A LOGISTICS REPORT FOR A GRAVITY SURVEY CONDUCTED NEAR ALICE SPRINGS, NT

ON BEHALF OF
PACIFIC OIL & GAS PTY LTD

GEOTERREX PTY LTD
PROJECT NO. 4-156

JOHN PEACOCK
DECEMBER 1989

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1. INTRODUCTION

1.1 Location

During the period 3 December 1989 to 13 December 1989 and 19 February 1990 to 23 February 1990, GEOTERREX PTY LTD of 13 Whiting Street, Artarmon, NSW 2064, conducted a Gravity Survey on behalf of PACIFIC OIL & GAS PTY LTD. The survey was performed near Murphy's Range and Parrarra Anticline in the Northern Territory. (See Figure 1 for Grid Map).

1.2 Purpose and Scope of the Programme

The purpose of the gravity survey was to provide data in conjunction with the seismic survey taking place at the time. Station spacings of approximately 200 metres were used.

1.3 Production Statistics

The field data acquisition phase of the survey lasted 16 days during which time a total of 541 gravity stations were investigated. This gave an average of 34 gravity stations per day.

1.4 Personnel and Equipment

The work performed by GEOTERREX provided gravity measurements made by a Lacoste and Romberg Model G gravity meters and absolute survey coordinates provided by GEOSYSTEM surveyors.

GEOTERREX PTY LTD provided the following personnel for the data acquisition:

David Owen	(Project Geophysicist)
Danny Bartolic	(Field Assistant)
John Peacock	(Project Geophysicist)

GEOTERREX PTY LTD supplied the following equipment to aid data acquisition:

- One Lacoste and Romberg Model G gravity meter, Serial No. G473.
- Field and office supplies, as required.
- One field computer for data reduction.

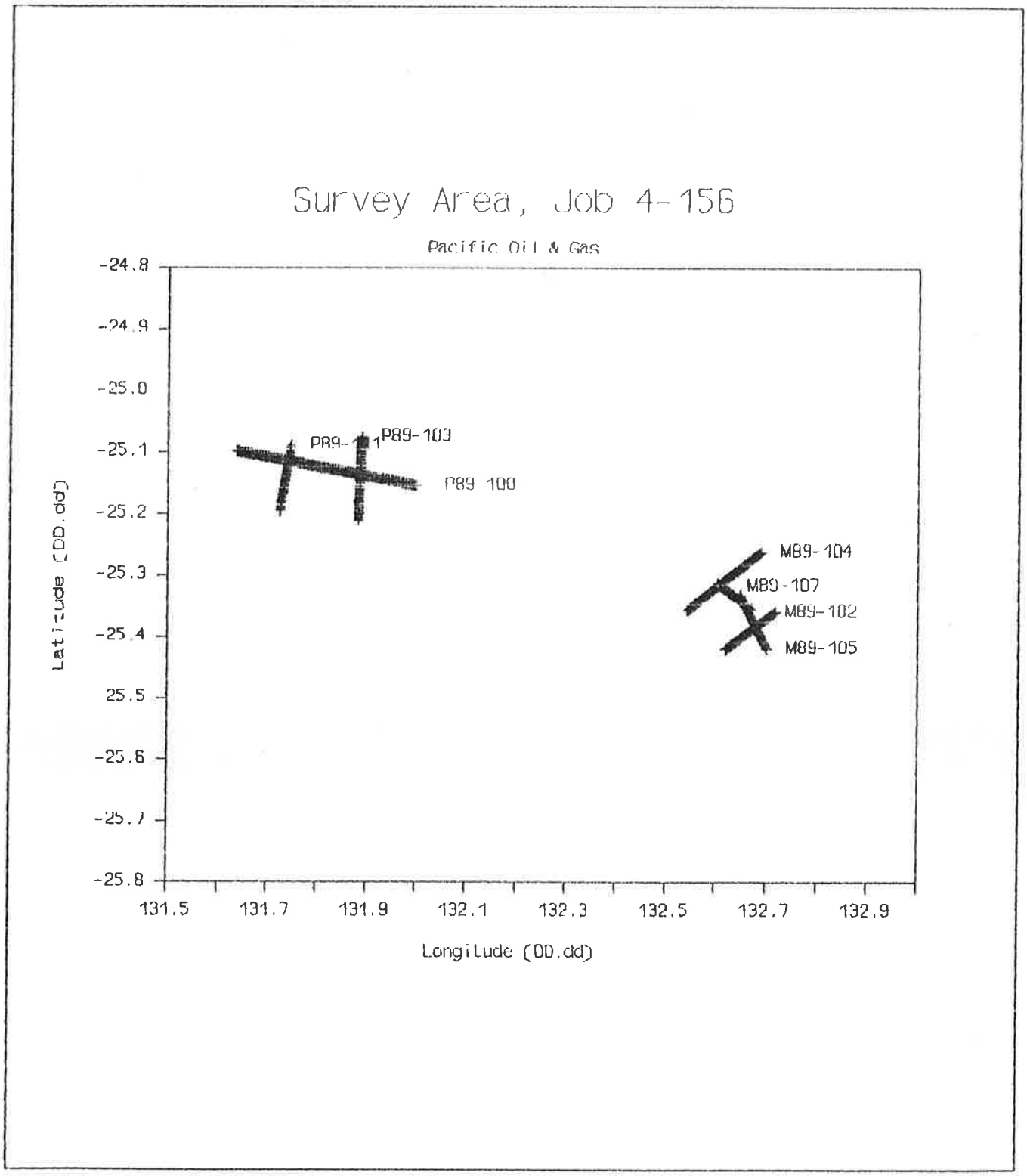
Survey Area, Job 4-156
Pacific Oil & Gas
-24.8
-24.9
-25.0
-25.1
-25.2
-25.3
-25.4
25.5
-25.6
-25.7
-25.8
Latitude (DD.dd)
131.5
131.7
131.9
132.1
132.3
132.5
132.7
132.9
Longitude (DD.dd)
P89-103
P89 100
M89-104
M89-107
M89-102
M89-105

Figure 1

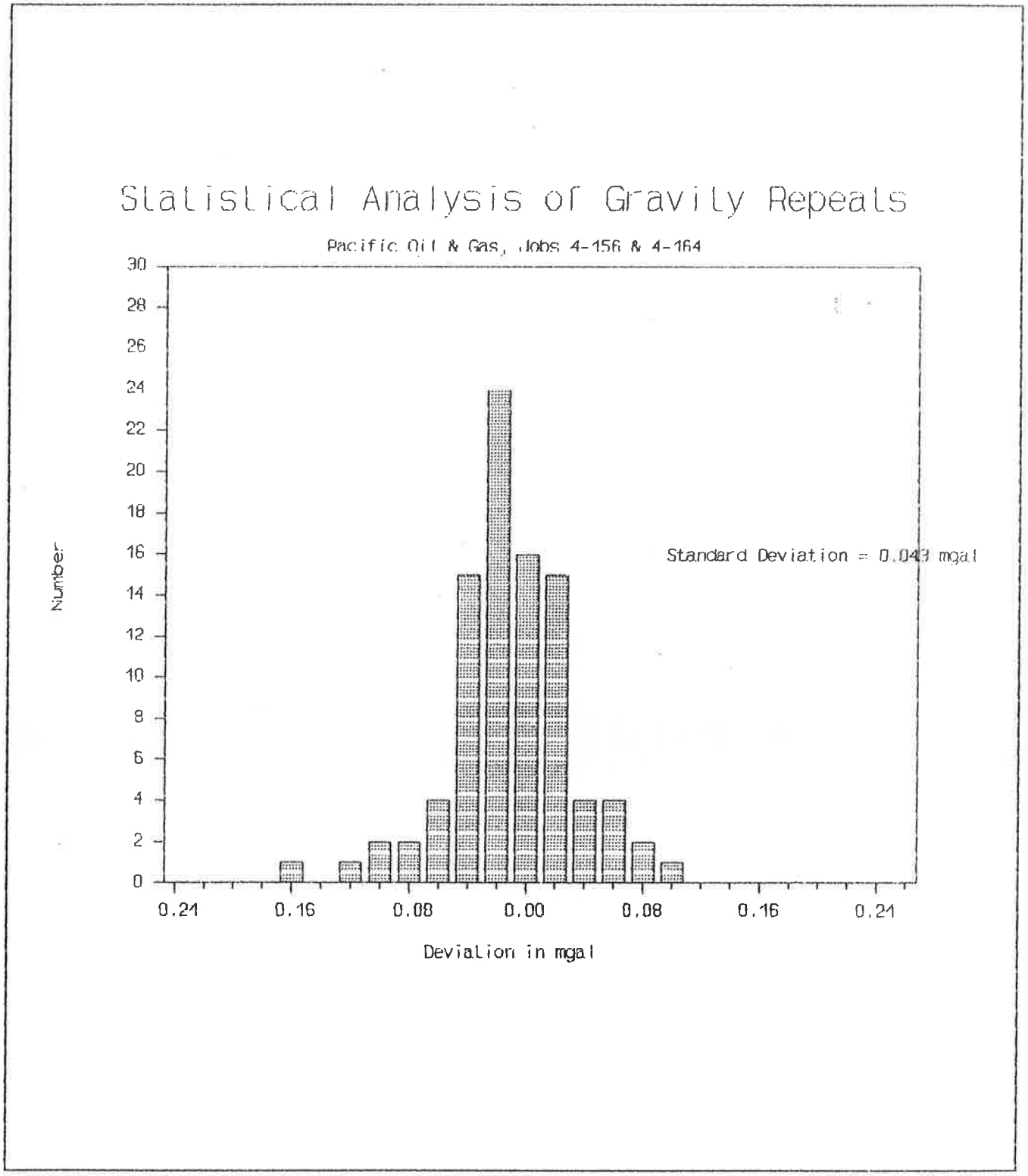
Statistical Analysis of Gravity Repeats
Pacific Oil & Gas, Jobs 4-156 & 4-164
Number
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
0.24
0.16
0.08
0.00
0.08
0.16
0.24
Deviation in mgal
Standard Deviation = 0.043 mgal

Figure 2

2. SURVEY PROCEDURES

2.1 The Gravity Survey

To tie the gravity data into the Australian National gravity network, a base station was established in each area of the seismic survey. These bases were tied to the Gravity Network station listed below. The gravity values of the bases used during the survey were:

BASE	GRAVITY VALUE
Alice Springs BMR (8090.0135)	978639.40 mgal
POGB1	978795.07 mgal
POGB2	978797.65 mgal

All gravity readings taken during the course of the survey were tied to these base stations.

2.2 Positioning

All station coordinates were provided by GEOSYSTEMS surveying crews. Absolute positions were then assigned to the stations during the data processing stage.

3. DATA PROCESSING AND PRESENTATION

3.1 Data Reduction

The sequence of calculations to convert raw gravity and positional data to final Bouguer gravity is shown in Appendix B.

The final processing in Sydney consisted of merely dumping the data into the GEOTERREX computer facility. Data was immediately in a form which could be plotted, printed or put on to a floppy disc or 9-track tape. After a paper copy of each map sheet was examined for possible errors, final ink on plastic profiled plots and posting maps were produced at 1:50,000 scale.

3.2 Quality Control

1. The Gravity Data

A total of 43 revisits of stations yielding 91 deviations (16.8%) were collected to monitor the accuracy of the gravity data. The deviations were calculated by taking the difference of each reading at a station from the average reading of the station. A histogram of these deviations is shown in Figure 2. This histogram conforms roughly to a normal distribution with a standard deviation of 0.043 mgal. Thus the accuracy (from Appendix C) of the observed gravity is:

$$\pm \frac{0.043}{\sqrt{2}} = 0.030 \ mgal$$

2. Horizontal and Vertical Coordinates

It was estimated by GEOSYSTEMS surveyors that the horizontal co-ordinates were accurate to approximately 0.20 metres within the grid and to within 20 metres absolutely. Quoted accuracy for the vertical co-ordinate was 0.02 metres.

3. Accuracy of the Final Bouguer Gravity Data

The total probable error in the final Bouguer data, e_{bg}, is a result of the expression:

$$e_{bg}^2 = e_{gT}^2 + (c \times e_h)^2$$

Where:

e_g *is the error in the observed gravity*
e_{gT} *is the error in the theoretical gravity*
e_h *is the error in the elevation*

$$c = (0.3086 - 2\pi\rho G) = 0.1967 \ \frac{mgal}{metre}$$

$$G = 6.67 \times 10^{-8} \ \frac{(dyne*cm^2)}{g^2}$$

$$\rho = 2.67 \ \frac{g}{cm^2}$$

from the preceding sections:

$$e_g = 0.030 \ mgal$$

$$e_h = 0.71 \ metres$$

$$e_{gT} = 0.00081 \sin(2\phi) \ \frac{mgal}{metre} \times northing\ error, \quad \phi = 25^{\circ}\ latitude$$

$$= 0.0001 \ mgal$$

it follows:

$$e_{bg}^2 = 0.030^2 + 0.0001^2 + (0.71 \times 0.1967)^2$$

$$= 0.0204$$

$$e_{bg} = 0.14 \ mgal$$

This is the probable error in the final Bouguer gravity values.

3.3 Final Products Delivered

One copy of this report and the products listed below have been delivered to PACIFIC OIL & GAS PTY LTD to this date:

1. Multichannel reproducible plots of the Bouguer gravity at 2.67 g/cc, the Free Air gravity, and Elevation at 1:50,000 scale.

2. Reproducible final Bouguer posting maps at 1:50,000 scale.

3. Reproducible elevation posting maps at 1:50,000 scale.

4. One computer listing of the relevant survey information (see Appendix A).

5. Two located data tapes.

5. CONCLUSIONS AND RECOMMENDATIONS

This survey has shown that the gravity data collected was of excellent repeatability but was subsequently effected by elevation control of dubious quality. When used in conjunction with seismic, it is a very cost-effective survey method. Although the field phase of the programme proceeded without incident, delivery of the co-ordinates for some of the survey lines did slow down processing.

Respectfully submitted,

JOHN PEACOCK
Geophysicist.

APPENDIX A

Computer Listing of Final Bouguer Data

Line ID	Stat ID	Observed Gravity	AMG North	AMG East	Longitude	Latitude	Elev.	Free Air	Boug 2.20	Boug 2.40	Boug 2.67	Part ???
M09-102	100	978791.23	7186495	260596	132.619847	-25.419141	476.69	-45.47	-89.41	-93.41	-98.80	
M09-102	120	978791.87	7186632	260792	132.621819	-25.417937	473.87	-45.62	-89.30	-93.27	-98.63	
M09-102	140	978791.58	7186770	260989	132.623800	-25.416723	478.08	-44.52	-88.59	-92.60	-98.01	
M09-102	160	978791.24	7186908	261185	132.625772	-25.415509	477.55	-44.94	-88.96	-92.96	-98.37	
M09-102	180	978791.63	7187046	261382	132.627753	-25.414296	475.14	-45.21	-89.01	-92.99	-98.36	
M09-102	200	978791.57	7187183	261579	132.629735	-25.413091	475.70	-45.01	-88.86	-92.85	-98.23	
M09-102	220	978792.16	7187321	261775	132.631706	-25.411878	473.41	-45.04	-88.68	-92.65	-98.01	
M09-102	240	978792.22	7187459	261972	132.633688	-25.410664	473.12	-44.99	-88.60	-92.57	-97.92	
M09-102	260	978792.16	7187597	262169	132.635669	-25.409450	473.82	-44.75	-88.42	-92.39	-97.76	
M09-102	280	978794.23	7187735	262365	132.637641	-25.408237	466.90	-44.73	-87.77	-91.68	-96.96	
M09-102	300	978794.58	7187872	262562	132.639622	-25.407032	467.21	-44.20	-87.27	-91.18	-96.47	
M09-102	320	978794.68	7188010	262759	132.641603	-25.405818	466.70	-44.17	-87.19	-91.10	-96.38	
M09-102	340	978795.27	7188148	262955	132.643574	-25.404604	463.39	-44.52	-87.23	-91.12	-96.36	
M09-102	360	978795.91	7188286	263152	132.645556	-25.403390	460.59	-44.66	-87.11	-90.97	-96.18	
M09-102	380	978796.55	7188423	263349	132.647537	-25.402186	458.21	-44.67	-86.90	-90.74	-95.93	
M09-102	380	978796.57	7188423	263349	132.647537	-25.402186	458.21	-44.65	-86.88	-90.72	-95.91	
M09-102	400	978797.43	7188561	263545	132.649508	-25.400972	456.15	-44.34	-86.39	-90.21	-95.37	
M09-102	420	978798.03	7188699	263742	132.651489	-25.399758	453.11	-44.59	-86.36	-90.16	-95.28	
M09-102	440	978798.16	7188837	263938	132.653460	-25.398544	451.51	-44.87	-86.49	-90.27	-95.38	
M09-102	460	978798.12	7188975	264135	132.655441	-25.397330	451.16	-44.93	-86.52	-90.30	-95.41	
M09-102	480	978799.36	7189112	264332	132.657422	-25.396125	445.19	-45.45	-86.49	-90.22	-95.26	
M09-102	500	978798.32	7189250	264528	132.659393	-25.394911	448.70	-45.32	-86.68	-90.44	-95.52	
M09-102	520	978798.34	7189388	264725	132.661374	-25.393697	448.69	-45.22	-86.58	-90.34	-95.42	
M09-102	540	978798.09	7189526	264922	132.663355	-25.392483	448.37	-45.48	-86.82	-90.57	-95.64	
M09-102	560	978798.58	7189664	265118	132.665325	-25.391268	445.86	-45.68	-86.78	-90.52	-95.56	
M09-102	580	978798.40	7189801	265315	132.667306	-25.390063	445.81	-45.80	-86.89	-90.63	-95.67	
M09-102	600	978798.18	7189939	265512	132.669287	-25.388849	446.13	-45.83	-86.96	-90.69	-95.74	
M09-102	600	978798.21	7189939	265512	132.669287	-25.388849	446.13	-45.80	-86.93	-90.66	-95.71	
M09-102	620	978798.00	7190077	265708	132.671258	-25.387635	446.54	-45.80	-86.96	-90.70	-95.76	
M09-102	640	978797.75	7190215	265905	132.673238	-25.386420	447.37	-45.71	-86.95	-90.70	-95.76	
M09-102	660	978797.41	7190352	266102	132.675219	-25.385215	448.22	-45.70	-87.02	-90.78	-95.85	
M09-102	680	978797.69	7190490	266298	132.677189	-25.384001	447.44	-45.58	-86.82	-90.57	-95.63	
M09-102	700	978797.64	7190628	266495	132.679170	-25.382787	447.75	-45.45	-86.72	-90.47	-95.54	
M09-102	720	978797.64	7190766	266692	132.681151	-25.381572	447.79	-45.35	-86.63	-90.38	-95.45	
M09-102	740	978797.65	7190904	266888	132.683121	-25.380358	447.88	-45.23	-86.51	-90.27	-95.33	
M09-102	760	978797.76	7191041	267085	132.685101	-25.379152	447.97	-45.01	-86.30	-90.05	-95.12	
M09-102	780	978797.88	7191179	267281	132.687072	-25.377938	447.40	-44.98	-86.22	-89.97	-95.03	
M09-102	800	978797.94	7191317	267478	132.689052	-25.376723	447.05	-44.94	-86.15	-89.90	-94.95	
M09-102	800	978797.94	7191317	267478	132.689052	-25.376723	447.05	-44.94	-86.15	-89.90	-94.95	
M09-102	820	978797.92	7191455	267675	132.691033	-25.375509	446.82	-44.95	-86.13	-89.88	-94.93	
M09-102	840	978798.12	7191593	267871	132.693003	-25.374294	446.83	-44.66	-85.85	-89.59	-94.65	
M09-102	860	978798.36	7191730	268068	132.694983	-25.373089	446.34	-44.49	-85.63	-89.37	-94.42	
M09-102	880	978798.62	7191868	268265	132.696963	-25.371874	446.22	-44.18	-85.31	-89.05	-94.10	
M09-102	900	978799.07	7192006	268461	132.698933	-25.370659	445.99	-43.71	-84.82	-88.56	-93.61	
M09-102	920	978799.53	7192144	268658	132.700914	-25.369445	445.54	-43.31	-84.38	-88.11	-93.15	
M09-102	940	978799.84	7192281	268855	132.702893	-25.368239	445.50	-42.93	-83.99	-87.72	-92.76	
M09-102	960	978800.08	7192419	269051	132.704864	-25.367024	446.73	-42.22	-83.40	-87.14	-92.20	
M09-102	980	978800.56	7192557	269248	132.706844	-25.365810	447.17	-41.52	-82.74	-86.49	-91.55	
M09-102	1000	978801.07	7192695	269445	132.708824	-25.364595	445.97	-41.30	-82.41	-86.14	-91.19	
M09-102	1020	978801.55	7192833	269641	132.710794	-25.363380	444.68	-41.13	-82.12	-85.85	-90.88	
M09-102	1040	978801.92	7192970	269838	132.712773	-25.362174	444.18	-40.83	-81.77	-85.50	-90.52	
M09-102	1060	978802.07	7193108	270035	132.714753	-25.360959	444.48	-40.50	-81.47	-85.20	-90.23	
M09-102	1080	978801.75	7193246	270231	132.716723	-25.359744	446.91	-39.99	-81.18	-84.93	-89.99	
M09-102	1100	978800.58	7193384	270428	132.718703	-25.358529	452.82	-39.25	-80.99	-84.78	-89.91	
M09-104	100	978797.09	7193337	252768	132.543328	-25.356131	455.81	-41.65	-83.66	-87.40	-92.64	II

M89-104	100	978797.10	7193337	252760	132.543320	-25.356131	455.81	-41.64	-83.65	-87.47	-92.63	II
M89-104	121	978796.29	7193486	252971	132.545371	-25.354820	458.50	-41.53	-83.79	-87.63	-92.82	II
M89-104	140	978795.87	7193621	253155	132.547222	-25.353633	460.17	-41.35	-83.77	-87.62	-92.83	II
M89-104	160	978795.68	7193763	253349	132.549174	-25.352384	460.50	-41.35	-83.80	-87.66	-92.87	II
M89-104	181	978796.15	7193912	253552	132.551217	-25.351073	458.89	-41.28	-83.58	-87.43	-92.62	II
M89-104	199	978796.38	7194040	253726	132.552968	-25.349947	458.11	-41.22	-83.44	-87.28	-92.47	II
M89-104	211	978797.05	7194125	253842	132.554135	-25.349199	454.84	-41.50	-83.43	-87.24	-92.39	II
M89-104	230	978797.89	7194260	254026	132.555987	-25.348011	450.91	-41.88	-83.45	-87.23	-92.33	II
M89-104	240	978798.19	7194331	254123	132.556963	-25.347387	449.17	-41.99	-83.39	-87.15	-92.24	II
M89-104	252	978798.30	7194417	254239	132.558130	-25.346630	449.03	-41.87	-83.26	-87.02	-92.10	II
M89-104	262	978797.72	7194488	254335	132.559096	-25.346005	452.18	-41.43	-83.11	-86.90	-92.02	II
M89-104	280	978797.19	7194615	254510	132.560857	-25.344888	455.47	-40.87	-82.85	-86.67	-91.82	II
M89-104	300	978797.56	7194757	254703	132.562798	-25.343639	454.95	-40.57	-82.51	-86.32	-91.47	II
M89-104	313	978798.13	7194850	254829	132.564066	-25.342820	453.09	-40.52	-82.28	-86.08	-91.21	II
M89-104	331	978798.15	7194977	255003	132.565817	-25.341703	453.48	-40.30	-82.10	-85.90	-91.03	II
M89-104	347	978797.75	7195091	255158	132.567376	-25.340700	454.68	-40.26	-82.17	-85.98	-91.13	II
M89-104	364	978798.94	7195212	255322	132.569026	-25.339635	448.70	-40.84	-82.20	-85.96	-91.04	II
M89-104	382	978798.78	7195339	255496	132.570777	-25.338518	448.54	-40.97	-82.32	-86.08	-91.15	II
M89-104	400	978798.54	7195467	255670	132.572527	-25.337391	447.65	-41.41	-82.67	-86.42	-91.49	II
M89-104	417	978796.27	7195588	255835	132.574187	-25.336326	447.75	-41.57	-82.85	-86.60	-91.66	II
M89-104	436	978796.88	7195723	256019	132.576038	-25.335139	453.27	-41.18	-82.96	-86.76	-91.88	II
M89-104	436	978796.89	7195723	256019	132.576038	-25.335139	453.27	-41.17	-82.95	-86.75	-91.87	II
M89-104	455	978796.11	7195858	256202	132.577879	-25.333950	455.92	-41.04	-83.07	-86.89	-92.05	II
M89-104	475	978796.22	7196000	256396	132.579831	-25.332701	455.79	-40.89	-82.90	-86.72	-91.88	II
M89-104	490	978797.70	7196106	256541	132.581289	-25.331768	448.29	-41.66	-82.98	-86.74	-91.81	II
M89-104	501	978798.25	7196184	256647	132.582356	-25.331082	445.43	-41.94	-83.00	-86.73	-91.77	II
M89-104	520	978797.46	7196319	256831	132.584207	-25.329894	448.33	-41.75	-83.08	-86.84	-91.91	II
M89-104	540	978795.62	7196461	257025	132.586158	-25.328644	456.42	-41.01	-83.08	-86.91	-92.07	II
M89-104	557	978795.13	7196582	257189	132.587808	-25.327579	458.16	-40.69	-83.12	-86.96	-92.14	II
M89-104	574	978794.50	7196703	257354	132.589468	-25.326514	460.98	-40.57	-83.07	-86.93	-92.15	II
M89-104	580	978794.66	7196745	257412	132.590051	-25.326144	460.47	-40.55	-82.99	-86.85	-92.06	II
M89-104	595	978796.28	7196852	257557	132.591509	-25.325203	453.84	-40.91	-82.74	-86.54	-91.68	II
M89-104	613	978796.58	7196980	257731	132.593260	-25.324076	453.64	-40.59	-82.41	-86.21	-91.34	II
M89-104	631	978796.20	7197107	257905	132.595010	-25.322958	454.43	-40.65	-82.54	-86.34	-91.49	II
M89-104	640	978795.75	7197171	257992	132.595885	-25.322395	456.54	-40.41	-82.49	-86.32	-91.48	II
M89-104	657	978795.35	7197292	258157	132.597544	-25.321330	458.30	-40.19	-82.44	-86.28	-91.46	II
M89-104	674	978795.53	7197413	258321	132.599194	-25.320265	457.56	-40.16	-82.34	-86.18	-91.35	II
M89-104	691	978796.92	7197533	258485	132.600843	-25.319208	450.92	-40.75	-82.31	-86.09	-91.19	II
M89-104	710	978798.80	7197668	258669	132.602694	-25.318020	442.90	-41.26	-82.09	-85.80	-90.81	II
M89-104	723	978798.99	7197760	258795	132.603961	-25.317210	442.82	-41.04	-81.86	-85.57	-90.58	II
M89-104	745	978798.60	7197917	259008	132.606103	-25.315828	444.25	-40.69	-81.84	-85.57	-90.59	II
M89-104	775	978797.34	7198130	259298	132.609019	-25.313953	450.68	-40.04	-81.58	-85.36	-90.46	II
M89-104	800	978796.47	7198303	259542	132.611472	-25.312431	454.68	-39.57	-81.48	-85.29	-90.43	
M89-104	820	978797.71	7198445	259735	132.613413	-25.311181	449.13	-39.95	-81.35	-85.12	-90.20	
M89-104	840	978798.77	7198587	259929	132.615363	-25.309931	449.68	-39.63	-80.09	-83.85	-88.94	
M89-104	860	978796.68	7198729	260122	132.617304	-25.308680	454.50	-39.15	-81.05	-84.85	-90.00	
M89-104	880	978797.85	7198871	260316	132.619255	-25.307430	450.25	-39.20	-80.71	-84.48	-89.57	
M89-104	900	978797.56	7199013	260509	132.621196	-25.306180	451.53	-39.01	-80.63	-84.42	-89.53	
M89-104	920	978796.46	7199155	260703	132.623146	-25.304930	457.43	-38.20	-80.37	-84.20	-89.38	
M89-104	940	978796.18	7199297	260896	132.625087	-25.303679	459.05	-37.90	-80.21	-84.06	-89.25	
M89-104	960	978796.63	7199438	261090	132.627037	-25.302438	459.77	-37.14	-79.52	-83.37	-88.57	
M89-104	980	978797.39	7199580	261284	132.628988	-25.301188	455.67	-37.56	-79.56	-83.39	-88.53	
M89-104	1000	978797.40	7199722	261477	132.630928	-25.299937	456.18	-37.30	-79.35	-83.17	-88.34	
M89-104	1020	978797.18	7199864	261671	132.632879	-25.298687	458.42	-36.74	-79.00	-82.84	-88.05	
M89-104	1040	978797.31	7200006	261864	132.634819	-25.297437	458.26	-36.58	-78.82	-82.66	-87.84	
M89-104	1060	978797.20	7200148	262058	132.636770	-25.296186	460.89	-35.79	-78.27	-82.13	-87.35	
M89-104	1080	978796.39	7200290	262251	132.638710	-25.294936	464.91	-35.27	-78.12	-82.02	-87.28	
M89-104	1100	978797.31	7200432	262445	132.640661	-25.293685	462.76	-34.92	-77.58	-81.46	-86.70	

M09-104	1111	978797.17	7200510	262550	132.641717	-25.292999	463.75	-34.71	-77.46	-81.35	-86.59	II
M09-104	1120	978797.08	7200574	262638	132.642601	-25.292435	464.70	-34.47	-77.30	-81.20	-86.46	
M09-104	1140	978796.46	7200716	262832	132.644551	-25.291184	468.04	-33.97	-77.11	-81.04	-86.33	
M09-104	1160	978796.98	7200858	263025	132.646491	-25.289933	466.61	-33.80	-76.82	-80.73	-86.01	
M09-104	1180	978797.52	7200999	263219	132.648441	-25.288692	464.37	-33.87	-76.68	-80.57	-85.82	
M09-104	1200	978797.60	7201141	263413	132.650391	-25.287441	464.65	-33.62	-76.45	-80.34	-85.60	
M09-104	1200	978797.51	7201141	263413	132.650391	-25.287441	464.65	-33.71	-76.54	-80.43	-85.69	
M09-104	1220	978797.40	7201283	263606	132.652332	-25.286190	465.94	-33.53	-76.28	-80.19	-85.46	
M09-104	1240	978796.93	7201425	263800	132.654282	-25.284940	467.12	-33.35	-76.41	-80.32	-85.61	
M09-104	1260	978796.11	7201567	263993	132.656222	-25.283689	462.19	-33.69	-76.21	-80.08	-85.31	
M09-104	1280	978798.01	7201709	264187	132.658172	-25.282438	462.77	-33.44	-76.10	-79.97	-85.21	
M09-104	1300	978798.55	7201851	264380	132.660112	-25.281187	460.17	-33.61	-76.03	-79.89	-85.09	
M09-104	1320	978798.55	7201993	264574	132.662061	-25.279937	459.98	-33.58	-75.99	-79.84	-85.04	
M09-104	1340	978799.11	7202135	264767	132.664001	-25.278686	457.05	-33.84	-75.97	-79.80	-84.97	
M09-104	1360	978799.65	7202277	264961	132.665951	-25.277435	454.57	-33.98	-75.88	-79.69	-84.83	
M09-104	1378	978799.96	7202404	265135	132.667700	-25.276316	452.34	-34.28	-75.98	-79.77	-84.88	
M09-104	1400	978799.91	7202560	265348	132.669840	-25.274942	452.61	-34.15	-75.87	-79.66	-84.79	
M09-104	1420	978799.46	7202702	265542	132.671790	-25.273691	454.39	-33.96	-75.85	-79.66	-84.80	
M09-104	1430	978799.35	7202774	265638	132.672756	-25.273057	454.68	-33.94	-75.85	-79.66	-84.81	II
M09-104	1440	978799.33	7202844	265735	132.673730	-25.272440	454.48	-33.98	-75.87	-79.68	-84.82	
M09-104	1460	978799.08	7202986	265929	132.675679	-25.271189	455.37	-33.87	-75.84	-79.66	-84.81	
M09-104	1480	978799.10	7203128	266122	132.677619	-25.269938	455.92	-33.59	-75.62	-79.44	-84.60	
M09-104	1500	978799.25	7203270	266316	132.679569	-25.268687	455.31	-33.54	-75.51	-79.33	-84.48	
M09-104	1520	978799.19	7203412	266509	132.681508	-25.267436	455.97	-33.31	-75.34	-79.16	-84.32	
M09-104	1540	978799.40	7203554	266703	132.683458	-25.266185	456.07	-32.96	-75.02	-78.84	-84.00	
M09-104	1560	978799.59	7203696	266896	132.685397	-25.264933	456.10	-32.70	-74.74	-78.56	-83.72	
M09-104	1579	978799.75	7203832	267081	132.687257	-25.263736	456.78	-32.24	-74.35	-78.18	-83.34	II
M09-104	1579	978799.72	7203832	267081	132.687257	-25.263736	456.78	-32.27	-74.38	-78.21	-83.37	II
M09-104	1580	978799.79	7203838	267090	132.687346	-25.263682	456.79	-32.20	-74.30	-78.13	-83.30	
M09-104	1600	978799.92	7203980	267284	132.689296	-25.262431	457.05	-31.90	-74.03	-77.86	-83.03	
M09-104	1600	978800.00	7203980	267284	132.689296	-25.262431	457.05	-31.82	-73.95	-77.78	-82.95	
M09-104	1600	978799.98	7203981	267285	132.689306	-25.262423	457.05	-31.84	-73.97	-77.80	-82.97	II
M09-105	100	978796.86	7186724	268719	132.700593	-25.418361	457.25	-45.78	-87.93	-91.77	-96.94	II
M09-105	120	978797.26	7186932	268599	132.699436	-25.416465	454.62	-46.06	-87.97	-91.78	-96.92	II
M09-105	133	978797.32	7187067	268521	132.698685	-25.415235	454.37	-45.99	-87.88	-91.69	-96.83	II
M09-105	154	978797.13	7187286	268396	132.697480	-25.413240	454.93	-45.87	-87.81	-91.62	-96.77	II
M09-105	166	978797.16	7187411	268324	132.696786	-25.412101	454.34	-45.94	-87.83	-91.63	-96.77	II
M09-105	181	978797.28	7187567	268234	132.695919	-25.410679	453.52	-45.98	-87.78	-91.58	-96.71	II
M09-105	197	978797.27	7187734	268139	132.695004	-25.409157	453.23	-45.97	-87.75	-91.55	-96.68	II
M09-105	211	978797.26	7187879	268055	132.694194	-25.407836	453.29	-45.87	-87.65	-91.45	-96.58	II
M09-105	226	978796.99	7188035	267965	132.693327	-25.406414	453.93	-45.84	-87.69	-91.49	-96.63	II
M09-105	240	978796.94	7188181	267881	132.692517	-25.405084	453.96	-45.79	-87.64	-91.44	-96.58	II
M09-105	240	978796.98	7188181	267881	132.692517	-25.405084	453.96	-45.75	-87.60	-91.40	-96.54	II
M09-105	250	978796.82	7188285	267822	132.691949	-25.404136	454.22	-45.76	-87.63	-91.44	-96.58	II
M09-105	264	978796.55	7188431	267739	132.691140	-25.402805	454.92	-45.73	-87.66	-91.47	-96.62	II
M09-105	278	978796.78	7188577	267654	132.690330	-25.401475	453.25	-45.92	-87.70	-91.50	-96.62	II
M09-105	292	978796.72	7188722	267570	132.689521	-25.400153	453.24	-45.89	-87.67	-91.47	-96.59	II
M09-105	310	978796.60	7188910	267463	132.688490	-25.398440	453.30	-45.87	-87.65	-91.45	-96.58	II
M09-105	327	978796.55	7189087	267361	132.687507	-25.396827	452.96	-45.91	-87.66	-91.46	-96.58	II
M09-105	340	978796.51	7189222	267283	132.686756	-25.395597	452.76	-45.93	-87.66	-91.46	-96.58	II
M09-105	352	978796.49	7189347	267212	132.686072	-25.394458	452.36	-45.99	-87.69	-91.48	-96.60	II
M09-105	370	978796.69	7189534	267104	132.685031	-25.392754	451.01	-46.09	-87.66	-91.44	-96.54	II
M09-105	382	978796.63	7189659	267032	132.684339	-25.391615	451.13	-46.03	-87.62	-91.40	-96.50	II
M09-105	397	978796.67	7189815	266942	132.683470	-25.390193	451.29	-45.84	-87.44	-91.22	-96.33	II
M09-105	409	978796.50	7189940	266871	132.682787	-25.389054	452.08	-45.69	-87.36	-91.15	-96.27	II
M09-105	421	978796.49	7190065	266799	132.682093	-25.387915	451.82	-45.70	-87.35	-91.14	-96.25	II
M09-105	433	978796.49	7190190	266727	132.681399	-25.386776	451.43	-45.74	-87.35	-91.14	-96.24	II
M09-105	442	978796.67	7190284	266673	132.680879	-25.385919	450.72	-45.72	-87.27	-91.04	-96.14	II

M09-105	466	978797.39	7190533	266530	132.679502	-25.383650	448.08	-45.66	-86.96	-90.72	-95.78	II
M09-105	474+11	978797.49	7190626	266477	132.678991	-25.382802	447.96	-45.53	-86.83	-90.58	-95.65	II
M09-105	474+11	978797.49	7190626	266477	132.678991	-25.382802	447.96	-45.53	-86.83	-90.58	-95.65	II
M09-105	474+11	978797.49	7190626	266477	132.678991	-25.382802	447.96	-45.53	-86.83	-90.58	-95.65	II
M09-105	480	978797.43	7190679	266446	132.678693	-25.382319	447.93	-45.57	-86.86	-90.61	-95.68	II
M09-105	496	978797.51	7190846	266350	132.677768	-25.380797	447.37	-45.56	-86.79	-90.54	-95.60	II
M09-105	514	978797.52	7191033	266243	132.676737	-25.379093	447.12	-45.50	-86.72	-90.47	-95.52	II
M09-105	526	978797.36	7191158	266171	132.676044	-25.377954	447.97	-45.32	-86.62	-90.37	-95.44	II
M09-105	547	978797.20	7191377	266045	132.674830	-25.375958	449.18	-44.97	-86.37	-90.14	-95.22	II
M09-105	562	978796.60	7191533	265956	132.673973	-25.374537	451.38	-44.79	-86.40	-90.18	-95.29	II
M09-105	572	978796.04	7191637	265896	132.673395	-25.373589	453.61	-44.60	-86.41	-90.21	-95.34	II
M09-105	583	978796.98	7191751	265830	132.672760	-25.372550	449.56	-44.83	-86.27	-90.04	-95.13	II
M09-105	601	978797.33	7191939	265722	132.671720	-25.370836	447.98	-44.85	-86.15	-89.90	-94.97	II
M09-105	601	978797.34	7191939	265722	132.671720	-25.370836	447.98	-44.84	-86.14	-89.89	-94.96	II
M09-105	620	978797.77	7192136	265609	132.670631	-25.369041	445.65	-45.01	-86.09	-89.82	-94.86	II
M09-105	631	978798.15	7192251	265543	132.669996	-25.367993	444.37	-44.95	-85.91	-89.63	-94.66	II
M09-105	648	978798.81	7192428	265441	132.669013	-25.366380	441.91	-44.93	-85.67	-89.37	-94.37	II
M09-105	664	978799.81	7192594	265346	132.668099	-25.364867	437.61	-45.15	-85.49	-89.16	-94.11	II
M09-105	680	978799.91	7192761	265250	132.667174	-25.363345	437.00	-45.14	-85.42	-89.08	-94.03	II
M09-105	705	978799.91	7193021	265101	132.665740	-25.360976	438.53	-44.50	-84.92	-88.60	-93.56	II
M09-105	720	978799.75	7193177	265011	132.664873	-25.359554	438.44	-44.59	-85.00	-88.68	-93.64	II
M09-105	723	978799.74	7193208	264993	132.664700	-25.359271	438.41	-44.59	-85.00	-88.67	-93.63	II
M09-105	742	978799.11	7193406	264879	132.663602	-25.357467	441.11	-44.26	-84.92	-88.62	-93.61	II
M09-105	754	978798.91	7193531	264807	132.662909	-25.356328	441.97	-44.11	-84.85	-88.56	-93.56	II
M09-105	772	978798.56	7193718	264700	132.661879	-25.354623	443.95	-43.73	-84.66	-88.38	-93.40	II
M09-105	789	978797.33	7193895	264598	132.660896	-25.353010	449.41	-43.16	-84.59	-88.36	-93.44	II
M09-105	805	978796.65	7194062	264502	132.659972	-25.351488	452.66	-42.74	-84.46	-88.26	-93.38	II
M09-105	817	978797.21	7194187	264431	132.659289	-25.350349	450.21	-42.85	-84.35	-88.13	-93.22	II
M09-105	829	978797.51	7194312	264359	132.658596	-25.349210	448.90	-42.88	-84.26	-88.02	-93.10	II
M09-105	841	978797.65	7194437	264287	132.657902	-25.348071	448.82	-42.68	-84.05	-87.82	-92.89	II
M09-105	856	978797.72	7194593	264197	132.657036	-25.346649	449.17	-42.40	-83.81	-87.57	-92.65	II
M09-105	877	978797.34	7194811	264072	132.655833	-25.344662	451.79	-41.84	-83.48	-87.27	-92.38	II
M09-105	877	978797.32	7194811	264072	132.655833	-25.344662	451.79	-41.86	-83.50	-87.29	-92.40	II
M09-105	877	978797.33	7194811	264072	132.655833	-25.344662	451.79	-41.85	-83.49	-87.28	-92.39	II
M09-105	877	978797.35	7194811	264072	132.655833	-25.344662	451.79	-41.83	-83.47	-87.26	-92.37	II
M09-105	877	978797.34	7194811	264072	132.655833	-25.344662	451.79	-41.84	-83.48	-87.27	-92.38	II
M09-105	880	978797.41	7194848	264072	132.655838	-25.344328	452.28	-41.59	-83.28	-87.07	-92.19	
M09-105	900	978796.34	7195056	263953	132.654693	-25.342432	457.72	-40.85	-83.04	-86.88	-92.06	
M09-105	920	978794.57	7195265	263834	132.653548	-25.340527	466.71	-39.71	-82.74	-86.65	-91.93	
M09-105	940	978794.79	7195473	263715	132.652403	-25.338632	465.53	-39.73	-82.64	-86.54	-91.81	
M09-105	960	978795.29	7195681	263596	132.651257	-25.336736	463.76	-39.64	-82.39	-86.28	-91.52	
M09-105	980	978796.14	7195890	263477	132.650112	-25.334831	459.94	-39.84	-82.23	-86.09	-91.29	
M09-105	1000	978796.57	7196098	263358	132.648967	-25.332936	457.88	-39.91	-82.12	-85.95	-91.13	
M09-105	1018	978796.91	7196286	263251	132.647938	-25.331222	456.48	-39.88	-81.96	-85.79	-90.95	
M09-107	260	978798.86	7198229	258771	132.603805	-25.312974	444.22	-40.44	-81.39	-85.11	-90.14	
M09-107	280	978797.48	7198098	258971	132.605767	-25.314188	450.37	-40.01	-81.52	-85.30	-90.39	
M09-107	300	978797.45	7197968	259171	132.607730	-25.315394	451.05	-39.91	-81.49	-85.27	-90.37	
M09-107	320	978797.17	7197838	259370	132.609682	-25.316599	451.94	-40.00	-81.66	-85.45	-90.56	
M09-107	340	978796.36	7197707	259570	132.611644	-25.317813	455.25	-39.88	-81.84	-85.66	-90.81	
M09-107	360	978796.86	7197577	259770	132.613606	-25.319018	452.56	-40.29	-82.01	-85.80	-90.92	
M09-107	380	978798.19	7197446	259969	132.615559	-25.320232	446.75	-40.84	-82.02	-85.76	-90.82	
M09-107	400	978798.91	7197316	260169	132.617521	-25.321437	443.54	-41.19	-82.08	-85.79	-90.81	
M09-107	420	978798.39	7197186	260368	132.619474	-25.322642	446.19	-40.98	-82.11	-85.85	-90.89	
M09-107	440	978797.04	7197055	260568	132.621436	-25.323856	452.28	-40.53	-82.22	-86.01	-91.13	
M09-107	460	978796.90	7196925	260768	132.623399	-25.325061	453.08	-40.51	-82.28	-86.07	-91.20	
M09-107	480	978798.02	7196795	260967	132.625351	-25.326266	448.90	-40.76	-82.14	-85.91	-90.98	
M09-107	500	978797.66	7196664	261167	132.627314	-25.327480	449.92	-40.89	-82.37	-86.14	-91.23	
M09-107	520	978797.40	7196534	261366	132.629267	-25.328685	451.17	-40.85	-82.44	-86.22	-91.33	

M89-107	540	978796.26	7196404	261566	132.631229	-25.329890	456.75	-40.36	-82.46	-86.29	-91.45
M89-107	560	978796.31	7196273	261766	132.633192	-25.331104	456.55	-40.45	-82.54	-86.36	-91.53
M89-107	580	978795.92	7196143	261965	132.635145	-25.332308	458.58	-40.30	-82.57	-86.41	-91.60
M89-107	600	978796.44	7196013	262165	132.637108	-25.333513	456.62	-40.47	-82.56	-86.39	-91.55
M89-107	600	978796.34	7196013	262165	132.637108	-25.333513	456.62	-40.57	-82.66	-86.49	-91.65
M89-107	620	978796.49	7195882	262365	132.639070	-25.334727	456.79	-40.45	-82.56	-86.39	-91.55
M89-107	640	978795.78	7195752	262564	132.641023	-25.335932	460.19	-40.20	-82.62	-86.47	-91.68
M89-107	660	978795.66	7195621	262764	132.642986	-25.337145	460.60	-40.27	-82.73	-86.59	-91.80
M89-107	680	978796.29	7195491	262963	132.644939	-25.338350	458.09	-40.50	-82.73	-86.57	-91.75
M89-107	700	978795.91	7195361	263163	132.646902	-25.339555	459.08	-40.66	-82.98	-86.83	-92.02
M89-107	720	978795.20	7195230	263363	132.648865	-25.340769	462.44	-40.42	-83.05	-86.92	-92.15
M89-107	740	978794.82	7195100	263562	132.650818	-25.341973	464.30	-40.31	-83.11	-87.00	-92.25
M89-107	760	978794.81	7194970	263762	132.652782	-25.343178	464.37	-40.38	-83.19	-87.08	-92.33
M89-107	780	978796.93	7194839	263961	132.654735	-25.344391	454.49	-41.40	-83.29	-87.10	-92.24
M89-107	780	978797.00	7194839	263961	132.654735	-25.344391	454.49	-41.33	-83.22	-87.03	-92.17
M89-107	800	978797.86	7194709	264161	132.656698	-25.345596	450.02	-41.93	-83.41	-87.18	-92.27
M89-107	820	978797.95	7194579	264361	132.658661	-25.346800	448.98	-42.24	-83.63	-87.39	-92.47
M89-107	840	978797.58	7194448	264560	132.660615	-25.348014	449.77	-42.45	-83.91	-87.68	-92.77
M89-107	860	978799.75	7194318	264760	132.662578	-25.349218	439.47	-43.55	-84.06	-87.74	-92.71
M89-107	880	978800.10	7194187	264960	132.664541	-25.350432	436.58	-44.17	-84.42	-88.08	-93.02
M89-107	900	978800.33	7194057	265159	132.666495	-25.351636	434.66	-44.62	-84.69	-88.33	-93.25
M89-107	920	978800.41	7193927	265359	132.668458	-25.352841	435.24	-44.45	-84.57	-88.21	-93.14
M89-107	934	978800.49	7193836	265499	132.669833	-25.353684	437.04	-43.87	-84.16	-87.82	-92.76
P89-100	100	978803.35	7219935	160707	131.636237	-25.098255	492.69	-6.06	-51.48	-55.60	-61.18
P89-100	120	978803.39	7219901	160942	131.638555	-25.098614	492.70	-6.04	-51.46	-55.59	-61.16
P89-100	140	978803.23	7219868	161178	131.640884	-25.098965	493.44	-6.00	-51.48	-55.62	-61.20
P89-100	160	978803.19	7219835	161414	131.643212	-25.099315	493.68	-5.99	-51.49	-55.63	-61.22
P89-100	180	978803.03	7219801	161649	131.645530	-25.099674	494.22	-6.01	-51.56	-55.70	-61.30
P89-100	200	978802.91	7219768	161885	131.647859	-25.100025	494.84	-5.96	-51.57	-55.72	-61.32
P89-100	200	978802.93	7219768	161885	131.647859	-25.100025	494.84	-5.94	-51.55	-55.70	-61.30
P89-100	220	978802.58	7219735	162121	131.650187	-25.100375	495.69	-6.05	-51.74	-55.90	-61.50
P89-100	240	978802.33	7219701	162356	131.652506	-25.100734	497.07	-5.90	-51.72	-55.88	-61.51
P89-100	260	978801.66	7219668	162592	131.654834	-25.101085	499.66	-5.79	-51.85	-56.04	-61.69
P89-100	280	978800.61	7219635	162828	131.657163	-25.101435	503.33	-5.74	-52.13	-56.35	-62.05
P89-100	300	978800.15	7219601	163064	131.659491	-25.101794	503.36	-6.21	-52.61	-56.83	-62.52
P89-100	300	978800.05	7219601	163064	131.659491	-25.101794	503.36	-6.31	-52.71	-56.93	-62.62
P89-100	320	978798.37	7219568	163299	131.661810	-25.102144	508.00	-6.58	-53.41	-57.67	-63.42
P89-100	340	978798.49	7219535	163535	131.664138	-25.102494	507.01	-6.79	-53.53	-57.78	-63.51
P89-100	360	978799.21	7219501	163771	131.666467	-25.102853	506.47	-6.27	-52.95	-57.20	-62.93
P89-100	380	978799.37	7219468	164006	131.668785	-25.103203	506.56	-6.10	-52.80	-57.04	-62.77
P89-100	400	978798.72	7219435	164242	131.671114	-25.103553	511.41	-5.28	-52.42	-56.71	-62.49
P89-100	420	978800.11	7219402	164478	131.673443	-25.103903	508.78	-4.73	-51.62	-55.89	-61.64
P89-100	440	978799.63	7219368	164714	131.675771	-25.104262	506.01	-6.09	-52.73	-56.97	-62.69
P89-100	460	978799.60	7219335	164949	131.678090	-25.104612	504.09	-6.73	-53.20	-57.42	-63.13
P89-100	480	978799.82	7219302	165185	131.680418	-25.104962	502.65	-6.98	-53.31	-57.53	-63.21
P89-100	500	978800.24	7219268	165421	131.682747	-25.105321	501.42	-6.97	-53.19	-57.39	-63.06
P89-100	500	978800.18	7219268	165421	131.682747	-25.105321	501.42	-7.03	-53.25	-57.45	-63.12
P89-100	520	978800.22	7219235	165656	131.685066	-25.105670	500.60	-7.26	-53.41	-57.60	-63.27
P89-100	540	978799.78	7219202	165892	131.687395	-25.106020	501.00	-7.60	-53.79	-57.98	-63.65
P89-100	560	978798.84	7219168	166128	131.689723	-25.106379	501.06	-8.55	-54.74	-58.94	-64.60
P89-100	580	978798.41	7219135	166364	131.692052	-25.106729	501.65	-8.82	-55.06	-59.27	-64.94
P89-100	600	978797.83	7219102	166599	131.694371	-25.107078	502.80	-9.07	-55.42	-59.63	-65.32
P89-100	620	978796.85	7219068	166835	131.696699	-25.107437	502.97	-10.02	-56.39	-60.60	-66.29
P89-100	640	978797.94	7219035	167071	131.699028	-25.107786	501.90	-9.29	-55.55	-59.76	-65.44
P89-100	660	978798.05	7219002	167306	131.701347	-25.108136	501.57	-9.30	-55.54	-59.74	-65.42
P89-100	680	978798.21	7218968	167542	131.703676	-25.108494	501.09	-9.32	-55.51	-59.71	-65.38
P89-100	700	978797.84	7218935	167778	131.706005	-25.108844	501.00	-9.74	-55.92	-60.12	-65.79
P89-100	720	978797.48	7218902	168014	131.708334	-25.109193	500.49	-10.28	-56.42	-60.61	-66.27

P89-100	740	978797.09	7218869	168249	131.710653	-25.109542	499.86	-10.89	-56.97	-61.16	-66.81
P89-100	760	978797.09	7218835	168485	131.712981	-25.109901	499.77	-10.94	-57.01	-61.20	-66.85
P89-100	780	978796.58	7218802	168721	131.715310	-25.110250	500.54	-11.24	-57.38	-61.57	-67.24
P89-100	800	978796.63	7218769	168956	131.717629	-25.110599	500.00	-11.38	-57.47	-61.66	-67.32
P89-100	820	978796.90	7218735	169192	131.719958	-25.110958	499.00	-11.44	-57.44	-61.62	-67.27
P89-100	840	978797.31	7218702	169428	131.722287	-25.111307	500.00	-10.75	-56.84	-61.03	-66.69
P89-100	860	978797.94	7218669	169664	131.724616	-25.111656	500.00	-10.14	-56.23	-60.42	-66.08
P89-100	880	978797.95	7218635	169899	131.726935	-25.112014	499.00	-10.47	-56.46	-60.65	-66.29
P89-100	920	978798.00	7218569	170371	131.731593	-25.112712	498.00	-10.77	-56.68	-60.85	-66.49
P89-100	940	978797.05	7218535	170606	131.733912	-25.113070	500.00	-11.13	-57.22	-61.41	-67.07
P89-100	960	978797.14	7218502	170842	131.736241	-25.113419	498.59	-11.50	-57.46	-61.64	-67.28
P89-100	980	978796.25	7218469	171078	131.738571	-25.113768	500.00	-11.98	-58.07	-62.26	-67.92
P89-100	1000	978796.42	7218472	171065	131.738443	-25.113739	500.00	-11.81	-57.90	-62.09	-67.74
P89-100	1000	978796.37	7218436	171314	131.740900	-25.114117	500.00	-11.88	-57.97	-62.16	-67.82
P89-100	1020	978796.29	7218437	171305	131.740811	-25.114106	502.00	-11.35	-57.62	-61.83	-67.51
P89-100	1040	978796.23	7218402	171546	131.743189	-25.114474	503.00	-11.12	-57.49	-61.70	-67.39
P89-100	1060	978796.40	7218367	171786	131.745557	-25.114842	501.57	-11.42	-57.65	-61.86	-67.53
P89-100	1080	978796.58	7218332	172027	131.747936	-25.115210	501.67	-11.23	-57.48	-61.68	-67.36
P89-100	1100	978796.08	7218297	172267	131.750304	-25.115578	503.00	-11.35	-57.72	-61.93	-67.62
P89-100	1100	978796.08	7218297	172267	131.750304	-25.115578	502.64	-11.46	-57.79	-62.01	-67.69
P89-100	1120	978795.92	7218262	172508	131.752682	-25.115946	504.00	-11.23	-57.68	-61.91	-67.61
P89-100	1140	978795.29	7218227	172748	131.755051	-25.116314	505.91	-11.29	-57.93	-62.17	-67.89
P89-100	1160	978793.62	7218192	172989	131.757429	-25.116681	512.45	-10.97	-58.21	-62.50	-68.30
P89-100	1180	978793.83	7218157	173229	131.759798	-25.117049	511.07	-11.21	-58.32	-62.60	-68.39
P89-100	1200	978792.90	7218122	173470	131.762176	-25.117417	514.00	-11.26	-58.64	-62.95	-68.76
P89-100	1220	978791.72	7218087	173711	131.764554	-25.117785	517.00	-11.54	-59.20	-63.53	-69.38
P89-100	1240	978791.62	7218052	173951	131.766923	-25.118152	515.73	-12.06	-59.60	-63.92	-69.76
P89-100	1260	978791.08	7218018	174192	131.769301	-25.118511	516.72	-12.32	-59.95	-64.28	-70.13
P89-100	1280	978790.53	7217983	174432	131.771670	-25.118878	518.05	-12.48	-60.24	-64.58	-70.44
P89-100	1300	978789.99	7217948	174673	131.774048	-25.119246	519.95	-12.46	-60.39	-64.75	-70.63
P89-100	1320	978789.25	7217913	174913	131.776417	-25.119613	524.54	-11.81	-60.16	-64.56	-70.49
P89-100	1340	978788.35	7217878	175154	131.778796	-25.119981	530.00	-11.05	-59.91	-64.35	-70.34
P89-100	1360	978787.89	7217843	175394	131.781164	-25.120348	532.00	-10.92	-59.96	-64.42	-70.44
P89-100	1380	978787.02	7217808	175635	131.783543	-25.120715	534.00	-11.20	-60.42	-64.90	-70.94
P89-100	1400	978786.40	7217773	175876	131.785921	-25.121083	536.00	-11.23	-60.64	-65.13	-71.19
P89-100	1420	978786.73	7217738	176116	131.788290	-25.121450	535.00	-11.23	-60.55	-65.03	-71.08
P89-100	1440	978785.72	7217703	176357	131.790668	-25.121817	539.76	-10.80	-60.55	-65.08	-71.18
P89-100	1460	978787.22	7217668	176597	131.793037	-25.122184	536.00	-10.48	-59.89	-64.38	-70.45
P89-100	1480	978786.07	7217633	176838	131.795416	-25.122551	542.00	-9.81	-59.77	-64.31	-70.44
P89-100	1500	978786.21	7217599	177078	131.797785	-25.122909	541.00	-10.00	-59.87	-64.40	-70.52
P89-100	1520	978786.11	7217564	177319	131.800163	-25.123277	542.00	-9.82	-59.78	-64.32	-70.45
P89-100	1540	978786.28	7217529	177559	131.802532	-25.123644	541.66	-9.78	-59.71	-64.25	-70.38
P89-100	1560	978787.15	7217494	177800	131.804911	-25.124011	538.00	-10.06	-59.66	-64.16	-70.25
P89-100	1580	978788.34	7217459	178040	131.807280	-25.124378	530.00	-11.37	-60.22	-64.66	-70.66
P89-100	1600	978788.95	7217424	178281	131.809658	-25.124745	529.00	-11.09	-59.85	-64.29	-70.27
P89-100	1600	978788.99	7217424	178281	131.809658	-25.124745	529.00	-11.05	-59.81	-64.25	-70.23
P89-100	1620	978789.62	7217389	178522	131.812037	-25.125112	526.00	-11.37	-59.86	-64.27	-70.22
P89-100	1640	978788.94	7217354	178762	131.814406	-25.125478	528.00	-11.46	-60.13	-64.56	-70.53
P89-100	1660	978789.00	7217319	179003	131.816785	-25.125845	528.00	-11.43	-60.10	-64.52	-70.50
P89-100	1680	978788.23	7217284	179243	131.819154	-25.126212	528.65	-12.02	-60.75	-65.18	-71.16
P89-100	1700	978788.87	7217249	179484	131.821533	-25.126579	527.02	-11.91	-60.49	-64.91	-70.87
P89-100	1720	978789.27	7217214	179724	131.823902	-25.126945	525.00	-12.16	-60.55	-64.95	-70.89
P89-100	1740	978789.12	7217180	179965	131.826281	-25.127303	523.00	-12.95	-61.16	-65.54	-71.46
P89-100	1760	978788.30	7217145	180205	131.828650	-25.127670	525.00	-13.18	-61.57	-65.97	-71.91
P89-100	1780	978787.14	7217110	180446	131.831029	-25.128036	527.00	-13.75	-62.33	-66.74	-72.70
P89-100	1800	978786.44	7217075	180687	131.833408	-25.128403	528.00	-14.16	-62.83	-67.26	-73.23
P89-100	1820	978786.30	7217040	180927	131.835777	-25.128769	526.31	-14.85	-63.37	-67.78	-73.73
P89-100	1840	978786.53	7217005	181168	131.838156	-25.129136	523.94	-15.38	-63.67	-68.07	-73.99

P89-100	1860	978786.56	7216970	181409	131.840525	-25.129502	523.29	-15.57	-63.81	-68.20	-74.12
P89-100	1880	978787.01	7216935	181649	131.842904	-25.129869	522.08	-15.52	-63.65	-68.02	-73.93
P89-100	1900	978788.05	7216900	181889	131.845273	-25.130235	520.84	-14.89	-62.90	-67.27	-73.16
P89-100	1920	978788.55	7216865	182130	131.847652	-25.130602	520.52	-14.51	-62.50	-66.86	-72.75
P89-100	1940	978789.79	7216830	182370	131.850021	-25.130968	521.00	-14.15	-62.18	-66.54	-72.44
P89-100	1960	978788.96	7216795	182611	131.852400	-25.131334	520.59	-14.13	-62.12	-66.48	-72.37
P89-100	1980	978789.62	7216761	182851	131.854769	-25.131691	520.01	-13.68	-61.61	-65.97	-71.85
P89-100	2000	978790.13	7216726	183092	131.857149	-25.132058	520.00	-13.20	-61.13	-65.49	-71.37
P89-100	2000	978790.14	7216726	183092	131.857149	-25.132058	519.63	-13.30	-61.20	-65.55	-71.43
P89-100	2020	978790.52	7216691	183333	131.859528	-25.132424	519.47	-13.00	-60.88	-65.23	-71.11
P89-100	2040	978790.82	7216656	183573	131.861897	-25.132790	518.91	-12.89	-60.73	-65.08	-70.95
P89-100	2060	978790.99	7216621	183814	131.864276	-25.133156	519.49	-12.57	-60.46	-64.81	-70.69
P89-100	2080	978791.34	7216586	184054	131.866645	-25.133522	519.57	-12.22	-60.11	-64.47	-70.35
P89-100	2100	978791.71	7216551	184295	131.869025	-25.133888	519.34	-11.95	-59.82	-64.17	-70.05
P89-100	2120	978792.52	7216516	184535	131.871394	-25.134254	518.41	-11.45	-59.24	-63.58	-69.45
P89-100	2140	978792.78	7216481	184776	131.873773	-25.134620	517.00	-11.65	-59.31	-63.64	-69.49
P89-100	2160	978792.71	7216446	185016	131.876142	-25.134986	517.00	-11.75	-59.40	-63.73	-69.58
P89-100	2180	978792.50	7216411	185257	131.878522	-25.135352	516.00	-12.29	-59.85	-64.18	-70.02
P89-100	2200	978792.22	7216376	185498	131.880901	-25.135718	515.00	-12.90	-60.38	-64.69	-70.52
P89-100	2220	978791.72	7216342	185738	131.883271	-25.136074	515.00	-13.43	-60.90	-65.22	-71.04
P89-100	2240	978790.98	7216307	185979	131.885650	-25.136440	515.00	-14.19	-61.67	-65.98	-71.81
P89-100	2260	978790.62	7216272	186219	131.888019	-25.136806	515.00	-14.58	-62.05	-66.37	-72.19
P89-100	2280	978790.37	7216237	186460	131.890399	-25.137172	515.00	-14.85	-62.33	-66.64	-72.47
P89-100	2300	978790.65	7216202	186700	131.892768	-25.137537	514.17	-14.86	-62.25	-66.56	-72.38
P89-100	2320	978791.20	7216167	186941	131.895148	-25.137903	513.70	-14.48	-61.83	-66.13	-71.95
P89-100	2340	978791.71	7216132	187181	131.897517	-25.138268	513.00	-14.21	-61.50	-65.79	-71.60
P89-100	2360	978791.93	7216097	187422	131.899897	-25.138634	512.00	-14.32	-61.52	-65.81	-71.60
P89-100	2380	978792.25	7216062	187662	131.902266	-25.138999	511.00	-14.34	-61.44	-65.72	-71.50
P89-100	2400	978792.62	7216027	187903	131.904646	-25.139365	510.00	-14.30	-61.31	-65.59	-71.35
P89-100	2400	978792.63	7216027	187903	131.904646	-25.139365	510.00	-14.29	-61.30	-65.58	-71.34
P89-100	2420	978792.95	7215992	188144	131.907025	-25.139731	508.00	-14.61	-61.44	-65.70	-71.44
P89-100	2440	978793.10	7215957	188384	131.909395	-25.140096	508.13	-14.45	-61.29	-65.54	-71.29
P89-100	2460	978793.12	7215923	188625	131.911775	-25.140452	506.86	-14.84	-61.57	-65.81	-71.55
P89-100	2480	978793.12	7215888	188865	131.914144	-25.140817	504.48	-15.60	-62.11	-66.33	-72.04
P89-100	2500	978793.19	7215853	189106	131.916524	-25.141183	502.75	-16.09	-62.44	-66.65	-72.34
P89-100	2520	978793.37	7215818	189346	131.918894	-25.141548	502.76	-15.94	-62.28	-66.49	-72.18
P89-100	2540	978793.80	7215783	189587	131.921273	-25.141913	502.77	-15.53	-61.87	-66.09	-71.77
P89-100	2560	978792.77	7215748	189827	131.923643	-25.142278	501.59	-16.95	-63.18	-67.39	-73.06
P89-100	2580	978792.19	7215713	190068	131.926023	-25.142644	502.04	-17.41	-63.69	-67.90	-73.58
P89-100	2600	978792.27	7215678	190309	131.928402	-25.143009	505.37	-16.33	-62.92	-67.15	-72.87
P89-100	2620	978790.85	7215643	190549	131.930772	-25.143374	514.00	-15.11	-62.49	-66.80	-72.62
P89-100	2640	978793.45	7215608	190790	131.933152	-25.143739	501.36	-16.44	-62.65	-66.86	-72.53
P89-100	2660	978793.96	7215573	191030	131.935522	-25.144104	501.00	-16.07	-62.25	-66.45	-72.11
P89-100	2680	978794.16	7215538	191271	131.937901	-25.144469	498.39	-16.70	-62.64	-66.81	-72.45
P89-100	2700	978794.38	7215504	191511	131.940271	-25.144825	497.89	-16.66	-62.55	-66.72	-72.36
P89-100	2720	978794.11	7215469	191752	131.942651	-25.145190	498.00	-16.92	-62.82	-67.00	-72.63
P89-100	2740	978794.78	7215434	191992	131.945021	-25.145554	497.00	-16.58	-62.39	-66.56	-72.18
P89-100	2760	978795.10	7215399	192233	131.947401	-25.145919	496.00	-15.98	-61.88	-66.06	-71.69
P89-100	2780	978794.77	7215364	192473	131.949771	-25.146284	497.00	-16.64	-62.46	-66.62	-72.24
P89-100	2800	978794.78	7215329	192714	131.952151	-25.146649	498.00	-16.35	-62.25	-66.43	-72.06
P89-100	2800	978794.86	7215329	192714	131.952151	-25.146649	498.00	-16.27	-62.17	-66.35	-71.98
P89-100	2820	978794.83	7215294	192955	131.954530	-25.147013	498.00	-16.32	-62.23	-66.40	-72.04
P89-100	2840	978795.20	7215259	193195	131.956900	-25.147378	496.70	-16.38	-62.17	-66.33	-71.95
P89-100	2860	978795.81	7215224	193436	131.959280	-25.147743	495.09	-16.29	-61.93	-66.08	-71.68
P89-100	2880	978796.04	7215189	193676	131.961650	-25.148107	494.16	-16.37	-61.93	-66.07	-71.66
P89-100	2900	978795.56	7215154	193917	131.964030	-25.148472	497.00	-16.00	-61.82	-65.98	-71.60
P89-100	2940	978796.16	7215085	194398	131.968781	-25.149192	496.62	-15.57	-61.35	-65.51	-71.13
P89-100	2960	978796.46	7215050	194638	131.971151	-25.149556	494.00	-16.10	-61.64	-65.78	-71.37

P89-100	2980	978796.33	7215015	194879	131.973531	-25.149921	492.00	-16.88	-62.23	-66.35	-71.92
P89-100	3000	978796.33	7214980	195120	131.975911	-25.150285	489.00	-17.83	-62.90	-67.00	-72.53
P89-100	3020	978795.96	7214945	195360	131.978281	-25.150649	490.95	-17.62	-62.88	-66.99	-72.55
P89-100	3040	978796.47	7214910	195601	131.980661	-25.151014	489.00	-17.74	-62.81	-66.91	-72.44
P89-100	3060	978796.40	7214875	195841	131.983031	-25.151378	491.00	-17.22	-62.48	-66.59	-72.15
P89-100	3080	978796.08	7214840	196082	131.985411	-25.151742	493.00	-16.95	-62.39	-66.52	-72.10
P89-100	3100	978796.25	7214805	196322	131.987781	-25.152106	493.00	-16.80	-62.25	-66.38	-71.95
P89-100	3120	978796.56	7214770	196563	131.990162	-25.152470	493.00	-16.52	-61.96	-66.09	-71.67
P89-100	3140	978796.04	7214735	196803	131.992532	-25.152834	494.00	-16.75	-62.29	-66.43	-72.02
P89-100	3160	978795.48	7214700	197044	131.994912	-25.153199	496.00	-16.72	-62.44	-66.60	-72.21
P89-100	3180	978793.64	7214666	197285	131.997292	-25.153554	501.00	-17.04	-63.22	-67.42	-73.09
P89-103	100	978791.02	7208004	185842	131.882387	-25.211283	486.21	-28.24	-73.06	-77.13	-82.63
P89-103	120	978790.39	7208244	185845	131.882472	-25.209120	489.00	-27.86	-72.93	-77.03	-82.56
P89-103	140	978791.27	7208484	185849	131.882567	-25.206957	487.00	-27.44	-72.34	-76.42	-81.93
P89-103	160	978791.70	7208724	185853	131.882662	-25.204793	486.00	-27.17	-71.97	-76.04	-81.54
P89-103	180	978792.03	7208964	185857	131.882757	-25.202630	486.00	-26.69	-71.49	-75.56	-81.06
P89-103	200	978792.17	7209204	185860	131.882842	-25.200466	488.00	-25.78	-70.77	-74.86	-80.38
P89-103	220	978792.71	7209444	185864	131.882936	-25.198303	487.00	-25.40	-70.29	-74.38	-79.88
P89-103	240	978792.80	7209684	185868	131.883031	-25.196140	488.00	-24.85	-69.84	-73.93	-79.45
P89-103	260	978792.79	7209924	185872	131.883126	-25.193976	490.00	-24.10	-69.26	-73.37	-78.91
P89-103	280	978792.84	7210164	185875	131.883211	-25.191813	491.00	-23.59	-68.85	-72.96	-78.52
P89-103	300	978793.01	7210404	185879	131.883306	-25.189649	492.00	-22.96	-68.31	-72.43	-78.00
P89-103	320	978792.97	7210644	185883	131.883400	-25.187486	493.00	-22.54	-67.98	-72.11	-77.69
P89-103	340	978792.93	7210884	185887	131.883495	-25.185323	493.00	-22.43	-67.87	-72.00	-77.58
P89-103	360	978792.90	7211124	185890	131.883580	-25.183159	494.49	-21.85	-67.43	-71.57	-77.17
P89-103	380	978792.93	7211364	185894	131.883675	-25.180996	496.00	-21.20	-66.92	-71.08	-76.69
P89-103	400	978792.74	7211604	185898	131.883769	-25.178833	496.82	-20.99	-66.79	-70.95	-76.57
P89-103	400	978792.59	7211604	185898	131.883769	-25.178833	496.82	-21.14	-66.94	-71.10	-76.72
P89-103	420	978792.21	7211845	185902	131.883864	-25.176660	498.14	-20.96	-66.88	-71.05	-76.69
P89-103	440	978790.11	7212085	185905	131.883949	-25.174497	506.00	-20.48	-67.13	-71.37	-77.09
P89-103	460	978788.12	7212325	185909	131.884044	-25.172333	515.41	-19.42	-66.93	-71.25	-77.08
P89-103	480	978786.26	7212565	185913	131.884139	-25.170170	522.11	-19.06	-67.19	-71.57	-77.47
P89-103	480	978786.18	7212565	185913	131.884139	-25.170170	522.11	-19.14	-67.27	-71.65	-77.55
P89-103	500	978787.46	7212805	185917	131.884233	-25.168007	518.44	-18.84	-66.63	-70.98	-76.84
P89-103	500	978787.40	7212805	185917	131.884233	-25.168007	518.44	-18.90	-66.69	-71.04	-76.90
P89-103	520	978785.90	7213045	185920	131.884318	-25.165843	527.00	-17.61	-66.19	-70.61	-76.57
P89-103	540	978787.87	7213285	185924	131.884413	-25.163680	519.00	-17.96	-65.80	-70.15	-76.02
P89-103	560	978787.52	7213525	185928	131.884507	-25.161516	517.00	-18.78	-66.43	-70.77	-76.62
P89-103	580	978785.75	7213765	185932	131.884602	-25.159353	523.48	-18.40	-66.65	-71.04	-76.96
P89-103	600	978785.49	7214005	185936	131.884697	-25.157190	524.00	-18.35	-66.65	-71.04	-76.97
P89-103	600	978785.53	7214005	185936	131.884697	-25.157190	524.00	-18.31	-66.61	-71.00	-76.93
P89-103	620	978786.78	7214245	185939	131.884781	-25.155026	520.00	-18.14	-66.07	-70.43	-76.31
P89-103	640	978787.76	7214485	185943	131.884876	-25.152863	515.00	-18.55	-66.03	-70.34	-76.17
P89-103	660	978787.78	7214725	185947	131.884971	-25.150699	512.00	-19.31	-66.51	-70.80	-76.59
P89-103	680	978788.24	7214965	185951	131.885065	-25.148536	511.00	-19.01	-66.11	-70.39	-76.17
P89-103	700	978788.42	7215205	185954	131.885150	-25.146372	511.80	-18.43	-65.61	-69.90	-75.69
P89-103	720	978789.50	7215445	185958	131.885245	-25.144209	511.14	-17.40	-64.52	-68.80	-74.59
P89-103	740	978790.45	7215686	185962	131.885339	-25.142037	512.64	-15.84	-63.10	-67.39	-73.19
P89-103	760	978790.46	7215926	185966	131.885434	-25.139873	513.49	-15.42	-62.75	-67.05	-72.86
P89-103	780	978791.03	7216166	185969	131.885519	-25.137710	514.34	-14.44	-61.85	-66.16	-71.98
P89-103	800	978791.68	7216406	185973	131.885613	-25.135546	515.23	-13.36	-60.85	-65.17	-71.00
P89-103	820	978792.05	7216646	185977	131.885708	-25.133383	518.31	-11.89	-59.67	-64.01	-69.87
P89-103	840	978791.41	7216886	185981	131.885802	-25.131220	518.00	-12.48	-60.22	-64.57	-70.43
P89-103	860	978791.14	7217126	185984	131.885897	-25.129056	520.00	-11.98	-59.91	-64.27	-70.15
P89-103	880	978790.53	7217366	185988	131.885982	-25.126893	521.00	-12.13	-60.16	-64.52	-70.42
P89-103	900	978789.96	7217606	185992	131.886076	-25.124729	522.00	-12.24	-60.36	-64.73	-70.64
P89-103	900	978790.03	7217606	185992	131.886076	-25.124729	522.00	-12.17	-60.29	-64.66	-70.57
P89-103	920	978789.30	7217846	185996	131.886171	-25.122566	524.00	-12.13	-60.44	-64.83	-70.75

P89-103	940	978788.22	7218086	185999	131.886255	-25.120402	527.00	-12.14	-60.72	-65.13	-71.09
P89-103	960	978789.58	7218326	186003	131.886350	-25.118239	523.00	-11.86	-60.07	-64.45	-70.37
P89-103	980	978790.34	7218566	186007	131.886444	-25.116076	524.00	-10.64	-58.95	-63.34	-69.26
P89-103	1000	978791.84	7218806	186011	131.886539	-25.113912	524.00	-8.99	-57.30	-61.69	-67.61
P89-103	1020	978792.60	7219046	186014	131.886623	-25.111749	522.00	-8.70	-56.82	-61.19	-67.10
P89-103	1040	978792.10	7219287	186018	131.886718	-25.109576	523.00	-8.74	-56.95	-61.33	-67.25
P89-103	1060	978791.57	7219527	186022	131.886813	-25.107413	524.00	-8.81	-57.11	-61.51	-67.43
P89-103	1080	978791.39	7219767	186026	131.886907	-25.105249	522.37	-9.34	-57.50	-61.87	-67.78
P89-103	1100	978791.05	7220007	186030	131.887001	-25.103086	519.15	-10.53	-58.38	-62.73	-68.61
P89-103	1120	978790.89	7220247	186033	131.887096	-25.100923	517.75	-10.97	-58.70	-63.04	-68.89
P89-103	1140	978791.11	7220487	186037	131.887180	-25.098759	515.62	-11.26	-58.79	-63.11	-68.94
P89-103	1160	978791.37	7220727	186041	131.887275	-25.096596	515.66	-10.84	-58.37	-62.69	-68.52
P89-103	1180	978790.22	7220967	186045	131.887369	-25.094432	518.00	-11.11	-58.86	-63.20	-69.06
P89-103	1200	978791.33	7221207	186048	131.887454	-25.092269	514.00	-11.09	-58.47	-62.78	-68.59
P89-103	1200	978791.39	7221207	186048	131.887454	-25.092269	514.00	-11.04	-58.42	-62.73	-68.54
P89-103	1220	978791.30	7221447	186052	131.887548	-25.090105	513.00	-11.28	-58.56	-62.86	-68.67
P89-103	1240	978791.32	7221687	186056	131.887643	-25.087942	512.00	-11.42	-58.61	-62.90	-68.69
P89-103	1260	978791.24	7221927	186060	131.887737	-25.085779	511.00	-11.65	-58.76	-63.04	-68.82
P89-103	1280	978791.58	7222167	186063	131.887822	-25.083615	511.00	-11.16	-58.27	-62.55	-68.33
P89-103	1300	978792.29	7222407	186067	131.887916	-25.081452	510.00	-10.61	-57.62	-61.90	-67.67
P89-103	1320	978792.63	7222647	186071	131.888010	-25.079288	509.00	-10.43	-57.35	-61.62	-67.37
P89-103	1340	978793.17	7222887	186075	131.888105	-25.077125	508.19	-9.99	-56.84	-61.09	-66.84
P89-103	1350	978793.61	7223008	186077	131.888152	-25.076034	507.31	-9.75	-56.51	-60.76	-66.50
P89-103	1350	978793.58	7223008	186077	131.888152	-25.076034	507.31	-9.78	-56.54	-60.79	-66.53
P89-111	100	978796.20	7209353	169811	131.723827	-25.195682	497.57	-18.47	-64.33	-68.50	-74.13
P89-111	120	978796.97	7209590	169850	131.724271	-25.193554	494.00	-18.65	-64.19	-68.33	-73.92
P89-111	140	978797.61	7209827	169889	131.724715	-25.191425	491.00	-18.79	-64.05	-68.16	-73.72
P89-111	160	978797.36	7210064	169928	131.725158	-25.189297	491.00	-18.89	-64.15	-68.27	-73.82
P89-111	180	978796.25	7210301	169968	131.725612	-25.187169	492.00	-19.55	-64.90	-69.02	-74.59
P89-111	200	978796.15	7210538	170007	131.726055	-25.185041	492.55	-19.33	-64.73	-68.86	-74.43
P89-111	220	978795.61	7210775	170046	131.726499	-25.182913	493.00	-19.58	-65.03	-69.16	-74.73
P89-111	240	978794.94	7211012	170086	131.726953	-25.180785	494.00	-19.79	-65.33	-69.47	-75.06
P89-111	260	978794.85	7211249	170125	131.727396	-25.178656	495.00	-19.43	-65.06	-69.20	-74.80
P89-111	260	978794.94	7211249	170125	131.727396	-25.178656	495.00	-19.34	-64.97	-69.11	-74.71
P89-111	280	978795.16	7211486	170164	131.727840	-25.176528	495.00	-18.97	-64.60	-68.75	-74.35
P89-111	300	978795.93	7211723	170204	131.728293	-25.174400	494.00	-18.36	-63.90	-68.04	-73.63
P89-111	320	978795.95	7211960	170243	131.728736	-25.172272	495.00	-17.88	-63.51	-67.66	-73.26
P89-111	340	978795.34	7212197	170282	131.729180	-25.170144	496.00	-18.04	-63.76	-67.92	-73.53
P89-111	360	978794.39	7212434	170321	131.729623	-25.168015	499.00	-17.91	-63.91	-68.09	-73.74
P89-111	380	978793.44	7212671	170361	131.730077	-25.165887	500.00	-18.41	-64.50	-68.69	-74.34
P89-111	400	978792.59	7212908	170400	131.730520	-25.163759	502.33	-18.39	-64.70	-68.90	-74.59
P89-111	400	978792.58	7212908	170400	131.730520	-25.163759	502.33	-18.40	-64.71	-68.91	-74.60
P89-111	420	978791.95	7213145	170439	131.730964	-25.161631	503.70	-18.46	-64.89	-69.11	-74.81
P89-111	440	978791.08	7213382	170479	131.731417	-25.159503	505.80	-18.53	-65.16	-69.40	-75.12
P89-111	460	978789.93	7213619	170518	131.731860	-25.157374	508.76	-18.62	-65.52	-69.78	-75.54
P89-111	480	978788.97	7213856	170557	131.732303	-25.155246	511.00	-18.74	-65.85	-70.13	-75.91
P89-111	500	978788.34	7214093	170597	131.732757	-25.153118	512.01	-18.91	-66.11	-70.40	-76.19
P89-111	520	978788.97	7214330	170636	131.733200	-25.150990	509.00	-19.07	-65.98	-70.25	-76.01
P89-111	540	978789.35	7214567	170675	131.733643	-25.148862	506.49	-19.31	-66.00	-70.24	-75.97
P89-111	540	978789.40	7214567	170675	131.733643	-25.148862	506.49	-19.26	-65.95	-70.19	-75.92
P89-111	560	978790.11	7214804	170714	131.734086	-25.146733	504.76	-18.94	-65.47	-69.70	-75.41
P89-111	580	978790.70	7215041	170754	131.734540	-25.144605	503.09	-18.72	-65.09	-69.31	-75.00
P89-111	600	978790.56	7215278	170793	131.734983	-25.142477	506.00	-17.81	-64.45	-68.69	-74.42
P89-111	620	978791.22	7215515	170832	131.735426	-25.140349	503.42	-17.80	-64.20	-68.42	-74.12
P89-111	640	978791.54	7215752	170872	131.735879	-25.138220	504.00	-17.15	-63.61	-67.83	-73.54
P89-111	660	978792.47	7215989	170911	131.736322	-25.136092	507.00	-15.15	-61.88	-66.13	-71.87
P89-111	660	978792.40	7215989	170911	131.736322	-25.136092	507.00	-15.22	-61.95	-66.20	-71.94
P89-111	680	978793.63	7216226	170950	131.736765	-25.133964	504.00	-14.77	-61.22	-65.45	-71.15

P89-111	700	978793.61	7216463	170990	131.737218	-25.131836	503.00	-14.95	-61.31	-65.53	-71.22
P89-111	720	978793.08	7216700	171029	131.737661	-25.129707	504.00	-15.02	-61.48	-65.70	-71.40
P89-111	740	978791.47	7216937	171068	131.738104	-25.127579	506.00	-15.87	-62.51	-66.75	-72.47
P89-111	760	978791.17	7217174	171107	131.738548	-25.125451	509.01	-15.09	-62.01	-66.28	-72.03
P89-111	780	978794.07	7217411	171147	131.739000	-25.123323	499.00	-15.13	-61.13	-65.31	-70.96
P89-111	800	978792.94	7217648	171186	131.739443	-25.121194	507.00	-13.64	-60.38	-64.63	-70.36
P89-111	820	978794.69	7217885	171225	131.739886	-25.119066	500.00	-13.91	-60.00	-64.19	-69.84
P89-111	840	978795.54	7218122	171265	131.740339	-25.116938	498.00	-13.53	-59.43	-63.61	-69.24
P89-111	860	978795.62	7218359	171304	131.740782	-25.114809	500.28	-12.60	-58.71	-62.90	-68.56
P89-111	880	978796.74	7218596	171343	131.741225	-25.112681	500.11	-11.38	-57.48	-61.67	-67.33
P89-111	900	978797.45	7218833	171383	131.741678	-25.110553	499.07	-10.84	-56.85	-61.03	-66.68
P89-111	920	978797.44	7219070	171422	131.742121	-25.108425	499.00	-10.73	-56.73	-60.91	-66.55
P89-111	940	978797.06	7219307	171461	131.742564	-25.106296	501.00	-10.34	-56.52	-60.72	-66.39
P89-111	960	978797.26	7219544	171500	131.743007	-25.104168	501.00	-9.99	-56.18	-60.38	-66.04
P89-111	980	978797.33	7219781	171540	131.743459	-25.102040	500.00	-10.09	-56.18	-60.37	-66.02
P89-111	1000	978797.47	7220018	171579	131.743902	-25.099911	501.00	-9.49	-55.67	-59.87	-65.54
P89-111	1000	978797.47	7220018	171579	131.743902	-25.099911	501.00	-9.49	-55.67	-59.87	-65.54
P89-111	1020	978797.63	7220255	171618	131.744345	-25.097783	500.73	-9.27	-55.42	-59.62	-65.28
P89-111	1040	978797.74	7220492	171658	131.744798	-25.095655	501.00	-8.92	-55.11	-59.31	-64.97
P89-111	1060	978797.70	7220729	171697	131.745240	-25.093526	501.00	-8.82	-55.00	-59.20	-64.87
P89-111	1080	978797.27	7220966	171736	131.745683	-25.091398	501.00	-9.10	-55.28	-59.48	-65.15
P89-111	1100	978796.94	7221203	171776	131.746136	-25.089270	503.29	-8.58	-54.97	-59.19	-64.88

^Z

APPENDIX B

Reduction to Final Gravity Values

THE REDUCTION TO FINAL BOUGUER GRAVITY VALUES

Observed Gravity

All readings of the gravimeter are reduced to observed gravity values according to the equation:

$$g_o = g_{stn} + c_{tide} - \frac{(g_{pmbase} - g_{ambase})}{(t_{pmbase} - t_{ambase})} \times t_{station} - g_{ambase} + g_{base}$$

Where:

g_o *is the observed gravity (mgal)*

g_{stn} *is the gravity reading at each station*

c_{tide} *is the tidal correction calculated Longman's formulae (published in the Journal of Geophysical Research, Vol 64 No 12) in mgal*

The final Bouguer gravity, Bg, is the result of the expression:

$$B_g = g_o - g_{gT} + \frac{dg}{dh} \times h - (2\ \pi\ G\ \rho) \times h = g_o - g_{gT} + c \times h$$

Where:

g_o *is the observed gravity value (mgal)*

g_{gT} *is the theoretical gravity (mgal)*

h *is the station elevation (metres)*

$\frac{dg}{dh}$ *is the Free Air Effect* (-0.30861 $\frac{mgal}{metre}$ *above the datum)*

ρ *is the Bouguer density* ($\frac{g}{cm^3}$)

G *is the Universal Gravity Constant* ($6.67 \times 10^{-8}\ \frac{dyne*cm}{g^2}$)

c *is the combined Free Air and Bouguer Effect:*

$$\frac{dg}{dh} - 2\pi\rho G$$

APPENDIX C

Statistical Analysis and Error Calculations

STATISTICAL ANALYSIS AND ERROR CALCULATION

Assuming all of the factors contributing to the final Bouguer gravity are mutually independent, then the expected error in the final Bouguer gravity is the square root of the sum of the squares of the error in each factor:

$$i.e.\ \ Error_{Bouguer}^{2} = Error_{Observedg}^{2} + (C \times Error_{h}^{2}) + Error_{gT}^{2}$$

This assumption is not absolutely valid, since a small amount of cross-correlation does exist (for instance, an error in the vertical will affect the terrain correction if measured elevations rather than grid elevations are used to calculate the terrain correction). These cross-correlations will however, be generally small, so the above error calculation will yield results that are very close to the true values.

In order to quantitatively measure the so-called expected error, it is necessary to define the confidence limit. This gives some meaning to the term expected error (or put more positively, expected accuracy) by making the following statement possible:

X percent of the measured values will be accurate to within +/-Y.

For our purposes, we have defined the confidence limit to be 1 sigma, or roughly 67%, hence we are after the error range (ie +/- .3mgal) that will allow us to confidently state that 67% of the data satisfies this criterion. We could have chosen a 2 sigma limit, in which our expected error would have been larger, since our confidence limit would be about 95%. Similarly, we could have gone for a 50% confidence limit, which would have resulted in a smaller expected error. By choosing the 1 sigma limit, we are conforming to a fairly wide accepted industry standard.

The solution of the error equation for the final Bouguer gravity reduces to collecting enough data to determine the 1 sigma confidence limit of each of the factors in the equation. This is done by repeating enough samples to derive a statistically significant error limit. For simplicity, we will look at the probable error in observed gravity. The calculation of the probable errors in the other factors is analogous.

To derive the probable error in the observed gravity, stations are revisited and the gravity reading is taken again. Each reading at a station is compared with the mean of all readings taken at that station. For example, a station with three readings would yield three deviations from the mean value. It is believed that this method yields a much better statistical analysis of the data. Once all the deviations for a survey have been calculated, they are plotted on a histogram. The repeat differences will fit a normal distribution curve with a mean (zero in theory, very close to zero in practice) and a standard deviation (sigma). Statistically, 67% of the repeat differences will fall within +/- 1 sigma of the mean.

According to our definition:

$$Error_{Repeat\ Difference} = \pm\sigma$$

In other words, the expected repeatability of an observed gravity reading is:

$$\pm\sigma$$

It is very important to realize that expected repeatability is not expected accuracy of an individual reading. The expected repeatability and expected accuracy of the individual reading are only the same if the repeat reading has an expected error of zero. This follows logically from our definition of expected error as the square root of the sum of the squares of the expected error of each independent factor (see the formula for expected error of final Bouguer gravity). There may be other small cross-correlations (ie. the observer may look up the previous reading to speed up the repeat reading), but for our purposes, we assumed they are totally independent.

Thus:

$$Error_{Repeat\ Difference} = Error_{Repeat\ Reading}^{2} + Error_{First\ Reading}^{2}$$

But we assume:

$$Error_{Repeat\ Reading}^{2} = Error_{First\ Reading}^{2}$$

(This assumption is a good one: you expect to be able to read a gravimeter on the same spot with the same precision at different times).

Therefore:

$$Error_{Repeat\ Difference}^{2} = 2 \times Error_{First\ Reading}^{2}$$

or:

$$Error_{First\ Reading} = \sqrt{2}\ \sigma$$

The expected error of an individual observed gravity value is equal to 0.71 times the expected repeatability.

The above calculation for observed gravity is carried through for each factor in the final Bouguer value and the end result is 67% confidence limit of final Bouguer gravity which we have defined as expected accuracy.

PACIFIC OIL AND GAS PTY LTD
AMADEUS BASIN
GRAVITY SURVEY
LOCATED DATA TAPE FORMAT

COLUMN	DESCRIPTION
1 - 6	UNUSED
7	BLANK
8 - 10	UNUSED
11 - 16	UNUSED
18 - 22	LINE number
23	BLANK
24 - 29	READING NUMBER
30	UNUSED
31 - 42	EASTING coordinate
43	BLANK
44 - 55	NORTHING coordinate
56	BLANK
57 - 62	SHOT POINT
63 - 71	OBSERVED GRAVITY
72 - 77	ELEVATION
78 - 83	Free Air Gravity
84 - 89	Bouguer Gravity Value - 2.2 g/cc
90 - 95	Bouguer Gravity Value - 2.4 g/cc
96 -103	Bouguer Gravity Value - 2.67 g/cc
104	BLANK

RECORD LENGTH	=	104 Bytes
BLOCK SIZE	=	5096 Bytes
9-TRACK ASCII		1600 bpi