

363 PRECISE POSITIONS OF ASTEROIDS

H. Debehogne

Observatoire Royal de Belgique

and

L.E. Machado, J.F. Caldeira, E.R. Netto and G.G. Vieira

Observatório do Valongo, Universidade Federal do Rio de Janeiro
Brasil

Received 1982 November 23

RESUMO

363 posições precisas e dependências de asteróides foram obtidas de observações fotográficas realizadas no astrógrafo GPO ($D = 40$ cm; $f = 4$ m) do ESO, La Silla, Chile, durante fevereiro e março de 1981. A redução das observações foi efetuada pelo método dos mínimos quadrados e das dependências, tendo sido utilizadas cinco estrelas de referência.

As posições e movimentos próprios dessas estrelas foram extraídas do SAO Catalogue e o equinócio é 1950.0. Das 363 posições, 206 correspondem a cinco asteróides novos; as restantes dizem respeito aos asteróides selecionados na Ephemeridi Malik Planet, ITA, Leningrado.

ABSTRACT

363 astronomical positions and dependences of asteroids are given as obtained from photographic observations made at the GPO ($D = 40$ cm; $f = 4$ m) - ESO, La Silla, Chile, during February and March 1981. The reductions of the observations were obtained by means of five reference stars (SAO Catalogue) through two methods: dependences and least squares. Of the 363 positions, 206 correspond to 5 new asteroids.

Key words: MINOR PLANETS

I. INTRODUCTION

363 precise positions of asteroids and its dependences are presented, based on photographic observations made during February and March 1981 at the European Southern Observatory ESO - La Silla, Chile. Of the 363 positions, 157 correspond to planetoids included in the Ephemeridi Malik Planet (1981), ITA; the others correspond to five new asteroids denoted provisionally in this paper by E 3005, E 3009, E 3012, E 3013 and E 3035. The utilized telescope was the astrograph with 40 cm objective diameter and 4 m focal distance, called GPO. Observations were made by H. Debehogne (O.R.B.) and G. de Sanctis (Osservatorio Astronomico di Torino, Italia).

II. REDUCTION

The reading of the photographic plates was made at the Ascorecord coordinatograph of the Observatório do Valongo, and the reduction was made at the Burroughs 6700 computer of the Núcleo de Computação Eletrônica, NCE, of the Universidade Federal do Rio de Janeiro. The procedure for the reduction (Debehogne and Machado 1979) uses five reference stars with their coordinates and proper motions taken from the SAO Star Catalogue, for the 1950.0 equinox. Dependences and

least squares are employed in the reduction procedure. The dependences are presented, since they allow, at any time, without new reading of the plates, the obtention of new positions, as would be the case when the reference stars would present more refined coordinates and proper motion values.

III. RESULTS

Table 1 gives the computed positions: right ascension and declination. Residuals ($O - C$) are given only for the asteroids included in the soviet ephemeris mentioned above.

Table 2 gives the dependences for all asteroids listed in Table 1.

The authors wish to thank the integral support received from ESO during the observation work which resulted in the present paper.

REFERENCES

- Debehogne, H. and Machado, L.E. 1979, *Astr. and Ap. Suppl.*, **36**, 313.
- Ephemeridi Malik Planet 1981, Inst. Teor. Astron. (Leningrad).
- SAO Star Catalogue, 1966, (Washington, D.C.: Smithsonian Institute).

TABLE 1

POSITIONS

No	Object	Plate	Date UT 1981	Mon	Day	α	H	M	S	1950	δ	Residuals	No	Object	Plate	Date UT 1981	Mon	Day	α	H	M	S	1950	δ	Residuals
1	334 CHICAGO	4531	2	27	298453	10 37 42.459	11	37	16.52	0 0	0	0	147	1204 RENZIA	4655	3	8-160534	10 30 43.165	10 47 44.05	0.1	-1				
2	334 CHICAGO	4531	2	27	312998	10 37 41.509	11 37 23.64	0 0	C				148	1204 RENZIA	4655	3	8-173459	10 30 42.749	10 47 46.38	0.1	-1				
3	334 CHICAGO	4549	3	1-147557	10 36 32.899	11 45 30.91	0 0	C					149	1204 RENZIA	4655	3	8-180385	10 30 42.331	10 47 48.32	0.1	-1				
4	334 CHICAGO	4549	3	1-154540	10 36 32.627	11 45 32.76	0 0	C					150	1204 RENZIA	4684	3	10-296813	10 28 37.374	10 58 36.89	0.1	-1				
5	334 CHICAGO	4549	3	1-161404	10 36 32.329	11 45 35.10	0 0	C					151	1204 RENZIA	4694	3	10-303046	10 26 37.017	10 58 38.44	0.1	-1				
6	334 CHICAGO	4566	3	2-101198	10 35 56.584	11 45 46.49	0 0	C					152	1204 RENZIA	4695	3	12-155266	10 26 50.137	11 7 47.10	0.2	-2				
7	334 CHICAGO	4566	3	2-108121	10 35 56.723	11 45 46.24	0 0	C					153	1204 RENZIA	4695	3	12-160114	10 26 49.862	11 7 48.93	0.2	-2				
8	334 CHICAGO	4566	3	2-115677	10 35 56.468	11 45 46.78	0 0	C					154	1204 RENZIA	4695	3	12-164962	10 26 49.564	11 7 50.63	0.2	-2				
9	334 CHICAGO	4534	3	3-115677	10 35 17.863	11 54 18.19	0 0	C					155	1986 1935 SV	4655	3	8-166534	10 27 24.831	10 20 10.58	-0.1	0				
10	334 CHICAGO	4584	3	3-145022	10 35 17.386	11 54 18.19	0 0	C					156	1986 1935 SV	4655	3	8-173459	10 27 24.562	10 20 10.58	-0.1	0				
11	334 CHICAGO	4584	3	3-155947	10 35 17.386	11 54 21.79	0 0	C					157	1986 1935 SV	4655	3	8-180385	10 27 24.331	10 20 10.58	-0.1	0				
12	334 CHICAGO	4611	3	5-217663	10 34 0.178	12 3 15.52	0 0	C					158	1986 1935 SV	4531	2	27-298453	10 30 43.165	11 11 55.16	0.1	-1				
13	334 CHICAGO	4611	3	5-225599	10 33 55.512	12 3 17.41	0 0	C					159	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
14	334 CHICAGO	4611	3	5-231514	10 33 59.647	12 3 19.50	0 0	C					160	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
15	334 CHICAGO	4624	3	6-196580	10 33 23.876	12 7 26.17	0 0	C					161	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
16	334 CHICAGO	4624	3	6-208522	10 33 23.580	12 7 28.25	0 0	C					162	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
17	334 CHICAGO	4624	3	6-210778	10 33 23.329	12 7 29.82	0 0	C					163	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
18	334 CHICAGO	4635	3	7-103218	10 32 50.488	12 11 15.68	0 0	C					164	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
19	334 CHICAGO	4635	3	7-109705	10 32 50.488	12 11 17.90	0 0	C					165	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
20	334 CHICAGO	4635	3	7-115631	10 32 49.596	12 11 18.81	0 0	C					166	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
21	334 CHICAGO	4636	3	7-127712	10 32 49.542	12 11 21.77	0 0	C					167	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
22	334 CHICAGO	4636	3	7-134637	10 32 49.279	12 11 23.21	0 0	C					168	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
23	334 CHICAGO	4636	3	7-141563	10 32 49.036	12 11 26.91	0 0	C					169	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
24	334 CHICAGO	4652	3	8-108282	10 32 13.664	12 15 26.49	0 0	C					170	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
25	334 CHICAGO	4652	3	8-113208	10 32 13.425	12 15 29.71	0 0	C					171	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
26	334 CHICAGO	4652	3	8-120133	10 32 13.154	12 15 33.17	0 0	C					172	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
27	334 CHICAGO	4652	3	8-130652	10 32 12.517	12 15 38.45	0 0	C					173	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
28	334 CHICAGO	4652	3	8-194928	10 32 16.351	12 15 49.98	0 0	C					174	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
29	334 CHICAGO	4656	3	8-204858	10 32 16.351	12 15 49.98	0 0	C					175	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
30	334 CHICAGO	4656	3	8-208779	10 32 16.351	12 15 49.98	0 0	C					176	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
31	334 CHICAGO	4669	3	9-120866	10 31 38.723	12 15 39.38	0 0	C					177	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
32	334 CHICAGO	4669	3	9-127791	10 31 38.482	12 15 39.38	0 0	C					178	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
33	334 CHICAGO	4669	3	9-134717	10 31 38.482	12 15 39.38	0 0	C					179	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
34	334 CHICAGO	4680	3	10-179772	10 30 58.475	12 23 53.11	0 0	C					180	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
35	334 CHICAGO	4680	3	10-186697	10 30 58.475	12 23 53.11	0 0	C					181	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
36	334 CHICAGO	4680	3	10-192530	10 30 58.475	12 23 53.11	0 0	C					182	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
37	334 CHICAGO	4684	3	10-289195	10 30 54.455	12 23 53.11	0 0	C					183	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
38	334 CHICAGO	4684	3	10-296813	10 30 54.455	12 24 21.84	0 0	C					184	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
39	334 CHICAGO	4684	3	10-303046	10 30 53.549	12 24 21.84	0 0	C					185	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
40	334 CHICAGO	4695	3	12-155266	10 29 48.409	12 31 44.39	0 0	C					186	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
41	334 CHICAGO	4695	3	12-160114	10 29 48.409	12 31 44.39	0 0	C					187	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
42	334 CHICAGO	4695	3	12-164962	10 29 48.409	12 31 44.39	0 0	C					188	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
43	334 CHICAGO	4702	3	13-094708	10 29 15.663	12 35 22.74	0 0	C					189	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
44	334 CHICAGO	4702	3	13-103018	10 29 15.663	12 35 22.74	0 0	C					190	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
45	334 CHICAGO	4710	3	14-076741	10 29 15.663	12 35 22.74	0 0	C					191	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
46	334 CHICAGO	4710	3	14-083667	10 28 41.593	12 35 8.06	0 0	C					192	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
47	334 CHICAGO	4710	3	14-090592	10 28 41.593	12 35 8.06	0 0	C					193	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
48	334 CHICAGO	4711	3	14-106175	10 28 40.781	12 35 9.39	0 0	C					194	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
49	334 CHICAGO	4711	3	14-113100	10 28 40.781	12 35 15.31	0 0	C					195	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
50	334 CHICAGO	4711	3	14-120026	10 28 40.781	12 35 15.31	0 0	C					196	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
51	334 CHICAGO	4712	3	14-156551	10 28 40.781	12 35 15.31	0 0	C					197	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
52	334 CHICAGO	4712	3	14-156551	10 28 40.781	12 35 15.31	0 0	C					198	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
53	334 CHICAGO	4712	3	14-156551	10 28 40.781	12 35 15.31	0 0	C					199	1986 1935 SV	4549	3	27-312998	10 37 42.459	11 37 23.64	0 0	C				
54	334 CHICAGO	4720	3	14-139471	10 28 38.598	12 35 22.74	0 0	C					200	1986 1935 SV											

[illegible]

TABLE 1 (CONTINUED)

No	Object	Plate	Date UT 1981	α	H M S	δ	Residuals	No	Object	Plate	Date UT 1981	α	H M S	δ	Residuals
		Mon	Day				'			Mon	Day				'
293	E3012	4710	3	14-083667	10 30 38-276	11 55 38-14		329	E3013	4684	3	10-289195	10 29 36-181	11 27 34-05	
294	E3012	4710	3	14-090592	10 30 37-693	11 55 39-93		330	E3013	4684	3	10-296813	10 29 37-765	11 27 36-94	
295	E3013	4549	3	1-147557	10 38 23-259	10 26 36-85		331	E3013	4684	3	10-303046	10 29 37-423	11 27 39-16	
296	E3013	4549	3	1-154540	10 38 22-832	10 26 36-98		332	E3013	4695	3	12-155266	10 27 56-862	11 39 5-38	
297	E3013	4549	3	1-161408	10 38 22-380	10 26 43-09		333	E3013	4695	3	12-160114	10 27 56-610	11 39 7-34	
298	E3013	4566	3	2-101196	10 37 27-370	10 33 14-05		334	E3013	4695	3	12-164962	10 27 56-356	11 39 9-37	
299	E3013	4566	3	2-108121	10 37 26-370	10 33 17-02		335	E3035	4624	3	6-196580	10 38 3-559	12 18 52-40	
300	E3013	4566	3	2-115647	10 37 26-566	10 33 20-02		336	E3035	4624	3	6-203852	10 38 3-066	12 18 50-26	
301	E3013	4584	3	3-142096	10 36 25-594	10 40 24-49		337	E3035	4624	3	6-210778	10 38 2-621	12 18 47-86	
302	E3013	4584	3	3-149222	10 36 25-581	10 40 26-96		338	E3035	4635	3	7-103218	10 37 3-024	12 14 32-82	
303	E3013	4584	3	3-155947	10 36 25-542	10 40 29-76		339	E3035	4635	3	7-109705	10 37 2-592	12 14 30-84	
304	E3013	4597	3	4-144213	10 35 27-515	10 47 13-30		340	E3035	4635	3	7-116631	10 37 2-124	12 14 29-11	
305	E3013	4597	3	4-151139	10 35 27-515	10 47 13-30		341	E3035	4635	3	7-116631	10 37 2-124	12 14 29-11	
306	E3013	4597	3	4-158664	10 35 27-515	10 47 13-30		342	E3035	4635	3	7-116631	10 37 2-124	12 14 29-11	
307	E3013	4597	3	4-158664	10 35 27-515	10 47 13-30		343	E3035	4635	3	7-116631	10 37 2-124	12 14 29-11	
308	E3013	4624	3	6-196580	10 35 26-566	11 1 5-35		344	E3035	4635	3	7-116631	10 37 2-124	12 14 29-11	
309	E3013	4624	3	6-203852	10 35 26-566	11 1 5-35		345	E3035	4635	3	7-116631	10 37 2-124	12 14 29-11	
310	E3013	4624	3	6-210778	10 35 26-566	11 1 5-35		346	E3035	4635	3	7-116631	10 37 2-124	12 14 29-11	
311	E3013	4635	3	7-103218	10 32 37-365	11 7 7-75		347	E3035	4670	3	9-155493	10 34 48-161	12 4 31-23	
312	E3013	4635	3	7-109705	10 32 37-365	11 7 7-75		348	E3035	4670	3	9-162418	10 34 47-708	12 4 28-83	
313	E3013	4635	3	7-116631	10 32 37-365	11 7 7-75		349	E3035	4670	3	9-172807	10 34 46-577	12 4 24-13	
314	E3013	4635	3	7-127712	10 32 35-634	11 7 10-18		350	E3035	4670	3	9-181117	10 34 46-577	12 4 24-13	
315	E3013	4635	3	7-134637	10 32 35-634	11 7 10-18		351	E3035	4670	3	9-181117	10 34 46-577	12 4 24-13	
316	E3013	4635	3	7-141563	10 32 35-634	11 7 10-18		352	E3035	4670	3	9-181117	10 34 46-577	12 4 24-13	
317	E3013	4635	3	7-141563	10 32 35-634	11 7 10-18		353	E3035	4670	3	9-181117	10 34 46-577	12 4 24-13	
318	E3013	4635	3	7-141563	10 32 35-634	11 7 10-18		354	E3035	4670	3	9-181117	10 34 46-577	12 4 24-13	
319	E3013	4635	3	7-141563	10 32 35-634	11 7 10-18		355	E3035	4670	3	9-181117	10 34 46-577	12 4 24-13	
320	E3013	4635	3	7-141563	10 32 35-634	11 7 10-18		356	E3035	4670	3	9-181117	10 34 46-577	12 4 24-13	
321	E3013	4635	3	7-141563	10 32 35-634	11 7 10-18		357	E3035	4670	3	9-181117	10 34 46-577	12 4 24-13	
322	E3013	4635	3	7-141563	10 32 35-634	11 7 10-18		358	E3035	4670	3	9-181117	10 34 46-577	12 4 24-13	
323	E3013	4635	3	7-141563	10 32 35-634	11 7 10-18		359	E3035	4670	3	9-181117	10 34 46-577	12 4 24-13	
324	E3013	4635	3	7-141563	10 32 35-634	11 7 10-18		360	E3035	4670	3	9-181117	10 34 46-577	12 4 24-13	
325	E3013	4635	3	7-141563	10 32 35-634	11 7 10-18		361	E3035	4670	3	9-181117	10 34 46-577	12 4 24-13	
326	E3013	4635	3	7-141563	10 32 35-634	11 7 10-18		362	E3035	4670	3	9-181117	10 34 46-577	12 4 24-13	
327	E3013	4635	3	7-141563	10 32 35-634	11 7 10-18		363	E3035	4670	3	9-181117	10 34 46-577	12 4 24-13	
328	E3013	4635	3	7-141563	10 32 35-634	11 7 10-18		364	E3035	4670	3	9-181117	10 34 46-577	12 4 24-13	

DEPENDENCES

Observation			No SAO Positions			used			Dependences			Observation			No SAO Positions			used			Dependences																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
1	2	7006	13,152	56,996	3,27	0.597376	0.366555	0.090161	0.125893	0.242123	0.240154	-0.794634	0.382158	0.387989	0.685385	0.685028	0.684402	0.684920	0.798203	0.798855	0.799544	0.225030	0.225066	0.225079	0.225096	0.307642	0.405688	0.632870	0.632870	0.377291	0.377132	0.249151	0.464328	0.463046	0.231381	0.130491	0.130595	0.324285	0.323500	0.097766	0.097058	0.437023	0.436676	0.468703	0.013490	0.012680	0.098411	0.336658	0.199182	0.351030	0.931740	0.515960	0.388939	0.388504	0.151469	0.152067	0.088078	0.163903	0.163697	0.163636	0.716367	0.204277	0.203760	0.203285	0.189425	0.183821	0.183826	0.194432	0.119760	0.119725	0.663454	0.663947	0.010120	0.010120	0.283205	0.011750	0.011750	0.011846	0.397668	0.46586	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.913	2.955	3.634	6.999	13.933	27.955	27.955	51.334	4.601	9.9234	91.664	1.673	1.913	1.913	4.912	19.617	4.536	15.82	51.97	17.05	19.617	4.536	12.623	1.913	1.913	1.617	2.612	1.

TABLE 2 (CONTINUED)

Observation	No SAQ	Positions	Used	Dependences	Observation	No SAQ	Positions	Used	Dependences
77 78 79	99195	19.617	17.05	C-271430 C-270597 C-265867	163 164 165	99271	43.340	54.16	0.189941 0.189034 0.189188
	99146	49.506	44.72	1.011303 1.012877 1.014577		7005	32.996	3.27	0.194210 0.194172 0.194192
	99157	46.237	35.90	-0.564635 -0.564257 -0.564148		7006	13.158	49.88	0.634838 0.637215 0.639945
	99162	46.596	15.82	-0.061090 -0.061257 -0.061780		99271	43.340	54.16	-0.174106 -0.175778 -0.177618
	99164	13.673	51.97	C-278987 C-378329 C-377903		99206	4.410	55.11	C-622838 C-424015 C-028196
	99167	53.600	31.58	0.235496 C-234476 C-233447		99214	44.407	52.83	-0.077780 -0.079624 C-084975
80 81 82	99166	33.158	20.97	0.607258 C-607915 C-608308		7010	36.301	21.82	0.642263 C-641258 C-040310
	99132	33.158	20.97	0.607258 C-607915 C-608308		7014	23.984	1.32	0.145449 C-144410 C-040310
	99146	49.506	44.72	-0.617528 C-115848 C-116869		99198	8.912	27.70	0.317834 C-318600 C-318294
	99162	46.596	15.82	-0.617528 C-115848 C-116869		99198	8.912	27.70	0.317834 C-318600 C-318294
	99164	13.673	51.97	C-292308 C-291323 C-290758		99198	8.912	27.70	0.317834 C-318600 C-318294
	99167	53.600	31.58	0.402625 C-401666 C-400406		99198	8.912	27.70	0.317834 C-318600 C-318294
83 84	99268	28.648	49.19	-0.052089 C-040697 C-040337		99198	8.912	27.70	0.317834 C-318600 C-318294
	99271	43.340	54.16	-0.052089 C-040697 C-040337		99198	8.912	27.70	0.317834 C-318600 C-318294
	99272	48.127	16.65	0.432035 C-430024 C-430024		99198	8.912	27.70	0.317834 C-318600 C-318294
	99279	5.569	6.70	0.432035 C-430024 C-430024		99198	8.912	27.70	0.317834 C-318600 C-318294
	99285	58.694	55.33	C-514677 C-509721 C-509721		99198	8.912	27.70	0.317834 C-318600 C-318294
85 86 87	99257	38.780	3.17	-0.08216 C-037185 -0.036229		99198	8.912	27.70	0.317834 C-318600 C-318294
	99258	38.780	3.17	-0.08216 C-037185 -0.036229		99198	8.912	27.70	0.317834 C-318600 C-318294
	99259	4.667	24.76	0.153422 C-152785 -0.151964		99198	8.912	27.70	0.317834 C-318600 C-318294
	99268	26.667	49.19	-0.099037 C-098624 C-094554		99198	8.912	27.70	0.317834 C-318600 C-318294
	99272	48.127	16.65	0.432035 C-430024 C-430024		99198	8.912	27.70	0.317834 C-318600 C-318294
88 89 90	99251	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99252	4.617	16.65	0.432035 C-430024 C-430024		99198	8.912	27.70	0.317834 C-318600 C-318294
	99253	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99254	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99255	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
91 92 93	99251	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99252	4.617	16.65	0.432035 C-430024 C-430024		99198	8.912	27.70	0.317834 C-318600 C-318294
	99253	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99254	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99255	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
94 95 96	99251	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99252	4.617	16.65	0.432035 C-430024 C-430024		99198	8.912	27.70	0.317834 C-318600 C-318294
	99253	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99254	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99255	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
97 98 99	99251	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99252	4.617	16.65	0.432035 C-430024 C-430024		99198	8.912	27.70	0.317834 C-318600 C-318294
	99253	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99254	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99255	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
100 101 102	99251	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99252	4.617	16.65	0.432035 C-430024 C-430024		99198	8.912	27.70	0.317834 C-318600 C-318294
	99253	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99254	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99255	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
103 104 105	99251	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99252	4.617	16.65	0.432035 C-430024 C-430024		99198	8.912	27.70	0.317834 C-318600 C-318294
	99253	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99254	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99255	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
106 107 108	99251	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99252	4.617	16.65	0.432035 C-430024 C-430024		99198	8.912	27.70	0.317834 C-318600 C-318294
	99253	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99254	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99255	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
109 110 111	99251	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99252	4.617	16.65	0.432035 C-430024 C-430024		99198	8.912	27.70	0.317834 C-318600 C-318294
	99253	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99254	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99255	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
112 113 114	99251	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99252	4.617	16.65	0.432035 C-430024 C-430024		99198	8.912	27.70	0.317834 C-318600 C-318294
	99253	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99254	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99255	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
115 116 117	99251	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99252	4.617	16.65	0.432035 C-430024 C-430024		99198	8.912	27.70	0.317834 C-318600 C-318294
	99253	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99254	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99255	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
118 119 120	99251	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99252	4.617	16.65	0.432035 C-430024 C-430024		99198	8.912	27.70	0.317834 C-318600 C-318294
	99253	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99254	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294
	99255	3.452	4.80	-0.526903 C-528311 -0.527999		99198	8.912	27.70	0.317834 C-318600 C-318294

POSITIONS OF ASTEROIDS

99162	45.586	15.82	-C.142236	-C.141576	-C.14C870	99133	37.191	1.32	C.198429	0.198429
99164	12.673	51.97	C.359766	C.359498	C.355391	99141	16.639	8.71	C.192237	C.192303
99187	13.933	17.55	C.301712	C.301497	C.301236	99157	46.237	35.96	-C.012146	-C.012058
7001	35.673	38.15	C.208199	C.208293		7010	36.301	21.82	C.095505	C.096723
7015	53.594	34.91	C.579310	C.578496		99206	4.410	51.81	C.235528	C.236651
99175	58.290	17.73	-C.109653	-C.108351		99214	4.407	52.83	C.332607	C.332534
99187	13.933	17.55	-C.284441	-C.283761		99251	3.452	4.80	C.322673	C.320493
99210	22.653	34.07	C.037713	C.036401		99271	43.340	54.16	C.013667	C.013931
7009	30.685	21.46	C.556569	C.555931	C.555139	7005	32.996	3.27	-C.013111	-C.013136
7013	33.294	31.91	C.178606	C.178708	C.177475	7006	13.158	49.88	-C.012419	-C.008577
99182	46.596	15.82	C.428839	C.429069	C.429181	99271	43.340	54.16	C.093305	C.091874
99184	12.673	51.97	-C.060847	-C.059616	-C.056199	99206	4.410	55.11	C.276325	C.277076
99187	5.630	31.58	-C.184958	-C.183691	-C.182587	99214	4.407	52.83	C.465677	C.466996
99161	16.609	8.71	-C.045972	-C.045744	-C.045165	7010	36.301	21.82	C.0137547	C.0136701
99162	46.596	15.82	C.282111	C.282061	C.281165	7014	23.984	1.32	C.010915	C.010788
99164	12.673	17.73	C.454869	C.454324	C.453924	99193	8.912	27.70	C.242895	C.243159
99175	58.290	17.73	C.045333	C.045326	C.045275	99198	27.955	26.27	C.080767	C.081650
99185	28.138	58.50	C.301583	C.300872	C.300275	99214	4.410	55.11	C.527677	C.527323
99141	16.609	8.71	C.003236	C.004554	C.005723	99193	8.912	27.70	C.062545	C.062712
99145	49.596	44.72	C.106269	C.106846	C.107182	99198	27.955	26.27	C.282533	C.283001
99162	46.596	15.82	C.238196	C.237912	C.237647	99206	4.410	55.11	C.216718	C.216641
99167	53.680	31.58	C.374156	C.369965	C.368933	99214	4.407	52.83	C.339958	C.336746
99175	54.290	17.73	C.280143	C.280724	C.280158	99167	53.680	31.58	C.259974	C.259933
99185	17.225	26.50	C.285139	C.286099	C.287258	99193	19.617	17.05	C.585435	C.584393
99240	13.851	30.76	-C.041179	-C.039391	-C.037729	99162	46.586	15.82	-C.149353	-C.148364
99242	32.425	2.09	C.584759	C.583655	C.582760	99198	27.955	26.27	-C.373573	-C.373137
99257	36.780	34.17	-C.065817	-C.065636	-C.065593	99187	13.933	17.55	-C.069629	-C.069099
99265	43.647	24.70	C.217078	C.233274	C.233404	7015	53.594	34.91	C.436160	C.437267
99230	11.225	26.50	C.418362	C.435358	C.440489	99193	8.912	27.70	C.401215	C.399932
99240	13.851	30.76	C.262310	C.262405	C.262555	99187	13.933	17.55	-C.089389	-C.087250
99242	32.425	2.09	-C.408362	-C.407530	-C.406744	99198	27.955	26.27	-C.234662	-C.232583
99237	38.780	3.17	C.037669	C.037863	C.038113	7011	38.634	8.65	C.018552	C.017489
99260	54.593	15.26	-C.038415	-C.036689	-C.034764	7008	4.809	41.66	C.401603	C.402516
7010	36.301	21.82	-C.284954	-C.284734	-C.284527	7009	30.285	21.46	C.335400	C.336631
99214	4.407	52.83	C.367493	C.366861	C.366430	99198	27.955	26.27	C.184025	C.183728
99230	17.225	26.50	C.697791	C.697741	C.697768	99206	4.410	55.11	-C.011465	-C.010831
99251	3.452	4.80	C.004798	C.004301	C.003780	99208	4.410	52.83	-C.132893	-C.131912
99257	38.780	3.17	-C.194871	-C.193830	-C.192616	99214	46.407	15.82	C.105156	C.105922
99251	3.452	4.80	-C.406347	-C.407563	-C.408824	99162	46.586	15.82	C.186112	C.186352
99214	4.407	52.83	C.554933	C.556723	C.558453	99164	12.673	17.55	C.128033	C.121161
99230	17.225	26.50	C.454047	C.454266	C.454709	99187	13.933	17.55	C.283796	C.283152
99240	13.851	30.76	C.148028	C.147926	C.147670	99193	8.912	27.70	C.304410	C.303583
99242	32.425	2.09	C.249338	C.246648	C.247991	99195	19.617	17.05	C.200558	C.200558
7016	25.203	44.82	-C.183205	-C.182085	-C.182131	99162	46.586	15.82	C.243437	C.243437
9913	53.594	34.91	C.1020363	C.1018766	C.1018028	99164	12.673	17.55	C.135471	C.136027
99193	8.912	27.70	-C.449314	-C.449117	-C.448968	99187	13.933	17.55	C.230877	C.229975
99206	4.410	55.11	C.122068	C.126328	C.125623	99195	19.617	17.05	C.136657	C.136657
99214	4.407	52.83	C.485108	C.483728	C.482596	99197	26.122	17.95	C.096668	C.096668
99166	43.365	25.90	C.174024	C.174488	C.174576	99164	12.673	17.55	C.224830	C.224830
99187	53.680	31.58	C.115660	C.117478	C.119213	7015	53.594	34.91	C.480787	C.480787
99177	10.495	58.23	C.208960	C.208738	C.208553	99162	46.586	15.82	-C.110108	-C.110108
99180	43.728	13.14	-C.243634	-C.242685	-C.241177	99186	43.494	21.02	C.317823	
99195	19.617	17.05	C.257701	C.256610	C.255461	7003	35.073	38.35	C.157198	C.156811
7001	7.083	14.08	C.326950	C.327903	C.327903	7004	57.011	10.61	C.261226	C.261565
7002	29.392	46.29	C.636564	C.635785	C.635785	99164	12.673	17.55	C.116695	C.116163
99146	49.506	44.72	-C.315017	-C.313694	-C.313694	99167	35.680	31.58	C.136251	C.136214
99164	12.673	51.97	C.104168	C.103711		99195	19.617	17.05	C.334623	C.334623
99167	53.680	31.58	C.247335	C.246295	C.246295	99195	19.617	17.05	C.334623	C.334623
7001	7.093	14.08	C.805026	C.804268	C.804268	99162	46.586	15.82	C.334623	C.334623
99132	33.158	20.97	C.011680	C.012947	C.012947	99167	53.680	31.58	C.244456	C.244456
99146	49.506	44.72	-C.121701	-C.121052	-C.120175	99187	13.933	17.55	C.244456	C.244456
99162	46.596	15.82	-C.143818	-C.143823	-C.144013	99198	27.955	26.27	C.129541	C.129541
99164	12.673	51.97	C.448813	C.447660	C.446468	99206	4.410	55.11	C.029635	C.028808
99156	41.628	57.46	C.715127	C.716119	C.717022	99162	46.237	35.96	C.137485	C.138732
99164	12.673	51.97	-C.250430	-C.250238	-C.250238	99162	46.586	15.82	C.162876	C.162876
99166	43.365	25.90	C.538500	C.538639	C.538955	99164	12.673	17.55	C.182518	C.182518
99177	10.495	58.23	-C.033993	-C.034482	-C.035093	99167	53.680	31.58	C.205399	C.204872
99180	43.728	13.14	C.038202	C.039963	C.039963	99186	43.494	21.02	C.303322	C.303322
7006	13.158	49.88	C.159448	C.161426	C.161426	7003	35.073	38.35	C.285039	C.284964
7005	32.996	3.27	C.337245	C.339306	C.339306	99157	46.237	35.96	C.306355	C.307016
99231	3.452	4.80	C.494625	C.495641	C.495641	99162	46.586	15.82	C.406743	C.406607
7031	19.695	24.63	-C.261644	-C.265436	-C.265436	99175	54.290	17.73	-C.020733	-C.020369
7030	57.634	47.81	-C.310016	-C.318736	-C.318736	99187	13.933	17.55	C.022596	C.021782
7010	36.301	21.82	C.447081	C.448470	C.448470	7023	43.698	43.47	C.009518	C.009086
99206	4.410	55.11	C.207626	C.207566	C.207415	99133	37.191	1.32	C.184203	C.185043
99214	4.407	52.83	-C.153664	-C.153806	-C.153806	99141	16.609	8.71	-C.271110	-C.271361
99251	3.452	4.80				99157	46.237	35.96	C.198996	C.198996

TABLE 2 (CONTINUED)

Observation			No SAO			Positions used			Dependences								
248	249	250	99162	46-586	15-82	C-334173	C-331426	C-312720	307	308	309	7016	25-203	44-82	-C-068146	C-415708	C-420058
			99141	16-609	8-71	C-077225	C-073169	C-074614				7015	53-594	36-91	-C-049388	-C-066807	-C-065465
			99162	46-586	15-82	C-0192461	C-0192353	C-019234				99193	9-912	27-70	-C-026789	-C-024524	-C-026344
			99164	12-673	51-97	C-011603	C-012143	C-012609				99204	4-410	55-43	-C-029134	-C-024870	-C-027856
			99175	54-290	17-73	C-021750	C-0217965	C-0218063				7063	4-407	52-83	-C-026412	-C-024154	-C-023895
			99185	28-108	58-50	C-0170833	C-0171365	C-0171911				7009	36-809	41-66	C-050534	C-0511733	C-052320
251	252	253	99104	18-701	3-20	C-0109310	C-0110221	C-0111233	310	311	312	7009	36-809	41-66	C-050534	C-0511733	C-052320
			99115	25-643	27-01	C-0109310	C-0169280	C-0169280				7009	36-809	41-66	C-050534	C-0511733	C-052320
			99133	37-191	1-82	C-0240222	C-0243078	C-0243016				7009	36-809	41-66	C-050534	C-0511733	C-052320
			99141	16-609	8-71	C-0454597	C-0454640	C-0454543				7009	36-809	41-66	C-050534	C-0511733	C-052320
254	255	256	99157	36-730	3-17	C-0362324	C-0361340	C-0360476	313	314	315	99162	4-407	55-43	-C-049388	-C-024524	-C-026344
			99265	41-647	24-70	C-0121327	C-0120352	C-0119454				99164	12-673	51-97	-C-034122	-C-026789	-C-024524
			99261	3-452	4-80	C-0902026	C-0895337	C-0888837				99187	1-933	17-55	-C-049233	-C-0488751	-C-0482171
			99263	26-647	49-19	C-0150688	C-0150688	C-0150688				99193	9-912	27-70	-C-0561961	-C-0561347	-C-0561541
			99264	34-783	8-10	C-0912661	C-0911740	C-0912661				99193	9-912	27-70	-C-0561961	-C-0561347	-C-0561541
257	258	259	99267	28-647	48-19	C-0279734	C-0279655	C-0279655				99193	9-912	27-70	-C-0561961	-C-0561347	-C-0561541
			99271	43-340	58-16	C-0509168	C-0509225	C-0509225				99193	9-912	27-70	-C-0561961	-C-0561347	-C-0561541
			99272	43-127	15-65	C-0236139	C-0233975	C-0231815				99193	9-912	27-70	-C-0561961	-C-0561347	-C-0561541
260	261	262	7010	36-301	21-82	C-0260221	C-0270098	C-0270098	319			99167	53-680	31-58	-C-0416193	-C-0416193	-C-0416193
			7030	57-634	4-81	C-0259124	C-0258070	C-0257705				7015	25-203	44-82	-C-0257304	-C-0257304	-C-0257304
			7031	19-695	24-83	C-0259124	C-0258070	C-0257705				7015	25-203	44-82	-C-0257304	-C-0257304	-C-0257304
263	264	265	99251	3-452	4-80	C-0111479	C-0113947	C-0113656				7008	54-809	43-66	-C-0422953	-C-0422953	-C-0422953
			99257	38-730	3-17	C-0258709	C-0258635	C-0258635				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			7005	13-152	4-38	C-0151817	C-0152125	C-0152371				99170	1-495	58-26	-C-0152765	-C-0152765	-C-0152765
			7006	3-452	4-80	C-0995866	C-0995921	C-0995921				99180	1-495	58-26	-C-0152765	-C-0152765	-C-0152765
			99214	44-407	52-83	C-0172077	C-0172282	C-0172654				99185	18-617	17-05	-C-0261449	-C-0261449	-C-0261449
266	267	268	99205	4-410	55-11	C-0324444	C-0326188	C-0331193				99193	9-912	27-70	-C-0561961	-C-0561347	-C-0561541
			99216	44-407	52-83	C-000739	C-0006668	C-0005048				99214	4-407	52-83	-C-0561961	-C-0561347	-C-0561541
			99193	23-934	1-32	C-095897	C-096763	C-097465				99245	58-671	24-98	-C-0458043	-C-0458043	-C-0458043
269	270	271	99251	3-452	4-80	C-0111479	C-0113947	C-0113656				99251	3-452	4-80	-C-0422953	-C-0422953	-C-0422953
			99214	44-407	52-83	C-0324444	C-0326188	C-0331193				99162	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99216	44-407	52-83	C-000739	C-0006668	C-0005048				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
272	273	274	99185	28-108	58-50	C-0170833	C-0171365	C-0171911				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99193	23-934	1-32	C-095897	C-096763	C-097465				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99214	44-407	52-83	C-0324444	C-0326188	C-0331193				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
275	276	277	99245	58-671	24-98	C-0458043	C-0458043	C-0458043				99206	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99251	3-452	4-80	C-0111479	C-0113947	C-0113656				7001	7-083	14-08	-C-0377266	-C-0377266	-C-0377266
			99193	23-934	1-32	C-095897	C-096763	C-097465				7002	29-392	46-29	-C-0257304	-C-0257304	-C-0257304
278	279	280	99205	4-410	55-11	C-0324444	C-0326188	C-0331193				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99214	44-407	52-83	C-000739	C-0006668	C-0005048				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99216	44-407	52-83	C-0324444	C-0326188	C-0331193				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
281	282	283	99185	28-108	58-50	C-0170833	C-0171365	C-0171911				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99193	23-934	1-32	C-095897	C-096763	C-097465				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99214	44-407	52-83	C-0324444	C-0326188	C-0331193				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
284	285	286	99245	58-671	24-98	C-0458043	C-0458043	C-0458043				99206	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99251	3-452	4-80	C-0111479	C-0113947	C-0113656				7013	36-301	21-82	-C-0260221	-C-0260221	-C-0260221
			99193	23-934	1-32	C-095897	C-096763	C-097465				7013	36-301	21-82	-C-0260221	-C-0260221	-C-0260221
			99214	44-407	52-83	C-0324444	C-0326188	C-0331193				7013	36-301	21-82	-C-0260221	-C-0260221	-C-0260221
287	288	289	99205	4-410	55-11	C-0324444	C-0326188	C-0331193				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99214	44-407	52-83	C-000739	C-0006668	C-0005048				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99216	44-407	52-83	C-0324444	C-0326188	C-0331193				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
290	291	292	99185	28-108	58-50	C-0170833	C-0171365	C-0171911				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99193	23-934	1-32	C-095897	C-096763	C-097465				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99214	44-407	52-83	C-0324444	C-0326188	C-0331193				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
293	294	295	99245	58-671	24-98	C-0458043	C-0458043	C-0458043				99206	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99251	3-452	4-80	C-0111479	C-0113947	C-0113656				7013	36-301	21-82	-C-0260221	-C-0260221	-C-0260221
			99193	23-934	1-32	C-095897	C-096763	C-097465				7013	36-301	21-82	-C-0260221	-C-0260221	-C-0260221
			99214	44-407	52-83	C-0324444	C-0326188	C-0331193				7013	36-301	21-82	-C-0260221	-C-0260221	-C-0260221
296	297	298	99205	4-410	55-11	C-0324444	C-0326188	C-0331193				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99214	44-407	52-83	C-000739	C-0006668	C-0005048				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99216	44-407	52-83	C-0324444	C-0326188	C-0331193				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
299	300	301	99185	28-108	58-50	C-0170833	C-0171365	C-0171911				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99193	23-934	1-32	C-095897	C-096763	C-097465				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99214	44-407	52-83	C-0324444	C-0326188	C-0331193				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
302	303	304	99245	58-671	24-98	C-0458043	C-0458043	C-0458043				99206	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99251	3-452	4-80	C-0111479	C-0113947	C-0113656				7013	36-301	21-82	-C-0260221	-C-0260221	-C-0260221
			99193	23-934	1-32	C-095897	C-096763	C-097465				7013	36-301	21-82	-C-0260221	-C-0260221	-C-0260221
			99214	44-407	52-83	C-0324444	C-0326188	C-0331193				7013	36-301	21-82	-C-0260221	-C-0260221	-C-0260221
305	306	307	99205	4-410	55-11	C-0324444	C-0326188	C-0331193				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99214	44-407	52-83	C-000739	C-0006668	C-0005048				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
			99216	44-407	52-83	C-0324444	C-0326188	C-0331193				99166	53-680	31-58	-C-0257304	-C-0257304	-C-0257304
308	309	310	99185	28-108	58-50	C-0170833	C-0171365	C-01719									

8...19D

292	293	294	99187	13.933	17.55	C-307925	C-307592	99240	13.931	30.72	-C-132050	-C-130413	C-130779	0.25213	0.25213
			99210	22.453	34.07	0.101756	0.100808	99186	6.999	32.31	0.253979	0.253003	0.253979	0.253003	0.253979
			7009	30.285	21.46	0.659895	0.659125	99186	43.494	21.02	0.221762	0.223266	0.221762	0.223266	0.221762
			7015	53.594	34.91	0.226534	0.225571	99193	8.912	27.70	C-442319	C-442804	C-442319	C-442804	C-442319
			99162	46.586	15.82	0.459126	0.461089	99217	55.354	48.04	0.113283	0.113052	0.113283	0.113052	0.113283
			99164	12.673	51.97	-C-126968	-C-126460	99227	8.623	20.18	-C-011363	-C-032125	-C-032831	-C-032125	-C-032831
			99167	53.680	31.58	0.218587	0.219325	7010	36.301	21.82	-C-144466	-C-145644	-C-144466	-C-145644	-C-144466
295	296	297	99230	17.225	26.50	0.181126	0.181181	7013	6.999	32.31	0.419489	0.418615	0.419489	0.418615	0.419489
			99240	13.851	30.76	0.244762	0.246599	99195	19.617	17.05	0.311809	0.312675	0.311809	0.312675	0.311809
			99242	32.723	2.09	0.125642	0.124044	99198	27.955	26.27	C-508519	C-508937	C-508519	C-508937	C-508519
			99257	33.730	3.17	0.252617	0.252984	99214	44.407	52.33	-0.095352	-0.094584	-0.095352	-0.094584	-0.095352
			99265	41.647	24.70	0.196048	0.194160	7009	30.285	21.46	0.673895	0.673229	0.673895	0.673229	0.673895
			99230	17.225	26.50	0.317266	0.318591	7003	35.073	38.35	-C-199697	-C-199306	-C-199697	-C-199306	-C-199697
298	299	300	99240	13.851	30.76	C-493775	C-493566	99182	46.586	15.82	0.103727	0.103097	0.103727	0.103097	0.103727
			99242	32.425	2.09	-C-040532	-C-041555	99184	15.673	51.97	0.323764	0.324185	0.323764	0.324185	0.323764
			99257	38.730	3.17	C-291260	C-291344	99187	15.673	51.97	C-305765	C-304989	C-305765	C-304989	C-305765
			99260	54.593	15.26	-C-061768	-C-063856	7003	35.073	38.35	0.254189	0.252579	0.254189	0.252579	0.254189
301	302	303	7010	36.301	21.82	-C-006813	-C-006557	7015	53.594	34.91	0.624510	0.624522	0.624510	0.624522	0.624510
			99214	44.407	52.33	C-348954	C-350400	99175	53.594	34.91	-C-120034	-C-119402	-C-120034	-C-119402	-C-120034
			99230	17.225	26.50	0.432321	0.432272	99187	15.673	51.97	0.275403	0.274947	0.275403	0.274947	0.275403
			99251	3.452	4.80	C-084513	0.084005	99210	25.453	34.97	-C-014074	-0.633146	-C-014074	-0.633146	-C-014074
			99257	53.730	3.17	C-141024	C-139860	7004	10.253	21.86	0.216575	0.216631	0.216575	0.216631	0.216575
304	305	306	99251	3.452	4.80	-0.026440	-C-027471	7013	46.586	15.82	0.216962	0.216135	0.216962	0.216135	0.216962
			99214	44.407	52.33	0.599848	0.601614	99182	53.594	34.91	0.115808	0.114822	0.115808	0.114822	0.115808
			99230	17.225	26.50	C-245056	C-245227	99184	15.673	51.97	0.179561	0.180813	0.179561	0.180813	0.179561
			99240	13.851	30.76	0.159050	0.158903	99184	15.673	51.97	C-251094	C-252162	C-251094	C-252162	C-251094
			99242	32.423	2.09	C-022486	0.021727	99167	53.673	31.58	C-251094	C-252162	C-251094	C-252162	C-251094

Henri Debehogne: Observatoire Royal de Belgique, 3 Av. Circulaire, Uccle-Brussels 18, Belgium.
J.F. Caldeira, L.E. Machado, E.R. Netto and G.G. Vieira: Observatório do Valongo, Universidade Federal do Rio de Janeiro, CEP 20080, Rio de Janeiro, RJ, Brasil.

