PR 89-45
VOLUME 3

REPORT

Gravity Survey
on
E.P. 18 Northern Territory

prepared for Salient Geophysics
by S. Gunson

ONSHORE

89/045C

CONTENTS

1. Introduction

This report presents a description of the operations and, the results of a detailed gravity survey of part of the "Tanumbirini" 1 : 250,000 sheet lying within EP 18.

The purpose of the survey was to detect any gravity indications that might arise from sub-surface structures of significance to oil prospecting on EP 18. A. Flavelle of Salient Geophysics, had discerned from B.M.R. data along the Carpentaria Highway, a small (≈2 milligal) positive gravity anomaly on the general regional background of about -40 milligals. In conjunction with the gravity trends evident in the B.M.R. survey (regional) it was expected, that this local "high" would trend northwest from its highway intersection and that it might be of structural signifigance.

To investigate this possibility, a detailed gravity survey was proposed and initiated by Salient Geophysics. Station spacings would be comparable to existing B.M.R. detail work along the Carpentaria Highway, i.e. nominally 200m and traverses would be run on any existing tracks or cleared fence lines in, or close to the area.

2. Operations

The measuring and pegging of the traverse lines were done by N. and M. Larkins of Salient Geophysics during September and October 1988. Distances were measured using a belt chain which appeared to develop an error of up to +5%. Because the ends of lines were tied to known features, there is no error in the plotted results from this source. Levelling of the survey lines was done by a surveyor from Daly Waters from 14/10/88 to 23/10/88.

The gravity meter used for the survey was La Coste and Romberg, G616, hired from P & V Geophysics, Perth. The meter was taken to the area by the writer of this report (S. Gunson). It arrived on 16/9/88 and was prepared for use on 17/9/88.

I stayed in the area until 21/9/88 and during this time instructed the Larkins in the care and use of the gravity meter and also in good field practice with respect to loop closures and drift or jump control. After my departure, the Larkins completed the survey.

It became obvious from the first day that there could be problems holding the meter at its correct temperature of 47.8°C. With ambient "shade" temperatures of 35–38°C, radiant heat from the ground soon heated the meter and its case above the operating temperature. To overcome this, gravity readings were made at night.

The gravity measurements were completed on 18/10/88.

The distribution of tracks was such that the survey can be divided into two separate areas nominated 8801 and 8802.

8801 (Figure 1.) is a simple west-east line crossing the Stuart Highway about 45km south of Daly Waters and 1km north of the Buchanan Highway. The line starts 7km west of the Stuart Highway and finishes 28km east of the highway. Gravity values on this line are tied to B.M.R. 8011. 8648 on the Stuart Highway.

8802 (Figure 1.) is a network of five loops to the north of the Carpentaria Highway. The point A is 35km east of the Stuart Highway. Gravity values in this area are tied to B.M.R. 8011.8924 on the Carpentaria Highway.

3. Accuracy

The gravity meter had a reading limit of ±0.005 milligal but, from my observation of the operators and from duplicated readings, I would take the uncertainty of individual observations to not exceed ±0.4 milligal. In this context, errors arising from levelling will be negligible (±1cm→±0.02 milligal).

I quote the result of tying the survey areas 8801 and 8802 together:

	Δg(BMR)	Δg(Salient)
BMR 8011.8924		
	+14.00mgal	+14.04mgal
BMR 8011.8648		

4. Processing

The observed gravity values have been adjusted for tides, drift and closure errors. They have been converted to Bouguer anomalies on the same basis as the B.M.R. data using a Bouguer density of $2.67tm^{-3}$. Elevation changes in the region are not great and if a density of, say, $2.2tm^{-3}$ were used the forms of any anomalies would hardly be affected, although their base level would change by about 5 milligal.

Principal facts for all the observations are attached to this report (appendix.A). They are fully compatible with the B.M.R. tabulation with which I was provided.

5. Results

(a) 8801 area: The Bouguer anomalies for this area are presented as a simple profile in Figure 2.

(b) 8802 area: The Bouguer anomalies for this area are presented as a contour plan in Figure 3. This plan also incorporates nearby B.M.R. data along the Carpentaria Highway.

6. Discussion of Results

(a) 8801 area: The gravity variations along this line are entirely in agreement with the regional pattern disclosed by the B.M.R. regional gravity survey. There do not appear to be any variations of significance to the detailed structure of the sedimentary basin. These results will not be further discussed.

(b) 8802 area: The contours of this area show, to the north west, a nearly circular gravity high of about 10 milligal amplitude with a flat spur of 3 milligal amplitude trending south east of the survey area. The anomaly in the B.M.R. highway values which provoked this survey (see Introduction) is actually the flank of this spur as it approaches the highway.

It is possible to make some estimates concerning the structure responsible for the flat spur.

From its amplitude we can deduce the least thickness of the body as 75m divided by the density contrast (assumed uniform). Thus for a density contrast of $0.4tm^{-3}$ we get a least thickness of 190m, whereas a contrast of $0.5tm^{-3}$ would imply a least thickness of 1,500m.

The application of Smith's rules for a two dimensional body to the north easterly flank of the spur gives a maximum depth to the top of the causative body of 800m.

The curve from which these figures were obtained is displayed in Figure 4. This profile is particularly suitable for such calculations. I am not able to express these results in geological terms without more information.

As far as the large high to the north west is concerned, it appears to be more deep-seated and can not be analysed without regional removal.

7. Conclusions

The gravity survey has been successful in defining the gravity anomaly observed along the highway.

8. Recommendation

Treating this present report and analysis as preliminary, I would recommend further analysis and study of the area by setting it in the regional gravity context and obtaining any other information such as aeromagnetic survey data and whatever geological contral data might be available.

(S. GUNSON)
FAusIMM, MAIP

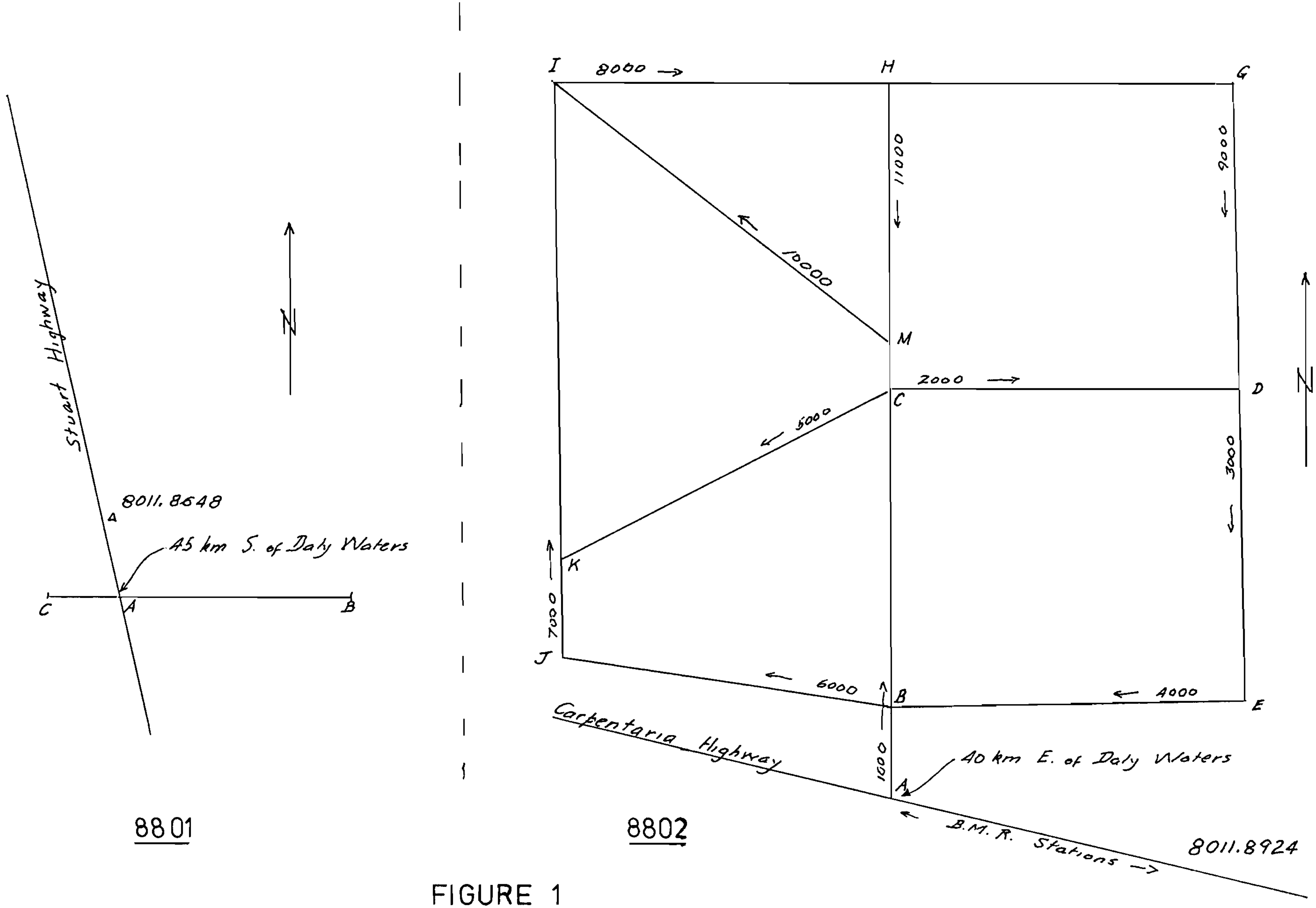

FIGURE 1

Traverse locations

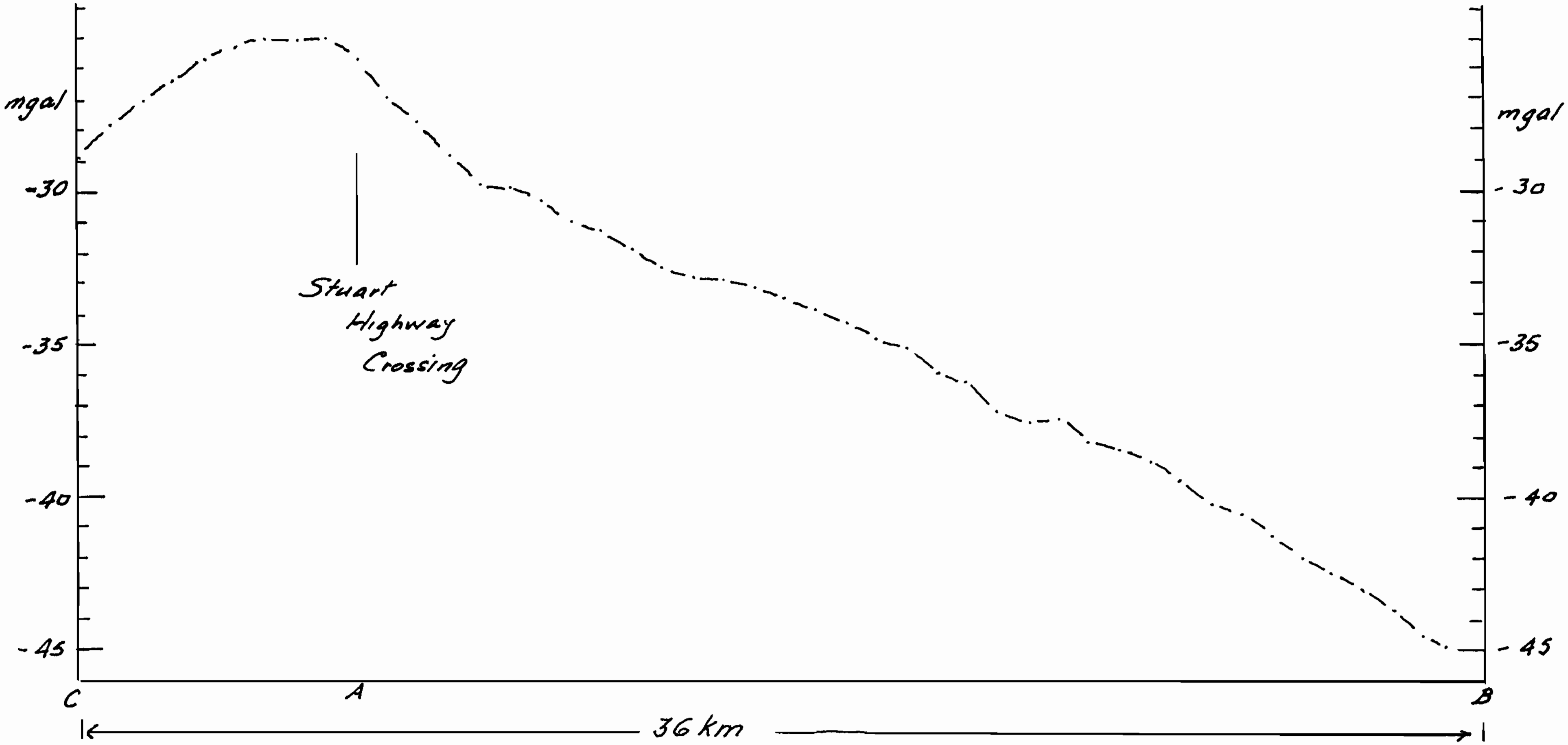

FIGURE 2

Gravity profile — 8801 area

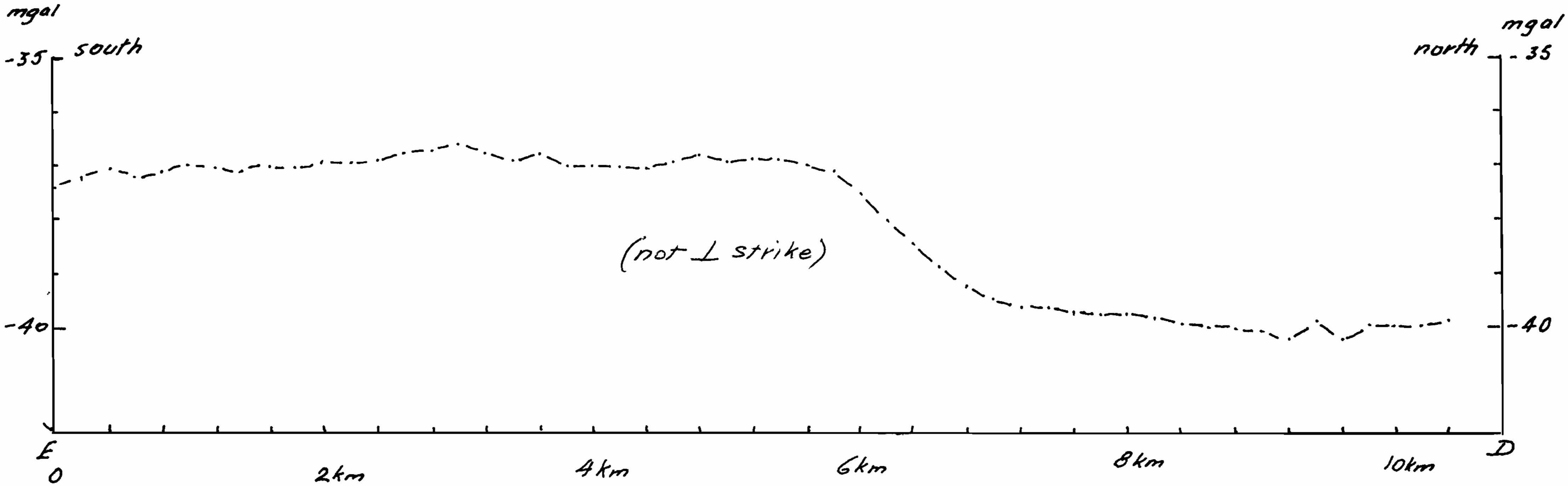

FIGURE 4

Gravity profile — 8802 area

APPENDIX A

EP - 18

Gravity data - 22 pages

Unless otherwise indicated
all station intervals are 200m

8802

Station	g_0	B.A.	h	λ	φ
6302 –	978,			133.	16.
(8011) 8924	368.87	-41.87	227.20	.760830°	.312332°
8802 ( ) 1000	371.27	-38.01	231.19	.7048	.2982
1002	371.16	-37.80	231.78	.7049	.2964
1004	371.30	-37.76	231.39	.7049	.2946
1006	371.34	-37.13	231.48	.7050	.2827
1008	371.40	-37.43	231.63	.7051	.2909
1010	371.25	-37.22	233.04	.7052	.2891
1012	370.87	-37.20	234.65	.7052	.2873
1014	370.99	-36.98	234.66	.7053	.2854
1016	371.27	-36.92	233.11	.7054	.2836
1018	371.31	-36.81	233.02	.7055	.2818
1020	371.42	-36.78	232.16	.7055	.2800
1022	371.68	-36.61	231.27	.7056	.2782
1024	371.66	-36.67	230.59	.7057	.2763
1026	371.65	-36.61	230.50	.7058	.2745
1028	371.66	-36.52	230.49	.7058	.2727
1030	371.68	-36.28	231.15	.7059	.2709
1032	371.34	-36.46	231.51	.7060	.2690
1034	371.19	-36.63	230.97	.7060	.2672
1036	370.99	-36.67	231.33	.7061	.2654
1038	370.80	-36.73	231.56	.7062	.2636
1040	370.76	-36.57	232.13	.7063	.2618
1042	370.50	-36.45	233.61	.7063	.2599
1044	370.01	-36.39	235.96	.7064	.2531
1046	369.62	-36.32	237.84	.7065	.2563
1048	369.73	-36.03	238.32	.7066	.2545
1050	369.67	-35.74	239.62	.7066	.2526
1052	369.30	-35.64	241.58	.7067	.2508
1054	369.36	-35.45	241.82	.7068	.2490
1056	978, 369.52	-35.10	242.31	133 .7069	16 .2472

8802

Station	g_o	B.A.	h.	λ	φ
1058	978,368.91	-34.98	245.57	133.7069	16.2453
1060	368.68	-34.76	247.41	.7070	.2435
1062	368.41	-34.69	248.72	.7071	.2417
1064	368.07	-34.63	250.33	.7072	.2399
1066	368.11	-34.42	250.75	.7072	.2381
1068	368.74	-34.04	249.00	.7073	.2362
1070	369.11	-33.77	248.06	.7074	.2344
1072	369.10	-33.69	248.08	.7074	.2326
1074	368.68	-33.72	249.58	.7075	.2308
1076	368.67	-33.62	249.68	.7076	.2289
1078	368.67	-33.47	250.03	.7077	.2271
1080	368.32	-33.42	251.61	.7077	.2253
1082	367.82	-33.41	253.78	.7078	.2235
1084	367.64	-33.26	254.98	.7079	.2217
1086	367.33	-33.20	256.40	.7080	.2198
1088	367.08	-33.06	257.96	.7080	.2180
1090	367.17	-32.87	258.02	.7081	.2162
1092	367.51	-32.70	256.71	.7082	.2144
1094	367.67	-32.69	255.50	.7083	2125
1096	368.02	-32.56	253.93	.7083	.2107
1098	368.05	-32.50	253.65	.7084	.2089
1100	367.73	-32.49	254.88	.7085	.2071
1102	367.39	-32.48	256.20	.7085	.2053
1104	367.18	-32.40	257.22	.7086	.2034
1106	368.24	-32.13	252.74	.7087	.2016
1108	368.73	-32.07	250.14	.7088	.1998
1110	369.26	-31.85	248.10	.7088	.1980
1112	369.55	-31.75	246.66	.7089	.1961
235m					
(c 2000	978,369.75	-31.69	245.43	133.7090	16.1940
				133.7090	16.1940

8802

Station	g	BA	h	λ	φ
(i) 2000	978,369.75	-31.69	245.43	133.7090	16.1940
2002	369.44	-31.85	246.24	.7110	.1940
2004	368.90	-32.08	247.81	.7130	.1940
2006	368.67	-32.13	248.70	.7149	.1940
130m 2008	368.57	-32.21	248.83	.7162	1941
2010	368.11	-32.50	249.69	.7182	.1941
2012	367.43	-32.85	251.37	.7202	.1941
2014	366.65	-33.16	253.75	.7222	.1941
2016	365.28	-33.65	* 258.27	.7242	.1941
2018	363.05	-34.03	* 267.65	.7262	.1941
2020	362.85	-34.26	267.52	.7281	.1941
2022	363.09	-34.42	265.51	.7301	.1942
2024	363.09	-34.74	263.89	.7321	.1942
2026	363.31	-34.80	262.44	.7341	.1942
2028	362.88	-35.10	263.14	.7361	.1942
2030	362.56	-35.39	263.26	.7380	.1942
2032	362.53	-35.49	262.89	.7400	.1942
2034	362.29	-35.88	262.14	.7420	.1942
2036	362.10	-36.22	261.42	.7440	.1943
2038	361.95	-36.54	260.56	.7460	.1943
2040	361.77	-37.01	259.08	.7480	.1943
2042	361.66	-37.43	257.49	.7499	.1943
2044	361.55	-37.84	255.94	.7519	.1943
2046	362.02	-37.98	252.86	.7534	.1943
2048	362.20	-38.19	250.89	.7559	.1943
2050	362.18	-38.38	250.01	.7579	.1944
2052	362.11	-38.51	249.72	.7599	.1944
185m 2054	362.21	-38.58	248.85	.7617	.1944
15m 2056	362.01	-38.88	248.36	.7638	.1944
2058	361.88	-39.08	248.01	.7658	.1944
2060	978,361.85	-39.20	247.55	.7678	.1944

Station	g_o	BA	h	λ	φ
2062	978,361.58	-39.57	247.04	133.7698	16.1944
2064	361.47	-39.77	246.60	.7718	.1945
2066	361.43	-39.83	246.49	.7737	.1945
2068	361.38	-39.98	245.97	.7757	.1945
2070	361.46	-39.96	245.68	.7777	.1945
100m					
(7) 3000	361.51	-39.89	245.77	133.7787	16.1945
3002	361.50	-39.99	245.85	.7787	.1964
3004	361.57	-39.99	245.92	.7787	.1984
3006	361.58	-39.99	246.31	.7787	.2003
3008	361.84	-40.29	243.98	.7787	.2023
3010	362.23	-39.90	244.42	.7787	.2042
3012	362.67	-40.21	241.07	.7787	.2061
3014	363.36	-40.08	238.71	.7787	.2081
3016	363.53	-40.02	238.62	.7787	.2100
3018	363.79	-40.00	237.93	.7787	.2120
3020	363.96	-39.99	237.57	.7787	.2139
3022	364.38	-39.82	236.74	.7787	.2158
3024	364.53	-39.79	236.61	.7787	.2178
3026	364.78	-39.79	235.84	.7787	.2197
3028	364.98	-39.76	235.43	.7787	.2216
3030	365.15	-39.65	235.60	.7787	.2236
3032	364.81	-39.65	237.83	.7787	.2255
3034	364.64	-39.52	239.83	.7787	.2275
3036	364.87	-39.28	240.37	.7787	.2294
3038	365.42	-38.91	239.91	.7787	.2313
3040	366.12	-38.48	239.03	.7787	.2333
3042	367.07	-38.05	236.84	.7787	.2352
3044	367.97	-37.56	235.23	.7787	.2372
3046	978,369.01	-37.16	232.42	133.7787	16.2391

8802

Station	g₀	BA	h	λ	φ
3048	978,369.60	-37.03	230.55	133.7787	16.2410
3050	370.01	-36.95	229.37	.7787	.2430
3052	370.33	-36.90	228.49	.7787	.2449
3054	370.58	-36.94	227.47	.7787	.2469
3056	370.82	-36.86	227.12	.7787	.2488
3058	370.91	-36.98	226.54	.7787	.2507
3060	370.97	-37.09	226.16	.7787	.2527
3062	371.31	-37.06	225.03	.7787	.2546
3064	371.27	-37.03	225.86	.7787	.2565
3066	371.36	-37.03	225.91	.7787	.2585
3068	371.64	-36.85	225.89	.7787	.2604
3070	371.71	-36.93	225.62	.7787	.2624
3072	371.94	-36.78	225.64	.7787	.2643
3074	372.22	-36.60	225.62	.7787	.2662
3076	372.18	-36.73	225.68	.7787	.2682
3078	372.21	-36.79	225.68	.7787	.2701
3080	372.18	-36.90	225.76	.7787	.2721
3082	372.22	-36.96	225.70	.7787	.2740
3084	372.34	-36.94	225.69	.7787	.2759
3086	372.35	-37.03	225.64	.7787	.2779
3088	372.44	-37.03	225.67	.7787	.2798
3090	372.48	-37.06	225.80	.7787	.2818
3092	372.60	-37.03	225.82	.7787	.2837
3094	372.77	-36.95	225.83	.7787	.2856
3096	372.68	-37.12	225.92	.7787	.2876
3098	372.63	-37.23	226.09	.7787	.2895
3100	372.92	-37.02	226.14	.7787	.2915
3102	372.58	-37.22	227.34	.7787	.2934
100m 3104	372.28	-37.43	228.28	.7787	.2953
(1) 4000	372.23	-37.45	228.67	133.7787	16.2963
4002	978,371.77	-37.52	230.62	.7767	.2962

8802

Station	g_o	B.A.	h	λ	φ
4004	978,371.77	-37.71	229.65	133.7748	16.2961
4006	371.07	-38.05	231.42	.7728	.2959
4008	371.38	-37.96	230.26	.7708	.2958
4010	372.30	-37.70	226.90	.7688	.2957
4012	372.27	-37.92	225.91	.7669	.2956
4014	372.07	-38.05	226.20	.7649	.2954
4016	372.05	-38.16	225.72	.7629	.2953
4018	371.89	-38.25	226.05	.7609	.2952
4020	371.77	-38.41	225.80	.7590	.2951
4022	371.76	-38.42	225.77	.7570	.2950
4024	371.51	-38.66	225.78	.7550	.2948
4026	371.45	-38.72	225.78	.7530	.2947
4028	371.69	-38.48	225.72	.7511	.2946
4030	371.35	-38.75	226.05	.7491	.2945
4032	370.93	-39.16	226.08	.7471	.2943
4034	370.66	-39.46	225.92	.7452	.2942
4036	370.19	-39.94	225.83	.7432	.2941
4038	370.19	-39.93	225.85	.7412	.2940
4040	370.41	-39.70	225.84	.7392	.2938
4042	370.86	-39.25	225.84	.7373	.2937
4044	371.31	-38.80	225.80	.7353	.2936
4046	371.52	-38.51	226.21	.7333	.2935
4048	371.72	-38.30	226.19	.7313	.2934
4050	371.64	-38.24	226.86	.7294	.2932
4052	370.82	-38.19	231.26	.7274	.2931
4054	370.52	-38.22	232.65	.7254	.2930
4056	371.16	-38.08	230.05	.7234	.2929
4058	371.06	-38.07	230.59	.7215	.2927
4060	371.00	-37.87	231.85	.7195	.2926
4062	370.63	-37.99	233.12	.7175	.2925
4064	371.02	-37.93	231.41	.7156	.2924
4066	371.09	-37.90	231.18	.7136	.2923
4068	371.05	-37.93	231.21	.7116	.2921
4070	978,371.32	-37.66	231.17	133.7096	16.2920

8802

Station	g_o	B.A.	h	λ	φ
4072	978, 371.46	-37.52	231.16	133.7077	16.2919
(F) 4074	371.49	-37.37	231.71	.7057	.2918
(B)				133.7047	16.2917
(C) 2000	369.75	-31.69	245.43	133.7090	16.1940
5002	369.71	-31.74	245.77	.7076	.1954
5004	369.79	-31.71	245.82	.7062	.1968
150m 5006	369.80	-31.75	245.85	.7052	.1979
5008	369.82	-31.75	246.11	.7038	.1993
5010	369.56	-31.94	246.78	.7024	.2007
5012	369.45	-32.03	247.22	.7010	.2021
5014	369.43	-32.14	247.12	.6996	.2035
5016	369.37	-32.20	247.45	.6982	.2049
5018	369.16	-32.26	248.59	.6968	.2063
5020	368.86	-32.29	250.30	.6954	.2077
5022	369.08	-32.37	249.11	.6940	.2091
5024	368.45	-32.58	251.60	.6926	.2105
5026	367.96	-32.79	253.35	.6912	.2119
1[illegible]m 5027	368.56	-32.75	250.68	.6905	.2126
[illegible]m 5028	368.20	-32.84	252.21	.6898	.2133
5030	368.56	-33.06	249.64	.6884	.2147
5032	368.74	-33.17	248.49	.6870	.2161
5034	368.90	-33.31	247.31	.6856	.2175
5036	369.17	-33.36	245.99	.6842	.2189
100m 5037	369.21	-33.47	245.44	.6835	.2196
[illegible]m 5038	369.32	-33.49	244.95	.6828	.2203
5040	369.70	-33.40	243.66	.6814	.2217
5042	369.94	-33.52	242.32	.6800	.2231
5044	370.05	-33.68	241.30	.6786	.2245
5046	370.13	-33.80	240.60	.6772	.2259
5048	370.13	-33.92	240.33	.6758	.2273
5050	978, 369.80	-34.22	240.82	133.6744	16.2287

8802

Station	g_0	B.A.	h	λ	φ
5052	978,369.54	-34.46	241.29	133.6731	16.2302
5054	369.47	-34.45	242.07	.6717	.2316
5056	369.22	-34.49	243.49	.6703	.2330
5058	369.04	-34.43	245.06	.6689	.2344
5060	369.64	-34.06	244.20	.6675	.2358
5062	370.44	-33.84	241.61	.6661	.2372
5064	370.69	-33.81	240.81	.6647	.2386
5066	370.59	-33.92	241.13	.6633	.2400
5068	370.32	-34.23	241.24	.6619	.2414
5070	370.46	-34.35	240.27	.6605	.2428
5072	370.85	-34.58	237.48	.6591	.2442
5074	370.82	-34.74	237.15	.6577	.2456
K				133.6570	16.2463
(2) 6000	371.37	-37.49	231.71	133.7047	16.2917
6002	371.34	-37.48	231.86	.7028	.2916
6004	371.37	-37.31	232.57	.7010	.2915
6006	370.61	-37.51	235.40	.6991	2915
6008	370.18	-37.52	237.51	.6973	.2914
6010	370.45	-37.51	236.16	.6954	.2913
6012	370.86	-37.45	234.37	.6935	.2912
6014	371.48	-37.31	231.94	.6917	.2912
6016	371.47	-37.47	231.12	.6898	.2911
6018	371.53	-37.45	230.94	.6879	.2910
6020	371.68	-37.24	231.19	.6861	.2909
6022	371.17	-37.41	232.95	.6842	.2909
6024	371.41	-37.12	233.16	.6824	.2908
6026	371.40	-37.24	232.58	133.6805	16.2907
6028	370.85	-37.57	233.57	.6787	.2903
6030	370.54	-37.83	233.76	.6768	.2899
6032	370.21	-37.56	236.70	.6750	.2895
6034	978,369.70	-37.47	239.66	133.6731	16.2891

8802

Station	g_o	B.A.	h	λ	φ
6036	978,369.04	-37.59	242.33	133.6713	16.2887
6038	368.83	-37.36	244.24	.6692	.2875
6040	368.66	-37.08	246.29	.6671	.2864
6042	368.75	-36.79	247.01	.6650	.2852
6044	368.56	-36.63	248.48	.6628	.2840
6046	368.58	-36.48	248.84	.6607	.2828
6048	368.36	-36.40	250.09	.6586	.2817
T { 6049	368.23	-36.29	251.02	133.6565	16.2805
7000	368.23	-36.29	251.02	133.6565	16.2805
7002	368.16	-36.17	251.46	.6566	.2783
7004	368.38	-35.96	250.83	.6567	.2760
7006	368.14	-35.93	251.68	.6567	.2738
7008	368.07	-35.70	252.63	.6568	.2715
7010	368.11	-35.41	253.38	.6569	.2693
7012	368.07	-35.21	254.04	.6570	.2670
7014	367.87	-35.01	255.52	6570	.2648
7016	367.50	-34.92	257.29	.6571	.2625
7018	367.08	-34.85	259.23	.6572	.2603
7020	367.82	-34.70	255.68	.6573	.2580
7022	369.11	-34.44	? 249.07	6573	.2558
7024	371.22		? 246.05	.6574	.2535
7026	370.58		?	.6575	.2513
7028	370.61		?	.6576	.2491
7030	370.84	-34.44	238.89	.6577	.2468
K→ 7032	370.95	-34.55	237.23	.6577	.2446
7034	370.72	-34.84	236.36	.6578	.2423
7036	370.79	-34.85	235.41	.6579	.2401
7038	371.19	-34.54	234.38	.6580	.2378
7040	371.55	-34.20	233.73	.6580	.2356
7042	978,371.90	-33.80	233.40	133.6581	16.2333

8802

Station	g_0	B.A.	h	λ	φ
7044	978, 372.17	-33.58	232.63	133.6582	16.2311
7046	373.01	-32.90	231.24	.6583	.2288
7048	373.34	-32.76	229.72	.6583	.2266
7050	373.46	-32.69	228.92	.6584	.2244
7052	373.40	-32.66	228.82	.6585	.2221
7054	373.39	-32.60	228.65	.6586	.2199
7056	372.84	-32.64	230.65	.6587	.2176
7058	372.66	-32.61	231.18	.6587	.2154
7060	372.47	-33.02	229.50	.6588	.2131
7062	372.45	-33.12	228.56	.6589	.2109
7064	372.33	-33.31	227.64	.6590	.2086
7066	372.66	-33.08	226.58	.6590	.2064
7068	372.94	-32.71	226.48	.6591	.2041
7070	373.03	-32.50	226.58	.6592	.2019
7072	373.33	-32.12	226.38	.6593	.1996
7074	374.27	-31.37	224.92	.6594	.1974
7076	374.72	-31.04	223.77	.6594	.1952
7078	375.10	-30.75	222.70	.6595	.1929
7080	375.23	-30.60	222.28	.6596	.1907
7082	375.34	-30.43	222.02	.6597	.1884
7084	375.55	-30.26	221.29	.6597	.1862
7086	375.50	-30.20	221.28	.6598	.1839
7088	375.71	-29.96	220.88	.6599	.1817
7090	375.73	-29.91	220.47	.6600	.1794
7092	375.75	-29.83	220.25	.6600	.1772
7094	375.74	-29.73	220.24	.6601	.1749
7096	375.72	-29.60	220.48	.6602	.1727
7098	375.58	-29.55	220.88	.6603	.1705
7100	375.56	-29.51	220.66	.6604	.1682
7102	375.80	-29.24	220.26	.6604	.1660
7104	978, 375.80	-29.09	220.47	133.6605	16.1637

8802

	Station	g_o	B.A.	h	λ	φ
	7106	978, 375.71	-28.95	221.07	133.6606	16. 1615
	7108	375.82	-28.79	220.80	.6607	.1592
	7110	375.82	-28.70	220.71	.6607	.1570
	7112	376.04	-28.55	219.76	.6608	.1547
	7114	376.23	-28.36	219.25	.6609	.1525
	7116	376.00	-28.43	219.51	.6610	.1502
	7118	376.09	-28.21	219.61	.6610	1480
	7120	376.15	-28.07	219.49	.6611	.1457
(I,	7122	376.15	-27.92	219.70	133.6612	16.1435
G	8000	376.15	-27.96	219.50	133.6612	16.1435
	8002	375.78	-28.26	219.87	.6636	.1436
	8004	375.48	-28.30	221.24	.6660	.1437
	8006	375.27	-28.29	222.34	.6683	.1438
	8008	375.12	-28.18	223.69	.6707	.1438
	8010	374.61	-28.08	226.81	.6731	.1439
	8012	373.80	-28.28	229.95	.6755	.1440
	8014	373.07	-28.39	233.12	.6779	.1441
	8016	372.41	-28.41	236.41	.6802	.1442
	8018	372 70	-28.31	235.48	.6826	.1443
	8020	372.75	-28.44	234.59	.6850	.1444
	8022	373 15	-28.23	233.59	.6874	.1444
	8024	373.17	-28.25	233.42	.6898	.1445
	8026	372.99	-28.35	233.86	.6922	.1446
	8028	372.81	-28.45	234.28	.6945	.1447
	8030	372.67	-28.36	235.31	.6969	.1448
	8032	372 17	-28.77	235.97	.6993	.1449
	8034	371.87	-28.88	236.94	.7017	.1450
	8036	371.50	-28.98	238.35	.7041	.1450
	8038	978, 370.89	-29.25	240.08	133. 7064	16. 1451

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Station	g	B.A.	h	λ	φ
8040	978,369 66	-29.69	244.14	133.7088	16.1452
H (11000) 8042	369.65	-29.44	245.47	133.7112	16.1453
8044	369.19	-30.32	243.35	.7135	.1454
8046	368.48	-30.86	244.24	.7158	.1454
8048	367.56	-31.32	246.62	.7182	.1455
8050	366.51	-31.49	248.59	.7205	.1456
8052	365.57	-32.61	250.22	.7228	.1456
8054	364.30	-33 43	252.52	.7251	.1457
8056	361.95	-34.15	260.82	.7275	.1458
8058	360.39	-34.74	265.81	.7298	.1459
8060	360.08	-35.08	265.66	.7321	.1459
8062	359.97	-35.43	264.45	.7344	.1460
8064	359.84	-35.72	263.64	.7367	.1461
8066	359.71	-36.03	262.74	.7391	.1461
8068	359.62	-36.32	261.73	.7414	.1462
8070	359 51	-36.48	261.51	.7437	.1463
8072	359.41	-36.65	261.17	.7460	.1463
8074	359.35	-36.72	261.15	.7483	.1464
8076	359.42	-36.74	260.70	.7507	.1465
8078	359.45	-36.84	260.06	.7530	.1465
8080	359.31	-36.93	260.33	.7553	.1466
8082	358.89	-37.19	261.14	.7576	.1467
8084	358.70	-37.34	261.34	.7600	.1467
8086	358.62	-37.43	261.34	.7623	.1468
8088	358.21	-37.71	262.02	.7646	.1469
8090	357.92	-37.90	262.58	.7669	.1470
8092	357.63	-38.25	262.23	.7692	.1470
8094	357.34	-38.25	263 77	.7716	.1471
8096	357.25	-38.29	264.02	.7739	.1472
8098	357.18	-38.33	264.17	.7762	.1472
8100	978,357.13	-38.46	263.80	133.7785	16.1473

Station	g_o	B.A.	h	λ	φ	
(G) 9000	978,357.34	-38.26	263.74	133.7787	16.1473	
9002	357.37	-38.62	262.30	.7787	.1494	
9004	357.85	-38.56	260.67	.7787	.1516	
9006	358.29	-38.82	257.61	.7787	.1537	
9008	358.61	-38.90	256.14	.7787	.1559	
9010	358.69	-38.97	255.88	.7787	.1580	
9012	358.75	-38.89	256.54	.7787	.1602	
9014	358.42	-39.10	257.62	.7787	.1623	
9016	358.46	-39.22	257.36	.7787	.1645	?
9018	359.42	-39.16	253.31	.7787	.1666	
9020	360.27	-39.22	249.18	.7787	.1688	
9022	360.31	-39.34	248.89	.7787	.1709	
9024	360.43	-39.44	248.32	.7787	.1730	
9026	360.68	-39.45	247.49	.7787	.1752	
9028	360.71	-39.50	247.60	.7787	.1773	
9030	361.16	-39.45	246.11	.7787	.1795	
9032	361.21	-39.55	245.86	.7787	.1816	
9034	361.26	-39.57	246.05	.7787	.1838	
9036	361.17	-39.64	246.67	.7787	.1859	
9038	361.12	-39.78	246.76	.7787	.1881	
9040	361.28	-39.86	246.03	.7787	.1902	
9042	361.38	-39.93	245.72	.7787	.1924	
G 9044	361.51	-39.89	245.77	133.7787	16.1945	
3000	978,361.51	-39.89	245.77	133.7787	16.1945	

8802

Station	g_o	B.A.	h	λ	φ
(I) 10000	978,370.10	-31.33	245.09	133.7074	16.1923
10002	370.17	-31.15	245.19	.7057	.1905
10004	370.51	-31.00	243.80	.7041	.1888
10006	370.30	-30.97	244.61	.7024	.1870
10008	370.23	-30.89	244.97	.7008	.1853
10010	370.38	-30.75	244.49	.6991	.1836
10012	371.05	-30.50	241.89	.6975	.1818
10014	371.90	-30.09	239.26	.6958	.1801
10016	372.61	-30.12	235.05	.6942	.1783
10018	372.64	-30.06	234.77	.6925	.1766
10020	372.93	-29.81	234.10	.6909	.1748
10022	373.10	-29.68	233.53	.6892	.1731
10024	373.19	-29.66	232.74	.6876	.1714
10026	373.40	-29.49	232.10	.6859	.1696
10028	373.59	-29.18	232.26	.6843	.1679
10030	373.19	-29.35	233.03	.6826	.1661
10032	373.22	-29.35	232.42	.6810	.1644
10034	373.36	-29.29	231.63	.6793	.1627
10036	373.65	-29.11	230.63	.6777	.1609
10038	373.95	-29.02	229.12	.6760	.1592
10040	374.10	-29.04	227.82	.6744	.1574
10042	374.49	-28.82	226.57	.6727	.1557
10044	374.67	-28.78	225.39	.6711	.1539
10046	375.09	-28.59	223.81	.6694	.1522
10048	375.54	-28.32	222.47	.6678	.1505
10050	375.74	-28.11	222.08	.6661	.1487
10052	376.12	-28.05	220.06	.6645	.1470
10054	376.23	-27.95	219.53	.6628	.1452
(I) 10056	376.15	-27.98	219.38	133.6612	16.1435
8000	978,376.15	-27.96	219.50	133.6612	16.1435

8802

Station	g_o	B.A.	h	λ	φ	
(H) (8042) 11000	978,369.65	-29.44	245.47	133.7112	16.1453	
11002	369.48	-29.46	246.84	.7111	.1478	
11004	369.00	-29.52	249.63	.7110	.1503	
11006	368.48	-29.51	252.92	.7109	.1528	
11008	368.28	-29.60	254.08	.7107	.1553	
11010	369.70	-29.53	247.85	.7106	.1578	
11012	370.03	-29.58	246.53	.7105	.1603	
11014	369.34	-30.62	245.36	.7104	.1628	
11016	370.45	-29.70	244.97	.7103	.1653	
11018	370.52	-29.90	244.22	.7102	.1678	
11020	370.70	-30.00	243.39	.7101	.1703	
11022	371.50	-29.57	242.16	.7100	.1728	
11024	371.16	-30.18	241.40	.7098	.1753	
11026	371.29	-30.27	240.86	.7097	.1778	
11028	371.45	-30.30	240.52	.7096	.1803	
11030	371.32	-30.43	241.13	.7095	.1828	
11032	371.27	-30.52	241.52	.7094	.1853	
11033	978,371.20	-30.62	241.67	133.7093	16.1865	

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	g_0	B.A.	h	λ	φ
0200	978,389.18	-28.84	263.68	133.2968	16.6078
0220	389.58	-28.52	263.30	.2987	↑
0240	389.98	-28.14	263.18	.3005	
0260	390.34	-27.80	263.09	.3024	
0280	390.60	-27.52	263.20	.3043	
0300	390.84	-27.26	263.27	.3062	
0320	391.11	-27.13	262.54	.3080	
0340	391.34	-27.00	262.06	.3099	
0360	391.57	-26.84	261.72	.3118	
0380	391.72	-26.67	261.80	.3137	
0400	392.04	-26.46	261.24	.3155	
0420	392.49	-26.32	259.68	.3174	
0440	392.71	-26.16	259.34	.3193	
0460	392.91	-26.12	258.56	.3212	
0480	393.34	-25.83	257.84	.3230	
0500	393.66	-25.73	256.76	.3249	
0520	393.83	-25.62	256.42	.3268	
0540	394.10	-25.43	256.00	.3286	
0560	394.32	-25.26	255.74	.3305	
0580	394.53	-25.18	255.09	.3324	
0600	394.58	-25.17	254.90	.3343	
0620	394.70	-25.12	254.52	.3361	
0640	394.80	-25.09	254.14	.3380	
0660	394.91	-25.04	253.88	.3399	
0680	395.16	-24.86	253.48	.3418	
0700	395.17	-24.88	253.36	.3436	
0720	395.30	-24.90	252.60	.3455	
0740	395.28	-25.05	251.92	.3474	
0760	395.40	-24.93	251.94	.3492	
0780	394.83	-25.14	253.73	.3511	↓
0800	978,394.38	-25.20	255.76	133.3530	16.6078

	g_0	B.A.	h	λ	φ
om 0820	978,394.36	-24.92	257.25	133.3549	16.6078
0840	393.97	-25.08	258.44	.3567	↑
0860	393.47	-25.24	260.16	.3586	↓
0980	978,392.93	-25.44	261.89	133.3605	16.6078

	g_0	B.A.	h	λ	ϕ
511) 8648	978,382.87	-29.33	274.10		16.5310
1000	392.32	-25.67	263.82	133 ·3624	16.6078
1002	391.51	-26.17	265.40	·3642	↑
1004	391.89	-26.42	262.22	·3661	
1006	392.68	-26.65	257.01	·3680	
1008	392.67	-26.97	255.32	·3698	
1010	392.37	-27.30	255.26	·3717	
1012	392.80	-27.38	252.68	·3736	
1014	393.38	-27.39	249.66	·3755	
1016	393.46	-27.66	247.90	·3773	
1018	393.52	-27.91	246.30	·3792	
1020	393.38	-28.16	245.76	·3811	
1022	393.22	-28.40	245.36	·3830	
1024	392.89	-28.78	245.10	·3848	
1026	392.53	-29.14	245.11	·3867	
1028	392.38	-29.37	244.71	·3886	
1030	392.39	-29.57	243.62	·3905	
1032	392.36	-29.68	243.21	·3923	
1034	392.69	-29.59	241.98	·3942	
1036	392.87	-29.54	241.32	·3961	
1038	392.85	-29.65	240.86	·3979	
1040	392.81	-29.75	240.56	·3998	
1042	392.75	-29.87	240.28	·4017	
1044	392.69	-29.99	239.94	·4036	
1046	? 391.67	-31.03	239.87	·4054	
1048	392.49	-30.29	239.43	·4073	
1050	392.32	-30.57	238.90	·4092	
1052	392.29	-30.64	238.70	·4111	
1054	392.20	-30.88	237.94	·4129	
1056	392.20	-30.97	237.44	·4148	↓
1058	978,392.42	-30.87	236.84	133 ·4167	16.6078

	g_0	B.A.	h	λ	φ
1060	978,392.52	-30.81	236.65	133.4185	16.6078
1062	392.35	-31.04	236.32	.4204	
1064	392.32	-31.19	235.75	.4223	
1066	392.46	-31.25	234.70	.4242	
1068	392.59	-31.31	233.72	.4260	
1070	392.51	-31.53	233.02	.4279	
1072	392.37	-31.76	232.55	.4298	
1074	392.42	-31.88	231.71	.4317	
1076	392.56	-31.99	230.44	.4335	
1078	392.10	-32.05	232.46	.4354	
1080	391.77	-32.35	232.62	.4373	
1082	392.67	-32.04	229.61	.4391	
1084	392.70	-32.12	229.04	.4410	
1086	392.46	-32.31	229.31	.4429	
1088	391.92	-32.65	230.34	.4448	
1090	391.45	-32.73	232.31	.4466	
1092	391.68	-32.55	232.04	.4485	
1094	391.57	-32.72	231.74	.4504	
1096	391.62	-32.77	231.23	.4523	
1098	391.64	-32.86	230.70	.4541	
1100	391.64	-32.98	230.08	.4560	
1102	391.65	-33.06	229.60	.4579	
1104	391.66	-33.15	229.12	.4598	
1106	391.68	-33.15	229.00	.4616	
1108	391.55	-33.31	228.84	.4635	
1110	391.60	-33.42	228.04	.4654	
1112	391.75	-33.48	226.96	.4672	
1114	392.02	-33.40	226.01	.4691	
1116	391.94	-33.64	225.18	.4710	
1118	392.19	-33.78	223.19	.4729	
1120	978,392.02	-33.81	223.94	133.4747	16.6078

	g_0	B.A.	h	λ	φ
1122	978,391.73	-34.00	224.42	133.4766	16.6078
1124	391.70	-33.80	225.59	.4785	↑
1126	391.53	-34.30	223.92	.4804	
1128	391.90	-34.18	222.64	.4822	
1130	391.83	-34.34	222.18	.4841	
1132	391.52	-34.64	222.25	.4860	
1134	391.56	-34.61	222.19	.4878	
1136	391.40	-34.74	222.34	.4897	
1138	391.41	-34.74	222.30	.4916	
1140	391.26	-34.88	222.32	.4935	
1142	390.97	-35.18	222.28	.4953	
1144	391.09	-35.06	222.28	.4972	
1146	391.00	-35.15	222.29	.4991	
1148	390.59	-35.56	222.29	.5010	↓
1150	390.39	-35.75	222.36	.5028	16.6078
1152	390.20	-35.96	222.34	.5047	16.6082
1154	390.16	-36.03	222.32	.5065	.6086
1156	390.10	-36.11	222.34	.5084	.6090
1158	389.97	-36.26	222.32	.5102	.6094
1160	390.01	-36.25	222.30	.5121	.6098
1162	389.73	-36.54	222.38	.5139	.6102
1164	389.58	-36.71	222.40	.5158	.6106
1166	389.14	-37.17	222.40	.5176	.6110
1168	388.99	-37.34	222.38	.5195	.6114
1170	388.94	-37.43	222.36	.5213	.6118
1172	388.92	-37.47	222.34	.5231	.6122
1174	388.85	-37.56	222.36	.5250	.6126
1176	388.64	-37.79	222.32	.5268	.6130
1178	388.81	-37.65	222.34	.5287	.6134
1180	388.94	-37.54	222.36	.5305	.6138
1182	978, 388.86	-37.64	222.34	133.5324	16.6142

	g.	B.A.	h	λ	φ
1184	978,388.78	-37.75	222.32	133.5342	16.6146
1186	388.54	-38.01	222.36	.5361	.6150
1188	388.50	-38.07	222.34	.5379	.6154
1190	388.26	-38.33	222.36	.5397	.6158
1192	388.07	-38.54	222.36	.5416	.6162
1194	388.02	-38.62	222.36	.5434	.6166
1196	388.04	-38.61	222.38	.5453	.6170
1198	387.94	-38.73	222.38	.5471	.6174
1200	387.81	-38.88	222.38	.5490	.6178
1202	387.75	-38.99	222.30	.5508	.6182
1204	387.71	-39.04	222.34	.5527	.6186
1206	387.68	-39.09	222.36	.5545	.6190
1208	387.45	-39.34	222.36	.5563	.6194
1210	387.23	-39.59	222.36	.5582	.6198
1212	387.05	-39.79	222.36	.5600	.6202
1214	386.94	-39.92	222.36	.5619	.6206
1216	386.75	-40.12	222.38	.5637	.6210
1218	386.57	-40.33	222.38	.5656	.6214
1220	386.28	-40.64	222.38	.5674	.6218
1222	385.97	-40.97	222.38	.5693	.6222
1224	385.95	-41.02	222.36	.5711	.6226
1226	385.90	-41.10	222.36	.5730	.6230
1228	385.77	-41.25	222.34	.5748	.6234
1230	385.76	-41.28	222.36	.5766	.6238
1232	385.62	-4[illegible].44	222.36	.5785	.6242
1234	385.52	-41.57	222.36	.5803	.6246
1236	385.39	-41.72	222.36	.5822	.6250
1238	385.23	-41.89	222.38	.5840	.6254
1240	384.92	-42.22	222.40	.5859	.6258
1242	384.76	-42.41	222.38	.5877	.6262
1244	978,384.61	-42.58	222.38	133.5896	16.6266

	g_o	B.A.	h	λ	φ
1246	978,384.33	−42.88	222.38	133.5914	16.6270
1248	384.16	−43.05	222.48	·5932	·6274
1250	384.06	−43.15	222.64	·5951	·6278
1252	383.62	−43.22	224.62	·5969	·6282
1254	383.02	−43.50	226.36	·5988	·6286
1256	382.26	−43.65	229.55	·6006	·6290
1258	381.64	−43.83	231.94	·6025	·6294
1260	381.43	−44.10	231.77	·6043	·6298
1262	381.63	−44.11	230.80	·6062	·6302
1264	381.45	−44.28	230.94	·6080	·6306
1266	381.37	−44.25	231.65	·6098	·6310
1268	381.02	−44.42	232.68	·6117	·6314
1270	380.76	−44.62	233.10	·6135	·6318
1272	380.21	−45.05	233.80	·6154	·6322
1274	379.42	−45.35	236.44	·6172	·6326
1276	378.77	−45.62	238.50	·6191	·6330
1278	378.20	−45.80	240.56	·6209	·6334
1280	377.68	−45.99	242.39	·6228	·6338
1282	376.92	−46.20	245.32	·6246	·6342
1284	376.40	−46.33	247.40	·6265	·6346
1286	978,376.18	−46.36	248.45	133.6283	16.6350