

363 PRECISE POSITIONS OF ASTEROIDS

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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 Electrônica, 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.

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REFERENCES

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- Ephemeridi Malik Planet 1981, Inst. Teor. Astron. (Leningrad).
- SAO Star Catalogue, 1966, (Washington, D.C.: Smithsonian Institute).

TABLE 1

No	Object	Plate UT 1981			1950			6			Residuals			No	Object	Plate UT 1981			1950			6			Residuals			
		Mon	Day	H M	S	o	-	n	M	,	Mon	Day	H M	S	o	-	n	M	,	Mon	Day	H M	S	o	-	n	M	,
1	334 CHICAGO	4531	2	21.294453	10 37 42.459	11 37 16.52	0	0	0	147	1204	RENZIA	4655	3	0.166534	10 30 41.165	10 47 44.05	0.1	-1	1204	RENZIA	4655	3	0.173459	10 30 42.749	10 47 45.38	0.1	-1
2	334 CHICAGO	4531	2	27.312996	10 37 41.569	11 37 20.64	0	0	0	148	1204	RENZIA	4655	3	0.173459	10 30 42.749	10 47 45.38	0.1	-1	1204	RENZIA	4655	3	0.173459	10 30 42.749	10 47 45.38	0.1	-1
3	334 CHICAGO	4549	3	1.147557	10 36 32.899	11 45 30.91	0	0	0	149	1204	RENZIA	4654	3	0.173459	10 30 42.749	10 47 45.38	0.1	-1	1204	RENZIA	4654	3	0.296813	10 28 37.374	10 58 36.89	0.1	-1
4	334 CHICAGO	4549	3	1.154542	10 36 32.827	11 45 32.76	0	0	0	150	1204	RENZIA	4654	3	0.173459	10 30 42.749	10 47 45.38	0.1	-1	1204	RENZIA	4654	3	0.303446	10 28 37.374	10 58 36.89	0.1	-1
5	334 CHICAGO	4549	3	1.161404	10 36 32.829	11 45 35.19	0	0	0	151	1204	RENZIA	4654	3	0.173459	10 30 42.749	10 47 45.38	0.1	-1	1204	RENZIA	4654	3	0.315266	10 26 50.137	11 17 47.10	0.2	-2
6	334 CHICAGO	4566	3	1.165196	10 35 55.934	11 45 44.49	0	0	0	152	1204	RENZIA	4654	3	0.173459	10 30 42.749	10 47 45.38	0.1	-1	1204	RENZIA	4654	3	0.321014	10 26 49.93	11 17 49.93	0.2	-2
7	334 CHICAGO	4566	3	2.108121	10 35 56.723	11 45 46.24	0	0	0	153	1204	RENZIA	4654	3	0.173459	10 30 42.749	10 47 45.38	0.1	-1	1204	RENZIA	4654	3	0.321014	10 26 49.93	11 17 49.93	0.2	-2
8	334 CHICAGO	4566	3	2.115474	10 35 56.68	11 45 48.78	0	0	0	154	1204	RENZIA	4654	3	0.173459	10 30 42.749	10 47 45.38	0.1	-1	1204	RENZIA	4654	3	0.321014	10 26 49.93	11 17 49.93	0.2	-2
9	334 CHICAGO	4566	3	3.116096	10 35 17.863	11 54 18.19	0	0	0	155	1986	1935 SV	4655	3	0.166534	10 27 2.833	10 26 8.37	-0.1	0	1986	1935 SV	4655	3	0.166534	10 27 2.833	10 26 8.37	-0.1	0
10	334 CHICAGO	4584	3	1.149922	10 35 17.586	11 54 19.26	0	0	0	156	1986	1935 SV	4655	3	0.166534	10 27 2.833	10 26 8.37	-0.1	0	1986	1935 SV	4655	3	0.166534	10 27 2.833	10 26 8.37	-0.1	0
11	334 CHICAGO	4584	3	3.155947	10 35 17.340	11 54 21.75	0	0	0	157	1986	1935 SV	4655	3	0.166534	10 27 2.833	10 26 8.37	-0.1	0	1986	1935 SV	4655	3	0.166534	10 27 2.833	10 26 8.37	-0.1	0
12	334 CHICAGO	4611	3	5.217663	10 34 0.178	12 3 15.52	0	0	0	158	E3005	E3005	4531	2	27.28855	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.28855	10 27 2.833	10 26 8.37	-0.1	0
13	334 CHICAGO	4611	3	5.223589	10 33 55.947	12 3 19.50	0	0	0	159	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
14	334 CHICAGO	4611	3	5.231314	10 33 55.647	12 3 19.50	0	0	0	160	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
15	334 CHICAGO	4624	3	6.196380	10 33 23.871	12 7 26.17	0	0	0	161	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
16	334 CHICAGO	4624	3	6.203052	10 33 23.580	12 7 28.25	0	0	0	162	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
17	334 CHICAGO	4624	3	6.210778	10 33 23.329	12 7 29.82	0	0	0	163	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
18	334 CHICAGO	4635	3	7.109705	10 32 50.408	12 11 15.68	0	0	0	164	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
19	334 CHICAGO	4635	3	7.109718	10 32 50.264	12 11 17.20	0	0	0	165	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
20	334 CHICAGO	4635	3	7.116351	10 32 49.996	12 11 18.81	0	0	0	166	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
21	334 CHICAGO	4636	3	7.127712	10 32 49.529	12 11 21.77	0	0	0	167	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
22	334 CHICAGO	4636	3	7.134637	10 32 49.279	12 11 23.01	0	0	0	168	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
23	334 CHICAGO	4636	3	7.145052	10 32 49.010	12 11 24.91	0	0	0	169	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
24	334 CHICAGO	4652	3	8.106882	10 32 13.664	12 15 24.49	0	0	0	170	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
25	334 CHICAGO	4652	3	8.113208	10 32 13.495	12 15 24.49	0	0	0	171	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
26	334 CHICAGO	4652	3	8.120362	10 32 12.517	12 15 23.37	0	0	0	172	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
27	334 CHICAGO	4654	3	8.127712	10 32 14.927	12 15 24.95	0	0	0	173	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
28	334 CHICAGO	4656	3	8.198928	10 32 14.384	12 15 24.95	0	0	0	174	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
29	334 CHICAGO	4656	3	8.201854	10 32 14.151	12 15 24.95	0	0	0	175	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
30	334 CHICAGO	4656	3	8.208779	10 32 9.886	12 15 24.95	0	0	0	176	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
31	334 CHICAGO	4669	3	9.120666	10 31 36.025	12 15 24.95	0	0	0	177	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
32	334 CHICAGO	4669	3	9.127991	10 31 36.462	12 15 24.95	0	0	0	178	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
33	334 CHICAGO	4669	3	9.134117	10 31 36.226	12 15 24.95	0	0	0	179	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
34	334 CHICAGO	4680	3	10.186697	10 30 58.206	12 23 54.95	-0.1	0	0	180	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
35	334 CHICAGO	4680	3	10.192330	10 30 58.206	12 23 56.75	-0.1	0	0	181	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0	E3005	E3005	4531	2	27.312996	10 27 2.833	10 26 8.37	-0.1	0
36	334 CHICAGO	4684																										

POSITIONS OF ASTEROIDS

526 JENA	3.149022	10 34 38-325	10 17 28-40	-1	215	E3009	4.151119	10 33 55-575	11 25 34-05
526 JENA	3.155947	10 36 37-396	10 17 30-51	-1	216	E3009	4.155954	10 33 55-260	11 25 36-263
526 JENA	4.152213	10 33 53-103	10 22 45-25	-1	217	E3009	4.152213	10 33 57-663	11 31 26-63
526 JENA	4.151119	10 33 52-754	10 22 45-14	-1	218	E3009	4.151119	10 33 57-96	11 31 23-96
526 JENA	4.158664	10 33 52-022	10 22 45-25	-1	219	E3009	5.224559	10 33 7-446	11 31 31-52
526 JENA	4.158634	10 33 53-064	10 43 8-02	-1	220	E3009	6.193550	10 33 7-045	11 36 45-932
526 JENA	4.6555	10 30 53-374	10 43 11-02	-1	221	E3009	6.203652	10 32 20-503	11 36 43-932
526 JENA	4.6555	10 30 53-374	10 43 12-97	-1	222	E3009	6.210377	10 32 20-164	11 36 51-117
526 JENA	4.6555	10 30 53-556	10 43 14-02	-1	223	E3009	7.103217	10 31 37-704	11 41 40-221
526 JENA	4.6555	10 26 47-995	11 10 49-78	-1	224	E3009	7.193705	10 31 37-397	11 41 42-223
526 JENA	4.6555	10 26 47-717	11 10 51-88	-1	225	E3009	7.115651	10 31 37-071	11 41 44-31
526 JENA	4.710	10 34 48-995	10 26 47-717	-1	226	E3009	8.127712	10 31 36-520	11 41 48-18
526 JENA	4.710	10 34 49-992	10 26 47-717	-1	227	E3009	8.136337	10 31 36-216	11 41 48-18
526 JENA	4.731	10 25 31-444	11 19 19-61	-1	228	E3009	7.141563	10 31 35-899	11 41 50-646
526 JENA	4.731	10 25 31-444	11 19 21-58	-1	229	E3009	8.106282	10 30 50-416	11 46 56-96
526 JENA	4.731	10 25 31-444	11 19 23-56	-1	230	E3009	8.120328	10 30 50-127	11 46 58-96
612 ROSWITHA	4.531	2 27-29853	10 43 29-331	0-0	231	E3009	7.1909	10 30 49-796	11 47 6-77
612 ROSWITHA	4.531	2 27-29853	10 43 29-331	0-0	232	E3009	7.115651	10 30 49-042	11 47 6-32
612 ROSWITHA	4.531	2 27-29853	10 43 29-331	0-0	233	E3009	8.165534	10 30 47-687	11 47 15-92
612 ROSWITHA	4.531	2 27-29853	10 43 29-331	0-0	234	E3009	8.173459	10 30 47-771	11 47 18-222
612 ROSWITHA	4.531	2 27-29853	10 43 29-331	0-0	235	E3009	8.180185	10 30 46-552	11 47 20-337
612 ROSWITHA	4.531	2 27-29853	10 43 29-331	0-0	236	E3009	9.020866	10 30 3-123	11 52 13-67
612 ROSWITHA	4.531	2 27-29853	10 43 29-331	0-0	237	E3009	9.120133	10 30 49-796	11 47 6-77
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	238	E3009	6.6552	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	239	E3009	6.6659	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	240	E3009	6.6754	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	241	E3009	6.6854	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	242	E3009	6.695	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	243	E3009	6.7054	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	244	E3009	6.7153	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	245	E3009	6.7252	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	246	E3009	6.7351	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	247	E3009	6.7450	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	248	E3009	6.7549	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	249	E3009	6.7648	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	250	E3009	6.7747	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	251	E3009	6.7846	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	252	E3009	6.7945	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	253	E3009	6.8044	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	254	E3009	6.8143	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	255	E3009	6.8243	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	256	E3009	6.8342	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	257	E3009	6.8441	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	258	E3009	6.8540	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	259	E3009	6.8639	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	260	E3009	6.8738	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	261	E3009	6.8837	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	262	E3009	6.8936	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	263	E3009	6.9035	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	264	E3009	6.9134	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	265	E3009	6.9233	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	266	E3009	6.9332	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	267	E3009	6.9431	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	268	E3009	6.9530	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	269	E3009	6.9629	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	270	E3009	6.9728	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	271	E3009	6.9827	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	272	E3009	6.9926	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	273	E3009	7.0025	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	274	E3009	7.0124	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	275	E3009	7.0223	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	276	E3009	7.0322	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	277	E3009	7.0421	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	278	E3009	7.0520	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	279	E3009	7.0619	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	280	E3009	7.0718	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	281	E3009	7.0817	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	282	E3009	7.0916	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	283	E3009	7.101513	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	284	E3009	7.111522	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	285	E3009	7.121521	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	286	E3009	7.131520	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	287	E3009	7.141519	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	288	E3009	7.151518	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	289	E3009	7.161517	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	290	E3009	7.171516	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	291	E3009	7.181515	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	292	E3009	7.191514	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	293	E3009	7.201513	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	294	E3009	7.211512	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	295	E3009	7.221511	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	296	E3009	7.231510	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	297	E3009	7.241509	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	298	E3009	7.251508	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	299	E3009	7.261507	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1 14-7557	10 41 47-024	0-0	300	E3009	7.271506	10 30 49-796	11 52 18-15
615 ROSWITHA	4.549	1							

TABLE 1 (CONTINUED)

No	Object	Plate Date UT 1981			1950			Residuals			No Object	Plate Date UT 1981			1950			Residuals			
		Mon	Day	H M S	o	'	"	M	Mon	Day	H M S	o	'	"	M	Mon	Day	H M S	o	'	"
293	E3012	4710	3	14.03667	10	30	38.276	11	55	30.14	329	63013	4684	3	10.289195	10	29	34.101	11	27	34.05
294	E3012	4710	3	14.036592	10	30	37.893	11	55	39.93	330	63013	4684	3	10.296813	10	29	37.765	11	27	36.94
295	E3013	4559	3	14.147557	10	38	23.259	10	26	16.85	331	63013	4684	3	10.303046	10	29	37.423	11	27	39.33
296	E3013	4569	3	14.134540	10	38	22.838	10	26	19.98	332	63013	4695	3	12.155266	10	27	56.062	11	39	5.36
297	E3013	4549	3	14.161408	10	38	23.886	10	26	14.05	333	63013	4695	3	12.160111	10	27	56.810	11	35	7.34
298	E3013	4586	3	14.101196	10	37	27.382	10	33	14.05	334	63013	4695	3	12.164362	10	27	56.356	11	39	9.47
299	E3013	4566	3	14.08122	10	37	26.976	10	33	17.02	335	63035	4624	3	6.196280	10	38	3.559	12	18	52.40
300	E3013	4566	3	14.115647	10	37	26.566	10	33	20.02	336	63035	4624	3	6.203552	10	38	3.066	12	18	50.26
301	E3013	4584	3	14.122096	10	36	26.394	10	46	24.49	337	63035	4624	3	6.210177	10	38	2.621	12	18	47.66
302	E3013	4584	3	14.19422	10	36	25.981	10	46	26.96	338	63035	4635	3	7.103218	10	37	3.024	12	18	32.82
303	E3013	4594	3	14.155947	10	36	25.542	10	46	29.76	339	63035	4635	3	7.109705	10	37	2.592	12	14	30.84
304	E3013	4597	3	14.144213	10	35	27.915	10	47	15.59	340	63035	4635	3	7.116331	10	37	2.124	12	14	29.41
305	E3013	4597	3	14.131139	10	35	27.515	10	47	14.30	341	63035	4656	3	8.1194928	10	35	50.388	12	5	15.35
306	E3013	4597	3	14.138664	10	35	27.165	10	47	21.16	342	63035	4656	3	8.201654	10	35	49.938	12	5	13.03
307	E3013	4624	3	6.196580	10	33	25.127	11	1	5.35	343	63035	4656	3	8.208979	10	35	4.9385	12	5	11.18
308	E3013	4624	3	6.203852	10	33	26.757	11	1	7.77	344	63035	4670	3	9.148368	10	34	4.6161	12	4	31.23
309	E3013	4624	3	6.210777	10	33	26.395	11	1	10.96	345	63035	4670	3	9.155593	10	34	4.7708	12	4	28.43
310	E3013	4624	3	6.215218	10	32	37.365	11	7	5.31	346	63035	4670	3	9.162418	10	34	47.230	12	4	26.66
311	E3013	4635	3	7.107905	10	32	37.417	11	7	7.75	347	63035	4671	3	9.172007	10	34	4.6577	12	4	24.13
312	E3013	4635	3	7.116631	10	32	36.434	11	7	10.33	348	63035	4671	3	9.181117	10	34	4.66414	12	4	19.61
313	E3013	4636	3	7.127712	10	32	35.996	11	7	13.53	349	63035	4671	3	9.188443	10	34	4.55201	12	4	19.42
314	E3013	4636	3	7.134637	10	32	35.606	11	7	15.93	350	63035	4670	3	1C179772	10	33	4.1327	11	59	17.35
315	E3013	4636	3	7.14156	10	32	35.222	11	7	18.26	351	63035	4630	3	10.186697	10	33	4.11365	11	59	15.46
316	E3013	4652	3	8.106282	10	31	40.359	11	13	58.40	352	63035	4630	3	10.192230	10	33	4C.751	11	59	13.57
317	E3013	4652	3	8.113208	10	31	39.984	11	13	41.33	353	63035	4631	3	10.201934	10	33	4.0407	11	55	11.20
318	E3013	4652	3	8.120133	10	31	39.596	11	13	44.06	354	63035	4631	3	10.208559	10	33	39.656	11	55	8.00
319	E3013	4654	3	8.136563	10	31	38.653	11	13	49.57	355	63035	4631	3	10.215784	10	33	35.195	11	55	6.56
320	E3013	4655	3	8.166531	10	31	38.900	11	14	1.99	356	63035	4695	3	12.155266	10	31	37.694	11	46	59.45
321	E3013	4655	3	8.187345	10	31	38.501	11	14	4.68	357	63035	4695	3	12.160114	10	31	37.368	11	46	58.06
322	E3013	4655	3	8.180385	10	31	38.108	11	14	6.85	358	63035	4695	3	12.164362	10	31	37.059	11	46	56.46
323	E3013	4655	3	8.194928	10	31	35.285	11	14	11.68	359	63035	4702	3	13.094708	10	30	4C.517	11	53	5.57
324	E3013	4656	3	8.201851	10	31	34.895	11	14	14.37	360	63035	4702	3	13.103018	10	30	40.0226	11	53	52.79
325	E3013	4656	3	8.208779	10	31	34.524	11	14	16.91	361	63035	4710	3	14.076741	10	29	41.983	11	36	35.4
326	E3013	4669	3	9.120466	10	30	33.868	11	20	10.30	362	63035	4710	3	14.083367	10	29	41.98	11	36	31.72
327	E3013	4669	3	9.127791	10	30	42.956	11	20	13.02	363	63035	4710	3	14.090592	10	29	41.012	11	36	29.42

TABLE 2
DEPENDENCES

Observation	No SAO Positions used		Dependences		Observation		No SAO Positions		Dependences		
	Dependences	Dependences	Dependences	Dependences	Dependences	Dependences	Dependences	Dependences	Dependences	Dependences	
1	2	70105	13.152	"	49.38	0.5979316	0.5986443	99164	12.673	51.97	
		79255	12.998	3.47	0.3666555	0.3678885	99167	53.640	31.52	-0.0297667	
2	3	70142	4.32	-0.030161	-0.019922	40	41	4.2	9.494	21.02	
		99251	24.63	-0.025833	-0.026800	99157	55.673	38.35	0.14023	0.1455240	
3	4	70131	19.695	-0.022154	-0.020154	99162	46.530	15.32	0.146150	0.1476762	
		79251	47.81	-0.242123	-0.220987	99175	54.290	17.73	0.06704	0.069585	
3	5	70151	57.536	-0.691748	-0.387989	99107	13.933	17.55	0.342516	0.343167	
		99251	3.452	-0.691748	-0.388043	99108	4.3	4.4	-0.463061	-0.463155	
2	6	70124	26.657	-0.388462	-0.655385	99203	35.073	38.35	0.465184	0.4651662	
		99251	4.410	-0.027902	-0.019271	70303	7015	34.91	-0.039928	-0.039957	
6	7	70105	32.998	3.27	-0.225066	0.225066	99185	7023	17.71	0.536280	0.5331184
		79251	13.158	-0.225639	-0.231073	99187	15.533	17.55	0.035065	0.036870	
7	8	70124	43.362	-0.307662	-0.308613	99210	2.453	34.37	0.161602	0.1625558	
		99251	54.16	-0.465772	-0.301961	99212	4.307	21.22	0.31777	0.31777	
8	9	70105	4.410	-0.632800	-0.64202	99157	4.237	35.90	0.4697442	0.4697442	
		99251	4.407	-0.632800	-0.64202	99175	54.290	17.73	0.316775	0.316775	
9	10	70114	36.351	21.82	0.29803	0.798885	99185	53.594	34.91	-0.039928	
		79251	23.984	1.32	-0.371729	-0.371718	99187	54.290	17.71	-0.039928	
10	11	70114	27.707	-0.249151	-0.260050	99146	4.494	21.02	0.464331	0.464331	
		99251	9.918	27.952	-0.664326	-0.462061	99146	5.07568	0.704055	0.704055	
11	12	70124	55.116	-0.230996	-0.231381	99113	56.615	6.40	-0.160331	-0.160331	
		99251	52.83	-0.130556	-0.130595	99222	59.700	17.57	0.021045	0.01187	
12	13	70114	31.98	-0.330493	-0.332485	99133	37.191	1.92	0.075700	0.075907	
		99251	51.617	-0.242485	-0.333506	99133	37.191	1.92	0.075700	0.075907	
13	14	70114	9.9195	19.617	-0.130493	-0.130595	99157	4.237	35.90	0.315864	0.315864
		99251	46.516	15.82	-0.440175	-0.130595	99157	54.290	17.73	0.315864	0.315864
14	15	70114	27.955	26.27	-0.437023	-0.436676	99133	54.494	4.37	0.160331	0.160331
		99251	13.933	17.55	-0.667703	-0.668107	99175	16.091	1.82	0.040882	0.040882
15	16	70114	53.594	34.51	-0.012680	-0.014242	99141	16.091	8.71	-0.666448	-0.666448
		99251	8.912	27.70	-0.984411	-0.941616	99157	46.237	35.25	0.666106	0.666106
16	17	70114	13.933	17.55	-0.303551	-0.303651	99162	45.816	15.82	0.160331	0.160331
		99251	27.955	26.27	-0.130493	-0.130595	99141	16.091	8.71	0.437865	0.437865
17	18	70114	36.634	8.65	-0.097766	-0.097766	99162	45.816	15.82	0.095982	0.095982
		99251	32.31	9.918	-0.351573	-0.351573	99162	45.816	15.82	0.095982	0.095982
18	19	70114	6.998	32.31	-0.941701	-0.307079	99162	12.673	51.50	0.105067	0.105067
		99251	13.933	17.55	-0.515960	-0.516997	99175	54.290	17.73	0.421229	0.421229
19	20	70114	27.955	26.27	-0.204277	-0.204277	99185	16.091	8.71	0.166619	0.166619
		99251	13.933	17.55	-0.130493	-0.130595	99141	16.091	8.71	0.411270	0.411270
20	21	70114	55.334	48.04	-0.152667	-0.152667	99146	49.506	44.72	0.046608	0.046608
		99251	15.90	-0.080718	-0.080718	99162	45.816	15.82	0.095982	0.095982	
21	22	70114	27.955	26.27	-0.199182	-0.198570	99162	45.816	15.82	0.095982	0.095982
		99251	13.933	17.55	-0.094592	-0.094592	99162	45.816	15.82	0.095982	0.095982
22	23	70114	36.634	8.65	-0.351573	-0.351573	99162	45.816	15.82	0.095982	0.095982
		99251	32.31	9.918	-0.351573	-0.351573	99162	45.816	15.82	0.095982	0.095982
23	24	70114	6.998	32.31	-0.941701	-0.307079	99162	12.673	51.50	0.105067	0.105067
		99251	13.933	17.55	-0.515960	-0.516997	99175	54.290	17.73	0.421229	0.421229
24	25	70114	27.955	26.27	-0.130493	-0.130595	99141	16.091	8.71	0.166619	0.166619
		99251	13.933	17.55	-0.080718	-0.080718	99162	45.816	15.82	0.095982	0.095982
25	26	70114	55.334	48.04	-0.152667	-0.152667	99146	49.506	44.72	0.046608	0.046608
		99251	15.90	-0.080718	-0.080718	99162	45.816	15.82	0.095982	0.095982	
26	27	70114	27.955	26.27	-0.130493	-0.130595	99141	16.091	8.71	0.166619	0.166619
		99251	13.933	17.55	-0.080718	-0.080718	99162	45.816	15.82	0.095982	0.095982
27	28	70114	6.998	32.31	-0.941701	-0.307079	99162	12.673	51.50	0.105067	0.105067
		99251	13.933	17.55	-0.515960	-0.516997	99175	54.290	17.73	0.421229	0.421229
28	29	70114	27.955	26.27	-0.130493	-0.130595	99141	16.091	8.71	0.166619	0.166619
		99251	13.933	17.55	-0.080718	-0.080718	99162	45.816	15.82	0.095982	0.095982
29	30	70114	55.334	48.04	-0.152667	-0.152667	99146	49.506	44.72	0.046608	0.046608
		99251	15.90	-0.080718	-0.080718	99162	45.816	15.82	0.095982	0.095982	
30	31	70114	6.998	32.31	-0.941701	-0.307079	99162	12.673	51.50	0.105067	0.105067
		99251	13.933	17.55	-0.515960	-0.516997	99175	54.290	17.73	0.421229	0.421229
31	32	70114	27.955	26.27	-0.130493	-0.130595	99141	16.091	8.71	0.166619	0.166619
		99251	13.933	17.55	-0.080718	-0.080718	99162	45.816	15.82	0.095982	0.095982
32	33	70114	6.998	32.31	-0.941701	-0.307079	99162	12.673	51.50	0.105067	0.105067
		99251	13.933	17.55	-0.515960	-0.516997	99175	54.290	17.73	0.421229	0.421229
33	34	70114	27.955	26.27	-0.130493	-0.130595	99141	16.091	8.71	0.166619	0.166619
		99251	13.933	17.55	-0.080718	-0.080718	99162	45.816	15.82	0.095982	0.095982
34	35	70114	6.998	32.31	-0.941701	-0.307079	99162	12.673	51.50	0.105067	0.105067
		99251	13.933	17.55	-0.515960	-0.516997	99175	54.290	17.73	0.421229	0.421229
35	36	70114	55.334	48.04	-0.152667	-0.152667	99141	49.506	44.72	0.046608	0.046608
		99251	15.90	-0.080718	-0.080718	99162	45.816	15.82	0.095982	0.095982	
36	37	70114	6.998	32.31	-0.941701	-0.307079	99162	12.673	51.50	0.105067	0.105067
		99251	13.933	17.55	-0.515960	-0.516997	99175	54.290	17.73	0.421229	0.421229
37	38	70114	27.955	26.27	-0.130493	-0.130595	99141	16.091	8.71	0.166619	0.166619
		99251	13.933	17.55	-0.080718	-0.080718	99162	45.816	15.82	0.095982	0.095982
38	39	70114	6.998	32.31	-0.941701	-0.307079	99162	12.673	51.50	0.105067	0.105067
		99251	13.933	17.55	-0.515960	-0.516997	99175	54.290	17.73	0.421229	0.421229

TABLE 2 (CONTINUED)

		Observation No		SAO Positions		Dependences Used		Observation No		SAO Positions		Dependences		
77	78	99195	19-617	17-05	-0.271130	0.265867	163	164	165	99271	54-16	0.188941	0.189188	
		99146	49-506	44-72	-0.011303	1-0.012877				99271	53-340	0.188934	0.189172	
		99157	46-237	35-90	-0.566635	-0.564425	-0-061257	-0-061270		7006	3-27	0.194172	0.194192	
		99162	46-556	15-82	-0-061090	-0-061257	-0-061270			99211	13-150	0-636838	0-637215	
		99164	12-673	51-97	-0-378897	-0-378297	-0-377903			99214	4-330	0-171056	0-175778	
80	81	99132	33-158	49-506	-0.011287	-0.011686	166	167	168	99274	4-410	0-42238	0-422015	
		99146	49-506	44-72	-0-012528	-0-012715				99274	52-83	-0-077780	-0-079624	
		99167	53-680	31-58	-0-011287	-0-115448	-0-116869			7010	36-301	-0-012258	-0-040130	
		99162	46-556	15-82	-0-611528	-0-611652	-0-611634			99214	4-407	-0-142549	0-144610	
		99164	12-673	51-97	-0-291323	-0-291323	-0-290758			99193	8-912	0-144610	0-144605	
83	84	99167	53-680	31-58	-0-402675	-0-016866	-0-000406			99214	4-410	0-343933	0-343933	
		99268	26-668	49-19	-0-052089	-0-049097	169	170	171	99193	52-83	0-150629	0-149155	
		99271	43-310	54-16	-0-003120	-0-010307				99193	9-912	0-224149	0-226011	
		99272	46-327	16-65	-0-108497	-0-110190				99195	19-617	0-161929	0-165538	
		99279	5-529	6-70	-0-362035	-0-330024				99198	27-955	0-59265	0-588335	
85	86	99285	58-694	55-33	-0-516777	-0-509721	172	173	174	99214	4-410	0-053122	0-053100	
		99257	38-780	3-17	-0-038216	-0-037185	-0-036229			99193	8-912	-0-053734	-0-053746	
		99265	41-667	46-70	-0-158422	-0-152785	-0-151964			99197	53-680	0-05616	0-05582	
		99251	13-452	4-80	-0-090057	-0-096224	-0-095534			99162	46-596	0-066030	0-066559	
		99268	26-667	49-19	-0-528903	-0-528311	-0-527899			99198	21-955	0-29249	0-290668	
88	89	99271	46-127	16-65	-0-459498	-0-452114	-0-505920	175	176	177	99187	13-933	0-275084	0-276460
		99251	3-552	4-80	-0-146999	-0-151057	-0-152920			99214	4-407	0-5511	0-551112	
		99257	38-780	3-17	-0-177366	-0-178269	-0-178700			99193	8-912	0-012118	0-011665	
		99268	26-667	49-19	-0-211574	-0-211446	-0-211404			99187	13-933	0-566858	0-566819	
		99271	43-340	54-16	-0-216670	-0-216470	-0-216350			99198	19-617	0-275442	0-272093	
91	92	99271	46-127	16-65	-0-245021	-0-245056	-0-244950	176	179	180	99162	46-596	0-066030	0-066559
		7010	36-301	21-82	-0-246420	-0-243557	-0-244931			7011	38-634	0-046030	0-046030	
		99251	7030	57-334	-0-636997	-0-366449	-0-366449			99162	21-955	0-29249	0-290668	
		7014	23-984	47-81	-0-216565	-0-215229	-0-211908			99162	13-933	0-275084	0-276460	
		99214	4-407	52-83	-0-145995	-0-147873	-0-146367			99193	3-912	0-425752	0-425752	
		99251	38-780	3-17	-0-054642	-0-124638	-0-125755			99193	9-912	0-031022	0-031022	
94	95	99205	4-410	55-11	-0-082905	-0-083281	-0-083559	184		99164	51-673	0-031025	0-031025	
		99205	4-407	52-83	-0-087407	-0-087205	-0-089554			99167	53-680	0-028559	0-028559	
		99214	4-410	52-83	-0-244805	-0-244720	-0-244505	181	182	183	99141	16-619	0-046030	0-046030
		7005	32-996	3-27	-0-244805	-0-244720	-0-244505			99157	8-71	0-046030	0-046030	
		99251	13-158	49-88	-0-092829	-0-090669	-0-090952			99162	8-65	0-051100	0-051100	
		7014	23-984	4-80	-0-731423	-0-729525	-0-727701	185	186	187	99162	15-92	0-321526	0-321526
100	101	99214	21-82	0-203692	-0-200992	-0-200827			7004	35-073	0-559402	0-540356		
		7014	23-984	1-32	-0-350333	-0-330836	-0-3315161			99164	12-673	0-040767	0-040772	
		99205	4-410	55-11	-0-256196	-0-256044	-0-256985			99167	51-673	0-040767	0-040772	
		99251	3-452	4-80	-0-175523	-0-175182	-0-176095			99167	31-58	0-040767	0-040772	
103	104	99251	3-452	4-80	-0-023348	-0-021953	-0-021953	187	188	189	99195	19-617	0-040767	0-040772
		99185	56-301	58-50	-0-131899	-0-132032	-0-132032			99162	46-237	0-231526	0-231526	
		7013	21-82	0-200827	-0-200827	-0-200827			99162	46-586	0-231526	0-231526		
		99214	4-407	52-83	-0-082873	-0-083209	-0-083209			99175	50-290	0-035987	0-035987	
		99245	58-771	52-83	-0-100109	-0-099649	-0-099115			99167	51-673	0-035987	0-035987	
		99251	3-452	4-80	-0-248030	-0-247443	-0-246877			99186	43-494	0-112781	0-112781	
106	107	99193	3-912	27-70	-0-269666	-0-269111	-0-268722	190	191	192	99157	35-90	0-169977	0-169977
		99193	3-912	27-70	-0-023348	-0-021953	-0-021953			99162	46-237	0-231526	0-231526	
		99205	21-82	0-108449	-0-105271	-0-105270			99162	46-586	0-231526	0-231526		
		99214	4-407	52-83	-0-084949	-0-085661	-0-085661			99175	50-290	0-035987	0-035987	
		7014	23-984	1-32	-0-043346	-0-182121	-0-180821			99186	51-673	0-035987	0-035987	
		7011	36-301	21-82	-0-092424	-0-091408	-0-092022	193	194	195	99133	31-58	0-118121	0-118121
		99193	3-912	27-70	-0-408268	-0-409111	-0-409511			99133	37-101	0-035987	0-035987	
		7011	23-984	1-32	-0-059595	-0-058909	-0-058922			99146	49-506	0-046030	0-046030	
		99205	21-82	0-106771	-0-105961	-0-105961			99157	46-237	0-231526	0-231526		
		7013	36-301	21-82	-0-193115	-0-192519	-0-191813			99162	46-586	0-231526	0-231526	
		99214	4-407	52-83	-0-084949	-0-085661	-0-085661			99175	50-290	0-035987	0-035987	
		7013	6-999	32-31	-0-259116	-0-256656	-0-256656			99186	43-494	0-118121	0-118121	
		99251	23-984	1-32	-0-043346	-0-182121	-0-180821			99133	37-101	0-035987	0-035987	
		7014	23-984	1-32	-0-092424	-0-091408	-0-092022			99146	49-506	0-046030	0-046030	
		99193	8-912	27-70	-0-601549	-0-60705	-0-605772			99157	46-237	0-231526	0-231526	
		99214	4-407	52-83	-0-248527	-0-246355	-0-246165			99162	46-586	0-231526	0-231526	
		7010	36-301	21-82	-0-106771	-0-105961	-0-105961			99175	50-290	0-035987	0-035987	
		112	113	114	112	113	114	196	197	198	99104	18-701	0-046030	0-046030
		99193	6-999	32-31	-0-153127	-0-153127	-0-153127			99113	16-613	0-046030	0-046030	
		99193	19-617	17-05	-0-366905	-0-367505	-0-366801			99113	25-643	0-118121	0-118121	
		99193	27-955	26-27	-0-376877	-0-376877	-0-376877			99122	59-706	0-371175	0-371175	
		99214	4-407	52-83	-0-210644	-0-210644	-0-210644			99133	17-191	0-118121	0-118121	
		7009	30-285	21-456	-0-744024	-0-744024	-0-744024			99146	18-701	0-046030	0-046030	
		99214	44-407	52-83	-0-210644	-0-210644	-0-210644			99157	18-701	0-046030	0-046030	
		7009	30-285	21-456	-0-744024	-0-744024	-0-744024			99162	18-701	0-046030	0-046030	

POSITIONS OF ASTEROIDS

25

9162	45.586	15.82	-0.142256	-0.141576	-0.140870
99164	12.673	51.97	0.359766	0.359698	0.356331
99167	13.933	17.55	C.301712	C.301497	C.301236
703	35.073	16.35	C.20199	C.20593	205 206 207
7035	53.594	34.91	-0.109653	-0.108551	9906
99175	54.290	17.73	0.284411	0.283761	9914
99178	13.933	17.55	0.037733	0.036801	9951
99210	22.453	34.07	-0.031733	-0.030691	9971
7039	30.285	21.46	0.555659	0.555931	C.555139
7015	33.594	34.91	C.179606	C.178706	7005
99162	46.396	15.82	0.488830	0.490679	C.177613
99164	12.673	51.97	C.059116	C.059139	9906
99167	53.693	31.52	-0.165958	-0.165591	C.165575
99174	16.639	8.71	0.08972	0.082244	C.091755
99162	46.396	15.82	0.282111	0.282161	7014
99164	12.673	51.97	C.454867	C.454884	C.053934
99175	54.290	17.73	C.053333	C.054226	C.054213
99165	23.113	58.91	C.301563	C.301275	214 215 216
99141	16.009	8.71	0.032336	0.005554	9915
99145	49.376	44.70	-0.106446	-0.107382	99198
99162	46.396	15.82	0.230196	0.237912	9906
99167	53.680	31.58	0.371156	0.368933	99214
99175	54.290	17.73	0.281143	0.280724	217 218 219
99230	17.825	26.50	0.285139	0.286099	0.287558
99240	13.051	30.76	-0.041179	-0.039391	0.037729
99242	32.025	2.09	0.584799	0.582670	99195
99257	38.780	3.17	-0.065636	-0.065593	99198
99265	41.447	24.76	0.231078	0.233224	220 221 222
99230	17.825	26.50	C.433162	C.433538	0.040849
99240	13.851	30.76	0.205150	0.204105	0.205755
99242	32.025	2.09	0.408320	0.407530	0.406744
99257	38.780	3.17	-0.086666	-0.087663	0.088113
99260	54.593	15.26	0.036415	0.036499	0.034764
99214	44.407	21.82	-0.264954	-0.264334	0.265257
99230	17.825	26.50	0.367493	0.368861	0.370764
99240	13.851	30.76	0.168028	0.144926	0.147610
99242	32.025	2.09	C.249338	C.248648	C.247991
99251	3.452	4.80	0.004798	0.004101	0.003780
99242	32.025	2.09	0.408320	0.407530	0.406744
99257	38.780	3.17	-0.192871	-0.192616	0.192616
99260	54.593	15.26	-0.405347	-0.404563	0.404824
99214	44.407	21.82	-0.055933	-0.055623	0.055853
99230	17.825	26.50	0.454047	0.454266	0.454709
99240	13.851	30.76	0.168028	0.144926	0.147610
99242	32.025	2.09	0.249338	0.248648	0.247991
99251	3.452	4.80	-0.181205	1.020215	1.020213
7015	25.035	4.80	0.181205	1.020215	1.020213
7015	53.594	34.91	1.020363	-0.181764	-0.180282
99193	8.912	27.76	-0.493316	-0.449117	-0.448566
99206	4.410	55.11	0.127068	0.125328	0.125523
99214	44.407	52.83	0.485108	0.483728	0.482296
99162	43.345	25.90	C.174024	C.174786	0.174796
99164	53.693	31.58	C.115680	C.117478	0.117488
99167	54.290	10.95	0.208966	0.207338	0.207353
99168	43.345	13.14	-0.231634	-0.246855	0.241177
99193	13.617	14.05	0.257101	0.256110	0.255481
7001	7.083	14.05	0.362903	0.327903	0.327903
7002	29.392	46.29	0.636564	0.635785	0.635785
99164	49.316	44.72	0.315017	-0.311694	0.311694
99164	12.673	51.97	0.104168	0.103711	0.103711
99167	12.673	51.97	0.244295	0.244295	0.244295
99168	7.093	14.05	0.805026	0.602268	0.030356
99112	33.158	20.97	C.011680	C.012947	C.011684
99146	49.506	44.72	C.121701	C.121052	C.121075
99162	46.598	15.82	-0.143818	-0.144013	0.144013
99164	12.673	51.97	0.448813	0.447660	0.446688
99167	12.673	51.97	0.715127	0.716119	C.716119
99168	12.673	51.97	0.250238	-0.250238	C.250238
99169	51.97	0.538500	0.535639	0.536955	
99177	10.495	56.25	-0.035993	-0.034482	-0.035093
99180	43.728	13.14	0.038082	C.029863	C.029321
7006	13.158	49.88	0.159448	0.161424	0.161424
7005	32.996	3.27	0.331285	0.333306	0.333306
99251	3.452	4.80	0.494625	0.495641	0.495641
7031	19.695	24.63	0.270286	0.269063	0.269063
7030	57.634	47.81	0.261644	0.265336	0.265336
7010	36.301	21.82	C.310016	C.310136	C.310136
99206	4.410	55.11	0.447081	0.448470	0.448470
99214	44.407	52.83	0.207626	-0.207566	-0.207566
99231	3.452	4.80	-0.155664	-0.155806	-0.155806

TABLE 2 (CONTINUED)

Observation	No SAO	Positions used	Dependences			Observation	No SAO	Positions used	Dependences						
			No	SAO	Dependences										
248 249 250	99162	46.586	15.82	0.334173	C+332720	507	503	309	7916	44.21	-C+068146	C+11708	C+420058		
	99141	16.609	8.71	0.771319	0.192253	0.192324	7015	53.594	34.21	0.419888	-0.056807	-0.054655			
	99162	46.586	15.82	0.192461	0.192253	0.192324	7015	d.912	27.76	-C+068789	-C+026524	-C+053344			
	99164	12.673	51.97	-0.011603	-0.012443	-0.012605	99193	d.912	55.11	-C+249114	-C+248410	-C+277856			
	99173	54.290	17.73	0.211750	0.212765	0.210863	99214	4.407	52.33	-C+266412	-C+251514	-C+438955			
251 252 253	99185	28.108	58.50	-0.170433	-0.171345	-0.171911	510	311	312	7003	54.89	41.6C	C+51733	C+515364	
	99104	13.401	3.20	-0.109100	C+110221	C+111235	99198	27.935	21.46	C+152563	C+156465	C+16225			
	99115	25.643	27.01	-0.162553	-0.162968	-0.169268	99206	4.410	26.27	-C+276531	-C+276532	-C+77282			
	99133	37.191	1.82	C+24022	C+243078	C+243022	99214	4.407	55.11	C+32516	C+131761	C+10961			
	99141	16.619	6.71	0.454597	0.454560	0.454565	99214	4.407	52.93	C+277834	C+276695	C+25446			
	99157	46.237	35.90	0.362130	0.361340	0.360476	313	314	315	99162	45.82	41.43	C+142269	C+141389	C+145622
254 255 256	99257	38.70	3.17	-0.121327	-0.120352	-0.119454	99162	4.407	51.82	51.97	C+391422	C+381526	C+313855		
	99265	41.647	24.70	0.092026	0.089337	0.088637	99187	13.933	17.55	-C+489233	-C+488751	-C+48171			
	99281	3.452	4.80	-0.153068	-0.150888	-0.148828	99193	9.912	27.70	C+561347	C+561501	C+565501			
	99263	26.647	49.15	0.686530	0.685645	0.685192	99195	19.617	17.35	C+638200	C+637266	C+633339			
	99272	4.8127	16.65	0.498059	0.496038	0.494253	7002	29.392	46.25	C+20824	C+208752	C+289595			
	7010	36.301	2.32	0.268220	0.270038	0.271953	7016	25.203	44.82	0.616664	C+413932	C+413932			
260 261 262	99251	3.432	4.90	C+33673	C+335614	C+336754	7015	53.598	34.41	C+257104	C+252661	C+255659			
	7030	57.614	47.81	0.581645	0.579333	0.577045	7016	12.673	51.87	-C+026331	C+252600	C+252600			
	7031	19.635	24.63	0.239190	0.238070	0.237065	7008	54.803	41.6C	C+277827	C+277827	C+277827			
	7031	5.432	3.17	0.091261	0.091140	0.092241	99195	19.617	17.05	C+7397	C+7397	C+7397			
	7031	26.647	49.19	C+279754	C+279657	C+279577	99197	26.122	17.95	C+127575	C+127575	C+127575			
	99263	43.340	54.16	0.309168	0.30925	0.308927	7002	29.382	46.29	-C+041693	C+041184	C+041184			
	99271	13.401	2.31	0.236139	0.233915	0.231813	99167	53.680	31.58	-C+011184	C+011184	C+011184			
	7010	57.614	47.81	0.268220	0.270038	0.271953	7015	53.598	34.41	C+257104	C+257104	C+257104			
	7010	23.934	52.43	0.172077	0.172202	0.172654	99185	28.108	58.50	C+27503	C+27503	C+27503			
	7014	23.934	52.43	-0.592190	-0.299068	-0.289582	99195	9.617	17.05	C+298961	C+298961	C+298961			
266 267 268	99251	4.407	52.83	0.025194	0.026445	0.026269	39166	43.365	25.9C	C+025263	C+025159	C+025118			
	7005	32.935	3.17	0.141719	-0.113947	-0.113656	99167	51.630	31.58	C+223716	C+223716	C+223734			
	99193	13.153	49.32	C+151817	C+152125	C+152371	99177	10.495	56.4C	C+155509	C+155509	C+153332			
	99251	35.432	4.38	0.69986	0.697921	0.696133	99180	4.728	13.14	C+117312	C+117312	C+115555			
	99251	2.384	1.32	0.523868	0.522714	0.522514	99162	4.508	15.82	C+117119	C+117119	C+120497			
	7014	23.984	5.32	0.348451	0.347314	0.343376	99162	4.508	15.82	C+125360	C+125360	C+125360			
	99251	3.452	4.80	C+257161	C+256777	C+256423	99167	53.680	31.58	C+151373	C+151373	C+151373			
	7014	56.101	21.82	C+257162	C+256777	C+256423	99187	13.933	51.87	C+173547	C+173547	C+173547			
	7014	2.384	1.32	0.432898	0.433403	0.433943	99193	8.912	27.70	C+543781	C+543781	C+543781			
	99206	4.410	55.11	C+032444	C+032818	C+033192	99193	4.407	52.33	C+593570	C+593570	C+593570			
	99214	4.407	52.83	C+000739	-0.000688	-0.000548	99206	4.407	52.33	C+593670	C+593670	C+593670			
	99251	3.452	4.80	0.098612	-0.020863	-0.022159	329	330	331	58.671	24.98	-C+580388			
272 273 274	99185	2.384	1.32	0.523868	0.522714	0.522514	99251	3.452	4.8C	C+030703	C+030042	C+0247473			
	99206	4.410	55.11	C+132056	C+132235	C+132235	7002	29.392	46.29	C+033132	C+030392	C+020846			
	99214	4.407	52.83	C+23475	C+234958	C+235195	99146	4.9508	44.12	-C+147716	-C+147716	-C+144431			
	99214	4.407	52.83	C+23476	C+234958	C+235195	99167	5.6137	51.87	C+113130	C+113130	C+113130			
	99245	58.671	24.48	0.171663	0.171100	0.171100	99167	53.680	31.58	C+512632	C+512632	C+512634			
	99251	5.452	4.80	0.255335	0.254817	0.254289	332	333	334	7001	27.955	14.08			
	99193	27.70	5.912	C+568716	C+568971	C+568375	99146	4.910	55.11	C+026724	C+026724	C+026616			
	99193	27.70	5.912	C+561079	C+561187	C+561187	99162	4.9508	44.12	C+010316	C+010316	C+010316			
	99206	4.410	55.11	C+17781	C+178142	C+171781	99162	4.9508	44.12	C+421076	C+421076	C+421076			
	99214	4.407	52.83	C+132056	C+131626	C+131626	99167	5.6137	51.87	C+422093	C+422093	C+422093			
	99214	4.407	52.83	C+23475	C+234958	C+235195	99167	5.6137	51.87	C+220011	C+220011	C+220011			
	7013	21.402	4.80	0.254572	0.254932	0.254535	99245	3.0212	27.70	C+027212	C+027212	C+027212			
	7013	36.331	21.402	C+23476	C+234958	C+235195	99193	7.031	14.08	C+010736	C+010736	C+010736			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	35.158	20.97	-C+103136	-C+103136	-C+103136			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+026724	C+026724	C+026616			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+010316	C+010316	C+010316			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+026724	C+026724	C+026616			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+010316	C+010316	C+010316			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+026724	C+026724	C+026616			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+010316	C+010316	C+010316			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+026724	C+026724	C+026616			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+010316	C+010316	C+010316			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+026724	C+026724	C+026616			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+010316	C+010316	C+010316			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+026724	C+026724	C+026616			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+010316	C+010316	C+010316			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+026724	C+026724	C+026616			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+010316	C+010316	C+010316			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+026724	C+026724	C+026616			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+010316	C+010316	C+010316			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+026724	C+026724	C+026616			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+010316	C+010316	C+010316			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+026724	C+026724	C+026616			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+010316	C+010316	C+010316			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+026724	C+026724	C+026616			
	7013	21.402	4.80	C+23476	C+234958	C+235195	99193	7.031	14.08	C+010316	C+010316	C+0			

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