SATURN SATELLITES AND MINOR PLANETS POSITIONS
IN FEBRUARY 1983 AT ESO, LA SILLA

H. Debehogne[1]

R.R. de Freitas Mourão[2]

L.E. da Silva Machado[3]

SUMMARY

In february 1983, we have observed the Satellites of Saturn and Minor Planets at the ESO, La Silla, Chile. The instrument GRO (D=40cm; f=4m) was used. Having clear skies, magnitude 18 could be attained. Measures and reductions were performed at the Observatoire royal de Belgique with the Ascorecord measuring machine (0,1μ) and by means of five reference stars on the UNIVAC computer of the Royal Institute of Meteorology (SAO Star Catalogue, Least Squares and Dependences Methods).

RESUMO

Em fevereiro de 1983 foram observados no ESO, La Silla, Chile, asteróides e satélites de Saturno. Utilizou-se o telescópio astrométrico GPO (D=40cm; f=4m), evidentemente sem o prisma que lhe dá o nome. Dadas as condições favoráveis de transparência da atmosfera, a magnitude 18 foi atingida. As medidas foram efetuadas no coordenatógrafo Ascorecord (0,1μ) no Observatoire royal de Belgique e as reduções realizadas no computador UNIVAC do Institut royal de Météorologie. Foram utilizadas cinco estrelas de referência; suas coordenadas α, δ e seus movimentos próprios, μα e μδ, extraídos do SAO Star Catalogue. Os métodos das dependências e dos mínimos quadrados foram utilizados na obtenção das posições dos corpos celestes fotografados. O controle final do trabalho foi levado a efeito no Observatório do Valongo, UFRJ.

1- Observatoire royal de Belgique
   Av. Circulaire, 3
   B-1180 Bruxelles, Belgique

2- Observatório Nacional do Rio de Janeiro
   R. General Bruce 586, São Cristóvão
   20.081 Rio de Janeiro-RJ - Brasil

3- Observatório do Valongo, Universidade Federal do Rio de Janeiro
   Ladeira do Pedro Antonio 43, Saúde
   20.030 Rio de Janeiro-RJ - Brasil

Key words: Minor-Planets - Reference stars - Dependences - Observations - Saturn Satellites.

1. INTRODUCTION

This paper contains results of photographic observations of asteroids and satellites of Saturn obtained at the GPO of the ESO, La Silla (D=40cm; F=4m) using the 4m focal length Telescope (D=40cm) as guide. R.R.F. Mourão was the observer.

2. METHOD

The reduction method, which uses five reference stars is based on the dependences (Debehogne et al., 1979) for future improvements. Easily we can pass from the measured coordinates x_p, y_p to the standard (or rectilinear celestial) coordinates x_p, y_p and to the equatorial ones of the minor planet of satellite through the classical formulae (Smart, 1944).

It should be noticed that the general method

$$X = \sum_{i+j=o}^{n} a_{ij}x^i y^j, \quad Y = \sum_{i+j=o}^{n} b_{ij}x^i y^j, \quad n \leq 7,$$

with $i+j=k \leq n$, $i \nearrow$ and $j \searrow$ in $i+j=k$ (ordinated polynomium of degree n), programmed by one of the authors and used by him to demonstrate the theorem of the minimum (Debehogne, 1975) is used here with n=1. Thus, the bijection between (x,y) and (X,Y) contains three terms determined by five equations (least squares method) given by the five reference stars. We compute the residuals on these stars (table 2) to give an idea of the accuracy of catalogue measurements and solutions of this algebraic system (5 equations for 3 unknowns).

3. ACCURACY

For good images and for a nearly pentagonal distribution of reference stars, having the celestial object near its center, the measurements attain 0".2 (asteroids and satellites). The best evaluations of accuracy may be obtained only from the orbit residuals.

4. RESULTS

Tables 1 and 2 present the order number of each position (to connect the two), the number and name of the minor planet and satellite, the plate number, the date (UT), to topocentric right ascen-

sion and declination)at 1950.0), with the same number of decimals as in SAO Catalogue used, the residuals (same units as in the ITA ephemerides; sometimes differences appear on account the linear approximation: it is not very important for these residuals, which are used only for identification purposes), the star residuals and the dependences. In table 2, also, are given the star SAO number and the last decimals of their coordinates (proper motion included).

ACKNOWLEDGMENTS

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TABLE 2. STAR RESIDUALS. DEPENDENCES.

OBSERVATIONS			NO SAO	POSITIONS USED		STAR RESIDUALS						DEPENDENCES		
				S	''	S	''	S	''	S	''			
1	2	3	96927	+37.518	26.08	+0.009	+0.32	+0.005	+0.30	+0.003	+0.32	+0.434960	+0.436179	+0.437486
			96945	+34.865	15.65	-0.008	-0.51	-0.002	-0.62	-0.002	-0.50	+0.123849	+0.123952	+0.124112
			79452	+45.612	16.24	-0.006	+0.27	-0.009	+0.54	-0.005	+0.23	-0.172542	-0.173609	-0.174862
			79451	+41.994	50.39	+0.013	-0.03	+0.012	-0.29	+0.007	+0.02	+0.010066	+0.009097	+0.008114
			79428	+13.612	35.83	-0.007	-0.04	-0.006	+0.07	-0.004	-0.07	+0.603668	+0.604381	+0.605150
4	5	6	79391	+59.527	31.65	+0.029	+0.91	+0.027	+0.49	+0.028	+0.54	+0.503700	+0.504251	+0.504824
			79399	+29.175	37.78	-0.039	-1.15	-0.039	-0.67	-0.040	-0.73	+0.369513	+0.369829	+0.370315
			79428	+13.612	35.83	+0.015	+0.15	+0.026	+0.27	+0.021	+0.31	-0.053473	-0.053383	-0.053323
			79443	+17.514	22.51	-0.009	+0.24	-0.027	-0.17	-0.019	-0.21	+0.001620	+0.001371	+0.000959
			79451	+41.994	50.39	+0.004	-0.15	+0.014	+0.08	+0.009	+0.10	+0.178640	+0.177932	+0.177226
7	8	9	79428	+13.612	35.83	-0.012	-0.14	-0.010	+0.03	-0.007	+0.08	+0.096787	+0.096308	+0.095645
			79391	+59.527	31.65	+0.060	+1.09	+0.018	+0.44	+0.035	+0.59	+0.248051	+0.248372	+0.248621
			79399	+29.175	37.78	-0.010	-0.35	+0.011	-0.34	-0.006	-0.54	+0.218976	+0.219046	+0.219173
			79378	+40.162	53.85	-0.028	-0.44	-0.014	-0.09	-0.016	-0.08	+0.392006	+0.393033	+0.394172
			96913	+34.705	09.17	-0.010	-0.15	-0.004	-0.04	-0.006	-0.04	+0.044179	+0.043241	+0.042389
10	11	12	96913	+34.705	09.17	-0.001	-0.01	-0.005	-0.05	-0.002	-0.02	-0.138389	-0.138887	-0.139684
			79371	+10.496	50.38	-0.009	-0.17	-0.009	-0.12	-0.004	+0.10	+0.318581	+0.319498	+0.320435
			79378	+40.162	53.85	+0.008	+0.20	-0.002	+0.01	-0.001	-0.18	+0.314940	+0.315497	+0.316070
			79391	+59.527	31.65	+0.011	+0.09	+0.049	+0.53	+0.020	+0.19	+0.237149	+0.236822	+0.236570
			79399	+29.175	37.78	-0.010	-0.10	-0.033	-0.36	-0.014	-0.09	+0.267719	+0.267071	+0.266566
13	14	15	96900	+42.763	19.71	-0.013	-0.06	+0.009	+0.05	+0.000	-0.25	-0.018926	-0.018438	-0.017862
			96911	+28.491	08.17	+0.008	+0.01	-0.011	+0.01	-0.007	+0.24	-0.177844	-0.177880	-0.177902
			96913	+34.705	09.17	+0.004	+0.07	+0.008	-0.09	+0.014	-0.10	+0.167986	+0.166448	+0.164735
			79378	+40.162	53.85	-0.015	-0.19	-0.017	+0.24	-0.034	+0.13	+0.516651	+0.516863	+0.517013
			79371	+10.496	50.38	+0.017	+0.17	+0.011	-0.21	+0.027	-0.02	+0.512133	+0.513007	+0.514016
16	17	18	79504	+02.790	59.40	+0.013	-0.30	+0.018	-0.30	+0.012	-0.33	+0.783629	+0.782001	+0.780078
			79514	+26.943	17.96	-0.006	+0.20	-0.007	+0.13	-0.003	+0.17	+0.068873	+0.068024	+0.067136
			79492	+57.588	24.39	-0.031	+0.46	-0.047	+0.79	-0.041	+0.76	-0.054727	-0.054232	-0.053345
			79483	+36.509	58.87	+0.043	-0.82	+0.063	-1.06	+0.049	-1.09	-0.121246	-0.119866	-0.118599
			79480	+25.201	42.85	-0.019	+0.46	-0.026	+0.44	-0.017	+0.49	+0.323471	+0.324074	+0.324730
19	20	21	79480	+25.201	42.85	-0.026	+0.02	-0.018	+0.22	-0.018	+0.37	+0.561980	+0.560984	+0.559749
			79483	+36.509	58.87	+0.014	+0.02	+0.011	-0.06	+0.008	-0.16	+0.248101	+0.248594	+0.249124
			79461	+06.957	19.84	-0.004	-0.19	-0.007	-0.30	+0.011	-0.19	+0.306244	+0.305766	+0.305255
			79446	+32.961	11.65	+0.032	+0.17	+0.026	+0.05	+0.009	-0.21	+0.216500	+0.216124	+0.215693
			79428	+13.612	35.83	-0.016	-0.02	-0.012	+0.09	-0.009	+0.19	-0.332825	-0.331469	-0.329821
22	23	24	79480	+25.201	42.85	+0.010	-0.00	+0.010	-0.09	+0.012	-0.11	-0.030808	-0.035165	-0.039300
			79492	+57.588	24.40	-0.035	-0.01	-0.039	+0.39	-0.041	+0.40	+0.217715	+0.218133	+0.218352
			79483	+36.509	58.87	+0.033	+0.01	+0.036	-0.36	+0.038	-0.37	+0.306402	+0.308168	+0.309947
			79461	+06.957	19.84	-0.003	+0.02	+0.000	-0.04	-0.003	+0.00	+0.211967	+0.212213	+0.212547

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			79446	+32.961	11.65	-0.005	-0.01	-0.008	+0.11	-0.006	+0.08	+0.294724	+0.296651	+0.298454
25	26	27	79480	+25.201	42.85	-0.003	+0.39	+0.005	-0.10	-0.005	+0.07	+0.750592	+0.749193	+0.749522
			79461	+06.957	19.84	+0.001	-0.79	-0.003	-0.04	+0.010	-0.22	+0.169458	+0.170843	+0.170047
			79446	+32.961	11.65	+0.013	-0.19	-0.019	+0.62	+0.003	+0.19	-0.215743	-0.214181	-0.215900
			79443	+17.514	22.51	-0.009	+0.46	+0.015	-0.41	-0.006	-0.03	-0.710587	-0.713627	-0.713923
			79428	+13.612	35.83	-0.002	+0.13	+0.003	-0.08	-0.002	+0.00	+1.006280	+1.007773	+1.010255
28	29	30	180751	+58.815	26.97	-0.025	-0.21	-0.024	-0.11	-0.024	-0.12	+0.608150	+0.608044	+0.607834
			180759	+34.444	31.99	+0.050	+0.30	+0.047	+0.14	+0.046	+0.20	+0.334312	+0.333988	+0.333676
			180723	+16.426	11.81	-0.034	-0.25	-0.033	-0.12	-0.033	-0.15	-0.061523	-0.061690	-0.061710
			180704	+12.693	00.40	-0.018	+0.09	-0.015	+0.07	-0.012	+0.02	+0.155337	+0.155489	+0.155625
			180667	+54.166	38.43	+0.027	+0.07	+0.025	+0.02	+0.023	+0.06	-0.036276	-0.035832	-0.035426
31	32	33	180734	+53.050	24.93	-0.013	+0.40	-0.021	+0.44	-0.011	+0.59	+0.988448	+0.988064	+0.987754
			180723	+16.426	11.81	-0.002	-0.35	+0.013	-0.33	-0.001	-0.66	+0.199167	+0.198941	+0.198632
			180690	+20.252	57.29	+0.019	+0.05	+0.006	-0.01	+0.014	+0.28	-0.257979	-0.257970	-0.258089
			180655	+04.114	39.20	-0.039	+0.59	-0.039	+0.71	-0.030	+0.67	-0.207375	-0.207050	-0.206624
			180667	+54.166	38.43	+0.036	-0.70	+0.042	-0.80	+0.028	-0.89	+0.277740	+0.278015	+0.278327
34	35	36	180655	+04.114	39.20	-0.037	+0.30	-0.033	+0.02	-0.050	+0.34	-0.107546	-0.107085	-0.106739
			180667	+54.166	38.43	+0.044	-0.27	+0.034	+0.05	+0.055	-0.39	+0.102559	+0.102898	+0.103386
			180723	+16.426	11.81	+0.015	-0.30	+0.023	-0.15	+0.029	-0.15	+0.069738	+0.069296	+0.068753
			180734	+53.050	24.93	-0.016	+0.52	-0.036	+0.33	-0.041	+0.18	+0.411415	+0.411091	+0.410791
			180719	+05.365	40.43	-0.005	-0.26	+0.012	-0.24	+0.007	+0.02	+0.523833	+0.523800	+0.523809
37	38	39	180690	+20.252	57.29	+0.018	-0.15	+0.020	-0.04	+0.016	-0.15	-0.157286	-0.157661	-0.158129
			180655	+04.114	39.20	-0.019	+0.34	-0.019	+0.20	-0.011	+0.24	+0.169714	+0.170545	+0.171396
			180704	+12.693	00.41	+0.017	-0.68	+0.012	-0.52	-0.001	-0.39	+0.242796	+0.242750	+0.242724
			180734	+53.050	24.93	-0.038	+0.63	-0.039	+0.36	-0.025	+0.47	+0.243621	+0.243134	+0.242559
			180719	+05.365	40.43	+0.022	-0.13	+0.026	-0.01	+0.021	-0.17	+0.501155	+0.501232	+0.501450
40	41	42	180620	+13.335	40.71	+0.029	-0.49	+0.035	-0.63	+0.029	-0.58	-0.170038	-0.169682	-0.169410
			180655	+04.114	39.20	-0.013	+0.52	-0.022	+0.58	-0.021	+0.44	-0.019493	-0.019694	-0.019775
			180704	+12.693	00.41	-0.003	-0.24	+0.002	-0.22	+0.005	-0.11	+0.514208	+0.513498	+0.512909
			180676	+25.932	40.22	+0.014	+0.06	+0.010	-0.01	+0.006	-0.10	+0.603504	+0.603536	+0.603507
			180626	+21.804	22.50	-0.027	+0.14	-0.026	+0.28	-0.018	+0.35	+0.071819	+0.072342	+0.072768
43	44		118652	+58.783	06.93	-0.028	+0.15	-0.015	+0.14					
			118664	+05.300	02.04	+0.043	-0.14	+0.013	-0.04					
			118684	+10.970	48.97	-0.019	-0.08	+0.008	-0.24					
			118706	+38.678	09.58	+0.045	-0.14	+0.013	-0.04					
			118707	+45.386	06.20	-0.042	+0.21	-0.020	+0.18					
45	46	47	118183	+18.820	37.23	-0.011	+0.17	-0.011	+0.34	+0.003	+0.19	+0.372509	+0.371714	+0.370798
			118171	+51.248	02.91	-0.007	-0.18	-0.006	-0.26	-0.016	-0.03	+0.258746	+0.258470	+0.258209
			118172	+54.102	59.06	+0.027	-0.05	+0.027	-0.22	+0.017	-0.26	+0.257700	+0.257436	+0.257090
			118138	+52.327	19.75	-0.002	+0.07	-0.002	+0.12	+0.003	+0.05	-0.058139	-0.056965	-0.055422
			99003	+54.666	41.49	-0.007	-0.01	-0.007	+0.01	-0.006	+0.05	+0.169183	+0.169345	+0.169325
48	49	50	79504	+02.790	59.40	+0.013	-0.30	+0.018	-0.30	+0.012	-0.33	+0.787496	+0.790289	+0.792983
			79514	+26.943	17.96	-0.006	+0.20	-0.007	+0.13	-0.003	+0.17	+0.089907	+0.089179	+0.088498
			79492	+57.5??	24.39	-0.031	+0.46	-0.047	+0.79	-0.041	+0.76	+0.633240	+0.634836	+0.635951

Overlay block (rows 43–44, printed over the right-hand columns):

118652	+58.78	+0.002380	+0.002479	.15 -0.015	+0.14
118664	+35.30	-0.115707	-0.114264	.14 +0.013	-0.04
118684	+10.97	+0.206724	+0.206747	.08 +0.008	-0.24
118706	+38.67	+0.541712	+0.540186	.14 +0.013	-0.04
118707	+45.38	+0.364891	+0.364851	.21 -0.020	+0.18

			79480	+25.201	42.85	-0.019	+0.46	-0.026	+0.44	-0.017	+0.49	+0.252046	+0.252567	+0.252920
51	52	53	180751	+58.815	26.97	-0.025	-0.21	-0.024	-0.11	-0.024	-0.12	-0.371549	-0.371511	-0.371398
			180759	+34.444	31.99	+0.050	+0.30	+0.047	+0.14	+0.046	+0.20	+0.348925	+0.348551	+0.348237
			180723	+16.426	11.81	-0.034	-0.25	-0.033	-0.12	-0.033	-0.15	+0.796023	+0.795830	+0.795495
			180704	+12.693	00.40	-0.018	+0.09	-0.015	+0.07	-0.012	+0.02	+0.116439	+0.116575	+0.116707
			180667	+54.166	38.43	+0.027	+0.07	+0.025	+0.02	+0.023	+0.06	+0.110162	+0.110554	+0.110960
54	55	56	180734	+53.050	24.93	-0.013	+0.40	-0.021	+0.44	-0.011	+0.59	+0.093059	+0.092939	+0.092931
			180723	+16.426	11.81	-0.002	-0.35	+0.013	-0.33	-0.001	-0.66	+0.450682	+0.450349	+0.449844
			180690	+20.252	57.29	+0.019	+0.05	+0.006	-0.01	+0.014	+0.28	+0.434346	+0.434154	+0.433916
			180655	+04.114	39.20	-0.039	+0.59	-0.039	+0.71	-0.030	+0.67	+0.087744	+0.088055	+0.088376
			180667	+54.166	38.43	+0.036	-0.70	+0.042	-0.80	+0.028	-0.89	-0.065831	-0.065496	-0.065067
57	58	59	180655	+04.114	39.20	-0.037	+0.30	-0.033	+0.02	-0.050	+0.34	+0.330397	+0.330649	+0.331004
			180667	+54.166	38.43	+0.044	-0.27	+0.034	+0.05	+0.055	-0.39	+0.096544	+0.096918	+0.097221
			180723	+16.426	11.81	+0.015	-0.30	+0.023	-0.15	+0.029	-0.15	+0.613554	+0.613147	+0.612600
			180734	+53.050	24.93	-0.016	+0.52	-0.036	+0.33	-0.041	+0.18	+0.127830	+0.127555	+0.127284
			180719	+05.365	40.43	-0.005	-0.26	+0.012	-0.24	+0.007	+0.02	-0.168325	-0.168269	-0.168109
60	61	62	180690	+20.252	57.29	+0.018	-0.15	+0.020	-0.04	+0.016	-0.15	+0.480362	+0.479908	+0.479313
			180655	+04.114	39.20	-0.019	+0.34	-0.019	+0.20	-0.011	+0.24	+0.316888	+0.317678	+0.318457
			180704	+12.693	00.41	+0.017	-0.68	+0.012	-0.52	-0.001	-0.39	+0.158864	+0.158869	+0.158887
			180734	+53.050	24.93	-0.038	+0.63	-0.039	+0.36	-0.025	+0.47	+0.102819	+0.102278	+0.101801
			180719	+05.365	40.43	+0.022	-0.13	+0.026	-0.01	+0.021	-0.17	-0.058932	-0.058733	-0.058458
63	64	65	180620	+13.335	40.71	+0.029	-0.49	+0.035	-0.63	+0.029	-0.58	+0.301473	+0.301617	+0.301870
			180655	+04.114	39.20	-0.013	+0.52	-0.022	+0.58	-0.021	+0.44	+0.605283	+0.605029	+0.604872
			180704	+12.693	00.41	-0.003	-0.24	+0.002	-0.22	+0.005	-0.11	+0.527343	+0.526774	+0.526284
			180676	+25.932	40.22	+0.014	+0.06	+0.010	-0.01	+0.006	-0.10	-0.267568	-0.267413	-0.267446
			180626	+21.804	22.50	-0.027	+0.14	-0.026	+0.28	-0.018	+0.35	-0.166532	-0.166008	-0.165580
66	67	68	100686	+40.198	-21.15	+0.035	-0.18	+0.035	-0.25	+0.044	-0.15	+0.178639	+0.176240	+0.174163
			100694	+11.429	31.93	-0.033	+0.17	-0.033	+0.24	-0.042	+0.15	+0.200136	+0.197317	+0.194860
			100688	+42.918	03.19	-0.008	+0.12	-0.021	+0.06	-0.030	+0.13	+0.156246	+0.158390	+0.160271
			100698	+21.636	15.12	+0.001	-0.10	+0.017	-0.01	+0.026	-0.12	+0.181441	+0.183354	+0.185023
			100716	+00.710	49.34	+0.005	-0.01	+0.002	-0.04	+0.001	+0.00	+0.283539	+0.284699	+0.285683
69	70	71	96927	+37.518	26.08	+0.009	+0.32	+0.005	+0.30	+0.003	+0.32	+0.437644	+0.438879	+0.440110
			96945	+34.865	15.65	-0.008	-0.51	-0.002	-0.62	-0.002	-0.50	+0.447339	+0.447508	+0.447689
			79452	+45.612	16.24	-0.006	+0.27	-0.009	+0.54	-0.005	+0.23	+0.304813	+0.303645	+0.302618
			79451	+41.994	50.39	+0.013	-0.03	+0.012	-0.29	+0.007	+0.02	+0.016471	+0.015525	+0.014501
			79428	+13.612	35.83	-0.007	-0.04	-0.006	+0.07	-0.004	-0.07	-0.206266	-0.205557	-0.204918
72	73	74	96900	+42.763	19.71	-0.013	-0.06	+0.009	+0.05	+0.000	-0.25	+0.644891	+0.645336	+0.646033
			96911	+28.491	08.17	+0.008	+0.01	-0.011	+0.01	-0.007	+0.24	+0.501901	+0.502010	+0.501914
			98913	+34.705	09.17	+0.004	+0.07	+0.008	-0.09	+0.014	-0.10	-0.497175	-0.498890	-0.500284
			79378	+40.162	53.85	-0.015	-0.19	-0.017	+0.24	-0.034	+0.13	-0.014229	-0.014282	-0.014062
			79371	+10.496	50.38	+0.017	+0.17	+0.011	-0.21	+0.027	-0.02	+0.364612	+0.365827	+0.366398
75	76	77	118183	+18.820	37.23	-0.011	+0.17	-0.021	+0.34	+0.003	+0.19	+0.087463	+0.086772	+0.085951
			118171	+51.248	02.91	-0.007	-0.18	-0.086	-0.26	-0.016	-0.03	+0.103429	+0.103168	+0.102896
			118172	+54.102	59.06	+0.027	-0.05	+0.027	-0.22	+0.017	-0.26	+0.179123	+0.178881	+0.178615

			ID											
			118138	+52.327	19.75	-0.002	+0.07	-0.002	+0.12	+0.003	+0.05	+0.256926	+0.257950	+0.259125
			99003	+54.666	41.49	-0.007	-0.01	-0.007	+0.01	-0.006	+0.05	+0.373060	+0.373229	+0.373412
78	79	80	79528	+13.424	20.23	-0.010	+0.26	-0.007	+0.10	-0.022	+0.21	+0.425734	+0.424770	+0.423712
			79504	+02.790	59.40	+0.006	+0.43	-0.010	+0.55	-0.008	+0.48	+0.300204	+0.299871	+0.299686
			79507	+07.215	11.84	+0.009	-0.78	+0.019	-0.66	+0.040	-0.74	+0.409968	+0.409609	+0.409497
			79483	+36.509	58.87	+0.009	-0.49	+0.012	-0.36	+0.029	-0.45	-0.149804	-0.149007	-0.148368
			79480	+25.201	42.85	-0.014	+0.58	-0.015	+0.36	-0.039	+0.51	+0.013897	+0.014758	+0.015473
81	82	83	79504	+02.790	59.40	+0.013	-0.30	+0.018	-0.30	+0.012	-0.33	+0.787414	+0.786168	+0.784683
			79514	+26.943	17.96	-0.006	+0.20	-0.007	+0.13	-0.003	+0.17	+0.081482	+0.080642	+0.079895
			79492	+57.588	24.39	-0.031	+0.46	-0.047	+0.79	-0.041	+0.76	-0.056470	-0.056144	-0.055449
			79483	+36.509	58.87	+0.043	-0.82	+0.063	-1.06	+0.049	-1.09	-0.126117	-0.124965	-0.123991
			79480	+25.201	42.85	-0.019	+0.46	-0.026	+0.44	-0.017	+0.49	+0.313692	+0.314298	+0.314861
84	85	86	79480	+25.201	42.85	+0.010	-0.00	+0.010	-0.09	+0.012	-0.11	+0.419551	+0.415825	+0.412567
			79492	+57.588	24.40	-0.035	-0.01	-0.039	+0.39	-0.041	+0.40	+0.194347	+0.194366	+0.194551
			79483	+36.509	58.87	+0.033	+0.01	+0.036	-0.36	+0.038	-0.37	+0.108296	+0.110068	+0.111544
			79461	+06.957	19.84	-0.003	+0.02	+0.000	-0.04	-0.003	+0.00	+0.180324	+0.180642	+0.180820
			79446	+32.961	11.65	-0.005	-0.01	-0.008	+0.11	-0.006	+0.08	+0.097483	+0.099099	+0.100518
87	88	89	79480	+25.201	42.85	-0.003	+0.39	+0.005	-0.10	-0.005	+0.07	+0.790754	+0.789761	+0.789734
			79461	+06.957	19.84	+0.001	-0.79	-0.003	-0.04	+0.010	-0.22	+0.214816	+0.215819	+0.215226
			79446	+32.961	11.65	+0.013	-0.19	-0.019	+0.62	+0.003	+0.19	-0.138109	-0.137141	-0.138266
			79443	+17.514	22.51	-0.009	+0.46	+0.015	-0.41	-0.006	-0.03	-0.545872	-0.548591	-0.548480
			79428	+13.612	35.83	-0.002	+0.13	+0.003	-0.08	-0.002	+0.00	+0.678411	+0.680151	+0.681785
90	91	92	180751	+58.815	26.97	-0.025	-0.21	-0.024	-0.11	-0.024	-0.12	+0.044745	+0.044412	+0.044126
			180759	+34.444	31.99	+0.050	+0.30	+0.047	+0.14	+0.046	+0.20	-0.281065	-0.281283	-0.281455
			180723	+16.426	11.81	-0.034	-0.25	-0.033	-0.12	-0.033	-0.15	+0.006285	+0.006384	+0.006521
			180704	+12.693	00.40	-0.018	+0.09	-0.015	+0.07	-0.012	+0.02	+0.403398	+0.403483	+0.403542
			180667	+54.166	38.43	+0.027	+0.07	+0.025	+0.02	+0.023	+0.06	+0.826637	+0.827004	+0.827265
93	94	95	180734	+53.050	24.93	-0.013	+0.40	-0.021	+0.44	-0.011	+0.59	+0.127791	+0.127359	+0.126857
			180723	+16.426	11.81	-0.002	-0.35	+0.013	-0.33	-0.001	-0.66	-0.259914	-0.259972	-0.260056
			180690	+20.252	57.29	+0.019	+0.05	+0.006	-0.01	+0.014	+0.28	-0.074230	-0.073938	-0.073869
			180655	+04.114	39.20	-0.039	+0.59	-0.039	+0.71	-0.030	+0.67	+0.544821	+0.545044	+0.545378
			180667	+54.166	38.43	+0.036	-0.70	+0.042	-0.80	+0.028	-0.89	+0.661532	+0.661507	+0.661689
96	97	98	180655	+04.114	39.20	-0.037	+0.30	-0.033	+0.02	-0.050	+0.34	+0.643203	+0.643537	+0.643937
			180667	+54.166	38.43	+0.044	-0.27	+0.034	+0.05	+0.055	-0.39	+0.600905	+0.601064	+0.601298
			180723	+16.426	11.81	+0.015	-0.30	+0.023	-0.15	+0.029	-0.15	-0.257009	-0.257034	-0.257268
			180734	+53.050	24.93	-0.016	+0.52	-0.036	+0.33	-0.041	+0.18	-0.136101	-0.136251	-0.136494
			180719	+05.365	40.43	-0.005	-0.26	+0.012	-0.24	+0.007	+0.02	+0.149002	+0.148684	+0.148527
99	100	101	180620	+13.335	40.71	+0.029	-0.49	+0.035	-0.63	+0.029	-0.58	+0.443678	+0.443967	+0.444200
			180655	+04.114	39.20	-0.013	+0.52	-0.022	+0.58	-0.021	+0.44	+0.241386	+0.241527	+0.241634
			180704	+12.693	00.41	-0.003	-0.24	+0.002	-0.22	+0.005	-0.11	-0.130517	-0.130851	-0.131064
			180676	+25.932	40.22	+0.014	+0.06	+0.010	-0.01	+0.006	-0.10	+0.040974	+0.040705	+0.040494
			180626	+21.804	22.50	-0.027	+0.14	-0.026	+0.28	-0.018	+0.35	+0.404480	+0.404651	+0.404736
102	103		118652	+58.783	06.93	-0.028	+0.15	-0.015	+0.14			+0.456543	+0.457258	
			118664	+05.300	02.04	+0.043	-0.14	+0.013	-0.04			+0.383930	+0.384914	

			ID										
			118684	+10.970	48.97	-0.019	-0.08	+0.008	-0.24			+0.195460	+0.195401	
			118706	+38.678	09.58	+0.045	-0.14	+0.013	-0.04			-0.022304	-0.023302	
			118707	+45.386	06.20	-0.042	+0.21	-0.020	+0.18			-0.013629	-0.014272	
104	105	106	118419	+20.906	57.57	-0.003	-0.11	-0.002	-0.09	-0.005	-0.12	+1.245918	+1.247589	+1.249255
			118439	+37.548	31.30	+0.018	+0.51	+0.012	+0.45	+0.030	+0.58	+0.051283	+0.051355	+0.051204
			118445	+20.723	41.52	-0.034	-0.44	-0.024	-0.39	-0.046	-0.44	-0.169731	-0.170258	-0.170522
			118447	+41.857	30.27	+0.032	-0.33	+0.025	-0.29	+0.028	-0.49	-0.113901	-0.114472	-0.115054
			118450	+48.307	52.08	-0.013	+0.36	-0.011	+0.31	-0.007	+0.48	-0.013570	-0.014214	-0.014882
107	108	109	118388	+26.548	23.16	+0.014	+0.16	+0.011	+0.16	+0.021	+0.18	+0.543344	+0.545051	+0.546640
			118396	+08.030	43.77	-0.045	-0.64	-0.057	-0.53	-0.062	-0.65	+0.068133	+0.068454	+0.068793
			118400	+01.203	55.73	+0.037	+0.53	+0.047	+0.43	+0.051	+0.54	-0.105463	-0.106064	-0.106500
			118409	+00.503	13.25	+0.002	+0.17	+0.024	+0.06	+0.001	+0.13	+0.310381	+0.310137	+0.309908
			118419	+20.906	57.57	-0.008	-0.21	-0.025	-0.12	-0.010	-0.18	+0.183605	+0.182423	+0.181159
110	111	112	118387	+13.336	49.62	-0.037	-0.15	-0.033	+0.14	-0.024	-0.01	+0.138125	+0.136637	+0.134950
			118388	+26.548	23.16	+0.033	+0.16	+0.030	-0.14	+0.024	+0.03	+0.678713	+0.677003	+0.675650
			118363	+21.137	27.84	-0.020	-0.01	-0.018	+0.05	-0.008	+0.04	+0.448862	+0.450569	+0.452221
			118370	+41.513	48.97	+0.001	-0.18	+0.000	+0.07	-0.012	-0.13	+0.106344	+0.107247	+0.107754
			118362	+21.066	52.85	+0.023	+0.18	+0.021	-0.12	+0.021	+0.07	-0.372043	-0.371456	-0.370575
113	114	115	158411	+38.905	38.94	+0.005	+0.27	-0.021	+0.22	-0.018	-0.11	+0.246205	+0.246255	+0.246357
			158412	+49.408	13.82	-0.001	-0.21	-0.007	-0.18	+0.011	+0.01	+0.260286	+0.260314	+0.260409
			158427	+13.464	26.27	-0.007	-0.12	+0.043	-0.08	+0.011	+0.16	+0.178270	+0.178273	+0.178249
			158455	+15.131	22.76	-0.000	+0.02	+0.003	+0.02	-0.001	+0.01	+0.240188	+0.240107	+0.240147
			139820	+10.444	27.59	+0.003	+0.03	-0.018	+0.02	-0.004	-0.06	+0.075051	+0.075050	+0.074838
116	117	118	158411	+38.905	38.94	+0.005	+0.27	-0.021	+0.22	-0.018	-0.11	+0.251148	+0.251039	+0.251351
			158412	+49.408	13.82	-0.001	-0.21	-0.007	-0.18	+0.011	+0.01	+0.267363	+0.267201	+0.267469
			158427	+13.464	26.27	-0.007	-0.12	+0.043	-0.08	+0.011	+0.16	+0.174730	+0.174771	+0.174836
			158455	+15.131	22.76	-0.000	+0.02	+0.003	+0.02	-0.001	+0.01	+0.247718	+0.247590	+0.247316
			139820	+10.444	27.59	+0.003	+0.03	-0.018	+0.02	-0.004	-0.06	+0.059042	+0.059399	+0.059028
119	120	121	158411	+38.905	38.94	+0.005	+0.27	-0.021	+0.22	-0.018	-0.11	+0.258553	+0.258446	+0.258524
			158412	+49.408	13.82	-0.001	-0.21	-0.007	-0.18	+0.011	+0.01	+0.269134	+0.268954	+0.268906
			158427	+13.464	26.27	-0.007	-0.12	+0.043	-0.08	+0.011	+0.16	+0.186520	+0.186597	+0.186807
			158455	+15.131	22.76	-0.000	+0.02	+0.003	+0.02	-0.001	+0.01	+0.213567	+0.213338	+0.212776
			139820	+10.444	27.59	+0.003	+0.03	-0.018	+0.02	-0.004	-0.06	+0.072226	+0.072665	+0.072987
122	123	124	158411	+38.905	38.94	+0.005	+0.27	-0.021	+0.22	-0.018	-0.11	+0.211099	+0.211082	+0.211238
			158412	+49.408	13.82	-0.001	-0.21	-0.007	-0.18	+0.011	+0.01	+0.234441	+0.234395	+0.234522
			158427	+13.464	26.27	-0.007	-0.12	+0.043	-0.08	+0.011	+0.16	+0.156151	+0.156181	+0.156185
			158455	+15.131	22.76	-0.000	+0.02	+0.003	+0.02	-0.001	+0.01	+0.312324	+0.312228	+0.312144
			139820	+10.444	27.59	+0.003	+0.03	-0.018	+0.02	-0.004	-0.06	+0.085985	+0.086114	+0.085911
125	126	127	158411	+38.905	38.94	+0.005	+0.27	-0.021	+0.22	-0.018	-0.11	+0.094193	+0.094000	+0.094091
			158412	+49.408	13.82	-0.001	-0.21	-0.007	-0.18	+0.011	+0.01	+0.140822	+0.140556	+0.140589
			158427	+13.464	26.27	-0.007	-0.12	+0.043	-0.08	+0.011	+0.16	+0.097110	+0.097275	+0.097284
			158455	+15.131	22.76	-0.000	+0.02	+0.003	+0.02	-0.001	+0.01	+0.513695	+0.513410	+0.513249
			139820	+10.444	27.59	+0.003	+0.03	-0.018	+0.02	-0.004	-0.06	+0.154180	+0.154758	+0.154787

TABLE 1. POSITIONS.

NO	OBJECT	PLATE	MON.	DAY	ALPHA 1950 H M S	DELTA 1950 O ′ ″	RESIDUALS M	″
1	38 LEDA	6018	2	12.047787	7 25 45.449	+20 29 38.28	+ .1	0
2	38 LEDA	6018	2	12.054713	7 25 45.223	+20 29 37.62	+ .1	0
3	38 LEDA	6018	2	12.061638	7 25 44.977	+20 29 37.00	+ .1	0
4	38 LEDA	6037	2	14.050004	7 24 43.346	+20 25 41.48	- .0	0
5	38 LEDA	6037	2	14.056871	7 24 43.161	+20 25 40.81	- .0	0
6	38 LEDA	6037	2	14.063797	7 24 42.945	+20 25 39.85	- .0	0
7	38 LEDA	6055	2	16.042397	7 23 49.333	+20 21 39.29	- .0	0
8	38 LEDA	6055	2	16.049322	7 23 49.156	+20 21 38.80	- .0	0
9	38 LEDA	6055	2	16.056248	7 23 48.951	+20 21 37.68	- .0	0
10	38 LEDA	6075	2	18.047326	7 23 2.757	+20 17 30.03	+ .1	0
11	38 LEDA	6075	2	18.054251	7 23 2.576	+20 17 28.89	+ .1	0
12	38 LEDA	6075	2	18.061177	7 23 2.385	+20 17 28.26	+ .1	0
13	38 LEDA	6095	2	20.081341	7 22 23.654	+20 13 11.51	+ .4	- 1
14	38 LEDA	6095	2	20.088267	7 22 23.479	+20 13 11.11	+ .4	- 1
15	38 LEDA	6095	2	20.095192	7 22 23.286	+20 13 10.52	+ .4	- 1
16	158 KORONIS	6037	2	14.050004	7 30 46.881	+21 12 36.14	- .0	+ 1
17	158 KORONIS	6037	2	14.056871	7 30 46.651	+21 12 36.51	- .0	+ 1
18	158 KORONIS	6037	2	14.063797	7 30 46.399	+21 12 37.12	- .0	+ 1
19	158 KORONIS	6055	2	16.042397	7 29 43.513	+21 14 34.35	- .0	+ 1
20	158 KORONIS	6055	2	16.049322	7 29 43.338	+21 14 34.67	- .0	+ 1
21	158 KORONIS	6055	2	16.056248	7 29 43.117	+21 14 34.92	- .0	+ 1
22	158 KORONIS	6075	2	18.047326	7 28 45.947	+21 16 20.59	+ .1	0
23	158 KORONIS	6075	2	18.054251	7 28 45.744	+21 16 21.20	+ .1	0
24	158 KORONIS	6075	2	18.061177	7 28 45.543	+21 16 21.66	+ .1	0
25	158 KORONIS	6095	2	20.081341	7 27 54.056	+21 17 51.87	+ .2	0
26	158 KORONIS	6095	2	20.088267	7 27 53.874	+21 17 52.35	+ .2	0
27	158 KORONIS	6095	2	20.095192	7 27 53.691	+21 17 53.14	+ .2	0
28	686 GERSUIND	6022	2	12.162751	12 21 2.327	-22 16 18.44	- .4	+ 5
29	686 GERSUIND	6022	2	12.169677	12 21 2.172	-22 16 19.03	- .4	+ 5
30	686 GERSUIND	6022	2	12.176602	12 21 2.016	-22 16 19.08	- .4	+ 5
31	686 GERSUIND	6043	2	14.239706	12 20 19.164	-22 20 22.66	- .1	+ 2
32	686 GERSUIND	6043	2	14.246631	12 20 19.010	-22 20 22.60	- .1	+ 2
33	686 GERSUIND	6043	2	14.253557	12 20 18.842	-22 20 23.03	- .1	+ 2
34	686 GERSUIND	6062	2	16.241853	12 19 32.214	-22 23 28.76	+ .1	0
35	686 GERSUIND	6062	2	16.248870	12 19 32.017	-22 23 29.03	+ .1	0
36	686 GERSUIND	6062	2	16.255703	12 19 31.819	-22 23 29.80	+ .1	0
37	686 GERSUIND	6082	2	18.255092	12 18 39.691	-22 25 47.45	+ .2	- 2
38	686 GERSUIND	6082	2	18.262017	12 18 39.509	-22 25 47.41	+ .2	- 2
39	686 GERSUIND	6082	2	18.268943	12 18 39.326	-22 25 47.86	+ .2	- 2
40	686 GERSUIND	6101	2	20.263484	12 17 42.250	-22 27 16.05	+ .2	- 2
41	686 GERSUIND	6101	2	20.270409	12 17 42.025	-22 27 16.37	+ .2	- 2
42	686 GERSUIND	6101	2	20.277334	12 17 41.838	-22 27 16.43	+ .2	- 2
43	871 AMNERIS	6006	2	10.291486	11 8 41.388	+05 02 14.55	+ .4	- 3
44	871 AMNERIS	6006	2	10.302220	11 8 40.957	+05 02 18.93	+ .4	- 3
45	1007 PAWLOWIA	6024	2	12.259709	10 11 28.967	+09 41 37.84	+ .1	0
46	1007 PAWLOWIA	6024	2	12.266634	10 11 28.607	+09 41 39.82	+ .1	0
47	1007 PAWLOWIA	6024	2	12.274252	10 11 28.158	+09 41 41.50	+ .1	0
48	1432 ETHIOPIA	6037	2	14.050004	7 28 48.774	+21 41 50.23	+ .0	0
49	1432 ETHIOPIA	6037	2	14.056871	7 28 48.480	+21 41 52.05	+ .0	0
50	1432 ETHIOPIA	6037	2	14.063797	7 28 48.191	+21 41 54.00	+ .0	0

TABLE 1. POSITIONS.

NO	OBJECT	PLATE	MON.	DAY	ALPHA 1950 H M S	DELTA 1950 ° ' "	RESIDUALS M '
51	1436 1936 YA	6022	2	12.162751	12 18 57.151	-21 16 17.81	- .4 + 4
52	1436 1936 YA	6022	2	12.169677	12 18 57.016	-21 16 18.71	- .4 + 4
53	1436 1936 YA	6022	2	12.176602	12 18 56.895	-21 16 20.03	- .4 + 4
54	1436 1936 YA	6043	2	14.239706	12 18 20.460	-21 21 57.80	- .1 + 1
55	1436 1936 YA	6043	2	14.246631	12 18 20.332	-21 21 58.74	- .1 + 1
56	1436 1936 YA	6043	2	14.253557	12 18 20.192	-21 22 00.27	- .1 + 1
57	1436 1936 YA	6062	2	16.241853	12 17 40.260	-21 26 41.00	+ .1 - 1
58	1436 1936 YA	6062	2	16.248870	12 17 40.111	-21 26 41.62	+ .1 - 1
59	1436 1936 YA	6062	2	16.255703	12 17 39.948	-21 26 42.69	+ .1 - 1
60	1436 1936 YA	6082	2	18.255092	12 16 54.949	-21 30 40.82	+ .2 - 2
61	1436 1936 YA	6082	2	18.262017	12 16 54.780	-21 30 41.29	+ .2 - 2
62	1436 1936 YA	6082	2	18.268943	12 16 54.631	-21 30 42.37	+ .2 - 2
63	1436 1936 YA	6101	2	20.263484	12 16 5.100	-21 33 52.02	+ .2 - 2
64	1436 1936 YA	6101	2	20.270409	12 16 4.937	-21 33 52.87	+ .2 - 3
65	1436 1936 YA	6101	2	20.277334	12 16 4.771	-21 33 53.03	+ .2 - 2
66	1727 METTE	6091	2	19.236785	13 43 51.198	+18 21 02.37	+ .0 + 9
67	1727 METTE	6091	2	19.244750	13 43 51.428	+18 21 13.00	+ .0 + 9
68	1727 METTE	6091	2	19.251698	13 43 51.624	+18 21 22.17	+ .0 + 9
69	1829 DAWSON	6018	2	12.047787	7 26 36.736	+19 34 39.66	+ .1 0
70	1829 DAWSON	6018	2	12.054713	7 26 36.505	+19 34 39.00	+ .1 0
71	1829 DAWSON	6018	2	12.061638	7 26 36.281	+19 34 37.83	+ .1 0
72	1829 DAWSON	6095	2	20.081341	7 23 7.398	+19 17 56.75	+ .4 + 1
73	1829 DAWSON	6095	2	20.088267	7 23 7.206	+19 17 56.02	+ .4 + 1
74	1829 DAWSON	6095	2	20.095192	7 23 7.063	+19 17 55.28	+ .4 + 1
75	1894 HAFFNER	6024	2	12.259709	10 9 36.943	+10 00 52.36	- .0 0
76	1894 HAFFNER	6024	2	12.266634	10 9 36.627	+10 00 54.18	- .0 0
77	1894 HAFFNER	6024	2	12.274252	10 9 36.263	+10 00 56.23	- .0 0
78	1911 SCHUBART	6018	2	12.047787	7 31 46.182	+21 11 22.43	+ .1 - 1
79	1911 SCHUBART	6018	2	12.054713	7 31 45.960	+21 11 22.89	+ .1 - 1
80	1911 SCHUBART	6018	2	12.061638	7 31 45.760	+21 11 23.02	+ .1 - 1
81	1911 SCHUBART	6037	2	14.050004	7 30 48.672	+21 12 52.92	- .0 - 1
82	1911 SCHUBART	6037	2	14.056871	7 30 48.472	+21 12 52.88	- .0 - 1
83	1911 SCHUBART	6037	2	14.063797	7 30 48.270	+21 12 53.24	- .0 - 1
84	1911 SCHUBART	6075	2	18.047326	7 29 7.617	+21 15 25.19	+ .1 0
85	1911 SCHUBART	6075	2	18.054251	7 29 7.431	+21 15 25.57	+ .1 0
86	1911 SCHUBART	6075	2	18.061177	7 29 7.280	+21 15 26.07	+ .1 0
87	1911 SCHUBART	6095	2	20.081341	7 28 23.610	+21 16 26.00	+ .2 - 1
88	1911 SCHUBART	6095	2	20.088267	7 28 23.436	+21 16 26.64	+ .2 - 1
89	1911 SCHUBART	6095	2	20.095192	7 28 23.282	+21 16 26.84	+ .2 - 1
90	2363 CEBRIONES	6022	2	12.162751	12 15 29.092	-22 09 34.31	- .0 + 0
91	2363 CEBRIONES	6022	2	12.169677	12 15 28.948	-22 09 33.77	- .0 + 0
92	2363 CEBRIONES	6022	2	12.176602	12 15 28.839	-22 09 33.17	- .0 + 0
93	2363 CEBRIONES	6043	2	14.239706	12 14 58.062	-22 06 53.92	- .0 + 0
94	2363 CEBRIONES	6043	2	14.246631	12 14 57.962	-22 06 52.68	- .0 + 0
95	2363 CEBRIONES	6043	2	14.253557	12 14 57.814	-22 06 52.02	- .0 + 0
96	2363 CEBRIONES	6062	2	16.241853	12 14 25.556	-22 03 47.35	+ .0 - 0
97	2363 CEBRIONES	6062	2	16.248870	12 14 25.438	-22 03 46.26	+ .0 - 0
98	2363 CEBRIONES	6062	2	16.255703	12 14 25.283	-22 03 45.87	+ .0 - 0
99	2363 CEBRIONES	6101	2	20.263484	12 13 12.359	-21 55 55.03	+ .0 - 0
100	2363 CEBRIONES	6101	2	20.270409	12 13 12.225	-21 55 54.11	+ .0 - 0

DATE UT 1983

TABLE 1. POSITIONS.

NO	OBJECT	PLATE	DATE UT 1983 MON.	DAY	ALPHA 1950 H M S			DELTA 1950 O ' ''			RESIDUALS M	'
101	2363 CEBRIONES	6101	2	20.277334	12	13	12.133	-21	55	53.36	+ .0	- 0
102	2380 HEILONGJIAN	6006	2	10.291486	11	3	49.567	+05	23	16.00	+ .0	- 0
103	2380 HEILONGJIAN	6006	2	10.302220	11	3	49.059	+05	23	18.41	+ .0	- 0
104	1980 KG	6012	2	11.167553	10	36	31.693	+02	48	27.57	- .0	0
105	1980 KG	6012	2	11.174479	10	36	31.360	+02	48	29.45	- .0	0
106	1980 KG	6012	2	11.181404	10	36	31.036	+02	48	31.25	- .0	0
107	1980 KG	6031	2	13.137185	10	34	50.209	+02	57	39.56	- .0	- 0
108	1980 KG	6031	2	13.144087	10	34	49.850	+02	57	41.83	- .0	- 0
109	1980 KG	6031	2	13.151036	10	34	49.492	+02	57	43.59	- .0	- 0
110	1980 KG	6049	2	15.119928	10	33	3.960	+03	07	36.32	- .0	- 0
111	1980 KG	6049	2	15.126854	10	33	3.597	+03	07	38.51	- .0	- 0
112	1980 KG	6049	2	15.133780	10	33	3.248	+03	07	40.62	- .0	- 0
113	RHEA	6092	2	19.267616	14	10	25.152	-10	23	04.89		
114	RHEA	6092	2	19.274876	14	10	25.130	-10	23	04.69		
115	RHEA	6092	2	19.281455	14	10	25.082	-10	23	05.17		
116	TITAN	6092	2	19.267616	14	10	22.617	-10	23	54.65		
117	TITAN	6092	2	19.274876	14	10	22.681	-10	23	53.67		
118	TITAN	6092	2	19.281455	14	10	22.513	-10	23	53.58		
119	HYPERION	6092	2	19.267616	14	10	17.911	-10	21	57.22		
120	HYPERION	6092	2	19.274876	14	10	17.973	-10	21	55.82		
121	HYPERION	6092	2	19.281455	14	10	17.925	-10	21	53.68		
122	JAPETUS	6092	2	19.267616	14	10	45.670	-10	26	02.22		
123	JAPETUS	6092	2	19.274876	14	10	45.681	-10	26	01.73		
124	JAPETUS	6092	2	19.281455	14	10	45.604	-10	26	01.88		
125	PHOEBE	6092	2	19.267616	14	11	53.253	-10	33	08.03		
126	PHOEBE	6092	2	19.274876	14	11	53.344	-10	33	06.16		
127	PHOEBE	6092	2	19.281455	14	11	53.309	-10	33	05.71		