.33889	00	50	16.13	+07	48	13.9		688
1982	FK		1984	10	29.26597	00	45	53.84	+07	41	31.5	16.0	688
1982	FK		1984	10	29.29583	00	45	52.56	+07	41	30.2		688
1982	GG		1983	11	28.17083	03	03	00.80	+21	35	15.3		688
1982	GG		1983	11	28.19306	03	02	59.42	+21	35	11.6		688
1982	GG		1983	11	28.23125	03	02	56.94	+21	35	06.5		688
1982	GG		1983	11	28.25417	03	02	55.46	+21	35	03.6		688
1982	GG		1983	12	05.15694	02	56	26.22	+21	18	14.0	17.5	688
1982	GG		1983	12	05.18125	02	56	24.96	+21	18	12.8		688
1982	HL		1984	10	29.32326	02	02	47.62	+08	15	21.7	17.5	688
1982	HL		1984	10	29.35000	02	02	46.22	+08	15	16.5		688
1982	HL		1984	10	31.26806	02	01	03.76	+08	09	30.8	17.5	688
1982	HL		1984	10	31.29861	02	01	02.06	+08	09	24.2		688
1983	NJ		1984	10	26.29792	02	18	10.25	-07	23	14.2	16.8	688
1983	NJ		1984	10	26.35833	02	18	07.54	-07	23	34.3		688
1983	TB		1984	11	27.41042	05	34	25.58	+39	56	05.1		688
1983	TB		1984	11	27.41944	05	34	22.65	+39	56	08.4		688
1983	TB		1984	11	27.42986	05	34	19.37	+39	56	11.4		688
1983	WK1	*	1983	11	28.08542	02	11	08.17	+14	58	17.1	16.5 4	688
1983	WK1		1983	11	28.12500	02	11	05.77	+14	58	36.0		688
1983	WL1	*	1983	11	28.17083	03	04	40.66	+21	41	45.6	5	688
1983	WL1		1983	11	28.23125	03	04	37.58	+21	41	18.9	1	688
1984	QJ1		1984	10	26.11181	23	12	10.38	-02	48	28.4	17.2	688
1984	QJ1		1984	10	26.20069	23	12	11.64	-02	48	44.3		688
1984	SL		1984	10	23.19861	00	06	24.80	-11	23	22.5	16.0	688
1984	SL		1984	10	23.25556	00	06	24.01	-11	23	38.1		688
1984	SL		1984	10	29.10347	00	05	53.35	-11	43	13.6	16.5	688
1984	SL		1984	10	29.17917	00	05	53.08	-11	43	24.6		688
1984	SV		1984	10	26.15625	23	42	00.34	+02	59	29.8	17.2	688
1984	SV		1984	10	26.24514	23	41	57.67	+02	59	20.4		688
1984	SF1		1984	10	26.15625	23	29	26.81	+01	58	06.4	17.0	688
1984	SF1		1984	10	26.24514	23	29	25.98	+01	57	52.3		688
1984	SG1		1984	09	25.30347	23	48	14.42	+04	19	45.8	16.8	688
1984	SG1		1984	09	25.33403	23	48	12.94	+04	19	35.2		688
1984	SQ2		1984	10	26.13403	23	29	00.37	-07	23	59.3	17.5	688
1984	SQ2		1984	10	26.22292	23	28	59.43	-07	23	27.8		688
1984	SR2		1984	10	26.15625	23	22	31.15	+04	17	22.2	17.0	688
1984	SR2		1984	10	26.24514	23	22	30.29	+04	17	15.6		688
1984	ST2		1984	10	26.15625	23	35	18.82	+06	12	39.8	16.8	688
1984	ST2		1984	10	26.24514	23	35	17.93	+06	12	43.5		688
1984	SA3		1984	10	26.11181	22	59	09.06	-00	33	24.2	17.2	688
1984	SA3		1984	10	26.20069	22	59	08.45	-00	33	17.6		688
1984	SD3		1984	10	26.11181	23	14	07.25	-02	29	22.8	17.0	688

1984	SD3		1984	10	26.20069	23	14	06.32	-02	30	01.7		688
1984	SH3		1984	10	23.19861	23	57	40.76	-07	20	55.6	16.8	688
1984	SH3		1984	10	23.25556	23	57	38.69	-07	20	46.2		688
1984	SH3		1984	10	29.10347	23	54	44.98	-07	00	13.3	17.0	688
1984	SH3		1984	10	29.17917	23	54	42.99	-06	59	53.5		688
1984	SL3		1984	10	23.23958	01	09	31.75	+07	48	46.7	16.0	688
1984	SL3		1984	10	23.33889	01	09	25.54	+07	48	52.5		688
1984	SL3		1984	10	29.26597	01	03	59.49	+07	55	37.7	16.0	688
1984	SL3		1984	10	29.29583	01	03	58.05	+07	55	40.0		688
1984	SO3		1984	10	26.26389	01	19	25.78	+04	13	45.2	17.2	688
1984	SO3		1984	10	26.31667	01	19	23.68	+04	13	33.3		688
1984	SO3		1984	10	31.25243	01	15	54.61	+03	56	13.9	17.2	688
1984	SO3		1984	10	31.28333	01	15	53.45	+03	56	05.9		688
1984	SP3		1984	10	26.26389	01	13	07.62	+07	06	00.5	16.2	688
1984	SP3		1984	10	26.31667	01	13	04.24	+07	05	57.3		688
1984	SP3		1984	10	31.25243	01	08	21.38	+07	01	48.7	16.2	688
1984	SP3		1984	10	31.28333	01	08	19.68	+07	01	46.5		688
1984	SQ3		1984	10	26.26389	01	13	00.38	+08	32	33.5	16.5	688
1984	SQ3		1984	10	26.31667	01	12	57.06	+08	32	25.8		688
1984	SQ3		1984	10	31.25243	01	08	25.87	+08	21	23.4	16.5	688
1984	SQ3		1984	10	31.28333	01	08	24.35	+08	21	18.6		688
1984	SU3		1984	10	26.26389	01	34	51.46	+06	41	04.1	16.5	688
1984	SU3		1984	10	26.31667	01	34	48.51	+06	41	07.7		688
1984	SU3		1984	10	31.25243	01	30	48.04	+06	48	10.7	16.8	688
1984	SU3		1984	10	31.28333	01	30	46.55	+06	48	13.5		688
1984	UD		1984	10	26.27917	01	48	43.09	+12	32	28.4	16.2	688
1984	UD		1984	10	26.33958	01	48	39.18	+12	32	33.1		688
1984	UG		1984	10	31.31389	02	48	45.90	+15	03	14.6	16.8	688
1984	UG		1984	10	31.34444	02	48	44.46	+15	03	09.8		688
1984	UH	*	1984	10	23.22083	00	23	33.73	-02	52	32.6	17.2	6 688
1984	UH		1984	10	23.31944	00	23	28.70	-02	52	37.5		688
1984	UJ	*	1984	10	23.22083	00	24	41.74	-02	38	46.9	17.2	6 688
1984	UJ		1984	10	23.31944	00	24	38.95	-02	39	14.8		688
1984	UK	*	1984	10	23.22083	00	28	11.44	+00	00	44.6	16.8	9 688
1984	UK		1984	10	23.31944	00	28	06.50	+00	00	36.3		688
1984	UK		1984	10	29.15694	00	24	05.02	-00	04	19.4	16.8	688
1984	UK		1984	10	29.23194	00	24	02.09	-00	04	20.8		688
1984	UL	*	1984	10	23.22083	00	36	42.38	-06	24	04.1	17.2	6 688
1984	UL		1984	10	23.31944	00	36	37.94	-06	24	06.2		688
1984	UM	*	1984	10	23.22083	00	37	12.79	-01	25	38.9	17.0	6 688
1984	UM		1984	10	23.31944	00	37	09.26	-01	25	58.0		688
1984	UM		1984	10	29.15694	00	34	33.23	-01	39	47.6	16.8	688
1984	UM		1984	10	29.23194	00	34	31.32	-01	39	54.1		688
1984	UN	*	1984	10	23.22083	00	39	57.88	+00	20	36.2	16.8	6 688
1984	UN		1984	10	23.31944	00	39	53.99	+00	20	27.3		688
1984	UN		1984	10	29.15694	00	36	49.01	+00	15	57.8	16.8	688
1984	UN		1984	10	29.23194	00	36	46.76	+00	15	56.6		688
1984	UO	*	1984	10	23.22083	00	43	54.25	-04	19	13.7	16.8	6 688
1984	UO		1984	10	23.31944	00	43	49.91	-04	19	44.0		688
1984	UO		1984	10	29.15694	00	40	10.32	-04	45	12.6	17.0	688
1984	UO		1984	10	29.23194	00	40	07.56	-04	45	27.9		688
1984	UP	*	1984	10	23.23958	01	02	09.89	+05	28	08.9	16.8	4 688
1984	UP		1984	10	23.33889	01	02	05.04	+05	27	51.4		688
1984	UP		1984	10	29.26597	00	57	36.04	+05	10	35.0	17.0	688
1984	UP		1984	10	29.29583	00	57	34.64	+05	10	31.6		688
1984	UQ	*	1984	10	23.23958	01	12	18.68	+09	26	12.1	16.2	4 688
1984	UQ		1984	10	23.33889	01	12	13.92	+09	25	09.0		688
1984	UQ		1984	10	29.26597	01	07	56.36	+08	23	21.8	16.8	688
1984	UQ		1984	10	29.29583	01	07	55.27	+08	23	03.3		688

1984	UR	*	1984	10	26.26389	01	33	10.30	+04	18	06.4		16.8	6 688
1984	UR		1984	10	26.31667	01	33	07.01	+04	18	10.9			688
1984	UR		1984	10	31.25243	01	28	21.42	+04	24	06.9		16.5	688
1984	UR		1984	10	31.28333	01	28	19.63	+04	24	09.3			688
1984	US	*	1984	10	26.38819	02	50	44.89	+19	10	07.0		16.0	6 688
1984	US		1984	10	26.42569	02	50	42.26	+19	10	16.7			688
1984	US		1984	10	31.32917	02	45	02.28	+19	31	42.1		15.8	688
1984	US		1984	10	31.35972	02	44	59.83	+19	31	46.6			688
1984	US		1984	11	18.23472	02	23	45.47	+20	33	41.0		15.2	688
1984	US		1984	11	18.28750	02	23	41.96	+20	33	49.9			688
1984	UT	*	1984	10	26.38819	02	52	51.86	+22	30	35.5		16.5	6 688
1984	UT		1984	10	26.42569	02	52	50.30	+22	30	07.9			688
1984	UT		1984	10	31.32917	02	49	15.03	+21	28	48.2		16.2	688
1984	UT		1984	10	31.35972	02	49	13.47	+21	28	21.1			688
1984	UU	*	1984	10	26.38819	02	56	47.79	+21	39	02.4		16.5	6 688
1984	UU		1984	10	26.42569	02	56	45.95	+21	38	48.8			688
1984	UU		1984	10	31.32917	02	52	51.02	+21	11	22.1		16.5	688
1984	UU		1984	10	31.35972	02	52	49.42	+21	11	08.3			688
1984	UV	*	1984	10	26.38819	03	14	04.40	+16	12	24.2		16.8	6 688
1984	UV		1984	10	26.42569	03	14	02.72	+16	12	19.3			688
1984	UW	*	1984	10	26.40694	03	42	24.46	+28	43	07.8		17.0	6 688
1984	UW		1984	10	26.44444	03	42	23.26	+28	43	02.8			688
1984	UX	*	1984	10	26.40694	03	43	26.95	+28	32	17.4		16.0	6 688
1984	UX		1984	10	26.44444	03	43	25.73	+28	32	31.4			688
1984	UY	*	1984	10	26.40694	03	55	43.52	+22	23	20.6		17.5	6 688
1984	UY		1984	10	26.44444	03	55	41.72	+22	23	16.5			688
1984	UZ	*	1984	10	26.40694	04	10	10.96	+23	48	04.6		17.5	6 688
1984	UZ		1984	10	26.44444	04	10	10.11	+23	47	53.4			1 688
1984	UJ1		1984	10	26.27917	01	50	05.78	+12	09	13.4		16.8	688
1984	UJ1		1984	10	26.33958	01	50	01.69	+12	09	18.2			688
1984	UK1		1984	10	26.27917	01	53	17.94	+13	29	26.3		17.2	A 688
1984	UK1		1984	10	26.33958	01	53	14.61	+13	29	02.3			B 688
1984	UM1		1984	10	26.27917	01	56	41.90	+12	54	25.0		17.0	688
1984	UM1		1984	10	26.33958	01	56	38.62	+12	54	03.7			688
1984	UM1		1984	10	29.32326	01	54	02.33	+12	35	33.5		17.2	688
1984	UM1		1984	10	29.35000	01	54	00.74	+12	35	22.5			688
1984	UM1		1984	10	31.26806	01	52	21.75	+12	23	26.9		16.8	688
1984	UM1		1984	10	31.29861	01	52	20.00	+12	23	15.0			688
1984	UP1	*	1984	10	29.25069	00	35	27.43	-13	33	03.8		17.0	6 688
1984	UP1		1984	10	29.28073	00	35	26.55	-13	33	03.9			688
1984	UQ1	*	1984	10	29.25069	00	35	43.72	-11	38	57.8		17.0	6 688
1984	UQ1		1984	10	29.28073	00	35	43.03	-11	38	54.3			688
1984	UR1	*	1984	10	29.25069	00	44	11.56	-06	42	10.4		16.8	6 688
1984	UR1		1984	10	29.28073	00	44	10.34	-06	42	03.3			2 688
1984	US1	*	1984	10	29.32326	02	05	42.22	+09	27	11.2		16.8	6 688
1984	US1		1984	10	29.35000	02	05	40.91	+09	27	05.0			688
1984	US1		1984	10	31.26806	02	04	12.66	+09	18	42.7		16.8	688
1984	US1		1984	10	31.29861	02	04	11.12	+09	18	33.9			688
1984	UT1	*	1984	10	29.32326	02	08	00.44	+13	22	19.5		17.2	7 688
1984	UT1		1984	10	29.35000	02	07	59.06	+13	22	12.6			688
1984	UT1		1984	10	31.26806	02	06	27.42	+13	13	18.5		17.2	688
1984	UT1		1984	10	31.29861	02	06	25.76	+13	13	10.2			688
1984	UU1	*	1984	10	29.32326	02	10	45.86	+08	22	25.7		17.5	7 688
1984	UU1		1984	10	29.35000	02	10	44.01	+08	22	23.5			688
1984	UV1	*	1984	10	29.32326	02	11	57.75	+13	26	40.3		17.0	7 688
1984	UV1		1984	10	29.35000	02	11	56.40	+13	26	32.4			688
1984	UV1		1984	10	31.26806	02	10	21.59	+13	18	31.6		17.0	688
1984	UV1		1984	10	31.29861	02	10	19.84	+13	18	25.0			688
1984	UW1	*	1984	10	29.32326	02	12	02.47	+13	15	56.2		17.0	6 688

1984	UW1		1984	10	29.35000	02	12	01.20	+13	15	30.6		2	688
1984	UW1		1984	10	31.26806	02	10	44.77	+12	45	52.6	17.0	A	688
1984	UW1		1984	10	31.29861	02	10	43.10	+12	45	27.0		A	688
1984	UX1	*	1984	10	29.32326	02	12	16.09	+11	39	45.8	17.0	7	688
1984	UX1		1984	10	29.35000	02	12	14.38	+11	39	44.9			688
1984	UX1		1984	10	31.26806	02	10	11.47	+11	38	02.9	17.0		688
1984	UX1		1984	10	31.29861	02	10	09.52	+11	38	01.7			688
1984	UY1	*	1984	10	29.36528	02	38	16.49	+08	33	42.6	17.0	6	688
1984	UY1		1984	10	29.39306	02	38	14.66	+08	33	46.8			688
1984	UZ1	*	1984	10	29.36528	02	39	28.59	+12	26	31.5	17.0	6	688
1984	UZ1		1984	10	29.39306	02	39	27.06	+12	26	20.4			688
1984	UZ1		1984	10	31.31389	02	37	46.75	+12	15	23.7	16.8		688
1984	UZ1		1984	10	31.34444	02	37	45.27	+12	15	13.3			688
1984	UA2	*	1984	10	29.36528	02	48	53.05	+09	24	24.8	16.8	6	688
1984	UA2		1984	10	29.39306	02	48	51.23	+09	24	15.5			688
1984	UA2		1984	10	31.31389	02	46	48.35	+09	14	39.6	16.8		688
1984	UA2		1984	10	31.34444	02	46	46.35	+09	14	30.1			688
1984	UB2	*	1984	10	29.36528	02	58	18.64	+15	12	46.7	17.2	6	688
1984	UB2		1984	10	29.39306	02	58	17.23	+15	12	37.2			688
1984	UB2		1984	10	31.31389	02	56	46.22	+15	05	40.8	17.2		688
1984	UB2		1984	10	31.34444	02	56	45.01	+15	05	32.0			688
1984	UC2	*	1984	10	29.36528	02	58	59.24	+08	14	05.8	16.5	6	688
1984	UC2		1984	10	29.39306	02	58	57.46	+08	14	01.5			688
1984	UC2		1984	10	31.31389	02	56	58.94	+08	08	46.6	16.5		688
1984	UC2		1984	10	31.34444	02	56	56.78	+08	08	41.4			688
1984	US2	*	1984	10	26.15625	23	40	25.27	+00	09	06.6	17.0	6	688
1984	US2		1984	10	26.24514	23	40	24.15	+00	09	10.4			688
1984	UT2	*	1984	10	26.15625	23	42	17.58	+02	32	58.2	17.5	6	688
1984	UT2		1984	10	26.24514	23	42	15.86	+02	32	54.8			688
1984	UU2	*	1984	10	26.27917	01	36	42.58	+10	40	23.4	16.8	6	688
1984	UU2		1984	10	26.33958	01	36	38.54	+10	40	02.1			688
1984	UV2	*	1984	10	26.27917	01	37	34.43	+17	32	25.9	16.5	6	688
1984	UV2		1984	10	26.33958	01	37	30.56	+17	32	23.3			688
1984	UW2	*	1984	10	26.27917	01	43	00.22	+17	42	34.3	17.0	6	688
1984	UW2		1984	10	26.33958	01	42	57.30	+17	42	09.6			688
1984	UX2	*	1984	10	26.27917	01	44	21.10	+17	04	21.4	16.2	6	688
1984	UX2		1984	10	26.33958	01	44	16.94	+17	04	21.4			688
1984	UY2	*	1984	10	26.27917	01	48	01.96	+16	47	56.5	16.8	6	688
1984	UY2		1984	10	26.33958	01	47	58.26	+16	47	29.6			688
1984	UZ2	*	1984	10	26.27917	01	49	38.27	+16	00	13.0	17.0	6	688
1984	UZ2		1984	10	26.33958	01	49	34.53	+15	59	50.0			688
1984	UA3	*	1984	10	26.27917	01	51	12.15	+18	06	06.6	17.0	6	688
1984	UA3		1984	10	26.33958	01	51	08.39	+18	05	30.1			688
1984	UB3	*	1984	10	26.27917	01	52	29.83	+12	31	25.9	17.0	6	688
1984	UB3		1984	10	26.33958	01	52	26.87	+12	31	07.7			688
1984	UC3	*	1984	10	26.27917	01	53	30.22	+11	48	32.0	17.0	6	688
1984	UC3		1984	10	26.33958	01	53	27.13	+11	48	13.9			688
1984	UD3	*	1984	10	26.27917	01	53	45.54	+10	43	13.3	17.0	6	688
1984	UD3		1984	10	26.33958	01	53	42.36	+10	42	40.3			688
1984	UE3	*	1984	10	26.27917	02	00	06.49	+14	58	00.4	17.0	6	688
1984	UE3		1984	10	26.33958	02	00	02.50	+14	57	44.6			688
1984	UF3	*	1984	10	26.29792	02	09	58.06	-05	06	18.0	17.2	6	688
1984	UF3		1984	10	26.35833	02	09	54.76	-05	06	31.2			688
1984	UG3	*	1984	10	26.29792	02	22	52.25	-06	32	00.0	17.0	7	688
1984	UG3		1984	10	26.35833	02	22	48.78	-06	31	57.2			688
1984	UH3	*	1984	10	29.32326	02	08	08.87	+12	47	25.8	17.0	G	688
1984	UH3		1984	10	29.35000	02	08	07.18	+12	47	14.1		C	688
1984	UH3		1984	10	31.26806	02	06	27.33	+12	28	52.9	17.5		688
1984	UH3		1984	10	31.29861	02	06	25.64	+12	28	39.7			688

1984 VA	1984 11 01.31319	03 11 41.11	+17 21 11.1		16.5		688
1984 VA	1984 11 01.35556	03 11 38.95	+17 21 06.8				688
6562 P-L	1983 11 28.19306	03 27 10.74	+18 23 45.9		16.5		688
6562 P-L	1983 11 28.25417	03 27 07.42	+18 23 38.6				688

Note 1: right ascension uncertain. 2: declination uncertain. 3 = 1 + 2. 4: discoverer Skiff. 5 = 1 + 4. 6: discoverer Bowell. 7 = 1 + 6. 9 = 3 + 6. A: object diffuse. B = 1 + A. C = 2 + A. G = 6 + A.

OBSERVATIONS MADE AT THE GOETHE LINK OBSERVATORY.

Plates measured and reduced at Indiana University under the direction of D. Owings in response to requests from the Minor Planet Center. Contact: F. K. Edmondson, Swain Hall West 319A, Indiana University, Bloomington, IN 47401, U.S.A.

Object	Date	UT	R. A. (1950)	Decl.		N	Obs.
1112	1963 03	24.11486	12 26 52.63	-15 40 04.7		1	760
1112	1963 03	24.16869	12 26 49.96	-15 39 52.2		1	760
1116	1956 09	09.09272	22 05 34.28	-23 00 40.4		2	760
1116	1956 09	09.13439	22 05 31.95	-23 00 40.5		2	760
1143	1962 12	01.08326	03 05 57.19	+16 36 59.0			760
1143	1962 12	01.12771	03 05 56.14	+16 36 53.4			760
1143	1962 12	02.12274	03 05 27.11	+16 34 35.3		3	760
1143	1962 12	02.17714	03 05 25.50	+16 34 28.2		3	760
1182	1956 10	05.16809	02 30 37.70	+29 19 12.6			760
1182	1956 10	05.26323	02 30 33.54	+29 19 43.6			760
1182	1956 10	06.29934	02 29 48.38	+29 25 17.2			760
1182	1956 10	06.34240	02 29 46.38	+29 25 29.8			760
1182	1956 10	28.36733	02 07 04.11	+30 08 57.7			760
2983	1955 03	20.08822	09 28 06.26	+08 42 30.2			760
2983	1955 03	20.13890	09 28 04.90	+08 42 40.6			760
3002	1963 09	27.25347	23 53 48.44	-11 07 19.0			760
3002	1963 09	27.29861	23 53 45.86	-11 07 35.2			760
1955 SM	1955 09	17.27286	00 09 12.73	+09 34 37.1			760
1955 SM	1955 09	17.31314	00 09 10.94	+09 34 20.5			760
1955 SQ	1955 09	17.27286	23 56 18.56	+04 48 13.8			760
1955 SQ	1955 09	17.31314	23 56 16.56	+04 47 49.5			760

Note 1: the rough position on MPC 2235 is in error. 2: likewise the position on MPC 1603. 3: likewise the position on MPC 2233.

OBSERVATIONS MADE AT OAK RIDGE OBSERVATORY BY R. E. McCROSKY, C.-Y. SHAO AND G. SCHWARTZ.

Plates with the 1.5-m reflector, reduced using the Astrographic Catalogue. Coordination and verification by, and assistance with identifications from, C. M. Bardwell. Contact: R. E. McCrosky, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, U.S.A.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
526	1984 10	21.19575	00 52 29.87	+02 43 39.1			801
1916	1984 10	03.38324	03 58 35.91	+40 27 09.0			801
1916	1984 10	25.16426	03 34 45.27	+43 22 29.9			801
2100	1984 08	24.04597	18 04 07.47	+16 20 25.1			801
2100	1984 08	29.04833	18 16 02.32	+08 21 17.6			801
3106	1983 07	10.11855	16 47 26.60	-09 28 29.3			801
3120	1984 08	29.09499	20 38 29.55	+01 27 25.3			801
3122	1984 10	15.96517	18 44 26.79	-02 54 16.4			801
3122	1984 10	17.96711	18 50 30.61	-00 57 49.5			801
A908 AA	1984 10	21.04076	21 07 44.21	-05 56 24.2	18		801
1938 SL	1984 09	26.16944	00 52 31.11	-05 59 35.5			801
1938 SL	1984 10	16.17130	00 34 44.68	-05 14 06.6			801
1949 QC	1984 10	17.18107	01 02 33.64	-09 51 46.3			801
1953 EE	1984 08	25.25000	23 03 13.37	-18 23 36.7			801

1953	EE		1984	10	21.08702	22	22	16.76	-17	58	05.5		1 801
1955	RY		1984	08	24.08973	18	42	16.30	-18	59	23.1		801
1955	RY		1984	10	17.00701	19	57	33.26	-15	22	38.2		801
1971	SC		1984	10	16.13438	23	42	53.04	-17	33	17.5		801
1971	SC		1984	10	21.13175	23	49	33.69	-18	05	09.7		801
1973	SD3		1984	10	17.15889	00	57	44.89	+05	30	42.6		2 801
1973	SD3		1984	10	18.20539	00	56	59.77	+05	25	44.9		801
1973	SX3		1984	09	26.15344	00	21	43.38	-05	58	47.4		801
1973	SX3		1984	10	16.15564	00	06	28.79	-06	31	55.1		801
1973	UL5		1984	10	03.19994	00	51	45.27	+05	46	16.8	17	801
1973	UL5		1984	10	19.10609	00	39	49.00	+04	32	33.0		801
1973	UL5		1984	10	21.16577	00	38	22.76	+04	23	29.9		801
1974	SL		1984	09	27.03110	20	01	46.26	-10	16	17.6		801
1974	SL		1984	10	16.00320	20	12	21.92	-11	15	23.6		801
1976	SU2		1984	09	23.13751	22	49	18.58	+00	20	04.3		801
1976	SU2		1984	10	17.05554	22	40	10.51	-03	55	13.5		801
1976	YU3		1984	10	18.11523	00	22	42.48	+04	49	13.9		801
1977	TO3		1984	10	21.25894	02	30	19.72	+20	05	16.2		801
1979	SF9		1984	10	17.19837	01	24	27.30	+04	54	33.8		801
1979	SX9		1984	10	03.30193	02	26	51.71	+12	59	05.5		801
1979	SX9		1984	10	18.24363	02	15	59.92	+12	13	59.8		801
1979	SS11		1984	10	21.21503	01	52	24.58	+11	41	32.2		801
1979	SA12		1984	10	01.04077	22	02	23.91	-12	24	10.4		801
1979	SA12		1984	10	18.06163	21	59	51.58	-12	32	01.2		801
1979	SA12		1984	10	21.06097	22	00	08.66	-12	29	30.7		3 801
1980	TB5		1984	10	17.08002	23	33	51.97	+03	11	45.1		801
1981	CK		1984	10	19.17403	01	01	56.92	+07	03	13.0		801
1981	EP		1984	10	17.11495	00	05	19.63	-09	06	33.0		801
1981	WY		1984	09	26.24053	01	11	14.87	-08	29	08.1		801
1981	WY		1984	10	19.13124	00	47	31.95	-09	20	02.9		801
1981	YE		1984	10	03.22180	01	06	30.92	+03	34	12.1		801
1981	YE		1984	10	19.14739	00	51	20.62	+02	21	34.2		801
1982	BY1		1984	10	25.22839	02	11	14.98	+11	12	45.0		801
1982	FK		1984	08	26.31539	01	29	41.43	+07	59	48.8		801
1982	FK		1984	08	27.29270	01	29	30.26	+08	02	01.0		801
1982	RA		1984	10	16.11616	19	38	47.51	+34	11	55.8		801
1982	RA		1984	10	20.98370	19	35	55.48	+36	23	41.2		801
1983	HF		1984	10	01.01904	22	07	11.98	+10	15	01.0		4 801
1983	NJ		1984	10	03.32154	02	33	08.80	-04	43	38.6		801
1983	NJ		1984	10	21.23926	02	21	50.60	-06	53	09.9		801
1983	XF		1984	02	09.02735	04	30	06.71	+26	19	35.1		801
1984	KD		1984	10	25.19663	00	59	43.33	-23	58	38.0		5 801
1984	SX1		1984	10	19.10609	00	39	39.94	+04	24	09.5	17	801
1984	SX1		1984	10	21.16577	00	38	35.65	+04	07	31.2		801
1984	TB	*	1984	10	03.19994	00	52	51.19	+05	33	34.6	16.5	801
1984	TB		1984	10	19.10609	00	40	20.80	+04	25	45.8	17.3	801
1984	TB		1984	10	21.16577	00	38	51.93	+04	17	43.9		801
1984	TC	*	1984	10	03.19994	00	53	41.35	+05	40	08.7	18.0	801
1984	TD	*	1984	10	03.19994	00	54	00.76	+05	55	34.4	17.0	801
1984	TD		1984	10	19.10609	00	42	30.11	+04	43	02.9	18.0	801
1984	UE2	*	1984	10	17.19837	01	24	16.80	+04	54	01.0	17.5	801
1984	UF2	*	1984	10	18.20539	00	58	22.97	+05	27	35.6	17.8	801
1984	UG2	*	1984	10	18.98943	21	08	08.13	-18	36	30.1	18	801
1984	UH2	*	1984	10	19.14739	00	52	56.50	+02	16	49.9	17.5	801
1984	UJ2	*	1984	10	19.17403	01	02	27.41	+06	52	16.7	18.5	801
1984	UK2	*	1984	10	25.22839	02	11	03.09	+11	06	18.0	18	801
1984	UN2		1984	10	03.19994	00	52	54.24	+05	50	39.4		801
1984	UN2	*	1984	10	19.10609	00	40	49.18	+04	24	43.5	17.5	801
1984	UN2		1984	10	21.16577	00	39	23.24	+04	14	23.1		801

1984 UO2 *	1984 10 19.10609	00 41 05.30	+04 31 21.2		18.0		801
1984 UP2 *	1984 10 19.10609	00 41 11.51	+04 41 30.6		18.5		801
1984 UQ2 *	1984 10 19.10609	00 41 54.06	+04 58 17.6		18.0		801

Note 1: image somewhat trailed. 2: poor images. 3: on a star. 4: date erroneously given as 1984 09 31 on MPC 9201. 5: involved with a star.

OBSERVATIONS MADE AT JCPM OI STATION BY K. SUZUKI AND T. URATA.
Contact: T. Urata, Nishitaka-cho 8-23, Shimizu, Shizuoka 424, Japan.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1984 WA *	1984 11 21.55208	04 26 19.34	+21 16 59.5		14.5	882
1984 WA	1984 11 21.58542	04 26 17.44	+21 16 43.6			882

OBSERVATIONS MADE AT KARASUYAMA BY S. INODA.
Measured by T. Urata. Copied from Nihondaira Obs. Circ. No. 1483.
Contact: T. Urata, Nishitaka-cho 8-23, Shimizu, Shizuoka 424, Japan.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1290	1984 09 24.55515	23 14 25.98	+04 02 48.0		16	889
1290	1984 09 24.58788	23 14 24.49	+04 02 42.8			889
1984 QE	1984 09 24.52060	22 51 32.05	-15 57 36.4		15.5	889
1984 QE	1984 09 24.54369	22 51 31.08	-15 57 38.1			889
1984 QE	1984 09 24.57685	22 51 29.85	-15 57 42.1			889

OBSERVATION MADE AT LANCASTER.
Plate taken and measured by D. G. Buczynski. Contact: A. J. Hollis, Ormada, 85 Forest Road, Cuddington, Northwich, Cheshire CW8 2ED, England.

Object	Date	UT	R. A. (1950)	Decl.	N	Obs.
8	1984 10 02.91924	01 43 14.31	-02 32 14.7		1	980

Note 1: observatory code 980, Long. and Parallax 357.20, -251, -343 (see MPC 7757).

OBSERVATIONS MADE AT EASTFIELD.
Plates taken by H. B. Ridley, measured by R. Miles, reduced by A. J. Hollis. Contact: A. J. Hollis, Ormada, 85 Forest Road, Cuddington, Northwich, Cheshire CW8 2ED, England.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
9	1984 04 26.91285	11 39 24.50	+10 07 29.2		984
9	1984 05 29.94167	11 43 11.97	+07 43 24.2		984
11	1984 04 26.91285	11 52 52.28	+07 33 16.7		984
11	1984 05 29.94167	11 52 21.62	+06 47 00.3		984
14	1984 04 27.93333	13 36 16.08	+04 58 17.0		984
14	1984 05 29.97361	13 21 09.38	+02 44 52.8		984

* * * * *

ORBITAL ELEMENTS OF ONE-OPPOSITION MINOR PLANETS.

The orbit computers are B = C. M. Bardwell, E = E. Bowell, G = D. W. E. Green, M = B. G. Marsden, N = S. Nakano. See also MPC 7828.

Planet	B(1,0)	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1984 QO	13.5	841007	307.92	89.97	343.44	14.38	0.2559	2.5632	31	0		G
1984 SA	15.0	841007	25.70	77.38	253.79	5.87	0.2226	2.2860	34	4		M
1984 SG	17.5	840917	320.00	50.44	357.79	19.16	0.1100	1.9121	3	5	1	M
1984 SL	14.0	841007	350.59	228.29	156.80	9.73	0.3021	2.7328	35	0		M
1984 SV	14.5	841007	295.79	99.83	343.58	5.88	0.1181	2.4012	35	0		M
1984 SG1	13.5	840917	318.73	115.50	287.72	3.39	0.0468	2.7901	5	8		B
1984 SX1	14.5	841007	17.84	142.66	198.28	6.23	0.2812	2.7920	23	0		M
1984 SB2	14.5	841007	8.97	162.26	206.32	26.40	0.1595	2.5497	31	0		G
1984 SQ2	15.5	841007	352.41	342.25	31.88	5.65	0.1783	2.2405	31	6		E

1984 SR2	15.3	841007	347.47	66.44	315.78	4.88	0.1544	2.2217	31	6		E
1984 ST2	15.6	841007	4.84	22.15	337.70	6.39	0.2048	2.2017	31	6		E
1984 SL3	14.7	841007	15.59	330.91	23.11	6.80	0.2001	2.2501	31	6		E
1984 SQ3	14.5	841007	45.66	299.02	21.46	4.81	0.1426	2.2168	33	6		E
1984 SU3	15.1	841007	11.35	314.92	42.97	5.74	0.3089	2.6378	33	6		E
1984 SW3	14.5	841007	352.77	99.64	294.19	9.59	0.2554	2.3884	29	4		M
1984 SZ3	14.5	841007	167.61	352.60	210.59	3.04	0.1022	2.2712	3	6	1	M
1984 TB	13.0	841007	192.41	169.72	14.24	2.78	0.1365	2.8789	23	4		M
1984 TD	13.5	841007	271.58	168.85	300.48	0.10	0.0621	3.1838	21	4		M
1984 UA	14.8	841027	80.94	50.16	243.72	12.26	0.1740	2.5761	13	0		N
1984 UD	14.5	841027	348.88	23.23	26.99	9.09	0.2462	2.7283	13	0		M
1984 US	13.0	841027	335.70	38.63	34.79	15.69	0.1506	2.6200	23	0		M
1984 UT	14.0	841027	339.22	202.04	231.94	16.14	0.2300	2.7790	29	8		M
1984 UU	12.5	841027	188.75	333.02	241.95	9.74	0.0448	2.9487	5	8	1	M
1984 UA1	16.0	841027	18.42	335.37	26.31	6.74	0.2812	2.5613	2	5	1	G
1984 UB1	14.0	841027	2.81	3.21	28.61	7.52	0.1371	2.8927	2	5	1	M
1984 UC1	15.5	841027	6.89	125.61	261.29	1.92	0.1003	2.2143	2	5	1	M
1984 UD1	13.5	841027	351.98	187.12	218.78	9.28	0.1090	3.0775	2	4	1	G
1984 UF1	14.0	841027	37.55	124.69	229.68	2.13	0.0567	2.5083	2	6		G
1984 UJ1	16.0	841027	12.82	341.63	28.28	6.30	0.2492	2.3513	5	8	1	M
1984 UK1	14.5	841027	282.71	255.68	227.15	3.82	0.1195	2.4256	5	8		M
1984 UL1	14.5	841027	346.88	215.09	198.78	1.03	0.2512	3.1204	2	5	1	G
1984 UM1	13.5	841027	199.17	338.49	219.18	4.79	0.1492	2.5824	5	0	1	M
1984 UN1	13.0	841027	314.06	203.73	261.49	4.55	0.1771	3.1314	2	5	1	G
1984 UO1		841027	270.38	128.24	24.03	9.04	0.1872	2.4356	2	5	1	G
1984 UN2	14.0	841007	34.79	139.07	196.52	1.60	0.0463	2.9106	23	5		M
1984 UB3	14.0	841027	352.82	141.04	261.11	0.70	0.1830	2.9407	5	6	1	M
1984 UD3	15.0	841027	333.74	216.03	207.53	7.50	0.1012	2.4303	4	6		M
1984 VA	15.0	841116	357.24	2.82	52.36	1.91	0.2758	2.8953	11	7	1	M
1984 WC	15.5	841206	340.10	206.81	256.88	6.18	0.3399	2.3479	3	5		N

Note 1: e assumed.

* * * * *

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

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

(3144)* 1931 TY1 = 1981 XG1

Discovered 1931 Oct. 10 by K. Reinmuth at Heidelberg. The identification is by O. Kippes (MPC 7468).

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M	132.11348	(1950.0)	P	Q	
n	0.29686736	Peri.	95.12241	+0.95486182	+0.28333705
a	2.2255008	Node	248.44099	-0.29605821	+0.88321331
e	0.2094659	Incl.	5.50452	-0.02425767	+0.37370357
P	3.32	B(1,0)	14.5		

Residuals in seconds of arc

311010	024	(8.3-	9.0-)	811127	330	1.4+	1.1+	840822	688	2.2+	0.5-
311016	024	(3.6+	5.3+)	811201	330	0.8-	0.1-	840822	688	2.4+	2.4+
311019	024	0.5-	1.5-	811204	511	1.3+	1.1+	840826	801	1.0-	0.4-
311104	024	1.4-	0.8+	811204	511	0.9-	1.8+	840926	801	2.6-	0.5-
811118	330	1.3-	0.2-	840724	801	0.8-	1.0+				

(3145)* 1955 RY = 1955 SY1 = 1955 TD = 1981 RS2

Discovered 1955 Sept. 14 at the Goethe Link Observatory, Indiana University. The identification 1955 RY = 1981 RS2 (MPC 7605) and the double designation 1955 RY = 1955 SY1 (MPC 1556) are by O. Kippes.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M	130.49640		(1950.0)		P		Q				
n	0.30357565	Peri.	41.50663		+0.81445572		+0.57390920				
a	2.1925934	Node	283.27325		-0.55277307		+0.72274587				
e	0.2357487	Incl.	5.03277		-0.17636272		+0.38505406				
P	3.25	B(1,0)	15.5								

Residuals in seconds of arc

550914	760	2.6-	1.3-	551010	760	0.6-	1.3+	811003	095	2.2-	0.3-
550914	760	2.1-	0.6-	551012	760	2.7+	1.4-	830121	801	0.4-	1.0-
550921	760	3.0+	1.4+	551012	760	0.3-	0.9-	840824	801	0.0	0.7-
550921	760	3.0+	0.6+	810907	095	3.4+	0.8-	841017	801	0.6-	1.5+
551010	760	2.1-	4.2+	810927	095	0.4-	0.3-				

(3146)* 1972 KG = 1949 HF = 1965 SY = 1980 SB = 1983 EN

Discovered 1972 May 17 by T. Smirnova at the Crimean Astrophysical Observatory.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M	192.82678		(1950.0)		P		Q				
n	0.25943879	Peri.	82.29824		-0.07907077		+0.99683569				
a	2.4347037	Node	183.20066		-0.96243855		-0.07846728				
e	0.1966454	Incl.	8.39327		-0.25973031		-0.01270790				
P	3.80	B(1,0)	14.5								

Residuals in seconds of arc

490423	024	(4.7+	12.2+)	800912	323	0.9-	1.5-	830313	046	2.0+	0.0
650923	330	0.6+	1.8-	800916	046	0.3+	1.1-	830313	046	2.4-	3.1+
720517	095	1.8-	1.1-	800916	046	0.3+	1.6-	840729	801	0.8+	0.5+
720606	095	0.9+	1.7-	800917	323	1.8+	5.3+	840826	801	0.6+	0.6+
720610	095	0.2+	0.2+	830312	046	1.4+	2.3-	841029	688	1.4-	2.0-
800912	323	1.2-	3.7+	830312	046	0.7-	1.1-	841029	688	0.0	3.5-

(3147)* 1976 YU3 = 1979 OU12

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

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M	33.11597		(1950.0)		P		Q				
n	0.23199275	Peri.	241.61200		-0.12757718		-0.99116745				
a	2.6231297	Node	215.77466		+0.93024701		-0.10691244				
e	0.1947744	Incl.	3.55116		+0.34404149		-0.07846544				
P	4.25	B(1,0)	14.5								

Residuals in seconds of arc

761216	095	0.7-	0.8+	790726	675	1.0-	1.4+	840920	046	1.2-	2.4-
761220	095	2.0-	1.8+	790727	675	0.6+	0.7+	840921	046	0.3-	1.0+
770113	095	2.3+	0.6-	820325	801	1.9+	0.6-	840923	801	0.9+	0.4-
770120	095	0.8+	0.5-	820422	801	1.8-	0.6+	841018	801	0.8+	0.6+

(3148)* 1979 SA12 = 1973 QV1

Discovered 1979 Sept. 24 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M	31.06715		(1950.0)		P		Q				
n	0.17929266	Peri.	42.57757		+0.72356367		-0.69025761				
a	3.1147824	Node	1.07302		+0.62971419		+0.65995430				
e	0.1777590	Incl.	0.74541		+0.28269357		+0.29665596				
P	5.50	B(1,0)	13.0								

Residuals in seconds of arc

730831	095	0.7-	0.4-	791116	095	0.4+	1.0-	840928	688	1.3+	0.1-
730905	095	2.0+	3.1-	791122	095	0.2-	0.7+	841001	801	0.3-	1.1+
790924	095	1.1+	0.4+	840725	801	1.9-	0.4-	841018	801	1.2-	0.4+
791014	095	1.1-	0.1+	840825	801	0.7+	2.0+	841021	801	0.7-	0.2+

(3149)* 1981 SH = 1951 WN2 = 1951 YS = 1971 TF3
Discovered 1981 Sept. 22 by Z. Vavrova at Klet.
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M	36.20884	(1950.0)	P	Q	
n	0.29242476	Peri.	237.02696	+0.42519915	-0.90494033
a	2.2479844	Node	187.86599	+0.86629605	+0.41233578
e	0.1567081	Incl.	7.13161	+0.26217711	+0.10517698
P	3.37	B(1,0)	15.0		

Residuals in seconds of arc

511126	672	1.6-	0.4-		810922	046	2.8+	0.3+	811005	688	1.1+	2.2-
511126	672	2.0-	0.5-		810922	046	0.6-	0.3-	811005	046	0.8-	1.1+
511223	711	3.7+	0.9+	Y	810925	046	1.0-	3.1-	811005	046	1.2-	0.1-
711010	095	0.4-	1.5+		810925	046	0.7+	1.9+	840724	801	0.7+	2.3+
711011	095	0.3-	1.8+		811005	688	0.0	2.2-	840826	801	1.2-	0.3+

(3150)* 1983 CB = 1966 FB = 1968 QE1 = 1971 BX1 = 1982 DQ2
Discovered 1983 Feb. 11 by T. Seki at Geisei.
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M	80.36200	(1950.0)	P	Q	
n	0.17227069	Peri.	277.42366	-0.03390662	+0.99725076
a	3.1988592	Node	349.90249	-0.70251039	-0.07067317
e	0.1189342	Incl.	22.07429	-0.71086530	+0.02227600
P	5.72	B(1,0)	12.0		

Residuals in seconds of arc

660317	760	2.5+	2.2+		830217	372	0.4-	0.1+	830316	688	3.2-	0.6-
660317	760	0.0	2.9+		830219	688	0.4+	2.0-	830316	688	0.5-	1.6-
680827	095	5.2+	3.7-		830219	688	0.1+	2.2-	830402	675	0.5+	0.2-
710130	095	4.1+	2.2+		830308	372	0.7-	0.3-	830402	372	0.5+	0.2+
820225	511	3.6-	0.8-		830308	372	0.8-	1.9+	830402	372	0.1+	1.5+
820226	511	0.4-	0.6-		830309	688	1.0+	1.6-	830403	675	0.7+	0.4+
830211	372	0.5+	1.3-		830309	688	0.4-	0.2-	830506	688	0.8-	1.7-
830213	372	0.3-	0.2-		830311	372	1.8-	0.8+	830506	688	0.3-	2.4-
830215	372	0.5-	0.4+		830311	372	2.4-	0.5+	840529	474	0.1+	0.8-
830215	372	0.8-	0.6+		830314	372	0.5-	2.3-	840529	474	1.1-	0.3-
830217	372	1.2+	0.8+		830314	372	0.7+	2.9-				

(3151)* 1983 HF = 1951 LD = 1980 TA12 = 1980 UP
Discovered 1983 Apr. 18 by N. G. Thomas at the Anderson Mesa Station of the Lowell Observatory.
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M	173.00162	(1950.0)	P	Q	
n	0.21454432	Peri.	37.18201	-0.37171759	+0.91122600
a	2.7634909	Node	212.12896	-0.91159883	-0.39442664
e	0.1376091	Incl.	19.49267	-0.17553801	+0.11872152
P	4.59	B(1,0)	13.0		

Residuals in seconds of arc

510601	760	0.3-	7.4+		830418	688	0.8-	0.8-	840731	801	0.9+	1.8-
510601	760	0.3-	1.0-		830506	688	0.1-	0.7-	840827	801	0.4-	0.6-
801010	095	0.4-	0.7-		830506	688	0.0	1.6-	840923	801	0.0	1.1-
801017	095	0.9+	0.1+		830515	688	0.3+	2.3-	841001	801	0.2-	0.8-
830418	688	1.1+	1.5-		830515	688	0.8-	1.9-				

(3152)* 1983 LF = 1951 YC = 1980 TP8
Discovered 1983 June 7 by A. C. Gilmore and P. M. Kilmartin at Mt. John University Observatory.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M 200.19188		(1950.0)	P	Q
n 0.23165279	Peri.	290.80552	-0.60177344	+0.78073326
a 2.6256955	Node	301.06931	-0.64000705	-0.59745535
e 0.0899469	Incl.	11.33150	-0.47776531	-0.18303736
P 4.25	B(1,0)	12.5		

Residuals in seconds of arc

511222 711	0.7+	5.3+ Y	830705 474	2.3+	0.1+	840529 474	0.8+	1.0-
511222 711	0.9-	5.8- Y	830705 474	2.0+	0.0	840726 474	0.1-	0.4-
801013 095	1.0+	0.5+	830711 474	1.5-	2.3-	840726 474	0.6+	0.8-
830607 474	2.2-	1.5+	830711 474	0.7+	1.7-	840825 474	0.7-	0.9+
830607 474	0.2+	1.8-	830728 474	0.2+	0.9+	840825 474	1.3-	0.8+
830612 474	0.3-	1.5+	830728 474	0.8+	0.2+			
830612 474	1.2-	1.3+	840529 474	0.4+	0.8-			

(3153)* 1984 SH3 = 1969 TF5 = 1975 GD = 1979 GQ = 1982 BY5

Discovered 1984 Sept. 28 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M 93.12934		(1950.0)	P	Q
n 0.26124561	Peri.	347.02904	+0.88797545	-0.45167508
a 2.4234648	Node	40.18756	+0.43299309	+0.75769370
e 0.1286619	Incl.	7.70718	+0.15497282	+0.47105188
P 3.77	B(1,0)	14.0		

Residuals in seconds of arc

691014 095	2.0+	1.6+	790406 808	0.5-	1.7+	840928 688	0.2+	0.1+
691015 095	3.1-	0.3-	820126 381	0.3+	0.4-	841023 688	0.4-	0.0
750415 805	1.4+	1.1-	820126 381	0.9-	0.1+	841023 688	0.7+	0.5-
750418 805	0.8-	1.4-	820128 381	0.3+	0.6+	841029 688	0.0	0.6-
790406 808	0.3+	1.1+	840928 688	0.4+	0.3-	841029 688	0.1+	0.6+

(3154)* 1984 SO3 = 1975 BP = 1979 WD4 = 1979 YV5 = 1982 JT

Discovered 1984 Sept. 28 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory. The double designation 1979 WD4 = 1979 YV5 is by N. S. Chernykh. The identification 1941 WA = 1982 JT (JAM 1507) is invalid.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M 53.79723		(1950.0)	P	Q
n 0.18000103	Peri.	307.93495	+0.63878872	-0.76822194
a 3.1066052	Node	102.30983	+0.71873276	+0.57624713
e 0.1633615	Incl.	2.47776	+0.27453994	+0.27888043
P 5.48	B(1,0)	13.5		

Residuals in seconds of arc

750117 095	0.4-	2.2-	820516 675	2.3-	0.0	841026 688	1.5-	1.2-
791117 095	2.3-	0.8+	820517 675	4.4+	0.9-	841026 688	3.2+	1.2-
791218 095	1.8+	0.3+	820518 675	0.1+	0.3-	841031 688	1.4-	0.2+
820515 675	0.5-	0.2+	840928 688	0.6+	0.7+	841031 688	0.8+	1.7-
820516 675	2.7-	2.2-	840928 688	0.0	0.1-			

(3155)* 1984 SP3 = 1932 EG = 1934 VN = 1941 SR1 = 1968 DT = 1970 XK = 1972 HB = 1977 UK1 = 1977 UE2 = 1982 BD5

Discovered 1984 Sept. 28 by B. A. Skiff at the Anderson Mesa Station of the Lowell Observatory. The double designation 1977 UK1 = 1977 UE2 is by O. Kippes (MPC 6840).

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M 84.54890		(1950.0)	P	Q
n 0.27484210	Peri.	28.59649	+0.55052975	-0.83272317
a 2.3428647	Node	28.12213	+0.74004551	+0.45406509
e 0.1005227	Incl.	7.19910	+0.38632841	+0.31685487
P 3.59	B(1,0)	13.0		

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

320305	024	8.6+	1.8-		771016	031	0.4+	1.9+		820126	381	0.6-	1.1+
341108	094	(0.01-	0.17-)X		771016	031	2.2+	0.5+		820126	381	0.0	1.2-
341115	094	(17.1-	4.2-)X		771018	095	0.6-	1.5+		820128	381	0.3+	2.0-
410927	062	1.7-	1.9-		771019	031	0.7+	0.2+		820128	381	1.9-	2.9-
410930	062	2.6-	1.6-		771019	031	1.8-	1.0+		840928	688	1.9+	1.4-
410930	062	1.5-	1.4-		771020	031	0.8+	0.3-		840928	688	0.6+	1.8-
680227	095	0.7+	7.0+		771020	033	0.3+	1.1-		841026	688	1.0+	1.2-
701204	095	2.3-	6.7+		771021	031	0.5+	0.4+		841026	688	0.1-	1.0-
720418	095	3.2-	6.3-		771021	031	4.0+	1.5-		841031	688	1.6+	0.1-
771014	031	0.9-	1.5+		820126	381	2.5-	2.4-		841031	688	2.5+	1.1-
771015	031	1.6-	1.6+		820126	381	2.4-	2.6-					
771016	031	1.1+	1.5+		820126	381	2.9-	2.2-					

1969 TT1 = 1984 UE1

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	115.17967		(1950.0)	P	Q
n	0.26347350	Peri.	355.12953	+0.93261669	-0.36041076
a	2.4097886	Node	26.01894	+0.33245779	+0.83851886
e	0.1830344	Incl.	2.37411	+0.14034932	+0.40864434
P	3.74	B(1,0)	15.0		

Residuals in seconds of arc

691008	095	0.9+	3.3+		691111	095	1.5-	0.9+		841029	046	0.9-	0.4-
691013	095	1.5+	1.5-		691113	095	0.2-	1.1+		841029	046	0.4-	1.0+
691016	095	0.7-	0.6-		841028	046	0.4+	1.6-		841030	046	0.2-	2.2+
691104	095	1.3-	1.0+		841028	046	0.3+	1.5-		841030	046	1.7+	1.1+

1975 QO = 1984 UM2

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	104.50494		(1950.0)	P	Q
n	0.22899007	Peri.	50.25979	+0.94420587	-0.31282284
a	2.6460161	Node	327.58455	+0.21121714	+0.81517385
e	0.3098705	Incl.	11.08228	+0.25271050	+0.48747663
P	4.30	B(1,0)	14.5		

Residuals in seconds of arc

750830	808	0.8-	1.2+		750909	808	0.8-	0.0		841026	675	0.1-	0.8+
750831	808	0.6+	0.9-		750909	808	0.6-	0.8+		841027	675	0.6-	0.4+
750902	808	0.5-	0.1-		841023	675	1.3+	0.5-					
750902	808	1.5+	1.7-		841025	675	0.2+	0.3+					

1978 QJ2 = 1932 HB = 1973 UH1 = 1979 VD3 = 1984 UG1

The identification 1978 QJ2 = 1932 HB is by L. D. Schmadel.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	154.34658		(1950.0)	P	Q
n	0.17612349	Peri.	256.49976	+0.23966423	+0.97081188
a	3.1520424	Node	27.37229	-0.88274467	+0.22186442
e	0.1572290	Incl.	1.15136	-0.40413229	+0.09110690
P	5.60	B(1,0)	12.5		

Residuals in seconds of arc

320424	024	0.4-	0.7-		780826	414	0.9+	1.5+		841028	046	4.6+	0.5-
731026	095	0.0	0.1-		780826	414	1.0+	0.6+		841028	046	0.8+	2.9-
780823	414	1.1+	1.0+		780831	095	0.7-	0.0		841029	046	0.2+	0.2+
780823	414	2.7-	1.3+		780905	095	0.5-	0.2+		841029	046	1.4-	1.7-
780824	414	1.2+	1.7+		780927	095	0.2-	0.7-		841030	046	2.1-	1.6-
780824	414	1.8+	0.2+		791114	095	1.3+	2.1+		841030	046	2.0-	2.0-

1980 VO
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	93.89085	(1950.0)	P	Q
n	0.24196113	Peri. 347.95516	+0.89601942	-0.43100134
a	2.5505853	Node 38.15401	+0.42035286	+0.74600005
e	0.3228502	Incl. 9.94671	+0.14301280	+0.50766304
P	4.07	B(1,0) 15.0		

Residuals in seconds of arc

801017 095	0.6-	1.8-	801114 688	1.0-	0.7+	801210 688	0.4-	1.8-
801109 688	1.8+	1.8-	801129 688	0.2+	0.3+	841023 688	0.1+	0.2+
801109 688	2.4+	1.8+	801129 688	0.1-	0.2+	841023 688	1.0-	1.1-
801113 688	0.7-	0.4-	801204 688	0.1-	0.9-	841029 688	0.1-	1.3+
801113 688	0.3-	0.1+	801204 688	0.4-	2.5+	841029 688	0.4+	0.8+
801114 688	0.2+	0.7+	801210 688	0.9-	0.7-			

1984 QJ1 = 1974 VO
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	142.13172	(1950.0)	P	Q
n	0.28881210	Peri. 124.64426	+0.86701674	+0.49723066
a	2.2666962	Node 205.58420	-0.47812686	+0.81194930
e	0.2003997	Incl. 4.29027	-0.14027360	+0.30577768
P	3.41	B(1,0) 15.0		

Residuals in seconds of arc

741112 095	1.6+	1.6+	840831 688	0.7-	0.2-	840928 688	0.3+	0.3-
741115 095	0.0	2.6+	840928 688	0.6-	0.1-	841026 688	0.5+	1.6+
741117 095	1.4-	5.2-	840928 688	0.1-	0.2-	841026 688	0.1+	0.1+
840831 688	0.6+	0.3-	840928 688	0.5+	0.3+			

1984 SF1 = 1933 FC1 = 1950 HG = 1974 RH1
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	167.19245	(1950.0)	P	Q
n	0.29492070	Peri. 11.43242	+0.56456175	+0.82416757
a	2.2352876	Node 292.95453	-0.76103938	+0.49870673
e	0.1838316	Incl. 2.79619	-0.31951383	+0.26840158
P	3.34	B(1,0) 15.0		

Residuals in seconds of arc

330324 024	0.5-	0.7-	840927 046	3.5+	2.2-	840929 046	1.5-	0.2+
500421 760(68.3+	47.1-)X		840927 046	2.8+	3.0-	840930 046	0.5+	0.4-
740912 095	2.1-	1.0+	840928 688	2.9-	0.0	840930 046	0.3+	0.2-
840925 688	1.6-	0.4+	840928 688	0.3-	0.4-	841026 688	1.6+	1.6+
840925 688	1.3+	0.4-	840929 046	0.4-	1.1+	841026 688	1.0+	0.7+

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

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

Comet Shoemaker (1984r)
T 1984 Sept. 5.18579 ET

q	5.4921212	(1950.0)	P	Q
		Peri. 183.38235	+0.57927721	+0.81504720
		Node 237.98230	+0.74815341	-0.52594624
e	1.0	Incl. 179.21199	+0.32358055	-0.24306093

From 16 observations 1984 Oct. 23-Nov. 24.

Periodic Comet Shoemaker 1 (1984q)
T 1984 Sept. 16.51862 ET

q 1.9774706		(1950.0)	P	Q
n 0.13600645	Peri.	18.62332	+0.98769034	+0.00128309
a 3.7448094	Node	339.31940	-0.11756224	+0.66571817
e 0.4719436	Incl.	26.28957	+0.10318387	+0.74620216
P 7.25				

From 28 observations 1984 Sept. 27-Oct. 29.

Comet Levy-Rudenko (1984t)
T 1984 Dec. 14.24043 ET

q 0.9184751		(1950.0)	P	Q
	Peri.	82.68961	+0.31148698	-0.83727878
	Node	330.47117	-0.09218368	+0.44404887
e 1.0	Incl.	65.75147	+0.94576848	+0.31903738

From 22 observations 1984 Nov. 14-Dec. 1.

Comet Hartley (1984v)
T 1985 Sept. 29.78861 ET

q 3.9869511		(1950.0)	P	Q
	Peri.	255.63290	+0.07574101	-0.34221368
	Node	249.49402	+0.60246751	-0.73272709
e 1.0	Incl.	89.29391	-0.79454150	-0.58821833

From 5 observations 1984 Nov. 17-Dec. 4.

(3156)* 1953 EE = 1953 FD1 = 1934 GV = 1970 RH = 1982 FL = 1982 GA

Discovered 1953 Mar. 15 by A. Schmitt at Uccle. The double designation 1953 EE = 1953 FD1 and the identification 1953 EE = 1982 GA are by A. Patry (MPC 1762) and by E. Bowell (MPC 6894), respectively.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M 317.74519		(1950.0)	P	Q
n 0.20426184	Peri.	119.37487	-0.58552953	-0.81001962
a 2.8554719	Node	6.73974	+0.61656432	-0.47061558
e 0.1969460	Incl.	15.81812	+0.52631131	-0.34984167
P 4.83	B(1,0)	12.5		

Residuals in seconds of arc

340413	078(34.9-	20.8-)X	820321	688	0.8+	2.3-	820425	688	0.6+	0.5-
530315	012	0.6+	0.6-	820330	704	0.7-	1.2+	820425	688	1.0+	2.4-
530316	024	3.2-	0.1+	820331	704	2.2+	4.9+	820526	688	0.4-	1.3+
530320	024	3.0-	0.9-	820401	704	0.1+	3.8+	820526	688	0.0	1.0-
530410	012	5.7+	1.1+	820402	704	1.2-	2.2+	840825	801	0.2-	0.5+
700909	095	2.6-	3.4+	820414	688	0.1-	1.1-	841021	801	1.0+	2.4-
820321	688	0.0	2.4-	820414	688	0.8-	1.6-				

(3157)* 1973 SX3 = 1957 YO = 1976 GN4 = 1979 VG3 = 1982 HX2

Discovered 1973 Sept. 25 by L. V. Zhuravleva at the Crimean Astrophysical Observatory. The key identification 1973 SX3 = 1982 HX2 is by E. Bowell (MPC 7366).

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M 80.95915		(1950.0)	P	Q
n 0.17589564	Peri.	313.25418	+0.99267011	+0.08240637
a 3.1547577	Node	42.24884	-0.02953660	+0.87472419
e 0.1387927	Incl.	7.55539	-0.11719065	+0.47756336
P 5.60	B(1,0)	12.5		

Residuals in seconds of arc

571227	760	0.4-	2.3-	760402	095	4.4+	6.8+	840928	688	1.5+ 1.8-
571227	760	0.6+	1.9-	791114	095	0.1+	0.1-	841016	801	1.0- 3.2+
730925	095	0.9+	2.5-	820425	033	1.0-	0.4-	841023	688	1.3- 1.1-
730927	095	1.2+	5.5+	820425	033	1.6-	0.4-	841023	688	1.5+ 1.6-
731031	033	1.3-	0.2+	820427	033	0.5+	1.0-	841029	688	0.6- 1.0-
731101	033	2.1-	0.6+	820427	033	0.3-	1.3-	841029	688	0.1+ 1.4-
731102	033	0.5-	0.5+	840926	801	0.4+	3.2+			
731103	033	1.0-	0.7+	840928	688	0.4+	1.2-			

(3158)* 1976 SU2 = 1968 UV2 = 1972 TA11 = 1980 TA10

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

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

			(1950.0)	P	Q
M	50.09121				
n	0.24209223	Peri.	227.89130	+0.57436954	-0.81797699
a	2.5496593	Node	187.26439	+0.80551184	+0.57168623
e	0.1026158	Incl.	14.58046	+0.14577479	+0.06394132
P	4.07	B(1,0)	14.0		

Residuals in seconds of arc

681023	095	1.5-	4.7-	761025	095	2.0+	0.1+	840925	688	0.8- 2.5-
721005	095	2.8+	1.3-	761026	095	1.4-	0.1-	840925	688	0.3+ 1.8-
721013	095	3.0+	2.1+	761027	095	3.2-	1.5+	840928	688	0.3+ 1.5-
760924	095	4.3-	3.1+	801015	095	2.9-	3.4+	840928	688	0.9- 1.7-
760929	095	1.0-	3.3+	840923	801	1.2+	0.1-	841017	801	0.8- 0.6-

(3159)* 1976 US2 = 1976 YG = 1972 TT4 = 1983 JR

Discovered 1976 Oct. 26 by T. M. Smirnova at the Crimean Astrophysical Observatory. The double designation 1976 US2 = 1976 YG was found by T. Urata (JAM 743), and the identifications 1976 US2 = 1972 TT4 and 1976 US2 = 1983 JR were found by L. D. Schmadel and by E. Bowell, respectively (MPC 8391).

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

			(1950.0)	P	Q
M	177.16307				
n	0.23937710	Peri.	56.41551	+0.14236142	+0.97479344
a	2.5689027	Node	222.83433	-0.97107287	+0.10393256
e	0.1097810	Incl.	14.63575	-0.19170474	+0.19742282
P	4.12	B(1,0)	14.0		

Residuals in seconds of arc

721005	095	0.5-	3.7+	761118	381	0.1-	1.4-	830515	688	0.1+ 0.3+
761024	381	0.5+	1.3-	761216	801	1.1-	1.6-	840725	801	0.7+ 0.6+
761024	381	0.5-	1.9-	830507	688	0.6+	0.6+	840827	801	2.2+ 0.0
761026	095	2.2+	4.5+	830507	688	0.5+	0.1-	840923	801	2.7- 1.3-
761118	381	0.2-	0.9-	830515	688	1.0-	0.5+			

(3160)* 1980 LE

Discovered 1980 June 14 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

			(1950.0)	P	Q
M	178.43931				
n	0.26882390	Peri.	331.20817	+0.20197214	+0.97707349
a	2.3777022	Node	310.36015	-0.88074568	+0.15112683
e	0.1548475	Incl.	5.07005	-0.42836234	+0.14996023
P	3.67	B(1,0)	14.5		

Residuals in seconds of arc

800614	688	0.5-	1.0-	800717	688	0.9+	1.3-	840923	801	1.1-	1.5+
800614	688	0.7-	0.6-	800804	688	0.3-	0.9-	840925	801	0.8+	2.0+
800617	688	0.5+	0.9+	830316	688	0.8-	0.4-	840925	688	0.5-	0.5+
800617	688	0.8+	1.9+	830316	688	0.3-	1.8+	840925	688	3.1+	0.0
800618	688	0.6-	1.8-	830410	688	3.3-	1.4-	840928	688	2.3-	0.9+
800618	688	0.7+	0.2-	830410	688	3.1+	1.6-	840928	688	2.1+	0.4-
800705	688	0.2+	0.4-	840729	801	1.0-	0.2+	841026	688	3.2-	2.7-
800717	688	1.3+	0.5-	840826	801	0.2+	0.8-	841026	688	2.5+	2.2-

(3161)* 1980 TB5

Discovered 1980 Oct. 9 by C. S. Shoemaker at Palomar.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

			(1950.0)	P	Q
M	198.24279				
n	0.23924680	Peri.	255.52448	-0.38840621	+0.92066949
a	2.5698353	Node	351.31402	-0.71488390	-0.32764859
e	0.1752136	Incl.	14.90202	-0.58144786	-0.21216526
P	4.12	B(1,0)	13.0		

Residuals in seconds of arc

801007	675	0.1-	0.1+	830317	688	1.4-	3.0-	840925	688	0.6+	0.8-
801008	675	1.3+	1.6-	830317	688	0.3-	1.3-	840925	688	1.9+	0.9-
801009	675	0.5-	0.4-	830413	491	0.2-	0.4+	840928	688	2.1-	0.5-
801010	675	1.5+	1.5+	830414	491	0.4+	1.5+	840928	688	1.6+	1.4-
801105	675	0.3+	1.4-	840827	801	2.1+	1.2+	841017	801	0.3-	0.6+
801107	675	1.5-	0.1+	840923	801	2.9-	1.1+				

(3162)* 1980 YH

Discovered 1980 Dec. 16 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

			(1950.0)	P	Q
M	343.61754				
n	0.17520866	Peri.	316.53958	+0.06134609	-0.96857374
a	3.1629986	Node	128.44102	+0.97910334	+0.01148405
e	0.1431868	Incl.	17.92353	+0.19388991	+0.24846130
P	5.63	B(1,0)	12.5		

Residuals in seconds of arc

801216	688	0.4+	0.1+	810309	688	0.0	3.5-	840826	801	0.1+	0.6+
801216	688	0.4-	1.3-	820421	688	0.3-	1.5+	840831	688	2.9-	4.9-
810103	688	1.3-	0.6+	820421	688	1.4-	0.4-	840831	688	2.2-	4.1-
810208	688	0.1+	1.0-	820428	688	0.4-	1.7-	840925	688	3.3+	1.0+
810208	688	0.8+	1.3-	820428	688	1.6+	1.9-	840925	688	2.9+	0.3+
810309	688	0.6+	1.0-	840726	801	0.1-	2.2-				

(3163)* 1981 QM = 1944 RH = 1970 RK

Discovered 1981 Aug. 28 by C. Kowal at Palomar. The key identification 1981 QM = 1944 RH is by E. Bowell (MPC 8144).

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

			(1950.0)	P	Q
M	60.53135				
n	0.26578295	Peri.	120.63663	+0.70296034	+0.71110918
a	2.3958041	Node	194.05273	-0.66953548	+0.65544639
e	0.3312715	Incl.	3.08264	-0.23993540	+0.25438899
P	3.71	B(1,0)	15.0		

Residuals in seconds of arc

440913	062	0.3+	1.0-	810828	675	0.0	4.2+	811025	675	2.7-	0.4+
440913	062	0.5+	1.2-	810829	675	0.4-	0.7-	811117	675	0.3-	0.8+
440914	062	0.3+	0.4+	810830	675	0.5+	1.1-	811117	675	1.0-	0.2+
440915	062	0.7+	0.6-	810831	675	0.3+	0.5-	840310	675	0.8-	0.6-
440915	062	0.7-	1.4-	810901	675	0.3+	0.3-	840311	675	0.1+	0.9-
700909	095	1.0+	0.4+	811025	675	0.0	0.3+				

(3164)* 6562 P-L = 1971 SW = 1972 VX = 1979 BX1

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M	83.99770	(1950.0)		P	Q
n	0.17705056	Peri.	55.78557	-0.50227290	-0.86392010
a	3.1410235	Node	64.40638	+0.77923397	-0.47072620
e	0.1727714	Incl.	2.34693	+0.37485510	-0.17905001
P	5.57	B(1,0)	13.5		

Residuals in seconds of arc

600924	675	1.1+	0.4+	601022	675	1.6-	1.1-	790124	095	0.7+	0.3+
600926	675	0.1+	1.2+	601024	675	0.4+	0.9-	831108	801	0.7+	1.1+
600927	675	1.6+	0.5+	601026	675	0.3-	0.1+	831128	688	0.6+	0.0
600928	675	1.0+	0.8+	710916	808	2.5-	1.8-	831128	688	0.9-	0.7+
601017	675	0.6-	0.2+	721109	095	2.4-	2.2-	840202	801	1.2+	1.4+

1978 RX = 1955 RR = 1972 TZ10 = 1984 US1

The identifications 1978 RX = 1955 RR and 1978 RX = 1984 US1 are by C. M. Bardwell and by E. Bowell, respectively.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	49.51744	(1950.0)		P	Q
n	0.17223913	Peri.	275.25142	+0.47252878	-0.88108448
a	3.1992563	Node	146.52613	+0.82234745	+0.43256763
e	0.1906367	Incl.	2.09536	+0.31695616	+0.19124690
P	5.72	B(1,0)	13.0		

Residuals in seconds of arc

550913	760	1.1+	0.4+	780905	095	0.1-	1.7-	841029	688	0.3+	1.3-
550913	760	0.0	2.6+	780907	095	0.1+	0.9-	841029	688	0.1-	0.4-
550918	760	1.8-	2.2+	780912	095	1.2-	0.2+	841031	688	0.9+	0.1+
550918	760	1.7-	1.8+	780928	095	1.4+	0.3-	841031	688	0.3-	0.8-
721004	095	0.8+	2.2-	781004	095	0.2+	0.1+				
780901	095	1.1+	0.1+	781009	095	0.4-	0.0				

1980 SG = 1953 RJ = 1970 AH

The 1984 observations were identified by E. Bowell.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	129.65162	(1950.0)		P	Q
n	0.25699440	Peri.	344.25246	+0.99418323	-0.09773517
a	2.4501225	Node	21.51163	+0.10723645	+0.85926357
e	0.1573492	Incl.	7.08840	+0.01000237	+0.50210949
P	3.84	B(1,0)	15.0		

Residuals in seconds of arc

530913	760	3.7-	2.0+	801001	046	0.8+	1.1+	801015	095	3.9+	0.2+
530913	760	1.5+	5.6-	801001	046	1.7-	0.5+	841026	688	1.3+	1.2-
530917	760	2.2+	2.4+	801003	046	1.6-	1.2+	841026	688	0.0	1.0-
530917	760	0.8+	0.5-	801003	046	0.2+	0.9+	841031	688	0.4+	0.5-
700104	095	0.0	0.6+	801005	046	0.5-	0.9-	841031	688	0.8-	0.1+
800916	046	1.2-	0.6-	801005	046	0.8+	1.5-				
800916	046	1.5-	0.0	801010	095	1.2-	2.5+				

1982 DA

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M	92.24264	(1950.0)		P	Q
n	0.31296746	Peri.	326.47711	-0.42526919	-0.86812527
a	2.1485061	Node	146.50892	+0.89831073	-0.43935424
e	0.3307708	Incl.	27.63383	+0.11038086	+0.23092500
P	3.15	B(1,0)	16.0		

Residuals in seconds of arc

820218	675	0.1+	0.0	820226	324	0.1-	0.3-	820323	801	0.6+	0.4+
820218	675	0.2+	2.0-	820227	511	1.9+	1.5-	820324	675	1.2-	1.3-
820219	675	0.5-	1.7-	820228	675	1.0-	0.8-	820413	675	0.5+	1.3-
820220	675	0.1+	1.2-	820228	675	0.4-	0.6-	820422	801	1.0+	1.3+
820220	324	0.5-	0.3-	820228	675	0.4+	1.6-	820514	675	0.1+	0.0
820223	489	1.6+	1.8-	820228	675	1.3+	1.6-	820621	801	0.1+	0.4+
820223	489	2.3+	4.0+	820228	324	0.3-	0.9-	840920	474	0.7+	0.3-
820223	324	1.5-	8.0+	820301	330	2.1-	2.8+	840921	474	0.6-	0.4+
820223	489	0.7-	1.2+	820301	330	0.9-	0.1-	840921	474	0.0	0.3-
820224	324	0.8-	0.7+	820304	675	0.4+	1.6-				

1984 KD
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M	155.53564		(1950.0)	P	Q
n	0.30254345	Peri.	203.58240	+0.25484244	+0.93848459
a	2.1975776	Node	81.84232	-0.84545544	+0.33320851
e	0.5408661	Incl.	13.61579	-0.46931911	-0.09065739
P	3.26	B(1,0)	18.0		

From 49 observations 1984 May 27-Oct. 25, mean residual 1".1.

1984 QA
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M	181.19601		(1950.0)	P	Q
n	1.00113941	Peri.	54.82670	-0.88629393	+0.45603017
a	0.9896304	Node	152.04500	-0.46079522	-0.85087404
e	0.4683812	Incl.	9.91826	-0.04637705	-0.26086365
P	0.98	B(1,0)	19.0		

From 30 observations 1984 Aug. 30-Sept. 24, mean residual 1".2.

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ORBITAL ELEMENTS BY K. HURUKAWA, TOKYO ASTRONOMICAL OBSERVATORY.

The identifications are by K. Hurukawa unless otherwise stated.

2055 P-L = 1977 EK5
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	97.35810		(1950.0)	P	Q
n	0.27068433	Peri.	246.43933	-0.63131782	+0.77440372
a	2.3667997	Node	344.19572	-0.64395564	-0.55340074
e	0.1382130	Incl.	8.80162	-0.43215616	-0.30667003
P	3.64	B(1,0)	16.2		

Residuals in seconds of arc

600924	675	0.6+	0.3-	601022	675	0.9+	0.8+	770314	381	1.6+	0.5-
600926	675	0.2+	0.7-	601025	675	1.2-	0.3-	770315	381	0.5+	0.4-
600928	675	0.6-	0.3+	770312	381	0.2-	0.3+	770315	381	1.6-	0.3-
600929	675	0.2+	0.0	770312	381	0.6-	0.0				
601017	675	0.0	0.0	770314	381	0.1+	0.7+				

2091 P-L = 1978 WR13
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	33.52956		(1950.0)	P	Q
n	0.27881392	Peri.	132.75025	+0.93367571	-0.35357184
a	2.3205661	Node	248.02833	+0.30801852	+0.87389528
e	0.1161915	Incl.	3.51713	+0.18268622	+0.33360754
P	3.54	B(1,0)	16.8		

Residuals in seconds of arc

600924	675	0.1+	0.2+	601022	675	0.2-	0.4-	781129	675	0.1+	1.0+
600926	675	0.2-	0.0	601025	675	0.5+	0.6+	781130	675	0.1-	0.9-
601017	675	0.3+	0.1-	601026	675	0.5-	0.4-				

2093 P-L = 1976 UG9
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	352.57440		(1950.0)	P	Q
n	0.18679902	Peri.	77.45331	+0.35293540	+0.93163563
a	3.0307761	Node	213.62108	-0.90761763	+0.31842067
e	0.0518996	Incl.	8.99339	-0.22730341	+0.17510947
P	5.28	B(1,0)	14.4		

Residuals in seconds of arc

600924	675	0.3+	0.0	601022	675	0.7-	0.0	761022	381	0.1-	0.4+
600926	675	0.5-	0.7+	601025	675	0.2+	0.5+	761024	381	0.3+	0.6-
600928	675	0.3-	1.7-	601026	675	0.6+	0.4-				
600929	675	0.4+	0.8+	761022	381	0.3-	0.1+				

2103 P-L = 1976 JN1 = 1980 EF2
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	80.98862		(1950.0)	P	Q
n	0.22714769	Peri.	353.38340	-0.85473266	+0.51806428
a	2.6603046	Node	217.87559	-0.47377031	-0.80403371
e	0.1365234	Incl.	3.01312	-0.21207020	-0.29178621
P	4.34	B(1,0)	15.0		

Residuals in seconds of arc

600924	675	0.6+	0.8+	601026	675	0.3+	0.5-	760430	808	0.1-	0.6+
600926	675	0.4+	0.9+	601026	675	0.0	1.5-	760502	095	0.8-	0.2-
600928	675	0.3-	0.2+	760423	808	1.7+	0.8-	760503	808	0.6+	0.3+
601017	675	0.6+	0.3+	760423	808	1.3+	0.7-	760503	808	1.1-	0.3+
601022	675	0.5+	0.1-	760427	808	0.0	0.1+	800315	808	0.3+	0.4-
601022	675	1.5-	0.8-	760427	808	1.1-	0.2-	800315	808	0.7-	0.5-
601025	675	0.3+	1.6-	760430	808	0.9-	0.7-				

2594 P-L = 1979 OE1
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	109.27441		(1950.0)	P	Q
n	0.20004420	Peri.	142.88572	+0.36600575	+0.93033216
a	2.8954736	Node	148.56517	-0.86395022	+0.34880877
e	0.0474523	Incl.	2.51050	-0.34587541	+0.11320118
P	4.93	B(1,0)	15.4		

Residuals in seconds of arc

600924	675	0.4-	0.7+	601017	675	0.0	0.1+	790724	675	2.9-	0.3-
600926	675	0.3-	0.8-	601022	675	0.0	0.2-	790724	413	1.6+	0.1+
600928	675	0.0	0.5+	601025	675	0.4+	0.2+	790725	675	2.0-	0.9+
600929	675	0.3+	0.1-	601026	675	0.0	0.4-	790727	675	3.4+	0.7-

2631 P-L = 1954 TR = 1977 SX
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	130.47001		(1950.0)	P	Q
n	0.17543614	Peri.	22.55417	+0.51270842	-0.85840550
a	3.1602702	Node	36.60722	+0.78341181	+0.45991318
e	0.1747889	Incl.	1.57920	+0.35127770	+0.22720005
P	5.62	B(1,0)	13.5		

Residuals in seconds of arc

541003	711	0.8-	1.2+	600926	675	0.4+	0.3+	601025	675	0.4+	0.2-
541003	711	0.6-	0.9+	600927	675	0.1+	0.2+	601026	675	0.2-	0.7-
541004	711	1.5+	2.4-	600928	675	0.2-	0.7-	770918	095	0.1+	0.2-
600924	675	0.6+	0.8+	601017	675	0.4+	0.1+				
600924	675	1.3-	0.4+	601022	675	0.3-	0.0				

3040 P-L = 1977 PS1
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	328.48130		(1950.0)	P	Q
n	0.23003149	Peri.	56.94337	+0.95784961	+0.25453269
a	2.6380239	Node	288.00765	-0.28725050	+0.85405493
e	0.2228526	Incl.	8.05022	+0.00335864	+0.45365546
P	4.28	B(1,0)	15.2		

Residuals in seconds of arc

600924	675	0.6+	1.3+	600927	675	0.2-	0.1+	601024	675	0.0	0.9-
600924	675	0.1-	0.1-	600928	675	0.7+	0.0	601025	675	0.5+	1.6-
600925	675	1.1-	0.2-	600928	675	0.0	1.0+	601026	675	0.5+	0.0
600925	675	1.0-	1.2+	601017	675	1.1-	0.3+	770814	095	0.1+	2.9+
600926	675	0.2+	1.3+	601017	675	0.8+	0.2-	770821	095	0.5+	4.1-
600926	675	0.7-	0.4+	601022	675	0.7+	1.6-				

3524 P-L = 1983 EE
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	166.30369		(1950.0)	P	Q
n	0.23909186	Peri.	254.89901	-0.48948218	+0.86983911
a	2.5709505	Node	345.31234	-0.67735460	-0.42371247
e	0.0434813	Incl.	14.04666	-0.54917933	-0.25268095
P	4.12	B(1,0)	14.0		

Residuals in seconds of arc

601017	675	0.5+	0.2+	601025	675	0.2-	0.6-	830310	046	(4.4-	1.0-)
601022	675	0.5+	0.1+	601025	675	0.2+	0.7+	830310	046	2.1-	0.7-
601022	675	1.3+	0.1-	601026	675	0.1+	0.6+	830312	046	2.7-	2.4-
601022	675	0.2+	0.2+	601026	675	0.3+	0.3-	830312	046	1.0-	0.4-
601024	675	1.6-	0.4-	830308	046	2.5+	0.7+	830313	046	1.0+	0.1+
601024	675	1.1-	0.4-	830308	046	(5.1+	5.8+)	830313	046	2.3+	2.8+

4016 P-L = 1974 SS = 1979 WR5
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	126.61666		(1950.0)	P	Q
n	0.21003030	Peri.	30.76510	+0.98298854	-0.18127683
a	2.8029517	Node	339.61625	+0.14647961	+0.87076779
e	0.0206803	Incl.	4.86410	+0.11080279	+0.45705816
P	4.69	B(1,0)	13.8		

Residuals in seconds of arc

600924	675	0.1+	1.0-	601017	675	0.2+	0.8+	740921	095	0.1+	2.6+
600925	675	0.0	1.9-	601022	675	1.5+	0.6-	740923	095	0.7-	2.2+
600926	675	0.8-	0.8-	601024	675	1.8+	0.5+	791117	095	0.6-	1.3+
600928	675	0.8-	0.6-	601026	675	1.0+	0.0				
600928	675	0.1-	1.2-	740919	095	1.6-	1.0-				

4069 P-L = 1974 HQ
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	62.25263		(1950.0)	P	Q
n	0.18225762	Peri.	338.04343	-0.99812272	+0.00819345
a	3.0809155	Node	202.68147	+0.00786420	-0.96566168
e	0.0395586	Incl.	9.05608	-0.06073862	-0.25967361
P	5.41	B(1,0)	14.6		

Residuals in seconds of arc

600924	675	0.0	0.3-	601017	675	0.1-	0.1+	601026	675	0.3-	0.0
600925	675	0.3+	1.0+	601022	675	0.4+	1.4-	740422	805	0.6-	0.3+
600926	675	0.3+	0.2-	601022	675	0.6+	1.5+	740424	805	0.5+	0.5-
600928	675	0.4-	0.5-	601024	675	0.4-	0.2-	740425	805	0.1+	0.1+

4122 P-L = 1975 TB6 = 1978 GM3 = 1980 TY8 = 1982 BX2

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	338.22092		(1950.0)	P	Q
n	0.19825466	Peri.	200.27550	+0.55594218	-0.83111541
a	2.9128714	Node	215.95243	+0.76566992	+0.51823776
e	0.0583519	Incl.	1.29281	+0.32353960	+0.20168488
P	4.97	B(1,0)	13.4		

Residuals in seconds of arc

600924	675	0.6-	0.2+	601025	675	1.2+	0.2+	820121	046	0.3+	0.6+
600925	675	0.0	0.3-	601026	675	0.2-	0.6+	820121	046	0.9+	0.3+
600926	675	0.7-	0.3+	601026	675	0.5+	0.1-	820125	046	0.1+	1.7-
600928	675	0.4+	0.2-	751011	049	0.4-	0.2+	820125	046	0.5+	1.2+
601017	675	0.6+	0.4+	751011	049	0.0	0.3+	820127	046	1.0-	0.6-
601022	675	0.5-	0.7-	751011	049	0.4+	0.7+	820128	046	0.8-	0.4+
601022	675	0.1-	0.7-	780411	095	0.5+	1.2+				
601024	675	0.6-	0.1+	801013	095	0.4-	0.0				

4237 P-L = 1980 FK3

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	242.49172		(1950.0)	P	Q
n	0.27584068	Peri.	175.55016	-0.81204427	-0.58331043
a	2.3372116	Node	328.74354	+0.53432078	-0.73054084
e	0.0653842	Incl.	2.01560	+0.23470280	-0.35504792
P	3.57	B(1,0)	16.5		

Residuals in seconds of arc

600924	675	0.4-	0.3-	601022	675	0.6-	0.4+	800316	809	0.1-	0.7-
600925	675	1.0+	0.9-	601026	675	0.9+	0.4+	800317	809	0.7+	0.6-
600926	675	0.5+	0.3-	800316	809	0.0	0.0	800317	809	0.1+	0.1+
600928	675	0.1+	0.6+	800316	809	0.2+	0.0	800323	809	0.5-	0.5+
601017	675	1.2-	0.2-	800316	809	0.6-	0.3+				

4601 P-L = 1976 YN = 1976 YB5

The double designation 1976 YN = 1976 YB5 is by H. Oishi (JAM 1665).

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	256.20671		(1950.0)	P	Q
n	0.18899759	Peri.	9.34165	+0.12223160	-0.99125975
a	3.0072260	Node	73.64948	+0.90718437	+0.09129950
e	0.2251530	Incl.	2.96500	+0.40258658	+0.09522867
P	5.21	B(1,0)	14.5		

Residuals in seconds of arc

600924	675	0.2-	0.2-	601017	675	0.8+	1.0+	761216	095	2.9-	0.9+
600926	675	0.4-	0.3+	601022	675	0.5+	0.1-	761218	095	2.1+	0.4+
600927	675	0.2-	0.3-	601025	675	0.3-	0.5-	761220	095	0.9+	1.3-
600928	675	0.0	0.4+	601026	675	0.3-	0.5-				

4650 P-L = 1970 GN1 = 1981 ES

The identification 4650 P-L = 1981 ES was also found by O. Kippes.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	55.10877		(1950.0)	P	Q
n	0.26524130	Peri.	207.98261	-0.79574453	+0.60560246
a	2.3990694	Node	9.29674	-0.54843408	-0.71633471
e	0.1385844	Incl.	2.13763	-0.25692549	-0.34656925
P	3.72	B(1,0)	14.8		

Residuals in seconds of arc

600924	675	0.5-	1.0-	601025	675	0.8+	0.6-	810304	809	0.0	0.4-
600924	675	0.1-	1.8-	601026	675	0.9+	1.3+	810304	809	0.3+	0.7-
600925	675	0.0	0.6-	700411	805	1.4-	0.7-	810309	809	0.8-	0.3-
600926	675	0.4+	1.3-	700411	805	0.5-	2.2-	810309	809	0.2-	0.0
600928	675	0.9+	1.6-	700411	805	1.0-	3.1-	810309	809	0.0	0.1+
601017	675	0.3-	1.0-	810302	809	0.8-	0.2-	810310	809	0.6+	0.4+
601022	675	0.5+	0.2+	810302	809	0.9-	0.2-	810310	809	0.9+	0.3+
601022	675	0.6+	1.6-	810302	809	0.2-	0.6-	810310	809	1.2+	0.2+
601024	675	1.3+	0.7-	810304	809	0.7-	0.2-				

4657 P-L = 1976 SD6 = 1976 US11

The double designation 1976 SD6 = 1976 US11 is by H. Oishi (JAM 1665). The identifications 4657 P-L = 1976 SD6 and 4657 P-L = 1976 US11 were also independently suggested by O. Kippes and E. Bowell, respectively.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

			(1950.0)	P	Q
M	262.18958				
n	0.18798048	Peri.	273.76087	+0.83288580	-0.55326224
a	3.0180638	Node	119.83076	+0.51403614	+0.76380316
e	0.0961682	Incl.	0.93910	+0.20510509	+0.33242387
P	5.24	B(1,0)	14.6		

Residuals in seconds of arc

600924	675	0.5+	0.5-	601017	675	0.2+	0.2+	761022	381	0.3-	0.0
600924	675	0.8-	0.2-	601022	675	0.1-	0.5+	761022	381	0.4+	0.2+
600926	675	0.4+	0.2+	601025	675	0.0	0.5-	761024	381	0.2-	0.2+
600927	675	0.7-	0.6+	601026	675	0.4+	0.9-				
600928	675	0.3+	0.4+	760924	095	0.0	0.3-				

5557 P-L = 1974 CS = 1980 GC1

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

			(1950.0)	P	Q
M	5.93531				
n	0.17905745	Peri.	215.77953	-0.90726054	+0.42055102
a	3.1175157	Node	349.08780	-0.38090558	-0.82558543
e	0.1419557	Incl.	1.17797	-0.17829539	-0.37622538
P	5.50	B(1,0)	14.7		

Residuals in seconds of arc

600924	675	0.5-	0.3+	601022	675	0.5+	0.9+	800414	805	0.7+	1.3+
600926	675	0.6-	0.1+	601025	675	0.1+	1.5+	800415	805	0.9+	0.2+
600928	675	0.3-	0.7+	601026	675	0.5-	0.3-	800416	805	0.1-	1.8+
601017	675	0.7-	1.3+	740214	095	0.4+	1.0+				

6092 P-L = 1980 GH1

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

			(1950.0)	P	Q
M	104.67228				
n	0.23316134	Peri.	28.18289	-0.72040850	+0.69161139
a	2.6143630	Node	195.92126	-0.66649977	-0.71103901
e	0.1868101	Incl.	10.88890	-0.19180628	-0.12687482
P	4.23	B(1,0)	14.2		

Residuals in seconds of arc

600924	675	0.1+	0.2+	601022	675	0.1-	0.3-	800415	805	0.5-	0.6-
600925	675	0.7+	0.1+	601024	675	0.7-	0.6+	800416	805	0.7+	0.1-
600926	675	0.7-	0.4-	601026	675	0.6+	0.6-				
601017	675	0.0	0.4+	800414	805	0.2-	0.7+				

6519 P-L = 1973 DQ
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	174.99882		(1950.0)	P	Q
n	0.18558214	Peri.	90.23860	-0.49862163	-0.86631233
a	3.0440103	Node	29.72893	+0.76956461	-0.45816309
e	0.1818537	Incl.	3.42835	+0.39893205	-0.19897116
P	5.31	B(1,0)	14.2		

Residuals in seconds of arc

600924 675	0.5-	0.1-	600928 675	0.3-	0.4+	601026 675	0.2-	0.0
600926 675	0.6-	0.3+	600928 675	1.1+	0.7-	730227 029	0.1-	0.7+
600926 675	0.3+	0.2-	601017 675	0.2+	0.3+	730228 029	0.0	0.1+
600927 675	0.5-	0.3+	601022 675	0.1-	0.5+	730307 029	0.2+	0.9-
600927 675	0.7+	0.3-	601025 675	0.1+	0.5-			

6536 P-L = A916 SA = 1955 XE = 1982 RU1
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	190.10487		(1950.0)	P	Q
n	0.17961245	Peri.	240.81322	+0.92352144	-0.38346799
a	3.1110904	Node	141.73397	+0.35609704	+0.84971991
e	0.1606876	Incl.	0.71930	+0.14248875	+0.36184025
P	5.49	B(1,0)	13.7		

Residuals in seconds of arc

160930 029(60.7-	26.2-)Y		601017 675	0.2+	0.1+	820915 046	(4.3+	0.1+)
161003 029(64.2-	22.3-)Y		601017 675	0.5+	0.6-	820915 046	1.9+	0.4+
551206 760	3.2-	17.9+ X	601022 675	0.2-	0.3+	820915 046	2.0+	0.1+
600924 675	0.1+	0.1+	601022 675	0.5+	0.4-	820916 046	1.1+	1.2+
600926 675	0.2-	0.0	601024 675	0.0	0.1-	820916 046	0.1-	1.0+
600927 675	0.1-	0.3+	601026 675	0.5-	0.0	820917 046	0.2-	0.2+
600928 675	0.4-	0.4+	820915 046	2.2-	1.3-	820917 046	2.3-	1.8-

6543 P-L = 1974 CD
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	185.87756		(1950.0)	P	Q
n	0.17409702	Peri.	246.09172	+0.84999208	+0.52554263
a	3.1764548	Node	82.18533	-0.46899194	+0.78631622
e	0.1690227	Incl.	2.10037	-0.23991668	+0.32482570
P	5.66	B(1,0)	13.9		

Residuals in seconds of arc

600924 675	0.4+	0.0	601017 675	0.3+	0.3+	740214 801	0.3+	0.6+
600926 675	0.5-	0.1-	601022 675	0.4-	0.2+	740218 801	0.5-	0.1-
600927 675	0.1+	0.2+	601025 675	0.1+	0.2-	740218 801	0.1+	0.6-
600928 675	0.1-	0.3-	601026 675	0.1+	0.2-			

6563 P-L = 1958 DT = 1976 GT4 = 1980 BS1
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	89.30996		(1950.0)	P	Q
n	0.22258792	Peri.	153.47505	-0.94107417	-0.33789183
a	2.6965130	Node	6.82442	+0.28466313	-0.81443399
e	0.0707819	Incl.	6.98003	+0.18260974	-0.47172702
P	4.43	B(1,0)	13.6		

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

580224 760(0.03-	0.01-)X		601017 675	0.8-	0.2+	760402 095	0.4-	0.8-
600924 675	0.1+	0.4-	601022 675	0.3-	0.5+	800123 095	0.1-	0.1-
600926 675	0.1-	0.5-	601024 675	0.3+	0.5-			
600928 675	1.1+	0.0	601026 675	0.3+	0.2-			

6624 P-L = 1978 WQ2
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	22.56707		(1950.0)		P		Q				
n	0.27948186	Peri.	333.90986		+0.84459995		-0.53344526				
a	2.3168673	Node	58.40329		+0.50010214		+0.75557443				
e	0.0918674	Incl.	3.07457		+0.19117732		+0.38018867				
P	3.53	B(1,0)	17.0								

Residuals in seconds of arc

600924	675	0.2-	0.4-	601017	675	0.1-	0.3+	781129	675	0.0	0.1+
600926	675	0.1-	0.2-	601022	675	0.9-	0.1-	781130	675	0.0	0.1-
600927	675	0.2+	0.0	601024	675	0.6+	0.3-				
600928	675	0.2+	0.7+	601026	675	0.3+	0.1+				

6787 P-L = 1975 EM5 = 1981 AZ = 1981 CD1
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M	88.54198		(1950.0)		P		Q				
n	0.30888576	Peri.	102.64343		-0.67422285		+0.73842593				
a	2.1673963	Node	124.95578		-0.68323520		-0.61734772				
e	0.0885005	Incl.	0.85822		-0.28038048		-0.27130967				
P	3.19	B(1,0)	15.8								

Residuals in seconds of arc

600924	675	0.8-	0.3+	601017	675	0.4-	0.9+	810108	381	3.7-	2.8-
600926	675	0.1+	0.2+	601022	675	0.3+	0.8-	810108	381	0.3+	1.5+
600927	675	0.4-	0.7+	601026	675	0.3-	0.3+	810111	801	1.9+	0.1-
600928	675	0.8+	0.2+	750315	095	0.6+	1.4+	810206	801	1.5+	1.5+

* * * * *

ORBITAL ELEMENTS BY T. URATA, SHIMIZU, JAPAN.

The following orbital elements have been copied from NOC 1484.

(3165)* 1984 QE = 1953 GP = 1973 FU = 1974 QE2 = 1981 WB2

Discovered 1984 Aug. 31 by K. Suzuki and T. Urata at the JCPM Oi Station. The identifications 1984 QE = 1953 GP = 1974 QE2 = 1981 WB2 are by T. Urata (NOC 1482). The identification 1984 QE = 1973 FU is by K. Hurukawa and S. Nakano.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

M	142.59607		(1950.0)		P		Q				
n	0.29303041	Peri.	239.04398		+0.83996634		+0.53831060				
a	2.2448858	Node	88.30534		-0.47156908		+0.78649671				
e	0.1787654	Incl.	3.92368		-0.26847560		+0.30272863				
P	3.36	B(1,0)	14.0								

Residuals in seconds of arc

530412	024	(1.8+	12.4-)	840824	882	0.6-	0.8+	840925	882	0.4+	2.2-
530419	024	0.0	0.3-	840831	882	0.7+	3.6+	840926	882	(5.2+	3.6-)Y
730326	095	0.3+	1.6+	840831	882	0.4+	4.7+	840926	882	0.7+	1.2-
740826	095	0.7-	1.3+	840924	889	0.8+	1.6-	841021	372	2.6-	2.0-
811123	046	0.1-	0.5+	840924	889	0.3-	1.2-	841021	372	2.4-	1.0+
811123	046	0.1+	1.2+	840924	889	0.6	2.3-				
840824	882	0.4-	1.0-	840925	882	1.4+	0.4-				

* * * * *

ORBITAL ELEMENTS BY S. NAKANO, TOKYO.

The following orbital elements are taken in part from Nakano Note Nos. 463-466 and 468. Identifications are by S. Nakano unless otherwise stated.

Periodic Comet Russell 3 (1982 IX)
Epoch 1982 Nov. 7.0 ET = JDE 2445280.5
T 1982 Nov. 23.24194 ET

		(1950.0)	P	Q
q 2.5102917				
n 0.13149396	Peri.	353.45584	-0.47463568	+0.85071469
a 3.8300006	Node	248.00115	-0.79606474	-0.52436886
e 0.3445714	Incl.	14.09785	-0.37550219	+0.03635671
P 7.50				

From 37 observations 1983 June 14-Oct. 31, mean residual 1".2.

Periodic Comet Kowal-Vavrova (1983t)
Epoch 1983 Apr. 16.0 ET = JDE 2445440.5
T 1983 Apr. 2.42029 ET

		(1950.0)	P	Q
q 2.6088632				
n 0.06181720	Peri.	19.49666	-0.75111088	+0.65958135
a 6.3347553	Node	201.84722	-0.61522838	-0.71473218
e 0.5881667	Incl.	4.31756	-0.23942950	-0.23261631
P 15.94				

From 12 observations 1983 May 8-Sept. 28, mean residual 2".0.

Comet IRAS (1983o)
Epoch 1983 Dec. 12.0 ET = JDE 2445680.5
T 1983 Nov. 28.00064 ET

		(1950.0)	P	Q
q 2.2547765				
z -0.0000868	Peri.	333.98189	-0.76266148	-0.57204738
+/-0.0000106	Node	200.56057	-0.33216052	-0.05403694
e 1.0001957	Incl.	120.74303	-0.55499266	+0.81843864

From 22 observations 1983 Aug. 4-1984 June 5, mean residual 1".2.

Periodic Comet Russell 4 (1984d)
Epoch 1984 Jan. 21.0 ET = JDE 2445720.5
T 1984 Jan. 5.96790 ET

		(1950.0)	P	Q
q 2.1250093				
n 0.15411177	Peri.	91.25187	-0.95137224	-0.29015944
a 3.4454464	Node	71.88801	+0.22110726	-0.87701857
e 0.3832412	Incl.	6.24759	+0.21448178	-0.38294375
P 6.40				

From 39 observations 1984 Mar. 2-May 7, mean residual 1".2.

Periodic Comet Hartley-IRAS (1983v)
Epoch 1984 Jan. 21.0 ET = JDE 2445720.5
T 1984 Jan. 8.70946 ET

		(1950.0)	P	Q
q 1.2824590				
n 0.04593512	Peri.	47.11405	+0.68149591	-0.73168987
a 7.7215795	Node	0.80053	-0.34840087	-0.34108863
e 0.8339123	Incl.	95.72474	+0.64356830	+0.59015970
P 21.46				

From 42 observations 1983 Nov. 4-1984 June 4, mean residual 1".4.

Periodic Comet Shoemaker 2 (1984u)
T 1984 Sept. 26.42745 ET

		(1950.0)	P	Q
q 1.3205417				
n 0.11917452	Peri.	317.33405	+0.93814057	-0.16733387
a 4.0895963	Node	54.80050	+0.31845894	+0.76065777
e 0.6770973	Incl.	21.77532	-0.13592711	+0.62721538
P 8.27				

From 6 observations 1984 Nov. 18-28.

Comet Shoemaker (1984s)
T 1985 Jan. 3.87877 ET

		(1950.0)	P	Q
q 1.2142296	Peri.	229.23032	-0.01977870	-0.98646772
	Node	222.76234	+0.97424303	+0.01755899
e 0.9695468	Incl.	13.86986	+0.22463150	-0.16301265

P 251.8
From 13 observations 1984 Oct. 25-Nov. 23.

(3166)* 1940 FG = 1937 LL = 1955 XG = 1957 KM = 1960 HC = 1970 ET = 1974 MT = 1974 QV2 = 1975 VS = 1977 JA1 = 1980 DG4

Discovered 1940 Mar. 30 by Y. Vaisala at Turku. The identification 1940 FG = 1977 JA1 was also independently suggested by E. Bowell and F. Bowman.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5

		(1950.0)	P	Q
M 230.88747				
n 0.29454432	Peri.	118.13531	-0.98221166	+0.16659168
a 2.2371870	Node	71.56307	-0.18766802	-0.88661703
e 0.1178001	Incl.	5.24033	+0.00640006	-0.43145968
P 3.35	B(1,0)	14.0		

Residuals in seconds of arc

370601 078(44.4-	50.1+)X	551206 760	0.1-	0.3+	740627 095	1.5+	1.7+
400330 062	0.9-	0.1-	551213 760	1.1-	0.1+	740816 808	1.5-	1.3+
400330 062	2.9-	2.1-	551213 760	1.2+	1.1-	740816 808	0.8-	2.0+
400330 062	0.8-	0.2-	570527 076	1.8+	2.5-	751101 095	1.3-	0.7+
400404 062	1.3+	1.0+	570528 076	2.5+	2.5-	770515 095	2.8-	0.1+
400412 062	1.3+	2.0+	600422 760	0.2-	0.7+	770518 095	1.7-	1.5+
400412 062	1.5-	1.4-	600422 760	1.6+	0.0	770523 095	0.4+	0.9+
551206 760	0.8+	1.9-	700307 095	0.1-	0.9-	800220 095	4.0+	4.1+

A924 EG = 1935 GO = 1982 DW2
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

		(1950.0)	P	Q
M 347.03571				
n 0.27134070	Peri.	56.79286	-0.99457793	+0.10316986
a 2.3629813	Node	129.12541	-0.10013484	-0.91617215
e 0.1566955	Incl.	0.96505	-0.02806694	-0.38727841
P 3.63	B(1,0)	14.5		

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

240308 024	1.5-	4.9+	240327 024	0.8+	0.1-	820220 704	0.5-	1.2+
240309 024	2.5+	0.1-	240407 024	1.3-	1.7-	820221 704	0.7-	2.7-
240313 024	0.2-	2.1-	350406 078(0.04+	0.02-)X		820222 704	0.8+	0.4+

1931 TJ1 = A906 WC = 1964 YG = 1981 NQ
Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

		(1950.0)	P	Q
M 290.92536				
n 0.27274152	Peri.	303.74352	-0.00286675	-0.99961631
a 2.3548834	Node	146.38805	+0.93311314	-0.01258029
e 0.1299724	Incl.	2.85270	+0.35957147	+0.02467710
P 3.61	B(1,0)	14.0		

Residuals in seconds of arc

061120 803(69.2-	69.5+)Y	311009 690	2.3-	2.2-	650108 330	0.2-	0.1+
311006 690	2.2+	2.4-	311012 024	9.2+	7.3+	810702 805	0.3-	0.1-
311006 024	0.5-	0.4-	311016 024	7.5-	0.3+	810702 805	0.3+	0.4+
311007 690	1.2-	2.6-	641231 330	0.2+	0.1-			

1933 SJ = 1954 UL2 = 1954 WB = 1958 TN1 = 1975 XF3

The identification 1933 SJ = 1958 TN1 was independently suggested by E. Bowell.

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M 240.53537	(1950.0)	P	Q	
n 0.23739634	Peri. 359.82284	+0.73153569	+0.68129579	
a 2.5831774	Node 317.19232	-0.62546379	+0.65523444	
e 0.1737501	Incl. 2.21788	-0.27138642	+0.32634932	
P 4.15	B(1,0) 13.5			

Residuals in seconds of arc

330917	012	7.1+	1.9-	331019	012	0.0	2.8-	581010	690	6.1-	2.4- Y
330925	012	5.0+	0.5-	331020	012	1.8-	0.3+	581011	690	4.2+	6.4+ Y
330927	012	(10.8-	1.0+)	541028	760	1.3-	2.0+	751126	330	0.2+	0.6+
331012	012	4.8-	1.9+	541028	760	2.5+	2.1+	751129	330	0.5-	0.8+
331014	012	(10.1+	5.6+)	541116	760	2.1-	1.6+	751202	095	1.3+	9.3-
331017	012	2.9-	4.4-	541116	760	1.5-	2.7+				

1938 AD = 1933 UO1 = 1957 QJ = 1964 TN = 1971 TB2 = 1980 FE12

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M 42.91085	(1950.0)	P	Q	
n 0.28614773	Peri. 75.68585	+0.90211498	-0.43008378	
a 2.2807449	Node 309.77461	+0.37631348	+0.82372379	
e 0.1341992	Incl. 2.60104	+0.21113202	+0.36946861	
P 3.44	B(1,0) 14.5			

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

331020	024	3.5-	4.4+	380221	053	19.6-	20.5+ X	641030	760	2.3+	2.4+
380106	053	23.3+	7.8+ X	380223	053	5.3+	5.7+ X	711012	095	2.5-	2.6-
380122	053	(33.5-	18.7+)X	380224	053	(34.6-	5.4+)X	800323	808	0.7+	2.4+
380126	053	(35.6+	14.0-)X	380227	053	22.4-	26.1- X	800323	808	2.1+	2.9+
380128	053	7.2-	11.1+ X	570830	760	(0.03+	0.00+)X	800420	808	0.1+	1.7+
380131	053	(41.1+	1.3-)X	641012	760	(25.6+	40.9-)X	800420	808	0.1+	1.8+
380220	053	20.2+	24.5- X	641030	760	1.8+	1.6-				

1949 DA = 1933 FL1 = 1933 HN = 1973 SL6 = 1975 EU2

Epoch 1985 Dec. 1.0 ET = JDE 2446400.5 (J-P)

M 95.92834	(1950.0)	P	Q	
n 0.30420987	Peri. 18.51950	-0.99982111	+0.00796411	
a 2.1895492	Node 161.91105	-0.01345362	-0.93699370	
e 0.0418862	Incl. 3.16741	+0.01329476	-0.34925545	
P 3.24	B(1,0) 14.0			

Residuals in seconds of arc

330325	024	1.7-	0.8-	490227	760	1.2-	1.9-	490307	760	2.3-	0.9-
330420	024	0.3+	3.6-	490302	760	0.7+	0.3+	730928	095	1.2+	3.2-
490219	760	0.9-	1.7-	490305	754	4.1+	3.7+	750308	095	0.7+	2.3+
490219	760	2.0-	0.6-	490305	754	3.9+	3.7+				
490219	760	2.7-	2.6-	490307	760	0.1+	1.4-				

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EPHEMERIDES.

Comet Levy-Rudenko (1984t) Elements MPC 9293

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1984 11 16	18 46.94	+10 43.3	1.148	1.046	58.0	53.3	9.5
1984 11 26	18 43.05	+16 03.6					
1984 12 06	18 38.80	+21 24.9	1.137	0.930	51.4	55.9	9.0
1984 12 16	18 33.40	+26 53.3					
1984 12 26	18 26.33	+32 42.2	1.018	0.942	56.1	60.1	8.8
1985 01 05	18 16.61	+39 19.7					
1985 01 15	18 01.38	+47 32.8	0.821	1.077	72.6	60.7	8.9
1985 01 25	17 30.64	+58 20.5					
1985 02 04	15 57.44	+71 12.9	0.648	1.285	101.7	48.7	9.1

1985 02 14	11 21.97	+73 48.8						
1985 02 24	09 03.97	+59 23.7	0.702	1.525	127.9	30.8	10.1	
1985 03 06	08 28.07	+45 10.5						
1985 03 16	08 16.97	+34 43.4	1.032	1.777	122.5	28.2	11.6	

Periodic Comet Shoemaker 1 Elements MPC 9293

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1984 11 16	22 54.73	+22 25.6	1.387	2.041	117.4	25.5	12.8	
1984 11 26	23 01.89	+23 12.8						
1984 12 06	23 11.91	+24 05.3	1.619	2.088	103.9	27.3	13.2	
1984 12 16	23 24.28	+25 04.2						
1984 12 26	23 38.62	+26 09.7	1.870	2.145	92.1	27.3	13.7	
1985 01 05	23 54.58	+27 21.3						
1985 01 15	00 11.88	+28 37.8	2.133	2.212	81.4	26.1	14.1	
1985 01 25	00 30.33	+29 57.8						
1985 02 04	00 49.75	+31 20.0	2.401	2.286	71.4	24.1	14.5	
1985 02 14	01 10.00	+32 42.4						
1985 02 24	01 30.98	+34 03.7	2.667	2.366	61.8	21.6	14.9	
1985 03 06	01 52.59	+35 22.2						
1985 03 16	02 14.73	+36 36.4	2.925	2.452	52.6	18.8	15.2	
1985 03 26	02 37.33	+37 44.9						
1985 04 05	03 00.28	+38 46.8	3.170	2.541	43.6	15.8	15.6	
1985 04 15	03 23.49	+39 40.8						
1985 04 25	03 46.85	+40 26.5	3.392	2.633	35.0	12.7	15.9	

Comet Shoemaker (1984s) Elements MPC 9305

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1984 11 16	02 02.22	+09 20.1	0.456	1.422	158.2	15.0	10.8	
1984 11 26	02 10.39	+03 17.7						
1984 12 06	02 24.95	-03 01.3	0.384	1.292	136.7	31.6	10.0	
1984 12 16	02 47.02	-08 54.8						
1984 12 26	03 16.62	-13 43.1	0.370	1.222	122.4	42.8	9.7	
1985 01 05	03 52.63	-16 56.6						
1985 01 15	04 32.56	-18 22.2	0.400	1.226	118.5	44.8	9.9	
1985 01 25	05 13.43	-18 03.4						
1985 02 04	05 52.77	-16 22.1	0.481	1.304	121.7	40.0	10.6	
1985 02 14	06 28.94	-13 50.1						
1985 02 24	07 01.49	-10 58.0	0.622	1.439	124.9	34.3	11.6	
1985 03 06	07 30.66	-08 10.6						
1985 03 16	07 56.88	-05 43.3	0.835	1.613	123.5	31.0	12.7	
1985 03 26	08 20.70	-03 42.7						
1985 04 05	08 42.63	-02 10.9	1.118	1.809	117.2	29.5	13.8	
1985 04 15	09 02.99	-01 06.2						
1985 04 25	09 22.11	-00 25.6	1.463	2.017	108.1	28.3	14.9	
1985 05 05	09 40.20	-00 05.7						
1985 05 15	09 57.43	-00 03.2	1.858	2.231	97.7	26.7	15.8	

Comet Shoemaker (1984r) Elements MPC 9292

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1984 11 16	02 52.12	+16 17.6	4.536	5.517	172.1	1.4	16.7	
1984 11 26	02 38.66	+15 15.8						
1984 12 06	02 26.31	+14 16.0	4.695	5.533	145.3	5.8	16.8	
1984 12 16	02 15.47	+13 21.0						
1984 12 26	02 06.34	+12 33.1	4.998	5.553	119.8	8.8	16.9	
1985 01 05	01 59.01	+11 53.5						
1985 01 15	01 53.41	+11 22.6	5.386	5.576	96.1	10.1	17.1	
1985 01 25	01 49.42	+11 00.2						
1985 02 04	01 46.85	+10 45.5	5.794	5.604	74.0	9.7	17.3	
1985 02 14	01 45.51	+10 37.7						

1985 02 24	01 45.21	+10 35.6	6.169	5.634	53.4	8.1	17.5
1985 03 06	01 45.75	+10 38.3					
1985 03 16	01 46.95	+10 44.6	6.468	5.669	33.8	5.6	17.6

Periodic Comet Shoemaker 2 (1984u) Elements MPC 9304

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1984 11 16	03 12.16	+14 26.1	0.469	1.457	175.0	3.4	14.0
1984 11 26	03 00.84	+21 14.7					
1984 12 06	02 54.02	+26 20.5	0.625	1.570	153.6	16.2	14.9
1984 12 16	02 52.33	+30 01.3					
1984 12 26	02 55.47	+32 40.6	0.859	1.703	135.0	24.1	16.0
1985 01 05	03 02.79	+34 38.5					
1985 01 15	03 13.45	+36 08.2	1.150	1.848	119.8	27.5	17.0
1985 01 25	03 26.76	+37 18.2					
1985 02 04	03 42.13	+38 13.6	1.482	2.001	106.6	28.2	17.9

Comet Hartley (1984v) Elements MPC 9293

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1984 11 16	05 07.77	-10 03.9	3.996	4.810	141.5	7.3	17.3
1984 11 26	04 59.17	-12 12.0					
1984 12 06	04 49.82	-14 08.0	3.892	4.720	143.4	7.1	17.2
1984 12 16	04 40.21	-15 47.8					
1984 12 26	04 30.92	-17 09.0	3.919	4.634	131.9	9.1	17.1
1985 01 05	04 22.46	-18 10.7					
1985 01 15	04 15.25	-18 54.2	4.049	4.551	114.9	11.3	17.1
1985 01 25	04 09.59	-19 21.8					
1985 02 04	04 05.64	-19 36.9	4.238	4.473	97.4	12.6	17.1
1985 02 14	04 03.43	-19 42.9					
1985 02 24	04 02.91	-19 43.0	4.441	4.400	81.2	12.8	17.2
1985 03 06	04 03.98	-19 40.3					
1985 03 16	04 06.50	-19 37.4	4.621	4.331	67.1	12.2	17.2
1985 03 26	04 10.34	-19 36.5					
1985 04 05	04 15.35	-19 39.6	4.752	4.268	55.7	11.2	17.2
1985 04 15	04 21.39	-19 48.6					
1985 04 25	04 28.35	-20 04.7	4.820	4.210	47.8	10.2	17.2

(3154) 1984 SO3 a,e,i = 3.11, 0.16, 2 Elements MPC 9290

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 11 16	01 07.41	+03 21.7	1.762	2.622	143.3	13.0	17.1
1984 11 26	01 04.84	+03 19.8					
1984 12 06	01 04.77	+03 34.2	1.945	2.612	122.7	18.5	17.5
1984 12 16	01 07.16	+04 03.8					
1984 12 26	01 11.85	+04 46.9	2.179	2.605	104.5	21.4	17.8
1985 01 05	01 18.63	+05 41.5					
1985 01 15	01 27.23	+06 45.3	2.436	2.601	88.4	22.2	18.0
1985 01 25	01 37.42	+07 56.3					
1985 02 04	01 48.99	+09 12.4	2.693	2.599	74.0	21.4	18.2

1978 QJ2 a,e,i = 3.15, 0.16, 1 Elements MPC 9291

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 11 16	01 10.75	+07 33.7	2.340	3.207	145.9	10.0	17.1
1984 11 26	01 07.31	+07 15.4					
1984 12 06	01 05.93	+07 09.4	2.577	3.237	124.4	14.6	17.4
1984 12 16	01 06.60	+07 15.6					
1984 12 26	01 09.21	+07 33.4	2.871	3.265	104.9	16.9	17.7
1985 01 05	01 13.59	+08 01.7					
1985 01 15	01 19.52	+08 38.9	3.190	3.294	87.3	17.4	18.0
1985 01 25	01 26.82	+09 23.5					
1985 02 04	01 35.29	+10 14.1	3.506	3.321	71.2	16.3	18.2

1978 RX a,e,i = 3.20, 0.19, 2 Elements MPC 9296

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984	11 16	01 53.21	+08 19.6	1.692	2.625	155.7	8.9	16.4
1984	11 26	01 48.30	+07 56.8					
1984	12 06	01 45.70	+07 48.9	1.832	2.611	133.7	15.8	16.8
1984	12 16	01 45.61	+07 56.5					
1984	12 26	01 48.05	+08 19.0	2.039	2.601	114.1	20.2	17.1
1985	01 05	01 52.87	+08 54.7					
1985	01 15	01 59.82	+09 41.3	2.284	2.594	97.0	22.1	17.4
1985	01 25	02 08.67	+10 36.7					
1985	02 04	02 19.18	+11 38.6	2.540	2.590	81.8	22.1	17.6
1985	02 14	02 31.12	+12 44.7					
1985	02 24	02 44.32	+13 53.1	2.790	2.590	68.1	20.8	17.8

1969 TT1 a,e,i = 2.41, 0.18, 2 Elements MPC 9291

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984	11 16	02 02.78	+13 55.4	1.033	1.991	160.0	9.8	16.8
1984	11 26	01 57.12	+13 38.2					
1984	12 06	01 54.81	+13 35.4	1.167	2.009	137.9	19.2	17.3
1984	12 16	01 56.00	+13 48.5					
1984	12 26	02 00.50	+14 16.9	1.363	2.032	119.1	25.0	17.8
1985	01 05	02 07.95	+14 58.6					
1985	01 15	02 17.92	+15 50.7	1.598	2.058	103.2	27.7	18.2
1985	01 25	02 30.03	+16 50.2					
1985	02 04	02 43.95	+17 54.5	1.852	2.089	89.4	28.2	18.6
1985	02 14	02 59.37	+19 00.6					
1985	02 24	03 16.06	+20 06.2	2.111	2.123	77.1	27.0	18.9

1975 QO a,e,i = 2.65, 0.31, 11 Elements MPC 9291

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984	11 16	02 39.02	+39 10.5	0.952	1.903	157.3	11.6	16.1
1984	11 26	02 31.13	+38 02.9					
1984	12 06	02 26.90	+36 39.0	1.047	1.945	146.3	16.3	16.4
1984	12 16	02 26.85	+35 13.4					
1984	12 26	02 30.82	+33 56.1	1.216	1.995	129.9	22.2	16.9
1985	01 05	02 38.38	+32 52.8					
1985	01 15	02 48.88	+32 04.6	1.440	2.051	114.2	25.9	17.4
1985	01 25	03 01.77	+31 30.1					
1985	02 04	03 16.59	+31 07.1	1.701	2.111	100.1	27.4	17.9
1985	02 14	03 32.91	+30 52.4					
1985	02 24	03 50.42	+30 42.9	1.984	2.175	87.3	27.0	18.3
1985	03 06	04 08.85	+30 35.9					
1985	03 16	04 27.96	+30 29.0	2.275	2.241	75.4	25.4	18.6

1980 SG a,e,i = 2.45, 0.16, 7 Elements MPC 9296

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984	11 16	02 43.30	+22 10.7	1.164	2.144	169.9	4.7	17.0
1984	11 26	02 33.84	+21 56.5					
1984	12 06	02 27.18	+21 42.9	1.274	2.170	147.3	14.2	17.5
1984	12 16	02 23.95	+21 35.5					
1984	12 26	02 24.27	+21 37.8	1.465	2.198	126.6	21.1	18.0
1985	01 05	02 27.95	+21 51.3					
1985	01 15	02 34.58	+22 15.2	1.706	2.228	108.9	24.7	18.5
1985	01 25	02 43.75	+22 47.8					
1985	02 04	02 55.09	+23 27.2	1.974	2.260	93.5	25.8	18.8
1985	02 14	03 08.23	+24 10.7					
1985	02 24	03 22.90	+24 56.4	2.248	2.293	79.9	25.2	19.1
1985	03 06	03 38.86	+25 41.9					
1985	03 16	03 55.90	+26 25.4	2.516	2.327	67.6	23.3	19.4

A924 EG a,e,i = 2.36, 0.16, 1 Elements MPC 9305

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984	11 16	03 37.43	+17 52.1	1.580	2.568	176.7	1.3	17.3
1984	11 26	03 26.77	+17 15.9					
1984	12 06	03 17.00	+16 42.4	1.601	2.540	157.7	8.5	17.7
1984	12 16	03 09.22	+16 16.3					
1984	12 26	03 04.14	+16 01.0	1.724	2.510	134.2	16.3	18.1
1985	01 05	03 02.12	+15 58.5					
1985	01 15	03 03.14	+16 08.7	1.916	2.479	113.6	21.3	18.4
1985	01 25	03 07.01	+16 30.3					
1985	02 04	03 13.47	+17 01.5	2.140	2.447	95.9	23.6	18.6
1985	02 14	03 22.21	+17 39.9					
1985	02 24	03 32.94	+18 23.1	2.370	2.413	80.5	23.9	18.8
1985	03 06	03 45.42	+19 09.0					
1985	03 16	03 59.43	+19 55.3	2.585	2.379	67.0	22.6	19.0
1985	03 26	04 14.79	+20 40.1					
1985	04 05	04 31.33	+21 21.5	2.774	2.344	54.8	20.4	19.0
1985	04 15	04 48.90	+21 58.0					
1985	04 25	05 07.39	+22 28.2	2.930	2.309	43.6	17.5	19.1

4016 P-L a,e,i = 2.80, 0.02, 5 Elements MPC 9299

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984	11 16	03 53.00	+27 49.0	1.788	2.764	168.6	4.1	17.3
1984	11 26	03 43.08	+27 23.3					
1984	12 06	03 33.77	+26 49.3	1.812	2.767	162.4	6.2	17.4
1984	12 16	03 26.14	+26 12.0					
1984	12 26	03 20.92	+25 36.7	1.944	2.771	140.0	13.2	17.8
1985	01 05	03 18.51	+25 07.6					
1985	01 15	03 18.95	+24 47.4	2.157	2.774	119.3	18.0	18.1
1985	01 25	03 22.09	+24 36.6					
1985	02 04	03 27.68	+24 35.1	2.416	2.778	101.0	20.4	18.4
1985	02 14	03 35.41	+24 41.4					
1985	02 24	03 45.01	+24 53.7	2.692	2.782	84.8	20.7	18.6
1985	03 06	03 56.21	+25 10.3					
1985	03 16	04 08.78	+25 29.1	2.961	2.786	70.2	19.6	18.8
1985	03 26	04 22.51	+25 48.5					
1985	04 05	04 37.22	+26 06.8	3.208	2.790	56.9	17.5	19.0
1985	04 15	04 52.76	+26 22.7					
1985	04 25	05 08.99	+26 34.9	3.422	2.794	44.5	14.6	19.0

1982 DA a,e,i = 2.15, 0.33, 28 Elements MPC 9296

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984	11 16	05 30.12	-35 19.3	0.864	1.592	118.3	33.1	17.5
1984	11 26	05 26.68	-37 08.9					
1984	12 06	05 20.08	-37 47.6	0.786	1.532	119.3	34.1	17.2
1984	12 16	05 11.85	-37 00.6					
1984	12 26	05 03.99	-34 38.1	0.729	1.485	119.4	35.2	17.0
1985	01 05	04 58.60	-30 38.8					
1985	01 15	04 57.13	-25 12.4	0.701	1.453	118.2	36.6	16.9
1985	01 25	05 00.25	-18 37.0					
1985	02 04	05 08.13	-11 19.4	0.716	1.438	114.4	38.6	17.0
1985	02 14	05 20.43	-03 51.1					
1985	02 24	05 36.71	+03 19.0	0.790	1.443	107.8	40.8	17.2
1985	03 06	05 56.45	+09 47.6					
1985	03 16	06 19.06	+15 20.7	0.922	1.466	99.7	42.0	17.6
1985	03 26	06 43.99	+19 52.6					
1985	04 05	07 10.65	+23 23.2	1.099	1.505	91.5	41.6	18.1
1985	04 15	07 38.43	+25 56.4					
1985	04 25	08 06.81	+27 37.6	1.305	1.559	83.8	39.9	18.5

6543 P-L a,e,i = 3.18, 0.17, 2 Elements MPC 9302

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984	11 16	08 00.25	+21 28.6	2.961	3.503	115.5	14.8	19.3
1984	11 26	07 59.53	+21 36.7					
1984	12 06	07 56.62	+21 51.0	2.743	3.526	136.7	11.1	19.1
1984	12 16	07 51.64	+22 10.4					
1984	12 26	07 44.88	+22 33.1	2.608	3.547	159.8	5.5	18.8
1985	01 05	07 36.88	+22 57.0					
1985	01 15	07 28.36	+23 19.3	2.586	3.568	175.7	1.2	18.5
1985	01 25	07 20.11	+23 38.4					
1985	02 04	07 12.91	+23 52.9	2.687	3.587	152.0	7.4	19.0
1985	02 14	07 07.33	+24 02.6					
1985	02 24	07 03.74	+24 07.9	2.892	3.605	129.7	12.2	19.3
1985	03 06	07 02.33	+24 09.2					
1985	03 16	07 03.04	+24 06.9	3.166	3.622	109.5	15.0	19.5
1985	03 26	07 05.76	+24 01.5					
1985	04 05	07 10.29	+23 52.9	3.473	3.637	91.4	16.0	19.8
1985	04 15	07 16.39	+23 41.0					
1985	04 25	07 23.85	+23 25.7	3.781	3.651	74.9	15.4	20.0

1933 SJ a,e,i = 2.58, 0.17, 2 Elements MPC 9305

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984	11 16	09 09.81	+17 18.0	2.676	2.989	98.6	19.1	18.5
1984	11 26	09 13.49	+17 00.1					
1984	12 06	09 14.93	+16 51.8	2.416	3.001	117.6	16.9	18.2
1984	12 16	09 13.93	+16 53.8					
1984	12 26	09 10.41	+17 06.4	2.200	3.012	139.0	12.4	17.9
1985	01 05	09 04.47	+17 28.3					
1985	01 15	08 56.51	+17 57.0	2.067	3.020	162.8	5.5	17.6
1985	01 25	08 47.18	+18 29.0					
1985	02 04	08 37.42	+19 00.1	2.047	3.026	172.2	2.5	17.4
1985	02 14	08 28.24	+19 26.7					
1985	02 24	08 20.54	+19 46.6	2.146	3.030	147.9	10.0	17.8
1985	03 06	08 14.98	+19 58.6					
1985	03 16	08 11.89	+20 02.7	2.340	3.032	125.9	15.4	18.1
1985	03 26	08 11.34	+19 59.3					
1985	04 05	08 13.21	+19 48.8	2.593	3.031	106.4	18.5	18.4
1985	04 15	08 17.26	+19 31.7					
1985	04 25	08 23.21	+19 08.2	2.869	3.029	89.3	19.4	18.6

5557 P-L a,e,i = 3.12, 0.14, 1 Elements MPC 9301

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984	12 06	10 10.69	+12 09.1	2.550	2.937	103.3	19.1	19.5
1984	12 16	10 14.86	+11 46.3					
1984	12 26	10 16.92	+11 34.9	2.268	2.911	122.0	16.7	19.2
1985	01 05	10 16.68	+11 36.1					
1985	01 15	10 14.07	+11 49.9	2.037	2.885	143.1	11.8	18.8
1985	01 25	10 09.21	+12 15.5					
1985	02 04	10 02.48	+12 49.9	1.892	2.860	166.4	4.6	18.4
1985	02 14	09 54.56	+13 28.9					
1985	02 24	09 46.34	+14 07.5	1.858	2.836	169.2	3.8	18.3
1985	03 06	09 38.81	+14 40.9					
1985	03 16	09 32.82	+15 05.3	1.934	2.813	145.8	11.5	18.6
1985	03 26	09 28.97	+15 18.8					
1985	04 05	09 27.58	+15 20.5	2.098	2.791	124.7	17.1	18.9
1985	04 15	09 28.67	+15 10.6					
1985	04 25	09 32.11	+14 49.7	2.315	2.771	106.3	20.4	19.2
1985	05 05	09 37.68	+14 18.3					
1985	05 15	09 45.07	+13 37.4	2.555	2.753	90.3	21.5	19.4

2631 P-L a,e,i = 3.16, 0.17, 2 Elements MPC 9298

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984	12 06	11 07.85	+07 16.8	2.900	3.037	88.4	18.9	18.7
1984	12 16	11 13.85	+06 43.0					
1984	12 26	11 18.06	+06 20.4	2.650	3.071	106.0	17.9	18.5
1985	01 05	11 20.27	+06 10.5					
1985	01 15	11 20.36	+06 13.8	2.425	3.105	125.8	14.9	18.2
1985	01 25	11 18.25	+06 30.5					
1985	02 04	11 14.04	+06 59.5	2.261	3.139	147.9	9.6	18.0
1985	02 14	11 08.07	+07 38.0					
1985	02 24	11 00.85	+08 22.4	2.191	3.173	171.5	2.6	17.6
1985	03 06	10 53.11	+09 07.6					
1985	03 16	10 45.66	+09 48.7	2.238	3.207	164.2	4.9	17.8
1985	03 26	10 39.20	+10 22.0					
1985	04 05	10 34.33	+10 44.5	2.396	3.240	141.5	11.1	18.2
1985	04 15	10 31.37	+10 55.2					
1985	04 25	10 30.42	+10 53.9	2.638	3.272	121.0	15.3	18.5
1985	05 05	10 31.45	+10 41.3					
1985	05 15	10 34.30	+10 18.3	2.930	3.304	102.7	17.4	18.8

6536 P-L a,e,i = 3.11, 0.16, 1 Elements MPC 9302

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984	12 26	12 02.73	+00 01.3	3.269	3.468	93.3	16.4	19.4
1985	01 05	12 06.46	-00 20.8					
1985	01 15	12 08.48	-00 31.7	2.995	3.487	112.1	15.1	19.1
1985	01 25	12 08.66	-00 30.5					
1985	02 04	12 06.93	-00 16.9	2.758	3.504	132.9	11.9	18.9
1985	02 14	12 03.35	+00 08.7					
1985	02 24	11 58.13	+00 44.9	2.596	3.521	155.6	6.7	18.6
1985	03 06	11 51.67	+01 28.9					
1985	03 16	11 44.53	+02 16.8	2.541	3.536	179.1	0.2	18.1
1985	03 26	11 37.35	+03 04.3					
1985	04 05	11 30.79	+03 47.2	2.607	3.550	157.1	6.3	18.7
1985	04 15	11 25.39	+04 22.0					
1985	04 25	11 21.53	+04 46.5	2.779	3.562	135.0	11.5	18.9
1985	05 05	11 19.43	+04 59.4					
1985	05 15	11 19.12	+05 00.8	3.027	3.574	115.0	14.9	19.2
1985	05 25	11 20.54	+04 51.1					
1985	06 04	11 23.56	+04 31.1	3.315	3.583	97.0	16.3	19.4

4069 P-L a,e,i = 3.08, 0.04, 9 Elements MPC 9299

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1985	01 15	13 26.86	-12 14.4	2.797	2.959	89.7	19.4	19.6
1985	01 25	13 33.84	-12 43.3					
1985	02 04	13 39.08	-13 00.1	2.519	2.960	106.9	18.6	19.4
1985	02 14	13 42.38	-13 03.4					
1985	02 24	13 43.52	-12 52.1	2.268	2.962	126.2	15.6	19.1
1985	03 06	13 42.42	-12 25.3					
1985	03 16	13 39.18	-11 43.3	2.075	2.963	147.6	10.4	18.8
1985	03 26	13 34.07	-10 47.4					
1985	04 05	13 27.63	-09 41.1	1.974	2.966	170.8	3.1	18.4
1985	04 15	13 20.60	-08 29.5					
1985	04 25	13 13.79	-07 18.6	1.984	2.969	165.5	4.9	18.5
1985	05 05	13 07.96	-06 14.5					
1985	05 15	13 03.69	-05 22.0	2.101	2.972	143.1	11.8	18.8
1985	05 25	13 01.34	-04 44.0					
1985	06 04	13 01.05	-04 21.7	2.301	2.976	122.9	16.6	19.2
1985	06 14	13 02.80	-04 14.8					
1985	06 24	13 06.45	-04 22.0	2.551	2.980	105.0	19.2	19.4

6563 P-L a,e,i = 2.70, 0.07, 7 Elements MPC 9302

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1985	01 15	13 30.66	-08 40.6	2.314	2.517	90.1	23.0	18.0
1985	01 25	13 38.82	-09 47.9					
1985	02 04	13 45.04	-10 45.8	2.060	2.522	106.4	22.0	17.7
1985	02 14	13 49.01	-11 33.4					
1985	02 24	13 50.42	-12 09.6	1.830	2.529	124.9	18.7	17.4
1985	03 06	13 49.06	-12 33.5					
1985	03 16	13 44.94	-12 44.4	1.652	2.538	145.9	12.7	17.0
1985	03 26	13 38.32	-12 42.1					
1985	04 05	13 29.86	-12 28.3	1.558	2.547	168.9	4.3	16.6
1985	04 15	13 20.54	-12 06.0					
1985	04 25	13 11.48	-11 39.9	1.569	2.557	166.1	5.4	16.7
1985	05 05	13 03.76	-11 15.7					
1985	05 15	12 58.14	-10 58.1	1.682	2.568	143.8	13.5	17.1
1985	05 25	12 55.05	-10 50.8					
1985	06 04	12 54.60	-10 55.7	1.874	2.580	123.8	19.1	17.5
1985	06 14	12 56.66	-11 12.9					
1985	06 24	13 01.03	-11 42.0	2.113	2.593	106.5	22.1	17.8

4650 P-L a,e,i = 2.40, 0.14, 2 Elements MPC 9300

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1985	02 04	14 00.53	-12 04.0	1.662	2.106	102.4	27.2	18.1
1985	02 14	14 09.77	-13 03.1					
1985	02 24	14 16.61	-13 50.0	1.432	2.091	118.3	24.6	17.7
1985	03 06	14 20.61	-14 23.7					
1985	03 16	14 21.41	-14 43.1	1.239	2.080	136.9	19.1	17.3
1985	03 26	14 18.84	-14 47.1					
1985	04 05	14 13.12	-14 35.9	1.107	2.072	158.7	10.1	16.8
1985	04 15	14 05.00	-14 11.4					
1985	04 25	13 55.70	-13 37.8	1.062	2.067	176.9	1.5	16.3
1985	05 05	13 46.77	-13 02.2					
1985	05 15	13 39.60	-12 31.9	1.110	2.067	153.9	12.4	16.9
1985	05 25	13 35.16	-12 13.1					
1985	06 04	13 33.92	-12 09.6	1.238	2.070	133.3	20.9	17.3
1985	06 14	13 35.90	-12 22.3					
1985	06 24	13 40.88	-12 50.2	1.419	2.077	116.1	26.1	17.7
1985	07 04	13 48.54	-13 31.6					
1985	07 14	13 58.49	-14 23.6	1.632	2.088	101.6	28.5	18.1

1949 DA a,e,i = 2.19, 0.04, 3 Elements MPC 9306

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1985	02 04	14 04.85	-10 57.8	1.662	2.098	101.8	27.4	17.3
1985	02 14	14 13.86	-11 23.4					
1985	02 24	14 20.33	-11 32.6	1.442	2.100	118.2	24.6	17.0
1985	03 06	14 23.85	-11 24.1					
1985	03 16	14 24.10	-10 57.7	1.259	2.102	137.4	18.7	16.5
1985	03 26	14 20.96	-10 13.9					
1985	04 05	14 14.74	-09 15.6	1.139	2.106	159.7	9.5	16.1
1985	04 15	14 06.25	-08 08.5					
1985	04 25	13 56.72	-07 00.7	1.108	2.110	173.5	3.1	15.8
1985	05 05	13 47.66	-06 01.7					
1985	05 15	13 40.35	-05 18.8	1.173	2.116	151.2	13.3	16.3
1985	05 25	13 35.68	-04 56.6					
1985	06 04	13 34.08	-04 56.2	1.317	2.122	130.6	21.3	16.7
1985	06 14	13 35.51	-05 16.1					
1985	06 24	13 39.79	-05 53.4	1.512	2.129	113.3	26.0	17.1
1985	07 04	13 46.60	-06 45.2					
1985	07 14	13 55.58	-07 48.0	1.734	2.137	98.6	28.1	17.5

3040 P-L a,e,i = 2.64, 0.22, 8 Elements MPC 9299

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1985	03 16	16 26.36	-29 58.2	2.348	2.778	105.1	20.2	19.7
1985	03 26	16 31.24	-30 26.2					
1985	04 05	16 33.57	-30 48.4	2.058	2.733	122.9	17.9	19.4
1985	04 15	16 33.09	-31 03.4					
1985	04 25	16 29.65	-31 08.8	1.817	2.688	142.7	13.1	18.9
1985	05 05	16 23.37	-31 02.0					
1985	05 15	16 14.78	-30 40.6	1.656	2.641	163.5	6.2	18.5
1985	05 25	16 04.75	-30 03.7					
1985	06 04	15 54.50	-29 13.0	1.596	2.594	166.6	5.2	18.4
1985	06 14	15 45.28	-28 13.3					
1985	06 24	15 38.13	-27 10.6	1.639	2.545	145.9	12.9	18.6
1985	07 04	15 33.75	-26 11.6					
1985	07 14	15 32.39	-25 20.7	1.764	2.497	125.7	19.3	18.9
1985	07 24	15 34.08	-24 40.8					
1985	08 03	15 38.65	-24 12.3	1.939	2.449	107.9	23.2	19.1
1985	08 13	15 45.80	-23 54.3					
1985	08 23	15 55.29	-23 45.2	2.137	2.401	92.3	24.9	19.3

2093 P-L a,e,i = 3.03, 0.05, 9 Elements MPC 9298

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1985	03 16	16 29.87	-18 50.2	2.513	2.949	106.1	18.9	19.2
1985	03 26	16 33.98	-18 26.9					
1985	04 05	16 35.79	-17 56.2	2.254	2.940	124.6	16.3	18.9
1985	04 15	16 35.20	-17 18.6					
1985	04 25	16 32.21	-16 34.9	2.050	2.931	145.0	11.4	18.6
1985	05 05	16 27.07	-15 46.7					
1985	05 15	16 20.25	-14 56.5	1.932	2.923	166.3	4.7	18.2
1985	05 25	16 12.47	-14 07.1					
1985	06 04	16 04.59	-13 22.3	1.919	2.916	166.8	4.6	18.2
1985	06 14	15 57.46	-12 45.3					
1985	06 24	15 51.81	-12 18.6	2.012	2.909	145.7	11.3	18.5
1985	07 04	15 48.13	-12 03.7					
1985	07 14	15 46.67	-12 00.3	2.189	2.902	125.8	16.5	18.8
1985	07 24	15 47.48	-12 07.8					
1985	08 03	15 50.50	-12 24.3	2.419	2.897	107.9	19.5	19.1
1985	08 13	15 55.56	-12 48.1					
1985	08 23	16 02.49	-13 17.0	2.676	2.891	91.9	20.5	19.3

(3020) 1949 PR a,e,i = 2.76, 0.06, 6 Elements MPC 8672

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1985	03 16	16 54.85	-15 21.2	2.432	2.792	100.6	20.5	17.6
1985	03 26	17 00.66	-15 06.2					
1985	04 05	17 04.23	-14 46.6	2.165	2.779	118.0	18.5	17.3
1985	04 15	17 05.37	-14 23.5					
1985	04 25	17 03.92	-13 58.3	1.942	2.766	137.3	14.3	17.0
1985	05 05	16 59.94	-13 33.0					
1985	05 15	16 53.72	-13 09.3	1.790	2.753	158.0	7.9	16.6
1985	05 25	16 45.81	-12 49.5					
1985	06 04	16 37.07	-12 35.9	1.736	2.741	170.0	3.7	16.4
1985	06 14	16 28.46	-12 30.2					
1985	06 24	16 20.91	-12 33.8	1.787	2.728	152.3	10.0	16.7
1985	07 04	16 15.20	-12 47.2					
1985	07 14	16 11.80	-13 10.0	1.928	2.715	131.9	16.2	17.0
1985	07 24	16 10.91	-13 41.1					
1985	08 03	16 12.56	-14 18.9	2.132	2.703	113.6	20.1	17.3
1985	08 13	16 16.60	-15 01.5					
1985	08 23	16 22.86	-15 47.3	2.370	2.691	97.2	21.9	17.5