

---

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

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

Telephone 617-495-7244/7440/7444 (for emergency use only)

TWX 710-320-6842 ASTROGRAM CAM EASYLINK 62794505

MARSDEN@CFA.BITNET or .SPAN

BRIAN@CFAPS1.SPAN

GARETH@CFAPS1.SPAN

Brian G. Marsden, Director

Gareth V. Williams, Associate Director

---

### EDITORIAL

Contributors of perturbed orbital elements are advised that use of the Epoch 1994 Feb. 17.0 TT (rather than 1993 Aug. 1.0 TT) will become effective *following* the 1993 Sept. 30 batch of *MPCs*.

Regular subscribers to the *MPCs* will notice a substantial change in format from previous batches. Starting with this current batch, the *MPCs* will be computer typeset. In addition to saving space (the two-column format allows almost twice as much material to be fitted on to a single page), use can be made of **bold** and *italic* text for emphasis, and diacritical marks may now be easily inserted. Contributors of observations and orbital elements should note that there is no change in the format in which material should be submitted to the Minor Planet Center: this format is described on *MPC* 18847-18850.

Although a typesetting system is now being used to prepare the *MPCs*, there are some conventions from the old style that will continue to be used, and this seems a good opportunity to explain these conventions.

Observations are intended to be in the FK<sub>5</sub>/J2000.0 system, with the right ascension  $\alpha$  given in hours, minutes and seconds of time and the declination  $\delta$  in degrees, minutes and seconds of arc. Magnitudes of minor planets are B (photographic) unless otherwise stated (V = visual, R = red, etc.), and magnitudes of comets are T (total) =  $m_1$  or N (nuclear) =  $m_2$ . Observations are topocentric using the observatory codes tabulated with the positions of the observatories on *MPC* 22434-22439 (except that code 500 indicates an observation reduced to the geocenter). Although not shown that way in the *MPCs*, observers are requested to indicate (in column 15 of the usual format) whether a position was obtained micrometrically (M), using a transit instrument (T) or a CCD (C), the default being photographic, but if the position is simply being rotated from one determined initially according to the 1950.0 (or other) equinox, this should be denoted with a letter A (overriding M, T or C).

Orbital elements are also in the FK<sub>5</sub>/J2000.0 system, with  $\omega$  = argument of perihelion,  $\Omega$  = longitude of ascending node,  $i$  = inclination being in degrees and referred to the ecliptic. The orbital eccentricity, semimajor axis (in astronomical units), mean daily motion (in degrees) and revolution period (in years) are denoted by  $e$ ,  $a$ ,  $n$  and  $P$ , respectively. Equatorial components may also be given of the unit vectors **P** and **Q** from the sun to the perihelion and to the point in the orbit 90° ahead of perihelion. For comets the perihelion time  $T$  (in terrestrial time TT), perihelion distance  $q$  (in astronomical units) and reciprocal  $z$  of the semimajor axis (in reciprocal astronomical units, with mean error) are also given. For minor planets the mean anomaly  $M$  (in degrees) at the stated Epoch is given, as are the absolute visual magnitude  $H$  and magnitude slope factor  $G$  (0.15 unless otherwise stated). Low-precision minor-planet orbits (those for unusual objects being in bold face) also show the arclength in days and perhaps a note (D indicating a double designation, E

that  $e$  was assumed and F both), followed by an initial indicating the orbit computer. New orbits for already-numbered minor planets indicate the number of observations and the number of different oppositions utilized (with the timespan) and the root-mean-square (rms) residual (in seconds of arc); codes (M-N) or (M-P) indicate that perturbations by the planets Mercury-Neptune (generally with the earth considered separate from the moon) or Mercury-Pluto were considered; M-C allows replacement of Pluto by Ceres, and M-V indicates that the effects of Vesta (and probably Pallas) were also considered. For minor planets being newly numbered and cases of multiple-opposition linkages the (O-C) residuals of the individual observations are given (with the sign following the value); dates are condensed into the last two figures of the year, the month and the day; and the observatory codes are shown. Notes X and Y mean that the observations are approximate or semi-accurate, respectively, and observations with residuals in parentheses were excluded from the orbit solution. If the previous result gave an ephemeris good to better than 10 minutes of arc and no further identifications have been found (or discarded), multiple-opposition or long-arc single-opposition orbits are listed more concisely at the end of the orbit section.

Ephemerides give J2000.0 positions (right ascension in hours and minutes of time, declination in degrees and minutes of arc) for 0 hours TT on the dates stated.  $\Delta$  and  $r$  denote geocentric and heliocentric distances (in astronomical units),  $\epsilon$  and  $\phi$  the solar elongation and the phase angle (in degrees); in some instances these last two columns will be replaced by the Variation (in  $\alpha$  and  $\delta$ , minutes of time and arc) corresponding to a change of +1 day in  $T$ . For most objects the ephemerides are replaced by single-line entries giving the position at opposition, arranged in order of opposition date; the daily motion  $\dot{\alpha}$ ,  $\dot{\delta}$  is in minutes of time and arc;  $\phi_{\text{MIN}}$  gives the minimum phase angle (in degrees) and the date (in the nearest month) that minimum is achieved; reference is given to the *MPC* containing the orbital elements.

Readers will note the large number of new names (227) announced this month. In view of the volume of this material, which required *substantial* editing of what was submitted, it seems desirable to adopt a common format for the submission of names. The Minor Planet Center has prepared a document describing this format, including information on how diacritical marks should be indicated. Proposers of names are encouraged to obtain this document (via e-mail and/or regular mail) and are strongly urged to submit all future proposals in this format. Submission of names via e-mail is preferred, although submission on MS-DOS diskette will be acceptable if e-mail is unavailable. The processing of proposals not submitted in the correct format may be substantially delayed.

### ERRATA

*MPC* Line  
22295 - 9

For A. Żytkow read A. Żytkow and M. J. Irwin

22391 19 Two observations from code 293 on 930419 were inadvertently omitted from the residual block. The observations are represented as follows: (0.1-, 1.4-) and (0.3+, 0.2+).

## OBSERVATORY CODES

The following listing is a revision of that on *MPC* 19348–19356. The longitudes  $\lambda$  are measured in degrees eastward from Greenwich, and the parallax constants  $\rho \cos \phi'$  and  $\rho \sin \phi'$  are the product of the geocentric distance (in earth equatorial radii) and the cosine and sine, respectively, of the geocentric latitude. The Minor Planet Center would be pleased to learn of any errors in this list.

Obs.	$\lambda$	$\rho \cos \phi'$	$\rho \sin \phi'$	
000	0.0000	0.62411	+0.77873	Greenwich
001	0.15	0.629	+0.774	Crowborough (Roberts)
002	0.62	0.622	+0.781	Rayleigh (Van Looy)
003	3.90	0.725	+0.687	Montpellier
004	1.4625	0.72520	+0.68627	Toulouse
005	2.2313	0.65989	+0.74887	Meudon
006	2.1258	0.75107	+0.65811	Fabra Observatory, Barcelona
007	2.3371	0.65947	+0.74922	Paris
008	3.0355	0.80172	+0.59578	Algiers
009	7.4417	0.6838	+0.7272	Berne-Uecht
010	6.9267	0.72368	+0.68811	Caussols
011	8.80	0.680	+0.732	Wetzikon (Locher)
012	4.3582	0.63333	+0.77131	Uccle
013	4.4840	0.61481	+0.78604	Leiden
014	5.3940	0.72888	+0.68237	Marseilles
015	5.1292	0.61576	+0.78529	Utrecht
016	5.9893	0.68006	+0.73076	Besançon
017	6.8496	0.64193	+0.76431	Hoher List
018	6.7612	0.62779	+0.77578	Düsseldorf-Bilk
019	6.9575	0.68331	+0.72779	Neuchâtel
020	7.3004	0.72391	+0.68767	Nice
021	8.3855	0.65701	+0.75138	Karlsruhe
022	7.7748	0.70790	+0.70409	Pino Torinese
023	8.26	0.643	+0.762	Wiesbaden
024	8.7216	0.65211	+0.75570	Heidelberg-Königstuhl
025	9.1975	0.66019	+0.74865	Stuttgart
026	7.4648	0.68489	+0.72640	Berne-Zimmerwald
027	9.1912	0.70254	+0.70929	Milan
028	9.9363	0.64686	+0.76009	Würzburg
029	10.2406	0.59640	+0.80000	Hamburg-Bergedorf
030	11.2554	0.72350	+0.68806	Arcetri Observatory, Florence
031	11.1925	0.63905	+0.76672	Sonneberg
032	11.5842	0.63161	+0.77272	Jena
033	11.7125	0.63089	+0.77334	Karl Schwarzschild Observatory, Tautenburg
034	12.4523	0.74519	+0.66466	Monte Mario Observatory, Rome
035	12.5779	0.56501	+0.82232	Copenhagen
036	12.6514	0.74726	+0.66241	Castel Gandolfo
037	13.7333	0.73660	+0.67416	Collurania Observatory, Teramo
038	13.7704	0.70033	+0.71144	Trieste
039	13.1874	0.56485	+0.82243	Lund
040	13.7298	0.63019	+0.77387	Lohrmann Institute, Dresden
041	11.3808	0.67986	+0.73101	Innsbrück
042	13.0661	0.61169	+0.78847	Potsdam
043	11.5286	0.69770	+0.71422	Asiago Astrophysical Observatory, Padua
044	14.2559	0.75738	+0.65082	Capodimonte Observatory, Naples
045	16.3390	0.66739	+0.74227	Vienna (since 1879)
046	14.29	0.659	+0.748	Kleť Observatory, České Budějovice
047	16.8782	0.61146	+0.78864	Poznań
048	15.83	0.640	+0.765	Hradec Kralove
049	17.6067	0.5088	+0.8580	Uppsala-Kvistaberg
050	18.0582	0.51118	+0.85660	Stockholm (before 1931)
051	18.4766	0.83055	-0.55508	Cape
052	18.3083	0.51224	+0.85597	Stockholm-Saltsjöbaden
053	18.9642	0.67688	+0.73373	Konkoly Observatory, Budapest (since 1934)
054	11.6654	0.56595	+0.82169	Brorfelde
055	19.9596	0.64321	+0.76316	Cracow
056	20.2450	0.65501	+0.75346	Skalná Pleso
057	20.5133	0.71074	+0.70116	Belgrade
058	20.4957	0.57895	+0.81263	Kaliningrad
059	20.2201	0.65500	+0.75364	Lomnický Štít
060	21.4200	0.61572	+0.78535	Warsaw-Ostrowik
061	22.30	0.661	+0.746	Uzhgorod
062	22.2293	0.49440	+0.86632	Turku
063	22.4450	0.49496	+0.86601	Turku-Tuorla
064	22.75	0.495	+0.865	Turku-Kevola
065	12.63	0.673	+0.739	Traunstein (Bendel)
066	23.7169	0.78932	+0.61195	Athens
067	24.0297	0.64632	+0.76058	Lvov University Observatory
068	24.0142	0.64627	+0.76062	Lvov Polytechnic Institute
069	24.41	0.549	+0.833	Baldone, near Riga
070	25.2865	0.57940	+0.81233	Vilnius (before 1939)
071	24.72	0.748	+0.661	Smolyan
072	7.17	0.629	+0.774	Scheuren Observatory (Gussow)
073	26.0967	0.71549	+0.69630	Bucharest
074	26.4058	0.87518	-0.48263	Boyden Observatory, Bloemfontein
075	26.7216	0.52557	+0.84791	Tartu
076	27.8768	0.90127	-0.43225	Johannesburg-Hartbeespoort
077	28.0292	0.89819	-0.43876	Yale-Columbia Station, Johannesburg
078	28.0750	0.89824	-0.43868	Johannesburg
079	28.2288	0.90120	-0.43251	Radcliffe Observatory, Pretoria
080	28.9667	0.75566	+0.65278	Istanbul
081	27.8768	0.90127	-0.43225	Leiden Station, Johannesburg
082	15.63	0.668	+0.741	St. Polten (Klauser)
083	30.50	0.640	+0.767	Golosseevo-Kiev
084	30.3274	0.50471	+0.86041	Pulkovo
085	30.5023	0.63800	+0.76749	Kiev
086	30.7582	0.68987	+0.72152	Odessa
087	31.3411	0.86799	+0.49495	Helwan
088	31.82	0.868	+0.500	Kottomia
089	31.9747	0.68359	+0.72743	Nikolaev
090	8.25	0.645	+0.762	Mainz (Riemann, Landgraf)

091	4.2090	0.70364	+0.70827	St. Étienne (Chanal)	303	289.1329	0.98889	+0.15190	Mérida
092	18.5546	0.60177	+0.79601	Torun-Piwnice	304	289.2980	0.87559	-0.48217	Las Campanas Observatory
093	20.3647	0.3537	+0.9322	Skibotn	305	109.53	0.950	+0.310	Purple Mountain, Hainan Island station
094	33.9974	0.71565	+0.69620	Crimea-Simeis	312	112.33	0.957	+0.288	Tsingtao field station, Xisha Islands
095	34.02	0.711	+0.701	Crimea-Nauchnij	323	116.1350	0.84882	-0.52703	Perth Observatory, Bickley
096	9.4283	0.69967	+0.71215	Merate	324	116.3277	0.76598	+0.64072	Peking Observatory, Shaho Station
097	34.7625	0.86165	+0.50608	Wise Observatory, Mitzpeh Ramon	327	117.5750	0.76278	+0.64470	Peking Observatory, Xinglong Station
098	11.5694	0.69774	+0.71395	Cima Ekar	330	118.8209	0.84828	+0.52788	Purple Mountain Observatory, Nanking
099	25.53	0.483	+0.873	Lahti (Salmi)	334	120.3196	0.80925	+0.58552	Tsingtao
100	24.13	0.462	+0.884	Ahtari (Kapanen)	337	121.1865	0.85708	+0.51349	Zô-Sé
101	36.2322	0.64403	+0.76246	Kharkov	360	132.9442	0.83314	+0.55138	Kuma Kogen (Nakamura)
102	36.59	0.565	+0.823	Zvenigorod	361	134.8956	0.82652	+0.56102	Sumoto (Nakano)
103	14.47	0.694	+0.715	Ljubljana	362	140.6550	0.73673	+0.67398	Ray Observatory (Saitoh)
104	10.8042	0.71985	+0.69202	San Marcello Pistoiese (Tesi)	363	130.7703	0.83416	+0.54967	Yamada (Otsubo)
105	37.5706	0.56403	+0.82302	Moscow	364	130.5747	0.85213	+0.52164	YCPM Kagoshima Station (Mukai)
106	14.0736	0.69661	+0.71520	Crni crh (Mikuz)	365	135.9579	0.82597	+0.56196	Uto Observatory
107	11.0030	0.70998	+0.70186	Cavezzo (Calanca)	366	138.3003	0.81147	+0.58267	Miyasaka Observatory
108	11.0278	0.72367	+0.68784	Montelupo (Tombelli)	367	133.1670	0.81504	+0.57747	Yatsuka (Abe)
110	39.15	0.544	+0.835	Rostov	368	138.8117	0.81213	+0.58191	Ochiai (Hioki)
114	41.44	0.725	+0.687	Engelhardt Observatory, Zelenchukskaya Station	369	139.1500	0.8101	+0.5844	Chichibu (Sato)
115	41.4417	0.72492	+0.68700	Zelenchukskaya	370	133.5273	0.83424	+0.54956	Kochi (Seki)
119	42.8253	0.74729	+0.66264	Abastuman	371	133.5965	0.82433	+0.56431	Tokyo-Okayama
123	44.2917	0.76352	+0.64398	Byurakan	372	133.8276	0.83450	+0.54920	Geisei (Seki)
125	44.90	0.739	+0.671	Tbilisi	373	135.3397	0.82866	+0.55797	Oishi (Tsumura)
128	46.10	0.626	+0.779	Saratov	374	134.7196	0.81915	+0.57174	Minami-Oda Observatory (Sugano)
129	45.88	0.776	+0.629	Ordubad	375	134.8708	0.8206	+0.5697	Uzurano (Einaga)
135	49.1210	0.56353	+0.82334	Kasan	376	139.0392	0.81321	+0.58022	Uenohara (Kawasato)
136	48.8156	0.56282	+0.82383	Engelhardt Observatory, Kasan	377	135.7933	0.82014	+0.57031	Kwasan Observatory, Kyoto
168	59.50	0.546	+0.835	Kourovskaya	378	136.0142	0.82437	+0.56426	Murou (Kumamori)
186	66.8821	0.77679	+0.62781	Kitab	379	137.7708	0.8228	+0.5664	Hamamatsu (Wakuta)
188	66.88	0.781	+0.622	Shokin Majdanak	380	137.0349	0.82190	+0.56772	Ishiki (Kojima)
190	68.68	0.783	+0.619	Gissar	381	137.6283	0.81220	+0.58173	Tokyo-Kiso
191	68.7811	0.78306	+0.62006	Dushanbe	382	137.5553	0.80915	+0.58639	Tokyo-Norikura
192	69.2936	0.75213	+0.65692	Tashkent	383	137.8959	0.80218	+0.59526	Chirorin (Sei)
193	69.22	0.786	+0.617	Sanglok	384	138.1792	0.8219	+0.5678	Shimada
210	76.9573	0.73042	+0.68104	Alma-Ata	385	138.4680	0.82039	+0.56997	Nihondaira Observatory (Urata)
217	77.88	0.729	+0.683	Assah	386	138.3217	0.81121	+0.58309	Yatsugatake-Kobuchizawa
218	78.4541	0.95444	+0.29768	Hyderabad	387	139.1944	0.81000	+0.58469	Tokyo-Dodaira
219	78.7283	0.95618	+0.29216	Japal-Rangapur	388	139.5421	0.81330	+0.57991	Tokyo-Mitaka
220	78.83	0.976	+0.216	Kavalur	389	139.7447	0.81347	+0.57965	Tokyo (before 1938)
223	80.2464	0.97427	+0.22465	Madras	390	139.8725	0.80425	+0.59234	Utsunomiya (Kurosaki)
236	84.9465	0.55370	+0.82995	Tomsk	391	140.7824	0.78621	+0.61592	Sendai Observatory, Ayashi Station
286	102.79	0.908	+0.420	Yunnan Observatory	392	141.3667	0.73355	+0.67741	JCPM Sapporo Station
292	285.1058	0.76630	+0.64033	Burlington, New Jersey (Handley)	393	140.1292	0.8090	+0.5858	JCPM Sakura Station
293	285.5899	0.76936	+0.63668	Burlington remote site (Handley)	394	142.3208	0.70692	+0.70493	JCPM Hamatonbetsu Station
295	283.0000	0.7789	+0.6251	Catholic University Observatory, Washington	395	142.3583	0.7224	+0.6891	Tokyo-Asahikawa
296	286.2515	0.7365	+0.6742	Dudley Observatory (after 1893)	396	142.4208	0.7236	+0.6879	Asahikawa (Tsuchiya)
297	286.83	0.720	+0.692	Middlebury	397	141.4761	0.73210	+0.67892	Sapporo Science Center
298	287.3408	0.74943	+0.65988	Van Vleck Observatory	398	139.1080	0.80870	+0.58630	Nagatoro (Kawasato)
299	107.6160	0.99316	-0.11808	Bosscha Observatory, Lembang	399	144.5900	0.73158	+0.67950	Kushiro (Ueda)
301	288.8467	0.70279	+0.70926	Mont Megantic	400	143.7827	0.72344	+0.68811	Kitami (Yanai)
302	288.88	0.990	+0.150	University of the Andes station	401	139.4208	0.8088	+0.5861	Oosato (Yamagishi)

402	136.3078	0.81800	+0.57335	Dynic Astronomical Observatory	510	8.03	0.631	+0.772	Siegen
403	137.0556	0.81593	+0.57625	Kani (Mizuno)	511	5.71	0.722	+0.690	Haute Provence
404	140.9292	0.7909	+0.6099	Yamamoto (Otomo)	512	4.49	0.615	+0.786	Leiden (before 1860)
405	139.3292	0.8069	+0.5887	Kamihoriguchi (Shimoda)	513	4.7855	0.69971	+0.71209	Lyons
406	141.8233	0.72946	+0.68174	Bibai (Saito)	514	8.43	0.652	+0.755	Mundenheim (1907–1913)
407	140.3099	0.78426	+0.61837	Kahoku (Okazaki)	515	7.48	0.650	+0.758	Volkssternwarte Dhaun, near Kirn
408	138.1747	0.81121	+0.58328	Nyukasa (Hirasawa, Suzuki)	516	9.9733	0.59539	+0.80075	Hamburg (before 1909)
409	139.3680	0.81236	+0.58124	Mizuho (Hioki)	517	6.1525	0.69340	+0.71823	Geneva
410	134.8910	0.81883	+0.57222	Sengamine (Ito)	518	9.9727	0.59545	+0.80071	Marine Observatory, Hamburg
411	139.4170	0.80739	+0.58805	Oizumi (Kobayashi)	519	8.29	0.626	+0.776	Meschede (Hempel)
412	140.5991	0.80011	+0.59803	Iwaki (Tanaka)	520	7.0966	0.63427	+0.77053	Bonn
413	149.0661	0.85560	-0.51626	Siding Spring Observatory	521	10.8899	0.64562	+0.76116	Bamberg
414	149.0077	0.81694	-0.57499	Mount Stromlo	522	7.7677	0.66279	+0.74633	Strasbourg
415	149.0624	0.81613	-0.57608	Kambah, near Canberra (Herald)	523	8.65	0.643	+0.765	Frankfurt
416	149.13	0.816	-0.575	Barton, near Canberra (Herald)	524	8.4605	0.6509	+0.7566	Mannheim
418	150.94	0.858	-0.511	Tamworth (Garrard)	525	8.7708	0.6331	+0.7715	Marburg
419	150.83	0.833	-0.551	Windsor (Tebbutt)	526	10.1477	0.58426	+0.80886	Kiel
420	151.2050	0.83126	-0.55404	Sydney	527	9.9431	0.5955	+0.8007	Altona
425	152.93	0.896	-0.443	Taylor Range Observatory, Brisbane	528	9.9426	0.62340	+0.77931	Göttingen
474	170.4650	0.72077	-0.69108	Mount John Observatory, Lake Tekapo	529	10.7229	0.50259	+0.86163	Christiania
478	3.0896	0.72548	+0.68597	Lamalou-les-Bains (Azema)	530	10.6898	0.5911	+0.8039	Lübeck
479	6.0505	0.73020	+0.68096	Sollies-Pont (Candela)	531	12.4797	0.74545	+0.66434	Collegio Romano, Rome
480	0.77	0.615	+0.786	Cockfield (Mobberley)	532	11.6084	0.66853	+0.74130	Munich
481	7.93	0.596	+0.800	Moorwarfen	533	11.8715	0.70335	+0.70847	Padua
482	357.1854	0.55560	+0.82866	St. Andrews	534	12.3913	0.62606	+0.77719	Leipzig (since 1861)
483	173.80	0.748	-0.661	Carter Observatory, Black Birch Station	535	13.3578	0.78782	+0.61386	Palermo
484	174.75	0.753	-0.657	Happy Valley, Wellington (Gilmore)	536	13.1062	0.61135	+0.78873	Berlin-Babelsberg
485	174.7654	0.75256	-0.65635	Carter Observatory, Wellington	537	13.3642	0.6097	+0.7900	Urania Observatory, Berlin
486	175.47	0.765	-0.643	Palmerston North (Munford)	538	13.8461	0.70998	+0.70187	Pola
487	355.45	0.568	+0.821	Macnairston Observatory	539	14.1316	0.66968	+0.74024	Kremsmünster
488	358.37	0.575	+0.816	Newcastle-upon-Tyne (D. S. Brown)	540	14.2750	0.6647	+0.7448	Linz
489	359.87	0.612	+0.788	Hemingford Abbots (Young)	541	14.3953	0.64306	+0.76331	Prague
490	358.00	0.633	+0.772	Wimborne Minster (Swan)	542	13.04	0.607	+0.790	Falkensee (Gressmann)
491	356.9000	0.76131	+0.64644	Centro Astronómico de Yebes	543	11.66	0.565	+0.821	Leipzig (before 1861)
492	358.47	0.605	+0.795	Mickleover (Baguley)	544	13.4250	0.61040	+0.78945	Wilhelm Foerster Observatory, Berlin
493	357.4637	0.79747	+0.60190	Estacion Astronómica de Calar Alto	545	16.3817	0.66767	+0.74200	Vienna (before 1879)
494	357.8361	0.61126	+0.78879	Stakenbridge (Manning)	546	16.3549	0.66760	+0.74207	Oppolzer Observatory, Vienna
495	357.66	0.598	+0.800	Altrincham (Scott)	547	17.0363	0.62904	+0.77479	Breslau
496	358.69	0.631	+0.774	Bishopstoke (Arbour)	548	13.3950	0.60999	+0.78976	Berlin (1835–1913)
497	359.30	0.626	+0.776	Ascot-Loudwater (Armstrong)	549	17.6257	0.50341	+0.86116	Uppsala
498	359.26	0.612	+0.788	Northampton (Hurst)	550	11.4196	0.5943	+0.8015	Schwerin
499	359.79	0.626	+0.776	Cheam (Birtwhistle)	551	18.1895	0.67201	+0.73808	Hurbanovo, formerly O'Gyalla
500	0.0000	0.00000	0.00000	Geocentric	552	11.3418	0.71485	+0.69700	Osservatorio S. Vittore, Bologna
501	0.3475	0.63237	+0.77208	Herstmonceux	553	18.9938	0.64002	+0.76574	Chorzów
502	0.85	0.617	+0.783	Colchester (Hendrie)	554	8.40	0.638	+0.769	Burgsolms Observatory, Wetzlar
503	0.0948	0.61400	+0.78667	Cambridge	555	19.83	0.643	+0.762	Cracow-Fort Skala
504	4.44	0.685	+0.725	Le Creusot (Merlin)	556	11.26	0.675	+0.734	Reintal, near Munich (Seiler)
505	4.56	0.622	+0.781	Simon Stevin	557	14.7837	0.64530	+0.76148	Ondřejov
506	9.96	0.598	+0.797	Bendestorf (Ressel)	558	21.0303	0.61396	+0.78672	Warsaw
507	5.22	0.617	+0.783	Nyenheim (Son)	559	14.98	0.793	+0.607	Serra La Nave
508	5.29	0.617	+0.783	Zeist (Son)	560	10.93	0.704	+0.708	Madonna di Dossobuono (Luciano)
509	5.87	0.732	+0.680	La Seyne sur Mer	561	20.02	0.671	+0.739	Piszkéstető

562	15.92	0.668	+0.741	Figl Observatory, Vienna	670	240.9558	0.82775	+0.55922	Camarillo (Rogers)
563	13.60	0.671	+0.739	Seewalchen (Bressler)	671	242.00	0.828	+0.561	Stony Ridge
564	11.19	0.671	+0.741	Herrsching (Stättmayer).	672	241.9403	0.82802	+0.55930	Mount Wilson
565	10.14	0.704	+0.708	Brescia	673	242.3191	0.82647	+0.56172	Table Mountain Observatory, Wrightwood
566	203.7439	0.93625	+0.35152	Haleakala	674	242.39	0.826	+0.563	Ford Observatory, Wrightwood
567	12.71	0.699	+0.715	Chions	675	243.1360	0.83634	+0.54686	Palomar Mountain
568	204.5278	0.94171	+0.33725	Mauna Kea	679	244.5367	0.85792	+0.51292	San Pedro Martir
569	24.9587	0.49891	+0.86375	Helsinki	680	244.78	0.833	+0.554	Los Angeles (Hutson)
570	25.2990	0.5794	+0.8123	Vilnius (since 1939)	685	247.84	0.816	+0.575	Williams, AZ (Roques)
571	10.63	0.704	+0.708	Cavriana	686	249.2092	0.84512	+0.53359	U. of Minn. Infrared Obs., Mt. Lemmon
572	6.89	0.631	+0.772	Cologne	687	248.3473	0.81848	+0.57318	Northern Arizona University, Flagstaff
573	9.6612	0.6145	+0.7862	Eldagsen (Bonk)	688	248.4645	0.81938	+0.57193	Lowell Observatory, Mesa Station
574	10.27	0.704	+0.708	Gottolengo (Mattarozzi)	689	248.2413	0.81844	+0.57329	U.S. Naval Observatory, Flagstaff
575	6.808	0.68219	+0.72894	La Chaux de Fonds (Behrend)	690	248.3142	0.81825	+0.57353	Lowell Observatory, Flagstaff
576	0.38	0.631	+0.774	Burwash (Young)	691	248.4006	0.84946	+0.52649	Steward Observatory, Kitt Peak
577	7.50	0.678	+0.734	Metzerlen Observatory	692	249.0513	0.84679	+0.53036	Steward Observatory, Tucson
578	27.99	0.898	-0.439	Linden Observatory (Hers)	693	249.2680	0.84532	+0.53321	Catalina Station, Tucson
579	8.85	0.711	+0.701	Novi Ligure (Balbi)	694	248.9943	0.84700	+0.53009	Tumamoc Hill, Tucson
580	15.50	0.683	+0.729	Graz (Ornig)	695	248.4053	0.84950	+0.52643	Kitt Peak
581	22.80	0.830	-0.556	Sedgefield (Hers)	696	249.1154	0.85205	+0.52249	Whipple Observatory (Mt. Hopkins)
582	1.22	0.617	+0.783	Orwell Park	697	248.3842	0.84956	+0.52629	Kitt Peak (McGraw-Hill)
583	30.27	0.692	+0.720	Odessa-Mayaki	698	249.28	0.844	+0.532	Mt. Bigelow
584	30.2946	0.50213	+0.86189	Leningrad	702	252.8117	0.8305	+0.5561	Joint Obs. for cometary research, Socorro
585	30.53	0.638	+0.767	Kiev comet station	704	253.34	0.833	+0.554	Lincoln Laboratory ETS, New Mexico
586	0.1423	0.73358	+0.67799	Pic du Midi	707	254.56	0.774	+0.633	Chamberlin field station (Everhart)
587	9.2302	0.69744	+0.71448	Sormano	708	255.0475	0.77092	+0.63520	Chamberlin Observatory, Denver
588	11.25	0.715	+0.697	Eremo di Tizzano	711	255.9785	0.86114	+0.50731	McDonald Observatory, Fort Davis
589	12.64	0.739	+0.673	Santa Lucia Stroncone	724	260.8053	0.94388	+0.33026	National Observatory, Tacubaya
590	7.46	0.678	+0.734	Metzerlen	741	266.8503	0.71493	+0.69692	Goodsell Observatory, Northfield
591	9.6258	0.6099	+0.7898	Resse Observatory (Ehring)	742	266.3138	0.74900	+0.66041	Drake University, Des Moines
592	7.01	0.629	+0.774	Sohlingen (Koch)	743	266.7633	0.70857	+0.70328	University of Minnesota, Minneapolis
593	11.17	0.739	+0.671	Monte Argentario	753	270.5921	0.73161	+0.67950	Washburn Observatory, Madison
594	13.2033	0.74497	+0.66529	Monte Autore	754	271.4432	0.73762	+0.67303	Yerkes Observatory, Williams Bay
595	13.53	0.697	+0.715	Farra d'Isonzo	756	272.3257	0.74361	+0.66641	Dearborn Observatory, Evanston
596	12.62	0.744	+0.666	Colleverde di Guidonia	759	273.1947	0.80946	+0.58530	Nashville (Barnard)
597	9.6630	0.6146	+0.7862	Springe (Ehring)	760	273.6048	0.77216	+0.63337	Goethe Link Observatory, Brooklyn
598	11.3333	0.71748	+0.69442	Loiano (Del Zanna)	765	275.5775	0.77669	+0.62784	Cincinnati
599	13.561	0.7392	+0.6713	Astronomical Observatory, Campo Imperatore	766	275.5167	0.73600	+0.67477	Michigan State University Obs., East Lansing
600	11.4708	0.71618	+0.69564	TLC Observatory, Bologna	767	276.2697	0.74102	+0.66930	Ann Arbor
601	13.7275	0.63009	+0.77395	Engelhardt Observatory, Dresden	768	277.08	0.734	+0.675	Dearborn (McEldery)
602	16.3854	0.66764	+0.74203	Urania Observatory, Vienna	769	276.9892	0.76716	+0.63936	McMillin Observatory, Columbus
603	10.1300	0.58622	+0.80745	Bothkamp	771	277.57	0.922	+0.389	Boyer's Observatory, Havana
604	13.4777	0.59631	+0.80007	Archenold Sternwarte, Berlin-Treptow	773	278.4318	0.74966	+0.65966	Warner and Swasey Observatory, Cleveland
605	236.383	0.6656	+0.7438	Sooke (Newton)	774	278.9250	0.74905	+0.66039	Warner and Swasey Nassau Station, Chardon
606	236.3921	0.66580	+0.74367	Victoria (Newton)	775	284.6168	0.76029	+0.64743	Sayre Observatory, South Bethlehem
607	236.6917	0.66435	+0.74493	Climenhaga Observatory, Victoria	776	284.4669	0.73472	+0.67619	Foggy Bottom, Hamilton
608	236.5830	0.66363	+0.74560	Dominion Astrophysical Observatory, Victoria	777	280.6017	0.72454	+0.68695	Toronto
609	237.7379	0.79038	+0.61059	Leuschner Observatory, Berkeley	778	279.9778	0.76172	+0.64582	Allegheny Observatory, Pittsburgh
610	238.3545	0.79619	+0.60335	Lick Observatory, Mount Hamilton	779	280.5779	0.72219	+0.68943	David Dunlap Observatory, Richmond Hill
611	240.0092	0.68448	+0.72663	Wanapum Dam (Pryal)	780	281.4778	0.78868	+0.61280	Leander McCormick Observatory, Charlottesville
612	240.82	0.821	+0.568	San Emidio Peak	781	281.5075	1.00045	-0.00405	Quito
613	240.82	0.826	+0.563	Ojai	782	281.65	0.999	+0.000	Quito (comet astrograph station)

783	282.02	0.783	+0.622	Rixeyville (Chester)	880	316.7771	0.92169	-0.38664	Rio de Janeiro
784	282.2207	0.7413	+0.6689	Alfred University Observatory	881	137.2571	0.81872	+0.57230	Toyota (Suzuki)
785	285.3433	0.76319	+0.64402	Princeton	882	137.3558	0.81842	+0.57281	JCPM Oi Station
786	282.9345	0.77906	+0.62487	U.S. Naval Obs., Washington (since 1893)	883	138.4215	0.81986	+0.57065	Shizuoka
787	282.9494	0.77934	+0.62451	U.S. Naval Obs., Washington (before 1893)	884	138.0792	0.8187	+0.5724	Kawane (Iwahana)
788	284.3667	0.76953	+0.63650	Mount Cuba Observatory, Wilmington	885	138.4667	0.82049	+0.56975	JCPM Yakiimo Station
789	284.5940	0.73188	+0.67922	Litchfield Observatory, Clinton	886	138.9367	0.81836	+0.57280	Mishima (Akiyama)
790	284.2835	0.70343	+0.70840	Dominion Observatory, Ottawa	887	139.3367	0.80745	+0.58798	Ojima (Niijima)
791	284.5236	0.76713	+0.63937	Flower and Cook Observatory, Philadelphia	888	138.9952	0.81885	+0.57217	Gekko (Oshima)
792	288.30	0.753	+0.657	U. of Rhode Island, Quonochontaug	889	140.1427	0.80322	+0.59372	Karasuyama (Inoda)
793	286.2200	0.73660	+0.67407	Dudley Observatory, Albany (before 1893)	890	140.2500	0.8108	+0.5834	JCPM Tone Station
794	278.90	0.748	+0.661	Vassar College Observatory, Poughkeepsie	891	140.8633	0.78606	+0.61609	JCPM Kimachi Station
795	286.0123	0.7589	+0.6491	Rutherford	892	139.4753	0.80852	+0.58650	YGCO Hoshikawa and Nagano Stations
796	286.45	0.755	+0.654	Stamford	893	140.8657	0.78626	+0.61583	Sendai Municipal Observatory
797	287.0751	0.75218	+0.65676	Yale Observatory, New Haven	894	138.4476	0.81113	+0.58321	Kiyosato (Miyasaka).
798	287.0154	0.75093	+0.65822	Yale Observatory, Bethany	895	140.7203	0.78573	+0.61658	Hatamae (Sato)
799	288.8650	0.73896	+0.67150	Winchester (Metcalf)	896	138.3678	0.81132	+0.58292	Astro Village Observatory
800	288.4511	0.96006	-0.28021	Harvard Observatory, Arequipa	897	139.4929	0.80797	+0.58725	YGCO Chiyoda Station
801	288.4408	0.73838	+0.67216	Oak Ridge Observatory	898	138.1883	0.82107	+0.56899	Fujieda (Shiozawa)
802	288.8706	0.73982	+0.67055	Harvard Observatory, Cambridge	899	142.5500	0.7224	+0.6891	Toma (Tsuchiya)
803	288.9167	0.74543	+0.66436	Taunton (Metcalf)	900	135.9865	0.82039	+0.56995	Ohtsu (Ikari)
804	289.3121	0.83421	-0.54976	Santiago-San Bernardo	901	137.0877	0.81664	+0.57525	Tajimi
805	288.97	0.840	-0.542	Santiago-Cerro El Roble	902	132.2208	0.82775	+0.55922	Ootake
806	289.4513	0.83584	-0.54738	Santiago-Cerro Calán	903	134.6610	0.81507	+0.57752	Kannabe Observatory, Albireo Station
807	289.1941	0.86560	-0.49980	Cerro Tololo Observatory, La Serena	904	135.12	0.824	+0.565	Go-Chome (Iba) and Kobe-Suma (Kaihatsu)
808	290.67	0.851	-0.523	El Leoncito	905	135.9246	0.83368	+0.55040	Nachi-Katsuura Observatory
809	289.2704	0.87346	-0.48603	European Southern Observatory, La Silla	906	145.667	0.8113	-0.5837	Cobram (Camilleri)
810	288.5154	0.73712	+0.67352	Wallace Observatory, Westford	907	144.9758	0.79082	-0.61001	Melbourne
811	289.8952	0.75259	+0.65629	Maria Mitchell Observatory, Nantucket	950	342.1176	0.87764	+0.47847	La Palma
812	288.42	0.840	-0.542	Viña del Mar (Liller)	970	7.4292	0.62045	+0.78162	Chelmsford (James)
813	289.3083	0.83533	-0.54805	Santiago-Quinta Normal (1862-1920)	971	350.8140	0.78134	+0.62204	Lisbon
814	288.42	0.746	+0.664	North Scituate (Napier)	972	357.5833	0.54359	+0.83656	Dun Echt
815	289.3479	0.83539	-0.54799	Santiago-Santa Lucia (1849-1861)	973	359.67	0.622	+0.779	Harrow
816	285.7583	0.71645	+0.69542	Rand Observatory (Viscome)	974	8.9220	0.71542	+0.69637	Genoa (Alfano)
820	295.37	0.931	-0.366	Tarija	975	359.98	0.774	+0.633	Valencia
821	295.4533	0.85270	-0.52103	Córdoba-Bosque Alegre	976	358.48	0.612	+0.788	Leamington Spa (Johnstone)
822	295.8035	0.85419	-0.51834	Córdoba	977	351.5483	0.58660	+0.80717	Markree
839	302.0678	0.82097	-0.56906	La Plata	978	358.25	0.584	+0.809	Conder Brow (Greenwood)
863	137.18	0.807	+0.588	Furukawa (Ohshita)	979	358.75	0.629	+0.774	South Wonston (Arbour)
864	130.7533	0.84257	+0.53680	Kumamoto (Miyamoto)	980	357.2200	0.58864	+0.80570	Lancaster (Buczynski)
868	135.1359	0.83066	+0.55492	Hidaka Observatory	981	353.3522	0.58409	+0.80898	Armagh
869	133.4298	0.83480	+0.54870	Tosa (Ike)	982	353.6621	0.59771	+0.79904	Dunsink Observatory, Dublin
870	313.17	0.934	-0.359	Campiñas	983	353.7946	0.80521	+0.59101	San Fernando
871	134.3925	0.82256	+0.56678	Akou (Kawanishi)	984	357.26	0.631	+0.774	Eastfield (Ridley)
872	134.2411	0.82904	+0.55734	Tokushima (Iwamoto)	985	357.53	0.607	+0.790	Telford (McAdam)
873	133.7708	0.8235	+0.5654	Kurashiki Observatory (Honda)	986	358.75	0.624	+0.779	Ascot (Waterfield)
874	314.42	0.924	-0.380	Itajuba	987	355.37	0.586	+0.807	Archallagan Observatory (Soper)
875	139.2353	0.80896	+0.58593	Yorii (Arai, Mori)	988	355.7060	0.56225	+0.82421	Glasgow
876	139.2467	0.80762	+0.58774	Honjo (Mitsuma)	989	357.69	0.600	+0.797	Wilfred Hall Observatory, Preston
877	139.0828	0.81194	+0.58196	Okutama (Hioki)	990	356.3121	0.76260	+0.64487	Madrid
878	136.9142	0.82019	+0.57019	Kagiya (Furuta)	991	356.9278	0.59750	+0.79919	Liverpool (since 1867)
879	137.3535	0.81970	+0.57099	Tokai (Furuta)	992	356.9995	0.5973	+0.7993	Liverpool (before 1867)

993	357.50	0.631	+0.774	Woolston Observatory (Waterfield)
994	359.39	0.629	+0.776	Godalming (Ridley)
995	358.4177	0.57819	+0.81319	Durham
996	358.7483	0.62025	+0.78179	Oxford
997	359.15	0.619	+0.783	Hartwell
998	359.7593	0.62226	+0.78020	London-Mill Hill
999	359.4725	0.71033	+0.70153	Bordeaux-Floirac

## CORRECTED OBSERVATIONS

The following observations correct those previously published.

Object	Date	UT	$\alpha_{2000}$	$\delta_{2000}$	Reference	Mag.	N Obs.
1982 OF <sub>1</sub>	* 1982 07 16.50400	18 10 19.71	-13 56 31.2	17.5	<i>MPC</i> 14843	17.5	413
(43)	1936 08 11.89119	22 35 09.44	-02 06 17.5	1561	<i>RI</i>	1561	1 073
(74)	1936 09 21.48786	21 39 41.46	-09 25 52.0	1475	<i>RI</i>	1475	2 337

Note 1: time originally slightly in error. 2: time corrected by -1 hour.

## IDENTIFICATION CHANGES

Continuation to *MPC* 22276.

Object	Date	UT	$\alpha_{2000}$	$\delta_{2000}$	Originally	Mag.	Obs.
1985 SD <sub>7</sub>	* 1985 09 22.96814	01 37 43.85	+12 21 41.1	1985 SC <sub>5</sub>			095
1992 FG <sub>3</sub>	* 1992 03 24.54792	11 46 31.83	+10 02 03.5	1992 EP <sub>1</sub>			399
1992 FG <sub>3</sub>	1992 03 24.56296	11 46 30.89	+10 02 03.5	1992 EP <sub>1</sub>			399

## OBSERVATIONS OF COMETS

Observations are published here for the following observatory codes:

104	San Marcello Pistoiese. 0.4-m <i>f</i> /5 reflector. Observers L. Tesi and P. Gigli. Reduced by G. Cattani.
107	Cavezzo. 0.40-m <i>f</i> /2.23 reflector + CCD. Observers R. Calanca and R. Bonomi.
372	Geisei. 0.60-m <i>f</i> /3.5 reflector. Observer T. Seki. From <i>Orient. Astron. Assoc. Comet Bull.</i>
413	Siding Spring. 1.0-m reflector + CCD. Observers D. I. Steel and G. J. Garradd. Measured by G. J. Garradd.
540	Linz. 0.3-m <i>f</i> /5.2 Schmidt-Cassegrain + CCD. Observers E. Meyer, E. Obermair and H. Raab.
675	Palomar. 0.46-m Schmidt telescope. Observers J. Alu, B. M. Cudnik, E. F. Helin, K. Lawrence, D. H. Levy, M. Nassir, C. S. Shoemaker, E. M. Shoemaker and P. W. Tracadas.
691	Kitt Peak. 0.91-m Spacewatch telescope. Observer J. V. Scotti.
801	Oak Ridge. 1.5-m reflector + CCD. Observers R. E. McCrosky and C.-Y. Shao.

Object	Date	UT	$\alpha_{2000}$	$\delta_{2000}$	Mag.	N Obs.
--------	------	----	-----------------	-----------------	------	--------

## Comet Pajdušáková-Mrkos (1948 V)

/1948 V	1949 12 22.17361	04 03 07.94	+25 32 34.2			675
/1948 V	1949 12 22.19687	04 03 07.24	+25 32 29.3			675

## Periodic Comet Smirnova-Chernykh

/1984 V	1993 04 15.29653	13 44 20.82	-03 05 35.8			675
/1984 V	1993 04 15.33125	13 44 19.45	-03 05 29.9			675

/1984 V	1993 04 16.35104	13 43 40.47	-03 02 42.9			675
/1984 V	1993 04 16.38073	13 43 39.29	-03 02 37.8			675
/1984 V	1993 04 19.31267	13 41 47.48	-02 54 54.0			675
/1984 V	1993 04 19.34601	13 41 46.21	-02 54 48.3			675

## Periodic Comet Helin-Roman-Crockett

/1988 XIII	1993 06 25.42438	21 14 38.78	-19 03 48.7	23.2 T	1 691
/1988 XIII	1993 06 25.44470	21 14 38.28	-19 03 51.5	23.2 T	1 691
/1988 XIII	1993 06 26.41175	21 14 20.80	-19 06 06.0	22.0 T	2 691
/1988 XIII	1993 06 26.42217	21 14 20.62	-19 06 06.1	21.7 T	691
/1988 XIII	1993 06 26.43453	21 14 20.28	-19 06 08.2	21.7 T	691
/1988 XIII	1993 06 26.44637	21 14 20.10	-19 06 09.5		691
/1988 XIII	1993 07 20.36399	21 03 26.30	-20 12 59.7	21.1 T	691
/1988 XIII	1993 07 20.37339	21 03 26.01	-20 13 01.4	22.3 T	691
/1988 XIII	1993 07 20.38725	21 03 25.67	-20 13 03.5	21.3 T	691

## Periodic Comet Encke

/1990 XXI	1993 07 22.41513	01 25 44.30	+16 03 38.0	20.6 T	691
/1990 XXI	1993 07 22.42281	01 25 44.38	+16 03 41.7		691
/1990 XXI	1993 07 22.43067	01 25 44.67	+16 03 44.1		691
/1990 XXI	1993 07 25.42861	01 26 58.88	+16 22 48.4	20.2 T	691
/1990 XXI	1993 07 25.43665	01 26 59.05	+16 22 51.5		691
/1990 XXI	1993 07 25.44825	01 26 59.32	+16 22 55.9		691

## Periodic Comet Arend-Rigaux

/1991 XVII	1993 07 22.20914	15 30 52.87	-01 18 08.3	21.9 T	691
/1991 XVII	1993 07 22.21699	15 30 52.89	-01 18 10.3		691
/1991 XVII	1993 07 22.22987	15 30 52.92	-01 18 12.3		691

## Comet Shoemaker-Levy (1991 XXIV)

/1991 XXIV	1993 07 18.27559	22 08 27.96	-10 20 08.8		801
/1991 XXIV	1993 07 18.29365	22 08 27.44	-10 20 16.0		801
/1991 XXIV	1993 07 21.41163	22 06 56.98	-10 41 23.0	15.9 T	675
/1991 XXIV	1993 07 22.30029	22 06 30.21	-10 47 27.0		801
/1991 XXIV	1993 07 22.32100	22 06 29.52	-10 47 36.5		3 801
/1991 XXIV	1993 07 24.39010	22 05 26.56	-11 01 52.4		675
/1991 XXIV	1993 07 24.44670	22 05 24.81	-11 02 15.5		675

## Periodic Comet Howell

/1992c	1993 07 22.44024	02 48 45.43	+13 04 16.4	15.1 T	691
/1992c	1993 07 23.45054	02 50 04.27	+13 10 23.8	14.4 T	691
/1992c	1993 07 23.45812	02 50 04.84	+13 10 26.6	20.4 N	691

## Periodic Comet Singer Brewster

/1992e	1993 07 20.40528	22 29 41.00	+01 00 15.9	22.2 N	691
/1992e	1993 07 20.42444	22 29 40.53	+01 00 13.2	20.9 T	691
/1992e	1993 07 20.44416	22 29 40.00	+01 00 10.6		691
/1992e	1993 07 24.43222	22 27 53.60	+00 49 59.6		691
/1992e	1993 07 24.43969	22 27 53.38	+00 49 57.9		691

## Periodic Comet Shoemaker-Levy 8

/1992f	1993 07 21.31954	21 58 03.45	-04 03 12.0	21.9 N	691
/1992f	1993 07 21.34737	21 58 02.61	-04 03 14.7	19.2 T	691
/1992f	1993 07 21.37445	21 58 01.73	-04 03 18.1	19.2 T	691
/1992f	1993 07 25.36680	21 55 56.03	-04 11 43.4	20.9 N	691





A	earlier approximate position inferior							1990 UK <sub>1</sub>	1993 07 23.00208	20 04 09.85	-14 18 49.7	18.3	010	
a	sense of motion ambiguous							1990 UK <sub>1</sub>	1993 07 23.01285	20 04 09.13	-14 18 50.0		010	
B	black or dark plate							1990 UK <sub>1</sub>	1993 07 23.02332	20 04 08.48	-14 18 49.9		010	
b	bad seeing							1993 OY <sub>1</sub>	* 1993 07 23.00208	20 00 50.74	-16 46 27.4	18.2	010	
C	correction to earlier position							1993 OY <sub>1</sub>	1993 07 23.01285	20 00 50.13	-16 46 29.1		010	
c	crowded star field							1993 OY <sub>1</sub>	1993 07 23.02332	20 00 49.59	-16 46 30.9		010	
D	declination uncertain							1993 OE <sub>2</sub>	* 1993 07 20.98472	20 00 58.31	-15 18 06.9		010	
d	diffuse image							1993 OE <sub>2</sub>	1993 07 20.99514	20 00 57.75	-15 18 11.1		010	
E	at or near edge of plate							1993 OE <sub>2</sub>	1993 07 21.00521	20 00 57.16	-15 18 13.4		010	
F	faint image							1993 OE <sub>2</sub>	1993 07 23.00208	19 59 04.32	-15 28 11.4	18.6	010	
f	involved with emulsion or plate flaw							1993 OE <sub>2</sub>	1993 07 23.01285	19 59 03.70	-15 28 14.4		010	
G	poor guiding							1993 OE <sub>2</sub>	1993 07 23.02332	19 59 03.03	-15 28 17.7		010	
g	no guiding							1993 OF <sub>2</sub>	* 1993 07 20.98472	20 03 12.04	-16 17 37.6		010	
I	involved with star							1993 OF <sub>2</sub>	1993 07 20.99514	20 03 11.57	-16 17 42.6		010	
i	inkdot measured							1993 OF <sub>2</sub>	1993 07 21.00521	20 03 11.09	-16 17 46.1		010	
M	measurement difficult							1993 OF <sub>2</sub>	1993 07 23.00208	20 01 36.00	-16 31 04.8	18.5	010	
N	near edge of plate, measurement uncertain							1993 OF <sub>2</sub>	1993 07 23.01285	20 01 35.44	-16 31 07.8		010	
O	image out of focus							1993 OF <sub>2</sub>	1993 07 23.02332	20 01 35.02	-16 31 11.5		010	
o	plate measured in one direction only							1993 OG <sub>2</sub>	* 1993 07 20.98472	20 06 56.81	-15 39 53.6		010	
P	position uncertain							1993 OG <sub>2</sub>	1993 07 20.99514	20 06 56.29	-15 39 54.9		010	
p	poor image							1993 OG <sub>2</sub>	1993 07 21.00521	20 06 55.78	-15 39 56.1		010	
R	right ascension uncertain							1993 OG <sub>2</sub>	1993 07 23.00208	20 05 11.94	-15 40 39.7	18.4	010	
r	poor distribution of reference stars							1993 OG <sub>2</sub>	1993 07 23.01285	20 05 11.37	-15 40 35.9		010	
S	poor sky							1993 OG <sub>2</sub>	1993 07 23.02332	20 05 10.84	-15 40 36.5		010	
s	streaked image							1993 OH <sub>2</sub>	* 1993 07 20.98472	20 07 39.42	-14 29 37.5		010	
T	time uncertain							1993 OH <sub>2</sub>	1993 07 20.99514	20 07 38.71	-14 29 38.0		010	
t	trailed image							1993 OH <sub>2</sub>	1993 07 21.00521	20 07 38.21	-14 29 39.2		010	
U	uncertain image							1993 OH <sub>2</sub>	1993 07 23.00208	20 05 42.68	-14 31 18.5	18.3	010	
u	unconfirmed image							1993 OH <sub>2</sub>	1993 07 23.01285	20 05 41.94	-14 31 19.1		010	
V	very faint image							1993 OH <sub>2</sub>	1993 07 23.02332	20 05 41.38	-14 31 19.3		010	
W	weak image							1993 OJ <sub>2</sub>	* 1993 07 20.98472	20 08 12.10	-14 44 57.2		010	
w	weak solution							1993 OJ <sub>2</sub>	1993 07 20.99514	20 08 11.51	-14 45 01.1		010	
Object	Date	UT	$\alpha_{2000}$	$\delta_{2000}$	Mag.	N Obs.		1993 OJ <sub>2</sub>	1993 07 21.00521	20 08 11.10	-14 45 04.6		010	
<b>010 Caussols</b>									1993 OJ <sub>2</sub>	1993 07 23.00208	20 06 35.56	-14 56 30.2	18.5	010
E. W. Elst, Royal Observatory, B-1180 Brussels, Belgium									1993 OJ <sub>2</sub>	1993 07 23.01285	20 06 34.97	-14 56 32.8		010
C. Pollas, Observatoire de la Côte d'Azur, Avenue Copernic, F-06130 Grasse, France									1993 OJ <sub>2</sub>	1993 07 23.02332	20 06 34.52	-14 56 36.7		010
Observers E. W. Elst, J. B. Emond									1993 OK <sub>2</sub>	* 1993 07 20.98472	20 10 51.06	-14 25 32.4		010
Measurer E. W. Elst									1993 OK <sub>2</sub>	1993 07 20.99514	20 10 50.32	-14 25 24.3		010
0.9-m Schmidt telescope									1993 OK <sub>2</sub>	1993 07 21.00521	20 10 49.38	-14 25 15.0		010
1978 VT <sub>6</sub>	1993 07 20.98472		20 10 57.67	-15 37 37.3		010		1993 OK <sub>2</sub>	1993 07 23.00208	20 07 43.43	-13 57 31.4	18.2	010	
1978 VT <sub>6</sub>	1993 07 20.99514		20 10 56.84	-15 37 37.7		010		1993 OK <sub>2</sub>	1993 07 23.01285	20 07 42.42	-13 57 22.3		010	
1978 VT <sub>6</sub>	1993 07 21.00521		20 10 56.19	-15 37 38.4		010		1993 OK <sub>2</sub>	1993 07 23.02332	20 07 41.39	-13 57 14.0		010	
1978 VT <sub>6</sub>	1993 07 23.00208		20 08 50.03	-15 39 53.5	18.3	010		1993 OL <sub>2</sub>	* 1993 07 20.98472	20 11 31.35	-15 31 01.3		010	
1978 VT <sub>6</sub>	1993 07 23.01285		20 08 49.32	-15 39 54.1		010		1993 OL <sub>2</sub>	1993 07 20.99514	20 11 30.65	-15 31 05.4		010	
1978 VT <sub>6</sub>	1993 07 23.02332		20 08 48.74	-15 39 55.0		010		1993 OL <sub>2</sub>	1993 07 21.00521	20 11 30.15	-15 31 08.7		010	
1979 MZ <sub>2</sub>	1992 10 23.00139		01 59 07.15	+08 50 05.5	18.3	010		1993 OL <sub>2</sub>	1993 07 23.00208	20 09 31.96	-15 40 46.2	18.4	010	
1979 MZ <sub>2</sub>	1992 10 23.02222		01 59 05.93	+08 49 58.8		010		1993 OL <sub>2</sub>	1993 07 23.01285	20 09 31.33	-15 40 48.9		010	
1990 UK <sub>1</sub>	1993 07 20.98472		20 06 16.89	-14 17 21.8		010		1993 OL <sub>2</sub>	1993 07 23.02332	20 09 30.82	-15 40 51.8		010	
1990 UK <sub>1</sub>	1993 07 20.99514		20 06 16.10	-14 17 22.8		010		1993 OM <sub>2</sub>	* 1993 07 20.98472	20 12 05.75	-16 54 43.6		010	
1990 UK <sub>1</sub>	1993 07 21.00521		20 06 15.45	-14 17 24.6		010		1993 OM <sub>2</sub>	1993 07 20.99514	20 12 05.15	-16 54 43.4		010	
								1993 OM <sub>2</sub>	1993 07 21.00521	20 12 04.63	-16 54 42.0		010	
								1993 OM <sub>2</sub>	1993 07 23.00208	20 10 25.73	-16 56 59.5	18.6	010	

1993 OM <sub>2</sub>	1993 07 23.01285	20 10 25.05	-16 57 01.9		010	1993 HD <sub>6</sub>	1993 04 27.92917	13 21 48.67	-09 55 31.3		033
1993 OM <sub>2</sub>	1993 07 23.02332	20 10 24.59	-16 57 03.0		010	1993 HE <sub>6</sub>	* 1993 04 26.88889	13 23 00.77	-10 38 27.5	17.6	033
(792)	1993 07 20.98472	20 00 06.78	-13 11 34.5	16.0	010	1993 HE <sub>6</sub>	1993 04 26.93056	13 22 58.59	-10 38 15.1		033
(792)	1993 07 20.99514	20 00 06.13	-13 11 35.0		010	1993 HE <sub>6</sub>	1993 04 27.92917	13 22 09.47	-10 33 17.8		033
(792)	1993 07 21.00521	20 00 05.53	-13 11 36.0		010	1993 HF <sub>6</sub>	* 1993 04 26.88889	13 26 11.63	-10 32 23.3	17.7	033
(2460)	1993 07 20.98472	20 11 54.25	-14 39 50.0		010	1993 HF <sub>6</sub>	1993 04 26.93056	13 26 09.17	-10 32 17.5		033
(2460)	1993 07 20.99514	20 11 53.56	-14 39 53.3		010	1993 HF <sub>6</sub>	1993 04 27.92917	13 25 11.64	-10 30 06.5		033
(2460)	1993 07 21.00521	20 11 52.93	-14 39 56.2		010	(1087)	1993 03 27.00208	13 18 52.72	-04 13 05.6	15.3	033
(2460)	1993 07 23.00208	20 09 50.25	-14 48 03.9	18.0	010	(1087)	1993 03 29.05347	13 17 15.30	-04 07 56.9		033
(2460)	1993 07 23.01285	20 09 49.54	-14 48 06.5		010	(1087)	1993 03 30.02778	13 16 28.37	-04 05 29.0		033
(2460)	1993 07 23.02332	20 09 48.90	-14 48 09.2		010	(1087)	1993 03 30.07986	13 16 25.78	-04 05 20.9		033
(4638)	1993 07 20.98472	20 09 43.04	-17 39 45.7		010	(1302)	1993 03 27.00208	13 20 05.59	-04 34 24.7	16.2	033
(4638)	1993 07 20.99514	20 09 42.29	-17 39 47.1		010	(1302)	1993 03 29.05347	13 18 37.13	-04 25 16.2		033
(4638)	1993 07 21.00521	20 09 41.62	-17 39 48.9		010	(1302)	1993 03 30.02778	13 17 54.53	-04 20 53.7		033
(4638)	1993 07 23.00208	20 07 28.91	-17 43 17.9	18.3	010	(1302)	1993 03 30.07986	13 17 52.12	-04 20 40.3		033
(4638)	1993 07 23.01285	20 07 28.18	-17 43 18.2		010	(2162)	1993 03 27.00208	13 27 02.97	-04 05 50.6	17.2	033
(4638)	1993 07 23.02332	20 07 27.50	-17 43 20.1		010	(2162)	1993 03 29.05347	13 25 12.02	-03 52 20.7		033
(5294)	1993 07 20.98472	19 59 30.61	-15 56 43.0		010	(2162)	1993 03 30.02778	13 24 18.25	-03 45 53.8		033
(5294)	1993 07 20.99514	19 59 30.00	-15 56 48.0		010	(2162)	1993 03 30.07986	13 24 15.20	-03 45 32.2		V 033
(5294)	1993 07 21.00521	19 59 29.54	-15 56 51.2		010	(3414)	1993 04 26.88889	13 28 31.80	-10 03 11.6	17.8	033
(5294)	1993 07 23.00208	19 57 49.57	-16 10 41.2	18.3	010	(3414)	1993 04 26.93056	13 28 29.31	-10 03 04.1		033
(5294)	1993 07 23.01285	19 57 49.03	-16 10 45.1		010	(3414)	1993 04 27.92917	13 27 29.03	-09 59 57.4		033
(5294)	1993 07 23.02332	19 57 48.53	-16 10 49.1		010	(3708)	1993 01 01.06944	09 17 38.82	+09 39 48.6	17.9	033

**033 Tautenburg**

F. Börngen, Thüringer Landessternwarte, Sternwarte 5, D-07778 Tautenburg,

Germany

1.3-m Schmidt telescope

PPM

1979 QB <sub>10</sub>	1993 04 26.88889	13 23 12.47	-10 38 14.4	18.3	033	(3708)	1993 01 01.11319	09 17 37.88	+09 39 48.7		033
1979 QB <sub>10</sub>	1993 04 26.93056	13 23 10.09	-10 38 01.0		033	(3708)	1993 01 02.07639	09 17 17.02	+09 39 46.8		033
1979 QB <sub>10</sub>	1993 04 27.92917	13 22 14.42	-10 32 54.5		033	(3859)	1993 03 27.00208	13 16 51.70	-03 51 16.3	17.4	033
1990 TJ <sub>2</sub>	1993 04 26.88889	13 22 00.84	-11 30 34.2	18.2	033	(4574)	1993 01 01.06944	09 20 58.98	+09 44 54.4	17.3	033
1990 TJ <sub>2</sub>	1993 04 26.93056	13 21 59.21	-11 30 18.0		033	(4574)	1993 01 01.11319	09 20 57.63	+09 44 52.0		033
1990 TJ <sub>2</sub>	1993 04 27.92917	13 21 19.68	-11 23 38.9		033	(4574)	1993 01 02.07639	09 20 27.95	+09 43 53.8		033
1991 RZ <sub>2</sub>	1993 01 01.06944	09 15 14.28	+08 28 22.0	18.4	033	(5506)	1993 04 26.88889	13 25 27.26	-11 00 53.0	17.1	033
1991 RZ <sub>2</sub>	1993 01 01.11319	09 15 13.02	+08 28 19.6		033	(5506)	1993 04 26.93056	13 25 24.89	-11 00 48.0		033
1991 RZ <sub>2</sub>	1993 01 02.07639	09 14 46.43	+08 27 40.6		V 033	(5506)	1993 04 27.92917	13 24 30.90	-10 58 48.3		033
1991 RZ <sub>2</sub>	1993 02 22.86007	08 34 35.87	+10 37 25.6	18.2	033						
1991 XO <sub>1</sub>	1993 03 27.00208	13 23 30.14	-04 02 48.8	18.6	V 033	(2131)	1993 07 22.01317	21 13 06.41	-16 10 27.4		071
1991 XO <sub>1</sub>	1993 03 29.05347	13 21 44.03	-03 51 51.3		V 033	(2131)	1993 07 22.03522	21 13 03.08	-16 09 47.4		071
1991 XO <sub>1</sub>	1993 03 30.02778	13 20 52.83	-03 46 37.1		V 033	(5632)	1993 06 19.89051	14 03 44.45	+02 20 03.2		071
1993 AU	* 1993 01 01.06944	09 10 54.71	+08 04 30.0	18.6	033	(5632)	1993 06 19.91590	14 03 44.28	+02 19 51.7		071
1993 AU	1993 01 01.11319	09 10 53.51	+08 04 29.6		033	(5632)	1993 06 20.86333	14 03 42.24	+02 10 13.9		071
1993 AU	1993 01 02.07639	09 10 28.65	+08 04 21.3		V 033	(5632)	1993 06 20.88903	14 03 42.25	+02 09 55.6		071
1993 HB <sub>6</sub>	* 1993 04 26.88889	13 16 21.43	-11 14 59.7	17.8	033						
1993 HB <sub>6</sub>	1993 04 26.93056	13 16 19.21	-11 14 55.2		033						
1993 HB <sub>6</sub>	1993 04 27.92917	13 15 26.61	-11 12 51.9		033						
1993 HC <sub>6</sub>	* 1993 04 26.88889	13 17 05.34	-13 00 18.3	18.1	033						
1993 HC <sub>6</sub>	1993 04 26.93056	13 17 02.73	-13 00 11.5		033						
1993 HC <sub>6</sub>	1993 04 27.92917	13 16 03.28	-12 57 39.3		033						
1993 HD <sub>6</sub>	* 1993 04 26.88889	13 22 42.06	-09 55 27.1	18.0	033						
1993 HD <sub>6</sub>	1993 04 26.93056	13 22 39.88	-09 55 27.5		033						

**071 Bulgarian National Observatory**

V. G. Shkodrov, Department of Astronomy, Bulgarian Academy of Sciences,

72 Tsarigradsko shausse Boulevard, BG-1784 Sofia, Bulgaria

Observers V. Radeva, Z. Dontchev, V. Ivanova

0.50-m  $f/1.4$  Schmidt

(2131)	1993 07 22.01317	21 13 06.41	-16 10 27.4		071
(2131)	1993 07 22.03522	21 13 03.08	-16 09 47.4		071
(5632)	1993 06 19.89051	14 03 44.45	+02 20 03.2		071
(5632)	1993 06 19.91590	14 03 44.28	+02 19 51.7		071
(5632)	1993 06 20.86333	14 03 42.24	+02 10 13.9		071
(5632)	1993 06 20.88903	14 03 42.25	+02 09 55.6		071

**095 Crimean Astrophysical Observatory**N. S. Chernykh, Crimean Astrophysical Observatory, P.O. Nauchnyj, Crimea  
334413, UkraineYu. V. Batrakov, Institute for Theoretical Astronomy, Naberezhnaya Kutuzova 10,  
St. Petersburg 191187, Russia

Observers N. S. Chernykh, L. I. Chernykh, L. G. Karachkina, L. V. Zhuravleva

(4179)	1992 08 26.82292	19 10 17.90	-22 43 19.8		095
(4179)	1992 08 26.82296	19 10 17.92	-22 43 20.5		095

(4179)	1992 08 27.80197	19 08 38.37	-22 46 53.2	095	1988 FF	1993 06 16.87500	15 17 48.30	-13 34 11.1	104
(4179)	1992 08 27.81586	19 08 36.83	-22 46 57.2	095	1993 MO	1993 07 07.88056	16 58 38.57	-00 15 53.8	104
(4179)	1992 08 28.79167	19 07 00.39	-22 50 22.8	095	1993 MO	1993 07 08.88264	16 58 07.65	-01 34 19.7	104
(4179)	1992 08 28.80556	19 06 58.90	-22 50 26.1	095	1993 MO	1993 07 08.89444	16 58 07.29	-01 35 14.3	104
(4179)	1992 08 29.77604	19 05 25.80	-22 53 41.4	095	(5129)	1993 06 15.89444	17 03 39.58	-05 04 56.9	104
(4179)	1992 08 29.78993	19 05 24.49	-22 53 44.3	095	(5129)	1993 06 15.90625	17 03 38.89	-05 04 57.5	104
(4179)	1992 12 26.92882	08 34 52.10	+16 41 58.4	095	(5129)	1993 06 16.89722	17 02 44.24	-05 05 30.1	104
(4179)	1992 12 26.93924	08 34 50.19	+16 42 11.1	095	(5129)	1993 06 16.90903	17 02 43.58	-05 05 30.9	104
(4179)	1992 12 26.94965	08 34 48.28	+16 42 24.2	095	(5129)	1993 06 20.89722	16 59 10.12	-05 09 36.4	104
(4179)	1992 12 26.96009	08 34 46.34	+16 42 36.2	095	(5129)	1993 06 20.90903	16 59 09.66	-05 09 37.5	104
(4179)	1992 12 26.97051	08 34 44.40	+16 42 48.3	095	(5129)	1993 06 21.85625	16 58 21.00	-05 11 03.0	104
(4179)	1992 12 26.98096	08 34 42.50	+16 43 00.6	095	(5129)	1993 06 21.86806	16 58 20.32	-05 11 04.2	104
(4179)	1992 12 27.02257	08 34 34.75	+16 43 49.6	095	(5586)	1993 06 07.89722	14 56 40.33	-09 47 12.4	104
(4179)	1992 12 27.02951	08 34 33.47	+16 43 57.4	095	(5586)	1993 06 07.90903	14 56 40.04	-09 47 12.5	104
(4179)	1992 12 27.03646	08 34 32.16	+16 44 05.2	095	(5586)	1993 06 08.86458	14 56 18.09	-09 47 14.2	104
(4179)	1992 12 31.88933	08 23 20.03	+18 00 59.5	095	(5586)	1993 06 08.87639	14 56 17.85	-09 47 14.6	104
(4179)	1993 01 02.92624	08 19 29.21	+18 25 30.7	095	(5586)	1993 06 20.85833	14 54 04.99	-10 01 57.5	104
(4179)	1993 01 02.95957	08 19 25.11	+18 25 53.8	095	(5586)	1993 06 20.87014	14 54 04.96	-10 01 58.0	104
(4179)	1993 01 03.93125	08 17 44.42	+18 36 22.0	095					
(4179)	1993 01 03.95218	08 17 41.94	+18 36 36.1	095					
(4179)	1993 01 03.98333	08 17 38.29	+18 36 55.7	095					
(4179)	1993 01 04.02500	08 17 33.48	+18 37 19.6	095					
(4179)	1993 01 04.90889	08 16 07.81	+18 46 14.2	095					
(4179)	1993 01 04.92275	08 16 06.34	+18 46 22.3	095					
(4179)	1993 01 04.93734	08 16 04.67	+18 46 31.1	095	1993 MF	1993 07 20.85370	21 51 53.88	+30 09 12.3	107
(4179)	1993 01 04.95123	08 16 03.09	+18 46 39.0	095	1993 MF	1993 07 20.93141	21 52 11.28	+30 12 53.6	107
(4179)	1993 01 13.85243	08 04 24.21	+19 53 26.0	095	1993 MF	1993 07 20.93972	21 52 13.13	+30 13 17.6	107
(4179)	1993 01 13.86632	08 04 23.15	+19 53 31.4	095	1993 MF	1993 07 23.94554	22 03 53.61	+32 25 26.4	107
(4179)	1993 01 13.88021	08 04 22.11	+19 53 36.3	095	1993 MF	1993 07 23.98792	22 04 03.00	+32 27 13.3	107
(4179)	1993 01 13.89236	08 04 21.20	+19 53 40.9	095	1993 MF	1993 07 27.86195	22 19 05.54	+34 55 39.7	107
(4179)	1993 01 13.90625	08 04 20.28	+19 53 45.8	095	1993 MF	1993 07 27.89910	22 19 14.00	+34 57 01.7	107
(4179)	1993 01 18.84161	07 59 46.76	+20 18 11.7	095	1993 MF	1993 07 28.85385	22 22 54.85	+35 29 40.3	107
(4179)	1993 01 18.85342	07 59 46.06	+20 18 14.6	095	1993 MF	1993 07 28.89451	22 23 04.07	+35 31 04.4	107
(4179)	1993 01 18.86522	07 59 45.37	+20 18 17.2	095	1993 MF	1993 07 30.92535	22 30 49.33	+36 35 36.4	107
(4179)	1993 01 18.87703	07 59 44.72	+20 18 20.5	095	1993 MF	1993 07 30.95964	22 30 56.81	+36 36 40.5	107
(4179)	1993 01 18.88953	07 59 44.05	+20 18 22.9	095	1993 MF	1993 07 31.88026	22 34 26.51	+37 03 27.3	107
(4179)	1993 01 18.90203	07 59 43.26	+20 18 26.6	095	1993 MF	1993 07 31.91620	22 34 34.31	+37 04 32.2	107
(4179)	1993 02 12.79340	07 53 31.33	+21 02 53.3	095	1993 MF	1993 08 02.84761	22 41 48.04	+37 56 17.2	107
(4179)	1993 02 12.83507	07 53 31.68	+21 02 52.2	095	1993 MF	1993 08 02.88117	22 41 55.26	+37 57 09.7	107
					(1149)	1993 07 27.85035	20 32 38.69	-05 08 03.5	107
					(1149)	1993 07 27.88076	20 32 37.11	-05 08 02.5	107
					(1149)	1993 07 28.86101	20 31 46.08	-05 07 59.8	107
					(1149)	1993 07 28.90885	20 31 43.41	-05 07 57.8	107
					(1149)	1993 07 30.94531	20 29 57.12	-05 08 09.5	107
					(1149)	1993 07 30.96965	20 29 55.77	-05 08 10.9	107
					(1149)	1993 08 02.85499	20 27 25.94	-05 09 18.7	107
					(1149)	1993 08 02.89695	20 27 23.66	-05 09 16.2	107
A920 TA	1993 07 15.93409	21 09 08.83	-09 08 13.0	104	(1379)	1993 08 02.83507	19 27 35.75	-02 14 27.9	107
A920 TA	1993 07 15.94653	21 09 08.44	-09 08 11.3	104	(1379)	1993 08 02.86651	19 27 34.32	-02 14 44.4	107
1988 FF	1993 06 14.85347	15 18 48.40	-13 25 56.6	104	(3093)	1993 07 23.95750	20 23 03.72	-09 02 14.5	107
1988 FF	1993 06 14.86528	15 18 47.77	-13 26 01.2	104	(3093)	1993 07 24.00165	20 23 01.03	-09 02 02.7	107
1988 FF	1993 06 15.85903	15 18 17.67	-13 30 00.4	104	(3093)	1993 07 27.84382	20 19 12.21	-08 44 59.9	107
1988 FF	1993 06 15.87083	15 18 17.28	-13 30 02.9	104	(3093)	1993 07 27.87385	20 19 10.36	-08 44 51.3	107
1988 FF	1993 06 16.86319	15 17 48.81	-13 34 07.3	104					

**104 San Marcello Pistoiese**

L. Tesi, Osservatorio di Pian dei Termini, Viale Panoramico 45, I-51028 San  
Marcello Pistoiese (PT), Italy

Observers L. Tesi, P. Gigli

Measurers L. Tesi, G. Cattani

GSC

(3093)	1993 07 28.84660	20 18 12.33	-08 40 51.6		107
(3093)	1993 07 28.88448	20 18 10.07	-08 40 42.1		107
(4191)	1993 07 20.86851	17 05 00.17	-09 46 31.0		107
(4191)	1993 07 20.90087	17 04 59.89	-09 46 32.1		107

**303 Mérida**

O. A. Naranjo, Dept. de Física, Universidad de los Andes, Mérida 5101, Venezuela  
 Observer O. A. Naranjo  
 1.0-m Schmidt

1993 MF	1993 07 22.26528	21 57 20.65	+31 13 46.0	13	303
1993 MF	1993 07 22.27743	21 57 23.31	+31 14 18.8	13	303
1993 MF	1993 07 22.28976	21 57 26.00	+31 14 52.5	13	303
1993 MF	1993 07 25.28611	22 09 04.75	+33 20 14.3	13	303
1993 OY <sub>1</sub>	1993 07 25.12170	19 58 48.28	-16 54 09.6	16	303
1993 OY <sub>1</sub>	1993 07 25.20555	19 58 42.77	-16 54 27.4	16	303
1993 OY <sub>1</sub>	1993 07 25.21944	19 58 41.92	-16 54 30.5	16	303
(792)	1993 07 25.12170	19 56 15.30	-13 14 46.1	14	303
(792)	1993 07 25.20555	19 56 10.53	-13 14 49.8	14	303
(792)	1993 07 25.21944	19 56 09.45	-13 14 50.9	14	303
(1039)	1993 07 25.12170	19 50 24.84	-13 53 04.1	15	303
(1039)	1993 07 25.20555	19 50 19.95	-13 53 17.1	15	303
(1039)	1993 07 25.21944	19 50 19.17	-13 53 19.4	15	303
(5294)	1993 07 25.12170	19 56 04.07	-16 25 21.2	17	303
(5294)	1993 07 25.20555	19 55 59.46	-16 25 57.1	17	303
(5294)	1993 07 25.21944	19 55 58.66	-16 26 03.3	17	303

**372 Geisei**

T. Seki, Kamimachi 2-9-35, Kochi, Japan  
 0.60-m *f*/3.5 reflector  
 ACRS

1987 YK	1993 03 22.59549	12 10 36.94	+05 59 05.9	18	372
1987 YK	1993 03 22.60729	12 10 36.51	+05 59 10.0		372
1990 RE <sub>7</sub>	1993 03 16.68264	12 21 05.32	-03 30 50.1	17.5	372
1990 RE <sub>7</sub>	1993 03 16.69236	12 21 04.88	-03 30 48.1		372
(3780)	1993 03 17.62083	12 19 39.53	+00 36 17.7	17	372

**385 Nihondaira Observatory Oohira station**

T. Urata, 6-1, Muramatsuhara 1 Chome, Shimizu, Shizuoka-Ken 424, Japan  
 0.25-m *f*/3.4 hyperboloid astrocamera + CCD  
 GSC

1990 UD	1993 08 11.53089	20 08 13.36	-29 23 14.4		385
1990 UD	1993 08 11.53436	20 08 13.15	-29 23 15.0		385
1990 UD	1993 08 11.53868	20 08 12.88	-29 23 15.7		385
1990 UB <sub>2</sub>	1993 08 11.57068	21 28 52.66	-25 01 40.1		385
1990 UB <sub>2</sub>	1993 08 11.57458	21 28 52.47	-25 01 41.3		385
1990 UB <sub>2</sub>	1993 08 11.58204	21 28 52.07	-25 01 44.9		385
1990 XK	1993 08 11.63543	22 43 48.16	+11 14 59.8		385
1990 XK	1993 08 11.63980	22 43 47.97	+11 14 59.9		385
1990 XK	1993 08 11.64376	22 43 47.79	+11 14 59.4		385

**399 Kushiro**

H. Kaneda, Taiyo MS 2-H, 2 chome 2-15, Kawazoe 8 jo, Minami-ku, Sapporo 005,  
 Japan  
 Observer S. Ueda

Measurer H. Kaneda  
 0.25-m *f*/3.4 hyperboloid astrocamera  
 GSC

1987 UW <sub>1</sub>	1993 01 22.72153	09 31 10.30	+00 26 56.7	17	399
1987 UW <sub>1</sub>	1993 01 22.73611	09 31 09.64	+00 27 00.3		399

**413 Siding Spring**

R. H. McNaught, Siding Spring Observatory, Coonabarabran, N.S.W. 2357,  
 Australia

Observers G. Garradd, D. I. Steel

Measurers R. H. McNaught, G. Garradd

Uppsala Southern Schmidt, U.K. Schmidt, 1.0-m reflector + CCD

1951 SY	1976 11 16.56325	03 25 26.27	-17 36 03.3		413
1951 SY	1976 11 16.60492	03 25 24.34	-17 36 16.4		413
1951 SY	1984 10 12.39250	20 56 57.28	-12 54 15.8		413
1951 SY	1984 10 12.42722	20 56 59.45	-12 54 41.2		413
1971 FB	1978 01 06.45931	04 19 17.35	-20 06 32.8	18.0 V	413
1971 FB	1978 01 06.51139	04 19 16.10	-20 06 06.7		413
1971 FB	1984 11 13.45478	00 22 28.92	-07 32 08.7	18.5 V	413
1971 FB	1988 11 13.51970	02 50 50.29	-12 38 52.1	18 V	413
1971 FB	1988 11 13.59609	02 50 45.82	-12 39 45.6		413
1977 OW	1977 07 16.74833	23 58 37.74	-21 40 11.6		413
1977 OW	1977 07 16.80389	23 58 40.43	-21 40 35.5		413
1977 OW	1977 07 20.71995	00 01 44.83	-22 08 13.5		413
1977 OW	1977 07 20.77551	00 01 47.05	-22 08 38.0		413
1977 OX	1977 07 16.74833	23 52 20.79	-22 16 23.3		413
1977 OX	1977 07 16.80389	23 52 27.61	-22 17 10.4		413
1977 OX	1977 08 15.62465	00 41 40.40	-30 08 05.6		413
1977 OX	1977 08 15.67326	00 41 43.04	-30 08 52.1		413
1977 OX	1977 08 15.68559	00 41 43.90	-30 09 04.6		413
1977 OX	1977 08 15.76177	00 41 48.18	-30 10 18.4		413
1977 OX	1977 08 15.80344	00 41 50.58	-30 10 55.6		413
1977 OY	1977 07 16.74833	23 49 51.59	-23 35 59.3		413
1977 OY	1977 07 16.80389	23 49 53.21	-23 36 14.5		413
1977 OZ	1977 07 20.71995	23 56 23.22	-21 58 09.1		413
1977 OZ	1977 07 20.77551	23 56 24.93	-21 59 01.6		413
1977 PM <sub>2</sub>	* 1977 08 08.72064	00 03 01.70	-28 49 10.7		413
1977 PM <sub>2</sub>	1977 08 08.76230	00 03 00.61	-28 49 25.9		413
1977 PN <sub>2</sub>	* 1977 08 08.74147	00 00 48.43	-29 29 24.0		413
1988 LH	1993 07 31.48111	15 14 33.45	-16 04 02.5		413
1988 LH	1993 07 31.48451	15 14 33.64	-16 04 02.6		413
1990 OK <sub>1</sub>	1985 01 27.66720	10 19 09.24	-01 43 11.5	F	413
1990 OK <sub>1</sub>	1985 01 27.70887	10 19 06.92	-01 43 15.9	F	413
1990 OK <sub>1</sub>	1993 07 30.47236	13 35 06.70	-37 28 39.9		413
1990 OK <sub>1</sub>	1993 07 30.47478	13 35 06.92	-37 28 39.0		413
1990 OK <sub>1</sub>	1993 07 31.42098	13 36 32.09	-37 23 58.7		413
1990 QB	1993 07 31.54427	15 31 55.83	-46 10 09.2		413
1990 QB	1993 07 31.54772	15 31 55.98	-46 10 06.9		413
1990 SK	1993 07 31.47729	15 07 47.75	-37 27 32.8		413
1990 SP	1993 07 30.56553	20 34 19.57	-50 06 01.5		413
1990 SP	1993 07 31.60932	20 31 27.31	-50 15 56.5		413
1990 SP	1993 07 31.61272	20 31 26.70	-50 15 58.5		413

1990 TB	1993 07 31.55826	14 55 10.14	-10 28 03.2	413
1990 TR	1993 07 30.50638	16 00 18.79	-37 44 02.4	413
1990 TR	1993 07 30.50869	16 00 18.85	-37 44 01.6	413
1990 TR	1993 07 30.53035	16 00 19.45	-37 43 55.6	413
1990 TR	1993 07 31.46723	16 00 50.81	-37 40 08.5	413
1990 TR	1993 07 31.47449	16 00 51.01	-37 40 06.8	413
1990 TN <sub>4</sub>	1993 07 30.46696	13 44 12.87	-02 25 45.6	413
1990 TN <sub>4</sub>	1993 07 30.46949	13 44 13.00	-02 25 47.0	413
1990 WZ <sub>2</sub>	1993 07 30.57079	20 23 18.86	-51 56 22.8	413
1990 WZ <sub>2</sub>	1993 07 30.57311	20 23 18.60	-51 56 22.6	413
1990 WZ <sub>2</sub>	1993 07 31.60385	20 21 30.61	-51 55 25.9	413
1990 WZ <sub>2</sub>	1993 07 31.60610	20 21 30.40	-51 55 25.6	413
1992 AA	1991 10 12.68940	04 03 15.28	-00 41 18.4	F 413
1992 AA	1991 10 12.73106	04 03 18.06	-00 41 37.2	F 413
1992 AC	1993 07 30.57699	22 19 31.42	-19 29 58.4	413
1992 AC	1993 07 30.57976	22 19 31.32	-19 30 00.6	413
1992 VM	1984 04 01.40211	08 33 07.02	+18 31 22.0	413
1992 VM	1984 04 02.43959	08 33 49.19	+18 33 08.2	F 413
1992 WD <sub>5</sub>	1974 03 24.72674	16 33 31.38	-27 08 43.8	F 413
1992 WD <sub>5</sub>	1974 06 23.45543	15 09 53.77	-29 33 54.9	F 413
1993 BW <sub>3</sub>	1976 06 04.74558	20 54 18.87	-41 48 21.1	413
1993 BW <sub>3</sub>	1981 04 25.45022	11 56 34.66	-28 50 12.5	V 413
1993 BW <sub>3</sub>	1981 04 25.49187	11 56 32.17	-28 49 52.0	V 413
1993 HO <sub>1</sub>	1993 07 30.45295	14 43 12.76	-21 35 40.8	413
1993 HO <sub>1</sub>	1993 07 30.45662	14 43 13.12	-21 35 41.2	413
1993 HO <sub>1</sub>	1993 07 31.45899	14 44 26.30	-21 40 01.5	413
1993 HO <sub>1</sub>	1993 07 31.46360	14 44 26.43	-21 40 02.5	413
1993 HQ <sub>1</sub>	1977 07 16.77611	23 57 54.55	-22 34 23.1	413
1993 HQ <sub>1</sub>	1977 07 20.74773	23 57 50.33	-22 36 20.9	413
1993 HQ <sub>1</sub>	1977 07 22.73909	23 57 33.89	-22 37 59.5	18.5 V 413
1993 HQ <sub>1</sub>	1977 07 22.79117	23 57 33.20	-22 38 01.6	413
1993 HQ <sub>1</sub>	1977 10 06.46791	22 31 48.14	-19 02 38.0	413
1993 HQ <sub>1</sub>	1977 10 06.51652	22 31 45.75	-19 02 04.2	413
1993 HQ <sub>1</sub>	1982 04 29.58631	13 27 59.20	-31 55 04.5	413
1993 KG	1975 05 06.66056	16 43 59.96	-32 24 23.2	413
1993 KG	1975 05 06.70222	16 43 57.88	-32 24 30.0	413
1993 KG	1980 06 21.57038	18 51 29.13	-35 47 31.0	413
1993 KT <sub>1</sub>	1993 07 31.56809	15 38 10.50	-28 10 02.8	413
1993 KT <sub>1</sub>	1993 07 31.57062	15 38 10.62	-28 10 04.9	413
1993 LG <sub>1</sub>	1993 07 31.45140	14 49 30.16	-21 14 38.1	413
1993 LG <sub>1</sub>	1993 07 31.45480	14 49 30.44	-21 14 37.0	413
1993 ME <sub>1</sub>	1993 07 31.59630	17 09 12.99	+10 26 26.1	413
1993 ME <sub>1</sub>	1993 07 31.59884	17 09 13.17	+10 26 26.5	413
(243)	1993 07 30.41748	12 33 05.84	-04 33 19.6	413
(243)	1993 07 30.41931	12 33 05.96	-04 33 20.4	413
(243)	1993 07 31.40412	12 34 13.33	-04 40 25.1	413
(243)	1993 07 31.40635	12 34 13.48	-04 40 26.0	413
(243)	1993 07 31.40811	12 34 13.60	-04 40 26.7	413
(4649)	1993 07 31.53502	14 42 24.15	-09 34 13.1	413
(5604)	1976 04 23.63674	11 47 45.31	-18 47 40.2	413
(5604)	1976 04 23.66451	11 47 41.45	-18 46 53.4	413

**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

1993 OL	1993 07 28.44480	19 33 08.33	-25 26 24.5	15.9	474
1993 OL	1993 07 28.46546	19 32 59.73	-25 25 39.4	15.9	474
1993 OL	1993 07 28.55661	19 32 21.50	-25 22 18.0	15.8	474
1993 OL	1993 07 28.67409	19 31 32.47	-25 17 53.8	15.3	474

**557 Ondřejov**

P. Pravec, Astronomical Institute, Czech Academy of Sciences, CS-25165 Ondřejov, Czech Republic

0.18-m *f*/5.6 Maksutov + CCD

1993 MF	1993 06 30.97483	20 39 38.96	+11 25 12.3	557
1993 MF	1993 06 30.97782	20 39 39.49	+11 25 22.4	557
1993 MF	1993 06 30.98348	20 39 40.57	+11 25 44.2	557
1993 MF	1993 06 30.98816	20 39 41.45	+11 26 00.5	557
1993 MF	1993 06 30.99110	20 39 41.99	+11 26 10.9	557
1993 MF	1993 06 30.99196	20 39 42.15	+11 26 14.8	557
1993 MF	1993 06 30.99281	20 39 42.30	+11 26 17.3	557
1993 MF	1993 06 30.99368	20 39 42.49	+11 26 20.6	557
1993 MF	1993 06 30.99454	20 39 42.62	+11 26 23.5	557
1993 MF	1993 06 30.99539	20 39 42.80	+11 26 27.2	557
1993 MF	1993 07 24.89069	22 07 34.25	+33 03 55.4	557
1993 MF	1993 07 24.90381	22 07 37.20	+33 04 27.6	557
1993 MF	1993 07 24.90714	22 07 37.96	+33 04 35.7	557
1993 MF	1993 07 24.90903	22 07 38.39	+33 04 40.9	557
1993 MF	1993 07 24.91245	22 07 39.15	+33 04 49.4	557
1993 MF	1993 07 24.92826	22 07 42.69	+33 05 28.2	557
1993 MF	1993 07 24.93495	22 07 44.20	+33 05 44.3	557
1993 MF	1993 07 24.93690	22 07 44.62	+33 05 49.2	557
1993 MF	1993 07 24.94079	22 07 45.49	+33 05 58.3	557
1993 MF	1993 07 24.94325	22 07 46.03	+33 06 04.4	557
1993 MF	1993 07 24.96061	22 07 49.89	+33 06 47.1	557
1993 MF	1993 07 24.96521	22 07 50.95	+33 06 58.4	557
1993 MF	1993 07 24.96716	22 07 51.36	+33 07 03.1	557
1993 MF	1993 07 24.96911	22 07 51.79	+33 07 07.6	557
1993 MF	1993 07 24.97148	22 07 52.32	+33 07 13.7	557
1993 MF	1993 07 24.97391	22 07 52.84	+33 07 19.5	557
1993 MF	1993 07 24.98001	22 07 54.17	+33 07 34.2	557
1993 MF	1993 07 24.98584	22 07 55.49	+33 07 48.3	557
1993 MF	1993 07 25.00581	22 07 59.92	+33 08 36.4	557
1993 MF	1993 07 25.00970	22 08 00.77	+33 08 45.3	557
1993 MF	1993 07 25.03078	22 08 05.43	+33 09 36.4	557
1993 MF	1993 07 25.05888	22 08 11.61	+33 10 43.2	557
1993 MF	1993 07 25.06463	22 08 12.89	+33 10 56.8	557
1993 MF	1993 07 25.06657	22 08 13.33	+33 11 02.2	557
1993 MF	1993 07 25.07242	22 08 14.62	+33 11 15.5	557
1993 MF	1993 07 25.08119	22 08 16.55	+33 11 36.5	557

**587 Sormano**

P. Sicoli, Via Valli 9, I-22040 Garbagnate Monastero (Como), Italy  
 Observers E. Colzani, P. Sicoli, G. Ventre, M. Cavagna, E. Galliani  
 0.5-m *f*/5.9 reflector  
 GSC

1993 MF	1993 07 23.92709	22 03 49.51	+32 24 38.0	587
1993 MF	1993 07 23.93228	22 03 50.65	+32 24 51.5	587
1993 MF	1993 07 23.93734	22 03 51.79	+32 25 04.0	587
1993 MF	1993 07 27.93157	22 19 21.19	+34 58 10.9	587
1993 MF	1993 07 27.93459	22 19 21.87	+34 58 17.5	587
1993 MF	1993 07 27.93782	22 19 22.58	+34 58 24.4	587
1993 MF	1993 08 06.90248	22 56 27.11	+39 25 28.3	587
1993 MF	1993 08 06.90529	22 56 27.70	+39 25 31.8	587
1993 MF	1993 08 06.91057	22 56 28.78	+39 25 38.5	587
1993 MO	1993 07 23.90056	16 57 41.87	-20 34 36.8	16.9 V 587
1993 MO	1993 07 23.90512	16 57 42.04	-20 34 56.5	587
1993 ME <sub>1</sub>	1993 08 06.85559	17 19 01.23	+10 44 01.0	17.8 V 587
1993 ME <sub>1</sub>	1993 08 06.87664	17 19 03.03	+10 44 02.9	587

**589 Santa Lucia Stroncone**

A. Vagnozzi, Via Santa Lucia 68, I-05039 Stroncone (Terni), Italy  
 Observers A. Vagnozzi, V. Risoldi, G. Bernabei, E. Gregori, F. Lombardi  
 0.50-m *f*/2.8 Ritchey-Chrétien + CCD  
 GSC

1975 SR	1993 07 16.88990	16 19 21.67	-17 43 26.2	589
1975 SR	1993 07 16.90676	16 19 21.29	-17 43 27.1	589
1975 SR	1993 07 17.89574	16 19 08.49	-17 43 51.5	589
1975 SR	1993 07 17.92031	16 19 08.08	-17 43 51.6	589
1975 SR	1993 07 22.85111	16 18 33.90	-17 47 21.3	589
1975 SR	1993 07 22.89452	16 18 33.74	-17 47 23.4	589
1975 SR	1993 07 22.91353	16 18 33.78	-17 47 25.0	589
1993 KG	1993 06 15.88278	11 58 17.03	-01 55 34.3	589
1993 KG	1993 06 15.89276	11 58 17.53	-01 55 38.7	589
1993 KG	1993 06 15.90097	11 58 17.99	-01 55 43.3	589
1993 KG	1993 06 16.84685	11 59 08.11	-02 03 21.2	589
1993 KG	1993 06 16.86712	11 59 09.29	-02 03 30.3	589
1993 KG	1993 06 18.83701	12 00 56.21	-02 19 36.9	589
1993 KG	1993 06 18.84945	12 00 56.86	-02 19 43.1	589
1993 KG	1993 06 18.85874	12 00 57.39	-02 19 47.6	589
1993 KG	1993 06 18.87348	12 00 58.23	-02 19 54.5	589
1993 KG	1993 06 20.85749	12 02 49.41	-02 36 21.3	589
1993 KG	1993 06 20.87059	12 02 50.18	-02 36 28.8	589
1993 KG	1993 06 21.84243	12 03 45.88	-02 44 36.6	589
1993 KG	1993 06 21.85443	12 03 46.52	-02 44 42.4	589
1993 KG	1993 06 23.84752	12 05 43.14	-03 01 34.5	589
1993 KG	1993 06 23.85760	12 05 43.78	-03 01 37.8	589
1993 KG	1993 07 07.84687	12 20 44.34	-05 05 27.5	589
1993 KG	1993 07 07.85156	12 20 44.67	-05 05 30.0	589
1993 KG	1993 07 07.85665	12 20 44.97	-05 05 33.0	589
1993 KG	1993 07 08.85303	12 21 54.19	-05 14 41.0	589
1993 KG	1993 07 08.86056	12 21 54.66	-05 14 45.9	589
1993 KG	1993 07 08.86667	12 21 55.14	-05 14 48.7	589

1993 KG	1993 07 09.84628	12 23 03.58	-05 23 48.5	589
1993 KG	1993 07 09.86726	12 23 05.06	-05 24 00.4	589
1993 KG	1993 07 13.84674	12 27 49.04	-06 00 59.8	589
1993 KG	1993 07 13.85247	12 27 49.44	-06 01 03.5	589
1993 KG	1993 07 13.85708	12 27 49.74	-06 01 05.4	589
1993 NA	1993 07 16.94053	20 16 36.43	-10 14 36.5	18.0 V 589
1993 NA	1993 07 16.95257	20 16 35.78	-10 14 38.6	589
1993 NA	1993 07 23.94951	20 10 32.64	-10 41 37.7	589
1993 NA	1993 07 23.96812	20 10 31.61	-10 41 43.1	589
1993 NA	1993 07 24.86478	20 09 45.06	-10 45 39.4	589
1993 NA	1993 07 24.91648	20 09 42.32	-10 45 53.6	589
1993 NA	1993 07 24.93514	20 09 41.34	-10 45 58.1	589
1993 NA	1993 07 24.96118	20 09 39.90	-10 46 04.9	589
1993 NA	1993 07 24.97703	20 09 39.00	-10 46 10.2	589
1993 NA	1993 07 24.98979	20 09 38.37	-10 46 12.9	589
1993 NA	1993 07 25.90323	20 08 51.11	-10 50 21.7	589
1993 NA	1993 07 25.93606	20 08 49.40	-10 50 30.4	589
1993 NA	1993 07 26.89210	20 08 00.15	-10 54 57.6	589
1993 NA	1993 07 26.94951	20 07 57.02	-10 55 14.3	589
1993 NA	1993 07 27.95176	20 07 05.74	-11 00 00.5	589
1993 NA	1993 07 27.96205	20 07 05.28	-11 00 04.1	589
1993 NA	1993 07 28.89869	20 06 18.10	-11 04 36.9	589
1993 NA	1993 07 28.90920	20 06 17.54	-11 04 40.0	589
1993 NA	1993 07 28.92045	20 06 16.84	-11 04 43.8	589
1993 NA	1993 07 28.93080	20 06 16.29	-11 04 46.6	589
1993 OM	* 1993 07 24.88932	20 09 26.04	-10 43 19.2	18.5 V 589
1993 OM	1993 07 24.91648	20 09 24.54	-10 43 19.7	589
1993 OM	1993 07 24.96118	20 09 22.22	-10 43 20.5	589
1993 OM	1993 07 24.98979	20 09 20.82	-10 43 22.0	589
1993 OM	1993 07 25.90323	20 08 34.19	-10 43 53.5	589
1993 OM	1993 07 25.93606	20 08 32.56	-10 43 54.1	589
1993 OM	1993 07 26.96340	20 07 40.19	-10 44 32.8	589
1993 OM	1993 07 26.97589	20 07 39.49	-10 44 32.8	589
1993 OM	1993 07 27.97660	20 06 48.87	-10 45 13.9	589
1993 ON	* 1993 07 24.96118	20 09 47.82	-10 39 30.9	18.5 V 589
1993 ON	1993 07 24.97703	20 09 47.04	-10 39 36.7	589
1993 ON	1993 07 24.98979	20 09 46.39	-10 39 41.9	589
1993 ON	1993 07 25.90323	20 09 01.57	-10 45 59.3	589
1993 ON	1993 07 25.91860	20 09 00.79	-10 46 06.4	589
1993 ON	1993 07 25.93606	20 08 59.98	-10 46 13.3	589
1993 ON	1993 07 26.89210	20 08 13.08	-10 52 53.9	589
1993 ON	1993 07 26.94951	20 08 10.14	-10 53 18.0	589
1993 ON	1993 07 27.95176	20 07 21.01	-11 00 24.2	589
1993 ON	1993 07 27.96205	20 07 20.36	-11 00 28.7	589
1993 ON	1993 07 28.89869	20 06 35.01	-11 07 13.8	589
1993 ON	1993 07 28.90920	20 06 34.60	-11 07 16.2	589
1993 ON	1993 07 28.92045	20 06 33.89	-11 07 22.1	589
1993 ON	1993 07 28.93080	20 06 33.38	-11 07 26.6	589
1993 OX <sub>1</sub>	* 1993 07 28.89869	20 06 20.45	-11 06 46.0	18.5 V 589
1993 OX <sub>1</sub>	1993 07 28.90920	20 06 19.87	-11 06 42.3	589
1993 OX <sub>1</sub>	1993 07 28.92045	20 06 19.21	-11 06 43.7	589
1993 OX <sub>1</sub>	1993 07 28.93080	20 06 18.61	-11 06 41.2	589

1993 OX <sub>1</sub>	1993 07 29.94137	20 05 25.60	-11 05 08.2	589
1993 OX <sub>1</sub>	1993 07 29.95865	20 05 25.20	-11 05 04.0	589
1993 PA	* 1993 08 10.94315	19 55 58.82	-10 53 56.1	18.5 V 589
1993 PA	1993 08 10.95612	19 55 58.38	-10 54 03.6	589
1993 PA	1993 08 10.96999	19 55 57.79	-10 54 10.2	589

**595 Farra d'Isonzo**

L. Bittesini, Via dei Conventi 10, I-34070 Farra D'Isonzo (GO), Italy  
 Observers F. Piani, L. Bittesini, G. Lombardi, E. Pettarin, A. Toso  
 Measurers E. Pettarin, A. Toso  
 0.4-m  $f/4.5$  reflector  
 GSC

1993 PA	1993 08 12.93906	19 54 50.90	-11 08 53.2	595
1993 PA	1993 08 12.95946	19 54 50.10	-11 09 03.3	595
1993 PA	1993 08 12.97942	19 54 49.46	-11 09 12.3	I 595

**596 Colleverde di Guidonia**

V. S. Casulli, Via M. Rosa 1, I-00010 Colleverde di Guidonia (RM), Italy  
 0.31-m  $f/2.8$  Baker-Schmidt + CCD  
 GSC

1990 DJ	1993 07 28.91061	21 23 54.41	+00 33 34.0	596
1990 DJ	1993 07 28.93599	21 23 52.84	+00 33 03.8	596
1993 MF	1993 07 09.93031	21 10 39.13	+20 26 05.9	596
1993 MF	1993 07 09.93865	21 10 40.89	+20 26 35.7	596
1993 MF	1993 07 09.95190	21 10 43.63	+20 27 22.9	596
1993 MF	1993 07 09.96144	21 10 45.61	+20 27 57.1	596
1993 OL	1993 07 28.84394	19 30 23.47	-25 12 02.9	596
1993 OL	1993 07 28.85090	19 30 20.65	-25 11 48.0	596
1993 OL	1993 07 28.86872	19 30 13.02	-25 11 08.6	596
1993 OL	1993 07 28.87692	19 30 09.55	-25 10 50.0	596
(854)	1993 07 09.88487	19 42 36.67	-08 55 29.4	596
(854)	1993 07 09.88869	19 42 36.47	-08 55 30.0	596
(854)	1993 07 09.89496	19 42 36.14	-08 55 30.7	596
(854)	1993 07 14.84680	19 38 20.96	-09 09 26.4	596
(854)	1993 07 14.87542	19 38 19.38	-09 09 31.4	596
(854)	1993 07 14.90028	19 38 18.06	-09 09 37.0	596
(864)	1993 07 12.91187	20 38 27.10	-10 28 22.9	596
(864)	1993 07 12.94288	20 38 25.79	-10 28 31.7	596
(864)	1993 07 12.95707	20 38 25.12	-10 28 36.1	596
(2131)	1993 07 17.96620	21 22 12.44	-18 01 16.9	596
(2131)	1993 07 17.97745	21 22 10.89	-18 00 59.1	596
(2491)	1993 07 17.92683	20 37 33.25	-15 03 00.8	596
(2491)	1993 07 17.94135	20 37 32.30	-15 03 18.7	596
(3383)	1993 05 29.85364	16 27 29.86	+01 56 45.7	596
(3383)	1993 05 29.85684	16 27 29.63	+01 56 46.1	596
(3383)	1993 05 29.87743	16 27 28.55	+01 56 45.8	596
(3383)	1993 05 29.89478	16 27 27.58	+01 56 46.4	596
(5141)	1993 07 15.86920	20 01 34.88	-18 50 46.1	596
(5141)	1993 07 15.89964	20 01 33.49	-18 50 57.2	596
(5141)	1993 07 15.92403	20 01 32.22	-18 51 00.8	596
(5141)	1993 07 19.89498	19 58 09.28	-19 04 42.2	596
(5141)	1993 07 19.91417	19 58 08.21	-19 04 45.7	596

**597 Springe**

N. Ehring, Detmoldstrasse 8, D-30171 Hannover, Germany

(80)	1993 07 25.90204	18 34 37.82	-07 38 04.0	597
(80)	1993 07 25.90490	18 34 37.66	-07 38 04.4	597
(185)	1993 07 24.91749	20 19 55.35	-00 01 39.3	597
(185)	1993 07 24.92681	20 19 54.90	-00 01 44.4	597
(313)	1993 07 25.92054	19 42 14.08	-05 39 49.2	597
(313)	1993 07 25.93336	19 42 13.38	-05 39 53.7	597
(354)	1993 07 25.94102	20 32 21.42	-11 27 37.5	597
(354)	1993 07 25.95309	20 32 20.84	-11 27 42.7	597

**604 Archenhold Sternwarte, Berlin-Treptow**

A. Doppler, c/o Archenhold-Sternwarte, Alt-Treptow 1, D-12435 Berlin, Germany  
 Observers A. Doppler, A. Gnaedig, D. Przewozny  
 0.12-m  $f/12$  refractor  
 PPM

(18)	1992 10 31.14463	07 42 43.91	+09 22 37.8	604
(18)	1992 11 09.15981	07 48 53.61	+08 42 29.1	604
(18)	1992 11 09.18646	07 48 54.48	+08 42 22.6	604
(18)	1992 12 16.01413	07 45 28.90	+07 58 23.7	604
(18)	1992 12 16.13993	07 45 23.18	+07 58 42.7	604
(18)	1992 12 18.15376	07 43 51.76	+08 04 11.3	604

**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, P. M. Krol

0.25-m Schmidt, 0.5-m reflector + CCD

1993 MO	1993 07 15.29602	16 56 10.61	-09 58 21.7	657
1993 MO	1993 07 15.29784	16 56 10.60	-09 58 29.3	657
1993 MO	1993 07 15.29998	16 56 10.55	-09 58 39.4	657
1993 ME <sub>1</sub>	1993 07 15.26184	16 45 57.12	+07 43 32.3	17.0 657
1993 ME <sub>1</sub>	1993 07 15.26593	16 45 57.35	+07 43 36.2	16.9 657
1993 ME <sub>1</sub>	1993 07 15.26958	16 45 57.65	+07 43 40.0	16.9 657
3036 T-1	1993 07 01.29167	18 40 11.97	-00 45 29.3	16.5 657
3036 T-1	1993 07 01.29499	18 40 11.80	-00 45 28.9	657
3036 T-1	1993 07 01.29837	18 40 11.63	-00 45 28.7	16.5 657
3036 T-1	1993 07 15.31222	18 29 29.82	-01 02 44.7	657
3036 T-1	1993 07 15.31622	18 29 29.65	-01 02 45.5	657
3036 T-1	1993 07 15.31855	18 29 29.54	-01 02 46.2	657
1010 T-2	1993 07 08.34826	20 17 35.46	-05 43 50.9	657
1010 T-2	1993 07 08.35130	20 17 35.21	-05 43 51.7	657
1010 T-2	1993 07 08.35514	20 17 35.00	-05 43 51.9	657
1159 T-2	1993 07 15.32284	18 41 52.64	+00 27 31.7	657
1159 T-2	1993 07 15.32993	18 41 52.29	+00 27 30.1	657
1159 T-2	1993 07 15.33243	18 41 52.14	+00 27 29.6	657
(15)	1993 07 15.35014	19 50 03.01	-20 41 06.3	657
(15)	1993 07 15.35152	19 50 02.92	-20 41 06.0	657
(15)	1993 07 15.35237	19 50 02.86	-20 41 05.9	657
(15)	1993 07 15.35308	19 50 02.82	-20 41 05.9	657
(3749)	1993 07 15.35843	18 55 17.85	-24 17 08.2	657
(3749)	1993 07 15.36375	18 55 17.56	-24 17 08.4	657

**658 Dominion Astrophysical Observatory, Victoria**

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, G. C. L. Aikman

1.85-m reflector + CCD

GSC

1981 EX <sub>43</sub>	1993 07 17.38080	21 02 37.07	-05 57 46.2	658
1981 EX <sub>43</sub>	1993 07 17.38441	21 02 36.92	-05 57 46.5	658
1981 EX <sub>43</sub>	1993 07 17.38795	21 02 36.75	-05 57 46.9	658
1981 EX <sub>43</sub>	1993 07 25.41112	20 56 23.77	-06 15 47.8	658
1981 EX <sub>43</sub>	1993 07 25.41325	20 56 23.67	-06 15 48.2	658
1981 EX <sub>43</sub>	1993 07 25.41534	20 56 23.56	-06 15 48.5	658
1981 EX <sub>43</sub>	1993 07 26.36574	20 55 35.56	-06 18 47.3	658
1981 EX <sub>43</sub>	1993 07 26.36850	20 55 35.40	-06 18 47.7	658
1981 EX <sub>43</sub>	1993 07 26.37128	20 55 35.26	-06 18 47.6	658
1985 RW	1993 07 26.27671	18 33 32.97	+03 40 06.6	658
1985 RW	1993 07 26.27984	18 33 32.78	+03 40 06.7	658
1985 RW	1993 07 26.28333	18 33 32.60	+03 40 06.5	658
1988 WC	1993 07 25.28559	17 41 58.02	-03 05 29.7	658
1988 WC	1993 07 25.28964	17 41 57.88	-03 05 30.0	658
1988 WC	1993 07 25.29334	17 41 57.74	-03 05 30.2	658
1990 QL	1993 07 25.27328	17 27 20.19	+06 51 05.7	658
1990 QL	1993 07 25.27645	17 27 20.14	+06 51 03.8	658
1990 QL	1993 07 25.28039	17 27 20.00	+06 51 01.4	658
1990 QL	1993 07 26.22172	17 26 49.62	+06 41 31.5	658
1990 QL	1993 07 26.22473	17 26 49.54	+06 41 29.4	658
1990 QL	1993 07 26.22775	17 26 49.50	+06 41 28.6	658
1991 CA <sub>2</sub>	1993 07 17.26855	16 51 07.46	-06 19 05.2	658
1991 CA <sub>2</sub>	1993 07 17.27245	16 51 07.36	-06 19 06.4	658
1991 CA <sub>2</sub>	1993 07 17.27650	16 51 07.27	-06 19 07.6	658
1992 FD	1993 07 25.40068	21 22 13.55	+14 30 46.8	658
1992 FD	1993 07 25.40300	21 22 13.43	+14 30 45.7	658
1992 FD	1993 07 25.40499	21 22 13.34	+14 30 44.8	658
1992 FW <sub>1</sub>	1993 07 26.25323	17 52 53.80	+08 18 05.3	658
1992 FW <sub>1</sub>	1993 07 26.25663	17 52 53.67	+08 18 04.3	658
1992 FW <sub>1</sub>	1993 07 26.26109	17 52 53.47	+08 18 02.8	658
1993 MF	1993 07 17.35608	21 38 23.96	+27 18 05.3	658
1993 MF	1993 07 17.35951	21 38 24.68	+27 18 16.0	658
1993 MF	1993 07 17.36439	21 38 25.75	+27 18 31.2	658
1993 MF	1993 07 25.36906	22 09 24.76	+33 22 59.1	658
1993 MF	1993 07 25.37126	22 09 25.26	+33 23 04.6	658
1993 MF	1993 07 25.37394	22 09 25.84	+33 23 10.8	658
1993 MO	1993 07 17.25867	16 56 05.18	-12 29 40.7	658
1993 MO	1993 07 17.26122	16 56 05.16	-12 29 52.2	658
1993 MO	1993 07 17.26361	16 56 05.12	-12 30 02.4	658
1993 ME <sub>1</sub>	1993 07 17.24034	16 48 34.61	+08 14 51.3	658
1993 ME <sub>1</sub>	1993 07 17.24236	16 48 34.77	+08 14 53.1	658
1993 ME <sub>1</sub>	1993 07 17.24424	16 48 34.91	+08 14 54.8	658
1993 ME <sub>1</sub>	1993 07 25.26109	16 59 46.42	+09 46 26.1	658
1993 ME <sub>1</sub>	1993 07 25.26429	16 59 46.69	+09 46 27.4	658
1993 ME <sub>1</sub>	1993 07 25.26787	16 59 46.99	+09 46 29.3	658
1993 ME <sub>1</sub>	1993 07 26.21108	17 01 09.66	+09 54 00.7	658

1993 ME <sub>1</sub>	1993 07 26.21397	17 01 09.92	+09 54 01.9	658
1993 ME <sub>1</sub>	1993 07 26.21700	17 01 10.15	+09 54 03.2	658
1993 OR	* 1993 07 25.42455	21 47 42.23	-15 08 23.9	18 658
1993 OR	1993 07 25.43091	21 47 42.00	-15 08 24.5	658
1993 OR	1993 07 26.44218	21 47 01.17	-15 10 16.1	658
1993 OR	1993 07 26.44499	21 47 01.09	-15 10 16.7	658
1993 OR	1993 07 26.44772	21 47 00.99	-15 10 17.0	658
1993 OR	1993 07 26.45468	21 47 00.70	-15 10 17.5	658
1993 OR	1993 07 26.45721	21 47 00.55	-15 10 17.6	658
1993 OR	1993 07 26.45998	21 47 00.44	-15 10 18.2	658
2799 P-L	1993 07 17.28241	17 50 59.96	+19 39 50.3	658
2799 P-L	1993 07 17.28588	17 50 59.82	+19 39 49.5	658
2799 P-L	1993 07 17.28935	17 50 59.73	+19 39 48.1	658
2799 P-L	1993 07 17.29324	17 50 59.60	+19 39 46.8	658
	(3824)	1993 07 26.46897	21 46 25.84	-14 39 48.9 17.2 658
	(3824)	1993 07 26.47432	21 46 25.55	-14 39 49.8 658
	(3824)	1993 07 26.47670	21 46 25.41	-14 39 50.1 658
	(4257)	1993 07 25.34867	19 33 20.26	+32 51 46.8 658

**670 Camarillo**

J. E. Rogers, 441 Rowland Avenue, Camarillo, CA 93010, U.S.A.

0.25-m Schmidt-Cassegrain + CCD

GSC

1991 AB <sub>1</sub>	1993 06 24.28197	16 38 03.45	-07 30 34.9	16.2 V 670
1991 AB <sub>1</sub>	1993 06 24.31090	16 38 02.21	-07 30 38.8	670
1991 AB <sub>1</sub>	1993 06 24.32723	16 38 01.54	-07 30 42.3	670

**675 Palomar**

E. Helin, MS 183-501, Jet Propulsion Laboratory, Pasadena, CA 91109, U.S.A. (2)

C. Shoemaker, P.O. Box 984, Flagstaff, AZ 86002, U.S.A. (3)

C. J. van Houten, Sterrewacht Leiden, Postbus 9513, NL-2300 RA Leiden, The Netherlands (4)

E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001, U.S.A. (6)

9 = 3 + 6

Observers B. M. Cudnik (3, S), T. Gehrels (4, L), E. Helin (2, S), H. E. Holt (3, S), W. Johnson (2, S), K. Lawrence (2, S), D. H. Levy (3, S), M. Nassir (2, S), C. M. Olmstead (3, S), C. S. Shoemaker (3, S), E. M. Shoemaker (3, S), D. Williams (3, S)

Measurers J. Alu (2), B. M. Cudnik (3), K. E. Daniels (6), K. Lawrence (2), M. Nassir (2), P. W. Tracadas (6), C. J. van Houten (4), I. van Houten-Groeneveld (4), A. Wisse (4)

1.2-m (L) and 0.46-m (S) Schmidt telescopes

1931 FC	1993 07 16.44757	21 56 08.52	-19 04 53.5	2 675
1931 VS	1954 04 08.37535	14 18 45.20	-11 00 30.9	6 675
1931 VS	1954 04 08.39861	14 18 43.86	-11 00 28.4	6 675
1938 HA	1955 04 14.24931	12 12 09.18	+08 31 58.6	6 675
1938 HA	1955 04 14.27431	12 12 07.96	+08 31 59.6	6 675
1939 UB	1954 04 08.37535	14 09 49.55	-14 40 23.5	6 675
1939 UB	1954 04 08.39861	14 09 48.51	-14 40 09.3	6 675
1951 CF <sub>2</sub>	* 1951 02 04.31597	09 01 53.13	+20 54 20.2	6 675
1951 CF <sub>2</sub>	1951 02 04.34097	09 01 51.28	+20 54 27.2	6 675
1951 CG <sub>2</sub>	* 1951 02 04.31597	09 04 29.31	+22 32 00.5	16.5 6 675



1951 CG <sub>2</sub>	1951 02 04.34097	09 04 27.66	+22 32 10.9		6 675	1969 TM <sub>1</sub>	1954 07 29.38125	22 22 14.34	-23 54 28.3	6 675
1951 CH <sub>2</sub>	* 1951 02 04.31597	09 26 13.79	+22 33 25.9	16.5	6 675	1969 TM <sub>1</sub>	1954 07 29.40556	22 22 13.31	-23 54 36.7	6 675
1951 CH <sub>2</sub>	1951 02 04.34097	09 26 12.31	+22 33 42.8		6 675	1969 TX <sub>5</sub>	1955 04 14.24931	12 19 32.33	+08 21 57.3	6 675
1951 CJ <sub>2</sub>	* 1951 02 04.31597	09 26 39.81	+23 04 01.6	16.2	6 675	1969 TX <sub>5</sub>	1955 04 14.27431	12 19 31.03	+08 21 53.8	6 675
1951 CJ <sub>2</sub>	1951 02 04.34097	09 26 38.56	+23 04 19.0		6 675	1971 UT <sub>1</sub>	1954 12 21.13750	02 23 58.56	+11 30 56.6	6 675
1951 CK <sub>2</sub>	* 1951 02 04.31814	09 01 07.92	+24 24 29.7	16.5	6 675	1971 UT <sub>1</sub>	1954 12 21.16076	02 23 58.56	+11 30 57.6	6 675
1951 CK <sub>2</sub>	1951 02 04.34097	09 01 06.10	+24 24 35.2		6 675	1973 ST <sub>3</sub>	1953 04 15.21806	10 56 28.23	+07 05 48.2	6 675
1951 WH	1954 07 29.38125	22 11 29.33	-22 12 21.3		6 675	1973 ST <sub>3</sub>	1953 04 15.24201	10 56 27.71	+07 05 48.6	6 675
1951 WH	1954 07 29.40990	22 11 28.27	-22 12 29.6		6 675	1974 QM <sub>2</sub>	1953 04 15.21806	11 02 09.04	+02 34 16.2	6 675
1951 XJ <sub>1</sub>	* 1951 12 01.23542	03 33 39.09	+16 15 49.4		6 675	1974 QM <sub>2</sub>	1953 04 15.24201	11 02 08.31	+02 34 17.6	6 675
1951 XJ <sub>1</sub>	1951 12 01.26250	03 33 37.60	+16 15 43.9		6 675	1975 SA <sub>1</sub>	1952 01 31.43819	11 48 29.19	+12 48 01.2	6 675
1951 XK <sub>1</sub>	* 1951 12 01.23542	03 38 29.49	+15 46 01.7		6 675	1975 SA <sub>1</sub>	1952 01 31.46857	11 48 28.63	+12 48 06.4	6 675
1951 XK <sub>1</sub>	1951 12 01.26250	03 38 28.18	+15 45 59.4		6 675	1976 SG <sub>2</sub>	1955 04 21.24861	12 22 41.53	-00 46 43.1	6 675
1951 XL <sub>1</sub>	* 1951 12 01.23542	03 41 18.73	+16 06 36.2	17.2	6 675	1976 SG <sub>2</sub>	1955 04 21.27361	12 22 40.49	-00 46 32.5	6 675
1951 XL <sub>1</sub>	1951 12 01.26250	03 41 16.82	+16 06 40.7		6 675	1976 YR <sub>1</sub>	1954 12 21.13750	02 44 02.64	+12 00 09.8	6 675
1951 XM <sub>1</sub>	* 1951 12 01.23542	03 42 20.16	+20 30 29.1	17.5	6 675	1976 YR <sub>1</sub>	1954 12 21.16076	02 44 02.26	+12 00 16.1	6 675
1951 XM <sub>1</sub>	1951 12 01.26250	03 42 18.71	+20 30 28.5		6 675	1977 EO <sub>1</sub>	1993 04 15.29653	13 41 35.20	-08 19 26.4	9 675
1951 XN <sub>1</sub>	* 1951 12 01.23542	03 43 20.97	+19 05 20.4	17.8	6 675	1977 EO <sub>1</sub>	1993 04 15.33125	13 41 33.26	-08 19 18.2	9 675
1951 XN <sub>1</sub>	1951 12 01.26250	03 43 19.38	+19 05 20.9		6 675	1977 EO <sub>1</sub>	1993 04 16.35104	13 40 44.11	-08 15 45.9	9 675
1953 GE <sub>2</sub>	* 1953 04 15.21806	10 52 49.36	+05 03 03.3		6 675	1977 EO <sub>1</sub>	1993 04 16.38073	13 40 42.61	-08 15 39.8	9 675
1953 GE <sub>2</sub>	1953 04 15.24201	10 52 48.86	+05 03 03.9		6 675	1977 EO <sub>1</sub>	1993 04 19.31267	13 38 20.85	-08 05 31.9	9 675
1953 GF <sub>2</sub>	* 1953 04 15.21806	11 00 00.83	+06 50 31.2	17.8	6 675	1977 EO <sub>1</sub>	1993 04 19.34601	13 38 19.20	-08 05 24.5	9 675
1953 GF <sub>2</sub>	1953 04 15.24201	11 00 00.39	+06 50 29.9		6 675	1978 RK <sub>1</sub>	1951 12 01.23542	03 53 08.44	+18 03 41.6	6 675
1953 GG <sub>2</sub>	* 1953 04 15.21806	11 04 19.11	+06 43 21.0	17.5	6 675	1978 RK <sub>1</sub>	1951 12 01.26250	03 53 06.96	+18 03 39.1	6 675
1953 GG <sub>2</sub>	1953 04 15.24201	11 04 18.31	+06 43 20.8		6 675	1978 VR <sub>4</sub>	1954 07 01.21528	16 42 19.05	-18 23 00.9	6 675
1953 PN <sub>1</sub>	* 1953 08 15.27118	20 21 06.27	-18 45 15.6	17.5	6 675	1978 VR <sub>4</sub>	1954 07 01.23958	16 42 17.98	-18 22 57.7	6 675
1953 PN <sub>1</sub>	1953 08 15.29514	20 21 05.39	-18 45 29.7		6 675	1978 VT <sub>6</sub>	1993 07 15.38125	20 16 44.24	-15 32 29.8	16.5 2 675
1953 TV <sub>3</sub>	* 1953 10 01.21945	22 16 18.52	-09 34 18.4	17.2	6 675	1978 VT <sub>6</sub>	1993 07 15.40503	20 16 42.73	-15 32 31.3	2 675
1953 TV <sub>3</sub>	1953 10 01.25903	22 16 17.74	-09 34 04.4		6 675	1978 VT <sub>6</sub>	1993 07 17.30712	20 14 47.18	-15 34 01.0	2 675
1954 RX	* 1954 09 04.40556	00 42 51.28	-00 53 17.6	17.0	6 675	1978 VT <sub>6</sub>	1993 07 17.35000	20 14 44.28	-15 34 03.2	2 675
1954 RX	1954 09 04.43090	00 42 50.34	-00 53 20.1		6 675	1979 FD <sub>2</sub>	1954 09 04.40556	00 59 55.90	+03 33 28.3	6 675
1954 RY	* 1954 09 04.40556	00 45 30.07	+03 15 27.7		6 675	1979 FD <sub>2</sub>	1954 09 04.43090	00 59 55.22	+03 33 22.2	6 675
1954 RY	1954 09 04.43090	00 45 29.36	+03 15 20.4		6 675	1979 FD <sub>3</sub>	1953 10 01.23507	22 16 17.36	-13 53 06.0	6 675
1954 RZ	* 1954 09 04.40556	00 58 58.73	+03 25 53.0	17.5	6 675	1979 FD <sub>3</sub>	1953 10 01.25903	22 16 16.74	-13 53 09.4	6 675
1954 RZ	1954 09 04.43090	00 58 58.13	+03 25 31.4		6 675	1979 MZ <sub>2</sub>	1954 04 08.37535	14 12 06.21	-10 06 27.5	6 675
1954 YO	* 1954 12 21.13750	02 38 30.80	+14 04 15.5		6 675	1979 MZ <sub>2</sub>	1954 04 08.39861	14 12 05.07	-10 06 18.9	6 675
1954 YO	1954 12 21.16076	02 38 30.38	+14 04 05.2		6 675	1979 MR <sub>3</sub>	1950 03 17.23125	11 08 10.73	+15 14 48.6	6 675
1955 FH <sub>2</sub>	* 1955 03 23.19375	08 48 52.68	+20 34 24.8		6 675	1979 MR <sub>3</sub>	1950 03 17.25868	11 08 09.14	+15 15 00.6	6 675
1955 FH <sub>2</sub>	1955 03 23.21875	08 48 52.77	+20 34 19.9		6 675	1979 SP <sub>14</sub>	1954 05 31.20104	13 20 07.68	-04 52 47.3	6 675
1955 HB <sub>1</sub>	* 1955 04 21.24861	12 37 32.34	+02 22 15.6		6 675	1979 SP <sub>14</sub>	1954 05 31.22571	13 20 07.35	-04 52 46.8	6 675
1955 HB <sub>1</sub>	1955 04 21.27361	12 37 31.14	+02 22 25.9		6 675	1979 XQ	1954 04 08.37535	14 04 54.58	-11 40 54.1	6 675
1955 HC <sub>1</sub>	* 1955 04 21.24861	12 38 14.11	+01 47 26.4	17.2	6 675	1979 XQ	1954 04 08.39861	14 04 53.26	-11 40 49.1	6 675
1955 HC <sub>1</sub>	1955 04 21.27361	12 38 13.11	+01 47 41.3		6 675	1979 XQ	1954 05 31.20104	13 21 40.08	-08 56 42.4	6 675
1955 XL <sub>1</sub>	* 1955 12 12.51562	09 35 35.67	+18 06 34.6		6 675	1979 XQ	1954 05 31.22571	13 21 39.58	-08 56 42.1	6 675
1955 XL <sub>1</sub>	1955 12 12.53681	09 35 36.23	+18 06 42.0		6 675	1980 GO	1953 08 15.27118	19 56 21.90	-19 45 22.1	6 675
1955 YL	1955 12 16.22083	04 30 12.39	+01 31 57.4		6 675	1980 GO	1953 08 15.29514	19 56 21.06	-19 45 26.9	6 675
1955 YL	* 1955 12 16.24201	04 30 11.60	+01 32 02.5	18.2	6 675	1980 GO	1954 09 04.40556	00 48 06.21	+03 37 17.0	6 675
1955 YM	1955 12 16.22083	04 41 42.20	+00 42 47.1		6 675	1980 GO	1954 09 04.43090	00 48 05.37	+03 37 10.8	6 675
1955 YM	* 1955 12 16.24425	04 41 40.90	+00 42 48.7	18.2	6 675	1980 SG	1955 03 23.19375	09 00 53.61	+25 19 43.9	6 675
1964 PS	* 1964 08 08.32549	21 05 44.03	-32 25 24.7		6 675	1980 SG	1955 03 23.21528	09 00 53.25	+25 19 39.7	6 675
1965 UA	1953 04 15.21806	10 53 33.32	+07 55 50.5		6 675	1980 TT <sub>3</sub>	1953 04 15.21806	10 57 31.17	+07 24 03.7	6 675
1965 UA	1953 04 15.24201	10 53 32.60	+07 55 51.9		6 675	1980 TT <sub>3</sub>	1953 04 15.24201	10 57 30.54	+07 24 03.5	6 675

1980 TA <sub>4</sub>	1954 09 04.40556	00 53 05.51	+02 15 21.6	6 675	1982 UM <sub>2</sub>	1954 12 21.13750	02 23 25.65	+10 41 46.6	6 675
1980 TA <sub>4</sub>	1954 09 04.43090	00 53 04.56	+02 15 17.6	6 675	1982 UM <sub>2</sub>	1954 12 21.16076	02 23 25.77	+10 41 49.0	6 675
1980 VA <sub>3</sub>	1953 10 01.23507	22 16 34.85	-10 47 30.9	6 675	1982 UH <sub>8</sub>	1953 08 15.27118	20 00 17.89	-16 50 42.6	6 675
1980 VA <sub>3</sub>	1953 10 01.25903	22 16 34.21	-10 47 30.4	6 675	1982 UH <sub>8</sub>	1953 08 15.29514	20 00 16.93	-16 50 42.9	6 675
1981 ES <sub>4</sub>	1955 03 25.15625	08 24 13.83	+21 55 36.9	6 675	1982 VV <sub>10</sub>	1954 09 04.40556	00 47 29.36	-00 21 42.2	6 675
1981 ES <sub>4</sub>	1955 03 25.18264	08 24 13.60	+21 55 28.4	6 675	1982 VV <sub>10</sub>	1954 09 04.43090	00 47 28.52	-00 21 50.8	6 675
1981 EX <sub>10</sub>	1954 04 08.37535	14 06 15.36	-12 25 34.9	6 675	1983 CA <sub>1</sub>	1955 03 25.15625	08 18 39.40	+22 16 26.7	6 675
1981 EX <sub>10</sub>	1954 04 08.39861	14 06 14.22	-12 25 24.4	6 675	1983 CA <sub>1</sub>	1955 03 25.18264	08 18 39.86	+22 16 20.1	6 675
1981 EZ <sub>10</sub>	1953 04 15.21806	10 46 55.22	+02 49 41.4	6 675	1983 EB <sub>1</sub>	1951 12 01.23542	03 53 49.43	+15 41 15.0	6 675
1981 EZ <sub>10</sub>	1953 04 15.24201	10 46 54.86	+02 49 44.6	6 675	1983 EB <sub>1</sub>	1951 12 01.26250	03 53 47.75	+15 41 10.4	6 675
1981 EX <sub>15</sub>	1953 10 01.23507	21 55 42.38	-11 03 21.1	6 675	1983 RT <sub>1</sub>	1950 08 14.42361	02 09 53.63	+14 13 02.8	6 675
1981 EX <sub>15</sub>	1953 10 01.25903	21 55 41.88	-11 03 21.2	6 675	1983 RT <sub>1</sub>	1950 08 14.45104	02 09 54.71	+14 13 14.3	6 675
1981 EK <sub>18</sub>	1953 04 15.21806	10 50 26.53	+06 05 55.9	6 675	1983 XW	1953 08 15.27118	20 11 50.42	-20 36 29.3	6 675
1981 EK <sub>18</sub>	1953 04 15.24201	10 50 26.15	+06 05 59.0	6 675	1983 XW	1953 08 15.29514	20 11 49.34	-20 36 31.8	6 675
1981 EK <sub>18</sub>	1954 07 01.21528	16 26 35.70	-20 32 45.9	6 675	1983 XW	1954 12 21.13750	02 24 20.15	+14 32 15.9	6 675
1981 EK <sub>18</sub>	1954 07 01.23958	16 26 34.77	-20 32 43.1	6 675	1983 XW	1954 12 21.16076	02 24 20.07	+14 32 16.3	6 675
1981 EO <sub>18</sub>	1953 10 01.23507	22 02 11.89	-11 10 21.8	6 675	1984 EY	1955 04 21.24861	12 35 46.16	-00 36 10.5	6 675
1981 EO <sub>18</sub>	1953 10 01.25903	22 02 11.31	-11 10 23.8	6 675	1984 EY	1955 04 21.27361	12 35 44.96	-00 36 10.0	6 675
1981 EO <sub>18</sub>	1955 03 25.15625	08 12 22.37	+20 30 00.0	6 675	1984 FU	1954 07 29.38125	22 10 24.87	-21 08 11.6	6 675
1981 EO <sub>18</sub>	1955 03 25.18264	08 12 23.03	+20 29 55.3	6 675	1984 FU	1954 07 29.40556	22 10 23.62	-21 08 17.5	6 675
1981 EO <sub>18</sub>	1979 10 18.30764	01 38 37.64	+14 01 01.3	6 675	1984 MQ	1993 07 16.23247	18 15 57.45	-10 12 18.7	15.5 2 675
1981 EO <sub>18</sub>	1979 10 18.35972	01 38 34.60	+14 00 48.6	6 675	1984 MQ	1993 07 16.25903	18 15 56.36	-10 12 29.6	2 675
1981 EC <sub>23</sub>	1950 08 14.42361	02 02 21.31	+13 14 28.6	6 675	1984 MQ	1993 07 20.19410	18 13 31.47	-10 43 55.9	2 675
1981 EC <sub>23</sub>	1950 08 14.45104	02 02 21.75	+13 14 32.7	6 675	1984 MQ	1993 07 20.21632	18 13 30.54	-10 44 06.6	2 675
1981 EC <sub>23</sub>	1953 04 15.21806	10 46 16.91	+06 35 56.0	6 675	1984 UD <sub>3</sub>	1954 04 08.37535	14 18 25.45	-13 31 09.2	6 675
1981 EC <sub>23</sub>	1953 04 15.24201	10 46 16.53	+06 35 58.0	6 675	1984 UD <sub>3</sub>	1954 04 08.39861	14 18 24.28	-13 30 59.0	6 675
1981 ET <sub>24</sub>	1953 04 15.21806	10 55 41.85	+06 49 15.3	6 675	1984 YE <sub>4</sub>	1993 04 15.29653	13 42 03.61	-01 53 10.9	9 675
1981 ET <sub>24</sub>	1953 04 15.24201	10 55 41.59	+06 49 22.8	6 675	1984 YE <sub>4</sub>	1993 04 15.33125	13 42 01.48	-01 53 03.5	9 675
1981 EW <sub>24</sub>	1953 08 15.27118	20 17 01.58	-17 41 40.3	6 675	1984 YE <sub>4</sub>	1993 04 16.35104	13 41 00.93	-01 49 02.8	9 675
1981 EW <sub>24</sub>	1953 08 15.29514	20 17 00.48	-17 41 45.7	6 675	1984 YE <sub>4</sub>	1993 04 16.38073	13 40 59.09	-01 48 55.2	9 675
1981 EC <sub>25</sub>	1955 03 23.19375	08 51 30.19	+21 06 46.5	6 675	1984 YE <sub>4</sub>	1993 04 19.31267	13 38 06.00	-01 38 02.7	9 675
1981 EC <sub>25</sub>	1955 03 23.21875	08 51 29.91	+21 06 45.5	6 675	1985 CT	1950 03 17.23125	11 18 39.59	+19 22 43.7	6 675
1981 EZ <sub>47</sub>	1955 03 25.15625	08 14 06.78	+21 46 30.5	6 675	1985 CT	1950 03 17.25868	11 18 38.04	+19 23 00.2	6 675
1981 EZ <sub>47</sub>	1955 03 25.18264	08 14 07.41	+21 46 26.7	6 675	1985 GA <sub>1</sub>	1955 04 14.24931	12 08 21.86	+08 51 58.9	6 675
1981 GG	1955 04 14.24931	12 00 10.93	+13 15 39.7	6 675	1985 GA <sub>1</sub>	1955 04 14.27431	12 08 20.71	+08 52 06.9	6 675
1981 GG	1955 04 14.27431	12 00 09.74	+13 15 30.4	6 675	1985 QN	1993 04 15.29653	13 47 28.37	-07 11 17.0	9 675
1981 QT <sub>3</sub>	1953 10 01.23507	22 12 38.70	-14 08 36.2	6 675	1985 QN	1993 04 15.33125	13 47 26.55	-07 11 07.3	9 675
1981 QT <sub>3</sub>	1953 10 01.25903	22 12 38.10	-14 08 36.4	6 675	1985 QN	1993 04 16.35104	13 46 35.75	-07 06 02.2	9 675
1981 RB <sub>2</sub>	1993 06 15.29288	16 28 09.34	-21 43 43.7	3 675	1985 QN	1993 04 16.38073	13 46 34.19	-07 05 54.5	9 675
1981 RB <sub>2</sub>	1993 06 15.33229	16 28 07.21	-21 43 20.6	3 675	1985 QN	1993 04 19.31267	13 44 07.38	-06 51 24.3	9 675
1981 SZ <sub>7</sub>	1950 03 17.23125	11 30 03.72	+17 37 48.1	6 675	1985 QN	1993 04 19.34601	13 44 05.63	-06 51 15.1	9 675
1981 SZ <sub>7</sub>	1950 03 17.25868	11 30 02.28	+17 37 52.9	6 675	1985 RD	1953 10 01.23507	21 58 46.72	-13 04 31.9	6 675
1981 SZ <sub>7</sub>	1952 12 11.10208	01 21 04.03	+11 57 27.2	6 675	1985 RD	1953 10 01.25903	21 58 46.38	-13 04 31.9	6 675
1981 SZ <sub>7</sub>	1952 12 11.12361	01 21 04.11	+11 57 33.2	6 675	1985 RU	1993 07 21.27604	19 35 11.35	-36 16 27.8	16.7 3 675
1981 SZ <sub>7</sub>	1954 02 26.22986	07 55 58.56	+38 42 52.4	6 675	1985 RU	1993 07 23.30747	19 32 25.53	-35 54 44.2	3 675
1982 BQ <sub>2</sub>	1993 04 15.29653	13 43 36.11	-04 10 17.8	9 675	1985 RU	1993 07 25.25417	19 29 50.65	-35 32 38.7	3 675
1982 BQ <sub>2</sub>	1993 04 15.33125	13 43 33.92	-04 10 04.7	9 675	1985 RU	1993 07 25.28455	19 29 48.08	-35 32 17.4	3 675
1982 BQ <sub>2</sub>	1993 04 16.35104	13 42 35.15	-04 03 39.4	9 675	1985 RC <sub>4</sub>	1954 05 31.20104	13 31 57.47	-05 38 16.3	6 675
1982 BQ <sub>2</sub>	1993 04 16.38073	13 42 33.40	-04 03 29.2	9 675	1985 RC <sub>4</sub>	1954 05 31.22571	13 31 57.01	-05 38 14.6	6 675
1982 FC	1950 03 17.23125	11 07 08.37	+19 14 46.4	6 675	1985 UH <sub>3</sub>	1954 07 01.21528	16 25 46.78	-16 46 01.7	6 675
1982 FC	1950 03 17.25868	11 07 06.43	+19 14 44.4	6 675	1985 UH <sub>3</sub>	1954 07 01.23958	16 25 45.86	-16 46 02.8	6 675
1982 ST	1954 02 26.22986	07 56 52.37	+38 43 44.6	6 675	1986 JS	1993 07 20.43403	21 42 42.14	-14 04 34.2	15.5 2 675

1986 JS	1993 07 20.46545	21 42 41.15	-14 04 46.8	2 675	1989 CN	1954 07 28.46111	23 37 00.72	-02 29 57.9	6 675
1986 QS	1951 02 04.31597	09 11 09.69	+24 44 15.6	6 675	1989 FG	1955 12 12.51562	09 35 56.86	+19 29 18.7	6 675
1986 QS	1951 02 04.34097	09 11 08.04	+24 44 18.1	6 675	1989 FG	1955 12 12.53681	09 35 57.47	+19 29 19.3	6 675
1986 RY <sub>5</sub>	1993 07 17.38681	21 23 13.46	-04 08 32.9	2 675	1989 GF <sub>8</sub>	1954 12 21.13750	02 41 16.53	+13 53 33.2	6 675
1986 TZ <sub>1</sub>	1952 01 31.43819	11 45 27.31	+09 38 38.4	6 675	1989 GF <sub>8</sub>	1954 12 21.16076	02 41 16.03	+13 53 34.2	6 675
1986 TZ <sub>1</sub>	1952 01 31.46299	11 45 26.71	+09 38 46.4	6 675	1989 HG	1993 04 16.35104	13 47 45.62	-03 49 35.4	9 675
1986 TZ <sub>1</sub>	1955 03 23.19375	08 53 16.62	+24 18 16.3	6 675	1989 HG	1993 04 19.31267	13 45 34.55	-03 12 36.3	9 675
1986 TZ <sub>1</sub>	1955 03 23.21875	08 53 16.45	+24 18 14.5	6 675	1989 LT	1993 07 15.38733	20 40 34.37	-21 10 01.7	16.0 2 675
1987 DH <sub>6</sub>	1953 10 01.23507	22 14 17.14	-08 45 37.6	6 675	1989 LT	1993 07 15.41128	20 40 32.95	-21 10 07.4	2 675
1987 DH <sub>6</sub>	1953 10 01.25903	22 14 16.50	-08 45 40.2	6 675	1989 LT	1993 07 16.39809	20 39 38.55	-21 13 14.2	2 675
1987 DW <sub>6</sub>	1951 12 01.23542	03 47 30.40	+21 21 57.7	6 675	1989 LT	1993 07 16.42396	20 39 37.03	-21 13 18.4	2 675
1987 DW <sub>6</sub>	1951 12 01.26250	03 47 29.29	+21 21 55.3	6 675	1989 LT	1993 07 20.34722	20 35 52.59	-21 25 34.6	2 675
1987 EV	1955 12 12.51562	09 44 58.68	+14 20 16.9	6 675	1989 LT	1993 07 20.37066	20 35 51.12	-21 25 39.0	2 675
1987 EV	1955 12 12.53681	09 44 59.13	+14 20 07.6	6 675	1989 TB <sub>11</sub>	1993 07 21.41163	22 12 04.72	-13 24 35.0	17.3 3 675
1987 MM <sub>1</sub>	1954 04 08.37535	14 08 33.30	-09 58 13.7	6 675	1989 TB <sub>11</sub>	1993 07 24.39010	22 10 32.51	-13 29 08.9	3 675
1987 MM <sub>1</sub>	1954 04 08.39861	14 08 32.41	-09 58 03.8	6 675	1989 TB <sub>11</sub>	1993 07 24.44670	22 10 30.34	-13 29 15.3	3 675
1987 SJ <sub>1</sub>	1951 12 01.23542	03 39 30.54	+17 38 52.6	6 675	1989 UA	1954 02 26.22986	08 13 50.46	+36 33 14.1	6 675
1987 SJ <sub>1</sub>	1951 12 01.26250	03 39 28.93	+17 38 45.8	6 675	1989 UA	1954 02 26.25139	08 13 49.75	+36 33 09.7	6 675
1987 SQ <sub>1</sub>	1954 12 21.13750	02 43 14.65	+14 31 49.2	6 675	1989 UX <sub>5</sub>	1954 09 04.40556	00 42 40.13	-00 49 05.2	6 675
1987 SQ <sub>1</sub>	1954 12 21.15853	02 43 14.34	+14 31 47.2	6 675	1989 UX <sub>5</sub>	1954 09 04.43090	00 42 39.41	-00 49 09.3	6 675
1987 UQ <sub>3</sub>	1993 04 15.29653	13 37 15.44	-00 33 12.4	9 675	1989 YH <sub>1</sub>	1953 04 15.21806	11 06 51.39	+03 44 16.6	6 675
1987 UQ <sub>3</sub>	1993 04 15.33125	13 37 13.22	-00 33 02.2	9 675	1989 YH <sub>1</sub>	1953 04 15.24201	11 06 50.97	+03 44 18.1	6 675
1987 UQ <sub>3</sub>	1993 04 16.35104	13 36 12.60	-00 28 34.8	9 675	1990 DJ	1993 06 23.43264	21 39 04.24	+07 42 13.9	16.0 2 675
1987 UQ <sub>3</sub>	1993 04 16.38073	13 36 10.73	-00 28 27.0	9 675	1990 DJ	1993 06 23.45486	21 39 04.39	+07 42 09.3	2 675
1987 VB	1953 08 15.29514	20 21 05.09	-17 02 14.4	6 675	1990 DJ	1993 06 26.42969	21 39 27.59	+07 29 42.6	2 675
1988 AO <sub>1</sub>	1950 03 17.23125	11 18 29.14	+14 57 57.3	6 675	1990 DJ	1993 06 26.47153	21 39 27.67	+07 29 30.7	2 675
1988 AO <sub>1</sub>	1950 03 17.25868	11 18 27.69	+14 58 04.9	6 675	1990 DJ	1993 07 18.40191	21 32 35.01	+03 47 09.4	15.5 2 675
1988 AE <sub>5</sub>	1953 08 15.27118	19 56 23.55	-15 14 45.4	6 675	1990 DJ	1993 07 18.42778	21 32 33.81	+03 46 46.0	2 675
1988 AE <sub>5</sub>	1953 08 15.29514	19 56 22.60	-15 14 53.3	6 675	1990 DJ	1993 07 20.42413	21 31 07.69	+03 14 08.5	2 675
1988 EB <sub>1</sub>	1954 04 08.37535	14 14 30.48	-10 37 18.3	17.8 6 675	1990 DJ	1993 07 20.45417	21 31 06.25	+03 13 37.2	2 675
1988 EB <sub>1</sub>	1954 04 08.39861	14 14 29.24	-10 37 13.0	6 675	1990 EA <sub>5</sub>	1949 12 22.17361	04 10 20.43	+23 12 23.9	6 675
1988 ED <sub>1</sub>	1993 06 15.26944	16 20 17.77	-14 45 11.4	3 675	1990 EA <sub>5</sub>	1949 12 22.19687	04 10 19.35	+23 12 21.0	6 675
1988 ED <sub>1</sub>	1993 06 16.21007	16 19 26.03	-14 48 15.2	3 675	1990 OS <sub>1</sub>	1953 04 15.21806	11 04 13.56	+06 06 13.8	6 675
1988 KC	1951 12 01.23542	03 40 40.04	+15 46 19.1	6 675	1990 OS <sub>1</sub>	1953 04 15.24201	11 04 12.78	+06 06 08.0	6 675
1988 KC	1951 12 01.26250	03 40 38.45	+15 46 09.5	6 675	1990 RO <sub>1</sub>	1993 04 15.29653	13 32 14.22	-04 36 38.2	9 675
1988 TB <sub>1</sub>	1954 12 21.13750	02 32 54.42	+11 06 53.2	6 675	1990 RO <sub>1</sub>	1993 04 15.33125	13 32 12.45	-04 36 25.0	9 675
1988 TB <sub>1</sub>	1954 12 21.16076	02 32 54.46	+11 06 52.0	6 675	1990 RO <sub>1</sub>	1993 04 16.35104	13 31 24.05	-04 30 33.6	9 675
1988 VD <sub>3</sub>	1953 04 15.21806	10 47 45.08	+06 59 25.5	6 675	1990 RO <sub>1</sub>	1993 04 16.38073	13 31 22.53	-04 30 23.6	9 675
1988 VD <sub>3</sub>	1953 04 15.24201	10 47 44.54	+06 59 27.4	6 675	1990 RO <sub>1</sub>	1993 04 19.31267	13 29 04.23	-04 13 53.2	9 675
1988 XP	1953 08 15.27118	19 56 51.09	-18 31 28.1	6 675	1990 RO <sub>1</sub>	1993 04 19.34601	13 29 02.79	-04 13 44.3	9 675
1988 XP	1953 08 15.29514	19 56 49.98	-18 31 37.8	6 675	1990 RN <sub>3</sub>	1993 04 15.29653	13 57 19.67	-06 51 53.4	9 675
1988 XR	1954 12 21.13750	02 28 13.32	+14 27 31.1	6 675	1990 RN <sub>3</sub>	1993 04 15.33125	13 57 17.83	-06 51 34.6	9 675
1988 XR	1954 12 21.16076	02 28 13.75	+14 27 32.9	6 675	1990 RN <sub>3</sub>	1993 04 16.35104	13 56 26.30	-06 42 47.3	9 675
1988 XW <sub>1</sub>	1951 12 01.23542	03 45 28.97	+17 20 37.9	6 675	1990 RN <sub>3</sub>	1993 04 16.38073	13 56 24.70	-06 42 30.3	9 675
1988 XW <sub>1</sub>	1951 12 01.26250	03 45 27.47	+17 20 39.4	6 675	1990 RN <sub>3</sub>	1993 04 19.31267	13 53 54.33	-06 17 12.0	9 675
1988 XV <sub>2</sub>	1952 12 11.10208	01 17 53.71	+13 40 42.5	6 675	1990 RN <sub>3</sub>	1993 04 19.34601	13 53 52.53	-06 16 55.0	9 675
1988 XV <sub>2</sub>	1952 12 11.12361	01 17 54.49	+13 40 42.8	6 675	1990 SK <sub>3</sub>	1951 12 01.23542	03 34 57.86	+18 24 04.7	6 675
1989 AE <sub>7</sub>	1953 10 01.23507	21 57 13.36	-10 33 11.9	6 675	1990 SK <sub>3</sub>	1951 12 01.26250	03 34 56.16	+18 24 01.6	6 675
1989 AE <sub>7</sub>	1953 10 01.25903	21 57 12.73	-10 33 14.7	6 675	1990 TL <sub>1</sub>	1950 08 14.42361	02 18 22.58	+14 41 06.7	6 675
1989 CN	1951 12 01.23542	03 39 03.19	+16 57 31.7	6 675	1990 TL <sub>1</sub>	1950 08 14.45104	02 18 24.48	+14 41 11.4	6 675
1989 CN	1951 12 01.26250	03 39 01.50	+16 57 25.6	6 675	1990 TK <sub>8</sub>	1993 04 19.31267	13 54 29.57	-07 25 29.8	9 675
1989 CN	1954 07 28.43681	23 37 00.54	-02 29 58.2	6 675	1990 TK <sub>8</sub>	1993 04 19.34601	13 54 27.71	-07 25 26.9	9 675

1990 WN <sub>5</sub>	1993 04 15.29653	13 58 49.02	-02 47 02.0	9 675	1991 VX <sub>1</sub>	1993 07 17.23333	17 08 46.24	+04 14 54.1	2 675
1990 WN <sub>5</sub>	1993 04 15.33125	13 58 47.16	-02 46 56.8	9 675	1991 VV <sub>3</sub>	1954 09 04.40556	00 44 09.74	-00 48 41.2	6 675
1990 WN <sub>5</sub>	1993 04 16.35104	13 57 54.85	-02 45 14.0	9 675	1991 VV <sub>3</sub>	1954 09 04.43090	00 44 09.24	-00 48 45.1	6 675
1990 WN <sub>5</sub>	1993 04 16.38073	13 57 53.41	-02 45 12.0	9 675	1992 AO	1993 06 21.24097	15 24 55.80	+11 45 37.1	16.5 2 675
1990 WN <sub>5</sub>	1993 04 19.31267	13 55 21.90	-02 40 35.6	9 675	1992 AO	1993 06 21.26858	15 24 54.86	+11 45 21.3	2 675
1990 WN <sub>5</sub>	1993 04 19.34601	13 55 20.21	-02 40 32.6	9 675	1992 AO	1993 06 24.27222	15 23 30.20	+11 15 43.3	2 675
1990 XP	1950 08 14.42361	02 18 44.95	+14 06 49.5	6 675	1992 AO	1993 06 24.30313	15 23 29.28	+11 15 24.3	2 675
1990 XP	1950 08 14.45104	02 18 46.65	+14 06 55.1	6 675	1992 BW	1993 07 15.42431	21 16 20.10	-26 19 29.9	16.0 2 675
1991 AB <sub>1</sub>	1993 06 22.25590	16 39 31.17	-07 26 10.0	2 675	1992 BW	1993 07 17.37500	21 13 28.46	-26 04 40.7	2 675
1991 AB <sub>1</sub>	1993 06 22.29253	16 39 29.55	-07 26 14.8	2 675	1992 BW	1993 07 20.38264	21 08 48.65	-25 40 28.3	2 675
1991 AB <sub>1</sub>	1993 06 25.25156	16 37 22.58	-07 32 52.4	2 675	1992 BW	1993 07 20.40573	21 08 46.39	-25 40 16.8	2 675
1991 AB <sub>1</sub>	1993 06 25.27064	16 37 21.69	-07 32 55.1	2 675	1992 CA	1993 07 18.40920	22 27 51.28	-03 46 48.8	16.0 2 675
1991 BM <sub>2</sub>	1951 12 01.23542	03 43 09.58	+20 19 43.6	6 675	1992 CA	1993 07 18.43333	22 27 51.25	-03 47 13.5	2 675
1991 BM <sub>2</sub>	1951 12 01.26250	03 43 08.14	+20 19 38.8	6 675	1992 CA	1993 07 20.44861	22 27 51.10	-04 22 31.3	2 675
1991 BM <sub>2</sub>	1953 04 15.21806	10 59 06.01	+06 47 34.8	6 675	1992 DA	1954 09 04.40556	00 55 51.02	+03 22 46.0	6 675
1991 BM <sub>2</sub>	1953 04 15.24201	10 59 05.60	+06 47 36.7	6 675	1992 DA	1954 09 04.43090	00 55 49.87	+03 22 40.2	6 675
1991 EA	1955 12 12.51562	09 50 26.54	+20 08 26.2	6 675	1992 FN	1954 12 21.13750	02 39 13.48	+13 48 05.1	6 675
1991 EA	1955 12 12.53681	09 50 27.05	+20 08 25.1	6 675	1992 FN	1954 12 21.16076	02 39 13.09	+13 48 03.6	6 675
1991 JG	1949 12 22.17361	04 10 09.37	+23 48 29.5	6 675	1992 FS	1951 02 04.31597	09 28 08.63	+23 47 14.1	6 675
1991 JB <sub>1</sub>	1955 12 12.51562	09 40 18.44	+18 31 34.7	6 675	1992 FB <sub>1</sub>	1954 09 04.40556	01 03 15.24	-01 30 25.5	18.5 6 675
1991 JB <sub>1</sub>	1955 12 12.53681	09 40 18.53	+18 31 36.0	6 675	1992 FB <sub>1</sub>	1954 09 04.43090	01 03 14.79	-01 30 37.0	6 675
1991 LW	1954 07 01.21528	16 37 25.21	-18 53 35.7	6 675	1992 HS <sub>3</sub>	1993 05 23.36770	16 44 34.75	-23 30 44.5	18 3 675
1991 LW	1954 07 01.23958	16 37 24.22	-18 53 44.9	6 675	1992 HS <sub>3</sub>	1993 05 23.39635	16 44 33.69	-23 30 43.3	3 675
1991 PF <sub>10</sub>	1953 08 15.29514	19 55 50.79	-19 38 25.8	6 675	1992 HS <sub>3</sub>	1993 06 15.29288	16 32 19.15	-23 03 21.4	18 3 675
1991 PO <sub>13</sub>	1950 08 14.42361	02 05 18.63	+14 39 26.6	6 675	1992 HS <sub>3</sub>	1993 06 15.33229	16 32 17.83	-23 03 17.8	3 675
1991 PO <sub>13</sub>	1950 08 14.45104	02 05 19.78	+14 39 39.0	6 675	1992 HS <sub>3</sub>	1993 07 21.18507	16 19 17.17	-22 24 26.5	18.4 3 675
1991 PS <sub>16</sub>	1953 08 15.27118	19 58 37.44	-18 40 45.2	6 675	1992 HS <sub>3</sub>	1993 07 21.23524	16 19 16.72	-22 24 25.9	3 675
1991 PS <sub>16</sub>	1953 08 15.29514	19 58 36.45	-18 40 54.4	6 675	1992 MA	1953 04 15.21806	11 06 45.68	+05 27 14.9	6 675
1991 PC <sub>18</sub>	1953 08 15.27118	19 55 36.90	-19 20 35.6	6 675	1992 MA	1953 04 15.24201	11 06 45.09	+05 27 18.4	6 675
1991 PC <sub>18</sub>	1953 08 15.29514	19 55 35.84	-19 20 36.1	6 675	1992 PF <sub>2</sub>	1954 04 08.37535	14 04 41.22	-13 26 41.0	6 675
1991 RJ	1951 02 04.31597	09 18 15.54	+24 05 47.3	6 675	1992 PF <sub>2</sub>	1954 04 08.39861	14 04 40.22	-13 26 30.5	6 675
1991 RJ	1951 02 04.34097	09 18 13.85	+24 05 49.9	6 675	1992 PF <sub>2</sub>	1954 05 31.20104	13 32 10.74	-07 07 36.7	6 675
1991 RX <sub>10</sub>	1964 08 08.32549	21 12 41.00	-34 37 08.5	6 675	1992 PF <sub>2</sub>	1954 05 31.22571	13 32 10.68	-07 07 32.9	6 675
1991 RP <sub>11</sub>	1953 10 01.23507	22 17 58.08	-12 35 01.5	6 675	1992 PT <sub>2</sub>	1954 12 21.13750	02 20 32.52	+13 58 36.8	6 675
1991 RP <sub>11</sub>	1953 10 01.25903	22 17 57.68	-12 35 03.3	6 675	1992 PT <sub>2</sub>	1954 12 21.16076	02 20 32.81	+13 58 36.0	6 675
1991 RP <sub>25</sub>	1950 03 17.23125	11 25 13.67	+19 15 23.5	6 675	1992 QM	1949 12 22.17361	04 00 07.12	+27 03 47.0	6 675
1991 RP <sub>25</sub>	1950 03 17.25868	11 25 12.39	+19 15 26.8	6 675	1992 QM	1949 12 22.19297	04 00 06.23	+27 03 41.7	6 675
1991 TM	1953 08 15.27118	19 55 44.64	-18 09 29.7	6 675	1992 QM	1953 10 01.23507	21 57 01.73	-09 31 56.4	16.5 6 675
1991 TM	1953 08 15.29514	19 55 43.91	-18 09 37.5	6 675	1992 QM	1953 10 01.25903	21 57 01.55	-09 31 54.2	6 675
1991 TG <sub>4</sub>	1993 07 15.23438	16 52 14.41	+02 32 53.6	2 675	1992 UG	1952 01 31.43819	11 39 55.58	+11 34 55.7	6 675
1991 TG <sub>4</sub>	1993 07 15.26163	16 52 13.78	+02 32 49.5	2 675	1992 UG	1952 01 31.46597	11 39 54.96	+11 35 02.9	6 675
1991 TG <sub>4</sub>	1993 07 17.21389	16 51 31.38	+02 29 29.7	2 675	1992 YE	1953 08 15.27118	19 59 05.57	-19 00 58.4	6 675
1991 TG <sub>4</sub>	1993 07 17.23333	16 51 31.03	+02 29 28.0	2 675	1992 YE	1953 08 15.29514	19 59 04.30	-19 00 57.2	6 675
1991 UZ <sub>2</sub>	1955 04 21.24861	12 24 41.05	-00 52 09.0	6 675	1993 EF	1952 01 31.43819	11 39 06.35	+08 01 46.1	6 675
1991 UZ <sub>2</sub>	1955 04 21.27361	12 24 40.18	-00 52 03.4	6 675	1993 EF	1952 01 31.46597	11 39 05.99	+08 01 50.1	6 675
1991 VX <sub>1</sub>	1993 06 22.36736	17 28 40.49	+02 53 15.4	2 675	1993 GH	1993 04 15.29653	13 40 56.83	-06 29 06.2	9 675
1991 VX <sub>1</sub>	1993 06 22.39149	17 28 38.83	+02 53 27.5	2 675	1993 GH	1993 04 15.33125	13 40 54.97	-06 29 02.8	9 675
1991 VX <sub>1</sub>	1993 06 25.31424	17 25 29.23	+03 16 03.3	2 675	1993 GH	1993 04 16.35104	13 40 01.59	-06 27 21.3	9 675
1991 VX <sub>1</sub>	1993 06 25.33958	17 25 27.58	+03 16 13.2	2 675	1993 GH	1993 04 16.38073	13 39 59.97	-06 27 18.0	9 675
1991 VX <sub>1</sub>	1993 07 15.23438	17 09 39.94	+04 16 43.8	2 675	1993 GH	1993 04 19.31267	13 37 26.52	-06 22 36.0	9 675
1991 VX <sub>1</sub>	1993 07 15.26163	17 09 39.17	+04 16 42.5	2 675	1993 GH	1993 04 19.34601	13 37 24.75	-06 22 32.3	9 675
1991 VX <sub>1</sub>	1993 07 17.21389	17 08 46.76	+04 14 54.7	2 675	1993 GM	1993 04 15.29653	13 42 05.08	-05 29 07.8	9 675

1993 GM	1993 04 15.33125	13 42 03.40	-05 28 57.3	9 675	1993 GH <sub>1</sub>	1993 04 15.33125	13 45 01.85	-03 16 20.8	9 675
1993 GM	1993 04 16.35104	13 41 15.29	-05 24 10.4	9 675	1993 GH <sub>1</sub>	1993 04 16.35104	13 43 54.35	-03 18 33.0	9 675
1993 GM	1993 04 16.38073	13 41 13.81	-05 24 00.7	9 675	1993 GH <sub>1</sub>	1993 04 16.38073	13 43 52.37	-03 18 36.3	9 675
1993 GN	1993 04 15.29653	13 42 57.91	-05 19 45.5	9 675	1993 GH <sub>1</sub>	1993 04 19.31267	13 40 38.71	-03 25 25.8	9 675
1993 GN	1993 04 15.33125	13 42 55.63	-05 19 44.3	9 675	1993 GH <sub>1</sub>	1993 04 19.34601	13 40 36.47	-03 25 30.0	9 675
1993 GN	1993 04 16.35104	13 41 52.37	-05 19 14.7	9 675	1993 GJ <sub>1</sub>	* 1993 04 15.29653	13 49 21.33	-06 47 52.8	17.5 9 675
1993 GN	1993 04 16.38073	13 41 50.44	-05 19 13.7	9 675	1993 GJ <sub>1</sub>	1993 04 15.33125	13 49 19.27	-06 47 45.4	9 675
1993 GN	1993 04 19.31267	13 38 48.84	-05 18 14.5	9 675	1993 GJ <sub>1</sub>	1993 04 16.35104	13 48 20.86	-06 44 34.4	9 675
1993 GN	1993 04 19.34601	13 38 46.75	-05 18 13.7	9 675	1993 GJ <sub>1</sub>	1993 04 16.38073	13 48 18.98	-06 44 29.5	9 675
1993 GT	1993 04 15.29653	13 51 24.93	-08 07 01.0	17.5 9 675	1993 GJ <sub>1</sub>	1993 04 19.31267	13 45 30.23	-06 35 23.7	9 675
1993 GT	1993 04 15.33125	13 51 23.26	-08 06 51.8	9 675	1993 GJ <sub>1</sub>	1993 04 19.34601	13 45 28.21	-06 35 17.8	9 675
1993 GT	1993 04 16.35104	13 50 35.58	-08 02 43.4	9 675	1993 HK	1993 04 15.29653	13 37 43.22	-03 28 02.0	17.5 9 675
1993 GT	1993 04 16.38073	13 50 34.06	-08 02 36.9	9 675	1993 HK	1993 04 15.33125	13 37 41.29	-03 27 49.4	9 675
1993 GT	1993 04 19.31267	13 48 16.21	-07 50 45.1	9 675	1993 HK	1993 04 16.35104	13 36 47.04	-03 22 05.9	9 675
1993 GT	1993 04 19.34601	13 48 14.62	-07 50 37.0	9 675	1993 HK	1993 04 16.38073	13 36 45.39	-03 21 56.5	9 675
1993 GY	1993 05 23.17361	12 15 25.07	+13 30 18.0	18.0 3 675	1993 HK	1993 04 19.31267	13 34 10.71	-03 06 05.4	9 675
1993 GY	1993 05 23.21597	12 15 25.37	+13 29 47.5	3 675	1993 HK	1993 04 19.34601	13 34 08.98	-03 05 54.5	9 675
1993 GY	1993 05 24.17239	12 15 35.38	+13 18 51.3	3 675	1993 HP	1993 04 19.31267	13 56 29.70	-02 03 12.0	9 675
1993 GY	1993 05 24.21215	12 15 35.69	+13 18 23.0	3 675	1993 HP	1993 04 19.34601	13 56 27.73	-02 02 59.5	9 675
1993 GB <sub>1</sub>	* 1993 04 15.29653	13 33 57.87	-07 41 54.7	16.8 9 675	1993 HW	1993 04 15.29653	13 54 41.26	-06 36 03.6	9 675
1993 GB <sub>1</sub>	1993 04 15.33125	13 33 55.69	-07 41 40.4	9 675	1993 HW	1993 04 15.33125	13 54 39.24	-06 35 54.6	9 675
1993 GB <sub>1</sub>	1993 04 16.35104	13 32 55.17	-07 34 22.3	9 675	1993 HW	1993 04 16.35104	13 53 42.37	-06 31 27.6	9 675
1993 GB <sub>1</sub>	1993 04 16.38073	13 32 53.32	-07 34 09.3	9 675	1993 HW	1993 04 16.38073	13 53 40.65	-06 31 17.6	9 675
1993 GC <sub>1</sub>	* 1993 04 15.29653	13 37 45.07	-03 33 15.3	17.2 9 675	1993 HW	1993 04 19.31267	13 50 54.99	-06 18 40.3	9 675
1993 GC <sub>1</sub>	1993 04 15.33125	13 37 42.87	-03 33 06.1	9 675	1993 HW	1993 04 19.34601	13 50 53.03	-06 18 32.1	9 675
1993 GC <sub>1</sub>	1993 04 16.35104	13 36 40.29	-03 28 38.9	9 675	1993 HX	1993 04 16.35104	13 57 39.38	-06 35 22.1	9 675
1993 GC <sub>1</sub>	1993 04 16.38073	13 36 38.35	-03 28 30.9	9 675	1993 HX	1993 04 16.38073	13 57 37.46	-06 35 06.6	9 675
1993 GC <sub>1</sub>	1993 04 19.31267	13 33 38.31	-03 16 07.6	9 675	1993 HX	1993 04 19.31267	13 54 57.17	-06 18 31.7	9 675
1993 GC <sub>1</sub>	1993 04 19.34601	13 33 36.18	-03 15 59.9	9 675	1993 HX	1993 04 19.34601	13 54 55.38	-06 18 20.3	9 675
1993 GD <sub>1</sub>	* 1993 04 15.29653	13 38 59.99	-00 26 29.0	17.0 9 675	1993 HK <sub>1</sub>	1993 05 21.21979	13 39 36.36	-12 31 02.8	3 675
1993 GD <sub>1</sub>	1993 04 15.33125	13 38 57.72	-00 26 21.8	9 675	1993 HK <sub>1</sub>	1993 05 21.25347	13 39 35.08	-12 30 35.2	17.8 3 675
1993 GD <sub>1</sub>	1993 04 16.35104	13 37 54.92	-00 22 56.0	9 675	1993 HK <sub>1</sub>	1993 05 24.24601	13 37 55.63	-11 49 15.4	3 675
1993 GD <sub>1</sub>	1993 04 16.38073	13 37 53.00	-00 22 50.3	9 675	1993 HK <sub>1</sub>	1993 05 24.27969	13 37 54.60	-11 48 47.7	3 675
1993 GE <sub>1</sub>	* 1993 04 15.29653	13 42 43.36	-02 34 07.1	17.8 9 675	1993 JH	1993 06 18.20694	15 25 09.63	-22 23 44.8	17.0 3 675
1993 GE <sub>1</sub>	1993 04 15.33125	13 42 41.55	-02 33 52.1	9 675	1993 JH	1993 06 18.24722	15 25 08.52	-22 23 48.8	3 675
1993 GE <sub>1</sub>	1993 04 16.35104	13 41 49.68	-02 26 39.1	9 675	1993 KL	1953 03 14.24444	09 35 20.42	+57 57 12.7	6 675
1993 GE <sub>1</sub>	1993 04 16.38073	13 41 47.94	-02 26 25.2	9 675	1993 KL	1953 03 14.26854	09 35 19.12	+57 56 51.3	6 675
1993 GE <sub>1</sub>	1993 04 19.31267	13 39 17.83	-02 05 54.9	9 675	1993 KY <sub>1</sub>	1993 06 17.28038	16 23 56.50	-13 53 24.0	17.2 3 675
1993 GE <sub>1</sub>	1993 04 19.34601	13 39 16.15	-02 05 40.4	9 675	1993 KY <sub>1</sub>	1993 06 17.32830	16 23 54.08	-13 53 26.4	3 675
1993 GF <sub>1</sub>	* 1993 04 15.29653	13 43 56.41	-06 46 42.8	17.8 9 675	1993 KY <sub>1</sub>	1993 06 20.24861	16 21 43.01	-13 58 46.9	3 675
1993 GF <sub>1</sub>	1993 04 15.33125	13 43 54.52	-06 46 40.9	9 675	1993 LC <sub>2</sub>	* 1993 06 14.33194	17 22 36.30	-27 04 11.2	17.4 3 675
1993 GF <sub>1</sub>	1993 04 16.35104	13 43 00.16	-06 45 29.1	9 675	1993 LC <sub>2</sub>	1993 06 17.28785	17 19 49.73	-26 43 21.2	3 675
1993 GF <sub>1</sub>	1993 04 16.38073	13 42 58.48	-06 45 27.0	9 675	1993 LC <sub>2</sub>	1993 06 17.33577	17 19 47.02	-26 43 01.5	3 675
1993 GF <sub>1</sub>	1993 04 19.31267	13 40 22.31	-06 42 10.7	9 675	1993 LD <sub>2</sub>	* 1993 06 14.33194	17 30 53.55	-26 48 27.7	17.6 3 675
1993 GF <sub>1</sub>	1993 04 19.34601	13 40 20.48	-06 42 08.3	9 675	1993 LD <sub>2</sub>	1993 06 17.28785	17 28 11.21	-26 29 50.2	3 675
1993 GG <sub>1</sub>	* 1993 04 15.29653	13 44 21.66	-03 29 22.6	17.5 9 675	1993 LD <sub>2</sub>	1993 06 17.33577	17 28 08.37	-26 29 29.4	3 675
1993 GG <sub>1</sub>	1993 04 15.33125	13 44 19.97	-03 29 16.2	9 675	1993 LD <sub>2</sub>	1993 06 20.27361	17 25 30.12	-26 10 30.7	3 675
1993 GG <sub>1</sub>	1993 04 16.35104	13 43 31.36	-03 26 17.7	9 675	1993 LD <sub>2</sub>	1993 06 20.31233	17 25 27.79	-26 10 17.3	3 675
1993 GG <sub>1</sub>	1993 04 16.38073	13 43 29.87	-03 26 11.2	9 675	1993 LE <sub>2</sub>	* 1993 06 15.26944	15 59 47.61	-16 48 13.0	18.0 3 675
1993 GG <sub>1</sub>	1993 04 19.31267	13 41 10.08	-03 17 57.6	9 675	1993 LE <sub>2</sub>	1993 06 15.30885	15 59 45.88	-16 48 11.1	3 675
1993 GG <sub>1</sub>	1993 04 19.34601	13 41 08.40	-03 17 51.8	9 675	1993 LE <sub>2</sub>	1993 06 16.21007	15 59 07.85	-16 47 01.4	3 675
1993 GH <sub>1</sub>	* 1993 04 15.29653	13 45 04.17	-03 16 15.9	18.0 9 675	1993 LF <sub>2</sub>	* 1993 06 15.26944	16 07 41.60	-14 12 48.9	17.8 3 675

1993 LF <sub>2</sub>	1993 06 15.30885	16 07 39.56	-14 12 54.3		3 675	1993 MS <sub>1</sub>	* 1993 06 23.43264	21 32 42.79	+02 11 38.6	16.0	2 675
1993 LF <sub>2</sub>	1993 06 16.21007	16 06 55.55	-14 15 01.3		3 675	1993 MS <sub>1</sub>	1993 06 23.45486	21 32 42.52	+02 11 45.4		2 675
1993 LG <sub>2</sub>	* 1993 06 15.26944	16 08 50.72	-13 15 07.2	17.6	3 675	1993 MS <sub>1</sub>	1993 06 26.42969	21 32 12.35	+02 28 50.8		2 675
1993 LG <sub>2</sub>	1993 06 15.30885	16 08 49.11	-13 15 00.8		3 675	1993 MS <sub>1</sub>	1993 06 26.47153	21 32 11.61	+02 29 05.4		2 675
1993 LG <sub>2</sub>	1993 06 16.21007	16 08 13.43	-13 13 04.9		3 675	1993 MS <sub>1</sub>	1993 07 18.40191	21 21 34.66	+03 39 32.7	16.0	2 675
1993 LH <sub>2</sub>	* 1993 06 15.26944	16 14 07.51	-12 19 37.2	17.8	3 675	1993 MS <sub>1</sub>	1993 07 18.42778	21 21 33.48	+03 39 33.2		2 675
1993 LH <sub>2</sub>	1993 06 15.30885	16 14 05.77	-12 19 35.8		3 675	1993 MT <sub>1</sub>	* 1993 06 22.37969	19 10 22.67	-26 52 10.9	16.5	2 675
1993 LH <sub>2</sub>	1993 06 16.21007	16 13 30.29	-12 19 41.1		3 675	1993 MT <sub>1</sub>	1993 06 22.40399	19 10 20.80	-26 51 46.8		2 675
1993 MF	1993 07 15.33003	21 30 41.48	+25 31 35.2	13.5	2 675	1993 MT <sub>1</sub>	1993 06 24.41424	19 07 59.58	-26 16 33.5		2 675
1993 MF	1993 07 15.35556	21 30 46.85	+25 33 00.3		2 675	1993 NB	1993 07 16.29792	19 41 09.59	-13 11 25.3	15.5	2 675
1993 MF	1993 07 18.28229	21 41 57.96	+28 05 12.9		2 675	1993 NB	1993 07 16.32413	19 41 08.25	-13 11 45.0		2 675
1993 MF	1993 07 18.41528	21 42 26.72	+28 11 56.5		2 675	1993 NB	1993 07 20.23542	19 37 47.63	-14 03 16.7		2 675
1993 MF	1993 07 27.39479	22 17 15.40	+34 39 20.8	13	3 675	1993 NB	1993 07 20.26024	19 37 46.32	-14 03 38.2		2 675
1993 MF	1993 07 27.42969	22 17 22.94	+34 40 35.5		3 675	1993 NC	* 1993 07 15.38733	20 33 16.65	-26 08 27.8	16.0	2 675
1993 MK	1993 07 15.38733	20 35 06.12	-24 44 11.0	15.5	2 675	1993 NC	1993 07 15.41128	20 33 15.54	-26 08 41.7		2 675
1993 MK	1993 07 15.41128	20 35 04.68	-24 44 53.6		2 675	1993 NC	1993 07 20.34722	20 29 39.84	-26 55 18.7		2 675
1993 MK	1993 07 20.34722	20 30 09.17	-27 03 23.4		2 675	1993 NC	1993 07 20.37066	20 29 38.74	-26 55 32.5		2 675
1993 MK	1993 07 20.37066	20 30 07.60	-27 04 03.0		2 675	1993 ND	* 1993 07 15.38733	20 48 06.49	-26 46 50.1	16.0	2 675
1993 MU	1993 07 15.22691	16 42 49.10	-03 46 41.6	16.5	2 675	1993 ND	1993 07 15.41128	20 48 05.36	-26 47 04.1		2 675
1993 MU	1993 07 15.25538	16 42 48.05	-03 47 20.6		2 675	1993 ND	1993 07 20.34722	20 43 59.88	-27 35 27.1		2 675
1993 MU	1993 07 17.25260	16 41 49.14	-04 32 47.4		2 675	1993 ND	1993 07 20.37066	20 43 58.63	-27 35 40.0		2 675
1993 MU	1993 07 17.27674	16 41 48.66	-04 33 22.3		2 675	1993 NE	* 1993 07 15.38733	20 49 25.78	-26 21 18.7	16.0	2 675
1993 MA <sub>1</sub>	1993 06 20.19201	15 31 26.75	-22 47 30.3		3 675	1993 NE	1993 07 15.41128	20 49 24.68	-26 21 31.5		2 675
1993 ME <sub>1</sub>	1993 07 15.22049	16 45 53.89	+07 42 57.0	17.0	2 675	1993 NE	1993 07 20.34722	20 45 39.94	-27 01 37.9		2 675
1993 ME <sub>1</sub>	1993 07 15.24809	16 45 55.89	+07 43 24.6		2 675	1993 NE	1993 07 20.37066	20 45 38.66	-27 01 47.8		2 675
1993 MG <sub>1</sub>	1993 07 16.35452	20 22 57.74	-05 27 50.5	15.0	2 675	1993 NF	* 1993 07 15.36927	19 57 43.90	-17 24 59.7	16.5	2 675
1993 MG <sub>1</sub>	1993 07 16.37708	20 22 56.63	-05 27 25.7		2 675	1993 NF	1993 07 15.39323	19 57 42.69	-17 25 21.1		2 675
1993 MG <sub>1</sub>	1993 07 20.32622	20 19 39.81	-04 17 40.4		2 675	1993 NF	1993 07 20.24740	19 53 53.09	-18 35 31.8		2 675
1993 MG <sub>1</sub>	1993 07 20.35295	20 19 38.46	-04 17 12.7		2 675	1993 NF	1993 07 20.27240	19 53 51.91	-18 35 51.8		2 675
1993 MG <sub>1</sub>	1993 07 22.34253	20 17 56.93	-03 44 02.3	15.0	3 675	1993 NG	* 1993 07 15.33698	19 50 50.44	-04 59 00.3	16.5	2 675
1993 MG <sub>1</sub>	1993 07 22.37031	20 17 55.56	-03 43 36.0		3 675	1993 NG	1993 07 15.36163	19 50 48.39	-04 58 48.4		2 675
1993 MG <sub>1</sub>	1993 07 24.25243	20 16 19.63	-03 13 28.3		3 675	1993 NG	1993 07 17.30139	19 48 11.46	-04 43 22.5		2 675
1993 MG <sub>1</sub>	1993 07 24.28889	20 16 17.59	-03 12 54.1		3 675	1993 NG	1993 07 17.33142	19 48 08.86	-04 43 07.4		2 675
1993 MN <sub>1</sub>	* 1993 06 16.20260	15 43 42.59	-18 33 07.0	17.8	3 675	1993 NH	* 1993 07 15.23438	17 21 22.22	+03 56 48.8	16.0	2 675
1993 MN <sub>1</sub>	1993 06 20.19201	15 40 55.91	-18 45 23.3		3 675	1993 NH	1993 07 15.26163	17 21 21.15	+03 57 10.0		2 675
1993 MN <sub>1</sub>	1993 06 20.23316	15 40 54.17	-18 45 31.5		3 675	1993 NH	1993 07 17.21389	17 20 16.04	+04 21 08.2		2 675
1993 MO <sub>1</sub>	* 1993 06 16.20260	15 50 09.11	-20 01 14.8	17.2	3 675	1993 NH	1993 07 17.23333	17 20 15.18	+04 21 21.9		2 675
1993 MO <sub>1</sub>	1993 06 20.19201	15 47 42.00	-19 36 16.3		3 675	1993 OA	1993 07 16.43646	21 23 31.31	-03 30 20.1	16.0	2 675
1993 MO <sub>1</sub>	1993 06 20.23316	15 47 40.45	-19 36 02.1		3 675	1993 OA	1993 07 20.39410	21 22 02.04	-04 59 04.4		2 675
1993 MP <sub>1</sub>	* 1993 06 16.20260	15 50 53.28	-19 38 56.0	17.2	3 675	1993 OA	1993 07 20.41840	21 22 01.52	-04 59 44.6		2 675
1993 MP <sub>1</sub>	1993 06 20.19201	15 47 34.65	-19 45 25.9		3 675	1993 OB	1993 06 21.46632	20 07 53.97	-16 33 41.3	16.0	2 675
1993 MP <sub>1</sub>	1993 06 20.23316	15 47 32.56	-19 45 31.4		3 675	1993 OB	1993 06 24.44826	20 05 29.11	-15 55 01.5		2 675
1993 MQ <sub>1</sub>	* 1993 06 22.37361	18 08 46.07	-30 06 10.4	16.0	2 675	1993 OB	1993 06 24.47188	20 05 27.80	-15 54 43.4		2 675
1993 MQ <sub>1</sub>	1993 06 22.39844	18 08 44.29	-30 06 07.3		2 675	1993 OB	* 1993 07 16.33767	19 40 08.76	-10 56 19.7	16.0	2 675
1993 MQ <sub>1</sub>	1993 06 26.33177	18 04 09.94	-29 55 35.4		2 675	1993 OB	1993 07 16.35990	19 40 06.86	-10 56 01.0		2 675
1993 MQ <sub>1</sub>	1993 06 26.36128	18 04 07.93	-29 55 29.1		2 675	1993 OB	1993 07 20.24149	19 34 51.70	-10 03 24.2		2 675
1993 MR <sub>1</sub>	* 1993 06 23.43264	21 25 38.41	+02 54 59.0	16.0	2 675	1993 OB	1993 07 20.26667	19 34 49.57	-10 03 04.6		2 675
1993 MR <sub>1</sub>	1993 06 23.45486	21 25 38.45	+02 55 04.5		2 675	1993 OC	* 1993 07 16.39809	20 50 54.61	-15 01 47.6	16.0	2 675
1993 MR <sub>1</sub>	1993 06 26.42969	21 25 37.24	+03 08 37.6		2 675	1993 OC	1993 07 16.42396	20 50 52.53	-15 01 25.5		2 675
1993 MR <sub>1</sub>	1993 06 26.47153	21 25 36.75	+03 08 44.6		2 675	1993 OC	1993 07 20.37708	20 45 40.76	-14 05 41.6		2 675
1993 MS <sub>1</sub>	1992 05 02.16354	09 53 14.70	+00 07 55.6	16.5	2 675	1993 OC	1993 07 20.39983	20 45 38.85	-14 05 22.5		2 675
1993 MS <sub>1</sub>	1992 05 02.18646	09 53 15.75	+00 08 00.1		2 675	1993 OD	* 1993 07 16.39809	21 01 32.23	-16 30 17.2	15.5	2 675

1993 OD	1993 07 16.42396	21 01 29.91	-16 29 58.4	2 675	1993 OQ	1993 07 20.23542	19 41 25.03	-16 10 22.3	2 675
1993 OD	1993 07 20.37708	20 55 25.21	-15 42 09.8	2 675	1993 OQ	1993 07 20.26024	19 41 23.40	-16 10 14.6	2 675
1993 OD	1993 07 20.39983	20 55 22.82	-15 41 52.2	2 675	1993 OU	* 1993 07 16.28438	18 52 25.76	+00 42 17.5	16.5 2 675
1993 OD	1993 07 23.29965	20 50 38.13	-15 06 00.6	16.5 3 675	1993 OU	1993 07 16.31128	18 52 24.59	+00 42 04.3	2 675
1993 OD	1993 07 23.32986	20 50 35.05	-15 05 37.7	3 675	1993 OU	1993 07 20.22882	18 49 37.24	+00 09 58.3	2 675
1993 OD	1993 07 24.26736	20 49 00.39	-14 53 52.2	3 675	1993 OU	1993 07 20.25417	18 49 36.07	+00 09 46.3	2 675
1993 OD	1993 07 26.28576	20 45 33.21	-14 28 30.0	3 675	1993 OV	* 1993 07 16.28438	18 54 44.76	+03 01 39.8	16.5 2 675
1993 OD	1993 07 26.31424	20 45 30.05	-14 28 07.5	3 675	1993 OV	1993 07 16.31128	18 54 42.80	+03 01 50.8	2 675
1993 OE	* 1993 07 16.35451	20 15 09.72	-06 28 31.5	17.0 2 675	1993 OV	1993 07 20.22882	18 49 55.26	+03 20 57.5	2 675
1993 OE	1993 07 16.37708	20 15 08.56	-06 28 20.5	2 675	1993 OV	1993 07 20.25417	18 49 53.55	+03 21 04.0	2 675
1993 OE	1993 07 20.27899	20 11 19.45	-05 59 35.2	2 675	1993 OW	* 1993 07 16.34323	19 53 26.32	-23 40 18.3	16.5 2 675
1993 OE	1993 07 20.30243	20 11 18.09	-05 59 24.9	2 675	1993 OW	1993 07 16.36545	19 53 24.84	-23 40 50.9	2 675
1993 OF	* 1993 07 16.37708	20 15 38.78	-08 40 03.2	16.5 2 675	1993 OW	1993 07 20.24740	19 49 30.47	-25 18 11.3	2 675
1993 OF	1993 07 20.27899	20 12 18.95	-09 10 02.8	2 675	1993 OW	1993 07 20.27240	19 49 29.17	-25 18 47.6	2 675
1993 OF	1993 07 20.30243	20 12 17.85	-09 10 15.7	2 675	1993 OX	* 1993 07 24.26042	20 47 41.11	-03 10 29.3	16.5 3 675
1993 OG	* 1993 07 16.35451	20 13 25.59	-09 16 10.0	15.5 2 675	1993 OX	1993 07 26.27934	20 46 28.44	-03 32 07.3	3 675
1993 OG	1993 07 16.37708	20 13 24.47	-09 16 18.8	2 675	1993 OX	1993 07 27.31736	20 45 50.20	-03 43 42.6	3 675
1993 OG	1993 07 20.27899	20 10 29.62	-09 45 20.4	2 675	1993 OX	1993 07 27.34618	20 45 49.02	-03 44 02.4	3 675
1993 OG	1993 07 20.30243	20 10 28.57	-09 45 29.6	2 675	1993 OY	* 1993 07 17.31927	19 51 47.07	+03 41 40.3	16.0 2 675
1993 OH	* 1993 07 16.35451	20 09 51.51	-09 50 22.6	16.0 2 675	1993 OY	1993 07 17.35660	19 51 44.09	+03 42 10.0	2 675
1993 OH	1993 07 16.37708	20 09 50.45	-09 50 35.7	2 675	1993 OY	1993 07 20.31493	19 48 11.01	+04 20 56.2	2 675
1993 OH	1993 07 20.27899	20 06 20.87	-10 29 30.0	2 675	1993 OV <sub>1</sub>	* 1993 07 16.44757	21 54 32.89	-19 15 10.0	2 675
1993 OH	1993 07 20.30243	20 06 19.41	-10 29 44.4	2 675	1993 OV <sub>1</sub>	1993 07 20.42813	21 51 42.68	-17 26 21.2	16.0 2 675
1993 OJ	* 1993 07 16.35451	20 10 34.83	-09 24 44.1	16.0 2 675	1993 OV <sub>1</sub>	1993 07 20.45764	21 51 41.02	-17 25 34.2	2 675
1993 OJ	1993 07 16.37708	20 10 33.95	-09 24 59.9	2 675	1993 OV <sub>1</sub>	1993 07 23.38438	21 49 11.12	-16 07 35.3	17 3 675
1993 OJ	1993 07 20.27899	20 07 38.44	-10 12 02.7	2 675	1993 OV <sub>1</sub>	1993 07 24.31910	21 48 19.89	-15 43 05.6	3 675
1993 OJ	1993 07 20.30243	20 07 37.44	-10 12 18.2	2 675	1993 OV <sub>1</sub>	1993 07 24.34774	21 48 17.99	-15 42 22.9	3 675
1993 OK	* 1993 07 16.35451	20 11 22.15	-10 45 58.2	15.5 2 675	1993 OV <sub>1</sub>	1993 07 25.36441	21 47 19.71	-15 15 58.0	3 675
1993 OK	1993 07 16.37708	20 11 20.91	-10 45 55.5	2 675	1993 OW <sub>1</sub>	* 1993 07 23.38438	21 47 58.52	-16 28 12.2	16 3 675
1993 OK	1993 07 20.27899	20 07 32.10	-10 39 52.2	2 675	1993 OW <sub>1</sub>	1993 07 24.31910	21 47 33.15	-16 57 49.0	3 675
1993 OK	1993 07 20.30243	20 07 30.66	-10 39 50.0	2 675	1993 OW <sub>1</sub>	1993 07 24.34774	21 47 32.24	-16 58 44.4	3 675
1993 OL	* 1993 07 23.29271	20 05 33.15	-27 58 15.5	3 675	1993 OW <sub>1</sub>	1993 07 25.32778	21 47 03.40	-17 30 14.1	3 675
1993 OL	1993 07 23.32256	20 05 22.68	-27 57 34.4	3 675	1993 OW <sub>1</sub>	1993 07 25.35712	21 47 02.53	-17 31 10.3	3 675
1993 OL	1993 07 24.23819	20 00 03.89	-27 35 27.5	3 675	1993 OA <sub>2</sub>	* 1993 07 16.19774	16 27 28.77	-10 49 50.3	16.5 2 675
1993 OL	1993 07 24.37656	19 59 13.60	-27 31 59.1	3 675	1993 OA <sub>2</sub>	1993 07 16.22135	16 27 28.73	-10 49 56.8	2 675
1993 OL	1993 07 24.43298	19 58 52.90	-27 30 30.8	3 675	1993 OA <sub>2</sub>	1993 07 18.24410	16 27 32.35	-10 58 36.8	2 675
1993 OL	1993 07 25.24514	19 53 58.99	-27 08 54.9	3 675	1993 OB <sub>2</sub>	1993 07 15.27483	19 21 52.36	-14 21 34.1	16.0 2 675
1993 OL	1993 07 25.42969	19 52 49.12	-27 03 45.3	3 675	1993 OB <sub>2</sub>	1993 07 15.29896	19 21 50.71	-14 21 30.4	2 675
1993 OL	1993 07 26.26753	19 47 34.01	-26 39 18.9	3 675	1993 OB <sub>2</sub>	* 1993 07 16.29792	19 20 48.55	-14 18 01.2	16.0 2 675
1993 OL	1993 07 26.38611	19 46 47.46	-26 35 41.6	3 675	1993 OB <sub>2</sub>	1993 07 16.32413	19 20 46.86	-14 17 56.3	2 675
1993 OL	1993 07 27.31181	19 40 46.18	-26 06 13.0	3 675	1993 OB <sub>2</sub>	1993 07 17.27049	19 19 48.08	-14 14 42.4	2 675
1993 OL	1993 07 27.43698	19 39 55.32	-26 01 59.9	3 675	1993 OB <sub>2</sub>	1993 07 17.31267	19 19 45.27	-14 14 33.8	2 675
1993 OO	* 1993 07 18.40191	21 36 12.32	+07 19 37.2	16.0 2 675	1993 OB <sub>2</sub>	1993 07 20.23542	19 16 45.51	-14 04 58.6	2 675
1993 OO	1993 07 18.42778	21 36 11.50	+07 19 39.2	2 675	1993 OB <sub>2</sub>	1993 07 20.26024	19 16 43.84	-14 04 55.7	2 675
1993 OO	1993 07 20.42413	21 34 59.60	+07 20 50.0	2 675	1993 OC <sub>2</sub>	* 1993 07 23.41753	22 54 26.89	-16 29 14.0	18.0 3 675
1993 OO	1993 07 20.45417	21 34 58.45	+07 20 50.3	2 675	1993 OC <sub>2</sub>	1993 07 23.46111	22 54 24.78	-16 29 04.5	3 675
1993 OP	* 1993 07 18.40191	21 36 35.14	+07 19 19.2	16.5 2 675	1993 OC <sub>2</sub>	1993 07 25.39774	22 52 46.96	-16 20 35.6	3 675
1993 OP	1993 07 18.42778	21 36 33.73	+07 19 45.7	2 675	1993 OC <sub>2</sub>	1993 07 25.42378	22 52 45.60	-16 20 28.9	3 675
1993 OP	1993 07 20.42413	21 34 42.91	+07 53 40.4	2 675	1993 OD <sub>2</sub>	* 1993 07 23.41146	22 54 19.23	-08 09 06.9	16.5 3 675
1993 OP	1993 07 20.45417	21 34 41.06	+07 54 12.4	2 675	1993 OD <sub>2</sub>	1993 07 23.45486	22 54 19.48	-08 09 37.0	3 675
1993 OQ	* 1993 07 16.29792	19 45 40.21	-16 30 32.6	15.0 2 675	1993 OD <sub>2</sub>	1993 07 26.35191	22 54 38.57	-08 45 11.3	3 675
1993 OQ	1993 07 16.32413	19 45 38.55	-16 30 23.7	2 675	1993 OD <sub>2</sub>	1993 07 26.37969	22 54 38.49	-08 45 32.1	3 675

2024 P-L	1955 03 25.18264	08 10 31.53	+23 33 39.5	6 675	4032 T-3	1949 12 22.19687	03 53 08.22	+23 09 16.4	6 675
2508 P-L	1951 02 04.31597	09 15 20.12	+24 49 40.1	6 675	(24)	1953 04 15.21806	10 49 46.02	+08 13 43.3	6 675
2508 P-L	1951 02 04.34097	09 15 18.07	+24 49 46.0	6 675	(24)	1953 04 15.24201	10 49 45.69	+08 13 44.4	6 675
3066 P-L	1954 04 08.37535	13 58 47.43	-13 33 33.9	6 675	(47)	1953 04 15.21806	11 07 10.13	+06 34 16.9	6 675
3066 P-L	1954 04 08.39861	13 58 46.63	-13 33 23.9	6 675	(47)	1953 04 15.24201	11 07 09.41	+06 34 19.7	6 675
3066 P-L	1954 05 31.20104	13 27 27.26	-06 54 07.3	6 675	(48)	1954 05 31.20104	13 32 05.01	-04 50 40.6	6 675
3066 P-L	1954 05 31.22571	13 27 27.02	-06 54 02.5	6 675	(48)	1954 05 31.22571	13 32 04.67	-04 50 38.9	6 675
3535 P-L	1951 02 04.31597	09 03 59.37	+26 22 54.3	6 675	(72)	1953 04 15.21806	10 52 34.58	+02 47 49.9	6 675
3535 P-L	1951 02 04.34097	09 03 57.37	+26 22 54.6	6 675	(72)	1953 04 15.24201	10 52 34.12	+02 47 56.9	6 675
4019 P-L	* 1960 09 24.37573	00 27 04.97	+07 04 34.8	17.2	4 675	1954 04 08.37535	14 19 00.39	-11 38 27.8	6 675
4019 P-L	1960 09 25.42780	00 26 08.35	+06 58 21.0	4 675	(102)	1953 04 15.21806	10 57 52.30	+02 18 12.5	6 675
4019 P-L	1960 09 26.30558	00 25 21.30	+06 53 04.9	4 675	(102)	1953 04 15.24201	10 57 51.73	+02 18 18.8	6 675
4019 P-L	1960 09 28.36808	00 23 29.77	+06 40 29.6	4 675	(110)	1949 12 22.17361	03 54 13.24	+22 26 40.5	6 675
4019 P-L	1960 10 17.27085	00 08 05.82	+04 44 18.7	4 675	(110)	1949 12 22.19687	03 54 12.22	+22 26 39.7	6 675
4019 P-L	1960 10 22.22293	00 05 06.66	+04 17 58.2	4 675	(111)	1955 12 12.53681	09 43 54.69	+14 19 53.1	6 675
4019 P-L	1960 10 24.35836	00 04 00.60	+04 07 39.0	4 675	(113)	1955 03 23.19375	08 56 25.48	+20 55 11.1	6 675
4019 P-L	1960 10 26.32573	00 03 06.67	+03 58 43.3	4 675	(113)	1955 03 23.21875	08 56 25.40	+20 55 12.8	6 675
4582 P-L	1993 06 22.21528	14 59 26.98	-20 15 52.9	16.0	2 675	1954 09 04.40556	00 48 25.23	+00 18 16.7	6 675
4582 P-L	1993 06 24.21458	14 58 54.75	-20 13 36.2	2 675	(116)	1954 09 04.43090	00 48 24.38	+00 18 10.4	6 675
6035 P-L	1964 08 08.30624	20 49 18.10	-34 30 51.6	6 675	(122)	1954 12 21.13750	02 38 32.13	+13 40 14.5	6 675
7622 P-L	1952 01 31.43819	11 53 34.60	+10 31 06.8	6 675	(122)	1954 12 21.16076	02 38 31.80	+13 40 13.7	6 675
7622 P-L	1952 01 31.46597	11 53 33.82	+10 31 13.5	6 675	(178)	1955 12 12.51562	09 46 36.64	+15 55 03.2	6 675
7633 P-L	1951 12 01.23542	03 44 26.03	+15 58 41.9	6 675	(178)	1955 12 12.53681	09 46 36.93	+15 55 02.9	6 675
7633 P-L	1951 12 01.26250	03 44 24.60	+15 58 40.0	6 675	(228)	1953 04 15.21806	11 06 46.68	+02 43 32.3	6 675
9521 P-L	1953 10 01.23507	22 06 11.29	-13 59 43.2	6 675	(228)	1953 04 15.24201	11 06 45.87	+02 43 37.6	6 675
9521 P-L	1953 10 01.25903	22 06 10.75	-13 59 46.1	6 675	(239)	1954 05 31.20104	13 23 01.76	-04 26 37.2	6 675
2312 T-1	1951 02 04.31597	09 04 21.95	+20 49 24.0	6 675	(239)	1954 05 31.22571	13 23 01.34	-04 26 34.3	6 675
2312 T-1	1951 02 04.34097	09 04 20.47	+20 49 29.0	6 675	(240)	1954 12 21.13750	02 24 38.46	+11 28 09.8	6 675
4254 T-2	1951 12 01.23542	03 43 16.50	+19 04 20.7	6 675	(240)	1954 12 21.16076	02 24 38.62	+11 28 13.0	6 675
4254 T-2	1951 12 01.26250	03 43 14.44	+19 04 18.5	6 675	(247)	1953 04 15.21806	11 06 18.17	+08 22 41.5	6 675
5107 T-2	1973 09 19.29705	00 23 08.93	+11 37 46.8	4 675	(247)	1953 04 15.24201	11 06 17.24	+08 22 36.5	6 675
5107 T-2	1973 09 20.21458	00 22 21.23	+11 36 39.7	4 675	(257)	1951 02 04.31597	09 27 30.20	+20 37 33.4	6 675
5107 T-2	1973 09 20.29253	00 22 17.16	+11 36 34.1	4 675	(257)	1951 02 04.34097	09 27 28.91	+20 37 39.4	6 675
5107 T-2	1973 09 24.40035	00 18 41.32	+11 30 44.7	4 675	(276)	1954 04 08.37535	14 12 26.19	-14 25 32.6	6 675
5107 T-2	1973 09 24.47986	00 18 36.84	+11 30 37.1	4 675	(276)	1954 04 08.39861	14 12 25.28	-14 25 18.2	6 675
5107 T-2	* 1973 09 25.29375	00 17 54.11	+11 29 12.3	19.0	4 675	1953 10 01.23507	22 18 36.33	-11 44 02.9	6 675
5107 T-2	1973 09 25.35903	00 17 50.54	+11 29 05.1	4 675	(309)	1953 10 01.25903	22 18 35.69	-11 44 02.9	6 675
1076 T-3	1953 08 15.29514	19 57 32.37	-20 34 24.9	6 675	(320)	1954 12 21.13750	02 31 05.27	+11 41 16.9	6 675
2053 T-3	1977 10 07.25868	01 13 34.99	+14 18 59.6	4 675	(320)	1954 12 21.16076	02 31 05.10	+11 41 15.1	6 675
2053 T-3	1977 10 11.27743	01 10 28.45	+13 59 16.3	4 675	(334)	1953 08 15.29514	20 00 20.23	-19 44 55.2	6 675
2053 T-3	1977 10 11.34375	01 10 25.20	+13 58 56.4	4 675	(343)	1954 04 08.37535	13 57 56.79	-10 54 54.8	6 675
2053 T-3	1977 10 12.27587	01 09 41.94	+13 54 09.5	4 675	(343)	1954 04 08.39861	13 57 55.52	-10 54 47.8	6 675
2053 T-3	1977 10 12.34271	01 09 38.84	+13 53 49.7	4 675	(360)	1955 03 25.18264	08 33 19.79	+21 21 25.3	6 675
2053 T-3	* 1977 10 16.26233	01 06 38.31	+13 33 13.8	18.8	4 675	1951 02 04.31597	09 26 06.50	+21 20 05.0	6 675
2053 T-3	1977 10 16.32795	01 06 35.17	+13 32 53.7	4 675	(388)	1951 02 04.34097	09 26 05.07	+21 20 08.5	6 675
2053 T-3	1977 10 17.26458	01 05 52.74	+13 27 54.4	4 675	(412)	1955 12 12.51562	09 37 38.26	+19 05 22.5	6 675
2053 T-3	1977 10 17.33177	01 05 49.57	+13 27 33.0	4 675	(412)	1955 12 12.53681	09 37 38.54	+19 05 27.8	6 675
2053 T-3	1977 10 21.40868	01 02 48.88	+13 05 24.3	4 675	(428)	1955 04 21.27361	12 29 04.77	-02 46 32.7	6 675
2053 T-3	1977 10 21.46910	01 02 46.11	+13 05 05.5	4 675	(480)	1954 12 21.13750	02 24 38.77	+15 22 34.3	6 675
2053 T-3	1977 10 22.41528	01 02 05.65	+12 59 56.6	4 675	(480)	1954 12 21.16076	02 24 38.69	+15 22 23.1	6 675
2053 T-3	1977 10 22.46962	01 02 03.35	+12 59 37.7	4 675	(485)	1993 04 15.29653	13 49 27.01	-05 59 54.3	9 675
4032 T-3	1949 12 22.17361	03 53 09.08	+23 09 15.9	6 675	(485)	1993 04 15.33125	13 49 25.35	-05 59 34.9	9 675



(485)	1993 04 16.35104	13 48 37.50	-05 50 01.0	9 675	(869)	1953 10 01.23507	22 08 19.23	-13 11 19.8	6 675
(485)	1993 04 16.38073	13 48 36.06	-05 49 44.4	9 675	(869)	1953 10 01.25903	22 08 18.91	-13 11 25.5	6 675
(485)	1993 04 19.31267	13 46 19.00	-05 22 34.4	9 675	(885)	1954 07 01.21528	16 33 40.83	-17 26 26.7	6 675
(485)	1993 04 19.34601	13 46 17.40	-05 22 16.1	9 675	(885)	1954 07 01.23958	16 33 39.87	-17 26 26.2	6 675
(513)	1953 04 15.21806	10 46 22.92	+04 54 45.4	6 675	(935)	1953 10 01.23507	22 02 50.48	-11 59 18.3	6 675
(513)	1953 04 15.24201	10 46 22.63	+04 54 50.4	6 675	(935)	1953 10 01.25903	22 02 49.93	-11 59 17.0	6 675
(524)	1953 10 01.23507	21 58 25.70	-08 35 27.7	6 675	(959)	1993 04 15.29653	13 43 39.49	-07 11 26.8	9 675
(524)	1953 10 01.25903	21 58 25.04	-08 35 27.2	6 675	(959)	1993 04 15.33125	13 43 37.95	-07 11 19.6	9 675
(555)	1953 10 01.23507	22 12 39.82	-12 52 09.3	6 675	(959)	1993 04 16.35104	13 42 53.87	-07 07 45.6	9 675
(555)	1953 10 01.25903	22 12 39.18	-12 52 12.7	6 675	(959)	1993 04 16.38073	13 42 52.53	-07 07 39.6	9 675
(555)	1954 12 21.13750	02 27 41.78	+10 58 26.4	6 675	(959)	1993 04 19.31267	13 40 45.87	-06 57 32.4	9 675
(555)	1954 12 21.16076	02 27 41.52	+10 58 26.6	6 675	(959)	1993 04 19.34601	13 40 44.44	-06 57 25.3	9 675
(560)	1955 03 23.19375	08 52 21.67	+26 04 59.8	6 675	(977)	1954 02 26.22986	08 18 21.68	+36 56 22.7	6 675
(560)	1955 03 23.21875	08 52 21.83	+26 04 58.7	6 675	(977)	1954 02 26.25139	08 18 20.86	+36 56 23.1	6 675
(566)	1954 05 31.20104	13 24 51.62	-03 57 06.8	6 675	(1003)	1954 05 31.20104	13 20 24.15	-06 04 50.6	6 675
(566)	1954 05 31.22571	13 24 51.26	-03 57 06.7	6 675	(1003)	1954 05 31.22571	13 20 23.82	-06 04 49.1	6 675
(572)	1993 04 15.29653	13 38 30.51	-06 57 20.1	9 675	(1043)	1954 09 04.40556	00 58 57.53	+00 50 42.5	6 675
(572)	1993 04 15.33125	13 38 28.64	-06 57 02.5	9 675	(1043)	1954 09 04.43090	00 58 56.96	+00 50 29.9	6 675
(572)	1993 04 16.35104	13 37 35.55	-06 48 17.4	9 675	(1071)	1952 01 31.46597	11 30 43.49	+11 31 25.9	6 675
(572)	1993 04 16.38073	13 37 33.94	-06 48 02.6	9 675	(1081)	1951 02 04.31597	09 13 22.64	+22 25 12.0	6 675
(572)	1993 04 19.31267	13 35 01.94	-06 23 04.1	9 675	(1081)	1951 02 04.34097	09 13 21.25	+22 25 14.3	6 675
(572)	1993 04 19.34601	13 35 00.21	-06 22 46.5	9 675	(1091)	1954 05 31.20104	13 23 26.86	-07 36 54.1	6 675
(638)	1955 12 12.51562	09 32 58.12	+17 47 21.0	6 675	(1091)	1954 05 31.22571	13 23 26.53	-07 36 52.9	6 675
(638)	1955 12 12.53681	09 32 58.33	+17 47 24.0	6 675	(1111)	1954 07 01.21528	16 29 03.88	-17 11 05.3	6 675
(668)	1954 04 08.37535	14 04 17.67	-13 57 31.0	6 675	(1111)	1954 07 01.23958	16 29 03.09	-17 11 05.8	6 675
(668)	1954 04 08.39861	14 04 16.74	-13 57 24.3	6 675	(1120)	1993 04 16.35104	13 57 20.09	-06 35 21.7	9 675
(668)	1954 05 31.20104	13 28 48.83	-08 48 40.4	6 675	(1120)	1993 04 16.38073	13 57 18.21	-06 35 09.3	9 675
(668)	1954 05 31.22571	13 28 48.36	-08 48 36.0	6 675	(1120)	1993 04 19.31267	13 54 26.28	-06 15 39.4	9 675
(670)	1953 04 15.21806	11 05 01.26	+06 00 22.3	6 675	(1120)	1993 04 19.34601	13 54 24.24	-06 15 26.0	9 675
(670)	1953 04 15.24201	11 05 00.66	+06 00 28.5	6 675	(1125)	1954 05 31.20104	13 29 16.49	-05 32 06.5	6 675
(691)	1954 07 01.20660	16 28 06.28	-17 58 38.9	6 675	(1125)	1954 05 31.22571	13 29 16.14	-05 32 07.5	6 675
(691)	1954 07 01.23611	16 28 05.26	-17 58 41.9	6 675	(1162)	1951 12 01.23542	03 42 14.50	+20 31 45.2	6 675
(717)	1953 04 15.21806	10 53 06.80	+06 54 35.0	6 675	(1162)	1951 12 01.26250	03 42 13.43	+20 31 41.6	6 675
(717)	1953 04 15.24201	10 53 06.21	+06 54 37.6	6 675	(1183)	1953 10 01.23507	22 12 34.48	-13 28 45.3	6 675
(717)	1954 04 08.37535	14 11 33.79	-14 59 25.2	6 675	(1183)	1953 10 01.25903	22 12 33.82	-13 28 46.1	6 675
(717)	1954 04 08.39861	14 11 32.76	-14 59 18.9	6 675	(1188)	1951 02 04.31597	09 09 08.36	+23 16 41.2	6 675
(755)	1953 04 15.21806	10 56 01.50	+06 43 20.2	6 675	(1188)	1951 02 04.34097	09 09 06.32	+23 16 43.5	6 675
(755)	1953 04 15.24201	10 56 01.14	+06 43 25.8	6 675	(1218)	1954 09 04.40556	00 46 01.79	-00 08 44.6	6 675
(758)	1954 09 04.40556	01 06 24.70	-01 24 05.7	6 675	(1218)	1954 09 04.43090	00 46 00.85	-00 08 52.1	6 675
(758)	1954 09 04.43090	01 06 24.36	-01 24 12.6	6 675	(1223)	1951 12 01.23542	03 51 21.40	+21 41 04.2	6 675
(768)	1952 12 11.10208	01 23 35.91	+09 41 34.3	6 675	(1223)	1951 12 01.26250	03 51 19.90	+21 41 00.3	6 675
(768)	1952 12 11.12361	01 23 35.92	+09 41 42.3	6 675	(1238)	1964 08 08.30624	20 39 45.12	-36 24 36.1	6 675
(772)	1949 12 22.17361	04 04 46.52	+26 41 23.7	6 675	(1252)	1955 03 23.19375	08 50 05.06	+24 57 06.9	6 675
(772)	1949 12 22.20078	04 04 45.02	+26 41 28.6	6 675	(1252)	1955 03 23.21875	08 50 05.07	+24 57 27.1	6 675
(782)	1954 12 21.13750	02 24 09.12	+11 01 19.6	6 675	(1269)	1953 10 01.23507	22 00 27.47	-13 26 43.9	6 675
(782)	1954 12 21.16076	02 24 08.93	+11 01 23.9	6 675	(1269)	1953 10 01.25903	22 00 26.99	-13 26 46.7	6 675
(836)	1954 04 08.37535	14 16 39.20	-12 23 53.4	6 675	(1292)	1953 10 01.23507	22 01 27.43	-08 54 55.4	6 675
(836)	1954 04 08.39861	14 16 38.05	-12 23 43.6	6 675	(1292)	1953 10 01.25903	22 01 26.78	-08 54 59.9	6 675
(841)	1950 08 14.42361	01 57 43.54	+13 08 07.2	6 675	(1343)	1951 02 04.31597	09 25 21.67	+24 57 38.5	6 675
(841)	1950 08 14.45104	01 57 44.33	+13 08 16.8	6 675	(1343)	1951 02 04.34097	09 25 20.03	+24 57 45.5	6 675
(843)	1964 08 08.30486	20 53 07.29	-32 22 33.8	6 675	(1363)	1953 04 15.21806	11 04 19.45	+04 56 38.4	6 675
(843)	1964 08 08.32549	20 53 05.94	-32 22 30.2	6 675	(1363)	1953 04 15.24201	11 04 18.87	+04 56 41.6	6 675

(1383)	1954 05 31.20104	13 21 38.48	-08 35 55.7	6 675	(1918)	1954 05 31.22571	13 23 27.34	-05 17 54.8	6 675
(1383)	1954 05 31.22571	13 21 38.03	-08 35 53.6	6 675	(1939)	1955 03 25.15625	08 10 07.58	+21 15 36.2	6 675
(1429)	1952 01 31.43819	11 48 39.58	+11 20 48.0	6 675	(1939)	1955 03 25.18264	08 10 07.75	+21 15 36.1	6 675
(1429)	1952 01 31.46597	11 48 38.82	+11 20 55.1	6 675	(1953)	1954 05 31.20104	13 22 14.57	-06 25 21.0	6 675
(1430)	1955 12 12.51562	09 46 51.43	+14 56 43.5	6 675	(1953)	1954 05 31.22571	13 22 14.09	-06 25 20.0	6 675
(1430)	1955 12 12.53681	09 46 51.38	+14 56 41.8	6 675	(1997)	1950 08 14.42361	02 00 22.80	+13 16 01.8	6 675
(1442)	1951 12 01.23542	03 30 45.92	+18 26 45.0	6 675	(1997)	1950 08 14.45104	02 00 24.35	+13 16 20.4	6 675
(1442)	1951 12 01.26250	03 30 44.39	+18 26 36.3	6 675	(2002)	1953 04 15.21806	10 47 35.46	+07 25 21.3	6 675
(1483)	1954 12 21.13750	02 26 19.76	+12 25 03.8	6 675	(2002)	1953 04 15.24201	10 47 35.18	+07 25 29.2	6 675
(1483)	1954 12 21.16076	02 26 19.38	+12 25 04.8	6 675	(2009)	1954 05 31.20104	13 30 04.80	-05 34 02.7	6 675
(1488)	1955 03 23.19375	08 50 35.67	+25 12 22.8	6 675	(2009)	1954 05 31.22571	13 30 04.43	-05 34 02.9	6 675
(1488)	1955 03 23.21875	08 50 35.58	+25 12 16.6	6 675	(2012)	1953 08 15.27118	20 07 52.43	-16 48 18.3	6 675
(1519)	1952 01 31.46597	11 52 01.45	+10 26 13.3	6 675	(2012)	1953 08 15.29514	20 07 51.52	-16 48 19.0	6 675
(1520)	1949 12 22.17361	03 50 06.43	+22 00 51.5	6 675	(2015)	1954 07 29.38125	22 04 16.96	-23 06 01.1	6 675
(1520)	1949 12 22.19687	03 50 05.62	+22 00 41.7	6 675	(2015)	1954 07 29.40556	22 04 15.55	-23 05 58.3	6 675
(1529)	1955 04 14.24931	11 54 29.35	+12 36 35.9	6 675	(2066)	1993 04 15.29653	13 50 56.45	-03 45 32.2	9 675
(1529)	1955 04 14.27431	11 54 28.55	+12 36 37.7	6 675	(2066)	1993 04 15.33125	13 50 54.55	-03 45 21.5	9 675
(1569)	1951 02 04.31597	09 23 04.95	+25 33 24.4	6 675	(2066)	1993 04 16.35104	13 50 00.44	-03 39 53.3	9 675
(1569)	1951 02 04.34097	09 23 03.70	+25 33 33.4	6 675	(2066)	1993 04 16.38073	13 49 58.75	-03 39 43.8	9 675
(1572)	1952 01 31.43819	11 46 38.51	+09 08 50.9	6 675	(2066)	1993 04 19.31267	13 47 22.42	-03 24 29.7	9 675
(1572)	1952 01 31.46597	11 46 37.70	+09 08 53.0	6 675	(2066)	1993 04 19.34601	13 47 20.61	-03 24 19.8	9 675
(1624)	1954 12 21.13750	02 21 52.54	+11 28 07.3	6 675	(2074)	1954 04 08.37535	14 13 31.95	-14 06 05.5	6 675
(1624)	1954 12 21.16076	02 21 52.30	+11 28 06.9	6 675	(2074)	1954 04 08.39861	14 13 30.58	-14 05 26.4	6 675
(1633)	1954 09 04.40556	00 49 21.02	+01 41 56.3	6 675	(2106)	1953 08 15.29514	20 13 12.89	-14 52 23.6	6 675
(1633)	1954 09 04.43090	00 49 20.37	+01 41 50.4	6 675	(2137)	1955 12 12.51562	09 56 32.97	+16 02 19.3	6 675
(1651)	1950 08 14.42361	02 11 57.38	+13 00 38.5	6 675	(2137)	1955 12 12.53681	09 56 33.25	+16 02 14.8	6 675
(1651)	1950 08 14.45104	02 11 58.38	+13 00 39.5	6 675	(2149)	1954 12 21.13750	02 23 19.06	+12 29 15.4	6 675
(1668)	1993 04 15.29653	13 40 44.85	-05 21 27.1	9 675	(2149)	1954 12 21.16076	02 23 18.83	+12 29 18.3	6 675
(1668)	1993 04 15.33125	13 40 43.14	-05 21 15.5	9 675	(2159)	1949 12 22.17361	03 55 48.69	+25 42 50.2	6 675
(1668)	1993 04 16.35104	13 39 54.86	-05 15 40.6	9 675	(2159)	1949 12 22.19687	03 55 47.75	+25 42 44.8	6 675
(1668)	1993 04 16.38073	13 39 53.35	-05 15 31.7	9 675	(2225)	1951 12 01.23542	03 55 27.91	+18 09 01.0	6 675
(1668)	1993 04 19.31267	13 37 34.37	-04 59 38.3	9 675	(2225)	1951 12 01.26250	03 55 26.37	+18 08 58.9	6 675
(1668)	1993 04 19.34601	13 37 32.77	-04 59 27.6	9 675	(2249)	1954 07 01.21528	16 20 32.77	-15 43 03.3	6 675
(1676)	1952 01 31.43819	11 49 01.20	+11 38 15.3	6 675	(2249)	1954 07 01.23958	16 20 32.09	-15 43 04.2	6 675
(1676)	1952 01 31.46597	11 49 00.92	+11 38 22.5	6 675	(2279)	1954 09 04.43090	01 00 39.55	+03 13 09.8	6 675
(1697)	1953 04 15.21806	10 55 59.30	+02 31 22.3	6 675	(2297)	1951 12 01.23542	03 53 35.79	+18 04 06.0	6 675
(1697)	1953 04 15.24201	10 55 58.74	+02 31 23.9	6 675	(2297)	1951 12 01.26250	03 53 34.46	+18 04 03.1	6 675
(1703)	1955 03 25.15625	08 20 15.67	+22 31 38.8	6 675	(2297)	1954 05 31.20104	13 25 35.29	-06 38 06.1	6 675
(1703)	1955 03 25.18264	08 20 15.94	+22 31 39.9	6 675	(2297)	1954 05 31.22571	13 25 35.04	-06 38 06.7	6 675
(1742)	1954 12 21.13750	02 30 14.88	+11 15 34.5	6 675	(2342)	1954 04 08.37535	14 20 45.51	-13 54 14.1	6 675
(1742)	1954 12 21.16076	02 30 14.77	+11 15 35.8	6 675	(2342)	1954 04 08.39861	14 20 44.68	-13 54 09.7	6 675
(1745)	1951 12 01.23542	03 56 29.47	+19 00 16.6	6 675	(2376)	1951 02 04.31597	09 05 13.00	+21 55 10.6	6 675
(1745)	1951 12 01.26250	03 56 28.12	+19 00 13.8	6 675	(2376)	1951 02 04.34097	09 05 11.70	+21 55 15.8	6 675
(1772)	1952 01 31.43819	11 55 55.57	+09 29 32.3	6 675	(2383)	1951 02 04.31597	09 25 06.93	+21 16 32.7	6 675
(1772)	1952 01 31.46597	11 55 55.28	+09 29 40.4	6 675	(2383)	1951 02 04.34097	09 25 05.00	+21 16 38.9	6 675
(1791)	1954 12 21.13750	02 41 12.20	+11 21 50.3	6 675	(2389)	1953 04 15.21806	10 47 57.30	+03 06 08.2	6 675
(1791)	1954 12 21.16076	02 41 11.79	+11 21 49.9	6 675	(2389)	1953 04 15.24201	10 47 56.61	+03 06 09.6	6 675
(1859)	1953 04 15.21806	11 02 43.31	+03 21 29.2	6 675	(2406)	1953 10 01.23507	21 58 10.25	-14 24 02.3	6 675
(1859)	1953 04 15.24201	11 02 42.81	+03 21 30.3	6 675	(2406)	1953 10 01.25903	21 58 10.08	-14 23 58.3	6 675
(1893)	1949 12 22.17361	03 49 44.70	+21 22 12.6	6 675	(2419)	1953 10 01.23507	22 07 37.03	-11 02 13.4	6 675
(1893)	1949 12 22.19687	03 49 43.63	+21 22 12.2	6 675	(2419)	1953 10 01.25903	22 07 36.43	-11 02 21.6	6 675
(1918)	1954 05 31.20104	13 23 27.73	-05 17 58.7	6 675	(2424)	1993 04 15.29653	13 35 49.28	-08 25 29.6	9 675

(2424)	1993 04 15.33125	13 35 46.87	-08 25 27.0	9 675	(2775)	1993 04 19.34601	13 57 11.79	-06 05 02.2	9 675
(2448)	1953 08 15.27118	19 56 29.44	-17 53 41.8	6 675	(2803)	1954 04 08.37535	14 18 12.68	-14 07 10.2	6 675
(2448)	1953 08 15.29514	19 56 28.65	-17 53 52.6	6 675	(2803)	1954 04 08.39861	14 18 11.72	-14 07 05.3	6 675
(2451)	1953 10 01.23507	22 09 09.82	-08 13 17.4	6 675	(2806)	1951 12 01.23542	03 47 22.06	+16 34 04.5	6 675
(2451)	1953 10 01.25903	22 09 09.25	-08 13 15.2	6 675	(2806)	1951 12 01.26250	03 47 20.34	+16 34 01.1	6 675
(2464)	1955 12 12.51562	09 48 47.89	+14 18 08.9	6 675	(2826)	1954 05 31.20104	13 25 41.31	-09 39 17.7	6 675
(2464)	1955 12 12.53681	09 48 48.19	+14 18 05.4	6 675	(2826)	1954 05 31.22571	13 25 40.74	-09 39 20.4	6 675
(2466)	1953 04 15.21806	11 02 46.68	+08 09 36.1	6 675	(2847)	1951 12 01.23542	03 53 27.06	+20 32 03.5	6 675
(2466)	1953 04 15.24201	11 02 46.11	+08 09 40.7	6 675	(2847)	1951 12 01.26250	03 53 25.11	+20 31 56.5	6 675
(2491)	1993 07 15.38125	20 40 10.58	-14 12 00.2	2 675	(2869)	1953 04 15.21806	11 07 18.55	+05 17 15.7	6 675
(2491)	1993 07 15.40503	20 40 09.01	-14 12 29.6	2 675	(2869)	1953 04 15.24201	11 07 17.85	+05 17 14.4	6 675
(2491)	1993 07 20.33420	20 34 56.84	-15 52 16.9	2 675	(2877)	1955 03 25.15625	08 19 18.45	+21 54 13.9	6 675
(2491)	1993 07 20.35903	20 34 55.00	-15 52 47.5	2 675	(2877)	1955 03 25.18264	08 19 18.44	+21 54 14.3	6 675
(2492)	1953 04 15.21806	11 04 11.72	+06 30 12.4	6 675	(2884)	1954 04 08.37535	14 11 29.51	-12 38 20.9	6 675
(2492)	1953 04 15.24201	11 04 11.16	+06 30 15.2	6 675	(2884)	1954 04 08.39861	14 11 28.59	-12 38 15.6	6 675
(2499)	1950 08 14.45104	02 03 51.81	+12 31 57.3	6 675	(2926)	1950 08 14.42361	02 00 59.24	+14 53 00.7	6 675
(2524)	1954 12 21.13750	02 28 30.41	+14 59 12.6	6 675	(2926)	1950 08 14.45104	02 00 59.85	+14 53 04.7	6 675
(2524)	1954 12 21.16076	02 28 30.07	+14 59 11.4	6 675	(2952)	1955 12 12.51562	09 53 14.74	+14 44 36.7	6 675
(2532)	1953 04 15.21806	11 05 10.24	+04 18 22.5	6 675	(2952)	1955 12 12.53681	09 53 15.22	+14 44 32.5	6 675
(2532)	1953 04 15.24201	11 05 09.54	+04 18 24.4	6 675	(2972)	1954 04 08.37535	14 07 43.01	-12 49 41.1	6 675
(2533)	1953 08 15.29514	20 13 26.81	-17 43 59.2	6 675	(2972)	1954 04 08.39861	14 07 41.59	-12 49 33.3	6 675
(2587)	1955 03 23.19375	08 50 20.03	+20 28 47.5	6 675	(2972)	1954 05 31.18542	13 23 55.14	-08 18 51.4	6 675
(2587)	1955 03 23.21875	08 50 19.73	+20 28 48.5	6 675	(2981)	1954 07 01.21528	16 44 09.66	-21 01 40.2	6 675
(2596)	1953 08 15.27118	20 00 39.15	-16 59 37.4	6 675	(2981)	1954 07 01.23958	16 44 08.90	-21 01 38.2	6 675
(2596)	1953 08 15.29514	20 00 38.42	-16 59 44.0	6 675	(2986)	1993 06 19.21354	16 24 47.26	-23 03 54.0	3 675
(2620)	1954 04 08.37535	14 14 55.64	-10 11 33.8	6 675	(2986)	1993 06 20.24097	16 24 01.81	-23 02 38.0	3 675
(2633)	1954 09 04.43090	01 05 46.11	+01 13 23.1	6 675	(2989)	1955 04 21.24861	12 42 39.11	+00 59 46.6	6 675
(2633)	1993 04 15.29653	13 39 57.61	-06 51 53.5	9 675	(2989)	1955 04 21.27361	12 42 37.66	+00 59 52.7	6 675
(2633)	1993 04 15.33125	13 39 55.36	-06 51 42.9	9 675	(2997)	1950 08 14.42361	01 59 41.33	+13 55 28.4	6 675
(2633)	1993 04 16.35104	13 38 51.73	-06 46 46.8	9 675	(2997)	1950 08 14.45104	01 59 42.38	+13 55 42.3	6 675
(2633)	1993 04 16.38073	13 38 50.00	-06 46 36.5	9 675	(3077)	1952 12 11.10208	01 24 45.30	+11 11 15.2	6 675
(2633)	1993 04 19.31267	13 35 46.73	-06 32 35.3	9 675	(3077)	1952 12 11.12361	01 24 45.58	+11 11 14.5	6 675
(2633)	1993 04 19.34601	13 35 44.56	-06 32 25.4	9 675	(3097)	1953 04 15.21806	10 54 31.02	+02 55 30.1	6 675
(2640)	1950 08 14.42361	01 59 30.82	+13 03 51.1	6 675	(3097)	1953 04 15.24201	10 54 30.60	+02 55 36.2	6 675
(2640)	1950 08 14.45104	01 59 31.19	+13 03 58.6	6 675	(3124)	1993 04 15.29653	13 57 31.03	-04 57 21.1	9 675
(2644)	1953 04 15.21806	10 50 49.02	+06 28 27.3	6 675	(3124)	1993 04 15.33125	13 57 29.36	-04 57 08.5	9 675
(2644)	1953 04 15.24201	10 50 48.31	+06 28 29.2	6 675	(3124)	1993 04 16.35104	13 56 40.67	-04 50 56.2	9 675
(2666)	1954 04 08.37535	13 59 48.32	-10 20 44.6	6 675	(3124)	1993 04 19.31267	13 54 18.39	-04 33 04.5	9 675
(2666)	1954 04 08.39861	13 59 47.26	-10 20 33.2	6 675	(3124)	1993 04 19.34601	13 54 16.74	-04 32 52.1	9 675
(2666)	1954 05 31.20104	13 30 17.44	-05 50 12.5	6 675	(3143)	1954 05 31.20104	13 28 59.05	-06 13 04.4	6 675
(2666)	1954 05 31.22571	13 30 16.89	-05 50 07.8	6 675	(3143)	1954 05 31.22571	13 28 58.64	-06 13 05.8	6 675
(2687)	1954 05 31.20104	13 20 39.21	-05 19 11.4	6 675	(3155)	1950 03 17.23125	11 07 47.50	+14 13 02.0	6 675
(2687)	1954 05 31.22571	13 20 38.69	-05 19 16.5	6 675	(3155)	1950 03 17.25868	11 07 45.70	+14 13 06.9	6 675
(2700)	1953 04 15.21806	11 04 40.70	+06 16 07.3	6 675	(3155)	1954 04 08.37535	14 20 42.62	-14 15 57.0	6 675
(2700)	1953 04 15.24201	11 04 40.21	+06 16 11.5	6 675	(3155)	1954 04 08.39861	14 20 41.32	-14 15 55.2	6 675
(2700)	1954 07 01.23264	16 45 18.86	-18 50 55.4	6 675	(3165)	1954 12 21.13750	02 26 00.96	+11 13 48.4	6 675
(2700)	1954 07 01.23958	16 45 18.34	-18 50 53.6	6 675	(3165)	1954 12 21.16076	02 26 00.98	+11 13 52.6	6 675
(2742)	1955 03 25.15625	08 22 43.46	+20 36 59.3	6 675	(3179)	1953 08 15.28680	19 55 49.96	-18 45 50.7	6 675
(2742)	1955 03 25.18264	08 22 43.55	+20 36 58.3	6 675	(3183)	1993 04 15.29653	13 45 27.48	-07 41 25.9	9 675
(2747)	1953 04 15.21806	11 07 40.04	+03 55 18.9	6 675	(3183)	1993 04 15.33125	13 45 25.79	-07 41 17.4	9 675
(2747)	1953 04 15.24201	11 07 39.40	+03 55 20.4	6 675	(3183)	1993 04 16.35104	13 44 41.30	-07 36 53.2	9 675
(2775)	1993 04 19.31267	13 57 13.67	-06 05 10.6	9 675	(3183)	1993 04 16.38073	13 44 40.03	-07 36 46.8	9 675

(3183)	1993 04 19.31267	13 42 31.72	-07 24 11.7	9 675	(3592)	1955 04 21.27361	12 31 02.44	-02 06 39.4	6 675
(3183)	1993 04 19.34601	13 42 30.15	-07 24 03.7	9 675	(3615)	1953 08 15.27118	20 08 36.29	-19 40 10.1	6 675
(3226)	1954 07 01.23958	16 40 05.66	-20 42 23.2	6 675	(3615)	1953 08 15.29514	20 08 35.44	-19 40 15.4	6 675
(3227)	1955 04 21.24861	12 39 01.05	+00 48 39.8	6 675	(3659)	1955 04 21.24861	12 31 36.20	-02 47 41.2	6 675
(3227)	1955 04 21.27361	12 39 00.07	+00 48 47.1	6 675	(3664)	1951 12 01.23542	03 38 09.49	+21 32 45.9	6 675
(3257)	1951 02 04.31597	09 24 23.76	+24 17 59.5	6 675	(3664)	1951 12 01.26250	03 38 08.06	+21 32 38.0	6 675
(3257)	1951 02 04.34097	09 24 21.83	+24 18 07.6	6 675	(3664)	1953 04 15.21806	10 47 10.06	+02 26 22.7	6 675
(3259)	1954 07 01.21528	16 34 58.93	-15 24 40.7	6 675	(3664)	1953 04 15.24201	10 47 09.64	+02 26 26.9	6 675
(3259)	1954 07 01.23958	16 34 58.12	-15 24 33.7	6 675	(3666)	1953 10 01.23507	22 09 30.94	-13 25 25.7	6 675
(3274)	1953 10 01.23507	22 10 01.74	-12 44 16.7	6 675	(3666)	1953 10 01.25903	22 09 30.33	-13 25 28.6	6 675
(3274)	1953 10 01.25903	22 10 01.18	-12 44 19.4	6 675	(3702)	1951 02 04.31597	09 27 31.89	+21 58 21.0	6 675
(3283)	1955 03 23.19375	08 59 10.21	+21 59 24.0	6 675	(3702)	1951 02 04.34097	09 27 30.49	+21 58 34.5	6 675
(3283)	1955 03 23.21875	08 59 09.82	+21 59 19.5	6 675	(3746)	1955 03 25.15625	08 13 16.19	+21 06 16.9	6 675
(3290)	1954 04 08.37535	14 19 01.59	-11 02 57.9	6 675	(3746)	1955 03 25.18264	08 13 16.11	+21 06 15.8	6 675
(3290)	1954 04 08.39861	14 19 00.62	-11 02 52.7	6 675	(3778)	1952 12 11.10208	01 21 11.97	+10 14 08.0	6 675
(3291)	1953 10 01.23507	21 57 21.82	-12 51 37.2	6 675	(3778)	1952 12 11.12361	01 21 12.00	+10 14 07.2	6 675
(3291)	1953 10 01.25903	21 57 21.41	-12 51 39.6	6 675	(3922)	1949 12 22.17361	03 59 54.63	+23 35 13.4	6 675
(3328)	1949 12 22.17361	04 09 33.07	+24 17 14.2	6 675	(3922)	1949 12 22.19687	03 59 53.79	+23 35 10.0	6 675
(3328)	1949 12 22.19687	04 09 32.11	+24 17 14.2	6 675	(3930)	1949 12 22.17361	04 02 24.40	+21 35 24.3	6 675
(3328)	1954 12 21.13750	02 39 05.68	+13 49 37.1	6 675	(3930)	1949 12 22.19297	04 02 23.52	+21 35 22.9	6 675
(3328)	1954 12 21.16076	02 39 05.23	+13 49 40.9	6 675	(3942)	1954 04 08.37535	13 59 54.34	-13 20 48.1	6 675
(3339)	1954 02 26.22986	07 56 23.11	+36 27 10.5	6 675	(3942)	1954 04 08.39861	13 59 53.19	-13 20 45.4	6 675
(3349)	1954 12 21.13750	02 36 34.01	+14 59 48.3	6 675	(3957)	1953 04 15.21806	10 46 14.54	+06 15 10.2	6 675
(3349)	1954 12 21.16076	02 36 33.63	+14 59 49.7	6 675	(3957)	1953 04 15.23923	10 46 14.20	+06 15 14.1	6 675
(3368)	1954 09 04.40556	00 47 25.70	+03 23 25.9	6 675	(3959)	1954 12 21.13750	02 25 46.21	+11 21 05.5	6 675
(3368)	1954 09 04.43090	00 47 24.66	+03 23 28.8	6 675	(3959)	1954 12 21.16076	02 25 46.74	+11 21 07.0	6 675
(3373)	1953 04 15.21806	11 03 55.53	+06 17 56.5	6 675	(3989)	1949 12 22.17361	03 56 55.70	+26 47 15.3	6 675
(3373)	1953 04 15.24201	11 03 55.11	+06 18 01.1	6 675	(3989)	1949 12 22.19687	03 56 54.88	+26 47 09.2	6 675
(3404)	1953 08 15.27118	20 07 03.36	-19 13 49.7	6 675	(3993)	1951 12 01.23542	03 46 49.66	+16 49 03.5	6 675
(3404)	1953 08 15.29514	20 07 02.20	-19 13 48.2	6 675	(3993)	1951 12 01.26250	03 46 48.15	+16 48 57.0	6 675
(3477)	1993 04 15.29653	13 46 18.66	-06 43 09.8	9 675	(4012)	1951 12 01.23542	03 48 03.25	+20 15 24.6	6 675
(3477)	1993 04 15.33125	13 46 16.77	-06 42 51.1	9 675	(4012)	1951 12 01.26250	03 48 01.79	+20 15 12.5	6 675
(3477)	1993 04 16.35104	13 45 23.32	-06 33 46.4	9 675	(4014)	1953 10 01.23507	21 57 55.78	-11 02 04.4	6 675
(3477)	1993 04 16.38073	13 45 21.66	-06 33 30.0	9 675	(4014)	1953 10 01.25903	21 57 55.28	-11 02 07.4	6 675
(3490)	1955 12 12.51562	09 48 30.04	+19 37 29.9	6 675	(4020)	1953 04 15.21806	10 43 45.15	+02 55 25.9	6 675
(3490)	1955 12 12.53681	09 48 30.56	+19 37 27.7	6 675	(4020)	1953 04 15.24201	10 43 44.77	+02 55 31.4	6 675
(3495)	1953 10 01.23507	22 15 05.38	-12 58 08.4	6 675	(4028)	1954 04 08.37535	14 18 24.58	-11 26 28.6	6 675
(3495)	1953 10 01.25903	22 15 04.79	-12 58 11.6	6 675	(4028)	1954 04 08.39861	14 18 23.26	-11 26 19.4	6 675
(3504)	1954 12 21.13750	02 44 17.01	+13 26 10.5	6 675	(4050)	1953 10 01.23507	22 09 37.66	-11 56 59.7	6 675
(3504)	1954 12 21.16076	02 44 16.58	+13 26 10.6	6 675	(4050)	1953 10 01.25903	22 09 37.14	-11 57 03.2	6 675
(3529)	1953 10 01.23507	22 04 02.12	-09 30 01.7	6 675	(4080)	1953 04 15.21806	10 56 48.63	+02 28 57.4	6 675
(3529)	1953 10 01.25903	22 04 01.76	-09 30 08.1	6 675	(4080)	1953 04 15.24201	10 56 47.97	+02 29 04.7	6 675
(3541)	1951 12 01.23542	03 45 22.77	+16 34 52.3	6 675	(4084)	1955 04 21.24861	12 38 53.26	+00 46 02.4	6 675
(3541)	1951 12 01.26250	03 45 21.15	+16 34 49.7	6 675	(4084)	1955 04 21.27361	12 38 52.29	+00 46 07.0	6 675
(3572)	1954 12 21.13750	02 27 25.59	+14 12 44.3	6 675	(4087)	1954 04 08.37535	13 56 05.67	-11 56 52.5	6 675
(3572)	1954 12 21.16076	02 27 25.57	+14 12 42.9	6 675	(4087)	1954 04 08.39861	13 56 04.29	-11 56 47.2	6 675
(3576)	1954 02 26.22986	08 02 04.00	+35 45 39.4	6 675	(4091)	1955 04 14.24931	12 05 57.09	+13 04 16.8	6 675
(3583)	1954 04 08.37535	13 57 24.59	-11 24 42.6	6 675	(4091)	1955 04 14.27431	12 05 56.10	+13 04 15.6	6 675
(3583)	1954 04 08.39861	13 57 23.41	-11 24 36.5	6 675	(4101)	1953 04 15.21806	10 51 43.54	+03 31 04.3	6 675
(3591)	1951 12 01.23542	03 49 50.78	+21 00 45.9	6 675	(4101)	1953 04 15.24201	10 51 42.93	+03 31 04.6	6 675
(3591)	1951 12 01.26250	03 49 49.48	+21 00 40.2	6 675	(4123)	1955 03 25.15625	08 17 50.58	+23 15 19.6	6 675
(3592)	1955 04 21.24861	12 31 03.72	-02 06 40.9	6 675	(4123)	1955 03 25.18264	08 17 50.93	+23 15 17.5	6 675

(4143)	1954 09 04.40556	00 57 23.66	+02 46 10.0	6 675	(4588)	1951 02 04.34097	09 01 42.54	+23 00 11.6	6 675
(4143)	1954 09 04.43090	00 57 23.19	+02 46 05.1	6 675	(4592)	1951 12 01.23542	03 55 43.14	+20 17 49.9	6 675
(4174)	1954 12 21.13750	02 25 12.70	+11 26 46.8	6 675	(4592)	1951 12 01.26250	03 55 41.86	+20 17 46.2	6 675
(4174)	1954 12 21.16076	02 25 12.50	+11 26 46.5	6 675	(4616)	1951 12 01.23542	03 42 03.40	+17 57 36.1	6 675
(4195)	1953 10 01.23507	21 55 08.91	-11 41 29.5	6 675	(4616)	1951 12 01.26250	03 42 02.10	+17 57 35.2	6 675
(4195)	1953 10 01.25903	21 55 08.46	-11 41 30.3	6 675	(4620)	1954 12 21.13750	02 44 00.35	+11 40 52.9	6 675
(4247)	1954 09 04.40556	00 45 37.22	+02 05 34.2	6 675	(4620)	1954 12 21.16076	02 44 00.50	+11 41 02.5	6 675
(4247)	1954 09 04.43090	00 45 36.39	+02 05 27.8	6 675	(4622)	1954 04 08.37535	14 09 28.82	-11 32 42.6	6 675
(4259)	1954 12 21.13750	02 19 23.94	+13 23 25.3	6 675	(4624)	1993 04 15.29653	13 44 58.41	-06 56 43.0	9 675
(4259)	1954 12 21.16076	02 19 23.73	+13 23 26.2	6 675	(4624)	1993 04 15.33125	13 44 56.71	-06 56 34.5	9 675
(4331)	1993 04 15.29653	13 59 29.83	-03 43 47.3	9 675	(4624)	1993 04 16.35104	13 44 07.80	-06 52 15.3	9 675
(4331)	1993 04 15.33125	13 59 27.56	-03 43 39.3	9 675	(4624)	1993 04 16.38073	13 44 06.39	-06 52 08.3	9 675
(4331)	1993 04 16.35104	13 58 24.35	-03 39 52.8	9 675	(4624)	1993 04 19.31267	13 41 46.55	-06 39 56.9	9 675
(4331)	1993 04 16.38073	13 58 22.58	-03 39 48.3	9 675	(4624)	1993 04 19.34601	13 41 44.99	-06 39 47.7	9 675
(4331)	1993 04 19.31267	13 55 17.90	-03 29 25.9	9 675	(4627)	1951 12 01.23542	03 45 20.20	+16 12 42.4	6 675
(4331)	1993 04 19.34601	13 55 15.71	-03 29 19.5	9 675	(4627)	1951 12 01.26250	03 45 18.76	+16 12 40.1	6 675
(4335)	1955 03 23.19375	08 58 53.27	+21 23 08.7	6 675	(4643)	1993 04 15.29653	13 29 10.33	-05 56 53.8	9 675
(4335)	1955 03 23.21875	08 58 52.88	+21 23 07.7	6 675	(4643)	1993 04 15.33125	13 29 08.15	-05 56 41.9	9 675
(4346)	1954 12 21.13750	02 22 29.31	+12 46 09.6	6 675	(4643)	1993 04 16.35104	13 28 08.40	-05 50 50.0	9 675
(4346)	1954 12 21.16076	02 22 29.06	+12 46 05.6	6 675	(4643)	1993 04 16.38073	13 28 06.65	-05 50 40.2	9 675
(4376)	1954 04 08.37535	13 55 32.55	-12 16 19.4	6 675	(4646)	1949 12 22.17361	03 52 48.45	+23 16 29.2	6 675
(4376)	1954 04 08.39861	13 55 31.16	-12 16 10.4	6 675	(4646)	1949 12 22.18125	03 52 48.10	+23 16 28.2	6 675
(4387)	1954 09 04.40556	01 08 05.87	+00 51 48.9	6 675	(4650)	1953 08 15.27118	19 59 57.78	-20 20 48.5	6 675
(4387)	1954 09 04.43090	01 08 05.18	+00 51 40.1	6 675	(4650)	1953 08 15.29514	19 59 56.70	-20 20 48.7	6 675
(4393)	1953 08 15.27118	20 10 02.57	-20 10 34.1	18.5 6 675	(4654)	1954 09 04.40556	00 59 07.07	+01 53 49.8	6 675
(4393)	1953 08 15.29514	20 10 01.60	-20 10 38.4	6 675	(4654)	1954 09 04.43090	00 59 05.98	+01 53 45.6	6 675
(4445)	1951 12 01.23542	03 49 03.08	+17 20 38.2	6 675	(4655)	1953 04 15.21806	10 53 38.32	+05 01 20.1	6 675
(4445)	1951 12 01.26250	03 49 01.49	+17 20 31.3	6 675	(4655)	1953 04 15.24201	10 53 37.66	+05 01 22.5	6 675
(4454)	1953 10 01.23507	22 13 45.63	-10 02 52.1	6 675	(4671)	1955 03 23.19375	08 50 47.31	+20 20 48.7	6 675
(4454)	1953 10 01.25903	22 13 45.02	-10 02 54.2	6 675	(4671)	1955 03 23.21875	08 50 47.13	+20 20 46.8	6 675
(4458)	1952 01 31.43819	11 36 45.69	+08 38 43.0	6 675	(4675)	1993 06 22.37361	18 08 38.21	-26 54 03.2	16.0 2 675
(4458)	1952 01 31.46597	11 36 45.14	+08 38 50.5	6 675	(4675)	1993 06 22.39844	18 08 36.51	-26 53 59.0	2 675
(4463)	1954 12 21.13750	02 22 36.00	+11 38 19.3	6 675	(4675)	1993 06 26.33177	18 04 32.89	-26 42 12.4	2 675
(4463)	1954 12 21.16076	02 22 35.98	+11 38 19.9	6 675	(4675)	1993 06 26.36128	18 04 31.16	-26 42 05.6	2 675
(4466)	1954 04 08.37535	14 09 58.47	-11 07 43.6	6 675	(4677)	1954 05 31.20104	13 22 05.66	-08 52 18.8	6 675
(4488)	1954 07 01.21528	16 35 44.72	-17 07 51.8	6 675	(4677)	1954 05 31.22571	13 22 05.12	-08 52 15.0	6 675
(4488)	1954 07 01.23958	16 35 43.26	-17 07 48.5	6 675	(4678)	1955 04 21.24861	12 29 02.43	-01 29 22.8	6 675
(4500)	1953 10 01.23507	22 08 28.51	-13 06 55.3	6 675	(4678)	1955 04 21.27361	12 29 01.21	-01 29 17.2	6 675
(4500)	1953 10 01.25903	22 08 27.90	-13 06 58.8	6 675	(4701)	1993 04 15.29653	13 52 43.40	-05 54 15.0	9 675
(4501)	1951 12 01.23542	03 52 21.12	+20 38 49.4	6 675	(4701)	1993 04 15.33125	13 52 41.53	-05 54 06.1	9 675
(4501)	1951 12 01.26250	03 52 20.24	+20 38 43.2	6 675	(4701)	1993 04 16.35104	13 51 50.65	-05 49 23.6	9 675
(4504)	1953 04 15.21806	10 53 37.11	+05 08 39.5	6 675	(4701)	1993 04 19.31267	13 49 21.81	-05 35 59.8	9 675
(4504)	1953 04 15.24201	10 53 36.79	+05 08 47.8	6 675	(4701)	1993 04 19.34601	13 49 20.13	-05 35 50.8	9 675
(4519)	1955 04 21.24861	12 20 35.72	+00 55 59.4	6 675	(4746)	1993 06 20.19201	15 44 18.21	-18 44 56.0	3 675
(4519)	1955 04 21.27361	12 20 34.67	+00 56 06.7	6 675	(4746)	1993 06 20.23316	15 44 16.57	-18 44 53.5	3 675
(4522)	1950 03 17.23125	11 12 10.58	+16 13 40.3	6 675	(4775)	1951 02 04.31163	09 16 01.11	+21 17 52.6	6 675
(4522)	1950 03 17.25868	11 12 09.38	+16 13 50.4	6 675	(4775)	1951 02 04.34097	09 15 59.08	+21 17 58.2	6 675
(4530)	1953 10 01.23507	22 14 31.21	-10 19 40.5	6 675	(4811)	1955 03 23.19375	08 51 28.67	+22 35 48.3	6 675
(4530)	1953 10 01.25903	22 14 30.68	-10 19 43.4	6 675	(4811)	1955 03 23.21528	08 51 28.26	+22 35 45.1	6 675
(4549)	1954 09 04.40556	01 00 26.99	+03 46 28.7	6 675	(4812)	1950 08 14.42361	02 15 38.67	+14 03 01.7	6 675
(4549)	1954 09 04.43090	01 00 26.39	+03 46 24.8	6 675	(4848)	1993 04 15.29653	13 43 06.35	-01 21 57.8	9 675
(4588)	1951 02 04.31597	09 01 44.39	+23 00 11.9	6 675	(4848)	1993 04 15.33125	13 43 04.78	-01 21 47.6	9 675

(4848)	1993 04 16.35104	13 42 20.22	-01 17 04.0	9 675	(5243)	1953 04 15.21806	10 46 42.56	+04 00 26.9	6 675
(4848)	1993 04 16.38073	13 42 18.90	-01 16 55.6	9 675	(5243)	1953 04 15.24201	10 46 42.19	+04 00 34.0	6 675
(4848)	1993 04 19.31267	13 40 11.03	-01 03 42.8	9 675	(5245)	1954 07 01.21528	16 42 56.65	-16 40 58.1	6 675
(4848)	1993 04 19.34601	13 40 09.66	-01 03 34.0	9 675	(5245)	1954 07 01.23958	16 42 55.73	-16 41 00.8	6 675
(4850)	1953 10 01.23507	22 04 28.49	-10 31 58.0	6 675	(5267)	1955 03 23.19375	09 00 00.40	+25 44 01.2	6 675
(4850)	1953 10 01.25903	22 04 27.91	-10 32 02.7	6 675	(5267)	1955 03 23.21875	09 00 00.48	+25 44 01.8	6 675
(4872)	1950 03 17.23125	11 18 34.81	+19 48 28.2	6 675	(5286)	1954 12 21.13750	02 34 13.61	+11 18 36.3	6 675
(4885)	1953 04 15.21806	10 58 55.96	+07 22 10.2	6 675	(5286)	1954 12 21.16076	02 34 13.32	+11 18 37.2	6 675
(4885)	1953 04 15.24201	10 58 55.45	+07 22 15.9	6 675	(5306)	1954 12 21.13750	02 36 03.46	+13 22 09.4	6 675
(4921)	1954 12 21.13750	02 44 48.19	+14 38 20.8	6 675	(5306)	1954 12 21.16076	02 36 03.19	+13 22 10.2	6 675
(4921)	1954 12 21.16076	02 44 48.11	+14 38 17.5	6 675	(5306)	1955 12 12.51562	09 38 25.17	+16 58 06.4	6 675
(4926)	1953 10 01.23507	22 00 39.83	-11 55 36.1	6 675	(5306)	1955 12 12.53681	09 38 25.37	+16 58 07.9	6 675
(4926)	1953 10 01.25903	22 00 39.46	-11 55 35.5	6 675	(5323)	1949 12 22.17361	03 58 29.24	+22 01 31.3	6 675
(4933)	1953 10 01.23507	22 20 00.74	-11 13 01.4	6 675	(5323)	1949 12 22.19687	03 58 28.49	+22 01 32.8	6 675
(4933)	1953 10 01.25903	22 20 00.04	-11 13 04.8	6 675	(5328)	1954 04 08.39861	14 03 10.95	-14 30 50.6	6 675
(5012)	1955 04 21.24861	12 21 42.50	+00 28 24.0	6 675	(5328)	1954 05 31.20104	13 25 50.25	-08 54 18.1	6 675
(5026)	1953 04 15.21806	10 46 41.33	+02 40 06.3	6 675	(5328)	1954 05 31.22571	13 25 49.81	-08 54 12.3	6 675
(5026)	1953 04 15.24201	10 46 40.70	+02 40 10.5	6 675	(5383)	1954 12 21.13750	02 34 35.17	+12 16 38.1	6 675
(5037)	1993 04 15.29653	13 40 33.21	-02 18 11.3	9 675	(5383)	1954 12 21.16076	02 34 34.90	+12 16 39.1	6 675
(5037)	1993 04 15.33125	13 40 31.17	-02 17 54.6	9 675	(5394)	1953 04 15.21806	10 56 52.82	+03 50 34.6	6 675
(5037)	1993 04 16.35104	13 39 34.64	-02 09 46.8	9 675	(5394)	1953 04 15.24201	10 56 52.66	+03 50 35.7	6 675
(5037)	1993 04 16.38073	13 39 32.90	-02 09 32.1	9 675	(5425)	1955 03 25.18264	08 29 57.42	+23 44 43.2	6 675
(5037)	1993 04 19.31267	13 36 51.50	-01 46 50.6	9 675	(5429)	1954 04 08.37535	13 55 35.07	-11 29 43.7	6 675
(5037)	1993 04 19.34601	13 36 49.65	-01 46 36.1	9 675	(5429)	1954 04 08.39861	13 55 34.10	-11 29 37.1	6 675
(5045)	1954 07 01.21528	16 42 46.45	-19 27 07.5	6 675	(5429)	1954 05 31.20104	13 24 55.85	-08 28 42.7	6 675
(5045)	1954 07 01.23958	16 42 45.51	-19 27 06.6	6 675	(5429)	1954 05 31.22571	13 24 55.53	-08 28 41.1	6 675
(5058)	1952 01 31.43819	11 53 33.48	+09 15 14.1	6 675	(5438)	1953 08 15.27118	19 57 22.75	-15 44 37.9	6 675
(5058)	1952 01 31.47014	11 53 32.79	+09 15 24.4	6 675	(5438)	1953 08 15.29514	19 57 21.45	-15 44 32.8	6 675
(5082)	1955 04 21.24861	12 35 19.96	+01 01 06.2	6 675	(5459)	1955 04 21.24861	12 37 05.02	+00 26 12.2	6 675
(5082)	1955 04 21.27361	12 35 19.01	+01 01 10.3	6 675	(5485)	1951 12 01.23542	03 53 47.79	+21 26 34.9	6 675
(5099)	1954 04 08.37535	14 04 02.26	-10 57 37.0	6 675	(5485)	1951 12 01.26250	03 53 46.05	+21 26 31.9	6 675
(5099)	1954 04 08.39861	14 04 00.87	-10 57 28.1	6 675	(5498)	1953 04 15.21806	10 59 19.19	+04 39 40.4	6 675
(5099)	1954 05 31.20104	13 26 09.15	-07 49 05.8	6 675	(5498)	1953 04 15.24201	10 59 18.60	+04 39 45.4	6 675
(5099)	1954 05 31.22571	13 26 08.74	-07 49 04.3	6 675	(5550)	1954 12 21.13750	02 41 35.74	+14 03 08.3	6 675
(5122)	1955 12 12.51562	09 56 55.14	+16 17 20.5	6 675	(5550)	1954 12 21.16076	02 41 35.55	+14 03 07.8	6 675
(5122)	1955 12 12.53681	09 56 55.57	+16 17 24.7	6 675	(5557)	1954 09 04.40556	00 47 48.24	+03 30 13.5	6 675
(5134)	1955 03 23.19375	08 51 18.21	+26 34 50.0	6 675	(5557)	1954 09 04.43090	00 47 47.22	+03 30 09.6	6 675
(5134)	1955 03 23.21875	08 51 18.01	+26 34 48.4	6 675	(5573)	1993 04 15.29653	13 45 54.61	-01 07 08.8	9 675
(5157)	1954 04 08.38698	14 13 04.74	-13 41 11.4	6 675	(5573)	1993 04 15.33125	13 45 52.85	-01 06 43.7	9 675
(5159)	1954 09 04.40556	01 07 45.98	+02 55 14.4	6 675	(5573)	1993 04 16.35104	13 45 04.41	-00 55 06.6	9 675
(5159)	1954 09 04.43090	01 07 45.28	+02 55 04.8	6 675	(5573)	1993 04 16.38073	13 45 02.91	-00 54 45.8	9 675
(5165)	1954 12 21.13750	02 18 59.53	+10 17 54.2	6 675	(5573)	1993 04 19.31267	13 42 42.17	-00 21 45.1	9 675
(5165)	1954 12 21.16076	02 18 59.77	+10 17 59.7	6 675	(5573)	1993 04 19.34601	13 42 40.56	-00 21 22.6	9 675
(5203)	1953 04 15.21806	10 46 30.95	+03 38 53.1	6 675	(5581)	1993 04 15.29653	13 49 40.20	-07 48 34.9	9 675
(5203)	1953 04 15.24201	10 46 30.35	+03 38 56.9	6 675	(5581)	1993 04 15.33125	13 49 38.35	-07 48 21.4	9 675
(5213)	1954 04 08.37535	14 20 01.89	-11 03 22.7	6 675	(5581)	1993 04 16.35104	13 48 46.89	-07 41 50.5	9 675
(5213)	1954 04 08.39861	14 20 00.81	-11 03 12.3	6 675	(5581)	1993 04 19.31267	13 46 17.08	-07 23 05.6	9 675
(5214)	1953 04 15.21806	10 54 30.57	+08 26 01.3	6 675	(5581)	1993 04 19.34601	13 46 15.25	-07 22 53.9	9 675
(5214)	1954 09 04.40556	00 48 30.22	+03 16 42.9	6 675	(5625)	1955 12 16.22083	04 38 21.44	+01 38 51.7	6 675
(5214)	1954 09 04.43090	00 48 29.12	+03 16 41.3	6 675	(5625)	1955 12 16.24201	04 38 20.33	+01 38 51.0	6 675
(5222)	1952 12 11.10208	01 29 07.13	+10 52 00.6	6 675					
(5222)	1952 12 11.12361	01 29 07.08	+10 51 48.9	6 675					

**691 Kitt Peak, Steward Observatory**

T. Gehrels, Space Sciences Building, University of Arizona, Tucson, AZ 85721,  
U.S.A.

Observers T. Gehrels, D. L. Rabinowitz, J. V. Scotti

0.91-m Spacewatch telescope

GSC

1980 UM <sub>1</sub>	1993 07 22.25689	21 18 55.43	-09 57 59.6	18.2 V	691	1993 OS	1993 07 24.21276	15 00 51.02	-11 59 04.8	20.9 V	691
1980 UM <sub>1</sub>	1993 07 22.30119	21 18 52.98	-09 58 03.4		691	1993 OS	1993 07 24.22435	15 00 52.65	-11 59 03.8		691
1980 UM <sub>1</sub>	1993 07 22.35599	21 18 49.99	-09 58 08.4		691	1993 OS	1993 07 25.17370	15 03 19.89	-11 56 51.2	20.4 V	691
1981 EV <sub>18</sub>	1993 07 21.34128	22 29 26.98	-03 53 00.5	19.2 V	691	1993 OS	1993 07 25.18206	15 03 21.11	-11 56 49.9	20.6 V	691
1981 EV <sub>18</sub>	1993 07 21.36912	22 29 26.34	-03 53 02.2		691	1993 OS	1993 07 25.19024	15 03 22.31	-11 56 48.1	21.0 V	691
1981 EV <sub>18</sub>	1993 07 21.39620	22 29 25.72	-03 53 04.6		691	1993 OT	* 1993 07 24.26038	21 38 18.93	-11 08 34.6	20.3 V	691
1982 JD <sub>1</sub>	1993 05 24.21923	14 36 25.39	-10 28 18.1		691	1993 OT	1993 07 24.29274	21 38 17.93	-11 08 26.9	19.9 V	691
1982 JD <sub>1</sub>	1993 05 24.25136	14 36 24.20	-10 28 02.4	16.1 V	691	1993 OT	1993 07 24.32502	21 38 16.89	-11 08 19.1	20.0 V	691
1982 JD <sub>1</sub>	1993 05 24.28406	14 36 23.01	-10 27 46.2		691	1993 OT	1993 07 25.26086	21 37 51.24	-11 04 14.6	19.9 V	691
1987 SJ <sub>1</sub>	1993 03 25.23419	11 51 42.22	-00 05 48.7		691	1993 OT	1993 07 25.31198	21 37 49.55	-11 04 01.5	19.7 V	691
1987 SJ <sub>1</sub>	1993 03 25.26586	11 51 40.46	-00 05 36.4		691	1993 OT	1993 07 25.35700	21 37 48.03	-11 03 49.8	19.7 V	691
1987 SJ <sub>1</sub>	1993 03 25.29774	11 51 38.67	-00 05 24.3	18.8 V	691	1993 OZ	* 1993 07 21.31829	21 55 54.46	-04 02 54.4	18.4 V	691
1990 XA	1993 07 22.26685	21 00 22.17	-10 37 19.0		691	1993 OZ	1993 07 21.34612	21 55 53.91	-04 02 52.7		691
1990 XA	1993 07 22.32116	21 00 19.37	-10 37 22.3	16.5 V	691	1993 OZ	1993 07 21.37320	21 55 53.37	-04 02 49.6		691
1990 XA	1993 07 22.36541	21 00 17.06	-10 37 25.2		691	1993 OZ	1993 07 25.36585	21 54 33.71	-03 57 32.7	17.3 V	691
1991 BM <sub>2</sub>	1992 04 24.25921	14 10 02.10	-13 22 55.4		691	1993 OZ	1993 07 25.38403	21 54 33.24	-03 57 31.6		691
1991 BM <sub>2</sub>	1992 04 24.27980	14 10 01.10	-13 22 50.8	18.2 V	691	1993 OZ	1993 07 25.40201	21 54 32.76	-03 57 30.7		691
1991 BM <sub>2</sub>	1992 04 24.30053	14 10 00.08	-13 22 46.1		691	1993 OA <sub>1</sub>	* 1993 07 21.31901	21 57 17.81	-03 58 15.7	19.9 V	691
1991 VK <sub>16</sub>	* 1991 11 06.36747	02 46 52.66	+15 30 33.1	18.0 V	691	1993 OA <sub>1</sub>	1993 07 21.34684	21 57 16.79	-03 58 15.6		691
1991 VK <sub>16</sub>	1991 11 06.39218	02 46 50.67	+15 30 36.2		691	1993 OA <sub>1</sub>	1993 07 21.37392	21 57 15.84	-03 58 14.3		691
1991 VK <sub>16</sub>	1991 11 06.41741	02 46 48.66	+15 30 39.5		691	1993 OA <sub>1</sub>	1993 07 25.36597	21 54 44.32	-03 57 12.9	19.2 V	691
1993 GY	1993 06 23.19018	12 31 08.87	+07 04 25.9	17.6 V	691	1993 OA <sub>1</sub>	1993 07 25.38415	21 54 43.55	-03 57 13.5		691
1993 GY	1993 06 23.19990	12 31 09.32	+07 04 17.8		691	1993 OA <sub>1</sub>	1993 07 25.40213	21 54 42.79	-03 57 13.3		691
1993 GY	1993 06 23.20971	12 31 09.77	+07 04 10.1		691	1993 OB <sub>1</sub>	* 1993 07 21.32222	22 01 55.83	-03 58 22.1		691
1993 HL	1993 01 25.49113	14 02 03.92	-05 06 12.2	19.2 V	691	1993 OB <sub>1</sub>	1993 07 21.35005	22 01 55.04	-03 58 32.7	18.9 V	691
1993 HL	1993 01 25.51096	14 02 04.71	-05 06 15.2		691	1993 OB <sub>1</sub>	1993 07 21.37713	22 01 54.28	-03 58 41.8		691
1993 HL	1993 01 25.52951	14 02 05.39	-05 06 18.0		691	1993 OB <sub>1</sub>	1993 07 25.36961	21 59 59.22	-04 23 32.2	18.1 V	691
1993 HL	1993 04 17.33267	13 38 52.10	-03 05 00.3	17.2 V	691	1993 OB <sub>1</sub>	1993 07 25.38778	21 59 58.76	-04 23 38.3		691
1993 HL	1993 04 17.36442	13 38 50.01	-03 04 54.2		691	1993 OB <sub>1</sub>	1993 07 25.40577	21 59 58.03	-04 23 46.0		691
1993 HL	1993 04 17.39632	13 38 47.92	-03 04 47.5		691	1993 OC <sub>1</sub>	* 1993 07 21.32486	22 05 44.39	-04 06 09.0	19.0 V	691
1993 JE	1993 04 28.34698	15 55 20.61	-14 41 50.1	16.0 V	691	1993 OC <sub>1</sub>	1993 07 21.35270	22 05 43.79	-04 06 07.2		691
1993 JE	1993 04 28.38079	15 55 18.84	-14 41 48.5		691	1993 OC <sub>1</sub>	1993 07 21.37977	22 05 43.19	-04 06 05.0		691
1993 JE	1993 04 28.41407	15 55 17.05	-14 41 47.0		691	1993 OC <sub>1</sub>	1993 07 25.37254	22 04 13.49	-04 02 46.9	18.4 V	691
1993 KC	1993 07 19.23055	15 26 04.83	+15 49 06.3	17.9 V	691	1993 OC <sub>1</sub>	1993 07 25.39072	22 04 12.93	-04 02 46.4		691
1993 KC	1993 07 19.24024	15 26 05.79	+15 49 08.3	18.0 V	691	1993 OC <sub>1</sub>	1993 07 25.40870	22 04 12.42	-04 02 46.1		691
1993 KC	1993 07 19.24973	15 26 06.77	+15 49 09.6	18.1 V	691	1993 OD <sub>1</sub>	* 1993 07 21.32644	22 08 00.86	-03 59 16.2		691
1993 KD <sub>2</sub>	1992 01 29.46140	09 26 07.12	+24 16 35.3	17.5 V	691	1993 OD <sub>1</sub>	1993 07 21.35427	22 08 00.18	-03 59 20.9	19.6 V	691
1993 KD <sub>2</sub>	1992 01 29.48770	09 26 05.41	+24 16 46.7		691	1993 OD <sub>1</sub>	1993 07 21.38135	22 07 59.43	-03 59 26.0		691
1993 KD <sub>2</sub>	1992 01 29.51395	09 26 03.73	+24 16 58.1		691	1993 OD <sub>1</sub>	1993 07 25.37393	22 06 13.06	-04 12 14.8	18.8 V	691
1993 KD <sub>2</sub>	1993 05 19.31574	15 36 18.03	-10 45 51.0		691	1993 OD <sub>1</sub>	1993 07 25.39210	22 06 12.51	-04 12 18.8		691
1993 KD <sub>2</sub>	1993 05 19.33804	15 36 16.53	-10 45 50.0	16.6 V	691	1993 OE <sub>1</sub>	1993 07 25.41008	22 06 11.94	-04 12 22.9		691
1993 KD <sub>2</sub>	1993 05 19.36036	15 36 15.03	-10 45 49.2		691	1993 OE <sub>1</sub>	* 1993 07 21.32936	22 12 14.07	-03 49 27.9	20.0 V	691
1993 MJ	1993 07 20.41422	22 47 41.70	+02 17 41.6	20.2 V	691	1993 OE <sub>1</sub>	1993 07 21.35719	22 12 13.48	-03 49 33.8		691
1993 MJ	1993 07 20.43239	22 47 41.81	+02 17 47.3	20.4 V	691	1993 OE <sub>1</sub>	1993 07 21.38427	22 12 12.94	-03 49 39.7		691
1993 MJ	1993 07 20.45283	22 47 41.84	+02 17 54.5	20.3 V	691	1993 OE <sub>1</sub>	1993 07 25.37710	22 10 47.91	-04 05 43.8		691
1993 OS	* 1993 07 24.20464	15 00 49.80	-11 59 06.8		691	1993 OE <sub>1</sub>	1993 07 25.39527	22 10 47.45	-04 05 48.7		691
						1993 OE <sub>1</sub>	1993 07 25.41326	22 10 46.94	-04 05 53.8	19.3 V	691
						1993 OF <sub>1</sub>	* 1993 07 21.33225	22 16 24.21	-04 09 38.4		691
						1993 OF <sub>1</sub>	1993 07 21.36008	22 16 23.52	-04 09 44.8	19.3 V	691
						1993 OF <sub>1</sub>	1993 07 21.38716	22 16 22.83	-04 09 51.1		691
						1993 OF <sub>1</sub>	1993 07 25.37977	22 14 39.29	-04 27 22.7		691
						1993 OF <sub>1</sub>	1993 07 25.39794	22 14 38.78	-04 27 27.8		691

1993 OF <sub>1</sub>	1993 07 25.41593	22 14 38.21	-04 27 33.0	18.6 V	691	1993 OP <sub>1</sub>	1993 07 25.24692	21 30 38.07	-11 42 40.1	20.6 V	691
1993 OG <sub>1</sub>	* 1993 07 22.26861	21 03 31.25	-10 30 42.5		691	1993 OP <sub>1</sub>	1993 07 25.29341	21 30 35.81	-11 42 47.8		691
1993 OG <sub>1</sub>	1993 07 22.32292	21 03 28.86	-10 31 06.5		691	1993 OP <sub>1</sub>	1993 07 25.34045	21 30 33.37	-11 42 53.5		691
1993 OG <sub>1</sub>	1993 07 22.36716	21 03 26.83	-10 31 23.1	20.6 V	691	1993 OQ <sub>1</sub>	* 1993 07 25.25275	21 39 03.30	-11 41 20.5	20.0 V	691
1993 OG <sub>1</sub>	1993 07 24.23532	21 02 07.75	-10 43 52.4		691	1993 OQ <sub>1</sub>	1993 07 25.29924	21 39 00.71	-11 41 25.4		691
1993 OG <sub>1</sub>	1993 07 24.26767	21 02 06.16	-10 44 03.5		691	1993 OQ <sub>1</sub>	1993 07 25.34627	21 38 58.17	-11 41 29.9		691
1993 OG <sub>1</sub>	1993 07 24.29994	21 02 04.67	-10 44 17.3	20.4 V	691	1993 OQ <sub>1</sub>	1993 07 26.37999	21 38 02.97	-11 42 43.7	20.1 V	691
1993 OH <sub>1</sub>	* 1993 07 24.25741	21 34 01.44	-11 03 39.9		691	1993 OQ <sub>1</sub>	1993 07 26.41211	21 38 01.18	-11 42 47.2		691
1993 OH <sub>1</sub>	1993 07 24.28976	21 34 00.01	-11 03 47.1	18.9 V	691	1993 OQ <sub>1</sub>	1993 07 26.44757	21 37 59.11	-11 42 50.9		691
1993 OH <sub>1</sub>	1993 07 24.32204	21 33 58.67	-11 03 53.1		691	1993 OR <sub>1</sub>	* 1993 07 25.25363	21 40 19.72	-11 55 45.6	20.2 V	691
1993 OH <sub>1</sub>	1993 07 26.38877	21 32 31.76	-11 10 03.0		691	1993 OR <sub>1</sub>	1993 07 25.30013	21 40 17.40	-11 55 54.3		691
1993 OH <sub>1</sub>	1993 07 26.42367	21 32 30.26	-11 10 09.0		691	1993 OR <sub>1</sub>	1993 07 25.34716	21 40 15.02	-11 55 59.8		691
1993 OH <sub>1</sub>	1993 07 26.45709	21 32 28.75	-11 10 15.0	19.2 V	691	1993 OR <sub>1</sub>	1993 07 26.38093	21 39 24.53	-11 58 31.6	21.0 V	691
1993 OJ <sub>1</sub>	* 1993 07 24.25754	21 34 13.11	-10 53 14.1	19.8 V	691	1993 OR <sub>1</sub>	1993 07 26.41305	21 39 22.81	-11 58 36.8		691
1993 OJ <sub>1</sub>	1993 07 24.28990	21 34 11.63	-10 53 21.9		691	1993 OR <sub>1</sub>	1993 07 26.44852	21 39 21.00	-11 58 41.8		691
1993 OJ <sub>1</sub>	1993 07 24.32217	21 34 10.18	-10 53 29.0		691	1993 OS <sub>1</sub>	* 1993 07 25.25494	21 42 13.30	-12 00 40.7		691
1993 OJ <sub>1</sub>	1993 07 26.38881	21 32 38.03	-11 00 38.5	20.0 V	691	1993 OS <sub>1</sub>	1993 07 25.30144	21 42 11.47	-12 00 36.0	19.6 V	691
1993 OJ <sub>1</sub>	1993 07 26.42370	21 32 36.40	-11 00 46.1		691	1993 OS <sub>1</sub>	1993 07 25.34849	21 42 09.70	-12 00 29.5		691
1993 OJ <sub>1</sub>	1993 07 26.45712	21 32 34.77	-11 00 54.4		691	1993 OS <sub>1</sub>	1993 07 26.38242	21 41 33.18	-11 58 26.4		691
1993 OK <sub>1</sub>	* 1993 07 24.25912	21 36 29.55	-11 12 08.7	19.3 V	691	1993 OS <sub>1</sub>	1993 07 26.41454	21 41 31.91	-11 58 22.3	19.9 V	691
1993 OK <sub>1</sub>	1993 07 24.29147	21 36 28.10	-11 12 16.5		691	1993 OS <sub>1</sub>	1993 07 26.45001	21 41 30.47	-11 58 18.0		691
1993 OK <sub>1</sub>	1993 07 24.32375	21 36 26.73	-11 12 23.1		691	1993 OT <sub>1</sub>	* 1993 07 25.25497	21 42 15.90	-12 04 26.6	18.7 V	691
1993 OK <sub>1</sub>	1993 07 25.25969	21 35 48.57	-11 15 39.6		691	1993 OT <sub>1</sub>	1993 07 25.30147	21 42 13.97	-12 04 37.7		691
1993 OK <sub>1</sub>	1993 07 25.31081	21 35 46.31	-11 15 49.7		691	1993 OT <sub>1</sub>	1993 07 25.34851	21 42 12.08	-12 04 48.2		691
1993 OK <sub>1</sub>	1993 07 25.35584	21 35 44.29	-11 15 58.2	19.4 V	691	1993 OT <sub>1</sub>	1993 07 26.38240	21 41 31.36	-12 08 46.5	19.1 V	691
1993 OL <sub>1</sub>	* 1993 07 24.26110	21 39 21.24	-11 02 07.8	18.5 V	691	1993 OT <sub>1</sub>	1993 07 26.41452	21 41 30.02	-12 08 53.7		691
1993 OL <sub>1</sub>	1993 07 24.29346	21 39 19.86	-11 02 20.9		691	1993 OT <sub>1</sub>	1993 07 26.44999	21 41 28.56	-12 09 01.5		691
1993 OL <sub>1</sub>	1993 07 24.32573	21 39 18.52	-11 02 32.6		691	1993 OU <sub>1</sub>	* 1993 07 25.26122	21 38 22.64	-10 48 36.9	19.4 V	691
1993 OL <sub>1</sub>	1993 07 25.26143	21 38 40.77	-11 08 21.5		691	1993 OU <sub>1</sub>	1993 07 25.31234	21 38 20.74	-10 48 50.0		691
1993 OL <sub>1</sub>	1993 07 25.31254	21 38 38.51	-11 08 41.2		691	1993 OU <sub>1</sub>	1993 07 25.35736	21 38 19.10	-10 49 01.0		691
1993 OL <sub>1</sub>	1993 07 25.35757	21 38 36.61	-11 08 58.2	18.6 V	691	1993 OU <sub>1</sub>	1993 07 26.39200	21 37 41.95	-10 53 27.8	18.8 V	691
1993 OM <sub>1</sub>	* 1993 07 24.26246	21 41 18.80	-10 50 33.2	20.7 V	691	1993 OU <sub>1</sub>	1993 07 26.42690	21 37 40.67	-10 53 37.2		691
1993 OM <sub>1</sub>	1993 07 24.29481	21 41 17.06	-10 50 28.2		691	1993 OU <sub>1</sub>	1993 07 26.46032	21 37 39.40	-10 53 45.6		691
1993 OM <sub>1</sub>	1993 07 24.32708	21 41 15.35	-10 50 21.9		691	(60)	1993 07 23.27731	21 33 16.19	-09 33 29.1	12.5 V	691
1993 OM <sub>1</sub>	1993 07 26.39325	21 39 29.42	-10 44 00.4	20.7 V	691	(60)	1993 07 23.35542	21 33 12.56	-09 33 46.2		691
1993 OM <sub>1</sub>	1993 07 26.42813	21 39 27.51	-10 43 53.5		691	(60)	1993 07 23.41016	21 33 09.93	-09 33 58.5		691
1993 OM <sub>1</sub>	1993 07 26.46155	21 39 25.66	-10 43 47.4		691	(170)	1993 07 22.28307	21 24 23.83	-10 38 45.3		691
1993 ON <sub>1</sub>	* 1993 07 24.26331	21 42 32.97	-11 08 35.4		691	(170)	1993 07 22.33737	21 24 20.81	-10 38 39.8	12.9 V	691
1993 ON <sub>1</sub>	1993 07 24.29567	21 42 31.60	-11 08 45.9	17.2 V	691	(170)	1993 07 22.38161	21 24 18.34	-10 38 35.0		691
1993 ON <sub>1</sub>	1993 07 24.32794	21 42 30.18	-11 08 54.5		691	(296)	1993 07 19.30601	20 03 26.10	-20 10 53.9		691
1993 ON <sub>1</sub>	1993 07 25.26364	21 41 51.71	-11 13 16.2		691	(296)	1993 07 19.33218	20 03 24.38	-20 11 00.5	14.4 V	691
1993 ON <sub>1</sub>	1993 07 25.31475	21 41 49.46	-11 13 30.2		691	(296)	1993 07 19.38026	20 03 21.22	-20 11 12.5		691
1993 ON <sub>1</sub>	1993 07 25.35977	21 41 47.47	-11 13 44.0	17.0 V	691	(723)	1993 07 24.34986	21 26 00.92	-11 14 30.9	14.3 V	691
1993 OO <sub>1</sub>	* 1993 07 24.34120	21 13 30.39	-11 36 42.9	19.1 V	691	(723)	1993 07 24.38233	21 25 59.55	-11 14 38.0		691
1993 OO <sub>1</sub>	1993 07 24.37367	21 13 29.09	-11 36 52.2		691	(723)	1993 07 24.41463	21 25 58.20	-11 14 46.0		691
1993 OO <sub>1</sub>	1993 07 24.40596	21 13 27.73	-11 37 01.6		691	(1853)	1993 07 25.22664	21 01 04.73	-12 08 56.5	15.4 V	691
1993 OO <sub>1</sub>	1993 07 25.23467	21 12 57.39	-11 40 56.4		691	(1853)	1993 07 25.27314	21 01 02.16	-12 08 51.5		691
1993 OO <sub>1</sub>	1993 07 25.28117	21 12 55.50	-11 41 09.7	19.0 V	691	(1853)	1993 07 25.32018	21 00 59.60	-12 08 48.2		691
1993 OO <sub>1</sub>	1993 07 25.32821	21 12 53.57	-11 41 22.8		691	(2390)	1993 07 25.42645	01 25 56.63	+16 23 19.3	16.6 V	691
1993 OP <sub>1</sub>	* 1993 07 24.35357	21 31 21.94	-11 40 44.5	21.0 V	691	(2390)	1993 07 25.44611	01 25 57.56	+16 23 31.9	16.6 V	691
1993 OP <sub>1</sub>	1993 07 24.38603	21 31 20.22	-11 40 48.3		691	(2466)	1993 07 25.22639	21 00 20.85	-12 09 14.0	15.1 V	691
1993 OP <sub>1</sub>	1993 07 24.41833	21 31 18.56	-11 40 52.7		691	(2466)	1993 07 25.27289	21 00 18.47	-12 09 25.9		691



(2466)	1993 07 25.31993	21 00 16.23	-12 09 41.6		691	A920 TA	1993 07 18.24091	21 07 57.40	-09 03 39.4	801	
(2745)	1993 07 24.34280	21 15 49.21	-11 10 52.6	17.1 V	691	A920 TA	1993 07 18.26288	21 07 56.62	-09 03 36.8	801	
(2745)	1993 07 24.37527	21 15 47.53	-11 11 16.4		691	1931 FC	1993 07 24.24681	21 49 58.76	-19 29 25.2	801	
(2745)	1993 07 24.40756	21 15 45.88	-11 11 39.6		691	1931 FC	1993 07 24.26163	21 49 57.94	-19 29 28.1	801	
(3052)	1993 07 22.27129	21 07 23.32	-10 28 32.2		691	1942 CG	1993 07 22.19388	20 35 44.89	-24 46 06.2	801	
(3052)	1993 07 22.32559	21 07 20.35	-10 28 42.1	17.7 V	691	1942 CG	1993 07 24.18119	20 33 53.72	-24 58 03.6	801	
(3052)	1993 07 22.36983	21 07 17.91	-10 28 50.2		691	1942 CG	1993 07 24.19912	20 33 52.69	-24 58 10.3	801	
(4393)	1993 07 19.30686	20 04 39.60	-19 56 11.5		691	1949 PN	1993 07 18.32867	00 16 47.50	+06 18 28.3	801	
(4393)	1993 07 19.33303	20 04 38.32	-19 56 16.3	16.7 V	691	1949 PN	1993 07 18.33880	00 16 47.78	+06 18 34.7	801	
(4393)	1993 07 19.38112	20 04 35.92	-19 56 24.5		691	1950 DO	1993 07 18.28105	21 53 51.57	-10 32 18.9	801	
(4649)	1993 04 17.44181	15 26 02.53	-04 20 09.1	16.5 V	691	1950 DO	1993 07 18.31071	21 53 50.56	-10 32 21.1	801	
(4649)	1993 04 17.46222	15 26 01.61	-04 20 06.4		691	1950 DO	1993 07 22.27347	21 51 34.05	-10 38 50.9	801	
(4649)	1993 04 17.48225	15 26 00.73	-04 20 04.1		691	1950 DO	1993 07 22.29409	21 51 33.24	-10 38 53.4	801	
<b>697 Kitt Peak, McGraw-Hill Observatory</b>							1955 EH	1993 07 16.17898	18 59 28.54	-14 48 54.9	I 801
J. Tonry, Room 6-204, Massachusetts Institute of Technology, Cambridge, MA							1955 EH	1993 07 16.20029	18 59 27.21	-14 48 57.8	801
02139, U.S.A.							1955 EH	1993 07 21.15426	18 54 44.40	-15 08 21.8	I 801
2.4-m reflector + CCD							1955 EH	1993 07 21.16656	18 54 43.65	-15 08 25.9	801
1993 HV <sub>1</sub>	1993 07 07.16778	12 20 24.84	+04 37 17.3	20 V	697	1971 SN <sub>2</sub>	1993 07 22.15421	19 02 10.83	-24 19 34.2	801	
1993 HV <sub>1</sub>	1993 07 07.17167	12 20 24.97	+04 37 14.6	20 V	697	1971 SN <sub>2</sub>	1993 07 22.17244	19 02 09.96	-24 19 34.9	I 801	
1993 HV <sub>1</sub>	1993 07 07.17553	12 20 25.12	+04 37 12.2	20 V	697	1975 QC	1993 07 17.24522	20 39 38.63	-08 57 13.2	801	
1993 HV <sub>1</sub>	1993 07 07.17941	12 20 25.24	+04 37 09.7	20 V	697	1975 QC	1993 07 17.26137	20 39 37.89	-08 57 18.6	801	
<b>760 Goethe Link</b>							1975 QC	1993 07 18.20418	20 38 54.74	-09 02 00.0	801
E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001,							1977 PO <sub>1</sub>	1993 07 17.32164	00 27 58.34	+12 43 24.6	801
U.S.A.							1977 PO <sub>1</sub>	1993 07 17.33047	00 27 58.49	+12 43 28.8	801
Observers W. E. Crawley, H. S. Yun							1977 PO <sub>1</sub>	1993 07 24.30078	00 29 42.49	+13 34 04.1	801
Measurer K. E. Daniels							1977 PO <sub>1</sub>	1993 07 24.32928	00 29 42.78	+13 34 16.1	801
0.25-m refractor							1977 TC <sub>1</sub>	1993 07 24.29508	23 52 06.31	+05 13 40.1	801
PDS scanning microdensitometer							1977 TC <sub>1</sub>	1993 07 24.31113	23 52 07.02	+05 13 47.1	801
PPM, global solutions							1978 UL <sub>7</sub>	1993 07 24.05846	15 24 00.10	-18 19 47.8	801
(480)	1954 10 24.37267	03 00 44.96	+26 42 40.1	13.3	760	1978 UL <sub>7</sub>	1993 07 24.07954	15 24 01.33	-18 19 49.0	I 801	
(480)	1954 10 24.41712	03 00 42.76	+26 42 12.4		760	1978 VT <sub>6</sub>	1993 07 23.20919	20 08 36.88	-15 40 06.6	801	
(1172)	1954 10 24.37267	03 00 45.27	+24 55 09.5	16.5	760	1978 VT <sub>6</sub>	1993 07 23.22121	20 08 36.08	-15 40 07.3	801	
(1172)	1954 10 24.41712	03 00 43.90	+24 55 01.8		760	1980 PX	1993 07 19.32443	23 19 21.01	-02 47 13.1	r 801	
(1430)	1954 10 24.37267	03 19 06.18	+23 48 07.7		760	1980 PX	1993 07 19.33273	23 19 21.34	-02 47 12.3	r 801	
(1430)	1954 10 24.41712	03 19 03.65	+23 48 00.7		760	1980 PX	1993 07 24.27471	23 22 46.42	-02 33 50.4	801	
(2157)	1954 10 24.37267	03 02 33.29	+27 50 50.0		760	1980 PX	1993 07 24.29280	23 22 47.03	-02 33 48.4	801	
(2157)	1954 10 24.41712	03 02 30.86	+27 50 48.0		760	1980 SQ	1993 07 17.23634	20 31 45.18	-09 52 40.5	801	
(2532)	1962 12 02.28119	04 17 19.10	+29 13 53.6		760	1980 SQ	1993 07 17.25072	20 31 44.33	-09 52 41.7	801	
(4449)	1954 10 24.37267	03 14 23.11	+24 47 45.1		760	1980 SQ	1993 07 19.20917	20 29 53.63	-09 55 40.2	801	
(4449)	1954 10 24.41712	03 14 21.10	+24 47 39.6		760	1980 SQ	1993 07 19.22575	20 29 52.67	-09 55 41.3	801	
(5348)	1954 10 24.37267	03 24 42.93	+29 56 22.7		760	1980 UL <sub>1</sub>	1993 06 18.27252	18 49 22.80	-14 16 27.5	801	
(5348)	1954 10 24.41712	03 24 40.94	+29 56 19.6		760	1980 UL <sub>1</sub>	1993 07 16.11634	18 25 08.35	-13 15 10.4	801	
<b>801 Oak Ridge</b>							1980 UL <sub>1</sub>	1993 07 16.13277	18 25 07.52	-13 15 09.5	801
R. E. McCrosky, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street,							1980 UL <sub>1</sub>	1993 07 21.10251	18 21 24.68	-13 11 34.9	801
Cambridge, MA 02138, U.S.A.							1980 UL <sub>1</sub>	1993 07 21.11727	18 21 24.05	-13 11 34.5	801
Observers R. E. McCrosky, C.-Y. Shao							1981 EL <sub>4</sub>	1993 07 18.29968	22 11 45.14	-08 28 08.1	801
1.5-m reflector + CCD							1981 EL <sub>4</sub>	1993 07 18.32536	22 11 44.25	-08 28 07.7	801
GSC							1981 EL <sub>4</sub>	1993 07 22.28501	22 09 38.17	-08 27 46.8	801
A920 TA	1993 07 17.27615	21 08 28.11	-09 05 26.4		801	1981 EL <sub>4</sub>	1993 07 22.30838	22 09 37.28	-08 27 47.2	801	
A920 TA	1993 07 17.30663	21 08 27.06	-09 05 22.8		801	1981 ER <sub>5</sub>	1993 07 17.32836	23 22 05.55	+06 34 16.4	801	
						1981 ER <sub>5</sub>	1993 07 17.33282	23 22 05.71	+06 34 20.1	801	
						1981 ER <sub>5</sub>	1993 07 23.31917	23 25 18.20	+07 50 25.6	801	

1981 ER <sub>5</sub>	1993 07 23.32826	23 25 18.41	+07 50 32.3	801	1986 RW <sub>2</sub>	1993 07 18.23846	20 49 37.90	-21 09 40.9	801
1981 EQ <sub>12</sub>	1993 07 18.20816	21 07 02.85	-03 10 09.0	801	1986 RW <sub>2</sub>	1993 07 21.24544	20 47 02.34	-21 21 47.4	801
1981 EQ <sub>12</sub>	1993 07 18.22796	21 07 02.14	-03 10 04.1	801	1986 RW <sub>2</sub>	1993 07 21.27002	20 47 00.87	-21 21 54.1	801
1981 EQ <sub>12</sub>	1993 07 21.20773	21 05 24.19	-02 57 52.0	801	1986 RY <sub>5</sub>	1993 07 17.27987	21 23 17.19	-04 08 36.1	801
1981 EQ <sub>12</sub>	1993 07 21.23160	21 05 23.27	-02 57 46.8	801	1986 RY <sub>5</sub>	1993 07 17.30844	21 23 16.10	-04 08 35.3	801
1981 EJ <sub>22</sub>	1993 07 17.13352	17 54 35.16	-11 37 35.8	801	1986 RY <sub>5</sub>	1993 07 18.25888	21 22 41.71	-04 08 06.6	801
1981 EJ <sub>22</sub>	1993 07 17.15734	17 54 34.44	-11 37 40.6	801	1986 RY <sub>5</sub>	1993 07 18.27917	21 22 40.92	-04 08 06.4	801
1981 EJ <sub>22</sub>	1993 07 22.10534	17 52 37.97	-11 55 30.4	801	1986 RY <sub>5</sub>	1993 07 19.13103	21 22 09.17	-04 07 51.9	801
1981 EJ <sub>22</sub>	1993 07 22.13929	17 52 37.22	-11 55 37.9	801	1986 RY <sub>5</sub>	1993 07 19.18255	21 22 07.07	-04 07 51.5	801
1982 BD <sub>13</sub>	1993 07 18.22019	20 35 26.56	-21 01 38.5	801	1987 RT <sub>5</sub>	1993 07 24.14756	19 09 46.85	-21 54 05.8	801
1982 BD <sub>13</sub>	1993 07 18.23367	20 35 25.63	-21 01 39.5	801	1987 RT <sub>5</sub>	1993 07 24.16306	19 09 46.06	-21 54 10.0	801
1982 BD <sub>13</sub>	1993 07 21.22031	20 32 08.61	-21 04 49.9	801	1988 CH <sub>2</sub>	1993 07 22.16959	19 25 20.96	-17 44 07.5	801
1982 BD <sub>13</sub>	1993 07 21.23780	20 32 07.41	-21 04 50.8	801	1988 CH <sub>2</sub>	1993 07 22.18281	19 25 20.18	-17 44 12.0	801
1982 FF <sub>3</sub>	1993 07 17.29293	21 33 59.67	-12 50 27.4	801	1988 PL <sub>1</sub>	1993 07 22.07483	14 57 24.69	-12 34 32.9	801
1982 FF <sub>3</sub>	1993 07 17.31861	21 33 58.55	-12 50 30.7	801	1988 PL <sub>1</sub>	1993 07 24.05557	14 59 25.15	-12 26 44.5	801
1982 FF <sub>3</sub>	1993 07 21.29249	21 31 00.05	-13 00 43.1	801	1988 PL <sub>1</sub>	1993 07 24.07549	14 59 26.39	-12 26 40.7	801
1982 PR	1993 07 22.30554	22 17 01.00	-12 20 11.0	801	1988 PX <sub>2</sub>	1993 07 17.30091	21 35 24.37	-02 27 49.7	801
1982 PR	1993 07 22.33291	22 17 00.32	-12 20 14.9	801	1988 PX <sub>2</sub>	1993 07 17.32532	21 35 23.62	-02 27 52.9	801
1982 PR	1993 07 24.24921	22 16 13.76	-12 25 06.1	801	1988 PX <sub>2</sub>	1993 07 21.28949	21 33 17.27	-02 38 52.1	I 801
1982 PR	1993 07 24.27826	22 16 12.97	-12 25 10.7	801	1988 PX <sub>2</sub>	1993 07 21.31677	21 33 16.39	-02 38 58.4	801
1982 SE <sub>1</sub>	1993 07 18.29721	22 13 29.96	-07 20 46.7	801	1989 GT <sub>3</sub>	1993 07 23.21162	19 48 13.89	-19 58 46.7	I 801
1982 SE <sub>1</sub>	1993 07 18.33124	22 13 29.22	-07 20 47.3	801	1989 GT <sub>3</sub>	1993 07 23.25640	19 48 10.96	-19 58 52.8	801
1982 SE <sub>1</sub>	1993 07 21.30241	22 12 18.46	-07 21 31.8	801	1989 GT <sub>3</sub>	1993 07 24.17300	19 47 14.19	-20 00 49.8	801
1982 TP <sub>1</sub>	1993 07 24.21159	21 31 46.21	-09 23 17.6	801	1989 GT <sub>3</sub>	1993 07 24.19045	19 47 13.07	-20 00 51.9	801
1982 TP <sub>1</sub>	1993 07 24.23861	21 31 44.90	-09 23 21.9	801	1989 HD	1993 07 22.07106	13 53 29.23	+04 19 45.2	V 801
1983 RX	1993 07 24.33142	00 39 31.62	+06 49 33.2	801	1989 LW	1993 07 23.32626	00 33 48.91	+32 04 57.7	801
1983 RX	1993 07 24.34285	00 39 32.07	+06 49 38.8	801	1989 LW	1993 07 23.34995	00 33 50.63	+32 05 12.9	801
1983 XG	1993 07 16.15564	18 55 33.70	-15 44 47.1	I 801	1989 LW	1993 07 24.30337	00 35 01.16	+32 15 03.8	801
1983 XG	1993 07 16.17282	18 55 32.80	-15 44 48.1	I 801	1989 LW	1993 07 24.32113	00 35 02.51	+32 15 14.8	801
1984 BK	1993 07 19.30025	21 54 35.79	-11 28 54.1	801	1989 NM	1993 07 22.14564	18 34 23.43	-25 26 32.5	801
1984 BK	1993 07 19.31206	21 54 35.33	-11 28 54.2	801	1989 NM	1993 07 22.16333	18 34 22.61	-25 26 38.0	801
1984 BK	1993 07 22.27676	21 52 45.17	-11 30 42.1	801	1989 RB <sub>2</sub>	1993 07 22.13213	18 29 27.84	-24 58 58.5	801
1984 BK	1993 07 22.29631	21 52 44.36	-11 30 43.0	801	1989 RB <sub>2</sub>	1993 07 22.15163	18 29 26.93	-24 58 53.9	801
1985 CC <sub>2</sub>	1993 07 24.25230	22 49 54.37	-10 06 18.9	t 801	1989 SP	1993 07 19.32175	23 14 29.85	+10 37 38.4	801
1985 CC <sub>2</sub>	1993 07 24.28259	22 49 53.61	-10 06 27.6	801	1989 SP	1993 07 19.33738	23 14 30.17	+10 37 42.3	801
1985 PO	1993 07 18.24330	21 06 10.01	-14 30 01.5	801	1989 SP	1993 07 24.27038	23 15 50.67	+10 56 16.7	801
1985 PO	1993 07 18.26098	21 06 09.29	-14 30 06.3	801	1989 SP	1993 07 24.31786	23 15 51.08	+10 56 25.6	801
1985 PO	1993 07 19.21957	21 05 29.57	-14 34 29.0	801	1989 SU <sub>3</sub>	1993 07 22.11311	18 05 11.35	-09 24 03.3	r 801
1985 PO	1993 07 19.23459	21 05 28.90	-14 34 32.3	801	1989 SU <sub>3</sub>	1993 07 22.13536	18 05 10.54	-09 24 08.2	r 801
1985 TY <sub>1</sub>	1993 07 24.14316	19 29 34.19	-12 01 52.3	801	1989 SU <sub>3</sub>	1993 07 24.10284	18 04 07.46	-09 30 00.0	801
1985 TY <sub>1</sub>	1993 07 24.15970	19 29 33.28	-12 01 52.6	801	1989 SU <sub>3</sub>	1993 07 24.13304	18 04 06.54	-09 30 05.4	I 801
1986 JS	1993 07 19.29574	21 43 19.26	-13 55 10.5	801	1989 UL	1993 07 21.25009	21 18 07.65	-06 57 17.2	801
1986 JS	1993 07 19.30935	21 43 18.78	-13 55 16.8	801	1989 UL	1993 07 21.27457	21 18 06.64	-06 57 20.4	I 801
1986 JS	1993 07 22.24519	21 41 39.17	-14 19 55.1	801	1989 UL	1993 07 22.23325	21 17 26.34	-06 59 15.8	801
1986 JS	1993 07 22.26438	21 41 38.41	-14 20 06.9	801	1989 UL	1993 07 22.25757	21 17 25.27	-06 59 19.2	801
1986 QS <sub>1</sub>	1993 07 22.23830	21 35 55.06	-13 45 27.8	801	1989 UR <sub>3</sub>	1993 07 22.28221	21 59 29.43	-08 54 20.2	801
1986 QS <sub>1</sub>	1993 07 22.27985	21 35 53.50	-13 45 44.4	801	1989 UR <sub>3</sub>	1993 07 22.31777	21 59 28.74	-08 54 25.9	801
1986 QS <sub>1</sub>	1993 07 23.27002	21 35 18.15	-13 52 29.3	801	1989 UR <sub>3</sub>	1993 07 23.27889	21 59 11.76	-08 57 04.0	801
1986 QS <sub>1</sub>	1993 07 23.31229	21 35 16.52	-13 52 46.9	801	1989 UR <sub>3</sub>	1993 07 23.31476	21 59 11.02	-08 57 10.2	801
1986 RT <sub>2</sub>	1993 07 24.25685	22 29 25.10	-10 25 19.1	801	1989 VR	1993 07 18.28337	21 45 45.66	-11 03 13.8	801
1986 RT <sub>2</sub>	1993 07 24.28785	22 29 24.20	-10 25 22.7	801	1989 VR	1993 07 18.31370	21 45 44.65	-11 03 18.7	801
1986 RW <sub>2</sub>	1993 07 18.22552	20 49 38.62	-21 09 37.9	801	1989 VR	1993 07 22.26941	21 43 29.52	-11 15 05.1	801

1989 VR	1993 07 22.29192	21 43 28.72	-11 15 09.8	I 801	1990 WY <sub>3</sub>	1993 07 24.28006	22 25 12.71	-18 17 22.0	801
1989 YB	1993 07 22.33795	02 09 39.91	+20 49 36.7	801	1990 XA	1993 07 17.26722	21 04 22.78	-10 33 36.2	801
1989 YB	1993 07 22.34090	02 09 40.27	+20 49 38.9	801	1990 XA	1993 07 17.28516	21 04 21.93	-10 33 36.8	801
1989 YB	1993 07 23.33122	02 11 41.72	+21 02 28.6	801	1990 XA	1993 07 18.24728	21 03 37.02	-10 34 10.3	801
1989 YB	1993 07 23.33329	02 11 41.97	+21 02 30.4	801	1990 XA	1993 07 18.26471	21 03 36.17	-10 34 11.0	801
1989 YZ <sub>1</sub>	1993 07 24.21579	21 44 55.67	-16 03 14.6	801	1990 XK	1993 07 19.31740	22 55 33.50	+10 30 46.9	801
1989 YZ <sub>1</sub>	1993 07 24.24190	21 44 54.69	-16 03 20.1	801	1990 XK	1993 07 19.32780	22 55 33.31	+10 30 49.4	801
1990 DJ	1993 07 17.29051	21 33 19.58	+04 04 24.8	801	1990 XK	1993 07 21.29980	22 54 59.38	+10 38 33.9	I 801
1990 DJ	1993 07 17.31084	21 33 18.73	+04 04 06.3	801	1990 XK	1993 07 21.32615	22 54 58.91	+10 38 40.0	801
1990 DJ	1993 07 21.28455	21 30 28.63	+02 59 26.2	801	1990 XM	1993 07 24.33341	01 09 27.02	+04 36 43.4	801
1990 DJ	1993 07 21.29443	21 30 28.15	+02 59 16.0	801	1990 XM	1993 07 24.34075	01 09 27.62	+04 36 46.0	801
1990 OT <sub>3</sub>	1993 07 22.14304	18 35 48.60	-25 20 08.9	801	1990 YQ	1993 07 23.21905	21 04 21.83	-14 06 53.9	801
1990 OT <sub>3</sub>	1993 07 22.16065	18 35 47.67	-25 20 10.0	801	1990 YQ	1993 07 23.26394	21 04 19.39	-14 07 03.1	801
1990 QC <sub>2</sub>	1993 07 17.17429	19 11 27.28	-13 28 43.3	I 801	1991 AD	1993 07 24.10661	18 05 59.24	-19 27 28.2	801
1990 QC <sub>2</sub>	1993 07 17.19190	19 11 26.36	-13 28 48.9	801	1991 AD	1993 07 24.13625	18 05 57.99	-19 27 26.5	801
1990 QC <sub>2</sub>	1993 07 21.18025	19 08 12.48	-13 51 53.9	801	1991 AF <sub>1</sub>	1993 07 22.18862	19 40 19.03	-22 29 02.7	801
1990 QC <sub>2</sub>	1993 07 21.19691	19 08 11.63	-13 52 01.5	801	1991 AF <sub>1</sub>	1993 07 24.15553	19 38 34.95	-22 28 17.5	801
1990 QL <sub>2</sub>	1993 07 16.11970	18 23 41.50	-15 47 14.1	801	1991 AF <sub>1</sub>	1993 07 24.17063	19 38 34.13	-22 28 18.3	801
1990 QL <sub>2</sub>	1993 07 16.13591	18 23 40.54	-15 47 16.9	801	1991 AX <sub>1</sub>	1993 07 23.26738	21 24 07.62	-15 45 52.5	801
1990 QW <sub>3</sub>	1993 07 23.21389	20 52 24.99	-18 31 07.7	801	1991 AX <sub>1</sub>	1993 07 23.28395	21 24 06.90	-15 45 56.8	801
1990 QW <sub>3</sub>	1993 07 23.25883	20 52 22.36	-18 31 13.0	801	1991 AX <sub>1</sub>	1993 07 24.20767	21 23 27.25	-15 50 00.9	801
1990 QW <sub>3</sub>	1993 07 24.18374	20 51 31.06	-18 33 01.5	801	1991 AX <sub>1</sub>	1993 07 24.22243	21 23 26.58	-15 50 03.8	801
1990 QW <sub>3</sub>	1993 07 24.20197	20 51 30.03	-18 33 04.2	801	1991 AD <sub>2</sub>	1993 07 17.25406	21 00 13.86	-15 06 08.6	801
1990 RS <sub>17</sub>	1993 07 17.22309	20 30 39.52	-23 52 44.7	801	1991 AD <sub>2</sub>	1993 07 17.27031	21 00 13.20	-15 06 11.6	801
1990 RS <sub>17</sub>	1993 07 17.24139	20 30 38.39	-23 52 43.8	801	1991 AD <sub>2</sub>	1993 07 18.25257	20 59 30.08	-15 10 39.0	801
1990 RS <sub>17</sub>	1993 07 18.21432	20 29 41.75	-23 51 53.1	801	1991 AD <sub>2</sub>	1993 07 18.26954	20 59 29.28	-15 10 43.8	801
1990 RS <sub>17</sub>	1993 07 18.23118	20 29 40.74	-23 51 52.4	801	1991 BV	1993 07 24.26448	22 41 11.86	-09 01 45.1	801
1990 SQ <sub>16</sub>	1993 07 22.09729	17 39 13.58	-23 50 36.9	801	1991 BV	1993 07 24.29047	22 41 11.30	-09 01 55.1	801
1990 SQ <sub>16</sub>	1993 07 22.11685	17 39 12.83	-23 50 42.0	801	1991 TA <sub>1</sub>	1993 07 16.07059	14 35 56.24	+08 10 48.3	801
1990 TZ	1993 07 17.21235	19 57 52.08	+08 16 10.5	801	1991 TA <sub>1</sub>	1993 07 16.08218	14 35 56.77	+08 10 44.2	801
1990 TZ	1993 07 17.22697	19 57 51.18	+08 16 12.7	801	1992 AO	1993 07 16.07829	15 20 11.34	+07 02 26.2	801
1990 TZ	1993 07 18.20108	19 56 55.16	+08 17 20.5	801	1992 AO	1993 07 16.09395	15 20 11.41	+07 02 13.9	801
1990 TZ	1993 07 18.21111	19 56 54.54	+08 17 20.7	801	1992 AO	1993 07 19.05917	15 20 40.02	+06 24 26.7	V 801
1990 UW	1993 07 24.26681	23 02 45.97	-06 47 02.5	801	1992 AO	1993 07 19.07356	15 20 40.22	+06 24 15.5	V 801
1990 UW	1993 07 24.31359	23 02 45.11	-06 47 03.7	801	1992 AD <sub>1</sub>	1993 07 21.09965	17 52 59.49	-20 25 56.9	801
1990 UK <sub>1</sub>	1993 07 17.21571	20 10 09.61	-14 15 28.0	801	1992 AD <sub>1</sub>	1993 07 21.12025	17 52 58.86	-20 25 51.6	801
1990 UK <sub>1</sub>	1993 07 17.23000	20 10 08.70	-14 15 27.9	801	1992 AD <sub>1</sub>	1993 07 22.10145	17 52 24.58	-20 21 57.3	801
1990 UK <sub>1</sub>	1993 07 21.21595	20 06 02.27	-14 17 31.8	801	1992 AD <sub>1</sub>	1993 07 22.12156	17 52 23.85	-20 21 52.7	801
1990 UK <sub>1</sub>	1993 07 21.23459	20 06 01.11	-14 17 32.5	I 801	1992 FD	1993 07 17.28279	21 27 51.71	+15 20 46.2	801
1990 UB <sub>2</sub>	1993 07 24.22476	21 40 43.83	-22 18 55.8	801	1992 FD	1993 07 17.31351	21 27 50.52	+15 20 37.9	801
1990 UB <sub>2</sub>	1993 07 24.24450	21 40 43.24	-22 19 06.8	801	1992 FD	1993 07 21.26073	21 25 14.72	+14 59 30.9	801
1990 UO <sub>2</sub>	1993 06 24.19586	18 03 27.23	-00 34 59.8	801	1992 FD	1993 07 21.28112	21 25 13.83	+14 59 22.4	801
1990 UO <sub>2</sub>	1993 07 16.11139	17 41 48.24	+01 09 45.2	801	1992 FR	1993 07 23.31713	22 47 02.18	+02 34 02.0	801
1990 UO <sub>2</sub>	1993 07 16.12461	17 41 47.60	+01 09 46.8	801	1992 FR	1993 07 23.34547	22 47 01.57	+02 33 57.5	801
1990 UO <sub>2</sub>	1993 07 21.08808	17 37 58.87	+01 18 10.0	r 801	1992 FZ <sub>1</sub>	1993 07 23.32339	00 05 10.67	-04 51 30.2	801
1990 VS <sub>2</sub>	1993 07 23.21637	20 57 20.85	-16 36 24.5	801	1992 FZ <sub>1</sub>	1993 07 23.34752	00 05 11.47	-04 51 34.7	801
1990 VS <sub>2</sub>	1993 07 23.26139	20 57 18.47	-16 36 41.9	801	1992 FZ <sub>1</sub>	1993 07 24.29781	00 05 42.07	-04 54 33.0	801
1990 VS <sub>2</sub>	1993 07 24.18619	20 56 31.19	-16 42 33.8	801	1992 FZ <sub>1</sub>	1993 07 24.32691	00 05 42.92	-04 54 38.2	801
1990 VS <sub>2</sub>	1993 07 24.23348	20 56 28.70	-16 42 52.8	801	1992 FR <sub>2</sub>	1993 07 24.33618	01 04 06.11	-00 21 45.5	801
1990 WY <sub>3</sub>	1993 07 22.31095	22 26 00.58	-18 01 16.8	801	1992 FR <sub>2</sub>	1993 07 24.34796	01 04 06.83	-00 21 44.1	801
1990 WY <sub>3</sub>	1993 07 22.32678	22 26 00.15	-18 01 24.1	801	1993 HW <sub>1</sub>	1993 07 16.06432	14 09 23.12	-10 07 42.6	W 801
1990 WY <sub>3</sub>	1993 07 24.25920	22 25 13.29	-18 17 11.4	801	1993 HW <sub>1</sub>	1993 07 19.05615	14 12 58.97	-10 53 41.4	V 801

1993 HW <sub>1</sub>	1993 07 19.06241	14 12 59.40	-10 53 47.3	V 801	(4055)	1993 07 24.33878	02 00 10.31	+16 44 08.9	801	
1993 KM	1993 07 16.08597	16 53 00.40	+11 13 19.7	801	(4055)	1993 07 24.34587	02 00 11.67	+16 44 02.7	801	
1993 KM	1993 07 16.10096	16 53 00.44	+11 13 09.1	801	<b>809 European Southern Observatory</b>					
1993 KM	1993 07 18.14681	16 53 13.68	+10 48 03.4	801	H. Debehogne, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180					
1993 KM	1993 07 18.18017	16 53 13.89	+10 47 39.0	801	Brussels, Belgium (3)					
1993 MF	1993 07 17.33520	21 38 17.60	+27 17 05.2	801	E. W. Elst, Observatoire Royal de Belgique, Avenue Circulaire 3, B-1180 Brussels,					
1993 MF	1993 07 17.33716	21 38 18.05	+27 17 12.6	801	Belgium					
1993 MF	1993 07 18.28596	21 41 57.01	+28 05 21.9	801	Observers H. Debehogne, E. W. Elst, G. Pizarro, O. Pizarro					
1993 MF	1993 07 18.28780	21 41 57.40	+28 05 27.3	801	Measurers H. Debehogne, E. W. Elst, J. P. Olivier					
1993 MF	1993 07 23.30664	22 01 22.84	+31 58 37.0	801	1.0-m Schmidt, GPO 0.4-m astrograph					
1993 MF	1993 07 23.30881	22 01 23.31	+31 58 42.6	801	1978 VR <sub>4</sub>	1993 05 14.15139	16 40 35.21	-20 13 40.2	18.4	809
1993 MO	1993 07 16.10497	16 56 06.84	-11 01 00.0	801	1978 VR <sub>4</sub>	1993 05 14.16458	16 40 34.46	-20 13 37.0		809
1993 MO	1993 07 16.10851	16 56 06.79	-11 01 16.7	801	1978 VR <sub>4</sub>	1993 05 14.17778	16 40 33.59	-20 13 33.8		809
1993 ME <sub>1</sub>	1993 07 16.08999	16 47 02.73	+07 57 09.8	801	1978 VR <sub>4</sub>	1993 05 15.12222	16 39 38.53	-20 09 46.4		809
1993 ME <sub>1</sub>	1993 07 16.09767	16 47 03.28	+07 57 15.6	801	1978 VR <sub>4</sub>	1993 05 15.13542	16 39 37.69	-20 09 43.1		809
1993 ME <sub>1</sub>	1993 07 21.08454	16 53 50.01	+09 05 20.9	801	1978 VR <sub>4</sub>	1993 05 15.14861	16 39 36.80	-20 09 41.2		809
1993 OA	* 1993 07 18.25888	21 22 53.45	-04 10 13.2	801	1979 WX <sub>3</sub>	1993 05 14.15139	16 35 19.20	-19 22 44.4	18.5	809
1993 OA	1993 07 18.27917	21 22 52.95	-04 10 40.5	801	1979 WX <sub>3</sub>	1993 05 14.16458	16 35 18.47	-19 22 42.6		809
1993 OA	1993 07 21.20410	21 21 41.28	-05 18 21.2	801	1979 WX <sub>3</sub>	1993 05 14.17778	16 35 17.55	-19 22 41.3		809
1993 OA	1993 07 21.21306	21 21 41.01	-05 18 34.1	801	1979 WX <sub>3</sub>	1993 05 15.12222	16 34 26.78	-19 20 51.8		809
1993 OL	1993 08 15.04118	17 17 12.42	-07 31 35.4	801	1979 WX <sub>3</sub>	1993 05 15.13542	16 34 26.02	-19 20 49.7		809
1993 OL	1993 08 15.04287	17 17 11.65	-07 31 27.4	801	1979 WX <sub>3</sub>	1993 05 15.14861	16 34 25.10	-19 20 47.6		809
2777 P-L	1993 07 22.09365	17 50 26.89	-18 53 28.6	I 801	1981 EK <sub>7</sub>	1993 05 14.15139	16 25 20.19	-19 15 36.7	18.4	809
2777 P-L	1993 07 22.12899	17 50 26.00	-18 53 32.8	801	1981 EK <sub>7</sub>	1993 05 14.16458	16 25 19.60	-19 15 33.9		809
2777 P-L	1993 07 24.09861	17 49 46.50	-18 58 34.0	801	1981 EK <sub>7</sub>	1993 05 14.17778	16 25 18.93	-19 15 31.4		809
2777 P-L	1993 07 24.13969	17 49 45.70	-18 58 38.6	801	1987 DH <sub>6</sub>	1992 05 03.28924	15 16 29.12	-19 35 20.9		3 809
6766 P-L	1993 07 17.28846	21 28 13.39	-02 09 30.8	801	1987 DH <sub>6</sub>	1992 05 03.29965	15 16 28.61	-19 35 18.4		3 809
6766 P-L	1993 07 17.31633	21 28 12.47	-02 09 36.7	801	1987 DH <sub>6</sub>	1992 05 03.31007	15 16 28.10	-19 35 15.6		3 809
6766 P-L	1993 07 21.25344	21 26 04.81	-02 25 10.7	801	1987 RJ	1993 05 14.15139	16 38 10.63	-21 11 19.2	18.3	809
1159 T-2	1993 07 16.14513	18 41 12.99	+00 24 35.8	801	1987 RJ	1993 05 14.16458	16 38 09.84	-21 11 18.7		809
1159 T-2	1993 07 16.16244	18 41 12.12	+00 24 31.7	801	1987 RJ	1993 05 14.17778	16 38 09.08	-21 11 18.1		809
1159 T-2	1993 07 17.16966	18 40 24.14	+00 20 42.4	r 801	1987 RJ	1993 05 15.12222	16 37 14.89	-21 10 40.7		809
1159 T-2	1993 07 17.18440	18 40 23.43	+00 20 39.0	r 801	1987 RJ	1993 05 15.13542	16 37 14.07	-21 10 40.4		809
5140 T-2	1993 07 16.18605	19 07 40.09	-20 14 47.2	801	1987 RJ	1993 05 15.14861	16 37 13.35	-21 10 40.2		809
5140 T-2	1993 07 16.20328	19 07 39.16	-20 14 45.1	801	1989 GA <sub>3</sub>	1993 05 14.15139	16 21 09.47	-20 47 50.3	18.5	809
5140 T-2	1993 07 21.17388	19 03 23.49	-20 05 59.3	801	1989 GA <sub>3</sub>	1993 05 14.16458	16 21 08.78	-20 47 48.5		809
5140 T-2	1993 07 21.19024	19 03 22.61	-20 05 57.9	801	1989 GA <sub>3</sub>	1993 05 14.17778	16 21 08.03	-20 47 46.4		809
(1531)	1993 07 21.21039	21 17 43.47	-04 36 29.2	801	1989 GA <sub>3</sub>	1993 05 15.12222	16 20 12.73	-20 44 47.6		809
(1531)	1993 07 21.22876	21 17 42.52	-04 36 27.1	801	1989 GA <sub>3</sub>	1993 05 15.13542	16 20 11.84	-20 44 45.3		809
(1531)	1993 07 22.22920	21 16 53.14	-04 34 35.4	801	1989 GA <sub>3</sub>	1993 05 15.14861	16 20 11.01	-20 44 44.0		809
(1531)	1993 07 22.25147	21 16 51.98	-04 34 32.8	801	1993 JN	* 1993 05 14.15139	16 21 25.26	-22 01 47.3	18.4	809
(2168)	1993 07 22.17934	19 35 34.83	-24 37 21.3	801	1993 JN	1993 05 14.16458	16 21 24.41	-22 01 48.7		809
(2168)	1993 07 22.20425	19 35 33.26	-24 37 19.7	801	1993 JN	1993 05 14.17778	16 21 23.61	-22 01 49.9		809
(2168)	1993 07 24.15310	19 33 37.10	-24 35 03.6	801	1993 JN	1993 05 15.12222	16 20 30.67	-22 02 43.0		809
(2168)	1993 07 24.16824	19 33 36.15	-24 35 02.8	801	1993 JN	1993 05 15.13542	16 20 29.80	-22 02 45.0		809
(2302)	1993 07 18.25546	21 07 53.31	-17 02 09.4	801	1993 JN	1993 05 15.14861	16 20 29.00	-22 02 45.9		809
(2302)	1993 07 18.27134	21 07 52.43	-17 02 07.2	801	1993 JO	* 1993 05 14.15139	16 21 30.04	-23 46 11.2	18.7	809
(2302)	1993 07 21.24750	21 05 09.83	-16 55 35.8	801	1993 JO	1993 05 14.16458	16 21 29.03	-23 46 13.0		809
(2302)	1993 07 21.27228	21 05 08.40	-16 55 32.6	801	1993 JO	1993 05 14.17778	16 21 28.12	-23 46 11.6		809
(4055)	1993 07 18.33661	01 40 24.86	+18 04 34.5	801	1993 JO	1993 05 15.12222	16 20 23.23	-23 48 19.1		809
(4055)	1993 07 18.34177	01 40 25.87	+18 04 30.7	801	1993 JO	1993 05 15.13542	16 20 22.25	-23 48 19.3		809
					1993 JO	1993 05 15.14861	16 20 21.45	-23 48 20.0		809



1993 JG <sub>1</sub>	1993 05 14.17778	16 36 44.28	-22 01 37.6		809	(720)	1993 05 15.14861	16 29 18.18	-23 31 00.2		809
1993 JG <sub>1</sub>	1993 05 15.12222	16 36 01.14	-21 57 56.2		809	(734)	1984 09 21.11250	21 59 08.82	-16 19 40.1	3	809
1993 JG <sub>1</sub>	1993 05 15.13542	16 36 00.52	-21 57 50.9		809	(742)	1993 05 14.15139	16 20 27.80	-20 52 55.6	16.0	809
1993 JG <sub>1</sub>	1993 05 15.14861	16 35 59.85	-21 57 48.4		809	(742)	1993 05 14.16458	16 20 27.04	-20 52 56.7		809
1993 JH <sub>1</sub>	* 1993 05 14.15139	16 37 52.33	-23 19 30.2	18.3	809	(742)	1993 05 14.17778	16 20 26.26	-20 52 57.2		809
1993 JH <sub>1</sub>	1993 05 14.16458	16 37 51.63	-23 19 27.3		809	(742)	1993 05 15.12222	16 19 38.20	-20 53 56.5		809
1993 JH <sub>1</sub>	1993 05 14.17778	16 37 50.89	-23 19 25.8		809	(742)	1993 05 15.13542	16 19 37.44	-20 53 57.3		809
1993 JH <sub>1</sub>	1993 05 15.12222	16 37 02.19	-23 17 03.7		809	(742)	1993 05 15.14861	16 19 36.68	-20 53 58.7		809
1993 JH <sub>1</sub>	1993 05 15.13542	16 37 01.53	-23 17 01.2		809	(847)	1993 05 14.15139	16 33 54.89	-23 37 57.5	17.8	809
1993 JH <sub>1</sub>	1993 05 15.14861	16 37 00.83	-23 16 59.8		809	(847)	1993 05 14.16458	16 33 54.20	-23 37 55.5		809
1993 JJ <sub>1</sub>	* 1993 05 14.15139	16 38 41.77	-21 37 18.4	18.3	809	(847)	1993 05 14.17778	16 33 53.50	-23 37 54.7		809
1993 JJ <sub>1</sub>	1993 05 14.16458	16 38 41.01	-21 37 20.2		809	(847)	1993 05 15.12222	16 33 06.95	-23 35 55.1		809
1993 JJ <sub>1</sub>	1993 05 14.17778	16 38 40.31	-21 37 21.6		809	(847)	1993 05 15.13542	16 33 06.28	-23 35 54.1		809
1993 JJ <sub>1</sub>	1993 05 15.12222	16 37 52.50	-21 39 24.1		809	(847)	1993 05 15.14861	16 33 05.57	-23 35 51.9		809
1993 JJ <sub>1</sub>	1993 05 15.13542	16 37 51.75	-21 39 26.0		809	(1029)	1993 05 14.15139	16 23 07.40	-23 36 16.5	17.0	809
1993 JJ <sub>1</sub>	1993 05 15.14861	16 37 51.00	-21 39 27.6		809	(1029)	1993 05 14.16458	16 23 06.70	-23 36 15.8		809
1993 JK <sub>1</sub>	* 1993 05 14.15139	16 40 02.93	-23 20 25.3	18.4	809	(1029)	1993 05 14.17778	16 23 05.98	-23 36 15.2		809
1993 JK <sub>1</sub>	1993 05 14.16458	16 40 02.25	-23 20 24.0		809	(1029)	1993 05 15.12222	16 22 18.30	-23 35 16.0		809
1993 JK <sub>1</sub>	1993 05 14.17778	16 40 01.65	-23 20 23.4		809	(1029)	1993 05 15.13542	16 22 17.57	-23 35 15.3		809
1993 JK <sub>1</sub>	1993 05 15.12222	16 39 17.84	-23 19 02.4		809	(1029)	1993 05 15.14861	16 22 16.84	-23 35 14.5		809
1993 JK <sub>1</sub>	1993 05 15.13542	16 39 17.17	-23 19 01.5		809	(1255)	1993 05 14.15139	16 38 35.82	-20 26 55.3	17.5	809
1993 JK <sub>1</sub>	1993 05 15.14861	16 39 16.55	-23 19 00.5		809	(1255)	1993 05 14.16458	16 38 35.26	-20 26 52.1		809
1993 JL <sub>1</sub>	* 1993 05 14.15139	16 40 30.02	-20 40 24.8	18.5	809	(1255)	1993 05 14.17778	16 38 34.62	-20 26 49.2		809
1993 JL <sub>1</sub>	1993 05 14.16458	16 40 29.41	-20 40 23.3		809	(1255)	1993 05 15.12222	16 37 54.10	-20 23 33.7		809
1993 JL <sub>1</sub>	1993 05 14.17778	16 40 28.73	-20 40 21.3		809	(1255)	1993 05 15.13542	16 37 53.50	-20 23 30.6		809
1993 JL <sub>1</sub>	1993 05 15.12222	16 39 46.41	-20 38 51.8		809	(1255)	1993 05 15.14861	16 37 52.91	-20 23 27.7		809
1993 JL <sub>1</sub>	1993 05 15.13542	16 39 45.80	-20 38 49.4		809	(1393)	1993 05 14.15139	16 33 15.97	-22 58 17.7	16.0	809
1993 JL <sub>1</sub>	1993 05 15.14861	16 39 45.17	-20 38 47.3		809	(1393)	1993 05 14.16458	16 33 15.19	-22 58 18.8		809
1993 JM <sub>1</sub>	* 1993 05 14.15139	16 41 01.27	-23 32 17.8	18.1	809	(1393)	1993 05 14.17778	16 33 14.39	-22 58 20.8		809
1993 JM <sub>1</sub>	1993 05 14.16458	16 41 00.55	-23 32 16.1		809	(1393)	1993 05 15.12222	16 32 22.94	-23 00 13.6		809
1993 JM <sub>1</sub>	1993 05 14.17778	16 40 59.84	-23 32 14.6		809	(1393)	1993 05 15.13542	16 32 22.16	-23 00 15.1		809
1993 JM <sub>1</sub>	1993 05 15.12222	16 40 13.16	-23 30 09.4		809	(1393)	1993 05 15.14861	16 32 21.42	-23 00 16.0		809
1993 JM <sub>1</sub>	1993 05 15.13542	16 40 12.39	-23 30 07.9		809	(1768)	1984 09 21.11250	22 00 13.05	-15 26 54.3	3	809
1993 JM <sub>1</sub>	1993 05 15.14861	16 40 11.72	-23 30 06.4		809	(1792)	1993 05 14.15139	16 23 59.69	-19 25 48.2	18.4	809
4247 P-L	1993 05 14.15139	16 38 15.70	-22 46 13.2	18.4	809	(1792)	1993 05 14.16458	16 23 58.97	-19 25 48.6		809
4247 P-L	1993 05 14.16458	16 38 14.93	-22 46 11.2		809	(1792)	1993 05 14.17778	16 23 58.24	-19 25 48.2		809
4247 P-L	1993 05 14.17778	16 38 14.21	-22 46 10.3		809	(1792)	1993 05 15.12222	16 23 09.78	-19 25 25.6		809
4247 P-L	1993 05 15.12222	16 37 25.23	-22 43 55.8		809	(1792)	1993 05 15.13542	16 23 09.11	-19 25 25.2		809
4247 P-L	1993 05 15.13542	16 37 24.53	-22 43 54.8		809	(1792)	1993 05 15.14861	16 23 08.40	-19 25 25.0		809
4247 P-L	1993 05 15.14861	16 37 23.83	-22 43 52.0		809	(1816)	1984 09 21.11250	22 03 22.99	-15 30 54.4	3	809
(149)	1993 05 14.15139	16 38 56.88	-20 29 57.3	15.0	809	(2398)	1993 05 14.15139	16 40 31.59	-19 53 14.2	18.4	809
(149)	1993 05 14.16458	16 38 56.03	-20 29 55.8		809	(2398)	1993 05 14.16458	16 40 30.85	-19 53 13.5		809
(149)	1993 05 14.17778	16 38 55.18	-20 29 53.8		809	(2398)	1993 05 14.17778	16 40 29.99	-19 53 13.2		809
(149)	1993 05 15.12222	16 38 00.41	-20 27 47.1		809	(2398)	1993 05 15.12222	16 39 35.66	-19 52 11.6		809
(149)	1993 05 15.13542	16 37 59.56	-20 27 45.0		809	(2398)	1993 05 15.13542	16 39 34.97	-19 52 10.9		809
(149)	1993 05 15.14861	16 37 58.73	-20 27 43.4		809	(2398)	1993 05 15.14861	16 39 34.30	-19 52 10.4		809
(334)	1984 09 21.11250	21 57 30.13	-15 03 01.1	3	809	(2797)	1993 05 14.15139	16 29 43.73	-19 44 53.1	17.9	809
(720)	1993 05 14.15139	16 30 07.79	-23 31 54.3	15.0	809	(2797)	1993 05 14.16458	16 29 43.22	-19 44 54.0		809
(720)	1993 05 14.16458	16 30 07.08	-23 31 53.8		809	(2797)	1993 05 14.17778	16 29 42.73	-19 44 55.0		809
(720)	1993 05 14.17778	16 30 06.37	-23 31 52.7		809	(2797)	1993 05 15.12222	16 29 11.51	-19 45 43.2		809
(720)	1993 05 15.12222	16 29 19.65	-23 31 01.4		809	(2797)	1993 05 15.13542	16 29 10.95	-19 45 42.9		809
(720)	1993 05 15.13542	16 29 18.88	-23 31 01.0		809	(2797)	1993 05 15.14861	16 29 10.44	-19 45 44.2		809

(3434)	1993 05 14.15139	16 32 44.96	-19 35 51.4	18.2	809
(3434)	1993 05 14.16458	16 32 44.30	-19 35 51.3		809
(3434)	1993 05 14.17778	16 32 43.54	-19 35 50.4		809
(3434)	1993 05 15.12222	16 31 54.64	-19 34 49.3		809
(3434)	1993 05 15.13542	16 31 53.98	-19 34 49.0		809
(3434)	1993 05 15.14861	16 31 53.23	-19 34 48.5		809
(4138)	1993 05 14.15139	16 28 01.47	-20 09 52.5	18.3	809
(4138)	1993 05 14.16458	16 28 01.07	-20 09 52.4		809
(4138)	1993 05 14.17778	16 28 00.61	-20 09 50.7		809
(4138)	1993 05 15.12222	16 27 32.14	-20 08 32.8		809
(4138)	1993 05 15.13542	16 27 31.71	-20 08 31.2		809
(4138)	1993 05 15.14861	16 27 31.20	-20 08 30.3		809
(5124)	1993 05 14.15139	16 30 51.98	-23 32 10.5	18.3	809
(5124)	1993 05 14.16458	16 30 51.21	-23 32 09.3		809
(5124)	1993 05 14.17778	16 30 50.43	-23 32 08.0		809
(5124)	1993 05 15.12222	16 29 58.52	-23 30 27.9		809
(5124)	1993 05 15.13542	16 29 57.78	-23 30 26.5		809
(5124)	1993 05 15.14861	16 29 56.96	-23 30 25.9		809

**816 Rand Observatory**

G. R. Viscome, 100 Sentinel Road, Lake Placid, NY 12946, U.S.A.

0.37-m  $f/6$  reflector + telecompressor + CCD

GSC

(55)	1993 05 23.10941	09 14 54.27	+20 20 21.4		816
(64)	1993 05 30.11087	13 14 39.59	-09 55 09.5		816
(73)	1993 05 23.21172	14 49 40.89	-19 00 00.7		816
(94)	1993 06 05.11003	09 56 34.21	+15 17 33.8		816
(114)	1993 05 30.24821	18 16 14.70	-15 57 08.0		816
(119)	1993 05 30.30694	18 41 10.28	-15 03 47.2		816
(179)	1993 05 23.24462	15 08 09.28	-21 18 01.4		816
(179)	1993 06 13.10131	14 54 51.94	-19 31 44.8		816
(179)	1993 06 18.13731	14 52 49.64	-19 09 57.2		816
(235)	1993 06 05.15954	11 09 51.61	+14 36 52.7		816
(260)	1993 05 23.17662	13 55 04.08	-04 40 56.0		816
(747)	1993 05 30.27898	18 11 50.89	-06 04 15.8		816
(3925)	1993 06 24.28203	18 44 23.10	-02 07 16.0		816
(3940)	1993 06 25.17186	17 22 07.91	+16 55 24.6		816
(5235)	1993 06 25.19221	18 04 05.10	-20 56 20.1		816
(5235)	1993 06 25.19447	18 04 04.92	-20 56 19.5		816

**871 Akou**

K. Kawanishi, 2045-1, Kariya, Akou, Hyogo-Ken 678-02, Japan

0.33-m  $f/3.3$  reflector + CCD

GSC

1993 NB	1993 07 23.66708	19 34 52.28	-14 50 02.2	16.0 V	871
1993 NB	1993 07 23.67160	19 34 52.17	-14 50 05.2		871
1993 NB	1993 07 23.67542	19 34 51.92	-14 50 09.0		871

**885 JCPM Yakiimo Station**

T. Urata, 6-1, Muramatsuhara 1 Chome, Shimizu, Shizuoka-Ken 424, Japan

Observer A. Natori

Measurer T. Urata

0.25-m  $f/3.4$  hyperboloid astrocamera

GSC

1993 BO <sub>3</sub>	1993 02 01.70625	10 30 09.29	+17 09 27.2	17	885
1993 BO <sub>3</sub>	1993 02 13.60139	10 19 11.65	+18 39 31.7	17	885
1993 BO <sub>3</sub>	1993 02 13.61389	10 19 10.97	+18 39 36.3		885
1993 BO <sub>3</sub>	1993 02 23.67222	10 08 53.78	+19 45 40.4	17	885
1993 BP <sub>3</sub>	1993 03 21.46458	09 26 03.53	+05 31 24.2	17	885
1993 BP <sub>3</sub>	1993 03 21.47986	09 26 02.91	+05 31 16.5		885
1993 DD <sub>2</sub>	1993 03 21.55799	11 56 22.26	+07 53 23.1	16.5	885
1993 DD <sub>2</sub>	1993 03 21.58576	11 56 20.34	+07 53 24.5		885
1993 DD <sub>2</sub>	1993 03 29.57743	11 47 59.68	+07 54 02.4	16.5	885
1993 DD <sub>2</sub>	1993 03 29.59132	11 47 58.92	+07 54 00.9		885
1993 DG <sub>2</sub>	1993 03 20.53090	11 14 44.07	+14 12 18.8	17	885
1993 DG <sub>2</sub>	1993 03 20.53785	11 14 43.86	+14 12 21.6		885
1993 DG <sub>2</sub>	1993 03 29.52361	11 08 22.34	+15 07 57.5	17	885
1993 DG <sub>2</sub>	1993 03 29.54653	11 08 21.31	+15 08 05.9		885

**894 Otomo**

S. Otomo, Kiyosato 3545-3902, Takane-cho, Kitakoma-gun, Yamanashi-ken, 407-03,

Japan

0.25-m  $f/3.4$  reflector

PPM

1993 JD	1993 05 23.58681	15 14 08.57	-13 21 26.0	16.5	894
1993 JD	1993 05 23.59931	15 14 08.01	-13 21 21.2		894
1993 JD	1993 05 25.57569	15 12 40.02	-13 03 19.1		894
1993 JD	1993 05 25.58819	15 12 39.49	-13 03 12.3		894
1993 JD	1993 06 09.51013	15 03 59.96	-11 07 28.9	16.8	894
1993 JD	1993 06 09.52188	15 03 59.62	-11 07 24.4		894
1993 NB	* 1993 07 15.67604	19 41 40.75	-13 03 28.7	15.7	894
1993 NB	1993 07 15.68924	19 41 39.99	-13 03 42.0		894
1993 NB	1993 07 21.71600	19 36 31.26	-14 23 17.1	16.0	894
1993 NB	1993 07 21.72639	19 36 30.54	-14 23 27.0		894
1993 NB	1993 08 11.51493	19 22 00.05	-19 10 08.4	16.0	894
1993 NB	1993 08 11.52882	19 21 59.66	-19 10 22.4		894
(263)	1993 07 15.70451	20 04 51.53	-18 17 35.4		894
(263)	1993 07 15.71771	20 04 50.95	-18 17 36.8		894
(600)	1993 07 15.67604	19 39 26.39	-13 56 21.0		894
(600)	1993 07 15.68924	19 39 25.63	-13 56 27.3		894
(600)	1993 07 21.71600	19 34 10.87	-14 34 22.8		894
(600)	1993 07 21.72639	19 34 10.32	-14 34 27.3		894
(5141)	1993 07 15.70451	20 01 43.07	-18 50 15.3		894
(5141)	1993 07 15.71771	20 01 42.21	-18 50 18.6		894

**905 Nachi-Katsuura Observatory**

T. Urata, 6-1, Muramatsuhara 1 Chome, Shimizu, Shizuoka-Ken 424, Japan

Observer Y. Shimizu

Measurer T. Urata

0.30-m  $f/3.8$  hyperboloid astrocamera

GSC

1993 JH	1993 06 07.51794	15 31 21.49	-22 15 51.8	16	905
1993 JH	1993 06 07.52535	15 31 21.16	-22 15 52.3		905

**970 Chelmsford**

G. M. Hurst, 16 Westminster Close, Kempshott Rise, Basingstoke, Hants.  
RG22 4PP, England

Observer N. James  
0.30-m  $f/5.25$  reflector  
GSC

1993 MF 1993 07 17.93042 21 40 36.66 +27 47 16.5 970

**ORBITAL ELEMENTS**

Orbital elements have been computed by the following contributors:

C. M. Bardwell, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street,  
Cambridge, MA 02138, U.S.A. (B)

E. Bowell, Lowell Observatory, 1400 West Mars Hill Road, Flagstaff, AZ 86001,  
U.S.A. (E)

E. Goffin, Agfa-Gevaert N.V., Mortsel, Belgium

K. Ichikawa, 45 Shiromae Kamiwada-cho, Okazaki-shi, Aichi, 444-02 Japan

B. G. Marsden, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street,  
Cambridge, MA 02138, U.S.A. (M)

S. Nakano, 3-19, 1 chome, Takenokuchi, Sumoto, Hyogo-ken 656, Japan (N)

L. D. Schmadel, Astronomisches Rechen-Institut, Mönchhofstrasse 12-14, D-69120  
Heidelberg, Germany

G. V. Williams, Harvard-Smithsonian Center for Astrophysics, 60 Garden Street,  
Cambridge, MA 02138, U.S.A. (W)

**Periodic Comet Helin-Lawrence (1993l)**

Epoch 1993 June 22.0 TT = JDT 2449160.5

$T$	1993 June 30.51850 TT		Marsden	
$q$	(2000.0)		<b>P</b>	<b>Q</b>
$n$	0.10426741	$\omega$ 163.76203	-0.24112334	+0.95522437
$a$	4.4706464	$\Omega$ 92.04029	-0.90840827	-0.15996221
$e$	0.3088600	$i$ 9.88030	-0.34154640	-0.24891463
$P$	9.45			

From 46 observations 1993 Apr. 21–July 31, mean residual 1''.05.

**Comet Shoemaker-Levy (1993h)**

Epoch 1994 Feb. 17.0 TT = JDT 2449400.5

$T$	1994 Jan. 30.63866 TT		Marsden	
$q$	(2000.0)		<b>P</b>	<b>Q</b>
$z$	+0.0006133	$\omega$ 232.09022	-0.37964398	+0.79819626
	$\pm 0.0003233$	$\Omega$ 30.34250	-0.23027872	+0.40811556
$e$	0.9970209	$i$ 67.79713	-0.89601460	-0.44308512

From 17 observations 1993 May 23–July 30, mean residual 1''.01.

**Periodic Comet Helin-Roman-Crockett**

Epoch 1996 Nov. 13.0 TT = JDT 2450400.5

$T$	1996 Nov. 1.17585 TT		Marsden	
$q$	(2000.0)		<b>P</b>	<b>Q</b>
$n$	0.12084529	$\omega$ 10.17226	-0.20999780	-0.97491902
$a$	4.0518146	$\Omega$ 91.97814	+0.89176271	-0.22190364
$e$	0.1387044	$i$ 4.22989	+0.40082439	-0.01707843
$P$	8.16			

From 57 observations 1989–1993, mean residual 0''.88.

## One-opposition minor planets

Planet	$H$	Epoch	$M$	$\omega$	$\Omega$	$i$	$e$	$a$	Arc	O	N	C
1977 OW	14.5	770716	14.99	220.53	74.83	12.31	0.2776	2.4553	6 6	W		
<b>1977 OX</b>	<b>15.0</b>	<b>770716</b>	<b>357.55</b>	<b>223.93</b>	<b>102.85</b>	<b>16.69</b>	<b>0.5162</b>	<b>3.2764</b>	<b>30 9</b>	<b>W</b>		
1993 BO <sub>3</sub>	13.5	930202	50.03	355.03	84.83	4.60	0.1421	2.2748	24 8	N		
1993 BP <sub>3</sub>	13.5	930222	32.33	136.48	327.89	24.18	0.1900	2.3721	50 0	N		
1993 DD <sub>2</sub>	12.3	930314	88.49	65.40	14.16	14.90	0.0664	2.5851	35 8	N		
1993 DG <sub>2</sub>	13.8	930314	354.50	47.02	129.68	6.49	0.1133	2.2377	33 0	N		
1993 GT	11.0	930403	223.41	288.13	73.18	3.18	0.3035	2.9170	5 0	W		
1993 GC <sub>1</sub>	13.7	930423	275.38	237.55	71.07	4.84	0.1522	2.2959	4 6	E		
1993 GE <sub>1</sub>	13.2	930423	285.21	153.27	162.84	7.16	0.3000	2.7224	4 6	E	E	
1993 GF <sub>1</sub>	12.9	930423	106.96	60.33	36.95	13.09	0.0284	3.0134	4 6	E	E	
1993 GG <sub>1</sub>	12.9	930423	341.14	161.22	69.28	6.34	0.1101	3.1415	4 6	E	E	
1993 GH <sub>1</sub>	14.5	930423	19.10	142.30	40.38	15.32	0.1248	2.6261	4 6	E	E	
1993 GJ <sub>1</sub>	12.8	930423	229.92	307.05	46.17	8.28	0.2000	2.5235	4 6	E	E	
1993 HK	14.5	930403	6.11	65.25	127.32	3.33	0.1204	2.3703	5 0	W		
1993 HW	13.2	930423	322.19	180.77	82.74	3.03	0.1861	2.3710	29 0	E		
1993 HX	13.0	930423	294.43	146.90	133.67	3.05	0.0455	2.4118	28 9	E		
1993 JD	12.7	930602	15.66	355.00	223.74	12.57	0.1101	2.6008	26 0	N		
1993 KC	16.0	930602	348.77	37.38	228.59	25.34	0.3570	2.2061	62 0	W		
1993 KM	13.0	930602	359.46	79.87	175.11	20.19	0.3490	3.1366	62 0	B		
1993 LG <sub>1</sub>	14.5	930622	336.40	9.95	265.37	23.73	0.1828	2.4076	48 0	W		
1993 LD <sub>2</sub>	14.0	930602	359.55	345.47	274.70	10.04	0.1933	2.8648	6 5	W		
1993 MJ	18.0	930622	343.40	84.65	247.50	5.11	0.1816	2.2130	34 9	W		
<b>1993 MO</b>	<b>16.0</b>	<b>930622</b>	<b>352.03</b>	<b>167.06</b>	<b>111.60</b>	<b>22.63</b>	<b>0.2207</b>	<b>1.6261</b>	<b>30 0</b>	<b>B</b>		
1993 MG <sub>1</sub>	13.5	930622	357.15	15.44	277.82	14.68	0.3847	2.6939	31 0	W		
1993 NA	16.5	930712	16.66	78.63	193.89	4.56	0.1853	2.3182	12 0	W		
1993 NB	13.3	930801	337.86	204.91	130.18	14.19	0.2256	2.4406	27 0	N		
1993 OB	13.0	930622	312.65	84.07	281.23	21.33	0.2941	2.4004	29 7	W		
<b>1993 OL</b>	<b>15.5</b>	<b>930801</b>	<b>329.07</b>	<b>126.65</b>	<b>302.66</b>	<b>37.85</b>	<b>0.7621</b>	<b>1.7817</b>	<b>23 0</b>	<b>M</b>		
1993 OM	14.0	930712	107.35	265.69	269.25	11.51	0.1822	2.9818	3 9	W		
1993 ON	16.0	930712	341.47	164.39	158.86	8.29	0.1568	2.5813	4 0	W		
1993 OX	14.0	930712	3.81	132.41	161.87	11.13	0.2511	2.4378	3 4	W		
<b>1993 OV<sub>1</sub></b>	<b>16.5</b>	<b>930712</b>	<b>8.83</b>	<b>323.10</b>	<b>311.01</b>	<b>11.11</b>	<b>0.4369</b>	<b>2.3335</b>	<b>9 7</b>	<b>W</b>		
1993 OW <sub>1</sub>	13.5	930712	307.26	243.68	128.29	28.23	0.1284	1.9348	2 5	W		
1993 OB <sub>2</sub>	13.0	930712	315.07	93.12	266.50	9.77	0.2417	2.5457	5 8	W		

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<b>(24) Themis</b>		Obs.	555	$M$	120.38095	$\omega$	109.79461	
$H$	7.08	$G$	0.19	Opp.	44	$n$	0.17828352	
rms res.	0''.66	(M-C)		1908–1993		$e$	0.1353048	
							$i$	0.76245

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<b>(139) Juewa</b>		Obs.	270	$M$	75.67087	$\omega$	165.64885	
$H$	7.78	$G$	0.15	Opp.	53	$n$	0.21282316	
rms res.	1''.00	(M-C)		1874–1992		$e$	0.1777090	
							$i$	10.94282

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<b>(234) Barbara</b>		Obs.	214	$M$	291.65475	$\omega$	191.70661	
$H$	9.02	$G$	0.15	Opp.	46	$n$	0.26737475	
rms res.	0''.91	(M-C)		1883–1990		$e$	0.2431775	
							$i$	15.34302

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<b>(326) Tamara</b>		Obs.	104	$M$	199.51086	$\omega$	238.55838	
$H$	9.36	$G$	0.15	Opp.	31	$n$	0.27936073	
rms res.	1''.02	(M-C)		1892–1990		$e$	0.1896787	
							$i$	23.72582



Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(350) Ornamenta** Obs. 72 *M* 110.45438  $\omega$  337.82548  
*H* 8.37 *G* 0.15 Opp. 29 *n* 0.17872348  $\Omega$  90.51829  
 rms res. 1''02 (M-C) 1892–1993 *e* 0.1495893 *i* 24.81775

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(416) Vaticana** Obs. 320 *M* 293.07856  $\omega$  196.86135  
*H* 7.89 *G* 0.20 Opp. 42 *n* 0.21182007  $\Omega$  58.48350  
 rms res. 1''05 (M-C) 1896–1993 *e* 0.2216013 *i* 12.92424

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(432) Pythia** Obs. 192 *M* 253.66724  $\omega$  174.12257  
*H* 8.84 *G* 0.15 Opp. 42 *n* 0.27028921  $\Omega$  89.05395  
 rms res. 1''00 (M-C) 1897–1993 *e* 0.1456719 *i* 12.12218

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(476) Hedwig** Obs. 141 *M* 157.63893  $\omega$  0.45274  
*H* 8.55 *G* 0.15 Opp. 40 *n* 0.22862252  $\Omega$  286.62841  
 rms res. 1''00 (M-C) 1901–1992 *e* 0.0758264 *i* 10.94568

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(499) Venusia** Obs. 145 *M* 196.41744  $\omega$  177.01555  
*H* 9.39 *G* 0.15 Opp. 31 *n* 0.12297781  $\Omega$  256.70778  
 rms res. 0''92 (M-C) 1902–1992 *e* 0.2129856 *i* 2.09039

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(551) Ortrud** Obs. 145 *M* 122.68758  $\omega$  70.30137  
*H* 9.57 *G* 0.15 Opp. 32 *n* 0.19251555  $\Omega$  6.68089  
 rms res. 0''93 (M-C) 1904–1993 *e* 0.1210950 *i* 0.40616

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(885) Ulrike** Obs. 56 *M* 338.97907  $\omega$  206.73423  
*H* 10.7 *G* 0.15 Opp. 20 *n* 0.18108677  $\Omega$  149.19130  
 rms res. 0''92 (M-C) 1906–1992 *e* 0.1866762 *i* 3.30122

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(986) Amelia** Obs. 31 *M* 273.03627  $\omega$  266.64006  
*H* 9.4 *G* 0.15 Opp. 13 *n* 0.17669848  $\Omega$  92.85624  
 rms res. 0''84 (M-C) 1927–1993 *e* 0.1912776 *i* 14.78988

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(1125) China** Obs. 55 *M* 86.49079  $\omega$  12.48607  
*H* 11.2 *G* 0.15 Opp. 15 *n* 0.17740385  $\Omega$  97.29814  
 rms res. 0''85 (M-C) 1909–1991 *e* 0.2122887 *i* 3.03861

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(1172) Aneas** Obs. 116 *M* 210.17898  $\omega$  47.76260  
*H* 8.33 *G* 0.15 Opp. 24 *n* 0.08384415  $\Omega$  247.49288  
 rms res. 0''72 (M-C) 1930–1990 *e* 0.1019715 *i* 16.70862

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(1223) Neckar** Obs. 101 *M* 211.26509  $\omega$  14.53678  
*H* 10.58 *G* 0.15 Opp. 22 *n* 0.20290095  $\Omega$  41.13459  
 rms res. 0''89 (M-C) 1907–1990 *e* 0.0609413 *i* 2.55540

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(1536) Pielinen** Obs. 91 *M* 166.27118  $\omega$  170.02343  
*H* 13.7 *G* 0.15 Opp. 18 *n* 0.30108993  $\Omega$  195.92649  
 rms res. 0''85 (M-C) 1903–1993 *e* 0.1951614 *i* 1.52600

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(1676) Kariba** Obs. 36 *M* 66.98726  $\omega$  204.18860  
*H* 12.7 *G* 0.15 Opp. 11 *n* 0.29483701  $\Omega$  54.77462  
 rms res. 0''91 (M-C) 1939–1990 *e* 0.1871946 *i* 6.13790

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2009) Voloshina** Obs. 78 *M* 118.95364  $\omega$  9.74345  
*H* 10.8 *G* 0.15 Opp. 17 *n* 0.17941550  $\Omega$  107.65307  
 rms res. 0''88 (M-C) 1926–1992 *e* 0.1437844 *i* 2.85984

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2074) Shoemaker** Obs. 27 *M* 251.46462  $\omega$  205.30609  
*H* 14.0 *G* 0.15 Opp. 7 *n* 0.40823518  $\Omega$  207.40552  
 rms res. 0''84 (M-C) 1954–1986 *e* 0.0819578 *i* 30.07728

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2137) Priscilla** Obs. 33 *M* 258.68871  $\omega$  138.10209  
*H* 11.1 *G* 0.15 Opp. 11 *n* 0.17379516  $\Omega$  320.50185  
 rms res. 0''81 (M-C) 1905–1991 *e* 0.0686969 *i* 11.74406

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2157) Ashbrook** Obs. 19 *M* 268.14584  $\omega$  264.99971  
*H* 11.4 *G* 0.15 Opp. 9 *n* 0.21245938  $\Omega$  349.92251  
 rms res. 0''92 (M-C) 1924–1993 *e* 0.1147816 *i* 8.62772

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2159) Kukkamäki** Obs. 50 *M* 15.85595  $\omega$  124.24847  
*H* 12.07 *G* 0.15 Opp. 11 *n* 0.25214926  $\Omega$  351.59032  
 rms res. 0''77 (M-C) 1929–1991 *e* 0.0396328 *i* 3.28272

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2225) Serkowski** Obs. 37 *M* 201.84869  $\omega$  8.18689  
*H* 12.1 *G* 0.15 Opp. 9 *n* 0.20470858  $\Omega$  88.38046  
 rms res. 0''84 (M-C) 1951–1989 *e* 0.0350484 *i* 3.26222

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2279) Barto** Obs. 44 *M* 188.49766  $\omega$  62.61751  
*H* 12.97 *G* 0.15 Opp. 10 *n* 0.25575581  $\Omega$  140.17171  
 rms res. 0''91 (M-C) 1954–1992 *e* 0.1594373 *i* 2.97652

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2297) Daghestan** Obs. 94 *M* 344.11103  $\omega$  93.26851  
*H* 11.0 *G* 0.15 Opp. 15 *n* 0.17550813  $\Omega$  140.73183  
 rms res. 0''89 (M-C) 1931–1990 *e* 0.1408475 *i* 1.60287

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2302) Florya** Obs. 32 *M* 312.73502  $\omega$  68.85991  
*H* 12.1 *G* 0.15 Opp. 6 *n* 0.22915514  $\Omega$  307.98857  
 rms res. 0''95 (M-C) 1935–1993 *e* 0.1948962 *i* 12.10503

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2393) Suzuki** Obs. 50 *M* 258.49728  $\omega$  104.76700  
*H* 10.5 *G* 0.15 Opp. 13 *n* 0.16981838  $\Omega$  226.22135  
 rms res. 0".94 (M-C) 1955-1989 *e* 0.1926556 *i* 10.17075

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2406) Orelskaya** Obs. 54 *M* 87.67614  $\omega$  347.24707  
*H* 13.5 *G* 0.15 Opp. 10 *n* 0.30365901  $\Omega$  12.74924  
 rms res. 0".70 (M-C) 1950-1989 *e* 0.1639926 *i* 2.31411

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2492) Kutuzov** Obs. 64 *M* 323.53191  $\omega$  259.52919  
*H* 11.3 *G* 0.15 Opp. 11 *n* 0.17377074  $\Omega$  21.69593  
 rms res. 0".80 (M-C) 1953-1992 *e* 0.1505011 *i* 0.84048

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2532) Sutton** Obs. 18 *M* 197.81490  $\omega$  7.43718  
*H* 12.7 *G* 0.15 Opp. 7 *n* 0.26952743  $\Omega$  345.38301  
 rms res. 0".86 (M-C) 1953-1991 *e* 0.1708965 *i* 4.34645

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2596) Vainu Bappu** Obs. 21 *M* 132.40328  $\omega$  246.40754  
*H* 12.8 *G* 0.15 Opp. 6 *n* 0.18657274  $\Omega$  139.42336  
 rms res. 0".83 (M-C) 1953-1993 *e* 0.0646096 *i* 10.23968

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2633) Bishop** Obs. 27 *M* 282.80904  $\omega$  266.14723  
*H* 13.1 *G* 0.15 Opp. 11 *n* 0.29698078  $\Omega$  62.58425  
 rms res. 0".97 (M-C) 1951-1992 *e* 0.1384029 *i* 3.13050

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2742) Gibson** Obs. 49 *M* 346.54910  $\omega$  284.20784  
*H* 12.1 *G* 0.15 Opp. 10 *n* 0.19855411  $\Omega$  123.03276  
 rms res. 0".82 (M-C) 1953-1992 *e* 0.0676118 *i* 3.15795

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2775) Odishaw** Obs. 17 *M* 179.34585  $\omega$  306.57239  
*H* 13.6 *G* 0.15 Opp. 7 *n* 0.26154187  $\Omega$  102.35541  
 rms res. 0".80 (M-C) 1953-1993 *e* 0.1859929 *i* 3.73556

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2806) Graz** Obs. 27 *M* 122.19807  $\omega$  313.04232  
*H* 13.3 *G* 0.15 Opp. 9 *n* 0.26852319  $\Omega$  116.16563  
 rms res. 0".89 (M-C) 1951-1991 *e* 0.0467368 *i* 2.33944

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2877) Likhachev** Obs. 23 *M* 182.30862  $\omega$  231.64122  
*H* 12.1 *G* 0.15 Opp. 10 *n* 0.18014021  $\Omega$  81.14826  
 rms res. 1".03 (M-C) 1933-1991 *e* 0.1964830 *i* 2.34265

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2989) 1976 UF<sub>1</sub>** Obs. 34 *M* 47.59698  $\omega$  247.22698  
*H* 13.2 *G* 0.15 Opp. 7 *n* 0.29428471  $\Omega$  75.92899  
 rms res. 0".89 (M-C) 1952-1988 *e* 0.1737081 *i* 3.63069

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(2997) Cabrera** Obs. 27 *M* 199.66802  $\omega$  349.76758  
*H* 13.5 *G* 0.15 Opp. 6 *n* 0.24105029  $\Omega$  355.46582  
 rms res. 0".68 (M-C) 1950-1991 *e* 0.1985626 *i* 7.21767

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3077) Henderson** Obs. 47 *M* 33.86337  $\omega$  116.68598  
*H* 12.7 *G* 0.15 Opp. 7 *n* 0.29388430  $\Omega$  297.88178  
 rms res. 1".01 (M-C) 1942-1991 *e* 0.0552621 *i* 1.47443

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3097) Tacitus** Obs. 32 *M* 276.11778  $\omega$  84.58086  
*H* 12.1 *G* 0.15 Opp. 7 *n* 0.19631676  $\Omega$  197.30190  
 rms res. 0".80 (M-C) 1953-1990 *e* 0.0880930 *i* 7.44960

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3155) Lee** Obs. 27 *M* 134.35448  $\omega$  28.51847  
*H* 12.6 *G* 0.15 Opp. 7 *n* 0.27473248  $\Omega$  28.75466  
 rms res. 0".89 (M-C) 1941-1991 *e* 0.1003986 *i* 7.20187

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3183) 1949 PP** Obs. 23 *M* 255.58496  $\omega$  212.04200  
*H* 12.7 *G* 0.15 Opp. 7 *n* 0.17272054  $\Omega$  128.79928  
 rms res. 0".93 (M-C) 1949-1993 *e* 0.1263338 *i* 2.17308

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3240) Laocoon** Obs. 35 *M* 188.14535  $\omega$  13.59713  
*H* 10.1 *G* 0.15 Opp. 9 *n* 0.08156581  $\Omega$  296.36058  
 rms res. 0".73 (M-C) 1976-1993 *e* 0.1251912 *i* 2.32714

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3257) 1982 GG** Obs. 41 *M* 43.54750  $\omega$  275.20251  
*H* 13.5 *G* 0.15 Opp. 6 *n* 0.29186080  $\Omega$  30.54275  
 rms res. 0".88 (M-C) 1951-1989 *e* 0.1693571 *i* 5.56433

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3260) Vizbor** Obs. 25 *M* 86.75614  $\omega$  258.88791  
*H* 12.6 *G* 0.15 Opp. 9 *n* 0.29509559  $\Omega$  249.63395  
 rms res. 0".87 (M-C) 1954-1993 *e* 0.0926832 *i* 5.22017

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3274) Maillen** Obs. 70 *M* 102.45607  $\omega$  235.89589  
*H* 12.1 *G* 0.15 Opp. 8 *n* 0.17578045  $\Omega$  28.21709  
 rms res. 0".84 (M-C) 1953-1992 *e* 0.1088463 *i* 1.25032

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3290) Azabu** Obs. 35 *M* 357.47988  $\omega$  115.98975  
*H* 11.7 *G* 0.15 Opp. 6 *n* 0.12383892  $\Omega$  75.38371  
 rms res. 0".90 (M-C) 1954-1986 *e* 0.1247180 *i* 2.76813

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3490) 1984 SV** Obs. 23 *M* 69.23473  $\omega$  99.61982  
*H* 13.3 *G* 0.15 Opp. 7 *n* 0.26496407  $\Omega$  344.22177  
 rms res. 0".77 (M-C) 1951-1991 *e* 0.1168038 *i* 5.89300

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3529) 1981 EQ<sub>19</sub>** Obs. 23 *M* 279.24664  $\omega$  184.57181  
*H* 14.0 *G* 0.15 Opp. 5 *n* 0.26824291  $\Omega$  194.33557  
 rms res. 1".01 (M-C) 1953–1986 *e* 0.1846056 *i* 2.75997

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3541) Graham** Obs. 19 *M* 132.47693  $\omega$  130.83448  
*H* 12.6 *G* 0.15 Opp. 7 *n* 0.25553899  $\Omega$  92.36344  
 rms res. 0".60 (M-C) 1926–1988 *e* 0.1451690 *i* 4.00975

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3659) Bellingshausen** Obs. 47 *M* 279.11045  $\omega$  257.67740  
*H* 13.6 *G* 0.15 Opp. 8 *n* 0.24492567  $\Omega$  190.10260  
 rms res. 0".88 (M-C) 1949–1991 *e* 0.1201772 *i* 3.43401

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3664) Anneres** Obs. 32 *M* 341.10347  $\omega$  144.25887  
*H* 12.4 *G* 0.15 Opp. 11 *n* 0.21095721  $\Omega$  261.07326  
 rms res. 0".88 (M-C) 1951–1992 *e* 0.1342278 *i* 3.59487

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3739) 1977 RE<sub>2</sub>** Obs. 21 *M* 348.71074  $\omega$  171.23848  
*H* 13.4 *G* 0.15 Opp. 9 *n* 0.29893148  $\Omega$  113.54179  
 rms res. 0".78 (M-C) 1950–1993 *e* 0.1547831 *i* 4.62152

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3746) 1964 TC<sub>1</sub>** Obs. 21 *M* 50.51099  $\omega$  306.27014  
*H* 12.4 *G* 0.15 Opp. 7 *n* 0.17381303  $\Omega$  24.60697  
 rms res. 0".75 (M-C) 1935–1992 *e* 0.2482124 *i* 1.03145

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3778) Regge** Obs. 29 *M* 88.97104  $\omega$  99.56508  
*H* 12.5 *G* 0.15 Opp. 7 *n* 0.20244415  $\Omega$  340.16206  
 rms res. 0".66 (M-C) 1952–1993 *e* 0.0394865 *i* 1.38099

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3922) 1971 SP<sub>3</sub>** Obs. 27 *M* 336.50219  $\omega$  13.40982  
*H* 12.6 *G* 0.15 Opp. 8 *n* 0.17750579  $\Omega$  351.19103  
 rms res. 0".95 (M-C) 1949–1990 *e* 0.2025267 *i* 2.02008

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3942) Churivannia** Obs. 23 *M* 148.24356  $\omega$  288.23573  
*H* 13.1 *G* 0.15 Opp. 5 *n* 0.26652011  $\Omega$  18.46770  
 rms res. 0".84 (M-C) 1951–1988 *e* 0.1967727 *i* 4.63088

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(3993) 1988 VV<sub>5</sub>** Obs. 19 *M* 13.42155  $\omega$  246.15528  
*H* 12.4 *G* 0.15 Opp. 7 *n* 0.23918080  $\Omega$  206.24602  
 rms res. 1".02 (M-C) 1949–1992 *e* 0.0707489 *i* 3.07252

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(4014) Heizman** Obs. 29 *M* 43.98440  $\omega$  131.42823  
*H* 11.9 *G* 0.15 Opp. 8 *n* 0.15588190  $\Omega$  273.47669  
 rms res. 1".10 (M-C) 1953–1991 *e* 0.0457215 *i* 1.11019

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(4028) 1982 DV<sub>2</sub>** Obs. 35 *M* 338.97220  $\omega$  264.90993  
*H* 12.9 *G* 0.15 Opp. 8 *n* 0.24154303  $\Omega$  177.98053  
 rms res. 0".80 (M-C) 1954–1992 *e* 0.1493982 *i* 2.79923

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(4055) Magellan** Obs. 50 *M* 12.44513  $\omega$  154.14756  
*H* 14.8 *G* 0.15 Opp. 4 *n* 0.40128496  $\Omega$  164.99414  
 rms res. 0".90 (M-C) 1985–1993 *e* 0.3262483 *i* 23.23464

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(4191) Assesse** Obs. 56 *M* 4.81646  $\omega$  39.44907  
*H* 12.4 *G* 0.15 Opp. 6 *n* 0.23070182  $\Omega$  231.98701  
 rms res. 0".68 (M-C) 1980–1993 *e* 0.1414045 *i* 12.03788

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(4195) 1982 SK<sub>8</sub>** Obs. 48 *M* 76.31304  $\omega$  216.15259  
*H* 12.3 *G* 0.15 Opp. 8 *n* 0.20659173  $\Omega$  178.74170  
 rms res. 0".66 (M-C) 1953–1992 *e* 0.0686912 *i* 2.04562

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(4247) Grahamsmith** Obs. 33 *M* 260.60406  $\omega$  290.54516  
*H* 13.0 *G* 0.15 Opp. 5 *n* 0.17377732  $\Omega$  124.64095  
 rms res. 0".72 (M-C) 1954–1988 *e* 0.2276999 *i* 2.07323

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(4449) Sobinov** Obs. 23 *M* 127.22746  $\omega$  313.40453  
*H* 11.2 *G* 0.15 Opp. 6 *n* 0.17627454  $\Omega$  299.88367  
 rms res. 0".81 (M-C) 1954–1992 *e* 0.0813294 *i* 4.91602

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(4454) Kumiko** Obs. 28 *M* 291.77406  $\omega$  132.49810  
*H* 12.0 *G* 0.15 Opp. 6 *n* 0.17285525  $\Omega$  278.67441  
 rms res. 0".88 (M-C) 1953–1991 *e* 0.1001740 *i* 0.70430

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(4504) 1989 YO** Obs. 16 *M* 334.92369  $\omega$  226.66119  
*H* 13.1 *G* 0.15 Opp. 7 *n* 0.23502946  $\Omega$  181.07391  
 rms res. 0".84 (M-C) 1953–1990 *e* 0.1344166 *i* 14.81251

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(4574) Yoshinaka** Obs. 23 *M* 136.09905  $\omega$  100.92635  
*H* 11.2 *G* 0.15 Opp. 5 *n* 0.18945669  $\Omega$  280.75260  
 rms res. 0".85 (M-C) 1977–1993 *e* 0.0942272 *i* 8.69010

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(4620) 1978 OK** Obs. 17 *M* 57.46255  $\omega$  287.00792  
*H* 13.5 *G* 0.15 Opp. 5 *n* 0.28301919  $\Omega$  94.73346  
 rms res. 0".70 (M-C) 1954–1990 *e* 0.2201943 *i* 4.49456

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5  
**(4627) 1985 RT<sub>2</sub>** Obs. 56 *M* 213.72051  $\omega$  224.76557  
*H* 12.1 *G* 0.15 Opp. 8 *n* 0.19760353  $\Omega$  105.93997  
 rms res. 0".80 (M-C) 1951–1991 *e* 0.0587366 *i* 3.33360

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams  
**(4649) 1936 YD** Obs. 26 *M* 212.05476  $\omega$  313.55845  
*H* 11.6 *G* 0.15 Opp. 6 *n* 0.21686582  $\Omega$  81.06946  
 rms res. 0".97 (M-C) 1931-1993 *e* 0.1210474 *i* 15.41599

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell  
**(4671) 1988 AK<sub>1</sub>** Obs. 25 *M* 334.21673  $\omega$  332.09954  
*H* 13.0 *G* 0.15 Opp. 5 *n* 0.26754227  $\Omega$  349.64111  
 rms res. 0".89 (M-C) 1955-1990 *e* 0.0620763 *i* 4.81105

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams  
**(4675) Ohboke** Obs. 28 *M* 40.29369  $\omega$  294.66261  
*H* 12.9 *G* 0.15 Opp. 7 *n* 0.26323123  $\Omega$  294.70882  
 rms res. 1".00 (M-C) 1970-1993 *e* 0.1749831 *i* 4.47838

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell  
**(4872) Grieg** Obs. 23 *M* 272.22655  $\omega$  5.66283  
*H* 14.0 *G* 0.15 Opp. 5 *n* 0.21874107  $\Omega$  111.51924  
 rms res. 0".70 (M-C) 1950-1991 *e* 0.0573149 *i* 10.70498

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell  
**(5026) 1987 QL<sub>1</sub>** Obs. 19 *M* 230.26760  $\omega$  16.51249  
*H* 13.2 *G* 0.15 Opp. 6 *n* 0.26887341  $\Omega$  305.15363  
 rms res. 0".54 (M-C) 1953-1991 *e* 0.2436333 *i* 4.30211

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell  
**(5037) 6552 P-L** Obs. 57 *M* 137.80324  $\omega$  280.18170  
*H* 13.7 *G* 0.15 Opp. 5 *n* 0.28754415  $\Omega$  166.20221  
 rms res. 0".70 (M-C) 1960-1993 *e* 0.1115727 *i* 7.02279

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell  
**(5082) 1977 DN<sub>4</sub>** Obs. 24 *M* 335.48897  $\omega$  58.99974  
*H* 12.8 *G* 0.15 Opp. 6 *n* 0.17752078  $\Omega$  103.44995  
 rms res. 0".77 (M-C) 1955-1991 *e* 0.1200361 *i* 2.94780

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell  
**(5099) 1985 DY<sub>1</sub>** Obs. 40 *M* 211.41137  $\omega$  289.91972  
*H* 13.1 *G* 0.15 Opp. 6 *n* 0.25155164  $\Omega$  81.02589  
 rms res. 0".64 (M-C) 1954-1992 *e* 0.0517126 *i* 1.18405

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell  
**(5163) 1983 TD<sub>2</sub>** Obs. 16 *M* 151.36142  $\omega$  238.80410  
*H* 13.0 *G* 0.15 Opp. 6 *n* 0.25413824  $\Omega$  183.71609  
 rms res. 0".74 (M-C) 1929-1993 *e* 0.2004204 *i* 7.52796

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell  
**(5165) 1985 CG** Obs. 35 *M* 139.33561  $\omega$  351.34629  
*H* 13.4 *G* 0.15 Opp. 6 *n* 0.26679549  $\Omega$  97.80284  
 rms res. 0".85 (M-C) 1954-1992 *e* 0.1716643 *i* 3.38069

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell  
**(5214) 1990 VN<sub>3</sub>** Obs. 31 *M* 83.37031  $\omega$  262.24751  
*H* 13.4 *G* 0.15 Opp. 7 *n* 0.30445500  $\Omega$  7.87933  
 rms res. 0".83 (M-C) 1953-1992 *e* 0.1035842 *i* 6.07742

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell  
**(5222) 1980 TL<sub>13</sub>** Obs. 43 *M* 138.30758  $\omega$  330.52119  
*H* 10.9 *G* 0.15 Opp. 5 *n* 0.21305636  $\Omega$  220.89254  
 rms res. 0".68 (M-C) 1952-1992 *e* 0.1435069 *i* 34.50917

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell  
**(5267) 1966 CF** Obs. 38 *M* 179.35166  $\omega$  42.54941  
*H* 13.1 *G* 0.15 Opp. 5 *n* 0.27004835  $\Omega$  114.39045  
 rms res. 0".90 (M-C) 1955-1992 *e* 0.0855479 *i* 9.01422

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell  
**(5286) Haruomukai** Obs. 32 *M* 291.07357  $\omega$  271.67711  
*H* 12.2 *G* 0.15 Opp. 6 *n* 0.19786471  $\Omega$  120.52142  
 rms res. 0".82 (M-C) 1954-1992 *e* 0.0230827 *i* 2.94897

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell  
**(5323) 1986 TL<sub>4</sub>** Obs. 27 *M* 283.95404  $\omega$  346.70919  
*H* 14.1 *G* 0.15 Opp. 6 *n* 0.26542147  $\Omega$  61.83301  
 rms res. 0".83 (M-C) 1949-1992 *e* 0.1996999 *i* 3.32372

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell  
**(5328) 1989 UH<sub>1</sub>** Obs. 29 *M* 17.12506  $\omega$  162.03958  
*H* 13.4 *G* 0.15 Opp. 5 *n* 0.26368288  $\Omega$  217.71093  
 rms res. 0".91 (M-C) 1954-1992 *e* 0.1428595 *i* 6.92343

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell  
**(5394) 1986 EZ<sub>1</sub>** Obs. 37 *M* 42.35575  $\omega$  187.10249  
*H* 13.2 *G* 0.15 Opp. 6 *n* 0.26896936  $\Omega$  294.95530  
 rms res. 0".76 (M-C) 1953-1993 *e* 0.1660705 *i* 1.73907

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams  
**(5429) 1988 BZ<sub>1</sub>** Obs. 67 *M* 358.14471  $\omega$  294.66129  
*H* 12.2 *G* 0.15 Opp. 5 *n* 0.17095290  $\Omega$  183.70752  
 rms res. 1".00 (M-C) 1954-1992 *e* 0.1370118 *i* 0.75558

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Bowell  
**(5485) 1991 RQ<sub>21</sub>** Obs. 55 *M* 31.45966  $\omega$  64.68977  
*H* 13.3 *G* 0.15 Opp. 7 *n* 0.21771470  $\Omega$  51.35656  
 rms res. 0".71 (M-C) 1951-1993 *e* 0.1113955 *i* 3.30434

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams  
**(5604) 1992 FE** Obs. 43 *M* 292.14605  $\omega$  82.25881  
*H* 17.0 *G* 0.15 Opp. 4 *n* 1.10401178  $\Omega$  312.21291  
 rms res. 0".84 (M-N) 1976-1993 *e* 0.4054469 *i* 4.79225

**(5633)\* 1978 UL<sub>7</sub> = 1930 KU = 1975 TA<sub>5</sub> = 1977 FZ<sub>1</sub> = 1980 FE<sub>9</sub>  
 = 1987 QX<sub>8</sub>**

Discovered 1978 Oct. 27 by C. M. Olmstead on Palomar Schmidt plates taken by C. T. Kowal.

Id. G. V. Williams (*MPC* 20808)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5 Williams  
*M* 12.43767 (2000.0) **P** **Q**  
*n* 0.31290138  $\omega$  351.96584 -0.33718710 +0.94051927  
*a* 2.1488086  $\Omega$  258.32106 -0.86137487 -0.32603143  
*e* 0.1117157 *i* 2.43308 -0.37991866 -0.09553539  
*P* 3.15 *H* 13.8 *G* 0.15

Residuals in seconds of arc

300525 690 1.6- 2.4+	781027 675 0.3- 0.0	930524 801 0.7- 0.9-
300527 690 0.6+ 1.8-	781028 675 0.8- 0.1+	930524 801 0.1- 0.3-
300529 690 1.5+ 1.5+	781029 675 0.7- 0.4-	930526 801 0.0 0.6-
300529 690 (4.0- 1.3-)	781128 675 0.3- 0.0	930526 801 0.1- 0.1+
300531 690(10.9- 2.4-)	781129 675 0.2- 0.3-	930724 801 0.3+ 1.1-
300531 690 (4.7- 2.1+)	800316 095 0.0 1.8+	930724 801 0.7+ 0.4+
751014 095 2.2+ 1.1+	870820 010 0.9- 0.5+	
770326 095 0.4+ 0.0	870820 010 0.8+ 1.0+	

**(5634)\* 1978 VT<sub>6</sub> = 1987 RX<sub>4</sub> = 1992 CL<sub>3</sub>**

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

Id. B. G. Marsden (*MPC* 20140)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

		Marsden	
<i>M</i>	10.22456	(2000.0)	<i>Q</i>
<i>n</i>	0.31348903	$\omega$ 30.39520	+0.37188669 +0.92646502
<i>a</i>	2.1461224	$\Omega$ 261.48997	-0.86304449 +0.32207255
<i>e</i>	0.0831271	<i>i</i> 3.36151	-0.34183988 +0.19476098
<i>P</i>	3.14	<i>H</i> 14.7	<i>G</i> 0.15

Residuals in seconds of arc

781105 675 1.3+ 0.9+	920207 809 0.8- 1.7-	930717 675 0.1- 0.9+
781106 675 1.5- 0.6-	920207 809 1.1- 0.6-	930717 675 1.8- 0.9+
781107 675 0.9+ 1.4+	920212 809 (9.0+ 2.9-)	930720 010 (3.4+ 1.8-)
781108 675 0.4- 0.4+	920212 809(11.9+ 2.9-)	930720 010 1.3+ 1.5-
781129 675 0.1+ 0.5-	920212 809(14.2+ 3.4-)	930721 010 1.5+ 1.6-
781130 675 0.4- 1.0-	930623 675 0.4- 0.1+	930723 010 0.7+ 0.8-
870902 095 0.4+ 0.8-	930623 675 (2.2- 0.1+)	930723 010 0.7+ 0.6-
920202 809 (0.2+ 3.0-)	930626 675 0.3+ 0.1+	930723 010 (2.3+ 0.8-)
920202 809 (1.2- 2.5-)	930626 675 0.8- 0.4-	930723 801 0.7- 0.8+
920202 809 (0.2- 2.1-)	930715 675 (2.1- 3.7+)	930723 801 0.7- 1.0+
920207 809 1.4+ 0.3+	930715 675 (2.1- 3.1+)	

**(5635)\* 1981 ER<sub>5</sub> = 1986 XC<sub>5</sub> = 1988 CO<sub>5</sub>**

Discovered 1981 Mar. 2 by S. J. Bus at Siding Spring in the course of the

U.K. Schmidt-Caltech Asteroid Survey.

Id. C. M. Bardwell (*MPC* 13038)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

		Bardwell	
<i>M</i>	1.61704	(2000.0)	<i>Q</i>
<i>n</i>	0.26739751	$\omega$ 53.95217	+0.84388282 +0.52129730
<i>a</i>	2.3861504	$\Omega$ 274.30750	-0.52405102 +0.75013934
<i>e</i>	0.2664904	<i>i</i> 7.31292	-0.11503180 +0.40686619
<i>P</i>	3.69	<i>H</i> 13.7	<i>G</i> 0.15

Residuals in seconds of arc

810209 413 0.2- 0.5+	810310 413 1.4+ 1.5-	880221 809 0.8+ 0.8+
810214 413 1.3- 0.1+	810312 413 0.0 1.0-	880221 809 0.2+ 0.3+
810228 413 2.4+ 1.1+	810407 413 2.6- 0.9+	880221 809 1.2+ 0.6+
810228 413 2.1+ 0.2+	810407 413 1.5- 0.5+	880223 809 0.5+ 0.6+
810302 413 (5.8- 0.4-)	810409 413 0.2+ 1.4-	880223 809 0.7+ 1.2+
810302 413 1.2+ 0.8-	810409 413 0.5- 0.2-	880223 809 0.5+ 1.8+
810306 413 0.6- 1.3+	861204 046 0.2- 0.8-	930624 801 1.2- 0.3+
810306 413 0.2+ 1.2-	861204 046 (5.8+ 1.3+)	930624 801 0.6- 0.6+
810307 413 1.7- 0.3+	880213 809 1.3+ 0.6+	930717 801 0.0 0.3+
810307 413 0.9+ 0.8-	880215 809 0.2- 0.6-	930717 801 0.0 0.5+

810308 413 0.8- 0.7+	880216 809 0.8- 0.1+	930723 801 0.1+ 0.6+
810308 413 1.8+ 0.5-	880216 809 0.6- 0.1+	930723 801 0.1+ 0.6+
810310 413 2.2- 1.3-	880216 809 0.9- 0.6+	

**(5636)\* 1985 QN = 1970 GG<sub>2</sub> = 1979 HC<sub>2</sub>**

Discovered 1985 Aug. 22 by E. Bowell at the Anderson Mesa Station of the

Lowell Observatory.

Id. B. G. Marsden (*MPC* 10302), K. Hurokawa (*ibid.*)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

		Marsden	
<i>M</i>	284.40460	(2000.0)	<i>Q</i>
<i>n</i>	0.21450018	$\omega$ 194.25139	+0.76540943 +0.64264588
<i>a</i>	2.7638699	$\Omega$ 125.70764	-0.58626621 +0.71808920
<i>e</i>	0.1322856	<i>i</i> 2.39840	-0.26540599 +0.26712201
<i>P</i>	4.59	<i>H</i> 12.7	<i>G</i> 0.15

Residuals in seconds of arc

700413 805 0.0 0.3-	850914 688 0.6- 0.1+	901113 046 0.1+ 1.0-
700413 805 0.2- 0.4+	850915 095 1.8- 0.5-	901113 046 (3.5+ 2.5-)
700413 805 0.2- 0.1-	850918 688 (3.1- 4.4+)	920111 303 0.6- 0.6-
790420 095 0.5+ 0.3+	850918 688 0.3- 0.5+	920112 303(10.4- 2.5+)
790425 095 (2.5- 1.9-)	850918 688 (3.0- 4.8+)	930327 801 0.5- 0.8+
830214 381 0.4+ 0.3-	850918 688 0.4- 0.0	930327 801 0.4- 0.5+
850816 095 1.4- 1.0-	850920 095 1.6+ 1.3-	930415 675 0.2- 0.4-
850818 095 (2.6+ 0.7-)	851012 688 (2.5+ 1.7+)	930415 675 0.7- 1.1-
850822 688 0.8+ 1.1+	851012 688 (1.9+ 2.6+)	930416 675 0.5+ 0.2-
850822 688 0.5+ 0.3-	890709 293(83.1- 18.0-)	930416 675 0.1+ 1.4-
850823 095 0.6+ 0.5+	901110 046 (0.9+ 3.1-)	930419 675 0.2+ 0.1-
850914 688 (2.8- 1.7+)	901110 046 (3.4+ 1.6-)	930419 675 0.1- 0.7-
850914 688 1.9+ 0.6-	901113 046 (9.6- 2.8-)	
850914 688 (3.6- 1.4+)	901113 046 (7.1- 4.1-)	

**(5637)\* 1988 RF<sub>1</sub>**

Discovered 1988 Sept. 10 by C. S. Shoemaker at Palomar.

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

		Williams	
<i>M</i>	165.34005	(2000.0)	<i>Q</i>
<i>n</i>	0.08541983	$\omega$ 329.95209	+0.88250917 +0.47007209
<i>a</i>	5.1061895	$\Omega$ 2.17058	-0.31793119 +0.61900947
<i>e</i>	0.1184286	<i>i</i> 22.48383	-0.34655060 +0.62917367
<i>P</i>	11.54	<i>H</i> 10.1	<i>G</i> 0.15

Residuals in seconds of arc

541006 675 (4.4+ 1.9+)	881008 675 0.9- 0.9-	891103 675 1.7- 0.2-
541006 675 1.0- 0.8+	881008 675 1.9- 0.8-	930122 950 0.6- 0.5-
840329 413 0.1+ 1.5-	890928 675 1.0+ 1.1-	930122 950 0.7- 0.4-
880818 675 1.1+ 0.2+	890928 675 1.8+ 2.2+	930123 950 0.4- 1.0+
880910 675 0.3- 1.1+	890929 675 (1.1- 3.9-)	930123 950 0.5+ 1.8+
880910 675 0.8+ 0.3-	890929 675 1.7+ 1.9-	930218 950 0.0 0.8-
880912 675 0.4+ 0.6-	891102 675 0.0 0.9+	930218 950 0.3- 0.5-

**(5638)\* 1988 TA<sub>3</sub> = 1988 RJ<sub>1</sub> = 1989 TO<sub>2</sub>**

Discovered 1988 Oct. 10 by C. S. Shoemaker at Palomar.

Id. T. Kobayashi (*MPC* 15893), F. N. Bowman (d, *ibid.*)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	248.91232	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.08094137	$\omega$ 90.19350	-0.39544659	+0.91529029
<i>a</i>	5.2928431	$\Omega$ 156.05698	-0.89978547	-0.36930305
<i>e</i>	0.1069812	<i>i</i> 10.87808	-0.18441286	-0.16080715
<i>P</i>	12.18	<i>H</i> 9.8	<i>G</i> 0.15	

Residuals in seconds of arc

880818 675	2.1-	0.0	891128 688	1.7-	2.0+	920102 801	0.4+	0.3+
880818 675	0.2-	0.9-	891128 688	0.8-	2.1+	920108 801	0.7+	0.6+
880910 675	0.1-	0.4+	891129 688	0.1+	0.9+	920108 801	0.0	0.4-
881010 675	1.9+	1.6-	891129 688	0.2-	1.1+	921221 801	0.2+	0.4-
881012 675	0.0	0.5-	891201 688	0.3-	0.3+	921221 801	0.2+	0.2-
881105 675	0.4+	2.0-	891201 688	0.0	0.3+	921224 801	0.0	0.5-
881107 675	0.9+	1.3-	901020 675	1.8-	0.8-	921224 801	0.2+	0.0
891003 807	1.0+	0.9+	901022 675	1.2-	0.4+	930127 801	0.3-	0.6-
891006 807	0.8+	0.1-	901113 675	1.4+	0.3+	930127 801	0.4-	0.6-
891030 807	0.5+	0.1+	901114 675	0.0	2.2-			
891101 807	0.2+	0.1-	920102 801	0.1-	0.1+			

**(5639)\* 1989 PE**

Discovered 1989 Aug. 9 by J. Alu and E. F. Helin at Palomar.

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	302.76302	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.39115181	$\omega$ 87.90976	-0.48225719	+0.84640603
<i>a</i>	1.8517079	$\Omega$ 149.70419	-0.86897173	-0.49486081
<i>e</i>	0.0230638	<i>i</i> 26.60105	+0.11097804	-0.19674759
<i>P</i>	2.52	<i>H</i> 14.1	<i>G</i> 0.15	

Residuals in seconds of arc

510826 675	0.3+	2.7+	890907 675	(0.7+	5.0-)	921211 413	0.2-	0.5+
510826 675	0.3+	0.4+	890907 675	(1.3+	3.7-)	930121 801	0.0	0.4-
890809 675	0.5-	0.1+	910410 675	0.4+	0.6-	930121 801	0.6-	1.0-
890809 675	0.9-	0.1-	910410 675	0.1-	1.6-	930127 801	0.9-	0.9+
890810 675	1.6-	1.9-	910412 675	(2.9-	1.0+)	930127 801	0.1+	0.8-
890905 675	2.0+	0.5-	910412 675	0.8-	0.5+	930225 801	0.7+	1.6+
890905 675	0.9+	1.0-	921211 413	0.2+	0.0	930226 801	0.4+	0.2-

**(5640)\* 1989 UR<sub>3</sub> = 1963 SH = 1979 GC**

Discovered 1989 Oct. 21 by M. Mukai and M. Takeishi at YCPM Kagoshima Station.

Id. S. Nakano (*MPC* 15719)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Nakano

<i>M</i>	347.43903	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.22918502	$\omega$ 173.04728	+0.93933858	+0.34276895
<i>a</i>	2.6445101	$\Omega$ 166.88669	-0.31725100	+0.88196473
<i>e</i>	0.2555049	<i>i</i> 3.11996	-0.13036422	+0.32349290
<i>P</i>	4.30	<i>H</i> 13.5	<i>G</i> 0.15	

Residuals in seconds of arc

630919 760	0.0	0.2+	891025 046	1.1+	0.7-	891119 364	0.1+	0.6-
790401 809	0.3-	0.1+	891025 046	(3.7+	0.6-)	930612 691	1.4-	0.1+
790402 809	0.2+	0.8-	891025 046	(3.4+	0.2+)	930612 691	1.2-	0.2+
890930 675	1.5-	0.5-	891025 046	(5.7+	1.3+)	930612 691	0.9-	0.1-
890930 675	2.6-	0.0	891026 046	1.8+	0.1+	930722 801	0.8+	0.0
891021 364	1.0+	0.4+	891026 046	2.2+	0.8+	930722 801	0.9+	0.1-

891021 364	0.2-	0.6+	891117 364	0.4-	0.3+	930723 801	0.5+	0.1-
891023 364	0.0	0.2+	891117 364	0.2+	1.0-	930723 801	0.7+	0.2-
891023 364	0.3-	0.4-	891119 364	1.9-	0.6+			

**(5641)\* 1990 DJ = 1973 GA**

Discovered 1990 Feb. 27 by E. F. Helin at Palomar.

Id. G. V. Williams (*MPC* 16436)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	91.32634	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.40158131	$\omega$ 56.73724	-0.85175050	+0.49183976
<i>a</i>	1.8195070	$\Omega$ 151.45311	-0.50914161	-0.85832194
<i>e</i>	0.1261978	<i>i</i> 22.20437	+0.12367663	-0.14620908
<i>P</i>	2.45	<i>H</i> 12.7	<i>G</i> 0.15	

Residuals in seconds of arc

730406 662	0.1+	1.3+	900324 675	0.4+	1.0+	930626 675	1.2-	0.3-
730406 662	0.1-	1.6-	900324 675	0.9+	0.9+	930717 801	0.3+	0.7+
730408 662	(0.6-	4.0+)	900425 675	(0.2-	3.9-)	930717 801	0.4+	0.8+
730408 662	0.5-	0.8+	900425 675	0.4+	2.3-	930718 675	1.8+	1.4-
730427 675	1.3+	0.9-	911208 675	(0.1-	2.4-)	930718 675	1.1+	0.3-
730428 675	0.6-	0.3-	911208 675	(0.4-	2.9-)	930720 675	0.9-	0.5-
900227 675	0.6+	2.2-	920115 413	0.2+	0.7-	930720 675	0.8-	1.4-
900228 675	2.0-	0.0	920115 413	0.5+	0.9-	930721 801	0.0	0.1+
900301 675	(0.3-	2.7-)	930623 675	(0.8-	2.3-)	930721 801	0.1+	0.2+
900322 675	0.4-	0.6+	930623 675	(1.2-	2.2-)	930728 596	0.5+	0.1+
900322 675	0.1+	1.3+	930626 675	1.4-	0.6-	930728 596	0.5-	1.6+

**(5642)\* 1990 OK<sub>1</sub>**

Discovered 1990 July 27 by H. E. Holt at Palomar.

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	293.08018	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.27969442	$\omega$ 38.96587	+0.93774866	+0.13056048
<i>a</i>	2.3156887	$\Omega$ 310.31693	-0.31108781	+0.72779930
<i>e</i>	0.3319971	<i>i</i> 24.96716	+0.15444036	+0.67324746
<i>P</i>	3.52	<i>H</i> 13.6	<i>G</i> 0.15	

Residuals in seconds of arc

750409 413	0.8-	0.8+	900818 675	0.0	2.0+	901213 801	0.3+	0.2-
750409 413	1.6+	0.5+	900818 675	0.3+	0.9+	920326 413	2.5-	0.5+
850127 413	1.2+	0.9-	900821 675	0.1-	0.3+	930510 413	0.0	0.3-
850127 413	(4.1+	0.8+)	900821 675	0.2+	0.3+	930510 413	0.2-	0.0
900727 675	1.2-	0.6-	901015 801	0.4+	0.1+	930730 413	0.3+	0.7-
900727 675	1.2-	0.9-	901015 801	0.5+	0.2+	930730 413	0.4+	0.6-
900730 675	0.2-	1.3-	901016 801	0.8+	0.1-	930731 413	0.3+	0.8-
900730 675	0.7+	1.1-	901213 801	0.2-	0.4-			

**(5643)\* 1990 QC<sub>2</sub> = 1977 RR<sub>8</sub> = 1986 EM<sub>3</sub>**

Discovered 1990 Aug. 22 by H. E. Holt at Palomar.

Id. G. V. Williams (*MPC* 17213)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	13.97525	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.30403397	$\omega$ 114.07992	+0.13820412	+0.99010574
<i>a</i>	2.1903893	$\Omega$ 163.80802	-0.93738228	+0.13868454
<i>e</i>	0.1716526	<i>i</i> 4.99814	-0.31970936	+0.02138275
<i>P</i>	3.24	<i>H</i> 14.5	<i>G</i> 0.15	

Residuals in seconds of arc

770908 675	0.3+	0.3+	900914 675	0.0	0.3+	930624 801	1.1+	0.9-
770909 675	0.4-	0.0	900914 675	0.1-	0.6+	930717 801	0.6-	0.1+
860312 809	0.2+	0.7+	900914 675	0.5-	0.2+	930717 801	0.2-	0.4+
900822 675	0.4+	0.7-	900914 675	0.5+	0.8+	930721 801	0.7-	1.3+
900822 675	0.3-	0.6-	900919 675	0.0	0.1-	930721 801	1.0-	0.4-
900828 675	0.1+	0.2-	900919 675	0.0	0.3-			
900828 675	0.0	0.1-	930624 801	1.3+	0.2-			

**(5644)\* 1990 QG<sub>2</sub> = 1979 SZ<sub>12</sub>**

Discovered 1990 Aug. 22 by H. E. Holt at Palomar.

Id. S. J. Bus (*MPC* 18296)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	118.20785	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.17744926	$\omega$ 263.92186	+0.32958422	-0.94233324
<i>a</i>	3.1363168	$\Omega$ 166.39337	+0.93412435	+0.31653085
<i>e</i>	0.0986081	<i>i</i> 14.31255	+0.13706179	+0.10870276
<i>P</i>	5.55	<i>H</i> 11.8	<i>G</i> 0.15	

Residuals in seconds of arc

710324 675	(1.9+ 2.9-)	900914 675	1.0-	0.4-	911106 801	0.1-	0.3-	
710326 675	0.1-	1.8-	900914 675	0.4+	0.5-	911106 801	0.1+	0.5-
710326 675	0.0	1.4-	900919 675	0.2-	0.4-	930320 801	0.5-	0.2+
710327 675	(3.0- 2.0-)	900919 675	0.2+	0.6-	930320 801	0.2-	0.0	
790920 675	0.1-	1.0-	900920 675	0.3-	0.7-	930323 801	0.5-	0.2+
790921 675	0.3-	1.1-	900921 809	0.2-	0.8+	930323 801	0.5-	0.2+
900822 675	0.0	1.0-	900921 809	0.2+	0.7+	930414 675	1.6+	0.3-
900822 675	0.1+	1.0-	900921 809	0.7+	0.7+	930414 675	(0.8+ 2.4-)	
900828 675	0.1+	1.5-	900922 809	0.0	1.3+	930416 675	0.5+	0.2+
900828 675	(2.3+ 0.5+)	900922 809	0.4+	1.3+	930416 675	0.7-	0.5+	
900914 675	0.5-	0.4-	900922 809	0.6+	1.1+			
900914 675	0.3+	0.5+	911009 801	0.5+	0.1-			

**(5645)\* 1990 SP**

Discovered 1990 Sept. 20 by R. H. McNaught at Siding Spring.

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	240.13432	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.62499641	$\omega$ 47.97892	-0.05319771	-0.98436667
<i>a</i>	1.3548286	$\Omega$ 45.91906	+0.83315463	-0.13644305
<i>e</i>	0.3872100	<i>i</i> 13.51708	+0.55047559	+0.11138024
<i>P</i>	1.58	<i>H</i> 16.6	<i>G</i> 0.15	

Residuals in seconds of arc

900818 413	0.1-	0.6-	910211 801	0.2+	0.1-	910420 413	0.9-	0.0
900818 413	0.8-	0.4-	910313 801	0.3-	0.5-	910512 801	0.7-	0.7-
900910 413	(0.8- 7.1-)	910313 801	0.4+	0.5+	910512 801	0.4-	0.3-	
900920 413	0.0	1.3-	910316 801	0.1+	0.7-	930630 413	0.5-	0.5+
900921 413	0.3+	0.5-	910316 801	0.0	0.5-	930630 413	0.4-	0.4+
900922 413	0.5+	1.1-	910321 801	0.9+	0.8+	930701 413	0.1-	0.3+
900924 413	0.6+	0.6-	910321 801	1.7-	0.4+	930701 413	0.3+	0.4+
901010 413	0.2-	0.2-	910410 413	0.0	0.2-	930701 413	0.1+	0.3+
901011 413	0.5-	0.0	910412 801	0.0	0.1-	930701 413	0.1-	0.4+
901016 413	0.8+	0.6+	910412 801	0.2-	0.6-	930730 413	0.3-	0.5+
901017 413	1.4+	0.8+	910414 801	0.3+	0.1-	930731 413	0.1+	0.8+
910119 801	0.1+	0.4+	910414 801	0.3+	0.1-	930731 413	0.1-	0.7+

910119 801	0.3+	0.0	910419 801	0.2+	0.7-
910211 801	0.9+	0.4-	910419 801	0.2-	0.4-

**(5646)\* 1990 TR**

Discovered 1990 Oct. 11 by S. Ueda and H. Kaneda at Kushiro.

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	333.61342	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.31431935	$\omega$ 335.41679	+0.98296226	+0.18063322
<i>a</i>	2.1423412	$\Omega$ 14.30117	-0.13745669	+0.84524195
<i>e</i>	0.4374779	<i>i</i> 7.91426	-0.12202809	+0.50292911
<i>P</i>	3.14	<i>H</i> 14.4	<i>G</i> 0.15	

Residuals in seconds of arc

900503 413	0.5-	1.3-	901020 372	0.2-	2.4+	901115 095	0.2+	0.4+
900504 413	1.9+	0.1+	901021 801	0.1+	0.2+	901116 801	0.3-	0.5-
900924 095	(3.7+ 6.8+)	901021 801	0.2+	0.2+	901116 801	0.4-	0.5-	
900924 095	1.0+	1.3-	901023 392	0.6-	0.6-	901120 801	0.0	0.2+
901011 399	1.9+	0.4-	901023 392	0.1-	0.8-	901120 801	0.0	0.1-
901011 399	1.3+	0.0	901024 095	0.6-	0.2+	901207 657	0.5-	1.4-
901011 399	(3.2+ 0.9-)	901024 095	1.0-	0.6-	901207 657	(3.3- 1.4-)		
901014 095	(1.5- 5.2+)	901028 095	0.2-	0.3-	901208 399	1.0-	0.6-	
901014 095	0.4-	0.4-	901028 095	2.0-	1.1+	901208 399	0.6+	1.1-
901015 675	0.0	1.1-	901108 589	(1.1+ 3.4+)	901214 801	0.2-	0.4+	
901015 675	0.1+	0.2-	901108 589	(2.3+ 2.9+)	901214 801	0.3-	0.4+	
901015 399	0.0	1.4+	901108 589	(3.3+ 2.1+)	901215 801	0.1-	0.1+	
901015 392	1.2-	1.2-	901109 589	0.5-	1.1+	901215 801	0.2-	0.0
901015 399	1.4+	0.7+	901109 589	1.0+	1.0+	901218 413	0.1+	1.1-
901015 392	1.3-	1.5-	901109 589	2.0+	1.4+	910120 801	0.6+	0.6+
901015 399	1.1+	0.4+	901109 589	0.9+	0.8+	910120 801	1.4+	0.9+
901015 095	0.3-	0.0	901109 589	1.4+	1.2+	910209 801	0.0	1.0-
901015 095	0.5-	0.4-	901109 589	2.0+	1.5+	910210 801	1.1+	0.6+
901016 675	0.5+	0.5-	901110 046	0.8+	0.2+	910212 801	0.9-	1.1+
901016 095	0.5-	0.1+	901110 046	0.5+	0.4-	910212 801	0.7-	0.2+
901017 372	1.7-	1.4-	901110 540	0.3-	1.2-	920312 658	0.2-	0.4+
901017 372	0.8-	1.6+	901110 540	0.5+	1.2-	920312 658	0.1-	0.6-
901017 095	1.1-	0.4+	901110 540	0.1-	1.7-	920312 658	0.1+	0.7+
901017 095	0.5-	0.4-	901110 540	0.0	1.6-	930510 413	0.8-	0.3+
901018 392	(1.2- 3.0-)	901113 046	0.4+	0.4-	930510 413	0.1-	0.5+	
901018 385	0.0	1.3+	901113 046	0.1+	0.2-	930511 413	0.2-	0.2+
901018 385	0.7+	2.0+	901113 589	0.1-	0.2+	930511 413	0.1+	0.3+
901018 871	1.8-	1.5+	901113 589	0.5+	0.0	930730 413	0.5+	0.0
901018 871	1.3-	2.0+	901113 589	1.1+	0.2-	930730 413	0.5+	0.2+
901019 376	0.8+	1.4-	901113 589	0.4-	1.3-	930730 413	0.6+	0.2+
901020 801	0.1+	0.1+	901113 589	0.2+	0.8-	930731 413	0.3-	0.7-
901020 801	0.2+	0.1+	901113 589	0.7+	0.4-	930731 413	0.5-	0.9-
901020 372	1.0-	0.9-	901115 095	0.4+	0.8+			

**(5647)\* 1990 TZ**

Discovered 1990 Oct. 14 by E. F. Helin at Palomar.

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

M 208.98115		(2000.0)		Williams	
		P	Q		
<i>n</i>	0.26109338	$\omega$	226.49330	-0.24829815	-0.91195546
<i>a</i>	2.4244067	$\Omega$	240.62671	+0.96116972	-0.19002763
<i>e</i>	0.2679560	<i>i</i>	22.01269	+0.12041926	-0.36362995
<i>P</i>	3.77	<i>H</i>	11.1	<i>G</i>	0.15

Residuals in seconds of arc

751009	675	0.3+	1.8+	901214	801	0.2+	0.2-	920702	801	0.7-	0.3-
751202	675	0.5-	0.6+	901215	801	0.3+	0.1-	920702	801	0.2-	0.8-
751202	675	0.4-	0.4-	901219	801	0.4+	0.5-	930624	801	0.4-	0.1+
751203	675	0.6-	1.9-	901219	801	0.3-	0.2-	930624	801	0.5-	0.1+
751203	675	0.4+	0.3+	910211	801	0.1-	0.0	930707	657	0.1-	0.3+
751204	675	0.6+	0.8-	910212	801	0.6+	0.0	930707	657	0.7-	1.0+
751204	675	0.3+	0.3+	920501	675	0.9+	1.9-	930707	657	0.4+	0.5+
901014	675	0.4-	1.1+	920501	675	(0.4+	2.9-)	930708	657	1.0+	0.1+
901014	675	0.0	0.8+	920502	675	(0.6+	4.2-)	930708	657	0.3+	0.1-
901016	675	0.2+	0.1+	920527	675	(1.5-	2.9+)	930708	657	0.3+	0.4-
901016	675	0.0	0.4+	920527	675	1.1-	1.3+	930717	801	0.8+	1.3-
901118	675	0.5-	0.9-	920530	801	0.8+	0.2-	930717	801	0.2+	0.2-
901118	675	0.6-	0.4-	920530	801	0.3+	0.2+	930718	801	0.3+	0.1-
901119	675	0.3-	1.7-	920531	675	1.7-	0.8+	930718	801	0.1-	0.6-
901207	010	0.6+	0.3+	920630	801	1.4+	0.1-				
901207	010	(2.3-	4.1+)	920630	801	0.0	0.3-				

**(5648)\* 1990 VU<sub>1</sub>**

Discovered 1990 Nov. 11 by K. Endate and K. Watanabe at Kitami.

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

M 144.33360		(2000.0)		Williams	
		P	Q		
<i>n</i>	0.08309507	$\omega$	267.76148	+0.85966483	+0.35794416
<i>a</i>	5.2009884	$\Omega$	71.08938	-0.15494560	+0.86256736
<i>e</i>	0.1636943	<i>i</i>	22.66142	-0.48679383	+0.35756612
<i>P</i>	11.86	<i>H</i>	9.2	<i>G</i>	0.15

Residuals in seconds of arc

890904	413	0.3-	0.1-	901124	400	1.8+	1.2+	911202	675	(0.0	3.1-)
890921	413	0.7+	0.4-	901124	400	(2.9+	2.4+)	911206	675	0.0	1.1-
901111	400	1.8+	1.8-	901215	400	1.3-	0.7+	911231	675	0.0	0.3+
901111	400	1.5-	2.3+	901215	400	0.9+	0.0	911231	675	0.5+	0.8-
901112	364	(1.4+	2.7-)	901218	801	0.3-	0.0	920107	801	0.6+	0.4-
901112	364	0.6-	1.6-	901218	801	0.1-	0.2+	920107	801	0.4+	0.0
901113	400	1.4-	0.8+	910212	801	0.2-	0.7+	921221	801	0.1-	0.3+
901113	400	0.2+	0.5+	910212	801	0.0	0.9-	921221	801	0.2-	0.2+
901116	403	0.4-	0.6+	910317	801	0.4-	0.4-	921225	801	0.0	0.9+
901116	403	(2.5-	0.8-)	910318	801	0.4-	0.2-	921225	801	0.1-	0.0
901118	400	(4.2-	3.1+)	910320	801	0.1+	1.0-	930119	801	0.2+	0.1+
901118	400	(6.3-	0.2+)	910320	801	0.0	0.4-	930119	801	0.1+	0.1-

**(5649)\* 1990 WZ<sub>2</sub>**

Discovered 1990 Nov. 18 by E. F. Helin at Palomar.

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

M 268.80403		(2000.0)		Williams	
		P	Q		
<i>n</i>	0.28628633	$\omega$	62.15160	+0.41188168	-0.91090827
<i>a</i>	2.2800042	$\Omega$	3.78674	+0.64966165	+0.27469953
<i>e</i>	0.3367049	<i>i</i>	21.76316	+0.63897826	+0.30787382
<i>P</i>	3.44	<i>H</i>	13.2	<i>G</i>	0.15

Residuals in seconds of arc

750608	413	0.5-	0.5+	901215	675	0.5+	0.0	930630	413	0.1+	0.7+
750608	413	0.1+	0.2+	901217	675	1.7-	0.8-	930701	413	0.3+	1.0+
760824	413	1.1+	0.3+	901217	675	0.5+	0.1+	930701	413	0.2+	1.0+
760824	413	0.7+	2.2-	910216	801	0.5+	0.8-	930730	413	0.6-	0.3-
901118	675	(4.7-	0.2-)	910217	801	0.3-	0.9+	930730	413	0.7-	0.2-
901118	675	0.5+	0.8+	910320	801	0.2-	0.1+	930731	413	0.4-	0.2+
901119	675	0.4-	0.7-	910320	801	0.0	0.2+	930731	413	0.1-	0.3+
901119	675	1.0-	1.1+	930630	413	0.2+	0.7+				

**(5650)\* 1990 XK = 1937 LP = 1954 LE = 1981 WX<sub>5</sub>**

Discovered 1990 Dec. 10 by A. Natori and T. Urata at the JCPM Yakiimo

Station.

Id. T. Urata (*MPC* 17649)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

M 158.40851		(2000.0)		Nakano	
		P	Q		
<i>n</i>	0.23260071	$\omega$	277.97904	-0.97061875	-0.12614169
<i>a</i>	2.6185569	$\Omega$	254.95053	+0.19114580	-0.92146819
<i>e</i>	0.1083039	<i>i</i>	12.25049	-0.14615924	-0.36740258
<i>P</i>	4.24	<i>H</i>	11.7	<i>G</i>	0.15

Residuals in seconds of arc

370609	078	(0.9+	43.1-)	X	901225	885	2.0-	0.2-	920608	675	0.1+	0.7+
540607	760	0.4+	1.1-		910105	885	0.8-	0.8-	920608	675	0.5-	0.9-
540607	760	0.1+	2.0-		910105	885	0.5-	1.2-	930719	801	0.3+	0.3+
811124	095	0.8-	2.4+		910107	413	0.4-	0.5-	930719	801	0.1+	0.2+
901210	885	1.8+	1.9+		910108	413	0.1-	0.5-	930721	801	0.5-	0.0
901210	885	1.9+	1.9+		920511	385	1.4-	0.8+	930721	801	0.3+	0.2+
901212	881	1.1+	0.8-		920511	385	1.1+	0.4+	930811	385	0.2+	0.4-
901212	881	(3.9+	2.7-)		920525	885	0.7-	0.2+	930811	385	0.2+	0.2-
901214	885	1.1-	0.2-		920525	885	1.7+	1.7+	930811	385	0.2+	0.6-
901214	885	0.2+	0.8-		920530	385	0.6-	0.9+				
901225	885	(3.2-	0.8-)		920530	385	0.0	0.5+				

**(5651)\* 1991 CA<sub>2</sub> = 1977 QL = 1980 DY<sub>2</sub> = 1989 WJ<sub>7</sub>**

Discovered 1991 Feb. 14 by E. W. Elst at Haute Provence.

Id. H. Kaneda (*MPC* 18635)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

M 272.46455		(2000.0)		Nakano	
		P	Q		
<i>n</i>	0.17642896	$\omega$	231.38776	+0.96573808	-0.20120002
<i>a</i>	3.1483968	$\Omega$	139.45368	+0.23334184	+0.94964059
<i>e</i>	0.1487092	<i>i</i>	14.60504	-0.11358499	+0.24021094
<i>P</i>	5.59	<i>H</i>	11.8	<i>G</i>	0.15

Residuals in seconds of arc

770818	095	0.0	0.5-	910214	511	0.8-	0.5-	930610	657	0.6+	0.1-
800220	095	0.1+	0.7-	910216	511	0.7+	1.8-	930617	801	0.1-	0.6+
891122	808	1.0+	0.1+	910305	071	0.6+	0.7+	930617	801	0.4-	0.9+
891122	808	0.7+	0.6-	910305	071	0.9-	0.5+	930624	801	1.8-	0.9+



891127 808 0.1+ 0.8- 930524 801 0.2+ 0.2+ 930624 801 0.1- 0.9-  
 891127 808 1.3- 0.4- 930524 801 0.4+ 0.1+ 930717 658 0.1+ 1.3-  
 891204 808 (1.7- 32.2+) 930610 657 0.3+ 0.0 930717 658 0.0 1.4-  
 891204 808 (3.0- 33.1+) 930610 657 0.2+ 0.2- 930717 658 0.1+ 1.4-

**(5652)\* 1992 HS<sub>3</sub> = 1973 UE<sub>6</sub> = 1985 SC<sub>5</sub> = 1985 VX<sub>5</sub> = 1991 FN<sub>4</sub>**

Discovered 1992 Apr. 24 by C. S. Shoemaker at Palomar.

Id. G. V. Williams (*MPC* 20513, unpublished)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

		Williams	
<i>M</i>	233.77909	(2000.0)	<i>Q</i>
<i>n</i>	0.08340904	$\omega$ 107.15398	+0.87496487 -0.48309660
<i>a</i>	5.1879283	$\Omega$ 281.74425	+0.43067581 +0.80715752
<i>e</i>	0.0756706	<i>i</i> 1.90038	+0.22125736 +0.33928515
<i>P</i>	11.82	<i>H</i> 9.9	<i>G</i> 0.15

Residuals in seconds of arc

731026 095 0.5- 0.8+ 910326 809 1.2- 1.5+ 920605 675 0.2- 1.6-  
 850920 095 0.3+ 0.5- 920424 675 0.7+ 2.2- 930523 675 1.3+ 1.5+  
 851112 095 0.2- 1.0+ 920426 675 0.5- 1.0- 930523 675 0.5- 0.9+  
 910325 809 1.4+ 0.2+ 920426 675 0.8- 0.8- 930615 675 0.5- 0.3-  
 910325 809 1.3+ 0.1+ 920429 675 (2.9+ 0.9+) 930615 675 1.7- 0.3+  
 910325 809 1.4+ 0.0 920603 675 1.8+ 1.3+ 930721 675 (0.9- 2.8+)  
 910326 809 1.3- 1.3+ 920603 675 0.1- 1.5- 930721 675 0.5+ 1.2+  
 910326 809 1.2- 1.3+ 920605 675 0.2+ 0.2-

**(5653)\* 1992 WD<sub>5</sub>**

Discovered 1992 Nov. 21 by E. F. Helin and K. Lawrence at Palomar.

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

		Williams	
<i>M</i>	68.95822	(2000.0)	<i>Q</i>
<i>n</i>	0.41009011	$\omega$ 122.20577	-0.67317828 -0.73917685
<i>a</i>	1.7942509	$\Omega$ 10.19054	+0.63177236 -0.58977667
<i>e</i>	0.3040196	<i>i</i> 6.87551	+0.38431066 -0.32524000
<i>P</i>	2.40	<i>H</i> 15.4	<i>G</i> 0.15

Residuals in seconds of arc

740324 413 0.7+ 2.4- 921230 587 1.2- 0.6+ 930218 657 0.0 0.0  
 740428 413 0.9- 0.1+ 921230 587 0.7- 0.2+ 930218 657 0.5- 0.5+  
 740428 413 0.6+ 0.0 930101 410 1.0- 0.3+ 930218 657 0.3+ 0.2+  
 740623 413 0.6- 0.2+ 930101 410 0.6- 0.1- 930220 801 0.0 0.6-  
 910806 413 1.8- 0.2- 930101 410 0.1+ 0.1+ 930220 801 0.2- 0.8-  
 910806 413 1.8+ 0.1- 930104 670 1.3- 0.6+ 930226 658 0.5- 0.0  
 921121 675 (1.8+ 4.6-) 930104 670 (3.1- 0.3-) 930226 658 0.3- 0.2+  
 921121 675 (0.2+ 3.2-) 930119 801 0.3- 1.1- 930226 658 0.0 0.0  
 921122 675 1.2+ 2.2- 930119 801 0.0 1.2- 930228 658 0.5+ 0.9-  
 921124 675 1.0+ 1.3- 930119 049 0.3- 0.2- 930228 658 0.3+ 0.7-  
 921128 675 0.6+ 1.6- 930119 049 0.3- 0.2- 930228 658 0.2+ 0.7-  
 921128 675 0.3+ 2.0- 930119 049 0.1- 0.2+ 930306 670 1.8- 1.4+  
 921215 670 (1.5- 4.7+) 930119 049 0.0 0.2+ 930306 670 0.5- 2.3+  
 921217 670 1.3+ 1.6+ 930119 049 0.0 0.0 930306 670 (2.9- 3.8+)  
 921217 670 0.7+ 1.1+ 930120 049 0.3- 0.3+ 930316 657 0.6+ 0.7-  
 921217 670 1.2+ 0.7+ 930120 104 1.5+ 0.7+ 930316 657 0.7+ 0.9-  
 921217 670 0.6- 1.1- 930120 104 0.9+ 0.9- 930316 657 0.7+ 1.0-  
 921218 595 (2.0- 3.4+) 930121 049 0.2- 0.4- 930320 801 0.1- 0.0  
 921220 670 0.1+ 0.1+ 930121 049 0.0 0.0 930320 801 0.3- 0.2-  
 921220 670 1.6+ 1.8+ 930122 049 0.6- 0.3+ 930322 801 0.3- 0.1-

921220 670 0.4+ 0.5+ 930123 049 0.3- 0.1+ 930322 801 0.2- 0.2-  
 921221 801 0.4- 0.1+ 930123 049 0.5- 0.3+ 930322 670 1.2- 2.0+  
 921223 595 0.5- 0.3+ 930126 801 0.2- 0.2- 930322 670 1.2+ 1.5-  
 921226 801 0.5- 0.4+ 930126 801 0.1- 0.1+ 930322 670 0.6- 1.2-  
 921226 801 0.4- 0.3+ 930126 104 0.8+ 0.2- 930418 658 0.0 0.3+  
 921226 587 1.0- 0.6+ 930126 104 2.3+ 0.1- 930418 658 1.4+ 0.4-  
 921226 587 0.3- 0.4+ 930127 104 0.5+ 0.1- 930418 587 0.4+ 1.5+  
 921229 410 0.2- 0.4+ 930127 104 0.3- 0.5- 930418 587 0.0 0.6+  
 921229 410 0.3- 0.1+ 930218 801 0.1+ 0.2- 930418 587 0.5+ 0.7+  
 921229 410 0.3- 0.1- 930218 801 0.0 0.2- 930418 587 0.6+ 0.7+

**(5654)\* 1993 KG = 1951 CU<sub>1</sub> = 1954 US<sub>1</sub> = 1956 GM = 1970 FF = 1979 EC = 1991 VJ<sub>16</sub>**

Discovered 1993 May 20 by A. Vagnozzi at Santa Lucia Stroncone.

Id. G. V. Williams (*MPC* 22412)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

		Williams	
<i>M</i>	52.11232	(2000.0)	<i>Q</i>
<i>n</i>	0.21258952	$\omega$ 130.44568	-0.81117177 -0.58363668
<i>a</i>	2.7804055	$\Omega$ 13.97792	+0.47942358 -0.69988958
<i>e</i>	0.1978629	<i>i</i> 8.80984	+0.33489311 -0.41173147
<i>P</i>	4.64	<i>H</i> 12.5	<i>G</i> 0.15

Residuals in seconds of arc

510210 711 0.1+ 1.8- Y 930525 587 0.5- 0.4- 930618 589 0.1- 0.1+  
 510210 711 1.6- 1.1+ Y 930525 587 0.2+ 1.0+ 930618 589 0.4- 0.1+  
 541024 760 (0.0 24.5-) X 930525 587 0.5+ 1.4- 930618 589 0.0 0.2+  
 560406 839 2.4+ 0.8+ 930526 589 0.5- 0.4- 930618 589 0.5+ 0.5+  
 700331 095 0.2+ 1.7+ 930526 589 1.3+ 1.2- 930620 589 0.2- 0.2+  
 750506 413 0.2- 0.7+ 930605 589 0.1+ 0.5- 930620 589 0.3+ 0.8-  
 750506 413 0.3+ 0.2- 930605 589 0.1+ 1.4- 930621 589 0.0 0.2-  
 790301 330 1.3+ 1.2+ 930605 589 0.1+ 0.4- 930621 589 0.6- 0.0  
 800621 413 0.6- 0.4- 930606 589 1.9+ 0.9+ 930623 589 1.3- 0.6-  
 911109 691 0.1- 0.4+ 930607 589 0.2- 0.4- 930623 589 0.5- 1.3+  
 911109 691 0.2- 0.6+ 930607 589 0.3- 0.0 930707 589 0.9- 0.1+  
 911109 691 0.1+ 0.5+ 930610 589 0.7- 0.3- 930707 589 0.8- 0.2+  
 930520 589 0.1- 0.2- 930610 589 0.7- 0.1- 930707 589 1.5- 0.0  
 930520 589 0.2- 0.0 930610 589 0.9- 0.1+ 930708 589 1.0+ 0.0  
 930520 589 0.1- 0.1- 930610 589 1.2- 0.4- 930708 589 0.3+ 0.8-  
 930520 589 0.1- 0.3- 930612 589 0.8- 0.2- 930708 589 1.1+ 0.2-  
 930524 589 0.4+ 0.3- 930612 589 1.4- 0.7- 930709 589 0.4+ 1.0+  
 930524 589 0.7- 0.9- 930615 589 0.1+ 1.0+ 930709 589 0.7+ 0.6+  
 930524 589 0.6+ 0.1- 930615 589 0.1- 1.4+ 930713 589 0.4+ 0.4-  
 930525 589 0.0 0.5- 930615 589 0.4+ 0.8+ 930713 589 0.2+ 0.9-  
 930525 589 0.3+ 0.4- 930616 589 0.4- 1.0+ 930713 589 0.3- 0.2-  
 930525 587 0.4- 0.3- 930616 589 1.4+ 1.7+

**(5655)\* 1159 T-2 = 1988 EN<sub>1</sub>**Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten- Groeneveld on Palomar Schmidt plates taken by T. Gehrels.  
Id. S. Nakano (*MPC* 15076)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Nakano

<i>M</i>	74.54038	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.23797717	$\omega$ 17.79554	-0.85519446	+0.51492982
<i>a</i>	2.5789674	$\Omega$ 193.67567	-0.50072369	-0.85023356
<i>e</i>	0.0366136	<i>i</i> 14.46937	-0.13385897	-0.10931689
<i>P</i>	4.14	<i>H</i> 12.9	<i>G</i> 0.15	

Residuals in seconds of arc

730929 675	0.7-	1.3-	880314 675	(0.0	3.9-)	920323 399	1.6+	0.7-
730929 675	0.0	0.5+	880314 675	0.2-	0.5-	930618 801	0.5+	0.3+
730930 675	0.6-	1.6+	880410 675	(1.1+	3.9-)	930618 801	0.4+	0.3-
730930 675	0.5-	1.1+	880410 675	(0.4+	3.5-)	930624 801	0.5+	0.5-
731004 675	1.6+	2.4-	901027 413	0.8-	0.8+	930624 801	0.5+	1.0-
731004 675	1.1+	2.2-	920302 399	0.5-	0.4+	930715 657	0.5-	0.4-
731005 675	0.5+	2.0-	920302 399	1.7+	2.4-	930715 657	0.4-	0.5-
731005 675	(1.1+	2.8-)	920303 399	0.4-	0.8-	930715 657	0.8-	0.4-
880311 675	(0.1+	3.1-)	920303 399	1.8-	0.6-	930716 801	0.0	0.8+
880311 675	1.1-	0.3-	920322 399	0.1+	0.1+	930716 801	0.2-	0.5+
880313 675	0.6+	0.1+	920322 399	0.7+	0.3+	930717 801	0.0	0.0
880313 675	1.8-	0.9+	920323 399	0.6+	1.1-	930717 801	0.2+	0.0

**1939 UB = 1973 UZ<sub>1</sub> = 1990 UG<sub>1</sub>**Id. H. Kaneda (*MPC* 17423); 1939 UB = 1984 JA (*ibid.*) is invalid

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Bowell

<i>M</i>	170.46350	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.23270718	$\omega$ 269.27018	-0.51377713	-0.85041434
<i>a</i>	2.6177582	$\Omega$ 212.45628	+0.84688940	-0.48162410
<i>e</i>	0.1325206	<i>i</i> 12.18409	+0.13715472	-0.21173966
<i>P</i>	4.24	<i>H</i> 12.0	<i>G</i> 0.15	

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

391007 062	0.1+	0.2-	901022 400	(3.2+	1.4-)	901113 400	2.5-	0.6-
391018 062	0.3-	0.1-	901022 400	(3.3+	0.1-)	901113 046	1.6-	2.3-
391020 062	0.0	0.1-	901024 400	1.0+	0.4+	901113 046	(1.9-	3.1-)
391111 062	0.1+	0.3-	901024 400	2.6+	0.1-	901113 046	0.4+	0.1-
540408 675	0.4-	0.8-	901110 046	(3.2-	0.8-)	901113 046	1.6+	1.9+
540408 675	0.4+	1.0+	901110 046	1.3-	1.5-			
731026 095	0.3+	1.8+	901113 400	0.3-	1.4+			

**1971 FB**

Id. R. H. McNaught (1978, 1984, 1988 observations)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	28.14126	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.26446847	$\omega$ 314.90782	-0.76629950	-0.64096434
<i>a</i>	2.4037360	$\Omega$ 185.76518	+0.63947704	-0.76755120
<i>e</i>	0.2412336	<i>i</i> 26.07699	-0.06208218	+0.00546513
<i>P</i>	3.73	<i>H</i> 14.5	<i>G</i> 0.15	

Residuals in seconds of arc

710324 675	1.0-	0.5+	710402 675	2.3+	1.7-	780106 413	0.9+	2.1-
710325 675	0.6-	1.2+	710513 675	2.0+	0.6-	780106 413	0.4-	0.5-
710326 675	1.1-	0.9+	710513 675	2.3+	0.9-	841113 413	1.0-	0.6-
710326 675	(4.6-	0.4-)	710514 675	1.0+	0.3+	881113 413	1.2+	2.3+
710326 675	1.0-	1.1+	710514 675	0.8+	0.8+	881113 413	0.6-	2.1+
710327 675	1.9-	1.5-	710726 691	(11.5+	3.1+)Y			
710327 675	1.1-	0.9+	710726 691	0.7-	2.0+	Y		

**1976 SG<sub>2</sub> = 1979 OP<sub>16</sub> = 1982 OF<sub>1</sub> = 1986 VW<sub>5</sub>**Id. C. M. Bardwell (*MPC* 11434), L. D. Schmadel (*ibid.*), E. Bowell, G. V. Williams

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	2.14115	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.30022877	$\omega$ 234.18314	+0.49458966	-0.86906102
<i>a</i>	2.2088583	$\Omega$ 186.20243	+0.82588943	+0.47377623
<i>e</i>	0.1263824	<i>i</i> 5.67191	+0.27071704	+0.14236936
<i>P</i>	3.28	<i>H</i> 13.5	<i>G</i> 0.15	

Residuals in seconds of arc

550421 675	0.1+	1.2+	861106 688	0.4+	0.0	910314 809	0.2-	0.4-
550421 675	0.4+	1.8+	861127 033	1.2-	0.3+	910314 809	0.1+	0.3-
760924 095	(3.0-	0.2+)	861128 033	1.7-	0.4-	910315 809	0.6-	0.4-
760925 095	0.0	1.7+	861204 688	0.8+	0.2+	910315 809	0.5-	0.4-
760928 095	2.1+	0.2+	861204 688	0.4-	0.2-	910315 809	0.4-	0.3-
760929 095	(3.8-	2.0-)	910310 809	0.9+	0.7+	910317 809	0.5-	0.5-
761025 095	(0.5+	3.0-)	910310 809	1.1+	0.7+	910317 809	0.1+	0.0
790731 095	0.5+	1.1+	910310 809	1.6+	0.7+	910317 809	0.6+	0.4+
820716 413	1.1-	1.1-	910312 809	0.0	0.6+	920726 801	0.6+	0.1-
820716 413	2.9-	0.1+	910312 809	0.2+	0.1+	920726 801	0.4+	0.2-
861004 095	1.1-	1.1+	910312 809	0.3+	0.1+	920729 801	0.6+	0.4+
861106 688	0.2-	0.1+	910314 809	0.6-	0.4-	920729 801	0.1+	1.0+

**1979 MZ<sub>2</sub> = 1990 FU<sub>2</sub>**Id. S. Nakano (*MPC* 16576)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	344.91601	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.24447624	$\omega$ 329.16802	-0.55827338	-0.82948283
<i>a</i>	2.5330569	$\Omega$ 154.75645	+0.76909225	-0.52509686
<i>e</i>	0.0820414	<i>i</i> 2.28481	+0.31117190	-0.19034578
<i>P</i>	4.03	<i>H</i> 14.0	<i>G</i> 0.15	

Residuals in seconds of arc

540408 675	0.2-	0.8-	790629 413	1.1+	1.8+	790823 675	1.9-	0.2+
540408 675	0.1+	0.5+	790724 675	1.6-	0.3-	900317 033	0.0	0.2-
790623 413	0.6+	0.4-	790724 413	1.3+	0.6-	900318 033	0.3-	0.6-
790624 413	1.0+	0.8-	790725 675	(7.1+	1.6+)	921023 010	0.5+	0.6-
790625 413	0.5-	0.1-	790727 675	(4.3+	0.8-)	921023 010	0.2-	0.3-

**1980 TA<sub>4</sub> = 1991 RT<sub>20</sub>**Id. K. Ichikawa (*MPC* 20010)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Bowell

<i>M</i>	74.37419	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.26553065	$\omega$ 87.83588	-0.27346694	-0.96127205
<i>a</i>	2.3973215	$\Omega$ 18.14714	+0.83304805	-0.25448147
<i>e</i>	0.0491576	<i>i</i> 6.31017	+0.48088125	-0.10580748
<i>P</i>	3.71	<i>H</i> 13.7	<i>G</i> 0.15	

Residuals in seconds of arc

540904 675	0.3-	0.8+	801010 675	0.3+	0.6+	910916 675	0.1+	1.1+
540904 675	0.0	0.5-	910914 675	1.2+	0.7-	910917 675	1.1-	1.1-
801008 675	0.3+	0.6-	910914 675	0.1+	0.5+	910917 675	0.6-	0.2-
801009 675	0.5-	0.2-	910916 675	0.2+	0.1+			

**1981 EK<sub>18</sub>**

Id. E. Bowell (1953, 1954 observations)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

M		(2000.0)		P		Q		Bowell	
<i>n</i>	0.17726531	$\omega$	279.52237	-0.71877166	-0.69511535				
<i>a</i>	3.1384862	$\Omega$	216.44324	+0.64645296	-0.66106148				
<i>e</i>	0.1309042	<i>i</i>	1.30115	+0.25586300	-0.28251082				
<i>P</i>	5.56	<i>H</i>	12.5	<i>G</i>	0.15				

Residuals in seconds of arc

530415 675	0.5+	0.0	810307 413	0.3-	0.1-	810408 413	1.1-	1.3+
530415 675	0.4-	0.3+	810311 413	0.3-	0.5+	810408 413	1.3+	0.3-
540701 675	0.9+	0.5-	810311 413	1.2+	0.7-	810411 413	0.8-	0.4-
540701 675	0.9-	0.6+	810316 413	1.5-	1.1+	810411 413	0.3-	0.9-
810209 413	0.2+	0.6+	810329 413	0.9-	0.5+	810430 413	0.7-	0.1-
810213 413	1.7+	0.6-	810329 413	0.7-	0.1+	810502 413	0.2-	0.1-
810302 413	1.3+	1.4-	810407 413	1.0-	0.5+			
810303 413	0.9+	0.8-	810407 413	1.0+	0.2+			

**1981 EO<sub>18</sub>**

Id. E. Bowell (1953, 1955 observations), S. J. Bus (1979 observations)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

M		(2000.0)		P		Q		Williams	
<i>n</i>	0.26907220	$\omega$	88.67752	+0.49404711	-0.86920828				
<i>a</i>	2.3762392	$\Omega$	331.68814	+0.78011334	+0.45326015				
<i>e</i>	0.0603144	<i>i</i>	2.39997	+0.38384975	+0.19756571				
<i>P</i>	3.66	<i>H</i>	14.0	<i>G</i>	0.15				

Residuals in seconds of arc

531001 675	0.0	0.4+	810302 413	0.1-	1.0+	810329 413	1.6-	0.1-
531001 675	0.1-	0.1-	810303 413	1.3-	0.5+	810329 413	1.6+	1.5-
550325 675	0.8-	1.0+	810303 413	0.8+	1.0-	810408 413	0.8-	1.2+
550325 675	1.1+	0.0	810307 413	0.5-	0.2-	810408 413	1.2+	0.5-
791018 675	1.0-	1.3-	810311 413	0.7-	0.4+	810411 413	0.2+	0.3-
791018 675	1.4+	0.5+	810311 413	1.3+	1.1-	810430 413	0.7+	0.2+
810209 413	0.8-	0.5+	810316 413	1.4-	0.6+	810502 413	0.1+	0.8-
810213 413	1.1+	0.0	810316 413	(2.9+	1.5-)			

**1981 EC<sub>23</sub>**

Id. E. Bowell (1950, 1953 observations)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

M		(2000.0)		P		Q		Bowell	
<i>n</i>	0.17635332	$\omega$	43.02346	+0.16719168	+0.98582846				
<i>a</i>	3.1492970	$\Omega$	236.60561	-0.90898046	+0.14872547				
<i>e</i>	0.0471686	<i>i</i>	0.94398	-0.38183959	+0.07760791				
<i>P</i>	5.59	<i>H</i>	13.9	<i>G</i>	0.15				

Residuals in seconds of arc

500814 675	0.0	0.7-	810303 413	(2.1+	1.9-)	810408 413	1.4+	0.2-
500814 675	0.0	0.7+	810307 413	1.5-	0.7+	810411 413	1.5-	0.3+
530415 675	0.1-	0.9+	810307 413	1.0+	0.7-	810411 413	1.2+	0.9-
530415 675	0.4+	0.0	810311 413	1.2+	0.8-	810430 413	0.2+	0.2+
810202 413	0.0	0.6+	810316 413	(2.5-	2.0+)	810502 413	0.0	0.3+
810209 413	0.1-	0.1-	810329 413	1.1-	0.4+			
810303 413	1.6-	0.1+	810329 413	0.6+	0.5-			

**1981 GG = 1979 WE<sub>8</sub>**Id. S. J. Bus (*MPC* 10544)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

M		(2000.0)		P		Q		Bowell	
<i>n</i>	0.22871587	$\omega$	128.85829	-0.95358439	-0.26356961				
<i>a</i>	2.6481252	$\Omega$	36.53272	+0.13818814	-0.81271222				
<i>e</i>	0.1799740	<i>i</i>	14.16051	+0.26754599	-0.51964402				
<i>P</i>	4.31	<i>H</i>	13.5	<i>G</i>	0.15				

Residuals in seconds of arc

550414 675	0.2-	0.1-	791125 675	0.1-	0.5+	810410 688	1.1-	0.2+
550414 675	0.2+	0.0	810405 688	1.4+	0.0	810503 688	1.6+	0.8+
791122 675	0.1-	0.1+	810405 688	1.9-	0.1+	810503 688	0.1-	1.0-
791124 675	0.1+	0.3-	810410 688	0.3+	0.1+			

**1981 QT<sub>3</sub> = 1968 FB = 1987 SS<sub>12</sub>**Id. C. M. Bardwell (*MPC* 13589)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

M		(2000.0)		P		Q		Bowell	
<i>n</i>	0.17552321	$\omega$	246.49210	-0.39569871	+0.91838031				
<i>a</i>	3.1592186	$\Omega$	0.19941	-0.80050086	-0.34471687				
<i>e</i>	0.0748489	<i>i</i>	5.91934	-0.45013432	-0.19428813				
<i>P</i>	5.62	<i>H</i>	12.0	<i>G</i>	0.15				

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

531001 675	0.3-	0.3+	810902 809	0.6+	0.4-	810906 809	0.0	0.0
531001 675	0.0	0.2+	810902 809	0.7+	0.7-	810906 809	0.0	0.6+
680325 095	0.0	0.1-	810902 809	0.5-	0.6-	810907 809	0.8+	1.6+
680325 020	(0.04+	0.00+)	810902 809	0.2-	1.3-	810907 809	1.0+	0.8+
680325 020	(0.03+	0.01+)	810902 809	0.7+	0.8-	810907 809	1.5+	1.1+
810827 809	0.7-	1.1-	810902 675	0.8-	0.3-	810907 809	0.0	0.9+
810827 809	1.2-	1.2-	810903 809	0.4-	1.0-	810907 809	0.0	0.7+
810827 809	0.6-	1.3-	810903 809	0.2-	0.2-	810907 809	0.2-	0.5+
810828 809	0.5-	0.1+	810903 809	0.1+	0.3+	810918 809	0.8-	1.2+
810828 809	0.1+	0.3-	810903 809	0.2+	0.3+	810918 809	0.9-	0.7+
810828 809	1.1+	0.4+	810903 809	0.3+	0.2+	810918 809	0.9-	0.2+
810828 809	0.3-	0.0	810903 809	0.6+	0.2+	870904 095	0.8-	1.9+
810828 809	0.3-	0.7+	810905 809	(1.9-	1.0-)	870917 809	0.1+	1.0-
810828 809	0.4-	0.5+	810905 809	(2.5-	1.2-)	870917 809	0.0	0.7-
810901 809	0.2+	0.7-	810905 809	(2.5-	1.8-)	870917 809	0.0	0.7-
810901 809	0.3+	0.3-	810905 809	0.2-	0.6+	870919 809	0.1+	0.0
810901 809	1.4+	0.3+	810905 809	0.7-	0.4+	870919 809	0.4+	0.1-
810901 809	0.2+	0.6-	810905 809	0.6-	0.0	870919 809	0.5+	0.1+
810901 809	0.3+	0.6-	810906 809	0.1-	0.0	870924 095	(0.8-	3.1+)
810901 809	0.1+	0.7-	810906 809	0.1-	0.0	870927 095	(4.2-	1.5+)
810901 675	0.7-	0.4-	810906 809	0.6+	0.5-			
810902 809	0.7+	0.3+	810906 809	0.1-	0.6+			

**1981 SZ<sub>7</sub> = 1981 UN<sub>10</sub> = 1981 WN<sub>4</sub> = 1971 UR<sub>4</sub>**Id. K. Hukurawa (d, *MPC* 10022), C. M. Bardwell (d, *ibid.*), L. D. Schmadel (d, *ibid.*), E. Bowell (1950, 1952, 1954 observations), G. V. Williams

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

M		(2000.0)		P		Q		Williams	
<i>n</i>	0.20450937	$\omega$	301.82629	+0.88653226	+0.44534561				
<i>a</i>	2.8531673	$\Omega$	32.23181	-0.30340203	+0.76423521				
<i>e</i>	0.2273525	<i>i</i>	13.59985	-0.34929610	+0.46648883				
<i>P</i>	4.82	<i>H</i>	12.0	<i>G</i>	0.15				

Residuals in seconds of arc

500317 675	0.1-	0.2-	711016 095	(3.0+	6.4-)	811124 095	1.3+	0.8+
500317 675	0.2+	0.2+	810929 095	0.9-	1.5-	811127 330	0.4+	1.0-
521211 675	0.3+	0.4-	811004 095	(0.7+	4.0-)	811201 330	0.7-	1.0+
521211 675	0.3+	0.4-	811023 095	(3.6+	0.6+)			
540226 675	0.1-	0.2-	811028 330	0.7-	1.4+			

**1982 UH<sub>8</sub> = 1982 TM = 1978 TM<sub>5</sub> = 1990 SG<sub>1</sub>**Id. S. Nakano (d, *MPC* 11231; *MPC* 17201), E. Bowell (k, *MPC* 17201),L. D. Schmadel (*ibid.*), G. V. Williams (*ibid.*)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	290.13883		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.24256607	$\omega$	37.26677	+0.79913429	+0.59429798
<i>a</i>	2.5463378	$\Omega$	286.02803	-0.57174459	+0.70485393
<i>e</i>	0.1117722	<i>i</i>	5.40433	-0.18572161	+0.38728651
<i>P</i>	4.06	<i>H</i>	12.9	<i>G</i>	0.15

Residuals in seconds of arc

530815 675	0.9-	0.8+	821021 095	0.8-	0.2+	900916 675	0.1+	0.8-
530815 675	0.5+	0.4+	821109 095	0.9+	0.9+	900917 675	0.2+	1.2-
781008 095	0.9-	0.3+	821111 095	0.3+	0.0	900917 675	0.4-	0.7+
821013 688	0.3-	0.0	821114 095	0.4+	1.6+	900918 675	(0.3+	2.6-)
821013 688	0.1-	0.3-	900916 675	0.8-	0.1+	900918 675	1.5+	1.5-

**1983 EB<sub>1</sub> = 1977 RD<sub>20</sub> = 1989 WE<sub>7</sub>**Id. S. J. Bus (*MPC* 18108), G. V. Williams

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	291.26435		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.25975684	$\omega$	329.70749	-0.71762756	-0.69633751
<i>a</i>	2.4327158	$\Omega$	166.14066	+0.64795096	-0.67346904
<i>e</i>	0.1229875	<i>i</i>	2.67269	+0.25528464	-0.24809982
<i>P</i>	3.79	<i>H</i>	13.3	<i>G</i>	0.15

Residuals in seconds of arc

511201 675	0.0	1.1-	830213 809	1.2-	0.4+	830219 809	0.4+	0.7-
511201 675	0.3+	0.7-	830213 809	0.7-	0.4+	830219 809	0.2+	0.4-
770909 675	0.2+	0.2+	830213 809	1.0-	0.3+	830304 046	0.9+	0.1+
770910 675	0.3-	0.1+	830217 809	1.1+	0.3+	830304 046	0.6-	0.5-
830211 809	0.5-	0.0	830217 809	1.1+	0.1+	891120 881	0.5-	2.1+
830211 809	0.3-	0.5+	830217 809	1.0+	0.7+	891120 881	0.2+	0.3-
830211 809	0.7-	0.1+	830219 809	0.4+	0.9-			

**1983 RT<sub>1</sub> = 1987 UE<sub>4</sub>**Id. T. Kobayashi (*MPC* 14474)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	260.89309		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.26662536	$\omega$	321.32074	+0.78446480	+0.62017298
<i>a</i>	2.3907551	$\Omega$	0.35260	-0.53833415	+0.68148398
<i>e</i>	0.1401514	<i>i</i>	6.28058	-0.30791448	+0.38854222
<i>P</i>	3.70	<i>H</i>	14.5	<i>G</i>	0.15

Residuals in seconds of arc

500814 675	0.1-	0.3-	830902 688	1.0+	0.2+	871025 399	(0.1-	3.0-)
500814 675	0.3+	0.2-	830906 688	1.1-	1.1-	871025 399	(2.6-	2.1-)
710416 675	0.1+	1.4+	830906 688	0.9+	0.4+	871028 399	0.4-	0.9+
710416 675	0.4+	0.5-	830906 095	1.0-	1.0+	871028 399	0.8+	0.8+
830902 688	(3.6+	0.2+)	871025 399	0.7-	0.6-	871028 399	0.1-	0.4-

**1985 UF<sub>3</sub> = 1989 TA<sub>8</sub> = 1993 MR<sub>1</sub>**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	314.57797		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.23500441	$\omega$	181.30314	+0.95985432	-0.27484343
<i>a</i>	2.6006708	$\Omega$	195.01532	+0.25927005	+0.94556869
<i>e</i>	0.1684618	<i>i</i>	12.49274	+0.10704540	+0.17424390
<i>P</i>	4.19	<i>H</i>	12.0	<i>G</i>	0.15

Residuals in seconds of arc

850921 095	0.8+	0.7+	851018 095	1.0+	1.7-	930623 675	0.2+	0.6-
851016 049	(2.5-	3.7+)	851112 095	0.1-	0.4+	930626 675	0.3+	0.5+
851016 049	2.1-	0.1+	891002 071	0.4+	1.1-	930626 675	(4.2-	3.3-)
851017 049	(2.9+	3.0+)	891002 071	0.4-	0.7+			
851017 049	0.5+	1.0+	930623 675	0.4-	0.3+			

**1987 DH<sub>6</sub> = 1983 GG<sub>2</sub> = 1991 BB<sub>1</sub>**Id. H. Kaneda (*MPC* 17959)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	85.48460		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.22264392	$\omega$	343.63758	-0.37823538	+0.92539287
<i>a</i>	2.6960555	$\Omega$	264.13286	-0.84657150	-0.35636179
<i>e</i>	0.1044942	<i>i</i>	1.39447	-0.37450592	-0.12905160
<i>P</i>	4.43	<i>H</i>	13.0	<i>G</i>	0.15

Residuals in seconds of arc

531001 675	0.2+	0.2+	870228 809	0.2-	0.2-	870306 809	0.5-	0.1+
531001 675	0.5-	1.4+	870228 809	0.1-	0.2-	870306 809	0.2-	0.2-
830410 095	1.2-	2.4+	870228 809	0.0	0.2-	870306 809	0.2-	0.2-
870223 809	0.3-	0.1+	870301 809	0.5+	0.2+	870307 809	1.1-	0.8-
870223 809	0.2+	0.2+	870301 809	0.6+	0.1+	870307 809	1.0-	0.1+
870223 809	0.4+	0.2-	870301 809	0.7+	0.3-	870307 809	0.5-	0.2-
870224 809	0.4-	0.6-	870302 809	0.2-	0.5+	910118 511	0.5+	0.0
870224 809	0.3-	0.5-	870302 809	0.3-	0.9+	910118 511	0.2-	1.4-
870224 809	0.1-	0.5-	870302 809	0.4-	0.9+	910118 511	1.7+	0.6-
870225 809	0.3+	0.2-	870303 809	0.7+	0.1-	910119 511	0.7-	0.9+
870225 809	0.5+	0.2-	870303 809	0.8+	0.1-	910119 511	1.0-	0.1-
870225 809	0.5+	0.2-	870303 809	1.0+	0.2-	910120 511	2.0-	0.1+
870226 809	0.3+	0.6+	870304 809	0.1+	0.8-	910120 511	0.0	0.2+
870226 809	0.5+	0.4+	870304 809	0.2+	0.7-	920503 809	0.6-	1.0-
870226 809	0.5+	0.3+	870304 809	0.1+	0.7-	920503 809	0.1+	0.8-
870227 809	0.3+	0.9+	870305 809	0.1-	0.6+	920503 809	0.8+	0.4-
870227 809	0.5+	0.5+	870305 809	0.1-	0.6+			
870227 809	0.5+	0.5+	870305 809	0.0	0.7+			

**1988 EB<sub>1</sub> = 1986 TH<sub>7</sub>**Id. S. Nakano (*MPC* 13161)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	146.31467		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.25986761	$\omega$	128.71737	-0.99668844	+0.06818630
<i>a</i>	2.4320245	$\Omega$	55.23540	-0.08057750	-0.90140560
<i>e</i>	0.1376762	<i>i</i>	3.09144	+0.01092800	-0.42757288
<i>P</i>	3.79	<i>H</i>	14.4	<i>G</i>	0.15

Residuals in seconds of arc

540408 675	0.5+	0.2-	880314 054	0.8-	0.2-	920425 809	0.6-	1.2+
540408 675	0.1-	1.1+	880318 054	0.0	0.3-	920425 809	0.3-	0.8+

861007 675	0.6+	0.5-	920424 809	0.2+	0.6+	920501 809	0.7+	1.4-
861007 675	0.1-	0.6+	920424 809	0.6+	0.7+	920501 809	1.1+	1.3-
861008 675	(6.0-	0.7-)	920424 809	0.9+	0.8+	920501 809	1.3+	1.8-
861008 675	1.0-	1.2+	920424 691	1.1-	0.4+	920504 809	(0.4+	3.5+)
880313 054	0.5+	0.3+	920424 691	1.2-	0.3+	920504 809	(0.7+	3.7+)
880313 054	0.2+	0.2-	920424 691	1.5-	0.0	920504 809	(0.8+	3.7+)

**1988 ED<sub>1</sub>**

Id. H. E. Holt (1993 observations)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	202.83368		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.23969991	$\omega$	335.60496	+0.44252520	-0.84984886
<i>a</i>	2.5665957	$\Omega$	87.01888	+0.86264639	+0.31623133
<i>e</i>	0.1390177	<i>i</i>	16.65566	+0.24497479	+0.42160960
<i>P</i>	4.11	<i>H</i>	11.0	<i>G</i>	0.15

Residuals in seconds of arc

880312 875	1.1+	0.1-	880323 875	(5.4-	5.6+)	880415 875	0.9+	0.0
880312 875	0.5+	1.4-	880409 875	(7.6-	1.0+)	880415 875	1.7-	1.1-
880318 875	0.1-	0.9+	880412 675	0.5-	0.5+	930615 675	0.4-	0.2+
880318 875	1.8-	0.5+	880414 675	1.7+	0.8+	930616 675	0.4+	0.3-

**1988 NC = 1982 BL<sub>12</sub> = 1993 MU**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	120.63675		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.37905178	$\omega$	36.52597	-0.78895795	-0.44587406
<i>a</i>	1.8909078	$\Omega$	111.63041	+0.39841322	-0.89503643
<i>e</i>	0.0619308	<i>i</i>	27.05242	+0.46777373	+0.01030084
<i>P</i>	2.60	<i>H</i>	14.0	<i>G</i>	0.15

Residuals in seconds of arc

820123 095	0.1+	0.4-	880717 675	0.6-	1.7+	930623 675	0.5-	1.3-
880712 675	(2.0+	4.9-)	880808 675	1.8-	0.3-	930715 675	0.4+	1.2+
880713 675	0.7+	1.9-	880808 675	1.5-	0.0	930715 675	0.6-	1.2+
880715 675	(5.6-	7.5-)	880810 675	1.2+	1.3-	930717 675	(0.3-	3.6+)
880715 675	1.2+	0.1-	930622 675	0.7+	1.9+	930717 675	(3.2+	1.5+)
880716 675	0.1-	0.9+	930622 675	0.3-	2.4-			
880717 675	0.7+	0.5+	930623 675	0.2+	0.5-			

**1988 RK<sub>0</sub> = 1993 OG**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	344.96611		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.19226505	$\omega$	177.31999	+0.79917527	+0.58478583
<i>a</i>	2.9730519	$\Omega$	145.65390	-0.55598038	+0.80708171
<i>e</i>	0.1398539	<i>i</i>	14.27168	-0.22848351	+0.08151475
<i>P</i>	5.13	<i>H</i>	11.5	<i>G</i>	0.15

Residuals in seconds of arc

880901 809	1.2+	1.3-	880908 809	1.0-	1.0+	880917 809	1.3+	1.0-
880902 809	1.6+	1.2-	880908 809	1.1-	1.1+	930716 675	1.0+	0.2+
880902 809	1.7+	1.1-	880909 809	1.6-	1.1+	930716 675	0.2-	1.1+
880905 809	0.1+	0.1+	880910 809	1.6-	1.1+	930720 675	0.1+	0.1+
880905 809	0.1+	0.0	880910 809	1.8-	1.1+	930720 675	0.8-	1.5-
880905 809	0.1-	0.1+	880917 809	1.2+	1.0-			
880907 809	1.0-	1.1+	880917 809	1.1+	1.0-			

**1989 CN**

Id. E. Bowell (1951, 1954 observations)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	253.97129		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.29736910	$\omega$	209.98006	+0.99991501	-0.00657566
<i>a</i>	2.2229967	$\Omega$	150.39034	+0.01035662	+0.92513427
<i>e</i>	0.1354963	<i>i</i>	1.30561	-0.00791965	+0.37958311
<i>P</i>	3.31	<i>H</i>	13.4	<i>G</i>	0.15

Residuals in seconds of arc

511201 675	0.0	0.6+	890207 809	0.2+	0.4+	890227 809	0.3+	0.2-
511201 675	0.1+	0.9-	890207 809	0.3+	0.6+	890227 809	0.4-	0.1+
540728 675	0.4+	0.0	890208 809	0.0	0.6+	890228 809	0.0	0.6-
540728 675	0.3-	0.1-	890208 809	0.0	0.8+	890228 809	0.1+	0.6-
890110 033	0.0	0.7+	890208 809	0.1-	0.6+	890228 809	0.3+	0.7-
890111 033	0.1-	0.4+	890210 809	0.8-	0.1+	890228 809	0.3+	0.4-
890112 033	0.3+	0.3-	890210 809	0.6-	0.0	890228 809	0.4+	0.1-
890204 399	(3.4-	1.0-)	890210 809	0.3-	0.1-	890228 809	0.4+	0.3+
890204 399	(5.4-	1.1-)	890211 399	(2.8-	0.6+)	890301 809	0.1+	0.1+
890204 399	(2.3-	0.9-)	890211 399	(1.4-	1.7+)	890301 809	0.0	0.2-
890204 399	(1.7-	1.3+)	890211 399	(3.0-	2.1+)	890302 809	0.4-	0.3-
890205 399	(2.6-	0.7-)	890212 809	0.4+	0.0	890302 809	0.2-	0.4-
890205 399	1.9-	0.1+	890212 809	0.3+	0.1+	890302 809	0.2-	0.3-
890205 399	0.4+	1.0-	890212 809	0.3+	0.1+			
890207 809	0.0	0.8+	890227 809	1.0+	0.5-			

**1989 LT**

Id. E. F. Helin (1993 observations)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	44.13161		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.26315968	$\omega$	247.79522	-0.36402695	+0.93138831
<i>a</i>	2.4116993	$\Omega$	0.85744	-0.84325790	-0.32937969
<i>e</i>	0.1432246	<i>i</i>	1.69668	-0.39547502	-0.15499946
<i>P</i>	3.75	<i>H</i>	13.5	<i>G</i>	0.15

Residuals in seconds of arc

890603 675	0.4+	0.3+	890630 675	0.3-	0.7+	930716 675	0.5+	0.9-
890603 675	0.1-	0.1-	890703 675	0.2+	0.6-	930716 675	0.3+	0.3-
890605 675	1.1-	0.0	890703 675	0.7+	0.3+	930720 675	0.1-	0.8+
890605 675	0.9+	1.0-	930715 675	0.2+	0.3+	930720 675	0.5-	0.8+
890630 675	0.6-	0.6+	930715 675	0.4-	0.9-			

**1989 PU = 1993 OA**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	348.42458		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.24363488	$\omega$	194.09038	+0.86286501	+0.38213871
<i>a</i>	2.5388853	$\Omega$	138.06226	-0.40242044	+0.91542165
<i>e</i>	0.2447692	<i>i</i>	29.66860	-0.30581328	-0.12638518
<i>P</i>	4.05	<i>H</i>	13.5	<i>G</i>	0.15

Residuals in seconds of arc

890802 675	0.7-	0.6+	930716 675	0.4-	1.0+	930720 675	0.7-	1.4-
890802 675	1.3+	0.0	930718 801	0.1+	0.1+	930721 801	0.4+	0.0
890829 675	0.7-	0.0	930718 801	0.2+	0.0	930721 801	0.3+	0.0
890901 675	0.1+	0.2-	930720 675	(3.3-	4.6+)			

**1990 OS<sub>1</sub> = 1993 FH<sub>1</sub>**Id. S. Nakano (*MPC* 22053)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Bowell

<i>M</i>	7.19601	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.27174340	$\omega$ 225.96410	-0.64758241	+0.76191703
<i>a</i>	2.3606415	$\Omega$ 3.72634	-0.64216737	-0.53796864
<i>e</i>	0.1874031	<i>i</i> 9.68199	-0.41019275	-0.36065522
<i>P</i>	3.63	<i>H</i> 13.4	<i>G</i> 0.15	

Residuals in seconds of arc

530415 675	0.1-	0.5-	900914 675	0.0	1.3-	930322 894	0.9+	1.1-
530415 675	0.5-	0.3-	900914 675	0.6+	1.0-	930322 894	0.8-	0.2+
900729 675	0.5+	0.2-	900916 675	0.1-	0.6+	930417 675	0.9+	0.1+
900729 675	0.2-	0.4+	900916 675	1.3+	0.0	930417 675	0.5-	0.0
900730 675	0.6-	0.1+	930320 894	0.3+	0.1+	930418 675	0.3+	0.5+
900730 675	1.0-	0.5+	930320 894	1.1-	0.0	930418 675	0.2+	0.4+

**1990 SY<sub>8</sub> = 1993 JN**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Marsden

<i>M</i>	340.39714	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.28053547	$\omega$ 240.00351	+0.45104914	+0.89034136
<i>a</i>	2.3110581	$\Omega$ 56.93536	-0.79124164	+0.43106001
<i>e</i>	0.1648073	<i>i</i> 4.24429	-0.41290598	+0.14655897
<i>P</i>	3.51	<i>H</i> 15.5	<i>G</i> 0.15	

Residuals in seconds of arc

900914 809	0.4-	0.3+	900922 809	1.7+	0.1+	930514 809	0.0	0.8+
900914 809	0.1+	0.8-	900925 809	1.2-	0.2-	930514 809	0.4-	0.4+
900914 809	0.8-	0.0	900925 809	0.6-	0.3-	930515 809	0.6+	0.0
900922 809	1.0+	0.5+	900925 809	0.7-	0.5-	930515 809	0.6-	1.2-
900922 809	0.8+	1.0+	930514 809	1.1+	1.3+	930515 809	0.7-	1.2-

**1990 UJ = 1990 WF<sub>12</sub> = 1986 RG<sub>9</sub> = 1993 LL<sub>1</sub>**Id. K. Ichikawa; 1990 UJ = 1978 RW<sub>10</sub> (*MPC* 17455) is invalid

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Ichikawa

<i>M</i>	308.71532	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.26589575	$\omega$ 183.36935	+0.94780001	+0.31630056
<i>a</i>	2.3951265	$\Omega$ 158.05943	-0.28996990	+0.90763084
<i>e</i>	0.1312567	<i>i</i> 6.20135	-0.13263710	+0.27597141
<i>P</i>	3.71	<i>H</i> 13.3	<i>G</i> 0.15	

Residuals in seconds of arc

860908 095	0.0	0.1-	901026 385	0.5-	0.5-	930615 675	2.3-	0.1+
901020 385	0.0	1.1-	901026 385	1.9-	0.7+	930615 675	0.4+	0.9-
901020 385	0.5+	0.1-	901122 385	0.7-	0.1-	930618 675	0.4-	0.4-
901021 385	1.8+	1.9+	901122 385	0.9+	1.0-	930620 675	0.3+	1.0+
901021 385	0.0	0.0	930614 675	0.3+	0.3-	930620 675	1.7+	0.4+

**1990 VY<sub>13</sub> = 1993 JP**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Marsden

<i>M</i>	155.36736	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.17868094	$\omega$ 31.81580	-0.05048594	-0.99718485
<i>a</i>	3.1218874	$\Omega$ 61.13119	+0.90252459	-0.06932296
<i>e</i>	0.1450653	<i>i</i> 3.62964	+0.42766872	+0.02857787
<i>P</i>	5.52	<i>H</i> 11.5	<i>G</i> 0.15	

Residuals in seconds of arc

901114 095	0.5+	0.4+	901123 372	0.4-	0.7+	930514 809	0.9-	0.5+
901114 095	0.6-	0.0	901123 372	(0.0	5.8+)	930515 809	0.5+	0.5-
901120 095	(3.2-	0.9-)	930514 809	0.2-	0.9+	930515 809	0.2-	1.3-
901120 095	0.5+	1.1-	930514 809	0.7+	0.6+	930515 809	0.1+	0.2-

**1991 BM<sub>2</sub> = 1975 EP<sub>4</sub> = 1989 TJ<sub>16</sub> = 1992 GK<sub>3</sub>**Id. H. Kaneda (*MPC* 18436), G. V. Williams

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	174.19057	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.18010153	$\omega$ 90.44969	-0.28020001	-0.95993835
<i>a</i>	3.1054493	$\Omega$ 15.82314	+0.87702160	-0.25706004
<i>e</i>	0.1582526	<i>i</i> 0.52822	+0.39028331	-0.11152803
<i>P</i>	5.47	<i>H</i> 13.0	<i>G</i> 0.15	

Residuals in seconds of arc

511201 675	0.8-	0.8-	891006 809	0.5+	0.9-	920404 809	0.2-	0.5-
511201 675	1.1-	1.4-	891006 809	0.6+	0.9-	920406 809	1.3-	0.8-
530415 675	0.9+	1.2-	910115 017	1.5-	1.0+	920406 809	1.0-	0.7-
530415 675	1.1+	1.4-	910117 046	0.6-	2.1-	920406 809	1.0-	0.1+
750315 095	(0.7+	3.2-)	910117 046	1.8-	0.2+	920424 691	0.4+	0.3-
891004 809	0.4+	0.3-	910118 046	2.2+	0.3+	920424 691	0.4+	0.6-
891004 809	1.0+	0.5-	910118 046	1.8+	0.4+	920424 691	0.3+	0.8-
891004 809	1.0+	0.3-	920404 809	0.7-	0.1+			
891006 809	0.4+	1.3-	920404 809	0.9-	0.8-			

**1991 LW = 1989 YH<sub>5</sub>**Id. G. V. Williams (*MPC* 18641)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Bowell

<i>M</i>	217.92185	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.23917652	$\omega$ 116.73982	-0.86357218	+0.45831871
<i>a</i>	2.5703387	$\Omega$ 91.18898	-0.50403443	-0.77318460
<i>e</i>	0.1808577	<i>i</i> 12.13715	-0.01387010	-0.43832584
<i>P</i>	4.12	<i>H</i> 13.3	<i>G</i> 0.15	

Residuals in seconds of arc

540701 675	0.3+	0.1+	910606 809	0.9+	0.8-	910614 675	(2.6+	0.7-)
540701 675	0.2-	0.2+	910606 809	0.8+	0.2+	910616 675	(3.3+	2.3-)
891228 511	0.3+	0.2-	910606 809	0.2+	0.1-	910616 675	1.3+	1.2-
891228 511	0.5-	0.9-	910608 809	0.3-	0.7+	910710 675	0.6-	0.3+
891229 511	0.4+	0.5-	910608 809	0.3-	0.3+	910710 675	0.2+	0.1+
891229 511	1.2-	1.1+	910608 809	0.7-	0.9+	910711 675	0.5-	0.7-
891229 511	1.1+	0.5-	910614 675	(2.5+	0.9-)	910711 675	1.8-	1.1-

**1991 PO<sub>13</sub> = 1988 VN<sub>6</sub>**Id. G. V. Williams (*MPC* 20508)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Bowell

<i>M</i>	210.27462	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.28690729	$\omega$ 334.65049	+0.80148381	+0.59777197
<i>a</i>	2.2767132	$\Omega$ 348.59118	-0.53289620	+0.70093987
<i>e</i>	0.1839938	<i>i</i> 4.95898	-0.27137677	+0.38903980
<i>P</i>	3.44	<i>H</i> 14.6	<i>G</i> 0.15	

Residuals in seconds of arc

500814 675	1.0+	0.0	910805 675	1.0-	1.2+	910904 691	0.3-	0.4-
500814 675	0.6-	0.8-	910808 675	0.4-	0.2-	910912 675	0.5+	0.4+
881103 033	0.1-	0.1+	910808 675	1.0-	0.0	910912 675	1.7+	0.3-

881104 033 0.0 0.1- 910904 691 0.1+ 0.3-  
 881104 033 0.1- 0.9+ 910904 691 0.1+ 0.1-

**1991 PS<sub>16</sub> = 1949 FS**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

		Williams			
<i>M</i>	303.68423	(2000.0)		<b>P</b>	<b>Q</b>
<i>n</i>	0.28774312	$\omega$	92.31570	-0.62282615	+0.77918424
<i>a</i>	2.2723022	$\Omega$	138.88422	-0.75362086	-0.57333816
<i>e</i>	0.1270957	<i>i</i>	6.14788	-0.21010283	-0.25328894
<i>P</i>	3.43	<i>H</i>	13.0	<i>G</i>	0.15

Residuals in seconds of arc

490331 012 0.0 0.5+ 910915 675 0.1- 0.5+ 921128 675 0.3+ 0.2+  
 530815 675 0.3+ 0.4- 910915 675 0.2- 0.7+ 921201 675 0.5- 0.2-  
 530815 675 0.1+ 1.1- 910917 675 0.1- 0.4+ 921201 675 (3.7+ 0.1+)  
 910807 675 0.6- 0.8- 910917 675 0.5+ 0.7+  
 910808 675 0.2- 0.2- 921128 675 0.4+ 1.2-

**1991 PC<sub>18</sub> = 1993 BX**Id. B. G. Marsden (*MPC* 21795)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

		Bowell			
<i>M</i>	76.77142	(2000.0)		<b>P</b>	<b>Q</b>
<i>n</i>	0.20973160	$\omega$	121.98455	+0.52102121	-0.84806328
<i>a</i>	2.8056067	$\Omega$	296.31715	+0.74226126	+0.50604134
<i>e</i>	0.0786259	<i>i</i>	6.18479	+0.42140850	+0.15719682
<i>P</i>	4.70	<i>H</i>	13.0	<i>G</i>	0.15

Residuals in seconds of arc

530815 675 0.1+ 0.3- 910914 675 0.8+ 0.5- 930116 010 0.5- 0.7-  
 530815 675 0.1+ 0.5- 910914 675 0.2+ 0.1- 930117 010 0.7- 0.7-  
 910808 675 0.8- 0.9- 921128 675 1.1+ 1.2+ 930117 010 0.7- 0.3-  
 910808 675 0.8- 0.9- 921128 675 2.1+ 0.4+ 930117 010 0.3- 0.2-  
 910912 675 0.1+ 1.1+ 930116 010 0.7- 0.5-  
 910912 675 0.6+ 0.9+ 930116 010 0.2- 0.3-

**1991 VX<sub>1</sub> = 1983 VP<sub>5</sub>**

Id. E. F. Helin (1993 observations), G. V. Williams

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

		Williams			
<i>M</i>	109.20677	(2000.0)		<b>P</b>	<b>Q</b>
<i>n</i>	0.36686392	$\omega$	298.76405	-0.93041038	-0.27134127
<i>a</i>	1.9325588	$\Omega$	226.71899	+0.31545787	-0.93511096
<i>e</i>	0.0712206	<i>i</i>	19.78274	-0.18660882	-0.22790659
<i>P</i>	2.69	<i>H</i>	13.0	<i>G</i>	0.15

Residuals in seconds of arc

831109 033 0.3+ 1.0+ 911208 675 1.3- 2.4- 930715 675 0.2- 1.2+  
 831110 033 0.2- 1.4+ 911208 675 0.8- 0.2- 930715 675 1.2+ 0.9+  
 911102 675 0.7+ 0.1- 930622 675 0.7- 1.1- 930717 675 0.1+ 0.2-  
 911102 675 1.6+ 0.1+ 930622 675 0.6- 1.1- 930717 675 0.4+ 0.6+  
 911104 675 0.4- 0.7- 930625 675 0.3- 0.3+  
 911104 675 0.2- 0.2+ 930625 675 0.2+ 0.5-

**1991 VV<sub>3</sub> = 1987 RJ<sub>2</sub> = 1987 SO<sub>13</sub>**Id. H. Kaneda (*MPC* 19521)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

		Bowell			
<i>M</i>	180.94853	(2000.0)		<b>P</b>	<b>Q</b>
<i>n</i>	0.26786110	$\omega$	347.34116	+0.79864725	-0.60024657
<i>a</i>	2.3833964	$\Omega$	49.63213	+0.55696558	+0.71005002
<i>e</i>	0.2108736	<i>i</i>	3.25076	+0.22792961	+0.36814810
<i>P</i>	3.68	<i>H</i>	14.0	<i>G</i>	0.15

Residuals in seconds of arc

540904 675 1.9- 0.7+ 911113 399 1.2- 0.1- 911205 399 0.4- 1.0-  
 540904 675 1.1+ 0.9+ 911113 399 0.9- 1.6+ 911205 399 1.0- 1.5-  
 870901 095 1.9+ 1.3- 911201 675 0.2+ 0.4+ 911207 399 1.7- 1.1+  
 870922 095 1.3- 0.2- 911201 675 0.6+ 0.4- 911207 399 0.3- 1.3+  
 911111 399 0.6+ 0.7+ 911203 675 1.0+ 0.8- 911209 399 0.4- 0.5+  
 911111 399 1.3+ 1.3- 911203 675 1.4+ 0.8- 911209 399 1.0+ 0.1-

**1992 CA**

Id. E. F. Helin (1993 observations)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

		Williams			
<i>M</i>	306.02256	(2000.0)		<b>P</b>	<b>Q</b>
<i>n</i>	0.36219271	$\omega$	240.63734	+0.87090622	-0.42045287
<i>a</i>	1.9491395	$\Omega$	142.51149	+0.44750807	+0.89246255
<i>e</i>	0.0834287	<i>i</i>	24.71338	-0.20312282	+0.16349307
<i>P</i>	2.72	<i>H</i>	13.5	<i>G</i>	0.15

Residuals in seconds of arc

920202 675 2.0+ 0.6+ 920204 675 1.2- 1.9- 930718 675 0.3+ 0.2+  
 920203 675 (1.9+ 3.6+) 920208 675 0.2- 1.2+ 930720 675 0.6- 0.6-  
 920203 675 0.0 2.1+ 920208 675 1.0- 0.5-  
 920204 675 0.5+ 1.5- 930718 675 0.3+ 0.3+

**1992 FB<sub>1</sub> = 1980 PH<sub>4</sub>**Id. K. Ichikawa (*MPC* 20343)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

		Bowell			
<i>M</i>	140.67172	(2000.0)		<b>P</b>	<b>Q</b>
<i>n</i>	0.22231080	$\omega$	346.19410	-0.84276192	-0.53259081
<i>a</i>	2.6987480	$\Omega$	160.99818	+0.51383647	-0.83920003
<i>e</i>	0.1036027	<i>i</i>	13.87837	+0.16038836	-0.10995610
<i>P</i>	4.43	<i>H</i>	12.5	<i>G</i>	0.15

Residuals in seconds of arc

540904 675 1.6- 0.7- 920323 400 1.6- 1.0+ 920407 400 0.6- 0.5+  
 540904 675 1.6+ 0.5+ 920323 400 1.0+ 0.8- 920407 400 0.1- 0.3+  
 800804 675 0.4- 0.4- 920324 400 1.3+ 1.3-  
 800805 675 0.4+ 0.3+ 920324 400 (1.1- 3.4-)

**1992 JP = 1955 YL = 1957 CB**

Id. E. Bowell, C. M. Bardwell, G. V. Williams

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

		Williams			
<i>M</i>	107.55469	(2000.0)		<b>P</b>	<b>Q</b>
<i>n</i>	0.17340927	$\omega$	67.02680	-0.93215483	+0.28073012
<i>a</i>	3.1848417	$\Omega$	128.48321	-0.32938880	-0.91970068
<i>e</i>	0.0652308	<i>i</i>	16.98301	+0.15030102	-0.27448363
<i>P</i>	5.68	<i>H</i>	11.5	<i>G</i>	0.15

Residuals in seconds of arc

551216 675 1.7- 0.3- 920506 400 1.7+ 0.8+ 920528 400 1.1+ 0.6+  
 551216 675 1.2+ 1.7+ 920506 400 2.1+ 0.9+ 920528 400 0.1- 1.1+  
 570204 024 0.0 1.0- 920519 400 (3.6+ 2.3+) 920731 801 1.9- 0.6-

920502 400 (4.7+ 0.8+) 920519 400 1.0- 1.9- 920731 801 2.1- 0.8-  
 920502 400 0.1- 1.0+ 920528 400 0.5- 0.1-

**1992 QM = 1983 VY<sub>3</sub>**

Id. E. Bowell (1949, 1953 observations), G. V. Williams

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	90.07314	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.20299672	$\omega$ 333.63913	+0.44865222	+0.89226832
<i>a</i>	2.8673235	$\Omega$ 322.95734	-0.80438413	+0.37844968
<i>e</i>	0.2882634	<i>i</i> 4.82590	-0.38945778	+0.24623785
<i>P</i>	4.86	<i>H</i> 12.5	<i>G</i> 0.15	

Residuals in seconds of arc

491222 675	0.3+	0.4+	920831 894	0.8+	1.6+	920920 399	0.3+	0.2+
491222 675	0.4-	1.0-	920831 894	0.4+	0.7+	920927 894	0.2-	1.3-
531001 675	0.1+	0.0	920901 894	0.9-	0.6+	921029 801	0.7+	0.2+
531001 675	0.2-	0.5+	920901 894	0.3-	0.5+	921029 801	0.3+	0.3-
831108 381	0.1+	0.6+	920903 894	0.6+	0.3+	921121 801	0.6-	0.2-
920825 894	1.2-	2.0-	920903 894	0.9+	0.5+	921121 801	0.1-	0.2+
920825 894	0.2-	1.7-	920920 399	0.5-	0.1+			

**1992 VM**

Id. R. H. McNaught (1984 observations)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	56.12041	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.21419693	$\omega$ 253.95612	+0.71422054	-0.69296405
<i>a</i>	2.7664780	$\Omega$ 149.69652	+0.69327530	+0.68107363
<i>e</i>	0.5090235	<i>i</i> 11.24981	+0.09622050	+0.23651541
<i>P</i>	4.60	<i>H</i> 15.0	<i>G</i> 0.15	

Residuals in seconds of arc

840401 413	2.2-	0.7-	921227 801	0.5-	0.2-	930226 658	0.3+	0.3-
840402 413	2.1+	0.9-	930104 413	0.4-	0.2+	930226 658	0.4+	0.2-
921103 413	0.5+	0.1+	930104 413	0.5-	0.1-	930226 658	0.8-	0.6-
921103 413	0.9-	0.4-	930105 413	0.3-	0.1+	930226 658	0.4+	0.1-
921107 413	1.1+	0.0	930105 413	0.2-	0.4+	930301 413	0.5+	0.3+
921124 413	1.8+	1.4-	930106 413	0.0	0.3+	930301 413	0.2+	0.4+
921125 413	0.3+	0.3+	930106 413	0.9-	0.7-	930301 413	1.3+	0.2-
921128 413	0.1+	0.1-	930106 413	0.1-	0.5+	930302 413	0.1-	0.9-
921130 413	1.1+	1.0-	930119 801	0.3+	0.6+	930302 413	0.5+	0.3+
921209 413	0.8-	0.5-	930119 801	0.3+	0.0	930303 413	0.6+	0.1+
921209 413	0.8-	0.6-	930126 801	0.5-	0.9+	930303 413	0.2+	0.4+
921212 413	0.8-	0.2+	930126 801	0.1+	0.0	930323 801	0.7-	0.3+
921212 413	0.8-	0.3+	930225 801	0.6-	0.1-	930323 801	0.4-	0.6+
921222 801	0.0	1.6+	930225 801	0.4+	0.7-	930511 413	0.3+	0.4-
921222 801	0.0	1.7+	930226 801	0.9+	0.0	930511 413	0.9-	0.7-
921227 801	0.5-	0.9-	930226 801	0.2+	0.3-			

**1992 YE = 1981 QL<sub>4</sub>**

Id. K. Ichikawa (MPC 21946)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Bowell

<i>M</i>	103.57463	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.28378304	$\omega$ 98.79718	+0.76521763	-0.63564307
<i>a</i>	2.2933927	$\Omega$ 300.73946	+0.53412829	+0.71530301
<i>e</i>	0.1120167	<i>i</i> 6.81420	+0.35937301	+0.29034375
<i>P</i>	3.47	<i>H</i> 14.0	<i>G</i> 0.15	

Residuals in seconds of arc

530815 675	0.1-	0.0	921218 885	0.4-	0.5+	921224 885	0.5-	1.0+
530815 675	0.1+	0.0	921218 885	0.2+	0.7-	921224 885	0.2+	1.1-
810830 675	0.6-	0.2+	921221 885	0.4-	0.2-			
810831 675	0.6+	0.3-	921221 885	0.8+	0.5+			

**1993 BW<sub>3</sub>**

Id. R. H. McNaught (1976, 1981 observations)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	111.06411	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.31312489	$\omega$ 74.24070	+0.79255254	-0.55972355
<i>a</i>	2.1477859	$\Omega$ 318.93273	+0.31417435	+0.71493729
<i>e</i>	0.5289079	<i>i</i> 21.61642	+0.52264228	+0.41901578
<i>P</i>	3.15	<i>H</i> 14.5	<i>G</i> 0.15	

Residuals in seconds of arc

760604 413	0.0	0.1-	930216 474	1.3+	0.8+	930302 413	0.3-	0.1+
810425 413	(4.8+ 0.3-)		930217 657	0.5-	0.7-	930302 413	0.5-	0.1+
810425 413	0.4+	0.1+	930217 657	0.3+	0.0	930303 413	0.5-	0.2+
930130 413	(3.1- 0.7-)		930217 657	0.1-	0.4+	930303 413	0.4-	0.1-
930130 413	(2.5+ 0.2+)		930217 474	1.8+	0.3+	930315 474	2.0+	0.1-
930202 413	0.0	0.3-	930217 474	0.5+	1.1+	930315 474	(2.3+ 0.5+)	
930202 413	1.2-	0.3-	930218 801	0.0	0.3+	930323 801	0.4-	0.2+
930202 413	1.9-	0.5-	930218 801	0.2-	0.1-	930323 801	0.7-	0.5-
930202 413	0.8+	0.2-	930221 801	0.3-	0.3+	930323 474	0.1-	0.3+
930203 413	0.9-	0.0	930221 801	0.3+	0.8-	930323 474	0.6+	0.9+
930214 413	2.0+	0.5-	930222 658	0.7-	0.4-	930510 413	0.1-	0.4-
930215 474	0.6+	0.5+	930222 658	0.8-	0.5-	930510 413	0.0	0.5-
930215 474	(3.2+ 0.2+)		930301 413	0.5-	0.2+	930511 413	0.6-	0.4-
930216 474	0.6+	0.3+	930301 413	0.3-	0.1+	930511 413	0.5-	0.2-

**1993 GY = 1987 WG<sub>4</sub>**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	54.00893	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.24017187	$\omega$ 90.08215	-0.87209126	-0.43199159
<i>a</i>	2.5632322	$\Omega$ 64.32654	+0.28170713	-0.82731102
<i>e</i>	0.1113875	<i>i</i> 14.77647	+0.40012239	-0.35908181
<i>P</i>	4.10	<i>H</i> 12.5	<i>G</i> 0.15	

Residuals in seconds of arc

871123 046	0.2-	0.8+	930414 675	0.5+	0.6+	930524 675	0.9+	0.4-
871123 046	2.6+	1.1+	930414 675	0.5+	1.0+	930524 675	0.0	1.2-
871126 046	1.4-	0.9-	930416 675	0.3-	0.3-	930623 691	0.7-	0.2+
871126 046	0.3+	1.2-	930416 675	0.5-	0.3+	930623 691	0.9-	0.2-
871126 046	2.4-	0.6-	930523 675	0.5+	0.4+	930623 691	1.0-	0.2-
871127 046	1.5+	0.1+	930523 675	0.1+	1.1-			

**1993 HK<sub>1</sub> = 1979 YT<sub>3</sub> = 1982 KG = 1990 UO<sub>11</sub> = 1990 VB<sub>2</sub>**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	316.87691	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.26781940	$\omega$ 96.60751	+0.74312408	+0.62587425
<i>a</i>	2.3836438	$\Omega$ 224.99032	-0.66502319	+0.73001955
<i>e</i>	0.3269556	<i>i</i> 19.56427	+0.07423443	+0.27450477
<i>P</i>	3.68	<i>H</i> 12.5	<i>G</i> 0.15	



Residuals in seconds of arc

791218 095	0.8+	0.9+	901115 403	0.4-	1.7-	930418 675	0.1+	0.5+
820519 801	0.8-	0.7+	901115 095	(11.7+	11.5+)	930521 675	0.4+	0.5+
901017 095	0.7-	0.0	901115 095	1.4+	1.5+	930521 675	0.4+	0.4-
901017 095	(4.7-	17.0-)	901122 403	1.7-	0.8+	930524 675	0.4+	0.1-
901114 403	1.6+	0.5+ Y	901122 403	(2.8-	0.0 )	930524 675	1.5+	0.2+
901114 403	(3.0-	4.0-)Y	930417 675	1.1-	1.4-			
901115 403	0.9-	1.9- Y	930417 675	0.8-	0.2-			

**1993 HQ<sub>1</sub>**

Id. R. H. McNaught (1977, 1982 observations)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	28.84757		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.35467621	$\omega$	198.84047	-0.90598801	+0.42169017
<i>a</i>	1.9765813	$\Omega$	6.47323	-0.33398957	-0.65852085
<i>e</i>	0.0702332	<i>i</i>	19.11629	-0.26007054	-0.62331989
<i>P</i>	2.78	<i>H</i>	15.5	<i>G</i>	0.15

Residuals in seconds of arc

770716 413	0.3-	1.0-	820429 413	1.5-	1.7-	930510 413	0.3+	0.5+
770720 413	0.6-	1.3+	930417 413	1.0+	0.3+	930511 413	0.1+	0.1-
770722 413	0.4+	0.0	930417 413	1.7+	1.3+	930511 413	0.1+	0.4-
770722 413	0.5+	0.7+	930418 413	0.4-	0.5+	930701 413	0.5-	0.3-
771006 413	0.4-	1.1-	930418 413	0.3-	0.4+	930701 413	0.1-	0.1+
771006 413	1.2-	1.9+	930429 413	0.5+	0.2+			

**1993 HV<sub>1</sub>**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	286.48881		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.17376845	$\omega$	258.15736	+0.33296701	+0.90970348
<i>a</i>	3.1804515	$\Omega$	34.71375	-0.60196147	+0.40762385
<i>e</i>	0.1316449	<i>i</i>	25.83175	-0.72579291	+0.07926145
<i>P</i>	5.67	<i>H</i>	14.5	<i>G</i>	0.15

From 14 observations 1993 Apr. 19–July 7, mean residual 0<sup>u</sup>.52.

**1993 HW<sub>1</sub>**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	0.50630		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.28280396	$\omega$	176.71431	-0.29452975	+0.93219972
<i>a</i>	2.2986829	$\Omega$	76.07705	-0.88165191	-0.18012809
<i>e</i>	0.2048157	<i>i</i>	12.51755	-0.36870331	-0.31393878
<i>P</i>	3.49	<i>H</i>	13.0	<i>G</i>	0.15

From 10 observations 1993 Apr. 23–July 19, mean residual 0<sup>u</sup>.57.

**1993 KL = 1991 VK<sub>16</sub>**

Id. E. Bowell (1953 observations), G. V. Williams

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	36.65023		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.27291445	$\omega$	149.72806	-0.93415488	+0.18760423
<i>a</i>	2.3538839	$\Omega$	44.58550	-0.34594161	-0.68493231
<i>e</i>	0.2186573	<i>i</i>	25.62399	+0.08763021	-0.70404005
<i>P</i>	3.61	<i>H</i>	14.0	<i>G</i>	0.15

Residuals in seconds of arc

530314 675	0.2-	0.5-	930424 675	0.4+	0.8+	930603 670	0.7+	0.4+
530314 675	0.1-	1.0-	930426 675	0.1+	1.5-	930603 670	2.1-	0.2-

911106 691	0.9-	1.2+	930426 675	1.4+	1.5+	930608 670	0.0	1.1+
911106 691	1.1-	1.0+	930519 675	0.6-	0.0	930608 670	1.8+	0.0
911106 691	1.1-	1.0+	930520 675	1.2-	2.0-	930608 670	0.5+	0.5-
930422 675	2.1+	0.5+	930520 675	0.4+	1.4+	930613 674	0.8-	0.5+
930424 675	0.0	1.2+	930603 670	0.1+	0.6-	930613 674	0.6-	0.4+

**1993 LD<sub>1</sub> = 5107 T-2**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	301.89984		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.18445506	$\omega$	336.48758	+0.68022145	+0.72880857
<i>a</i>	3.0563917	$\Omega$	336.13507	-0.63804849	+0.53610248
<i>e</i>	0.1134911	<i>i</i>	11.16453	-0.36082253	+0.42594858
<i>P</i>	5.34	<i>H</i>	13.8	<i>G</i>	0.15

Residuals in seconds of arc

730919 675	(5.5+	6.0+)	730924 675	1.6-	1.1+	930613 413	0.4+	0.0
730920 675	0.6-	0.2-	730925 675	0.3+	0.3-	930614 413	1.0-	1.5+
730920 675	0.7+	0.5-	730925 675	0.4+	0.6-	930615 413	0.5+	0.5-
730924 675	0.8+	0.5+	930613 413	0.4-	0.3+	930618 413	0.6+	1.3-

**1993 MF**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	359.90387		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.25775190	$\omega$	74.75058	+0.71027125	+0.69319839
<i>a</i>	2.4453149	$\Omega$	241.18557	-0.68751328	+0.64579196
<i>e</i>	0.5318777	<i>i</i>	8.03271	-0.15112985	+0.32004490
<i>P</i>	3.82	<i>H</i>	14.5	<i>G</i>	0.15

From 144 observations 1993 June 22–Aug. 6, mean residual 0<sup>u</sup>.56.

**1993 MK = 1973 AF<sub>1</sub> = 1992 AJ<sub>6</sub>**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	323.29344		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.36364616	$\omega$	236.89646	+0.91322118	+0.13886437
<i>a</i>	1.9439424	$\Omega$	112.48457	-0.05737564	+0.97459255
<i>e</i>	0.0920968	<i>i</i>	24.49333	-0.40340441	+0.17574426
<i>P</i>	2.71	<i>H</i>	14.0	<i>G</i>	0.15

Residuals in seconds of arc

730101 095	0.2+	0.8-	930617 675	0.1-	0.6-	930720 675	0.2+	0.8-
920101 675	0.5-	0.8+	930618 675	0.7+	0.3+	930720 675	0.5+	1.0-
920101 675	0.4+	0.3-	930715 675	0.2-	2.3+			
930617 675	1.1-	0.4-	930715 675	0.2-	0.3-			

**1993 MA<sub>1</sub> = 1986 YJ<sub>1</sub> = 1990 VF<sub>4</sub> = 1990 VD<sub>15</sub>**

Id. G. V. Williams, S. Nakano (d, MPC 20913)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

<i>M</i>	358.18752		(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.21690988	$\omega$	207.93312	-0.12298066	+0.98351674
<i>a</i>	2.7433623	$\Omega$	55.29356	-0.87783140	-0.04550412
<i>e</i>	0.1166924	<i>i</i>	9.27901	-0.46291228	-0.17499773
<i>P</i>	4.54	<i>H</i>	12.0	<i>G</i>	0.15

Residuals in seconds of arc

861230 675	0.5+	0.1-	901115 095	(7.8+	0.8+)	930616 675	0.1+	0.7-
861230 675	0.5-	0.1+	901115 095	1.8+	1.9+	930616 675	0.9-	0.4-
870101 675	(13.6+	1.1-)	901116 403	2.4+	0.7-	Y 930618 675	1.0+	0.0
870101 675	(19.5+	2.5-)	901116 403	0.1+	1.1-	Y 930618 675	1.1-	0.0

901115 403 0.1- 0.6- Y 901117 399 1.2- 1.0+ 930620 675 0.8+ 1.0+  
 901115 403 2.2- 1.0- Y 901117 399 0.8- 0.4+

**1993 ME<sub>1</sub>**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Bardwell

<i>M</i>	13.05297	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.23003422	$\omega$ 359.52856	-0.31210654	+0.87398613
<i>a</i>	2.6379977	$\Omega$ 252.24757	-0.87036613	-0.42020827
<i>e</i>	0.4851690	<i>i</i> 23.02285	-0.38085735	+0.24407632
<i>P</i>	4.28	<i>H</i> 15.5	<i>G</i> 0.15	

From 34 observations 1993 June 23-Aug. 6, mean residual 0<sup>''</sup>.60.**1993 MS<sub>1</sub> = 1974 SZ<sub>3</sub> = 1982 UA<sub>8</sub>**

Id. M. Nassir (1992 observations), G. V. Williams

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	81.58053	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.25302572	$\omega$ 350.19075	-0.77139005	+0.61877911
<i>a</i>	2.4756710	$\Omega$ 229.10369	-0.56972369	-0.77553113
<i>e</i>	0.1325419	<i>i</i> 11.33435	-0.28350012	-0.12515546
<i>P</i>	3.90	<i>H</i> 12.0	<i>G</i> 0.15	

Residuals in seconds of arc

740922 095 0.1+ 0.9- 930623 675 1.1+ 0.0 930718 675 0.4- 0.7+  
 821021 095 0.2+ 0.6- 930623 675 0.2+ 1.2- 930718 675 0.3- 0.1+  
 920502 675 0.3- 0.7- 930626 675 0.8+ 0.5-  
 920502 675 0.3- 1.1- 930626 675 1.2- 0.3+

**1993 OD = 1992 AY<sub>2</sub>**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	279.30253	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.40128074	$\omega$ 104.61643	+0.63409883	-0.71533984
<i>a</i>	1.8204154	$\Omega$ 302.15262	+0.50567111	+0.67087831
<i>e</i>	0.1501976	<i>i</i> 20.29162	+0.58499179	+0.19547689
<i>P</i>	2.46	<i>H</i> 13.5	<i>G</i> 0.15	

Residuals in seconds of arc

920101 675 0.2- 0.3+ 930716 675 1.0+ 0.0 930724 675 1.6- 1.8+  
 920101 675 0.7- 0.2+ 930720 675 0.4+ 0.7- 930726 675 1.5+ 0.9-  
 920110 675 0.1+ 0.1- 930720 675 1.3- 0.2+ 930726 675 0.1+ 0.1+  
 920110 675 0.7+ 0.4- 930723 675 0.5- 0.4-  
 930716 675 0.2+ 0.2- 930723 675 0.4+ 0.0

**3066 P-L = 1978 TK<sub>6</sub> = 1978 TF<sub>8</sub> = 1987 TZ**Id. H. Kaneda (*MPC* 16438)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Bowell

<i>M</i>	107.66564	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.22010669	$\omega$ 168.09564	+0.94303755	-0.31313763
<i>a</i>	2.7167347	$\Omega$ 210.88913	+0.28445148	+0.93408443
<i>e</i>	0.0313820	<i>i</i> 12.64243	+0.17253272	+0.17155494
<i>P</i>	4.48	<i>H</i> 13.3	<i>G</i> 0.15	

Residuals in seconds of arc

540408 675 (3.9- 1.4+) 600925 675 0.6- 0.1+ 781002 095 (4.2- 15.5+)  
 540408 675 0.1- 0.1- 600927 675 1.1+ 0.0 781008 095 (3.9- 6.4+)  
 540531 675 0.2- 0.6+ 600928 675 0.0 0.3+ 871002 095 0.1+ 0.9-  
 540531 675 0.3+ 1.0- 600929 675 0.6- 0.2+

**4019 P-L = 1975 TH<sub>1</sub> = 1993 JH<sub>1</sub>**

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Marsden

<i>M</i>	318.13902	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.26328096	$\omega$ 54.90576	+0.73432038	+0.67776515
<i>a</i>	2.4109586	$\Omega$ 262.39315	-0.63446175	+0.66565181
<i>e</i>	0.1034781	<i>i</i> 2.16952	-0.24131279	+0.31231726
<i>P</i>	3.74	<i>H</i> 14.0	<i>G</i> 0.15	

Residuals in seconds of arc

600924 675 0.5- 0.5+ 601022 675 0.4+ 1.0- 930514 809 0.2+ 0.8+  
 600925 675 0.1+ 0.6+ 601024 675 0.3+ 0.2+ 930514 809 0.3- 0.4+  
 600926 675 0.1- 0.3+ 601026 675 0.5+ 0.7- 930515 809 0.6- 0.7-  
 600928 675 0.1+ 0.3+ 751003 095 0.1+ 0.2- 930515 809 0.1+ 0.1-  
 601017 675 0.8- 0.3- 930514 809 0.2+ 0.2- 930515 809 0.4+ 0.6-

**4247 P-L = 1989 GC<sub>2</sub>**Id. T. Kobayashi (*MPC* 14960)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Marsden

<i>M</i>	52.35673	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.26116836	$\omega$ 302.96762	-0.92489292	+0.37959824
<i>a</i>	2.4239427	$\Omega$ 259.34938	-0.34100494	-0.85355391
<i>e</i>	0.1289944	<i>i</i> 1.27510	-0.16819253	-0.35686259
<i>P</i>	3.77	<i>H</i> 15.0	<i>G</i> 0.15	

Residuals in seconds of arc

600924 675 0.7- 0.2+ 890403 809 0.6- 1.7- 890410 809 0.8- 0.1+  
 600925 675 0.1- 0.6- 890405 809 0.0 0.5- 930514 809 0.2+ 0.0  
 600926 675 0.7+ 0.2+ 890405 809 0.1+ 0.3- 930514 809 0.6- 0.3+  
 600928 675 0.9+ 0.9+ 890405 809 0.4+ 0.7- 930514 809 0.7- 0.5-  
 601017 675 0.3+ 0.1- 890408 809 1.5+ 1.1+ 930515 809 0.0 0.1+  
 601022 675 1.2- 0.2- 890408 809 0.8+ 1.7+ 930515 809 0.3+ 0.6-  
 601026 675 0.2- 0.3- 890408 809 1.0+ 1.6+ 930515 809 0.7+ 0.4+  
 890403 809 0.6- 0.9- 890410 809 0.1+ 0.9+  
 890403 809 1.4- 1.2- 890410 809 0.2- 0.2+

**7622 P-L = 1990 TL = 1992 FG<sub>3</sub>**Id. R. Nagata (*MPC* 17463), G. V. Williams

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Williams

<i>M</i>	313.60176	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.29639882	$\omega$ 323.11647	+0.99126845	-0.10376432
<i>a</i>	2.2278455	$\Omega$ 43.06371	+0.13008631	+0.87041814
<i>e</i>	0.1809201	<i>i</i> 6.84350	-0.02155034	+0.48125381
<i>P</i>	3.33	<i>H</i> 14.0	<i>G</i> 0.15	

Residuals in seconds of arc

520131 675 1.6+ 1.1+ 901012 413 0.3- 0.6+ 901113 413 0.0 1.9-  
 520131 675 0.1- 0.5+ 901012 413 0.2- 0.5+ 920324 399 1.1- 1.1-  
 601022 675 0.4- 0.6+ 901013 413 1.0+ 0.2- 920324 399 (1.0- 4.7-)  
 601025 675 0.3- 0.4+ 901016 413 0.4+ 0.3-  
 601026 675 0.3- 0.3+ 901028 413 0.1+ 0.2-

**2312 T-1 = 3115 T-2**Id. G. V. Williams (*MPC* 19322)

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Bowell

<i>M</i>	351.44448	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.20304828	$\omega$ 10.26263	+0.68726359	-0.72592411
<i>a</i>	2.8668381	$\Omega$ 36.33183	+0.66325487	+0.61221029
<i>e</i>	0.0546702	<i>i</i> 2.56489	+0.29624608	+0.31342103
<i>P</i>	4.85	<i>H</i> 13.8	<i>G</i> 0.15	

Residuals in seconds of arc

510204 675	0.5+	0.4+	710402 675	0.8+	1.2-	730925 675	0.4+	1.5-
510204 675	0.4-	0.0	710416 675	0.2+	0.8+	730925 675	0.0	1.0-
710324 675	(2.9+	2.2-)	710416 675	0.5-	1.6+	730929 675	0.8+	0.0
710324 675	0.4+	1.9-	710513 675	1.1+	0.9+	730929 675	0.6+	0.3-
710325 675	0.3-	1.0-	710514 675	0.5+	0.3-	730930 675	0.7+	0.9-
710325 675	1.0-	0.4+	730919 675	(0.1+	2.8+)	730930 675	0.7+	0.6-
710326 675	1.9-	0.9+	730919 675	0.9-	1.8+	731004 675	(3.0+	0.3-)
710326 675	(1.4-	2.3-)	730920 675	0.8-	0.8+	731004 675	(2.8+	0.9-)
710326 675	0.9-	0.8-	730924 675	0.1-	0.2+	731005 675	(2.4+	0.6-)
710327 675	1.4+	0.4-	730924 675	1.0-	0.8+	731005 675	(2.7+	2.0-)

2053 T-3 = 1993 OM<sub>2</sub>

Epoch 1993 Aug. 1.0 TT = JDT 2449200.5

Marsden

<i>M</i>	336.94996	(2000.0)	<b>P</b>	<b>Q</b>
<i>n</i>	0.17782366	$\omega$ 61.56584	+0.89800440	+0.43434609
<i>a</i>	3.1319130	$\Omega$ 272.61559	-0.42426524	+0.81253297
<i>e</i>	0.1515457	<i>i</i> 4.03112	-0.11656372	+0.38875911
<i>P</i>	5.54	<i>H</i> 14.0	<i>G</i> 0.15	

Residuals in seconds of arc

771007 675	1.9+	0.5+	771017 675	0.1-	0.8+	930720 010	1.6-	0.4+
771011 675	0.0	0.5+	771017 675	0.3-	1.0+	930721 010	1.7-	2.4+
771011 675	0.7-	0.8+	771021 675	0.5+	0.9-	930723 010	2.1+	0.5+
771012 675	1.7-	0.7-	771021 675	0.9-	0.4+	930723 010	0.3+	1.2-
771012 675	0.0	0.0	771022 675	0.4+	0.8+	930723 010	1.4+	1.6-
771016 675	0.2+	2.0-	771022 675	1.3+	0.1-			
771016 675	0.3-	1.1-	930720 010	0.6-	0.5-			

Object	<i>H</i>	Epoch	<i>M</i>	$\omega$	$\Omega$	<i>i</i>	<i>e</i>	<i>a</i>	Obs.	Opp.	Arc	rms	Computer	MPC	Object
A920 TA	13.0	930801	348.49351	82.21917	249.37772	4.02754	0.2606377	2.4602789	16	5	1920-1993	1.15	Williams	21963	A920 TA
1931 FC	13.5	930801	84.14494	223.86333	353.19081	5.33459	0.1257610	2.2613852	22	7	1931-1993	1.06	Williams	21963	1931 FC
1931 VS	13.0	930801	322.77298	12.83776	37.08752	14.27014	0.1771059	2.5824139	24	3	1931-1989	0.82	Bowell	22072	1931 VS
1938 HA	11.9	930801	259.28563	219.29338	40.02654	11.20564	0.2118031	3.1418391	22	5	1938-1989	0.99	Bowell	18617	1938 HA
1942 CG	12.0	930801	219.20387	357.76627	98.25168	9.16771	0.1613957	2.5650084	16	4	1942-1993	0.91	Bardwell	21963	1942 CG
1949 PN	11.5	930801	8.45293	7.28311	325.92739	11.97266	0.1743282	2.6761373	11	3	1949-1993	0.91	Bardwell	22072	1949 PN
1950 DO	11.0	930801	290.51938	108.52556	286.04232	2.80404	0.0566082	2.7547150	21	6	1950-1993	0.90	Williams	21963	1950 DO
1951 SY	15.0	930801	26.16711	199.90317	169.75658	20.57736	0.3023284	2.5879641	16	5	1951-1992	0.73	Williams	20803	1951 SY
1951 WH	13.7	930801	205.15995	337.13914	48.40587	5.33781	0.1752268	2.2304553	17	5	1951-1993	0.65	Bowell	22429	1951 WH
1955 EH	13.0	930801	234.07956	277.77457	152.03009	7.00978	0.1522756	2.3792748	20	6	1955-1993	1.04	Williams	21963	1955 EH
1965 UA	14.1	930801	342.59384	351.22057	2.43064	4.69183	0.2258091	2.3144632	14	5	1953-1986	0.95	Bowell	21963	1965 UA
1969 TM <sub>1</sub>	14.2	930801	166.28671	357.87134	40.41914	7.42066	0.1329594	2.3781032	8	3	1954-1991	0.81	Bowell	21096	1969 TM <sub>1</sub>
1969 TX <sub>5</sub>	11.4	930801	158.86787	240.17757	24.45600	22.36729	0.0721807	3.2063751	13	5	1955-1992	0.73	Bowell	21963	1969 TX <sub>5</sub>
1971 SN <sub>2</sub>	12.0	930801	321.32830	262.35968	83.00473	2.36740	0.1743379	3.1695905	16	5	1971-1993	0.99	Williams	22429	1971 SN <sub>2</sub>
1971 UT <sub>1</sub>	12.8	930801	339.89751	184.15548	171.89721	2.33614	0.2155937	3.1545516	17	6	1954-1992	0.58	Bowell	22072	1971 UT <sub>1</sub>
1973 ST <sub>3</sub>	14.4	930801	137.24958	50.18325	359.24106	5.90808	0.2298733	2.3648966	25	4	1953-1991	0.82	Bowell	21963	1973 ST <sub>3</sub>
1974 QM <sub>2</sub>	14.3	930801	270.10757	297.24528	341.87567	5.86459	0.1806322	2.2471917	15	6	1953-1991	0.60	Bowell	22072	1974 QM <sub>2</sub>
1975 QC	14.0	930801	336.93818	171.50710	166.36452	6.83310	0.1375789	2.3481573	31	5	1975-1993	0.92	Bardwell	22429	1975 QC
1975 SR	15.0	930801	302.77392	164.94984	190.38183	2.41021	0.2489194	2.3940590	32	3	1975-1993	0.81	Williams	22397	1975 SR
1975 SA <sub>1</sub>	12.4	930801	278.38214	226.49772	26.28316	10.42566	0.0592690	2.9914900	12	5	1952-1991	0.65	Bowell	22072	1975 SA <sub>1</sub>
1976 YR <sub>1</sub>	13.7	930801	187.82235	24.18898	84.69018	5.93356	0.1485152	2.3642147	10	3	1954-1992	0.76	Bowell	20009	1976 YR <sub>1</sub>
1977 EO <sub>1</sub>	13.0	930801	359.49705	182.19963	52.07541	2.89700	0.1552720	3.0356903	25	4	1972-1993	0.82	Williams	22222	1977 EO <sub>1</sub>
1977 PO <sub>1</sub>	10.5	930801	22.13128	2.56283	317.50542	13.31272	0.2403284	3.9541682	18	4	1977-1993	1.02	Bardwell	22429	1977 PO <sub>1</sub>
1977 TC <sub>1</sub>	14.5	930801	355.89805	115.83395	224.23429	3.23747	0.2114250	2.1791579	21	6	1948-1993	1.16	Williams	21964	1977 TC <sub>1</sub>
1978 RK <sub>1</sub>	12.5	930801	242.53778	268.44149	93.86064	2.63035	0.1707760	3.1259731	23	6	1951-1989	0.70	Bowell	22073	1978 RK <sub>1</sub>
1978 VR <sub>4</sub>	14.0	930801	150.99631	239.32714	227.80107	4.09825	0.1150770	2.1964771	23	5	1954-1993	0.87	Williams	22073	1978 VR <sub>4</sub>
1979 FD <sub>2</sub>	14.0	930801	292.08888	30.33007	142.42732	2.71355	0.1513232	2.4294882	23	3	1954-1988	0.84	Williams	22429	1979 FD <sub>2</sub>
1979 FD <sub>3</sub>	14.3	930801	73.70862	99.19330	126.88448	2.94853	0.1243781	2.2363600	32	6	1953-1992	0.69	Bowell	21927	1979 FD <sub>3</sub>
1979 MR <sub>3</sub>	14.1	930801	354.43459	174.01852	122.48492	7.65261	0.1374612	2.3159314	17	5	1950-1990	0.57	Bowell	21965	1979 MR <sub>3</sub>
1979 QB <sub>10</sub>	14.0	930801	286.96840	340.85582	347.58916	1.63742	0.2006117	2.3981815	13	3	1979-1993	0.98	Williams	21965	1979 QB <sub>10</sub>
1979 SP <sub>14</sub>	12.3	930801	126.94383	270.05769	110.06110	2.69604	0.1088884	3.2169463	21	5	1954-1991	0.89	Bowell	21965	1979 SP <sub>14</sub>
1979 WX <sub>3</sub>	13.5	930801	244.79958	267.23602	124.67530	1.93133	0.1776235	2.4340770	29	5	1975-1993	1.24	Marsden	21965	1979 WX <sub>3</sub>
1979 XQ	13.8	930801	56.29399	326.82391	36.01605	3.62552	0.1309338	2.2599928	38	4	1954-1989	0.79	Bowell	22429	1979 XQ

1980 GO	13.0	930801	127.73600	53.13771	147.31330	1.79162	0.1057165	3.1718885	16	5	1953-1991	0.88	Bowell	18106	1980 GO
1980 PX	14.0	930801	354.43100	176.06637	160.35232	2.21946	0.2381382	2.1875249	25	3	1980-1993	0.81	Williams	22074	1980 PX
1980 SG	13.9	930801	129.92036	343.96804	22.12927	7.09082	0.1579372	2.4490845	17	4	1953-1984	0.91	Bowell	22270	1980 SG
1980 SQ	14.0	930801	297.75884	159.24163	223.76823	4.76389	0.1321836	2.2256887	22	3	1980-1993	0.70	Williams	21966	1980 SQ
1980 TT <sub>3</sub>	14.3	930801	170.99886	37.62533	1.47011	7.10237	0.1193878	2.3605251	15	4	1953-1993	0.63	Bowell	22270	1980 TT <sub>3</sub>
1980 UL <sub>1</sub>	12.5	930801	327.90605	94.96346	237.47778	8.24953	0.1656731	2.7574493	17	4	1962-1993	0.67	Bardwell	21966	1980 UL <sub>1</sub>
1980 UM <sub>1</sub>	14.5	930801	238.75220	174.19309	269.61141	4.84062	0.0990454	2.2508690	11	5	1953-1993	0.52	Williams	21784	1980 UM <sub>1</sub>
1980 VA <sub>3</sub>	14.2	930801	299.30164	41.28209	349.74361	3.20254	0.1373658	2.2347858	11	3	1953-1990	0.72	Bowell	18107	1980 VA <sub>3</sub>
1981 EL <sub>4</sub>	12.5	930801	121.03792	251.83423	308.46122	8.54672	0.0181792	2.9924554	28	5	1955-1993	0.78	Williams	22270	1981 EL <sub>4</sub>
1981 ES <sub>4</sub>	13.4	930801	152.58657	35.56667	327.28888	15.85754	0.1810607	2.6127493	17	4	1953-1991	1.00	Bowell	21785	1981 ES <sub>4</sub>
1981 EK <sub>7</sub>	13.5	930801	332.98148	74.35379	221.89051	4.33240	0.1459247	3.1490924	25	4	1978-1993	0.86	Marsden	19858	1981 EK <sub>7</sub>
1981 EX <sub>10</sub>	15.1	930801	219.43558	34.50647	204.77558	7.16947	0.2039701	2.7376349	25	4	1954-1992	0.98	Bowell	21966	1981 EX <sub>10</sub>
1981 EZ <sub>10</sub>	13.8	930801	126.24405	30.40392	265.23317	3.25191	0.0421988	2.7842604	25	5	1953-1987	0.87	Bowell	20810	1981 EZ <sub>10</sub>
1981 EQ <sub>12</sub>	14.5	930801	346.66165	95.28131	240.50170	6.45856	0.2673725	2.3907378	18	4	1978-1993	0.84	Bardwell	18417	1981 EQ <sub>12</sub>
1981 EX <sub>15</sub>	14.9	930801	135.09607	56.29215	327.15499	3.62764	0.0799670	2.6055244	18	5	1953-1991	0.83	Bowell	21930	1981 EX <sub>15</sub>
1981 EV <sub>18</sub>	14.5	930801	58.87831	54.63330	206.86264	4.14504	0.0646741	3.0030650	27	4	1978-1993	0.86	Williams	22429	1981 EV <sub>18</sub>
1981 EJ <sub>22</sub>	15.0	930801	357.44806	104.26470	188.37216	5.83781	0.2254107	2.4427253	25	3	1978-1993	0.94	Williams	22430	1981 EJ <sub>22</sub>
1981 ET <sub>24</sub>	14.7	930801	175.69490	19.77552	180.38227	6.60883	0.0429655	2.3019518	22	4	1953-1988	0.80	Bowell	21931	1981 ET <sub>24</sub>
1981 EW <sub>24</sub>	13.2	930801	9.97865	194.90819	162.21653	2.34993	0.0770489	2.8868723	23	4	1953-1991	0.88	Bowell	22074	1981 EW <sub>24</sub>
1981 EC <sub>25</sub>	14.5	930801	158.83192	331.12553	7.55926	3.70424	0.1753234	2.1714822	24	5	1955-1991	0.81	Bowell	21967	1981 EC <sub>25</sub>
1981 EX <sub>43</sub>	14.5	930801	320.48412	157.97263	204.13081	5.85174	0.1381400	2.3665673	25	3	1981-1993	1.01	Williams	21785	1981 EX <sub>43</sub>
1981 EZ <sub>47</sub>	14.1	930801	64.78216	46.83331	2.65310	2.11086	0.2438934	2.6271197	18	7	1955-1992	0.75	Bowell	22271	1981 EZ <sub>47</sub>
1981 RB <sub>2</sub>	13.0	930801	339.07069	47.26249	255.81776	12.92310	0.2001669	2.5882370	8	2	1981-1993	0.65	Williams	22399	1981 RB <sub>2</sub>
1982 BQ <sub>2</sub>	14.3	930801	141.74030	296.63109	142.48417	4.07914	0.1536814	2.2983708	22	4	1982-1993	0.75	Bowell	22075	1982 BQ <sub>2</sub>
1982 BD <sub>13</sub>	13.5	930801	79.18659	260.34037	315.17509	5.15978	0.0925084	2.2421712	16	5	1982-1993	0.63	Williams	22075	1982 BD <sub>13</sub>
1982 FC	13.7	930801	51.12739	181.25746	25.41236	10.75143	0.1409790	2.3258219	22	6	1950-1992	0.93	Bowell	22075	1982 FC
1982 FF <sub>3</sub>	13.5	930801	259.56855	150.94455	276.85549	1.64311	0.1207533	2.2143479	45	5	1982-1993	1.10	Bardwell	20498	1982 FF <sub>3</sub>
1982 JD <sub>1</sub>	14.0	930801	4.57036	36.14408	215.44819	8.38959	0.1723588	2.3813434	24	2	1982-1993	0.72	Williams	22399	1982 JD <sub>1</sub>
1982 PR	12.0	930801	327.44541	339.82650	30.62338	1.08334	0.2019641	3.1298764	23	6	1982-1993	0.93	Williams	21968	1982 PR
1982 ST	13.9	930801	3.23520	44.98549	343.71014	20.10041	0.1046593	1.9258763	22	4	1954-1990	0.77	Bowell	21968	1982 ST
1982 SE <sub>1</sub>	12.0	930801	319.20568	94.37991	284.08824	3.99423	0.1638972	3.1950290	20	3	1982-1993	1.04	Bardwell	22075	1982 SE <sub>1</sub>
1982 TP <sub>1</sub>	13.0	930801	185.26241	249.82729	242.37001	3.40406	0.1222497	2.4844969	31	6	1982-1993	0.82	Williams	22075	1982 TP <sub>1</sub>
1982 UM <sub>2</sub>	14.0	930801	238.82519	250.99471	158.90527	2.26194	0.1406152	2.5204791	17	4	1954-1990	1.05	Williams	21968	1982 UM <sub>2</sub>
1982 VV <sub>10</sub>	13.8	930801	16.40501	332.83100	104.93425	3.09616	0.0117363	2.2848221	12	4	1954-1991	0.94	Bowell	18283	1982 VV <sub>10</sub>
1983 CA <sub>1</sub>	12.5	930801	79.66591	181.06836	337.75354	7.47390	0.1585682	2.7808964	21	5	1955-1990	0.82	Williams	22051	1983 CA <sub>1</sub>
1983 RX	13.5	930801	32.96802	339.21578	319.99041	4.36704	0.1692392	2.2173027	15	6	1980-1993	1.03	Williams	22076	1983 RX
1983 XG	12.0	930801	296.17031	162.20876	209.00126	4.84014	0.1578269	3.1819716	17	3	1983-1993	0.96	Bardwell	22430	1983 XG
1983 XW	12.5	930801	270.84405	10.24647	35.24246	0.40837	0.2057174	3.1927813	21	4	1953-1988	0.78	Bowell	22399	1983 XW
1984 BK	13.0	930801	302.39267	81.24340	304.65558	4.23935	0.1031447	2.3719398	33	5	1953-1993	1.01	Williams	22076	1984 BK
1984 EY	13.3	930801	160.49700	196.57551	31.96808	7.03241	0.0736979	2.3658810	19	5	1955-1991	1.00	Bowell	21969	1984 EY
1984 FU	13.8	930801	264.43413	157.54700	23.14936	6.10762	0.1076303	2.2735773	27	5	1954-1992	0.87	Bowell	22076	1984 FU
1984 MQ	13.0	930801	345.54222	168.29940	146.76329	10.03010	0.2706232	2.7181991	16	3	1971-1993	1.17	Williams	22400	1984 MQ
1984 UD <sub>3</sub>	13.9	930801	159.03387	183.36968	207.85744	6.38839	0.1140365	2.3461469	22	3	1954-1991	0.89	Bowell	21969	1984 UD <sub>3</sub>
1984 YE <sub>4</sub>	13.5	930801	159.34216	348.76324	74.56419	6.51916	0.1441169	2.3561187	19	4	1984-1993	0.87	Williams	22271	1984 YE <sub>4</sub>
1985 CT	13.0	930801	217.91044	258.58619	147.47789	22.99569	0.2362644	2.3125449	25	5	1950-1993	0.88	Williams	22430	1985 CT
1985 CC <sub>2</sub>	13.5	930801	122.65629	80.31308	120.11781	3.74805	0.0341180	2.2716230	54	5	1980-1993	0.77	Williams	21969	1985 CC <sub>2</sub>
1985 GA <sub>1</sub>	13.9	930801	131.08468	141.36007	132.86598	5.90393	0.1714811	2.2245914	17	3	1955-1992	0.76	Bowell	22076	1985 GA <sub>1</sub>
1985 PO	13.5	930801	332.21997	201.70788	145.57333	3.41457	0.1432528	2.5424242	30	6	1949-1993	1.03	Williams	22076	1985 PO
1985 RD	12.9	930801	206.32152	316.22651	0.19461	1.39621	0.1815812	3.0348033	19	4	1953-1991	0.83	Bowell	20012	1985 RD
1985 RU	14.0	930801	333.88011	31.20127	318.42279	16.56576	0.3335396	2.5630915	17	4	1985-1993	0.82	Williams	22076	1985 RU
1985 RW	15.5	930801	164.19213	246.68869	241.44728	19.14892	0.0753653	1.9626887	37	4	1980-1993	0.62	Williams	22076	1985 RW
1985 RC <sub>4</sub>	12.6	930801	249.41045	169.07690	141.10031	2.76989	0.0653277	2.9034772	51	5	1954-1990	0.78	Bowell	22076	1985 RC <sub>4</sub>

1985 TY <sub>1</sub>	13.5	930801	302.12113	116.10492	248.85666	8.00127	0.0876279	2.6441393	14	4	1981-1993	0.99	Williams	22430	1985 TY <sub>1</sub>
1985 UH <sub>3</sub>	13.0	930801	47.28219	191.48004	147.54749	3.07149	0.2241760	2.4350982	14	4	1954-1992	0.78	Bowell	20632	1985 UH <sub>3</sub>
1986 JS	13.0	930801	33.06437	141.40230	128.79802	6.38582	0.1542205	2.2194670	16	5	1933-1993	1.14	Williams	22077	1986 JS
1986 QS	12.4	930801	120.35509	58.71742	349.05248	8.69464	0.1623907	2.7863112	94	6	1951-1993	0.54	Bowell	22077	1986 QS
1986 QS <sub>1</sub>	14.0	930801	322.68812	230.03376	133.91512	5.58057	0.1503102	2.3175923	47	3	1986-1993	0.68	Williams	22272	1986 QS <sub>1</sub>
1986 RT <sub>2</sub>	13.5	930801	7.50809	335.31343	338.90827	1.60448	0.0621391	2.3437653	16	6	1961-1993	0.70	Williams	21970	1986 RT <sub>2</sub>
1986 RW <sub>2</sub>	13.5	930801	327.76809	311.72918	40.03225	1.70893	0.1654936	2.3576757	30	5	1975-1993	0.96	Williams	22077	1986 RW <sub>2</sub>
1986 RY <sub>5</sub>	13.0	930801	6.64323	77.37304	227.82941	5.72715	0.1381772	2.3664655	21	5	1950-1993	0.86	Williams	20632	1986 RY <sub>5</sub>
1986 TZ <sub>1</sub>	13.5	930801	33.18142	285.83693	88.57750	5.37117	0.2190413	2.1969636	20	8	1952-1992	0.89	Bowell	22078	1986 TZ <sub>1</sub>
1987 DW <sub>6</sub>	12.2	930801	29.36775	180.46056	22.24046	1.55869	0.1512113	3.1510341	42	5	1951-1992	0.40	Bowell	22078	1987 DW <sub>6</sub>
1987 EV	13.5	930801	276.21661	269.84277	308.08510	4.06949	0.1112024	2.2700011	48	8	1955-1992	0.68	Williams	22430	1987 EV
1987 MM <sub>1</sub>	12.5	930801	80.64586	124.17304	195.21031	8.75609	0.1629669	2.7782295	25	4	1954-1992	0.83	Bowell	21970	1987 MM <sub>1</sub>
1987 RJ	14.0	930801	277.93227	287.54327	74.04372	2.84676	0.1199416	2.2225973	28	5	1982-1993	1.20	Marsden	22078	1987 RJ
1987 RT <sub>5</sub>	15.0	930801	349.14329	194.88784	119.52986	3.00406	0.1832380	2.1309684	9	3	1981-1993	0.46	Williams	20500	1987 RT <sub>5</sub>
1987 SJ <sub>1</sub>	15.0	930801	226.33645	150.03062	202.95847	1.55979	0.2230853	2.3604634	27	4	1951-1993	0.83	Williams	15558	1987 SJ <sub>1</sub>
1987 SQ <sub>1</sub>	12.4	930801	32.75153	215.87452	201.55154	1.49214	0.0598976	2.8345635	18	7	1954-1992	0.70	Bowell	21971	1987 SQ <sub>1</sub>
1987 UW <sub>1</sub>	12.4	930801	128.02150	167.38865	230.59614	8.73523	0.1309350	2.6204722	26	3	1987-1993	0.87	Nakano	22430	1987 UW <sub>1</sub>
1987 UQ <sub>3</sub>	13.5	930801	264.25151	257.79900	82.05055	6.30012	0.1230093	2.3214346	18	5	1979-1993	0.70	Williams	22272	1987 UQ <sub>3</sub>
1987 VB	13.0	930801	239.17405	129.16569	283.85170	2.91514	0.1423914	2.2418879	28	5	1950-1992	0.87	Williams	21971	1987 VB
1987 YK	13.0	930801	204.43097	298.97016	66.22792	4.88772	0.2034257	2.5826549	23	5	1980-1993	1.16	Nakano	21971	1987 YK
1988 AO <sub>1</sub>	13.0	930801	125.23672	6.64744	91.26567	6.06056	0.0953342	2.6286003	20	4	1950-1991	0.88	Bowell	19676	1988 AO <sub>1</sub>
1988 AE <sub>5</sub>	12.3	930801	246.49272	107.63297	146.34628	10.29514	0.0329217	3.0346717	54	5	1953-1991	0.66	Bowell	21971	1988 AE <sub>5</sub>
1988 CH <sub>2</sub>	13.5	930801	299.77421	238.77591	133.01675	7.18172	0.1321041	2.3119870	43	5	1976-1993	1.06	Williams	22079	1988 CH <sub>2</sub>
1988 FF	12.0	930801	5.35528	168.56433	82.68066	9.12256	0.1668753	2.7688061	24	3	1979-1993	0.85	Williams	22430	1988 FF
1988 KC	12.9	930801	40.95417	95.35414	228.15821	10.27587	0.3055543	2.5973002	16	6	1951-1992	0.85	Bowell	22079	1988 KC
1988 LH	13.5	930801	35.98569	321.56001	237.78664	5.85393	0.2166373	3.0207365	15	4	1983-1993	0.56	Williams	22272	1988 LH
1988 PL <sub>1</sub>	14.0	930801	278.98257	94.97783	247.22233	19.58218	0.0732001	1.9561854	14	4	1983-1993	1.01	Bardwell	22272	1988 PL <sub>1</sub>
1988 PX <sub>2</sub>	12.5	930801	295.10111	208.90039	181.75828	10.56891	0.0762978	3.0017264	24	4	1978-1993	1.08	Bardwell	21972	1988 PX <sub>2</sub>
1988 TB <sub>1</sub>	13.4	930801	117.14954	144.39387	208.97354	4.97051	0.1507318	2.4303569	20	4	1954-1992	0.73	Bowell	21260	1988 TB <sub>1</sub>
1988 VD <sub>3</sub>	13.7	930801	123.01396	41.15796	340.61114	1.81000	0.2170907	2.3833912	11	3	1953-1988	0.51	Bowell	14028	1988 VD <sub>3</sub>
1988 WC	13.5	930801	115.07215	252.68388	241.10737	22.50037	0.4040396	2.2213837	36	4	1955-1993	0.94	Williams	20147	1988 WC
1988 XP	13.6	930801	111.00014	253.46487	136.39266	8.56220	0.2081468	2.4422892	22	4	1953-1991	0.66	Bowell	22080	1988 XP
1988 XR	14.4	930801	110.22601	160.66031	236.61625	1.02531	0.2273627	2.4195319	18	4	1954-1988	0.80	Bowell	22080	1988 XR
1988 XW <sub>1</sub>	11.2	930801	4.18358	312.54670	69.62983	10.68577	0.1091779	3.0216223	18	5	1951-1991	0.71	Bowell	22080	1988 XW <sub>1</sub>
1988 XV <sub>2</sub>	15.2	930801	171.84946	127.13047	286.36212	3.50721	0.2030997	2.1966749	18	4	1952-1991	0.95	Bowell	22080	1988 XV <sub>2</sub>
1989 AE <sub>7</sub>	13.3	930801	15.02497	138.35541	314.61844	3.05503	0.1114337	2.8408826	23	4	1953-1992	0.41	Bowell	21972	1989 AE <sub>7</sub>
1989 FG	13.0	930801	72.06488	69.77590	53.60899	3.84543	0.1305520	2.5570670	14	3	1955-1993	0.68	Williams	22052	1989 FG
1989 GA <sub>3</sub>	14.0	930801	97.05756	279.96725	227.19683	1.64656	0.1549127	2.4156440	26	5	1970-1993	1.00	Marsden	20635	1989 GA <sub>3</sub>
1989 GT <sub>3</sub>	14.0	930801	320.59500	90.31535	262.07482	0.95250	0.1428211	2.2417190	27	4	1980-1993	0.81	Williams	22081	1989 GT <sub>3</sub>
1989 GF <sub>8</sub>	13.8	930801	41.99873	82.89643	72.31519	4.69457	0.1596643	2.5774666	21	5	1954-1993	0.87	Bowell	22431	1989 GF <sub>8</sub>
1989 HD	13.0	930801	342.30894	115.54631	143.77089	13.84828	0.1469005	2.6059876	24	3	1984-1993	0.99	Williams	22272	1989 HD
1989 HG	13.0	930801	48.90538	345.53330	191.68590	14.73115	0.1214966	2.5637564	13	2	1989-1993	0.50	Williams	22227	1989 HG
1989 LW	13.5	930801	17.78573	90.84544	224.07057	21.61850	0.2741059	2.3764656	16	5	1978-1993	1.06	Williams	16029	1989 LW
1989 NM	12.5	930801	342.55279	215.95955	99.22131	8.36514	0.1600450	2.5614410	20	5	1976-1993	0.83	Williams	22081	1989 NM
1989 RB <sub>2</sub>	11.5	930801	45.02053	292.72553	294.95336	6.51550	0.1656865	2.7954562	15	6	1950-1993	1.28	Williams	22081	1989 RB <sub>2</sub>
1989 SP	12.5	930801	355.37793	135.26443	205.03114	11.20876	0.1879789	2.5699776	16	4	1972-1993	0.81	Williams	20504	1989 SP
1989 SU <sub>3</sub>	12.5	930801	76.91180	15.68671	185.41525	9.78081	0.0381731	3.0559066	27	4	1976-1993	0.71	Williams	22431	1989 SU <sub>3</sub>
1989 TB <sub>11</sub>	13.0	930801	320.93171	33.94728	336.59119	4.02901	0.1345013	2.6661390	12	3	1980-1993	1.05	Williams	21973	1989 TB <sub>11</sub>
1989 UA	12.7	930801	322.72783	6.60456	45.70971	10.78376	0.0999201	2.5459460	15	3	1954-1989	0.91	Bowell	22081	1989 UA
1989 UL	13.0	930801	282.15285	190.15905	218.12438	5.43408	0.1399391	2.7765264	24	3	1980-1993	1.16	Bardwell	21973	1989 UL
1989 UX <sub>5</sub>	11.0	930801	72.65048	0.77568	77.15443	4.26696	0.0292126	5.0769795	18	4	1954-1990	0.69	Williams	22431	1989 UX <sub>5</sub>
1989 VR	12.5	930801	5.49129	128.75304	182.88843	2.03676	0.0416231	2.8956419	12	4	1969-1993	0.85	Bardwell	22081	1989 VR

1989 YB	12.5	930801	354.52469	101.27343	276.78941	6.58787	0.3023930	2.5436253	16	4	1981-1993	1.38	Williams	15899	1989 YB
1989 YH <sub>1</sub>	13.5	930801	308.27602	201.58890	324.33461	1.63463	0.1469672	2.4019398	24	7	1953-1990	0.95	Williams	22431	1989 YH <sub>1</sub>
1989 YZ <sub>1</sub>	12.0	930801	273.93273	14.77362	46.77240	1.65303	0.1560068	3.1588842	25	7	1932-1993	0.92	Williams	21973	1989 YZ <sub>1</sub>
1990 EA <sub>5</sub>	14.2	930801	213.02434	350.18589	303.19809	1.85133	0.1691426	2.4670681	21	4	1949-1991	0.77	Bowell	20018	1990 EA <sub>5</sub>
1990 OT <sub>3</sub>	13.0	930801	103.61342	235.54521	305.73873	3.87548	0.0512453	2.2006346	22	5	1951-1993	1.18	Williams	21941	1990 OT <sub>3</sub>
1990 QB	14.0	930801	260.64317	56.90376	332.44205	21.84519	0.2537808	2.3321582	24	5	1975-1993	0.72	Williams	22403	1990 QB
1990 QL	14.0	930801	253.30535	253.09558	157.37539	23.58864	0.2963922	2.3162863	17	3	1988-1993	0.69	Williams	21974	1990 QL
1990 QL <sub>2</sub>	13.5	930801	278.34460	224.51215	160.21754	5.12113	0.1305442	2.2618328	25	3	1990-1993	0.81	Bardwell	22431	1990 QL <sub>2</sub>
1990 QW <sub>3</sub>	15.5	930801	6.78564	341.27579	318.03238	1.78405	0.1530768	2.1417159	26	3	1987-1993	1.16	Williams	22082	1990 QW <sub>3</sub>
1990 RO <sub>1</sub>	12.8	930801	158.37936	261.44895	162.53651	4.63951	0.0572291	2.7914486	34	5	1976-1993	0.57	Bowell	17964	1990 RO <sub>1</sub>
1990 RN <sub>3</sub>	13.5	930801	342.19140	94.15100	180.23204	5.47779	0.2012415	2.3780710	18	2	1990-1993	1.11	Williams	22230	1990 RN <sub>3</sub>
1990 RE <sub>7</sub>	13.1	930801	132.69185	66.68301	358.85408	10.51219	0.1050974	2.9891250	19	3	1982-1993	0.74	Nakano	22273	1990 RE <sub>7</sub>
1990 RS <sub>17</sub>	13.5	930801	343.25912	6.85171	323.15155	5.19737	0.1893053	2.1998443	12	5	1954-1993	0.78	Williams	21974	1990 RS <sub>17</sub>
1990 SK	14.0	930801	280.35337	326.63042	47.20473	26.07151	0.2690232	2.2882193	9	3	1976-1993	0.60	Williams	17448	1990 SK
1990 SK <sub>3</sub>	13.7	930801	355.73727	244.05443	68.35404	3.81135	0.1693388	2.2033698	10	4	1951-1990	1.49	Bowell	20927	1990 SK <sub>3</sub>
1990 SQ <sub>16</sub>	13.0	930801	259.70034	300.28227	95.96231	5.21934	0.1295076	2.2566919	28	8	1933-1993	1.13	Williams	21974	1990 SQ <sub>16</sub>
1990 TB	13.5	930801	295.63283	138.20114	213.07470	7.94814	0.2990484	2.2966277	19	5	1969-1993	0.70	Williams	22273	1990 TB
1990 TL <sub>1</sub>	13.5	930801	288.52495	180.74918	192.84513	5.42523	0.1762674	2.3640342	29	5	1950-1993	0.89	Williams	22431	1990 TL <sub>1</sub>
1990 TJ <sub>2</sub>	12.4	930801	134.42284	224.13147	219.12393	9.03785	0.0772511	3.0398444	19	5	1969-1993	0.44	Schmadel	20819	1990 TJ <sub>2</sub>
1990 TN <sub>4</sub>	11.5	930801	24.57212	117.70285	78.17229	14.42502	0.0865837	3.1018377	22	4	1982-1993	0.88	Williams	22273	1990 TN <sub>4</sub>
1990 TK <sub>8</sub>	12.5	930801	14.34962	171.89040	42.99664	10.83609	0.0684807	3.0239404	12	2	1990-1993	0.92	Williams	22230	1990 TK <sub>8</sub>
1990 UD	13.6	930801	321.43540	296.89001	65.85392	4.79084	0.2165406	2.2118477	27	6	1934-1993	1.01	Nakano	22082	1990 UD
1990 UW	13.0	930801	258.67027	107.23630	334.15640	3.05300	0.1018411	2.2358406	33	6	1980-1993	0.90	Williams	22082	1990 UW
1990 UK <sub>1</sub>	14.5	930801	311.21702	114.33701	254.79177	4.22753	0.1715333	2.2545040	19	5	1951-1993	0.78	Marsden	22273	1990 UK <sub>1</sub>
1990 UB <sub>2</sub>	14.0	930801	0.13157	221.48428	91.41743	5.55825	0.2169060	2.2207016	26	4	1977-1993	0.89	Nakano	21975	1990 UB <sub>2</sub>
1990 UO <sub>2</sub>	13.0	930801	268.40689	162.10578	237.12787	23.82452	0.2259605	2.3671676	13	3	1939-1993	0.59	Bardwell	17965	1990 UO <sub>2</sub>
1990 VS <sub>2</sub>	13.5	930801	67.75068	110.04589	130.61455	6.13982	0.0104758	2.4810784	24	3	1990-1993	0.94	Williams	22083	1990 VS <sub>2</sub>
1990 WY <sub>3</sub>	12.5	930801	294.49763	287.20013	105.70224	8.56965	0.0568572	2.3939296	18	3	1990-1993	0.81	Williams	21975	1990 WY <sub>3</sub>
1990 XA	11.0	930801	120.24883	264.86350	277.65782	7.71016	0.0927562	2.8001254	24	7	1935-1993	1.17	Williams	22083	1990 XA
1990 XM	13.5	930801	342.92332	257.99663	114.65986	2.34700	0.1742118	2.1628220	14	4	1974-1993	1.06	Williams	18299	1990 XM
1990 XP	13.5	930801	320.85902	219.31609	188.97744	4.83855	0.1400868	2.2211022	16	5	1950-1991	0.82	Bowell	17828	1990 XP
1990 YQ	14.0	930801	292.17545	195.05977	207.69260	1.45221	0.2113297	2.3829032	23	5	1953-1993	0.89	Williams	21975	1990 YQ
1991 AD	12.5	930801	275.98369	125.85777	262.05499	7.65503	0.1749950	2.6975701	10	4	1982-1993	0.82	Bardwell	17831	1991 AD
1991 AB <sub>1</sub>	11.0	930801	270.21250	241.23181	130.63208	12.42636	0.1743980	3.0071391	34	9	1932-1993	0.93	Williams	22404	1991 AB <sub>1</sub>
1991 AF <sub>1</sub>	12.0	930801	201.53303	158.67689	299.34166	9.42530	0.0746669	2.9916286	31	5	1934-1993	0.82	Bardwell	21975	1991 AF <sub>1</sub>
1991 AX <sub>1</sub>	12.0	930801	175.99713	11.68509	126.15535	3.01699	0.0228556	2.8604400	37	6	1962-1993	1.01	Williams	21975	1991 AX <sub>1</sub>
1991 AD <sub>2</sub>	13.0	930801	299.83064	245.27086	141.81066	4.03139	0.1603519	2.6170941	34	6	1981-1993	0.80	Williams	21975	1991 AD <sub>2</sub>
1991 BV	12.0	930801	249.81036	307.58400	143.78370	12.97658	0.1372180	2.61117535	41	3	1991-1993	0.85	Williams	20638	1991 BV
1991 EA	13.5	930801	244.81161	152.30815	350.58174	6.28453	0.0750599	2.4627799	25	3	1955-1991	1.03	Williams	21975	1991 EA
1991 JG	12.1	930801	170.91103	165.89865	64.10992	12.77638	0.1404753	2.6898250	15	5	1938-1991	0.69	Bowell	18638	1991 JG
1991 JB <sub>1</sub>	12.0	930801	139.01863	147.47453	80.40926	5.05347	0.1207276	3.1926206	17	5	1934-1991	0.91	Williams	22083	1991 JB <sub>1</sub>
1991 PF <sub>10</sub>	14.3	930801	207.98729	209.51224	144.85289	2.20316	0.0689905	2.1490801	17	4	1953-1991	0.71	Bowell	21976	1991 PF <sub>10</sub>
1991 RJ	13.3	930801	189.29169	331.25464	338.16711	13.20227	0.1621872	2.6208946	25	5	1951-1992	0.87	Bowell	21976	1991 RJ
1991 RZ <sub>2</sub>	13.5	930801	71.51067	217.65645	234.77840	5.00107	0.1100460	2.7579776	20	4	1964-1993	0.39	Schmadel	22273	1991 RZ <sub>2</sub>
1991 RX <sub>10</sub>	14.5	930801	197.29071	344.94122	1.44936	12.78245	0.1016289	2.4358677	17	4	1964-1993	0.60	Williams	22273	1991 RX <sub>10</sub>
1991 RP <sub>11</sub>	15.1	930801	177.95494	208.15582	118.44076	1.41295	0.1541839	2.4386815	26	4	1953-1991	0.86	Bowell	21976	1991 RP <sub>11</sub>
1991 RP <sub>25</sub>	12.4	930801	74.63766	37.98253	39.51602	12.06184	0.1611682	3.0906589	23	5	1950-1993	0.72	Bowell	21976	1991 RP <sub>25</sub>
1991 TM	13.2	930801	243.13096	150.04889	140.63590	6.81040	0.1326590	2.4158594	20	5	1953-1991	0.71	Bowell	21976	1991 TM
1991 TA <sub>1</sub>	13.0	930801	243.36962	173.81837	204.87123	25.61782	0.0872859	1.9089989	27	2	1991-1993	0.94	Bardwell	22234	1991 TA <sub>1</sub>
1991 TG <sub>4</sub>	13.0	930801	137.44018	270.23802	222.73899	19.54071	0.1013841	1.9559743	20	2	1991-1993	1.26	Williams	22405	1991 TG <sub>4</sub>
1991 UZ <sub>2</sub>	11.7	930801	311.80112	48.85732	158.35947	1.85385	0.1563442	3.1238139	31	6	1955-1993	0.84	Bowell	21976	1991 UZ <sub>2</sub>
1991 XO <sub>1</sub>	13.5	930801	212.72261	292.49096	84.15311	3.13245	0.2090789	2.3888517	15	4	1950-1993	0.80	Williams	22431	1991 XO <sub>1</sub>

1992 AA	16.0	930801	202.76309	354.36398	102.81922	8.29131	0.3898986	1.9813714	40	1	225 days	0.94	Williams	20511	1992 AA
1992 AC	13.5	930801	171.63945	25.13843	121.82476	16.05811	0.4213310	2.1043759	167	3	1989-1993	0.86	Williams	22431	1992 AC
1992 AO	12.0	930801	206.35162	281.00695	127.20362	22.18932	0.0933337	2.3516065	30	3	1954-1993	0.72	Williams	22406	1992 AO
1992 AD <sub>1</sub>	12.0	930801	74.58482	279.52161	270.89663	12.39969	0.1523160	2.6596568	24	5	1966-1993	0.75	Williams	22084	1992 AD <sub>1</sub>
1992 BW	13.5	930801	276.27921	86.16745	315.47917	21.78714	0.0864482	1.9375265	13	3	1985-1993	0.51	Williams	20032	1992 BW
1992 DA	13.5	930801	114.72658	164.47734	27.79803	3.71420	0.1673683	2.3418077	15	4	1954-1992	0.94	Bowell	19874	1992 DA
1992 FD	13.0	930801	92.12599	34.28301	176.03056	26.21393	0.1168875	2.3336912	22	5	1951-1993	0.70	Williams	21977	1992 FD
1992 FN	13.4	930801	150.25037	354.11429	189.05000	1.41280	0.1197474	2.2132984	12	4	1954-1992	0.78	Bowell	21977	1992 FN
1992 FR	12.0	930801	85.63684	42.31103	182.13319	11.94161	0.1774199	2.6578710	31	8	1949-1993	1.03	Williams	22085	1992 FR
1992 FS	12.6	930801	28.46370	245.39268	36.36346	5.71685	0.1398106	2.7236596	10	4	1951-1992	0.88	Bowell	20155	1992 FS
1992 FW <sub>1</sub>	15.0	930801	183.17045	267.72819	191.82132	22.61256	0.2678546	2.3331484	16	4	1983-1993	1.03	Williams	21581	1992 FW <sub>1</sub>
1992 FZ <sub>1</sub>	13.0	930801	13.83400	189.59025	129.72842	7.75130	0.1329581	2.3584807	12	3	1979-1993	0.78	Williams	20156	1992 FZ <sub>1</sub>
1992 FR <sub>2</sub>	12.5	930801	11.66152	226.53289	105.58577	5.53684	0.1414135	2.2675766	21	7	1935-1993	0.89	Williams	22057	1992 FR <sub>2</sub>
1992 MA	11.9	930801	52.35920	91.65436	202.63044	0.37838	0.1543566	3.0895215	19	6	1953-1992	0.86	Bowell	21977	1992 MA
1992 PF <sub>2</sub>	13.5	930801	148.52422	49.72001	210.17049	5.08278	0.1528338	2.2662028	13	4	1954-1992	0.76	Williams	20934	1992 PF <sub>2</sub>
1992 PT <sub>2</sub>	14.2	930801	58.48898	144.08322	239.23793	3.93662	0.1433196	2.2972744	23	4	1954-1992	0.78	Bowell	21977	1992 PT <sub>2</sub>
1992 UG	13.1	930801	73.33600	302.02280	83.44650	6.51699	0.2824917	2.5969139	30	4	1952-1993	0.90	Bowell	22085	1992 UG
1993 EF	13.9	930801	76.93122	57.38298	63.56974	3.09955	0.1680762	2.4018575	19	4	1952-1993	0.72	Bowell	22274	1993 EF
1993 GM	13.0	930801	116.74120	336.43402	125.84049	3.20030	0.0683201	2.9340611	25	4	1982-1993	1.08	Williams	22409	1993 GM
1993 HL	13.0	930801	243.87262	308.03616	53.98181	8.62460	0.1939902	2.2516547	15	3	1950-1993	1.06	Williams	22409	1993 HL
1993 HO <sub>1</sub>	16.0	930801	79.16769	105.05170	22.90488	5.90614	0.4167118	1.9871274	24	1	103 days	0.40	Williams	22410	1993 HO <sub>1</sub>
1993 JE	13.0	930801	108.34624	58.56951	80.00724	6.72773	0.0786134	2.3872163	17	3	1989-1993	0.96	Williams	22410	1993 JE
1993 JH	13.7	930801	358.60220	226.03600	46.39424	4.27012	0.2355476	2.4399717	23	4	1970-1993	0.98	Nakano	22411	1993 JH
1993 KT <sub>1</sub>	14.0	930801	344.04235	211.27691	77.59197	25.09845	0.0499765	1.9511780	22	3	1990-1993	0.85	Williams	22413	1993 KT <sub>1</sub>
1993 KY <sub>1</sub>	14.0	930801	33.90016	96.73946	132.38267	4.76414	0.1179713	2.2988750	22	4	1972-1993	0.90	Williams	22413	1993 KY <sub>1</sub>
1993 KD <sub>2</sub>	13.5	930801	292.30163	251.28018	91.63521	8.25395	0.1680293	2.3333632	18	3	1987-1993	0.67	Williams	22414	1993 KD <sub>2</sub>
2024 P-L	14.1	930801	51.04720	191.40038	355.08501	4.70927	0.0844481	2.2662660	17	4	1955-1986	0.75	Bowell	12585	2024 P-L
2508 P-L	15.6	930801	84.82988	350.79499	10.26761	6.38454	0.2510675	2.3308342	14	3	1951-1992	0.67	Bowell	21120	2508 P-L
2777 P-L	14.0	930801	19.18088	99.88419	159.69803	2.91717	0.1678412	2.4058129	18	4	1960-1993	0.82	Williams	22086	2777 P-L
2799 P-L	14.5	930801	314.97960	163.89234	185.94348	29.59139	0.2359684	3.1472254	23	3	1960-1993	0.84	Williams	22432	2799 P-L
3535 P-L	12.8	930801	357.58440	272.70666	338.94603	12.23912	0.1787252	2.4204067	20	4	1951-1990	0.83	Bowell	22086	3535 P-L
4582 P-L	12.5	930801	323.97377	278.44883	20.51403	3.34810	0.1549400	3.1978487	21	4	1960-1993	0.74	Williams	22432	4582 P-L
6035 P-L	13.9	930801	264.16526	299.52813	359.61964	11.31441	0.1912417	2.6525714	26	4	1960-1990	0.89	Bowell	22086	6035 P-L
6766 P-L	12.0	930801	31.19157	110.16891	171.23852	13.71087	0.0573087	3.1465381	33	5	1960-1993	0.91	Williams	21950	6766 P-L
7633 P-L	13.5	930801	354.52399	208.14922	109.01303	3.30789	0.0574522	2.8378549	14	4	1951-1985	0.93	Bowell	22087	7633 P-L
9521 P-L	14.3	930801	150.36559	298.13102	123.62188	1.96051	0.1257134	2.2775526	26	5	1953-1991	0.69	Bowell	22087	9521 P-L
3036 T-1	13.5	930801	353.50763	105.36866	196.56921	11.68247	0.2201911	2.6329065	21	3	1971-1993	0.81	Williams	22432	3036 T-1
1010 T-2	12.0	930801	132.88867	319.07341	204.03837	9.49808	0.0919727	3.0056793	23	5	1955-1993	0.85	Williams	22274	1010 T-2
4254 T-2	14.1	930801	146.95195	262.44045	68.32574	3.36304	0.2359594	2.3953075	25	3	1951-1988	1.03	Bowell	15086	4254 T-2
5140 T-2	11.5	930801	351.45648	22.48710	279.74357	9.07032	0.0858302	3.0006273	26	4	1973-1993	0.86	Williams	21978	5140 T-2
1076 T-3	14.2	930801	246.83008	62.96602	308.79531	6.65374	0.1814210	2.2535688	22	6	1953-1991	0.82	Bowell	22088	1076 T-3
4032 T-3	14.8	930801	172.76491	325.69832	54.98673	4.68409	0.1757596	2.3171704	17	3	1949-1991	0.90	Bowell	19691	4032 T-3

## NEW NAMES OF MINOR PLANETS

**(2630) Hermod = 1980 TF<sub>3</sub>**

Discovered 1980 Oct. 14 at Haute Provence.

Named for a son of Odin and Frigga in Scandinavian mythology. He entered the land of the dead, guarded by Hel, in an attempt to rescue his brother Balder. Hel agreed on condition that everyone and everything in the world, even the plants, stones and metals, should mourn for Balder. All did, except for a single giant witch in

a cave, Thokk. Named by the Minor Planet Names Committee following a suggestion by F. Pilcher.

**(2677) Joan = 1935 FF**

Discovered 1935 Mar. 25 by M. Laugier at Nice.

Named in honor of Joan Jordan, secretary in the Solar and Stellar Physics division at the Harvard-Smithsonian Center for Astrophysics. Name proposed by members of the Planetary Sciences division, the identifications for this object having been made by B. G. Marsden.

**(2687) Tortali = 1982 HG**

Discovered 1982 Apr. 18 by M. Watt at the Anderson Mesa station of the Lowell Observatory.

Named for the spirit of daytime and the sun in the mythology of the Melanesians of the New Hebrides Islands, which recognizes no gods. He was the rival of Ul, spirit of nighttime and the moon. Named by the Minor Planet Names Committee following a suggestion by F. Pilcher.

**(2712) Keaton = 1937 YD**

Discovered 1937 Dec. 29 by G. Kulin at Budapest.

Named for Joseph Francis ('Buster') Keaton (1895–1966), American comedian, film actor and director. He joined his family's acrobatic act in vaudeville when still a child, and he perfected his art both as a comic actor and director, producing three classic stony-faced performances in *Sherlock Junior*, *The Navigator* and *The General*, all masterpieces of the silent screen. Thereafter his career declined, but the film *The Buster Keaton Story*, a 1957 screen biography, restored Keaton to his rightful place as one of the world's greatest comedians. Name proposed by G. V. and R. Williams, the identifications for this object having been made by C. M. Bardwell.

**(2718) Handley = 1951 OM**

Discovered 1951 July 30 by E. L. Johnson at Johannesburg.

Named for Tommy Handley (1894–1949), one of Britain's greatest entertainers of the Second World War. He began his career in variety and concert parties, but from about 1926 he found that his very fast, zany style of spoken humor suited the new medium of radio. Tommy Handley's biggest success was the radio show ITMA ("It's That Man Again"), which was first broadcast in 1939. He introduced many colorful characters and catch-phrases, including Mrs. Mopp, the charlady, with her eternal question—"Can I do you now, sir?" Name proposed by B. G. Marsden and G. V. and R. Williams, the identifications for this object having been made by C. M. Bardwell.

**(2738) Viracocha = 1940 EC**

Discovered 1940 Mar. 12 by G. Kulin at Budapest.

Named for the supreme being in Inca mythology. He created the human race and gave them laws for which he required obedience. In his later travels in the Andes Mountains he was accompanied by the Deceiver, Taguacipa, who turns to evil the good men he created. Later, the creation completed, he departed in the direction of the setting sun. Named by the Minor Planet Names Committee following a suggestion by F. Pilcher.

**(2739) Taguacipa = 1952 UZ<sub>1</sub>**

Discovered 1952 Oct. 17 by J. L. Brady at Mount Wilson.

Named for the great Deceiver in Inca mythology. He is the evil dual of the creator of the human race, Viracocha, and turns to evil the good men Viracocha created. The two always traveled in company, and their companionship continues by their being adjacent in the minor planet tables. Named by the Minor Planet Names Committee following a suggestion by F. Pilcher.

**(2825) Crosby = 1938 SD<sub>1</sub>**

Discovered 1938 Sept. 19 by C. Jackson at Johannesburg.

Named for Harry Lillis ('Bing') Crosby (1903–1977), American singer and film actor. Crosby began to sing while studying law at college and, after a spell with the Paul Whiteman Orchestra in a trio called The Rhythm Boys, appeared in the early talkie *King of Jazz* (1930). Later, turning solo, he began to make films in earnest, notably the 'Road' series of films with Bob Hope and Dorothy Lamour, and

won an Academy Award for *Going My Way* (1944). Crosby's 'White Christmas' and 'Silent Night' are two of the biggest selling recordings of all time. Name proposed by G. V. and R. Williams, the identifications for this object having been made by C. M. Bardwell.

**(2829) Bobhope = 1948 PK**

Discovered 1948 Aug. 9 by E. L. Johnson at Johannesburg.

Named in honor of Bob Hope (real name Leslie Townes Hope), American comedian, born Eltham, England, in 1903. Star of numerous radio and television productions, Hope made his mark playing bumbling fools and cowards in such films as *Cat and the Canary* (1939), *Caught in the Draft* (1941) and *Princess and the Pirate* (1944). Hope has been the recipient of four special Academy Awards and more than forty honorary doctorates. Name proposed by G. V. and R. Williams, the identifications for this object having been made by C. M. Bardwell.

**(2854) Rawson = 1964 JE**

Discovered 1964 May 6 by D. McLeish at Córdoba Observatory.

Named in memory of Guillermo Colesbery Rawson (1825–1890), Argentine physician who worked very hard during a 19th century epidemic in Buenos Aires. He was also a member of the National Parliament on numerous occasions.

**(2865) Laurel = 1935 OK**

Discovered 1935 July 31 by C. Jackson at Johannesburg.

Named for Stan Laurel (1890–1965), American comedian (born Arthur Stanley Jefferson in Ulverston, England), the thin half and gag deviser of Hollywood's first great comedy duo. Stan performed in circuses and vaudeville before acting in silent films. He teamed with Oliver Hardy in 1926, and the pair (Stan as the bumbling innocent and pompous Ollie with his long-suffering glances into the camera) made more than 200 timeless slapstick films and shorts. Name proposed by G. V. and R. Williams, the identifications for this object having been made by C. M. Bardwell.

**(2866) Hardy = 1961 TA**

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

Named for Oliver Norville Hardy (1892–1957), American comedian, the fat half of Hollywood's first great comedy duo. Ollie was a former vaudeville actor and singer, who began doing silent-film comedy in 1913. Laurel and Hardy successfully made the transition from silent to sound movies. Among their outstanding films is *Way Out West*, which incorporates Ollie's and Stan's rendition of 'Trail of the Lonesome Pine'. Name proposed by G. V. and R. Williams, the identifications for this object having been made by C. M. Bardwell.

**(2950) Rousseau = 1974 VQ<sub>2</sub>**

Discovered 1974 Nov. 9 by P. Wild at Zimmerwald.

Named in honor of Jean-Jacques Rousseau (1712–1778), citizen of Geneva, moralist and writer. The guiding idea of his discourses and novels was that human nature is principally good but gets corrupted by society under the influence of science and art, which he believed enhance social inequality and discontentment. Hence his emotional exhortations for a return to nature and the simple life. Real and also imagined persecution made him seek refuge in many remote places in western Europe. Rousseau's ideas later proved highly influential in inspiring the French Revolution, Storm and Stress, romanticism and socialism.

**(2989) Imago = 1976 UF<sub>1</sub>**

Discovered 1976 Oct. 22 by P. Wild at Zimmerwald.



The Latin word for image, in various degrees of reality, from full appearance (as, e.g., the mature stage of an insect) to a mental picture (e.g., of oneself or another person), to visions and dreams.

**(3035) Chambers = A924 EJ**

Discovered 1924 Mar. 7 by K. Reinmuth at Heidelberg.

Named in honor of John Eric Chambers (1969– ), graduate student at Manchester University, currently a predoctoral fellow at the Harvard-Smithsonian Center for Astrophysics. John's research concentrates on the effect of mean-motion resonances on the orbital evolution of solar system objects, and he has recently completed a study of P/Swift-Tuttle, showing that the motion of this object is dominated by the 1:11 resonance with Jupiter. Name proposed by members of the Planetary Sciences division, the identifications for this object having been made by B. G. Marsden.

**(3089) Oujianquan = 1981 XK<sub>2</sub>**

Discovered 1981 Dec. 3 at the Purple Mountain Observatory.

Named in honor of Oujianquan, Chinese entrepreneur, for his notable contributions in developing township enterprises.

**(3105) Stumpff = A907 PB**

Discovered 1907 Aug. 8 by A. Kopff at Heidelberg.

Named in memory of Karl Stumpff (1895–1970), eminent celestial mechanic and professor of astronomy at Berlin, Graz and Göttingen. His method of treatment of periodic processes was a forerunner of the Fast Fourier Analysis. The collected experience of decades of research went into his main scientific heritage, the three-volume *Himmelsmechanik*. Name proposed by G. Klare and L. D. Schmadel. Citation prepared by P. Brosche.

**(3118) Claytonsmith = 1974 OD**

Discovered 1974 July 19 at the Felix Aguilar Observatory, El Leoncito.

Named in memory of Clayton Albert Smith (1934–1993), a leading expert on astrometry. Smith was known for his work on stellar catalogues and for improving the celestial coordinate system. He was director of the Yale-Columbia Southern Observatory (now the Dr. Carlos U. Cesco Station) in El Leoncito from 1968 to 1970 and director of the U.S. Naval Observatory's Astrometry Department from 1992.

**(3144) Brosche = 1931 TY<sub>1</sub>**

Discovered 1931 Oct. 10 by K. Reinmuth at Heidelberg.

Named in honor of Peter Brosche (1936– ), astronomer at Heidelberg and Bonn. He has developed the determination of systematic differences into orthogonal functions, participated in the foundation of absolute radio interferometry and investigated the history of the Seeberg Observatory and its scientific founder F. X. von Zach. Name proposed by L. D. Schmadel, endorsed by G. Klare.

**(3156) Ellington = 1953 EE**

Discovered 1953 Mar. 15 by A. Schmitt at Uccle.

Named in honor of Edward Kennedy ('Duke') Ellington (1899–1974), renowned jazz pianist, composer and bandleader. Ellington crafted more than 1000 orchestrations for big bands, film scores, operas, ballets, musicals and church services. Name proposed by B. G. Marsden, who made the identifications for this object.

**(3179) Beruti = 1962 FA**

Discovered 1962 Mar. 31 at the La Plata Observatory.

Named in memory of Arturo Beruti (1862–1938), Argentine composer, author of the operas *Pampa*, *Kryse*, *Evangelina* and *Taras Bulba*, among others.

**(3183) Franzkaiser = 1949 PP**

Discovered 1949 Aug. 2 by K. Reinmuth at Heidelberg.

Named in memory of Franz Kaiser (1891–1962), astronomer at the Heidelberg-Königstuhl Observatory from 1911 to 1914. In 1914 Kaiser modified and improved the formulae for deriving photographic positions of minor planets by the interpolation method. He discovered 21 numbered minor planets. Name proposed and citation prepared by G. Klare.

**(3187) Dalian = 1977 TO<sub>3</sub>**

Discovered 1977 Oct. 10 at the Purple Mountain Observatory.

Named for the city in northeastern China, located on the southern tip of the Liao Dong peninsula. A center for industry, technology and education, Dalian is a port city and a tourist center.

**(3258) Somnium = 1983 RJ**

Discovered 1983 Sept. 8 by P. Wild at Zimmerwald.

The Latin word for dream or vision. Title of Johannes Kepler's famous posthumously (1643) published science-fiction work expounding astronomy for an observer on the moon.

**(3300) McGlasson = 1928 NA**

Discovered 1928 July 10 by H. E. Wood at Johannesburg.

Named in honor of Van McGlasson, head of the Computation Facility at the Harvard-Smithsonian Center for Astrophysics. Name proposed by B. G. Marsden, who made the identifications for this object.

**(3329) Golay = 1985 RT<sub>1</sub>**

Discovered 1985 Sept. 12 by P. Wild at Zimmerwald.

Named in honor of Marcel Golay (1927– ), who from 1956 to 1992 was director of the Observatoire de Genève. He developed a seven-color system of stellar photometry that allows precise and relatively rapid determination of temperature, gravity, rotation and chemistry. Under his inspiring leadership the observatory staff made these measurements on myriads of stars and cultivated practically all the branches of astrophysics profiting from them. It is due mainly to Golay that Switzerland is adhering firmly to ESO and ESA, giving access to the most modern observing methods and instruments. Golay has been president of IAU Commissions 25, 37 and 45.

**(3346) Gerla = 1951 SD**

Discovered 1951 Sept. 27 by S. Arend at Uccle.

Named in honor of Gertrude Lawrence (1898–1952), real name Gertrud Alexandra Dagma Lawrence Klases, English actress, best remembered for her performances in musicals and Noël Coward plays. Citation written by G. V. Williams following a suggestion by J. Bardwell, the identifications for this object having been made by C. M. Bardwell.

**(3380) Awaji = 1940 EF**

Discovered 1940 Mar. 15 by G. Kulin at Budapest.

Named for the largest island in the Seto inland sea in Japan. In Japanese mythology, this was the first island created. Name proposed by H. Oishi and S. Nakano, who found the identifications involving this object.

**(3404) Hinderer = 1934 CY**

Discovered 1934 Feb. 4 by K. Reinmuth at Heidelberg.

Named in memory of Fritz Hinderer (1912–1991), German astronomer at the Potsdam and Babelsberg Observatories and professor at the Berlin Free University. For many years, Hinderer was engaged in the study of irregular variables, as well as

W UMa stars. By means of more than 850 plates taken at the Babelsberg Observatory, he thoroughly investigated the spectrophotometric behavior of SS Cyg. After World War II, Hinderer served solely as an academic teacher of astronomy in West Berlin. Name suggested and citation prepared by L. D. Schmadel, who was a student of Hinderer.

**(3409) Abramov = 1977 RE<sub>6</sub>**

Discovered 1977 Sept. 9 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Fyodor Aleksandrovich Abramov (1920–1983), well-known writer who depicted in his works the lives and fates of the ordinary people of northern Russia.

**(3419) Guth = 1981 JZ**

Discovered 1981 May 8 by L. Brožek at Kletř.

Named in memory of Vladimír Guth (1905–1980), outstanding Czech astronomer, founder of contemporary Czechoslovak meteoric astronomy. He started his astronomical work at Ondřejov Observatory and during the 1950s went to Slovakia (to Skalnaté Pleso, then later as first director of the Astronomical Institute of the Slovak Academy of Sciences). After his return to Ondřejov, Guth led the department of interplanetary matter. Guth was president of IAU Commission 22 from 1952 to 1958. Name proposed by Ľ. Kresák.

**(3423) Slouka = 1981 CK**

Discovered 1981 Feb. 9 by L. Brožek at Kletř.

Named in memory of Hubert Slouka (1903–1973), Czech astronomer, well known as a popularizer of astronomy and as the author of a great number of books, articles and lectures. Slouka was the long-time editor-in-chief of *Říše Hvězd*, a Czech journal for amateur astronomers. His wonderful book *Views into the Sky* inspired an interest in astronomy in many Czech and Slovak astronomers.

**(3424) Nušl = 1982 CD**

Discovered 1982 Feb. 14 by L. Brožek at Kletř.

Named in memory of František Nušl (1867–1951), Czech astronomer and mathematician, director of the National Observatory in Prague and for many years the chairman of the Czech Astronomical Society. His main interest consisted of the construction of astronomical instruments for the determination of geographical coordinates (circumzenithal, diazenithal, radiozenithal, etc.) in collaboration with J. J. Frič.

**(3440) Stampfer = 1950 DD**

Discovered 1950 Feb. 17 by K. Reinmuth at Heidelberg.

Named in memory of Simon Stampfer (1790–1864), who despite his humble beginnings became an astronomer and a founding member of the Imperial Academy of Sciences in Vienna. He was the first, in 1851, to compute photometric diameters of minor planets on the basis of the mean albedo derived from observations of the satellites of the giant planets, and in 1862 he was the first to show that the revolution period of P/Swift-Tuttle was somewhat in excess of a century. Named by the Minor Planet Names Committee following a suggestion by H. Haupt.

**(3482) Lesnaya = 1975 VY<sub>4</sub>**

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

Named in honor of the village in the Mogilev district (Belorussia) near which the Russian army under the command of Peter the Great defeated the Swedes on 1708 Sept. 28.

**(3501) Olegiya = 1971 QU**

Discovered 1971 Aug. 18 by T. M. Smirnova at the Crimean Astrophysical Observatory.

Named in honor of Oleg Nikolaevich Korottsev (1922– ), a member of the Astronomical-Geodetical Society since 1946 and a well-known St. Petersburg popularizer of astronomical knowledge, especially on minor planets and comets. He is the author of a number of astronomical books.

**(3518) Florena = 1977 QC<sub>4</sub>**

Discovered 1977 Aug. 18 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Pavel Aleksandrovich Florenskij (1882–1943), well-known Russian religious philosopher, physicist and mathematician. The name also honors his son, Kirill Pavlovich Florenskij (1915–1982), geochemist and mineralogist.

**(3582) Cyrano = 1986 TT<sub>5</sub>**

Discovered 1986 Oct. 2 by P. Wild at Zimmerwald.

Named for the whimsical French poet and soldier Cyrano de Bergerac (1619–1655), who in some of his comedies made brisk use of fanciful ways of spaceflight.

**(3599) Basov = 1978 PB<sub>3</sub>**

Discovered 1978 Aug. 8 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of the contemporary physicist Nikolaj Gennadievich Basov, Nobel Prize Laureate and one of the founders of quantum electronics.

**(3644) Kojitaku = 1931 TW**

Discovered 1931 Oct. 5 by K. Reinmuth at Heidelberg.

Named for Takuo Kojima, who has made more than 1000 accurate observations of comets and discovered more than 10 numbered minor planets. He has also written the Comet Observers Guide column in *Gekkan-Tenmon* since 1990. Name proposed by T. Kobayashi, who found the identifications involving this minor planet.

**(3648) Raffinetti = 1957 HK**

Discovered 1957 Apr. 24 at the La Plata Observatory.

Named in memory of Virgilio Raffinetti (1869–1946), Argentine astronomer, who was director of La Plata Observatory between 1889 and 1905. Under his personal supervision the Gautier meridian circle was installed at this observatory in 1903.

**(3653) Klimishin = 1979 HF<sub>5</sub>**

Discovered 1979 Apr. 25 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Ivan Antonovich Klimishin, professor of astronomy at the Ivano-Frankovsk Pedagogical Institute. Prominent in the field of cosmic hydrodynamics, Klimishin is also an expert on the history of astronomy and is the author of some popular astronomical books.

**(3656) Hemingway = 1978 QX**

Discovered 1978 Aug. 31 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Ernest Hemingway (1899–1961), great American writer.

**(3682) Welther = A923 NB**

Discovered 1923 July 12 by K. Reinmuth at Heidelberg.

Named in honor of Barbara Welther (1938– ), historian of science at the Harvard-Smithsonian Center for Astrophysics. Barbara has recently completed an educational video examining the life and work of Annie Jump Cannon. Name proposed by members of the Planetary Sciences division, the identifications for this object having been made by B. G. Marsden.

**(3707) Schröter = 1934 CC**

Discovered 1934 Feb. 5 by K. Reinmuth at Heidelberg.

Named in honor of Egon Horst Schröter (1928– ), German solar astronomer and director of the Freiburg Kiepenheuer-Institut, on the occasion of his retirement. In 1976 he succeeded K.-O. Kiepenheuer at the Freiburg Institute for Solar Physics. An important achievement during his directorship was the erection of two new tower telescopes at Teide Observatory on Tenerife, Canary Islands. Schröter served as president of the Astronomische Gesellschaft from 1987 to 1990. In 1987 he became a member of the German Committee in COSPAR. Name proposed and citation prepared by J. Schubart, endorsed by G. Klare and L. D. Schmadel.

**(3710) Bogoslovskij = 1978 RD<sub>6</sub>**

Discovered 1978 Sept. 13 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Nikita Vladimirovich Bogoslovskij, well-known contemporary composer and writer, on the occasion of his eightieth birthday.

**(3723) Voznesenskij = 1976 GK<sub>2</sub>**

Discovered 1976 Apr. 1 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Andrej Andréevich Voznesenskij, distinguished contemporary poet, known also as the author of unique word-and-figure combinations ('vidioms'), and a friend of some of the astronomers of the Crimean Astrophysical Observatory.

**(3738) Ots = 1977 QA<sub>1</sub>**

Discovered 1977 Aug. 19 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of the opera singer Georg Karlovich Ots (1920–1975).

**(3739) Rem = 1977 RE<sub>2</sub>**

Discovered 1977 Sept. 8 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Rem Viktorovich Khokhlov (1926–1977), Soviet physicist and one of the founders of nonlinear optics. An academician, professor and then rector of the Moscow University, Rem was an outstanding alpinist who perished ascending the Pamirs.

**(3745) Petaev = 1949 SF**

Discovered 1949 Sept. 23 by K. Reinmuth at Heidelberg.

Named in honor of Michail Ivanovich Petaev, visiting planetary geologist in the Harvard-Smithsonian Center for Astrophysics Planetary Sciences division. Petaev's investigations include the study of the origins of enstatite chondrite and achondrite meteorites, and he has made detailed studies of numerous meteorites. Name proposed by members of the Planetary Sciences division, the identifications for this object having been made by C. M. Bardwell.

**(3787) Aivazovskij = 1977 RG<sub>7</sub>**

Discovered 1977 Sept. 11 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Ivan Konstantinovich Aivazovskij (1817–1900), great Russian painter of seascapes who lived and worked in Feodosia, in the Crimea.

**(3790) Raywilson = 1937 UE**

Discovered 1937 Oct. 26 by K. Reinmuth at Heidelberg.

Named in honor of Raymond N. Wilson (1928– ), astronomical optician and pioneer of new-technology telescopes, on the occasion of his retirement. After serving as a department head and chief optician with Carl Zeiss, in 1972 he joined the European Southern Observatory, where he began work on ESO's telescopes and auxiliary instrumentation. His great experience in the optical design of large telescopes, as well as his profound knowledge of test methods, led him to develop the concept of deformable, adjustable active optical elements. Wilson was responsible for the optical design and the evaluation of suitable tests for the large MPIA and ESO telescopes. Name suggested and citation prepared by L. D. Schmadel, endorsed by the Heidelberg-Königstuhl Observatory.

**(3799) Novgorod = 1979 SL<sub>9</sub>**

Discovered 1979 Sept. 22 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named for one of the oldest towns in Russia.

**(3816) Chugainov = 1975 VG<sub>9</sub>**

Discovered 1975 Nov. 8 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Pavel Fedorovich Chugainov (1933–1992), astronomer at the Crimean Astrophysical Observatory for more than 30 years, and a prominent specialist in stellar photometry and physics. Known for his research on red dwarfs, Chugainov was the head of the Working Group on Flare Stars of IAU Commission 27 and he had been a member of the Organizing Committee of IAU Commission 25 for some years.

**(3830) Trelleborg = 1986 RL**

Discovered 1986 Sept. 11 by P. Jensen, K. Augustesen and H. J. Fogh at Brorfelde.

Named in honor of an old town in southern Sweden, twinned with Holbaek, the nearest town to the Brorfelde Observatory. Name proposed by the third discoverer.

**(3835) Korolenko = 1977 SD<sub>3</sub>**

Discovered 1977 Sept. 23 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Vladimir Galaktionovich Korolenko (1853–1921), Russian writer and publicist whose works are filled with democratic and humanistic ideas.

**(3868) Mendoza = 4575 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 Eugenio E. Mendoza V. (1928– ) on the occasion of his 65th birthday. After obtaining his Ph.D. at the University of Chicago, he undertook a postdoctoral position at the University of Cambridge. Mendoza taught astronomy at several universities in Mexico, and he is an expert on photometry and spectroscopy.

**(3877) Braes = 3108 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 Luc L. Braes (1936– ), born in Belgium and since 1958 living and working in the Netherlands, first in Groningen and then at Leiden Observatory. His main interests are the OB-stars and the determination of stellar proper motions.

**(3881) Doumergua = 1925 VF**

Discovered 1925 Nov. 15 by B. Jekhowsky at Algiers.

Named in memory of Gaston Doumergue (1863–1937), president of France during 1924–1931, and his wife. This name was proposed for 1925 VF by the discoverer in 1933 in *Journal des Observateurs* **17**, 102, long before the enactment of the rule excluding contemporary politicians from being honored with minor planets.

**(3899) Wichterle = 1982 SN<sub>1</sub>**

Discovered 1982 Sept. 17 by M. Mahrová at Kleť.

Named in honor of Otto Wichterle (1913– ), Czech chemist with a special interest in macromolecular substances. He is well known as the inventor of the hydrophilic gels used for the production of contact lenses.

**(3911) Otomo = 1940 QB**

Discovered 1940 Aug. 31 by K. Reinmuth at Heidelberg.

Named in honor of Satoshi Otomo, a dentist living in Kiyosato. Discoverer of numerous minor planets since 1991, he is also an active confirmer of new objects in collaboration with S. Nakano, who proposed the name and made the identifications involving this object.

**(3937) Bretagnon = 1932 EO**

Discovered 1932 Mar. 14 by K. Reinmuth at Heidelberg.

Named in honor of Pierre Bretagnon, astronomer at the Bureau des Longitudes. He is the author of a modern, high-precision analytical theory for the motion of the planets from Mercury to Neptune, called ‘VSOP’. Name proposed and citation prepared by J. Meeus, endorsed by G. Klare and L. D. Schmadel.

**(3938) Chapront = 1949 PL**

Discovered 1949 Aug. 2 by K. Reinmuth at Heidelberg.

Named in honor of Jean Chapront and Michelle Chapront-Touzé, astronomers at the Bureau des Longitudes. They have constructed a high-precision analytical theory for the orbital motion of the moon, called ‘ELP 2000–82’. Name proposed and citation prepared by J. Meeus, endorsed by G. Klare and L. D. Schmadel.

**(3940) Larion = 1973 FE<sub>1</sub>**

Discovered 1973 Mar. 27 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named for Larisa Ivanovna Golubkina, dramatic actress, brilliant performer of romances.

**(3956) Caspar = 1988 VL<sub>1</sub>**

Discovered 1988 Nov. 3 by P. Jensen at Brorfelde.

Named in honor of Caspar Karstensen, grandson of the discoverer.

**(3957) Sugie = 1933 OD**

Discovered 1933 July 24 by K. Reinmuth at Heidelberg.

Named in honor of Atsushi Sugie, who works at the Dync Astronomical Observatory and who has discovered numerous minor planets there since 1988. He is an

active confirmer of new objects in collaboration with S. Nakano, who proposed the name and made the identifications involving this object.

**(3989) Odin = 1986 RM**

Discovered 1986 Sept. 8 by P. Jensen and K. Augustesen at Brorfelde.

Named after the first and mightiest god in Norse mythology, who is the god of battle and victory, but also of wisdom and poetry. He rules the world from his home in Asgaard, where he gathers all the heroes who fell in battle to the great hall of Valhal, where they enjoy feasting and fighting until Ragnarok, the end of the world.

**(3990) Heimdal = 1987 SO<sub>3</sub>**

Discovered 1987 Sept. 25 by P. Jensen and K. Augustesen at Brorfelde.

Named after the god of dawn and light in Norse mythology, son of Odin, born of nine virgins (all sisters). He is the watchman of the Aesir and guards Bifrost, the bridge between heaven and earth, against the giants. He is famous for his eyesight and can hear the grass grow. When he blows his lure Gjallarhorn it is heard throughout the world.

**(4002) Shinagawa = 1950 JB**

Discovered 1950 May 14 by K. Reinmuth at Heidelberg.

Named in honor of Seishi Shinagawa (1944– ), who was the first to use electronic computers for orbit computation in Japan, having written a computer program for this in 1965. This program was used by Yoshiaki Banno (1952–1991). Name proposed by S. Nakano, who found the identifications involving this object and learnt orbit computation and programming from Shinagawa and Banno.

**(4013) Ogiria = 1979 OM<sub>15</sub>**

Discovered 1979 July 21 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Maiya Borisovna Ogir’ (1933–1991), solar physicist and staff member of the Crimean Astrophysical Observatory for more than 30 years, known for her research on the active processes on the sun.

**(4059) Balder = 1987 SB<sub>5</sub>**

Discovered 1987 Sept. 29 by P. Jensen and K. Augustesen at Brorfelde.

Named after the kindest Norse god, handsome and wise, son of Odin, peace-maker among the Aesir. Through the treachery of Loke, Balder was killed with a mistletoe shaft by his blind brother Høder.

**(4092) Tyr = 1986 TJ<sub>4</sub>**

Discovered 1986 Oct. 8 by P. Jensen and K. Augustesen at Brorfelde.

Named after one of the bravest gods in Norse mythology and a great warrior. It is unclear whether he is a son of Odin or of the giant Ymer. Tyr lost his right hand when Fenrir was chained by the Aesir.

**(4112) Hrabal = 1981 ST**

Discovered 1981 Sept. 25 by M. Mahrová at Kleť.

Named in honor of Bohumil Hrabal (1914– ), one of the most reputable contemporary Czech writers, the author of many stories and non-traditional prose (‘I Attend The English King’, ‘Too Loud A Solitude’, ‘Harlequin’s Millions’). Some of his works have been adapted for film screenplays, e.g., ‘A Close Watch On The Trains’.

**(4118) Sveta = 1982 TH<sub>3</sub>**

Discovered 1982 Oct. 15 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named for Svetlana Evgen'evna Savitskaya (1948– ), 1970 world aerobatics champion, the second woman to fly in space (1982) and the first woman to fly in space twice (1984). On her second flight she became the first woman to walk in space.

**(4161) Amasis = 6627 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 after the Egyptian pharaoh Amasis (570–526 B.C.). The Greek and Roman historians praised him greatly because he gave the Greek merchants their own town in the Nile delta. Amasis introduced demotic characters for the hieroglyphs. He died just before the Persians conquered Egypt.

**(4162) SAF = 1940 WA**

Discovered 1940 Nov. 24 by A. Patry at Nice.

Named in honor of the Société Astronomique de France, founded in 1887 by Camille Flammarion and acknowledged as being of public utility by the French government in 1897. The SAF has both professional and amateur astronomers as members, and its presidents have included Tisserand, Janssen, Poincaré, Danjon and Lyot. The society publishes the magazine *L'Astronomie* and the quarterly *Observations et Travaux*. The centenary of the SAF was celebrated by holding IAU Colloquium No. 98: Contributions of Amateur Astronomers to Astronomy. Name suggested and citation prepared by M.-A. Combes.

**(4170) Semmelweis = 1980 PT**

Discovered 1980 Aug. 6 by Z. Vávrová at Kletř.

Named in memory of Ignaz Fülöp Semmelweis (1818–1865), Hungarian physician.

**(4180) Anaxagoras = 6092 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 after the Greek philosopher Anaxagoras (c.500–428 B.C.). He lived in Asia Minor and in Athens, where he became a friend of Pericles. He learned that solar and lunar eclipses originated in a scientific way and not as an act of the gods. This was an asebie (outrage against the gods) and Anaxagoras had to flee; he died in exile.

**(4213) Njord = 1987 ST<sub>4</sub>**

Discovered 1987 Sept. 25 by P. Jensen and K. Augustesen at Brorfelde.

Named after the god of winds, navigation and prosperity in Norse mythology. He belongs to the race of gods called the Vanir, who are often in conflict with the Aesir, and he was originally brought to Asgaard as a hostage. He is the father of Frej and Freja.

**(4215) Kamo = 1987 VE<sub>1</sub>**

Discovered 1987 Nov. 14 by S. Ueda and H. Kaneda at Kushiro.

Named in honor of Akira Kamo (1943– ), who established the Comet Observers Network in Japan, 'Hoshi no Hiroba', in 1968. He played a leading role for many observers and discoverers of comets for more than 20 years when he was the first president of the network. His words "let's come together at Hoshi no Hiroba" are well known among amateur and professional astronomers in Japan. Name proposed by K. Watanabe. Citation prepared by T. Nomura.

**(4236) Lidov = 1979 FV<sub>1</sub>**

Discovered 1979 Mar. 23 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Mikhail L'vovich Lidov, celestial mechanician at the Keldysh Institute of Applied Mathematics of the Russian Academy of Sciences, known for his works in astrodynamics and astronautics.

**(4271) Novosibirsk = 1976 GQ<sub>6</sub>**

Discovered 1976 Apr. 3 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named for the great Siberian industrial, cultural and scientific center, on the occasion of its 100th anniversary in 1993.

**(4274) Karamanov = 1980 RZ<sub>3</sub>**

Discovered 1980 Sept. 6 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Alemdar Sobitovich Karamanov, composer, who lives and works in the Crimea, known for his symphonies, ballets, music for performances and cinema films, piano concerti and other musical works, many of which are dedicated to the Crimea and its history.

**(4280) Simonenko = 1985 PF<sub>2</sub>**

Discovered 1985 Aug. 13 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Alla Nikolaevna Simonenko (1935–1984), specialist on small bodies of the solar system. She made substantial contributions to the study of the physical process of meteoroid fragmentation, the distribution of meteor radiants, the influx of meteoric matter to the earth, and the dynamics of asteroid orbits. She published two books on the study of asteroids and actively favored the development of physical investigations of asteroids in the former U.S.S.R. Citation prepared by D. F. Lupishko at the request of the discoverer.

**(4303) Savitskij = 1973 SZ<sub>3</sub>**

Discovered 1973 Sept. 25 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in honor of Evgenij Yakovlevich Savitskij (1910–1990), Russian aviator, father of cosmonaut Svetlana Savitskaya.

**(4304) Geichenko = 1973 SW<sub>4</sub>**

Discovered 1973 Sept. 27 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Semyon Stepanovich Geichenko, writer and literary scholar, researcher of the life and the creative work of A. S. Pushkin. Geichenko is especially known as director and curator of Mikhailovskoe, the Pushkin country-house museum in the Pskov region. He made a great effort to rebuild this memorial to Pushkin following its destruction in World War II.

**(4308) Magarach = 1978 PL<sub>4</sub>**

Discovered 1978 Aug. 9 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named for the Research Institute of wine-making and viticulture at Magarach, near Yalta. Founded in 1828 as a specialized school for gardening and wine-making, Magarach was one of the first such schools in what was then Russia.

**(4358) Lynn = A909 TF**

Discovered 1909 Oct. 5 by P. H. Cowell at Greenwich.

Named in memory of William Thynne Lynn (1835–1911), assistant at Greenwich Observatory from 1854 to 1880 and author of several popular books. He is best known, however, for the numerous short notes on astronomical matters he wrote in *The Observatory* for many years. Among those notes is an enigmatic one in 1902 in which he hinted that the Perseid comet P/Swift-Tuttle might be identical with Kegler's comet of 1737. Named by the Minor Planet Names Committee following a suggestion by B. G. Marsden.

**(4371) Fyodorov = 1983 GC<sub>2</sub>**

Discovered 1983 Apr. 10 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Svyatoslav Nikolaevich Fyodorov, famous Moscow ophthalmologist, outstanding surgeon and brilliant manager who organized several clinics in Moscow and other cities for the treatment of eye diseases.

**(4417) Lecar = 1931 GC**

Discovered 1931 Apr. 8 by K. Reinmuth at Heidelberg.

Named in honor of Myron Lecar (1930– ), astrophysicist in the Planetary Sciences division of the Harvard-Smithsonian Center for Astrophysics. Lecar's research covers the dynamics of both solar-system and stellar bodies, and the large-scale structure of the universe. Named by the Minor Planet Names Committee following a suggestion by members of the Planetary Sciences division.

**(4418) Fredfranklin = 1931 TR<sub>1</sub>**

Discovered 1931 Oct. 9 by K. Reinmuth at Heidelberg.

Named in honor of Fred Franklin (1932– ), astronomer in the Planetary Sciences division of the Harvard-Smithsonian Center for Astrophysics. Franklin's researches have covered chaos in the solar system, the rings of Saturn, and mutual phenomena of planetary satellites. Name proposed by members of the Planetary Sciences division, the identifications for this object having been made by B. G. Marsden.

**(4419) Allancook = 1932 HD**

Discovered 1932 Apr. 24 by K. Reinmuth at Heidelberg.

Named in honor of Allan F. Cook II (1922– ), astrophysicist in the Planetary Sciences Division of the Harvard-Smithsonian Center for Astrophysics, whose astronomical interests range from meteors and the earth's upper atmosphere, to Saturn's rings, to spectroscopy and photometry. Named by the Minor Planet Names Committee following a suggestion by members of the Planetary Sciences division.

**(4426) Roerich = 1969 TB<sub>6</sub>**

Discovered 1969 Oct. 15 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of the family of outstanding Russian figures of culture whose lives were closely connected with India: Nikolaj Konstantinovich Roerich (1874–1947), painter, writer, philosopher, archaeologist, public figure and enlightener; his wife, Elena Ivanovna Roerich (1879–1955), participant in all his expeditions, writer, philosopher; their elder son, Yurij Nikolaevich Roerich (1902–1960), scientist in oriental studies and philology; and their younger son, Svyatoslav Nikolaevich Roerich (1904–1993), painter and public figure.

**(4428) Khotinok = 1977 SN**

Discovered 1977 Sept. 18 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Roman L'vovich Khotinok, meteorite researcher in the Meteorite Committee of the Russian Academy of Sciences, who has investigated many

sites of possible meteorite falls and has discovered more than 20 different meteorites that are now stored in the Moscow collection.

**(4484) Sif = 1987 DD**

Discovered 1987 Feb. 25 by P. Jensen and K. Augustesen at Brorfelde.

Named after Tor's wife, who, after Odin's wife, is the highest ranked of the Asynjur, the goddesses of the Aesir. She is much pursued by the other gods, though they fear the anger of her strong husband.

**(4485) Radonezhskij = 1987 QQ<sub>11</sub>**

Discovered 1987 Aug. 27 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Sergij Radonezhskij (c.1321–1391), prominent figure in the Russian Church, a highly respected and honored person who was considered in Russia a protector of learners and learning. He actively supported Moscow Prince Dmitrij Donskoj in the policy of the consolidation of Russian principalities and in the national struggle for liberation against the Tartar-Mongolian yoke.

**(4537) Valgrirasp = 1987 RR<sub>3</sub>**

Discovered 1987 Sept. 2 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of the Soviet writer Valentin Grigorjevich Rasputin.

**(4572) Brage = 1986 RF**

Discovered 1986 Sept. 8 by P. Jensen and K. Augustesen at Brorfelde.

Named after the god of poetry and music in Norse mythology, husband of Idun and son and principal counsellor of Odin.

**(4589) McDowell = 1933 OB**

Discovered 1933 July 24 by K. Reinmuth at Heidelberg.

Named in honor of Jonathan Christopher McDowell (1960– ), astrophysicist, space enthusiast and feminist activist. His astrophysical interests include theoretical studies of background light and quasars. He shares his encyclopedic knowledge of spaceflight with the world by regularly releasing an electronic space newsletter. Citation written by A. Prestwich at the request of B. G. Marsden and G. V. Williams who appreciate Jonathan's assistance in trying to identify 1991 VG with manmade space debris. Identifications for this object were made by C. M. Bardwell.

**(4594) Dashkova = 1980 KR<sub>1</sub>**

Discovered 1980 May 17 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of princess Ekaterina Romanovna Dashkova (1744–1810), one of the most educated women in Russia of her time, well-known figure in Russian culture, director of the St. Petersburg Academy of Sciences and president of the Russian Academy during 1783–1796.

**(4615) Zinner = A923 RH**

Discovered 1923 Sept. 13 by K. Reinmuth at Heidelberg.

Named in memory of Ernst Zinner (1886–1970), assistant astronomer (1910–1914) and director (1926–1953) of the Remeis-Sternwarte, Bamberg. In addition to his observational work on variable stars, Zinner was the first professor of astronomy to investigate the history of astronomy in the Middle Ages quantitatively. Giacobini's comet 1900 I was rediscovered by Zinner in October 1913 and is now known as P/Giacobini-Zinner, parent of the Draconid meteors. Name proposed by G. Klare and L. D. Schmadel, citation prepared by R. Knigge.

**(4616) Bařalov = 1975 BF**

Discovered 1975 Jan. 17 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Aleksej Vladimirovich Bařalov, well-known contemporary cinema actor and producer.

**(4623) Obratsova = 1981 UT<sub>15</sub>**

Discovered 1981 Oct. 24 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Elena Vasil'evna Obratsova, outstanding singer at the Bolshoi Theatre in Moscow.

**(4648) Tirion = 1931 UE**

Discovered 1931 Oct. 18 by K. Reinmuth at Heidelberg.

Named in honor of the Dutch cartographer Wil Tirion, author of the *Sky Atlas 2000.0* and many other modern celestial maps. Name proposed and citation prepared by J. Meeus, endorsed by G. Klare and L. D. Schmadel.

**(4649) Sumoto = 1936 YD**

Discovered 1936 Dec. 20 by M. Laugier at Nice.

Named for the chief city of Awaji island on the Seto inland sea of Japan. The Oriental Astronomical Association's Computing Service is based in this city. Many observations of comets and minor planets by Japanese amateurs, as well as identifications and orbits, are collected there before being reported to the Minor Planet Center. Name proposed by S. Nakano, who found the identifications involving this object and who lives in Sumoto.

**(4669) Høder = 1987 UF<sub>1</sub>**

Discovered 1987 Oct. 27 by P. Jensen and K. Augustesen at Brorfelde.

Named after the blind god in Norse mythology, son of Odin and brother of Balder, whom he killed with a mistletoe shaft with the treacherous help of Loke.

**(4676) Uedaseiji = 1990 SD<sub>4</sub>**

Discovered 1990 Sept. 16 by T. Fujii and K. Watanabe at Kitami.

Named in honor of Seiji Ueda (1952– ), well known for his observations of comets and minor planets. He lives in Kushiro and has been an enthusiastic astronomer since his junior high school days. He played an active part in ice hockey as a Japanese-league player for six years. After retirement, he renewed his interest in astronomy. Since 1987 he has used a Wright-Schmidt Camera of 16-cm aperture and has discovered many minor planets.

**(4677) Hiroshi = 1990 SQ<sub>4</sub>**

Discovered 1990 Sept. 26 by A. Takahashi and K. Watanabe at Kitami.

Named in honor of Hiroshi Kaneda (1953– ), well known for his orbit computations for comets and minor planets. He lives in Sapporo and is a computer programmer who has written much astronomical software. Recently, he has been finding many identifications of minor planets. He has also put much energy into the astrometric measurement of films he has obtained at the Kushiro Observatory.

**(4686) Maisica = 1979 SX<sub>2</sub>**

Discovered 1979 Sept. 22 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Maria Luisa Grima Garcia, a charming Spanish woman who is the soul of her family, a hospitable hostess, and founder and curator of a small home museum. Maisica is a pet name for Maria Luisa.

**(4718) Araki = 1990 VP<sub>3</sub>**

Discovered 1990 Nov. 13 by T. Fujii and K. Watanabe at Kitami.

Named in honor of Chikara Araki (1946– ), an astronomical photographer in Hokkaido. He has formed a group called 'Konpeito' and has been taking a lot of impressive astronomical photographs.

**(4720) Tottori = 1990 YG**

Discovered 1990 Dec. 19 by S. Ueda and H. Kaneda at Kushiro.

Named for a central city of the Sanin area, located on the Japan Sea, sister city of Kushiro since 1963.

**(4723) Wolfgangmattig = 1937 TB**

Discovered 1937 Oct. 11 by K. Reinmuth at Heidelberg.

Named in honor of Wolfgang Mattig (1927– ), German solar physicist and cosmologist at the Freiburg Kiepenheuer-Institut, on the occasion of his retirement. In his thesis, Mattig worked on relativistic cosmology and, in 1957, he discovered an analytical relation between the redshift and the apparent magnitude of galaxies. He took an active part in the development of the Teide Observatory, Canary Islands. Since 1980, Mattig has been the German representative in the Solar Physics Commission of COSPAR. Name proposed and citation prepared by J. Schubart, endorsed by G. Klare and L. D. Schmadel.

**(4740) Veniamina = 1985 UV<sub>4</sub>**

Discovered 1985 Oct. 22 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.

Named in memory of Veniamin Vasil'evich Somov (1945–1991), the discoverer's brother.

**(4756) Asaramas = 1950 HJ**

Discovered 1950 Apr. 21 at the La Plata Observatory.

Named in honor of the Asociacion Argentina Amigos de la Astronomia, an amateur astronomical association in Argentina, founded 1929 Jan. 4. The A.A.A.A. was the first contact with astronomy for a large number of professional astronomers at the La Plata Observatory.

**(4774) Hobetsu = 1991 CV<sub>1</sub>**

Discovered 1991 Feb. 14 by S. Ueda and H. Kaneda at Kushiro.

Named for the city, located 100 km southeast of Sapporo, famous for the fossil of a sea dinosaur that was excavated there. Hobetsu is also well known as a production center for rice and melons.

**(4795) Kihara = 1989 CB<sub>1</sub>**

Discovered 1989 Feb. 7 by A. Takahashi and K. Watanabe at Kitami.

Named in honor of Hideo Kihara (1911–1993), a founder of the Nayoro Astronomical Club, who established the Kihara Observatory, where he made observations of sunspots for 20 years. The observatory was presented to the city of Nayoro before his death and is now known as the Nayoro-Kihara Observatory. Name suggested and citation prepared by H. Fukushima.

**(4842) Atsushi = 1989 WK**

Discovered 1989 Nov. 21 by S. Ueda and H. Kaneda at Kushiro.

Named in honor of Atsushi Takahashi (1965– ). A resident of Kitami, he makes observations of minor planets and comets as a member of a group named 'Hokkaido Showakusei Suisei Kaigi'. Name proposed by K. Watanabe.

**(4844) Matsuyama = 1991 BA<sub>2</sub>**

Discovered 1991 Jan. 23 by S. Ueda and H. Kaneda at Kushiro.

Named in honor of Masanori Matsuyama (1950– ), who started observing minor planets in 1987 and has discovered many new minor planets since then. He lives in Kushiro and makes observations of minor planets and comets as a member of 'Hokkaido Showakusei Susei Kaigi'. Name proposed by K. Watanabe.

**(4862) Loke = 1987 SJ<sub>5</sub>**

Discovered 1987 Sept. 30 by P. Jensen and K. Augustesen at Brorfelde.

Named after the strangest character in Norse mythology. Loke is one of the giants, but he lives among the Aesir in Asgaard. He is the symbol of falseness and intrigue—at the same time the enemy and the cunning helper of the gods. He caused the death of Balder, and he is the father of Fenrir, Hel and the Midgard serpent.

**(4863) Yasutani = 1987 VH<sub>1</sub>**

Discovered 1987 Nov. 13 by S. Ueda and H. Kaneda at Kushiro.

Named in honor of Keiki Yasutani (1958– ), an astronomical photographer renowned for his photographs of the moon and Mars. He is a member of the Sapporo Observatory. Name proposed by K. Watanabe.

**(4890) Shikanosima = 1982 VE<sub>4</sub>**

Discovered 1982 Nov. 14 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Named for the small island located off the northern coast of Kyushu. In 1784, a farmer found the golden seal that was the present from the emperor of ancient China to the king of Na, one of the local states of ancient Japan, when the King sent the first delegation to China under the Han Dynasty in A.D. 57. This association of China and Japan is the first one appearing in the Chinese historical records.

**(4894) Ask = 1986 RJ**

Discovered 1986 Sept. 8 by P. Jensen and K. Augustesen at Brorfelde.

Named after the first man, who, according to Norse mythology, was made from an ash tree by Odin and his two brothers, Vile and Ve.

**(4895) Embla = 1986 TK<sub>4</sub>**

Discovered 1986 Oct. 13 by P. Jensen and K. Augustesen at Brorfelde.

Named after the first woman, who, according to Norse mythology, was made from an ash tree by Odin, Vile and Ve.

**(4905) Hiromi = 1991 JM<sub>1</sub>**

Discovered 1991 May 15 by A. Takahashi and K. Watanabe at Kitami.

Named in honor of Hiromi Takahashi (1964– ), wife of the first discoverer.

**(4908) Ward = 1933 SD**

Discovered 1933 Sept. 17 by F. Rigaux at Uccle.

Named in honor of Steven Ward, electronics technician in the Computation Facility at the Harvard-Smithsonian Center for Astrophysics. Steve's assistance to the Minor Planet Center mainly involves system programming. Name proposed by B. G. Marsden, who made the identifications for this object.

**(4910) Kawasato = 1953 PR**

Discovered 1953 Aug. 11 by K. Reinmuth at Heidelberg.

Named in honor of Nobuhiro Kawasato, who co-discovered 1988 VG<sub>2</sub>, which was identified with the lost minor planet (724) Hapag. Name proposed by S. Nakano, who found the identifications involving this object.

**(4928) Vermeer = 1982 UG<sub>7</sub>**

Discovered 1982 Oct. 21 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in memory of famous Dutch painter Vermeer van Delft (1632–1675).

**(4929) Yamatai = 1982 XV**

Discovered 1982 Dec. 13 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Named for a region of ancient Japan. According to a Wei-dynasty Chinese historical book, there were more than 70 000 houses in Yamatai. Himiko, the queen of Yamatai, dispatched an envoy to ancient China in 238. There is no record of Yamatai (or Himiko) in any Japanese historical document, and the site of the city has not yet been located.

**(4940) Polenov = 1986 QY<sub>4</sub>**

Discovered 1986 Aug. 18 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in memory of the well-known Russian painter Vasilij Dmitrievich Polenov (1844–1927).

**(4944) Kozlovskij = 1987 RP<sub>3</sub>**

Discovered 1987 Sept. 2 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Ivan Semyonovich Kozlovskij, distinguished opera-singer who has rare lyric tenor and is popular for his many opera parties and for his rendering of Russian folk-songs.

**(4963) Kanroku = 1977 DR<sub>1</sub>**

Discovered 1977 Feb. 18 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Named for a Pekche priest who presented, by way of tribute, books on calendar-making, astronomy, geography, divination, etc., to the Japanese Government in 602. He taught the Japanese the algorithm of the luni-solar calendar used in China.

**(4968) Suzamur = 1986 PQ**

Discovered 1986 Aug. 1 by E. F. Helin at Palomar.

Named in honor of Suzanne Moss Murray, a charming and compassionate person, on the occasion of her birthday, 1993 Apr. 2. Suzanne, a special friend of the discoverer, has always shown enthusiasm and given encouragement to Helin's pursuit of minor planets.

**(4971) Hoshinohiroba = 1989 BY**

Discovered 1989 Jan. 30 by T. Fujii and K. Watanabe at Kitami.

Named after the Comet Observers Network in Japan, 'Hoshi no Hiroba', established by Akira Kamo in 1968. About 350 earnest observers made 8805 visual magnitude estimates of 89 comets in the first 20 years. 'Hoshi no Hiroba' means an open space where everybody can come and enjoy watching stars. Citation prepared by T. Nomura.

**(4975) Dohmoto = 1990 SZ<sub>1</sub>**

Discovered 1990 Sept. 16 by T. Fujii and K. Watanabe at Kitami.

Named in honor of Yoshio Dohmoto (1914– ), the former head of the Asahikawa Observatory in Hokkaido. Over a period of about 30 years, he carried out many observations of comets, occultations, artificial satellites, sunspots, etc. He is now an active leader of the Asahikawa Astronomical Club. Name suggested and citation prepared by H. Fukushima.



**(4978) Seitz = 4069 T-2**

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named in honor of Horstmar Seitz (1920–1943), a close friend of one of the discoverers.

**(4979) Otawara = 1949 PQ**

Discovered 1949 Aug. 2 by K. Reinmuth at Heidelberg.

Named in honor of Akira Otawara (1950– ), photo artist and writer. In 1983 he published two books, *Field Star Map 2000* and *Star & Planet Catalogue 2000*, in collaboration with S. Nakano, who proposed the name and found the identifications involving this object.

**(4996) Veisberg = 1986 PX<sub>5</sub>**

Discovered 1986 Aug. 11 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named for the Russian painter Vladimir Grigor'evich Veisberg (1924–1985).

**(4997) Ksana = 1986 TM**

Discovered 1986 Oct. 6 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in honor of Kseniya Andréevna Nessler, chemist by profession and fighter against environmental pollution by avocation, friend of the discoverer. Ksana is a familiar variant of Kseniya, the Russian form of Xenia.

**(5005) Kegler = 1988 UB**

Discovered 1988 Oct. 16 by S. Ueda and H. Kaneda at Kushiro.

Named for Ignatius Kegler (1680–1746), a German Jesuit, who worked for 29 years as Astronomer Royal in Beijing. The identity of a comet he observed in 1737 with P/Swift-Tuttle, briefly suggested by W. T. Lynn and discussed in considerable detail by B. G. Marsden, was proven by the comet's recovery in 1992. Name suggested by I. Hasegawa.

**(5009) Sethos = 2562 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 after the Egyptian pharaoh Sethos I (reigned 1304–1290 B.C.) of the 19th dynasty. His father was Ramses I, who reigned for only two years. Sethos I built the Great Hall of Columns of the Amun temple in Karnak and the Osiris temple at Abydos. Sethos I was the father of Ramses II.

**(5010) Amenemhêt = 4594 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 after the Egyptian pharaoh Amenemhêt III (1844–1797 B.C.), son of Sesostri III. He regulated the oasis Fajum, which became rich agricultural land. There he built an immense temple which Herodotus later visited and called a 'labyrinth'.

**(5017) Tenchi = 1977 DS<sub>2</sub>**

Discovered 1977 Feb. 18 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Named for the emperor (626–671) who made the first clepsydra in Japan in 660. On 671 June 10 (Gregorian style) he placed a new clepsydra on a new pavilion, and it sounded out the hours with bells and drums. In commemoration of this, June 10 is designated as the 'Time Day' in Japan.

**(5018) Tenmu = 1977 DY<sub>8</sub>**

Discovered 1977 Feb. 19 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Named for a Japanese emperor (?–686), younger brother of the emperor Tenchi, skilled in astronomy and divination. He erected the first Japanese astronomical observatory in 675.

**(5021) Krylania = 1982 VK<sub>12</sub>**

Discovered 1982 Nov. 13 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in honor of Anna Alexeevna Kapitsa (1903– ), the daughter of Alexei Nikolaevich Krylov. She was an outstanding Russian mathematician and the wife of famous physicist Pyotr Leonidovich Kapitsa. Name proposed by the discoverer following a suggestion by Maria Sergeevna Kapitsa.

**(5031) Švejcar = 1990 FW<sub>1</sub>**

Discovered 1990 Mar. 16 by Z. Vávrová at Kletř.

Named in honor of Josef Švejcar (1897– ), Czech physician.

**(5035) Swift = 1991 UX**

Discovered 1991 Oct. 18 by S. Ueda and H. Kaneda at Kushiro.

Named in memory of Lewis Swift (1820–1913), famous U.S. comet hunter. The first of his 13 discoveries, P/Swift-Tuttle (1862 III), parent of the Perseid meteors, is also the most famous. He discovered his last comet at the age of 79. Name suggested by I. Hasegawa.

**(5036) Tuttle = 1991 US<sub>2</sub>**

Discovered 1991 Oct. 31 by S. Ueda and H. Kaneda at Kushiro.

Named for Horace P. Tuttle (1837–1923), astronomer at Harvard and—after serving in the U.S. Navy during the Civil War—at the Naval Observatory in Washington. Co-discoverer of both the Perseid comet P/Swift-Tuttle and the Leonid comet P/Tempel-Tuttle, he also found four other comets and the minor planets (66) Maja and (73) Klytia. Name suggested and citation prepared by I. Hasegawa.

**(5037) Habing = 6552 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 Harm Habing (1937– ), professor of astronomy at the University of Leiden and president of IAU Commission 34 (Interstellar Matter). Habing was the Dutch co-chairman of the Joint Science Team of the Infrared Astronomical Satellite (IRAS). Since 1983 he has supervised many publications based on IRAS observations of galaxies. Habing is a stimulating supervisor for his students and young scientists.

**(5040) Rabinowitz = 1972 RF**

Discovered 1972 Sept. 15 by T. Gehrels at Palomar.

Named in honor of the U.S. astronomer David Rabinowitz and his work in the Spacewatch program.

**(5048) Moriarty = 1981 GC**

Discovered 1981 Apr. 1 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named for Professor James Moriarty, whom some would describe as a fictional character in the Sherlock Holmes stories of Sir Arthur Conan Doyle. Described by Holmes as "the Napoleon of crime", and also as "the celebrated author of *The Dynamics of an Asteroid*—a book that ascends to such rarefied heights of pure mathematics

that it is said that there was no man in the scientific press capable of criticizing it”, the “most dangerous and capable criminal in Europe” died in a struggle with Holmes at the Reichenbach Falls in Switzerland. Name suggested by J. F. Bowers, citation prepared by J. B. Tatum.

**(5049) Sherlock = 1981 VC<sub>1</sub>**

Discovered 1981 Nov. 2 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named for Sherlock Holmes, the famous detective in the stories by Sir Arthur Conan Doyle. Holmes’s knowledge of astronomy was nil; he was ignorant of the Copernican Theory and of the composition of the solar system. “You say that we go round the sun. If we went round the moon it would not make a pennyworth of difference to me or my work.” Name suggested by J. F. Bowers, citation prepared by J. B. Tatum.

**(5050) Doctorwatson = 1983 RD<sub>2</sub>**

Discovered 1983 Sept. 14 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named for Dr. John H. Watson, M.D., friend, confidant and chronicler of the detective Sherlock Holmes in the stories by Sir Arthur Conan Doyle. Name suggested by J. F. Bowers, citation prepared by J. B. Tatum.

**(5060) Yoneta = 1988 BO<sub>5</sub>**

Discovered 1988 Jan. 24 by S. Ueda and H. Kaneda at Kushiro.

Named in honor of Katsuhiko Yoneta (1904–1957), doctor of engineering and a graduate of Hokkaido Imperial University. A pioneer of astronomical observation by amateur astronomers in Hokkaido, he established the Hokkaido branch of the Oriental Astronomical Association in 1924 and inspired many young students. Name suggested and citation prepared by H. Fukushima.

**(5064) Tanchozuru = 1990 FS**

Discovered 1990 Mar. 16 by M. Matsuyama and K. Watanabe at Kushiro.

Named for the crane that mainly inhabits Kushiro Marsh National Park in eastern Hokkaido. This bird is designated as a Special Natural Species. The white-bodied bird is about 1 meter in height and characterized by partial black plumage and a red spotted head. It is widely regarded in Japan as a lucky bird. Although the bird was once nearly exterminated, conservation means that there are now more than 400 individuals.

**(5070) Arai = 1991 XT**

Discovered 1991 Dec. 9 by S. Ueda and H. Kaneda at Kushiro.

Named in honor of Ikunosuke Arai (1836–1909), the first director of the Central Meteorological Observatory. In his early days, he contributed to the triangulation of Hokkaido. In 1887 he observed the total eclipse of the sun at Sanjo, Niigata, and successfully photographed the event. Name suggested and citation prepared by H. Fukushima.

**(5071) Schoenmaker = 3099 T-2**

Discovered 1973 Sept. 30 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named in honor of Anton A. Schoenmaker, for many years technical officer at the Leiden Observatory. He wrote computer programs for the van Houtens, so that they were able to make the first identifications for their three Trojan Surveys. The help of Ton is very much appreciated. Ton is also a visual comet observer.

**(5072) Hioki = 1931 TS<sub>1</sub>**

Discovered 1931 Oct. 9 by K. Reinmuth at Heidelberg.

Named in honor of Tsutomu Hioki, who co-discovered 1988 VG<sub>2</sub>, which was identified with the lost minor planet (724) Hapag. Name proposed by S. Nakano, who found the identifications involving this object.

**(5082) Nihonsyoki = 1977 DN<sub>4</sub>**

Discovered 1977 Feb. 18 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Named for the chronicles of Japan from the earliest times to 697, written in Chinese and completed in 720. It was the first historical record compiled by the Japanese government and contained records of various astronomical phenomena, such as the appearances of seven comets (including the 684 return of P/Halley), 13 solar eclipses (e.g., in 628), occultations of stars and planetary phenomena. It was translated into English by W. G. Aston and published under the title of *Nihongi*.

**(5083) Irinara = 1977 EV**

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

Named in honor of Irina Evgen’evna Raksha, well-known writer in Moscow and a friend of the discoverer’s family.

**(5088) Tancredi = 1979 QZ<sub>1</sub>**

Discovered 1979 Aug. 22 by C.-I. Lagerkvist at the European Southern Observatory.

Named in honor of Gonzalo Tancredi, Uruguayan astronomer who spent several years in Uppsala, working with the planetary group there. He has specialized in a broad range of problems related to the dynamical and physical evolution of comets and their interrelations with minor planets, using both observations and theoretical modeling.

**(5093) Svirelia = 1982 TG<sub>1</sub>**

Discovered 1982 Oct. 14 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named for Elsa Gustavovna Sviridova, the wife of Georgij Vasil’evich Sviridov.

**(5094) Seryozha = 1982 UT<sub>6</sub>**

Discovered 1982 Oct. 20 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in honor of Serguei Pyotrovich Kapitsa (1928– ), professor of nuclear physics, active in public matters of science, the history of science and moderator of the principal Russian television program on science and society since 1973. He has been vice-president of the European Physical Society (1977–1980) and president of the Physical Society of the U.S.S.R. (1989–1992). He received the UNESCO Kalinga prize in 1979.

**(5112) Kusaji = 1987 SM<sub>13</sub>**

Discovered 1987 Sept. 23 by S. Ueda and H. Kaneda at Kushiro.

Named in honor of Shigeji Kusaji (1879–1956), agricultural worker in Asahikawa. He was the first head of the Asahikawa Astronomical Club and an earnest observer of sunspots. His observations were made from 1928 to 1955, and observations are still being made by amateur astronomers at his club. Name suggested by H. Kohsai. Citation prepared by H. Fukushima.

**(5148) Giordano = 5557 P-L**

Discovered 1960 Oct. 17 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named in memory of Giordano Bruno (1548–1600), Dominican priest, who spent 16 years travelling through Europe, but who was mostly in London, where many of his papers were published. Bruno assumed the existence of other worlds on which people could live, and he was convinced of the correctness of the heliocentric system. This brought him in conflict with the church, and he was condemned and burned on the Campo dei Fiori in Rome.

**(5149) Leibniz = 6582 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 after Gottfried Wilhelm Leibniz (1646–1716), German philosopher and mathematician, co-inventor of calculus.

**(5151) Weerstra = 2160 T-2**

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named in honor of Claas Weerstra, administrative officer and longtime programmer at the Leiden Observatory. He is an enthusiastic visual comet observer and is always very helpful when the van Houtens need help with new programs for their minor planet surveys.

**(5194) Böttger = 4641 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 after Johann Friedrich Böttger (1682–1719). He was supposed to have made gold as alchemist to King August II the Strong of Saxonia. But instead he developed, together with mathematician and physician Ehrenfried Walter von Tschirnhaus, the first European porcelain in 1707–08. In 1710, Böttger became the head of the Dresden (later Meissen) Porcelain Manufacture. Böttger tried to sell the secret for the production of porcelain to the king of Prussia, so August II put Böttger into prison, where he died a short time later.

**(5195) Kaendler = 3289 T-1**

Discovered 1971 Mar. 26 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named after Johann Joachim Kaendler (1706–1775), sculptor and porcelain-modeller at the Meissen Porcelain Manufacture. Kaendler was the first to develop the fine baroque porcelain figures, which are still imitated today.

**(5196) Bustelli = 3102 T-2**

Discovered 1973 Sept. 30 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named after Franz Anton Bustelli (1723–1763), Italian-Swiss artist. Bustelli worked first in Vienna and then became famous as modeller for the Bavarian Porcelain Manufactory in Nymphenburg. His figures from the *Commedia dell'arte* are especially fine.

**(5197) Rottmann = 4265 T-2**

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named after Friedrich Rottmann (1797–1850), German Romantic landscape painter. He travelled on the order of King Ludwig I of Bavaria to Salzburg, Tirol,

Rome and especially to Greece. His main work is kept in museums in Heidelberg and Munich.

**(5199) Dortmund = 1981 RP<sub>2</sub>**

Discovered 1981 Sept. 7 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named for the capital of North Rhein-Westphalia and the sister city of Rostov-on-Don. Founded more than 1100 years ago, Dortmund is now one of the largest industrial, financial and cultural centers in Germany.

**(5215) Tsurui = 1991 AE**

Discovered 1991 Jan. 9 by M. Matsuyama and K. Watanabe at Kushiro.

Named for a small town situated 20 km north of Kushiro in eastern Hokkaido.

**(5234) Sechenov = 1989 VP**

Discovered 1989 Nov. 4 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in honor of the outstanding Russian naturalist Ivan Mikhailovich Sechenov (1829–1905).

**(5238) Naozane = 1990 VE<sub>2</sub>**

Discovered 1990 Nov. 13 by T. Hioki and S. Hayakawa at Okutama.

Named for Naozane Jiro Kumagaya (1141–1208), respected for his courage as a soldier during the turbulent Heian-Kamakura era.

**(5243) Clasiën = 1246 T-2**

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named in honor of Clasiën Shane, wife of astronomy professor W. W. Shane (1928– ), of Nijmegen and the Leiden Observatory. From 1982 to 1987 the second discoverer lodged with the Shanes during the measuring for the T-1, T-2 and T-3 Trojan Surveys, and she is very grateful for their charming hospitality.

**(5247) Krylov = 1982 UP<sub>6</sub>**

Discovered 1982 Oct. 20 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in the memory of famous Russian mathematician and naval architect Alexei Nikolaevich Krylov (1863–1945).

**(5265) Schadow = 2570 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 after Johann Gottfried Schadow (1764–1850), German sculptor in the classic style. His best-known sculpture is the Quadriga at the Brandenburg Gate in Berlin.

**(5266) Rauch = 4047 T-2**

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named after Christian Daniel Rauch (1777–1857), German sculptor, first servant of King Friedrich Wilhelm III of Prussia. He received a grant from the king to become a pupil of Schadow. Rauch worked in the classic style in Rome from 1804 to 1811, and his main work is the sarcophagus of Queen Luise of Prussia.

**(5287) Heishu = 1989 WE**

Discovered 1989 Nov. 20 by Y. Mizuno and T. Furuta at Kani.

Named in memory of Heishu Hosoi (1728–1801), beloved scholar during the Edo era, born in the present-day city of Tokai, home of the second discoverer.

**(5288) Nankichi = 1989 XE**

Discovered 1989 Dec. 3 by Y. Mizuno and T. Furuta at Kani.

Named in memory of Nankichi Ni-imi (1913–1943), teacher and writer of fairy tales.

**(5291) Yuuko = 1990 YT**

Discovered 1990 Dec. 20 by M. Matsuyama and K. Watanabe at Kushiro.

Named in honor of Yuuko Matsuyama (1950– ), wife of the first discoverer.

**(5293) Bentengahama = 1991 BQ<sub>2</sub>**

Discovered 1991 Jan. 23 by M. Matsuyama and K. Watanabe at Kushiro.

Named for a beautiful sandy beach between Kushirozaki lighthouse and Chiyonoura, in the southern part of Kushiro City. The second discoverer spent his childhood there. The beach is being eroded and is gradually disappearing.

**(5294) Onnetoh = 1991 CB**

Discovered 1991 Feb. 3 by K. Endate and K. Watanabe at Kitami.

Named for the small lake in Akan National Park in eastern Hokkaido. The lake, surrounded by volcanic mountains, is 620 meters above sea level and 4 km in circumference.

**(5296) Friedrich = 9546 P-L**

Discovered 1960 Oct. 17 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named after Caspar David Friedrich (1774–1840), German painter of the Romantic school. Most of his work has a melancholic but peaceful expression.

**(5297) Schinkel = 4170 T-2**

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named after Karl Friedrich Schinkel (1781–1841), German architect and painter. He lived in Italy for two years. His style was mostly classic, but he also admired the Gothic style. His best known buildings are Schloss Charlottenhof in the park of Sanssouci and the mausoleum for Queen Luise of Prussia.

**(5306) Fangfen = 1980 BB**

Discovered 1980 Jan. 25 at the Agassiz Station of the Harvard College Observatory.

Named in honor of Fang Fen, a native of Zhangzhou in southern Fujian and wife of astronomer C.-Y. Shao, one of the Agassiz observers.

**(5316) Filatov = 1982 UB<sub>7</sub>**

Discovered 1982 Oct. 21 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named for the well-known ophthalmologist and surgeon Vladimir Petrovich Filatov (1875–1956).

**(5324) Lyapunov = 1987 SL**

Discovered 1987 Sept. 22 by L. G. Karachkina at the Crimean Astrophysical Observatory.

This unusual object is named in honor of the outstanding Russian mathematician Alexandr Mikhailovich Lyapunov (1857–1918), famous for his theory of the stability of motion and the ‘Lyapunov characteristic exponents’.

**(5331) Erimomisaki = 1990 BT<sub>1</sub>**

Discovered 1990 Jan. 27 by K. Endate and K. Watanabe at Kitami.

Named for the promontory at the southern end of Hokkaido. Warm and cold currents, crossing each other near the promontory, bring strong winds and thick fog.

**(5335) Damocles = 1991 DA**

Discovered 1991 Feb. 18 by R. H. McNaught at Siding Spring.

Legend has it that Damocles, a courtier of the tyrant Dionysius the Elder of Syracuse, was invited to a feast, where he was seated below a sword suspended by a thread. Intended to demonstrate the impermanence of power, the ‘sword of Damocles’ has become a symbol of impending disaster. This minor planet, in an unusual orbit of very high eccentricity and inclination and crossing the orbits of Mars and Uranus, could itself be seen as such a sword during periods of its orbital evolution when it becomes an earth crosser.

**(5340) Burton = 4027 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 William Butler Burton (1940– ), American born and since 1981 professor of astronomy at the University of Leiden. He was a student of Peter van de Kamp at Sproul Observatory. His main interest is the structure of the galactic system at different wavelengths. He served as president of IAU Commission 33 (Structure and Dynamics of the Galactic System) from 1985 to 1987 and is chairman of the Science Team of the DENIS (Deep Near Infrared Survey of the Southern Sky) collaboration.

**(5341) Purgathofer = 6040 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 memory of Alois Purgathofer (1925–1983), Austrian astronomer. Purgathofer mainly worked on photometry of galactic clusters, and he also observed special minor planets, e.g., (51) Nemausa. He put much effort into establishing an observatory with two telescopes at a remote site outside Vienna. Purgathofer was a member of the Committee on Image Tubes for Telescopes of the Carnegie Institution. He investigated planetary nebulae after building an image-tube spectrograph of his own design. Name proposed and citation prepared by A. Schnell, endorsed by L. D. Schmadel.

**(5342) Le Poole = 3129 T-2**

Discovered 1973 Sept. 30 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named in honor of Rudolf Le Poole (1942– ), who spent several years in Tucson, working with G. P. Kuiper, before moving to the Leiden Observatory. Le Poole is a member of the HIPPARCOS Science Team. He is also developing the Astrosan II, a very accurate measuring instrument for photographic plates, for the Leiden Observatory.

**(5369) Virgiugum = 1985 SE<sub>1</sub>**

Discovered 1985 Sept. 22 by P. Wild at Zimmerwald.

Latinization of Jungfraujoeh, at 3572m, the site of the highest astronomical observatory in the Swiss Alps. (5369) = (2040) + (3329), the numbers of the minor planets named for the astronomers Chalonge and Golay, who with their teams did extensive observing there, contributing much to the fame of the High-Alpine Research Station, run by a foundation of the academies of eight European countries. In his student years, the discoverer was several times an assistant in Chalonge’s group, thus getting the most impressive introduction to practical astronomy.

**(5370) Taranis = 1986 RA**

Discovered 1986 Sept. 2 by A. Maury at Palomar.

Named after the Gaulish god of thunder (Irish 'torann' and Gallic 'Taran'). His symbols are the wheel and the lightning. His cult was very common in ancient Gaul. Taranis is also the name of the first computer network in France for amateur astronomers, established by J. C. Merlin in 1988. Citation by the discoverer and J. C. Merlin.

**(5372) Bikki = 1987 WS**

Discovered 1987 Nov. 29 by K. Endate and K. Watanabe at Kitami.

Named in memory of Bikki Sunazawa (1931–1989), self-taught Japanese sculptor. In 1954 his sculpture was honored at the Japanese Modern Art Exhibition. His major works are 'Four Winds' and 'Nitsunekamui'.

**(5383) Leavitt = 4293 T-2**

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named in memory of Henrietta Swan Leavitt (1868–1921) of the Harvard College Observatory, discoverer of the period-luminosity law for the classical Cepheids.

**(5401) Minami-oda = 1989 EV**

Discovered 1989 Mar. 6 by T. Nomura, K. Kawanishi and M. Sugano at the Minami-Oda Observatory.

Named for the Minami-Oda district, inhabitants of which cooperated in establishing the observatory in 1971. Minami-Oda is located in the middle of Hyogo Prefecture and has the biggest hydroelectric power plant in Japan. The district has made efforts to limit light pollution.

**(5404) Uemura = 1991 EE<sub>1</sub>**

Discovered 1991 Mar. 15 by K. Endate and K. Watanabe at Kitami.

Named in honor of Naomi Uemura (1941–1984), a famous explorer, born in Hidaka, Hyogo Prefecture. He was the first to climb the highest mountains in five continents and the first Japanese to reach the summit of Mount Everest. From 1976 to 1978 he devoted himself to the exploration of the north polar regions and Greenland by dogsled. He disappeared in an attempt to reach the summit of Mount McKinley in 1984.

**(5405) Neverland = 1991 GY**

Discovered 1991 Apr. 11 by Y. Kushida and O. Muramatsu at the Yatsugatake South Base Observatory.

Named after the world famous play *Peter Pan*, written by Sir James M. Barrie (1860–1937) and later adapted into an animated film by Walt Disney. Never Land is a fantastic island floating among the stars, where Peter Pan, Tinker Bell and many others dwell. *Peter Pan* has enthralled generations of children and the young at heart throughout the world.

**(5408) Thé = 1232 T-1**

Discovered 1971 Mar. 25 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named in honor of Pik Sin Thé (1928– ) on the occasion of his 65th birthday. Pik Sin Thé studied in the US, became director of Lembang Observatory, Indonesia, and later professor at the University of Amsterdam. His main field of interest is young variable stars, on which he has done much important research.

**(5422) Hodgkin = 1982 YL<sub>1</sub>**

Discovered 1982 Dec. 23 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named for the famous English chemist and biochemist Dorothy Crowfoot-Hodgkin, 1964 Nobel prize-winner.

**(5450) Sokrates = 2780 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 after the Greek philosopher Sokrates (c.470–399 B.C.), who taught that one should always say the truth. He was forced to drink hemlock, because the state was afraid that Sokrates influenced the youth and denied the official religion. As a good citizen he took the cup in the presence of all his pupils, without protesting against the government. As he never wrote anything down, all we know about Sokrates is from his pupil Plato.

**(5451) Plato = 4598 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 after Plato (c.428–348 B.C.), the most famous pupil of Sokrates. He was the founder of the philosophical Academy near Athens, which existed for over 900 years. His preserved papers were written in dialogue form as the 'lessons' of Sokrates. His philosophy has strongly influenced the western world to the present day.

**(5454) Kojiki = 1977 EW<sub>5</sub>**

Discovered 1977 Mar. 12 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Named for the first book of historical stories written in Japanese. Completed in 712, it contains myths, legends and historical accounts of the Imperial court from the earliest days of the creation up to 628. *Kojiki* is based on the oral shaman tradition and was written in the Chinese characters used to represent Japanese phonetics. Together with the *Nihonsyoki*, it is an important source book for the mythology, history and ethnology of ancient Japan.

**(5465) Chumakov = 1986 RF<sub>13</sub>**

Discovered 1986 Sept. 9 by L. G. Karachkina at the Crimean Astrophysical Observatory.

Named in honor of the well-known Russian microbiologist Mikhail Petrovich Chumakov (1909– ), who founded an institute for the study of poliomyelitis and tick encephalitis.

**(5466) Makibi = 1986 WP<sub>8</sub>**

Discovered 1986 Nov. 30 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Named for Kibi-no Makibi (695–775), a Japanese scholar and statesman, who travelled to T'ang-dynasty China to study in 717. Upon his return to Japan 17 years later, he presented many books on various fields (including astronomy and surveying) to the Japanese government and introduced Chinese technology into Japan. He subsequently served as an ambassador to China and also achieved the high post of minister.

**(5468) Hamatonbetsu = 1988 BK**

Discovered 1988 Jan. 16 by M. Mukai and M. Takahashi at the JCPM Kagoshima Station.

Located near the northern extremity of Japan, Hamatonbetsu is the town where the second discoverer lives. The lake and swamp around the town are very important

for waterfowl, and this site has been registered with the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention). The name also honors the inhabitants of the town, who have supported the astronomical activities of the discoverers.

**(5473) Yamanashi = 1988 VR**

Discovered 1988 Nov. 5 by Y. Kushida and O. Muramatsu at the Yatsugatake South Base Observatory.

Named for the prefecture in which the Yatsugatake South Base Observatory and many other amateur astronomical observatories are located. This prefecture is in central Japan about 150 km west of Tokyo and is famous for Mt. Fuji and the mountain's five lakes. This prefecture promotes environmental protection.

**(5481) Kiuchi = 1990 CH**

Discovered 1990 Feb. 15 by K. Endate and K. Watanabe at Kitami.

Named in honor of Tsuruhiko Kiuchi (1954– ), Japanese amateur astronomer, who recovered the Perseid comet P/Swift-Tuttle with binoculars on 1992 Sept. 26 in accordance with a prediction by B. G. Marsden. Kiuchi also co-discovered two new comets in 1990. He is employed in the manufacture of motor parts and is on the staff of a community school for star lovers. Name suggested by I. Hasegawa.

**(5484) Inoda = 1990 VH<sub>1</sub>**

Discovered 1990 Nov. 7 by T. Urata at the Oohira Station of the Nihondaira Observatory.

Named in honor of Shigeru Inoda (1955– ), ophthalmic vitreo-retinal surgeon and associate professor in the ophthalmology department of the Jichi Medical School. He is one of the most active amateur astronomers in the minor planet survey at Karasuyama Astronomical Observatory and is the discoverer of several minor planets. He has been a technical advisor at the Nihondaira Observatory.

**(5489) Oberkochen = 1993 BF<sub>2</sub>**

Discovered 1993 Jan. 17 by Y. Kushida and O. Muramatsu at the Yatsugatake South Base Observatory.

Named for the town in Germany in which the Zeiss Optical works are located. This minor planet was discovered on the night that two Zeiss engineers visited the observatory.

**(5490) Burbidge = 2019 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 E. Margaret Burbidge, astronomer at the University of California at San Diego. She is well-known for her investigations of galaxies and quasars. During 1972–73 she served as head of the Royal Greenwich Observatory, the only woman director in its 300-year history.

**(5491) Kaulbach = 3128 T-1**

Discovered 1971 Mar. 26 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named after Wilhelm von Kaulbach (1805–1874), German painter of portraits, historical scenes and natural scenes of country life. From 1849 he was for many years director of the Art Academy of Munich.

**(5492) Thoma = 3227 T-1**

Discovered 1971 Mar. 26 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named after Hans Thoma (1839–1924), German painter of mostly peaceful scenes depicting people in harmony with nature. He also painted many portraits. After a visit to Paris he was influenced by Courbet. Thoma worked in Munich, Frankfurt and Karlsruhe, where he was director of the art academy and the art museum.

**(5493) Spitzweg = 1617 T-2**

Discovered 1973 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named after Carl Spitzweg (1808–1885), German painter of the Biedermeier art period. His anecdotal and humoristic paintings mostly criticise his time through fine irony. Spitzweg travelled a lot through Europe, and his later work shows the influence of the coming impressionists.

**(5507) Niijima = 1987 UJ**

Discovered 1987 Oct. 21 by K. Suzuki and T. Urata at Toyota.

Named in honor of Tsuneo Niijima (1955– ), co-discoverer of periodic comet Urata-Niijima and discoverer of several minor planets. Name proposed by T. Urata.

**(5509) Rennsteig = 1988 RD<sub>3</sub>**

Discovered 1988 Sept. 8 by F. Börngen at Tautenburg.

Named for a narrow forest road, 168 km in length, that crosses the ridge-like hill in the chain of mountains of the Thuringian Forest. It is a favorite place for wanderers.

**(5513) Yukio = 1988 WB**

Discovered 1988 Nov. 27 by W. Kakei, M. Kizawa and T. Urata at the Oohira Station of the Nihondaira Observatory.

Named in honor of Yukio Hasegawa (1950– ), amateur astronomer and an excellent telescope maker. Periodic Comet Urata-Niijima, (2090) Mizuho, (3394) Banno and this object were discovered using a telescope made by him. Name proposed by T. Urata.

**(5520) Natori = 1990 RB**

Discovered 1990 Sept. 12 by T. Urata at the Oohira Station of the Nihondaira Observatory.

Named in honor of Akira Natori (1956– ), discoverer of several minor planets. He has collaborated with the Nihondaira Observatory for follow-up observations, and this minor planet was numbered as a result of this cooperation.

**(5526) Kenzo = 1991 UP<sub>1</sub>**

Discovered 1991 Oct. 18 by T. Urata at the Oohira Station of the Nihondaira Observatory.

Named in honor of Kenzo Suzuki (1950– ), a leading amateur observer of minor planets and comets in Japan, who has been performing astrometry since 1972 and has discovered several minor planets.

**(5529) Perry = 2557 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 Marcus Perry and his work in the Spacewatch program.

**(5531) Carolientje = 1051 T-2**

Discovered 1973 Sept. 29 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Named for Caroline van Houten, daughter of Karel and Thea van Houten and granddaughter of the discoverers.

**(5541) Seimei = 1976 UH<sub>16</sub>**

Discovered 1976 Oct. 22 by H. Kosai and K. Hurukawa at the Kiso Station of the Tokyo Astronomical Observatory.

Named for Abe-no Seimei (921–1005), an authority of astronomy, astrology and divination. At the request of the Emperor and nobles he told their fortune. There are many mysterious legends regarding his abilities. His descendants played important roles in compiling the Japanese annotated calendar for about 800 years.

**(5549) Bobstefanik = 1981 GM<sub>1</sub>**

Discovered 1981 Apr. 1 at the Agassiz Station of the Harvard College Observatory.

Named in honor of Robert Stefanik (1938– ), director of the Oak Ridge Observatory, where this minor planet was discovered. Stefanik's stellar research includes the determination of a new set of radial-velocity standards, the search for low-mass stellar companions and the determination of binary-star orbits. Name proposed by members of the Harvard-Smithsonian Center for Astrophysics Planetary Sciences division.

**(5591) Koyo = 1990 VF<sub>2</sub>**

Discovered 1990 Nov. 10 by T. Urata at the Oohira Station of the Nihondaira Observatory.

Named in honor of Koyo Kawanishi (1959– ), a dentist living in Ako-city, Hyogo. He has been observing comets and minor planets using his homemade 0.20-m reflector at his private observatory with his wife Kumi and daughter Saki. Familiar with electronics and mechanics, he has developed his own CCD instrumentation.

**(5592) Oshima = 1990 VB<sub>4</sub>**

Discovered 1990 Nov. 14 by K. Suzuki and T. Urata at Toyota.

Named in honor of Yoshiaki Oshima (1952– ), discoverer of the Apollo-type minor planet 1988 XB and several other minor planets. He contributed to the development of the instrumentation at the Nihondaira Observatory. Name proposed by T. Urata.

**EPHEMERIDES**

<b>1993 OV<sub>1</sub></b>		<i>a, e, i = 2.33, 0.44, 11</i>				Elements <i>MPC</i> 22472		
Date	TT	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	<i>r</i>	$\epsilon$	$\phi$	<i>V</i>
1993 08 31		21 14.92	-04 18.9	0.545	1.531	159.0	13.6	16.9
1993 09 10		21 13.19	-02 57.2	0.625	1.579	149.9	18.7	17.4
1993 09 20		21 15.30	-01 59.7	0.718	1.629	141.5	22.6	17.9
1993 09 30		21 20.81	-01 15.2	0.825	1.681	133.7	25.5	18.4
1993 10 10		21 29.05	-00 36.0	0.943	1.734	126.4	27.6	18.8
1993 10 20		21 39.46	+00 03.5	1.072	1.787	119.6	29.0	19.2
1993 10 30		21 51.56	+00 46.9	1.211	1.842	113.0	29.7	19.5
1993 11 09		22 04.91	+01 35.8	1.357	1.897	106.7	30.0	19.9
1993 11 19		22 19.21	+02 31.3	1.511	1.951	100.6	29.9	20.1

<b>1993 MF</b>		<i>a, e, i = 2.44, 0.53, 8</i>				Elements <i>MPC</i> 22489		
Date	TT	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	<i>r</i>	$\epsilon$	$\phi$	<i>V</i>
1993 08 31		00 00.45	+40 21.0	0.274	1.195	127.4	42.2	13.7
1993 09 10		00 13.98	+37 39.6	0.294	1.233	135.1	35.2	13.7
1993 09 20		00 21.54	+33 45.3	0.321	1.279	144.3	27.3	13.8
1993 09 30		00 25.71	+29 09.4	0.358	1.332	153.6	19.5	13.9
1993 10 10		00 28.75	+24 28.7	0.408	1.389	160.4	13.9	14.1
1993 10 20		00 32.24	+20 15.0	0.473	1.451	161.1	12.9	14.4
1993 10 30		00 37.19	+16 48.9	0.555	1.516	155.7	15.7	15.0

1993 11 09	00 43.85	+14 16.2	0.654	1.583	147.9	19.4	15.6
1993 11 19	00 52.20	+12 33.6	0.769	1.651	139.7	22.8	16.1
1993 11 29	01 02.10	+11 33.5	0.898	1.720	131.7	25.3	16.6
1993 12 09	01 13.27	+11 07.0	1.041	1.789	124.0	27.1	17.1
1993 12 19	01 25.51	+11 06.4	1.195	1.858	116.7	28.2	17.5
1993 12 29	01 38.65	+11 25.1	1.359	1.926	109.6	28.7	17.9
1994 01 08	01 52.49	+11 57.3	1.530	1.994	102.8	28.7	18.2
1994 01 18	02 06.93	+12 39.1	1.708	2.061	96.2	28.3	18.5
1994 01 28	02 21.87	+13 26.8	1.890	2.126	89.7	27.6	18.8

**1983 RB**

		<i>a, e, i = 2.22, 0.51, 19</i>				Elements <i>MPC</i> 8394		
Date	TT	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	<i>r</i>	Variation	<i>V</i>	
1993 08 31		01 27.48	+06 44.4	0.474	1.386	-5.28	+6.8	16.4
1993 09 10		01 23.24	-00 17.4	0.496	1.450	-5.41	-5.4	16.3
1993 09 20		01 15.04	-06 40.2	0.537	1.515	-5.38	-12.6	16.4
1993 09 30		01 05.16	-11 45.9	0.599	1.583	-5.13	-14.5	16.6
1993 10 10		00 55.85	-15 18.3	0.681	1.650	-4.70	-13.2	17.0
1993 10 20		00 48.71	-17 21.9	0.783	1.718	-4.16	-10.7	17.5
1993 10 30		00 44.64	-18 12.8	0.902	1.785	-3.61	-8.2	18.1
1993 11 09		00 43.75	-18 09.9	1.036	1.852	-3.09	-6.3	18.5
1993 11 19		00 45.79	-17 28.6	1.182	1.917	-2.64	-4.9	18.9
1993 11 29		00 50.36	-16 21.3	1.338	1.982	-2.26	-3.9	19.3
1993 12 09		00 57.00	-14 56.9	1.502	2.045	-1.95	-3.2	19.7
1993 12 19		01 05.33	-13 21.3	1.673	2.107	-1.69	-2.7	20.0
1993 12 29		01 15.02	-11 39.2	1.848	2.168	-1.48	-2.3	20.2

**1988 VN<sub>4</sub>**

		<i>a, e, i = 1.81, 0.32, 18</i>				Elements <i>MPC</i> 18814		
Date	TT	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	<i>r</i>	$\epsilon$	$\phi$	<i>V</i>
1993 08 31		04 24.60	+30 49.2	1.124	1.488	88.3	42.7	19.8
1993 09 10		04 56.85	+29 59.3	1.020	1.448	91.1	44.1	19.5
1993 09 20		05 29.70	+28 17.2	0.923	1.409	93.8	45.3	19.3
1993 09 30		06 02.61	+25 34.9	0.834	1.372	96.3	46.5	19.1
1993 10 10		06 35.02	+21 45.6	0.753	1.338	98.7	47.5	18.8
1993 10 20		07 06.26	+16 45.8	0.683	1.308	100.7	48.4	18.6
1993 10 30		07 35.78	+10 37.5	0.624	1.282	102.5	49.1	18.4
1993 11 09		08 03.17	+03 30.7	0.578	1.261	103.9	49.7	18.2
1993 11 19		08 27.97	-04 14.9	0.544	1.245	104.9	50.1	18.0
1993 11 29		08 49.89	-12 12.1	0.522	1.235	105.8	50.2	17.9
1993 12 09		09 08.62	-19 52.6	0.510	1.231	106.6	50.1	17.9
1993 12 19		09 23.69	-26 50.7	0.504	1.234	107.6	49.5	17.8
1993 12 29		09 34.73	-32 47.2	0.503	1.242	109.0	48.4	17.8
1994 01 08		09 41.40	-37 30.0	0.504	1.257	111.1	46.9	17.8
1994 01 18		09 43.50	-40 48.2	0.507	1.277	114.0	44.8	17.8
1994 01 28		09 41.64	-42 33.1	0.509	1.302	117.6	42.1	17.7
1994 02 07		09 37.18	-42 38.4	0.514	1.331	121.8	39.0	17.7
1994 02 17		09 32.23	-41 02.1	0.521	1.364	126.4	35.7	17.7
1994 02 27		09 29.12	-37 53.6	0.535	1.400	130.8	32.4	17.7
1994 03 09		09 29.34	-33 34.4	0.558	1.438	134.1	29.7	17.8
1994 03 19		09 33.48	-28 35.0	0.594	1.479	135.5	28.2	18.0
1994 03 29		09 41.40	-23 29.8	0.644	1.521	134.5	27.9	18.2
1994 04 08		09 52.38	-18 46.9	0.708	1.563	131.5	28.7	18.5
1994 04 18		10 05.74	-14 44.1	0.788	1.606	126.9	30.0	18.8
1994 04 28		10 20.82	-11 29.3	0.882	1.650	121.6	31.3	19.2

1994 05 08	10 37.03	-09 01.9	0.988	1.693	115.9	32.4	19.5
1994 05 18	10 54.01	-07 17.7	1.104	1.735	110.2	33.2	19.8
1994 05 28	11 11.45	-06 10.7	1.228	1.777	104.5	33.5	20.1

**(5626) 1991 FE**  $a, e, i = 2.19, 0.46, 4$  Elements *MPC* 22394

Date	TT	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\epsilon$	$\phi$	$V$
1993 08 31	05 34.83	+20 30.9	1.005	1.207	73.6	53.4	17.3	
1993 09 10	06 15.46	+20 01.1	0.987	1.197	73.8	53.9	17.2	
1993 09 20	06 54.05	+18 57.2	0.975	1.197	74.4	53.9	17.2	
1993 09 30	07 29.92	+17 26.9	0.967	1.206	75.5	53.5	17.2	
1993 10 10	08 02.69	+15 38.8	0.960	1.224	77.3	52.7	17.2	
1993 10 20	08 32.13	+13 41.1	0.952	1.250	79.8	51.6	17.2	
1993 10 30	08 58.11	+11 41.8	0.942	1.284	83.1	50.2	17.2	
1993 11 09	09 20.56	+09 47.4	0.928	1.324	87.2	48.4	17.2	
1993 11 19	09 39.32	+08 03.9	0.909	1.369	92.3	46.1	17.1	
1993 11 29	09 54.15	+06 37.2	0.886	1.419	98.4	43.4	17.1	
1993 12 09	10 04.79	+05 32.3	0.860	1.472	105.7	40.1	17.0	
1993 12 19	10 10.80	+04 54.9	0.833	1.528	114.2	36.0	16.9	
1993 12 29	10 11.88	+04 49.5	0.810	1.585	124.0	31.0	16.8	
1994 01 08	10 07.97	+05 18.8	0.793	1.643	135.2	24.9	16.6	
1994 01 18	09 59.50	+06 21.6	0.788	1.703	147.6	18.0	16.5	
1994 01 28	09 47.78	+07 50.2	0.802	1.762	160.8	10.6	16.3	
1994 02 07	09 34.78	+09 31.5	0.838	1.821	173.3	3.6	16.2	
1994 02 17	09 22.68	+11 10.5	0.898	1.880	170.5	5.0	16.5	
1994 02 27	09 13.30	+12 35.2	0.983	1.938	158.4	10.8	17.0	
1994 03 09	09 07.53	+13 39.7	1.089	1.996	146.9	15.8	17.4	
1994 03 19	09 05.54	+14 22.8	1.214	2.052	136.3	19.6	17.9	
1994 03 29	09 07.04	+14 45.8	1.353	2.107	126.6	22.3	18.2	
1994 04 08	09 11.46	+14 51.2	1.505	2.162	117.8	24.2	18.6	
1994 04 18	09 18.26	+14 41.3	1.666	2.215	109.6	25.3	18.9	
1994 04 28	09 26.91	+14 18.3	1.832	2.266	102.0	25.8	19.2	
1994 05 08	09 36.98	+13 44.2	2.003	2.317	94.8	25.7	19.4	
1994 05 18	09 48.14	+13 00.3	2.176	2.366	87.9	25.3	19.6	

**1991 AM**  $a, e, i = 1.70, 0.70, 30$  Elements *MPC* 22083

Date	TT	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\epsilon$	$\phi$	$V$
1993 08 31	06 05.20	-08 47.8	1.195	1.274	70.0	48.1	19.2	
1993 09 10	06 13.90	-11 06.8	1.220	1.385	76.3	44.9	19.4	
1993 09 20	06 19.20	-13 28.0	1.230	1.491	83.0	42.0	19.5	
1993 09 30	06 20.66	-15 50.5	1.230	1.591	90.4	39.0	19.5	
1993 10 10	06 17.84	-18 10.6	1.222	1.686	98.3	35.9	19.5	
1993 10 20	06 10.29	-20 20.9	1.213	1.776	106.6	32.5	19.5	
1993 10 30	05 57.87	-22 09.5	1.208	1.862	115.1	28.9	19.5	
1993 11 09	05 41.06	-23 22.3	1.214	1.942	123.2	25.3	19.5	
1993 11 19	05 21.07	-23 45.4	1.236	2.019	130.0	22.0	19.5	
1993 11 29	05 00.00	-23 10.8	1.279	2.091	134.3	19.7	19.6	
1993 12 09	04 40.16	-21 41.4	1.346	2.159	135.1	18.8	19.8	
1993 12 19	04 23.38	-19 28.7	1.438	2.224	132.4	19.1	20.0	
1993 12 29	04 10.70	-16 48.8	1.553	2.285	127.1	20.1	20.3	

**Periodic Comet Wiseman-Skiff (1986 XV)** Elements *MPC* 16380

Date	TT	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	Variation	$m_2$
1993 10 10	10 55.36	-05 26.7	2.762	1.980	-0.82	+7.7	20.7
1993 10 20	11 13.86	-08 13.4	2.762	2.041	-0.78	+7.1	20.8

1993 10 30	11 31.35	-10 55.4	2.754	2.102	-0.75	+6.4	20.9
1993 11 09	11 47.84	-13 32.1	2.738	2.164	-0.73	+5.8	21.0
1993 11 19	12 03.26	-16 03.0	2.712	2.227	-0.71	+5.1	21.1
1993 11 29	12 17.51	-18 27.4	2.678	2.291	-0.70	+4.5	21.2
1993 12 09	12 30.50	-20 45.1	2.635	2.354	-0.70	+4.0	21.3
1993 12 19	12 42.04	-22 55.4	2.583	2.418	-0.70	+3.4	21.4
1993 12 29	12 51.91	-24 57.7	2.524	2.481	-0.71	+2.9	21.5
1994 01 08	12 59.89	-26 51.1	2.460	2.544	-0.73	+2.5	21.5
1994 01 18	13 05.68	-28 34.2	2.392	2.607	-0.76	+2.1	21.6
1994 01 28	13 08.99	-30 05.0	2.324	2.669	-0.79	+1.8	21.6
1994 02 07	13 09.62	-31 20.9	2.259	2.731	-0.84	+1.7	21.6
1994 02 17	13 07.41	-32 18.4	2.200	2.793	-0.89	+1.7	21.7
1994 02 27	13 02.45	-32 53.4	2.152	2.854	-0.95	+1.8	21.7
1994 03 09	12 55.13	-33 02.6	2.120	2.914	-1.00	+2.1	21.8

**Periodic Comet Bus (1993b)** Elements *MPC* 18257

Date	TT	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\epsilon$	$\phi$	$m_2$
1993 10 20	09 59.93	+10 21.2	3.144	2.754	58.3	17.9	20.9	
1993 10 30	10 13.76	+09 04.3	2.991	2.718	64.6	19.3	20.7	
1993 11 09	10 27.02	+07 47.6	2.834	2.682	71.1	20.4	20.5	
1993 11 19	10 39.58	+06 32.7	2.674	2.647	77.8	21.4	20.4	
1993 11 29	10 51.30	+05 21.1	2.511	2.613	84.7	22.1	20.2	
1993 12 09	11 02.00	+04 14.4	2.349	2.579	92.0	22.4	20.0	
1993 12 19	11 11.46	+03 15.0	2.189	2.546	99.6	22.4	19.8	
1993 12 29	11 19.42	+02 24.8	2.034	2.513	107.6	21.9	19.5	
1994 01 08	11 25.62	+01 46.4	1.887	2.482	116.1	20.8	19.3	
1994 01 18	11 29.73	+01 22.3	1.749	2.452	125.2	19.1	19.1	
1994 01 28	11 31.52	+01 14.7	1.625	2.423	134.9	16.7	18.9	
1994 02 07	11 30.84	+01 25.1	1.517	2.394	145.3	13.6	18.7	
1994 02 17	11 27.72	+01 53.6	1.429	2.368	156.3	9.7	18.5	
1994 02 27	11 22.57	+02 37.9	1.365	2.342	167.8	5.1	18.4	
1994 03 09	11 16.12	+03 33.0	1.326	2.319	178.9	0.5	18.3	
1994 03 19	11 09.39	+04 31.5	1.313	2.296	168.3	5.0	18.2	
1994 03 29	11 03.57	+05 25.2	1.324	2.276	156.8	10.0	18.2	
1994 04 08	10 59.61	+06 07.1	1.358	2.257	145.7	14.5	18.2	
1994 04 18	10 58.17	+06 32.5	1.412	2.241	135.4	18.3	18.3	
1994 04 28	10 59.55	+06 39.1	1.480	2.226	126.0	21.5	18.3	
1994 05 08	11 03.71	+06 26.9	1.561	2.213	117.3	23.9	18.4	
1994 05 18	11 10.43	+05 56.8	1.650	2.203	109.4	25.7	18.5	
1994 05 28	11 19.42	+05 10.5	1.745	2.194	102.1	26.8	18.6	
1994 06 07	11 30.33	+04 09.9	1.845	2.188	95.4	27.5	18.7	
1994 06 17	11 42.86	+02 57.1	1.948	2.185	89.2	27.7	18.8	
1994 06 27	11 56.75	+01 33.9	2.052	2.183	83.4	27.6	19.0	
1994 07 07	12 11.76	+00 02.4	2.157	2.184	77.9	27.1	19.1	
1994 07 17	12 27.73	-01 35.7	2.262	2.187	72.7	26.3	19.2	
1994 07 27	12 44.50	-03 18.4	2.367	2.193	67.7	25.4	19.3	
1994 08 06	13 01.96	-05 04.1	2.470	2.201	62.8	24.2	19.4	
1994 08 16	13 20.05	-06 51.1	2.572	2.211	58.1	22.9	19.5	
1994 08 26	13 38.69	-08 37.7	2.672	2.223	53.4	21.4	19.6	
1994 09 05	13 57.82	-10 22.3	2.769	2.237	48.8	19.8	19.7	
1994 09 15	14 17.42	-12 03.4	2.863	2.253	44.1	18.1	19.8	
1994 09 25	14 37.42	-13 39.7	2.954	2.271	39.5	16.3	19.9	



1994 10 05	14 57.79	-15 09.7	3.040	2.292	34.9	14.4	20.0
1994 10 15	15 18.50	-16 32.2	3.121	2.313	30.1	12.5	20.1

## Periodic Comet Kojima (1992z)

Date TT	$\alpha_{2000}$	$\delta_{2000}$	$\Delta$	$r$	$\epsilon$	$\phi$	$m_2$	Elements MPC 18256
1993 10 30	09 00.30	+16 20.9	2.422	2.518	83.9	23.1	20.9	
1993 11 09	09 12.79	+15 26.5	2.280	2.498	90.8	23.4	20.8	
1993 11 19	09 23.80	+14 35.9	2.141	2.480	98.0	23.2	20.6	
1993 11 29	09 33.10	+13 51.5	2.005	2.464	105.8	22.7	20.4	
1993 12 09	09 40.41	+13 15.8	1.877	2.449	114.0	21.5	20.3	
1993 12 19	09 45.43	+12 51.2	1.757	2.436	122.9	19.8	20.1	
1993 12 29	09 47.92	+12 39.9	1.650	2.425	132.5	17.4	19.9	
1994 01 08	09 47.76	+12 42.8	1.559	2.416	142.7	14.3	19.8	
1994 01 18	09 45.01	+12 59.9	1.487	2.409	153.6	10.5	19.7	
1994 01 28	09 40.09	+13 28.6	1.438	2.404	165.1	6.1	19.6	
1994 02 07	09 33.75	+14 04.6	1.415	2.400	176.9	1.3	19.6	
1994 02 17	09 27.04	+14 42.1	1.418	2.399	171.3	3.6	19.6	
1994 02 27	09 21.13	+15 15.3	1.446	2.400	159.7	8.2	19.6	
1994 03 09	09 16.99	+15 39.7	1.499	2.403	148.6	12.4	19.7	
1994 03 19	09 15.25	+15 52.5	1.573	2.408	138.1	16.0	19.8	
1994 03 29	09 16.23	+15 52.6	1.664	2.414	128.4	18.9	19.9	
1994 04 08	09 19.84	+15 40.1	1.768	2.423	119.5	21.1	20.1	
1994 04 18	09 25.90	+15 15.2	1.884	2.434	111.2	22.6	20.2	
1994 04 28	09 34.05	+14 39.0	2.007	2.446	103.5	23.6	20.4	
1994 05 08	09 43.96	+13 52.2	2.136	2.461	96.3	24.1	20.6	
1994 05 18	09 55.28	+12 55.7	2.268	2.477	89.6	24.1	20.7	
1994 05 28	10 07.74	+11 50.5	2.402	2.494	83.2	23.8	20.9	
1994 06 07	10 21.07	+10 37.5	2.537	2.514	77.1	23.2	21.0	

## OPPOSITION DATA

Planet	Opposition	$\alpha_{2000}$	$\delta_{2000}$	$V$	$\alpha$	$\delta$	$\phi_{\text{MIN}}$	MPC
1980 VX <sub>1</sub>	93 08 01.2	20 46.27	-26 50.5	17.6	-0.95	- 2.3	2.8/30.4	22074
1990 VV <sub>2</sub>	93 08 01.3	20 46.34	-10 45.4	17.9	-1.02	- 3.6	2.8/02.8	17460
(5255)	93 08 01.3	20 46.49	-27 02.9	15.8	-0.91	- 7.1	3.3/29.9	20491
1990 SM <sub>6</sub>	93 08 01.5	20 47.18	-25 43.0	16.5	-1.09	- 3.7	3.2/30.8	21974
1991 AD <sub>2</sub>	93 08 01.6	20 47.54	-16 23.5	15.9	-0.89	- 5.4	0.6/02.0	21975
1978 VT <sub>4</sub>	93 08 01.6	20 47.59	-20 07.6	18.7	-0.79	- 3.0	0.6/01.1	15404
1992 BW	93 08 01.6	20 47.85	-23 43.9	15.6	-1.76	+10.8	3.1/01.4	20032
1990 VS <sub>2</sub>	93 08 01.9	20 48.96	-17 38.3	16.3	-0.91	- 6.5	0.1/02.0	22083
1986 QQ <sub>2</sub>	93 08 02.0	20 49.17	-16 35.8	16.3	-0.95	- 7.5	0.5/02.3	18286
1981 EX <sub>43</sub>	93 08 02.1	20 49.66	-06 44.3	16.8	-0.90	- 4.4	5.0/04.7	21785
1991 GE <sub>9</sub>	93 08 02.1	20 49.84	-18 18.3	17.7	-0.78	- 3.5	0.2/02.1	22431
(5471)	93 08 02.3	20 50.41	-04 28.7	15.8	-0.81	- 1.7	4.6/05.3	21772
1990 XA	93 08 02.4	20 50.75	-10 52.1	15.0	-0.88	- 1.6	2.3/03.9	22083
1991 AS <sub>1</sub>	93 08 02.4	20 50.92	-26 14.6	17.0	-1.32	+ 3.7	2.9/01.3	18436
1992 JP	93 08 02.5	20 51.11	-18 25.8	15.9	-0.74	- 7.3	0.2/02.3	xxxxxx
1987 SO <sub>9</sub>	93 08 02.8	20 52.12	-17 09.8	16.9	-1.06	- 5.4	0.2/02.9	20014
5200 T-2	93 08 02.8	20 52.53	-15 39.6	17.1	-0.86	- 1.2	0.6/03.3	21978
1981 GP	93 08 02.9	20 52.58	-49 27.8	18.3	-1.45	- 0.8	9.7/26.8	21968
1981 EB <sub>31</sub>	93 08 03.0	20 53.07	-12 05.5	19.1	-0.76	- 4.5	1.6/04.4	15704
1988 RO <sub>11</sub>	93 08 03.1	20 53.40	-19 30.5	18.0	-0.84	- 3.3	0.7/02.7	19022
2086 T-2	93 08 03.1	20 53.40	-23 11.1	18.0	-0.84	- 2.3	1.6/01.9	22087

1985 PO	93 08 03.1	20 53.51	-15 52.0	15.8	-0.87	- 5.6	0.7/03.6	22076
(5323)	93 08 03.1	20 53.56	-23 05.3	16.9	-1.04	- 4.8	2.3/01.8	xxxxxx
1990 YQ	93 08 03.2	20 53.94	-14 49.6	16.5	-1.00	- 4.2	1.1/03.9	21975
4831 P-L	93 08 03.3	20 54.28	-36 24.9	18.9	-1.10	- 1.7	6.1/30.2	22432
2647 P-L	93 08 03.4	20 54.47	-19 57.1	17.2	-1.02	- 3.9	1.0/02.8	16438
1978 VJ <sub>8</sub>	93 08 03.5	20 54.86	-16 17.1	17.3	-0.79	- 3.4	0.4/03.8	22429
(5302)	93 08 03.5	20 55.07	-19 10.9	16.5	-1.03	- 3.1	0.8/03.2	20786
4203 T-3	93 08 03.5	20 55.21	-00 33.2	18.4	-0.83	- 6.3	5.9/08.3	12703
1981 EQ <sub>12</sub>	93 08 03.7	20 55.77	-02 33.0	15.8	-0.76	+ 0.1	8.1/06.8	18417
1920 TA	93 08 03.8	20 56.41	-08 58.1	14.3	-0.79	- 1.0	4.4/05.7	21963
(5297)	93 08 03.8	20 56.44	-13 45.9	17.1	-0.98	- 6.8	1.4/04.8	20626
1989 SE <sub>2</sub>	93 08 03.9	20 56.76	-24 16.9	16.6	-0.88	- 4.5	2.5/02.2	17962
6516 P-L	93 08 03.9	20 56.83	-30 04.9	17.7	-1.15	- 2.4	6.6/01.1	21978
1990 WS <sub>2</sub>	93 08 04.0	20 57.01	-15 49.4	16.8	-0.98	- 5.1	0.5/04.4	17647
4077 P-L	93 08 04.2	20 57.62	-17 27.3	17.7	-1.00	- 3.6	0.1/04.2	22086
1984 DQ	93 08 04.2	20 58.00	-24 03.7	16.9	-1.14	+ 1.0	2.8/03.1	22076
7633 P-L	93 08 04.4	20 58.45	-19 18.0	16.9	-0.84	- 4.7	0.8/03.9	22087
2572 P-L	93 08 04.4	20 58.56	-21 11.9	18.2	-1.08	- 3.7	1.6/03.6	14627
1989 RB	93 08 04.5	20 58.88	-54 21.7	15.9	-1.52	+10.2	20.3/29.9	22081
1982 SV	93 08 04.7	20 59.58	+12 53.3	18.2	-0.95	- 6.0	11.1/12.4	8393
1990 TF <sub>4</sub>	93 08 05.2	21 01.46	-15 43.8	17.4	-0.98	- 3.7	0.4/05.5	22082
6615 P-L	93 08 05.2	21 01.53	-25 03.3	16.7	-1.12	- 3.1	3.5/03.5	19876
6034 P-L	93 08 05.2	21 01.64	-02 56.2	16.1	-0.75	- 5.2	6.6/09.1	22086
4882 P-L	93 08 05.2	21 01.68	-32 55.8	18.6	-1.06	- 2.0	5.9/01.7	21978
(5184)	93 08 05.3	21 02.17	-19 29.0	16.0	-1.13	- 2.4	1.1/04.8	20003
3070 T-2	93 08 05.4	21 02.14	-16 52.4	16.2	-1.00	- 6.1	0.0/05.4	21978
1981 EJ <sub>25</sub>	93 08 05.4	21 02.58	-13 36.0	19.6	-0.95	- 5.1	1.4/06.3	11149
(5265)	93 08 05.5	21 02.66	-10 47.0	17.4	-0.74	- 4.6	1.9/07.1	20494
4226 P-L	93 08 05.5	21 02.85	-14 41.4	18.9	-0.97	- 3.8	0.8/06.1	16439
2642 P-L	93 08 05.9	21 04.19	-07 03.2	16.8	-0.94	- 7.4	4.3/08.6	22086
1980 UM <sub>1</sub>	93 08 06.0	21 04.51	-10 29.1	17.0	-1.04	- 2.8	2.6/07.4	21784
1989 UL	93 08 06.2	21 05.40	-07 44.4	16.7	-0.84	- 3.7	3.2/08.4	21973
1985 UF <sub>3</sub>	93 08 06.2	21 05.43	+02 46.8	15.1	-0.80	- 5.9	7.9/11.7	xxxxxx
1993 MS <sub>1</sub>	93 08 06.3	21 05.60	+03 09.7	15.4	-0.90	- 3.7	7.6/11.5	xxxxxx
1173 T-2	93 08 06.3	21 05.75	-27 55.4	19.2	-0.93	- 1.7	3.7/03.7	15077
1992 FY <sub>1</sub>	93 08 06.6	21 06.95	-31 42.5	16.5	-1.09	- 4.2	5.8/02.9	20343
1986 RY <sub>5</sub>	93 08 06.7	21 07.42	-04 42.1	15.4	-0.88	- 3.7	5.6/09.7	20632
4611 P-L	93 08 07.2	21 09.23	-34 20.5	17.9	-1.17	- 1.4	6.4/03.3	22086
4854 T-1	93 08 07.2	21 09.32	-33 37.9	17.5	-0.94	- 2.3	5.9/03.0	19881
1981 VN	93 08 07.2	21 09.39	-42 42.2	17.0	-1.15	- 2.9	9.3/31.1	21564
2203 T-3	93 08 07.5	21 10.32	+00 44.6	18.6	-0.71	- 3.5	4.7/12.2	12701
1982 RK <sub>1</sub>	93 08 07.5	21 10.36	-13 30.0	16.4	-0.90	- 0.7	1.4/08.1	22271
1989 PU	93 08 07.7	21 11.06	-13 17.3	15.0	-0.71	-29.7	1.3/09.0	xxxxxx
1992 FD	93 08 07.7	21 11.27	+12 14.4	16.4	-0.86	-12.6	10.6/18.5	21977
1991 AX <sub>1</sub>	93 08 07.9	21 11.89	-16 57.5	15.8	-0.82	- 4.6	0.3/07.7	21975
1985 CN <sub>1</sub>	93 08 08.0	21 12.11	-20 55.6	17.1	-1.05	- 3.7	1.8/06.9	21969
1984 HR <sub>1</sub>	93 08 08.2	21 13.03	-25 49.8	15.9	-0.96	- 2.9	4.1/05.9	15709
1990 DJ	93 08 08.3	21 13.48	-03 21.2	14.5	-1.03	-24.0	5.9/13.2	21973
1990 DJ	93 08 08.3	21 13.49	-03 21.3	14.2	-1.03	-24.0	5.9/13.2	xxxxxx
1982 FF <sub>3</sub>	93 08 08.4	21 13.72	-14 05.0	15.8	-1.05	- 4.0	0.8/08.9	20498
6766 P-L	93 08 08.5	21 14.16	-04 07.8	16.3	-0.70	- 6.8	3.7/12.2	21950

1989 SW <sub>2</sub>	93 08 08.6	21 14.47	-23 09.2	17.2	-0.86	- 4.7	2.4/06.7	20017	2170 T-2	93 08 15.7	21 41.42	+03 02.7	16.8	-0.79	- 9.2	6.3/21.6	22088
1990 YX	93 08 08.6	21 14.57	-22 58.8	18.2	-0.99	- 3.2	2.5/07.0	22083	1979 ME <sub>8</sub>	93 08 16.0	21 42.69	-08 30.6	18.2	-0.96	- 5.9	2.0/17.6	20808
2030 T-2	93 08 08.8	21 15.19	-19 33.5	19.0	-0.95	- 3.5	1.5/07.9	17977	1991 AP <sub>1</sub>	93 08 16.3	21 43.66	-14 06.2	16.6	-1.02	- 4.3	0.2/16.2	17967
1979 FD <sub>3</sub>	93 08 08.9	21 15.90	-16 49.5	16.7	-1.00	- 6.3	0.4/08.7	21927	(5310)	93 08 16.4	21 43.81	-08 28.3	16.7	-0.89	- 7.3	2.0/18.0	20789
1990 VX <sub>2</sub>	93 08 09.1	21 16.29	-52 45.5	17.7	-1.40	- 4.1	11.3/28.1	21975	1968 OA <sub>1</sub>	93 08 16.4	21 43.82	-01 57.1	16.9	-0.88	- 5.8	5.2/19.8	22429
1981 EZ <sub>32</sub>	93 08 09.1	21 16.49	-03 21.5	18.9	-0.75	- 5.1	3.9/12.7	22271	1989 UR <sub>3</sub>	93 08 16.8	21 45.44	-10 55.5	15.1	-0.71	- 6.2	1.2/17.6	22431
1992 ER	93 08 09.1	21 16.71	-26 33.5	17.1	-1.13	- 2.3	4.3/06.8	21977	1989 UR <sub>3</sub>	93 08 16.8	21 45.45	-10 55.5	15.1	-0.71	- 6.2	1.2/17.6	xxxxxx
1981 EP <sub>15</sub>	93 08 09.4	21 17.65	-11 25.2	18.0	-1.03	- 2.2	1.9/10.4	22270	1992 HZ <sub>3</sub>	93 08 16.8	21 45.57	-16 59.0	16.6	-0.87	- 3.6	1.2/15.9	22085
1982 TP <sub>1</sub>	93 08 09.4	21 17.66	-10 19.0	16.7	-0.92	- 4.0	1.9/10.8	22075	2127 T-2	93 08 16.9	21 45.80	-13 33.1	18.4	-0.92	- 3.8	0.0/16.9	22088
1981 EH <sub>13</sub>	93 08 09.6	21 18.22	-09 46.6	16.9	-0.83	- 2.4	3.1/11.1	10770	3523 P-L	93 08 16.9	21 45.90	-15 14.8	16.0	-1.00	- 1.0	0.7/16.5	22086
1981 EY <sub>42</sub>	93 08 09.7	21 18.77	-14 33.5	19.7	-0.96	- 4.6	0.4/10.0	21968	1990 BK	93 08 17.1	21 46.44	-16 52.1	17.0	-0.77	- 4.3	1.0/16.1	22082
(5317)	93 08 09.9	21 19.62	-21 10.7	16.0	-0.86	- 8.3	1.9/08.3	20791	1988 CF <sub>6</sub>	93 08 17.2	21 46.79	-07 46.0	17.0	-0.95	- 4.4	2.0/18.7	21568
(5295)	93 08 10.0	21 20.00	-23 04.6	16.4	-0.78	- 4.2	2.1/08.0	20625	(5286)	93 08 17.2	21 46.96	-15 17.7	16.0	-0.80	- 5.0	0.6/16.7	xxxxxx
1988 PX <sub>2</sub>	93 08 10.0	21 20.07	-04 09.3	16.6	-0.73	- 5.9	3.7/13.4	21972	(5262)	93 08 17.3	21 47.47	-31 14.9	15.7	-0.82	- 5.4	4.9/11.8	20493
6555 P-L	93 08 10.3	21 20.95	-16 35.0	16.2	-0.82	- 4.8	0.4/10.0	22087	1990 VD <sub>3</sub>	93 08 17.5	21 48.08	-09 00.8	17.1	-0.96	- 4.1	1.6/18.7	21575
1986 QS <sub>1</sub>	93 08 10.4	21 21.40	-16 14.6	15.7	-0.88	- 8.4	0.4/10.2	22272	(5281)	93 08 17.5	21 48.10	-20 06.4	14.5	-0.76	- 7.6	2.3/15.3	20620
(5166)	93 08 10.5	21 21.69	-15 54.9	15.6	-0.96	- 6.4	0.2/10.4	19995	6012 P-L	93 08 17.6	21 48.44	-08 04.9	19.7	-0.74	- 3.7	1.4/19.1	16035
1989 FH	93 08 10.8	21 22.80	-19 35.7	17.0	-1.03	- 5.4	1.8/09.7	21973	(5147)	93 08 17.7	21 48.76	-19 24.3	14.7	-1.03	- 0.3	2.6/16.3	19851
1989 TR <sub>11</sub>	93 08 10.9	21 23.43	-36 57.2	16.7	-1.11	+ 0.8	9.6/05.9	22081	1981 EL <sub>4</sub>	93 08 17.9	21 49.80	-08 58.8	16.4	-0.84	- 1.9	1.3/19.1	22270
1981 EP <sub>10</sub>	93 08 11.0	21 23.56	-13 52.5	19.0	-1.03	- 1.6	0.6/11.3	10820	1982 YQ	93 08 18.0	21 49.98	-32 09.5	16.9	-0.94	- 6.4	6.5/12.0	21969
1987 DN <sub>6</sub>	93 08 11.1	21 24.03	-13 16.8	18.5	-0.90	- 3.6	0.6/11.6	22078	1990 VD <sub>7</sub>	93 08 18.1	21 50.51	-15 31.0	15.6	-1.03	- 3.5	1.0/17.6	20928
(5242)	93 08 11.2	21 24.30	-10 20.7	15.8	-0.83	- 4.0	1.8/12.5	20326	6328 P-L	93 08 18.2	21 50.95	-16 37.7	18.1	-0.92	- 3.9	1.3/17.3	22087
1981 ET <sub>19</sub>	93 08 11.2	21 24.38	-15 24.8	18.7	-0.93	- 5.5	0.1/11.2	21967	1989 TB <sub>11</sub>	93 08 18.3	21 51.08	-14 29.2	15.7	-0.92	- 2.7	0.6/18.0	21973
5174 T-3	93 08 11.2	21 24.54	-31 46.1	16.6	-0.83	- 5.4	5.5/06.4	22088	1985 CV <sub>1</sub>	93 08 18.4	21 51.46	-15 46.6	18.0	-0.74	- 3.7	0.7/17.6	19295
1986 JS	93 08 11.5	21 25.54	-17 30.3	14.5	-0.89	- 9.4	1.1/10.8	22077	1983 AD	93 08 18.4	21 51.55	-28 16.2	17.1	-0.95	- 5.1	5.0/13.9	21969
4537 P-L	93 08 11.7	21 26.23	-23 39.0	19.0	-1.15	- 2.5	3.7/09.7	22086	1984 SG <sub>1</sub>	93 08 18.4	21 51.68	-09 26.1	15.9	-0.85	- 3.4	1.3/19.5	22076
1992 DB	93 08 11.8	21 26.71	-16 40.9	16.3	-0.97	- 6.5	0.6/11.4	20032	1992 GA	93 08 18.7	21 52.61	-07 08.2	17.8	-0.97	- 1.3	2.0/20.2	21111
1980 RV <sub>2</sub>	93 08 11.8	21 26.92	-17 15.0	15.8	-0.97	- 2.0	1.2/11.4	17816	1992 FS	93 08 19.0	21 53.91	-22 41.5	15.6	-0.91	- 3.2	3.9/16.4	20155
1981 ET <sub>9</sub>	93 08 12.0	21 27.51	-12 22.1	19.8	-1.00	- 3.3	1.0/12.7	22270	1982 SE <sub>1</sub>	93 08 19.1	21 53.89	-08 14.7	15.7	-0.78	- 3.0	1.5/20.4	22075
1989 VR	93 08 12.1	21 27.89	-12 39.2	16.1	-0.80	- 4.5	0.8/12.8	22081	1978 VV <sub>9</sub>	93 08 19.2	21 54.34	-09 25.2	16.8	-0.76	- 3.7	1.0/20.2	21965
1990 KK	93 08 12.2	21 28.20	-54 06.1	16.1	-1.48	- 9.8	17.3/27.4	21974	1136 T-2	93 08 19.3	21 54.66	-10 18.1	17.5	-0.87	- 5.7	0.8/20.0	20648
(5221)	93 08 12.2	21 28.30	-17 18.4	16.5	-0.78	- 3.5	0.7/11.6	20317	1980 LY	93 08 19.5	21 55.78	-19 41.7	16.5	-0.94	- 7.2	3.5/17.4	17428
1990 UB <sub>2</sub>	93 08 12.2	21 28.32	-25 06.6	15.0	-0.76	- 7.5	5.5/09.0	21975	1981 EK <sub>10</sub>	93 08 19.8	21 56.58	-10 56.2	18.1	-1.00	- 4.1	0.6/20.3	21966
1988 BT <sub>3</sub>	93 08 12.3	21 28.56	-12 40.8	17.2	-0.95	- 7.2	0.9/13.0	22079	3197 T-3	93 08 20.1	21 57.75	-17 11.9	16.5	-0.79	- 4.5	1.7/18.7	22088
1980 VA <sub>3</sub>	93 08 12.4	21 29.12	-18 09.7	16.0	-1.06	- 3.2	1.5/11.7	18107	1978 UW <sub>7</sub>	93 08 20.1	21 57.82	+10 47.7	15.6	-0.76	- 7.4	10.5/28.9	20921
5332 T-2	93 08 12.5	21 29.33	+00 42.3	19.0	-0.77	- 3.2	4.8/16.8	20517	1985 CR <sub>2</sub>	93 08 20.3	21 58.53	-11 36.0	16.6	-0.99	- 5.1	0.3/20.6	22076
1990 SZ <sub>7</sub>	93 08 12.6	21 29.60	-26 21.2	17.0	-1.10	- 4.2	4.5/09.7	19866	1982 PR	93 08 20.3	21 58.68	-14 01.9	15.2	-0.78	- 4.0	0.6/19.9	21968
3220 T-3	93 08 12.6	21 29.76	-13 47.3	17.2	-0.77	- 4.0	0.3/12.9	22088	1985 CY <sub>1</sub>	93 08 20.6	21 59.52	-08 44.0	20.0	-0.68	- 5.6	0.8/21.8	18425
1931 FC	93 08 12.6	21 29.86	-20 28.5	16.1	-1.11	- 2.4	2.4/11.4	21963	(5484)	93 08 21.0	22 00.91	-33 08.7	16.4	-1.08	- 3.5	7.2/15.0	21778
1978 RR <sub>8</sub>	93 08 12.8	21 30.33	-07 46.5	17.4	-0.87	- 7.0	2.2/14.9	22073	1981 EF <sub>45</sub>	93 08 21.0	22 01.11	-15 25.7	19.2	-0.79	- 4.1	1.0/20.1	21968
1989 YZ <sub>1</sub>	93 08 12.9	21 30.67	-17 16.9	16.3	-0.79	- 3.7	0.8/12.2	21973	1978 VG <sub>5</sub>	93 08 21.0	22 01.13	-12 02.6	17.2	-0.75	- 3.9	0.0/21.1	22429
1991 CS <sub>1</sub>	93 08 12.9	21 30.97	-14 49.4	17.7	-0.75	- 4.1	0.0/12.9	22405	(5226)	93 08 21.0	22 01.16	-30 31.1	16.7	-1.05	- 5.5	7.0/15.4	20319
1981 EN	93 08 13.0	21 31.14	-08 29.3	18.1	-0.90	- 7.5	2.1/14.9	10768	1978 VD <sub>5</sub>	93 08 21.2	22 01.80	-10 58.6	19.1	-0.75	- 4.3	0.3/21.6	22429
1991 DT	93 08 13.1	21 31.83	-16 53.2	17.1	-0.76	- 4.1	0.6/12.6	22431	4023 T-1	93 08 21.6	22 03.40	-06 25.3	17.7	-0.93	- 8.1	2.2/23.4	21952
1984 BK	93 08 13.5	21 33.34	-12 10.6	15.4	-1.00	- 2.5	1.0/14.2	22076	1989 EL <sub>2</sub>	93 08 21.6	22 03.57	-19 35.7	15.7	-1.08	- 3.5	3.5/19.7	21973
1950 DO	93 08 13.8	21 34.15	-11 41.2	14.5	-0.86	- 3.4	1.0/14.5	21963	1992 DA	93 08 21.7	22 03.57	-17 33.5	16.8	-1.01	- 4.4	2.1/20.2	19874
1988 RD <sub>11</sub>	93 08 14.6	21 37.15	-17 25.9	17.3	-0.80	- 3.2	0.9/13.8	20815	1981 EV <sub>28</sub>	93 08 21.8	22 04.18	+02 59.8	17.7	-0.72	- 5.8	5.1/26.8	22271
1990 TS	93 08 14.9	21 38.21	-20 18.9	15.9	-1.11	- 3.4	2.7/13.4	20819	1990 WY <sub>3</sub>	93 08 21.8	22 04.29	-22 27.6	15.4	-0.91	- 8.0	4.2/18.4	21975
(5149)	93 08 14.9	21 38.24	-14 57.6	17.5	-0.75	- 3.6	0.2/14.7	19852	(5263)	93 08 22.0	22 04.83	+09 43.4	16.4	-0.70	- 4.3	6.0/29.2	20494
1990 RH <sub>4</sub>	93 08 15.4	21 40.15	-11 58.6	16.4	-0.98	- 7.2	0.8/16.0	17964	1981 EV <sub>17</sub>	93 08 22.0	22 04.97	-08 19.7	18.9	-0.93	- 5.3	1.4/23.1	10822
1978 SE <sub>3</sub>	93 08 15.5	21 40.54	-08 24.3	16.0	-0.87	- 5.3	2.4/17.1	10516	1986 QG <sub>1</sub>	93 08 22.2	22 05.74	-16 49.2	17.7	-0.94	- 6.9	2.0/20.7	22077

(5333)	93 08 22.4	22 06.45	+03 42.0	17.0	-0.89	- 6.7	5.2/27.4	20798	1990 XK	93 08 28.9	22 29.92	+10 34.8	15.7	-0.85	- 4.1	6.4/04.3	22083
1986 RT <sub>2</sub>	93 08 22.5	22 06.62	-12 09.2	15.7	-0.96	- 4.2	0.2/22.4	21970	1990 XK	93 08 28.9	22 29.92	+10 34.8	15.9	-0.85	- 4.1	6.4/04.3	xxxxx
1986 WO <sub>1</sub>	93 08 22.6	22 07.07	-15 05.5	16.4	-0.96	- 4.1	1.6/21.7	22078	1992 HY	93 08 29.0	22 30.51	-08 48.2	17.5	-0.91	- 5.5	0.2/29.2	20825
1988 UP	93 08 23.0	22 08.52	-15 06.6	15.3	-0.75	- 4.6	1.3/21.9	22080	1985 QP <sub>5</sub>	93 08 29.7	22 32.80	-20 20.2	16.4	-1.13	+ 1.5	4.6/27.1	16024
1978 RD <sub>10</sub>	93 08 23.1	22 08.67	-10 20.3	17.5	-0.78	- 5.1	0.4/23.4	22073	1985 UC	93 08 29.8	22 33.28	-31 43.5	16.3	-1.26	+ 6.6	10.9/25.8	16232
1981 EV <sub>18</sub>	93 08 23.2	22 09.21	-05 49.5	18.5	-0.75	- 5.0	1.8/25.0	22429	5104 T-2	93 08 30.0	22 33.94	+03 26.0	19.2	-0.77	- 4.2	3.9/03.0	15087
1988 FB	93 08 23.3	22 09.50	-15 39.1	16.6	-0.96	- 4.9	1.5/22.1	22079	1981 EH <sub>9</sub>	93 08 30.4	22 35.33	-03 15.1	19.7	-0.94	- 5.2	1.9/01.1	21930
1971 UT <sub>1</sub>	93 08 23.4	22 09.94	-09 49.0	16.0	-0.72	- 5.1	0.6/23.9	22072	(5222)	93 08 30.4	22 35.47	+34 37.6	15.9	-0.81	- 6.3	11.6/18.9	xxxxx
1992 CA	93 08 23.4	22 10.07	-18 35.9	14.8	-0.86	-28.2	3.2/20.3	xxxxx	1990 UW	93 08 30.4	22 35.53	-08 33.7	15.3	-1.03	- 4.3	0.1/30.5	22082
1976 QL <sub>2</sub>	93 08 23.5	22 10.24	-25 59.1	16.9	-0.84	- 2.8	4.5/19.1	14185	1991 GH <sub>11</sub>	93 08 30.6	22 36.32	-09 36.6	19.2	-0.72	- 4.7	0.2/30.4	20638
1979 MX <sub>5</sub>	93 08 23.6	22 10.50	-10 09.0	17.9	-0.95	- 6.5	0.4/23.9	18803	5137 T-2	93 08 30.8	22 36.83	+10 14.4	19.4	-0.81	- 7.6	6.3/06.6	20833
1979 ML <sub>5</sub>	93 08 23.7	22 10.93	-07 59.8	18.0	-0.78	- 6.7	1.2/24.8	22429	1989 GT <sub>4</sub>	93 08 31.0	22 37.84	-04 56.8	15.3	-0.81	- 7.7	1.8/01.3	22081
(5260)	93 08 23.8	22 11.62	-02 08.3	17.0	-0.79	- 8.6	2.9/27.0	21909	1990 UR <sub>4</sub>	93 08 31.0	22 37.89	-19 40.5	18.7	-0.97	- 5.9	4.1/27.6	22273
3138 T-1	93 08 23.9	22 11.78	-08 08.8	17.9	-0.94	- 6.8	1.1/24.9	21951	1971 UN <sub>1</sub>	93 08 31.4	22 39.19	-07 22.7	16.4	-0.75	- 5.0	0.4/31.8	14011
1989 WK <sub>2</sub>	93 08 23.9	22 11.96	-15 43.6	17.3	-0.83	-12.7	1.5/22.3	22081	1978 SP <sub>4</sub>	93 08 31.9	22 41.14	-20 10.6	16.6	-0.87	- 2.4	3.6/28.4	22429
1980 KK	93 08 24.0	22 12.27	-11 43.0	16.2	-0.94	- 6.1	0.3/23.9	17816	1991 DX	93 09 01.0	22 41.28	-01 39.2	16.3	-0.79	- 9.9	2.3/03.4	22083
1989 KA	93 08 24.0	22 12.40	-02 45.1	16.5	-0.96	- 6.3	3.2/26.7	22081	4327 T-3	93 09 01.0	22 41.36	-23 46.1	18.4	-0.94	- 4.0	5.2/27.3	13304
4550 P-L	93 08 24.1	22 12.70	-16 36.2	18.9	-1.08	- 4.1	2.4/22.7	17462	1979 MP <sub>3</sub>	93 09 01.0	22 41.57	-02 47.0	17.6	-0.91	- 6.3	2.4/02.8	21965
1983 WM	93 08 24.2	22 12.95	-00 33.3	16.5	-0.95	- 4.5	4.2/27.3	17434	1978 XW	93 09 01.5	22 42.95	-10 25.3	17.9	-0.76	- 4.8	0.6/31.8	20140
1981 DU <sub>1</sub>	93 08 24.6	22 14.20	+08 06.1	17.9	-0.79	- 4.2	6.3/30.5	20809	1985 CA <sub>2</sub>	93 09 01.5	22 43.16	-13 37.2	15.9	-0.94	- 8.2	2.3/30.7	22076
(5135)	93 08 24.7	22 14.63	-17 06.8	15.0	-1.02	- 4.2	2.8/23.0	19847	1981 EU <sub>13</sub>	93 09 01.6	22 43.39	+01 14.9	18.8	-0.90	- 7.9	3.4/04.7	21966
1041 T-2	93 08 24.8	22 15.32	-09 22.3	16.7	-0.77	- 5.2	0.5/25.4	22274	1989 VK	93 09 02.0	22 44.94	-01 35.7	16.8	-0.85	- 3.9	2.9/03.9	15720
1981 CB <sub>1</sub>	93 08 24.9	22 15.27	-20 05.8	16.8	-1.04	- 4.5	3.5/22.2	21966	1976 GY <sub>3</sub>	93 09 02.3	22 46.14	-03 41.9	15.7	-0.95	- 7.8	1.6/03.7	21964
1981 ET <sub>7</sub>	93 08 25.0	22 15.98	-05 56.6	18.3	-0.99	- 3.9	1.9/26.4	22270	1991 FF	93 09 02.4	22 46.22	-06 56.0	17.6	-0.85	- 0.9	0.2/02.6	21975
1981 EQ <sub>33</sub>	93 08 25.6	22 17.82	-03 55.1	18.7	-0.96	- 2.7	3.0/27.4	10772	1981 EF <sub>30</sub>	93 09 02.5	22 46.76	-07 17.3	17.4	-0.88	- 8.2	0.2/02.7	21967
4028 P-L	93 08 25.9	22 19.22	-00 22.5	17.4	-0.84	- 6.3	3.7/29.2	22086	1978 UK <sub>7</sub>	93 09 02.6	22 46.99	-05 32.3	16.7	-0.87	- 6.1	0.9/03.3	20808
(5292)	93 08 26.2	22 20.12	-34 44.8	14.7	-0.85	- 8.4	9.9/16.7	20624	1992 HD	93 09 02.6	22 47.08	-11 13.5	16.4	-0.83	- 5.8	1.1/01.5	22085
1991 BV	93 08 26.3	22 20.43	-13 41.9	15.6	-0.81	- 9.3	1.1/25.1	20638	4805 P-L	93 09 02.6	22 47.23	-10 28.2	18.6	-0.96	- 4.9	1.0/01.8	22086
1981 EK <sub>34</sub>	93 08 26.3	22 20.59	-10 43.6	16.9	-0.95	- 5.0	0.2/26.2	22271	1981 ED <sub>24</sub>	93 09 02.8	22 47.80	-05 49.4	17.8	-0.71	- 7.6	0.6/03.5	21967
1979 HW <sub>6</sub>	93 08 26.4	22 21.01	-09 37.6	16.6	-0.98	- 5.5	0.3/26.7	14780	1989 SA	93 09 02.8	22 47.92	-34 11.3	15.9	-0.91	- 5.2	10.8/23.8	22081
4050 T-3	93 08 26.6	22 21.78	-12 56.4	17.5	-0.86	- 7.2	1.0/25.8	19332	1991 FH	93 09 03.2	22 49.17	+11 58.3	18.3	-0.66	- 6.5	4.9/10.5	18826
1985 CM <sub>1</sub>	93 08 26.7	22 22.26	-13 13.7	16.4	-0.93	- 7.4	1.2/25.8	21969	1977 UO <sub>5</sub>	93 09 03.4	22 49.88	-11 23.6	16.0	-0.78	- 4.7	1.3/02.1	22049
1992 FJ	93 08 26.7	22 22.29	-03 23.0	17.4	-0.94	- 6.3	2.6/28.9	20154	1992 GE <sub>2</sub>	93 09 03.5	22 50.40	-10 51.2	16.3	-1.05	- 3.6	1.6/02.6	20824
1992 HX	93 08 27.0	22 23.32	-12 46.1	16.9	-0.77	- 4.1	1.0/26.3	20825	3151 T-2	93 09 03.9	22 51.76	-13 02.3	17.6	-1.02	- 4.8	2.4/02.2	17653
1989 XM	93 08 27.0	22 23.38	-14 53.8	16.3	-0.81	- 4.4	1.6/25.6	20506	1990 XF	93 09 04.0	22 52.41	+06 54.4	16.4	-0.91	- 3.3	4.3/08.4	21975
4636 P-L	93 08 27.2	22 23.67	-24 52.7	18.4	-0.87	- 1.7	4.1/22.9	12699	1965 UA	93 09 04.1	22 52.52	-11 23.8	15.0	-0.92	- 0.5	2.2/03.0	21963
1981 EA <sub>9</sub>	93 08 27.3	22 24.32	-09 37.9	15.8	-0.98	+ 2.3	0.2/27.4	21966	1983 RM <sub>3</sub>	93 09 04.6	22 54.22	-01 05.5	16.0	-1.08	- 2.9	2.5/06.2	21969
1992 FR	93 08 27.5	22 24.88	-01 01.9	15.7	-0.79	- 8.6	3.0/31.0	22085	1989 AM	93 09 04.6	22 54.47	-62 11.1	15.0	-1.49	+ 0.1	25.4/16.0	22080
1985 CC <sub>2</sub>	93 08 27.5	22 25.10	-13 49.2	16.1	-0.94	- 7.0	1.6/26.3	21969	1989 XC	93 09 04.6	22 54.58	-12 29.8	15.9	-0.80	- 5.1	2.0/02.9	21939
2546 P-L	93 08 27.6	22 25.40	+02 43.4	18.1	-0.77	- 9.4	4.4/01.1	12689	1980 GO	93 09 04.9	22 55.25	-07 36.0	17.6	-0.71	- 4.8	0.2/04.7	18106
2574 P-L	93 08 28.1	22 27.01	-34 11.3	18.6	-1.00	- 0.1	6.8/21.2	22086	2558 P-L	93 09 04.9	22 55.50	-12 02.1	17.1	-0.80	- 3.5	1.6/03.3	22061
(5227)	93 08 28.1	22 27.26	+07 55.6	15.5	-0.92	- 4.0	7.8/02.6	20320	1988 BB <sub>4</sub>	93 09 05.2	22 56.65	+04 05.0	16.3	-0.95	- 5.0	4.0/08.6	22430
1986 CG	93 08 28.1	22 27.37	+00 32.4	17.9	-0.82	- 3.9	3.1/31.3	22077	1981 EG <sub>27</sub>	93 09 05.4	22 57.17	-04 55.5	19.1	-0.78	- 4.2	0.5/06.0	21967
(5240)	93 08 28.2	22 27.69	+00 50.2	15.2	-0.91	- 5.2	4.2/31.5	20325	(5160)	93 09 05.4	22 57.19	-15 07.3	15.5	-0.84	- 8.7	3.3/02.5	19993
1975 XH	93 08 28.3	22 27.87	-24 40.1	18.3	-0.95	- 6.4	4.8/23.4	22072	1981 FL	93 09 05.4	22 57.45	-02 02.4	18.2	-0.87	- 8.0	1.5/07.1	22074
(5480)	93 08 28.4	22 28.28	-15 24.8	15.3	-0.73	- 5.9	1.8/26.5	21776	1982 BA	93 09 05.5	22 57.49	-14 22.3	16.4	-0.77	- 9.0	2.4/02.7	22271
1978 SO <sub>4</sub>	93 08 28.5	22 28.68	-16 02.8	15.7	-0.70	- 2.5	1.9/26.6	21964	2224 T-2	93 09 05.5	22 57.50	-10 13.6	17.0	-0.80	- 4.3	1.2/04.4	22432
1986 EQ <sub>2</sub>	93 08 28.7	22 29.33	-08 09.5	16.7	-0.78	- 5.2	0.5/29.2	11143	1986 XF <sub>1</sub>	93 09 05.7	22 58.48	-01 52.5	15.2	-0.88	- 4.1	2.2/07.2	22078
1992 LM	93 08 28.8	22 29.52	-20 16.5	16.6	-0.87	- 5.0	3.5/25.4	20827	2078 T-3	93 09 06.0	22 59.24	-06 40.6	16.5	-0.94	- 3.2	0.1/05.9	22088
3111 T-2	93 08 28.8	22 29.53	-01 20.9	18.2	-0.79	- 8.9	2.6/31.6	17978	1988 TA <sub>1</sub>	93 09 06.1	22 59.87	+04 01.3	16.1	-0.69	- 6.9	3.3/09.9	22080
1991 AK	93 08 28.8	22 29.85	-09 17.4	16.3	-0.87	- 4.3	0.1/28.9	17967	1985 UO <sub>3</sub>	93 09 06.1	22 59.98	-40 08.6	17.3	-1.27	+ 2.1	12.3/27.6	20813

(5277)	93 09 06.2	23 00.19	+04 57.5	17.6	-1.01	- 3.4	4.2/09.5	20619	1992 DG <sub>1</sub>	93 09 14.5	23 30.04	-02 35.7	16.1	-1.00	- 4.1	9.2/05.0	22085
1975 SJ	93 09 06.4	23 00.87	-11 12.7	15.9	-0.86	- 4.2	1.7/04.9	18280	1181 T-1	93 09 14.7	23 30.48	-00 35.4	17.1	-0.78	- 4.2	0.8/15.5	22274
1988 BX <sub>3</sub>	93 09 06.4	23 01.02	+03 31.6	17.0	-0.90	- 6.7	3.8/09.8	22430	1981 ER <sub>27</sub>	93 09 14.9	23 31.21	-05 47.8	17.6	-1.06	- 1.7	1.2/14.2	22271
1989 SP	93 09 06.5	23 01.26	+08 12.7	14.8	-0.67	-10.4	6.1/12.3	20504	2040 T-2	93 09 14.9	23 31.41	+00 07.5	18.4	-0.72	- 7.1	1.0/16.1	22432
9515 P-L	93 09 06.7	23 02.14	-12 30.6	17.4	-0.89	- 4.7	2.4/04.8	13154	1987 QW <sub>2</sub>	93 09 15.0	23 31.83	-04 46.3	16.2	-0.75	- 4.4	0.6/14.5	21936
1988 JW	93 09 07.0	23 03.02	-25 11.7	16.9	-0.90	- 6.9	7.0/31.6	22079	1981 ER <sub>43</sub>	93 09 15.1	23 32.00	-01 28.7	17.3	-0.78	- 4.9	0.5/15.6	22430
1988 TO <sub>1</sub>	93 09 07.2	23 03.64	-09 53.0	16.9	-0.78	- 5.4	1.3/05.9	22080	1987 RY	93 09 15.2	23 32.69	-03 34.8	15.5	-0.73	- 4.6	0.2/15.1	22078
1210 T-2	93 09 07.2	23 03.65	-06 28.3	16.5	-1.02	- 4.4	0.2/07.1	22087	1991 FV	93 09 15.9	23 35.07	+13 20.2	15.1	-0.77	- 4.6	5.1/21.6	22083
(5321)	93 09 07.6	23 05.03	+13 38.1	15.1	-0.61	-11.1	8.4/15.9	20793	1992 HH	93 09 16.2	23 36.02	-21 43.0	16.6	-0.87	- 5.4	6.2/09.7	22085
1986 VY	93 09 07.7	23 05.52	-04 49.4	16.3	-1.00	- 3.1	0.5/08.0	21970	(5304)	93 09 16.3	23 36.52	-14 47.1	16.2	-0.75	- 6.1	3.8/12.0	20786
1985 DC <sub>1</sub>	93 09 08.0	23 06.76	-05 51.4	17.9	-0.70	- 4.5	0.0/08.0	22076	2272 T-2	93 09 16.5	23 37.07	-05 11.2	16.5	-1.06	- 3.6	1.0/15.7	18133
4722 P-L	93 09 08.2	23 07.33	-03 48.1	17.4	-0.91	- 6.2	0.6/08.8	22086	1985 RQ	93 09 16.6	23 37.58	-09 24.9	16.0	-0.87	+ 2.0	3.8/14.8	15884
6643 P-L	93 09 08.3	23 07.51	-13 15.5	16.1	-1.04	- 3.9	3.5/06.0	17651	1989 CV	93 09 16.8	23 38.15	-06 43.0	17.1	-0.63	- 3.1	1.0/15.4	22080
1989 XD <sub>2</sub>	93 09 08.7	23 09.31	-14 51.6	16.8	-0.74	- 8.6	4.0/05.3	21973	1991 GZ <sub>9</sub>	93 09 17.0	23 39.02	+09 06.6	18.2	-0.82	- 4.5	3.2/20.8	21975
1981 ER <sub>5</sub>	93 09 09.1	23 10.73	+12 12.8	15.1	-0.79	- 2.6	9.1/15.2	xxxxxx	1992 CJ	93 09 17.0	23 39.10	+02 49.4	16.2	-0.92	- 8.7	2.0/18.8	20511
1981 ER <sub>5</sub>	93 09 09.1	23 10.77	+12 13.4	14.9	-0.79	- 2.6	9.1/15.2	22429	1981 EX <sub>13</sub>	93 09 17.1	23 39.12	+06 58.8	16.2	-0.71	- 7.7	3.0/20.5	20497
(5350)	93 09 09.4	23 11.88	-01 50.5	15.1	-0.99	- 5.0	1.5/10.5	20917	1989 YO <sub>5</sub>	93 09 17.3	23 39.82	-06 08.1	16.7	-0.72	- 4.7	1.1/16.0	18119
4017 T-3	93 09 09.5	23 12.20	-14 36.2	16.9	-1.04	- 4.2	4.1/06.8	12702	1981 EL <sub>24</sub>	93 09 17.6	23 41.08	-00 46.7	17.1	-0.79	- 4.8	0.4/18.1	22430
1976 SZ <sub>9</sub>	93 09 09.7	23 12.91	-07 53.5	16.1	-0.78	- 3.4	1.0/08.9	22072	1984 UT	93 09 17.7	23 41.47	+21 14.3	16.5	-0.77	- 7.3	8.3/26.5	18424
1988 EB <sub>1</sub>	93 09 09.8	23 13.18	-09 58.8	18.0	-0.92	- 5.2	1.7/08.3	xxxxxx	1987 DH <sub>6</sub>	93 09 17.7	23 41.49	+00 23.2	16.6	-0.83	- 5.4	0.8/18.5	xxxxxx
1980 XX	93 09 09.9	23 13.52	-16 04.5	16.3	-0.94	- 6.5	5.1/06.2	22074	1990 WB <sub>2</sub>	93 09 17.7	23 41.50	-13 07.2	17.7	-0.91	- 6.6	3.8/14.0	22083
1989 SE	93 09 10.2	23 14.50	-11 48.6	15.7	-0.92	+ 2.6	3.7/08.5	22081	1992 EE <sub>1</sub>	93 09 18.0	23 42.78	-33 06.0	17.7	-1.34	+ 1.9	10.5/10.2	21977
1980 PX	93 09 10.3	23 15.09	-05 35.4	14.5	-0.66	- 7.3	0.4/10.1	22074	1986 RQ	93 09 18.3	23 43.46	+09 49.7	15.7	-0.72	-12.0	5.3/23.0	20013
1986 QR <sub>3</sub>	93 09 10.4	23 15.43	-11 11.0	15.9	-1.01	- 3.7	2.7/08.6	20013	1992 FM <sub>1</sub>	93 09 18.7	23 45.02	+09 12.3	17.3	-1.34	+ 1.7	4.1/21.2	21580
1992 LQ	93 09 10.7	23 16.51	-23 41.3	16.7	-0.82	- 3.9	6.1/04.4	20827	1984 CP	93 09 18.8	23 45.27	-11 19.6	17.6	-0.87	- 7.1	3.3/15.5	22076
(5267)	93 09 11.0	23 17.50	-17 04.6	16.6	-0.90	- 7.4	4.4/06.8	xxxxxx	1977 TC <sub>1</sub>	93 09 18.9	23 45.85	+04 36.9	15.3	-0.74	- 7.8	3.2/21.2	21964
1992 LU	93 09 11.1	23 17.74	-01 56.5	16.7	-0.77	- 9.7	0.8/12.1	20827	(5318)	93 09 18.9	23 45.87	-06 57.2	16.9	-0.94	- 6.5	1.9/17.2	20792
1981 EU <sub>11</sub>	93 09 11.2	23 18.26	-01 43.1	19.0	-0.93	- 5.7	0.9/12.2	22270	(5089)	93 09 19.2	23 46.95	+03 14.6	16.4	-0.94	- 1.6	1.5/20.6	19829
1985 HS <sub>1</sub>	93 09 11.3	23 18.70	+03 41.3	16.9	-0.84	-14.3	2.7/14.6	21969	7639 P-L	93 09 19.3	23 47.03	-08 27.1	18.3	-0.85	- 5.5	2.1/17.0	18131
1981 EU <sub>33</sub>	93 09 11.4	23 18.66	+06 26.1	18.1	-0.82	- 7.1	4.9/15.2	11150	1988 RQ <sub>5</sub>	93 09 19.5	23 48.13	+00 23.4	16.5	-0.76	- 6.3	0.6/20.2	21972
1269 T-2	93 09 11.5	23 19.14	-03 08.2	17.9	-0.78	- 4.8	0.4/11.9	22087	(5435)	93 09 19.7	23 48.69	-25 59.3	16.3	-0.75	- 5.6	6.7/10.3	21552
4848 P-L	93 09 11.5	23 19.14	-03 59.2	18.0	-0.90	- 7.2	0.2/11.7	14629	1992 FZ <sub>1</sub>	93 09 19.8	23 49.11	-12 38.2	15.0	-0.82	- 8.4	4.9/15.7	20156
1939 VD	93 09 11.6	23 19.53	-26 47.6	15.0	-0.89	- 1.2	11.2/04.0	16227	1985 XR	93 09 20.0	23 49.60	-06 34.0	15.6	-0.82	- 6.3	2.0/18.2	21970
1986 TN <sub>1</sub>	93 09 11.7	23 19.91	+14 39.0	16.5	-0.88	- 7.0	6.8/18.5	21970	1981 XM <sub>2</sub>	93 09 20.0	23 49.93	+18 04.2	16.4	-0.86	- 5.4	7.0/26.8	17956
1992 FN	93 09 12.0	23 20.86	-03 20.9	16.9	-0.97	- 6.8	0.3/12.3	21977	1402 T-2	93 09 20.0	23 49.93	+00 32.2	18.6	-0.89	- 4.2	0.7/20.6	17976
1952 SW <sub>1</sub>	93 09 12.0	23 21.03	-23 25.8	17.4	-1.02	- 1.5	6.6/06.5	21963	4100 P-L	93 09 20.0	23 49.96	+00 55.7	18.6	-1.00	- 2.0	0.7/20.7	19317
1992 EU <sub>1</sub>	93 09 12.1	23 21.24	-14 49.9	16.4	-0.96	- 7.2	3.8/08.6	20643	1981 JM <sub>2</sub>	93 09 20.1	23 49.95	+00 53.3	16.9	-0.89	- 6.7	0.8/20.8	20811
(5205)	93 09 12.1	23 21.48	-06 13.6	15.3	-1.03	- 2.7	0.9/11.6	20134	6207 P-L	93 09 20.2	23 50.61	+03 05.6	18.3	-0.85	- 6.0	1.4/21.7	19318
1981 EF <sub>47</sub>	93 09 12.5	23 22.99	-05 36.1	19.6	-0.80	- 4.2	0.5/12.1	18421	1981 EK <sub>22</sub>	93 09 20.3	23 50.65	+00 11.1	18.7	-0.77	- 5.0	0.4/20.7	15407
1976 QZ <sub>1</sub>	93 09 12.6	23 23.35	-17 27.8	16.0	-1.00	- 4.1	5.9/08.5	22072	1981 EH <sub>34</sub>	93 09 20.3	23 50.92	-00 39.7	16.7	-0.79	- 4.5	0.1/20.5	22430
1986 QQ	93 09 12.7	23 23.32	-05 21.4	15.9	-1.03	- 4.1	0.6/12.3	22077	1989 UL <sub>3</sub>	93 09 20.4	23 51.34	-27 12.8	15.6	-0.94	- 4.8	9.4/10.7	15719
2548 P-L	93 09 12.9	23 24.03	-07 00.7	16.7	-0.74	- 4.9	0.9/11.8	22086	1990 UF <sub>2</sub>	93 09 20.6	23 51.75	+04 38.8	17.3	-0.91	- 8.5	2.0/22.5	22082
2190 T-1	93 09 13.2	23 25.16	-09 54.5	18.0	-0.92	- 4.4	2.2/11.3	22087	1987 DF <sub>6</sub>	93 09 20.7	23 52.06	+09 47.1	17.0	-0.95	- 2.5	3.4/23.9	18286
1991 GQ <sub>2</sub>	93 09 13.2	23 25.50	-03 12.8	17.6	-0.72	- 5.1	0.1/13.5	21975	1981 DM	93 09 20.8	23 52.58	+11 17.2	18.2	-0.93	- 6.3	4.5/25.0	22429
(5296)	93 09 13.3	23 25.78	-07 49.1	15.9	-0.73	- 4.8	1.2/12.0	20626	3107 T-3	93 09 20.9	23 52.89	-03 10.3	16.0	-0.78	- 4.4	0.7/20.1	22088
(5287)	93 09 13.5	23 26.56	-07 29.6	14.8	-0.77	- 8.5	1.5/12.2	20622	1949 PN	93 09 20.9	23 53.06	+12 52.6	13.8	-1.01	- 0.1	5.7/25.0	22072
1217 T-1	93 09 13.8	23 27.67	-02 15.2	17.8	-0.90	- 4.6	0.5/14.3	19320	1992 HK	93 09 21.1	23 53.52	-03 24.2	17.3	-0.83	- 6.1	0.9/20.2	20345
1981 EA <sub>39</sub>	93 09 14.0	23 27.99	-01 37.6	19.2	-0.95	- 5.6	0.7/15.0	16229	4354 T-3	93 09 21.1	23 53.56	-06 43.1	16.9	-0.91	- 7.9	2.7/19.1	22274
2168 T-2	93 09 14.0	23 28.00	-02 09.5	17.2	-0.76	- 5.5	0.5/14.4	22432	1981 ET <sub>27</sub>	93 09 21.3	23 54.40	-01 15.8	18.9	-0.75	- 5.6	0.2/21.1	21932
1977 TS <sub>3</sub>	93 09 14.2	23 28.86	-10 00.1	14.8	-0.71	- 5.9	2.6/11.9	21964	(5232)	93 09 21.3	23 54.48	-04 46.9	15.6	-0.73	- 8.9	1.3/19.8	20322
3854 T-3	93 09 14.3	23 29.08	-05 20.1	18.2	-0.71	- 5.0	0.5/13.6	19332	4008 T-3	93 09 21.4	23 54.73	-09 29.0	17.0	-0.99	- 6.5	3.3/18.6	17221

1988 FE	93 09 21.6	23 55.49	-14 17.3	17.5	-0.98	- 3.5	4.5/17.5	21569	(5148)	93 09 30.1	00 26.20	+03 23.8	18.3	-0.73	- 4.4	0.1/30.4	19852
1991 GG <sub>1</sub>	93 09 21.7	23 55.93	+06 59.8	15.7	-0.84	- 2.6	2.3/24.1	21975	1988 FS <sub>2</sub>	93 09 30.2	00 26.40	+02 46.3	16.8	-0.94	- 5.1	0.0/30.2	21569
1992 FT	93 09 21.7	23 56.01	-02 13.6	16.3	-0.96	- 7.5	0.7/21.2	21977	1989 SV <sub>5</sub>	93 10 01.0	00 29.34	-06 52.1	18.9	-0.91	- 4.8	3.4/27.8	20505
1990 UP <sub>3</sub>	93 09 21.9	23 56.35	-11 17.7	17.0	-0.97	- 6.1	4.2/18.4	21975	1979 MJ <sub>5</sub>	93 10 01.1	00 29.47	+00 55.1	17.0	-0.92	- 8.2	0.9/30.3	21965
1980 RE <sub>1</sub>	93 09 21.9	23 56.54	+00 17.6	16.6	-0.71	-10.6	0.3/22.2	16576	1985 JK	93 10 01.2	00 30.15	-06 41.3	17.7	-0.93	- 6.0	3.7/28.1	22076
(5293)	93 09 22.0	23 57.03	-21 09.8	15.6	-0.83	- 6.3	6.6/14.5	20625	1988 GL	93 10 01.3	00 30.50	-20 09.4	17.6	-1.01	- 2.3	7.7/24.4	22079
4118 T-3	93 09 22.2	23 57.75	-00 29.8	16.9	-0.66	- 9.1	0.1/22.2	15425	1989 TL <sub>15</sub>	93 10 01.3	00 30.59	+05 20.3	16.2	-0.88	- 5.0	0.8/02.0	19026
1992 JA	93 09 22.2	23 57.77	+30 08.1	17.3	-0.93	- 8.7	9.3/04.6	20644	(5238)	93 10 01.8	00 32.20	+10 20.1	15.5	-0.93	- 7.8	2.5/04.2	20324
1984 DA	93 09 22.5	23 58.76	-15 43.7	16.7	-0.91	-20.7	6.4/16.0	22076	1992 ES <sub>1</sub>	93 10 01.8	00 32.39	-04 42.8	16.6	-1.05	- 2.6	3.1/29.6	20154
1990 VB <sub>15</sub>	93 09 22.6	23 59.21	-08 05.3	15.1	-0.91	- 6.7	3.8/20.0	21975	1988 JP	93 10 01.9	00 32.61	-60 30.8	15.0	-1.16	+14.8	31.9/23.8	22079
1978 VO <sub>8</sub>	93 09 22.7	23 59.34	-03 40.7	17.7	-0.73	- 4.9	1.0/21.5	22270	1989 YB <sub>6</sub>	93 10 02.3	00 34.04	-15 29.7	18.4	-0.69	- 4.9	4.5/25.6	18817
1987 RC <sub>1</sub>	93 09 22.7	23 59.44	-01 17.6	15.5	-0.74	- 4.5	0.4/22.3	19298	1981 EC <sub>13</sub>	93 10 02.5	00 34.60	+13 12.3	18.7	-0.83	- 4.0	2.9/05.6	21966
4614 P-L	93 09 22.9	00 00.25	-02 56.6	17.2	-0.86	- 3.4	1.0/22.1	19318	1987 RZ	93 10 02.6	00 34.94	+00 32.1	16.9	-0.72	- 5.0	1.2/01.5	15887
1981 EE <sub>29</sub>	93 09 23.1	00 01.03	+07 35.9	19.3	-0.98	- 4.9	2.9/25.5	22271	(5354)	93 10 02.7	00 35.45	-02 19.5	16.1	-0.70	- 5.1	1.7/30.7	20919
1982 UR <sub>10</sub>	93 09 23.3	00 01.45	-00 47.7	16.7	-0.76	- 4.1	0.3/23.0	22075	1981 EK <sub>8</sub>	93 10 02.7	00 35.46	+13 59.2	18.2	-0.97	- 6.1	4.0/06.1	15241
1991 FG	93 09 23.7	00 02.89	+08 00.0	18.2	-0.74	- 6.9	1.9/26.5	22405	1984 ER <sub>1</sub>	93 10 02.7	00 35.57	+01 30.4	16.5	-0.74	- 5.3	0.7/02.0	22076
1991 CY	93 09 23.8	00 03.36	+15 26.5	16.7	-0.88	- 4.3	4.7/28.8	21975	1992 EP	93 10 02.8	00 35.94	-05 36.2	16.8	-0.98	- 4.4	3.5/30.0	20034
1977 PO <sub>1</sub>	93 09 24.5	00 05.87	+16 31.1	15.2	-0.75	- 1.8	4.6/29.8	22429	1991 FU	93 10 03.6	00 38.92	+23 44.6	15.4	-0.99	- 2.8	6.6/09.7	18438
1986 WE	93 09 24.6	00 06.18	-09 57.2	16.8	-0.91	- 6.1	3.5/21.1	22078	(5250)	93 10 03.7	00 39.07	-16 46.2	15.7	-0.71	- 7.9	8.5/25.7	20489
1990 SM <sub>28</sub>	93 09 24.6	00 06.38	+06 10.6	15.0	-0.99	- 6.7	2.4/26.5	22273	1992 GA <sub>1</sub>	93 10 03.7	00 39.30	+09 06.0	18.1	-0.85	-13.9	1.6/05.7	20344
1988 BJ <sub>1</sub>	93 09 25.2	00 08.50	-03 08.5	14.9	-0.86	- 8.4	1.8/23.9	22079	6217 P-L	93 10 03.7	00 39.31	+06 36.9	19.4	-0.67	- 7.8	0.6/04.7	15905
1989 UG <sub>3</sub>	93 09 25.4	00 08.92	-08 32.2	16.2	-0.85	- 5.2	3.8/22.2	15896	1988 UH	93 10 04.0	00 40.32	+05 32.4	16.7	-0.72	- 5.4	0.3/04.5	21972
1981 KJ	93 09 25.7	00 10.15	-14 37.1	16.6	-0.91	- 0.4	5.2/21.3	22074	1991 DO	93 10 04.0	00 40.40	+12 45.8	16.3	-0.89	- 3.4	2.6/06.7	18128
(5479)	93 09 25.8	00 10.39	+09 11.3	15.4	-0.65	-14.2	3.3/29.2	21776	1977 UP	93 10 04.3	00 41.11	+06 13.9	15.1	-1.00	- 3.0	0.9/05.0	21964
1988 XC	93 09 25.9	00 11.10	+00 02.8	16.1	-0.84	- 3.6	0.4/25.6	14202	1981 EH <sub>24</sub>	93 10 04.4	00 41.48	+03 14.2	18.4	-0.82	- 4.3	0.4/04.0	22430
1992 MM	93 09 26.0	00 11.49	-04 27.4	16.1	-0.93	- 5.3	2.1/24.3	20828	1981 DF <sub>2</sub>	93 10 04.4	00 41.68	+19 36.8	15.6	-0.78	- 7.4	7.3/10.0	22429
2268 T-3	93 09 26.3	00 12.22	+12 17.2	17.2	-0.70	- 7.5	3.7/30.4	22274	(5207)	93 10 04.6	00 42.18	+24 51.7	16.4	-1.08	- 2.2	8.0/11.0	20135
1981 EP <sub>25</sub>	93 09 26.3	00 12.51	+03 11.6	19.2	-0.77	- 5.3	0.5/27.0	22271	1989 KB	93 10 04.6	00 42.59	-43 59.0	15.5	-1.18	+ 8.7	23.4/23.0	22081
9540 P-L	93 09 26.4	00 12.85	+00 24.6	15.8	-0.88	- 4.3	0.4/26.2	22087	1989 LW	93 10 04.7	00 42.61	+27 51.2	15.6	-0.71	-20.7	9.5/15.9	16029
4260 T-1	93 09 26.5	00 13.17	-03 19.5	17.3	-0.77	- 5.3	1.5/25.0	21602	(5331)	93 10 04.8	00 43.04	-24 14.9	13.6	-0.52	- 5.0	14.2/21.2	20797
1989 LM	93 09 26.7	00 13.94	+11 29.7	16.1	-0.99	- 6.1	4.1/30.1	22081	(5450)	93 10 05.4	00 45.22	-01 25.4	15.8	-0.79	- 6.3	2.1/03.3	21558
1980 KD	93 09 26.7	00 13.96	-07 48.9	16.9	-0.67	- 5.2	2.2/23.5	21965	1988 GD	93 10 05.5	00 45.43	-04 15.2	16.5	-0.91	- 5.4	3.2/02.6	20501
2158 T-3	93 09 27.0	00 15.10	+05 14.3	16.6	-1.00	- 6.4	1.6/28.2	22088	1933 FE <sub>1</sub>	93 10 05.7	00 46.39	+08 29.1	17.7	-0.96	- 6.4	1.2/06.9	22072
1989 WD <sub>3</sub>	93 09 27.3	00 16.16	+08 59.0	17.6	-0.82	- 6.1	2.4/29.8	18632	1991 AF	93 10 05.8	00 46.57	+14 02.0	16.4	-0.92	- 7.6	3.8/08.8	21975
1981 SC <sub>7</sub>	93 09 27.6	00 17.07	-10 11.6	15.3	-0.97	+ 0.4	5.8/24.3	21968	1991 DC	93 10 06.1	00 47.69	+04 26.0	16.1	-0.99	- 3.7	0.3/05.9	17972
1990 WJ <sub>3</sub>	93 09 27.7	00 17.39	+03 16.4	16.8	-0.92	- 7.9	0.5/28.2	22083	1989 EN <sub>2</sub>	93 10 06.2	00 48.44	+06 49.2	16.3	-1.06	- 5.9	0.7/06.8	20016
1990 VF <sub>3</sub>	93 09 27.8	00 17.69	-07 39.6	15.2	-0.89	- 5.9	4.6/24.7	17644	1295 T-1	93 10 06.3	00 48.70	+05 19.1	17.4	-0.75	- 6.8	0.0/06.4	19878
1982 SO <sub>4</sub>	93 09 27.8	00 17.76	-01 09.7	15.0	-1.10	- 0.6	1.5/27.0	21968	1981 ED <sub>14</sub>	93 10 06.3	00 48.77	+09 52.5	18.9	-0.98	- 5.2	1.6/07.8	22398
1967 JN	93 09 27.8	00 17.96	-12 22.9	15.8	-0.94	- 0.8	4.9/23.9	20327	1929 TD <sub>1</sub>	93 10 06.6	00 49.51	+01 13.3	16.3	-0.93	- 3.3	1.9/05.4	21924
1986 PK <sub>6</sub>	93 09 28.0	00 18.28	+09 29.9	16.2	-0.98	- 7.1	2.9/30.5	22272	1967 HA	93 10 06.7	00 49.81	+22 57.4	16.8	-1.06	- 1.8	6.1/11.8	21963
1983 RX	93 09 28.0	00 18.53	+08 49.8	15.4	-1.04	- 4.5	3.1/30.2	22076	1982 VZ	93 10 06.8	00 50.18	+02 34.8	16.1	-0.75	- 5.0	0.9/05.9	9360
1989 SS <sub>1</sub>	93 09 28.0	00 18.64	-04 55.0	17.2	-0.87	- 3.1	3.3/26.0	20504	1980 EB	93 10 06.8	00 50.29	+06 04.2	17.3	-0.93	- 5.1	0.2/07.0	22429
4276 P-L	93 09 28.1	00 18.67	+03 44.3	18.6	-1.09	- 4.2	0.7/28.6	22086	1992 EM	93 10 06.9	00 50.58	+17 51.5	16.1	-1.12	- 3.8	5.0/10.6	20034
1982 UR <sub>6</sub>	93 09 28.1	00 18.99	-02 47.5	15.2	-0.85	- 2.9	2.4/26.7	19860	1990 BC <sub>1</sub>	93 10 07.1	00 51.46	-06 35.9	16.2	-0.72	- 6.8	3.7/02.9	21973
1989 SG <sub>1</sub>	93 09 28.3	00 19.47	-01 56.0	17.7	-0.81	- 7.9	1.3/26.9	21973	4136 T-2	93 10 07.4	00 52.39	+00 56.5	16.3	-0.90	- 1.3	1.9/06.1	14969
1984 AR	93 09 28.3	00 19.61	+01 31.2	16.8	-0.75	- 4.6	0.2/28.2	22076	1981 EE <sub>12</sub>	93 10 07.6	00 53.21	+16 22.0	17.9	-0.97	- 5.7	4.6/11.0	12706
1991 AO <sub>3</sub>	93 09 28.6	00 20.71	-12 36.7	15.9	-0.91	- 4.3	6.4/23.9	18125	1983 RX <sub>3</sub>	93 10 07.7	00 53.84	-04 27.9	15.7	-0.70	-11.3	4.0/03.9	22430
(5217)	93 09 29.3	00 23.22	-01 56.0	17.4	-0.92	- 6.3	1.5/27.9	20316	1982 SM <sub>7</sub>	93 10 07.8	00 53.94	+05 06.1	16.5	-0.78	- 4.1	0.2/07.6	22075
1991 CO <sub>3</sub>	93 09 29.5	00 23.71	+49 23.4	15.7	-1.24	+ 1.6	19.1/16.2	21975	1981 EO <sub>26</sub>	93 10 07.8	00 54.24	+07 18.2	18.1	-0.81	- 5.0	0.5/08.4	21967
1983 PB	93 09 29.8	00 25.09	-11 01.8	16.4	-0.96	- 1.6	7.1/26.0	21969	(5424)	93 10 08.1	00 55.00	+10 19.4	15.4	-0.94	- 7.4	1.9/09.6	21764
1989 SJ <sub>1</sub>	93 09 30.0	00 25.87	-04 43.1	17.4	-0.84	- 3.7	3.5/27.7	20504	1976 UR <sub>15</sub>	93 10 08.1	00 55.21	-04 59.8	17.2	-0.96	- 1.8	4.1/05.1	22072

1990 VG <sub>3</sub>	93 10 08.3	00 55.86	-04 17.3	15.6	-0.88	- 6.2	5.1/05.0	17460	1985 JY	93 10 17.8	01 31.20	+06 55.1	17.4	-0.74	- 3.7	0.7/17.1	19295
1984 SO <sub>5</sub>	93 10 08.5	00 56.56	-00 50.4	15.8	-0.80	- 6.4	2.7/06.2	22076	1982 XQ <sub>1</sub>	93 10 18.0	01 31.73	+07 28.7	17.4	-0.72	- 4.4	0.6/17.4	22075
1989 UT <sub>2</sub>	93 10 08.6	00 57.12	+16 02.4	16.3	-0.83	-10.0	3.5/12.3	22081	1931 VS	93 10 18.1	01 32.10	+02 48.6	15.3	-1.14	+ 2.9	3.0/16.7	22072
1992 FR <sub>2</sub>	93 10 09.1	00 59.05	-05 33.4	14.8	-0.93	- 4.9	5.4/05.6	22057	3502 T-3	93 10 18.1	01 32.27	+08 28.3	18.9	-1.06	- 5.2	0.5/17.8	12802
1988 CX <sub>1</sub>	93 10 09.5	01 00.09	+11 05.9	17.0	-1.00	- 6.0	1.8/11.0	21568	1989 SK	93 10 18.4	01 33.36	+20 33.3	15.2	-0.97	- 2.7	4.9/21.4	22081
1992 MA	93 10 09.6	01 00.69	+06 32.4	15.8	-0.77	- 4.9	0.0/09.7	21977	1981 EP <sub>27</sub>	93 10 18.9	01 35.35	+03 24.9	17.8	-0.73	- 8.5	2.1/16.8	21967
1992 HL	93 10 09.9	01 01.56	+02 26.5	16.3	-0.79	-10.3	1.3/08.4	20644	(5291)	93 10 19.2	01 36.32	+10 15.3	16.7	-0.93	- 6.0	0.1/19.3	20624
1979 SR	93 10 10.2	01 02.78	+09 12.8	15.3	-0.74	- 9.3	0.9/11.1	21965	1985 QA <sub>1</sub>	93 10 19.6	01 37.74	+10 34.2	16.2	-0.90	- 8.4	9.2/30.0	20813
1988 BN <sub>2</sub>	93 10 10.5	01 04.18	-31 47.3	17.5	-1.22	+ 2.3	13.6/30.7	21971	4094 T-3	93 10 19.8	01 38.44	+04 56.0	17.8	-0.96	- 3.2	2.1/18.4	22088
1981 EK <sub>23</sub>	93 10 10.6	01 04.29	+05 34.1	16.9	-0.89	- 7.6	0.6/10.2	21931	1986 RS <sub>1</sub>	93 10 19.8	01 38.48	+01 24.8	16.1	-0.84	- 8.1	4.2/17.0	14949
1971 SS <sub>1</sub>	93 10 10.7	01 04.48	+04 42.7	15.7	-0.78	- 4.4	0.8/10.0	15401	1988 LB	93 10 20.1	01 39.75	+29 25.6	16.2	-0.97	- 6.8	6.6/26.5	22079
1978 VK <sub>5</sub>	93 10 10.7	01 04.60	+08 59.1	16.1	-0.94	- 4.8	0.8/11.4	18415	1992 NJ	93 10 20.7	01 41.90	+10 53.2	15.9	-1.02	+ 1.6	0.1/20.8	22406
(5237)	93 10 11.1	01 06.02	+03 36.3	15.7	-1.05	- 4.2	1.3/10.2	20324	1991 EA <sub>1</sub>	93 10 20.8	01 42.17	+06 52.8	16.5	-0.89	- 2.7	1.1/19.8	22431
1992 LN	93 10 11.2	01 06.60	-05 37.1	16.9	-0.96	- 4.4	4.6/07.5	20827	5041 T-3	93 10 20.8	01 42.24	-03 50.0	17.2	-0.73	- 5.6	4.2/16.3	16039
1990 VR <sub>8</sub>	93 10 11.6	01 08.02	+00 27.1	17.1	-1.04	- 5.6	2.7/09.7	20336	1981 QT <sub>3</sub>	93 10 20.9	01 42.55	+14 56.7	16.6	-0.80	- 3.2	1.2/22.2	xxxxx
1975 RP	93 10 12.0	01 09.48	+07 16.8	15.9	-0.75	- 4.9	0.0/12.0	21963	1992 FV	93 10 20.9	01 42.75	+03 40.3	16.2	-1.06	- 5.0	2.8/19.1	21977
1973 EK	93 10 12.2	01 10.36	+07 24.3	16.1	-0.84	- 5.7	0.0/12.3	21963	1988 RQ <sub>2</sub>	93 10 21.2	01 43.99	+27 59.7	16.8	-0.94	- 3.8	5.3/26.4	21570
(5215)	93 10 12.3	01 10.49	-14 53.0	15.0	-0.83	- 5.2	7.6/05.0	20138	(5214)	93 10 21.4	01 44.47	+14 58.1	16.0	-1.15	- 3.3	1.7/22.5	xxxxx
1981 ET <sub>42</sub>	93 10 12.4	01 10.75	+10 05.8	17.3	-0.99	- 5.4	1.1/13.2	22074	1991 JB <sub>1</sub>	93 10 21.4	01 44.64	+04 44.8	17.0	-0.75	- 3.5	1.6/19.7	22083
1981 EG <sub>28</sub>	93 10 12.4	01 11.11	+06 18.1	15.8	-0.84	- 8.8	0.5/12.1	22050	1981 EX <sub>28</sub>	93 10 21.4	01 44.69	+22 05.4	17.9	-1.04	- 5.6	4.2/25.0	15242
1992 KF	93 10 12.6	01 11.63	-12 36.6	17.5	-0.98	- 1.3	6.8/07.1	21977	1988 DD <sub>5</sub>	93 10 21.6	01 45.33	+26 07.6	17.9	-1.03	- 6.3	5.0/26.4	21971
1992 GZ	93 10 12.6	01 11.73	+09 06.7	16.3	-0.92	- 5.0	0.5/13.1	22085	1981 ED <sub>21</sub>	93 10 21.6	01 45.62	+24 54.3	15.9	-1.06	+ 2.1	6.9/24.7	21967
1988 XJ <sub>1</sub>	93 10 12.7	01 12.14	-11 16.8	16.9	-0.82	- 1.9	5.8/07.1	20816	1981 EW <sub>24</sub>	93 10 21.7	01 45.82	+08 04.9	16.5	-0.81	- 5.2	1.0/20.9	22074
1981 ER <sub>15</sub>	93 10 12.9	01 12.68	+13 50.8	19.2	-0.96	- 6.7	2.2/15.0	22429	1986 RV <sub>2</sub>	93 10 21.8	01 46.28	+08 04.0	16.4	-0.98	- 7.8	1.2/21.0	22077
1988 CG	93 10 13.1	01 13.76	+02 30.4	17.7	-0.94	- 7.6	1.9/11.5	18429	1981 EY <sub>14</sub>	93 10 22.2	01 47.46	+17 28.7	17.7	-1.02	- 6.1	2.6/24.0	21967
1987 DG <sub>6</sub>	93 10 13.3	01 14.16	+09 44.3	17.1	-0.88	- 5.3	0.6/13.9	21970	1986 SF	93 10 22.2	01 47.71	+15 55.6	16.4	-1.09	- 4.7	1.9/23.6	22077
1950 DE	93 10 13.7	01 15.72	-04 19.6	16.1	-0.68	- 5.6	3.2/09.6	20803	1990 XP	93 10 22.8	01 50.08	+07 40.1	15.0	-0.87	- 9.0	1.7/21.7	17828
1978 PX <sub>2</sub>	93 10 13.8	01 16.02	+10 56.8	16.0	-0.91	- 4.0	1.4/14.7	22270	3097 P-L	93 10 23.0	01 50.82	+22 54.1	17.9	-0.92	- 5.2	3.8/26.6	15423
1978 RZ	93 10 13.8	01 16.04	+02 59.5	16.5	-0.79	- 5.0	1.7/12.2	20140	1992 FA <sub>1</sub>	93 10 24.0	01 54.36	+15 46.6	16.2	-1.01	- 7.3	1.6/25.2	22273
1982 UH	93 10 14.4	01 18.51	+12 27.6	15.1	-0.86	- 6.2	2.0/15.8	22075	(5329)	93 10 24.1	01 54.69	-14 23.5	14.6	-0.66	- 6.7	12.1/14.2	20796
(5271)	93 10 14.5	01 18.58	-12 14.8	17.5	-0.81	- 5.7	6.2/07.7	20616	1990 EJ <sub>2</sub>	93 10 24.3	01 55.41	+16 53.6	16.2	-0.72	- 6.4	1.5/25.9	22082
1982 UM <sub>6</sub>	93 10 14.5	01 18.93	+10 27.5	16.2	-0.96	- 4.2	1.0/15.2	21969	1988 RS <sub>4</sub>	93 10 24.3	01 55.79	+12 53.9	16.4	-0.88	- 4.4	0.4/24.7	19301
1978 VT <sub>8</sub>	93 10 15.0	01 20.38	+12 11.0	17.1	-0.77	- 5.8	1.1/16.2	18619	2055 P-L	93 10 25.3	01 59.70	+23 35.7	19.2	-1.10	- 3.3	4.0/28.4	22274
1979 MF	93 10 15.1	01 20.93	+01 48.9	17.9	-0.97	- 7.4	2.4/13.1	21965	1985 JN <sub>1</sub>	93 10 25.4	02 00.01	+03 16.1	17.8	-1.02	- 3.5	3.3/23.2	22076
1981 EE <sub>14</sub>	93 10 15.2	01 21.37	+10 40.1	18.0	-0.90	- 9.0	0.8/15.9	21966	1980 PB <sub>3</sub>	93 10 25.7	02 00.84	-02 07.0	16.2	-0.84	- 0.5	3.8/22.1	21966
1989 WC	93 10 15.3	01 21.59	+11 35.1	15.6	-0.88	- 5.3	1.2/16.2	18119	1983 RZ <sub>1</sub>	93 10 25.7	02 00.86	+14 36.5	16.3	-1.14	- 3.5	1.1/26.3	18109
4018 P-L	93 10 15.4	01 22.17	+13 50.4	16.0	-0.97	- 1.9	2.4/16.9	22086	1989 UL <sub>1</sub>	93 10 25.7	02 00.99	+08 00.0	15.3	-1.05	- 0.2	1.7/24.8	19303
1989 SR <sub>4</sub>	93 10 16.0	01 24.41	+05 08.2	17.4	-0.94	- 2.2	1.7/15.1	18293	(5340)	93 10 25.7	02 01.12	+16 49.4	17.3	-0.78	- 4.5	1.2/27.1	20801
1985 CS <sub>1</sub>	93 10 16.1	01 24.67	+04 40.2	16.7	-0.97	- 7.4	1.5/14.8	22076	1979 MK <sub>6</sub>	93 10 25.8	02 01.53	+08 44.5	17.5	-0.85	- 5.4	1.4/24.8	18804
1990 YM	93 10 16.3	01 25.39	-31 24.7	16.7	-1.05	- 2.8	13.0/01.4	18436	1981 EC <sub>16</sub>	93 10 25.9	02 01.67	+17 40.6	17.4	-1.01	- 6.2	1.9/27.4	21967
1990 XM	93 10 16.3	01 25.46	+03 17.1	14.6	-0.89	- 5.1	2.9/14.6	18299	1985 FE <sub>3</sub>	93 10 26.0	02 02.13	+00 28.1	16.6	-1.03	- 3.7	4.2/23.0	21969
1298 T-2	93 10 16.3	01 25.60	+03 44.5	17.7	-0.95	- 8.3	2.1/14.7	18832	1989 OA	93 10 26.1	02 02.55	+16 31.5	16.2	-0.99	- 7.3	1.6/27.3	22081
1979 MR <sub>6</sub>	93 10 16.4	01 25.60	+04 33.7	19.1	-0.97	- 7.1	1.6/15.1	22073	1992 OJ	93 10 26.1	02 02.77	+39 54.3	17.0	-1.06	- 3.5	7.6/03.9	22432
1992 FP <sub>1</sub>	93 10 16.4	01 25.68	+01 27.5	16.6	-0.84	- 8.3	2.4/14.0	20156	1989 AK	93 10 26.2	02 02.77	+05 49.5	15.5	-0.83	- 3.4	2.5/24.4	22080
1989 WM <sub>3</sub>	93 10 16.4	01 25.75	-03 53.1	15.2	-1.07	+ 1.1	5.5/13.4	22081	1987 SC <sub>6</sub>	93 10 26.3	02 03.36	+11 06.7	16.5	-0.78	- 4.4	0.4/26.0	22078
1986 AA <sub>2</sub>	93 10 16.6	01 26.58	-00 35.0	16.8	-0.84	- 4.9	3.2/13.7	21970	1984 OA	93 10 26.4	02 03.86	-17 45.6	15.0	-0.81	- 3.3	12.6/17.4	21969
(5356)	93 10 17.1	01 28.56	-03 23.8	14.9	-0.76	-11.2	4.8/12.5	20920	1981 ES <sub>29</sub>	93 10 26.6	02 04.59	+11 49.5	17.6	-0.79	- 6.1	0.2/26.4	22074
(5276)	93 10 17.2	01 28.77	-01 19.7	17.3	-0.81	- 7.4	3.2/13.8	20618	1992 LG	93 10 26.8	02 05.46	+07 07.3	16.6	-1.05	- 5.2	2.3/25.4	21977
1981 EU <sub>15</sub>	93 10 17.5	01 29.89	+13 29.6	18.0	-0.96	- 7.8	1.7/18.8	21967	1989 UA	93 10 26.9	02 05.60	+08 09.0	15.1	-1.07	+ 0.4	1.9/26.0	22081
1989 AQ	93 10 17.6	01 30.20	+06 38.0	15.5	-0.77	- 4.1	1.0/16.8	22080	1982 JE <sub>1</sub>	93 10 26.9	02 05.78	+05 01.0	16.0	-1.01	- 1.0	3.9/25.2	22075
1988 TP <sub>1</sub>	93 10 17.6	01 30.23	+06 29.8	15.8	-0.82	- 4.4	1.0/16.8	22080	1989 UZ <sub>4</sub>	93 10 27.0	02 06.13	+03 17.3	15.9	-0.85	- 6.3	4.0/24.3	22081