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

ERRATA.

MPC	Line		
12015	24	For	Krisbarons read Krisbarons
12015	27	For	Krisjanis read Krisjanis
12324	16	Add	The identifications 1972 RQ = 1934 RC1 = 1954 HF = 1966 CX = 1979 HW1 = 1983 ET are by T. Kobayashi.
12324	-23	Add	(MPC 6840). The identifications 1972 YR = 1965 AW = 1969 AS = 1971 OO = 1975 NC1 = 1979 OA14 = 1979 QH10 = 1981 AN1 are by T. Kobayashi.

* * * * *

CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object		Date	UT	R. A. (1950)	Decl.	Reference	Mag.	Obs.
1987 QC	*	1987 08	26.50417	21 59 28.40	-07 59 08.5	MPC12186	15.5	883
1987 QC		1987 08	26.52674	21 59 27.89	-07 59 15.7	MPC12186		883
1987 RG	*	1987 09	01.33785	00 49 00.58	+00 16 25.8	MPC12298	17.0	809
1987 RG		1987 09	01.34792	00 49 00.30	+00 16 23.0	MPC12298		809
1987 RG		1987 09	01.35833	00 49 00.10	+00 16 20.7	MPC12298		809
1987 RG		1987 09	01.36875	00 48 59.89	+00 16 17.9	MPC12298		809
1987 RK	*	1987 09	01.33785	00 52 15.43	+00 14 07.4	MPC12298	17.1	809
1987 RK		1987 09	01.34792	00 52 15.23	+00 14 05.8	MPC12298		809
1987 RK		1987 09	01.35833	00 52 15.10	+00 14 03.1	MPC12298		809
1987 RK		1987 09	01.36875	00 52 15.02	+00 13 59.4	MPC12298		809

* * * * *

DELETED OBSERVATIONS.

The following observation is to be deleted.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Obs.
1936 YH	1937 01	09.85	07 22.6	+24 55	RI 1522	020

* * * * *

DOUBLE DESIGNATIONS.

Continuation to MPC 9041.

	Note		Note		Note
1982 XE2 = 1982 XL2	1	1982 XG2 = 1982 XM2	1	1985 TK = 1985 TR1	5
1985 YB = 1986 AT	3				

Note 1: by H. Oishi. 2: by F. N. Bowman. 3: by S. Nakano. 5 = 2 + 3.

* * * * *

IDENTIFICATIONS.

The following list of identifications with numbered minor planets continues that on MPC 12165.

	Note		Note
1985 YE = (3631)	1	1987 QG3 = (385)	2

Note 1: by E. Goffin. 2: by E. W. Elst and D. W. E. Green.

* * * * *

IDENTIFICATION CHANGES.

Continuation to MPC 12253.

Object	Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
1937 AC1 *	1937 01	07.98	07 25.4	+24 50	1936 YH	15.0	020
1972 TD11*	1972 10	13.85679	00 53 55.07	+06 59 43.2	1972 TW8	17.5	095
1976 YX7 *	1976 12	20.84847	04 07 48.57	+25 03 10.6	1976 YL	17.0	095

* * * * *

OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

046 Klet. Observer A. Mrkos.
051 Cape. Observer J. Churms.
071 Smolyan. Observers E. W. Elst, V. Ivanova and V. Shkodrov. Measured by E. W. Elst.
323 Perth. Observers M. P. Candy, P. Jekabsons and J. Johnston.
372 Geisei. Observer T. Seki.
392 JCPM Sapporo Station. 0.25-m reflector. Observers H. Kaneda and S. Hirai.
399 Kushiro. 0.16-m reflector. Observer S. Ueda. Measured by H. Kaneda.
400 Kitami. Observer K. Endate. Measured by K. Watanabe.
413 Siding Spring Observatory. Observer R. H. McNaught.
415 Kambah, near Canberra. Observer D. Herald.
474 Mt. John. Observers A. C. Gilmore and P. M. Kilmartin.
494 Stakenbridge. Observer B. Manning. 0.26-m reflector. Communicated by G. M. Hurst.
503 Cambridge. Observer J. D. Shanklin.
657 Victoria. Observers D. D. Balam and J. Tatum.
675 Palomar. 0.46-m Schmidt. Observers J. Gibson, C. Shoemaker, E. Shoemaker and H. E. Holt.
688 Lowell Observatory, Anderson Mesa Station. Observer B. A. Skiff. Measured by E. Bowell.
691 University of Arizona, Kitt Peak. 0.91-m SPACEWATCH telescope, CCD in scanning mode. Observers T. Gehrels and J. Scotti.
783 Rixeyville, VA. 0.14-m Schmidt-Newtonian telescope. Observer G. R. Chester. Measured by R. E. Schmidt. Long. and Parallax 282.02, -334, -265 (see MPC 11200).
801 Oak Ridge Observatory. Observers R. E. McCrosky, C.-Y. Shao and

K. Watanabe.
883 Shizuoka. 0.13-m hyperboloid astrocamera. Observer W. Kakkei. Measured by M. Kizawa. From Nihondaira Obs. Circ.
892 YGCO Hoshikawa and Nagano Stations. Observers T. Kojima and S. Hayakawa. In part from Nihondaira Obs. Circ.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N Obs.
		Periodic Comet Encke				
/1984 VI	1987	08 15.49514	12 14 49.41	-12 13 47.6		323
/1984 VI	1987	08 17.49028	12 30 27.59	-14 11 19.1		323
/1984 VI	1987	08 18.46528	12 38 05.16	-15 06 29.4		323
		Periodic Comet Kohoutek				
/1986k	1987	07 25.76319	04 08 29.1	+24 51 58	18.5T	372
/1986k	1987	09 27.43311	06 52 07.36	+25 11 42.9	17.1T	691
		Periodic Comet Grigg-Skjellerup				
/1986m	1987	07 18.48403	12 36 52.02	+12 42 19.0		323
/1986m	1987	09 27.12194	17 27 03.26	-00 02 12.0	17.1T	691
/1986m	1987	09 27.14513	17 27 07.32	-00 02 24.0		691
		Comet Sorrells (1986n)				
/1986n	1987	08 26.51689	17 50 12.73	-09 26 56.8		892
		Periodic Comet Howell				
/1987h	1987	08 17.80208	01 22 46.99	-00 54 12.9		323
/1987h	1987	08 26.62280	01 22 14.63	-01 17 28.9		892
/1987h	1987	08 26.66817	01 22 13.84	-01 17 38.2		892
/1987h	1987	08 26.72431	01 22 13.45	-01 17 42.2		323
/1987h	1987	08 31.42396	01 20 47.05	-01 34 44.9		657
/1987h	1987	09 01.40076	01 20 23.36	-01 38 40.7		657
/1987h	1987	09 02.86181	01 19 44.54	-01 44 23.6		323
/1987h	1987	09 04.47326	01 18 57.32	-01 51 20.3		657
/1987h	1987	09 23.54722	01 04 32.90	-03 19 43.6	14 T	399
/1987h	1987	09 23.57986	01 04 31.01	-03 19 53.0		399
		Periodic Comet Klemola				
/1987i	1987	08 26.58935	00 24 36.96	+05 36 15.2		892
/1987i	1987	08 26.63263	00 24 37.65	+05 35 54.0		892
/1987i	1987	08 28.83750	00 25 24.58	+05 14 02.8		323
/1987i	1987	08 31.36076	00 26 08.17	+04 46 53.4		657
/1987i	1987	09 01.36535	00 26 22.49	+04 35 42.1		657
/1987i	1987	09 04.48437	00 26 56.24	+03 59 25.3		657
/1987i	1987	09 19.94149	00 26 33.90	+00 37 19.5	15.5T	071
/1987i	1987	09 19.98449	00 26 33.45	+00 36 46.2		071
/1987i	1987	09 21.29271	00 26 20.71	+00 19 04.3		657
/1987i	1987	09 21.95800	00 26 13.20	+00 10 06.3		046
/1987i	1987	09 21.97212	00 26 13.03	+00 09 54.4		046
		Comet Torres (1987j)				
/1987j	1987	07 17.50833	12 04 19.00	-10 16 08.3		323
		Periodic Comet Brooks 2				
/1987m	1987	08 18.78611	00 27 37.15	+04 46 30.1		323
/1987m	1987	08 26.66042	00 31 07.05	+04 32 03.3		323
/1987m	1987	08 31.32535	00 32 25.28	+04 15 51.4		657
/1987m	1987	09 02.80000	00 32 53.00	+04 05 24.6		323
/1987m	1987	09 21.95800	00 31 47.87	+01 59 02.9		046

/1987m	1987	09	21.97212	00	31	47.65	+01	58	56.4			046
/1987m	1987	09	22.88126	00	31	34.84	+01	51	33.5			046
/1987m	1987	09	23.60558	00	31	23.94	+01	45	43.2	14	T	399
/1987m	1987	09	23.63959	00	31	23.34	+01	45	24.1			399
/1987m	1987	09	25.96387	00	30	46.72	+01	26	06.0			494
/1987m	1987	09	29.29146	00	29	49.77	+00	58	12.5	15.0	T	688
/1987m	1987	09	29.33653	00	29	48.85	+00	57	48.2			688
/1987m	1987	09	30.60625	00	29	26.87	+00	47	20.6			323
/1987m	1987	10	16.19453	00	25	24.16	-01	12	41.6	15.0	T	688
/1987m	1987	10	16.28133	00	25	22.94	-01	13	15.2			688
/1987m	1987	10	16.96111	00	25	16.16	-01	17	39.1			503
/1987m	1987	10	17.54059	00	25	10.64	-01	21	15.5			892
/1987m	1987	10	17.55274	00	25	10.66	-01	21	18.8			892
/1987m	1987	10	19.24132	00	24	56.57	-01	31	35.0			657
/1987m	1987	10	19.51215	00	24	54.93	-01	33	04.0			892
/1987m	1987	10	19.52638	00	24	54.71	-01	33	09.5			892

Periodic Comet Harrington

/1987n	1987	07	02.61319	19	58	02.01	-17	32	48.5			323
/1987n	1987	07	24.61493	19	45	35.31	-20	51	53.4			323
/1987n	1987	09	20.47881	19	51	15.30	-28	28	04.3	15	T	399
/1987n	1987	09	27.47211	20	01	31.02	-28	36	37.3			399

Periodic Comet Borrelly

/1987p	1987	08	17.87292	02	49	17.98	-32	40	57.4			323
/1987p	1987	08	18.86597	02	50	55.89	-32	48	05.4			323
/1987p	1987	08	26.79062	03	03	24.86	-33	47	52.8			323

Periodic Comet Russell 2

/1987q	1987	07	18.62604	20	08	11.53	-42	44	18.2			323
/1987q	1987	07	24.71319	20	03	43.00	-43	06	22.9			323
/1987q	1987	07	31.72014	19	58	45.35	-43	17	13.6			323
/1987q	1987	08	18.62153	19	50	23.67	-42	37	10.1			323
/1987q	1987	08	28.62778	19	49	54.27	-41	40	10.9			323

Periodic Comet Reinmuth 1

/1987r	1987	09	27.39081	04	40	15.25	+12	25	18.4	18.3	T 1	691
/1987r	1987	09	27.41022	04	40	15.84	+12	25	16.7			691
/1987r	1987	09	27.42111	04	40	16.23	+12	25	15.9	19.7	N	691

Comet Bradfield (1987s)

/1987s	1987	08	15.51528	14	15	31.34	-22	20	35.8			323
/1987s	1987	08	17.50972	14	18	17.10	-21	51	52.5			323
/1987s	1987	08	18.48611	14	19	40.81	-21	37	57.2			323
/1987s	1987	08	19.48750	14	21	08.18	-21	23	44.6			323
/1987s	1987	08	19.72922	14	21	29.68	-21	20	18.1			051
/1987s	1987	08	19.73594	14	21	30.32	-21	20	13.9			051
/1987s	1987	08	24.72601	14	29	14.67	-20	10	56.2			051
/1987s	1987	08	26.46180	14	32	06.26	-19	47	15.1			323
/1987s	1987	08	26.72645	14	32	32.86	-19	43	38.9			051
/1987s	1987	08	31.44531	14	40	47.12	-18	40	06.3	8	T	372
/1987s	1987	08	31.45069	14	40	47.78	-18	40	01.0			372
/1987s	1987	09	01.72922	14	43	08.21	-18	22	49.8			051
/1987s	1987	09	01.73409	14	43	08.80	-18	22	46.2			051
/1987s	1987	09	04.47222	14	48	18.57	-17	46	09.5			323
/1987s	1987	09	07.73686	14	54	44.58	-17	02	20.3			051
/1987s	1987	09	07.74253	14	54	45.24	-17	02	16.8			051
/1987s	1987	09	14.40185	15	08	47.02	-15	31	37.3			892
/1987s	1987	09	14.40451	15	08	47.65	-15	31	33.2			892

/1987s	1987	09	14.41944	15	08	49.80	-15	31	18.8			892
/1987s	1987	09	16.43035	15	13	18.83	-15	03	09.6			415
/1987s	1987	09	16.43138	15	13	18.92	-15	03	07.6			415
/1987s	1987	09	16.47986	15	13	25.54	-15	02	29.3			323
/1987s	1987	09	23.39570	15	29	44.21	-13	22	20.7			415
/1987s	1987	09	23.39644	15	29	44.48	-13	22	17.8			415
/1987s	1987	09	23.41059	15	29	46.55	-13	22	12.2			392
/1987s	1987	09	23.41765	15	29	47.60	-13	22	06.6			392
/1987s	1987	09	29.43703	15	45	07.21	-11	48	27.0			415
/1987s	1987	09	29.43845	15	45	07.41	-11	48	26.9			415
/1987s	1987	10	01.40740	15	50	22.04	-11	16	15.2			415
/1987s	1987	10	03.39153	15	55	45.86	-10	42	57.3	7	T	392
/1987s	1987	10	03.40544	15	55	48.08	-10	42	42.9			392
/1987s	1987	10	07.40839	16	07	03.12	-09	32	02.2			415
/1987s	1987	10	07.40956	16	07	02.98	-09	31	59.0			415
/1987s	1987	10	09.37758	16	12	45.78	-08	55	46.6	7	T	392
/1987s	1987	10	09.38825	16	12	47.65	-08	55	33.3			392
/1987s	1987	10	09.40188	16	12	49.87	-08	55	09.2			415
/1987s	1987	10	09.41289	16	12	51.85	-08	54	59.0			415
/1987s	1987	10	13.39062	16	24	46.59	-07	37	56.1			892
/1987s	1987	10	13.39479	16	24	47.22	-07	37	50.5			892
/1987s	1987	10	13.40069	16	24	48.41	-07	37	40.8			892
/1987s	1987	10	18.37881	16	40	25.86	-05	53	38.5			892
/1987s	1987	10	18.38368	16	40	26.56	-05	53	33.2			892
/1987s	1987	10	19.44028	16	43	51.60	-05	30	17.5	6	T	883
/1987s	1987	10	19.44479	16	43	52.92	-05	30	13.8			883
/1987s	1987	10	19.44792	16	43	53.56	-05	30	08.8			883
/1987s	1987	10	22.39891	16	53	40.01	-04	22	51.6			415
/1987s	1987	10	22.77836	16	54	56.65	-04	14	10.2		2	503
/1987s	1987	10	22.79479	16	55	00.17	-04	13	49.0			503
/1987s	1987	10	24.75539	17	01	41.97	-03	27	08.2			503

Comet Rudenko (1987u)

/1987u	1987	09	10.17691	13	14	35.00	+27	34	27.9			657
/1987u	1987	09	12.43576	13	09	23.79	+26	50	12.4			400
/1987u	1987	09	12.44410	13	09	22.61	+26	50	03.6			400
/1987u	1987	09	12.45243	13	09	21.42	+26	49	54.3			400
/1987u	1987	09	14.42297	13	04	52.46	+26	10	22.9			892
/1987u	1987	09	14.42847	13	04	51.61	+26	10	20.3			892
/1987u	1987	09	16.42130	13	00	20.43	+25	29	27.0	8.0	T	400
/1987u	1987	09	16.42419	13	00	20.11	+25	29	23.8			400
/1987u	1987	10	16.52378	11	50	57.19	+08	28	45.4		3	675
/1987u	1987	10	16.52905	11	50	56.47	+08	28	28.0		3	675
/1987u	1987	10	21.84175	11	40	00.31	+03	05	11.6	6.5	T 4	372

Periodic Comet Helin

/1987w	1987	10	16.24737	01	09	43.53	+00	41	13.1	17.7	T	691
/1987w	1987	10	16.24981	01	09	43.43	+00	41	12.4			691

Periodic Comet West-Kohoutek-Ikemura

/1987x	1987	10	01.82188	10	04	59.9	+26	47	11	18	T	372

Comet Levy (1987y)

/1987y	1987	10	13.40972	14	46	35.67	+17	05	06.8	10	T	372
/1987y	1987	10	15.11187	14	56	46.80	+16	46	34.6			657
/1987y	1987	10	15.37517	14	58	19.31	+16	43	47.4	9	T	399
/1987y	1987	10	15.38895	14	58	23.97	+16	43	37.6			399
/1987y	1987	10	16.0118	15	02	02.82	+16	36	32.8			783
/1987y	1987	10	17.11302	15	08	23.55	+16	23	16.4			675

/1987y	1987	10	17.11667	15	08	24.86	+16	23	11.1			675
/1987y	1987	10	17.40507	15	10	03.57	+16	19	41.6	10.5T		372
/1987y	1987	10	18.37509	15	15	32.1	+16	07	38	10 T		392
/1987y	1987	10	18.37962	15	15	33.65	+16	07	26.6			892
/1987y	1987	10	18.38458	15	15	35.2	+16	07	32			392
/1987y	1987	10	18.38547	15	15	35.96	+16	07	26.1			892
/1987y	1987	10	18.39218	15	15	37.51	+16	07	16.9			892
/1987y	1987	10	21.38449	15	31	58.16	+15	27	58.5	10 T		399
/1987y	1987	10	21.39411	15	32	01.13	+15	27	50.4			399
/1987y	1987	10	23.00000	15	40	26.94	+15	05	56.3			783

Periodic Comet Shoemaker-Holt

/1987z	1987	09	24.38402	01	21	40.21	+10	36	05.1			675
/1987z	1987	09	24.41563	01	21	39.23	+10	35	59.3			675
/1987z	1987	10	18.33524	01	08	07.99	+08	48	07.4	15 T		675
/1987z	1987	10	19.48020	01	07	26.79	+08	42	26.3			675
/1987z	1987	10	20.28055	01	06	58.33	+08	38	27.8			675
/1987z	1987	10	21.35399	01	06	20.14	+08	33	07.7			675
/1987z	1987	10	22.14264	01	05	52.64	+08	29	12.8		5	801
/1987z	1987	10	22.25362	01	05	48.69	+08	28	39.9		5	801
/1987z	1987	10	23.20573	01	05	15.47	+08	23	58.4		5	801
/1987z	1987	10	20.33444	01	06	56.33	+08	38	07.8			657
/1987z	1987	10	21.26326	01	06	23.56	+08	33	31.8			657
/1987z	1987	10	26.33878	01	03	28.51	+08	08	42.9			691
/1987z	1987	10	26.35608	01	03	27.91	+08	08	37.7			691
/1987z	1987	10	26.36007	01	03	27.76	+08	08	36.5		6	691
/1987z	1987	10	27.66181	01	02	44.68	+08	02	27.8	17.5T		372
/1987z	1987	10	27.68368	01	02	43.98	+08	02	23.6			372

Periodic Comet Mueller

/1987a1	1987	10	18.33524	01	12	44.64	+12	25	54.3			675
/1987a1	1987	10	19.48020	01	11	52.73	+12	24	44.8			675
/1987a1	1987	10	20.28055	01	11	17.11	+12	23	57.5	17.5T		675
/1987a1	1987	10	21.35399	01	10	29.02	+12	22	48.7			675
/1987a1	1987	10	21.64306	01	10	16.4	+12	22	26	18 T		372
/1987a1	1987	10	21.65833	01	10	15.8	+12	22	26	18 T		372
/1987a1	1987	10	22.23375	01	09	50.45	+12	21	57.9		7	801
/1987a1	1987	10	23.17817	01	09	08.66	+12	20	49.9		8	801
/1987a1	1987	10	24.22304	01	08	23.41	+12	19	40.4			801
/1987a1	1987	10	26.38330	01	06	51.24	+12	17	12.2			691
/1987a1	1987	10	26.38668	01	06	51.15	+12	17	12.2			691
/1987a1	1987	10	26.40887	01	06	50.17	+12	17	10.4			691
/1987a1	1987	10	27.30310	01	06	13.08	+12	16	09.9	17.1T	9	691
/1987a1	1987	10	27.31656	01	06	12.50	+12	16	09.0			691

Comet McNaught (1987b1)

/1987b1	1987	10	10.40870	13	37	12.2	-55	49	30			413
/1987b1	1987	10	11.42300	13	43	23.7	-55	23	11			413
/1987b1	1987	10	14.41749	14	00	54.5	-54	00	18			413
/1987b1	1987	10	17.44338	14	17	27.0	-52	29	45			413
/1987b1	1987	10	18.42429	14	22	35.3	-51	59	01			413
/1987b1	1987	10	20.42900	14	32	44.47	-50	54	23.4			413
/1987b1	1987	10	22.40473	14	42	17.63	-49	48	28.7			415
/1987b1	1987	10	22.42637	14	42	23.67	-49	47	43.2			415
/1987b1	1987	10	22.43725	14	42	26.79	-49	47	20.6			413
/1987b1	1987	10	22.43831	14	42	27.15	-49	47	20.0			413
/1987b1	1987	10	23.42422	14	47	03.07	-49	13	40.4			413
/1987b1	1987	10	23.42738	14	47	04.09	-49	13	34.3			413
/1987b1	1987	10	23.42887	14	47	04.66	-49	13	31.3			413

/1987b1	1987	10	25.42781	14	56	05.28	-48	03	50.6	413
/1987b1	1987	10	25.42946	14	56	05.73	-48	03	47.2	413
/1987b1	1987	10	25.43247	14	56	06.83	-48	03	38.7	10 T 474
/1987b1	1987	10	25.43644	14	56	07.81	-48	03	30.3	474
/1987b1	1987	10	26.41773	15	00	24.12	-47	28	42.1	413
/1987b1	1987	10	26.42450	15	00	25.77	-47	28	27.0	413
/1987b1	1987	10	26.42779	15	00	26.71	-47	28	18.6	413
/1987b1	1987	10	30.41546	15	16	51.34	-45	02	44.6	A 413
/1987b1	1987	10	30.41682	15	16	51.78	-45	02	42.1	A 413

Note 1: 30" tail in p.a. 262 . 2: plate broken; images out of focus. 3: comet image overexposed; diffuse with no apparent condensation. 4: tail 18′ in p.a. 300 . 5: comet very highly condensed. 6: 38" tail in p.a. 254 . 7: weak image; inkdot measured. 8: diffuse with no apparent condensation. 9: 60" tail in p.a. 233 . A: poor conditions.

* * * * *

OBSERVATIONS OF MINOR PLANETS.

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

A earlier approximate position inferior
a sense of motion ambiguous
B black or dark plate
b bad seeing
C correction to earlier position
c crowded star field
D declination uncertain
d diffuse image
E at or near edge of plate
F faint image
G poor guiding
g no guiding
I involved with star
i inkdot measured
M measurement difficult
N near edge of plate, measurement uncertain
O image out of focus
o plate measured in one direction only
P position uncertain
p poor image
R right ascension uncertain
r outside reference star set
S poor sky
s streaked image
T time uncertain
t trailed image
U uncertain image
u unconfirmed image
V very faint image
W weak image
w weak solution

Object Date UT R. A. (1950) Decl. Mag. N Obs.

010 Caussols
J.-L. Heudier, CERGA Caussols, F-06460 Saint Vallier de Thiey, France
Observers A. Barthelemy, R. Chemin, J.-L. Heudier,
T. Laverge, C. Pollas
0.9-m Schmidt telescope
Observations in association with INAS

1987 QG6	1987 09 18.00347	00 16 47	-16 35 49	16		010
1987 QG6	1987 09 18.03819	00 16 47	-16 37 01			010
1987 QG6	1987 09 19.01319	00 16 41	-17 11 29			010
1987 QG6	1987 09 19.03403	00 16 41	-17 12 05			010

017 Hoher List
E. W. Elst, Royal Observatory, B-1180 Brussels, Belgium

1983 XM1	1987 10 21.85451	01 46 35.40	+23 42 18.9	16		017
1983 XM1	1987 10 21.87535	01 46 34.30	+23 42 15.7			017
1987 UP *	1987 10 21.85451	01 35 35.17	+19 14 27.0	16.5		017
1987 UP	1987 10 21.87535	01 35 33.78	+19 14 26.3			017
1987 UQ *	1987 10 21.85451	02 09 51.17	+18 50 11.6	16.5		017
1987 UQ	1987 10 21.87535	02 09 49.46	+18 50 02.6			017

026 Zimmerwald
P. Wild, Astronomisches Institut der Universitat, Sidlerstrasse 5,
CH-3012 Berne, Switzerland
Observer P. Wild
Measurers U. Hugentobler, P. Wild
0.4-m Schmidt telescope

1953 UD	1987 09 20.90174	23 05 11.74	+09 34 14.3	15.2		026
1953 UD	1987 09 22.89826	23 03 58.68	+09 09 36.6			026
1953 UD	1987 09 29.91458	23 00 09.89	+07 40 19.3			026
1953 UD	1987 09 30.95000	22 59 40.68	+07 26 58.8	15.5		026
1987 QD7 *	1987 08 21.95347	23 04 27.63	+06 56 16.1	15.2		026
1987 QD7	1987 08 28.06267	23 00 37.71	+06 40 55.6			026
1987 QD7	1987 08 29.00903	22 59 58.76	+06 37 25.2			026
1987 QD7	1987 08 30.97083	22 58 36.20	+06 29 18.6			026
1987 QD7	1987 09 03.02778	22 56 23.28	+06 14 24.3			026
1987 QD7	1987 09 13.83889	22 48 35.84	+05 03 39.4			026
1987 QD7	1987 09 15.89792	22 47 13.46	+04 47 53.2			026
1987 QD7	1987 09 17.90903	22 45 57.61	+04 32 01.1			026
1987 QD7	1987 09 20.88333	22 44 14.22	+04 07 57.7	15.5		026
1987 QD7	1987 09 30.93125	22 40 09.28	+02 46 42.8			026
1987 QE7 *	1987 08 21.95347	23 08 29.30	+06 21 43.4	16.5		026
1987 QE7	1987 08 29.00903	23 04 33.32	+05 23 03.9			026
1987 QE7	1987 08 30.97083	23 03 20.70	+05 04 25.6			026
1987 QE7	1987 09 03.02778	23 01 23.29	+04 33 30.0			026
1987 QE7	1987 09 15.89792	22 52 54.88	+02 05 12.4			026
1987 QE7	1987 09 17.90903	22 51 39.62	+01 40 24.6			026
1987 QE7	1987 09 30.93125	22 45 03.43	-00 58 34.2	17		026
1987 QF7 *	1987 08 30.94722	22 07 55.52	+01 35 56.6	16.0		026
1987 QF7	1987 09 03.00104	22 05 42.44	+01 18 17.8			026
1987 QF7	1987 09 13.82153	21 58 46.64	+00 08 13.3			026
1987 QF7	1987 09 15.87431	21 57 41.61	-00 05 48.1			026
1987 QF7	1987 09 17.88819	21 56 43.62	-00 19 35.1			026
1987 QF7	1987 09 20.86250	21 55 29.38	-00 39 51.1			026
1987 QF7	1987 09 29.93437	21 53 14.34	-01 38 45.5			026
1987 QF7	1987 09 30.91111	21 53 08.73	-01 44 37.8	17		026
1987 QG7 *	1987 08 30.94722	22 17 41.79	+02 39 47.2	17.0		026
1987 QG7	1987 09 03.00104	22 15 12.71	+02 15 49.1			026

1987 SZ6 * 1987 09 29.91458 23 06 03.36 +09 25 17.2 15.5 026
1987 SZ6 1987 09 30.95000 23 05 24.47 +09 19 49.9 15.5 026

033 Tautenburg
S. Marx, Karl Schwarzschild Observatorium, DDR-6901 Tautenburg,
Democratic Republic of Germany
Observers F. Borngen, K.-H. Mau, C. Hogner
Measurer F. Borngen
1.3-m Schmidt telescope
SAOC

1987 QO7 * 1987 08 22.00660 00 28 16.16 +02 29 50.3 17.8 033
1987 QO7 1987 08 22.06979 00 28 14.35 +02 30 04.0 033
1987 QO7 1987 08 23.04618 00 27 47.53 +02 33 20.9 033
1987 QP7 * 1987 08 22.00660 00 37 47.33 +00 39 09.9 17.7 033
1987 QP7 1987 08 22.06979 00 37 46.33 +00 38 59.8 033
1987 QP7 1987 08 23.04618 00 37 31.88 +00 36 23.4 033
1987 SN1 1987 08 22.00660 00 32 01.01 -00 00 53.3 17.3 033
1987 SN1 1987 08 22.06979 00 31 59.74 -00 01 07.9 033
1987 SN1 1987 08 23.04618 00 31 40.67 -00 03 39.2 033
1987 SA7 * 1987 09 29.96111 01 02 01.76 -00 07 59.5 16.3 033
1987 SA7 1987 09 30.01458 01 01 59.47 -00 08 25.4 033
1987 SA7 1987 09 30.95694 01 01 21.16 -00 16 05.2 033
1987 SA7 1987 10 01.01181 01 01 18.75 -00 16 32.1 033
1987 SB7 * 1987 09 29.96111 01 04 40.21 +02 13 19.2 18.5 033
1987 SB7 1987 09 30.01458 01 04 37.58 +02 12 49.7 033
1987 SB7 1987 09 30.95694 01 03 54.12 +02 04 04.1 033
1987 SB7 1987 10 01.01181 01 03 51.49 +02 03 34.3 033
1987 SB7 1987 10 01.93611 01 03 08.39 +01 55 00.7 033
1987 SB7 1987 10 01.98889 01 03 05.70 +01 54 30.1 033
1987 SC7 * 1987 09 29.96111 01 07 30.66 +02 08 32.2 17.8 033
1987 SC7 1987 09 30.01458 01 07 28.02 +02 08 08.7 033
1987 SC7 1987 09 30.95694 01 06 43.30 +02 01 18.9 033
1987 SC7 1987 10 01.01181 01 06 40.50 +02 00 54.4 033
1987 SC7 1987 10 01.93611 01 05 56.28 +01 54 12.7 033
1987 SC7 1987 10 01.98889 01 05 53.54 +01 53 49.5 033
1987 SD7 * 1987 09 29.96111 01 12 07.92 +01 47 47.6 18.2 033
1987 SD7 1987 09 30.01458 01 12 05.33 +01 47 31.5 033
1987 SD7 1987 09 30.95694 01 11 22.96 +01 42 56.9 033
1987 SD7 1987 10 01.01181 01 11 20.33 +01 42 39.9 033
1987 SD7 1987 10 01.93611 01 10 38.20 +01 38 10.5 033
1987 SD7 1987 10 01.98889 01 10 35.68 +01 37 55.5 033
302 1987 08 22.00660 00 32 52.25 +01 55 11.9 14.9 033
302 1987 08 22.06979 00 32 51.09 +01 55 09.8 033
302 1987 08 23.04618 00 32 34.04 +01 54 31.1 033
851 1987 08 22.00660 00 34 31.25 +01 34 48.4 16.3 033
851 1987 08 22.06979 00 34 29.92 +01 34 34.9 033
851 1987 08 23.04618 00 34 09.80 +01 30 52.3 033
875 1987 08 22.91424 21 30 59.84 +06 30 31.2 15.0 033
875 1987 08 22.96771 21 30 57.51 +06 29 57.3 033
1172 1987 08 22.91424 21 32 20.99 +07 33 31.4 15.5 033
1172 1987 08 22.96771 21 32 19.33 +07 33 23.1 033
1350 1987 09 29.96111 00 59 54.50 +02 20 25.0 14.6 033
1350 1987 09 30.01458 00 59 51.99 +02 20 06.7 033
1498 1987 08 22.91424 21 28 47.93 +05 17 22.2 15.5 033
1498 1987 08 22.96771 21 28 45.27 +05 17 17.9 033
1541 1987 08 22.00660 00 32 11.53 +02 43 43.9 16.6 033
1541 1987 08 22.06979 00 32 10.02 +02 43 39.3 033
1541 1987 08 23.04618 00 31 45.92 +02 42 19.4 033
1736 1987 09 29.96111 01 10 14.59 +02 02 55.8 14.7 033

1736		1987	09	30.01458	01	10	12.07	+02	02	26.7		033
1736		1987	09	30.95694	01	09	30.53	+01	53	59.3		033
1736		1987	10	01.01181	01	09	27.95	+01	53	29.9		033
1736		1987	10	01.93611	01	08	46.38	+01	45	10.6		033
1736		1987	10	01.98889	01	08	43.83	+01	44	41.7		033
1743		1987	08	21.98785	23	35	05.77	+01	32	29.6	17.3	033
1743		1987	08	22.02604	23	35	04.23	+01	32	17.2		033
1743		1987	08	23.02292	23	34	25.20	+01	26	52.7		033
1811		1987	08	21.85174	18	09	11.50	-13	47	20.7	17.5	033
1811		1987	08	21.87708	18	09	11.57	-13	47	27.4		033
1811		1987	08	22.84375	18	09	16.40	-13	51	28.3		033
1811		1987	08	22.87083	18	09	16.53	-13	51	35.0		033
1873		1987	08	22.91424	21	36	58.26	+07	13	01.0	18.9	033
1873		1987	08	22.96771	21	36	56.81	+07	12	48.6		033
2223		1987	08	22.91424	21	32	22.32	+05	32	56.0	16.7	033
2223		1987	08	22.96771	21	32	20.76	+05	32	45.8		033
2473		1987	08	21.98785	23	28	36.70	+00	46	56.4	16.2	033
2473		1987	08	22.02604	23	28	35.31	+00	46	43.1		033
2473		1987	08	23.02292	23	28	00.25	+00	40	51.5		033
3024		1987	09	29.96111	01	07	32.01	+00	46	23.3	16.0	033
3024		1987	09	30.01458	01	07	29.29	+00	46	21.0		033
3024		1987	09	30.95694	01	06	43.39	+00	45	35.0		033
3024		1987	10	01.01181	01	06	40.57	+00	45	32.6		033
3024		1987	10	01.93611	01	05	55.18	+00	44	48.1		033
3024		1987	10	01.98889	01	05	52.52	+00	44	45.8		033
3274		1987	08	22.00660	00	35	23.63	+02	50	46.2	18.0	033
3274		1987	08	22.06979	00	35	22.22	+02	50	38.4		033
3274		1987	08	23.04618	00	35	01.87	+02	48	32.4		033

046 Klet
A. Mrkos, Dept. of Astronomy and Astrophysics, Charles University,
Svedska 8, C-15000 Prague 5, Czechoslovakia
Observers A. Mrkos, Z. Vavrova
0.6-m Maksutov reflector

1977	QA1		1987	09	21.92380	00	17	07.68	+02	04	03.0	16.5	046
1977	QA1		1987	09	21.93792	00	17	06.75	+02	03	59.0		046
1983	VP7		1987	09	21.92380	00	11	25.98	-00	48	39.7		046
1983	VP7		1987	09	21.93792	00	11	25.03	-00	48	39.5		046
1984	SR1		1987	09	21.88867	22	33	07.28	-06	10	40.7		046
1984	SR1		1987	09	21.90279	22	33	06.71	-06	10	43.2		046
1987	QD1		1987	08	26.91649	21	27	04.05	-16	04	31.9		046
1987	QD1		1987	08	26.93090	21	27	03.59	-16	04	37.0		046
1987	QH7		1987	09	21.92380	00	07	18.53	-00	12	44.5	16.5	046
1987	QH7		1987	09	21.93792	00	07	17.89	-00	12	43.7		046
1987	QZ7	*	1987	08	26.91649	21	31	19.52	-17	15	16.4		046
1987	QZ7		1987	08	26.93090	21	31	18.75	-17	15	12.6		046
1987	QA8	*	1987	08	30.82807	21	16	00.46	-09	00	08.8	16.5	046
1987	QA8		1987	08	30.84213	21	15	59.94	-09	00	17.8		046
1987	SL1		1987	09	21.92380	00	04	36.14	+00	35	20.2	16.6	046
1987	SL1		1987	09	21.93792	00	04	35.35	+00	35	16.9		046
1987	SM1		1987	09	21.92380	00	10	45.96	+01	50	17.8	16.7	046
1987	SM1		1987	09	21.93792	00	10	45.17	+01	50	10.5		046
1987	SO1		1987	09	21.92380	00	12	47.62	-00	20	15.1	16.4	046
1987	SO1		1987	09	21.93792	00	12	47.03	-00	20	26.2		046
1987	SQ1		1987	09	21.92380	00	14	44.44	+02	25	26.8	16.6	046
1987	SQ1		1987	09	21.93792	00	14	43.59	+02	25	20.7		046
1987	SH2		1987	09	21.95800	00	29	34.16	-00	11	58.7	16.6	046
1987	SH2		1987	09	21.97212	00	29	33.45	-00	12	10.1		046
1987	SJ2		1987	09	21.95800	00	35	10.99	-00	04	31.4	16.8	046

1987	SJ2		1987	09	21.97212	00	35	10.16	-00	04	38.8		046
1987	SF4		1987	09	21.95800	00	31	59.79	+02	40	15.1	16.6	046
1987	SF4		1987	09	21.97212	00	31	58.87	+02	40	07.7		046
1987	SY5	*	1987	09	21.88867	22	32	15.24	-03	58	29.5	16.9	046
1987	SY5		1987	09	21.90279	22	32	14.65	-03	58	25.2		046
1987	SZ5	*	1987	09	21.88867	22	32	24.01	-04	24	45.7	16.6	046
1987	SZ5		1987	09	21.90279	22	32	23.76	-04	24	48.4		046
1987	SA6	*	1987	09	21.88867	22	38	14.71	-07	03	29.0	16.7	046
1987	SA6		1987	09	21.90279	22	38	14.21	-07	03	30.8		046
1987	SB6	*	1987	09	21.92380	00	04	16.45	+02	26	13.1	16.6	046
1987	SB6		1987	09	21.93792	00	04	15.90	+02	26	07.4		046
1987	SC6	*	1987	09	21.92380	00	05	17.03	-00	01	58.9	16.6	046
1987	SC6		1987	09	21.93792	00	05	16.34	-00	02	05.0		046
1987	SD6	*	1987	09	21.92380	00	05	51.40	+03	17	22.6	16.5	046
1987	SD6		1987	09	21.93792	00	05	50.72	+03	17	14.7		046
1987	SE6	*	1987	09	21.92380	00	11	40.14	+01	06	39.0	17.0	046
1987	SE6		1987	09	21.93792	00	11	39.58	+01	06	34.8		046
1987	SF6	*	1987	09	21.92380	00	12	27.27	-00	28	54.3	16.5	046
1987	SF6		1987	09	21.93792	00	12	26.84	-00	29	03.4		046
1987	SG6	*	1987	09	21.95800	00	26	59.62	+02	11	28.6	16.8	046
1987	SG6		1987	09	21.97212	00	26	59.08	+02	11	22.3		046
1987	SH6	*	1987	09	21.95800	00	27	38.52	+01	50	52.9	16.7	046
1987	SH6		1987	09	21.97212	00	27	37.76	+01	50	46.6		046
1987	SJ6	*	1987	09	21.95800	00	31	09.10	-00	11	09.2	16.7	046
1987	SJ6		1987	09	21.97212	00	31	08.41	-00	11	11.6		046
1987	SK6	*	1987	09	21.95800	00	32	27.47	+02	26	57.9	16.8	046
1987	SK6		1987	09	21.97212	00	32	26.63	+02	26	52.8		046
1987	SL6	*	1987	09	21.95800	00	34	22.71	+02	28	42.0	16.7	046
1987	SL6		1987	09	21.97212	00	34	21.80	+02	28	37.8		046
1987	SM6	*	1987	09	21.95800	00	34	49.43	+01	43	22.2	16.7	046
1987	SM6		1987	09	21.97212	00	34	48.77	+01	43	14.6		046
1987	SN6	*	1987	09	21.99579	00	29	19.22	+05	21	41.9	16.9	046
1987	SN6		1987	09	22.01021	00	29	18.50	+05	21	40.4		046
1987	SO6	*	1987	09	21.99579	00	29	24.58	+05	15	24.9	16.8	046
1987	SO6		1987	09	22.01021	00	29	23.84	+05	15	18.0		046
1987	SP6	*	1987	09	21.99579	00	31	46.85	+06	35	48.5	16.6	046
1987	SP6		1987	09	22.01021	00	31	46.17	+06	35	42.0		046
1987	SQ6	*	1987	09	21.99579	00	33	13.27	+05	15	57.9	16.9	046
1987	SQ6		1987	09	22.01021	00	33	12.51	+05	15	51.5		046
1987	SR6	*	1987	09	21.99579	00	36	30.08	+08	06	53.6	16.8	046
1987	SR6		1987	09	22.01021	00	36	29.58	+08	06	49.9		046
1987	SS6	*	1987	09	21.99579	00	37	02.21	+05	59	18.0	17.0	046
1987	SS6		1987	09	22.01021	00	37	01.66	+05	59	08.7		046
1987	ST6	*	1987	09	21.99579	00	37	57.38	+04	32	53.8	16.9	046
1987	ST6		1987	09	22.01021	00	37	56.77	+04	32	50.4		046
231			1987	09	21.99579	00	37	21.68	+06	16	09.3		046
231			1987	09	22.01021	00	37	20.93	+06	16	06.0		046
302			1987	09	21.92380	00	12	18.13	+00	33	11.7		046
302			1987	09	21.93792	00	12	17.28	+00	33	06.9		046
499			1987	09	21.88867	22	31	27.24	-06	18	31.0		046
499			1987	09	21.90279	22	31	26.75	-06	18	33.6		046
1496			1987	09	21.88867	22	30	18.56	-05	05	47.2		046
1496			1987	09	21.90279	22	30	18.11	-05	05	50.9		046
1497			1987	09	21.88867	22	40	24.01	-07	07	34.7		046
1497			1987	09	21.90279	22	40	23.56	-07	07	36.4		046
1541			1987	09	21.92380	00	11	33.99	+01	15	39.1		046
1541			1987	09	21.93792	00	11	33.15	+01	15	35.0		046
1679			1987	09	21.95800	00	33	24.50	-00	00	08.1		046
1679			1987	09	21.97212	00	33	23.89	-00	00	17.0		046

1699		1987	09	21.88867	22	42	00.20	-03	53	08.7	046
1699		1987	09	21.90279	22	41	59.71	-03	53	12.3	046
1762		1987	09	21.92380	00	08	38.23	-00	24	49.8	046
1762		1987	09	21.93792	00	08	37.53	-00	24	55.9	046
2179		1987	09	21.95800	00	37	40.02	+01	02	46.8	046
2179		1987	09	21.97212	00	37	39.28	+01	02	45.7	046
2281		1987	09	21.99579	00	41	14.32	+05	37	47.4	046
2281		1987	09	22.01021	00	41	13.58	+05	37	41.6	046
2753		1987	09	21.99579	00	37	14.54	+08	26	13.5	046
2753		1987	09	22.01021	00	37	13.89	+08	26	11.3	046

054 Brorfelde
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Observers K. Augustesen, P. Jensen
Measurer P. Jensen
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Observations in part in association with INAS

1974	QU1		1987	09	29.97336	01	00	09.66	+07	17	14.2	054
1974	QU1		1987	09	30.94616	00	59	28.09	+07	11	42.1	054
1974	QU1		1987	09	30.96362	00	59	27.30	+07	11	36.1	054
1978	RD6		1987	09	29.97336	00	54	51.25	+08	57	40.6	054
1978	RD6		1987	09	30.94616	00	54	10.68	+08	46	29.3	054
1978	RD6		1987	09	30.96362	00	54	09.93	+08	46	17.5	054
1979	MV6		1987	09	29.97336	00	55	03.71	+09	37	02.6	054
1979	MV6		1987	09	30.94616	00	54	13.60	+09	30	29.6	054
1979	MV6		1987	09	30.96362	00	54	12.67	+09	30	23.0	054
1980	PF		1987	10	02.99002	01	11	50.46	+23	35	39.4	054
1981	DK3		1987	08	31.97370	22	19	19.39	-00	45	14.4	054
1982	TD1		1987	09	29.97336	00	59	02.34	+07	50	33.9	054
1982	TD1		1987	09	30.94616	00	58	14.10	+07	48	32.7	054
1982	TD1		1987	09	30.96362	00	58	13.20	+07	48	30.1	054
1983	VE		1987	09	25.91815	22	37	20.03	-02	29	28.7	16.0	054
1983	VE		1987	09	25.93551	22	37	19.35	-02	29	35.8	054
1983	VE		1987	09	29.90762	22	34	52.15	-02	54	27.6	054
1983	VE		1987	09	29.92498	22	34	51.54	-02	54	36.6	054
1983	VE		1987	09	30.87824	22	34	19.78	-03	00	20.4	054
1983	VE		1987	09	30.89560	22	34	19.15	-03	00	27.7	054
1985	YP		1987	08	20.92475	21	45	00.73	+24	50	22.6	054
1985	YP		1987	08	29.94801	21	31	53.97	+26	16	24.8	054
1987	QJ7	*	1987	08	31.97370	22	17	21.95	-00	23	00.4	16.8	054
1987	QK7	*	1987	08	31.97370	22	17	56.99	-02	31	19.7	17.0	054
1987	QL7	*	1987	08	31.97370	22	19	39.36	-02	22	24.1	17.0	054
1987	QM7	*	1987	08	31.97370	22	20	09.68	-00	55	42.1	17.1	054
1987	SY1		1987	09	29.97336	00	51	22.83	+09	37	12.4	054
1987	SY1		1987	09	30.94616	00	50	23.81	+09	36	59.8	15.6	054
1987	SY1		1987	09	30.96362	00	50	22.67	+09	36	59.7	054
1987	SK3	*	1987	09	25.91815	22	28	05.78	+00	15	01.4	18.0	054
1987	SK3		1987	09	25.93551	22	28	04.98	+00	14	54.8	054
1987	SK3		1987	09	29.90762	22	25	31.03	-00	05	37.0	054
1987	SK3		1987	09	29.92498	22	25	30.38	-00	05	43.8	054
1987	SK3		1987	09	30.87824	22	24	57.03	-00	10	30.4	054
1987	SK3		1987	09	30.89560	22	24	56.29	-00	10	36.8	054
1987	SL3	*	1987	09	25.91815	22	31	48.13	-01	36	20.9	18.0	054
1987	SL3		1987	09	25.93551	22	31	47.47	-01	36	23.9	054
1987	SL3		1987	09	29.90762	22	29	21.53	-01	45	16.6	054
1987	SL3		1987	09	29.92498	22	29	20.94	-01	45	20.6	054
1987	SL3		1987	09	30.87824	22	28	48.42	-01	47	21.6	054
1987	SL3		1987	09	30.89560	22	28	47.79	-01	47	24.1	054

1987	SM3	*	1987	09	25.91815	22	31	53.61	-01	32	52.1		054
1987	SM3		1987	09	25.93551	22	31	52.76	-01	32	57.5	18.0	054
1987	SM3		1987	09	29.90762	22	29	12.22	-01	47	07.4		054
1987	SM3		1987	09	29.92498	22	29	11.60	-01	47	12.2		054
1987	SM3		1987	09	30.87824	22	28	37.29	-01	50	23.2		054
1987	SM3		1987	09	30.89560	22	28	36.59	-01	50	27.0		054
1987	SN3	*	1987	09	25.91815	22	32	11.07	-02	04	46.3	17.5	054
1987	SN3		1987	09	25.93551	22	32	10.56	-02	04	56.4		054
1987	SN3		1987	09	29.90762	22	30	33.08	-02	40	39.2		054
1987	SN3		1987	09	29.92498	22	30	32.73	-02	40	50.1		054
1987	SN3		1987	09	30.87824	22	30	13.55	-02	49	01.6		054
1987	SN3		1987	09	30.89560	22	30	13.08	-02	49	12.3		054
1987	SO3	*	1987	09	25.91815	22	33	23.03	-02	34	33.1	16.2	054
1987	SO3		1987	09	25.93551	22	33	22.57	-02	34	40.5		054
1987	SO3		1987	09	29.90762	22	31	39.31	-02	58	39.5		054
1987	SO3		1987	09	29.92498	22	31	38.89	-02	58	48.1		054
1987	SO3		1987	09	30.87824	22	31	16.19	-03	04	23.4		054
1987	SO3		1987	09	30.89560	22	31	15.75	-03	04	30.9		054
1987	SP3	*	1987	09	25.91815	22	38	35.70	-00	41	22.3	18.3 V	054
1987	SP3		1987	09	25.93551	22	38	35.02	-00	41	30.3		054
1987	SQ3	*	1987	09	25.91815	22	40	24.48	-01	31	50.2	16.5	054
1987	SQ3		1987	09	25.93551	22	40	23.65	-01	31	52.7		054
1987	SQ3		1987	09	30.87824	22	36	58.99	-01	39	25.3	16.7	054
1987	SQ3		1987	09	30.89560	22	36	58.35	-01	39	28.0		054
1987	SP4	*	1987	09	25.91815	22	26	56.20	-00	15	08.7	18.0	054
1987	SP4		1987	09	25.93551	22	26	55.42	-00	15	16.8		054
1987	SQ4	*	1987	09	25.91815	22	30	48.23	-03	06	08.0	18.4 V	054
1987	SQ4		1987	09	25.93551	22	30	47.74	-03	06	17.0		054
1987	SR4	*	1987	09	25.91815	22	33	16.51	+00	00	40.0	18.0	054
1987	SR4		1987	09	25.93551	22	33	15.80	+00	00	35.9		054
1987	SS4	*	1987	09	25.91815	22	37	00.54	-03	11	54.8	18.5 V	054
1987	SS4		1987	09	25.93551	22	36	59.82	-03	12	00.5		054
1987	ST4	*	1987	09	25.91815	22	37	19.97	-02	44	29.5	18.0	054
1987	ST4		1987	09	25.93551	22	37	19.26	-02	44	35.1		054
1987	SU4	*	1987	09	29.90762	22	30	26.19	+00	09	46.7	17.5	054
1987	SU4		1987	09	29.92498	22	30	25.73	+00	09	32.9		054
1987	SU4		1987	09	30.87824	22	30	09.71	-00	01	09.4		054
1987	SU4		1987	09	30.89560	22	30	09.33	-00	01	21.1		054
1987	SV4	*	1987	09	30.94616	00	48	50.82	+08	42	52.2	17.8	054
1987	SV4		1987	09	30.96362	00	48	49.95	+08	42	46.4		054
1987	SW4		1987	09	29.97336	00	50	46.14	+07	58	49.1		054
1987	SW4	*	1987	09	30.94616	00	49	54.46	+07	55	18.2	18.0	054
1987	SW4		1987	09	30.96362	00	49	53.62	+07	55	15.0		054
1987	SX4		1987	09	29.97336	00	52	05.17	+08	29	05.2		054
1987	SX4	*	1987	09	30.94616	00	51	26.08	+08	22	06.8	18.0	054
1987	SX4		1987	09	30.96362	00	51	25.35	+08	21	58.2		054
1987	SY4	*	1987	09	30.94616	00	52	51.67	+08	17	27.8	18.0	054
1987	SY4		1987	09	30.96362	00	52	50.59	+08	17	24.7		054
1987	SZ4	*	1987	09	30.94616	00	53	56.52	+09	37	56.3	18.0	054
1987	SZ4		1987	09	30.96362	00	53	55.69	+09	37	49.4		054
1987	SA5		1987	09	29.97336	00	56	10.67	+09	06	00.6		054
1987	SA5	*	1987	09	30.94616	00	55	10.73	+09	00	45.7	18.0	054
1987	SA5		1987	09	30.96362	00	55	09.59	+09	00	40.5		054
1987	SB5	*	1987	09	29.94095	23	38	16.83	+10	29	28.6	17.0	054
1987	SB5		1987	09	29.95831	23	38	16.08	+10	29	22.3		054
1987	SB5		1987	09	30.91068	23	37	37.06	+10	22	43.5		054
1987	SB5		1987	09	30.92804	23	37	36.30	+10	22	35.7		054
1987	SC5	*	1987	09	30.87824	22	36	38.18	-02	06	48.0	17.6	054
1987	SC5		1987	09	30.89560	22	36	37.46	-02	06	56.7		054

1987	SD5		1987	09	29.97336	00	53	03.65	+07	03	51.7		054
1987	SD5	*	1987	09	30.94616	00	52	17.82	+06	58	55.6	17.0	054
1987	SD5		1987	09	30.96362	00	52	16.98	+06	58	50.3		054
1987	SE5		1987	09	29.97336	00	54	38.53	+10	29	52.6		054
1987	SE5	*	1987	09	30.94616	00	53	44.02	+10	26	54.6	17.0	054
1987	SE5		1987	09	30.96362	00	53	43.00	+10	26	51.7		054
1987	SF5		1987	09	29.97336	00	56	55.33	+11	20	53.7		054
1987	SF5	*	1987	09	30.94616	00	56	01.32	+11	18	02.4	17.5	054
1987	SF5		1987	09	30.96362	00	56	00.33	+11	17	59.9		054
1987	SG5		1987	09	29.97336	00	56	54.26	+07	51	23.2		054
1987	SG5	*	1987	09	30.94616	00	56	07.25	+07	45	28.5	18.5 V	054
1987	SG5		1987	09	30.96362	00	56	06.45	+07	45	22.6		054
1987	SH5	*	1987	09	30.94616	00	57	01.82	+11	12	02.6	18.0	054
1987	SH5		1987	09	30.96362	00	57	01.00	+11	11	56.7		054
1987	SJ5		1987	09	29.97336	00	57	48.48	+08	17	48.4		054
1987	SJ5	*	1987	09	30.94616	00	57	05.15	+08	09	40.0	16.7	054
1987	SJ5		1987	09	30.96362	00	57	04.33	+08	09	31.3		054
1987	SK5		1987	09	29.97336	00	58	07.32	+10	02	51.2		054
1987	SK5	*	1987	09	30.94616	00	57	05.41	+10	02	04.3	16.8	054
1987	SK5		1987	09	30.96362	00	57	04.27	+10	02	03.5		054
1987	SL5		1987	09	29.97336	00	58	20.20	+11	14	46.9		054
1987	SL5	*	1987	09	30.94616	00	57	33.16	+11	08	02.3	17.6	054
1987	SL5		1987	09	30.96362	00	57	32.33	+11	07	56.0		054
1987	SM5		1987	09	29.97336	00	58	57.06	+08	00	34.3		054
1987	SM5	*	1987	09	30.94616	00	57	59.55	+08	02	50.2	17.0	054
1987	SM5		1987	09	30.96362	00	57	58.48	+08	02	53.0		054
1987	SN5		1987	09	29.97336	00	58	41.80	+06	56	59.9		054
1987	SN5	*	1987	09	30.94616	00	58	01.06	+06	50	40.6	18.3 V	054
1987	SN5		1987	09	30.96362	00	58	00.36	+06	50	33.9		054
1987	SO5		1987	09	29.97336	00	59	30.43	+10	50	41.2		054
1987	SO5	*	1987	09	30.94616	00	58	42.61	+10	48	37.6	17.2	054
1987	SO5		1987	09	30.96362	00	58	41.72	+10	48	35.2		054
1987	SP5		1987	09	29.97336	00	59	58.05	+08	16	02.1		054
1987	SP5	*	1987	09	30.94616	00	59	01.20	+08	16	41.9	18.4 V	054
1987	SP5		1987	09	30.96362	00	59	00.17	+08	16	42.3		054
1987	SQ5		1987	09	29.97336	01	01	03.70	+10	33	38.2		054
1987	SQ5	*	1987	09	30.94616	01	00	09.93	+10	27	14.9	18.2 V	054
1987	SQ5		1987	09	30.96362	01	00	08.91	+10	27	08.1		054
1987	SR5		1987	09	29.97336	01	02	14.48	+10	35	46.7		054
1987	SR5	*	1987	09	30.94616	01	01	20.06	+10	30	47.8	17.8	054
1987	SR5		1987	09	30.96362	01	01	19.15	+10	30	43.3		054
1987	SS5		1987	09	29.97336	01	02	15.26	+09	16	30.8		054
1987	SS5	*	1987	09	30.94616	01	01	28.10	+09	12	30.6	18.5 V	054
1987	SS5		1987	09	30.96362	01	01	27.20	+09	12	26.6		054
1987	ST5		1987	09	29.97336	01	03	32.93	+09	53	15.2		054
1987	ST5	*	1987	09	30.94616	01	02	47.66	+09	46	17.9	17.8	054
1987	ST5		1987	09	30.96362	01	02	46.82	+09	46	11.5		054
1987	SU5		1987	09	29.97336	01	05	07.52	+07	56	50.4		054
1987	SU5	*	1987	09	30.94616	01	04	17.90	+07	48	44.0	18.0	054
1987	SU5		1987	09	30.96362	01	04	17.05	+07	48	35.5		054
1987	SV5	*	1987	09	30.94616	01	05	38.25	+07	52	25.0	18.2 V	054
1987	SV5		1987	09	30.96362	01	05	37.44	+07	52	19.3		054
1987	SW6	*	1987	09	29.97336	00	48	19.81	+09	47	14.3		054
1987	SW6		1987	09	30.94616	00	47	39.62	+09	39	30.2	17.0	054
1987	SW6		1987	09	30.96362	00	47	38.86	+09	39	22.4		054
1987	SX6	*	1987	09	30.94616	00	49	38.53	+09	55	28.9	18.4 V	054
1987	SX6		1987	09	30.96362	00	49	37.62	+09	55	24.2		054
1987	SY6	*	1987	09	30.94616	00	52	12.96	+09	40	06.2	18.2 V	054
1987	SY6		1987	09	30.96362	00	52	12.28	+09	39	57.0		054

1987	TB	*	1987	10	02.99002	01	17	29.52	+22	53	56.0	17.5	054
1987	TC	*	1987	10	02.99002	01	20	19.32	+23	14	05.7	17.0	054
1987	TD	*	1987	10	02.99002	01	20	24.10	+21	41	18.2	18.0	054
1987	UN	*	1987	10	27.00307	02	15	01.99	+04	07	02.8	15.5	054
1987	UN		1987	10	27.02043	02	15	00.73	+04	07	06.2		054
1987	UO	*	1987	10	27.00307	02	17	47.21	+04	24	16.8	18.2	054
1987	UO		1987	10	27.02043	02	17	46.20	+04	24	12.9		054
147			1987	09	29.97336	00	54	42.32	+08	25	49.2		054
147			1987	09	30.94616	00	54	00.16	+08	21	15.0		054
147			1987	09	30.96362	00	53	59.36	+08	21	10.1		054
156			1987	09	29.94095	23	38	43.79	+11	08	38.0		054
156			1987	09	29.95831	23	38	42.92	+11	08	31.5		054
156			1987	09	30.91068	23	38	00.02	+11	01	46.6		054
156			1987	09	30.92804	23	37	59.18	+11	01	39.0		054
549			1987	09	25.91815	22	34	50.10	-03	23	53.9		054
549			1987	09	25.93551	22	34	49.35	-03	23	59.4		054
549			1987	09	29.90762	22	31	59.84	-03	41	18.2		054
549			1987	09	29.92498	22	31	59.19	-03	41	24.0		054
703			1987	09	30.94616	01	08	20.63	+09	14	21.5		054
703			1987	09	30.96362	01	08	19.73	+09	14	14.4		054
788			1987	08	31.97370	22	20	41.19	-01	56	15.8		054
1025			1987	08	31.97370	22	05	33.21	-03	16	24.6		054
1114			1987	09	25.91815	22	37	50.31	-00	36	24.4		054
1114			1987	09	25.93551	22	37	49.73	-00	36	33.0		054
1114			1987	09	30.87824	22	35	23.30	-01	13	37.3		054
1114			1987	09	30.89560	22	35	22.76	-01	13	46.3		054
1167			1987	09	25.91815	22	34	46.28	-01	30	03.9		054
1167			1987	09	25.93551	22	34	45.72	-01	30	10.1		054
1167			1987	09	29.90762	22	32	49.30	-01	49	37.8		054
1167			1987	09	29.92498	22	32	48.80	-01	49	44.8		054
1167			1987	09	30.87824	22	32	23.02	-01	54	16.1		054
1167			1987	09	30.89560	22	32	22.49	-01	54	22.2		054
1349			1987	09	25.91815	22	29	50.71	+00	35	07.9		054
1349			1987	09	25.93551	22	29	50.00	+00	35	03.5		054
1349			1987	09	29.90762	22	27	29.72	+00	22	54.1		054
1349			1987	09	29.92498	22	27	29.03	+00	22	48.9		054
1349			1987	09	30.87824	22	26	58.12	+00	19	59.8		054
1349			1987	09	30.89560	22	26	57.42	+00	19	55.7		054
1645			1987	09	29.97336	01	06	24.38	+08	42	57.0		054
1645			1987	09	30.94616	01	05	41.92	+08	38	38.2		054
1645			1987	09	30.96362	01	05	41.15	+08	38	33.8		054
2283			1987	08	31.97370	22	08	06.44	-03	18	15.4		054
2303			1987	10	27.00307	02	20	27.36	+04	23	49.2		054
2303			1987	10	27.02043	02	20	26.55	+04	23	39.4		054
2331			1987	09	25.91815	22	29	08.23	-03	22	03.1		054
2331			1987	09	25.93551	22	29	07.54	-03	22	09.8		054
2331			1987	09	29.90762	22	26	20.50	-03	43	24.1		054
2331			1987	09	29.92498	22	26	19.76	-03	43	31.3		054
2365			1987	09	25.91815	22	30	26.41	-01	31	48.8		054
2365			1987	09	25.93551	22	30	25.67	-01	31	54.7		054
2365			1987	09	29.90762	22	27	49.40	-01	50	14.6		054
2365			1987	09	29.92498	22	27	48.76	-01	50	21.1		054
2365			1987	09	30.87824	22	27	14.15	-01	54	35.3		054
2365			1987	09	30.89560	22	27	13.45	-01	54	41.2		054
2606			1987	09	29.97336	00	55	38.47	+07	23	59.2		054
2606			1987	09	30.94616	00	54	55.81	+07	17	10.2		054
2606			1987	09	30.96362	00	54	55.00	+07	17	03.2		054
2704			1987	09	29.97336	01	02	06.76	+08	43	55.8		054
2704			1987	09	30.94616	01	01	18.05	+08	36	52.2		054

2704		1987	09	30.96362	01	01	17.14	+08	36	44.8	054
3280		1987	09	29.97336	00	51	04.86	+08	55	46.3	054
3280		1987	09	30.94616	00	50	13.13	+08	51	17.4	054
3280		1987	09	30.96362	00	50	12.13	+08	51	12.4	054
3459		1987	10	27.00307	02	18	55.02	+04	48	23.8	054
3459		1987	10	27.02043	02	18	53.81	+04	48	19.6	054

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72 Lenin Boulevard, BG-1784 Sofia, Bulgaria
Observers E. W. Elst, V. Shkodrov, V. Ivanova

1967	UV	1987	09	21.95278	00	28	29.54	-04	22	47.3	17.6 071
1967	UV	1987	09	21.97451	00	28	28.16	-04	22	52.2	071
1967	UV	1987	09	22.99624	00	27	28.38	-04	28	08.1	17.8 071
1967	UV	1987	09	23.01620	00	27	27.38	-04	28	23.7	071
1967	UV	1987	09	23.93715	00	26	33.49	-04	33	08.3	071
1967	UV	1987	09	23.95547	00	26	32.61	-04	33	17.2	071
1967	UV	1987	09	24.99728	00	25	30.78	-04	38	35.5	16.9 071
1967	UV	1987	09	25.02517	00	25	29.05	-04	38	44.3	071
1981	EA11	1987	09	24.86638	22	15	05.93	-11	05	41.6	17.5 071
1981	EA11	1987	09	24.91701	22	15	03.62	-11	05	30.2	071
1981	EW14	1987	09	18.89479	22	31	23.06	-05	09	28.8	17.5 071
1981	EW14	1987	09	18.91377	22	31	22.25	-05	09	20.3	071
1982	TL1	1987	09	20.02182	00	56	27.74	+05	33	40.3	17 071
1982	TL1	1987	09	20.04034	00	56	26.98	+05	33	40.4	071
1983	QF	1987	09	21.95278	00	33	51.48	-07	23	52.9	16 071
1983	QF	1987	09	21.97451	00	33	50.67	-07	24	13.0	071
1983	QF	1987	09	22.99624	00	33	09.12	-07	40	12.8	16.5 071
1983	QF	1987	09	23.01620	00	33	08.48	-07	40	23.3	071
1983	QF	1987	09	23.93715	00	32	30.24	-07	54	51.3	071
1983	QF	1987	09	23.95547	00	32	29.59	-07	55	08.6	071
1984	SR1	1987	09	19.86181	22	34	41.06	-06	00	45.3	18.8 071
1984	SR1	1987	09	19.88102	22	34	40.14	-06	00	52.0	071
1984	SR1	1987	09	19.90075	22	34	39.14	-06	00	55.0	071
1985	GX	1987	09	22.99624	00	39	55.45	-04	06	18.4	17.6 071
1985	GX	1987	09	23.01620	00	39	54.61	-04	06	34.3	071
1985	GX	1987	09	23.93715	00	39	14.57	-04	15	29.9	071
1985	GX	1987	09	23.95547	00	39	13.72	-04	15	37.4	071
1985	GX	1987	09	24.99728	00	38	27.75	-04	25	53.3	17.5 071
1985	GX	1987	09	25.02517	00	38	26.77	-04	26	07.9	071
1987	RE	1987	09	19.86181	22	35	24.06	-05	29	14.4	18.5 071
1987	RE	1987	09	19.88102	22	35	22.29	-05	29	18.0	071
1987	RE	1987	09	19.90075	22	35	22.06	-05	29	22.2	071
1987	RG	1987	09	19.94149	00	38	48.09	-01	18	07.3	16.5 071
1987	RG	1987	09	19.98449	00	38	46.25	-01	18	19.2	071
1987	RJ	1987	09	19.94149	00	40	53.79	-01	32	24.4	16.5 071
1987	RJ	1987	09	19.98449	00	40	51.64	-01	32	37.7	071
1987	SB	1987	09	23.93715	00	34	46.45	-04	24	49.8	071
1987	SB	1987	09	23.95547	00	34	44.31	-04	25	02.1	071
1987	SB	1987	09	24.99728	00	32	35.82	-04	34	27.3	17 071
1987	SB	1987	09	25.02517	00	32	32.50	-04	34	44.1	071
1987	SB1	1987	09	19.94149	00	34	47.98	-02	02	22.8	16.7 071
1987	SB1	1987	09	19.98449	00	34	46.16	-02	02	52.4	071
1987	SB1	1987	09	24.99728	00	31	23.82	-03	05	29.9	16.8 071
1987	SB1	1987	09	25.02517	00	31	22.32	-03	05	46.7	071
1987	SC1	1987	09	21.95278	00	36	39.81	-03	55	52.0	17.8 071
1987	SC1	1987	09	21.97451	00	36	38.91	-03	56	07.4	071
1987	SC1	1987	09	22.99624	00	35	58.78	-04	04	41.6	17.5 071
1987	SC1	1987	09	23.01620	00	35	57.72	-04	04	54.0	071

1987	SC1		1987	09	23.93715	00	35	21.41	-04	12	41.9		071
1987	SC1		1987	09	23.95547	00	35	20.54	-04	12	47.9		071
1987	SC1		1987	09	24.99728	00	34	38.11	-04	21	43.3	17.2	071
1987	SC1		1987	09	25.02517	00	34	36.95	-04	21	54.5		071
1987	SE2	*	1987	09	18.86019	22	31	41.95	-11	42	20.4	17.4	071
1987	SE2		1987	09	18.87697	22	31	41.09	-11	42	18.9		071
1987	SE2		1987	09	24.86638	22	26	38.32	-11	40	57.5	17.5	071
1987	SE2		1987	09	24.91701	22	26	35.65	-11	40	57.1		071
1987	SG2	*	1987	09	19.94149	00	29	12.74	-00	14	12.7	18	071
1987	SG2		1987	09	19.98449	00	29	10.84	-00	14	37.9		071
1987	SH2	*	1987	09	19.94149	00	31	04.78	+00	10	47.1	16.9	071
1987	SH2		1987	09	19.98449	00	31	02.96	+00	10	15.8		071
1987	SJ2	*	1987	09	19.94149	00	36	50.80	+00	09	34.3	17.7	071
1987	SJ2		1987	09	19.98449	00	36	48.46	+00	09	18.4		071
1987	SK2	*	1987	09	19.94149	00	39	03.51	-00	28	56.5	17.6	071
1987	SK2		1987	09	19.98449	00	39	01.87	-00	29	08.9		071
1987	SL2	*	1987	09	19.94149	00	39	18.65	+01	06	21.8	16.2	071
1987	SL2		1987	09	19.98449	00	39	16.63	+01	06	16.8		071
1987	SM2	*	1987	09	19.94149	00	39	55.14	+00	27	20.7	17.7	071
1987	SM2		1987	09	19.98449	00	39	53.47	+00	27	07.0		071
1987	SN2	*	1987	09	19.96649	00	50	11.52	-05	34	46.9	17.5	071
1987	SN2		1987	09	20.00384	00	50	09.29	-05	34	57.3		071
1987	SO2	*	1987	09	19.96649	00	51	14.48	-04	55	10.7	18	071
1987	SO2		1987	09	20.00384	00	51	12.29	-04	55	18.3		071
1987	SP2	*	1987	09	19.96649	00	52	25.13	-05	10	39.1	16	071
1987	SP2		1987	09	20.00384	00	52	22.68	-05	10	39.2		071
1987	SQ2	*	1987	09	19.96649	00	53	43.30	-05	27	32.8	17.5	071
1987	SQ2		1987	09	20.00384	00	53	41.80	-05	27	50.6		071
1987	SR2	*	1987	09	19.96649	00	54	05.57	-04	23	04.9	17.3	071
1987	SR2		1987	09	20.00384	00	54	04.05	-04	23	23.1		071
1987	SS2	*	1987	09	19.96649	00	56	38.39	-03	51	52.6	16.5	071
1987	SS2		1987	09	20.00384	00	56	37.49	-03	52	19.4		071
1987	ST2	*	1987	09	19.96649	00	58	14.15	-05	44	56.6	16.5	071
1987	ST2		1987	09	20.00384	00	58	12.05	-05	44	56.7		071
1987	SU2	*	1987	09	19.96649	01	00	27.95	-06	22	42.6	16.7	071
1987	SU2		1987	09	20.00384	01	00	26.45	-06	23	10.5		071
1987	SV2	*	1987	09	20.02182	00	49	03.18	+06	10	39.6	17.2	071
1987	SV2		1987	09	20.04034	00	49	02.45	+06	10	35.2		071
1987	SW2	*	1987	09	20.02182	00	51	36.49	+04	41	23.7	17.5	071
1987	SW2		1987	09	20.04034	00	51	35.76	+04	41	20.8		071
1987	SX2	*	1987	09	20.02182	00	56	19.43	+04	12	32.4	17.5	071
1987	SX2		1987	09	20.04034	00	56	18.43	+04	12	27.2		071
1987	SY2	*	1987	09	20.02182	01	02	06.23	+06	02	46.3	17.2	071
1987	SY2		1987	09	20.04034	01	02	05.11	+06	02	45.4		071
1987	SZ2	*	1987	09	21.95278	00	22	29.61	-04	43	01.0	17.2	071
1987	SZ2		1987	09	21.97451	00	22	28.10	-04	43	02.5		071
1987	SA3	*	1987	09	21.95278	00	26	39.38	-06	16	34.3	17.8	071
1987	SA3		1987	09	21.97451	00	26	38.59	-06	16	41.2		071
1987	SB3	*	1987	09	21.95278	00	29	15.60	-04	22	57.7	17.3	071
1987	SB3		1987	09	21.97451	00	29	14.18	-04	23	01.4		071
1987	SB3		1987	09	22.99624	00	28	13.21	-04	23	59.4	17.7	071
1987	SB3		1987	09	23.01620	00	28	12.15	-04	24	05.2		071
1987	SB3		1987	09	23.93715	00	27	17.09	-04	24	58.8		071
1987	SB3		1987	09	23.95547	00	27	16.24	-04	25	04.4		071
1987	SB3		1987	09	24.99728	00	26	13.14	-04	25	56.8	17	071
1987	SB3		1987	09	25.02517	00	26	11.12	-04	25	58.3		071
1987	SC3	*	1987	09	21.95278	00	32	11.17	-05	47	12.4	17.2	071
1987	SC3		1987	09	21.97451	00	32	10.33	-05	47	21.6		071
1987	SC3		1987	09	22.99624	00	31	26.40	-05	53	14.9	17.5	071

1987	SC3		1987	09	23.01620	00	31	25.60	-05	53	23.5		071
1987	SC3		1987	09	23.93715	00	30	46.35	-05	58	41.8		071
1987	SC3		1987	09	23.95547	00	30	45.67	-05	58	53.2		071
1987	SC3		1987	09	24.99728	00	30	00.63	-06	04	47.9	17.4	071
1987	SC3		1987	09	25.02517	00	29	59.46	-06	04	57.7		071
1987	SD3	*	1987	09	21.95278	00	32	40.73	-03	31	24.4	18.2	071
1987	SD3		1987	09	21.97451	00	32	39.76	-03	31	37.3		071
1987	SD3		1987	09	22.99624	00	31	58.33	-03	41	32.7	17.5	071
1987	SD3		1987	09	23.01620	00	31	57.19	-03	41	46.2		071
1987	SD3		1987	09	23.93715	00	31	20.10	-03	50	44.7		071
1987	SD3		1987	09	23.95547	00	31	19.48	-03	50	56.2		071
1987	SD3		1987	09	24.99728	00	30	36.34	-04	01	04.3	17.5	071
1987	SD3		1987	09	25.02517	00	30	35.16	-04	01	15.9		071
1987	SE3	*	1987	09	21.95278	00	34	45.60	-04	53	23.1	17.5	071
1987	SE3		1987	09	21.97451	00	34	44.81	-04	53	35.6		071
1987	SE3		1987	09	22.99624	00	33	53.04	-04	59	43.2	17.5	071
1987	SE3		1987	09	23.01620	00	33	51.93	-04	59	54.2		071
1987	SE3		1987	09	23.93715	00	33	05.76	-05	05	24.9		071
1987	SE3		1987	09	23.95547	00	33	04.70	-05	05	30.4		071
1987	SE3		1987	09	24.99728	00	32	11.32	-05	11	46.5	17.7	071
1987	SE3		1987	09	25.02517	00	32	09.98	-05	11	57.9		071
1987	SR3	*	1987	09	20.89080	22	36	00.76	-10	50	44.4	17.5	071
1987	SR3		1987	09	20.91331	22	35	59.45	-10	50	35.0		071
1987	SS3	*	1987	09	20.89080	22	41	25.96	-11	05	19.9	17.2	071
1987	SS3		1987	09	20.91331	22	41	25.15	-11	05	25.1		071
1987	ST3	*	1987	09	20.89080	22	41	54.29	-11	47	07.9	17.3	071
1987	ST3		1987	09	20.91331	22	41	53.77	-11	47	10.5		071
1987	SU3	*	1987	09	22.99624	00	35	18.90	-05	21	27.3	17.5	071
1987	SU3		1987	09	23.01620	00	35	17.77	-05	21	31.9		071
1987	SU3		1987	09	23.93715	00	34	23.18	-05	20	48.1		071
1987	SU3		1987	09	23.95547	00	34	22.06	-05	20	49.8		071
1987	SU3		1987	09	24.99728	00	33	18.86	-05	19	59.9	17.5	071
1987	SU3		1987	09	25.02517	00	33	17.17	-05	20	01.4		071
1987	SU6	*	1987	09	18.89479	22	24	29.53	-05	59	50.4	18.5	071
1987	SU6		1987	09	18.91377	22	24	29.06	-05	59	56.0		071
1987	SV6	*	1987	09	18.89479	22	34	07.47	-04	08	21.4	17.5	071
1987	SV6		1987	09	18.91377	22	34	06.68	-04	08	20.8		071
82			1987	09	18.86019	22	32	56.11	-12	08	49.2	16	071
82			1987	09	18.87697	22	32	55.31	-12	08	52.6		071
82			1987	09	20.89080	22	31	26.25	-12	15	42.8	16	071
82			1987	09	20.91331	22	31	25.12	-12	15	47.3		071
82			1987	09	24.86638	22	28	40.50	-12	28	05.8	16	071
82			1987	09	24.91701	22	28	38.48	-12	28	16.1		071
161			1987	09	19.94149	00	35	45.36	-01	15	00.3	15	071
161			1987	09	19.98449	00	35	42.71	-01	15	00.6		071
208			1987	09	20.02182	00	58	14.73	+06	27	23.7	15.5	071
208			1987	09	20.04034	00	58	13.91	+06	27	24.4		071
217			1987	09	20.89080	22	41	07.71	-09	58	35.4	15	071
217			1987	09	20.91331	22	41	07.23	-09	58	48.6		071
385			1987	09	18.86019	22	33	26.23	-10	12	58.9	15	071
385			1987	09	18.87697	22	33	25.51	-10	12	59.7		071
385			1987	09	20.89080	22	31	49.55	-10	14	57.7	16	071
385			1987	09	20.91331	22	31	48.40	-10	14	58.8		071
385			1987	09	24.86638	22	28	51.37	-10	17	52.5	16	071
385			1987	09	24.91701	22	28	49.26	-10	17	55.5		071
499			1987	09	18.89479	22	33	07.17	-06	07	55.1	16.5	071
499			1987	09	18.91377	22	33	06.47	-06	07	58.0		071
499			1987	09	19.86181	22	32	34.06	-06	11	24.8	16.7	071
499			1987	09	19.88102	22	32	33.34	-06	11	28.6		071

499	1987	09	19.90075	22	32	32.74	-06	11	31.0	071
499	1987	09	20.81855	22	32	01.73	-06	14	46.4	16.5 071
499	1987	09	20.93928	22	31	57.68	-06	15	12.3	071
513	1987	09	20.02182	00	49	29.16	+04	33	01.4	16 071
513	1987	09	20.04034	00	49	28.59	+04	32	54.7	071
585	1987	09	18.89479	22	25	46.46	-06	07	44.0	16 071
585	1987	09	18.91377	22	25	45.49	-06	07	50.6	071
585	1987	09	19.86181	22	25	04.29	-06	14	46.2	16.5 071
585	1987	09	19.88102	22	25	03.31	-06	14	58.2	071
585	1987	09	19.90075	22	25	02.40	-06	15	06.2	071
585	1987	09	20.81855	22	24	23.61	-06	21	46.7	16 071
609	1987	09	18.86019	22	21	20.37	-09	42	02.7	16.5 071
609	1987	09	18.87697	22	21	19.88	-09	42	09.8	071
609	1987	09	24.86638	22	18	02.75	-10	08	56.9	16 071
609	1987	09	24.91701	22	18	01.12	-10	09	11.1	071
716	1987	09	19.96649	00	54	30.58	-02	58	34.8	16 071
716	1987	09	20.00384	00	54	29.11	-02	58	51.9	071
933	1987	09	19.94149	00	33	56.31	-02	41	47.9	16.6 071
933	1987	09	19.98449	00	33	54.18	-02	42	08.8	071
933	1987	09	24.99728	00	29	35.24	-03	19	47.8	17.1 071
933	1987	09	25.02517	00	29	33.59	-03	20	01.8	071
1044	1987	09	19.94149	00	34	14.93	-02	53	07.9	16 071
1044	1987	09	19.98449	00	34	12.68	-02	53	18.2	071
1044	1987	09	22.99624	00	31	33.40	-03	07	49.3	16.5 071
1044	1987	09	23.01620	00	31	31.98	-03	07	50.9	071
1044	1987	09	24.99728	00	29	45.49	-03	17	12.9	16 071
1044	1987	09	25.02517	00	29	43.86	-03	17	22.0	071
1185	1987	09	21.95278	00	33	49.05	-07	15	40.6	16 071
1185	1987	09	21.97451	00	33	47.74	-07	15	46.3	071
1185	1987	09	22.99624	00	32	49.80	-07	21	38.0	16.5 071
1185	1987	09	23.01620	00	32	48.52	-07	21	37.2	071
1185	1987	09	23.93715	00	31	55.27	-07	26	52.9	071
1185	1987	09	23.95547	00	31	54.28	-07	27	02.0	071
1217	1987	09	20.89080	22	38	51.94	-11	17	41.6	17.1 071
1217	1987	09	20.91331	22	38	50.90	-11	17	47.2	071
1245	1987	09	18.86019	22	30	41.52	-10	17	57.9	16 071
1245	1987	09	18.87697	22	30	40.92	-10	18	00.8	071
1245	1987	09	20.89080	22	29	24.14	-10	27	30.6	16 071
1245	1987	09	20.91331	22	29	23.08	-10	27	34.7	071
1245	1987	09	24.86638	22	27	05.42	-10	44	44.8	16.5 071
1245	1987	09	24.91701	22	27	03.49	-10	44	56.5	071
1301	1987	09	20.89080	22	42	06.32	-11	25	23.6	16.9 071
1301	1987	09	20.91331	22	42	05.37	-11	25	39.7	071
1492	1987	09	22.99624	00	38	21.68	-04	05	17.3	17.2 071
1492	1987	09	23.01620	00	38	20.58	-04	05	28.7	071
1492	1987	09	23.93715	00	37	29.08	-04	13	17.0	071
1492	1987	09	24.99728	00	36	29.09	-04	22	17.8	17.2 071
1492	1987	09	25.02517	00	36	27.35	-04	22	30.0	071
1496	1987	09	18.89479	22	32	23.97	-04	53	54.2	16.3 071
1496	1987	09	18.91377	22	32	23.05	-04	53	51.6	071
1496	1987	09	19.86181	22	31	41.76	-04	57	46.9	16.8 071
1496	1987	09	19.88102	22	31	40.83	-04	57	47.1	071
1496	1987	09	19.90075	22	31	40.07	-04	57	52.2	071
1496	1987	09	20.81855	22	31	01.63	-05	01	37.3	16.5 071
1496	1987	09	20.93928	22	30	55.96	-05	02	07.5	071
1623	1987	09	20.89080	22	35	38.13	-11	46	13.7	16.8 071
1623	1987	09	20.91331	22	35	37.20	-11	46	16.4	071
1679	1987	09	19.94149	00	34	41.27	+00	19	01.1	16 071

1679	1987	09	19.98449	00	34	39.69	+00	18	38.6	071
1698	1987	09	20.89080	22	38	22.24	-10	11	08.0	17.2 071
1698	1987	09	20.91331	22	38	21.13	-10	11	10.0	071
1799	1987	09	20.89080	22	36	53.11	-11	20	46.0	16.9 071
1799	1987	09	20.91331	22	36	52.42	-11	20	52.0	071
2138	1987	09	21.95278	00	22	20.88	-07	33	48.1	16 071
2138	1987	09	21.97451	00	22	19.75	-07	33	51.1	071
2144	1987	09	18.86019	22	25	49.65	-11	37	31.4	17 071
2144	1987	09	18.87697	22	25	48.98	-11	37	36.7	071
2144	1987	09	24.86638	22	22	08.90	-12	02	14.8	16.9 071
2144	1987	09	24.91701	22	22	07.06	-12	02	22.8	071
2181	1987	09	19.94149	00	37	51.98	-01	00	03.3	17.4 071
2181	1987	09	19.98449	00	37	49.54	-01	00	08.5	071
2309	1987	09	20.89080	22	32	54.81	-10	52	07.2	16.7 071
2309	1987	09	20.91331	22	32	53.95	-10	52	10.5	071
2309	1987	09	24.86638	22	30	38.88	-11	18	16.5	17.5 071
2309	1987	09	24.91701	22	30	37.09	-11	18	32.9	071
2311	1987	09	18.86019	22	19	17.46	-10	38	15.1	16.7 071
2311	1987	09	18.87697	22	19	17.16	-10	38	17.1	071
2311	1987	09	24.86638	22	16	22.76	-11	03	50.3	16.8 071
2311	1987	09	24.91701	22	16	21.22	-11	04	04.9	071
2550	1987	09	24.86638	22	13	42.10	-11	50	12.1	17.2 071
2550	1987	09	24.91701	22	13	40.58	-11	50	33.7	071
2645	1987	09	20.89080	22	35	37.82	-10	48	05.0	16.6 071
2645	1987	09	20.91331	22	35	36.47	-10	48	00.2	071
2741	1987	09	21.95278	00	29	18.88	-05	48	59.5	16.8 071
2741	1987	09	21.97451	00	29	17.87	-05	49	09.0	071
2741	1987	09	23.01620	00	28	27.88	-05	57	54.0	17.2 071
2741	1987	09	23.93715	00	27	43.17	-06	05	40.1	071
2741	1987	09	23.95547	00	27	42.38	-06	05	54.9	071
2741	1987	09	24.99728	00	26	51.94	-06	14	27.3	16.8 071
2741	1987	09	25.02517	00	26	50.71	-06	14	42.1	071
2776	1987	09	20.02182	00	48	17.21	+05	15	05.7	17 071
2776	1987	09	20.04034	00	48	16.38	+05	15	01.7	071
2848	1987	09	20.02182	00	55	21.12	+06	42	21.9	16.2 071
2848	1987	09	20.04034	00	55	20.53	+06	42	16.3	071
3193	1987	09	20.89080	22	34	31.92	-13	46	56.8	17.1 071
3193	1987	09	20.91331	22	34	30.45	-13	47	03.7	071
3321	1987	09	20.89080	22	36	54.33	-09	52	22.7	16.5 071
3321	1987	09	20.91331	22	36	53.42	-09	52	31.3	071
3470	1987	09	20.81855	22	30	21.74	-05	16	13.5	17.3 071
3470	1987	09	20.93928	22	30	15.52	-05	16	55.5	071

091 St. Etienne
G. M. Hurst, 16 Westminster Close, Kempshott Rise, Basingstoke, Hants. RG22 4PP, England
Observer R. Chanal
0.41-m reflector

1025	1987	08	20.96528	22	15	34.32	+00	59	54.9	091
1025	1987	08	20.98958	22	15	32.99	+00	59	25.2	091
1025	1987	08	22.02833	22	14	37.11	+00	36	19.9	091
1025	1987	08	29.97685	22	07	21.42	-02	28	39.5	091
1025	1987	08	30.01562	22	07	19.30	-02	29	30.2	091
3225	1987	08	19.91111	19	05	00.44	+19	33	53.2	091
3225	1987	08	20.89143	19	04	54.51	+19	11	18.4	091
3225	1987	08	20.90972	19	04	54.25	+19	10	52.9	091
3225	1987	08	21.90625	19	04	50.87	+18	47	44.0	091
3225	1987	08	21.94930	19	04	50.64	+18	46	41.2	091

095 Crimean Astrophysical Observatory
G. R. Kastel', Institute for Theoretical Astronomy,
Naberezhnaya Kutuzova 10, Leningrad 191187, U.S.S.R.
Observers L. I. Chernykh, L. G. Karachkina

1987 SL	*	1987 09 22.98410	01 20 35.92	+26 28 17.5		13		095
1987 SL		1987 09 25.89571	01 13 52.01	+27 46 58.2		13		095
1987 SL		1987 09 26.05439	01 13 29.20	+27 50 53.5		13		095
1987 SL		1987 10 15.79829	00 33 35.13	+32 13 59.4		13.5		095
1987 SL		1987 10 15.86218	00 33 28.66	+32 14 12.8		13.5		095
1987 SC2	*	1987 09 27.04509	01 51 23.06	+05 01 50.2		14		095

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

1927 UE		1987 09 26.22431	22 49 12.47	+05 23 49.3				293
1983 VP7		1987 09 26.31667	00 06 33.69	-00 41 50.6				293
1762		1987 09 26.31667	00 05 16.09	-00 50 39.8				293
2180		1987 09 26.22431	22 45 54.36	+05 40 22.3				293

323 Perth
M. P. Candy, Perth Observatory, Bickley, WA 6076, Australia
Observers M. P. Candy, P. Jekabsons, A. McGrath, M. Kempin
0.3-m astrograph

1986 RA		1986 11 06.52917	00 41 42.04	-23 34 55.7				323
1986 RA		1986 11 07.53125	00 43 35.91	-23 30 35.7				323
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2		1982 03 08.66319	13 28 56.15	+06 04 23.3				323
2		1982 03 08.66667	13 28 56.08	+06 04 28.1				323
2		1982 03 08.67014	13 28 55.99	+06 04 32.9				323
3		1982 06 03.73090	18 24 02.41	-05 05 49.2				323
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6		1981 01 13.52569	03 25 19.00	-00 55 03.7				323
6		1981 01 13.52778	03 25 19.08	-00 55 02.3				323
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13	1982	09	29.66111	00	14	02.40	-18	14	18.1	323
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15	1982	03	25.48264	05	40	53.26	+24	09	55.5	323
15	1982	03	25.48611	05	40	53.55	+24	09	54.8	323
16	1982	03	11.59375	10	40	38.29	+09	20	48.9	323
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18	1983	02	28.71493	10	53	58.30	+10	07	57.8	323
18	1983	02	28.71910	10	53	58.15	+10	08	00.4	323
18	1983	03	01.61458	10	53	08.01	+10	16	26.6	323
18	1983	03	01.62049	10	53	07.64	+10	16	30.9	323
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18	1983	03	01.62882	10	53	07.16	+10	16	36.0	323
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18	1984	05	31.72361	16	49	12.33	-05	46	00.5	323
23	1982	03	11.84549	16	51	31.30	-19	33	05.8	323
23	1982	03	11.85208	16	51	31.50	-19	33	06.6	323
23	1982	03	11.85556	16	51	31.58	-19	33	06.3	323
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25	1982	01	12.69583	07	21	25.80	-09	10	54.8	323
25	1982	01	12.71250	07	21	24.81	-09	10	53.2	323
25	1983	02	28.73056	13	18	37.92	-22	33	41.2	323
25	1983	02	28.73646	13	18	37.84	-22	33	40.5	323
25	1983	02	28.74063	13	18	37.86	-22	33	40.5	323
25	1983	02	28.74479	13	18	37.75	-22	33	39.0	323
25	1983	03	01.67569	13	18	27.30	-22	30	44.3	323
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25	1983	04	18.66250	12	45	58.40	-14	13	32.0	323
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31	1981	06	22.64375	16	59	35.56	-51	16	23.1	323
37	1982	06	03.58403	12	54	05.19	-07	35	02.2	323
37	1982	06	03.59306	12	54	05.15	-07	35	01.7	323
39	1981	02	10.80417	14	27	44.97	-06	11	06.4	323
39	1981	03	06.73680	14	32	57.36	-04	46	32.2	323
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39	1981	03	06.74514	14	32	57.34	-04	46	29.8	323
39	1981	03	06.74861	14	32	57.34	-04	46	29.0	323
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39	1981	03	22.82153	14	29	24.33	-03	13	23.5	323
39	1981	03	22.82361	14	29	24.25	-03	13	21.3	323
39	1981	03	22.82569	14	29	24.25	-03	13	20.9	323
39	1981	03	22.83299	14	29	24.05	-03	13	19.6	323
39	1981	03	22.83611	14	29	23.94	-03	13	17.1	323
39	1981	05	01.62465	14	02	47.07	+01	02	46.3	323
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45	1982	03	11.62055	11	10	40.80	+09	09	23.3	323
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51	1982	03	10.84931	15	02	12.09	-09	54	21.9	323
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69		1981	05	18.86944	19	51	33.70	-10 30 06.6	323
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80		1981	04	15.49167	07	36	03.43	+12 16 46.0	323
80		1982	03	09.80278	14	19	16.30	-17 31 12.7	323
80		1982	03	09.80764	14	19	16.30	-17 31 12.6	323
80		1982	03	09.81111	14	19	16.25	-17 31 11.1	323
80		1982	03	09.81458	14	19	16.21	-17 31 11.2	323
88		1981	06	04.83542	18	37	00.04	-24 24 27.2	323
88		1981	06	04.83819	18	36	59.84	-24 24 26.8	323
88		1981	06	04.84028	18	36	59.74	-24 24 26.8	323
88		1981	06	04.84236	18	36	59.68	-24 24 26.6	323
90		1981	03	24.59722	10	24	03.76	+13 12 43.9	323
90		1981	03	24.61388	10	24	03.11	+13 12 47.9	323
90		1982	05	18.66597	14	56	05.30	-15 31 18.8	323
95		1982	03	10.68403	10	10	23.23	-08 07 59.2	323
95		1982	03	10.68889	10	10	23.02	-08 07 58.8	323
95		1982	03	10.69236	10	10	22.80	-08 07 55.6	323
95		1982	03	10.69583	10	10	22.75	-08 07 54.7	323
104		1982	03	10.54653	09	10	36.17	+20 21 51.6	323
104		1982	03	10.55139	09	10	35.94	+20 21 52.5	323
104		1982	03	10.55486	09	10	35.96	+20 21 52.7	323
104		1982	03	10.55833	09	10	35.84	+20 21 52.6	323
104		1984	06	25.64963	17	38	04.59	-26 08 50.1	323
104		1984	06	27.56493	17	36	30.31	-26 08 29.2	323
104		1984	06	27.64444	17	36	26.05	-26 08 26.0	323
104		1984	06	28.52778	17	35	42.95	-26 08 15.3	323
104		1984	06	28.60139	17	35	39.27	-26 08 09.5	323
105		1986	12	16.76875	06	33	25.49	-09 11 20.9	323
111		1982	03	08.75972	16	36	44.66	-27 27 01.0	323
111		1982	03	08.76458	16	36	44.78	-27 27 02.5	323

111	1982	03	08.76875	16	36	45.08	-27	27	02.9	323
111	1982	03	08.77222	16	36	45.18	-27	27	03.9	323
111	1982	03	11.80486	16	39	04.43	-27	35	58.1	323
111	1982	03	11.80972	16	39	04.63	-27	35	59.3	323
111	1982	03	11.81319	16	39	04.72	-27	35	59.5	323
111	1982	03	11.81667	16	39	04.94	-27	36	00.7	323
111	1982	03	12.84861	16	39	49.51	-27	38	59.9	323
111	1982	03	12.85347	16	39	49.77	-27	38	58.2	323
111	1982	03	12.85729	16	39	49.92	-27	38	58.4	323
111	1982	03	12.86111	16	39	49.98	-27	38	58.7	323
119	1982	11	29.79861	07	25	16.06	+13	54	54.2	323
119	1982	11	29.80243	07	25	15.95	+13	54	53.8	323
119	1982	11	29.80521	07	25	15.92	+13	54	54.2	323
119	1982	11	29.80799	07	25	15.83	+13	54	53.0	323
128	1984	06	27.47569	13	16	13.06	-03	13	15.6	323
128	1984	06	28.45278	13	16	31.76	-03	17	38.1	323
130	1982	12	02.77569	10	10	03.87	+06	05	59.1	323
130	1982	12	02.78160	10	10	03.95	+06	06	01.2	323
137	1982	01	12.60417	05	06	19.10	+06	55	52.0	323
137	1982	01	12.62083	05	06	18.55	+06	55	54.5	323
137	1983	02	28.63264	08	33	00.52	+02	25	07.5	323
137	1983	02	28.63854	08	33	00.30	+02	25	08.9	323
137	1983	02	28.64271	08	33	00.24	+02	25	09.4	323
137	1983	02	28.64688	08	33	00.13	+02	25	12.7	323
143	1981	01	30.83194	13	13	51.38	-15	07	35.4	323
143	1981	01	30.84583	13	13	51.61	-15	07	40.5	323
143	1981	03	06.70278	13	11	43.16	-18	48	05.5	323
143	1981	03	24.68055	12	58	31.89	-19	27	12.7	323
143	1981	03	27.74931	12	55	43.37	-19	27	41.0	323
143	1981	03	27.77361	12	55	41.80	-19	27	41.1	323
143	1982	05	13.83681	21	33	08.11	-22	40	58.1	323
143	1982	05	13.86111	21	33	09.16	-22	40	53.4	323
143	1982	07	27.78056	21	27	59.52	-21	40	35.6	323
143	1982	07	27.84086	21	27	56.21	-21	40	36.9	323
143	1982	07	29.72118	21	26	10.20	-21	42	17.9	323
143	1982	07	29.74583	21	26	08.81	-21	42	18.4	323
144	1982	03	12.71956	12	06	52.51	+06	39	37.8	323
144	1982	03	12.72639	12	06	52.16	+06	39	40.0	323
144	1982	03	12.73125	12	06	51.95	+06	39	41.3	323
145	1981	12	02.54931	23	18	44.54	-18	51	00.8	323
145	1981	12	02.55417	23	18	44.50	-18	50	57.7	323
145	1981	12	02.55764	23	18	44.74	-18	50	56.5	323
145	1981	12	02.56111	23	18	44.87	-18	50	54.5	323
148	1981	11	03.55208	21	21	00.64	-23	43	50.9	323
148	1981	11	03.57639	21	21	02.11	-23	43	50.2	323
148	1983	02	28.60278	07	01	18.55	+09	14	13.9	323
148	1983	02	28.60868	07	01	18.54	+09	14	17.5	323
148	1983	02	28.61285	07	01	18.55	+09	14	20.8	323
148	1983	02	28.61701	07	01	18.56	+09	14	24.4	323
148	1983	03	24.48958	07	09	41.45	+13	25	35.6	323
148	1983	03	24.49444	07	09	41.72	+13	25	38.3	323
148	1983	03	24.49792	07	09	41.87	+13	25	39.5	323
148	1983	03	24.50139	07	09	42.01	+13	25	41.8	323
148	1983	04	14.45417	07	27	05.04	+15	55	19.5	323
148	1983	04	14.45903	07	27	05.32	+15	55	21.2	323
148	1983	04	14.46250	07	27	05.55	+15	55	22.5	323
153	1981	01	27.70052	09	03	54.79	+06	16	12.3	323
153	1981	02	03.57257	08	59	35.16	+06	32	53.2	323
153	1981	02	03.60035	08	59	34.12	+06	32	57.9	323

153	1981	02	24.57500	08	47	03.86	+07	35	57.4	323
153	1981	03	27.49305	08	37	02.07	+09	05	56.6	323
153	1982	03	12.68958	12	02	02.58	-08	35	41.7	323
153	1982	03	12.70625	12	02	01.90	-08	35	34.8	323
153	1982	07	27.46389	12	12	46.17	-05	11	16.4	323
157	1981	05	06.83403	17	50	14.24	-27	13	28.7	323
157	1981	05	06.85833	17	50	13.40	-27	13	34.6	323
157	1981	06	12.66389	17	18	00.95	-29	11	39.1	323
157	1981	07	02.60000	16	58	01.85	-29	35	36.2	323
174	1982	03	18.62917	11	12	23.21	-03	50	24.0	323
174	1982	03	18.64583	11	12	22.22	-03	50	24.9	323
174	1982	03	29.63403	11	02	41.46	-03	26	22.1	323
174	1982	03	29.63889	11	02	41.21	-03	26	21.8	323
174	1982	03	29.64236	11	02	41.05	-03	26	20.9	323
174	1982	03	29.64583	11	02	40.85	-03	26	20.0	323
174	1982	05	20.46528	10	51	47.74	-03	00	44.4	323
174	1982	05	20.48160	10	51	48.13	-03	00	45.7	323
179	1981	01	14.62014	07	12	24.09	+15	21	35.7	323
179	1981	01	14.63681	07	12	22.85	+15	21	37.9	323
179	1981	01	15.53403	07	11	35.16	+15	21	53.5	323
185	1982	03	10.49583	09	04	33.93	+11	54	17.0	323
185	1982	03	10.50069	09	04	33.72	+11	54	19.9	323
185	1982	03	10.50417	09	04	33.67	+11	54	21.4	323
185	1982	03	10.50764	09	04	33.55	+11	54	23.6	323
185	1985	11	29.74861	06	12	47.30	-10	08	07.0	323
185	1985	11	29.76528	06	12	46.63	-10	08	09.4	323
196	1982	12	02.78889	10	41	19.11	+15	59	27.1	323
196	1982	12	02.79479	10	41	19.19	+15	59	24.7	323
201	1982	02	19.56528	07	20	41.67	+17	34	09.5	323
201	1982	02	19.57014	07	20	41.53	+17	34	10.3	323
201	1982	02	19.57431	07	20	41.40	+17	34	11.5	323
201	1982	02	19.57778	07	20	41.33	+17	34	12.5	323
201	1985	11	29.71666	05	42	35.07	+14	42	34.3	323
206	1983	09	09.65208	22	33	27.62	-10	41	59.8	323
206	1983	09	09.67639	22	33	26.57	-10	42	08.5	323
216	1982	03	10.59097	09	27	43.43	-02	52	37.6	323
216	1982	03	10.59583	09	27	43.29	-02	52	36.2	323
216	1982	03	10.59931	09	27	43.14	-02	52	34.7	323
216	1982	03	10.60278	09	27	43.06	-02	52	31.8	323
219	1982	12	29.77604	09	33	52.70	-00	21	01.8	323
219	1983	01	07.80764	09	29	19.51	-00	25	28.2	323
219	1983	02	10.75972	09	00	02.56	+01	40	23.5	323
220	1982	06	21.69306	17	56	41.91	-20	17	10.4	323
220	1982	06	21.70972	17	56	40.92	-20	17	04.1	323
221	1982	03	09.68556	13	10	33.78	+04	06	09.0	323
229	1983	09	08.63542	22	38	38.60	-11	10	50.0	323
229	1983	09	09.65208	22	37	55.42	-11	14	25.3	323
229	1983	09	09.67639	22	37	54.48	-11	14	25.3	323
230	1984	05	09.52361	13	45	58.14	-17	06	26.1	323
230	1984	05	09.53021	13	45	57.82	-17	06	26.1	323
242	1981	11	16.60417	02	39	49.54	+09	47	40.6	323
242	1981	11	17.61319	02	39	03.46	+09	40	37.4	323
242	1981	11	23.59167	02	34	44.77	+09	01	03.8	323
249	1983	04	22.56597	13	13	10.42	-20	26	46.8	323
260	1983	12	07.73750	04	34	58.80	+12	59	40.7	323
260	1983	12	13.66111	04	30	30.47	+12	52	43.6	323
279	1981	01	06.81667	12	24	40.06	+00	00	50.9	323
279	1981	01	09.79166	12	25	25.50	-00	02	19.0	323
279	1981	02	27.73958	12	19	36.82	+00	59	26.0	323

279	1981	02	27.76388	12	19	36.26	+00	59	32.4	323
279	1981	03	09.65451	12	14	46.01	+01	32	59.5	323
279	1981	03	24.63681	12	06	25.00	+02	27	09.8	323
279	1982	04	21.76458	15	08	47.06	-16	09	53.9	323
279	1982	04	21.78889	15	08	46.22	-16	09	50.7	323
279	1982	05	18.66597	14	52	46.65	-15	10	30.5	323
280	1981	02	13.71388	10	55	24.54	+14	10	34.8	323
280	1981	02	13.73819	10	55	23.29	+14	10	40.5	323
287	1982	03	10.77946	14	20	51.79	-00	47	26.4	323
287	1982	03	10.78472	14	20	51.76	-00	47	24.5	323
287	1982	03	10.78993	14	20	51.68	-00	47	22.2	323
290	1983	03	04.79375	13	45	51.69	-09	04	49.7	323
303	1986	04	09.75556	15	35	31.84	-27	45	52.0	323
303	1986	04	15.68819	15	32	22.43	-27	50	16.7	323
308	1982	03	11.64375	11	11	34.41	+03	31	48.0	323
308	1982	03	11.64861	11	11	34.16	+03	31	49.2	323
308	1982	03	11.65208	11	11	34.00	+03	31	50.7	323
308	1982	03	11.65556	11	11	33.84	+03	31	51.4	323
310	1982	02	15.66285	09	01	47.94	+11	35	31.6	323
313	1982	06	03.81424	20	12	46.31	-04	42	07.9	323
324	1982	09	30.48299	19	34	18.98	-23	26	44.6	323
324	1982	09	30.49514	19	34	19.58	-23	26	37.9	323
324	1982	09	30.50556	19	34	20.29	-23	26	29.7	323
324	1982	10	06.52222	19	40	36.39	-22	30	38.3	323
324	1982	10	06.52708	19	40	36.69	-22	30	35.6	323
324	1982	10	06.53056	19	40	36.96	-22	30	34.1	323
324	1982	10	06.53403	19	40	37.19	-22	30	31.5	323
329	1981	01	05.71250	07	27	32.70	-02	13	06.5	323
329	1981	01	15.56597	07	18	14.07	-01	32	38.6	323
329	1981	01	15.59028	07	18	12.80	-01	32	32.9	323
329	1982	03	18.82083	16	17	45.15	-06	39	47.6	323
329	1982	03	18.83750	16	17	45.66	-06	39	39.8	323
329	1982	04	21.84236	16	20	40.42	-01	02	47.6	323
329	1982	04	21.85903	16	20	39.66	-01	02	35.7	323
329	1982	05	12.81181	16	07	27.63	+02	21	00.4	323
334	1981	02	11.70139	10	47	07.21	+10	26	57.4	323
334	1981	02	11.72569	10	47	06.39	+10	27	03.8	323
334	1981	02	13.67222	10	46	00.34	+10	35	42.8	323
334	1981	02	27.68750	10	37	28.16	+11	39	04.8	323
334	1981	02	27.71181	10	37	27.31	+11	39	15.1	323
334	1981	03	09.61632	10	31	18.79	+12	21	38.9	323
334	1981	03	24.59722	10	23	12.98	+13	14	27.9	323
334	1981	03	24.61388	10	23	12.38	+13	14	31.7	323
334	1982	04	13.73958	14	09	46.91	-06	31	58.1	323
334	1982	04	13.75625	14	09	46.29	-06	31	53.5	323
334	1982	04	14.73403	14	09	10.85	-06	28	11.7	323
334	1982	04	14.75833	14	09	09.88	-06	28	05.0	323
334	1982	05	04.63333	13	56	49.18	-05	18	50.0	323
334	1982	05	04.65069	13	56	48.65	-05	18	47.8	323
334	1982	05	12.70764	13	52	14.08	-04	57	10.2	323
334	1982	05	12.72431	13	52	13.71	-04	57	07.9	323
340	1981	02	25.69167	13	00	18.63	-03	28	16.9	323
348	1983	09	09.60729	21	26	20.52	-27	00	32.4	323
354	1982	03	09.56319	08	44	04.19	+19	39	12.4	323
354	1982	03	09.56806	08	44	03.97	+19	39	13.7	323
354	1982	03	09.57188	08	44	03.98	+19	39	14.5	323
354	1982	03	09.57569	08	44	03.88	+19	39	16.9	323
356	1981	04	08.87152	15	03	59.57	-25	53	03.0	323
356	1981	05	01.68055	14	44	35.96	-25	25	38.4	323

386	1982	01	12.66528	07	09	42.65	-03	51	51.3	323
386	1982	01	12.68194	07	09	41.80	-03	51	43.7	323
389	1983	02	28.78698	14	31	43.37	-26	04	00.4	323
389	1983	03	01.72708	14	32	01.55	-26	08	45.1	323
389	1983	03	01.73299	14	32	01.70	-26	08	47.1	323
389	1983	03	01.74132	14	32	01.79	-26	08	49.4	323
389	1983	03	01.74549	14	32	01.87	-26	08	51.3	323
389	1983	07	22.44792	14	05	37.89	-19	29	40.9	323
389	1983	07	22.45556	14	05	38.30	-19	29	41.7	323
389	1983	07	22.46181	14	05	38.65	-19	29	41.9	323
389	1983	07	22.46806	14	05	39.03	-19	29	42.2	323
411	1983	02	28.86458	15	48	51.75	-02	28	15.4	323
411	1983	03	01.78611	15	49	26.85	-02	26	04.0	323
411	1983	07	22.49097	15	07	27.52	-04	56	29.6	323
413	1981	05	01.75000	15	38	56.74	+04	58	10.2	323
413	1982	10	15.84444	06	01	59.53	+05	08	35.1	323
413	1982	10	15.84931	06	01	59.59	+05	08	35.2	323
413	1982	10	15.85278	06	01	59.69	+05	08	35.4	323
413	1982	10	15.85625	06	01	59.76	+05	08	34.7	323
413	1982	12	15.72292	05	25	00.83	+10	11	14.5	323
413	1983	01	10.63958	05	00	06.77	+14	41	15.5	323
426	1983	02	28.52292	07	06	51.77	+26	51	53.8	323
426	1983	02	28.53299	07	06	51.68	+26	51	49.2	323
426	1983	02	28.53715	07	06	51.64	+26	51	47.7	323
434	1981	01	08.66042	08	21	57.21	-14	19	11.0	323
434	1981	01	09.59375	08	21	02.72	-14	15	45.3	323
434	1981	01	09.61805	08	21	01.30	-14	15	38.9	323
434	1981	01	27.64792	08	01	35.53	-11	45	02.1	323
434	1981	02	04.61389	07	53	19.76	-09	52	17.6	323
434	1981	02	24.52917	07	39	32.68	-04	01	02.0	323
434	1981	03	25.49306	07	44	02.35	+04	12	04.1	323
434	1982	09	09.73333	22	56	20.70	+01	45	54.1	323
434	1984	01	06.82639	11	41	48.99	-10	51	03.2	323
434	1984	02	03.69375	11	53	13.70	-09	21	34.1	323
434	1984	02	10.74931	11	52	23.85	-08	11	35.7	323
434	1984	03	27.59375	11	19	31.75	+06	26	02.6	323
442	1982	03	10.76736	14	19	02.22	-04	55	20.5	323
444	1982	06	21.43611	12	31	54.75	-01	03	11.9	323
444	1982	06	21.44097	12	31	54.87	-01	03	12.5	323
444	1982	06	21.44444	12	31	54.99	-01	03	12.8	323
444	1982	06	21.44792	12	31	55.06	-01	03	12.7	323
451	1982	03	11.74375	14	31	50.85	+04	49	43.5	323
451	1982	03	11.74861	14	31	50.82	+04	49	44.9	323
451	1982	03	11.75208	14	31	50.74	+04	49	47.1	323
451	1982	03	11.75556	14	31	50.74	+04	49	47.1	323
451	1982	06	03.61458	13	41	01.69	+06	37	02.1	323
451	1982	07	29.50278	13	53	18.05	-00	07	21.5	323
451	1982	07	29.50868	13	53	18.32	-00	07	24.7	323
451	1982	07	29.51265	13	53	18.44	-00	07	26.9	323
451	1982	07	29.51701	13	53	18.58	-00	07	29.2	323
453	1981	02	03.83055	13	52	26.03	-10	11	46.6	323
453	1981	02	03.85486	13	52	27.36	-10	11	57.0	323
453	1981	03	16.68680	14	08	50.95	-13	55	03.1	323
453	1981	03	19.70694	14	07	49.05	-14	03	17.9	323
453	1981	03	19.72361	14	07	48.42	-14	03	19.7	323
453	1981	03	25.71319	14	04	47.67	-14	15	46.6	323
464	1982	03	25.73819	13	41	39.35	+04	40	32.0	323
464	1982	03	25.75486	13	41	38.77	+04	40	37.4	323
464	1982	04	15.62986	13	25	50.22	+06	25	39.6	323

464	1982	04	15.65417	13	25	49.09	+06	25	45.8	323
471	1981	10	28.80451	05	53	18.13	+17	07	52.4	323
471	1981	10	29.70799	05	53	20.15	+17	12	06.7	323
471	1981	10	29.80556	05	53	19.93	+17	12	36.2	323
471	1981	10	29.80833	05	53	19.93	+17	12	37.3	323
471	1981	10	29.81042	05	53	19.91	+17	12	37.2	323
471	1981	10	29.81250	05	53	19.91	+17	12	38.1	323
472	1983	12	08.67743	03	30	44.75	-05	41	53.9	323
476	1982	03	10.80556	14	24	32.52	-29	58	51.0	323
480	1981	02	23.50555	04	19	55.25	+08	47	08.0	323
480	1981	02	23.52222	04	19	56.11	+08	47	10.3	323
480	1981	03	19.50694	04	46	06.88	+09	29	59.1	323
480	1981	03	19.52431	04	46	07.97	+09	29	59.9	323
480	1981	03	24.48333	04	52	31.33	+09	39	00.6	323
480	1981	03	24.50764	04	52	33.25	+09	39	03.3	323
480	1981	04	13.47569	05	20	50.65	+10	07	38.8	323
487	1986	09	22.86667	05	33	57.69	+13	38	02.4	323
489	1982	11	16.82083	07	16	40.95	+06	25	49.9	323
489	1982	12	16.77535	07	05	00.11	+05	28	34.0	323
489	1983	01	14.67847	06	42	32.68	+06	26	36.2	323
489	1983	02	08.64340	06	28	05.79	+08	29	52.0	323
489	1983	02	28.56563	06	25	59.13	+10	22	50.5	323
498	1986	03	14.61736	09	28	03.61	+25	23	46.4	323
502	1986	10	28.60764	00	56	35.19	-29	30	33.1	323
509	1982	01	12.80903	07	58	51.84	-01	40	24.7	323
509	1982	01	12.82569	07	58	50.99	-01	40	24.3	323
511	1983	06	07.80208	19	33	24.43	-19	56	08.8	323
512	1981	08	27.81181	23	13	35.75	-23	25	00.7	323
512	1981	08	27.82847	23	13	35.20	-23	25	13.3	323
512	1981	11	23.54306	23	36	13.17	-17	07	31.5	323
512	1981	11	23.55972	23	36	14.54	-17	07	15.4	323
512	1983	03	03.71007	11	05	41.68	+17	57	46.0	323
513	1982	09	29.79757	02	31	51.10	+09	01	31.0	323
513	1982	10	13.73472	02	24	31.92	+07	23	21.9	323
513	1982	10	13.75903	02	24	30.82	+07	23	14.3	323
513	1982	10	18.75694	02	21	08.93	+06	45	51.2	323
513	1982	11	09.65555	02	05	12.55	+04	14	52.5	323
513	1982	12	29.56076	01	54	59.39	+03	03	23.6	323
531	1983	04	13.56806	13	05	08.84	-04	39	04.9	323
531	1983	05	20.48194	12	48	26.06	+06	18	37.7	323
532	1981	01	08.59444	02	07	51.76	-04	07	24.6	323
532	1981	01	08.59931	02	07	51.81	-04	07	21.1	323
532	1981	01	08.60278	02	07	51.83	-04	07	19.3	323
532	1981	01	08.60625	02	07	51.96	-04	07	17.1	323
532	1981	01	14.52083	02	09	39.11	-03	17	10.1	323
532	1981	01	14.52569	02	09	39.21	-03	17	07.4	323
532	1981	01	14.52917	02	09	39.27	-03	17	06.5	323
532	1981	01	14.53264	02	09	39.35	-03	17	05.0	323
532	1981	02	02.58194	02	19	40.85	-00	24	34.1	323
532	1981	02	02.58681	02	19	41.03	-00	24	30.3	323
532	1981	02	02.59028	02	19	41.14	-00	24	28.2	323
532	1981	02	02.59375	02	19	41.34	-00	24	27.2	323
532	1982	03	08.52986	08	21	05.75	+32	26	59.8	323
532	1982	03	08.53472	08	21	05.69	+32	27	01.0	323
532	1982	03	08.53819	08	21	05.66	+32	27	01.5	323
532	1982	03	08.54236	08	21	05.59	+32	27	01.9	323
532	1983	04	21.79132	18	42	42.24	-12	59	54.8	323
535	1982	03	09.72153	13	37	42.85	+00	39	03.1	323
535	1982	03	09.72639	13	37	42.80	+00	39	01.5	323

535	1982	03	09.72986	13	37	42.75	+00	39	05.4	323
535	1982	03	09.73333	13	37	42.61	+00	39	06.6	323
554	1982	03	10.61458	09	26	23.58	+12	00	58.7	323
554	1982	03	10.61979	09	26	23.39	+12	01	00.1	323
554	1982	03	10.62361	09	26	23.24	+12	01	00.1	323
554	1982	03	10.62708	09	26	23.10	+12	01	00.8	323
568	1981	01	08.74653	10	53	07.79	-17	39	50.7	323
568	1981	01	09.63750	10	53	03.10	-17	46	50.2	323
568	1981	01	09.65416	10	53	03.07	-17	46	57.0	323
568	1981	01	27.74670	10	47	22.99	-19	35	40.8	323
568	1981	02	13.55069	10	36	07.76	-20	04	56.4	323
573	1981	02	12.67153	10	50	04.63	+09	27	33.1	323
582	1982	02	11.71667	10	08	46.80	+03	04	08.2	323
582	1982	02	11.72153	10	08	46.61	+03	04	14.5	323
582	1982	02	11.72500	10	08	46.47	+03	04	20.7	323
582	1982	02	11.72847	10	08	46.28	+03	04	23.6	323
582	1982	02	18.65208	10	03	33.78	+05	49	43.9	323
582	1982	02	18.65694	10	03	33.53	+05	49	50.9	323
582	1982	02	18.66042	10	03	33.36	+05	49	55.6	323
582	1982	02	18.66389	10	03	33.20	+05	50	00.8	323
582	1982	03	05.58125	09	52	58.56	+11	43	32.6	323
582	1982	03	05.58611	09	52	58.39	+11	43	38.4	323
582	1982	03	05.58958	09	52	58.39	+11	43	38.4	323
582	1982	03	05.59306	09	52	58.07	+11	43	48.6	323
582	1982	03	12.66597	09	49	13.01	+14	14	23.0	323
582	1982	03	12.67083	09	49	12.92	+14	14	28.6	323
582	1982	03	12.67431	09	49	12.77	+14	14	33.2	323
582	1982	03	12.67778	09	49	12.62	+14	14	32.9	323
582	1982	03	29.47222	09	45	37.76	+18	57	10.5	323
582	1982	03	29.47708	09	45	37.74	+18	57	14.4	323
582	1982	03	29.48055	09	45	37.76	+18	57	17.4	323
582	1982	03	29.48403	09	45	37.75	+18	57	20.2	323
585	1981	01	05.55764	02	07	12.50	+04	41	30.3	323
587	1981	02	09.59826	10	25	56.47	+05	51	37.6	323
587	1981	02	10.63680	10	24	20.17	+05	38	15.1	323
587	1981	02	12.60486	10	21	13.60	+05	12	52.8	323
593	1983	09	09.55486	20	01	51.14	-38	37	16.0	323
594	1982	01	15.61701	06	16	56.56	-14	30	48.6	323
601	1982	04	27.52014	10	08	55.68	+10	07	17.7	323
603	1981	09	23.68333	23	44	48.64	+01	50	49.3	323
619	1982	09	28.85660	03	23	50.12	+09	01	25.6	323
619	1982	10	21.71181	03	15	05.82	+05	08	22.2	323
619	1982	10	25.80417	03	12	11.45	+04	24	42.4	323
619	1982	11	08.69410	03	00	47.57	+02	07	32.3	323
619	1983	02	17.51528	03	14	42.51	+04	55	59.4	323
620	1981	05	05.78056	15	28	00.29	-29	24	43.2	323
625	1982	09	08.70139	01	14	49.88	-10	46	09.4	323
625	1982	09	08.72569	01	14	49.37	-10	46	26.9	323
625	1982	09	29.69097	01	02	56.95	-14	21	25.3	323
625	1982	10	08.69306	00	56	04.34	-15	26	45.4	323
625	1982	10	08.71806	00	56	03.08	-15	26	56.1	323
628	1981	01	14.57639	04	34	35.79	+14	17	40.2	323
635	1982	01	12.57917	02	22	18.86	+03	37	45.4	323
635	1982	12	29.72743	09	08	01.61	+03	18	12.4	323
635	1983	03	14.55451	08	24	04.10	+08	55	09.5	323
641	1983	09	08.63542	22	35	08.73	-11	57	03.2	323
641	1983	09	09.65208	22	34	08.62	-12	02	04.4	323
641	1983	09	09.67639	22	34	07.34	-12	02	11.1	323
652	1983	03	21.71111	14	31	00.58	+06	49	35.6	323

652	1983	04	22.66806	14	06	15.74	+09	09	15.6	323
663	1982	03	10.66528	09	57	50.72	-15	53	47.8	323
663	1982	03	10.67014	09	57	50.42	-15	53	44.9	323
663	1982	03	10.67361	09	57	50.35	-15	53	43.2	323
663	1982	03	10.67708	09	57	50.21	-15	53	43.0	323
669	1982	10	20.76875	03	27	55.23	+06	08	38.9	323
669	1982	11	08.72500	03	14	24.34	+04	22	21.5	323
669	1983	02	18.51667	03	08	01.32	+06	59	40.3	323
676	1982	10	19.79340	06	53	55.08	+09	35	29.5	323
676	1982	12	14.75625	06	40	55.20	+08	01	29.3	323
676	1983	01	14.63750	06	15	53.75	+09	23	06.1	323
676	1983	02	01.53090	06	05	33.32	+10	45	08.3	323
702	1982	01	25.72292	09	39	49.08	-02	16	06.5	323
702	1982	01	25.72778	09	39	48.80	-02	16	06.7	323
702	1982	01	25.73135	09	39	48.62	-02	16	07.9	323
702	1982	01	25.73472	09	39	48.49	-02	16	08.6	323
702	1982	03	10.51875	09	04	34.44	-02	03	13.9	323
702	1982	03	10.52361	09	04	34.24	-02	03	12.9	323
702	1982	03	10.52708	09	04	34.13	-02	03	12.1	323
702	1982	03	10.53056	09	04	34.04	-02	03	12.1	323
704	1982	01	25.74306	09	59	51.91	-05	49	25.1	323
704	1982	01	25.74792	09	59	51.69	-05	49	24.8	323
704	1982	01	25.75139	09	59	51.51	-05	49	25.7	323
704	1982	01	25.75486	09	59	51.37	-05	49	25.9	323
704	1982	02	11.73681	09	46	21.58	-05	54	45.0	323
704	1982	02	11.74167	09	46	21.31	-05	54	44.5	323
704	1982	03	11.54653	09	24	54.07	-04	40	22.2	323
704	1982	03	11.55139	09	24	53.87	-04	40	20.9	323
704	1982	03	11.55486	09	24	53.72	-04	40	20.1	323
704	1982	03	11.55799	09	24	53.61	-04	40	19.1	323
704	1983	02	28.75694	13	54	24.26	-33	28	06.2	323
704	1983	02	28.76285	13	54	24.20	-33	28	07.7	323
704	1983	02	28.76586	13	54	24.03	-33	28	09.5	323
704	1983	03	01.70139	13	54	13.99	-33	31	54.1	323
704	1983	03	01.70729	13	54	13.94	-33	31	56.0	323
704	1983	03	01.71146	13	54	13.86	-33	31	56.7	323
704	1983	03	01.71563	13	54	13.83	-33	31	57.9	323
704	1983	05	06.69306	13	10	51.88	-31	25	12.7	323
704	1983	05	06.69792	13	10	51.69	-31	25	10.4	323
704	1983	05	06.70139	13	10	51.39	-31	25	07.1	323
729	1982	06	21.78889	20	04	00.60	-12	49	47.9	323
729	1982	06	21.81111	20	03	59.89	-12	49	55.7	323
729	1982	07	14.62222	19	46	46.76	-15	48	15.9	323
729	1982	07	14.64271	19	46	45.67	-15	48	26.0	323
729	1982	08	10.65451	19	25	07.30	-19	43	41.0	323
729	1982	08	10.67535	19	25	06.56	-19	43	50.9	323
742	1982	04	27.70174	13	38	34.31	+00	14	47.8	323
745	1981	08	31.85347	04	16	46.92	+06	41	39.8	323
745	1981	11	03.78542	04	18	06.62	+03	10	52.7	323
745	1981	11	03.80278	04	18	06.00	+03	10	49.7	323
745	1981	12	21.64514	03	43	30.86	+03	06	30.4	323
764	1982	10	20.80347	06	52	34.99	+22	16	37.9	323
764	1982	11	18.75208	06	56	50.02	+20	35	23.0	323
764	1982	12	22.73160	06	35	31.66	+18	51	51.6	323
764	1983	01	07.62222	06	21	17.84	+18	12	42.1	323
767	1982	04	02.56319	10	05	21.27	+14	58	33.1	323
778	1983	02	11.86120	14	28	41.54	-28	20	38.6	323
778	1983	04	22.60139	14	01	23.84	-31	05	06.0	323
789	1982	12	14.80972	07	52	10.81	+08	30	58.7	323

789	1983	01	11.65764	07	29	45.68	+07	58	53.3	323
789	1983	02	02.63194	07	10	37.15	+08	31	42.4	323
793	1982	03	25.77708	15	12	56.88	-18	15	53.6	323
793	1982	04	13.83333	15	02	01.22	-19	01	52.3	323
793	1982	04	13.85417	15	02	00.29	-19	01	55.6	323
803	1982	12	16.74028	06	51	28.00	+17	36	52.2	323
803	1983	01	07.65417	06	33	05.79	+17	12	59.5	323
803	1983	01	13.66736	06	28	13.26	+17	09	01.6	323
834	1982	02	18.76528	12	09	16.55	-02	05	26.6	323
836	1981	11	03.75243	02	54	48.55	+12	18	42.1	323
836	1981	11	16.60417	02	43	32.87	+10	37	20.1	323
836	1981	11	17.61319	02	42	44.71	+10	30	27.3	323
836	1981	11	23.59167	02	38	27.56	+09	53	59.3	323
836	1981	12	01.68194	02	34	15.74	+09	18	33.2	323
838	1981	12	07.69931	07	26	04.67	+12	27	06.1	323
838	1981	12	07.72361	07	26	03.68	+12	27	02.7	323
838	1982	01	27.56944	06	44	22.33	+11	38	25.9	323
838	1982	01	27.59375	06	44	21.19	+11	38	29.9	323
838	1982	02	16.55417	06	35	10.51	+12	07	24.6	323
838	1982	03	15.50347	06	37	52.72	+12	55	00.9	323
857	1984	04	05.64097	13	18	18.81	+00	59	27.8	323
890	1981	02	09.59826	10	24	34.27	+06	52	38.3	323
896	1983	03	01.64792	11	13	19.42	-10	48	10.0	323
896	1983	03	24.65556	10	51	20.55	-08	28	46.0	323
896	1983	04	08.58368	10	41	21.83	-06	26	44.1	323
896	1983	05	16.47778	10	47	45.04	-03	09	07.5	323
901	1983	02	08.74236	09	15	51.35	+11	18	59.7	323
904	1981	12	21.80278	08	48	52.05	-03	28	25.6	323
904	1982	01	25.68194	08	27	13.84	-03	20	50.6	323
904	1982	01	25.70625	08	27	12.47	-03	20	43.6	323
904	1982	02	16.58472	08	11	16.21	-01	06	46.0	323
904	1982	02	16.60903	08	11	15.49	-01	06	37.8	323
904	1982	03	12.56458	08	03	28.04	+02	03	30.6	323
906	1982	11	16.64792	02	01	15.35	+12	16	57.1	323
907	1982	04	23.80208	20	05	02.67	-38	18	51.5	323
907	1982	04	23.81875	20	05	03.39	-38	18	57.2	323
907	1982	07	30.63333	19	23	29.61	-48	20	14.1	323
907	1982	07	30.65764	19	23	28.23	-48	20	13.4	323
914	1982	12	29.68611	08	12	06.60	-05	14	02.0	323
914	1983	03	11.56389	07	16	46.96	-04	30	16.0	323
919	1984	01	04.68264	05	27	21.99	+15	04	44.3	323
919	1984	01	05.66319	05	26	36.66	+15	03	17.1	323
925	1984	06	22.77847	21	42	03.99	-08	51	42.8	323
925	1984	06	25.84063	21	41	06.18	-08	34	23.8	323
925	1984	06	27.85000	21	40	20.89	-08	23	26.5	323
925	1984	06	28.85903	21	39	55.96	-08	18	03.2	323
926	1983	05	19.80764	19	15	58.81	-37	33	59.8	323
926	1983	05	19.83194	19	15	58.80	-37	34	14.1	323
931	1981	01	14.57639	04	32	29.74	+14	03	50.1	323
942	1981	07	03.65764	19	28	29.88	-30	59	38.7	323
942	1982	09	29.75903	02	24	29.00	+01	34	01.9	323
942	1982	10	19.66215	02	10	33.83	+00	53	36.2	323
975	1981	08	25.79271	23	12	05.76	-08	44	28.4	323
1006	1981	02	10.70694	10	45	23.20	-02	01	42.5	323
1008	1983	10	24.61944	00	53	09.24	+05	31	31.3	323
1017	1981	11	16.68333	03	48	11.45	+08	39	02.7	323
1017	1981	11	16.70764	03	48	09.95	+08	39	00.6	323
1017	1981	11	19.77882	03	45	13.72	+08	32	44.9	323
1022	1981	10	28.69861	23	19	54.54	-30	54	34.4	323

1022	1981	10	28.72292	23	19	54.22	-30	54	25.4	323
1036	1983	03	21.56979	09	59	28.39	-17	06	29.0	323
1036	1983	05	19.49583	09	52	36.77	-09	37	51.5	323
1040	1981	05	03.55139	12	18	10.86	-26	18	35.0	323
1043	1982	11	17.76528	05	08	04.71	+10	06	43.5	323
1043	1983	02	18.55938	04	32	05.75	+12	18	59.2	323
1044	1982	05	18.66597	14	51	56.26	-15	11	32.9	323
1057	1984	07	31.82188	21	20	00.38	-10	19	11.0	323
1066	1982	10	11.68958	01	31	00.85	+15	59	27.6	323
1066	1982	10	11.71389	01	30	59.31	+15	59	28.9	323
1075	1982	04	22.72431	15	23	55.37	-04	19	08.9	323
1075	1982	04	22.74097	15	23	54.71	-04	19	06.0	323
1075	1983	10	18.55556	21	06	17.83	-27	57	35.0	323
1083	1982	05	31.74931	16	30	01.53	-20	09	29.1	323
1114	1982	09	28.74236	01	48	53.00	+09	41	31.3	323
1114	1982	09	28.76667	01	48	52.31	+09	41	21.4	323
1114	1982	09	29.72361	01	48	21.09	+09	34	37.0	323
1114	1982	11	17.61354	01	18	15.73	+03	45	19.7	323
1160	1982	10	18.54306	21	48	28.85	-20	16	48.3	323
1161	1983	03	23.74097	13	39	06.08	+01	11	41.8	323
1161	1983	04	13.62778	13	24	20.79	+02	28	41.5	323
1165	1982	11	16.77326	05	29	46.02	+09	48	26.4	323
1165	1983	03	11.51389	04	55	48.63	+10	40	22.3	323
1192	1982	03	25.70347	12	17	58.59	-06	22	19.3	323
1192	1982	03	27.77431	12	14	27.81	-06	44	30.7	323
1197	1984	01	05.78333	08	35	48.29	+03	36	25.3	323
1197	1984	01	09.70347	08	32	54.09	+03	15	00.6	323
1197	1984	02	24.55833	07	55	07.00	+02	32	01.2	323
1197	1984	02	29.62361	07	53	12.96	+02	44	56.6	323
1219	1982	04	21.80833	16	17	13.75	-22	38	04.0	323
1219	1982	04	21.82500	16	17	13.17	-22	38	05.3	323
1219	1982	05	19.70104	15	50	39.72	-22	22	42.9	323
1219	1982	05	31.70382	15	37	11.72	-22	00	04.5	323
1224	1982	04	15.69444	14	45	44.09	-24	02	30.6	323
1224	1982	05	20.64305	14	12	29.32	-20	17	44.7	323
1226	1984	03	13.77847	14	12	15.49	-13	48	15.7	323
1226	1984	03	28.74305	14	03	28.15	-14	19	36.2	323
1230	1982	01	26.61667	06	27	17.12	+06	40	08.9	323
1235	1983	04	14.75764	14	52	45.02	-37	59	04.3	323
1236	1983	04	07.70833	14	41	25.67	-10	02	55.0	323
1242	1983	09	08.63542	22	36	07.80	-12	05	48.9	323
1242	1983	09	09.65208	22	35	07.87	-12	06	11.2	323
1242	1983	09	09.67639	22	35	06.51	-12	06	11.8	323
1246	1981	01	15.68681	09	10	19.73	+07	54	44.9	323
1253	1982	11	16.64792	01	59	32.33	+12	13	53.4	323
1260	1981	07	03.73542	19	56	29.69	-24	03	28.1	323
1264	1982	05	18.87257	19	50	28.22	+03	00	35.2	323
1264	1982	05	31.83785	19	50	35.94	+06	21	53.9	323
1264	1982	07	13.59306	19	23	42.61	+13	52	32.8	323
1264	1982	07	13.61771	19	23	41.33	+13	52	39.6	323
1264	1982	07	27.64358	19	11	45.79	+14	15	28.0	323
1264	1982	10	13.52986	19	23	34.95	+06	20	07.4	323
1264	1982	10	21.49306	19	32	16.44	+05	38	25.7	323
1266	1983	01	11.73160	09	48	07.99	+16	20	21.5	323
1266	1983	02	11.73924	09	23	21.62	+16	20	09.6	323
1266	1983	03	03.63507	09	07	03.30	+16	10	39.4	323
1271	1984	04	05.64097	13	18	19.30	+01	08	16.7	323
1276	1982	10	21.74323	03	49	06.36	-13	04	52.5	323
1276	1982	11	12.74826	03	32	46.64	-14	05	16.8	323

1290	1983	04	13.76458	14	37	06.41	-24	24	09.2	323
1293	1983	11	24.59306	02	40	22.02	+16	25	48.9	323
1301	1983	10	06.79166	04	04	46.33	-23	39	26.4	323
1301	1983	12	12.59791	03	29	14.35	-34	57	11.3	323
1301	1983	12	15.59757	03	27	39.40	-34	36	30.6	323
1301	1983	12	21.56806	03	25	14.19	-33	43	23.6	323
1301	1984	02	10.57569	03	48	59.88	-19	31	16.5	323
1310	1984	02	03.80347	13	24	09.42	-08	29	56.5	323
1310	1984	03	27.68403	12	38	23.55	-14	00	42.0	323
1311	1982	02	16.68403	10	24	14.32	+04	45	35.5	323
1311	1982	02	16.70833	10	24	13.15	+04	45	42.7	323
1311	1982	02	26.62396	10	14	54.85	+05	37	39.0	323
1311	1982	03	16.62153	10	00	07.92	+07	13	55.4	323
1311	1982	03	16.64653	10	00	06.82	+07	14	03.9	323
1311	1982	03	17.64236	09	59	28.54	+07	18	47.9	323
1311	1982	03	17.66667	09	59	27.59	+07	18	55.1	323
1316	1982	12	16.81528	08	05	29.60	-10	43	43.1	323
1320	1981	10	22.56736	22	57	38.59	-35	02	39.6	323
1320	1981	10	22.59167	22	57	38.48	-35	02	22.1	323
1320	1982	10	14.78924	04	31	34.26	+14	35	25.0	323
1320	1982	11	08.75729	04	15	19.50	+14	59	43.4	323
1323	1982	10	13.73472	02	25	06.68	+07	39	24.8	323
1323	1982	10	13.75903	02	25	05.45	+07	39	27.2	323
1323	1982	10	20.69618	02	19	31.52	+07	32	42.6	323
1323	1982	10	21.67535	02	18	42.69	+07	31	47.1	323
1323	1982	10	27.68438	02	13	36.41	+07	26	31.4	323
1323	1982	10	27.74479	02	13	33.16	+07	26	26.9	323
1329	1983	01	07.68472	07	37	43.69	+13	56	44.6	323
1329	1983	03	14.50417	07	01	59.88	+19	42	04.2	323
1341	1981	01	31.80764	11	48	05.39	+17	02	47.9	323
1341	1981	02	02.77430	11	47	42.07	+17	19	52.9	323
1341	1982	06	21.73472	19	21	25.56	-19	53	19.4	323
1341	1982	06	21.75972	19	21	24.46	-19	53	29.1	323
1341	1982	10	11.49375	19	09	45.41	-27	27	38.1	323
1341	1982	10	13.49236	19	12	04.06	-27	27	01.7	323
1341	1982	10	14.49375	19	13	14.80	-27	26	36.1	323
1341	1982	10	20.52292	19	20	40.19	-27	22	27.1	323
1344	1982	03	25.63542	11	17	45.50	+15	24	46.3	323
1344	1982	03	27.70903	11	15	57.72	+15	27	26.5	323
1344	1982	04	02.62535	11	11	26.38	+15	28	46.2	323
1356	1984	06	25.64063	17	33	53.32	-26	55	00.2	323
1356	1984	06	27.56493	17	32	13.27	-26	57	37.0	323
1356	1984	06	28.52778	17	31	23.86	-26	58	50.4	323
1364	1981	08	27.81181	23	16	06.52	-23	45	23.3	323
1364	1981	08	27.82847	23	16	05.69	-23	45	28.6	323
1367	1984	04	02.70277	13	57	32.50	-48	08	43.6	323
1369	1981	01	05.67083	05	15	49.22	+04	00	54.2	323
1369	1981	02	04.56562	05	04	43.73	+05	39	07.1	323
1373	1981	01	14.69375	09	33	36.78	-08	49	52.1	323
1413	1982	10	14.69653	01	21	02.00	+02	33	03.0	323
1413	1982	10	15.69931	01	20	18.69	+02	25	43.4	323
1413	1982	10	20.65174	01	16	45.84	+01	50	31.3	323
1414	1982	11	18.70486	05	03	38.50	+09	23	08.3	323
1414	1982	12	16.70000	04	38	50.86	+08	54	25.6	323
1429	1982	07	27.82431	23	28	27.39	-21	02	24.6	323
1429	1982	07	27.84097	23	28	27.95	-21	02	27.6	323
1431	1983	04	15.69757	15	06	59.47	+04	14	37.4	323
1431	1983	04	21.73333	15	02	31.34	+04	48	30.9	323
1431	1983	05	09.73542	14	46	57.20	+05	57	59.3	323

1431	1983	05	13.71667	14	43	25.06	+06	04	57.5	323
1450	1982	05	31.88403	21	36	43.55	-18	45	15.9	323
1458	1982	01	29.64930	07	44	48.54	+05	05	22.4	323
1458	1982	04	16.47431	07	38	15.88	+11	37	32.0	323
1458	1982	04	20.47882	07	41	17.71	+11	47	49.0	323
1465	1983	12	07.67361	03	32	18.02	+05	57	17.0	323
1465	1983	12	09.68021	03	30	56.14	+05	54	24.3	323
1465	1983	12	12.66736	03	28	59.41	+05	51	03.8	323
1494	1982	03	29.54792	10	15	18.65	+08	52	27.7	323
1494	1982	03	29.57222	10	15	17.83	+08	52	34.4	323
1503	1983	06	07.77743	19	47	52.12	-31	55	07.6	323
1504	1982	11	08.79653	05	03	29.12	+13	15	33.3	323
1504	1982	11	12.78680	05	00	41.68	+13	19	58.3	323
1504	1982	11	15.73750	04	58	19.63	+13	23	59.6	323
1504	1982	12	15.69306	04	26	18.32	+14	47	43.4	323
1504	1982	12	22.65486	04	19	15.13	+15	18	41.8	323
1505	1982	03	29.60660	10	27	30.05	-14	39	35.4	323
1505	1982	04	16.51319	10	22	15.35	-11	51	37.0	323
1505	1982	04	16.53750	10	22	15.28	-11	51	23.7	323
1518	1981	09	26.66250	00	02	42.78	-06	12	31.2	323
1518	1981	09	26.68681	00	02	41.15	-06	12	34.4	323
1518	1981	09	28.62847	00	00	35.12	-06	16	42.6	323
1518	1981	09	28.65278	00	00	33.48	-06	16	44.9	323
1518	1981	10	22.61805	23	39	25.93	-06	15	42.3	323
1518	1981	10	22.64236	23	39	25.10	-06	15	37.0	323
1520	1981	08	25.73958	21	45	01.43	+10	53	18.9	323
1520	1981	08	25.76389	21	45	00.43	+10	53	15.5	323
1541	1982	08	10.69653	22	17	56.79	-15	10	59.9	323
1543	1983	03	21.63264	12	57	12.62	-24	18	03.4	323
1543	1983	04	21.61319	12	27	34.76	-22	01	11.6	323
1549	1982	11	16.69410	04	33	22.13	+17	48	28.6	323
1573	1982	10	21.78194	05	19	27.97	+00	00	56.3	323
1584	1982	03	09.54028	08	19	47.98	-00	28	56.7	323
1584	1982	03	09.54514	08	19	47.79	-00	29	00.8	323
1584	1982	03	09.54861	08	19	47.69	-00	29	00.2	323
1591	1981	09	02.69444	22	53	42.82	-48	14	49.4	323
1591	1981	09	02.71875	22	53	41.14	-48	14	57.0	323
1593	1981	09	01.57778	19	59	08.83	-28	59	31.3	323
1593	1981	09	02.65417	19	59	53.32	-29	05	48.5	323
1593	1981	09	02.67222	19	59	54.01	-29	05	54.4	323
1597	1982	01	26.66875	07	32	37.03	+09	47	44.8	323
1603	1983	03	23.64444	10	32	09.32	+16	32	26.4	323
1607	1982	05	20.73958	16	06	38.85	-08	30	39.9	323
1612	1983	03	08.65069	10	33	58.78	-02	20	50.2	323
1614	1981	12	17.65278	06	11	55.32	+03	18	36.5	323
1614	1981	12	17.66944	06	11	54.38	+03	18	36.7	323
1615	1983	01	13.70764	09	30	26.89	+13	50	10.1	323
1615	1983	03	14.62569	08	49	14.95	+17	21	53.0	323
1620	1983	02	28.65903	10	45	55.88	+02	24	52.5	323
1620	1983	02	28.67257	10	45	51.55	+02	23	46.2	323
1620	1983	02	28.68264	10	45	48.46	+02	22	58.0	323
1620	1983	02	28.68993	10	45	46.15	+02	22	23.6	323
1620	1983	03	01.58750	10	41	16.14	+01	07	51.9	323
1620	1983	03	01.60000	10	41	11.94	+01	06	45.9	323
1620	1983	03	03.66944	10	29	23.15	-02	06	16.3	323
1620	1983	03	03.67778	10	29	19.83	-02	07	05.4	323
1620	1983	03	08.62361	09	51	59.11	-12	01	37.6	323
1620	1983	03	11.67361	09	20	42.00	-19	37	09.7	323
1620	1983	03	21.47153	06	52	37.66	-42	25	42.2	323

1620	1983	03	22.47361	06	35	05.97	-43	48	58.5	323
1620	1983	03	23.47222	06	17	47.17	-44	58	21.0	323
1620	1983	03	24.47778	06	00	40.21	-45	55	09.5	323
1620	1983	03	25.47153	05	44	13.20	-46	39	16.8	323
1642	1982	05	31.79931	18	08	40.93	-39	04	51.8	323
1642	1982	08	17.54236	17	16	59.33	-34	55	48.7	323
1651	1982	10	07.66493	00	02	25.30	+00	24	36.0	323
1651	1982	10	20.60625	23	52	43.48	-01	12	42.3	323
1651	1982	10	21.63194	23	52	06.83	-01	19	13.8	323
1667	1981	02	13.71388	10	57	56.30	+14	47	00.9	323
1667	1981	02	13.73819	10	57	54.83	+14	47	13.6	323
1675	1982	03	31.86667	17	35	08.78	-27	46	08.6	323
1675	1982	05	18.82292	17	28	34.59	-30	44	15.4	323
1675	1982	05	25.70903	17	21	45.02	-31	02	17.2	323
1684	1982	02	19.70451	11	32	05.22	+07	58	00.8	323
1711	1983	04	14.62153	12	35	05.50	+10	07	18.0	323
1712	1983	12	07.78333	06	46	34.15	+07	14	32.9	323
1712	1984	01	04.73160	06	24	48.70	+05	44	57.9	323
1712	1984	01	13.65625	06	17	47.69	+05	34	20.5	323
1712	1984	02	02.59618	06	05	39.08	+05	40	33.7	323
1712	1984	02	03.64965	06	05	11.70	+05	41	52.6	323
1716	1984	03	27.73785	13	47	44.20	-17	41	54.8	323
1750	1984	02	03.74965	12	37	59.78	-31	47	31.5	323
1759	1981	10	02.72431	02	53	56.05	+09	41	45.6	323
1759	1981	10	02.74861	02	53	55.76	+09	41	36.8	323
1759	1981	11	03.70139	02	35	38.68	+06	27	48.4	323
1776	1982	10	14.69653	01	21	48.06	+02	35	44.4	323
1776	1982	10	15.69931	01	21	05.48	+02	28	53.0	323
1776	1982	10	20.65174	01	17	36.33	+01	55	58.0	323
1787	1984	02	02.69514	11	11	41.69	-01	49	37.6	323
1787	1984	02	08.68125	11	08	23.01	-01	53	11.2	323
1801	1981	01	31.80764	11	48	37.94	+17	41	43.6	323
1801	1981	02	04.79514	11	47	23.32	+18	07	32.1	323
1810	1986	07	11.69653	19	43	26.63	-16	56	56.2	323
1817	1983	07	15.62708	20	03	30.13	-42	17	19.1	323
1817	1983	07	15.65139	20	03	28.28	-42	17	44.6	323
1848	1982	11	09.55139	00	00	18.40	+01	30	21.7	323
1848	1982	11	12.64028	23	59	47.75	+01	26	44.6	323
1863	1982	04	23.47708	04	36	02.88	-56	19	06.4	323
1866	1985	04	18.75694	16	45	30.96	-03	56	39.2	323
1866	1985	04	19.73264	16	44	43.68	-04	02	37.7	323
1866	1985	04	22.72431	16	41	58.41	-04	22	34.6	323
1866	1985	05	09.57153	16	15	49.36	-07	12	50.9	323
1866	1985	05	15.61111	16	01	40.81	-08	42	55.8	323
1898	1982	10	20.73333	02	57	15.71	+15	27	14.6	323
1898	1982	11	09.69201	02	41	47.69	+14	11	49.6	323
1906	1983	10	04.69930	23	46	27.26	+00	41	39.3	323
1915	1981	02	10.56597	07	18	42.48	-40	47	48.6	323
1933	1981	09	02.61875	22	00	26.55	-09	37	05.2	323
1933	1981	09	02.63542	22	00	25.70	-09	37	14.4	323
1934	1983	10	17.77361	04	12	58.33	-17	02	35.1	323
1934	1984	02	02.55208	03	28	00.62	+17	45	21.7	323
1935	1986	12	01.62708	02	06	47.20	+04	18	52.2	323
1984	1981	02	06.63889	10	28	34.22	+05	25	52.0	323
2008	1982	04	14.68194	12	39	58.14	-04	23	26.4	323
2008	1982	04	14.70625	12	39	56.70	-04	23	29.0	323
2050	1982	10	25.74653	02	40	01.22	-13	13	24.1	323
2072	1983	04	14.66979	13	26	07.17	-08	39	23.2	323
2072	1983	05	13.62847	13	02	34.48	-07	04	59.8	323

2077	1981	09	24.73542	02	55	05.74	-35	25	26.9	323
2077	1981	09	24.75972	02	55	04.94	-35	25	33.1	323
2078	1981	08	25.67083	20	08	52.43	+05	56	29.6	323
2100	1981	08	28.71458	21	03	41.39	+15	51	58.3	323
2100	1981	08	31.54861	20	53	33.35	+10	49	09.0	323
2146	1986	12	30.61875	03	47	13.59	-25	07	45.9	323
2147	1981	11	23.70208	04	33	50.62	+07	09	49.9	323
2150	1981	02	02.62708	08	05	53.58	-27	26	14.2	323
2161	1981	09	23.76736	00	55	27.56	-06	04	49.6	323
2161	1981	09	23.78403	00	55	26.80	-06	04	58.3	323
2161	1981	10	23.65903	00	34	04.90	-08	49	11.8	323
2161	1981	10	23.68333	00	34	04.09	-08	49	14.6	323
2162	1981	10	02.66319	01	15	42.29	+02	04	13.3	323
2162	1981	10	02.68750	01	15	41.07	+02	04	04.2	323
2162	1981	10	19.69514	01	00	18.03	+00	13	35.7	323
2162	1981	10	19.71944	01	00	16.80	+00	13	28.7	323
2173	1982	01	29.64931	07	43	18.42	+04	40	07.7	323
2189	1983	12	12.72569	04	39	57.35	+02	03	29.8	323
2193	1981	05	06.89167	18	25	58.01	-34	13	47.7	323
2193	1981	08	31.50625	17	32	12.99	-36	05	06.0	323
2199	1982	10	18.71250	01	55	22.66	-01	45	33.7	323
2266	1982	01	15.71944	09	23	55.36	-04	47	20.2	323
2266	1982	01	15.74375	09	23	54.53	-04	47	21.5	323
2266	1982	01	28.62153	09	15	01.87	-04	43	04.8	323
2266	1982	01	28.64583	09	15	00.78	-04	43	01.7	323
2266	1982	02	16.64236	09	00	42.66	-03	38	33.3	323
2266	1982	02	19.64861	08	58	38.68	-03	23	25.6	323
2266	1982	03	17.48750	08	47	11.28	-00	51	33.2	323
2266	1982	03	17.51181	08	47	11.11	-00	51	25.0	323
2274	1984	06	19.72222	17	50	25.34	-27	23	17.9	323
2274	1984	06	27.64444	17	41	45.49	-27	15	42.3	323
2274	1984	06	28.60139	17	40	46.02	-27	14	29.1	323
2281	1983	04	14.66979	13	25	06.28	-09	05	12.4	323
2281	1983	04	21.68819	13	18	01.96	-08	17	06.2	323
2303	1984	01	06.73819	09	52	18.50	-10	48	33.2	323
2303	1984	02	24.59583	09	23	42.82	-07	32	48.7	323
2303	1984	03	27.55486	09	11	52.02	-01	40	17.8	323
2303	1984	03	29.56736	09	11	55.25	-01	19	17.5	323
2330	1983	03	22.61319	11	46	20.87	+09	17	51.0	323
2363	1983	03	24.69236	11	59	09.76	-19	37	57.6	323
2377	1983	10	04.69930	23	46	34.95	+00	12	53.4	323
2433	1982	10	13.68958	00	43	27.11	+02	51	26.5	323
2433	1982	10	13.71528	00	43	25.95	+02	51	13.4	323
2435	1983	10	06.75208	02	35	36.31	+09	19	53.5	323
2435	1983	10	14.73773	02	30	07.75	+08	21	51.5	323
2443	1982	09	28.80625	03	05	05.24	+01	13	59.1	323
2443	1982	11	17.64931	02	31	39.65	-01	55	25.1	323
2444	1984	01	06.79028	11	14	16.57	-10	15	23.0	323
2449	1983	02	10.70972	08	09	23.61	-12	48	01.6	323
2544	1983	01	11.76806	11	01	47.65	-06	24	10.3	323
2544	1983	03	14.67569	10	00	59.13	-21	47	11.0	323
2544	1983	04	19.48611	09	39	54.00	-21	44	35.1	323
2583	1984	04	06.70659	13	51	37.01	-06	54	24.0	323
2612	1982	10	13.79566	03	51	00.87	-09	39	57.8	323
2612	1982	10	13.81806	03	51	00.21	-09	40	09.1	323
2612	1982	10	18.79653	03	48	53.51	-10	19	20.3	323
2612	1982	11	09.72431	03	33	50.00	-12	28	36.3	323
3015	1986	09	11.82708	01	12	54.64	-07	44	47.8	323
3015	1986	12	01.55208	00	24	16.89	-04	08	22.2	323

3551		1986	11	27.68958	03	03	43.96	-20	24	22.0	323
3554		1986	03	11.70625	11	27	29.51	+24	36	54.4	323

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0.60-m reflector
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1987	OM		1987	09	16.51181	21	23	15.62	-26	47	32.8	17	372
1987	OM		1987	09	16.58840	21	23	14.94	-26	47	36.7	17	372
1987	OM		1987	09	17.59514	21	23	12.77	-26	48	41.4	17	372
1987	PB		1987	09	16.52708	20	49	20.54	-10	51	00.3	17.5	372
1987	PB		1987	09	16.54236	20	49	20.26	-10	51	00.3		372
1987	SE		1987	09	26.67257	23	36	51.84	+06	53	48.1	17	372
1987	SE		1987	10	01.61667	23	32	57.87	+06	37	04.7	17	372
1987	SF		1987	09	26.64792	23	49	33.17	-08	27	33.3	17	372
1987	SF		1987	10	01.67778	23	46	09.68	-09	05	33.2	17	372
1987	SG		1987	09	26.69687	00	14	30.33	+07	06	57.5	17	372
1987	SG		1987	10	02.69757	00	08	58.85	+06	24	46.8	17	372
1987	SG		1987	10	17.55174	23	57	29.99	+04	41	12.9	17	372
1987	SG		1987	10	17.56354	23	57	29.49	+04	41	08.6		372
1987	SH		1987	09	26.61666	23	32	46.18	+06	41	33.4	16.5	372
1987	SH		1987	10	01.64757	23	28	29.26	+06	10	44.7	17	372
1987	SH		1987	10	17.53021	23	18	06.50	+04	35	45.9	17	372
1987	SH		1987	10	17.54097	23	18	06.08	+04	35	44.0		372
1987	SZ1	*	1987	09	16.63576	23	53	43.9	-06	47	34	17	372
1987	SZ1		1987	09	17.61354	23	52	56.7	-06	54	13		372
1987	SZ1		1987	09	18.61389	23	52	07.8	-07	00	55	16.5	372
1987	SZ1		1987	09	26.62292	23	45	43.53	-07	50	29.9	16.5	372
1987	SZ1		1987	10	01.72847	23	41	56.05	-08	16	40.0	17	372
1987	SA2	*	1987	09	18.68090	23	40	56.89	+07	09	33.5	19	372
1987	SA2		1987	09	19.66840	23	39	40.11	+07	05	45.1		372
1987	UZ	*	1987	10	21.67222	01	05	04.76	+08	35	29.9	18 d	372
1987	UZ		1987	10	21.68403	01	05	03.97	+08	35	33.2	d	372
918			1987	10	17.51250	23	07	42.7	+06	14	47	15	372
918			1987	10	21.62465	23	06	10.8	+06	12	23	15	372

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Observers H. Kosai, K. Hurukawa, T. Nakamura, M. Yoshikawa
Measurer H. Kosai
AGK3, SAOC, global solutions

1968	HP		1983	02	14.52992	09	30	07.66	+13	06	43.0	17.0	381
1970	WC		1983	03	11.68972	13	28	26.84	-11	19	09.6	18.0	381
1970	WC		1983	03	11.75568	13	28	24.66	-11	19	07.2	18.0	381
1976	SD3		1984	01	24.46541	06	14	43.62	+28	05	01.2	18.0	381
1976	SD3		1984	01	24.52513	06	14	40.93	+28	05	00.4	18.0	381
1977	DN4		1986	11	30.47304	02	55	57.87	+13	23	57.3	18.0	381
1977	DN4		1986	11	30.57585	02	55	53.38	+13	23	44.4	18.0	381
1977	DN4		1986	12	01.45359	02	55	16.96	+13	21	53.6	18.0	381
1977	DN4		1986	12	01.54804	02	55	13.00	+13	21	42.9	18.0	381
1981	EP20		1984	01	24.46541	06	17	25.67	+27	37	10.6	18.5	381
1981	EP20		1984	01	24.52513	06	17	23.24	+27	37	04.5	18.5	381
1983	CA1		1983	02	14.52992	09	40	40.18	+17	15	14.0	17.5	381
1983	CD1		1983	02	14.52992	09	45	44.30	+14	58	43.5	17.5	381
1983	CZ3	*	1983	02	14.52992	09	29	02.37	+12	34	42.6	17.5	381
1983	CA4	*	1983	02	14.52992	09	29	38.62	+12	48	07.7	18.0	381
1983	CB4	*	1983	02	14.52992	09	30	04.13	+12	21	48.8	17.5	381
1983	CC4	*	1983	02	14.52992	09	30	27.55	+13	01	16.3	17.5	381
1983	CD4	*	1983	02	14.52992	09	30	29.90	+16	12	49.4	18.5	381

1983	CE4	*	1983	02	14.52992	09	31	17.91	+13	44	17.1	16.5	381
1983	CF4	*	1983	02	14.52992	09	31	29.56	+13	06	43.9	18.5	381
1983	CG4	*	1983	02	14.52992	09	32	03.35	+12	27	19.2	18.0	381
1983	CH4	*	1983	02	14.52992	09	32	14.25	+14	28	31.4	18.0	381
1983	CJ4	*	1983	02	14.52992	09	32	51.56	+13	00	58.7	17.0	381
1983	CK4	*	1983	02	14.52992	09	33	25.01	+13	05	51.8	18.0	381
1983	CL4	*	1983	02	14.52992	09	34	47.89	+14	42	33.7	18.0	381
1983	CM4	*	1983	02	14.52992	09	34	50.66	+15	09	48.1	17.5	381
1983	CN4	*	1983	02	14.52992	09	34	58.54	+17	01	43.2	17.5	381
1983	CO4	*	1983	02	14.52992	09	35	01.79	+14	24	27.1	17.5	381
1983	CP4	*	1983	02	14.52992	09	35	03.13	+16	25	30.9	18.5	381
1983	CQ4	*	1983	02	14.52992	09	36	24.28	+14	05	11.9	17.5	381
1983	CR4	*	1983	02	14.52992	09	36	25.34	+15	56	31.5	17.0	381
1983	CS4	*	1983	02	14.52992	09	36	28.68	+17	04	22.8	18.0	381
1983	CT4	*	1983	02	14.52992	09	37	06.83	+16	21	11.4	18.5	381
1983	CU4	*	1983	02	14.52992	09	37	39.06	+13	21	42.6	18.5	381
1983	CV4	*	1983	02	14.52992	09	39	00.99	+14	24	43.4	18.5	381
1983	CW4	*	1983	02	14.52992	09	39	42.60	+13	21	49.4	18.0	381
1983	CX4	*	1983	02	14.52992	09	40	03.45	+16	08	00.6	18.0	381
1983	CY4	*	1983	02	14.52992	09	40	14.67	+14	16	11.2	17.5	381
1983	CZ4	*	1983	02	14.52992	09	40	17.71	+15	32	24.8	17.0	381
1983	CA5	*	1983	02	14.52992	09	40	26.35	+15	09	17.0	18.5	381
1983	CB5	*	1983	02	14.52992	09	41	03.91	+14	22	29.4	18.0	381
1983	CC5	*	1983	02	14.52992	09	41	18.99	+14	34	41.8	17.0	381
1983	CD5	*	1983	02	14.52992	09	42	17.67	+12	05	43.1	18.0	381
1983	CE5	*	1983	02	14.52992	09	42	30.09	+13	32	08.9	17.5	381
1983	CF5	*	1983	02	14.52992	09	42	38.11	+13	41	57.5	18.0	381
1983	CG5	*	1983	02	14.52992	09	43	28.55	+13	16	08.3	18.0	381
1983	CH5	*	1983	02	14.52992	09	43	35.31	+16	22	15.9	18.0	381
1983	CJ5	*	1983	02	14.52992	09	43	40.95	+14	31	26.6	18.5	381
1983	CK5	*	1983	02	14.52992	09	44	06.12	+15	04	57.2	18.5	381
1983	CL5	*	1983	02	14.52992	09	44	19.68	+14	33	18.0	18.5	381
1983	CM5	*	1983	02	14.52992	09	44	36.99	+13	44	23.9	18.5	381
1983	CN5	*	1983	02	14.52992	09	45	23.77	+13	46	33.9	17.5	381
1983	CO5	*	1983	02	14.52992	09	47	17.50	+12	12	08.5	18.5	381
1983	CP5	*	1983	02	14.52992	09	48	27.64	+15	55	06.0	18.5	381
1983	CQ5	*	1983	02	14.52992	09	49	17.38	+12	26	03.3	18.0	381
1983	CR5	*	1983	02	14.52992	09	49	54.01	+15	42	25.0	18.0	381
1983	CS5	*	1983	02	14.52992	09	50	15.21	+15	14	14.0	18.0	381
1983	CT5	*	1983	02	14.52992	09	50	19.50	+12	55	23.5	18.0	381
1983	CU5	*	1983	02	14.52992	09	50	23.70	+14	11	04.2	18.0	381
1983	CV5	*	1983	02	14.52992	09	50	40.30	+13	34	04.4	17.5	381
1983	EM1	*	1983	03	11.66611	12	51	05.46	-03	08	09.3	17.0	381
1983	EM1		1983	03	11.73347	12	51	02.05	-03	07	59.0	17.0	381
1983	EN1	*	1983	03	11.66611	12	55	22.88	-00	48	31.6	17.5	381
1983	EN1		1983	03	11.73347	12	55	19.98	-00	48	14.0	17.5	381
1983	EO1	*	1983	03	11.66611	12	56	06.21	-02	56	51.3	16.5	381
1983	EO1		1983	03	11.73347	12	56	03.86	-02	56	16.0	16.5	381
1983	EP1	*	1983	03	11.66611	13	01	42.93	-00	58	50.7	17.5	381
1983	EP1		1983	03	11.73347	13	01	40.53	-00	58	32.7	17.5	381
1983	EQ1	*	1983	03	11.66611	13	02	05.17	-00	52	06.5	17.5	381
1983	EQ1		1983	03	11.73347	13	02	02.18	-00	51	48.3	17.5	381
1983	ER1	*	1983	03	11.68972	13	22	27.97	-12	09	07.8	17.0	381
1983	ER1		1983	03	11.75568	13	22	25.80	-12	08	42.5	17.0	381
1983	ES1	*	1983	03	11.68972	13	22	56.77	-07	17	02.7	18.0	381
1983	ES1		1983	03	11.75568	13	22	54.25	-07	16	56.3	18.0	381
1983	ET1	*	1983	03	11.68972	13	26	06.55	-10	46	33.4	18.5	381
1983	ET1		1983	03	11.75568	13	26	04.02	-10	46	19.1	18.5	381
1983	EU1	*	1983	03	11.68972	13	26	07.73	-12	27	47.7	17.5	381

1983	EU1		1983	03	11.75568	13	26	02.69	-12	28	54.0	17.5	381
1983	EV1	*	1983	03	11.68972	13	26	17.89	-08	32	25.7	17.5	381
1983	EV1		1983	03	11.75568	13	26	16.44	-08	32	10.0	17.5	381
1983	EW1	*	1983	03	11.68972	13	26	34.81	-09	00	42.7	18.5	381
1983	EW1		1983	03	11.75568	13	26	33.05	-09	00	37.4	18.5	381
1983	EX1	*	1983	03	11.68972	13	26	54.04	-10	57	09.4	18.5	381
1983	EX1		1983	03	11.75568	13	26	52.18	-10	57	01.4	18.5	381
1983	EY1	*	1983	03	11.68972	13	27	29.06	-11	50	18.5	18.0	381
1983	EY1		1983	03	11.75568	13	27	27.11	-11	50	33.2	18.0	381
1983	EZ1	*	1983	03	11.68972	13	29	47.94	-10	15	34.2	18.5	381
1983	EZ1		1983	03	11.75568	13	29	45.89	-10	15	29.9	18.5	381
1983	EA2	*	1983	03	11.68972	13	29	48.46	-07	42	34.3	18.5	381
1983	EA2		1983	03	11.75568	13	29	46.51	-07	42	30.2	18.5	381
1983	EB2	*	1983	03	11.68972	13	29	54.22	-11	05	45.9	18.0	381
1983	EB2		1983	03	11.75568	13	29	52.03	-11	05	52.4	18.0	381
1983	EC2	*	1983	03	11.68972	13	31	05.17	-09	50	31.8	18.5	381
1983	EC2		1983	03	11.75568	13	31	03.02	-09	50	47.2	18.5	381
1983	ED2	*	1983	03	11.68972	13	34	18.99	-11	59	45.7	18.0	381
1983	ED2		1983	03	11.75568	13	34	17.17	-11	59	33.3	18.0	381
1983	EE2	*	1983	03	11.68972	13	34	48.51	-07	53	20.6	18.0	381
1983	EE2		1983	03	11.75568	13	34	45.97	-07	53	13.6	18.0	381
1983	EF2	*	1983	03	11.68972	13	35	43.57	-09	51	04.5	17.0	381
1983	EF2		1983	03	11.75568	13	35	41.79	-09	51	06.8	17.0	381
1983	EG2	*	1983	03	11.68972	13	37	37.82	-07	50	49.3	18.0	381
1983	EG2		1983	03	11.75568	13	37	35.68	-07	50	45.8	18.0	381
1983	EH2	*	1983	03	11.71124	13	41	38.07	-11	34	36.6	18.0	381
1983	EH2		1983	03	11.77721	13	41	36.07	-11	34	34.3	18.0	381
1983	EJ2	*	1983	03	11.71124	13	44	45.28	-11	39	16.3	18.0	381
1983	EJ2		1983	03	11.77721	13	44	43.26	-11	39	24.6	18.0	381
1983	EK2	*	1983	03	11.71124	13	47	36.02	-09	54	43.7	18.0	381
1983	EK2		1983	03	11.77721	13	47	33.60	-09	54	50.0	18.0	381
1984	BE1	*	1984	01	24.43907	05	53	32.65	+32	10	48.1	17.5	381
1984	BE1		1984	01	24.49804	05	53	30.50	+32	10	30.8	17.5	381
1984	BF1	*	1984	01	24.43907	05	53	34.38	+32	02	56.9	16.5	381
1984	BF1		1984	01	24.49804	05	53	32.04	+32	02	51.4	16.5	381
1984	BG1	*	1984	01	24.43907	05	57	06.79	+27	23	36.6	18.0	381
1984	BG1		1984	01	24.49804	05	57	04.54	+27	23	20.8	18.0	381
1984	BH1	*	1984	01	24.43907	05	57	13.82	+32	47	37.6	18.0	381
1984	BH1		1984	01	24.49804	05	57	12.58	+32	47	14.2	18.0	381
1984	BJ1	*	1984	01	24.43907	05	58	23.37	+32	03	46.2	17.5	381
1984	BJ1		1984	01	24.49804	05	58	20.98	+32	03	36.4	17.5	381
1984	BK1	*	1984	01	24.43907	06	08	09.13	+28	28	01.7	18.0	381
1984	BK1		1984	01	24.46541	06	08	08.09	+28	28	01.2	18.0	381
1984	BK1		1984	01	24.49804	06	08	06.87	+28	27	59.0	18.0	381
1984	BK1		1984	01	24.52513	06	08	05.79	+28	27	54.4	18.0	381
1984	BL1	*	1984	01	24.43907	06	08	40.89	+29	01	58.8	18.0	381
1984	BL1		1984	01	24.46541	06	08	39.66	+29	02	03.9	18.0	381
1984	BL1		1984	01	24.49804	06	08	38.43	+29	02	14.0	18.0	381
1984	BL1		1984	01	24.52513	06	08	37.23	+29	02	19.5	18.0	381
1984	BM1	*	1984	01	24.43907	06	08	43.05	+28	18	22.6	18.0	381
1984	BM1		1984	01	24.46541	06	08	42.21	+28	18	22.5	18.0	381
1984	BM1		1984	01	24.49804	06	08	41.13	+28	18	23.2	18.0	381
1984	BM1		1984	01	24.52513	06	08	40.09	+28	18	21.9	18.0	381
1984	BN1	*	1984	01	24.46541	06	08	43.74	+32	53	56.8	18.0	381
1984	BN1		1984	01	24.52513	06	08	41.64	+32	53	32.9	18.0	381
1984	BO1	*	1984	01	24.46541	06	13	01.11	+27	33	57.2	18.0	381
1984	BO1		1984	01	24.52513	06	12	59.23	+27	34	23.3	18.0	381
1984	BP1	*	1984	01	24.46541	06	17	35.01	+30	57	35.7	18.5	381
1984	BP1		1984	01	24.52513	06	17	32.35	+30	57	06.8	18.5	381

1984	BQ1	*	1984	01	24.46541	06	22	53.31	+30	43	18.9	18.5	381
1984	BQ1		1984	01	24.52513	06	22	50.51	+30	43	16.0	18.5	381
1984	BR1	*	1984	01	24.46541	06	30	03.64	+31	04	46.6	18.5	381
1984	BR1		1984	01	24.52513	06	30	00.80	+31	04	44.9	18.5	381
1984	BS1	*	1984	01	24.46541	06	32	21.25	+31	50	45.4	18.0	381
1984	BS1		1984	01	24.52513	06	32	17.82	+31	50	44.3	18.0	381
1985	QN		1983	02	14.52992	09	37	09.59	+15	18	47.6	18.5	381
1985	TQ		1986	11	30.54387	03	46	01.58	+22	08	22.1	16.2	381
1985	TQ		1986	11	30.61612	03	45	59.05	+22	08	13.7	16.2	381
1985	TQ		1986	12	01.48206	03	45	28.90	+22	06	51.1	16.2	381
1985	TQ		1986	12	01.57720	03	45	25.49	+22	06	41.6	16.2	381
1986	VU6		1986	11	30.47304	03	11	02.93	+16	37	09.0	17.5	381
1986	VU6		1986	11	30.57585	03	10	59.83	+16	36	57.9	17.5	381
1986	VU6		1986	12	01.45359	03	10	34.09	+16	35	07.5	17.5	381
1986	VU6		1986	12	01.54804	03	10	31.01	+16	34	55.0	17.5	381
1986	VV6		1986	11	30.47304	03	01	36.46	+13	34	38.2	15.0	381
1986	VV6		1986	11	30.57585	03	01	31.06	+13	34	42.5	15.0	381
1986	VV6		1986	12	01.45359	03	00	47.99	+13	35	22.3	15.0	381
1986	VV6		1986	12	01.54804	03	00	43.21	+13	35	27.4	15.0	381
1986	VW6		1986	11	30.47304	03	04	21.28	+12	31	49.8	17.0	381
1986	VW6		1986	11	30.57585	03	04	16.46	+12	31	44.1	17.0	381
1986	VW6		1986	12	01.45359	03	03	37.47	+12	30	57.0	17.0	381
1986	VW6		1986	12	01.54804	03	03	33.04	+12	30	52.5	17.0	381
1986	WK		1986	11	30.54387	03	39	57.73	+26	23	55.8	16.0	381
1986	WK		1986	11	30.61612	03	39	53.17	+26	23	56.9	16.0	381
1986	WK		1986	12	01.48206	03	39	03.93	+26	24	09.7	16.0	381
1986	WK		1986	12	01.57720	03	38	58.24	+26	24	10.4	16.0	381
1986	WN4		1986	11	30.47304	02	50	36.71	+14	26	56.8	18.0	381
1986	WN4		1986	11	30.57585	02	50	32.03	+14	27	01.5	18.0	381
1986	WN4		1986	12	01.45359	02	49	57.91	+14	27	33.1	18.0	381
1986	WN4		1986	12	01.54804	02	49	54.00	+14	27	36.5	18.0	381
1986	WQ4		1986	11	30.47304	02	53	31.47	+13	19	40.1	18.0	381
1986	WQ4		1986	11	30.57585	02	53	25.91	+13	19	45.5	18.0	381
1986	WQ4		1986	12	01.45359	02	52	42.60	+13	20	34.0	18.0	381
1986	WQ4		1986	12	01.54804	02	52	37.63	+13	20	39.6	18.0	381
1986	WR4		1986	11	30.47304	02	54	23.97	+13	37	04.3	19.0	381
1986	WR4		1986	11	30.57585	02	54	19.25	+13	37	05.7	19.0	381
1986	WR4		1986	12	01.45359	02	53	43.29	+13	37	14.3	19.0	381
1986	WR4		1986	12	01.54804	02	53	39.29	+13	37	16.4	19.0	381
1986	WC8	*	1986	11	29.49458	22	53	46.22	-09	49	35.3	17.5	381
1986	WC8		1986	11	30.43291	22	54	52.76	-09	55	36.6	17.5	381
1986	WC8		1986	11	30.50637	22	54	57.86	-09	56	00.2	17.5	381
1986	WC8		1986	12	01.42373	22	56	04.23	-10	01	33.5	17.5	381
1986	WC8		1986	12	01.51961	22	56	10.88	-10	02	09.1	17.5	381
1986	WD8	*	1986	11	30.43291	22	59	26.15	-07	17	23.9	19.0	381
1986	WD8		1986	11	30.50637	22	59	29.12	-07	17	03.9	19.0	381
1986	WD8		1986	12	01.42373	23	00	07.26	-07	13	06.2	19.0	381
1986	WD8		1986	12	01.51961	23	00	10.90	-07	12	47.0	19.0	381
1986	WE8	*	1986	11	30.43291	23	02	02.26	-07	42	33.9	19.0	381
1986	WE8		1986	11	30.50637	23	02	05.12	-07	42	12.7	19.0	381
1986	WE8		1986	12	01.42373	23	02	39.47	-07	38	06.2	19.0	381
1986	WE8		1986	12	01.51961	23	02	42.93	-07	37	42.7	19.0	381
1986	WF8	*	1986	11	30.47304	02	49	59.53	+17	14	24.5	18.0	381
1986	WF8		1986	11	30.57585	02	49	55.67	+17	13	53.9	18.0	381
1986	WF8		1986	12	01.45359	02	49	25.23	+17	09	16.7	18.0	381
1986	WF8		1986	12	01.54804	02	49	21.77	+17	08	48.2	18.0	381
1986	WG8	*	1986	11	30.47304	02	51	16.47	+14	39	50.6	17.5	381
1986	WG8		1986	11	30.57585	02	51	11.84	+14	39	28.7	17.5	381
1986	WG8		1986	12	01.45359	02	50	36.03	+14	36	14.0	17.5	381

1986	WG8		1986	12	01.54804	02	50	32.04	+14	35	54.1	17.5	381
1986	WH8	*	1986	11	30.47304	02	51	17.57	+16	49	41.3	17.0	381
1986	WH8		1986	11	30.57585	02	51	11.77	+16	49	34.7	17.0	381
1986	WH8		1986	12	01.45359	02	50	25.64	+16	48	40.5	17.0	381
1986	WH8		1986	12	01.54804	02	50	20.43	+16	48	34.7	17.0	381
1986	WJ8	*	1986	11	30.47304	02	51	45.31	+14	13	34.5	19.5	381
1986	WJ8		1986	11	30.57585	02	51	42.44	+14	13	11.4	19.5	381
1986	WJ8		1986	12	01.45359	02	51	16.68	+14	13	35.1	19.5	381
1986	WJ8		1986	12	01.54804	02	51	12.97	+14	13	22.1	19.5	381
1986	WK8	*	1986	11	30.47304	02	51	53.22	+14	15	53.4	19.0	381
1986	WK8		1986	11	30.57585	02	51	49.03	+14	15	40.2	19.0	381
1986	WK8		1986	12	01.45359	02	51	22.36	+14	09	39.8	19.0	381
1986	WK8		1986	12	01.54804	02	51	19.95	+14	09	18.7	19.0	381
1986	WL8	*	1986	11	30.47304	02	52	11.14	+17	25	40.8	18.0	381
1986	WL8		1986	12	01.45359	02	51	19.94	+17	24	38.4	18.0	381
1986	WL8		1986	12	01.54804	02	51	14.74	+17	24	31.1	18.0	381
1986	WM8	*	1986	11	30.47304	02	55	12.85	+13	40	11.4	19.0	381
1986	WM8		1986	11	30.57585	02	55	08.51	+13	39	57.6	19.0	381
1986	WM8		1986	12	01.45359	02	54	33.00	+13	37	56.4	19.0	381
1986	WM8		1986	12	01.54804	02	54	29.03	+13	37	44.1	19.0	381
1986	WN8	*	1986	11	30.47304	02	55	34.24	+12	47	38.0	17.0	381
1986	WN8		1986	11	30.57585	02	55	28.33	+12	47	26.0	17.0	381
1986	WN8		1986	12	01.45359	02	54	41.60	+12	45	51.0	17.0	381
1986	WN8		1986	12	01.54804	02	54	36.36	+12	45	40.8	17.0	381
1986	WO8	*	1986	11	30.47304	02	57	33.57	+14	00	49.0	18.0	381
1986	WO8		1986	11	30.57585	02	57	28.93	+14	00	51.6	18.0	381
1986	WO8		1986	12	01.45359	02	56	52.85	+14	01	14.1	18.0	381
1986	WO8		1986	12	01.54804	02	56	48.70	+14	01	17.3	18.0	381
1986	WP8	*	1986	11	30.47304	02	57	50.13	+13	40	35.6	17.5	381
1986	WP8		1986	11	30.57585	02	57	45.71	+13	40	19.1	17.5	381
1986	WP8		1986	12	01.45359	02	57	09.18	+13	38	00.7	17.5	381
1986	WP8		1986	12	01.54804	02	57	05.13	+13	37	46.9	17.5	381
1986	WQ8	*	1986	11	30.47304	02	58	21.31	+16	55	37.0	17.5	381
1986	WQ8		1986	11	30.57585	02	58	16.82	+16	55	21.4	17.5	381
1986	WQ8		1986	12	01.45359	02	57	40.79	+16	53	06.2	17.5	381
1986	WQ8		1986	12	01.54804	02	57	36.88	+16	52	50.2	17.5	381
1986	WR8	*	1986	11	30.47304	02	58	39.72	+16	04	27.1	18.5	381
1986	WR8		1986	11	30.57585	02	58	35.54	+16	03	43.3	18.5	381
1986	WR8		1986	12	01.45359	02	58	02.82	+15	56	44.1	18.5	381
1986	WR8		1986	12	01.54804	02	57	58.87	+15	55	58.1	18.5	381
1986	WS8	*	1986	11	30.47304	02	58	51.47	+17	27	59.5	18.5	381
1986	WS8		1986	11	30.57585	02	58	46.69	+17	27	37.4	18.5	381
1986	WS8		1986	12	01.45359	02	58	08.48	+17	24	10.5	18.5	381
1986	WS8		1986	12	01.54804	02	58	04.28	+17	23	50.8	18.5	381
1986	WT8	*	1986	11	30.47304	02	59	52.55	+13	42	00.0	18.5	381
1986	WT8		1986	11	30.57585	02	59	46.35	+13	42	21.6	18.5	381
1986	WT8		1986	12	01.45359	02	58	54.37	+13	45	32.3	18.5	381
1986	WT8		1986	12	01.54804	02	58	48.56	+13	45	53.3	18.5	381
1986	WU8	*	1986	11	30.47304	03	00	16.41	+16	26	10.2	18.0	381
1986	WU8		1986	11	30.57585	03	00	10.41	+16	25	45.8	18.0	381
1986	WU8		1986	12	01.45359	02	59	26.76	+16	22	37.9	18.0	381
1986	WU8		1986	12	01.54804	02	59	21.91	+16	22	17.2	18.0	381
1986	WV8	*	1986	11	30.47304	03	00	37.12	+17	14	46.0	18.5	381
1986	WV8		1986	11	30.57585	03	00	34.46	+17	14	06.4	18.5	381
1986	WV8		1986	12	01.45359	03	00	15.54	+17	08	51.6	18.5	381
1986	WV8		1986	12	01.54804	03	00	13.09	+17	08	18.6	18.5	381
1986	WW8	*	1986	11	30.47304	03	01	42.70	+14	49	16.0	18.0	381
1986	WW8		1986	11	30.57585	03	01	39.87	+14	48	48.5	18.0	381
1986	WW8		1986	12	01.45359	03	01	14.99	+14	44	32.8	18.0	381

1986	WW8		1986	12	01.54804	03	01	12.33	+14	44	06.2	18.0	381
1986	WX8	*	1986	11	30.47304	03	02	51.79	+17	13	17.0	17.5	381
1986	WX8		1986	11	30.57585	03	02	47.58	+17	12	11.5	17.5	381
1986	WX8		1986	12	01.45359	03	02	13.10	+17	02	52.9	17.5	381
1986	WX8		1986	12	01.54804	03	02	08.98	+17	01	51.7	17.5	381
1986	WY8	*	1986	11	30.47304	03	03	27.73	+15	04	32.1	19.5	381
1986	WY8		1986	11	30.57585	03	03	21.99	+15	04	28.9	19.5	381
1986	WY8		1986	12	01.45359	03	02	34.56	+15	03	49.0	19.5	381
1986	WY8		1986	12	01.54804	03	02	29.44	+15	03	44.9	19.5	381
1986	WZ8	*	1986	11	30.47304	03	04	09.73	+17	21	37.6	18.5	381
1986	WZ8		1986	11	30.57585	03	04	04.70	+17	21	15.4	18.5	381
1986	WZ8		1986	12	01.45359	03	03	25.89	+17	18	12.9	18.5	381
1986	WZ8		1986	12	01.54804	03	03	21.25	+17	17	52.3	18.5	381
1986	WA9	*	1986	11	30.47304	03	04	38.70	+12	28	09.3	17.5	381
1986	WA9		1986	11	30.57585	03	04	35.52	+12	28	04.4	17.5	381
1986	WA9		1986	12	01.45359	03	04	09.19	+12	27	25.6	17.5	381
1986	WA9		1986	12	01.54804	03	04	06.19	+12	27	20.9	17.5	381
1986	WB9	*	1986	11	30.47304	03	04	49.01	+15	05	50.2	17.5	381
1986	WB9		1986	11	30.57585	03	04	43.89	+15	05	14.3	17.5	381
1986	WB9		1986	12	01.45359	03	04	02.70	+15	00	15.0	17.5	381
1986	WB9		1986	12	01.54804	03	03	58.08	+14	59	42.9	17.5	381
1986	WC9	*	1986	11	30.47304	03	04	50.35	+13	41	53.2	19.0	381
1986	WC9		1986	11	30.57585	03	04	45.33	+13	41	54.5	19.0	381
1986	WC9		1986	12	01.45359	03	04	04.35	+13	42	02.2	19.0	381
1986	WC9		1986	12	01.54804	03	03	59.75	+13	42	03.8	19.0	381
1986	WD9	*	1986	11	30.47304	03	05	15.06	+15	14	55.3	19.0	381
1986	WD9		1986	11	30.57585	03	05	10.88	+15	14	41.1	19.0	381
1986	WD9		1986	12	01.45359	03	04	36.53	+15	12	37.0	19.0	381
1986	WD9		1986	12	01.54804	03	04	32.47	+15	12	21.7	19.0	381
1986	WE9	*	1986	11	30.47304	03	05	28.79	+13	33	48.4	18.5	381
1986	WE9		1986	11	30.57585	03	05	24.50	+13	32	49.9	18.5	381
1986	WE9		1986	12	01.45359	03	04	52.19	+13	25	10.6	18.5	381
1986	WE9		1986	12	01.54804	03	04	48.55	+13	24	22.0	18.5	381
1986	WF9	*	1986	11	30.47304	03	05	51.45	+13	54	23.7	19.0	381
1986	WF9		1986	11	30.57585	03	05	46.54	+13	54	10.4	19.0	381
1986	WF9		1986	12	01.45359	03	05	06.74	+13	51	56.5	19.0	381
1986	WF9		1986	12	01.54804	03	05	02.26	+13	51	42.2	19.0	381
1986	WG9	*	1986	11	30.47304	03	06	12.13	+13	15	04.9	18.0	381
1986	WG9		1986	11	30.57585	03	06	09.09	+13	14	35.0	18.0	381
1986	WG9		1986	12	01.45359	03	05	44.18	+13	10	25.1	18.0	381
1986	WG9		1986	12	01.54804	03	05	41.39	+13	09	58.3	18.0	381
1986	WH9	*	1986	11	30.47304	03	06	14.75	+16	54	05.6	17.5	381
1986	WH9		1986	11	30.57585	03	06	10.35	+16	53	31.7	17.5	381
1986	WH9		1986	12	01.45359	03	05	32.60	+16	49	34.6	17.5	381
1986	WH9		1986	12	01.54804	03	05	27.83	+16	49	03.9	17.5	381
1986	WJ9	*	1986	11	30.47304	03	06	29.10	+17	16	59.8	18.0	381
1986	WJ9		1986	11	30.57585	03	06	23.36	+17	17	01.0	18.0	381
1986	WJ9		1986	12	01.45359	03	05	35.38	+17	17	11.8	18.0	381
1986	WJ9		1986	12	01.54804	03	05	29.61	+17	17	10.8	18.0	381
1986	WK9	*	1986	11	30.47304	03	07	26.17	+13	52	35.7	18.5	381
1986	WK9		1986	11	30.57585	03	07	20.84	+13	52	16.3	18.5	381
1986	WK9		1986	12	01.45359	03	06	41.00	+13	49	33.9	18.5	381
1986	WK9		1986	12	01.54804	03	06	36.61	+13	49	18.2	18.5	381
1986	WL9	*	1986	11	30.47304	03	07	54.43	+13	27	10.4	18.0	381
1986	WL9		1986	11	30.57585	03	07	47.60	+13	27	20.3	18.0	381
1986	WL9		1986	12	01.45359	03	06	52.59	+13	28	55.2	18.0	381
1986	WL9		1986	12	01.54804	03	06	46.45	+13	29	06.4	18.0	381
1986	WM9	*	1986	11	30.47304	03	08	07.46	+13	08	28.0	19.0	381
1986	WM9		1986	11	30.57585	03	08	02.71	+13	07	55.4	19.0	381

1986	WM9		1986	12	01.45359	03	07	26.28	+13	03	49.4	19.0	381
1986	WM9		1986	12	01.54804	03	07	22.33	+13	03	25.2	19.0	381
1986	WN9	*	1986	11	30.47304	03	08	19.39	+15	07	18.0	18.0	381
1986	WN9		1986	11	30.57585	03	08	14.83	+15	07	05.3	18.0	381
1986	WN9		1986	12	01.45359	03	07	34.49	+15	05	41.5	18.0	381
1986	WN9		1986	12	01.54804	03	07	29.93	+15	05	31.8	18.0	381
1986	WO9	*	1986	11	30.47304	03	09	25.66	+14	13	10.0	18.0	381
1986	WO9		1986	11	30.57585	03	09	20.72	+14	12	48.8	18.0	381
1986	WO9		1986	12	01.45359	03	08	40.52	+14	09	44.2	18.0	381
1986	WO9		1986	12	01.54804	03	08	36.11	+14	09	24.7	18.0	381
1986	WP9	*	1986	11	30.47304	03	09	36.66	+13	21	28.9	19.0	381
1986	WP9		1986	11	30.57585	03	09	31.61	+13	21	35.8	19.0	381
1986	WP9		1986	12	01.45359	03	08	47.48	+13	22	34.3	19.0	381
1986	WP9		1986	12	01.54804	03	08	42.93	+13	22	31.3	19.0	381
1986	WQ9	*	1986	11	30.47304	03	10	14.32	+17	22	02.1	17.5	381
1986	WQ9		1986	11	30.57585	03	10	08.20	+17	21	53.6	17.5	381
1986	WQ9		1986	12	01.45359	03	09	24.58	+17	19	47.5	17.5	381
1986	WQ9		1986	12	01.54804	03	09	20.60	+17	19	42.4	17.5	381
1986	WR9	*	1986	11	30.47304	03	10	26.01	+12	49	21.2	17.5	381
1986	WR9		1986	11	30.57585	03	10	21.43	+12	49	06.7	17.5	381
1986	WR9		1986	12	01.45359	03	09	45.46	+12	47	15.3	17.5	381
1986	WR9		1986	12	01.54804	03	09	41.31	+12	47	05.7	17.5	381
1986	WS9	*	1986	11	30.47304	03	10	42.39	+14	15	07.4	18.0	381
1986	WS9		1986	11	30.57585	03	10	36.76	+14	15	20.9	18.0	381
1986	WS9		1986	12	01.45359	03	09	50.57	+14	17	08.6	18.0	381
1986	WS9		1986	12	01.54804	03	09	45.35	+14	17	21.6	18.0	381
1986	WT9	*	1986	11	30.47304	03	11	09.54	+16	15	04.2	17.0	381
1986	WT9		1986	11	30.57585	03	11	04.27	+16	15	13.8	17.0	381
1986	WT9		1986	12	01.45359	03	10	20.48	+16	16	27.3	17.0	381
1986	WT9		1986	12	01.54804	03	10	15.46	+16	16	34.9	17.0	381
1986	WU9	*	1986	11	30.47304	03	11	33.06	+16	05	20.2	17.5	381
1986	WU9		1986	11	30.57585	03	11	28.99	+16	05	11.1	17.5	381
1986	WU9		1986	12	01.45359	03	10	53.85	+16	04	04.1	17.5	381
1986	WU9		1986	12	01.54804	03	10	49.78	+16	03	58.0	17.5	381
1986	WV9	*	1986	11	30.54387	03	29	04.55	+23	12	27.1	17.5	381
1986	WV9		1986	11	30.61612	03	28	59.75	+23	12	08.3	17.5	381
1986	WV9		1986	12	01.48206	03	28	05.47	+23	08	33.4	17.5	381
1986	WV9		1986	12	01.57720	03	27	59.19	+23	08	11.0	17.5	381
1986	WW9	*	1986	11	30.54387	03	30	13.14	+23	06	02.4	18.0	381
1986	WW9		1986	11	30.61612	03	30	08.74	+23	05	07.7	18.0	381
1986	WW9		1986	12	01.48206	03	29	27.77	+22	56	28.5	18.0	381
1986	WW9		1986	12	01.57720	03	29	22.99	+22	55	31.1	18.0	381
1986	WX9	*	1986	11	30.54387	03	30	51.62	+24	32	51.8	18.0	381
1986	WX9		1986	11	30.61612	03	30	46.82	+24	32	43.4	18.0	381
1986	WX9		1986	12	01.48206	03	29	51.85	+24	31	09.2	18.0	381
1986	WX9		1986	12	01.57720	03	29	45.58	+24	30	57.4	18.0	381
1986	WY9	*	1986	11	30.54387	03	31	50.15	+24	11	18.0	18.5	381
1986	WY9		1986	11	30.61612	03	31	46.10	+24	11	00.7	18.5	381
1986	WY9		1986	12	01.48206	03	30	59.54	+24	07	17.6	18.5	381
1986	WY9		1986	12	01.57720	03	30	54.40	+24	06	53.1	18.5	381
1986	WZ9	*	1986	11	30.54387	03	32	02.09	+22	51	48.9	18.5	381
1986	WZ9		1986	11	30.61612	03	31	57.52	+22	51	32.0	18.5	381
1986	WZ9		1986	12	01.48206	03	31	01.54	+22	47	45.3	18.5	381
1986	WZ9		1986	12	01.57720	03	30	55.18	+22	47	19.0	18.5	381
1986	WA10	*	1986	11	30.54387	03	32	36.54	+24	46	59.5	17.5	381
1986	WA10		1986	11	30.61612	03	32	33.03	+24	46	19.5	17.5	381
1986	WA10		1986	12	01.48206	03	31	51.99	+24	38	29.5	17.5	381
1986	WA10		1986	12	01.57720	03	31	47.58	+24	37	37.3	17.5	381
1986	WB10	*	1986	11	30.54387	03	32	46.95	+24	49	28.3	19.0	381

1986	WB10	1986	11	30.61612	03	32	42.99	+24	49	16.6	19.0	381
1986	WB10	1986	12	01.48206	03	31	55.39	+24	46	40.5	19.0	381
1986	WB10	1986	12	01.57720	03	31	50.30	+24	46	24.0	19.0	381
1986	WC10*	1986	11	30.54387	03	33	19.84	+22	48	06.6	18.0	381
1986	WC10	1986	11	30.61612	03	33	14.89	+22	47	47.2	18.0	381
1986	WC10	1986	12	01.48206	03	32	20.64	+22	44	07.8	18.0	381
1986	WC10	1986	12	01.57720	03	32	14.57	+22	43	43.9	18.0	381
1986	WD10*	1986	11	30.54387	03	33	30.20	+23	38	01.8	17.0	381
1986	WD10	1986	11	30.61612	03	33	25.50	+23	37	47.3	17.0	381
1986	WD10	1986	12	01.48206	03	32	30.82	+23	35	23.7	17.0	381
1986	WD10	1986	12	01.57720	03	32	24.53	+23	35	07.9	17.0	381
1986	WE10*	1986	11	30.54387	03	34	02.30	+24	40	08.6	18.0	381
1986	WE10	1986	11	30.61612	03	33	57.64	+24	39	55.3	18.0	381
1986	WE10	1986	12	01.48206	03	33	04.85	+24	37	13.8	18.0	381
1986	WE10	1986	12	01.57720	03	32	59.18	+24	36	55.2	18.0	381
1986	WF10*	1986	11	30.54387	03	34	14.84	+27	16	39.3	18.0	381
1986	WF10	1986	11	30.61612	03	34	10.07	+27	16	45.1	18.0	381
1986	WF10	1986	12	01.48206	03	33	14.52	+27	17	51.6	18.0	381
1986	WF10	1986	12	01.57720	03	33	08.11	+27	17	58.7	18.0	381
1986	WG10*	1986	11	30.54387	03	34	22.29	+25	39	08.2	18.0	381
1986	WG10	1986	11	30.61612	03	34	18.37	+25	38	43.0	18.0	381
1986	WG10	1986	12	01.48206	03	33	35.02	+25	33	30.4	18.0	381
1986	WG10	1986	12	01.57720	03	33	30.14	+25	32	56.5	18.0	381
1986	WH10*	1986	11	30.54387	03	34	48.31	+23	49	26.4	18.0	381
1986	WH10	1986	11	30.61612	03	34	44.46	+23	48	55.9	18.0	381
1986	WH10	1986	12	01.48206	03	33	54.86	+23	42	53.2	18.0	381
1986	WH10	1986	12	01.57720	03	33	49.26	+23	42	13.1	18.0	381
1986	WJ10*	1986	11	30.54387	03	35	09.72	+27	11	43.8	17.0	381
1986	WJ10	1986	11	30.61612	03	35	05.39	+27	11	00.5	17.0	381
1986	WJ10	1986	12	01.48206	03	34	18.97	+27	02	43.9	17.0	381
1986	WJ10	1986	12	01.57720	03	34	13.57	+27	01	50.4	17.0	381
1986	WK10*	1986	11	30.54387	03	35	26.93	+25	28	18.7	18.5	381
1986	WK10	1986	11	30.61612	03	35	23.23	+25	28	03.0	18.5	381
1986	WK10	1986	12	01.48206	03	34	40.80	+25	24	49.5	18.5	381
1986	WK10	1986	12	01.57720	03	34	35.94	+25	24	26.5	18.5	381
1986	WL10*	1986	11	30.54387	03	36	35.28	+22	28	12.3	16.0	381
1986	WL10	1986	11	30.61612	03	36	31.43	+22	27	40.3	16.0	381
1986	WL10	1986	12	01.48206	03	35	52.13	+22	21	47.7	16.0	381
1986	WL10	1986	12	01.57720	03	35	47.53	+22	21	09.3	16.0	381
1986	WM10*	1986	11	30.54387	03	37	18.73	+23	08	44.7	17.5	381
1986	WM10	1986	11	30.61612	03	37	14.49	+23	08	45.5	17.5	381
1986	WM10	1986	12	01.48206	03	36	25.46	+23	08	56.0	17.5	381
1986	WM10	1986	12	01.57720	03	36	19.69	+23	08	56.9	17.5	381
1986	WN10*	1986	11	30.54387	03	39	47.25	+23	40	06.8	18.0	381
1986	WN10	1986	11	30.61612	03	39	42.81	+23	39	58.5	18.0	381
1986	WN10	1986	12	01.48206	03	38	54.39	+23	38	10.0	18.0	381
1986	WN10	1986	12	01.57720	03	38	48.91	+23	37	58.6	18.0	381
1986	WO10*	1986	11	30.54387	03	42	21.06	+24	41	35.3	18.0	381
1986	WO10	1986	11	30.61612	03	42	16.64	+24	41	26.1	18.0	381
1986	WO10	1986	12	01.48206	03	41	30.01	+24	39	29.3	18.0	381
1986	WO10	1986	12	01.57720	03	41	24.72	+24	39	15.4	18.0	381
1986	WP10*	1986	11	30.54387	03	42	41.68	+27	16	05.9	17.0	381
1986	WP10	1986	11	30.61612	03	42	36.47	+27	15	56.1	17.0	381
1986	WP10	1986	12	01.48206	03	41	35.06	+27	14	01.7	17.0	381
1986	WP10	1986	12	01.57720	03	41	28.14	+27	13	49.5	17.0	381
1986	WQ10*	1986	11	30.54387	03	42	56.90	+22	20	05.7	18.5	381
1986	WQ10	1986	11	30.61612	03	42	52.65	+22	19	48.5	18.5	381
1986	WQ10	1986	12	01.48206	03	42	03.97	+22	16	19.9	18.5	381
1986	WQ10	1986	12	01.57720	03	41	58.37	+22	15	57.9	18.5	381

1986	WR10*	1986	11	30.54387	03	43	37.95	+26	40	14.4	17.5	381
1986	WR10	1986	11	30.61612	03	43	33.34	+26	39	54.6	17.5	381
1986	WR10	1986	12	01.48206	03	42	41.37	+26	36	05.9	17.5	381
1986	WR10	1986	12	01.57720	03	42	35.36	+26	35	39.5	17.5	381
1986	WS10*	1986	11	30.54387	03	44	07.09	+22	56	24.9	17.5	381
1986	WS10	1986	11	30.61612	03	44	03.04	+22	56	26.6	17.5	381
1986	WS10	1986	12	01.48206	03	43	15.92	+22	56	46.2	17.5	381
1986	WS10	1986	12	01.57720	03	43	10.62	+22	56	49.1	17.5	381
1986	WT10*	1986	11	30.54387	03	44	54.33	+27	34	32.8	17.0	381
1986	WT10	1986	11	30.61612	03	44	49.35	+27	34	32.9	17.0	381
1986	WT10	1986	12	01.48206	03	43	53.44	+27	34	28.9	17.0	381
1986	WT10	1986	12	01.57720	03	43	47.15	+27	34	28.6	17.0	381
1986	WU10*	1986	11	30.54387	03	45	22.43	+23	19	27.3	19.0	381
1986	WU10	1986	11	30.61612	03	45	17.80	+23	18	49.2	19.0	381
1986	WU10	1986	12	01.48206	03	44	24.55	+23	11	29.3	19.0	381
1986	WU10	1986	12	01.57720	03	44	18.06	+23	10	34.8	19.0	381
1986	WV10*	1986	11	30.54387	03	45	45.25	+22	38	55.3	18.0	381
1986	WV10	1986	11	30.61612	03	45	40.88	+22	38	33.2	18.0	381
1986	WV10	1986	12	01.48206	03	44	54.26	+22	34	16.7	18.0	381
1986	WV10	1986	12	01.57720	03	44	48.77	+22	33	48.4	18.0	381
1986	WW10*	1986	11	30.54387	03	46	04.32	+22	24	46.5	16.5	381
1986	WW10	1986	11	30.61612	03	46	00.20	+22	24	34.2	16.5	381
1986	WW10	1986	12	01.48206	03	45	13.73	+22	22	21.1	16.5	381
1986	WW10	1986	12	01.57720	03	45	08.40	+22	22	05.1	16.5	381
1986	WX10*	1986	11	30.54387	03	46	42.02	+23	16	37.4	16.0	381
1986	WX10	1986	11	30.61612	03	46	37.25	+23	16	15.7	16.0	381
1986	WX10	1986	12	01.48206	03	45	44.82	+23	12	05.6	16.0	381
1986	WX10	1986	12	01.57720	03	45	38.67	+23	11	38.2	16.0	381
1986	WY10*	1986	11	30.54387	03	47	05.55	+22	58	55.9	18.5	381
1986	WY10	1986	11	30.61612	03	47	01.19	+22	58	57.2	18.5	381
1986	WY10	1986	12	01.48206	03	46	13.00	+22	59	15.4	18.5	381
1986	WY10	1986	12	01.57720	03	46	07.59	+22	59	18.7	18.5	381
1986	WZ10*	1986	11	30.54387	03	47	31.86	+23	54	15.5	17.5	381
1986	WZ10	1986	11	30.61612	03	47	26.85	+23	54	25.3	17.5	381
1986	WZ10	1986	12	01.48206	03	46	29.40	+23	56	15.6	17.5	381
1986	WZ10	1986	12	01.57720	03	46	22.90	+23	56	28.2	17.5	381
1986	WA11*	1986	11	30.54387	03	48	11.29	+24	56	24.3	19.0	381
1986	WA11	1986	11	30.61612	03	48	08.75	+24	56	16.6	19.0	381
1986	WA11	1986	12	01.48206	03	47	38.63	+24	54	50.3	19.0	381
1986	WA11	1986	12	01.57720	03	47	35.48	+24	54	39.9	19.0	381
1986	WB11*	1986	11	30.54387	03	48	13.75	+23	41	27.1	18.0	381
1986	WB11	1986	11	30.61612	03	48	09.15	+23	41	15.7	18.0	381
1986	WB11	1986	12	01.48206	03	47	16.38	+23	38	56.5	18.0	381
1986	WB11	1986	12	01.57720	03	47	10.30	+23	38	40.7	18.0	381
1986	WC11*	1986	11	30.54387	03	50	57.67	+27	19	30.0	18.0	381
1986	WC11	1986	11	30.61612	03	50	52.48	+27	19	24.6	18.0	381
1986	WC11	1986	12	01.48206	03	49	52.65	+27	17	57.5	18.0	381
1986	WC11	1986	12	01.57720	03	49	45.72	+27	17	48.3	18.0	381
1986	XF1	1986	11	30.54387	03	44	39.55	+23	20	54.2	16.0	381
1986	XF1	1986	11	30.61612	03	44	35.16	+23	20	32.4	16.0	381
1986	XF1	1986	12	01.48206	03	43	45.89	+23	16	12.1	16.0	381
1986	XF1	1986	12	01.57720	03	43	40.20	+23	15	44.4	16.0	381
1986	XH1	1986	11	30.61612	03	51	53.49	+24	33	18.1	16.0	381
1986	XH1	1986	12	01.48206	03	50	55.21	+24	28	52.4	16.0	381
1986	XH1	1986	12	01.57720	03	50	48.51	+24	28	22.5	16.0	381
1986	XR5	1986	11	30.54387	03	49	51.84	+23	57	38.9	16.0	381
1986	XR5	1986	11	30.61612	03	49	47.68	+23	57	32.9	16.0	381
1986	XR5	1986	12	01.48206	03	49	00.59	+23	56	23.5	16.0	381
1986	XR5	1986	12	01.57720	03	48	55.18	+23	56	15.6	16.0	381

1986	XS5	*	1986	12	01.45359	03	11	54.46	+16	18	34.4	17.0	381
1986	XS5		1986	12	01.54804	03	11	49.48	+16	18	39.5	17.0	381
1986	XT5	*	1986	12	01.48206	03	47	16.43	+27	35	05.3	17.0	381
1986	XT5		1986	12	01.57720	03	47	10.41	+27	34	28.2	17.0	381
41			1986	11	29.49458	23	00	13.94	-07	29	01.1	13.0	381
41			1986	11	30.43291	23	00	44.50	-07	28	19.2	13.0	381
41			1986	11	30.50637	23	00	46.94	-07	28	14.8	13.0	381
41			1986	12	01.42373	23	01	17.74	-07	27	26.8	13.0	381
41			1986	12	01.51961	23	01	20.63	-07	27	23.5	13.0	381
116			1986	11	29.49458	22	59	38.99	-10	11	31.1	15.0	381
116			1986	11	30.43291	23	00	06.73	-10	07	20.7	15.0	381
116			1986	11	30.50637	23	00	08.88	-10	07	00.0	15.0	381
116			1986	12	01.42373	23	00	36.87	-10	02	46.6	15.0	381
116			1986	12	01.51961	23	00	39.52	-10	02	23.1	15.0	381
130			1983	02	14.52992	09	50	30.81	+13	00	03.0	12.5	381
138			1986	11	30.47304	02	57	50.70	+16	55	55.9	13.0	381
138			1986	11	30.57585	02	57	45.25	+16	55	42.6	13.0	381
138			1986	12	01.45359	02	57	01.88	+16	53	51.2	13.0	381
138			1986	12	01.54804	02	56	57.01	+16	53	39.2	13.0	381
165			1984	01	24.46541	06	17	31.18	+28	49	43.2	12.9	381
165			1984	01	24.52513	06	17	28.64	+28	49	32.7	12.9	381
207			1984	01	24.43907	05	53	56.03	+29	19	36.4	13.6	381
207			1984	01	24.49804	05	53	53.52	+29	19	30.8	13.6	381
279			1986	11	30.47304	02	54	23.30	+15	27	11.5	14.6	381
279			1986	11	30.57585	02	54	19.80	+15	26	59.4	14.6	381
279			1986	12	01.45359	02	53	51.49	+15	25	20.1	14.6	381
279			1986	12	01.54804	02	53	48.38	+15	25	10.1	14.6	381
283			1984	01	24.43907	05	47	16.54	+28	17	14.1	13.7	381
283			1984	01	24.49804	05	47	14.50	+28	17	05.1	13.7	381
290			1983	03	11.68972	13	39	53.97	-10	10	28.9	15.6	381
290			1983	03	11.71124	13	39	51.61	-10	10	40.7	15.6	381
290			1983	03	11.75568	13	39	48.72	-10	11	06.0	15.6	381
290			1983	03	11.77721	13	39	47.36	-10	11	17.0	15.6	381
314			1986	11	29.49458	23	00	54.62	-10	21	06.6	16.5	381
314			1986	11	30.43291	23	01	46.88	-10	18	16.4	16.5	381
314			1986	11	30.50637	23	01	50.93	-10	18	01.0	16.5	381
314			1986	12	01.42373	23	02	42.76	-10	15	07.3	16.5	381
314			1986	12	01.51961	23	02	47.94	-10	14	51.5	16.5	381
332			1986	11	29.49458	23	06	11.39	-07	13	13.5	16.0	381
332			1986	11	30.43291	23	06	53.66	-07	07	33.0	16.0	381
332			1986	11	30.50637	23	06	57.08	-07	07	03.8	16.0	381
332			1986	12	01.42373	23	07	39.45	-07	01	28.8	16.0	381
332			1986	12	01.51961	23	07	43.57	-07	00	51.2	16.0	381
333			1983	02	14.52992	09	42	45.22	+16	37	45.1	15.1	381
551			1983	03	11.71124	13	59	46.90	-12	20	58.3	15.1	381
551			1983	03	11.77721	13	59	45.45	-12	20	52.3	15.1	381
589			1986	11	29.49458	23	07	59.91	-07	07	23.1	15.5	381
589			1986	11	30.43291	23	08	34.03	-07	05	50.3	15.5	381
589			1986	11	30.50637	23	08	36.74	-07	05	40.1	15.5	381
589			1986	12	01.42373	23	09	11.30	-07	04	06.7	15.5	381
589			1986	12	01.51961	23	09	14.61	-07	03	54.1	15.5	381
632			1986	11	29.49458	23	00	51.18	-05	57	24.5	18.5	381
632			1986	11	30.43291	23	01	27.85	-05	53	11.3	18.5	381
632			1986	11	30.50637	23	01	30.73	-05	52	53.3	18.5	381
632			1986	12	01.42373	23	02	07.35	-05	48	38.8	18.5	381
632			1986	12	01.51961	23	02	10.61	-05	48	12.6	18.5	381
635			1986	11	29.49458	22	57	46.53	-06	32	57.5	16.0	381
635			1986	11	30.43291	22	58	25.57	-06	31	37.5	16.0	381
635			1986	11	30.50637	22	58	28.65	-06	31	33.0	16.0	381

635	1986	12	01.42373	22	59	07.68	-06	30	03.6	16.0	381
635	1986	12	01.51961	22	59	11.45	-06	29	56.4	16.0	381
651	1986	11	30.54387	03	36	25.10	+26	14	47.0	14.0	381
651	1986	11	30.61612	03	36	20.78	+26	14	46.5	14.0	381
651	1986	12	01.48206	03	35	31.48	+26	14	37.3	14.0	381
651	1986	12	01.57720	03	35	25.77	+26	14	37.1	14.0	381
710	1986	11	30.47304	03	08	40.28	+15	09	57.9	16.0	381
710	1986	11	30.57585	03	08	36.26	+15	09	39.3	16.0	381
710	1986	12	01.45359	03	07	59.43	+15	07	25.7	16.0	381
710	1986	12	01.54804	03	07	55.24	+15	07	10.3	16.0	381
812	1983	03	11.68972	13	18	19.21	-10	03	47.4	16.9	381
812	1983	03	11.75568	13	18	16.38	-10	03	46.9	16.9	381
819	1984	01	24.46541	06	29	29.26	+28	51	20.1	16.2	381
819	1984	01	24.52513	06	29	25.60	+28	51	13.7	16.2	381
1004	1983	03	11.66611	12	58	12.24	-03	46	38.3	16.0	381
1004	1983	03	11.73347	12	58	10.00	-03	46	21.8	16.0	381
1122	1984	01	23.43634	04	10	12.81	+24	05	21.6	15.0	381
1122	1984	01	23.51775	04	10	15.07	+24	05	30.6	15.0	381
1132	1984	01	24.46541	06	16	42.31	+32	44	35.9	16.8	381
1132	1984	01	24.52513	06	16	39.49	+32	44	31.6	16.8	381
1259	1983	03	11.71124	13	47	31.91	-07	53	04.8	15.6	381
1259	1983	03	11.77721	13	47	30.66	-07	52	55.7	15.6	381
1369	1983	03	11.66611	12	49	05.38	-03	17	39.4	16.0	381
1369	1983	03	11.73347	12	49	03.02	-03	17	10.6	16.0	381
1394	1986	11	29.49458	22	59	08.02	-07	01	43.8	18.0	381
1394	1986	11	30.43291	23	00	00.46	-06	57	02.3	18.0	381
1394	1986	11	30.50637	23	00	04.56	-06	56	38.7	18.0	381
1394	1986	12	01.42373	23	00	56.88	-06	51	56.5	18.0	381
1394	1986	12	01.51961	23	01	01.93	-06	51	25.3	18.0	381
1442	1983	03	11.68972	13	36	13.53	-10	49	59.9	17.0	381
1442	1983	03	11.75568	13	36	11.71	-10	49	48.2	17.0	381
1443	1986	11	29.49458	22	56	33.70	-07	06	41.8	17.5	381
1443	1986	11	30.43291	22	57	14.99	-07	02	48.6	17.5	381
1443	1986	11	30.50637	22	57	18.15	-07	02	29.6	17.5	381
1443	1986	12	01.42373	22	57	59.48	-06	58	37.4	17.5	381
1443	1986	12	01.51961	22	58	03.53	-06	58	15.2	17.5	381
1447	1983	03	11.71124	13	47	25.70	-08	14	53.7	16.4	381
1447	1983	03	11.77721	13	47	23.87	-08	14	47.8	16.4	381
1462	1983	02	14.52992	09	39	51.29	+15	19	13.2	16.2	381
1581	1986	11	30.47304	03	05	49.29	+14	37	47.2	15.1	381
1581	1986	11	30.57585	03	05	44.79	+14	37	33.4	15.1	381
1581	1986	12	01.45359	03	05	07.62	+14	35	35.8	15.1	381
1581	1986	12	01.54804	03	05	03.52	+14	35	22.5	15.1	381
1632	1986	11	29.49458	22	49	52.48	-05	47	58.1	18.0	381
1632	1986	11	30.43291	22	50	52.62	-05	44	23.9	18.0	381
1632	1986	11	30.50637	22	50	57.25	-05	44	04.3	18.0	381
1632	1986	12	01.42373	22	51	57.00	-05	40	25.3	18.0	381
1632	1986	12	01.51961	22	52	02.96	-05	40	02.2	18.0	381
1674	1983	02	14.52992	09	43	15.12	+16	52	54.8	15.6	381
1699	1983	03	11.68972	13	27	03.03	-12	26	28.1	17.6	381
1699	1983	03	11.75568	13	27	00.76	-12	26	19.6	17.6	381
1831	1986	11	30.47304	03	10	31.92	+15	11	10.6	16.5	381
1831	1986	11	30.57585	03	10	26.37	+15	11	00.6	16.5	381
1831	1986	12	01.45359	03	09	34.88	+15	09	51.9	16.5	381
1831	1986	12	01.54804	03	09	29.06	+15	09	44.4	16.5	381
1835	1983	03	11.68972	13	20	15.09	-09	54	36.5	17.1	381
1835	1983	03	11.75568	13	20	12.89	-09	54	25.2	17.1	381
2004	1984	01	24.43907	05	57	35.51	+27	48	43.0	15.6	381
2004	1984	01	24.49804	05	57	33.24	+27	48	37.5	15.6	381

2072	1983	03	11.71124	13	53	27.89	-10	23	23.1	17.0	381
2072	1983	03	11.77721	13	53	25.93	-10	23	17.8	17.0	381
2156	1983	03	11.68972	13	33	07.44	-09	06	49.0	17.7	381
2156	1983	03	11.75568	13	33	04.82	-09	06	40.4	17.7	381
2281	1983	03	11.71124	13	50	44.45	-11	55	23.8	17.7	381
2281	1983	03	11.77721	13	50	43.10	-11	55	14.8	17.7	381
2305	1983	03	11.66611	13	05	19.28	-03	18	44.2	16.5	381
2305	1983	03	11.73347	13	05	16.58	-03	18	34.5	16.5	381
2336	1983	03	11.71124	13	54	13.20	-07	52	10.7	17.0	381
2336	1983	03	11.77721	13	54	11.91	-07	52	03.1	17.0	381
2373	1983	02	14.52992	09	45	01.65	+13	01	23.9	18.0	381
2395	1983	03	11.68972	13	24	19.36	-08	24	19.6	18.0	381
2395	1983	03	11.75568	13	24	17.43	-08	24	08.7	18.0	381
2413	1986	11	30.43291	22	51	39.73	-10	24	48.0	18.0	381
2413	1986	11	30.50637	22	51	43.04	-10	24	36.0	18.0	381
2413	1986	12	01.42373	22	52	26.21	-10	21	50.7	18.0	381
2413	1986	12	01.51961	22	52	30.50	-10	21	34.3	18.0	381
2433	1986	11	29.49458	23	09	35.01	-05	14	55.0	18.5	381
2433	1986	11	30.43291	23	10	16.42	-05	13	17.8	18.5	381
2433	1986	11	30.50637	23	10	19.79	-05	13	13.8	18.5	381
2433	1986	12	01.42373	23	11	00.94	-05	11	27.5	18.5	381
2433	1986	12	01.51961	23	11	04.79	-05	11	24.9	18.5	381
2485	1983	02	14.52992	09	33	43.90	+17	44	07.0	16.3	381
2488	1984	01	24.46541	06	29	18.06	+31	32	03.4	17.2	381
2488	1984	01	24.52513	06	29	14.71	+31	32	05.4	17.2	381
2591	1983	03	11.71124	13	57	43.77	-12	54	16.3	16.7	381
2591	1983	03	11.77721	13	57	42.58	-12	54	13.9	16.7	381
2592	1986	12	01.45359	03	11	43.44	+16	51	37.7	17.5	381
2592	1986	12	01.54804	03	11	39.68	+16	51	26.2	17.5	381
2624	1983	03	11.68972	13	36	32.73	-07	54	35.9	17.8	381
2624	1983	03	11.75568	13	36	31.30	-07	54	25.7	17.8	381
2632	1983	03	11.66611	12	56	12.98	-02	47	38.0	17.0	381
2632	1983	03	11.73347	12	56	10.26	-02	47	30.6	17.0	381
2700	1983	03	11.66611	13	06	17.27	-05	55	58.3	17.5	381
2712	1983	03	11.71124	13	41	39.75	-09	59	50.2	17.4	381
2712	1983	03	11.77721	13	41	38.04	-09	59	38.7	17.4	381
2748	1984	01	24.43907	05	48	58.91	+29	04	00.5	18.5	381
2748	1984	01	24.49804	05	48	56.84	+29	03	51.9	18.5	381
2832	1983	03	11.66611	13	10	16.60	-04	25	32.2	17.0	381
2832	1983	03	11.73347	13	10	14.47	-04	25	08.7	17.0	381
2885	1986	11	30.54387	03	41	25.88	+25	42	03.9	15.0	381
2885	1986	11	30.61612	03	41	21.25	+25	41	49.4	15.0	381
2885	1986	12	01.48206	03	40	30.45	+25	38	51.8	15.0	381
2885	1986	12	01.57720	03	40	24.52	+25	38	32.5	15.0	381
2918	1983	02	14.52992	09	33	04.11	+14	53	14.6	18.0	381
3035	1986	11	30.47304	03	02	49.45	+14	01	19.8	16.3	381
3035	1986	11	30.57585	03	02	44.46	+14	01	00.6	16.3	381
3035	1986	12	01.45359	03	02	02.78	+13	58	04.8	19.0	381
3035	1986	12	01.54804	03	01	58.24	+13	57	47.0	16.3	381
3333	1986	11	30.47304	03	11	55.59	+16	30	08.0	17.5	381
3333	1986	11	30.57585	03	11	50.86	+16	29	35.6	17.5	381
3333	1986	12	01.45359	03	11	14.15	+16	24	48.9	17.5	381
3333	1986	12	01.54804	03	11	10.12	+16	24	19.3	17.5	381
3457	1983	02	14.52992	09	50	15.27	+16	37	16.0	17.5	381
3548	1986	11	30.54387	03	49	13.80	+23	28	21.5	16.2	381
3548	1986	11	30.61612	03	49	11.10	+23	28	16.3	16.2	381
3548	1986	12	01.48206	03	48	39.32	+23	27	28.4	16.2	381
3548	1986	12	01.57720	03	48	35.83	+23	27	22.4	16.2	381
3680	1983	03	11.71124	13	53	15.72	-09	25	45.0	17.0	381

3680		1983 03 11.77721	13 53 13.96	-09 25 45.2			17.0		381
3698		1983 03 11.66611	12 54 47.27	-01 00 08.6			17.5		381
3698		1983 03 11.73347	12 54 44.37	-00 59 43.5			17.5		381

399 Kushiro
H. Kaneda, 8-8-B210, 10 Chome, Kashiwaoka, Makomanai,
Minami-Ku, Sapporo 005, Japan
Observer S. Ueda
Measurer H. Kaneda
0.16-m reflector
Copied in part from Nihondaira Obs. Circ.

1987 US	*	1987 10 25.60046	02 08 43.78	+19 00 36.1			15.5		399
1987 US		1987 10 25.61638	02 08 42.90	+19 00 31.9					399
1987 US		1987 10 25.63542	02 08 41.88	+19 00 26.5					399
1987 UA1	*	1987 10 25.61638	01 56 36.05	+20 54 41.8			16		399
1987 UA1		1987 10 25.63542	01 56 35.29	+20 54 29.8					399
1987 UB1	*	1987 10 25.65560	02 11 13.89	+17 04 59.6			15		399
1987 UB1		1987 10 25.67297	02 11 12.78	+17 04 59.3					399
1987 UB1		1987 10 25.68964	02 11 11.66	+17 04 59.5					399
1987 UC1	*	1987 10 25.65560	02 11 31.98	+16 22 57.0			16.5		399
1987 UC1		1987 10 25.67297	02 11 30.77	+16 22 55.1					399
1987 UC1		1987 10 25.68964	02 11 29.79	+16 22 51.1					399
1987 UD1	*	1987 10 21.50556	01 39 48.2	+08 47 18			16.5		399
1987 UD1		1987 10 21.52222	01 39 47.3	+08 47 10					399
1987 UD1		1987 10 21.53889	01 39 46.3	+08 47 05					399

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

1987 QA		1987 10 18.62787	07 47 45.33	-69 34 26.1			17		474
1987 QA		1987 10 18.66676	07 48 12.31	-69 34 45.4					474

511 Haute Provence
E. W. Elst, Royal Observatory, B-1180 Brussels, Belgium
Observers E. W. Elst, G. Sause
Measurer E. W. Elst

1987 OP		1987 07 28.04861	21 41 29.52	+07 06 36.2					511
1987 OP		1987 07 31.98403	21 38 39.04	+07 13 37.3					511
1987 OP		1987 08 01.00694	21 38 38.10	+07 13 39.1					511

552 San Vittore
E. Colombini, Via S. Vittore 44, I-40136 Bologna, Italy
Observers C. Vacchi, G. Sassi
Measurers C. Vacchi, V. Goretti, E. Colombini
AGK3, SAOC

1983 VE		1987 09 20.84931	22 40 57.15	-01 56 25.1			16.0		552
1983 VE		1987 09 20.87014	22 40 56.11	-01 56 33.5					552
1983 VE		1987 09 21.86250	22 40 11.47	-02 03 03.2					552
1983 VE		1987 09 21.88542	22 40 10.49	-02 03 11.9					552
1983 VE		1987 09 22.85833	22 39 27.80	-02 09 35.9					552
1983 VE		1987 09 22.87917	22 39 26.89	-02 09 44.3					552
1983 VE		1987 09 30.90208	22 34 19.03	-03 00 28.9			16.5		552
1983 VE		1987 09 30.92292	22 34 18.32	-03 00 36.1					552

567 Osservatorio Chaonis
J. M. Baur, Via Zara 20, I-33083 Chions, Italy

Observers C. R. Baur, G. Carniel
Measurer J. M. Baur
0.6-m f/3 Wright reflector
AGK3, SAOC

2037	1987	10	19.99236	03	21	19.53	+22 38 29.8	16.2	567
2037	1987	10	20.00625	03	21	18.90	+22 38 31.8		567
2459	1987	10	19.91875	02	46	34.72	+15 41 20.8	16.6	567
2459	1987	10	19.92986	02	46	34.13	+15 41 17.7		567
2974	1987	10	19.91875	02	45	12.61	+15 51 32.9	16.5	567
2974	1987	10	19.92986	02	45	12.02	+15 51 25.9		567

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

375	1987	09	27.84404	23	48	40.68	+10 42 42.9		573
375	1987	09	27.84803	23	48	40.46	+10 42 42.4		573
375	1987	09	27.85208	23	48	40.24	+10 42 42.0		573
375	1987	09	29.79340	23	46	55.38	+10 40 27.6		573
375	1987	09	29.79757	23	46	55.16	+10 40 27.0		573
375	1987	09	29.80139	23	46	54.94	+10 40 26.5		573
690	1987	08	31.87813	22	40	12.89	+11 11 38.6		573
690	1987	08	31.88183	22	40	12.72	+11 11 38.2		573
690	1987	08	31.88993	22	40	12.39	+11 11 37.1		573
995	1987	08	31.90382	23	47	49.55	+17 47 46.7		573
995	1987	08	31.91204	23	47	49.32	+17 47 45.1		573
995	1987	08	31.91563	23	47	49.21	+17 47 44.3		573
995	1987	09	27.82240	23	30	09.09	+13 49 21.3		573
995	1987	09	27.82662	23	30	08.97	+13 49 18.0		573
995	1987	09	27.83108	23	30	08.84	+13 49 14.6		573

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

1927 UE	1987	08	19.29382	23	14	21.24	+09 08 09.4		657
1927 UE	1987	08	21.27125	23	13	26.42	+09 07 17.1		657
1927 UE	1987	08	21.34000	23	13	24.17	+09 07 13.3		657
1927 UE	1987	09	17.20597	22	54	54.37	+06 47 29.7		657
1927 UE	1987	09	22.22542	22	51	32.17	+06 01 50.8		657
1927 UE	1987	09	27.25590	22	48	41.01	+05 13 50.3		657
1927 UE	1987	10	12.13021	22	44	42.50	+02 57 14.8		657
1927 UE	1987	10	13.17187	22	44	42.92	+02 48 43.8		657
1983 QF	1987	08	31.41042	00	44	25.90	-02 06 16.5		657
1983 QF	1987	09	30.29000	00	27	57.39	-09 32 36.2		657
1983 VP7	1987	09	27.26910	00	05	31.21	-00 40 23.8		657
1983 VP7	1987	09	29.29139	00	03	18.45	-00 37 07.4		657
1987 UA	1987	10	19.24132	00	27	01.96	-02 47 42.0		E 657
302	1987	09	27.26910	00	07	11.90	+00 11 05.9		657
302	1987	09	29.29139	00	05	15.34	+00 02 44.9		657
482	1987	09	04.48437	00	31	41.98	+03 19 11.9		657
1762	1987	09	27.26910	00	04	32.15	-00 56 21.5		657
1848	1987	10	20.33444	01	04	23.09	+08 38 35.7		657
1848	1987	10	21.26326	01	03	39.21	+08 34 14.6		657
1848	1987	10	21.29521	01	03	37.59	+08 34 06.1		657
2180	1987	08	19.29382	23	11	35.96	+09 02 47.2		657
2180	1987	08	19.33271	23	11	34.41	+09 02 40.5		657
2180	1987	08	21.27125	23	10	25.64	+08 57 54.6		657
2180	1987	08	21.34000	23	10	23.11	+08 57 42.7		657
2180	1987	09	17.20597	22	51	39.46	+06 43 20.9		657

675 Palomar
J. Gibson, ITT/Federal Electric Corporation and Jet Propulsion Laboratory, MS 238-332, Pasadena, CA 91109, U.S.A. (1)
E. Helin, MS 183-501, Jet Propulsion Laboratory, Pasadena, CA 91109, U.S.A. (2)
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Observers J. Gibson, E. Helin, H. Holt, C. Kowal, J. Mueller, J. Phinney, N. Reid, C. Shoemaker, E. Shoemaker, S. Singer-Brewster, D. Schneeberger
Measurers J. Alu, S. J. Bus, L. Fisher, J. Gibson, C. Shoemaker
1.2-m and 0.46-m Schmidt telescopes

1966	PK		1987	08	23.38194	00	21	42.72	-01	26	34.2	16.0	2 675
1966	PK		1987	08	23.43403	00	21	41.88	-01	26	41.5		2 675
1966	PK		1987	08	28.38056	00	20	07.09	-01	40	49.1		2 675
1966	PK		1987	08	28.42917	00	20	05.91	-01	40	58.5		2 675
1972	RF		1987	09	18.36424	23	13	35.71	-01	24	33.3	16.0	2 675
1972	RF		1987	09	19.29132	23	13	09.37	-01	49	29.7	16.0	2 675
1972	RF		1987	09	19.31632	23	13	08.63	-01	50	09.0		2 675
1972	RF		1987	09	20.34340	23	12	39.78	-02	17	35.4		2 675
1977	KV1	*	1977	05	18.35521	15	43	07.50	-18	07	05.4	16.5	6 675
1977	KV1		1977	05	19.33507	15	42	07.34	-18	00	47.5		6 675
1977	KW1	*	1977	05	18.35521	15	46	00.36	-18	09	37.3	16.8	6 675
1977	KW1		1977	05	19.33507	15	45	11.81	-18	07	11.2		6 675
1977	KX1	*	1977	05	18.35521	15	46	54.90	-17	18	02.5	18.5	6 675
1977	KX1		1977	05	19.33507	15	46	06.71	-17	15	23.1		6 675
1977	KY1	*	1977	05	18.35521	15	49	13.69	-20	46	14.1	17.0	6 675
1977	KY1		1977	05	19.33507	15	48	24.87	-20	44	05.5		6 675
1977	KZ1	*	1977	05	18.35521	15	50	01.32	-17	15	05.1	17.8	6 675
1977	KZ1		1977	05	19.33507	15	49	08.51	-17	11	45.2		6 675
1977	KA2	*	1977	05	18.35521	15	52	06.22	-16	53	22.9	16.2	6 675
1977	KA2		1977	05	19.33507	15	51	17.16	-16	51	29.8		6 675
1977	KB2	*	1977	05	18.35521	15	53	46.29	-17	52	35.8	16.8	6 675
1977	KB2		1977	05	19.33507	15	52	42.92	-17	56	38.3		6 675
1977	KC2	*	1977	05	18.35521	15	54	30.11	-20	48	35.0	19.0	6 675
1977	KC2		1977	05	19.33507	15	53	24.13	-20	46	55.0		6 675
1978	SC6		1977	05	18.35521	15	50	50.33	-21	01	01.6		6 675
1978	SC6		1977	05	19.33507	15	49	45.01	-20	58	16.7		6 675
1981	EH20		1977	05	18.35521	15	50	26.90	-16	28	39.9		6 675
1981	EH20		1977	05	19.33507	15	49	36.01	-16	25	05.6		6 675
1981	EX23		1977	05	18.35521	15	57	13.05	-21	24	31.2		6 675
1981	EX23		1977	05	19.33507	15	56	20.72	-21	21	06.2		6 675
1981	EA26		1977	05	18.35521	15	43	51.74	-18	39	15.0		6 675
1981	EA26		1977	05	19.33507	15	42	56.98	-18	35	29.1		6 675
1985	TL3		1987	02	17.11111	03	34	07.09	+02	02	10.0		1 675
1985	TL3		1987	02	17.11319	03	34	07.13	+02	02	10.5		1 675
1985	TL3		1987	02	18.13692	03	34	30.55	+02	05	54.9		1 675
1985	TL3		1987	02	18.14826	03	34	30.80	+02	05	57.3		1 675
1985	TL3		1987	03	17.16606	03	48	42.24	+03	48	50.5		1 675
1985	TL3		1987	03	17.20056	03	48	43.57	+03	48	58.3		1 675
1985	TL3		1987	04	13.15382	04	08	48.29	+05	25	58.6		1 675
1985	TL3		1987	04	13.15583	04	08	48.37	+05	25	58.8		1 675
1985	TL3		1987	04	14.15667	04	09	38.21	+05	29	15.6		1 675
1985	TL3		1987	04	14.16333	04	09	38.50	+05	29	16.5		1 675
1987	MO		1987	09	19.16667	20	28	04.44	+18	47	21.3	16.5	2 675
1987	MO		1987	09	19.22995	20	28	04.39	+18	46	55.5		2 675
1987	OC		1987	09	19.16181	19	42	22.67	+13	16	41.5	16.8	2 675
1987	OC		1987	09	19.22153	19	42	24.05	+13	16	31.5		2 675

1987	ON		1987	09	20.26204	21	33	45.75	-13	56	26.4	17.0	2	675
1987	ON		1987	09	20.28247	21	33	45.56	-13	56	40.9		2	675
1987	QH		1987	09	18.21111	20	56	10.20	-11	36	50.9	16.8	2	675
1987	QH		1987	09	20.27830	20	56	41.07	-11	21	23.4		2	675
1987	QX		1987	09	20.40833	01	13	04.11	+15	53	47.1	16.8	2	675
1987	QX		1987	09	20.43767	01	13	02.84	+15	54	38.5		2	675
1987	QY		1987	09	20.41250	01	40	23.09	-04	45	13.2	17.0	2	675
1987	QY		1987	09	20.44201	01	40	23.03	-04	46	08.6		2	675
1987	QC1		1987	09	18.21649	21	16	01.97	-14	45	21.4	17.0	2	675
1987	QC1		1987	09	20.28247	21	15	17.91	-14	26	12.5		2	675
1987	QH7	*	1987	08	23.38194	00	20	22.88	-01	07	05.7	17.0	2	675
1987	QH7		1987	08	23.43403	00	20	22.72	-01	06	56.2		2	675
1987	QH7		1987	08	28.38056	00	19	57.39	-00	51	54.3	17.0	2	675
1987	QH7		1987	08	28.42917	00	19	56.86	-00	51	47.4		2	675
1987	QN7	*	1987	08	23.38194	00	22	04.84	-01	11	37.7	17.5	2	675
1987	QN7		1987	08	23.43403	00	22	04.86	-01	11	55.4		2	675
1987	QN7		1987	08	28.38056	00	22	00.75	-01	46	01.9	17.5	2	675
1987	QN7		1987	08	28.42917	00	22	00.43	-01	46	22.0		2	675
1987	QV7	*	1987	08	23.43958	01	17	05.92	+07	02	46.9	17.5	2	675
1987	QV7		1987	08	23.49167	01	17	06.09	+07	02	31.7		2	675
1987	QV7		1987	08	24.43958	01	17	09.38	+06	56	51.4		2	675
1987	QV7		1987	08	24.48472	01	17	09.42	+06	56	36.4		2	675
1987	QV7		1987	08	26.42361	01	17	12.01	+06	44	23.0		2	675
1987	QV7		1987	08	26.47222	01	17	11.88	+06	44	08.2		2	675
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1987	SB		1987	09	30.35972	00	22	22.60	-05	16	38.3		3	675
1987	SL		1987	09	25.41163	01	14	58.54	+27	34	45.4	16	3	675
1987	SL		1987	09	25.46388	01	14	50.93	+27	36	04.7		3	675
1987	SL		1987	10	02.32639	00	59	14.30	+30	01	12.2		1	675
1987	SL		1987	10	02.49583	00	58	50.81	+30	03	59.5		1	675
1987	SY	*	1987	09	25.31458	23	31	21.64	+16	02	42.7	17	3	675
1987	SY		1987	09	26.28732	23	29	03.81	+15	30	49.1		3	675
1987	SY		1987	09	30.27813	23	21	11.06	+13	33	08.0		3	675
1987	SY		1987	10	01.32153	23	19	29.16	+13	05	37.4		1	675
1987	SY		1987	10	01.48854	23	19	12.89	+13	01	16.4		1	675
1987	SY		1987	10	02.37153	23	17	55.11	+12	39	08.9		1	675
1987	SY		1987	10	02.46042	23	17	47.06	+12	36	55.9		1	675
1987	SZ	*	1987	09	18.34028	00	50	02.64	+09	30	07.6	17.8	2	675
1987	SZ		1987	09	18.38194	00	50	00.86	+09	29	18.6		2	675
1987	SA1		1987	09	24.30659	23	37	07.54	-05	41	06.1	14.5	3	675
1987	SA1		1987	09	30.28680	23	28	24.06	-04	36	33.3		3	675
1987	SD2	*	1987	09	20.27014	22	10	38.78	-04	13	45.6	16.5	2	675
1987	SD2		1987	09	20.29097	22	10	38.22	-04	13	57.9		2	675
1987	SF3	*	1987	09	26.29166	00	12	47.88	+03	42	15.1	16	3	675
1987	SF3		1987	09	26.32083	00	12	52.73	+03	41	54.6		3	675
1987	SF3		1987	10	18.31215	00	50	32.34	+01	26	05.2		3	675
1987	SF3		1987	10	19.36233	00	51	31.21	+01	24	32.8		3	675
1987	SF3		1987	10	21.34392	00	53	18.96	+01	22	39.6		3	675
1987	SG3	*	1987	09	26.29166	00	08	13.53	+04	54	50.5	16.5	3	675
1987	SG3		1987	09	26.32083	00	08	12.51	+04	53	58.4		3	675
1987	SH3	*	1987	09	26.29166	00	08	23.60	+07	11	44.7	17	3	675
1987	SH3		1987	09	26.32083	00	08	22.04	+07	10	57.4		3	675
1987	SJ3	*	1987	09	27.30850	00	42	01.95	-06	04	02.1	16	3	675
1987	SJ3		1987	09	27.33923	00	41	58.28	-06	03	37.8		3	675
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1987	SJ3		1987	09	29.34652	00	38	05.89	-05	37	20.9		3	675
1987	SJ3		1987	09	30.33940	00	36	10.59	-05	24	05.0		3	675
1987	SJ3		1987	09	30.35972	00	36	08.17	-05	23	49.7		3	675
1987	SB4	*	1987	09	28.27188	00	39	35.63	-24	53	46.6	17.2	3	675

1987	SB4		1987	09	28.29895	00	39	29.89	-24	53	41.3	3 675
1987	SW5	*	1987	09	25.33542	00	59	45.40	+07	07	22.1	18.0 2 675
1987	SW5		1987	09	25.38403	00	59	44.09	+07	05	53.1	2 675
1987	SX5	*	1987	09	25.33542	01	03	24.51	+06	47	46.8	17.5 2 675
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1987	UA		1987	09	24.32552	23	35	28.01	+25	08	55.8	3 675
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1987	UW		1987	10	18.40625	02	37	01.2	+07	19	09	7 675
1987	UW		1987	10	19.34028	02	36	20.3	+06	57	20	7 675
1987	UW		1987	10	19.40972	02	36	17.2	+06	55	43	7 675
1987	UW		1987	10	28.39925	02	29	13.3	+03	27	55	7 675
1987	UW		1987	10	28.41314	02	29	12.8	+03	27	39	7 675
1987	UX	*	1987	10	18.33681	02	45	59.7	+08	33	28	17 7 675
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1987	UX		1987	10	28.41314	02	39	24.0	+04	00	30	7 675
384			1977	05	18.35521	15	33	22.57	-20	29	56.2	6 675
384			1977	05	19.33507	15	32	26.10	-20	28	14.3	6 675
644			1977	05	18.35521	15	35	29.79	-17	59	11.9	6 675
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748			1977	05	18.35521	15	42	09.63	-21	03	33.3	6 675
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813			1977	05	19.33507	15	41	29.61	-20	55	49.5	6 675
867			1977	05	18.35521	15	30	03.99	-20	26	09.3	6 675
1669			1977	05	18.35521	15	45	31.71	-20	49	07.3	6 675
1669			1977	05	19.33507	15	44	42.64	-20	46	47.1	6 675
1691			1977	05	18.35521	15	41	10.05	-18	17	19.1	6 675
1691			1977	05	19.33507	15	40	24.44	-18	14	41.2	6 675
1742			1977	05	18.35521	15	57	06.13	-16	38	01.6	6 675
1742			1977	05	19.33507	15	56	16.25	-16	35	21.8	6 675
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1807			1977	05	19.33507	15	44	43.03	-19	36	10.1	6 675
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2312			1977	05	18.35521	15	51	10.31	-19	49	54.2	6 675
2312			1977	05	19.33507	15	50	31.90	-19	48	35.6	6 675
2513			1977	05	18.35521	15	43	46.85	-21	38	34.8	6 675
2513			1977	05	19.33507	15	42	43.54	-21	33	54.8	6 675
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2838			1977	05	18.35521	15	49	52.45	-18	49	44.0	6 675
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3598       1977 05 19.33507  15 56 41.36  -19 12 56.4                  6 675
```

688 Lowell Observatory, Anderson Mesa Station
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road,
Flagstaff, AZ 86001, U.S.A.
Observers B. A. Skiff, E. Bowell, R. Griego, K. Zeigler
Measurer E. Bowell
0.33-m photographic telescope
PDS scanning microdensitometer
AGK3 and Perth 70 secondary nets, global solutions
See also MPC 9533

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1950 SJ    1987 10 16.13626  23 42 35.79  +08 23 35.2           16.5    688
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1950 SJ    1987 10 16.25243  23 42 34.17  +08 22 17.9                   688
1950 SJ    1987 10 26.14087  23 41 54.34  +06 33 43.2           16.5    688
1950 SJ    1987 10 26.21505  23 41 54.54  +06 32 58.8                   688
1964 TC1   1987 10 20.28237  02 45 57.50  +16 24 45.7           17.2    688
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1966 PK    1987 09 21.24258  00 05 40.09  -03 19 49.0           16.5    688
1966 PK    1987 09 21.28648  00 05 38.07  -03 20 00.3                   688
1967 UV    1987 09 19.30575  00 30 59.35  -04 08 57.0           17.0    688
1967 UV    1987 09 19.35061  00 30 56.98  -04 09 11.6                   688
1974 QU1   1987 09 26.32997  01 02 38.66  +07 37 04.3           16.2    688
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1978 RN5   1987 10 20.16992  00 55 27.99  +18 14 07.3           16.2    688
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1981 EM    1987 09 21.24258  23 59 48.69  +00 58 25.1           16.5    688
1981 EM    1987 09 21.28648  23 59 46.08  +00 58 22.4                   688
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1981 EH4   1987 09 21.30867  00 21 07.00  +14 41 58.8                   688
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1981 EH4   1987 09 29.26924  00 15 50.61  +13 35 39.8                   688
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1981	LJ	1987	09	29.20302	00	10	04.94	-04	02	49.8	16.5	688
1981	LJ	1987	09	29.24736	00	10	02.78	-04	03	04.5		688
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1981	TO3	1987	10	20.34940	02	53	33.04	+14	29	57.1		688
1982	TU	1987	10	20.16992	00	55	55.55	+19	15	12.4	17.0	688
1982	TU	1987	10	20.21510	00	55	53.13	+19	14	58.8		688
1982	TU	1987	10	26.26985	00	51	05.46	+18	46	46.7	17.2	688
1982	UR7	1987	10	20.30484	03	04	03.88	+02	23	57.0	16.8	688
1982	UR7	1987	10	20.37171	03	04	00.93	+02	23	43.5		688
1983	QF	1987	09	19.30575	00	35	35.64	-06	42	32.1	16.0	688
1983	QF	1987	09	19.35061	00	35	33.79	-06	43	14.5		688
1983	TE1	1987	10	20.28237	03	01	11.18	+15	36	46.9	16.8	688
1983	TE1	1987	10	20.34940	03	01	08.58	+15	36	21.0		688
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1985	AF	1987	09	29.22539	00	07	38.35	+10	59	02.1	17.2 R	688
1985	AF	1987	09	29.26924	00	07	35.99	+10	58	48.4		688
1985	FA2	1987	09	26.35216	01	39	51.42	-08	07	01.1	16.5	688
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1985	GX	1987	09	29.33653	00	35	12.33	-05	07	53.8	P	688
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1987	RJ	1987	10	16.28133	00	17	20.63	-03	29	36.9		688
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1987	RJ	1987	10	26.24406	00	10	57.34	-03	44	17.0		688
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1987	SE	1987	09	26.30792	23	37	09.78	+06	54	59.2		688
1987	SE	1987	10	16.13626	23	23	20.83	+05	47	20.3	17.0	688
1987	SE	1987	10	16.22352	23	23	17.71	+05	47	05.3		688
1987	SE	1987	10	26.14087	23	18	58.67	+05	18	05.4	17.2	688
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1987	SK		1987	09	26.37418	00	40	05.85	+04	41	44.3		688
1987	SL		1987	09	19.32815	01	28	56.75	+24	33	02.9	16.2 P	688
1987	SL		1987	09	29.31404	01	05	59.86	+29	04	57.1	16.2 R	688
1987	SL		1987	09	29.35941	01	05	53.32	+29	05	52.7	P	688
1987	SO		1987	09	26.26324	23	43	24.17	+10	13	47.6	16.2	688
1987	SO		1987	09	26.30792	23	43	21.73	+10	13	33.3		688
1987	SO		1987	10	16.13626	23	31	45.42	+08	19	42.3	16.5	688
1987	SO		1987	10	16.22352	23	31	43.54	+08	19	13.2		688
1987	SO		1987	10	26.14087	23	30	35.61	+07	31	25.0	16.5	688
1987	SO		1987	10	26.21505	23	30	35.69	+07	31	06.9		688
1987	SP		1987	09	26.24106	23	26	04.75	-00	29	48.5	16.8	688
1987	SP		1987	09	26.28543	23	26	02.75	-00	30	03.2		688
1987	SR		1987	09	26.24106	23	29	56.28	+00	18	42.3	16.5	688
1987	SR		1987	09	26.28543	23	29	54.13	+00	18	14.5		688
1987	SS		1987	09	26.26324	23	30	33.00	+03	07	39.9	16.8	688
1987	SS		1987	09	26.30792	23	30	30.79	+03	07	23.5		688
1987	SU		1987	09	26.24106	23	33	55.78	-01	32	10.9	16.8	688
1987	SU		1987	09	26.28543	23	33	52.81	-01	32	19.8		688
1987	SV		1987	09	26.26324	23	38	45.75	+03	16	50.3	16.2	688
1987	SV		1987	09	26.30792	23	38	43.14	+03	16	38.3		688
1987	SV		1987	10	16.13626	23	23	46.06	+01	53	31.8	16.8	688
1987	SV		1987	10	16.22352	23	23	42.97	+01	53	14.6		688
1987	SV		1987	10	26.14087	23	20	02.82	+01	25	42.4	16.8	688
1987	SV		1987	10	26.21505	23	20	01.65	+01	25	32.5		688
1987	SA1	*	1987	09	26.24106	23	34	12.53	-05	20	16.5	14.5	688
1987	SA1		1987	09	26.28543	23	34	08.51	-05	19	48.6		688
1987	SB1	*	1987	09	19.30575	00	35	12.63	-01	54	17.7	16.8	688
1987	SB1		1987	09	19.35061	00	35	10.79	-01	54	54.8		688
1987	SB1		1987	09	29.29146	00	28	24.35	-03	57	57.6	16.5	688
1987	SB1		1987	09	29.33653	00	28	22.35	-03	58	31.7		688
1987	SB1		1987	10	16.19453	00	17	22.96	-06	57	23.9	16.8	688
1987	SB1		1987	10	16.28133	00	17	19.76	-06	58	10.0		688
1987	SC1	*	1987	09	19.30575	00	38	19.11	-03	33	21.4	17.0	688
1987	SC1		1987	09	19.35061	00	38	17.05	-03	33	50.7	R	688
1987	SE1	*	1987	09	19.32815	01	14	12.20	+26	50	14.7	16.5	688
1987	SE1		1987	09	19.37859	01	14	10.13	+26	50	27.7		688
1987	SE1		1987	09	29.31404	01	06	55.87	+27	18	17.4	16.2	688
1987	SE1		1987	09	29.35941	01	06	53.33	+27	18	20.8		688
1987	SF1	*	1987	09	19.32815	01	23	50.16	+25	40	26.7	16.8	688
1987	SF1		1987	09	19.37859	01	23	48.64	+25	40	25.7		688
1987	SF1		1987	09	29.31404	01	18	03.59	+25	25	44.8	16.8	688
1987	SF1		1987	09	29.35941	01	18	01.68	+25	25	35.7		688
1987	SF1		1987	10	20.16992	01	02	43.97	+23	41	46.3	16.8	688
1987	SF1		1987	10	20.21510	01	02	41.76	+23	41	28.7		688
1987	SF1		1987	10	26.18927	00	58	28.29	+22	57	25.2	16.5	688
1987	SF1		1987	10	26.26985	00	58	25.04	+22	56	47.6		688
1987	SG1	*	1987	09	21.24258	00	00	11.77	-01	11	57.9	16.8	688
1987	SG1		1987	09	21.28648	00	00	09.95	-01	12	33.0		688
1987	SH1	*	1987	09	21.24258	00	00	18.08	+00	24	55.5	16.5	688
1987	SH1		1987	09	21.28648	00	00	15.96	+00	24	42.4		688
1987	SH1		1987	09	29.20302	23	54	35.62	-00	14	48.1	16.5	688
1987	SH1		1987	09	29.24736	23	54	33.69	-00	15	00.8		688
1987	SJ1	*	1987	09	21.24258	00	00	31.88	+01	33	12.6	17.0	688
1987	SJ1		1987	09	21.28648	00	00	29.78	+01	32	55.3		688
1987	SJ1		1987	09	29.20302	23	54	38.61	+00	41	37.2	17.0 P	688
1987	SJ1		1987	09	29.24736	23	54	36.43	+00	41	21.0		688
1987	SK1	*	1987	09	21.24258	00	04	47.91	-02	19	27.5	17.0	688

1987	SK1		1987	09	21.28648	00	04	45.25	-02	19	33.0		688
1987	SL1	*	1987	09	21.24258	00	05	13.77	+00	38	12.3	17.0	688
1987	SL1		1987	09	21.28648	00	05	11.10	+00	38	00.9		688
1987	SL1		1987	09	29.20302	23	57	51.46	+00	04	10.2	17.0	688
1987	SL1		1987	09	29.24736	23	57	49.14	+00	04	01.0		688
1987	SM1	*	1987	09	21.24258	00	11	18.52	+01	54	38.2	17.0	688
1987	SM1		1987	09	21.28648	00	11	16.39	+01	54	21.3	R	688
1987	SM1		1987	09	29.20302	00	04	56.36	+01	03	48.9	17.0	688
1987	SM1		1987	09	29.24736	00	04	54.33	+01	03	32.4		688
1987	SN1	*	1987	09	21.24258	00	12	59.34	-02	04	51.3	17.0 R	688
1987	SN1		1987	09	21.28648	00	12	56.88	-02	05	06.0	R	688
1987	SN1		1987	09	29.20302	00	06	13.88	-02	43	09.6	16.8	688
1987	SN1		1987	09	29.24736	00	06	11.31	-02	43	22.0		688
1987	SO1	*	1987	09	21.24258	00	13	13.30	-00	12	02.0	16.5	688
1987	SO1		1987	09	21.28648	00	13	11.51	-00	12	35.7		688
1987	SO1		1987	09	29.20302	00	08	12.43	-01	47	08.1	16.2	688
1987	SO1		1987	09	29.24736	00	08	10.51	-01	47	38.8		688
1987	SP1	*	1987	09	21.24258	00	14	47.18	+03	30	59.8	17.0	688
1987	SP1		1987	09	21.28648	00	14	44.63	+03	30	56.5		688
1987	SP1		1987	09	29.20302	00	06	53.88	+03	20	48.6	16.8	688
1987	SP1		1987	09	29.24736	00	06	51.23	+03	20	45.5		688
1987	SQ1	*	1987	09	21.24258	00	15	16.19	+02	29	14.7	17.2	688
1987	SQ1		1987	09	21.28648	00	15	13.86	+02	29	00.7		688
1987	SQ1		1987	09	29.20302	00	09	02.50	+01	44	22.1	16.8	688
1987	SR1	*	1987	09	21.24258	23	59	36.80	+02	00	41.5	17.0	688
1987	SR1		1987	09	21.28648	23	59	34.88	+02	00	14.5		688
1987	SR1		1987	09	29.20302	23	53	45.33	+00	30	23.0	16.8	688
1987	SR1		1987	09	29.24736	23	53	43.33	+00	29	59.1		688
1987	SS1	*	1987	09	21.26465	00	01	05.38	+15	17	08.0	16.8	688
1987	SS1		1987	09	21.30867	00	01	03.81	+15	16	40.5		688
1987	SS1		1987	09	29.22539	23	56	41.94	+13	42	01.5	16.5	688
1987	SS1		1987	09	29.26924	23	56	40.39	+13	41	28.4		688
1987	SS1		1987	10	16.16547	23	49	02.68	+09	57	24.6	16.8	688
1987	SS1		1987	10	16.25243	23	49	00.91	+09	56	19.4		688
1987	ST1	*	1987	09	21.26465	00	06	09.75	+15	16	54.2	17.0	688
1987	ST1		1987	09	21.30867	00	06	07.63	+15	16	47.3		688
1987	ST1		1987	09	29.22539	23	59	56.14	+14	51	23.9	16.5 P	688
1987	ST1		1987	10	16.16547	23	48	03.15	+13	28	34.9	16.5	688
1987	SU1	*	1987	09	21.26465	00	06	58.47	+13	41	42.3	17.5	688
1987	SU1		1987	09	21.30867	00	06	56.37	+13	41	26.7		688
1987	SV1	*	1987	09	21.26465	00	11	26.66	+18	09	32.1	16.8	688
1987	SV1		1987	09	21.30867	00	11	24.63	+18	09	21.2		688
1987	SV1		1987	09	29.22539	00	05	33.56	+17	24	27.7	16.5	688
1987	SV1		1987	09	29.26924	00	05	31.47	+17	24	13.0		688
1987	SV1		1987	10	16.16547	23	54	06.61	+15	18	20.9	17.0	688
1987	SV1		1987	10	16.25243	23	54	03.52	+15	17	33.3		688
1987	SW1	*	1987	09	21.26465	00	16	58.19	+13	57	24.4	16.8	688
1987	SW1		1987	09	21.30867	00	16	56.40	+13	56	57.0		688
1987	SW1		1987	09	29.22539	00	11	18.75	+12	25	19.4	16.5	688
1987	SW1		1987	09	29.26924	00	11	16.76	+12	24	49.8		688
1987	SW1		1987	10	16.16547	00	00	36.26	+08	40	21.7	16.5	688
1987	SW1		1987	10	16.25243	00	00	33.46	+08	39	14.9		688
1987	SX1	*	1987	09	26.32997	00	39	19.77	+05	40	04.3	16.5	688
1987	SX1		1987	09	26.37418	00	39	16.66	+05	39	51.4		688
1987	SY1	*	1987	09	26.32997	00	55	00.50	+09	37	08.9	16.0	688
1987	SY1		1987	09	26.37418	00	54	57.90	+09	37	09.6		688
1987	SP2		1987	09	29.29146	00	42	55.90	-04	50	25.8	16.5	688
1987	SP2		1987	09	29.33653	00	42	53.06	-04	50	19.1		688
1987	ST2		1987	09	29.29146	00	48	37.74	-05	38	53.7	16.5	688

1987	ST2		1987	09	29.33653	00	48	34.65	-05	38	51.0		688
1987	ST2		1987	10	16.19453	00	29	50.82	-05	01	04.4	16.5	688
1987	ST2		1987	10	16.28133	00	29	45.18	-05	00	47.5		688
1987	ST2		1987	10	26.16694	00	20	17.64	-04	17	10.6	16.8	688
1987	ST2		1987	10	26.24406	00	20	13.78	-04	16	46.1		688
1987	SG3		1987	09	29.20302	00	06	47.15	+03	29	33.3	16.2 D	688
1987	SG3		1987	09	29.24736	00	06	45.97	+03	28	22.2		688
1987	SV3	*	1987	09	26.24106	23	34	40.24	-04	53	07.3	17.0	688
1987	SV3		1987	09	26.28543	23	34	37.37	-04	53	03.2		688
1987	SW3	*	1987	09	26.26324	23	38	35.59	+05	25	06.2	16.5	688
1987	SW3		1987	09	26.30792	23	38	33.04	+05	24	49.6		688
1987	SW3		1987	10	16.13626	23	23	56.90	+03	24	34.9	16.8	688
1987	SW3		1987	10	16.22352	23	23	54.21	+03	24	08.0		688
1987	SW3		1987	10	26.14087	23	20	40.41	+02	40	07.2	17.0	688
1987	SW3		1987	10	26.21505	23	20	39.52	+02	39	51.0		688
1987	SX3	*	1987	09	26.26324	23	42	39.68	+03	13	48.6	17.0	688
1987	SX3		1987	09	26.30792	23	42	37.85	+03	13	30.8		688
1987	SY3	*	1987	09	26.35216	01	31	38.49	-04	02	35.9	16.5	688
1987	SY3		1987	09	26.39608	01	31	36.80	-04	02	56.0		688
1987	SY3		1987	10	20.19271	01	14	58.32	-06	42	34.3	16.2	688
1987	SY3		1987	10	20.23741	01	14	56.40	-06	42	48.9		688
1987	SZ3	*	1987	09	26.35216	01	32	22.51	-04	15	45.7	16.2	688
1987	SZ3		1987	09	26.39608	01	32	21.06	-04	16	09.4		688
1987	SZ3		1987	10	20.19271	01	16	36.12	-06	40	52.3	16.5	688
1987	SZ3		1987	10	20.23741	01	16	34.09	-06	41	00.9		688
1987	SA4	*	1987	09	29.20302	00	07	28.53	-02	31	08.4	16.8	688
1987	SA4		1987	09	29.24736	00	07	27.14	-02	31	28.1		688
1987	SC4	*	1987	09	21.26465	00	08	23.82	+12	47	38.1	16.2	688
1987	SC4		1987	09	21.30867	00	08	21.50	+12	47	32.0		688
1987	SC4		1987	09	29.22539	00	02	00.01	+12	17	33.6	16.2 R	688
1987	SC4		1987	09	29.26924	00	01	57.72	+12	17	21.4		688
1987	SC4		1987	10	16.16547	23	50	59.77	+10	41	10.2	16.2	688
1987	SC4		1987	10	16.25243	23	50	57.30	+10	40	38.8		688
1987	SD4	*	1987	09	21.26465	00	15	51.73	+17	10	12.8	17.0	688
1987	SD4		1987	09	21.30867	00	15	49.06	+17	10	04.6	R	688
1987	SD4		1987	09	29.22539	00	08	23.23	+16	38	32.9	16.8	688
1987	SD4		1987	09	29.26924	00	08	20.82	+16	38	19.7	R	688
1987	SD4		1987	10	16.16547	23	54	46.25	+14	51	52.9	17.2 P	688
1987	SD4		1987	10	16.25243	23	54	43.08	+14	51	15.9		688
1987	SE4	*	1987	09	29.22539	23	54	25.94	+10	18	37.6	16.5	688
1987	SE4		1987	09	29.26924	23	54	23.61	+10	18	15.9		688
1987	SE4		1987	10	16.13626	23	42	41.98	+07	57	54.5	16.5 P	688
1987	SE4		1987	10	16.16547	23	42	40.90	+07	57	40.1	16.5 P	688
1987	SE4		1987	10	26.14087	23	39	02.68	+06	42	23.2	16.5	688
1987	SE4		1987	10	26.21505	23	39	01.58	+06	41	55.3		688
1987	SF4	*	1987	09	29.29146	00	25	39.80	+01	47	39.2	16.8	688
1987	SF4		1987	09	29.33653	00	25	37.15	+01	47	18.9		688
1987	SG4	*	1987	09	29.29146	00	27	51.57	+00	02	54.0	17.2	688
1987	SG4		1987	09	29.33653	00	27	48.85	+00	02	41.9		688
1987	SH4	*	1987	09	29.29146	00	42	47.81	-00	24	58.6	17.0	688
1987	SH4		1987	09	29.33653	00	42	44.62	-00	24	52.8		688
1987	SH4		1987	10	16.19453	00	24	17.77	+00	22	51.9	17.2	688
1987	SH4		1987	10	16.28133	00	24	12.57	+00	23	08.1		688
1987	SH4		1987	10	26.16694	00	15	37.03	+01	00	52.8	17.2	688
1987	SH4		1987	10	26.24406	00	15	33.67	+01	01	10.2	R	688
1987	SJ4	*	1987	09	29.29146	00	44	06.74	-00	25	20.8	16.5	688
1987	SJ4		1987	09	29.33653	00	44	04.49	-00	25	39.4		688
1987	SJ4		1987	10	16.19453	00	31	52.86	-02	05	47.7	16.8	688
1987	SJ4		1987	10	16.28133	00	31	49.29	-02	06	12.9		688

1987	SJ4		1987	10	26.16694	00	26	35.61	-02	39	45.6	17.0		688
1987	SJ4		1987	10	26.24406	00	26	33.31	-02	39	57.5			688
1987	SK4	*	1987	09	29.29146	00	46	15.37	-04	39	04.3	16.8		688
1987	SK4		1987	09	29.33653	00	46	13.17	-04	39	16.8			688
1987	SM4	*	1987	09	29.31404	00	58	05.69	+23	53	25.7	16.5		688
1987	SM4		1987	09	29.35941	00	58	03.27	+23	53	20.1			688
1987	SM4		1987	10	20.16992	00	40	09.86	+22	15	41.8	16.5		688
1987	SM4		1987	10	20.21510	00	40	07.51	+22	15	22.1			688
1987	SM4		1987	10	26.18927	00	35	51.25	+21	31	19.7	16.8		688
1987	SM4		1987	10	26.26985	00	35	47.83	+21	30	42.5			688
1987	SN4	*	1987	09	29.31404	00	58	32.00	+27	13	11.5	17.2		688
1987	SN4		1987	09	29.35941	00	58	29.43	+27	13	18.9		R	688
1987	SO4	*	1987	09	29.35941	00	56	56.29	+24	39	45.8	16.8		688
1987	UC	*	1987	10	20.26008	01	57	21.47	+09	23	05.2	17.0		688
1987	UC		1987	10	20.32707	01	57	18.58	+09	22	38.3			688
1987	UD	*	1987	10	20.26008	02	05	33.61	+06	52	27.7	17.0	P	688
1987	UD		1987	10	20.32707	02	05	29.68	+06	52	04.8		P	688
1987	UE	*	1987	10	20.28237	02	49	47.20	+15	43	03.8	16.8		688
1987	UE		1987	10	20.34940	02	49	44.33	+15	42	51.5			688
1987	UF	*	1987	10	20.28237	02	50	55.56	+16	02	30.2	17.0		688
1987	UF		1987	10	20.34940	02	50	52.30	+16	02	22.0			688
1987	UG	*	1987	10	20.28237	02	59	22.78	+16	34	05.7	16.8		688
1987	UG		1987	10	20.34940	02	59	20.02	+16	33	48.0			688
1987	UT	*	1987	10	26.14087	23	17	21.92	+03	53	40.7	16.8		688
1987	UT		1987	10	26.21505	23	17	22.57	+03	53	34.6			688
1987	UU	*	1987	10	20.30484	02	57	33.74	-00	50	42.8	16.8		688
1987	UU		1987	10	20.37171	02	57	30.82	-00	51	05.4			688
1987	UV	*	1987	10	20.30484	03	12	35.08	+00	16	52.9	16.5		688
1987	UV		1987	10	20.37171	03	12	32.60	+00	16	19.7			688
2126	P-L		1987	09	29.20302	23	52	59.92	+03	58	22.9	17.0		688
2126	P-L		1987	09	29.24736	23	52	57.15	+03	58	14.6			688
40			1987	10	20.26008	02	14	59.18	+06	06	30.5			688
40			1987	10	20.32707	02	14	55.04	+06	06	12.6			688
62			1987	09	16.24097	01	15	14.76	+04	35	04.5			688
62			1987	09	16.26250	01	15	14.12	+04	34	59.0			688
99			1987	10	20.28237	02	49	12.56	+15	19	27.8			688
99			1987	10	20.34940	02	49	08.84	+15	19	25.3			688
147			1987	09	26.32997	00	57	17.15	+08	42	23.9			688
147			1987	09	26.37418	00	57	15.29	+08	42	12.6			688
156			1987	10	16.13626	23	28	03.01	+09	11	58.9			688
156			1987	10	16.22352	23	28	00.03	+09	11	23.0			688
156			1987	10	26.14087	23	23	36.75	+08	04	16.1			688
156			1987	10	26.21505	23	23	35.11	+08	03	47.7			688
161			1987	09	19.30575	00	36	24.63	-01	14	18.1			688
161			1987	09	19.35061	00	36	21.77	-01	14	20.9			688
161			1987	09	29.29146	00	25	46.38	-01	23	32.4			688
161			1987	09	29.33653	00	25	43.36	-01	23	35.0			688
175			1987	09	26.24106	23	31	52.58	-05	32	26.8			688
175			1987	09	26.28543	23	31	50.57	-05	32	34.0			688
202			1987	10	20.19271	01	03	13.45	-05	12	26.7			688
202			1987	10	20.23741	01	03	11.51	-05	12	39.1			688
208			1987	09	26.32997	00	53	38.01	+06	02	35.5			688
208			1987	09	26.37418	00	53	35.93	+06	02	24.3			688
232			1987	10	20.26008	02	15	36.27	+05	22	30.2			688
232			1987	10	20.32707	02	15	32.77	+05	22	06.7			688
302			1987	09	21.24258	00	12	56.68	+00	36	00.1			688
302			1987	09	21.28648	00	12	54.14	+00	35	49.4			688
302			1987	09	29.20302	00	05	20.63	+00	03	10.2			688
302			1987	09	29.24736	00	05	17.92	+00	02	58.1			688

329	1987	09	16.24097	01	32	58.45	+03	27	45.1		688
329	1987	09	16.26250	01	32	57.80	+03	27	31.6		688
329	1987	10	20.19271	01	09	16.97	-03	00	46.4		688
329	1987	10	20.23741	01	09	14.83	-03	01	14.9		688
375	1987	09	26.26324	23	50	06.96	+10	44	18.8		688
375	1987	09	26.30792	23	50	04.44	+10	44	16.5		688
457	1987	09	21.26465	23	56	09.32	+20	42	36.6		688
457	1987	09	21.30867	23	56	07.35	+20	42	21.4		688
474	1987	09	29.29146	00	49	04.38	-03	00	13.0		688
474	1987	09	29.33653	00	49	02.24	-03	00	43.0		688
474	1987	10	16.19453	00	36	33.39	-05	39	56.8		688
474	1987	10	16.28133	00	36	29.71	-05	40	35.8		688
474	1987	10	26.16694	00	30	54.82	-06	40	56.8		688
474	1987	10	26.24406	00	30	52.63	-06	41	19.7		688
490	1987	09	21.24258	23	56	16.22	-00	28	51.0		688
490	1987	09	21.28648	23	56	14.42	-00	29	11.4		688
490	1987	09	29.20302	23	50	59.76	-01	30	18.7		688
490	1987	09	29.24736	23	50	57.96	-01	30	38.9		688
513	1987	09	26.32997	00	45	27.65	+03	43	45.6		688
513	1987	09	26.37418	00	45	25.85	+03	43	24.8		688
513	1987	10	16.19453	00	31	54.43	+01	04	20.0		688
513	1987	10	16.28133	00	31	50.77	+01	03	40.4		688
513	1987	10	26.16694	00	26	06.16	-00	05	19.3		688
513	1987	10	26.24406	00	26	03.65	-00	05	48.1		688
540	1987	09	29.20302	00	01	43.72	+03	30	24.5		688
540	1987	09	29.24736	00	01	41.20	+03	30	01.5		688
540	1987	10	26.14087	23	42	09.33	+00	02	34.2		688
540	1987	10	26.21505	23	42	07.08	+00	02	09.8		688
547	1987	09	26.32997	00	44	05.25	+07	45	14.3		688
547	1987	09	26.37418	00	44	03.71	+07	44	33.4		688
547	1987	10	26.16694	00	28	52.54	+00	00	34.3		688
547	1987	10	26.24406	00	28	50.81	-00	00	27.1		688
552	1987	09	21.26465	00	15	15.04	+13	30	21.4	15.8	688
552	1987	09	21.30867	00	15	13.14	+13	30	10.7		688
552	1987	09	29.22539	00	09	25.26	+12	53	25.4		688
552	1987	09	29.26924	00	09	23.25	+12	53	12.1		688
552	1987	10	16.16547	23	57	52.26	+11	19	45.4		688
552	1987	10	16.25243	23	57	49.25	+11	19	16.3		688
553	1987	09	16.24097	01	32	24.72	+00	11	41.5		688
553	1987	09	16.26250	01	32	23.96	+00	11	35.1		688
555	1987	09	26.24106	23	33	09.76	-05	43	27.1		688
555	1987	09	26.28543	23	33	07.82	-05	43	39.6		688
557	1987	09	26.24106	23	32	23.87	+01	00	02.8		688
557	1987	09	26.28543	23	32	21.41	+00	59	49.0		688
558	1987	09	16.24097	01	29	09.51	-00	24	36.7		688
558	1987	09	16.26250	01	29	08.85	-00	24	44.6		688
558	1987	10	20.19271	01	06	11.96	-04	06	20.5		688
558	1987	10	20.23741	01	06	09.94	-04	06	34.7		688
578	1987	10	20.28237	02	59	33.58	+18	51	24.4		688
578	1987	10	20.34940	02	59	29.99	+18	51	18.8		688
633	1987	09	26.35216	01	32	43.52	-03	24	29.7		688
633	1987	09	26.39608	01	32	41.92	-03	24	50.8		688
633	1987	10	20.19271	01	16	16.02	-06	13	00.2		688
633	1987	10	20.23741	01	16	14.02	-06	13	15.4		688
647	1987	09	16.18750	21	44	11.65	-00	45	45.2		688
647	1987	09	16.21736	21	44	10.37	-00	45	55.9		688
681	1987	09	26.24106	23	21	31.98	-02	45	59.1	16.0	688
681	1987	09	26.28543	23	21	30.31	-02	46	21.2		688
716	1987	09	29.29146	00	47	50.14	-04	03	49.7		688

716	1987	09	29.33653	00	47	48.11	-04	04	08.4	688
716	1987	10	16.19453	00	35	11.52	-05	47	57.7	688
716	1987	10	16.28133	00	35	07.70	-05	48	24.8	688
716	1987	10	26.16694	00	28	39.20	-06	32	20.6	688
716	1987	10	26.24406	00	28	36.45	-06	32	38.7	688
733	1987	09	21.26465	00	14	35.91	+14	39	51.3	688
733	1987	09	21.30867	00	14	33.69	+14	39	49.8	688
733	1987	09	29.22539	00	08	02.02	+14	32	05.3	688
733	1987	09	29.26924	00	07	59.84	+14	32	01.9	688
733	1987	10	16.16547	23	54	43.71	+13	58	29.1	688
733	1987	10	16.25243	23	54	39.98	+13	58	15.7	688
741	1987	09	26.35216	01	27	28.70	-04	29	00.9	688
741	1987	09	26.39608	01	27	26.87	-04	29	16.1	688
741	1987	10	20.19271	01	08	13.59	-06	26	15.2	688
741	1987	10	20.23741	01	08	11.35	-06	26	24.6	688
750	1987	09	29.29146	00	39	41.53	-01	50	57.5	688
750	1987	09	29.33653	00	39	38.92	-01	51	10.6	688
750	1987	10	16.19453	00	24	17.84	-03	11	32.9	688
750	1987	10	16.28133	00	24	13.25	-03	11	53.5	688
750	1987	10	26.16694	00	16	32.22	-03	43	04.6	688
750	1987	10	26.24406	00	16	28.91	-03	43	16.0	688
769	1987	09	29.29146	00	48	24.95	-00	45	41.0	688
769	1987	09	29.33653	00	48	22.76	-00	45	49.7	688
769	1987	10	16.19453	00	35	03.04	-01	29	56.8	688
769	1987	10	16.28133	00	34	59.04	-01	30	07.2	688
769	1987	10	26.16694	00	28	14.75	-01	44	40.0	688
769	1987	10	26.24406	00	28	11.85	-01	44	44.1	688
795	1987	09	19.30575	00	22	31.95	-07	04	00.7	688
795	1987	09	19.35061	00	22	29.25	-07	04	04.6	688
825	1987	10	20.26008	02	14	06.18	+07	40	39.4	688
825	1987	10	20.32707	02	14	01.99	+07	40	18.8	688
851	1987	09	21.24258	00	13	45.93	-01	22	12.4	688
851	1987	09	21.28648	00	13	43.44	-01	22	32.3	688
851	1987	09	29.20302	00	06	10.86	-02	18	53.1	688
851	1987	09	29.24736	00	06	08.19	-02	19	11.9	688
861	1987	09	26.35216	01	42	30.60	-01	54	40.8	688
861	1987	09	26.39608	01	42	28.96	-01	54	54.4	688
861	1987	10	20.19271	01	25	39.16	-03	52	22.5	688
861	1987	10	20.23741	01	25	37.15	-03	52	32.5	688
906	1987	10	20.28237	03	00	32.61	+17	05	01.3	688
906	1987	10	20.34940	03	00	29.10	+17	05	04.2	688
920	1987	09	29.20302	23	58	00.06	+03	24	13.4	688
920	1987	09	29.24736	23	57	57.93	+03	23	46.5	688
933	1987	09	19.30575	00	34	28.41	-02	37	01.0	R 688
933	1987	09	19.35061	00	34	25.74	-02	37	20.3	688
933	1987	09	29.29146	00	25	46.26	-03	51	38.5	R 688
933	1987	09	29.33653	00	25	44.01	-03	51	58.9	688
976	1987	09	26.26324	23	39	46.54	+08	15	19.4	688
976	1987	09	26.30792	23	39	44.65	+08	15	04.5	688
976	1987	10	16.13626	23	27	51.01	+06	24	24.5	688
976	1987	10	16.22352	23	27	48.34	+06	23	56.3	688
976	1987	10	26.14087	23	23	46.35	+05	32	54.6	688
976	1987	10	26.21505	23	23	44.83	+05	32	33.0	688
990	1987	09	26.24106	23	29	00.74	-02	22	51.7	688
990	1987	09	26.28543	23	28	58.16	-02	22	49.8	688
995	1987	10	26.14087	23	20	21.72	+08	04	26.1	688
995	1987	10	26.21505	23	20	21.66	+08	03	38.9	688
1030	1987	10	20.30484	03	14	45.12	+06	08	00.7	688
1030	1987	10	20.37171	03	14	42.73	+06	07	34.0	688

1044	1987	09	19.30575	00	34	47.99	-02	49	59.9			688
1044	1987	09	19.35061	00	34	45.52	-02	50	13.2			688
1044	1987	09	29.29146	00	25	52.22	-03	36	45.0			688
1044	1987	09	29.33653	00	25	49.71	-03	36	57.9			688
1064	1987	09	16.18750	21	42	11.89	+01	25	45.5			688
1064	1987	09	16.21736	21	42	10.78	+01	25	38.4			688
1100	1987	09	26.24106	23	21	58.37	-02	44	55.6			688
1100	1987	09	26.28543	23	21	56.44	-02	45	08.5			688
1145	1987	10	26.14087	23	25	56.17	-00	06	55.7	16.2		688
1145	1987	10	26.21505	23	25	54.40	-00	07	00.7			688
1154	1987	10	20.26008	02	13	06.54	+08	10	30.8			688
1154	1987	10	20.32707	02	13	03.64	+08	10	17.9			688
1165	1987	10	20.28237	02	54	29.55	+11	28	22.3	15.5		688
1165	1987	10	20.34940	02	54	26.54	+11	27	55.5			688
1184	1987	09	21.24258	23	57	31.74	+00	52	16.4			688
1184	1987	09	21.28648	23	57	29.07	+00	52	13.3			688
1184	1987	09	29.20302	23	49	41.97	+00	42	18.0			688
1184	1987	09	29.24736	23	49	39.33	+00	42	14.8			688
1184	1987	10	26.14087	23	29	45.19	+00	29	00.3			688
1184	1987	10	26.21505	23	29	43.13	+00	29	03.9			688
1185	1987	09	19.30575	00	36	15.37	-07	00	16.8			688
1185	1987	09	19.35061	00	36	12.87	-07	00	33.1			688
1220	1987	09	26.35216	01	42	33.58	-07	19	49.3	16.8	P	688
1220	1987	09	26.39608	01	42	32.23	-07	20	03.4			688
1220	1987	10	20.19271	01	25	20.69	-09	28	34.5	16.8		688
1220	1987	10	20.23741	01	25	18.58	-09	28	44.2			688
1277	1987	09	26.26324	23	37	56.97	+09	50	23.1			688
1277	1987	09	26.30792	23	37	54.67	+09	50	01.7			688
1277	1987	10	16.13626	23	25	51.92	+07	15	12.1			688
1277	1987	10	16.22352	23	25	49.62	+07	14	34.6			688
1277	1987	10	26.14087	23	23	13.89	+06	08	07.1			688
1277	1987	10	26.21505	23	23	13.19	+06	07	40.9			688
1305	1987	10	20.28237	03	02	36.74	+15	58	32.7			688
1305	1987	10	20.34940	03	02	33.88	+15	58	23.0			688
1350	1987	09	26.32997	01	02	34.05	+02	41	16.3			688
1350	1987	09	26.37418	01	02	32.07	+02	41	01.5			688
1371	1987	09	21.24258	23	54	53.23	+02	28	23.0	16.8		688
1371	1987	09	21.28648	23	54	51.44	+02	27	58.1			688
1371	1987	09	29.20302	23	49	48.31	+01	14	55.2			688
1371	1987	09	29.24736	23	49	46.85	+01	14	31.0			688
1391	1987	10	20.30484	02	56	34.57	+05	59	50.3			688
1391	1987	10	20.37171	02	56	31.29	+05	59	32.9			688
1413	1987	09	21.24258	00	01	48.13	+00	01	24.7			688
1413	1987	09	21.28648	00	01	46.23	+00	01	04.3			688
1413	1987	09	29.20302	23	56	17.38	-00	58	58.3			688
1413	1987	09	29.24736	23	56	15.48	-00	59	19.5			688
1468	1987	09	29.31404	00	56	14.96	+28	44	08.8			688
1468	1987	09	29.35941	00	56	11.89	+28	44	13.1			688
1477	1987	09	29.31404	00	55	20.05	+29	30	18.7			688
1477	1987	09	29.35941	00	55	17.47	+29	30	28.0			688
1486	1987	09	26.24106	23	31	40.87	-02	59	40.9			688
1486	1987	09	26.28543	23	31	38.45	-02	59	55.4			688
1487	1987	09	29.29146	00	43	09.07	+00	53	27.5			688
1487	1987	09	29.33653	00	43	07.14	+00	53	15.2			688
1487	1987	10	16.19453	00	31	12.23	-00	20	25.1	16.8		688
1487	1987	10	16.28133	00	31	08.69	-00	20	45.9			688
1487	1987	10	26.16694	00	24	58.70	-00	55	30.6	17.0		688
1487	1987	10	26.24406	00	24	56.15	-00	55	43.8			688
1491	1987	09	26.32997	00	45	45.26	+09	50	07.6			688

1491	1987	09	26.37418	00	45	43.17	+09	49	58.9			688
1492	1987	09	19.30575	00	41	43.39	-03	33	37.7			688
1492	1987	09	19.35061	00	41	40.97	-03	34	01.2			688
1492	1987	09	29.29146	00	32	22.69	-04	57	46.8	17.0	R	688
1492	1987	09	29.33653	00	32	19.71	-04	58	09.0			688
1502	1987	09	21.24258	00	01	30.06	+02	59	48.4			688
1502	1987	09	21.28648	00	01	28.06	+02	59	31.9			688
1502	1987	09	29.20302	23	55	12.99	+02	08	04.1			688
1502	1987	09	29.24736	23	55	10.81	+02	07	45.6			688
1528	1987	10	20.30484	03	01	56.00	+03	47	02.5	16.8		688
1528	1987	10	20.37171	03	01	52.73	+03	46	38.9			688
1541	1987	09	21.24258	00	12	08.45	+01	18	19.7			688
1541	1987	09	21.28648	00	12	06.17	+01	18	09.9			688
1541	1987	09	29.20302	00	05	24.22	+00	47	05.2	16.5		688
1541	1987	09	29.24736	00	05	21.78	+00	46	55.3			688
1545	1987	10	20.26008	02	03	00.75	+10	41	50.0			688
1545	1987	10	20.32707	02	02	57.15	+10	41	34.0			688
1630	1987	10	20.28237	02	49	22.07	+14	24	53.4			688
1630	1987	10	20.34940	02	49	18.95	+14	24	45.2			688
1679	1987	09	29.29146	00	28	34.24	-01	09	45.1	16.0		688
1679	1987	09	29.33653	00	28	32.40	-01	10	10.5			688
1679	1987	10	16.19453	00	17	48.89	-03	37	57.5	16.2		688
1679	1987	10	16.28133	00	17	45.74	-03	38	37.8			688
1679	1987	10	26.16694	00	12	44.51	-04	48	34.8	16.5		688
1679	1987	10	26.24406	00	12	42.41	-04	49	02.8			688
1735	1987	09	21.24258	00	16	45.33	-01	54	39.8	15.5		688
1735	1987	09	21.28648	00	16	42.94	-01	54	44.1			688
1735	1987	09	29.20302	00	09	35.36	-02	01	15.5	15.5		688
1735	1987	09	29.24736	00	09	32.95	-02	01	17.7			688
1736	1987	09	16.24097	01	18	04.14	+03	56	02.8			688
1736	1987	09	16.26250	01	18	03.59	+03	55	53.9			688
1741	1987	09	29.29146	00	51	06.72	+01	55	25.0	16.2		688
1741	1987	09	29.33653	00	51	04.46	+01	55	11.9			688
1741	1987	10	16.19453	00	37	32.23	+00	45	17.1	16.5		688
1741	1987	10	16.28133	00	37	28.08	+00	44	58.4			688
1741	1987	10	26.16694	00	30	29.73	+00	13	48.9	16.8		688
1741	1987	10	26.24406	00	30	26.45	+00	13	38.1			688
1744	1987	10	20.28237	02	41	23.37	+16	54	00.3	17.2		688
1744	1987	10	20.34940	02	41	19.49	+16	53	49.9		R	688
1762	1987	09	21.24258	00	09	09.46	-00	20	48.5			688
1762	1987	09	21.28648	00	09	07.45	-00	21	03.7			688
1762	1987	09	29.20302	00	03	03.32	-01	07	35.4			688
1762	1987	09	29.24736	00	03	01.23	-01	07	50.9			688
1804	1987	09	26.32997	00	48	50.25	+09	55	08.7	16.5		688
1804	1987	09	26.37418	00	48	47.63	+09	54	56.9			688
1821	1987	09	21.24258	23	57	29.25	+03	30	54.8		R	688
1821	1987	09	21.28648	23	57	26.45	+03	30	41.2			688
1821	1987	09	26.26324	23	52	45.24	+03	02	22.5			688
1821	1987	09	26.30792	23	52	42.62	+03	02	09.3			688
1821	1987	09	29.20302	23	50	04.83	+02	45	27.7			688
1821	1987	09	29.24736	23	50	02.24	+02	45	10.7			688
1821	1987	10	16.13626	23	37	35.40	+01	18	54.5			688
1821	1987	10	16.22352	23	37	32.25	+01	18	31.8			688
1821	1987	10	26.14087	23	33	37.64	+00	44	44.9	17.2		688
1821	1987	10	26.21505	23	33	36.45	+00	44	35.2			688
1850	1987	10	20.26008	02	06	46.36	+08	14	50.9			688
1850	1987	10	20.32707	02	06	41.94	+08	14	33.0			688
1891	1987	09	29.31404	00	58	37.29	+22	30	47.3	16.5		688
1891	1987	09	29.35941	00	58	34.66	+22	30	44.6			688

1891	1987	10	20.16992	00	38	44.25	+21	34	10.8	16.5	688
1891	1987	10	20.21510	00	38	41.68	+21	33	59.1		688
1891	1987	10	26.18927	00	33	40.57	+21	05	38.7	16.5	688
1891	1987	10	26.26985	00	33	36.71	+21	05	15.0		688
1900	1987	09	21.26465	00	00	58.57	+13	48	30.3	15.8	688
1900	1987	09	21.30867	00	00	55.80	+13	48	21.0		688
1900	1987	09	29.22539	23	53	03.53	+13	09	49.2		688
1900	1987	09	29.26924	23	53	00.88	+13	09	34.5		688
1999	1987	09	26.35216	01	46	36.28	-03	16	40.1		688
1999	1987	09	26.39608	01	46	34.96	-03	16	59.2		688
2003	1987	09	26.32997	01	05	00.65	+04	35	53.4		688
2003	1987	09	26.37418	01	04	59.00	+04	35	43.2	R	688
2026	1987	09	26.24106	23	34	01.98	+00	13	50.5	P	688
2026	1987	09	26.28543	23	33	59.38	+00	13	34.1		688
2066	1987	10	20.28237	03	05	08.18	+11	30	41.1		688
2066	1987	10	20.34940	03	05	04.58	+11	30	26.0		688
2080	1987	09	21.24258	00	05	19.35	-02	44	04.8		688
2080	1987	09	21.28648	00	05	16.46	-02	44	17.0		688
2080	1987	09	29.20302	23	57	01.69	-03	18	17.6		688
2080	1987	09	29.24736	23	56	58.97	-03	18	25.5		688
2138	1987	09	19.30575	00	24	28.60	-07	17	30.6		688
2138	1987	09	19.35061	00	24	26.25	-07	17	48.6		688
2174	1987	09	26.24106	23	36	33.15	-03	03	54.2	16.0	688
2174	1987	09	26.28543	23	36	30.60	-03	03	47.3		688
2179	1987	09	29.29146	00	31	22.47	+00	49	01.2	15.8	688
2179	1987	09	29.33653	00	31	20.05	+00	48	56.1		688
2179	1987	10	16.19453	00	16	53.45	+00	21	52.9		688
2179	1987	10	16.28133	00	16	49.19	+00	21	46.6		688
2181	1987	09	29.29146	00	28	43.98	-01	17	58.1		688
2181	1987	09	29.33653	00	28	41.51	-01	18	03.0		688
2223	1987	09	16.21736	21	22	17.50	+03	58	00.0		688
2286	1987	09	29.29146	00	33	57.13	+01	20	52.6		688
2286	1987	09	29.33653	00	33	54.32	+01	20	37.5		688
2286	1987	10	16.19453	00	18	23.98	-00	03	26.7		688
2286	1987	10	16.28133	00	18	19.50	-00	03	47.8		688
2286	1987	10	26.16694	00	11	37.60	-00	34	40.7	16.8	688
2286	1987	10	26.24406	00	11	34.94	-00	34	52.0		688
2295	1987	09	26.32997	00	44	06.51	+08	20	31.1		688
2295	1987	09	26.37418	00	44	04.40	+08	20	19.7		688
2323	1987	09	21.24258	00	02	23.07	-00	38	52.4		688
2323	1987	09	21.28648	00	02	20.90	-00	39	02.6		688
2323	1987	09	29.20302	23	56	09.21	-01	08	27.7		688
2323	1987	09	29.24736	23	56	07.10	-01	08	36.3		688
2379	1987	10	26.16694	00	15	15.87	+01	04	55.0	15.8	688
2379	1987	10	26.24406	00	15	13.71	+01	04	40.3		688
2398	1987	09	16.26250	01	25	01.35	+02	10	36.3		688
2459	1987	10	20.28237	02	46	20.06	+15	39	00.0	16.2	688
2459	1987	10	20.34940	02	46	17.07	+15	38	34.0		688
2460	1987	10	20.28237	03	00	15.67	+12	28	47.9	16.5	688
2460	1987	10	20.34940	03	00	12.39	+12	28	23.3		688
2489	1987	10	20.28237	02	42	54.02	+14	56	22.9	17.0	688
2489	1987	10	20.34940	02	42	50.92	+14	56	12.1		688
2490	1987	10	20.28237	02	41	05.91	+14	21	49.7		688
2490	1987	10	20.34940	02	41	02.91	+14	21	07.7		688
2520	1987	09	26.24106	23	35	43.67	-04	34	37.8		688
2520	1987	09	26.28543	23	35	41.64	-04	34	45.1		688
2524	1987	10	20.26008	01	59	46.42	+12	38	00.5		688
2524	1987	10	20.32707	01	59	43.19	+12	37	43.8		688
2554	1987	09	26.26324	23	47	03.86	+07	17	28.0		688

2554	1987	09	26.30792	23	47	00.99	+07	17	11.6			688
2554	1987	10	16.13626	23	30	51.94	+05	21	42.2			688
2554	1987	10	16.22352	23	30	48.63	+05	21	15.2			688
2554	1987	10	26.14087	23	26	27.58	+04	34	21.3			688
2554	1987	10	26.21505	23	26	26.03	+04	34	04.1			688
2579	1987	09	26.30792	23	45	19.40	+09	35	06.1	17.0		688
2579	1987	10	16.13626	23	28	59.30	+07	20	47.1		P	688
2579	1987	10	16.22352	23	28	55.84	+07	20	08.6			688
2606	1987	09	26.32997	00	58	15.47	+07	49	03.8			688
2640	1987	09	26.32997	00	47	26.09	+06	06	01.1	17.2		688
2640	1987	09	26.37418	00	47	23.35	+06	05	51.2			688
2663	1987	10	20.28237	03	04	44.05	+19	29	12.3			688
2663	1987	10	20.34940	03	04	40.58	+19	29	13.4			688
2704	1987	09	26.32997	01	05	02.98	+09	09	21.7			688
2704	1987	09	26.37418	01	05	00.84	+09	09	03.6			688
2707	1987	09	21.24258	00	15	18.44	-02	41	51.6	16.8		688
2707	1987	09	21.28648	00	15	16.50	-02	42	06.9			688
2707	1987	09	29.20302	00	09	23.67	-03	19	07.9			688
2707	1987	09	29.24736	00	09	21.59	-03	19	17.0			688
2741	1987	09	19.30575	00	31	24.00	-05	26	23.5	16.8		688
2741	1987	09	19.35061	00	31	21.69	-05	26	47.0			688
2775	1987	10	20.26008	02	13	00.25	+05	50	41.2	16.5		688
2775	1987	10	20.32707	02	12	56.57	+05	50	23.6			688
2776	1987	09	26.32997	00	43	03.30	+04	30	27.1			688
2776	1987	10	26.16694	00	17	54.77	+00	54	42.9			688
2776	1987	10	26.24406	00	17	51.58	+00	54	15.8			688
2848	1987	09	26.32997	00	51	10.99	+06	19	21.3			688
2848	1987	09	26.37418	00	51	09.00	+06	19	10.6			688
2863	1987	10	20.26008	02	12	20.70	+10	01	02.4			688
2863	1987	10	20.32707	02	12	17.54	+10	00	46.4			688
2942	1987	10	20.30484	03	15	46.86	+06	48	46.4	17.2		688
2942	1987	10	20.37171	03	15	43.36	+06	48	28.8			688
2944	1987	10	20.26008	02	11	00.33	+07	49	19.4			688
2944	1987	10	20.32707	02	10	57.28	+07	48	38.0			688
2946	1987	09	26.32997	00	39	54.95	+05	07	45.9			688
2946	1987	09	26.37418	00	39	52.75	+05	07	31.5			688
2974	1987	10	20.28237	02	44	54.94	+15	48	32.8			688
2974	1987	10	20.34940	02	44	51.37	+15	48	00.3			688
2993	1987	09	29.31404	00	58	21.55	+28	05	34.0			688
2993	1987	09	29.35941	00	58	18.85	+28	05	44.0		D	688
3024	1987	09	16.24097	01	17	34.48	+00	57	09.9			688
3024	1987	09	16.26250	01	17	33.51	+00	57	08.5			688
3071	1987	09	29.29146	00	41	07.83	+01	41	24.7	17.2		688
3071	1987	09	29.33653	00	41	05.76	+01	41	13.4			688
3071	1987	10	16.28133	00	29	21.16	+00	22	30.8		R	688
3109	1987	09	29.29146	00	43	29.59	+01	27	22.3			688
3109	1987	09	29.33653	00	43	26.84	+01	27	14.0			688
3109	1987	10	16.19453	00	27	00.03	+00	43	41.0			688
3109	1987	10	16.28133	00	26	55.23	+00	43	30.4			688
3109	1987	10	26.16694	00	18	56.89	+00	29	20.0	16.5		688
3109	1987	10	26.24406	00	18	53.45	+00	29	16.2			688
3280	1987	09	26.32997	00	54	15.10	+09	11	47.0	16.5		688
3280	1987	09	26.37418	00	54	12.85	+09	11	35.1			688
3291	1987	09	29.20302	00	03	07.47	-01	21	28.9			688
3291	1987	09	29.24736	00	03	05.49	-01	21	43.6			688
3466	1987	09	29.29146	00	35	41.95	+00	43	48.8			688
3469	1987	10	20.28237	02	46	30.27	+16	15	58.7			688
3469	1987	10	20.34940	02	46	27.25	+16	15	35.9			688
3481	1987	09	26.24106	23	28	55.81	-01	26	13.4			688

3481	1987 09 26.28543	23 28 53.57	-01 26 39.6				688
3485	1987 09 26.24106	23 28 26.27	-01 02 21.7				688
3485	1987 09 26.28543	23 28 24.02	-01 02 34.1				688
3666	1987 10 20.26008	02 05 40.69	+09 11 49.8			P	688
3666	1987 10 20.32707	02 05 37.38	+09 11 37.7				688
3675	1987 10 20.21510	00 53 52.44	+16 25 04.7				688
3675	1987 10 26.18927	00 49 30.69	+16 04 56.0				688

690 Lowell Observatory
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road,
Flagstaff, AZ 86001, U.S.A.
Observers C. W. Tombaugh, K. Newman
Measurer B. A. Skiff
0.33-m photographic telescope

1930 UT	1930 10 15.21875	00 15 26.58	+16 47 23.4			R	690
1930 UT	1930 10 17.29722	00 14 00.48	+16 36 57.9				690
1930 UT	1930 10 19.29861	00 12 42.20	+16 27 00.4			R	690
1930 UU	1930 10 17.29722	00 15 58.95	+13 54 57.5				690
1930 UU	1930 10 19.29861	00 14 39.25	+13 47 02.4				690
1930 UC1	1930 10 15.21875	00 43 18.47	+13 04 12.4			P	690
1930 UC1	1930 10 17.29722	00 41 47.08	+12 43 34.4			D	690
1930 UC1	1930 10 19.29861	00 40 23.38	+12 23 35.0			P	690
230	1930 10 15.21875	00 26 06.40	+15 35 23.4				690
230	1930 10 17.29722	00 24 32.78	+15 13 41.3				690
230	1930 10 19.29861	00 23 06.80	+14 52 39.3				690
1321	1930 10 15.21875	00 26 05.44	+16 21 13.0				690
1321	1930 10 17.29722	00 24 26.72	+16 11 48.1				690
1321	1930 10 19.29861	00 22 55.03	+16 02 39.4				690

691 Kitt Peak, Steward Observatory
T. Gehrels, Space Sciences Building, University of Arizona,
Tucson, AZ 85721, U.S.A.
Observers T. Gehrels, J. V. Scotti
Measurer R. McCarty
0.91-m SPACEWATCH telescope, CCD in scanning mode
SAOC 1984
See also MPC 9198, MPC 10373 and Astron. J. 91, 1242, 1986

1987 SL	1987 10 16.20582	00 32 57.85	+32 15 34.8				691
1987 SL	1987 10 16.21863	00 32 56.63	+32 15 38.0		16.5V		691
1987 SL	1987 10 16.22978	00 32 55.55	+32 15 40.4				691
1987 SY	1987 10 15.20697	23 07 25.31	+08 39 03.4				691
1987 SY	1987 10 15.21470	23 07 25.10	+08 38 57.1		17.8V		691
1987 SY	1987 10 15.25141	23 07 24.16	+08 38 26.7				691
3291	1987 09 27.18824	00 04 34.38	-01 10 57.4				691
3291	1987 09 27.22434	00 04 32.78	-01 11 08.6		17.0V		691
3362	1987 09 20.32319	01 17 43.96	-11 32 27.7				691
3362	1987 09 20.33858	01 17 40.55	-11 33 02.9				691
3362	1987 09 20.35895	01 17 36.15	-11 33 48.9				691

801 Oak Ridge
R. E. McCrosky, Harvard-Smithsonian Center for Astrophysics,
60 Garden Street, Cambridge, MA 02138, U.S.A.
Observers R. E. McCrosky, C.-Y. Shao, G. Schwartz
1.5-m reflector
AC

1966 PK	1987 09 26.28318	00 01 50.31	-03 42 16.5				801
1976 GK2	1987 10 19.11144	23 40 41.03	-04 35 12.3				801
1978 RD6	1984 02 03.02386	04 31 05.98	+06 03 16.1				801
1978 RD6	1986 06 04.13890	15 05 44.22	-04 03 28.3				801

1979	MV6		1986	06	10.14433	14	31	17.12	-13	55	12.6	801
1983	QF		1987	08	24.32778	00	45	44.56	-00	39	16.8	801
1983	RC4		1987	09	26.07701	21	03	46.30	-19	07	22.8	801
1984	DH1		1986	10	29.96629	18	49	25.77	-11	39	43.8	801
1984	DH1		1987	08	25.23049	22	08	24.40	+18	44	31.4	801
1984	DH1		1987	09	23.15096	21	48	54.60	+16	42	20.6	801
1984	DH1		1987	10	18.98932	21	41	29.73	+13	59	46.8	801
1984	DH1		1987	10	19.99432	21	41	27.79	+13	53	40.7	801
1985	TL3		1987	02	25.01736	03	37	25.97	+02	31	32.0	801
1987	SB		1987	10	19.13685	23	58	02.05	-06	25	43.6	801
3691			1987	09	26.15741	22	50	27.33	-04	26	34.4	801
3693			1987	09	25.09347	20	07	21.67	-07	47	39.5	801
3707			1987	08	22.17331	21	24	15.76	-00	08	33.3	801

809 European Southern Observatory
W. Landgraf, University Observatory, Geissmarlandstrasse 11, D-3400 Gottingen, Federal Republic of Germany (2)
E. Elst, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180 Brussels, Belgium (4)
0.4-m GPO astrograph

1981	EW14		1987	08	28.29444	22	53	45.79	-05	43	33.0	18.2	4 809
1981	EW14		1987	08	28.30799	22	53	44.87	-05	43	31.5		4 809
1981	EW14		1987	08	28.31875	22	53	44.00	-05	43	30.1		4 809
1983	EW		1987	08	28.29444	22	51	07.05	-06	15	27.7	17.2	4 809
1983	EW		1987	08	28.30799	22	51	06.30	-06	15	34.7		4 809
1983	EW		1987	08	28.31875	22	51	05.64	-06	15	38.9		4 809
1983	NR		1987	06	25.21841	20	32	36.22	-29	39	18.0		2 809
1983	NR		1987	06	25.22326	20	32	36.00	-29	39	17.4	15.1	2 809
1983	NR		1987	06	25.22813	20	32	35.81	-29	39	16.6		2 809
1987	MX		1987	06	25.21841	20	30	00.82	-29	43	10.6		2 809
1987	MX		1987	06	25.22326	20	30	00.69	-29	43	13.2	15.9	2 809
1987	MX		1987	06	25.22813	20	30	00.54	-29	43	14.8		2 809
1987	MN1	*	1987	06	24.01181	09	53	30.84	-02	54	31.9		2 809
1987	MO1	*	1987	06	26.25590	19	51	01.74	-30	52	25.8		2 809
1987	MP1	*	1987	06	26.25590	19	52	17.57	-31	21	59.2		2 809
1987	MQ1	*	1987	06	26.25590	19	52	25.67	-31	35	26.7		2 809
1987	MR1	*	1987	06	26.25590	19	52	50.26	-31	08	36.6		2 809
1987	MS1	*	1987	06	26.25590	19	53	04.56	-31	23	21.3	17.5	2 809
1987	MT1	*	1987	06	26.25590	19	54	04.47	-30	07	25.8	16.5	2 809
1987	MU1	*	1987	06	26.25590	19	56	24.71	-31	38	02.8	18.0	2 809
1987	MV1	*	1987	06	26.25590	19	57	49.51	-30	33	32.9	17.0	2 809
1987	MV1		1987	07	01.21875	19	50	38.86	-30	37	40.4	17.5	2 809
1987	MW1	*	1987	06	24.29204	20	23	19.29	-22	17	51.5	17.2	2 809
1987	MW1		1987	06	24.30177	20	23	18.83	-22	17	50.2		2 809
1987	MX1		1987	06	25.21841	20	29	20.44	-30	11	03.8		2 809
1987	MX1	*	1987	06	25.22326	20	29	20.34	-30	11	03.8	17.6	2 809
1987	MX1		1987	06	25.22813	20	29	20.25	-30	11	05.2		2 809
1987	ND		1987	06	23.34688	20	24	47.84	-23	20	42.8		2 809
1987	ND		1987	06	23.35174	20	24	47.80	-23	20	44.7		2 809
1987	ND		1987	06	23.35660	20	24	47.75	-23	20	46.0		2 809
1987	ND		1987	06	24.29204	20	24	42.24	-23	26	50.4		2 809
1987	ND		1987	06	24.29690	20	24	42.20	-23	26	52.5		2 809
1987	ND		1987	06	24.30177	20	24	42.16	-23	26	54.4		2 809
1987	ND		1987	06	25.31285	20	24	33.48	-23	33	36.2		2 809
1987	ND		1987	06	25.31771	20	24	33.42	-23	33	38.3		2 809
1987	ND		1987	06	25.32257	20	24	33.35	-23	33	39.6		2 809
1987	NO		1987	06	24.29690	20	24	50.72	-24	02	39.7		2 809
1987	ND1		1987	07	02.30660	20	25	40.95	-22	18	57.7		2 809
1987	ND1	*	1987	07	02.31146	20	25	40.72	-22	18	56.9	17.8	2 809

1987	ND1	1987	07	02.31632	20	25	40.71	-22	18	56.5	2 809
1987	OO	1987	08	20.21528	21	22	08.09	+07	15	49.0	17.2 4 809
1987	OO	1987	08	20.22569	21	22	07.56	+07	15	47.9	4 809
1987	OO	1987	08	22.12083	21	20	42.23	+07	08	52.6	4 809
1987	OO	1987	08	22.13125	21	20	41.79	+07	08	51.0	4 809
1987	OP	1987	08	20.21528	21	22	48.80	+07	00	46.2	16.5 4 809
1987	OP	1987	08	20.22569	21	22	48.30	+07	00	46.2	4 809
1987	OP	1987	08	22.12083	21	21	13.12	+06	55	24.2	4 809
1987	OP	1987	08	22.13125	21	21	12.59	+06	55	22.4	4 809
1987	OR	1987	08	19.17917	20	46	05.06	+07	40	25.7	17.5 4 809
1987	OR	1987	08	19.19097	20	46	04.67	+07	40	11.8	4 809
1987	OR	1987	08	19.20000	20	46	04.30	+07	40	01.4	4 809
1987	OR	1987	08	30.05556	20	40	34.48	+03	39	01.5	17.3 4 809
1987	OR	1987	08	30.06597	20	40	34.22	+03	38	48.3	4 809
1987	OR	1987	08	30.07639	20	40	33.96	+03	38	34.4	4 809
1987	OR	1987	08	31.04306	20	40	13.56	+03	17	00.9	4 809
1987	OR	1987	08	31.05347	20	40	13.32	+03	16	46.8	4 809
1987	OR	1987	08	31.06389	20	40	13.10	+03	16	33.8	4 809
1987	QG1	1987	08	26.28056	22	04	14.06	-05	14	38.9	17.2 4 809
1987	QG1	1987	08	26.29097	22	04	13.42	-05	14	37.3	4 809
1987	QG1	1987	08	26.30278	22	04	12.63	-05	14	36.0	4 809
1987	QS1	1987	08	21.03264	19	48	47.95	-24	57	15.4	17.4 4 809
1987	QS1	1987	08	21.04306	19	48	47.81	-24	57	15.4	4 809
1987	QS1	1987	08	21.05347	19	48	47.68	-24	57	15.6	4 809
1987	QS1	1987	08	22.02847	19	48	15.02	-24	54	42.7	17.2 4 809
1987	QS1	1987	08	22.03889	19	48	14.67	-24	54	40.9	4 809
1987	QS1	1987	08	24.03542	19	47	13.84	-24	49	17.1	17.6 4 809
1987	QS1	1987	08	24.04653	19	47	13.50	-24	49	16.5	4 809
1987	QT1	1987	08	18.11875	19	54	34.01	-24	42	07.3	17.2 4 809
1987	QT1	1987	08	18.12917	19	54	33.82	-24	42	05.1	4 809
1987	QT1	1987	08	21.03264	19	53	24.71	-24	27	57.1	17.1 4 809
1987	QT1	1987	08	21.04306	19	53	24.50	-24	27	54.0	4 809
1987	QT1	1987	08	21.05347	19	53	24.29	-24	27	50.3	4 809
1987	QT1	1987	08	22.02847	19	53	05.07	-24	22	59.2	17 4 809
1987	QT1	1987	08	22.03889	19	53	04.87	-24	22	55.8	4 809
1987	QT1	1987	08	24.03542	19	52	32.78	-24	12	47.0	17.5 4 809
1987	QT1	1987	08	24.04653	19	52	32.72	-24	12	44.2	4 809
1987	QU1	1987	08	29.04236	21	34	19.04	-13	29	06.5	17.3 4 809
1987	QU1	1987	08	29.05278	21	34	18.54	-13	29	10.7	4 809
1987	QU1	1987	08	29.06319	21	34	18.17	-13	29	13.2	4 809
1987	QZ1	1987	08	29.04236	21	36	33.09	-12	35	52.2	17.5 4 809
1987	QZ1	1987	08	29.05278	21	36	32.41	-12	35	52.9	4 809
1987	QZ1	1987	08	29.06319	21	36	31.77	-12	35	54.1	4 809
1987	QC3	1987	08	22.25625	22	04	27.29	-07	22	14.1	17 4 809
1987	QC3	1987	08	22.26806	22	04	26.55	-07	22	15.2	4 809
1987	QE3	1987	08	22.25625	22	07	43.70	-06	31	13.5	17 4 809
1987	QE3	1987	08	22.26806	22	07	43.13	-06	31	18.6	4 809
1987	QS5	1987	08	28.29444	22	50	36.27	-05	30	14.5	18.2 4 809
1987	QS5	1987	08	28.30799	22	50	35.63	-05	30	15.5	4 809
1987	QS5	1987	08	28.31875	22	50	34.96	-05	30	15.0	4 809
1987	QY6	1987	08	26.28056	21	58	14.89	-04	31	51.3	17.1 4 809
1987	QY6	1987	08	26.29097	21	58	14.27	-04	31	49.3	4 809
1987	QY6	1987	08	26.30278	21	58	13.53	-04	31	48.2	4 809
1987	QZ6	1987	08	26.28056	22	00	20.03	-05	36	44.9	17.2 4 809
1987	QZ6	1987	08	26.29097	22	00	19.43	-05	36	46.1	4 809
1987	QZ6	1987	08	26.30278	22	00	18.77	-05	36	48.6	4 809
1987	QC7	1987	08	26.28056	21	58	47.99	-05	57	43.0	17.4 4 809
1987	QC7	1987	08	26.29097	21	58	47.43	-05	57	47.5	4 809
1987	QC7	1987	08	26.30278	21	58	46.83	-05	57	52.2	4 809

1987	QQ7	*	1987	08	26.28056	21	57	53.31	-05	58	11.3	17.6	4	809
1987	QQ7		1987	08	26.29097	21	57	52.67	-05	58	10.9		4	809
1987	QQ7		1987	08	26.30278	21	57	51.98	-05	58	10.1		4	809
1987	QR7	*	1987	08	28.29444	22	54	01.87	-05	37	42.1	18.5	4	809
1987	QR7		1987	08	28.30799	22	54	01.28	-05	37	46.2		4	809
1987	QR7		1987	08	28.31875	22	54	00.74	-05	37	51.1		4	809
1987	QS7	*	1987	08	28.29444	22	56	30.92	-06	24	45.1	17.5	4	809
1987	QS7		1987	08	28.30799	22	56	30.35	-06	24	47.6		4	809
1987	QS7		1987	08	28.31875	22	56	29.83	-06	24	52.1		4	809
1987	QT7	*	1987	08	29.04236	21	31	49.65	-12	22	58.1	18	4	809
1987	QT7		1987	08	29.05278	21	31	49.25	-12	23	02.1		4	809
1987	QT7		1987	08	29.06319	21	31	48.85	-12	23	05.9		4	809
1987	QU7	*	1987	08	29.04236	21	32	29.25	-12	02	47.0	17.2	4	809
1987	QU7		1987	08	29.05278	21	32	28.81	-12	02	56.5		4	809
1987	QU7		1987	08	29.06319	21	32	28.36	-12	03	03.2		4	809
1987	QW7	*	1987	08	21.06701	20	15	51.80	-15	59	32.6	17	4	809
1987	QW7		1987	08	21.07847	20	15	51.23	-15	59	34.5		4	809
1987	QW7		1987	08	21.09028	20	15	50.75	-15	59	37.5		4	809
1987	QX7	*	1987	08	21.06701	20	16	55.61	-16	29	52.7	17.2	4	809
1987	QX7		1987	08	21.07847	20	16	55.25	-16	29	55.9		4	809
1987	QX7		1987	08	21.09028	20	16	54.89	-16	30	01.6		4	809
1987	QY7	*	1987	08	21.10347	22	01	05.02	-32	30	40.7	17.4	4	809
1987	QY7		1987	08	21.11389	22	01	04.48	-32	30	43.1		4	809
1987	QY7		1987	08	21.12431	22	01	03.95	-32	30	45.8		4	809
1987	RA		1987	08	26.28056	22	02	04.21	-05	09	52.6	17	4	809
1987	RA		1987	08	26.29097	22	02	03.71	-05	09	52.7		4	809
1987	RA		1987	08	26.30278	22	02	02.96	-05	09	53.5		4	809
167			1987	08	28.29444	22	53	53.28	-06	35	13.2	15	4	809
167			1987	08	28.30799	22	53	52.69	-06	35	17.3		4	809
167			1987	08	28.31875	22	53	52.15	-06	35	21.3		4	809
217			1987	08	28.29444	22	52	57.09	-05	22	14.5	14	4	809
217			1987	08	28.30799	22	52	56.69	-05	22	24.2		4	809
217			1987	08	28.31875	22	52	56.29	-05	22	32.3		4	809
1173			1987	08	26.28056	22	05	49.23	-04	36	09.4	16.7	4	809
1173			1987	08	26.29097	22	05	48.93	-04	36	11.8		4	809
1173			1987	08	26.30278	22	05	48.52	-04	36	13.2		4	809
1465			1987	08	28.29444	22	51	05.37	-05	13	25.3	17.1	4	809
1465			1987	08	28.30799	22	51	04.79	-05	13	30.5		4	809
1465			1987	08	28.31875	22	51	04.32	-05	13	34.6		4	809
2207			1987	08	21.06701	20	13	49.71	-15	24	54.2	16.5	4	809
2207			1987	08	21.07847	20	13	49.43	-15	24	55.2		4	809
2207			1987	08	21.09028	20	13	49.10	-15	24	57.5		4	809
2420			1987	08	20.21528	21	24	38.82	+07	15	37.4		4	809
2420			1987	08	20.22569	21	24	38.25	+07	15	33.9		4	809
2420			1987	08	22.12083	21	23	06.97	+07	00	57.2		4	809
2420			1987	08	22.13125	21	23	06.45	+07	00	52.2		4	809
3240			1987	08	29.04236	21	31	17.70	-13	12	16.7	16.9	4	809
3240			1987	08	29.05278	21	31	17.39	-13	12	19.9		4	809
3240			1987	08	29.06319	21	31	17.04	-13	12	21.0		4	809
3321			1987	08	28.29444	22	52	23.90	-06	01	45.7	16.8	4	809
3321			1987	08	28.30799	22	52	23.41	-06	01	53.5		4	809
3321			1987	08	28.31875	22	52	22.95	-06	01	59.4		4	809

881 Toyota
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Observers K. Suzuki, T. Urata
0.31-m f/5.7 reflector
Copied in part from Nihondaira Obs. Circ.

1987	QC		1987	10	18.49757	21	52	53.10	-09	24	26.8	16.5	881
1987	QC		1987	10	18.52951	21	52	54.30	-09	24	22.7		881
1987	SJ		1987	09	28.52500	00	40	47.85	+05	35	04.8	15.5	881
1987	SJ		1987	09	28.55000	00	40	46.77	+05	34	51.2		881
1987	SJ		1987	10	01.68333	00	38	42.66	+05	05	11.2	15	881
1987	SJ		1987	10	01.71111	00	38	41.49	+05	04	56.1		881
1987	SJ		1987	10	02.68264	00	38	03.10	+04	55	43.3	15.5	881
1987	SJ		1987	10	02.70486	00	38	02.22	+04	55	30.6		881
1987	SJ		1987	10	13.53819	00	31	19.13	+03	16	47.4	15.5	881
1987	SJ		1987	10	13.56111	00	31	18.32	+03	16	36.2		881
1987	SJ		1987	10	18.56146	00	28	45.10	+02	36	14.7	15.5	881
1987	SJ		1987	10	18.59063	00	28	44.16	+02	36	02.0		881
1987	SK		1987	09	28.56632	00	38	02.29	+04	31	35.8	16.5	881
1987	SK		1987	09	28.59688	00	38	00.42	+04	31	27.3		881
1987	SK		1987	10	02.67083	00	34	06.13	+04	11	59.9	16	881
1987	SK		1987	10	02.69375	00	34	04.78	+04	11	53.0		881
1987	SK		1987	10	13.52569	00	24	04.24	+03	21	05.5	16.5	881
1987	SK		1987	10	13.55000	00	24	02.81	+03	20	59.0		881
1987	SK		1987	10	18.51528	00	20	02.89	+03	00	36.5	17	881
1987	SK		1987	10	18.54410	00	20	01.32	+03	00	30.5		881
1987	SB2	*	1987	09	28.65382	01	16	02.26	+03	36	29.3	15	881
1987	SB2		1987	09	28.67465	01	16	01.07	+03	36	32.6		881
1987	SB2		1987	10	01.69931	01	13	11.15	+03	44	18.6	15.5	881
1987	SB2		1987	10	01.72292	01	13	09.66	+03	44	20.9		881
1987	SB2		1987	10	02.72014	01	12	12.09	+03	46	54.2	15.5	881
1987	SB2		1987	10	02.73542	01	12	11.14	+03	46	55.6		881
1987	SB2		1987	10	18.63733	00	56	22.52	+04	29	11.4	15.5	881
1987	SB2		1987	10	18.65799	00	56	21.32	+04	29	15.3		881
1987	SB2		1987	10	22.60764	00	52	37.55	+04	40	56.7	15.5	881
1987	SB2		1987	10	22.62569	00	52	36.58	+04	40	59.3		881
1987	SV2		1987	10	01.68333	00	40	05.32	+05	19	35.4	17	881
1987	SV2		1987	10	01.71111	00	40	03.89	+05	19	27.6		881
1987	SV2		1987	10	02.68264	00	39	17.46	+05	14	56.4	17	881
1987	SV2		1987	10	02.70486	00	39	16.37	+05	14	49.4		881
1987	SV2		1987	10	18.57674	00	27	07.47	+04	02	12.8	17	881
1987	SV2		1987	10	18.60660	00	27	06.09	+04	02	05.4		881
1987	TA	*	1987	10	12.59363	01	30	58.55	+16	53	27.5	16	881
1987	TA		1987	10	12.61817	01	30	57.11	+16	53	27.2		881
1987	TA		1987	10	12.64729	01	30	55.24	+16	53	24.9		881
1987	UB	*	1987	10	18.57674	00	26	16.51	+03	50	49.3	17	881
1987	UB		1987	10	18.60660	00	26	15.43	+03	50	30.8		881
1987	UJ	*	1987	10	21.52535	02	05	52.45	+16	47	36.9	17	881
1987	UJ		1987	10	21.54618	02	05	51.37	+16	47	32.6		881
1987	UK	*	1987	10	21.58229	02	29	39.62	+15	33	58.8	16	881
1987	UK		1987	10	21.60313	02	29	38.36	+15	33	47.0		881
1987	UR	*	1987	10	22.60764	00	51	14.85	+04	47	14.0	17	881
1987	UR		1987	10	22.62569	00	51	14.03	+04	47	13.3		881
56			1987	10	18.63733	00	55	38.44	+04	32	40.5		881
56			1987	10	18.65799	00	55	37.51	+04	32	29.9		881
2946			1987	09	18.61701	00	46	04.13	+05	43	33.7	16.5	881
2946			1987	09	18.63785	00	46	03.20	+05	43	29.3		881
2946			1987	09	28.56632	00	37	58.85	+04	56	12.3	16.5	881
2946			1987	09	28.59688	00	37	57.28	+04	56	03.5		881
2946			1987	10	18.51528	00	20	38.92	+03	09	29.2	16.5	881
2946			1987	10	18.54410	00	20	37.58	+03	09	21.4		881

883 Shizuoka
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Azuma, Sakura-mura, Niihari-gun, Ibaragi-ken, 305 Japan

Observers M. Kizawa, W. Kakkei
0.13-m hyperboloid astro-camera
Copied from Nihondaira Obs. Circ.

1987 QC	1987 08 26.54896	21 59 27.08	-07 59 21.3					883
1987 QC	1987 08 28.56387	21 58 01.35	-08 06 05.9			15.5	F	883
1987 QC	1987 08 28.58867	21 58 00.39	-08 06 13.1					883
1987 QC	1987 08 28.68021	21 57 56.31	-08 06 31.0					883
1987 QC	1987 09 01.60347	21 55 15.72	-08 20 17.2			15.5		883
1987 QC	1987 09 01.64514	21 55 13.88	-08 20 27.7					883
1987 QC	1987 09 01.68472	21 55 12.58	-08 20 34.6				F	883

887 Ojima
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Observer T. Niijima
Measurer M. Kizawa
0.30-m f/5.8 reflector
Copied in part from Nihondaira Obs. Circ.

1987 TA	1987 10 19.54109	01 24 20.43	+16 40 46.4			16		887
1987 TA	1987 10 19.56100	01 24 19.18	+16 40 45.7					887
1987 UH *	1987 10 19.54109	01 23 55.52	+15 35 40.6			17		887
1987 UH	1987 10 19.56100	01 23 54.37	+15 35 32.3					887
902	1987 10 12.59363	01 33 18.50	+16 34 29.1			15.5		887
902	1987 10 12.61817	01 33 17.06	+16 34 29.5					887
902	1987 10 12.64729	01 33 15.09	+16 34 29.3					887

975 Valencia
Long. and Parallax 359.98, -330, -270 (see MPC 11200)
A. Lopez, Observatorio Astronomico de Valencia, Avda. Blasco Ibanez 13, E-46010 Valencia, Spain
Observers A. Lopez G., J. A. Lopez O., R. Lopez M., J. Belmonte
0.25-m f/15 refractor
SAOC

1	1985 01 24.79167	02 45 34.75	+12 23 11.0					975
3	1985 04 29.91076	12 02 22.30	+06 43 19.0					975
3	1985 06 13.88194	12 06 23.13	+06 41 50.8					975
4	1985 04 17.98507	14 03 43.70	+00 52 33.7					975
4	1985 04 29.92882	13 52 32.24	+01 35 46.8					975
4	1985 05 08.92743	13 44 53.20	+01 48 46.3					975
4	1985 06 11.91493	13 33 39.01	-00 06 45.3					975
4	1985 06 13.90035	13 34 01.65	-00 20 18.4					975
6	1985 02 17.86458	05 53 14.20	+13 31 53.9					975
6	1985 03 02.80660	05 59 35.19	+15 22 11.5					975
6	1985 03 06.85313	06 02 27.48	+15 53 15.8					975
6	1985 03 08.83438	06 04 00.13	+16 07 51.0					975
6	1985 03 10.81944	06 05 38.36	+16 22 02.1					975
6	1985 03 13.83750	06 08 17.02	+16 42 49.3					975
6	1985 03 28.84062	06 24 00.65	+18 11 11.3					975
6	1985 03 30.82813	06 26 22.45	+18 21 00.3					975
7	1985 01 27.83542	05 04 41.09	+19 44 41.3					975
7	1985 01 29.85972	05 05 22.76	+19 41 52.5					975
7	1985 01 30.83542	05 05 46.17	+19 40 39.9					975
7	1985 02 13.82986	05 14 39.47	+19 31 58.2					975
7	1985 03 02.78472	05 32 26.20	+19 34 03.1					975
7	1985 03 04.81285	05 34 58.38	+19 34 33.3					975
7	1985 03 08.81354	05 40 11.76	+19 35 24.1					975
7	1985 03 10.79688	05 42 52.96	+19 35 45.9					975
7	1985 03 13.80660	05 47 04.89	+19 36 07.4					975
7	1985 03 14.79757	05 48 29.53	+19 36 11.0					975

7	1985 03 28.85799	06 09 54.26	+19 32 57.1	975
7	1985 03 30.80451	06 13 02.66	+19 31 43.2	975

* * * * *

ORBITAL ELEMENTS OF ONE-OPPOSITION MINOR PLANETS.

The columns headed Arc and O give the time span in days covered by the observations and the number of observations utilized in the computation (0 = 10 or more). In the note column N, D means that there are double (or other multiple) designations, E means that the value of the eccentricity was assumed, F means both; the designations are listed at the end.

The orbit computers (column C) are B = C. M. Bardwell, G = D. W. E. Green, I = H. Oishi, l = W. Landgraf, M = B. G. Marsden, N = S. Nakano.

Planet	H	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1930 UT		301011	33.95	9.87	306.93	9.40	0.2686	3.2391	4	3	E	M
1976 UD4	13.6	761228	16.09	237.82	170.67	2.50	0.1835	2.4540	53	3	D	I
1976 UJ4	13.3	761228	17.40	320.76	85.13	3.49	0.2120	2.6848	53	3	D	I
1983 CA1	12.5	830215	333.24	200.71	334.99	9.26	0.1044	2.8469	5	5		B
1983 CD1	12.0	830215	78.44	283.58	117.42	2.17	0.2144	3.1693	8	5	E	B
1986 VV6	13.0	861106	333.44	10.83	76.42	5.49	0.1975	2.5643	25	6		B
1986 VW6	13.0	861106	15.50	283.42	104.35	3.68	0.1394	2.7072	25	6		B
1986 WN4	15.0	861126	12.27	324.44	70.71	3.71	0.2061	2.4316	6	8		B
1986 WQ4	14.5	861126	62.14	255.60	70.78	6.45	0.2214	2.3038	6	8		B
1986 WR4	15.5	861126	39.17	267.92	80.48	3.76	0.2775	2.5063	6	8	E	B
1986 WC8	13.0	861126	324.72	251.63	186.84	30.90	0.3496	2.5867	2	5	E	B
1986 XF1	13.5	861126	32.47	85.29	287.08	2.55	0.2143	2.3944	4	6		B
1986 XH1	12.5	861126	275.56	250.48	279.87	4.28	0.2060	2.3620	4	5		B
1986 XR5	13.0	861126	27.99	340.69	31.34	4.16	0.2896	3.0457	5	5	E	B
1987 MO	14.0	870724	3.19	33.69	275.54	20.44	0.1176	1.9210	83	7		M
1987 MX	13.5	870704	3.42	243.86	43.08	6.34	0.1606	2.5103	33	7		M
1987 NO	14.0	870724	1.34	345.31	311.40	6.10	0.1368	2.3277	28	8	D	l
1987 OC	13.5	870813	357.44	47.58	271.29	23.85	0.2081	2.3423	54	6		B
1987 ON	13.5	870813	8.00	153.34	158.15	13.89	0.1944	2.5993	63	8		M
1987 OO	14.5	870724	354.64	81.11	242.72	10.66	0.2293	2.5384	26	6		B
1987 OR	14.0	870813	42.76	81.73	171.26	23.97	0.2169	2.3124	34	0		G
1987 QH	14.5	870902	1.66	6.89	318.03	8.28	0.2913	2.3767	26	4		B
1987 QY	14.5	870902	345.98	210.25	173.22	24.80	0.2426	2.2944	27	6		M
1987 QC1	14.0	870902	353.56	7.33	332.62	14.34	0.2644	2.6766	29	8		B
1987 QD1	12.0	870813	344.53	202.55	139.99	8.65	0.1654	3.1779	9	7		M
1987 QG1	15.5	870813	337.52	51.81	310.29	6.92	0.2382	2.1829	4	0		B
1987 QS1	13.0	870813	59.86	266.41	328.14	6.67	0.1033	2.5043	5	8		G
1987 QT1	14.0	870813	24.86	298.76	330.38	5.53	0.2255	2.3305	6	0		G
1987 QZ1	14.5	870813	316.33	67.75	317.41	4.21	0.1980	2.3561	8	9		B
1987 QG6	14.5	870902	334.37	241.81	158.71	22.10	0.3464	2.3140	27	6		M
1987 QE7	13.0	870902	341.36	179.99	190.81	11.87	0.1884	2.6229	40	7		M
1987 QH7	15.0	870902	348.19	9.79	4.48	4.43	0.3314	2.5797	37	0		G
1987 QV7	12.5	870813	282.24	291.14	180.61	17.01	0.2899	2.6011	3	6		B
1987 RA	15.0	870813	338.26	70.79	290.97	4.19	0.2496	2.2629	11	8		B
1987 SE	11.5	870922	67.88	320.97	321.62	9.32	0.0744	3.0177	40	0		M
1987 SF	15.0	870922	344.10	243.53	139.37	4.79	0.2351	2.3422	15	6		N
1987 SH	13.0	870922	320.44	126.92	275.26	5.05	0.0629	2.4185	30	8		M
1987 SO	14.0	870922	24.08	28.18	289.01	5.06	0.2741	2.2935	37	8		M
1987 SB1	13.0	870922	32.30	148.26	169.89	13.86	0.1731	2.6783	27	8		B
1987 SC1	14.0	870922	337.92	258.11	141.38	5.72	0.2480	2.6531	6	0		G
1987 SL1	14.5	870922	357.96	3.89	358.41	2.06	0.1339	2.3059	8	6	E	G

1987 SQ1	13.0	870922	33.46	117.95	202.57	1.32	0.1108	2.8533	8	5	E	G
1987 SS1	13.0	870922	355.86	159.08	210.26	17.08	0.2799	3.3062	25	6		B
1987 ST1	12.5	870922	343.20	103.30	288.00	8.23	0.2372	3.1217	25	4		B
1987 SW1	14.0	870922	348.95	163.64	214.83	10.52	0.1586	2.3347	25	6		B
1987 SB3	15.0	870922	19.56	298.02	32.75	6.06	0.2114	2.2907	3	8		G
1987 SC3	13.0	870922	359.45	249.53	113.72	5.81	0.1139	3.0972	3	8	E	G
1987 SD3	14.0	870922	28.68	159.00	161.21	10.28	0.2027	2.8877	3	7		G
1987 SE3	12.5	870922	217.59	60.41	100.86	5.47	0.2863	2.5104	3	5	E	G
1987 SJ3	14.5	870922	25.61	315.21	15.48	20.80	0.0963	1.8542	3	6		M
1987 SK3	14.0	870922	248.91	186.14	276.69	5.84	0.0425	2.3698	5	6		M
1987 SL3	12.5	870922	300.94	90.75	318.37	10.36	0.0402	3.1191	5	6	E	M
1987 SM3	14.5	870922	70.79	324.80	305.66	5.73	0.0640	2.1909	5	3		G
1987 SN3	14.5	870922	5.04	141.04	200.82	6.74	0.1357	2.3138	5	6		G
1987 SO3	10.5	870922	328.71	201.00	191.79	9.75	0.2185	3.9240	5	6		G
1987 SU3	13.5	870922	359.40	341.82	21.18	15.98	0.1443	2.9223	2	6	E	G
1987 SC4	14.5	870922	3.19	72.48	284.04	4.76	0.2310	2.2516	25	6		B
1987 SD4	14.0	870922	28.65	28.72	291.07	7.39	0.2206	2.3879	25	6		B
1987 SH4	14.0	871012	27.40	313.26	17.60	13.92	0.1980	2.6009	27	6		M
1987 SM4	13.5	871012	11.58	71.97	289.67	8.82	0.1895	2.5812	27	6		M
1987 SB7	16.5	870922	22.24	167.62	165.09	4.67	0.2129	2.2694	2	6		G
1987 SC7	13.0	870922	180.27	24.30	166.94	7.03	0.1419	2.5486	2	6	E	G
1987 SD7	14.0	870922	357.62	279.80	93.94	3.35	0.1140	2.8748	2	6	E	G
1987 UM	14.0	871012	334.81	18.59	20.52	25.96	0.2196	2.3082	3	3		B
1987 UW	14.0	871012	22.66	154.13	205.17	30.80	0.1720	2.5726	10	6		M
1987 UX	14.5	871012	16.63	156.83	204.68	24.32	0.2565	2.4014	10	6		M

1976 UD4 = 1976 YC4 (H. Oishi)
1976 UJ4 = 1976 YM4 (H. Oishi)
1987 NO = 1987 OH (W. Landgraf)

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ORBITAL ELEMENTS BY E. GOFFIN, AGVA-GEFFERT N.V., MORTSEL, BELGIUM.

(192) Nausikaa
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	274.94495		(1950.0)	P	Q
n	0.26456334	Peri.	29.85164	+0.97399403	-0.22389645
a	2.4031614	Node	342.98095	+0.17718285	+0.84820282
e	0.2469468	Incl.	6.81420	+0.14121568	+0.48002328
P	3.73	H	7.13	G 0.03	

From 281 observations at 32 oppositions 1931-1987, mean residual 0".6.

(632) Pyrrha
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	240.65096		(1950.0)	P	Q
n	0.22713666	Peri.	250.69604	-0.38376759	+0.92342707
a	2.6603854	Node	356.73420	-0.83195796	-0.34679023
e	0.1930384	Incl.	2.22285	-0.40070987	-0.16437451
P	4.34	H	11.74	G 0.15	

From 70 observations at 16 oppositions 1907-1985, mean residual 0".9.

(702) Alauda
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	265.71981		(1950.0)	P	Q
n	0.17268309	Peri.	4.30847	+0.40128499	+0.85410563
a	3.1937641	Node	289.63247	-0.85048101	+0.21332446
e	0.0286589	Incl.	20.56623	-0.34007706	+0.47433768
P	5.71	H	7.23	G 0.13	

From 61 observations at 19 oppositions 1910-1985, mean residual 0".8.

(751) Faina
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	6.65035		(1950.0)	P	Q
n	0.24187928	Peri.	302.66442	+0.90304350	-0.33921639
a	2.5511555	Node	78.35656	+0.42496472	+0.79491666
e	0.1541241	Incl.	15.60835	-0.06258938	+0.50303056
P	4.07	H	8.64	G 0.15	

From 75 observations at 20 oppositions 1913-1986, mean residual 0".8.

(841) Arabella
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	343.72620		(1950.0)	P	Q
n	0.29103860	Peri.	119.31833	-0.40092982	-0.91608531
a	2.2551165	Node	354.30617	+0.81588192	-0.35380204
e	0.0694840	Incl.	3.78915	+0.41664370	-0.18871096
P	3.39	H	13.02	G 0.25	

From 35 observations at 12 oppositions 1930-1984, mean residual 1".0.

(872) Holda
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	299.41434		(1950.0)	P	Q
n	0.21852987	Peri.	18.98381	-0.83496206	+0.54936951
a	2.7297875	Node	194.47441	-0.52004518	-0.80678818
e	0.0809993	Incl.	7.38262	-0.17997603	-0.21745338
P	4.51	H	9.95	G 0.25	

From 47 observations at 21 oppositions 1900-1986, mean residual 1".1.

(899) Jokaste
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	3.31089		(1950.0)	P	Q
n	0.19882581	Peri.	126.92013	+0.92620762	-0.31617837
a	2.9072846	Node	252.32618	+0.23908967	+0.91374219
e	0.2013187	Incl.	12.44650	+0.29150569	+0.25515967
P	4.96	H	10.17	G 0.15	

From 42 observations at 16 oppositions 1923-1986, mean residual 1".1.

(940) Kordula
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	2.77080		(1950.0)	P	Q
n	0.15989021	Peri.	267.09751	+0.91023998	+0.40135124
a	3.3619259	Node	69.22217	-0.32323554	+0.84248298
e	0.1677694	Incl.	6.25601	-0.25880872	+0.35936000
P	6.16	H	9.33	G 0.15	

From 54 observations at 20 oppositions 1920-1984, mean residual 0".9.

(961) Gunnie
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	115.31751		(1950.0)	P	Q
n	0.22287792	Peri.	284.50460	+0.64737278	+0.75743102
a	2.6941681	Node	26.43637	-0.60497479	+0.57840201
e	0.0927503	Incl.	10.99261	-0.46358817	+0.30290158
P	4.42	H	11.39	G 0.15	

From 26 observations at 9 oppositions 1921-1985, mean residual 1".1.

(1118) Hanskya
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	287.17726	(1950.0)	P	Q
n	0.17157331	Peri. 336.59279	+0.43565605	+0.88582202
a	3.2075214	Node 318.73857	-0.78277373	+0.28522444
e	0.0593699	Incl. 14.01909	-0.44437495	+0.36601416
P	5.74	H 9.79	G 0.15	

From 33 observations at 19 oppositions 1927-1987, mean residual 1".1.

(1152) Pawona
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	112.25647	(1950.0)	P	Q
n	0.26081048	Peri. 218.50403	-0.98307393	+0.17834624
a	2.4261596	Node 331.68481	-0.13842108	-0.87296843
e	0.0442295	Incl. 5.07178	-0.12002191	-0.45400301
P	3.78	H 11.1	G 0.25	

From 29 observations at 15 oppositions 1926-1987, mean residual 1".1.

(1200) Imperatrix
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	327.49930	(1950.0)	P	Q
n	0.18431032	Peri. 47.43948	-0.30308660	+0.95236020
a	3.0579915	Node 204.97775	-0.89612062	-0.29692650
e	0.1153337	Incl. 4.60342	-0.32420109	-0.06960390
P	5.35	H 10.68	G 0.15	

From 47 observations at 18 oppositions 1929-1987, mean residual 1".1.

(1209) Pumma
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	243.76138	(1950.0)	P	Q
n	0.17508660	Peri. 181.69562	+0.01843237	+0.99251319
a	3.1644685	Node 89.37295	-0.91585370	+0.06520404
e	0.1323324	Incl. 6.93515	-0.40108882	-0.10327636
P	5.63	H 10.4	G 0.25	

From 38 observations at 20 oppositions 1927-1986, mean residual 1".1.

(1262) Sniadeckia
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	71.68069	(1950.0)	P	Q
n	0.18899952	Peri. 213.56969	+0.91321741	+0.36153863
a	3.0071995	Node 124.12445	-0.30569550	+0.91285487
e	0.0069737	Incl. 13.12270	-0.26941459	+0.18969926
P	5.21	H 10.18	G 0.15	

From 47 observations at 18 oppositions 1907-1985, mean residual 1".1.

(1332) Marconia
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	185.14151	(1950.0)	P	Q
n	0.18393786	Peri. 342.95215	+0.99826504	+0.05798353
a	3.0621182	Node 13.73589	-0.04773027	+0.89871113
e	0.1316871	Incl. 2.47112	-0.03447786	+0.43469094
P	5.36	H 10.2	G 0.25	

From 58 observations at 18 oppositions 1924-1985, mean residual 0".9.

(1516) Henry
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	275.65491	(1950.0)	P	Q
n	0.23258542	Peri. 92.52749	-0.77499560	+0.61986074
a	2.6186717	Node 125.80874	-0.62318754	-0.71723402
e	0.1893045	Incl. 8.73108	-0.10497198	-0.31835203
P	4.24	H 12.04	G 0.15	

From 57 observations at 11 oppositions 1939-1986, mean residual 0".9.

(1682) Karel
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	228.57253	(1950.0)	P	Q
n	0.29422660	Peri. 9.09540	+0.90194329	+0.43000498
a	2.2387973	Node 325.34875	-0.40048494	+0.79825252
e	0.1913161	Incl. 4.02658	-0.16158626	+0.42176847
P	3.35	H 12.89	G 0.25	

From 32 observations at 12 oppositions 1929-1986, mean residual 1".1.

(1849) Kresak
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	233.93340	(1950.0)	P	Q
n	0.18456370	Peri. 104.67463	-0.89337964	-0.42559411
a	3.0551922	Node 50.35487	+0.30531248	-0.81021020
e	0.0149377	Incl. 10.78007	+0.32963177	-0.40302493
P	5.34	H 11.1	G 0.25	

From 19 observations at 6 oppositions 1942-1985, mean residual 1".0.

(1984) Fedynskij
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	1.62413	(1950.0)	P	Q
n	0.18852297	Peri. 126.60204	+0.67305337	+0.73954732
a	3.0122652	Node 185.72266	-0.70234794	+0.63560090
e	0.0825176	Incl. 4.77577	-0.23174671	+0.22154290
P	5.23	H 11.2	G 0.25	

From 54 observations at 9 oppositions 1926-1986, mean residual 0".9.

(1990) Pilcher
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	12.12345	(1950.0)	P	Q
n	0.30745342	Peri. 12.07528	-0.90463756	+0.42599997
a	2.1741183	Node 193.15978	-0.39540446	-0.84984658
e	0.0518506	Incl. 3.13385	-0.15901632	-0.31029795
P	3.21	H 13.15	G 0.25	

From 28 observations at 9 oppositions 1956-1986,mean residual 1".3.

(2039) Payne-Gaposchkin
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	202.97231	(1950.0)	P	Q
n	0.17523681	Peri. 45.29250	-0.77471293	-0.63078745
a	3.1626599	Node 95.54893	+0.56692231	-0.72366628
e	0.1467878	Incl. 2.52785	+0.28003388	-0.28002554
P	5.62	H 12.7	G 0.25	

From 32 observations at 7 oppositions 1974-1986, mean residual 0".8.

(2040) Chalonge
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	274.71158	(1950.0)	P	Q
n	0.17989938	Peri. 85.22140	-0.54949593	-0.81981995
a	3.1077753	Node 39.53875	+0.63043818	-0.53337530
e	0.1971346	Incl. 14.65770	+0.54827175	-0.20834117
P	5.48	H 11.7	G 0.25	

From 30 observations at 8 oppositions 1972-1985, mean residual 0".9.

(2071) Nadezhda
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	28.96313	(1950.0)	P	Q
n	0.29165925	Peri. 0.20786	+0.53042678	+0.84602192
a	2.2519161	Node 301.82686	-0.77783092	+0.46047457
e	0.1563289	Incl. 3.63036	-0.33708529	+0.26871932
P	3.38	H 13.2	G 0.25	

From 25 observations at 6 oppositions 1971-1987, mean residual 0".8.

(2093) Genichesk
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	0.27426	(1950.0)	P	Q
n	0.28835173	Peri. 117.24233	+0.03256485	+0.99842694
a	2.2691037	Node 154.50017	-0.95036728	+0.04507022
e	0.1687012	Incl. 6.08584	-0.30942134	-0.03335141
P	3.42	H 13.2	G 0.25	

From 25 observations at 8 oppositions 1971-1985, mean residual 0".9.

(2126) Gerasimovich
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	282.69834	(1950.0)	P	Q
n	0.26676455	Peri. 69.22700	+0.79713794	-0.59854160
a	2.3899233	Node 327.38914	+0.48443011	+0.71256787
e	0.1198953	Incl. 8.48211	+0.36041445	+0.36605325
P	3.69	H 12.4	G 0.25	

From 14 observations at 6 oppositions 1931-1987, mean residual 1".0.

(2139) Makharadze
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	231.12511	(1950.0)	P	Q
n	0.25544814	Peri. 65.09048	+0.78089528	+0.62355622
a	2.4599950	Node 256.31129	-0.58600269	+0.71067244
e	0.1895893	Incl. 2.19137	-0.21634098	+0.32576421
P	3.86	H 12.81	G 0.15	

From 27 observations at 7 oppositions 1924-1985, mean residual 0".9.

(2200) Pasadena
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	332.33460	(1950.0)	P	Q
n	0.26423886	Peri. 210.66235	-0.96201017	+0.27223816
a	2.4051284	Node 345.09299	-0.23144606	-0.85317178
e	0.1467816	Incl. 4.58466	-0.14480731	-0.44495425
P	3.73	H 12.7	G 0.25	

From 47 observations at 8 oppositions 1960-1985, mean residual 0".7.

(2225) Serkowski
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	190.55474	(1950.0)	P	Q
n	0.20463359	Peri. 10.99492	-0.15367494	-0.98648096
a	2.8520126	Node 87.86298	+0.90216241	-0.16357065
e	0.0331787	Incl. 3.26503	+0.40309677	-0.00999787
P	4.82	H 12.0	G 0.25	

From 38 observations at 8 oppositions 1960-1987, mean residual 0".9.

(2233) Kuznetsov
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	247.22838	(1950.0)	P	Q
n	0.28660091	Peri. 159.17919	+0.69405361	-0.71783954
a	2.2783355	Node 246.82280	+0.65177823	+0.65882668
e	0.0808969	Incl. 3.41346	+0.30573635	+0.22506397
P	3.44	H 12.69	G 0.25	

From 38 observations at 11 oppositions 1957-1985, mean residual 1".0.

(2276) Warck
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	56.64501	(1950.0)	P	Q
n	0.26933577	Peri. 54.24706	-0.01413896	+0.99959611
a	2.3746888	Node 214.96748	-0.93067524	-0.02216995
e	0.1691787	Incl. 2.46528	-0.36557310	+0.01777968
P	3.66	H 13.0	G 0.25	

From 15 observations at 4 oppositions 1933-1987, mean residual 1".0.

(2279) Barto
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	87.86427	(1950.0)	P	Q
n	0.25593876	Peri. 62.66503	-0.92480514	+0.37894457
a	2.4568502	Node 139.57836	-0.36482570	-0.85823042
e	0.1606349	Incl. 2.98023	-0.10787804	-0.34618139
P	3.85	H 12.97	G 0.15	

From 22 observations at 6 oppositions 1968-1987, mean residual 1".0.

(2372) Proskurin
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	325.63488	(1950.0)	P	Q
n	0.18021919	Peri. 319.83620	+0.53352576	-0.84444770
a	3.1040975	Node 97.86997	+0.78774513	+0.47567467
e	0.1866401	Incl. 2.74975	+0.30790886	+0.24625532
P	5.47	H 11.8	G 0.25	

From 12 observations at 7 oppositions 1906-1985, mean residual 1".0.

1940 WA = 1951 AS1 = 1987 OP
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	7.98281	(1950.0)	P	Q
n	0.20623823	Peri. 156.73447	+0.62296278	-0.74563056
a	2.8372055	Node 253.87181	+0.67339948	+0.66504391
e	0.1375523	Incl. 14.25476	+0.39805843	+0.04185282
P	4.78	H 11.4	G 0.25	

Residuals in seconds of arc

401124	020(15.3-	17.9-)X	401228	062	0.1+	1.2+	870731	511	0.6-	0.8-
401126	020(16.9-	4.4+)X	510113	711	(5.3-	4.7-)Y	870801	511	1.2+	0.9-
401129	062	0.1-	0.0	510113	711	(3.7+	6.6+)Y	870820	809	1.3-	0.4-
401129	062	1.3-	0.4-	870727	511	0.5-	2.6+	870820	809	0.6-	1.2+
401203	062	1.4+	0.6+	870727	511	0.7+	1.3-	870822	809	1.8+	0.0
401227	062	0.2+	1.3-	870728	511	2.6-	0.4-	870822	809	2.0+	0.1+

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

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

(3709)* 1985 TL3 = 1985 WK = 1971 OK1 = 1979 HQ2

Discovered 1985 Oct. 14 by C. Shoemaker at Palomar. The double designation 1985 TL3 = 1985 WK is by F. Bowman (MPC 11630).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	38.21363	(1950.0)		P	Q
n	0.08158937	Peri.	246.96651	+0.29089792	-0.95600361
a	5.2647810	Node	186.48226	+0.95365475	+0.29291306
e	0.0635566	Incl.	19.60912	+0.07694816	-0.01609474
P	12.08	H	9.5	G 0.25	

Residuals in seconds of arc

710729 095	0.0	0.2-	851116 675	0.4+	0.1+	870317 675	0.7-	0.9-
790424 095	0.0	1.9+	870217 675	0.6-	0.7+	870413 675	1.0+	0.4-
850921 675	0.4+	0.6+	870217 675	0.7-	0.7+	870413 675	0.7+	0.6-
850921 675	0.4-	0.3+	870218 675	0.5-	1.0+	870414 675	0.9+	0.1-
851014 675	0.2-	0.4+	870218 675	0.6-	0.9+	870414 675	0.2+	0.5-
851014 675	0.2+	1.2+	870225 801	0.4+	0.1-			
851116 675	0.4-	0.6-	870317 675	0.6-	0.8-			

1976 UG15 = 1976 WR = 1987 SJ4

The identification 1976 UG15 = 1987 SJ4 is by E. Bowell. The double designation 1976 UG15 = 1976 WR is by H. Oishi (MPC 12302).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	90.45746	(1950.0)		P	Q
n	0.26751656	Peri.	227.64064	+0.99553509	-0.08813147
a	2.3854472	Node	137.38276	+0.09438936	+0.92672994
e	0.2232377	Incl.	2.86168	+0.00072425	+0.36524576
P	3.68	H	15.0	G 0.25	

Residuals in seconds of arc

761022 381	0.1+	0.2+	761118 381	1.8+	0.3+	871016 688	0.1-	0.4-
761022 381	0.3+	0.1+	761118 381	1.1+	0.1+	871016 688	0.7+	1.8-
761024 381	0.2-	0.2+	870929 688	0.7+	0.7+			
761024 381	0.1+	0.2-	870929 688	0.9-	0.5+			

1977 CZ = 1979 QE6 = 1982 BQ9

The key identification 1977 CZ = 1982 BQ9 is by A. Lowe.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	297.35673	(1950.0)		P	Q
n	0.18176055	Peri.	70.66699	-0.08551140	+0.99629585
a	3.0865299	Node	194.43654	-0.92720165	-0.08290877
e	0.1091270	Incl.	2.08640	-0.36467094	-0.02281922
P	5.42	H	11.5	G 0.25	

Residuals in seconds of arc

770213 675	0.5+	0.2-	790819 095	0.0	0.0	820120 095	0.1-	0.7+
770214 675	0.5-	0.2+	820119 095	0.1+	0.8-			

1979 WE2 = 1973 SO6 = 1985 VJ3

The key identification 1979 WE2 = 1985 VJ3 is by A. Lowe.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	208.85422	(1950.0)		P	Q
n	0.17202490	Peri.	205.95889	+0.96075992	-0.27733349
a	3.2019118	Node	170.13808	+0.25942928	+0.89185533
e	0.1443880	Incl.	1.72278	+0.09816736	+0.35732366
P	5.73	H	12.0	G 0.25	

Residuals in seconds of arc

730928 095	0.2+	0.5-	791117 095	1.5+	0.9+	851120 095	0.7-	0.6+
791116 095	2.7-	1.1+	851110 095	0.8+	0.2+			

1986 JT = 1987 ST5
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	135.02779	(1950.0)		P	Q
n	0.19882202	Peri.	66.15947	+0.07472080	+0.99526921
a	2.9073273	Node	208.34010	-0.95586927	+0.05374186
e	0.2626573	Incl.	7.51647	-0.28413155	+0.08093827
P	4.96	H	13.0	G 0.25	

Residuals in seconds of arc

860502 046	1.7+	0.7+	860513 688	0.3+	0.4+	870929 054	0.2-	0.2-
860502 046	0.5+	1.3-	860513 688	1.6-	1.1-	870930 054	0.1+	0.3-
860504 688	0.4-	0.9+	860608 688	0.3+	0.8+	870930 054	0.0	0.8+
860504 688	1.0-	1.2+	860608 688	0.4+	1.5-			

1987 QX
Epoch 1987 Sept. 2.0 ET = JDE 2447040.5

M	355.52120	(1950.0)		P	Q
n	0.21039193	Peri.	12.59331	+0.99072319	-0.13413091
a	2.7997333	Node	354.95964	+0.09278985	+0.78503739
e	0.4689574	Incl.	14.38566	+0.09928548	+0.60475217
P	4.68	H	15.0	G 0.25	

From 6 observations 1987 Aug. 24-Sept. 20.

1987 QF7 = 1981 GG1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	62.72998	(1950.0)		P	Q
n	0.21688316	Peri.	131.04067	+0.99559804	-0.02567154
a	2.7435931	Node	230.62882	-0.00527004	+0.94490347
e	0.2420789	Incl.	6.69620	+0.09357762	+0.32634093
P	4.54	H	13.0	G 0.25	

Residuals in seconds of arc

810404 474	1.0+	3.2+	870830 026	0.1-	0.8+	870917 026	1.1-	0.1+
810404 474	0.5-	3.0+	870903 026	0.6-	0.9-	870920 026	1.3+	0.3+
810405 474	0.1+	2.9-	870913 026	1.7+	0.0	870929 026	0.2+	1.0-
810405 474	0.6-	3.3-	870915 026	0.6-	0.3-	870930 026	0.8-	1.2+

1987 SB
Epoch 1987 Sept. 22.0 ET = JDE 2447060.5

M	32.32683	(1950.0)		P	Q
n	0.30093190	Peri.	167.88515	-0.34187969	+0.93827939
a	2.2054162	Node	82.10563	-0.86651630	-0.29315197
e	0.6607333	Incl.	3.03481	-0.36368638	-0.18355845
P	3.28	H	15.5	G 0.25	

From 9 observations 1987 Sept. 20-Oct. 19.

1987 SY
Epoch 1987 Sept. 22.0 ET = JDE 2447060.5

M	46.01117	(1950.0)	P	Q
n	0.57082915	Peri. 291.15157	-0.45273057	+0.88876463
a	1.4392358	Node 311.72270	-0.77827914	-0.43309838
e	0.5851108	Incl. 5.50806	-0.43510529	-0.15007741
P	1.73	H 17.5	G 0.25	

From 10 observations 1987 Sept. 25-Oct. 15.

1987 SF3
Epoch 1987 Sept. 22.0 ET = JDE 2447060.5

M	10.13469	(1950.0)	P	Q
n	0.29233104	Peri. 133.65604	+0.77455438	+0.63246671
a	2.2484648	Node 187.12220	-0.59565727	+0.72557026
e	0.5340295	Incl. 3.31417	-0.21273911	+0.27117091
P	3.37	H 19.0	G 0.25	

From 5 observations 1987 Sept. 26-Oct. 21.

1987 UA
Epoch 1987 Sept. 22.0 ET = JDE 2447060.5

M	353.39147	(1950.0)	P	Q
n	0.43302822	Peri. 173.61357	+0.97957095	-0.18208728
a	1.7303153	Node 197.59106	+0.16973150	+0.97624114
e	0.2967418	Incl. 16.40445	+0.10785166	+0.11746259
P	2.28	H 17.5	G 0.25	

From 6 observations 1987 Sept. 24-Oct. 21.

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

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

Periodic Comet Helin (1987w)
T 1987 Aug. 11.71571 ET

q	2.5690811	(1950.0)	P	Q
n	0.06813486	Peri. 216.10010	+0.99870334	+0.01329964
a	5.9368553	Node 143.04473	+0.00402372	+0.94163010
e	0.5672657	Incl. 4.68848	-0.05074893	+0.33638651
P	14.47			

From 14 observations 1987 Aug. 24-Oct. 16.

Comet Bradfield (1987s)
Epoch 1987 Nov. 21.0 ET = JDE 2447120.5
T 1987 Nov. 7.27391 ET

q	0.8689891	(1950.0)	P	Q
z	+0.0059710	Peri. 73.90853	+0.78223102	+0.27316554
	+/-0.0000643	Node 267.38349	-0.50161958	+0.80914785
e	0.9948112	Incl. 34.08974	+0.36944881	+0.52025026

From 75 observations 1987 Aug. 12-Oct. 24, mean residual 1".1.

(3710)* 1978 RD6 = 1978 SK5 = 1978 VG12 = 1982 NC = 1983 WG1
Discovered 1978 Sept. 13 by N. S. Chernykh at the Crimean Astrophysical Observatory. The identifications 1978 RD6 = 1982 NC = 1983 WG1 are by E. Bowell (MPC 8466).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	105.83193		(1950.0)	P	Q
n	0.21744700	Peri.	127.11071	+0.81895453	+0.56879856
a	2.7388428	Node	198.60825	-0.57238434	+0.80015741
e	0.1618267	Incl.	13.78564	-0.04110535	+0.19030585
P	4.53	H	12.9	G 0.25	

Residuals in seconds of arc

780913	095	0.3-	2.3+	820715	688	0.4+	2.2-	870926	688	0.2+	0.4-
780927	095	0.6-	2.8+	831129	688	1.4-	1.4-	870926	688	0.1+	0.2+
781001	049	0.2+	0.7-	831129	688	0.8+	1.6-	870929	054	0.0	0.9-
781001	049	0.1+	1.0-	831209	688	0.0	2.4-	870930	054	0.1+	0.8-
781003	095	0.1+	1.1+	831209	688	(4.9+	1.4+)	870930	054	0.2+	0.5-
781102	095	0.0	1.1+	840203	801	0.1+	0.6+				
820715	688	0.1-	0.9-	860604	801	0.1-	0.5-				

(3711)* 1983 QD

Discovered 1983 Aug. 31 by J. Gibson at Palomar.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	358.94374		(1950.0)	P	Q
n	0.22743941	Peri.	121.02433	+0.27118431	-0.95071992
a	2.6580240	Node	312.45019	+0.79896119	+0.30942090
e	0.1672182	Incl.	11.75334	+0.53676819	+0.01975720
P	4.33	H	13.0	G 0.25	

Residuals in seconds of arc

830831	675	0.2+	0.3+	831009	688	(4.7+	1.0-)	850102	675	0.0	0.8+
830901	675	0.5+	1.9+	831027	675	0.4+	0.6+	850324	688	0.3+	0.3+
830902	675	0.1-	0.9-	831127	675	0.1-	0.5-	850424	801	0.2-	1.2-
830904	688	1.0+	0.0	840124	675	0.3-	0.3-	860514	474	1.1-	0.2+
830904	688	1.2-	0.7+	840202	801	1.3-	1.1+	860514	474	0.5+	0.1+
830917	675	0.5+	0.3-	840222	675	0.3+	0.8-	870730	801	0.6-	1.0+
831009	688	0.4-	1.6-	841231	675	0.1+	0.3-	870822	801	0.8+	1.1-

(3712)* 1984 YC

Discovered 1984 Dec. 22 by A. R. Klemola at the Lick Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	284.52302		(1950.0)	P	Q
n	0.21775578	Peri.	199.96830	-0.56015532	-0.65961421
a	2.7362530	Node	287.53098	+0.81335141	-0.32319683
e	0.2538847	Incl.	31.70481	+0.15711617	-0.67856680
P	4.53	H	11.9	G 0.25	

Residuals in seconds of arc

841222	662	1.4-	1.7-	850120	704	1.9+	1.2-	860508	474	0.9+	0.1-
841222	662	0.9+	3.5+	850120	704	1.2+	2.2+	860613	474	1.6-	0.3-
841223	662	1.6-	1.6-	850120	704	(2.0+	4.3+)	860713	474	0.4-	2.1+
841223	662	0.6+	1.6+	850120	704	0.7-	0.8+	860713	474	1.1-	1.4+
841224	662	0.0	1.1-	850122	704	0.8+	1.6+	870704	675	2.4-	0.3+
841224	662	0.3+	0.1-	850122	704	(0.9-	4.9+)	870704	675	1.2-	0.9-
841224	662	0.6-	0.9-	850123	801	0.3-	0.2-	870723	801	0.4-	0.2+
841224	662	0.2-	1.2-	850125	704	2.1-	2.1+	870730	801	0.3-	1.0+
841231	675	0.2-	0.5+	850125	704	1.4+	3.1+	870821	801	0.1+	1.0+
850102	675	0.1-	1.0+	850218	801	0.1+	2.1-	870825	801	0.4+	1.8+
850112	675	0.3+	0.4+	850421	801	1.1+	2.3-				
850120	704	2.2+	1.9-	860508	474	1.5+	0.3-				

(3713)* 1985 FA2 = 1949 KN

Discovered 1985 Mar. 22 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	104.75499	(1950.0)		P	Q
n	0.18772826	Peri.	214.28677	+0.79083349	+0.58284612
a	3.0207604	Node	108.96989	-0.50788731	+0.79522729
e	0.1036926	Incl.	11.38888	-0.34151556	+0.16704474
P	5.25	H	11.4	G 0.25	

Residuals in seconds of arc

490529	760	0.6-	1.9-	850423	688	2.4-	0.4+	860606	809	0.7+	0.6+
490529	760	1.2-	3.2-	850423	688	0.6-	1.5+	860608	809	0.4-	1.6+
850322	688	2.7+	0.1-	860603	809	1.0+	0.8+	870926	688	0.8+	0.3-
850322	688	2.0+	0.4+	860603	809	0.4-	0.4+	870926	688	1.1-	0.1+
850414	688	0.7+	0.9+	860604	809	0.7-	0.7+	871020	688	1.0+	0.9+
850414	688	1.5-	0.1+	860606	809	0.6+	0.3+	871020	688	1.1-	0.4+

1935 SP1 = 1935 UK = 1975 ER3 = 1987 SA1

The double designation 1935 SP1 = 1935 UK is by H. Hirose (MPC 834). The identification 1935 SP1 = 1975 ER3 was suggested by L. D. Schmadel.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	122.10665	(1950.0)		P	Q
n	0.26517745	Peri.	303.02773	+0.54301462	+0.83972263
a	2.3994545	Node	359.84971	-0.58183967	+0.37538123
e	0.2532055	Incl.	22.73216	-0.60547314	+0.39237079
P	3.72	H	12.5	G 0.25	

Residuals in seconds of arc

350928	078	4.7+	0.2+	351027	078	3.8-	0.6-	870926	688	0.3+	0.1+
351001	078	2.2+	2.2-	750314	095	1.7+	1.6+	870930	675	2.3-	0.9+
351015	078	1.6-	0.2+	870924	675	0.9-	1.5+				
351018	078	(3.3+	29.6-)X	870926	688	0.8-	0.9+				

1940 RG = 1930 UC1 = 1987 QD7

The key identification 1940 RG = 1987 QD7 is by P. Wild.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	113.81393	(1950.0)		P	Q
n	0.29358139	Peri.	88.47458	+0.85658970	+0.50970794
a	2.2420807	Node	240.87448	-0.50239655	+0.78833747
e	0.2235783	Incl.	5.27581	-0.11769360	+0.34456035
P	3.36	H	13.0	G 0.25	

Residuals in seconds of arc

301015	690	4.2-	3.7-	870821	026	0.3+	1.1+	870915	026	1.6-	1.0-
301017	690	4.3+	4.2+	870828	026	2.3+	1.2+	870917	026	1.3+	0.1-
301019	690	1.0+	0.5+	870829	026	0.8-	0.2-	870920	026	0.2-	1.0-
400907	062	3.3-	0.3-	870830	026	0.6-	0.1+	870930	026	0.4-	2.5-
400908	062	2.5+	2.7+	870903	026	0.1-	0.2+				
400930	062	1.1-	1.3+	870913	026	0.9+	2.9-				

1971 UQ = 1977 KC2

The identification is by E. Bowell.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	7.72861	(1950.0)		P	Q
n	0.29085182	Peri.	311.59713	+0.99290329	-0.10753767
a	2.2560864	Node	54.63682	+0.11892177	+0.89487941
e	0.1715300	Incl.	3.57010	+0.00081692	+0.43315875
P	3.39	H	15.0	G 0.25	

Residuals in seconds of arc

711026	029	0.6-	1.4+	711110	029	0.1-	0.1+	770518	675	2.5+	0.4-
711026	029	0.9+	1.0+	711110	029	0.6+	0.6-	770519	675	2.5-	0.2-
711030	029	0.9-	1.8-	711119	029	0.3-	0.3+				

1978 PY2 = 1977 KZ1 = 1987 SM1

The identifications are by E. Bowell.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	45.08329	(1950.0)		P	Q
n	0.22366124	Peri.	207.96474	+0.79059014	-0.61230329
a	2.6878793	Node	189.80126	+0.56939050	+0.73940981
e	0.0885374	Incl.	2.42584	+0.22530357	+0.27992465
P	4.41	H	13.0	G 0.25	

Residuals in seconds of arc

770518	675	0.4+	0.2-	780902	809	0.4+	0.6-	870921	688	1.7+	2.2+
770519	675	0.4-	0.4+	780903	095	3.1-	0.8+	870921	688	2.2+	1.8+
780808	095	0.7-	0.7+	780906	809	0.5+	0.2-	870921	046	0.7-	0.3-
780902	809	0.5+	0.6-	780910	809	0.3-	2.0+	870921	046	2.1-	2.3-
780902	809	0.2+	0.9-	780910	809	0.7+	1.5-	870929	688	2.0-	0.7-
780902	809	0.0	0.9-	780910	809	0.6+	1.6+	870929	688	0.7+	0.2-
780902	809	0.2+	0.1-	780910	809	1.2+	0.7-				

1978 PL4 = 1983 XL1 = 1987 SE1

The key identification 1978 PL4 = 1987 SE1 is by E. Bowell.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	62.27282	(1950.0)		P	Q
n	0.22470453	Peri.	91.82739	+0.79736610	-0.58261024
a	2.6795530	Node	303.84079	+0.45033765	+0.74803213
e	0.1989879	Incl.	10.92338	+0.40175031	+0.31782581
P	4.39	H	12.5	G 0.25	

Residuals in seconds of arc

780809	095	0.7-	1.1-	780826	414	0.6+	0.5-	870919	688	0.0	0.3-
780823	414	0.1+	0.0	780826	414	0.6+	0.2+	870929	688	0.5+	0.1-
780823	414	1.0-	1.1+	831204	561	0.1+	0.1+	870929	688	1.4-	0.1-
780824	414	0.3+	0.2-	831204	561	0.0	0.4+				
780824	414	0.4-	1.2+	870919	688	1.4+	0.2-				

1978 RG1 = 1977 KX1

The identification is by E. Bowell.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	268.38779	(1950.0)		P	Q
n	0.17104649	Peri.	199.62984	+0.96604238	+0.25779097
a	3.2141105	Node	145.41608	-0.23274152	+0.89757630
e	0.2492868	Incl.	1.76584	-0.11222076	+0.35763193
P	5.76	H	13.0	G 0.25	

Residuals in seconds of arc

770518	675	0.3-	0.2-	780905	095	0.1-	0.8-	780926	095	0.5+	0.6+
770519	675	0.3+	0.2+	780907	095	0.2+	0.8+	780928	095	0.5-	0.5-

1981 ET = 1972 GB1 = 1987 SY1

The identifications 1981 ET = 1972 GB1 and 1981 ET = 1987 SY1 are by L. D. Schmadel and by E. Bowell, respectively.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	105.18750	(1950.0)		P	Q
n	0.21633319	Peri.	318.62390	+0.73413822	+0.67898756
a	2.7482410	Node	358.59116	-0.57053045	+0.61355943
e	0.2506036	Incl.	9.64565	-0.36815225	+0.40313859
P	4.56	H	12.5	G 0.25	

Residuals in seconds of arc

720412	095	3.3+	4.9+	810307	809	0.3-	0.1+	810315	809	0.7+	0.1+
810202	413	0.4+	0.4+	810307	809	0.1-	0.0	810315	809	1.0+	0.1+
810213	413	0.7+	0.4+	810307	809	0.2-	0.1+	810316	413	2.3+	1.1-
810302	809	0.5-	0.1-	810307	413	1.3-	1.0+	810329	413	0.2-	0.2-
810302	809	0.2-	0.2-	810308	809	0.7+	0.1+	810407	413	0.0	0.1-
810302	809	0.0	0.1-	810308	809	0.8+	0.4+	810408	413	2.1-	0.8+
810302	413	1.7-	1.0+	810308	809	0.9+	0.8+	810408	413	0.5-	0.7-
810303	809	0.6-	0.7-	810309	809	0.3+	0.2+	810411	413	2.3-	0.4-
810303	809	0.3-	0.7-	810309	809	0.4+	0.2+	810411	413	0.5+	1.0-
810303	809	0.2-	0.4-	810309	809	0.4+	0.2+	810430	413	0.1+	1.8-
810303	413	2.1-	1.3+	810309	809	0.4+	0.0	810502	413	0.5+	1.0-
810305	809	1.0-	0.1-	810310	809	0.5+	0.1+	810503	413	2.2+	0.5-
810305	809	0.9-	0.4-	810310	809	0.4+	0.1+	870926	688	0.2+	1.0+
810305	809	0.9-	0.6-	810310	809	0.6+	0.4+	870926	688	1.8+	1.1+
810306	809	0.1+	0.6-	810311	413	1.2-	0.5+	870929	054	0.3-	0.2-
810306	809	0.0	0.5-	810311	413	0.5+	0.1+	870930	054	1.0-	0.3-
810306	809	0.1+	0.8-	810315	809	0.4+	0.0	870930	054	1.7-	0.1-

1981 EA26

The 1977 observations were identified by E. Bowell.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	270.60924	(1950.0)	P	Q	
n	0.22406359	Peri.	292.52013	-0.87037142	-0.49193273
a	2.6846606	Node	218.02151	+0.46352501	-0.80394011
e	0.1868555	Incl.	1.98626	+0.16612692	-0.33418931
P	4.40	H	14.0	G 0.25	

Residuals in seconds of arc

770518	675	0.6-	0.2-	810311	413	0.7-	0.4+	810407	413	1.2-	0.9+
770519	675	0.8+	0.9+	810315	413	1.3+	0.8+	810410	413	1.7-	0.6+
810212	413	0.3+	0.1+	810405	413	1.0-	0.4+	810410	413	0.9-	0.7-
810212	413	0.4+	0.6-	810405	413	3.3+	1.7-	810501	413	0.6+	1.4-
810302	413	0.4+	0.0	810406	413	1.1-	0.6+	810503	413	0.0	0.6-
810306	413	1.2-	1.4+	810406	413	1.4+	0.9-				

1981 EO34 = 1987 SO1

The identification is by E. Bowell.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	79.42127	(1950.0)	P	Q	
n	0.23075278	Peri.	183.26231	+0.99977993	+0.01656575
a	2.6325237	Node	175.72445	-0.01309611	+0.97215853
e	0.2121441	Incl.	9.94156	-0.01638846	+0.23373781
P	4.27	H	14.5	G 0.25	

Residuals in seconds of arc

810209	413	0.3-	1.3+	810316	413	4.9+	2.5-	870921	688	1.2+	1.3+
810213	413	0.1+	0.5-	810329	413	1.3-	0.6+	870921	688	0.5+	0.8-
810302	413	0.2-	0.9-	810407	413	0.0	0.0	870921	046	2.2-	0.4-
810303	413	0.7-	0.3+	810408	413	2.1-	2.2+	870921	046	2.7-	1.3-
810303	413	1.1+	1.1-	810411	413	0.1-	0.2-	870929	688	2.6+	0.4+
810307	413	0.7-	0.1+	810411	413	1.7+	1.5-	870929	688	0.6+	1.0+
810307	413	2.2-	0.9+	810502	413	0.5+	0.0				
810311	413	1.0-	1.3+	810503	413	0.5+	0.4+				

1981 RD2 = 1976 YL = 1987 SF1

The key identification 1981 RD2 = 1987 SF1 is by E. Bowell.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	45.45212	(1950.0)		P	Q
n	0.17320729	Peri.	129.18691	+0.79074492	-0.58150485
a	3.1873235	Node	267.19620	+0.48580098	+0.78621210
e	0.1745612	Incl.	11.03882	+0.37245117	+0.20909959
P	5.69	H	12.0	G 0.25	

Residuals in seconds of arc

761216 095	2.4-	1.0-	870919 688	0.4+	0.5+	871020 688	1.7-	0.5-
761218 095	2.4+	0.6+	870919 688	0.9+	0.3+	871026 688	1.2-	0.5+
810907 095	0.4-	0.4+	870929 688	0.3+	1.9+	871026 688	0.9+	0.1+
810927 095	0.5+	0.2-	870929 688	0.0	0.0			
811003 095	0.4+	1.2-	871020 688	0.2+	1.6-			

1982 TT = 1961 XP = 1987 SV1

The key identification 1982 TT = 1987 SV1 is by E. Bowell.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	43.88596	(1950.0)		P	Q
n	0.18596411	Peri.	138.65937	+0.85508187	-0.48744507
a	3.0398407	Node	251.33600	+0.41303372	+0.84641534
e	0.1275022	Incl.	10.75071	+0.31342965	+0.21442568
P	5.30	H	12.0	G 0.25	

Residuals in seconds of arc

611207 760	0.8-	3.5-	821021 095	0.0	0.0	870929 688	0.4-	0.5-
611207 760	0.8+	2.1+	821022 095	0.8-	1.2-	870929 688	1.3-	1.5+
821013 688	0.8+	1.5-	821111 095	1.5-	5.3+	871016 688	0.5+	2.0+
821013 688	0.2+	1.5-	870921 688	0.3+	1.0-	871016 688	1.0+	3.4-
821015 095	1.1+	1.0+	870921 688	0.1-	0.9+			

1987 QA

Epoch 1987 Sept. 2.0 ET = JDE 2447040.5

M	318.36604	(1950.0)		P	Q
n	0.46590781	Peri.	278.82647	-0.00387502	-0.99180557
a	1.6479197	Node	168.71175	+0.95784846	+0.03300011
e	0.4687126	Incl.	40.72032	-0.28724784	+0.12342085
P	2.12	H	15.5	G 0.25	

From 13 observations 1987 Aug. 23-Oct. 18.

1987 SL

Epoch 1987 Sept. 22.0 ET = JDE 2447060.5

M	11.93436	(1950.0)		P	Q
n	0.19349043	Peri.	319.94440	+0.68180767	+0.73031390
a	2.9604863	Node	352.67947	-0.55725575	+0.48115033
e	0.6100429	Incl.	19.33566	-0.47392439	+0.48490820
P	5.09	H	15.5	G 0.25	

From 15 observations 1987 Sept. 19-Oct. 16.

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ORBITAL ELEMENTS BY D. W. E. GREEN, SMITHSONIAN ASTROPHYSICAL OBSERVATORY.

Comet Levy (1987y)

T 1987 Sept. 9.16021 ET

q	0.5163995	(1950.0)		P	Q
		Peri.	13.27669	-0.84180297	-0.08611567
		Node	143.08494	+0.37751919	-0.79951453
e	1.0	Incl.	62.52183	+0.38580697	+0.59444143

From 9 observations 1987 Oct. 13-21.

Comet Rudenko (1987u)
Epoch 1987 Oct. 12.0 ET = JDE 2447080.5
T 1987 Oct. 9.52741 ET

q 0.6025872	(1950.0)		P	Q
z -0.0005449	Peri.	143.83807	-0.59682262	+0.02427949
+/-0.0000833	Node	297.87341	+0.33531549	+0.91562207
e 1.0003283	Incl.	114.87003	+0.72894875	-0.40130628

From 22 observations 1987 Aug. 22-Oct. 21, mean residual 0".7.

Periodic Comet Mueller (1987a1)
T 1987 Dec. 4.88096 ET

q 2.6623709	(1950.0)		P	Q
n 0.11855577	Peri.	31.95639	+0.81885379	-0.57394934
a 4.1038132	Node	3.10313	+0.49166645	+0.69433109
e 0.3512446	Incl.	8.27032	+0.29621375	+0.43415031
P 8.31				

From 11 observations 1987 Oct. 18-27.

Comet McNaught (1987b1)
T 1987 Dec. 11.91442 ET

q 0.8424323	(1950.0)		P	Q
	Peri.	17.32508	-0.19172126	-0.06825428
	Node	260.63651	-0.97620974	-0.08968182
e 1.0	Incl.	97.11733	-0.10127932	+0.99362897

From 20 observations 1987 Oct. 10-30.

Periodic Comet Shoemaker-Holt (1987z)
T 1988 May 12.98244 ET

q 3.0402581	(1950.0)		P	Q
n 0.10295375	Peri.	208.95588	+0.45506466	-0.88947437
a 4.5085953	Node	214.02384	+0.83067147	+0.44097295
e 0.3256751	Incl.	4.28949	+0.32078198	+0.11990918
P 9.57				

From 15 observations 1987 Sept. 24-Oct. 26.

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ORBITAL ELEMENTS BY S. NAKANO, SMITHSONIAN ASTROPHYSICAL OBSERVATORY.

The identifications are by S. Nakano unless otherwise stated.

(3714)* 1983 TT1 = 1973 FK = 1979 XT = 1981 FH1 = 1987 ST2
Discovered 1983 Oct. 12 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 48.52895	(1950.0)		P	Q
n 0.24024904	Peri.	21.61990	+0.63819534	-0.76029757
a 2.5626833	Node	29.14064	+0.66485096	+0.46499790
e 0.1761519	Incl.	14.39444	+0.38817510	+0.45356869
P 4.10	H 12.9		G 0.25	

Residuals in seconds of arc

730329	805	0.5-	0.2-	831012	688	1.1+	1.1-	870929 688	1.5- 2.9+
791214	095	3.3-	0.8+	831104	688	0.1-	0.9+	871016 688	1.6- 0.5-
810329	095	0.7+	0.3+	831104	688	0.8+	0.1-	871016 688	0.7- 2.1-
831011	688	0.8+	1.3-	870919	071	(3.1-	4.6-)	871026 688	1.2- 0.9-
831011	688	0.9+	1.4-	870920	071	(1.6-	5.3-)	871026 688	2.0+ 0.8-
831012	688	2.9+	0.9+	870929	688	1.4-	3.1+		

1931 TC4 = 1931 TB4 = 1973 SA4 = 1973 UC6 = 1986 LW1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	95.88559	(1950.0)		P	Q
n	0.21197136	Peri.	313.22373	+0.95500268	+0.28766219
a	2.7858141	Node	30.27135	-0.21312478	+0.83497584
e	0.2312402	Incl.	8.24057	-0.20627095	+0.46911172
P	4.65	H	12.5	G 0.25	

Residuals in seconds of arc

311006	690	2.2-	1.4-	311017	690	1.6+	0.5-	860604 809 4.0- 0.2-
311007	690	2.3-	0.8-	311018	690	1.2+	0.0	860604 809(25.7- 2.3+)
311009	690	2.3-	0.3+	730925	095	1.8-	1.5+	860607 809 2.2+ 0.0
311013	690	4.9+	1.2+	731027	095	1.0+	0.1-	860607 809 1.8+ 0.1+

1966 TP = 1938 DT1 = 1985 FF1 = 1987 RE
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	27.17057	(1950.0)		P	Q
n	0.23144056	Peri.	88.55635	+0.54143228	-0.83876329
a	2.6273057	Node	328.44495	+0.72083446	+0.49842957
e	0.1865643	Incl.	6.32824	+0.43272252	+0.21918967
P	4.26	H	13.0	G 0.25	

Residuals in seconds of arc

380223	024	1.7+	3.2+	850322	688	1.8-	0.8-	870901 046 0.4+ 0.4-
661011	095	3.4+	1.2-	850322	688	0.6+	1.4-	870919 071 3.0- 0.9+
661013	095	2.2+	1.8-	870826	809	1.1+	0.7+	870919 071(14.2- 0.1+)
661017	095	3.5-	1.1-	870826	809	0.8+	0.6+	870919 071 2.1- 1.3-
661019	012	2.0-	1.0-	870826	809	0.8+	0.9+	
661020	095	0.5+	3.8+	870901	046	0.7+	0.6+	

1974 SF = 1985 UC2 = 1985 UV3
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	296.85977	(1950.0)		P	Q
n	0.27137641	Peri.	176.04907	+0.99852301	-0.05329042
a	2.3627693	Node	187.03192	+0.04717531	+0.94701584
e	0.2437116	Incl.	4.95772	+0.02694980	+0.31673512
P	3.63	H	15.0	G 0.25	

Residuals in seconds of arc

740919	095	1.8-	2.2-	741019	808	1.1-	4.3+	851020 049(11.6+ 3.7+)
740921	808	1.0+	2.1-	851017	010	0.4-	2.2-	851024 049 (0.3+ 11.5-)
740921	808	0.7+	0.5+	851018	010	1.8-	4.2-	851024 049 3.1+ 3.4+
741019	808	0.2+	2.9+	851020	049(11.6+		2.8+)	

1977 AL1 = 1975 VD10
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	33.52025	(1950.0)		P	Q
n	0.23294666	Peri.	253.20890	+0.86730334	+0.45995936
a	2.6159690	Node	79.05892	-0.34991844	+0.83528809
e	0.1569026	Incl.	11.17727	-0.35403672	+0.30121618
P	4.23	H	12.5	G 0.25	

Residuals in seconds of arc

751107	808	0.4-	1.1+	751108	808	0.5-	1.5-	770113 095 0.0 0.3-
751107	808	0.8+	0.9+	770112	675	0.9+	0.1+	770120 095 0.4- 1.1-
751108	808	0.1+	0.5-	770113	675	0.4-	1.2+	

1977 AZ1 = 1979 MN = 1981 UX19
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	6.94740		(1950.0)	P	Q
n	0.17130530	Peri.	21.91511	-0.36095773	-0.91334776
a	3.2108724	Node	89.65526	+0.82516639	-0.40693743
e	0.1035462	Incl.	10.86130	+0.43452267	+0.01406406
P	5.75	H	11.5	G 0.25	

Residuals in seconds of arc

770112	675	1.5+	0.9-	770120	095	0.0	0.2+	790625	805	0.7+	0.1-
770113	675	1.0-	2.5+	790622	805	1.8-	0.4-	811027	095	0.2+	0.4-
770113	095	0.4-	2.7-	790622	805	0.8+	0.7-				

1987 QC = 1948 RC1 = 1958 VW = 1982 OJ
The identifications were found independently by T. Urata (NOC 1665).
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	60.55389		(1950.0)	P	Q
n	0.20235765	Peri.	104.91257	+0.99933249	+0.01336264
a	2.8733573	Node	254.33063	-0.02554527	+0.92093291
e	0.3369533	Incl.	2.02368	+0.02611545	+0.38949201
P	4.87	H	13.0	G 0.25	

Residuals in seconds of arc

480901	094(42.9+	5.4+)X		870826	883	1.2-	3.2+	870830	809	0.0	0.3-
581111	760	0.0	1.7-	870826	883	(5.1+	6.0-)	870830	809	0.0	0.3+
581111	760	0.5+	0.5-	870827	809	0.3+	1.3-	870830	809	1.1-	0.6-
820717	688	0.4+	1.2-	870827	809	0.4-	1.0-	870901	883	0.4+	0.1-
820717	688	0.3-	1.3-	870827	809	0.3-	1.0-	870901	883	0.4-	1.9-
820817	688	0.4+	1.2-	870828	883	(1.6-	3.8+)	870901	883	(5.2+	0.6-)
820817	688	0.4+	0.0	870828	883	0.8+	1.8+	871018	881	0.1+	0.8+
870826	883	(7.7+	16.2+)	870828	883	1.4+	2.8+	871018	881	0.9-	0.9+

1987 RG = 1981 NR1 = 1982 XB2 = 1982 XK2
The double designation 1982 XB2 = 1982 XK2 is by H. Oishi.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	88.27210		(1950.0)	P	Q
n	0.18054592	Peri.	205.75550	+0.82811619	+0.55803152
a	3.1003576	Node	120.22294	-0.50305662	+0.78164977
e	0.1771209	Incl.	3.52622	-0.24730064	+0.27861166
P	5.46	H	12.5	G 0.25	

Residuals in seconds of arc

810710	808	1.1-	0.6+	821214	381	0.7-	0.6+	870919	688	0.6+	0.8-
810710	808	1.0+	0.3+	821214	381	0.4-	2.5+	870919	071	(1.8-	7.1-)
821213	381	0.6-	0.0	870901	809	1.0-	1.8+	870919	071	(1.7-	4.7-)
821213	381	1.8+	0.6-	870901	809	1.5-	1.6+	870929	688	2.3+	3.1-
821213	381	1.2-	0.0	870901	809	0.8-	2.0+	870929	688	1.4-	3.0-
821214	381	1.0-	0.5+	870901	809	0.2-	1.9+	871016	688	1.5+	0.4-
821214	381	1.3+	0.7-	870919	688	0.8+	0.8-	871016	688	0.1+	0.3-

1987 RJ = 1982 BT10 = 1984 XC
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	103.09029		(1950.0)	P	Q
n	0.29750031	Peri.	286.96199	+0.99883266	-0.00820535
a	2.2223475	Node	73.52791	+0.02704259	+0.91154784
e	0.1203141	Incl.	2.84532	-0.04002519	+0.41111217
P	3.31	H	14.0	G 0.25	

Residuals in seconds of arc

820119	095	0.5+	3.2+	870901	809	0.3+	1.6+	870929	688	1.7-	0.7-
841201	046	0.4-	0.4-	870919	688	0.0	0.5+	871016	688	0.3+	0.0
841201	046	0.8+	0.9-	870919	688	1.0-	1.1-	871016	688	1.1+	0.9+
870901	809	0.2-	1.0+	870919	071	(4.4-	5.7-)	871026	688	1.7+	1.3-
870901	809	0.3-	0.9+	870919	071	(2.4-	5.2-)	871026	688	1.1+	1.1-
870901	809	0.3-	1.9+	870929	688	1.4-	0.8-				

1987 SV = 1937 AW = 1937 AC1 = 1937 BH = 1939 RG = 1974 CG
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	65.37864		(1950.0)	P	Q
n	0.26728711	Peri.	76.34552	+0.86969064	-0.49119143
a	2.3868122	Node	313.04820	+0.42318213	+0.79274873
e	0.1096094	Incl.	3.81906	+0.25407692	+0.36094381
P	3.69	H	13.0	G 0.25	

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

370107	020(0.09+	0.05-)X		740214	095	0.2-	0.3-	871016	688	1.1+	1.0+
370109	020	4.5+	2.4-	740218	095	0.2+	0.1+	871016	688	1.2-	1.9+
370117	029	3.2-	0.4+	870919	688	1.0-	0.6+	871026	688	1.1-	0.1-
370117	029	1.7-	0.8+	870919	688	1.1+	0.4+	871026	688	0.3-	0.8+
390908	024	0.5+	0.1-	870926	688	0.1-	0.4-				
390909	024	1.6+	4.0-	870926	688	0.6-	0.4-				

1987 SN1 = 1969 OR = 1977 HV = 1979 YY2 = 1981 ER49
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	106.84925		(1950.0)	P	Q
n	0.22551868	Peri.	270.34910	+0.82668696	+0.56165305
a	2.6731001	Node	55.48100	-0.49857764	+0.75896330
e	0.0694648	Incl.	2.34292	-0.26078538	+0.32942460
P	4.37	H	13.0	G 0.25	

Residuals in seconds of arc

690717	095	0.4+	2.7-	810308	095	0.0	0.1-	870921	688	0.3-	0.9+
770424	675	0.2+	0.1+	870822	033	0.1+	3.5+	870921	688	2.7-	0.8-
770425	675	0.2-	0.1-	870822	033	0.1+	1.6-	870929	688	3.0+	0.3+
791224	095	0.3+	2.6-	870823	033	0.1-	1.4-	870929	688	0.6-	0.2+

1987 SV2 = 1972 TD11 = 1972 UF = 1977 RM6
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	138.66131		(1950.0)	P	Q
n	0.19621087	Peri.	304.85708	+0.29016896	+0.95694944
a	2.9330640	Node	342.00704	-0.87034130	+0.26082868
e	0.0818579	Incl.	1.30838	-0.39787938	+0.12734276
P	5.02	H	12.0	G 0.25	

Residuals in seconds of arc

721013	095	1.9+	1.0+	870920	071	(6.7+	4.5-)	871002	881	0.3-	0.7-
721028	095	2.1-	1.0-	870920	071	(8.2+	4.4-)	871018	881	0.9+	0.2+
770911	095	1.0-	0.4+	871001	881	0.5+	0.0	871018	881	0.3-	0.4+
770918	095	1.6-	0.3-	871001	881	0.4-	0.0				
770921	095	2.6+	0.0	871002	881	0.4-	0.0				

1987 SW3 = 1936 MJ = 1970 QO1 = 1976 GD8 = 1976 GG8

The double designation 1976 GD8 = 1976 GG8 is by O. Kippes and T. Urata (MPC 6840), who found it independently.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	160.25605		(1950.0)	P	Q
n	0.29189971	Peri.	355.69485	+0.14006611	+0.98794327
a	2.2506837	Node	282.34714	-0.90636461	+0.10111568
e	0.1740124	Incl.	3.87115	-0.39860342	+0.11723355
P	3.38	H	13.5	G 0.25	

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

360624	078(0.07+	0.02+)X	760404	808	0.8-	0.1-	871016	688	0.2-	0.7+
700831	095	0.1-	0.3+	760404	808	0.7-	0.7-	871016	688	0.2+	0.9+
760401	808	1.6+	0.3+	870926	688	0.5-	1.0-	871026	688	0.3-	0.1-
760401	808	0.2-	0.5+	870926	688	0.8+	0.5-	871026	688	0.1+	0.2-

1987 SE4 = 1962 XO = 1980 TV14
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	104.51950		(1950.0)	P	Q
n	0.27294233	Peri.	99.10320	+0.96579584	+0.24201867
a	2.3537282	Node	246.93519	-0.25927931	+0.89641088
e	0.1269240	Incl.	5.80687	-0.00355448	+0.37131456
P	3.61	H	13.0	G 0.25	

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

621202	760(0.03+	0.01+)X	870929	688	0.9+	1.3+	871016	688	2.0-	1.4-
801015	095	0.9+	0.5+	870929	688	0.4+	0.5+	871026	688	0.3+	1.0-
801017	095	0.9-	0.3-	871016	688	0.3-	1.1-	871026	688	0.7+	1.4+

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ORBITAL ELEMENTS BY K. HURUKAWA, TOKYO ASTRONOMICAL OBSERVATORY.

The identifications are by K. Hurukawa unless otherwise stated.

1968 HP = 1960 DA = 1976 KK
The identifications are by S. Nakano (MPC 11345).
Epoch 1988 Aug. 27.O ET = JDE 2447400.5

M	63.39658		(1950.0)	P	Q
n	0.25610461	Peri.	99.22546	-0.32012109	+0.94622981
a	2.4557894	Node	151.96598	-0.90344829	-0.29010323
e	0.1339869	Incl.	5.69031	-0.28513800	-0.14314070
P	3.85	H	13.0	G 0.25	

Residuals in seconds of arc

600222	760	0.2-	0.7-	680430	095	1.2+	2.3-	830214	381	0.4+	1.8+
680422	095	1.4-	1.0+	760525	095	2.0+	1.6+				
680426	095	(9.1+	1.3+)	760530	095	1.9-	0.4-				

1968 OC1 = 1986 WB9
Epoch 1988 Aug. 27.O ET = JDE 2447400.5

M	245.18311		(1950.0)	P	Q
n	0.28178021	Peri.	112.48490	+0.90598796	+0.41867669
a	2.3042472	Node	222.83329	-0.41422751	+0.84650357
e	0.1366144	Incl.	5.26744	-0.08718590	+0.32884881
P	3.50	H	13.9	G 0.25	

Residuals in seconds of arc

680725	805	0.2-	0.3-	680823	805	0.0	0.2-	861201	381	0.6+	0.0
680728	805	0.3+	0.7+	861130	381	0.9-	0.7+	861201	381	0.5+	0.6-
680730	805	0.1-	0.2-	861130	381	0.1-	0.0				

1970 WC = 1972 GK1 = 1977 RO6 = 1986 AV1
The identifications 1970 WC = 1972 GK1 = 1977 RO6 are by S. Nakano (MPC 10630).
Epoch 1988 Aug. 27.O ET = JDE 2447400.5

M	172.11480		(1950.0)	P	Q
n	0.27109588	Peri.	207.33621	-0.94028060	+0.34029133
a	2.3643990	Node	352.54293	-0.29891519	-0.83752892
e	0.0176325	Incl.	3.80547	-0.16285605	-0.42748931
P	3.64	H	13.4	G 0.25	

Residuals in seconds of arc

701124	029	0.2-	0.6+	720409	805	1.1+	0.9+	830311	381	0.4-	0.6-
701124	029	0.6+	0.6-	720409	805	0.2+	0.1+	830311	381	0.0	0.6-
701221	029	0.2+	0.2+	720410	805	0.1-	0.6+	860112	688	1.5-	0.2-
701221	029	0.0	0.4-	720410	805	0.4-	0.0	860112	688	1.4+	0.1+
701221	029	0.2-	0.1+	770911	095	0.1+	0.7+				
701221	029	0.4-	0.3+	770918	095	0.4-	0.2-				

1973 SM = 1986 VU6

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	89.08077		(1950.0)	P	Q
n	0.08405659	Peri.	167.49690	+0.96685266	-0.25478109
a	5.1612498	Node	207.28155	+0.23098163	+0.90079707
e	0.0416837	Incl.	2.10160	+0.10882751	+0.35164078
P	11.73	H	9.8	G 0.25	

Residuals in seconds of arc

730919	675	0.2+	0.3+	730930	675	0.4+	1.1-	861130	381	1.0-	1.6-
730920	675	0.5-	0.0	731004	675	0.1-	0.2-	861130	381	0.4-	0.4+
730924	675	0.1-	0.7+	731005	675	0.6+	0.2-	861201	381	2.2+	1.2+
730925	675	0.4-	0.8+	861106	688	2.0+	0.8-	861201	381	1.1-	0.5+
730929	675	0.0	0.3-	861106	688	1.8-	0.2+				

1976 SD3 = 1982 SV4 = 1982 UL

The identification and double designation are by H. Oishi (MPC 9956).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	285.77839		(1950.0)	P	Q
n	0.16966575	Peri.	69.30147	-0.20217149	-0.97878212
a	3.2315182	Node	32.41933	+0.87375061	-0.19564931
e	0.0286647	Incl.	3.56657	+0.44236473	-0.06088446
P	5.81	H	12.1	G 0.25	

Residuals in seconds of arc

760924	095	0.2-	0.9-	820926	095	0.7-	3.0+	840124	381	2.2+	0.4-
760929	095	1.6+	0.5-	821017	688	1.4-	1.6-	840124	381	2.2-	0.1-
761026	095	0.0	1.5-	821017	688	0.7+	1.5+				

1977 DN4 = 1975 WS = 1978 LY

The identifications 1977 DN4 = 1975 WS and 1977 DN4 = 1978 LY are by L. D. Schmadel and S. J. Bus, respectively (MPC 11153).

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	16.75276		(1950.0)	P	Q
n	0.17740202	Peri.	58.38362	-0.94594947	-0.32041155
a	3.1368735	Node	102.88761	+0.27737453	-0.87944864
e	0.1188576	Incl.	2.94954	+0.16805646	-0.35200360
P	5.56	H	12.9	G 0.25	

Residuals in seconds of arc

751128	095	0.5+	1.8-	770315	381	0.5-	0.1+	861130	381	0.2+	1.2+
770218	381	0.6+	0.1-	770315	381	0.6-	1.0-	861130	381	0.3-	1.2+
770218	381	0.5+	1.8+	780610	675	0.2+	1.1+	861201	801	(0.0	3.7+)
770219	381	0.2+	0.5+	780610	675	0.1+	0.0	861201	381	0.8-	0.2-
770219	381	0.9+	0.6-	861125	010	(6.6-	5.8-)	861201	381	0.0	0.6+
770312	381	0.5-	0.1+	861125	010	(0.4-	4.7-)				
770312	381	0.4-	0.3-	861125	010	(3.8-	5.1-)				

1978 RE3 = 1986 WQ10
Epoch 1988 Aug. 27.O ET = JDE 2447400.5

M	191.07795	(1950.0)		P	Q
n	0.25812699	Peri.	82.01376	+0.91581028	-0.40094211
a	2.4429455	Node	301.62059	+0.35690019	+0.83895565
e	0.1867064	Incl.	1.55935	+0.18415698	+0.36796582
P	3.82	H	15.4	G 0.25	

Residuals in seconds of arc

780902	809	0.7+	0.1-	780903	095	2.0-	1.4+	780910	809	0.1-	1.2-
780902	809	0.5+	0.4-	780906	809	0.2+	0.0	861130	381	0.6-	0.0
780902	809	0.2+	0.5-	780910	809	0.5-	1.2+	861130	381	0.6+	0.1+
780902	809	0.2+	0.6-	780910	809	0.3+	0.6-	861201	381	0.0	0.2-
780902	809	0.2+	0.1+	780910	809	0.3+	0.7+	861201	381	0.0	0.2+

1981 EP20 = 1979 SY7 = 1979 TO1

The double designation 1979 SY7 = 1979 TO1 was independently found by N. S. Chernykh (MPC 9751).

Epoch 1988 Aug. 27.O ET = JDE 2447400.5

M	150.84750	(1950.0)		P	Q
n	0.27014458	Peri.	4.76226	+0.91301238	-0.40768304
a	2.3699465	Node	19.31630	+0.37281480	+0.81973144
e	0.2242664	Incl.	2.46826	+0.16558238	+0.40228708
P	3.65	H	14.7	G 0.25	

Residuals in seconds of arc

770212	675	1.2-	1.3-	810302	413	0.7-	0.6+	810408	413	1.1-	1.0+
770214	675	1.2-	0.7-	810303	413	0.9+	0.0	810408	413	1.5+	0.8-
780509	675	2.6-	1.3+	810307	413	0.9+	0.1+	810411	413	0.6-	0.8+
780510	675	1.3-	0.6+	810307	413	1.2+	1.2-	810411	413	0.8+	0.8-
790923	095	0.1+	0.2+	810311	413	1.2-	1.2+	810502	413	1.2+	0.3-
791014	095	1.6+	0.5-	810316	413	0.8-	0.4+	810503	413	0.1-	0.5-
810202	413	1.7+	2.1-	810316	413	2.4+	1.5-	840124	381	1.8-	2.7+
810213	413	0.5+	1.2-	810329	413	0.4+	0.4+	840124	381	1.0-	0.1+

1982 UC11 = 1982 TO2 = 1986 WF8

The double designation 1982 UC11 = 1982 TO2 is by S. Nakano (MPC 11231).

Epoch 1988 Aug. 27.O ET = JDE 2447400.5

M	182.53851	(1950.0)		P	Q
n	0.24627494	Peri.	132.64155	+0.95948418	-0.27666989
a	2.5207081	Node	243.48426	+0.23790815	+0.89690952
e	0.2073682	Incl.	3.41667	+0.15096296	+0.34497404
P	4.00	H	14.7	G 0.25	

Residuals in seconds of arc

821014	095	0.5-	0.7+	821114	095	0.8-	0.9-	861201	381	0.3-	0.6-
821025	095	0.4+	0.6-	861130	381	0.6-	0.1-	861201	381	0.1-	0.2-
821109	095	1.0+	0.2+	861130	381	0.8+	1.7+				

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ORBITAL ELEMENTS BY H. OISHI, NIIZA, JAPAN.

1981 QY2 = 1963 UL

The identification is by H. Oishi.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	335.00167	(1950.0)		P	Q
n	0.20959801	Peri.	28.71289	-0.97259397	-0.22753533
a	2.8068044	Node	138.04664	+0.19728998	-0.91648634
e	0.1850979	Incl.	4.10360	+0.12303507	-0.32905996
P	4.70	H	12.9	G 0.25	

Residuals in seconds of arc

631018	760	0.7-	0.3+	810826	809	0.4+	0.6+	810828	809	0.8-	0.3-
631022	760	0.9+	0.6-	810826	809	0.2+	0.3-	810828	809	0.7-	0.3-
810824	809	2.9+	1.4+	810826	809	0.4+	1.1-	810828	809	0.8-	0.5-
810824	809	3.5+	1.1+	810826	809	0.7+	0.9-	810901	809	2.4-	2.1+
810824	809	3.9+	0.9+	810826	809	0.0	1.1-	810901	809	1.7-	2.0+
810825	809	0.2+	2.3-	810826	809	0.2+	1.2-	810901	809	2.5-	1.9+
810825	809	0.3-	2.6-	810826	809	0.5+	1.0-	810901	809	1.4-	1.7+
810825	809	0.3-	2.9-	810827	809	1.0-	0.1-	850901	809	0.6-	1.6+
810825	809	1.9+	2.4-	810827	809	0.5-	0.0	810901	809	0.0	1.9+
810825	809	1.6+	2.2-	810827	809	0.4-	0.1-	810901	809	0.8-	1.3+
810825	809	1.7+	1.8-	810827	809	0.6-	0.6+	810901	809	1.0-	1.0+
810825	809	1.0+	1.7+	810827	809	0.2-	0.7+	810905	809	(5.9+	8.6+)
810825	809	0.9+	1.2+	810827	809	0.4-	0.5+	810905	809	(6.2+	8.5+)
810825	809	1.2+	1.3+	810828	809	1.6-	0.4-	810905	809	(6.6+	8.3+)
810826	809	0.0	0.3+	810828	809	1.6-	0.9-				
810826	809	0.2+	0.4+	810828	809	1.6-	1.2-				

1981 SJ7 = 1981 WB5 = 1967 PB = 1974 RC1

The identifications are by H. Oishi.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	46.58841		(1950.0)	P	Q
n	0.28767451	Peri.	35.16368	+0.84163586	+0.53432144
a	2.2726680	Node	292.35366	-0.51285759	+0.74530004
e	0.1991002	Incl.	4.86405	-0.16919272	+0.39878371
P	3.43	H	13.9	G 0.25	

Residuals in seconds of arc

670814	095	0.6+	1.2-	810929	095	1.0+	0.3+	811124	095	0.9+	0.3+
740912	095	1.1-	2.0+	811002	095	0.2-	1.1-	811124	095	1.2-	1.1-

1983 AY = 1971 YG = 1980 KA

The identifications are by H. Oishi.

Epoch 1988 Aug. 27.0 ET = JDE 2447400.5 (J-P)

M	92.72719		(1950.0)	P	Q
n	0.27163751	Peri.	300.95975	-0.64848426	+0.75531220
a	2.3612597	Node	288.30640	-0.65991371	-0.61983053
e	0.0809973	Incl.	5.72581	-0.37944968	-0.21286989
P	3.63	H	12.8	G 0.25	

Residuals in seconds of arc

711216	095	0.1+	0.3+	800523	805	0.4+	0.2+	830121	688	2.9-	0.6-
800518	805	0.5-	1.2-	830109	688	1.5-	1.0-	830121	688	0.1-	1.1+
800523	805	0.1-	1.3+	830112	688	2.4+	0.1-				
800523	805	0.2+	0.2-	830112	688	2.0+	0.2+				

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ORBITAL ELEMENTS BY T. KOBAYASHI, GUNMA, JAPAN.

The identifications are by T. Kobayashi unless otherwise stated.

Comet Churyumov-Solodovnikov (1986i)

Epoch 1986 May 10.0 ET = JDE 2446560.5

T 1986 May 6.50687 ET

q	2.6421096		(1950.0)	P	Q
z	+0.0001528	Peri.	157.75060	+0.75695877	-0.01843709
	+/-0.0000166	Node	133.91719	-0.64669814	-0.16459335
e	0.9995962	Incl.	114.93405	+0.09378129	-0.98618918

From 42 observations 1986 July 15-1987 May 2, mean residual 1".2.

Comet Sorrells (1986n)
Epoch 1987 Mar. 26.0 ET = JDE 2446880.5
T 1987 Mar. 9.65412 ET

		(1950.0)	P	Q
q 1.7211555				
z +0.0000514	Peri.	70.21348	+0.94622526	+0.04904683
+/-0.0000019	Node	74.08793	-0.04902988	-0.95528086
e 0.9999116	Incl.	160.57884	+0.31977151	-0.29160400

From 224 observations 1986 Nov. 2-1987 Aug. 26, mean residual 1".0.

Comet Wilson (1986l)
Epoch 1987 May 5.0 ET = JDE 2446920.5
T 1987 Apr. 20.78318 ET

		(1950.0)	P	Q
q 1.1996589				
z -0.0002993	Peri.	238.29877	-0.47928865	-0.71644652
+/-0.0000018	Node	110.95848	-0.50092026	+0.69759146
e 1.0003591	Incl.	147.12187	-0.72066725	-0.00839918

From 359 observations 1986 Aug. 5-1987 July 4, mean residual 1".1.

Periodic Comet West-Kohoutek-Ikemura (1987x)
Epoch 1987 July 24.0 ET = JDE 2447000.5
T 1987 July 27.26897 ET

		(1950.0)	P	Q
q 1.5706049				
n 0.15398890	Peri.	359.83276	+0.11524060	-0.85511468
a 3.4472791	Node	83.52648	+0.91191444	-0.11069412
e 0.5443929	Incl.	30.57808	+0.39386758	+0.50648366
P 6.40				

From 39 observations 1974-1987, mean residual 1".3. Nongravitational parameters A1 = +0.39, A2 = -0.1277.

1949 PV = 1949 QD1 = 1982 BU9 = 1987 OE
The double designation 1949 PV = 1949 QD1 is by O. Kippes (NAZ 12, 22).
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

		(1950.0)	P	Q
M 97.47542				
n 0.28496500	Peri.	203.64137	+0.89670209	+0.43664017
a 2.2870467	Node	130.26679	-0.38939703	+0.85615610
e 0.1729889	Incl.	5.45967	-0.21046454	+0.27630072
P 3.46	H 14.0		G 0.25	

Residuals in seconds of arc

490802 024	0.8-	3.2+	490826 690	1.0+	1.6+	870726 675	2.1+	1.2-
490820 690	0.5-	2.7-	820119 095	0.4+	2.4-	870727 675	1.6-	1.2-
490824 690	0.4-	0.4-	820120 095	0.5-	1.4+			

1983 TW1 = 1966 RG = 1978 JG2 = 1987 SZ1
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

		(1950.0)	P	Q
M 113.32434				
n 0.23497787	Peri.	181.12247	+0.56974631	+0.81988507
a 2.6008666	Node	123.61268	-0.75344005	+0.54850265
e 0.2235012	Incl.	3.88120	-0.32820303	+0.16411373
P 4.19	H 13.4		G 0.25	

Residuals in seconds of arc

660915 095	1.2+	2.9-	831012 688	0.5+	1.4-	870918 372	1.5-	1.6+	Y
780506 095	0.6-	2.1-	831104 688	0.7-	0.4+	870926 372	3.5+	0.3+	
831011 688	1.7-	1.8-	831104 688	0.9+	0.8-	871001 372	(1.5+	16.2+)	
831011 688	0.1+	0.7+	870916 372	4.1-	1.9+	Y			
831012 688	2.0+	0.8-	870917 372	0.4+	1.1+	Y			

1984 QS = 1978 NB8
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 273.79205		(1950.0)	P	Q
n 0.17351926	Peri.	242.11407	+0.58227452	+0.81240486
a 3.1834957	Node	63.52984	-0.73320477	+0.54117013
e 0.2118974	Incl.	1.97808	-0.35123660	+0.21710188
P 5.68	H 13.5		G 0.25	

Residuals in seconds of arc

780707 675	0.0	0.4-	840824 801	0.2-	0.3-	840829 801	0.8-	1.0+
780708 675	0.0	0.1+	840827 801	1.1+	0.1-			
780709 675	0.1-	0.3+	840828 801	0.2-	0.6-			

1986 EE5 = 1962 WH2 = 1975 ES1 = 1978 RA5 = 1980 BW3 = 1984 UB2
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 184.78121		(1950.0)	P	Q
n 0.17779829	Peri.	331.04399	-0.56630739	-0.82414263
a 3.1322109	Node	153.44594	+0.76006032	-0.52653098
e 0.1640029	Incl.	1.18080	+0.31875422	-0.20869609
P 5.54	H 12.5		G 0.25	

Residuals in seconds of arc

621130 760(35.1-	80.4+)X		841029 688	0.2-	3.0-	860313 809	0.0	2.0-
750306 095	0.6+	3.4+	841031 688	3.1-	1.6+	860313 809	0.6-	1.3+
750315 095	0.2-	0.3+	841031 688	1.2+	0.5-	860318 809	1.4-	2.0-
780906 095	1.1+	0.8+	860305 809	0.7+	0.7-	860318 809	0.3+	1.4-
800122 095	1.1+	1.4+	860305 809	0.2-	0.3-			
841029 688	0.7+	0.4+	860305 809	0.1+	0.5+			

1987 SG = 1950 TS1 = 1953 RH1 = 1972 YL1 = 1973 AW2 = 1977 HY = 1981 WM2
The double designation 1972 YL1 = 1973 AW2 is by C. M. Bardwell (MPC 6840).
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 122.46895		(1950.0)	P	Q
n 0.31935878	Peri.	89.13548	+0.96331036	+0.26500873
a 2.1197443	Node	255.49622	-0.26037202	+0.88437138
e 0.1184239	Incl.	2.51414	-0.06511199	+0.38426246
P 3.09	H 14.1		G 0.25	

Residuals in seconds of arc

501013 024	1.5-	2.3-	770425 675	0.3-	0.1+	870918 372	1.5-	0.4+ Y
530907 024	2.1+	0.6+	811128 046	0.2-	0.1-	870926 372	(0.8-	7.3+)
721230 095	2.6+	0.7-	811128 046	0.6-	0.4+	871002 372	1.3+	0.9+
730102 095	1.4-	0.7+	870916 372	0.8-	1.3+ Y	871017 372	0.3+	0.3-
770424 675	0.3-	0.0	870917 372	0.4+	1.1- Y	871017 372	0.2-	0.1-

1987 SJ = 1954 UX = 1958 RP = 1979 WF3 = 1979 YQ6
The identifications 1987 SJ = 1954 UX = 1979 WF3 = 1979 YQ6 were found independently by S. Nakano.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M 98.15945		(1950.0)	P	Q
n 0.23863507	Peri.	137.70953	+0.87636741	+0.48122621
a 2.5742252	Node	193.56640	-0.46158900	+0.82727151
e 0.3146889	Incl.	4.90018	-0.13753455	+0.28990203
P 4.13	H 13.1		G 0.25	

Residuals in seconds of arc

541022 760	1.3+	0.6-	870918 881	1.6-	0.3+	871002 881	0.3-	0.3+
541022 760	0.8-	1.6-	870918 881	0.1-	0.3+	871002 881	0.7+	0.2+
580910 690	0.3-	1.4+ Y	870928 881	1.3+	0.4-	871013 881	0.8-	1.5-
580911 690(54.0+	52.2+)Y		870928 881	0.9+	0.0	871013 881	0.3-	1.0-
791116 095	0.2-	1.0+	871001 881	0.3+	0.1-	871018 881	0.0	0.2+
791223 095	0.1+	1.2+	871001 881	0.5+	0.6+	871018 881	0.6-	0.8+

1987 SK = 1971 TC1 = 1979 BC2 = 1984 UY
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	112.37691	(1950.0)		P	Q
n	0.30738971	Peri.	354.76042	+0.99519305	+0.09793250
a	2.1744187	Node	359.61934	-0.08893038	+0.90301242
e	0.1293317	Incl.	1.40836	-0.04101449	+0.41830348
P	3.21	H	14.1	G 0.25	

Residuals in seconds of arc

711011	095	1.4+	2.9+	870918	881	0.6-	1.2-	871002	881	0.2-	1.0-
711021	095	2.5-	0.6-	870926	688	1.7+	1.1+	871013	881	0.0	0.2-
790124	095	0.1+	0.5+	870926	688	2.9+	0.8+	871013	881	1.6-	0.4-
841026	688	0.2-	0.1-	870928	881	0.9-	0.4+	871018	881	1.6+	0.0
841026	688	0.6+	1.6-	870928	881	1.4-	0.5+	871018	881	1.1-	0.5+
870918	881	0.8+	0.8-	871002	881	0.9-	0.7-				

1987 SB2 = 1948 WJ = 1978 EB4 = 1982 YD1
The identifications are by T. Urata.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	62.31078	(1950.0)		P	Q
n	0.17695267	Peri.	344.91171	+0.98990361	-0.10486565
a	3.1421817	Node	21.80086	+0.14126750	+0.78492630
e	0.2539892	Incl.	14.87897	-0.01159042	+0.61065039
P	5.57	H	11.5	G 0.25	

Residuals in seconds of arc

481122	012	7.4+	7.5-	870928	881	0.4+	0.6+	871018	881	0.6-	1.4+
481126	012	3.9-	1.4+	871001	881	0.8+	0.7+	871018	881	0.0	1.7+
780306	095	0.8+	3.1+	871001	881	0.6-	0.6-	871022	881	0.6-	1.2+
821223	095	0.4+	2.1+	871002	881	1.7-	0.2-	871022	881	0.3+	0.5+
870928	881	0.4+	0.5+	871002	881	2.2-	1.1-				

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ORBITAL ELEMENTS BY W. LANDGRAF, UNIVERSITY OF GOTTINGEN.

1970 OB = 1987 ND
The identification is by W. Landgraf.
Epoch 1988 Aug. 27.0 ET = JDE 2447400.5

M	119.25657	(1950.0)		P	Q
n	0.29033092	Peri.	211.82711	+0.41017104	+0.90829122
a	2.2587796	Node	82.50177	-0.81833768	+0.40635928
e	0.2192760	Incl.	4.75930	-0.40259552	+0.09939415
P	3.39	H	15.0	G 0.25	

Residuals in seconds of arc

700724	808	0.1-	0.7-	870623	809	0.3-	0.1+	870625	809	0.2-	0.3-
700724	808	0.1+	0.0	870623	809	0.2-	0.0	870625	809	0.0	0.5-
700726	808	0.8+	0.7+	870623	809	0.3-	0.5+	870625	809	0.1-	0.2+
700726	808	0.4-	0.6-	870624	809	0.1+	0.1+	870701	809	0.2-	0.2-
700728	808	0.7-	0.1-	870624	809	0.4+	0.0	870701	809	0.1+	0.1+
700728	808	0.2+	0.7+	870624	809	0.6+	0.0	870701	809	0.1+	0.0

NEW NAMES OF MINOR PLANETS.

(2751) Campbell = 1962 RP

Discovered 1962 Sept. 7 at the Goethe Link Observatory, Indiana University.

Named in memory of W. W. Campbell (1862-1938), observational spectroscopist, director of the Lick Observatory (1901-1930), president of the University of California (1923-1930), president of the International Astronomical Union (1922-1925) and president of the U.S. National Academy of Sciences (1931-1935). He pioneered in conceiving, organizing and carrying out the first large-scale systematic program for the accurate measurement of stellar radial velocities. Name proposed by F. K. Edmondson. Citation prepared by D. E. Osterbrock.

(2753) Duncan = 1966 DH

Discovered 1966 Feb. 18 at the Goethe Link Observatory, Indiana University.

Named in memory of John Charles Duncan (1882-1967), a graduate of Indiana University, who taught astronomy at Harvard and Radcliffe until 1916 and at Wellesley until his retirement in 1950--after which he taught for another 14 years at the University of Arizona. The first edition of his widely-used textbook appeared in 1916; the fifth edition appeared in 1955. His Lick Ph.D. thesis on the orbits of two cepheid variables was the first step toward the abandonment of the widely-held binary star theory of cepheid variation. During a 28-year association with the Mount Wilson Observatory he measured the expansion of the Crab Nebula (1921), discovered three variable stars in external galaxies (1922) and took a superb series of pictorial photographs of galaxies, nebulae and Milky Way fields. Name proposed by F. K. Edmondson.

(3132) Landgraf = 1940 WL

Discovered 1940 Nov. 29 by L. Oterma at Turku.

Named in honor of Werner Landgraf, who found the identifications and computed the orbit for this minor planet, and whose initials appear in the object’s principal provisional designation.

(3164) Prast = 6562 P-L

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

Named in honor of Martin Prast, friend of one of the discoverers. Severely wounded in Vietnam in 1970, he became paraplegic and confined to a wheelchair. Together with his father he founded "Prast Research Association: Mobility Aids for Handicapped Persons". In 1977 he received the Outstanding Citizen award in the 36th Congressional District of New York State, and in 1982 he parachuted successfully into the Niagara River near Grand Island, N.Y.

(3173) McNaught = 1981 WY

Discovered 1981 Nov. 24 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in honor of Rob McNaught, who has been in charge of the University of Aston’s satellite-tracking camera at Herstmonceux and more recently at Siding Spring. In his spare time he successfully conducts patrols for novae, identifies images of prenovae and unusual variable stars on survey plates, measures their positions, makes astrometric observations of comets and minor planets and photometric observations of comets and novae, carries out extensive observational and computational work on meteors, as well as on occultations by minor planets. Named by the discoverer, following a suggestion by D. A. J. Seargent.

(3174) Alcock = 1984 UV

Discovered 1984 Oct. 26 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in honor of the outstanding British amateur astronomer George E. D. Alcock, visual discoverer of five comets and four novae.

(3201) Sijthoff = 6560 P-L

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

Named in honor of Albert Georg Sijthoff, publisher, owner of the former Zeiss planetarium in The Hague and first president of the board of the Omniversum space theater there. Through his lifelong efforts he greatly contributed to the popularization of astronomy in the Netherlands. He played a key role in founding Omniversum, the main center in the Netherlands for the popularization of science in general and astronomy in particular.

(3327) Campins = 1985 PW

Discovered 1985 Aug. 14 by E. Bowell at the Anderson Mesa Station of Lowell Observatory.

Named in honor of Humberto Campins, research scientist at the Planetary Science Institute in Tucson. Well known for his work on the properties of cometary comae, Campins has helped establish pioneering techniques to measure the physical properties of cometary nuclei using simultaneous infrared and visual observations. He has also undertaken infrared searches for intramercurial bodies. Citation written by R. P. Binzel at the request of the discoverer.

(3341) Hartmann = 1980 OD

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

Named in honor of William K. Hartmann, senior scientist at the Planetary Science Institute in Tucson. Hartmann's contributions to solar system research have ranged from work on planetary cratering rates and the origin of the moon to studies of comets and Trojan minor planets. He is the author of several textbooks on astronomy and planetary science, as well as popular books on space exploration. Hartmann is also a renowned space artist whose paintings depict scenes predicted by modern research. Citation written by R. P. Binzel at the request of the discoverer.

(3414) Champollion = 1983 DJ

Discovered 1983 Feb. 19 by E. Bowell at the Anderson Mesa Station of Lowell Observatory.

Named for Jean-Francois Champollion (1790-1832), French Egyptologist who in 1822 found the key to the decipherment of the Egyptian hieroglyphics on the Rosetta stone. Named by the discoverer following a suggestion by C. E. Spratt.

(3439) Lebofsky = 1983 RL2

Discovered 1983 Sep. 4 by E. Bowell at the Anderson Mesa Station of Lowell Observatory.

Named in honor of Larry A. Lebofsky, planetary scientist at the Lunar and Planetary Laboratory of the University of Arizona, Tucson. Lebofsky was the first to find chemically-bound water and the presence of ice in the regoliths of minor planets and has been a major contributor to the development of minor-planet thermal models. He has also played an important role in the extraction of minor-planet data from IRAS infrared observations. He has undertaken related laboratory spectral studies on icy condensates and the comparison of minor planets with cometary dust, planetary satellites and Pluto. Citation prepared by J. S. Lewis.

(3564) Talthybius = 1985 TC1
Discovered 1985 Oct. 15 by E. Bowell at the Anderson Mesa Station of Lowell Observatory.
Named for the chief herald of the Greek forces in the Trojan war.

(3631) Sigyn = 1987 BV1
Discovered 1987 Jan. 25 by E. W. Elst at the European Southern Observatory.
Named by the discoverer in honor of his daughter, who has a lively interest in astronomy and who accompanied him on his mission from Belgium to the Bulgarian National Observatory last year.

(3638) Davis = 1984 WX
Discovered 1984 Nov. 20 by E. Bowell at the Anderson Mesa Station of Lowell Observatory.
Named in honor of Donald R. Davis, senior scientist at the Planetary Science Institute in Tucson. Davis has made fundamental theoretical and experimental contributions to research on the collisional evolution of minor planets. With colleagues, he was the first to propose the "gravitationally bound rubble pile" model for large minor planets. Another of his research interests is infrared searching for intramercurial bodies. Citation written by R. P. Binzel at the request of the discoverer.

(3639) Weidenschilling = 1985 TX
Discovered 1985 Oct. 15 by E. Bowell at the Anderson Mesa Station of Lowell Observatory.
Named in honor of Stuart J. Weidenschilling, research scientist at the Planetary Science Institute in Tucson. Weidenschilling is a noted expert in the study of the origin of the solar system, and his research has also included collisional evolution of minor planets. He and colleagues are conducting a program of "photometric geodesy" to model the shapes of large, rapidly rotating minor planets from extensive lightcurve observations. Citation written by R. P. Binzel at the request of the discoverer.

(3680) Sasha = 1987 MY
Discovered 1987 June 28 by E. Helin at Palomar.
Named in honor of Alexandra Rachel Druyen Sagan, young daughter of Carl Sagan and Ann Druyan. Sasha’s charismatic parents are passionately committed to preserving a peaceful, intact world for their children to inherit. This is well expressed in the dedication of his book "Cosmos": "for Alexandra, who comes of age with the millennium. May we leave your generation a world better than the one we were given." In the hope that they will continue and expand the quests of their parents, this minor planet is dedicated to Sasha and her contemporaries throughout the world.

(3683) Baumann = 1987 MA
Discovered 1987 June 23 by W. Landgraf at the European Southern Observatory.
Named in honour of Paul Baumann (1901-1976) and his wife Helene (1899-1986). An amateur astronomer since 1959, Baumann founded the astronomical association (1961) and public observatory (1962) in Mainz, was involved in the establishment of several other associations in this area and was well known throughout Germany and in many other countries. Baumann was also a member of the first parliament of Rheinland-Pfalz (1947-1951) and for a long time a member of the Mainz city council. The Baumann family were good friends of the father of the discoverer for several decades.

EPHEMERIDES.

Comet Levy (1987y) Elements MPC 12445

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1987	11 01	16 23.45	+12 59.0	1.808	1.237	40.7	31.5	10.2
1987	11 11	17 03.75	+10 46.5					
1987	11 21	17 37.71	+08 55.0	2.178	1.564	40.4	24.2	11.6
1987	12 01	18 06.76	+07 28.0					
1987	12 11	18 32.01	+06 24.3	2.581	1.874	35.9	17.9	12.8
1987	12 21	18 54.27	+05 41.5					
1987	12 31	19 14.13	+05 16.7	2.965	2.169	30.0	13.1	13.7

Comet Bradfield (1987s) Elements MPC 12440

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1987	11 01	17 27.78	-00 21.6	1.130	0.877	48.3	57.7	5.2
1987	11 06	17 47.16	+01 58.2					
1987	11 11	18 07.93	+04 27.0	1.030	0.872	51.1	62.1	5.0
1987	11 16	18 30.35	+07 03.9					
1987	11 21	18 54.75	+09 47.4	0.938	0.905	56.0	64.8	4.9
1987	11 26	19 21.47	+12 34.8					
1987	12 01	19 50.74	+15 22.1	0.867	0.971	62.8	64.6	5.1
1987	12 06	20 22.62	+18 03.2					
1987	12 11	20 56.88	+20 30.5	0.835	1.061	70.8	61.2	5.4
1987	12 16	21 32.87	+22 35.9					
1987	12 21	22 09.61	+24 13.3	0.853	1.169	78.7	55.6	5.8
1987	12 26	22 45.90	+25 20.2					
1987	12 31	23 20.63	+25 58.2	0.927	1.287	84.6	49.5	6.4
1988	01 05	23 52.98	+26 12.0					
1988	01 10	00 22.53	+26 07.9	1.051	1.411	87.7	44.1	7.1
1988	01 15	00 49.23	+25 51.9					
1988	01 20	01 13.23	+25 29.2	1.215	1.539	88.2	39.7	7.8
1988	01 25	01 34.80	+25 03.4					
1988	01 30	01 54.26	+24 36.9	1.407	1.668	86.6	36.1	8.5
1988	02 04	02 11.91	+24 11.0					
1988	02 09	02 28.03	+23 46.7	1.620	1.798	83.5	33.0	9.1
1988	02 19	02 56.64	+23 03.9					
1988	02 29	03 21.60	+22 28.8	2.082	2.057	74.8	27.7	10.2
1988	03 10	03 43.93	+21 59.7					
1988	03 20	04 04.31	+21 34.9	2.563	2.311	64.2	22.8	11.2
1988	03 30	04 23.23	+21 12.4					
1988	04 09	04 40.98	+20 50.9	3.038	2.560	52.8	18.2	12.0
1988	04 19	04 57.78	+20 29.2					
1988	04 29	05 13.76	+20 06.3	3.486	2.803	40.9	13.6	12.7

1987 SY a,e,i = 1.44, 0.59, 6 Elements MPC 12440

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	23 09.09	+06 05.7	0.764	1.610	132.3	27.1	19.0
1987	11 11	23 15.00	+05 29.9					
1987	11 21	23 23.27	+05 22.5	1.074	1.747	115.8	30.6	20.0
1987	12 01	23 33.30	+05 37.0					
1987	12 11	23 44.63	+06 08.5	1.410	1.867	101.0	31.2	20.8
1987	12 21	23 56.97	+06 53.0					
1987	12 31	00 10.12	+07 48.0	1.756	1.970	87.2	29.9	21.3

1987 SB a,e,i = 2.21, 0.66, 3 Elements MPC 12439

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 01	23 51.26	-06 15.2	1.149	1.998	137.8	19.5	18.2
1987	11 11	23 50.49	-05 44.2					

1987 11 21	23 52.79	-04 58.7	1.504	2.160	118.7	23.7	19.0
1987 12 01	23 57.51	-04 02.2					
1987 12 11	00 04.10	-02 57.5	1.898	2.311	101.9	24.6	19.7
1987 12 21	00 12.14	-01 46.8					
1987 12 31	00 21.33	-00 31.5	2.307	2.452	86.5	23.6	20.2
1988 01 10	00 31.41	+00 46.9					
1988 01 20	00 42.18	+02 07.3	2.712	2.583	71.9	21.2	20.6

1987 SL a,e,i = 2.96, 0.61, 19 Elements MPC 12445

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	00 17.04	+32 12.5	0.739	1.660	146.5	19.3	16.8
1987 11 11	00 14.71	+31 38.9					
1987 11 21	00 17.15	+31 02.7	0.989	1.812	132.9	23.5	17.7
1987 12 01	00 23.35	+30 33.4					
1987 12 11	00 32.38	+30 15.1	1.290	1.966	119.0	26.0	18.6
1987 12 21	00 43.53	+30 08.6					
1987 12 31	00 56.30	+30 13.6	1.630	2.118	105.6	26.6	19.2
1988 01 10	01 10.30	+30 28.5					
1988 01 20	01 25.24	+30 51.6	1.996	2.267	92.7	25.7	19.8
1988 01 30	01 40.93	+31 21.3					
1988 02 09	01 57.19	+31 55.8	2.374	2.412	80.3	23.8	20.3
1988 02 19	02 13.91	+32 33.4					
1988 02 29	02 31.02	+33 12.7	2.750	2.552	68.1	21.1	20.6

1987 QX a,e,i = 2.80, 0.47, 14 Elements MPC 12439

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	00 37.45	+29 36.7	0.585	1.533	151.5	18.0	15.6
1987 11 11	00 35.64	+30 45.7					
1987 11 21	00 38.85	+31 26.6	0.713	1.589	137.5	24.8	16.3
1987 12 01	00 46.73	+31 52.9					
1987 12 11	00 58.51	+32 13.8	0.890	1.663	124.8	29.1	17.0
1987 12 21	01 13.37	+32 33.8					
1987 12 31	01 30.64	+32 55.3	1.109	1.750	113.4	31.1	17.6
1988 01 10	01 49.69	+33 18.6					
1988 01 20	02 10.08	+33 42.8	1.363	1.847	102.6	31.3	18.2
1988 01 30	02 31.46	+34 07.0					
1988 02 09	02 53.53	+34 29.6	1.645	1.950	92.2	30.4	18.7
1988 02 19	03 16.08	+34 49.2					
1988 02 29	03 38.93	+35 04.6	1.948	2.057	81.9	28.5	19.1

1987 UA a,e,i = 1.73, 0.30, 16 Elements MPC 12440

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	00 53.66	-13 18.4	0.282	1.235	145.2	27.3	16.3
1987 11 06	01 03.70	-15 56.5					
1987 11 11	01 13.46	-17 50.2	0.332	1.252	136.3	33.1	16.8
1987 11 16	01 22.95	-19 05.3					
1987 11 21	01 32.22	-19 47.8	0.392	1.273	129.5	36.8	17.3
1987 11 26	01 41.33	-20 03.0					
1987 12 01	01 50.34	-19 55.8	0.458	1.299	124.1	39.0	17.8
1987 12 06	01 59.27	-19 30.4					
1987 12 11	02 08.15	-18 50.3	0.531	1.329	119.6	40.1	18.2
1987 12 16	02 17.02	-17 58.2					
1987 12 21	02 25.92	-16 56.5	0.609	1.362	115.6	40.6	18.5
1987 12 26	02 34.88	-15 47.2					
1987 12 31	02 43.93	-14 32.1	0.692	1.398	111.9	40.7	18.9
1988 01 05	02 53.07	-13 13.1					
1988 01 10	03 02.30	-11 51.2	0.781	1.435	108.3	40.6	19.2
1988 01 15	03 11.65	-10 27.5					
1988 01 20	03 21.11	-09 03.1	0.875	1.474	104.8	40.2	19.5

1988 01 25	03 30.72	-07 38.7					
1988 01 30	03 40.45	-06 15.2	0.975	1.514	101.1	39.7	19.7
1988 02 04	03 50.30	-04 53.3					
1988 02 09	04 00.28	-03 33.5	1.080	1.555	97.5	39.0	20.0

Periodic Comet Shoemaker-Holt (1987z) Elements MPC 12446

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1987 11 01		01 00.48	+07 42.2	2.277	3.225	159.4	6.2	14.9
1987 11 11		00 56.14	+07 00.7					
1987 11 21		00 53.41	+06 29.2	2.394	3.190	137.2	12.1	14.9
1987 12 01		00 52.57	+06 10.0					
1987 12 11		00 53.75	+06 04.2	2.590	3.159	116.9	16.1	15.1
1987 12 21		00 56.89	+06 11.7					
1987 12 31		01 01.89	+06 31.6	2.830	3.131	98.5	18.1	15.2
1988 01 10		01 08.58	+07 02.6					
1988 01 20		01 16.78	+07 43.1	3.086	3.107	82.0	18.3	15.4
1988 01 30		01 26.32	+08 31.5					
1988 02 09		01 37.02	+09 26.1	3.334	3.086	67.0	17.1	15.5
1988 02 19		01 48.74	+10 25.2					
1988 02 29		02 01.37	+11 27.5	3.559	3.069	53.1	15.0	15.6

1987 SF3 a,e,i = 2.25, 0.53, 3 Elements MPC 12440

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01		01 02.04	+01 32.9	0.393	1.363	156.9	16.6	18.4
1987 11 11		01 10.04	+02 07.6					
1987 11 21		01 18.68	+03 00.3	0.600	1.504	141.4	24.2	19.8
1987 12 01		01 28.36	+04 06.4					
1987 12 11		01 39.13	+05 21.5	0.857	1.649	126.9	28.5	20.9

Periodic Comet Mueller (1987a1) Elements MPC 12446

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1987 11 01		01 03.13	+12 11.0	1.712	2.671	161.1	6.9	17.4
1987 11 11		00 57.78	+12 02.3					
1987 11 21		00 54.56	+12 00.0	1.836	2.664	139.3	14.0	17.6
1987 12 01		00 53.81	+12 07.3					
1987 12 11		00 55.58	+12 25.5	2.035	2.663	119.6	18.8	17.8
1987 12 21		00 59.75	+12 55.0					
1987 12 31		01 06.12	+13 35.2	2.281	2.667	102.1	21.1	18.1
1988 01 10		01 14.42	+14 24.9					
1988 01 20		01 24.42	+15 22.7	2.549	2.678	86.7	21.5	18.3
1988 01 30		01 35.89	+16 26.8					
1988 02 09		01 48.62	+17 35.6	2.818	2.694	72.7	20.5	18.6
1988 02 19		02 02.45	+18 47.4					
1988 02 29		02 17.23	+20 00.7	3.076	2.716	59.8	18.4	18.8

1987 QA a,e,i = 1.65, 0.47, 41 Elements MPC 12445

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01		09 48.77	-67 52.3	0.565	0.948	68.8	77.4	16.6
1987 11 06		10 19.07	-66 25.9					
1987 11 11		10 44.23	-64 49.2	0.634	0.908	63.7	77.6	16.8
1987 11 16		11 05.84	-63 05.8					
1987 11 21		11 25.02	-61 17.3	0.689	0.883	60.5	76.8	16.9
1987 11 26		11 42.55	-59 24.1					
1987 12 01		11 58.94	-57 26.2	0.727	0.876	59.2	75.3	16.9
1987 12 06		12 14.56	-55 23.7					
1987 12 11		12 29.61	-53 16.4	0.748	0.886	59.6	73.6	17.0
1987 12 16		12 44.19	-51 04.1					
1987 12 21		12 58.35	-48 46.0	0.751	0.913	61.8	71.8	17.0
1987 12 26		13 12.05	-46 21.2					

1987 12 31	13 25.28	-43 48.6	0.739	0.954	65.5	69.7	17.0
1988 01 05	13 37.98	-41 06.8					
1988 01 10	13 50.12	-38 14.4	0.714	1.007	70.8	67.2	16.9
1988 01 15	14 01.59	-35 09.4					
1988 01 20	14 12.32	-31 50.0	0.680	1.068	77.5	64.1	16.9
1988 01 25	14 22.19	-28 13.8					
1988 01 30	14 31.14	-24 18.7	0.642	1.134	85.6	60.0	16.8
1988 02 04	14 39.08	-20 03.3					
1988 02 09	14 45.90	-15 26.3	0.606	1.204	95.2	54.7	16.6
1988 02 14	14 51.49	-10 27.9					
1988 02 19	14 55.73	-05 09.6	0.580	1.274	105.7	48.3	16.5
1988 02 24	14 58.51	+00 24.5					
1988 02 29	14 59.76	+06 08.0	0.572	1.345	116.3	41.3	16.4
1988 03 05	14 59.40	+11 52.3					
1988 03 10	14 57.39	+17 27.6	0.587	1.416	125.2	35.0	16.4
1988 03 15	14 53.72	+22 44.1					
1988 03 20	14 48.46	+27 33.2	0.629	1.485	130.7	30.6	16.5
1988 03 25	14 41.76	+31 48.2					
1988 03 30	14 33.90	+35 25.3	0.696	1.552	131.8	28.7	16.8
1988 04 04	14 25.20	+38 23.6					
1988 04 09	14 16.03	+40 44.1	0.783	1.617	129.5	28.5	17.1
1988 04 14	14 06.81	+42 29.2					
1988 04 19	13 57.92	+43 42.5	0.886	1.680	125.2	29.2	17.5
1988 04 24	13 49.70	+44 27.7					
1988 04 29	13 42.42	+44 49.1	1.001	1.740	120.1	30.0	17.9

Comet Nishikawa-Takamizawa-Tago (1987c) Elements MPC 12009

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m2
1987 12 11	14 24.92	-18 24.6	4.611	3.884	38.1	9.0	19.7
1987 12 21	14 27.49	-18 39.8					
1987 12 31	14 28.97	-18 50.8	4.544	4.099	57.4	11.7	19.9
1988 01 10	14 29.17	-18 56.7					
1988 01 20	14 27.92	-18 56.5	4.406	4.309	77.9	12.9	20.1
1988 01 30	14 25.04	-18 49.0					
1988 02 09	14 20.43	-18 33.2	4.239	4.515	99.9	12.4	20.2
1988 02 19	14 14.06	-18 07.8					
1988 02 29	14 05.97	-17 32.1	4.096	4.718	123.6	10.1	20.3
1988 03 10	13 56.38	-16 45.7					
1988 03 20	13 45.64	-15 49.4	4.039	4.917	148.6	6.1	20.4
1988 03 30	13 34.24	-14 44.8					
1988 04 09	13 22.72	-13 34.8	4.117	5.113	173.0	1.4	20.7

1931 TC4 a,e,i = 2.79, 0.23, 8 Elements MPC 12447

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	01 55.93	+12 54.1	1.310	2.299	173.9	2.6	15.1
1987 11 11	01 47.00	+12 50.3					
1987 11 21	01 40.18	+12 51.5	1.429	2.339	150.2	12.1	15.8
1987 12 01	01 36.15	+13 01.5					
1987 12 11	01 35.15	+13 22.1	1.635	2.381	129.0	18.8	16.3
1987 12 21	01 37.05	+13 53.6					
1987 12 31	01 41.62	+14 35.5	1.899	2.426	110.6	22.3	16.8
1988 01 10	01 48.51	+15 26.1					
1988 01 20	01 57.38	+16 23.8	2.193	2.472	94.4	23.4	17.1

1981 QY2 a,e,i = 2.81, 0.19, 4 Elements MPC 12452

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	04 29.36	+15 52.4	1.987	2.882	148.9	10.3	17.3
1987 11 11	04 22.45	+15 27.2					
1987 11 21	04 13.87	+15 01.7	1.865	2.845	171.0	3.1	16.8

1987 12 01	04 04.53	+14 38.4					
1987 12 11	03 55.49	+14 20.2	1.858	2.808	161.0	6.6	16.9
1987 12 21	03 47.72	+14 09.8					
1987 12 31	03 42.02	+14 09.1	1.959	2.769	138.0	13.7	17.3
1988 01 10	03 38.85	+14 18.9					
1988 01 20	03 38.40	+14 38.8	2.139	2.731	117.1	18.7	17.6
1988 01 30	03 40.62	+15 07.6					
1988 02 09	03 45.33	+15 43.6	2.360	2.692	98.7	21.2	17.8

1977 AZ1 a,e,i = 3.21, 0.10, 11 Elements MPC 12448

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	04 31.46	+13 42.4	2.102	2.992	148.3	10.0	16.1
1987 11 11	04 24.90	+13 41.5					
1987 11 21	04 16.81	+13 43.4	1.999	2.977	169.7	3.4	15.7
1987 12 01	04 08.02	+13 49.6					
1987 12 11	03 59.50	+14 01.4	2.011	2.962	161.7	6.0	15.8
1987 12 21	03 52.14	+14 19.8					
1987 12 31	03 46.68	+14 45.6	2.132	2.948	139.3	12.6	16.1
1988 01 10	03 43.54	+15 18.4					
1988 01 20	03 42.90	+15 57.9	2.336	2.935	118.5	17.1	16.5
1988 01 30	03 44.75	+16 42.9					
1988 02 09	03 48.92	+17 32.2	2.587	2.924	100.0	19.4	16.8

1973 SM a,e,i = 5.16, 0.04, 2 Elements MPC 12451

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 01	06 09.44	+21 26.5	4.435	5.074	125.3	9.2	17.1
1987 11 11	06 07.25	+21 22.4					
1987 11 21	06 03.74	+21 18.8	4.225	5.080	146.7	6.1	16.9
1987 12 01	05 59.11	+21 15.5					
1987 12 11	05 53.70	+21 12.5	4.115	5.086	169.1	2.1	16.6
1987 12 21	05 47.88	+21 09.6					
1987 12 31	05 42.11	+21 07.0	4.128	5.092	167.4	2.4	16.6
1988 01 10	05 36.83	+21 04.8					
1988 01 20	05 32.42	+21 03.6	4.261	5.098	144.9	6.4	16.9
1988 01 30	05 29.17	+21 03.4					
1988 02 09	05 27.27	+21 04.6	4.494	5.104	123.4	9.3	17.1
1988 02 19	05 26.80	+21 07.3					
1988 02 29	05 27.78	+21 11.2	4.789	5.110	103.4	10.9	17.3

1977 DN4 a,e,i = 3.14, 0.12, 3 Elements MPC 12451

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 11 21	09 31.27	+15 42.5	2.536	2.839	97.5	20.2	18.1
1987 12 01	09 37.49	+15 23.5					
1987 12 11	09 41.66	+15 15.1	2.260	2.825	115.2	18.4	17.8
1987 12 21	09 43.57	+15 19.0					
1987 12 31	09 43.02	+15 36.0	2.025	2.811	135.4	14.2	17.4
1988 01 10	09 40.00	+16 05.5					
1988 01 20	09 34.70	+16 45.5	1.863	2.799	158.0	7.6	17.0
1988 01 30	09 27.62	+17 32.1					
1988 02 09	09 19.56	+18 19.7	1.804	2.789	176.5	1.2	16.6
1988 02 19	09 11.51	+19 03.3					
1988 02 29	09 04.48	+19 38.1	1.858	2.781	153.6	9.1	17.0
1988 03 10	08 59.31	+20 01.5					
1988 03 20	08 56.48	+20 12.7	2.010	2.774	131.7	15.5	17.4
1988 03 30	08 56.24	+20 11.8					
1988 04 09	08 58.52	+19 59.6	2.226	2.769	112.5	19.5	17.7
1988 04 19	09 03.12	+19 37.1					
1988 04 29	09 09.77	+19 05.0	2.476	2.766	95.8	21.2	18.0

1981 EP20 a,e,i = 2.37, 0.22, 2 Elements MPC 12452

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	11 21	10 12.01	+13 53.1	2.176	2.352	87.6	24.8	19.3
1987	12 01	10 20.70	+13 12.3					
1987	12 11	10 27.15	+12 43.7	1.965	2.402	104.0	23.4	19.0
1987	12 21	10 31.06	+12 29.4					
1987	12 31	10 32.13	+12 31.2	1.771	2.450	123.1	19.6	18.8
1988	01 10	10 30.20	+12 49.5					
1988	01 20	10 25.24	+13 23.0	1.625	2.498	145.3	13.0	18.4
1988	01 30	10 17.58	+14 08.5					
1988	02 09	10 07.97	+14 59.8	1.566	2.543	169.7	4.0	18.0
1988	02 19	09 57.47	+15 50.2					
1988	02 29	09 47.36	+16 32.8	1.619	2.586	164.1	6.0	18.2
1988	03 10	09 38.81	+17 03.2					
1988	03 20	09 32.61	+17 19.5	1.779	2.627	140.7	13.9	18.7
1988	03 30	09 29.18	+17 21.5					
1988	04 09	09 28.54	+17 10.5	2.017	2.665	120.2	19.0	19.2
1988	04 19	09 30.50	+16 48.0					
1988	04 29	09 34.76	+16 15.2	2.300	2.701	102.3	21.4	19.6

1983 AR a,e,i = 2.77, 0.14, 11 Elements MPC 11424

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	10 52.29	+21 04.6	2.415	2.781	101.3	20.3	17.5
1987	12 21	10 57.47	+21 20.7					
1987	12 31	11 00.26	+21 51.5	2.191	2.809	119.5	17.7	17.3
1988	01 10	11 00.45	+22 36.0					
1988	01 20	10 57.91	+23 31.5	2.015	2.836	139.5	13.0	17.0
1988	01 30	10 52.69	+24 33.2					
1988	02 09	10 45.21	+25 34.0	1.922	2.863	158.6	7.2	16.7
1988	02 19	10 36.15	+26 26.4					
1988	02 29	10 26.52	+27 03.2	1.936	2.889	160.7	6.5	16.7
1988	03 10	10 17.42	+27 20.3					
1988	03 20	10 09.80	+27 16.7	2.058	2.915	142.8	11.9	17.0
1988	03 30	10 04.36	+26 53.8					
1988	04 09	10 01.38	+26 14.7	2.267	2.939	123.3	16.5	17.4
1988	04 19	10 00.91	+25 22.7					
1988	04 29	10 02.78	+24 20.4	2.530	2.963	105.5	19.1	17.7
1988	05 09	10 06.72	+23 10.4					
1988	05 19	10 12.43	+21 54.1	2.817	2.985	89.5	19.8	18.0

1977 CZ a,e,i = 3.09, 0.11, 2 Elements MPC 12438

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	10 49.80	+05 33.9	2.974	3.232	96.2	17.6	17.2
1987	12 21	10 54.01	+05 05.1					
1987	12 31	10 56.42	+04 47.4	2.675	3.213	114.7	16.1	16.9
1988	01 10	10 56.87	+04 42.0					
1988	01 20	10 55.24	+04 50.1	2.418	3.194	135.3	12.5	16.6
1988	01 30	10 51.56	+05 11.8					
1988	02 09	10 46.08	+05 45.6	2.237	3.174	158.1	6.7	16.2
1988	02 19	10 39.21	+06 29.1					
1988	02 29	10 31.63	+07 18.1	2.164	3.154	177.1	0.9	15.8
1988	03 10	10 24.12	+08 07.6					
1988	03 20	10 17.45	+08 52.8	2.208	3.133	153.9	8.0	16.2
1988	03 30	10 12.30	+09 30.0					
1988	04 09	10 09.07	+09 56.4	2.353	3.112	131.9	13.9	16.5
1988	04 19	10 07.97	+10 11.0					
1988	04 29	10 09.02	+10 13.4	2.566	3.091	112.2	17.6	16.8
1988	05 09	10 12.08	+10 04.1					
1988	05 19	10 16.98	+09 43.8	2.813	3.069	94.9	19.2	17.0

1931 TE4 a,e,i = 2.28, 0.25, 3 Elements MPC 9471

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	10 57.99	+08 54.7	2.168	2.467	95.6	23.4	19.1
1987	12 21	11 03.74	+08 35.7					
1987	12 31	11 07.05	+08 32.9	1.953	2.515	113.7	21.0	18.9
1988	01 10	11 07.69	+08 47.6					
1988	01 20	11 05.47	+09 20.2	1.772	2.561	134.7	15.9	18.5
1988	01 30	11 00.41	+10 09.5					
1988	02 09	10 52.84	+11 11.3	1.661	2.604	158.4	8.0	18.2
1988	02 19	10 43.45	+12 19.6					
1988	02 29	10 33.28	+13 26.4	1.656	2.643	174.2	2.2	17.9
1988	03 10	10 23.52	+14 24.3					
1988	03 20	10 15.20	+15 08.2	1.765	2.680	150.9	10.4	18.5
1988	03 30	10 09.11	+15 35.4					
1988	04 09	10 05.63	+15 45.9	1.969	2.713	128.9	16.7	18.9
1988	04 19	10 04.80	+15 40.9					
1988	04 29	10 06.47	+15 22.0	2.233	2.743	109.8	20.2	19.3
1988	05 09	10 10.34	+14 51.3					
1988	05 19	10 16.10	+14 10.4	2.524	2.769	93.1	21.4	19.6

(3560) 1980 RZ2 a,e,i = 3.02, 0.11, 9 Elements MPC 11627

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	10 58.73	+06 30.0	2.954	3.186	94.5	17.9	16.2
1987	12 21	11 02.42	+05 47.1					
1987	12 31	11 04.19	+05 14.1	2.688	3.204	113.1	16.4	15.9
1988	01 10	11 03.88	+04 52.2					
1988	01 20	11 01.42	+04 41.9	2.461	3.222	133.9	12.7	15.7
1988	01 30	10 56.87	+04 43.3					
1988	02 09	10 50.49	+04 55.3	2.309	3.238	156.7	6.9	15.3
1988	02 19	10 42.77	+05 15.8					
1988	02 29	10 34.41	+05 41.5	2.264	3.254	176.8	1.0	15.0
1988	03 10	10 26.20	+06 08.3					
1988	03 20	10 18.90	+06 32.8	2.339	3.269	154.9	7.4	15.4
1988	03 30	10 13.13	+06 51.5					
1988	04 09	10 09.27	+07 02.5	2.518	3.282	132.8	12.9	15.8
1988	04 19	10 07.48	+07 04.7					
1988	04 29	10 07.77	+06 57.4	2.768	3.295	113.0	16.3	16.1
1988	05 09	10 09.97	+06 40.9					
1988	05 19	10 13.90	+06 15.6	3.054	3.307	95.4	17.7	16.3

1981 WM4 a,e,i = 2.83, 0.22, 11 Elements MPC 11732

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	10 59.17	-05 26.1	3.075	3.224	89.7	17.8	17.8
1987	12 21	11 02.81	-06 29.1					
1987	12 31	11 04.60	-07 22.6	2.818	3.253	107.6	16.7	17.6
1988	01 10	11 04.42	-08 04.6					
1988	01 20	11 02.17	-08 32.7	2.589	3.280	127.3	13.8	17.3
1988	01 30	10 57.92	-08 44.7					
1988	02 09	10 51.91	-08 39.4	2.427	3.305	148.0	9.1	17.1
1988	02 19	10 44.59	-08 16.6					
1988	02 29	10 36.60	-07 38.0	2.364	3.328	164.1	4.7	16.8
1988	03 10	10 28.71	-06 47.3					
1988	03 20	10 21.62	-05 49.3	2.417	3.349	155.5	7.1	17.0
1988	03 30	10 15.95	-04 49.7					
1988	04 09	10 12.09	-03 53.4	2.577	3.368	135.7	12.0	17.3
1988	04 19	10 10.22	-03 04.2					
1988	04 29	10 10.36	-02 24.7	2.815	3.385	116.4	15.5	17.6
1988	05 09	10 12.39	-01 56.3					
1988	05 19	10 16.14	-01 39.4	3.097	3.400	98.7	17.1	17.9

(3569) 1938 DN1 a,e,i = 2.59, 0.12, 14 Elements MPC 11637

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	10 38.45	+00 38.5	1.942	2.281	96.9	25.4	17.2
1987	12 21	10 46.76	+00 10.0					
1987	12 31	10 52.86	+00 00.0	1.713	2.290	113.5	23.2	16.8
1988	01 10	10 56.48	+00 12.3					
1988	01 20	10 57.38	+00 50.2	1.515	2.302	133.1	18.2	16.4
1988	01 30	10 55.48	+01 55.4					
1988	02 09	10 51.01	+03 26.6	1.381	2.317	155.9	10.0	16.0
1988	02 19	10 44.53	+05 18.5					
1988	02 29	10 37.02	+07 21.5	1.343	2.334	178.4	0.7	15.5
1988	03 10	10 29.65	+09 23.4					
1988	03 20	10 23.55	+11 13.2	1.414	2.352	154.5	10.5	16.1
1988	03 30	10 19.61	+12 42.7					
1988	04 09	10 18.29	+13 48.2	1.578	2.373	132.5	18.1	16.6
1988	04 19	10 19.68	+14 29.5					
1988	04 29	10 23.65	+14 48.0	1.804	2.395	113.8	22.6	17.0
1988	05 09	10 29.90	+14 46.5					
1988	05 19	10 38.08	+14 27.4	2.062	2.419	97.9	24.5	17.4

1975 VK2 a,e,i = 3.00, 0.10, 3 Elements MPC 10761

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	10 58.06	+09 36.4	2.986	3.238	95.8	17.6	19.2
1987	12 21	11 02.25	+09 22.6					
1987	12 31	11 04.58	+09 20.8	2.715	3.250	114.6	16.0	19.0
1988	01 10	11 04.89	+09 31.8					
1988	01 20	11 03.09	+09 55.6	2.486	3.261	135.4	12.2	18.7
1988	01 30	10 59.22	+10 31.1					
1988	02 09	10 53.54	+11 15.5	2.334	3.271	158.2	6.4	18.3
1988	02 19	10 46.47	+12 04.9					
1988	02 29	10 38.69	+12 54.5	2.291	3.279	175.2	1.5	18.1
1988	03 10	10 30.98	+13 39.2					
1988	03 20	10 24.08	+14 15.2	2.367	3.287	153.2	7.8	18.4
1988	03 30	10 18.63	+14 39.6					
1988	04 09	10 15.02	+14 51.5	2.545	3.294	131.4	13.2	18.8
1988	04 19	10 13.43	+14 51.0					
1988	04 29	10 13.90	+14 38.7	2.792	3.300	111.7	16.5	19.1
1988	05 09	10 16.28	+14 15.9					
1988	05 19	10 20.39	+13 43.6	3.072	3.304	94.2	17.8	19.3

1986 RR2 a,e,i = 2.27, 0.24, 6 Elements MPC 11349

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 00.88	+04 06.2	2.447	2.686	93.1	21.5	19.0
1987	12 21	11 06.13	+03 39.3					
1987	12 31	11 09.23	+03 26.7	2.200	2.716	111.2	19.7	18.8
1988	01 10	11 09.96	+03 30.5					
1988	01 20	11 08.13	+03 52.2	1.984	2.742	132.0	15.5	18.4
1988	01 30	11 03.73	+04 32.0					
1988	02 09	10 57.01	+05 28.2	1.837	2.765	155.5	8.5	18.0
1988	02 19	10 48.48	+06 36.9					
1988	02 29	10 39.02	+07 51.8	1.794	2.784	179.0	0.3	17.6
1988	03 10	10 29.65	+09 05.4					
1988	03 20	10 21.36	+10 11.2	1.869	2.800	154.4	8.9	18.1
1988	03 30	10 14.96	+11 04.2					
1988	04 09	10 10.91	+11 41.9	2.045	2.812	131.7	15.4	18.5
1988	04 19	10 09.37	+12 03.8					
1988	04 29	10 10.27	+12 10.4	2.287	2.821	111.8	19.4	18.9
1988	05 09	10 13.40	+12 03.1					
1988	05 19	10 18.49	+11 43.5	2.560	2.826	94.5	20.9	19.2

1969 TQ1 a,e,i = 3.14, 0.17, 3 Elements MPC 11746

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 11	11 00.60	+09 45.2	2.964	3.208	95.3	17.8	18.6
1987 12 21	11 04.83	+09 30.7					
1987 12 31	11 07.17	+09 28.3	2.713	3.240	114.0	16.1	18.4
1988 01 10	11 07.47	+09 38.7					
1988 01 20	11 05.65	+10 01.6	2.502	3.272	134.9	12.3	18.1
1988 01 30	11 01.77	+10 35.8					
1988 02 09	10 56.11	+11 18.5	2.369	3.302	157.6	6.5	17.8
1988 02 19	10 49.10	+12 05.8					
1988 02 29	10 41.43	+12 52.8	2.344	3.332	175.3	1.4	17.5
1988 03 10	10 33.84	+13 34.7					
1988 03 20	10 27.07	+14 07.9	2.438	3.361	153.9	7.5	17.9
1988 03 30	10 21.70	+14 29.9					
1988 04 09	10 18.13	+14 39.8	2.635	3.389	132.1	12.7	18.3
1988 04 19	10 16.51	+14 37.8					
1988 04 29	10 16.86	+14 24.6	2.902	3.416	112.5	15.8	18.6
1988 05 09	10 19.05	+14 01.3					
1988 05 19	10 22.89	+13 29.1	3.205	3.442	94.9	17.0	18.9

1986 RB a,e,i = 2.34, 0.26, 25 Elements MPC 11620

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987 12 11	11 20.85	+08 31.0	2.479	2.671	-0.74	+9.3	17.5
1987 12 21	11 24.69	+07 18.9					
1987 12 31	11 26.18	+06 16.0	2.235	2.712	-0.75	+10.2	17.3
1988 01 10	11 25.08	+05 23.1					
1988 01 20	11 21.16	+04 41.0	2.019	2.750	-0.80	+11.2	17.0
1988 01 30	11 14.40	+04 10.1					
1988 02 09	11 05.06	+03 49.9	1.870	2.785	-0.87	+12.1	16.6
1988 02 19	10 53.74	+03 39.2					
1988 02 29	10 41.40	+03 35.5	1.828	2.817	-0.92	+12.3	16.2
1988 03 10	10 29.22	+03 35.4					
1988 03 20	10 18.31	+03 35.6	1.910	2.845	-0.89	+11.7	16.7
1988 03 30	10 09.53	+03 32.9					
1988 04 09	10 03.36	+03 25.0	2.098	2.870	-0.78	+10.6	17.1
1988 04 19	09 59.91	+03 10.5					
1988 04 29	09 59.08	+02 48.5	2.356	2.892	-0.66	+9.3	17.5
1988 05 09	10 00.61	+02 18.8					
1988 05 19	10 04.20	+01 41.4	2.646	2.910	-0.54	+8.3	17.8

4601 P-L a,e,i = 3.00, 0.22, 3 Elements MPC 9300

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 11	10 53.96	+10 20.5	2.209	2.526	97.0	22.8	18.2
1987 12 21	11 00.72	+09 55.3					
1987 12 31	11 05.19	+09 44.7	1.995	2.564	114.6	20.4	17.9
1988 01 10	11 07.15	+09 50.0					
1988 01 20	11 06.43	+10 11.3	1.816	2.605	134.7	15.6	17.6
1988 01 30	11 03.06	+10 47.3					
1988 02 09	10 57.34	+11 34.3	1.709	2.646	157.4	8.3	17.3
1988 02 19	10 49.87	+12 27.2					
1988 02 29	10 41.56	+13 18.9	1.702	2.690	174.8	1.9	17.0
1988 03 10	10 33.45	+14 03.1					
1988 03 20	10 26.51	+14 35.1	1.806	2.734	153.6	9.3	17.5
1988 03 30	10 21.48	+14 52.2					
1988 04 09	10 18.74	+14 54.1	2.005	2.779	132.2	15.5	18.0
1988 04 19	10 18.40	+14 41.7					
1988 04 29	10 20.36	+14 16.4	2.270	2.824	113.3	19.1	18.4
1988 05 09	10 24.37	+13 39.9					
1988 05 19	10 30.15	+12 53.8	2.569	2.870	96.7	20.5	18.7

1974 SB5 a,e,i = 3.10, 0.17, 2 Elements MPC 10380

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 02.64	+08 16.4	3.411	3.620	94.3	15.7	18.7
1987	12 21	11 06.01	+08 01.0					
1987	12 31	11 07.69	+07 56.2	3.122	3.626	113.3	14.4	18.5
1988	01 10	11 07.56	+08 02.7					
1988	01 20	11 05.54	+08 20.5	2.874	3.631	134.3	11.2	18.2
1988	01 30	11 01.69	+08 49.0					
1988	02 09	10 56.22	+09 26.0	2.705	3.634	157.1	6.1	17.9
1988	02 19	10 49.52	+10 08.6					
1988	02 29	10 42.13	+10 52.8	2.646	3.636	177.3	0.7	17.5
1988	03 10	10 34.73	+11 34.4					
1988	03 20	10 27.95	+12 10.0	2.708	3.636	155.0	6.6	17.9
1988	03 30	10 22.37	+12 36.7					
1988	04 09	10 18.38	+12 53.1	2.878	3.634	132.9	11.6	18.2
1988	04 19	10 16.18	+12 58.7					
1988	04 29	10 15.84	+12 53.6	3.120	3.631	112.8	14.8	18.5
1988	05 09	10 17.29	+12 38.8					
1988	05 19	10 20.38	+12 14.9	3.400	3.627	94.8	16.1	18.7

1965 AK1 a,e,i = 3.18, 0.11, 18 Elements MPC 10951

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	10 48.22	+13 50.8	2.520	2.855	99.6	19.9	16.7
1987	12 21	10 54.85	+14 22.5					
1987	12 31	10 59.55	+15 12.1	2.254	2.848	117.7	17.8	16.4
1988	01 10	11 02.10	+16 20.4					
1988	01 20	11 02.32	+17 46.5	2.036	2.842	137.7	13.5	16.0
1988	01 30	11 00.17	+19 27.3					
1988	02 09	10 55.82	+21 16.5	1.900	2.838	157.7	7.6	15.6
1988	02 19	10 49.71	+23 05.8					
1988	02 29	10 42.60	+24 45.8	1.871	2.835	163.4	5.7	15.5
1988	03 10	10 35.44	+26 08.1					
1988	03 20	10 29.14	+27 07.6	1.953	2.834	146.0	11.3	15.8
1988	03 30	10 24.53	+27 42.3					
1988	04 09	10 22.09	+27 53.4	2.123	2.834	126.4	16.5	16.2
1988	04 19	10 22.02	+27 43.5					
1988	04 29	10 24.31	+27 15.9	2.350	2.836	108.6	19.7	16.5
1988	05 09	10 28.76	+26 33.6					
1988	05 19	10 35.12	+25 39.2	2.603	2.840	92.9	20.8	16.7

1982 UA7 a,e,i = 2.59, 0.19, 14 Elements MPC 11431

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 07.91	+21 54.3	2.479	2.795	98.2	20.4	18.1
1987	12 21	11 13.92	+22 24.6					
1987	12 31	11 17.66	+23 11.0	2.256	2.828	116.0	18.2	17.9
1988	01 10	11 18.87	+24 12.9					
1988	01 20	11 17.34	+25 27.5	2.076	2.859	135.2	14.0	17.6
1988	01 30	11 13.03	+26 49.8					
1988	02 09	11 06.20	+28 12.0	1.973	2.889	153.3	8.8	17.3
1988	02 19	10 57.40	+29 25.5					
1988	02 29	10 47.55	+30 21.7	1.975	2.916	157.8	7.4	17.3
1988	03 10	10 37.75	+30 55.1					
1988	03 20	10 29.07	+31 03.6	2.085	2.942	143.0	11.8	17.6
1988	03 30	10 22.34	+30 48.3					
1988	04 09	10 18.03	+30 12.8	2.283	2.966	124.3	16.2	17.9
1988	04 19	10 16.26	+29 21.1					
1988	04 29	10 16.96	+28 17.1	2.538	2.987	106.7	18.8	18.2
1988	05 09	10 19.87	+27 03.8					
1988	05 19	10 24.69	+25 43.6	2.819	3.006	90.7	19.7	18.5

(3612) 1982 TW a,e,i = 2.44, 0.18, 3 Elements MPC 11850

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 06.64	+09 24.0	2.613	2.852	93.8	20.2	18.7
1987	12 21	11 11.98	+09 06.3					
1987	12 31	11 15.29	+09 02.2	2.347	2.864	112.0	18.6	18.5
1988	01 10	11 16.36	+09 12.9					
1988	01 20	11 14.98	+09 38.8	2.115	2.874	132.6	14.6	18.1
1988	01 30	11 11.11	+10 19.2					
1988	02 09	11 04.93	+11 11.2	1.954	2.881	155.5	8.2	17.8
1988	02 19	10 56.88	+12 10.1					
1988	02 29	10 47.73	+13 09.8	1.897	2.885	174.8	1.8	17.4
1988	03 10	10 38.46	+14 03.6					
1988	03 20	10 30.02	+14 46.4	1.958	2.887	154.2	8.6	17.8
1988	03 30	10 23.25	+15 14.5					
1988	04 09	10 18.68	+15 27.1	2.119	2.886	131.9	15.0	18.2
1988	04 19	10 16.53	+15 24.5					
1988	04 29	10 16.82	+15 08.1	2.348	2.883	112.2	18.9	18.5
1988	05 09	10 19.34	+14 39.4					
1988	05 19	10 23.86	+14 00.0	2.608	2.877	94.9	20.5	18.8

1986 QN3 a,e,i = 2.23, 0.14, 3 Elements MPC 12127

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 04.81	+09 07.8	2.117	2.397	94.1	24.2	19.0
1987	12 21	11 12.05	+08 40.8					
1987	12 31	11 16.99	+08 29.3	1.884	2.423	111.4	22.2	18.7
1988	01 10	11 19.35	+08 35.1					
1988	01 20	11 18.84	+08 59.2	1.681	2.446	131.5	17.5	18.4
1988	01 30	11 15.33	+09 41.3					
1988	02 09	11 09.00	+10 38.1	1.540	2.467	154.4	10.0	18.0
1988	02 19	11 00.35	+11 44.3					
1988	02 29	10 50.34	+12 51.6	1.497	2.486	174.9	2.0	17.6
1988	03 10	10 40.19	+13 51.6					
1988	03 20	10 31.12	+14 37.7	1.566	2.502	154.5	9.9	18.0
1988	03 30	10 24.16	+15 06.0					
1988	04 09	10 19.87	+15 15.7	1.731	2.516	132.3	17.1	18.5
1988	04 19	10 18.41	+15 07.9					
1988	04 29	10 19.70	+14 44.5	1.958	2.528	113.0	21.5	18.9
1988	05 09	10 23.45	+14 07.7					
1988	05 19	10 29.32	+13 19.3	2.216	2.537	96.4	23.4	19.2

(3603) 1981 RM a,e,i = 2.57, 0.13, 5 Elements MPC 11847

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 01.40	+01 45.8	2.484	2.704	92.0	21.3	18.0
1987	12 21	11 07.72	+00 40.2					
1987	12 31	11 12.13	-00 16.0	2.193	2.680	109.1	20.3	17.6
1988	01 10	11 14.37	-01 00.7					
1988	01 20	11 14.20	-01 31.5	1.931	2.656	128.3	16.9	17.2
1988	01 30	11 11.47	-01 46.4					
1988	02 09	11 06.26	-01 43.8	1.730	2.630	149.9	10.8	16.8
1988	02 19	10 58.91	-01 23.8					
1988	02 29	10 50.15	-00 48.5	1.622	2.604	170.8	3.5	16.3
1988	03 10	10 40.97	-00 02.6					
1988	03 20	10 32.46	+00 47.9	1.623	2.578	159.0	8.0	16.5
1988	03 30	10 25.63	+01 36.3					
1988	04 09	10 21.15	+02 17.0	1.726	2.551	136.9	15.6	16.9
1988	04 19	10 19.34	+02 46.2					
1988	04 29	10 20.26	+03 01.8	1.899	2.524	117.2	20.8	17.2
1988	05 09	10 23.73	+03 03.1					
1988	05 19	10 29.49	+02 50.5	2.110	2.497	100.2	23.5	17.5

(3597) 1941 UL a,e,i = 3.15, 0.20, 3 Elements MPC 11845

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 12.57	+07 39.3	3.287	3.460	91.8	16.5	17.8
1987	12 21	11 16.65	+07 22.8					
1987	12 31	11 19.02	+07 17.5	3.022	3.490	110.5	15.3	17.6
1988	01 10	11 19.53	+07 24.2					
1988	01 20	11 18.10	+07 43.0	2.792	3.519	131.2	12.1	17.3
1988	01 30	11 14.76	+08 13.1					
1988	02 09	11 09.70	+08 52.5	2.635	3.547	153.8	7.1	17.0
1988	02 19	11 03.28	+09 38.2					
1988	02 29	10 56.03	+10 26.0	2.584	3.573	176.0	1.1	16.7
1988	03 10	10 48.63	+11 11.3					
1988	03 20	10 41.74	+11 50.5	2.654	3.598	158.2	5.9	17.0
1988	03 30	10 35.94	+12 20.4					
1988	04 09	10 31.67	+12 39.4	2.833	3.621	136.0	11.1	17.4
1988	04 19	10 29.15	+12 47.0					
1988	04 29	10 28.46	+12 43.4	3.091	3.643	115.7	14.4	17.7
1988	05 09	10 29.55	+12 29.6					
1988	05 19	10 32.28	+12 06.4	3.391	3.663	97.5	15.9	17.9

1981 UT15 a,e,i = 2.85, 0.07, 2 Elements MPC 10757

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 09.96	+06 35.3	2.807	3.006	91.9	19.1	18.5
1987	12 21	11 15.36	+06 01.7					
1987	12 31	11 18.91	+05 39.7	2.535	3.014	109.9	17.9	18.2
1988	01 10	11 20.40	+05 30.4					
1988	01 20	11 19.67	+05 34.7	2.294	3.022	130.1	14.4	17.9
1988	01 30	11 16.67	+05 52.8					
1988	02 09	11 11.56	+06 23.2	2.119	3.029	152.5	8.6	17.6
1988	02 19	11 04.71	+07 03.2					
1988	02 29	10 56.75	+07 48.5	2.046	3.035	176.5	1.1	17.1
1988	03 10	10 48.50	+08 33.8					
1988	03 20	10 40.83	+09 14.2	2.089	3.040	159.2	6.7	17.5
1988	03 30	10 34.49	+09 45.5					
1988	04 09	10 30.03	+10 05.3	2.238	3.044	136.6	13.1	17.8
1988	04 19	10 27.71	+10 12.6					
1988	04 29	10 27.61	+10 07.3	2.462	3.048	116.5	17.2	18.2
1988	05 09	10 29.60	+09 50.2					
1988	05 19	10 33.51	+09 22.3	2.727	3.050	98.8	19.1	18.5

1979 OM15 a,e,i = 3.14, 0.19, 1 Elements MPC 6517

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 15.43	+04 24.0	3.577	3.708	89.8	15.4	18.9
1987	12 21	11 19.19	+03 59.7					
1987	12 31	11 21.38	+03 45.3	3.283	3.715	108.6	14.5	18.6
1988	01 10	11 21.87	+03 41.9					
1988	01 20	11 20.56	+03 49.9	3.020	3.721	129.2	11.8	18.4
1988	01 30	11 17.46	+04 09.5					
1988	02 09	11 12.73	+04 39.6	2.828	3.725	151.6	7.2	18.1
1988	02 19	11 06.66	+05 18.1					
1988	02 29	10 59.72	+06 02.0	2.740	3.728	175.3	1.3	17.7
1988	03 10	10 52.52	+06 47.3					
1988	03 20	10 45.67	+07 30.2	2.773	3.729	160.9	5.0	17.9
1988	03 30	10 39.76	+08 07.2					
1988	04 09	10 35.21	+08 35.7	2.920	3.728	138.4	10.3	18.3
1988	04 19	10 32.31	+08 54.4					
1988	04 29	10 31.18	+09 02.5	3.149	3.726	117.7	13.8	18.5
1988	05 09	10 31.79	+09 00.4					
1988	05 19	10 34.05	+08 48.4	3.425	3.722	99.2	15.6	18.8

1985 RP2 a,e,i = 3.08, 0.19, 1 Elements MPC 11420

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 15.80	+04 52.3	3.357	3.497	89.9	16.4	19.1
1987	12 21	11 19.94	+04 27.4					
1987	12 31	11 22.42	+04 13.0	3.081	3.519	108.5	15.4	18.9
1988	01 10	11 23.09	+04 10.2					
1988	01 20	11 21.86	+04 19.6	2.836	3.539	129.1	12.5	18.7
1988	01 30	11 18.74	+04 41.1					
1988	02 09	11 13.90	+05 13.4	2.660	3.558	151.6	7.6	18.4
1988	02 19	11 07.64	+05 54.3					
1988	02 29	11 00.49	+06 40.2	2.587	3.576	175.4	1.3	18.0
1988	03 10	10 53.09	+07 26.9					
1988	03 20	10 46.09	+08 10.4	2.636	3.591	160.8	5.2	18.3
1988	03 30	10 40.11	+08 46.9					
1988	04 09	10 35.59	+09 14.0	2.796	3.606	138.2	10.7	18.6
1988	04 19	10 32.80	+09 30.7					
1988	04 29	10 31.84	+09 36.3	3.039	3.618	117.7	14.3	18.9
1988	05 09	10 32.67	+09 31.3					
1988	05 19	10 35.17	+09 16.5	3.327	3.629	99.2	16.0	19.2

(3555) 1931 TC1 a,e,i = 2.73, 0.24, 9 Elements MPC 11624

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 21.54	+13 20.2	3.196	3.376	91.9	16.9	18.5
1987	12 21	11 25.87	+13 10.8					
1987	12 31	11 28.43	+13 13.0	2.909	3.381	110.5	15.8	18.2
1988	01 10	11 29.03	+13 27.3					
1988	01 20	11 27.51	+13 53.2	2.656	3.383	130.9	12.7	17.9
1988	01 30	11 23.84	+14 29.2					
1988	02 09	11 18.15	+15 12.2	2.475	3.382	152.8	7.7	17.6
1988	02 19	11 10.78	+15 58.2					
1988	02 29	11 02.30	+16 41.8	2.399	3.380	170.2	2.9	17.3
1988	03 10	10 53.46	+17 18.2					
1988	03 20	10 45.06	+17 43.5	2.444	3.374	155.3	7.1	17.5
1988	03 30	10 37.83	+17 55.4					
1988	04 09	10 32.30	+17 53.2	2.596	3.367	133.7	12.4	17.9
1988	04 19	10 28.78	+17 37.8					
1988	04 29	10 27.36	+17 10.4	2.823	3.357	113.7	15.9	18.1
1988	05 09	10 27.97	+16 32.8					
1988	05 19	10 30.45	+15 46.4	3.088	3.344	95.7	17.5	18.4

1985 RZ2 a,e,i = 3.07, 0.17, 3 Elements MPC 11515

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 17.63	+07 08.4	3.319	3.468	90.4	16.5	18.8
1987	12 21	11 22.07	+06 52.0					
1987	12 31	11 24.85	+06 46.9	3.041	3.487	108.9	15.5	18.6
1988	01 10	11 25.81	+06 53.9					
1988	01 20	11 24.85	+07 13.3	2.795	3.504	129.4	12.5	18.3
1988	01 30	11 21.96	+07 44.6					
1988	02 09	11 17.29	+08 25.9	2.619	3.519	151.8	7.6	18.0
1988	02 19	11 11.14	+09 14.3					
1988	02 29	11 04.04	+10 05.8	2.546	3.533	174.4	1.6	17.6
1988	03 10	10 56.61	+10 55.5					
1988	03 20	10 49.55	+11 39.3	2.594	3.546	159.9	5.5	17.9
1988	03 30	10 43.48	+12 13.7					
1988	04 09	10 38.88	+12 36.9	2.753	3.557	137.6	10.9	18.3
1988	04 19	10 36.01	+12 47.9					
1988	04 29	10 35.01	+12 47.1	2.992	3.567	117.2	14.5	18.6
1988	05 09	10 35.83	+12 35.2					
1988	05 19	10 38.35	+12 13.2	3.277	3.575	98.8	16.2	18.8

1982 US6 a,e,i = 2.53, 0.16, 8 Elements MPC 11431

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 19.80	+13 45.5	2.561	2.783	92.5	20.7	19.2
1987	12 21	11 26.14	+13 34.4					
1987	12 31	11 30.43	+13 37.3	2.312	2.806	110.1	19.2	18.9
1988	01 10	11 32.43	+13 55.1					
1988	01 20	11 31.91	+14 27.5	2.093	2.828	130.0	15.5	18.6
1988	01 30	11 28.78	+15 12.6					
1988	02 09	11 23.15	+16 06.6	1.940	2.847	151.7	9.5	18.3
1988	02 19	11 15.40	+17 03.9					
1988	02 29	11 06.24	+17 57.3	1.887	2.865	168.7	3.9	18.0
1988	03 10	10 56.66	+18 40.0					
1988	03 20	10 47.67	+19 07.4	1.948	2.881	154.8	8.5	18.3
1988	03 30	10 40.18	+19 16.9					
1988	04 09	10 34.81	+19 08.8	2.111	2.894	133.6	14.5	18.6
1988	04 19	10 31.84	+18 44.7					
1988	04 29	10 31.31	+18 06.9	2.345	2.906	114.1	18.4	19.0
1988	05 09	10 33.07	+17 17.7					
1988	05 19	10 36.85	+16 19.2	2.615	2.915	96.9	20.2	19.3

(3577) 1969 TK a,e,i = 3.96, 0.19, 4 Elements MPC 11734

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 16.60	+01 19.5	3.304	3.421	88.4	16.7	16.7
1987	12 21	11 21.54	+00 34.2					
1987	12 31	11 24.86	-00 01.8	3.040	3.447	106.3	15.9	16.6
1988	01 10	11 26.42	-00 27.0					
1988	01 20	11 26.13	-00 40.4	2.804	3.475	126.0	13.2	16.3
1988	01 30	11 23.98	-00 41.4					
1988	02 09	11 20.12	-00 30.1	2.631	3.504	147.6	8.7	16.0
1988	02 19	11 14.84	-00 07.5					
1988	02 29	11 08.62	+00 23.9	2.554	3.534	169.9	2.8	15.7
1988	03 10	11 02.06	+01 00.9					
1988	03 20	10 55.79	+01 39.6	2.594	3.564	164.7	4.2	15.9
1988	03 30	10 50.41	+02 15.9					
1988	04 09	10 46.37	+02 46.7	2.746	3.596	142.9	9.7	16.2
1988	04 19	10 43.95	+03 09.5					
1988	04 29	10 43.27	+03 22.9	2.985	3.627	122.5	13.5	16.6
1988	05 09	10 44.30	+03 26.4					
1988	05 19	10 46.96	+03 20.1	3.278	3.659	104.1	15.6	16.8

1981 ER14 a,e,i = 2.34, 0.22, 9 Elements MPC 10821

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 23.52	+03 01.8	2.644	2.780	87.4	20.7	19.2
1987	12 21	11 29.81	+01 56.6					
1987	12 31	11 34.29	+00 59.8	2.340	2.756	104.5	20.2	18.9
1988	01 10	11 36.68	+00 13.0					
1988	01 20	11 36.70	-00 21.9	2.057	2.730	123.8	17.4	18.6
1988	01 30	11 34.12	-00 43.2					
1988	02 09	11 28.91	-00 49.9	1.828	2.700	145.5	11.9	18.1
1988	02 19	11 21.24	-00 41.8					
1988	02 29	11 11.69	-00 20.2	1.688	2.667	168.9	4.1	17.6
1988	03 10	11 01.16	+00 11.2					
1988	03 20	10 50.78	+00 47.4	1.662	2.632	163.5	6.2	17.6
1988	03 30	10 41.66	+01 22.4					
1988	04 09	10 34.68	+01 51.1	1.743	2.594	140.3	14.3	18.0
1988	04 19	10 30.34	+02 09.7					
1988	04 29	10 28.83	+02 16.1	1.903	2.553	119.5	20.1	18.3
1988	05 09	10 30.05	+02 09.3					
1988	05 19	10 33.77	+01 49.5	2.103	2.510	101.6	23.3	18.6

(3618) 1979 QP8 a,e,i = 3.14, 0.19, 2 Elements MPC 11858

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 23.67	+01 45.1	3.660	3.739	86.9	15.2	18.9
1987	12 21	11 27.82	+01 13.3					
1987	12 31	11 30.49	+00 50.8	3.350	3.733	105.3	14.7	18.7
1988	01 10	11 31.52	+00 38.7					
1988	01 20	11 30.80	+00 38.0	3.066	3.725	125.5	12.4	18.4
1988	01 30	11 28.29	+00 49.2					
1988	02 09	11 24.10	+01 12.0	2.846	3.716	147.6	8.2	18.1
1988	02 19	11 18.46	+01 45.3					
1988	02 29	11 11.79	+02 26.6	2.724	3.705	170.8	2.5	17.8
1988	03 10	11 04.65	+03 12.4					
1988	03 20	10 57.65	+03 58.8	2.722	3.693	164.8	4.0	17.8
1988	03 30	10 51.40	+04 41.8					
1988	04 09	10 46.41	+05 18.2	2.836	3.679	142.1	9.6	18.1
1988	04 19	10 42.99	+05 45.6					
1988	04 29	10 41.34	+06 02.8	3.039	3.663	121.2	13.6	18.4
1988	05 09	10 41.46	+06 09.3					
1988	05 19	10 43.29	+06 05.3	3.294	3.646	102.3	15.7	18.7

1968 OC1 a,e,i = 2.30, 0.14, 5 Elements MPC 12450

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 19.78	-01 27.5	2.484	2.617	86.5	22.1	18.9
1987	12 21	11 27.09	-02 30.5					
1987	12 31	11 32.57	-03 23.1	2.214	2.619	103.1	21.4	18.6
1988	01 10	11 35.94	-04 02.8					
1988	01 20	11 36.92	-04 27.1	1.962	2.619	121.9	18.6	18.3
1988	01 30	11 35.33	-04 33.4					
1988	02 09	11 31.13	-04 20.0	1.758	2.616	143.3	13.0	17.9
1988	02 19	11 24.55	-03 46.1					
1988	02 29	11 16.16	-02 53.6	1.639	2.611	166.2	5.2	17.4
1988	03 10	11 06.88	-01 47.2					
1988	03 20	10 57.75	-00 33.8	1.629	2.604	165.3	5.6	17.4
1988	03 30	10 49.87	+00 38.5					
1988	04 09	10 44.05	+01 42.7	1.727	2.595	142.6	13.6	17.8
1988	04 19	10 40.74	+02 33.8					
1988	04 29	10 40.11	+03 09.0	1.905	2.583	121.9	19.3	18.2
1988	05 09	10 42.04	+03 27.8					
1988	05 19	10 46.31	+03 30.5	2.130	2.569	103.9	22.5	18.5

1986 RM a,e,i = 2.26, 0.19, 3 Elements MPC 11625

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 27.40	+03 29.2	2.318	2.466	86.7	23.5	18.8
1987	12 21	11 35.01	+02 29.5					
1987	12 31	11 40.57	+01 41.6	2.081	2.499	103.4	22.5	18.5
1988	01 10	11 43.81	+01 07.4					
1988	01 20	11 44.45	+00 48.6	1.860	2.529	122.5	19.2	18.2
1988	01 30	11 42.28	+00 46.9					
1988	02 09	11 37.31	+01 02.5	1.689	2.557	144.5	12.9	17.8
1988	02 19	11 29.82	+01 34.2					
1988	02 29	11 20.47	+02 18.4	1.603	2.582	168.9	4.2	17.4
1988	03 10	11 10.27	+03 09.5					
1988	03 20	11 00.37	+04 00.7	1.628	2.604	165.5	5.5	17.5
1988	03 30	10 51.87	+04 45.4					
1988	04 09	10 45.55	+05 19.1	1.761	2.624	141.9	13.6	18.0
1988	04 19	10 41.83	+05 39.0					
1988	04 29	10 40.80	+05 44.4	1.975	2.640	121.2	19.1	18.4
1988	05 09	10 42.30	+05 35.6					
1988	05 19	10 46.06	+05 13.8	2.232	2.654	103.2	21.8	18.8

1951 JQ a,e,i = 2.80, 0.13, 8 Elements MPC 11735

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 11	11 25.00	-04 47.1	2.981	3.041	84.1	18.8	18.1
1987	12 21	11 31.28	-05 58.5					
1987	12 31	11 35.98	-07 02.5	2.679	3.022	100.8	18.6	17.9
1988	01 10	11 38.87	-07 57.1					
1988	01 20	11 39.72	-08 40.0	2.394	3.001	119.3	16.6	17.6
1988	01 30	11 38.39	-09 08.8					
1988	02 09	11 34.85	-09 21.3	2.158	2.979	139.6	12.4	17.2
1988	02 19	11 29.26	-09 15.8					
1988	02 29	11 22.06	-08 52.0	2.004	2.956	160.4	6.5	16.8
1988	03 10	11 13.94	-08 11.7					
1988	03 20	11 05.74	-07 18.8	1.958	2.932	165.2	5.0	16.7
1988	03 30	10 58.36	-06 19.2					
1988	04 09	10 52.54	-05 19.3	2.022	2.907	145.9	11.1	17.0
1988	04 19	10 48.77	-04 24.9					
1988	04 29	10 47.32	-03 40.4	2.176	2.881	125.6	16.5	17.3
1988	05 09	10 48.19	-03 08.3					
1988	05 19	10 51.25	-02 49.8	2.385	2.855	107.3	19.8	17.5

1979 SL9 a,e,i = 3.15, 0.15, 1 Elements MPC 11154

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	11 40.41	+02 08.1	2.748	3.129	103.6	17.8	17.0
1988	01 10	11 43.80	+01 49.4					
1988	01 20	11 45.27	+01 43.6	2.455	3.099	122.7	15.5	16.7
1988	01 30	11 44.65	+01 51.7					
1988	02 09	11 41.92	+02 13.7	2.216	3.069	143.9	10.9	16.3
1988	02 19	11 37.22	+02 48.7					
1988	02 29	11 30.92	+03 34.0	2.065	3.039	167.2	4.2	15.8
1988	03 10	11 23.64	+04 25.1					
1988	03 20	11 16.14	+05 17.0	2.026	3.009	168.8	3.7	15.7
1988	03 30	11 09.25	+06 04.0					
1988	04 09	11 03.71	+06 41.6	2.099	2.980	145.6	10.9	16.1
1988	04 19	11 00.01	+07 06.9					
1988	04 29	10 58.45	+07 18.3	2.259	2.951	124.6	16.3	16.4
1988	05 09	10 59.09	+07 15.7					
1988	05 19	11 01.83	+06 59.7	2.474	2.922	106.2	19.4	16.7
1988	05 29	11 06.51	+06 31.3					
1988	06 08	11 12.89	+05 51.8	2.711	2.894	90.0	20.5	16.9

1985 RC3 a,e,i = 3.25, 0.18, 1 Elements MPC 11521

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	11 45.20	+02 05.8	2.628	2.998	102.5	18.7	17.3
1988	01 10	11 48.52	+01 46.8					
1988	01 20	11 49.76	+01 41.5	2.398	3.032	121.6	16.0	17.1
1988	01 30	11 48.80	+01 50.4					
1988	02 09	11 45.70	+02 13.1	2.220	3.066	143.1	11.1	16.8
1988	02 19	11 40.66	+02 48.0					
1988	02 29	11 34.15	+03 31.9	2.130	3.101	166.4	4.3	16.4
1988	03 10	11 26.83	+04 20.1					
1988	03 20	11 19.47	+05 07.6	2.152	3.136	169.6	3.3	16.4
1988	03 30	11 12.85	+05 49.5					
1988	04 09	11 07.60	+06 21.8	2.286	3.171	146.6	10.0	16.9
1988	04 19	11 04.11	+06 42.5					
1988	04 29	11 02.61	+06 50.5	2.512	3.206	125.8	14.8	17.3
1988	05 09	11 03.08	+06 46.1					
1988	05 19	11 05.42	+06 30.0	2.794	3.241	107.2	17.3	17.6
1988	05 29	11 09.45	+06 03.2					
1988	06 08	11 14.94	+05 27.2	3.103	3.275	90.6	18.1	17.9

1979 SR9 a,e,i = 2.24, 0.15, 2 Elements MPC 10037

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	11 44.25	+04 17.9	1.993	2.420	103.5	23.3	17.9
1988 01 10	11 49.90	+03 53.8					
1988 01 20	11 53.18	+03 45.9	1.725	2.393	121.6	20.5	17.5
1988 01 30	11 53.76	+03 56.0					
1988 02 09	11 51.41	+04 24.6	1.504	2.364	142.5	14.7	17.0
1988 02 19	11 46.13	+05 10.5					
1988 02 29	11 38.27	+06 09.9	1.360	2.334	166.1	5.9	16.4
1988 03 10	11 28.69	+07 15.6					
1988 03 20	11 18.57	+08 18.9	1.319	2.302	167.6	5.3	16.3
1988 03 30	11 09.29	+09 11.1					
1988 04 09	11 02.02	+09 46.1	1.382	2.269	143.9	15.1	16.7
1988 04 19	10 57.52	+10 01.0					
1988 04 29	10 56.13	+09 55.4	1.521	2.236	123.1	22.2	17.1
1988 05 09	10 57.79	+09 30.8					
1988 05 19	11 02.26	+08 49.3	1.703	2.202	105.6	26.3	17.4
1988 05 29	11 09.20	+07 52.8					
1988 06 08	11 18.24	+06 43.5	1.900	2.168	90.9	27.9	17.7

1985 RL a,e,i = 2.87, 0.06, 3 Elements MPC 10943

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	11 47.30	+02 13.6	2.688	3.049	102.0	18.4	17.9
1988 01 10	11 50.82	+01 59.9					
1988 01 20	11 52.35	+02 00.0	2.418	3.046	121.2	16.1	17.6
1988 01 30	11 51.72	+02 14.7					
1988 02 09	11 48.91	+02 43.8	2.199	3.042	142.5	11.4	17.2
1988 02 19	11 44.05	+03 26.1					
1988 02 29	11 37.54	+04 18.2	2.067	3.037	165.8	4.6	16.8
1988 03 10	11 30.01	+05 15.5					
1988 03 20	11 22.22	+06 12.3	2.046	3.031	169.6	3.4	16.8
1988 03 30	11 15.03	+07 02.8					
1988 04 09	11 09.16	+07 42.7	2.139	3.025	146.4	10.6	17.1
1988 04 19	11 05.11	+08 09.2					
1988 04 29	11 03.17	+08 21.2	2.322	3.018	125.3	15.8	17.5
1988 05 09	11 03.37	+08 19.0					
1988 05 19	11 05.64	+08 03.4	2.560	3.010	106.7	18.8	17.8
1988 05 29	11 09.79	+07 35.6					
1988 06 08	11 15.60	+06 57.1	2.822	3.002	90.2	19.8	18.0

1978 SY6 a,e,i = 2.44, 0.15, 5 Elements MPC 8797

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	11 54.45	-05 20.3	2.493	2.795	97.3	20.4	19.1
1988 01 10	11 58.70	-06 01.9					
1988 01 20	12 00.84	-06 30.0	2.227	2.797	115.7	18.5	18.8
1988 01 30	12 00.66	-06 42.3					
1988 02 09	11 58.06	-06 36.9	2.000	2.798	136.4	14.1	18.4
1988 02 19	11 53.10	-06 12.8					
1988 02 29	11 46.15	-05 30.4	1.848	2.796	159.1	7.3	18.0
1988 03 10	11 37.84	-04 32.7					
1988 03 20	11 29.05	-03 24.6	1.802	2.792	172.1	2.8	17.8
1988 03 30	11 20.77	-02 13.2					
1988 04 09	11 13.88	-01 05.6	1.870	2.786	150.5	10.2	18.2
1988 04 19	11 09.00	-00 07.5					
1988 04 29	11 06.47	+00 36.9	2.032	2.778	128.9	16.4	18.5
1988 05 09	11 06.35	+01 06.0					
1988 05 19	11 08.53	+01 19.4	2.255	2.768	109.9	20.1	18.9
1988 05 29	11 12.82	+01 17.8					
1988 06 08	11 18.94	+01 02.4	2.504	2.755	93.3	21.6	19.1

1977 QJ2 a,e,i = 2.55, 0.13, 5 Elements MPC 10766

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	11 55.38	-01 52.3	2.455	2.776	98.5	20.5	18.1
1988	01 10	11 59.78	-02 43.4					
1988	01 20	12 02.09	-03 23.1	2.171	2.757	116.7	18.6	17.7
1988	01 30	12 02.05	-03 49.5					
1988	02 09	11 59.51	-04 01.1	1.928	2.736	137.3	14.2	17.3
1988	02 19	11 54.51	-03 56.9					
1988	02 29	11 47.34	-03 37.2	1.762	2.714	160.0	7.2	16.9
1988	03 10	11 38.64	-03 04.6					
1988	03 20	11 29.31	-02 22.9	1.700	2.691	172.6	2.7	16.6
1988	03 30	11 20.43	-01 38.2					
1988	04 09	11 12.94	-00 56.7	1.750	2.667	150.3	10.7	16.9
1988	04 19	11 07.56	-00 23.3					
1988	04 29	11 04.70	-00 01.8	1.892	2.641	128.7	17.3	17.3
1988	05 09	11 04.43	+00 06.1					
1988	05 19	11 06.65	+00 00.0	2.091	2.615	109.9	21.3	17.6
1988	05 29	11 11.14	-00 19.8					
1988	06 08	11 17.62	-00 52.4	2.316	2.588	93.7	23.0	17.9

1985 QN a,e,i = 2.76, 0.14, 2 Elements MPC 10302

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	11 55.14	+02 11.7	2.774	3.103	100.2	18.2	18.0
1988	01 10	11 58.80	+01 57.8					
1988	01 20	12 00.51	+01 57.1	2.489	3.092	119.2	16.1	17.7
1988	01 30	12 00.10	+02 10.7					
1988	02 09	11 57.51	+02 38.5	2.254	3.079	140.5	11.8	17.3
1988	02 19	11 52.83	+03 19.3					
1988	02 29	11 46.37	+04 10.4	2.102	3.065	163.7	5.2	16.9
1988	03 10	11 38.73	+05 07.1					
1988	03 20	11 30.63	+06 03.9	2.061	3.050	171.4	2.8	16.8
1988	03 30	11 22.95	+06 55.1					
1988	04 09	11 16.44	+07 36.0	2.136	3.033	148.1	10.1	17.1
1988	04 19	11 11.66	+08 03.7					
1988	04 29	11 08.98	+08 16.7	2.303	3.015	126.6	15.5	17.5
1988	05 09	11 08.47	+08 15.2					
1988	05 19	11 10.08	+08 00.1	2.528	2.995	107.7	18.8	17.7
1988	05 29	11 13.66	+07 32.4					
1988	06 08	11 18.98	+06 53.8	2.778	2.974	91.0	20.0	18.0

1978 VZ2 a,e,i = 2.57, 0.08, 2 Elements MPC 11747

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	11 53.73	+02 49.6	2.079	2.461	100.8	23.1	19.2
1988	01 10	11 59.59	+02 19.9					
1988	01 20	12 03.08	+02 05.8	1.849	2.477	118.7	20.4	18.9
1988	01 30	12 03.94	+02 08.7					
1988	02 09	12 02.05	+02 28.8	1.662	2.495	139.4	14.9	18.5
1988	02 19	11 57.48	+03 04.8					
1988	02 29	11 50.62	+03 53.3	1.549	2.512	162.6	6.8	18.1
1988	03 10	11 42.24	+04 48.4					
1988	03 20	11 33.37	+05 43.0	1.540	2.530	172.1	3.1	17.9
1988	03 30	11 25.15	+06 29.9					
1988	04 09	11 18.55	+07 03.6	1.638	2.548	148.8	11.7	18.4
1988	04 19	11 14.19	+07 21.4					
1988	04 29	11 12.39	+07 22.3	1.823	2.566	127.8	18.1	18.9
1988	05 09	11 13.13	+07 07.1					
1988	05 19	11 16.23	+06 37.6	2.062	2.584	109.6	21.6	19.3
1988	05 29	11 21.42	+05 55.2					
1988	06 08	11 28.41	+05 01.9	2.329	2.602	93.9	22.9	19.6

(3565) Ojima a,e,i = 3.21, 0.11, 7 Elements MPC 11631

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	11 58.09	+08 24.3	2.839	3.190	101.9	17.6	17.1
1988	01 10	12 01.79	+08 31.7					
1988	01 20	12 03.53	+08 52.7	2.593	3.212	121.0	15.2	16.8
1988	01 30	12 03.18	+09 26.7					
1988	02 09	12 00.74	+10 12.0	2.401	3.234	141.8	10.9	16.5
1988	02 19	11 56.33	+11 05.6					
1988	02 29	11 50.31	+12 02.7	2.296	3.256	162.9	5.1	16.2
1988	03 10	11 43.26	+12 58.0					
1988	03 20	11 35.87	+13 45.9	2.303	3.277	165.7	4.3	16.2
1988	03 30	11 28.91	+14 21.9					
1988	04 09	11 23.05	+14 43.4	2.423	3.298	145.6	9.9	16.6
1988	04 19	11 18.75	+14 49.4					
1988	04 29	11 16.31	+14 40.3	2.633	3.319	125.3	14.3	16.9
1988	05 09	11 15.81	+14 17.8					
1988	05 19	11 17.17	+13 43.4	2.902	3.339	106.9	16.9	17.2
1988	05 29	11 20.27	+12 59.0					
1988	06 08	11 24.91	+12 06.1	3.196	3.358	90.3	17.6	17.5

1978 NY7 a,e,i = 3.19, 0.19, 3 Elements MPC 11146

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	12 00.56	+02 56.2	3.405	3.693	99.3	15.2	18.7
1988	01 10	12 03.29	+02 48.3					
1988	01 20	12 04.34	+02 51.7	3.098	3.673	118.7	13.6	18.5
1988	01 30	12 03.61	+03 06.8					
1988	02 09	12 01.06	+03 33.1	2.841	3.652	140.0	10.0	18.1
1988	02 19	11 56.80	+04 09.5					
1988	02 29	11 51.08	+04 53.5	2.671	3.629	162.7	4.7	17.8
1988	03 10	11 44.36	+05 41.5					
1988	03 20	11 37.19	+06 29.4	2.616	3.605	172.2	2.1	17.6
1988	03 30	11 30.23	+07 12.7					
1988	04 09	11 24.09	+07 47.9	2.679	3.579	149.7	8.1	17.9
1988	04 19	11 19.26	+08 12.4					
1988	04 29	11 16.07	+08 25.0	2.841	3.552	128.2	12.9	18.2
1988	05 09	11 14.68	+08 25.4					
1988	05 19	11 15.09	+08 14.0	3.067	3.524	108.7	15.8	18.4
1988	05 29	11 17.25	+07 51.8					
1988	06 08	11 20.99	+07 19.7	3.322	3.495	91.3	16.9	18.6

1981 XA a,e,i = 2.01, 0.20, 21 Elements MPC 9466

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	11 54.69	+31 07.7	1.114	1.721	110.1	32.5	17.1
1988	01 10	12 08.35	+33 24.9					
1988	01 20	12 17.96	+36 02.9	1.026	1.764	122.7	28.0	16.9
1988	01 30	12 22.69	+38 53.1					
1988	02 09	12 21.94	+41 40.8	0.982	1.810	133.7	23.2	16.7
1988	02 19	12 15.55	+44 07.2					
1988	02 29	12 04.36	+45 51.0	0.998	1.859	138.4	20.7	16.7
1988	03 10	11 50.37	+46 36.4					
1988	03 20	11 36.27	+46 18.2	1.079	1.909	133.9	22.1	17.0
1988	03 30	11 24.57	+45 01.3					
1988	04 09	11 16.73	+42 58.9	1.220	1.960	123.5	25.2	17.4
1988	04 19	11 13.10	+40 24.7					
1988	04 29	11 13.39	+37 30.6	1.408	2.010	111.6	27.8	17.8
1988	05 09	11 16.96	+34 25.9					
1988	05 19	11 23.15	+31 16.3	1.629	2.058	99.8	29.0	18.2
1988	05 29	11 31.39	+28 05.5					
1988	06 08	11 41.20	+24 56.0	1.870	2.105	88.6	28.8	18.6

1985 PG1 a,e,i = 3.00, 0.10, 10 Elements MPC 10943

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 01.87	-05 22.0	3.011	3.259	95.6	17.5	18.3
1988 01 10	12 05.74	-05 44.3					
1988 01 20	12 07.81	-05 53.7	2.737	3.268	114.4	15.9	18.0
1988 01 30	12 07.93	-05 48.6					
1988 02 09	12 06.07	-05 28.1	2.503	3.277	135.2	12.3	17.7
1988 02 19	12 02.30	-04 51.9					
1988 02 29	11 56.90	-04 01.2	2.346	3.285	157.9	6.5	17.4
1988 03 10	11 50.36	-02 59.0					
1988 03 20	11 43.29	-01 49.8	2.297	3.292	176.0	1.2	17.0
1988 03 30	11 36.44	-00 39.2					
1988 04 09	11 30.48	+00 27.2	2.367	3.297	154.1	7.6	17.4
1988 04 19	11 25.92	+01 24.8					
1988 04 29	11 23.13	+02 10.3	2.539	3.302	132.3	13.0	17.8
1988 05 09	11 22.24	+02 42.3					
1988 05 19	11 23.24	+03 00.3	2.781	3.305	112.7	16.4	18.1
1988 05 29	11 26.03	+03 04.8					
1988 06 08	11 30.43	+02 57.0	3.058	3.308	95.2	17.8	18.3

(3534) Sax a,e,i = 2.76, 0.19, 8 Elements MPC 11502

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 00.63	-09 23.6	2.249	2.520	94.3	22.9	17.2
1988 01 10	12 06.53	-10 33.3					
1988 01 20	12 10.19	-11 29.5	2.032	2.560	111.4	21.0	17.0
1988 01 30	12 11.37	-12 09.5					
1988 02 09	12 09.97	-12 30.7	1.846	2.600	130.8	16.7	16.7
1988 02 19	12 06.02	-12 30.7					
1988 02 29	11 59.87	-12 08.5	1.724	2.640	152.1	10.1	16.4
1988 03 10	11 52.20	-11 25.4					
1988 03 20	11 43.89	-10 25.1	1.697	2.681	168.8	4.2	16.1
1988 03 30	11 35.98	-09 14.6					
1988 04 09	11 29.40	-08 01.8	1.779	2.721	155.2	8.9	16.5
1988 04 19	11 24.77	-06 53.9					
1988 04 29	11 22.45	-05 56.7	1.959	2.761	134.6	15.0	16.9
1988 05 09	11 22.50	-05 13.6					
1988 05 19	11 24.78	-04 45.7	2.208	2.801	115.8	19.0	17.3
1988 05 29	11 29.09	-04 33.2					
1988 06 08	11 35.14	-04 34.9	2.495	2.839	99.2	20.7	17.6

(3608) 1978 SD1 a,e,i = 3.38, 0.15, 11 Elements MPC 11849

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 06.58	+12 22.3	3.514	3.832	101.5	14.6	17.3
1988 01 10	12 09.41	+12 39.8					
1988 01 20	12 10.57	+13 08.6	3.225	3.821	120.6	12.8	17.0
1988 01 30	12 09.95	+13 48.0					
1988 02 09	12 07.53	+14 35.7	2.992	3.808	140.9	9.4	16.7
1988 02 19	12 03.39	+15 28.9					
1988 02 29	11 57.80	+16 23.3	2.849	3.795	159.9	5.1	16.4
1988 03 10	11 51.19	+17 14.0					
1988 03 20	11 44.10	+17 56.5	2.819	3.780	162.2	4.6	16.4
1988 03 30	11 37.18	+18 27.0					
1988 04 09	11 31.02	+18 43.2	2.904	3.764	144.4	8.9	16.6
1988 04 19	11 26.08	+18 44.5					
1988 04 29	11 22.71	+18 31.2	3.083	3.747	124.6	12.8	16.9
1988 05 09	11 21.06	+18 04.9					
1988 05 19	11 21.14	+17 27.3	3.320	3.729	106.1	15.1	17.1
1988 05 29	11 22.90	+16 39.9					
1988 06 08	11 26.19	+15 44.7	3.585	3.710	89.1	15.9	17.3

(3521) 1982 MH a,e,i = 2.26, 0.07, 4 Elements MPC 11429

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 02.40	+04 52.8	1.786	2.178	99.6	26.4	18.5
1988 01 10	12 10.46	+04 20.3					
1988 01 20	12 16.04	+04 04.7	1.569	2.192	116.4	23.7	18.2
1988 01 30	12 18.76	+04 07.4					
1988 02 09	12 18.34	+04 28.8	1.386	2.206	136.2	18.0	17.7
1988 02 19	12 14.67	+05 07.7					
1988 02 29	12 08.02	+05 59.6	1.268	2.221	158.7	9.3	17.3
1988 03 10	11 59.14	+06 57.6					
1988 03 20	11 49.17	+07 52.7	1.245	2.236	172.3	3.4	17.0
1988 03 30	11 39.56	+08 36.0					
1988 04 09	11 31.59	+09 01.6	1.324	2.251	150.6	12.6	17.5
1988 04 19	11 26.14	+09 06.8					
1988 04 29	11 23.64	+08 51.7	1.487	2.266	129.6	20.0	18.0
1988 05 09	11 24.11	+08 18.4					
1988 05 19	11 27.30	+07 29.5	1.704	2.282	111.8	24.3	18.4
1988 05 29	11 32.89	+06 27.3					
1988 06 08	11 40.49	+05 14.3	1.947	2.296	96.5	26.0	18.8

1981 PK a,e,i = 2.59, 0.27, 12 Elements MPC 12205

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 15.20	-14 45.8	3.161	3.291	88.8	17.4	18.9
1988 01 10	12 18.76	-15 52.1					
1988 01 20	12 20.52	-16 49.7	2.876	3.295	106.6	16.6	18.7
1988 01 30	12 20.26	-17 36.2					
1988 02 09	12 17.89	-18 09.1	2.618	3.296	126.0	14.0	18.4
1988 02 19	12 13.41	-18 25.9					
1988 02 29	12 07.03	-18 24.4	2.424	3.294	146.3	9.6	18.1
1988 03 10	11 59.21	-18 03.7					
1988 03 20	11 50.59	-17 24.5	2.327	3.289	162.2	5.3	17.8
1988 03 30	11 41.97	-16 30.2					
1988 04 09	11 34.15	-15 26.0	2.345	3.281	155.3	7.3	17.9
1988 04 19	11 27.77	-14 18.0					
1988 04 29	11 23.29	-13 12.4	2.469	3.270	136.2	12.3	18.2
1988 05 09	11 20.92	-12 14.1					
1988 05 19	11 20.67	-11 26.5	2.671	3.257	116.9	16.1	18.5
1988 05 29	11 22.44	-10 51.4					
1988 06 08	11 26.06	-10 29.6	2.917	3.240	99.3	18.0	18.7

(3547) 1978 TM6 a,e,i = 2.48, 0.05, 4 Elements MPC 11516

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 05.34	-04 59.1	2.171	2.460	95.0	23.5	18.0
1988 01 10	12 11.92	-06 03.8					
1988 01 20	12 16.31	-06 55.9	1.928	2.471	112.0	21.7	17.7
1988 01 30	12 18.23	-07 33.0					
1988 02 09	12 17.47	-07 52.9	1.716	2.482	131.5	17.3	17.3
1988 02 19	12 13.96	-07 53.7					
1988 02 29	12 07.93	-07 34.6	1.567	2.494	153.6	10.2	16.9
1988 03 10	11 59.98	-06 57.2					
1988 03 20	11 51.01	-06 05.4	1.513	2.505	173.4	2.6	16.5
1988 03 30	11 42.17	-05 06.1					
1988 04 09	11 34.56	-04 06.9	1.566	2.515	156.2	9.3	16.9
1988 04 19	11 29.00	-03 14.9					
1988 04 29	11 25.96	-02 35.3	1.715	2.526	134.6	16.5	17.4
1988 05 09	11 25.57	-02 10.9					
1988 05 19	11 27.72	-02 02.3	1.929	2.536	115.6	21.1	17.8
1988 05 29	11 32.17	-02 09.3					
1988 06 08	11 38.63	-02 30.5	2.178	2.545	99.2	23.2	18.1

1982 UM2 a,e,i = 2.52, 0.14, 2 Elements MPC 11438

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 08.95	-00 52.2	2.329	2.619	95.8	21.9	18.7
1988 01 10	12 14.69	-01 22.1					
1988 01 20	12 18.26	-01 37.2	2.091	2.646	113.8	19.9	18.4
1988 01 30	12 19.42	-01 35.9					
1988 02 09	12 18.03	-01 17.3	1.888	2.672	134.3	15.3	18.1
1988 02 19	12 14.09	-00 41.8					
1988 02 29	12 07.89	+00 08.5	1.755	2.697	157.3	8.1	17.7
1988 03 10	12 00.03	+01 09.2					
1988 03 20	11 51.35	+02 14.1	1.725	2.720	177.7	0.8	17.3
1988 03 30	11 42.88	+03 16.0					
1988 04 09	11 35.56	+04 08.6	1.807	2.742	153.9	9.3	17.8
1988 04 19	11 30.08	+04 47.4					
1988 04 29	11 26.88	+05 10.1	1.985	2.762	132.0	15.7	18.2
1988 05 09	11 26.04	+05 16.5					
1988 05 19	11 27.50	+05 07.6	2.228	2.781	112.8	19.6	18.6
1988 05 29	11 31.05	+04 44.6					
1988 06 08	11 36.44	+04 09.6	2.503	2.798	96.1	21.1	18.9

1984 EO1 a,e,i = 2.46, 0.10, 7 Elements MPC 9207

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 11.11	-01 00.4	2.287	2.571	95.3	22.4	18.0
1988 01 10	12 17.37	-02 01.0					
1988 01 20	12 21.57	-02 50.8	2.009	2.553	112.5	20.9	17.7
1988 01 30	12 23.39	-03 28.2					
1988 02 09	12 22.58	-03 51.8	1.764	2.534	132.2	16.8	17.2
1988 02 19	12 19.00	-04 00.2					
1988 02 29	12 12.78	-03 53.3	1.584	2.514	154.5	9.8	16.8
1988 03 10	12 04.42	-03 32.7					
1988 03 20	11 54.75	-03 01.8	1.499	2.494	176.6	1.4	16.2
1988 03 30	11 44.94	-02 26.2					
1988 04 09	11 36.16	-01 52.2	1.524	2.473	156.1	9.4	16.6
1988 04 19	11 29.37	-01 25.6					
1988 04 29	11 25.19	-01 10.6	1.644	2.452	133.9	17.2	17.0
1988 05 09	11 23.83	-01 09.5					
1988 05 19	11 25.23	-01 22.8	1.827	2.431	114.8	22.2	17.4
1988 05 29	11 29.19	-01 50.3					
1988 06 08	11 35.38	-02 30.9	2.042	2.410	98.4	24.6	17.7

(3587) 1981 RK5 a,e,i = 2.70, 0.04, 8 Elements MPC 11745

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 13.64	+06 15.6	2.408	2.718	97.5	21.0	17.5
1988 01 10	12 19.28	+05 51.9					
1988 01 20	12 22.79	+05 41.4	2.154	2.725	115.4	19.0	17.2
1988 01 30	12 23.93	+05 44.8					
1988 02 09	12 22.52	+06 01.5	1.939	2.733	135.6	14.6	16.8
1988 02 19	12 18.55	+06 29.9					
1988 02 29	12 12.25	+07 06.5	1.797	2.740	157.8	7.9	16.4
1988 03 10	12 04.19	+07 46.0					
1988 03 20	11 55.20	+08 22.7	1.757	2.747	172.0	2.9	16.2
1988 03 30	11 46.28	+08 50.6					
1988 04 09	11 38.43	+09 05.6	1.829	2.754	152.0	9.8	16.6
1988 04 19	11 32.38	+09 05.4					
1988 04 29	11 28.60	+08 49.7	1.995	2.760	130.8	16.0	17.0
1988 05 09	11 27.24	+08 19.5					
1988 05 19	11 28.21	+07 36.6	2.224	2.767	111.9	19.8	17.3
1988 05 29	11 31.36	+06 42.5					
1988 06 08	11 36.41	+05 38.9	2.485	2.772	95.5	21.4	17.6

1986 VB6 a,e,i = 2.26, 0.19, 5 Elements MPC 11729

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 14.92	+01 37.0	2.346	2.629	95.4	21.9	18.9
1988 01 10	12 20.71	+01 23.1					
1988 01 20	12 24.37	+01 25.2	2.094	2.646	113.5	19.9	18.6
1988 01 30	12 25.60	+01 44.5					
1988 02 09	12 24.24	+02 21.5	1.877	2.660	134.1	15.4	18.2
1988 02 19	12 20.22	+03 15.3					
1988 02 29	12 13.78	+04 22.6	1.730	2.671	157.1	8.3	17.8
1988 03 10	12 05.46	+05 37.5					
1988 03 20	11 56.11	+06 52.8	1.687	2.679	173.5	2.4	17.5
1988 03 30	11 46.80	+08 00.3					
1988 04 09	11 38.57	+08 53.6	1.757	2.684	152.1	10.1	17.9
1988 04 19	11 32.20	+09 28.8					
1988 04 29	11 28.19	+09 44.6	1.923	2.686	130.2	16.6	18.3
1988 05 09	11 26.70	+09 42.0					
1988 05 19	11 27.64	+09 22.6	2.149	2.684	111.1	20.6	18.7
1988 05 29	11 30.84	+08 48.8					
1988 06 08	11 36.01	+08 02.6	2.404	2.680	94.4	22.2	19.0

1985 JU1 a,e,i = 2.20, 0.13, 5 Elements MPC 11426

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 05.28	+05 22.9	1.920	2.292	99.1	25.1	18.7
1988 01 10	12 13.69	+05 01.7					
1988 01 20	12 19.97	+04 57.3	1.654	2.263	115.8	23.0	18.3
1988 01 30	12 23.73	+05 11.8					
1988 02 09	12 24.63	+05 45.8	1.423	2.233	135.0	18.2	17.8
1988 02 19	12 22.38	+06 38.8					
1988 02 29	12 17.01	+07 46.9	1.258	2.202	156.7	10.3	17.3
1988 03 10	12 09.00	+09 02.9					
1988 03 20	11 59.28	+10 16.6	1.183	2.171	170.1	4.5	16.9
1988 03 30	11 49.25	+11 17.2					
1988 04 09	11 40.36	+11 56.2	1.210	2.140	150.6	13.3	17.2
1988 04 19	11 33.79	+12 09.6					
1988 04 29	11 30.26	+11 56.8	1.319	2.109	129.6	21.6	17.6
1988 05 09	11 29.99	+11 20.6					
1988 05 19	11 32.83	+10 24.2	1.479	2.079	111.8	26.9	18.0
1988 05 29	11 38.50	+09 10.8					
1988 06 08	11 46.60	+07 43.5	1.662	2.049	96.9	29.5	18.3

1986 TK4 a,e,i = 2.35, 0.24, 7 Elements MPC 11345

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 23.65	+04 32.5	2.480	2.740	94.6	21.0	19.1
1988 01 10	12 28.68	+04 14.3					
1988 01 20	12 31.55	+04 10.2	2.237	2.771	112.8	19.1	18.8
1988 01 30	12 32.01	+04 20.8					
1988 02 09	12 29.90	+04 45.7	2.028	2.800	133.5	14.8	18.5
1988 02 19	12 25.20	+05 23.4					
1988 02 29	12 18.16	+06 10.3	1.890	2.825	156.3	8.1	18.1
1988 03 10	12 09.34	+07 01.3					
1988 03 20	11 59.56	+07 50.3	1.857	2.847	172.5	2.6	17.9
1988 03 30	11 49.83	+08 31.0					
1988 04 09	11 41.13	+08 58.7	1.940	2.866	152.6	9.3	18.3
1988 04 19	11 34.19	+09 11.2					
1988 04 29	11 29.50	+09 07.6	2.121	2.882	130.8	15.3	18.7
1988 05 09	11 27.19	+08 49.1					
1988 05 19	11 27.22	+08 17.3	2.367	2.895	111.4	19.0	19.0
1988 05 29	11 29.40	+07 33.8					
1988 06 08	11 33.48	+06 40.6	2.644	2.904	94.4	20.4	19.3

1985 QG4 a,e,i = 2.33, 0.23, 10 Elements MPC 11854

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 13.41	-02 08.9	2.149	2.430	94.3	23.8	18.6
1988 01 10	12 20.69	-03 32.4					
1988 01 20	12 26.01	-04 48.7	1.847	2.381	110.7	22.7	18.2
1988 01 30	12 28.98	-05 56.0					
1988 02 09	12 29.24	-06 52.7	1.576	2.330	129.4	19.1	17.7
1988 02 19	12 26.44	-07 36.4					
1988 02 29	12 20.51	-08 05.1	1.362	2.278	150.7	12.3	17.1
1988 03 10	12 11.76	-08 17.5					
1988 03 20	12 00.94	-08 13.8	1.237	2.226	171.3	3.9	16.5
1988 03 30	11 49.38	-07 57.1					
1988 04 09	11 38.59	-07 33.5	1.214	2.174	157.5	10.2	16.7
1988 04 19	11 29.94	-07 10.0					
1988 04 29	11 24.38	-06 53.6	1.284	2.122	135.3	19.5	17.0
1988 05 09	11 22.30	-06 49.1					
1988 05 19	11 23.70	-06 59.2	1.414	2.071	116.3	26.0	17.4
1988 05 29	11 28.33	-07 25.1					
1988 06 08	11 35.80	-08 06.2	1.571	2.022	100.6	29.6	17.6

1981 ET24 a,e,i = 2.30, 0.04, 7 Elements MPC 11739

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 02.90	-03 43.1	1.898	2.228	96.1	26.0	18.7
1988 01 10	12 11.91	-04 29.3					
1988 01 20	12 18.84	-04 59.0	1.653	2.222	112.3	24.2	18.3
1988 01 30	12 23.31	-05 08.9					
1988 02 09	12 25.02	-04 56.7	1.438	2.216	131.2	19.6	17.9
1988 02 19	12 23.75	-04 20.2					
1988 02 29	12 19.58	-03 19.5	1.281	2.211	153.3	11.6	17.4
1988 03 10	12 12.96	-01 58.3					
1988 03 20	12 04.79	-00 23.8	1.212	2.207	177.8	1.0	16.8
1988 03 30	11 56.32	+01 13.2					
1988 04 09	11 48.86	+02 41.2	1.245	2.204	157.5	10.0	17.3
1988 04 19	11 43.46	+03 51.5					
1988 04 29	11 40.77	+04 38.9	1.369	2.202	135.3	18.8	17.7
1988 05 09	11 41.01	+05 02.1					
1988 05 19	11 44.05	+05 02.5	1.554	2.201	116.6	24.3	18.2
1988 05 29	11 49.66	+04 42.2					
1988 06 08	11 57.47	+04 04.5	1.771	2.202	100.9	26.9	18.5

1979 SA10 a,e,i = 3.40, 0.19, 6 Elements MPC 10941

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 21.49	-04 42.0	3.059	3.237	91.4	17.7	17.3
1988 01 10	12 26.40	-05 08.8					
1988 01 20	12 29.57	-05 23.5	2.806	3.272	109.7	16.5	17.1
1988 01 30	12 30.84	-05 24.9					
1988 02 09	12 30.13	-05 12.5	2.586	3.307	129.9	13.2	16.8
1988 02 19	12 27.47	-04 46.0					
1988 02 29	12 23.06	-04 06.5	2.434	3.342	152.1	8.0	16.5
1988 03 10	12 17.29	-03 16.5					
1988 03 20	12 10.71	-02 19.8	2.383	3.377	175.6	1.3	16.2
1988 03 30	12 03.99	-01 21.3					
1988 04 09	11 57.80	-00 25.8	2.450	3.412	160.8	5.5	16.5
1988 04 19	11 52.70	+00 22.3					
1988 04 29	11 49.11	+00 59.8	2.624	3.446	138.7	11.1	16.9
1988 05 09	11 47.24	+01 25.1					
1988 05 19	11 47.15	+01 37.6	2.879	3.480	118.7	14.8	17.2
1988 05 29	11 48.78	+01 37.8					
1988 06 08	11 52.01	+01 26.6	3.180	3.513	100.7	16.5	17.5

1979 VG a,e,i = 2.31, 0.11, 6 Elements MPC 11434

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	12 26.08	+02 09.3	2.136	2.399	93.1	24.2	18.0
1988	01 10	12 33.45	+01 25.2					
1988	01 20	12 38.61	+00 54.8	1.901	2.422	110.0	22.4	17.8
1988	01 30	12 41.23	+00 39.4					
1988	02 09	12 41.04	+00 39.5	1.693	2.443	129.6	18.1	17.4
1988	02 19	12 37.89	+00 55.1					
1988	02 29	12 31.89	+01 24.3	1.543	2.462	152.0	10.9	17.0
1988	03 10	12 23.52	+02 03.1					
1988	03 20	12 13.63	+02 46.0	1.487	2.481	175.1	2.0	16.5
1988	03 30	12 03.40	+03 25.9					
1988	04 09	11 54.05	+03 56.5	1.540	2.497	158.0	8.6	16.9
1988	04 19	11 46.56	+04 13.6					
1988	04 29	11 41.56	+04 14.8	1.691	2.512	135.7	16.3	17.4
1988	05 09	11 39.30	+04 00.2					
1988	05 19	11 39.69	+03 30.8	1.910	2.526	116.2	21.1	17.8
1988	05 29	11 42.54	+02 48.2					
1988	06 08	11 47.54	+01 54.3	2.164	2.537	99.5	23.2	18.2

1982 DY1 a,e,i = 3.14, 0.09, 3 Elements MPC 12321

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	12 27.12	+00 56.1	3.164	3.352	92.4	17.0	17.4
1988	01 10	12 31.73	+00 36.1					
1988	01 20	12 34.65	+00 27.5	2.884	3.362	110.8	15.9	17.2
1988	01 30	12 35.69	+00 30.9					
1988	02 09	12 34.78	+00 46.4	2.639	3.371	131.1	12.7	16.9
1988	02 19	12 31.88	+01 13.3					
1988	02 29	12 27.17	+01 49.9	2.465	3.379	153.2	7.6	16.6
1988	03 10	12 21.01	+02 32.9					
1988	03 20	12 13.91	+03 18.6	2.394	3.387	174.8	1.5	16.2
1988	03 30	12 06.56	+04 02.1					
1988	04 09	11 59.65	+04 39.2	2.441	3.394	158.8	6.1	16.5
1988	04 19	11 53.79	+05 06.6					
1988	04 29	11 49.45	+05 22.1	2.594	3.400	136.9	11.7	16.9
1988	05 09	11 46.88	+05 25.0					
1988	05 19	11 46.17	+05 15.5	2.825	3.405	117.0	15.4	17.2
1988	05 29	11 47.29	+04 54.4					
1988	06 08	11 50.10	+04 23.0	3.098	3.409	99.1	17.1	17.4

1977 EN1 a,e,i = 3.13, 0.15, 2 Elements MPC 9593

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	12 21.20	+00 24.2	2.825	3.048	93.5	18.8	18.5
1988	01 10	12 27.12	-00 05.9					
1988	01 20	12 31.33	-00 24.5	2.520	3.019	111.2	17.7	18.2
1988	01 30	12 33.61	-00 30.4					
1988	02 09	12 33.77	-00 22.9	2.250	2.990	130.9	14.4	17.9
1988	02 19	12 31.74	-00 02.1					
1988	02 29	12 27.59	+00 30.9	2.046	2.962	152.8	8.8	17.4
1988	03 10	12 21.65	+01 13.2					
1988	03 20	12 14.47	+02 00.6	1.941	2.935	175.2	1.6	17.0
1988	03 30	12 06.84	+02 47.6					
1988	04 09	11 59.61	+03 28.7	1.948	2.907	159.5	6.9	17.2
1988	04 19	11 53.56	+03 59.3					
1988	04 29	11 49.28	+04 16.5	2.058	2.881	137.4	13.7	17.6
1988	05 09	11 47.11	+04 18.9					
1988	05 19	11 47.15	+04 06.6	2.241	2.856	117.7	18.3	17.9
1988	05 29	11 49.37	+03 40.3					
1988	06 08	11 53.57	+03 01.6	2.466	2.831	100.4	20.6	18.1

1986 TL1 a,e,i = 2.26, 0.13, 4 Elements MPC 11521

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 25.56	-07 30.6	2.271	2.465	89.4	23.5	18.7
1988 01 10	12 32.82	-08 39.4					
1988 01 20	12 38.04	-09 36.8	2.026	2.484	106.0	22.4	18.5
1988 01 30	12 40.87	-10 20.4					
1988 02 09	12 41.07	-10 48.0	1.801	2.501	125.0	18.8	18.1
1988 02 19	12 38.45	-10 57.3					
1988 02 29	12 33.08	-10 46.6	1.628	2.516	146.7	12.5	17.7
1988 03 10	12 25.36	-10 15.8					
1988 03 20	12 16.05	-09 27.0	1.543	2.528	169.1	4.3	17.3
1988 03 30	12 06.24	-08 25.7					
1988 04 09	11 57.11	-07 19.4	1.567	2.538	162.1	7.0	17.5
1988 04 19	11 49.66	-06 16.0					
1988 04 29	11 44.58	-05 22.4	1.693	2.546	139.8	14.8	17.9
1988 05 09	11 42.18	-04 43.1					
1988 05 19	11 42.44	-04 19.8	1.893	2.552	119.8	20.1	18.3
1988 05 29	11 45.20	-04 13.1					
1988 06 08	11 50.16	-04 21.9	2.135	2.555	102.5	22.8	18.6

1984 YV a,e,i = 1.92, 0.08, 21 Elements MPC 11151

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 05.19	-22 43.9	1.517	1.775	87.8	33.6	16.9
1988 01 10	12 17.45	-26 47.3					
1988 01 20	12 27.79	-30 48.8	1.347	1.780	98.4	33.2	16.6
1988 01 30	12 35.67	-34 44.4					
1988 02 09	12 40.46	-38 28.8	1.196	1.787	109.6	31.3	16.3
1988 02 19	12 41.38	-41 54.2					
1988 02 29	12 37.83	-44 49.4	1.073	1.797	121.0	28.2	16.0
1988 03 10	12 29.67	-47 01.5					
1988 03 20	12 17.65	-48 16.4	0.991	1.809	131.1	24.5	15.8
1988 03 30	12 03.75	-48 24.2					
1988 04 09	11 50.78	-47 24.7	0.961	1.823	136.6	22.2	15.7
1988 04 19	11 41.22	-45 28.3					
1988 04 29	11 36.61	-42 54.1	0.989	1.839	134.2	23.1	15.8
1988 05 09	11 37.21	-40 03.2					
1988 05 19	11 42.53	-37 13.1	1.076	1.856	125.5	26.3	16.1
1988 05 29	11 51.82	-34 36.8					
1988 06 08	12 04.24	-32 21.3	1.211	1.874	114.4	29.6	16.4

1986 TZ1 a,e,i = 2.20, 0.22, 5 Elements MPC 11427

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 32.62	+02 42.0	2.357	2.582	91.8	22.4	18.4
1988 01 10	12 39.31	+02 25.2					
1988 01 20	12 43.93	+02 23.6	2.109	2.606	109.3	20.9	18.1
1988 01 30	12 46.16	+02 38.7					
1988 02 09	12 45.77	+03 10.5	1.889	2.627	129.2	16.9	17.8
1988 02 19	12 42.63	+03 58.2					
1988 02 29	12 36.81	+04 58.8	1.731	2.644	151.5	10.3	17.4
1988 03 10	12 28.75	+06 07.0					
1988 03 20	12 19.19	+07 15.6	1.669	2.657	171.1	3.3	17.0
1988 03 30	12 09.17	+08 16.8					
1988 04 09	11 59.80	+09 03.9	1.721	2.667	156.1	8.8	17.3
1988 04 19	11 52.02	+09 32.7					
1988 04 29	11 46.48	+09 41.8	1.873	2.674	134.2	15.7	17.7
1988 05 09	11 43.47	+09 32.1					
1988 05 19	11 42.98	+09 05.8	2.092	2.677	114.6	20.1	18.1
1988 05 29	11 44.88	+08 24.9					
1988 06 08	11 48.89	+07 32.1	2.346	2.676	97.5	22.1	18.4

1981 EN12 a,e,i = 2.30, 0.13, 3 Elements MPC 10770

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 08.21	-04 17.9	1.828	2.145	94.6	27.2	19.0
1988 01 10	12 18.47	-05 38.6					
1988 01 20	12 26.84	-06 47.7	1.573	2.119	109.7	25.9	18.7
1988 01 30	12 32.91	-07 42.5					
1988 02 09	12 36.29	-08 20.1	1.345	2.094	127.2	22.0	18.2
1988 02 19	12 36.64	-08 37.5					
1988 02 29	12 33.80	-08 32.2	1.166	2.072	147.7	14.8	17.6
1988 03 10	12 28.03	-08 03.5					
1988 03 20	12 20.01	-07 13.6	1.064	2.053	170.4	4.6	17.0
1988 03 30	12 11.02	-06 09.1					
1988 04 09	12 02.55	-04 59.9	1.057	2.036	163.2	8.2	17.2
1988 04 19	11 55.96	-03 56.4					
1988 04 29	11 52.22	-03 07.6	1.138	2.023	141.0	18.3	17.6
1988 05 09	11 51.75	-02 38.4					
1988 05 19	11 54.51	-02 30.4	1.284	2.012	122.0	25.2	18.1
1988 05 29	12 00.27	-02 43.2					
1988 06 08	12 08.61	-03 14.6	1.468	2.006	106.4	29.0	18.5

1977 EM1 a,e,i = 3.12, 0.13, 1 Elements MPC 12004

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 24.86	-02 08.4	2.593	2.800	91.7	20.6	17.7
1988 01 10	12 31.49	-02 52.4					
1988 01 20	12 36.25	-03 24.5	2.340	2.817	108.9	19.3	17.5
1988 01 30	12 38.90	-03 43.2					
1988 02 09	12 39.29	-03 47.8	2.116	2.836	128.4	15.8	17.1
1988 02 19	12 37.32	-03 37.9					
1988 02 29	12 33.13	-03 14.2	1.954	2.856	150.2	9.9	16.8
1988 03 10	12 27.10	-02 39.0					
1988 03 20	12 19.84	-01 56.1	1.885	2.877	173.7	2.2	16.4
1988 03 30	12 12.18	-01 10.7					
1988 04 09	12 05.01	-00 28.4	1.928	2.899	162.5	6.0	16.6
1988 04 19	11 59.08	+00 06.0					
1988 04 29	11 54.95	+00 29.1	2.075	2.922	140.3	12.7	17.1
1988 05 09	11 52.90	+00 39.0					
1988 05 19	11 52.99	+00 35.3	2.300	2.945	120.5	17.2	17.5
1988 05 29	11 55.14	+00 18.7					
1988 06 08	11 59.16	-00 09.8	2.571	2.969	103.0	19.5	17.8

(3574) 1982 TQ a,e,i = 2.42, 0.18, 5 Elements MPC 11731

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 30.72	-07 42.3	2.684	2.828	88.1	20.3	19.2
1988 01 10	12 36.83	-08 29.4					
1988 01 20	12 41.08	-09 04.9	2.413	2.840	105.6	19.5	18.9
1988 01 30	12 43.23	-09 26.9					
1988 02 09	12 43.06	-09 33.7	2.165	2.850	125.2	16.4	18.6
1988 02 19	12 40.47	-09 23.5					
1988 02 29	12 35.53	-08 55.8	1.974	2.857	147.1	10.9	18.3
1988 03 10	12 28.60	-08 11.2					
1988 03 20	12 20.28	-07 12.6	1.874	2.861	170.4	3.3	17.8
1988 03 30	12 11.44	-06 05.2					
1988 04 09	12 03.04	-04 55.6	1.889	2.863	163.3	5.8	18.0
1988 04 19	11 55.91	-03 50.4					
1988 04 29	11 50.70	-02 55.4	2.012	2.862	140.5	12.9	18.4
1988 05 09	11 47.72	-02 14.1					
1988 05 19	11 47.07	-01 48.3	2.215	2.859	120.0	17.8	18.7
1988 05 29	11 48.67	-01 38.0					
1988 06 08	11 52.31	-01 42.4	2.463	2.852	102.0	20.4	19.0

(3580) 1983 CS2 a,e,i = 2.86, 0.24, 3 Elements MPC 11735

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 10.76	-00 17.6	1.867	2.194	95.6	26.5	16.7
1988 01 10	12 20.78	-01 35.3					
1988 01 20	12 28.74	-02 41.4	1.635	2.189	110.9	24.8	16.4
1988 01 30	12 34.28	-03 33.9					
1988 02 09	12 37.07	-04 11.3	1.432	2.190	128.8	20.6	16.0
1988 02 19	12 36.87	-04 31.9					
1988 02 29	12 33.67	-04 35.4	1.284	2.196	149.5	13.2	15.5
1988 03 10	12 27.86	-04 23.1					
1988 03 20	12 20.23	-03 58.4	1.216	2.208	172.7	3.3	15.0
1988 03 30	12 11.97	-03 27.4					
1988 04 09	12 04.38	-02 57.1	1.248	2.225	163.2	7.5	15.3
1988 04 19	11 58.55	-02 33.9					
1988 04 29	11 55.25	-02 23.0	1.371	2.248	141.4	16.2	15.8
1988 05 09	11 54.75	-02 26.6					
1988 05 19	11 56.99	-02 45.2	1.564	2.275	122.7	22.0	16.3
1988 05 29	12 01.78	-03 18.3					
1988 06 08	12 08.76	-04 04.0	1.800	2.307	106.7	24.9	16.7

1981 EN17 a,e,i = 2.29, 0.17, 5 Elements MPC 10771

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 29.64	-06 49.4	2.488	2.655	88.7	21.7	18.5
1988 01 10	12 36.40	-07 36.3					
1988 01 20	12 41.25	-08 10.7	2.225	2.668	105.9	20.8	18.3
1988 01 30	12 43.89	-08 30.5					
1988 02 09	12 44.09	-08 33.8	1.983	2.678	125.4	17.5	17.9
1988 02 19	12 41.70	-08 19.0					
1988 02 29	12 36.77	-07 45.2	1.796	2.685	147.4	11.5	17.5
1988 03 10	12 29.66	-06 53.8					
1988 03 20	12 21.01	-05 48.0	1.700	2.689	171.3	3.2	17.1
1988 03 30	12 11.78	-04 34.0					
1988 04 09	12 03.03	-03 19.4	1.716	2.690	163.0	6.3	17.2
1988 04 19	11 55.67	-02 11.4					
1988 04 29	11 50.39	-01 16.1	1.839	2.689	139.9	14.0	17.7
1988 05 09	11 47.54	-00 36.8					
1988 05 19	11 47.17	-00 14.6	2.038	2.684	119.4	19.2	18.0
1988 05 29	11 49.19	-00 09.4					
1988 06 08	11 53.34	-00 19.6	2.280	2.677	101.7	21.8	18.4

(3606) 1939 SF a,e,i = 2.61, 0.23, 12 Elements MPC 11848

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 33.22	-16 46.6	3.153	3.204	84.1	17.8	18.2
1988 01 10	12 38.45	-17 51.9					
1988 01 20	12 42.01	-18 48.9	2.864	3.204	101.2	17.5	18.0
1988 01 30	12 43.64	-19 35.3					
1988 02 09	12 43.18	-20 08.8	2.593	3.201	119.9	15.5	17.7
1988 02 19	12 40.54	-20 26.8					
1988 02 29	12 35.78	-20 26.6	2.372	3.196	140.1	11.5	17.4
1988 03 10	12 29.20	-20 06.7					
1988 03 20	12 21.32	-19 26.5	2.237	3.188	159.3	6.3	17.1
1988 03 30	12 12.90	-18 28.4					
1988 04 09	12 04.76	-17 16.8	2.212	3.177	161.4	5.8	17.0
1988 04 19	11 57.68	-15 58.2					
1988 04 29	11 52.27	-14 39.4	2.298	3.164	143.3	11.0	17.3
1988 05 09	11 48.88	-13 26.7					
1988 05 19	11 47.66	-12 24.4	2.474	3.148	123.5	15.5	17.6
1988 05 29	11 48.57	-11 35.5					
1988 06 08	11 51.48	-11 00.9	2.704	3.129	105.3	18.2	17.9

1986 TM a,e,i = 2.87, 0.33, 33 Elements MPC 11631

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		V
1987	12 31	13 00.54	+09 50.9	2.499	2.658	0.04	+11.2	16.5
1988	01 10	13 04.93	+08 58.8					
1988	01 20	13 07.01	+08 17.6	2.288	2.727	-0.03	+12.2	16.4
1988	01 30	13 06.47	+07 46.9					
1988	02 09	13 03.12	+07 25.3	2.097	2.796	-0.11	+13.2	16.1
1988	02 19	12 56.90	+07 11.0					
1988	02 29	12 48.00	+07 01.1	1.968	2.863	-0.20	+14.0	15.8
1988	03 10	12 36.97	+06 51.7					
1988	03 20	12 24.67	+06 39.4	1.941	2.928	-0.27	+14.1	15.6
1988	03 30	12 12.18	+06 20.6					
1988	04 09	12 00.61	+05 53.5	2.038	2.992	-0.33	+13.2	15.9
1988	04 19	11 50.79	+05 17.5					
1988	04 29	11 43.29	+04 32.7	2.249	3.054	-0.76	+11.7	16.4
1988	05 09	11 38.30	+03 40.3					
1988	05 19	11 35.75	+02 41.1	2.539	3.114	-0.59	+10.2	16.8
1988	05 29	11 35.47	+01 36.2					
1988	06 08	11 37.17	+00 26.4	2.872	3.171	-0.43	+8.9	17.1

1980 JH a,e,i = 2.62, 0.17, 13 Elements MPC 10295

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	12 25.59	-09 52.4	2.805	2.947	88.4	19.5	18.5
1988	01 10	12 32.01	-10 30.4					
1988	01 20	12 36.75	-10 56.3	2.500	2.925	105.8	18.9	18.2
1988	01 30	12 39.56	-11 07.7					
1988	02 09	12 40.23	-11 02.4	2.219	2.901	125.1	16.2	17.8
1988	02 19	12 38.63	-10 38.3					
1988	02 29	12 34.79	-09 54.3	1.994	2.875	146.8	10.9	17.4
1988	03 10	12 28.99	-08 50.8					
1988	03 20	12 21.75	-07 30.6	1.861	2.847	169.9	3.5	16.9
1988	03 30	12 13.87	-05 59.2					
1988	04 09	12 06.24	-04 24.3	1.842	2.818	164.0	5.6	17.0
1988	04 19	11 59.71	-02 53.8					
1988	04 29	11 54.98	-01 34.6	1.931	2.787	141.1	13.1	17.3
1988	05 09	11 52.42	-00 31.5					
1988	05 19	11 52.17	+00 13.6	2.101	2.755	120.4	18.5	17.6
1988	05 29	11 54.22	+00 40.0					
1988	06 08	11 58.38	+00 49.1	2.317	2.722	102.4	21.4	17.9

1984 HR1 a,e,i = 2.60, 0.15, 5 Elements MPC 10763

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	12 27.80	+01 45.3	2.394	2.628	92.5	21.9	18.4
1988	01 10	12 35.44	+01 02.1					
1988	01 20	12 41.29	+00 30.6	2.100	2.597	109.3	21.0	18.1
1988	01 30	12 45.00	+00 12.0					
1988	02 09	12 46.31	+00 07.2	1.835	2.565	128.2	17.6	17.7
1988	02 19	12 44.98	+00 16.7					
1988	02 29	12 40.94	+00 39.5	1.628	2.532	149.6	11.4	17.2
1988	03 10	12 34.45	+01 12.8					
1988	03 20	12 26.08	+01 52.4	1.509	2.500	172.5	3.0	16.7
1988	03 30	12 16.78	+02 31.8					
1988	04 09	12 07.71	+03 04.4	1.498	2.468	161.4	7.4	16.8
1988	04 19	11 59.94	+03 25.1					
1988	04 29	11 54.36	+03 29.9	1.587	2.437	138.9	15.8	17.2
1988	05 09	11 51.40	+03 18.0					
1988	05 19	11 51.20	+02 49.6	1.746	2.407	119.1	21.5	17.5
1988	05 29	11 53.68	+02 05.9					
1988	06 08	11 58.58	+01 08.8	1.944	2.377	102.3	24.7	17.8

2055 P-L a,e,i = 2.37, 0.14, 9 Elements MPC 9297

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	12 22.27	-01 29.5	1.947	2.220	92.5	26.3	19.4
1988	01 10	12 31.85	-03 04.8					
1988	01 20	12 39.53	-04 32.9	1.680	2.191	107.7	25.3	19.1
1988	01 30	12 44.90	-05 52.2					
1988	02 09	12 47.57	-07 01.3	1.438	2.163	125.2	21.9	18.6
1988	02 19	12 47.14	-07 58.1					
1988	02 29	12 43.40	-08 40.6	1.246	2.137	145.5	15.2	18.1
1988	03 10	12 36.51	-09 07.2					
1988	03 20	12 27.07	-09 17.4	1.130	2.114	167.7	5.8	17.5
1988	03 30	12 16.31	-09 13.4					
1988	04 09	12 05.78	-09 00.2	1.111	2.093	164.2	7.5	17.5
1988	04 19	11 56.98	-08 44.5					
1988	04 29	11 51.05	-08 33.5	1.186	2.075	142.1	17.3	18.0
1988	05 09	11 48.51	-08 32.6					
1988	05 19	11 49.43	-08 44.8	1.327	2.060	122.9	24.4	18.4
1988	05 29	11 53.59	-09 11.5					
1988	06 08	12 00.60	-09 52.2	1.508	2.049	107.0	28.3	18.8

1986 XF a,e,i = 2.60, 0.16, 3 Elements MPC 11640

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	12 38.42	-02 05.9	2.665	2.817	88.6	20.4	18.8
1988	01 10	12 44.76	-02 45.8					
1988	01 20	12 49.24	-03 13.9	2.409	2.843	106.0	19.4	18.5
1988	01 30	12 51.58	-03 28.9					
1988	02 09	12 51.62	-03 30.0	2.177	2.866	125.7	16.2	18.2
1988	02 19	12 49.22	-03 16.8					
1988	02 29	12 44.47	-02 50.1	2.002	2.888	147.7	10.6	17.9
1988	03 10	12 37.71	-02 12.3					
1988	03 20	12 29.52	-01 26.8	1.920	2.909	171.6	2.9	17.5
1988	03 30	12 20.74	-00 39.0					
1988	04 09	12 12.28	+00 05.4	1.952	2.927	163.9	5.4	17.7
1988	04 19	12 04.98	+00 41.8					
1988	04 29	11 59.46	+01 06.3	2.092	2.944	141.1	12.4	18.1
1988	05 09	11 56.07	+01 17.3					
1988	05 19	11 54.92	+01 14.4	2.313	2.959	120.6	17.1	18.5
1988	05 29	11 55.93	+00 58.2					
1988	06 08	11 58.92	+00 30.0	2.580	2.972	102.7	19.5	18.8

1971 UK a,e,i = 2.37, 0.17, 5 Elements MPC 10938

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	12 33.50	-08 26.4	2.626	2.759	87.2	20.9	19.2
1988	01 10	12 40.46	-09 18.6					
1988	01 20	12 45.66	-09 59.8	2.338	2.750	104.2	20.3	18.9
1988	01 30	12 48.82	-10 27.9					
1988	02 09	12 49.68	-10 40.9	2.071	2.738	123.2	17.5	18.6
1988	02 19	12 48.05	-10 36.8					
1988	02 29	12 43.92	-10 13.9	1.855	2.724	144.7	12.1	18.2
1988	03 10	12 37.54	-09 32.5					
1988	03 20	12 29.44	-08 34.2	1.726	2.708	167.9	4.4	17.7
1988	03 30	12 20.48	-07 23.8					
1988	04 09	12 11.68	-06 08.2	1.707	2.689	165.6	5.3	17.7
1988	04 19	12 04.01	-04 55.1					
1988	04 29	11 58.26	-03 51.5	1.797	2.668	142.6	13.3	18.1
1988	05 09	11 54.87	-03 02.2					
1988	05 19	11 54.00	-02 29.5	1.967	2.645	121.9	19.0	18.4
1988	05 29	11 55.60	-02 14.1					
1988	06 08	11 59.46	-02 15.3	2.183	2.619	103.9	22.1	18.7

1942 DB a,e,i = 2.58, 0.12, 12 Elements MPC 10157

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	12 29.37	-08 21.8	2.168	2.352	88.2	24.7	16.5
1988	01 10	12 38.33	-10 19.7					
1988	01 20	12 45.49	-12 12.7	1.904	2.336	103.3	24.2	16.2
1988	01 30	12 50.47	-13 59.2					
1988	02 09	12 52.91	-15 37.1	1.662	2.321	120.2	21.6	15.9
1988	02 19	12 52.47	-17 03.4					
1988	02 29	12 48.95	-18 14.4	1.465	2.308	139.2	16.3	15.4
1988	03 10	12 42.48	-19 06.0					
1988	03 20	12 33.61	-19 34.5	1.343	2.297	158.1	9.3	15.0
1988	03 30	12 23.38	-19 38.6					
1988	04 09	12 13.17	-19 21.0	1.316	2.289	161.8	7.8	14.9
1988	04 19	12 04.34	-18 48.2					
1988	04 29	11 58.00	-18 08.8	1.385	2.283	144.8	14.7	15.2
1988	05 09	11 54.73	-17 31.6					
1988	05 19	11 54.66	-17 02.8	1.531	2.281	126.3	21.0	15.6
1988	05 29	11 57.67	-16 46.5					
1988	06 08	12 03.43	-16 44.4	1.724	2.280	110.0	24.7	16.0

1925 VF a,e,i = 2.45, 0.15, 4 Elements MPC 11742

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	12 36.13	-00 26.9	2.170	2.379	89.8	24.4	17.1
1988	01 10	12 44.55	-01 15.8					
1988	01 20	12 50.89	-01 51.1	1.946	2.412	106.2	23.1	16.8
1988	01 30	12 54.81	-02 11.5					
1988	02 09	12 56.05	-02 16.0	1.742	2.446	125.1	19.3	16.5
1988	02 19	12 54.41	-02 04.3					
1988	02 29	12 49.92	-01 37.3	1.590	2.479	146.8	12.6	16.1
1988	03 10	12 42.93	-00 57.9					
1988	03 20	12 34.14	-00 11.0	1.524	2.512	170.6	3.7	15.7
1988	03 30	12 24.60	+00 37.0					
1988	04 09	12 15.46	+01 19.2	1.566	2.544	164.0	6.2	15.9
1988	04 19	12 07.74	+01 50.1					
1988	04 29	12 02.19	+02 06.1	1.710	2.574	141.2	14.2	16.4
1988	05 09	11 59.16	+02 06.2					
1988	05 19	11 58.68	+01 50.7	1.931	2.603	121.2	19.4	16.9
1988	05 29	12 00.62	+01 21.0					
1988	06 08	12 04.71	+00 39.0	2.195	2.631	103.9	22.0	17.2

1964 TT2 a,e,i = 2.62, 0.21, 3 Elements MPC 10294

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987	12 31	12 43.01	-02 29.2	3.031	3.144	87.4	18.2	18.9
1988	01 10	12 48.68	-03 03.3					
1988	01 20	12 52.71	-03 26.8	2.728	3.133	105.1	17.6	18.7
1988	01 30	12 54.85	-03 38.5					
1988	02 09	12 54.91	-03 37.7	2.449	3.120	124.9	15.0	18.3
1988	02 19	12 52.75	-03 23.8					
1988	02 29	12 48.41	-02 57.3	2.227	3.104	146.8	10.1	18.0
1988	03 10	12 42.11	-02 19.9					
1988	03 20	12 34.33	-01 34.7	2.099	3.086	170.4	3.1	17.5
1988	03 30	12 25.76	-00 46.2					
1988	04 09	12 17.24	+00 00.3	2.087	3.065	165.0	4.8	17.6
1988	04 19	12 09.59	+00 40.0					
1988	04 29	12 03.48	+01 08.9	2.186	3.043	142.0	11.8	17.9
1988	05 09	11 59.33	+01 24.8					
1988	05 19	11 57.35	+01 26.8	2.368	3.018	121.1	16.7	18.3
1988	05 29	11 57.55	+01 15.2					
1988	06 08	11 59.80	+00 50.9	2.598	2.991	102.7	19.3	18.5

1972 RT3 a,e,i = 2.68, 0.22, 4 Elements MPC 10032

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 43.99	-01 25.3	3.150	3.260	87.6	17.5	18.9
1988 01 10	12 49.44	-01 46.7					
1988 01 20	12 53.27	-01 56.5	2.852	3.257	105.6	16.9	18.6
1988 01 30	12 55.26	-01 53.9					
1988 02 09	12 55.24	-01 38.3	2.579	3.252	125.5	14.3	18.3
1988 02 19	12 53.13	-01 09.6					
1988 02 29	12 48.95	-00 29.0	2.366	3.245	147.4	9.5	18.0
1988 03 10	12 42.96	+00 21.1					
1988 03 20	12 35.60	+01 17.0	2.250	3.235	170.2	3.0	17.6
1988 03 30	12 27.54	+02 13.5					
1988 04 09	12 19.55	+03 05.5	2.250	3.223	163.7	5.0	17.7
1988 04 19	12 12.35	+03 48.2					
1988 04 29	12 06.57	+04 18.4	2.361	3.209	141.2	11.3	18.0
1988 05 09	12 02.60	+04 34.5					
1988 05 19	12 00.63	+04 36.1	2.557	3.192	120.5	15.8	18.3
1988 05 29	12 00.69	+04 24.0					
1988 06 08	12 02.67	+03 59.4	2.801	3.173	102.1	18.2	18.6

1985 PL a,e,i = 2.57, 0.22, 13 Elements MPC 10152

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 48.64	-13 59.3	3.127	3.139	81.7	18.1	19.2
1988 01 10	12 54.31	-15 18.8					
1988 01 20	12 58.37	-16 32.2	2.828	3.131	98.6	18.1	19.0
1988 01 30	13 00.53	-17 38.0					
1988 02 09	13 00.58	-18 34.3	2.543	3.120	117.2	16.3	18.7
1988 02 19	12 58.33	-19 18.9					
1988 02 29	12 53.74	-19 49.0	2.305	3.106	137.3	12.5	18.3
1988 03 10	12 47.01	-20 02.5					
1988 03 20	12 38.55	-19 57.6	2.148	3.090	157.2	7.2	18.0
1988 03 30	12 29.10	-19 34.8					
1988 04 09	12 19.54	-18 56.7	2.099	3.072	163.2	5.4	17.8
1988 04 19	12 10.79	-18 08.0					
1988 04 29	12 03.63	-17 15.2	2.162	3.051	146.2	10.6	18.1
1988 05 09	11 58.57	-16 24.4					
1988 05 19	11 55.84	-15 40.6	2.316	3.027	126.3	15.6	18.4
1988 05 29	11 55.49	-15 07.4					
1988 06 08	11 57.38	-14 46.7	2.528	3.001	108.0	18.8	18.6

1985 KC a,e,i = 2.20, 0.03, 6 Elements MPC 10042

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1987 12 31	12 33.54	-03 32.5	2.025	2.237	89.1	26.1	18.8
1988 01 10	12 43.22	-04 56.7					
1988 01 20	12 51.01	-06 11.4	1.772	2.231	104.5	25.3	18.5
1988 01 30	12 56.51	-07 14.8					
1988 02 09	12 59.34	-08 05.4	1.537	2.225	122.1	22.1	18.1
1988 02 19	12 59.14	-08 40.9					
1988 02 29	12 55.70	-08 59.6	1.347	2.218	142.7	15.7	17.6
1988 03 10	12 49.15	-09 00.5					
1988 03 20	12 40.04	-08 44.2	1.232	2.211	165.9	6.3	17.1
1988 03 30	12 29.46	-08 14.0					
1988 04 09	12 18.86	-07 36.3	1.216	2.204	167.5	5.7	17.0
1988 04 19	12 09.65	-06 58.6					
1988 04 29	12 02.94	-06 28.5	1.298	2.197	144.5	15.4	17.5
1988 05 09	11 59.32	-06 11.2					
1988 05 19	11 58.92	-06 09.4	1.454	2.190	124.3	22.4	18.0
1988 05 29	12 01.59	-06 23.8					
1988 06 08	12 06.97	-06 53.6	1.653	2.183	107.4	26.3	18.3

1982 OK a,e,i = 2.24, 0.21, 4 Elements MPC 10033

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	01 20	12 55.05	-03 24.6	2.151	2.581	104.6	21.6	19.1
1988	01 30	12 59.64	-03 31.7					
1988	02 09	13 01.92	-03 22.4	1.872	2.551	123.3	18.9	18.7
1988	02 19	13 01.61	-02 55.0					
1988	02 29	12 58.54	-02 09.5	1.644	2.518	144.6	13.2	18.3
1988	03 10	12 52.81	-01 07.8					
1988	03 20	12 44.83	+00 06.1	1.499	2.482	167.9	4.8	17.7
1988	03 30	12 35.44	+01 24.9					
1988	04 09	12 25.76	+02 39.9	1.461	2.443	165.2	6.0	17.7
1988	04 19	12 16.95	+03 43.0					
1988	04 29	12 10.05	+04 27.7	1.528	2.402	141.9	15.0	18.1
1988	05 09	12 05.69	+04 51.2					
1988	05 19	12 04.14	+04 53.4	1.670	2.359	121.2	21.5	18.4
1988	05 29	12 05.41	+04 35.3					
1988	06 08	12 09.29	+03 59.7	1.854	2.313	103.6	25.2	18.7
1988	06 18	12 15.50	+03 08.7					
1988	06 28	12 23.77	+02 04.7	2.050	2.266	88.6	26.6	18.9

1981 JX1 a,e,i = 2.35, 0.02, 4 Elements MPC 11618

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	01 20	12 55.44	-02 10.5	1.888	2.344	105.0	23.9	18.7
1988	01 30	13 00.95	-02 42.2					
1988	02 09	13 03.93	-02 59.2	1.651	2.340	123.0	20.7	18.3
1988	02 19	13 04.05	-03 00.4					
1988	02 29	13 01.16	-02 45.9	1.462	2.336	143.8	14.5	17.9
1988	03 10	12 55.38	-02 17.5					
1988	03 20	12 47.23	-01 38.5	1.350	2.332	167.2	5.4	17.4
1988	03 30	12 37.67	-00 55.2					
1988	04 09	12 27.95	-00 14.8	1.340	2.328	167.4	5.4	17.4
1988	04 19	12 19.33	+00 16.2					
1988	04 29	12 12.83	+00 32.4	1.431	2.324	144.3	14.6	17.8
1988	05 09	12 09.04	+00 31.8					
1988	05 19	12 08.13	+00 14.0	1.598	2.321	124.1	21.2	18.3
1988	05 29	12 10.03	-00 20.0					
1988	06 08	12 14.47	-01 08.2	1.810	2.318	106.9	24.8	18.6
1988	06 18	12 21.13	-02 08.6					
1988	06 28	12 29.72	-03 19.3	2.043	2.316	92.1	26.0	18.9

1981 EE37 a,e,i = 2.28, 0.18, 5 Elements MPC 9752

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	V
1988	01 20	13 02.08	-04 14.3	2.271	2.665	102.7	21.1	18.5
1988	01 30	13 05.96	-04 41.5					
1988	02 09	13 07.51	-04 55.3	2.000	2.652	121.5	18.5	18.2
1988	02 19	13 06.46	-04 54.9					
1988	02 29	13 02.69	-04 39.7	1.777	2.635	142.8	13.1	17.7
1988	03 10	12 56.32	-04 10.8					
1988	03 20	12 47.80	-03 30.7	1.637	2.616	166.6	5.1	17.2
1988	03 30	12 37.93	-02 44.0					
1988	04 09	12 27.81	-01 57.1	1.605	2.594	168.3	4.5	17.1
1988	04 19	12 18.52	-01 16.0					
1988	04 29	12 11.06	-00 46.5	1.682	2.569	144.5	13.2	17.6
1988	05 09	12 06.01	-00 31.5					
1988	05 19	12 03.64	-00 32.5	1.841	2.542	123.3	19.4	17.9
1988	05 29	12 03.96	-00 49.3					
1988	06 08	12 06.76	-01 20.7	2.048	2.512	105.2	22.9	18.2
1988	06 18	12 11.81	-02 05.1					
1988	06 28	12 18.82	-03 01.0	2.271	2.480	89.5	24.2	18.4