

**GRAVITY SURVEY
ON THE
MOUNT SPURR
GEOTHERMAL EXPLORATION PROJECT
KENAI PENINSULA BOROUGH, ALASKA
FOR
ORMAT TECHNOLOGIES, INC.
DATA ACQUISITION REPORT**

ISSUE DATE: December 27, 2011

ZONGE JOB # 10118



ZONGE GEOSCIENCES INC.

924 Greg Street

Sparks, Nevada 89431

Phone: (775) 355-7707, Fax: (775) 355-9144

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**GRAVITY SURVEY
ON THE
MOUNT SPURR PROJECT**

INTRODUCTION

Zonge Geosciences, Inc. performed a gravity survey near the Mount Spurr Volcano, located in Kenai Peninsula Borough, Alaska for ORMAT Technologies, Inc. The survey was conducted during the period of 12 July 2010 to 26 August 2010.

The survey area is located in Range 16-17 West; Township 13-14 North and lies within the Tyonek A-6, A-7, B-6 and B-7, Alaska 1:63,000 topographic sheets. Gravity data were acquired for a total of 340 stations. Station locations are shown in Figure 2.

This survey was conducted by Brad Haddix, Geophysical Crew Chief for Zonge Geosciences. This survey was conducted in conjunction with a magnetotelluric survey as Zonge job number 10118.

This report covers the data acquisition, instrumentation and processing.

INSTRUMENTATION

Gravity data were acquired with a Scintrex Model CG-5 gravimeter. These gravity meters have a reading resolution of .001 milligals and a typical repeatability of less than .01 milligals. Specifications for these instruments are included in Appendix B.

Positioning was obtained with Leica Geosystems model SR530 GPS receivers. These are survey-grade receivers capable of centimeter-level accuracy. GPS receiver specifications are included in Appendix C.

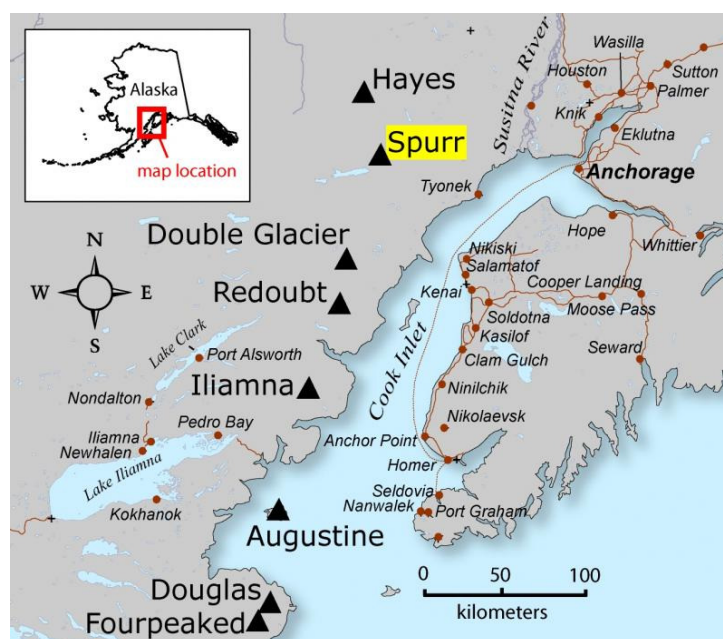


Figure 1: Mt. Spurr, Alaska location map

DATA ACQUISITION

GPS DATA

Carrier-phase GPS data were acquired for five to fifteen minute sessions at each station during simultaneous acquisition at a fixed GPS base station. Post-processed positions were determined using Leica Geo-Office™ software. A discussion of positioning quality is given under the section titled Data Quality, GPS.

One GPS base station was used for this survey. The position of base station (1) was determined by submitting a 12 hour occupation of this point to the National Geodetic Survey (NGS) On-line Positioning User Service (OPUS). OPUS processed this observation file with respect to 3 Continuously Operating Reference Stations (CORS).

Control point specifications and OPUS data solutions are listed in Appendix D.

GRAVITY DATA

Gravity measurements were made in a series of looped-traverses that were closed within a maximum of 11.5 hours. At least three measurements were made at each occupation.

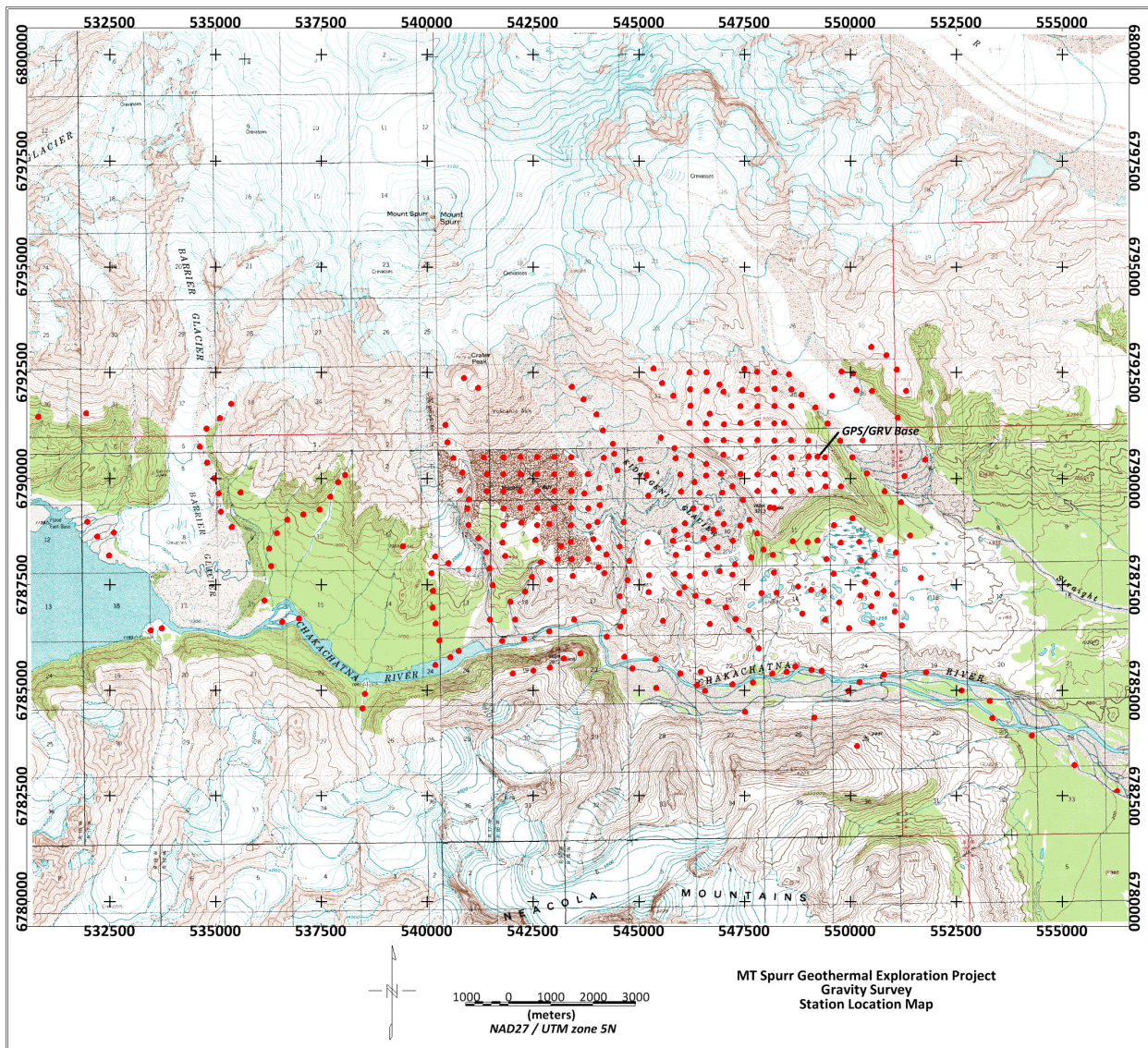


Figure 2: Station location map.

The gravity value for base station (1) was determined from a single loop-traverse to the NGS Control point “Nikolai” (PID UW6228). This control point has a designated gravity value of 981,789.00 milligals (Brown, 2006). Due to the remote nature of the survey area and limited use of the helicopter by the gravity crew, it was not possible to tie the local gravity base to a published regional gravity base.

A list of the gravity values and positions for these bases are shown in Appendix E.

DATA QUALITY

Due to inclement weather the helicopter was unable to retrieve the crew on July 28th and August 10th. The crew was forced to spend the night in the field, therefore unable to close the gravity loop. For these loops, the gravity closure readings were estimated based on instrument drift rates. Two stations per loop were repeated to verify the estimated loop closure. The repeated values are -0.067, 0.022, 0.008 and 0.005 milligals.

The average loop closure for the local survey was 0.040 milligals. Individual loop closures are tabulated in Appendix F.

Gravity measurement precision is evaluated by making repeat readings at selected gravity stations. For this survey, 28 gravity measurements were repeated. The average difference between repeat measurements is 0.04 milligals, and the maximum difference is 0.08 milligals. Repeated gravity measurements are tabulated in Appendix G.

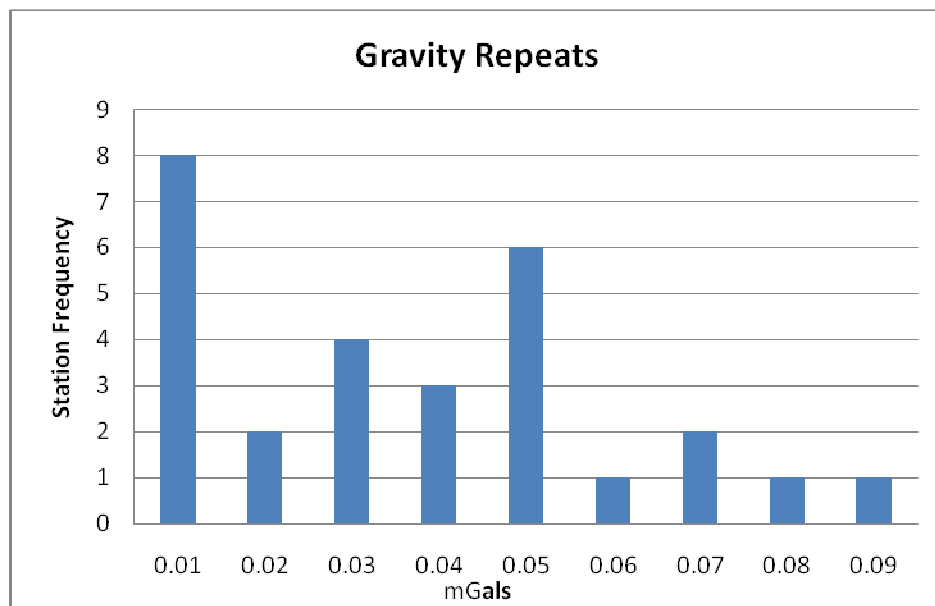


Figure 3: Histogram of Gravity Repeats

An important factor that determines the accuracy of the reduced measurement is the accuracy in determining a station's location, particularly the elevation. The vertical gradient

of the earth's field is approximately -0.308596 milligals per meter of increase in elevation. The Bouguer correction is $.1119$ milligals per meter of elevation increase, for a density of 2.67 gm/cc. This results in a total error in the Bouguer Anomaly of $.1967$ milligals per meter of elevation error, for a reduction density of 2.67 gm/cc.

GPS positioning precision is evaluated by making repeated GPS measurements at randomly selected stations. Comparison of 28 duplicate GPS measurements that were made over a range of field conditions and baseline lengths, show an average repeat of 0.11 meters and a maximum elevation difference of 1.92 meters. The vegetation canopy over portions of the survey area caused high positioning errors for stations located under the canopy. A tabulation of repeated GPS measurements is presented in Appendix G.

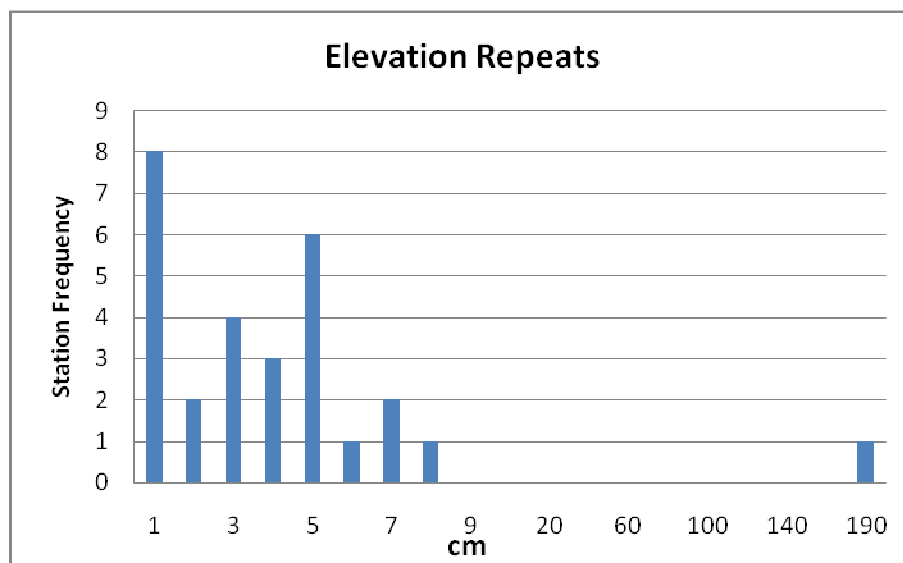


Figure 4: Histogram of GPS Repeats

DATA PROCESSING

GPS PROCESSING

Locations of the gravity stations were determined as baselines from the GPS base in WGS-84 coordinates and ellipsoidal heights. GPS observations were processed after data

acquisition (post-processing) using Leica Geo-Office™ software.

The WGS84 ellipsoidal heights were converted to geoidal (orthometric) heights in the NAVD88 datum using the NGS program, GEOID 2009. Station coordinates were converted to the NAD27 horizontal datum to use with UTM Zone 5 metric coordinates.

GRAVITY PROCESSING

The basic processing of gravimeter readings to calculate the observed gravity was made using software from Geosoft LTD. of Toronto, Canada. The assigned gravity value for the local gravity base (1) was established by a single loop-traverse to the NGS Control point “Nikolai” (PID UW6228).

The observed gravity is the gravitational acceleration, in milligals, that is determined by relative measurements made in a loop from a gravity base, after the meter readings have been corrected for instrument height, instrument scale factor, instrument drift and earth tides.

The long-term instrument drift is the rate at which each particular instrument accumulates error due to instrument factors such as vibration, battery voltage changes, and elastic relaxation, among others. It is minimized by proper technique, and warm up of the instrument.

Earth tides cause variations in observed gravity for land-based surveys of up to approximately .03 milligals per hour (Siegel, 1994). Corrections are computed by use of pre-programmed theoretical tide tables that are a part of the Geosoft™ gravity reduction software. The effect of earth tides can be further minimized by frequently tying loops to local gravity bases (Butler, 1991).

The observed gravity is a function of position (geographic latitude and elevation) and variations in the density of the subsurface material. A series of reductions are made to remove the gravity variation caused by position so that the gravity variations caused by subsurface density distribution remain.

A latitude correction must be made to the observed gravity measurements because the earth is not spherical, but has a slightly larger radius at the equator. It includes terms for both the Newtonian attraction of the earth as a flattened spheroid and the centrifugal force

caused by the earth's rotation (Siegel, 1994). The latitude correction is calculated for the International Ellipsoid of 1967 (International Association of Geodesy, 1971).

$$g_{\phi} = g_a (1 + f_2 \sin^2 \phi + f_4 \sin^4 \phi)$$

where:

g_{ϕ} = Latitude correction (gravity reference field on the ellipsoid).

ϕ = Latitude of the gravity observation.

$$f_2 = -f + \frac{5}{2}m + \frac{1}{2}f^2 - \frac{26}{7}fm + \frac{15}{4}m^2$$

$$f_4 = -\frac{1}{2}f^2 + \frac{5}{2}fm$$

$$m = \omega^2 a^2 b / (kM) = 3.44980143430 \times 10^{-3}$$

$$f = (a - b) / a = 1 / 298.24716742$$

a = Semi-major axis of the ellipsoid = 6378160 meter

b = Semi-minor axis of the ellipsoid = 6356775 meters

ω = Angular velocity of the Earth

M = Mass of the Earth

k = Newton's gravitational constant

The elevation correction has two parts: the free air correction and the Bouguer correction. The free air correction compensates for the variation of the earth's gravitational field with distance away from the center of the earth. The approximate and often-used correction is -0.308596 milligals per meter above the ellipsoid. In practice this is usually referenced to the Geoid due the fact that until recent advent of GPS technology, elevations were derived by leveling, which are by their nature, referenced to the Geoid. For this survey all elevations are referenced to the Geoid by use of the Geoid09 model.

The free air correction is calculated using the following formula:

$$\Delta g_{fa} = g_a - g_1 h_s + g_2 h_s^2 - g_l$$

where, $g_1 = .308768 - 0.00043986 \sin^2 \phi$

$$g_2 = 7.212 \times 10^{-8}$$

g_{fa} = free air anomaly in milligals

g_a = observed gravity

g_l = latitude correction

h_s = station elevation in meters

The Bouguer correction compensates for the mass of material located between the station elevation and the Geoid (mean sea level). The Bouguer correction is calculated on the basis of the gravitational attraction of a horizontal slab of infinite extent whose thickness is equal to the elevation difference between the stations of interest and mean sea level:

$$g_{ba} = g_{fa} - 0.0419088 * [\rho h_s]$$

where,

g_{ba} = Simple Bouguer anomaly in milligals

g_{fa} = free air anomaly

ρ = density of rock

The Complete Bouguer Anomaly includes those corrections found in the Simple Bouguer Anomaly, as well as, corrections for the effect of the surrounding topography and the curvature of the earth (Bullard B correction).

$$g_{cba} = g_{ba} + g_{BB} + g_{tc}$$

The Bullard B correction is used to correct for the fact that the mass of rock between the Geoid and the station elevation is a spherical shell as opposed to an infinite horizontal slab. The correction used by Zonge Geosciences is based on the formula given by LaFehr (1991):

$$g_{BB} = 2\pi k\rho(\mu h_s - \lambda R),$$

where

g_{BB} = Bullard B Correction

R = Earth radius to the station ($R_0 + h$, where R_0 is the earth's radius)

$2\pi k\rho$ is the simple Bouguer slab formula; μ and λ are dimensionless coefficients whose definitions are given in the appendix of LaFehr's 1991 paper.

Corrections for the gravity effect of variable Terrain g_{tc} are made from digital

elevation data. Terrain corrections were computed by Alan Cogbill of Geophysical Software Inc. Terrain corrections for topography to 300 meter radius were made from 1 meter LIDAR data using software (RASTERTC™) described by Cogbill (1990). Stations for which LIDAR coverage was unavailable; 30-m Shuttle Radar Topography Mission (SRTM) data were used for the terrain corrections.

Terrain corrections for topography from 300 meters to 166.7 kilometer radius were made from 30-m SRTM data using software (RASTERTC™). This algorithm performs a surface fit from a user specified inner radius (300m) out to a selected intermediate radius (17 km). Terrain corrections are computed for this interval using a numerical integration of the surface along radial lines at 6-degree increments. From the intermediate radius (17 km) out to an outer radius (166.7 km), terrain corrections are made using the approximation that each elevation represents the elevation of a rectangular compartment equal to the area of the elevation sample (cell size). The effect of each compartment is calculated using a line element formula. A curvature correction to the terrain model was computed at distances beyond 14 km.

Complete Bouguer gravity anomalies were computed for densities ranging from 1.60 gm/cm³ to 2.67 gm/cm³. If the density of the near-surface rocks differs from the reduction density, then an elevation dependent error will result. This error is approximately 1.25 microgals per foot for each 0.1 gm/cm³ difference in density (Hinze, 1990). The density which minimizes the correlation between elevation and the reduced gravity is generally chosen as the reduction density for further processing and plotting. A principle fact file providing the CBA gravity with reduction densities ranging from 1.60 gm/cm³ to 2.67 gm/cm³, is included on the DVD.

To identify the most effective reduction density for the survey, the standard Nettleton density analysis was employed to find a visually minimization of the correlation between topography and CBA anomaly patterns over a range of test densities.

Steep, local-scale topographic features such as drainages and ridges are locally formed in the low density volcanic units, hence not surprisingly, a relatively low reduction density of 2.25 gm/cm³ was required to clean these short wavelength features from the gravity and

produce an effective CBA anomaly map shown in Figure 3.

Unfortunately this relatively low reduction density left the CBA with a secondary residual elevation-density correlation anomaly associated with the steep mountain side which likely has an effective large-scale density greater than 2.40 g/cc.

Reduction of this secondary long wavelength topographic CBA over-print was accomplished by upward continuing the elevation grid by 800 meters and then selecting a good fitting empirically linear correlation factor for the smoothed elevations at gravity stations verses the CBA 2.25 gm/cm³ anomaly. The result of this topography removal is referred to as the CBA 2.25 Topographic Residual Anomaly and is shown in Figure 4.

DATA PRESENTATION

Plan maps are provided as Figures in the back pockets of this report. Figures are registered in UTM Zone 5N, NAD27 and plotted at a scale of 1:48000.

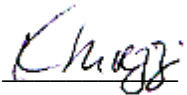
Figure 1 shows the locations of gravity stations on a topographic base. Figure 2 shows the Complete Bouguer Anomaly (CBA) Gravity at a reduction density of 2.25 gm/cm³. Figure 3 shows the CBA Gravity a reduction density of 2.25 gm/cm³ with the stations on the glaciers removed. Figure 4 shows the CBA gravity residual at a reduction density of 2.25 gm/cm³ with the stations on the glaciers removed. Figure 5 shows the horizontal gradient of the upward-continued (200m) CBA Gravity at a reduction density of 2.25 gm/cm³, with the stations on the glaciers removed. These figures are provided as Geotiff and PNG files on the Data DVD and are included in this document as fit-to-page plots in Appendix A

Digital data files are included on a DVD. A description of the DVD contents can be found on the DVD.

SAFETY AND ENVIRONMENTAL ISSUES

No health, safety incidents or accidents occurred during the course of this survey. No environmental damage was sustained as a result of the survey progress.

Respectfully submitted,

A handwritten signature in purple ink, appearing to read 'K. Moezzi', is written over a horizontal line.

Kam Moezzi
Field Operations Manager
Zonge Geosciences, Inc.

REFERENCES

- Butler, D.K., 1991, Tutorial—Engineering and environmental applications of microgravity. In Proceedings of Symposium on the Application of Geophysics to Engineering and Environmental Problems, '91. Knoxville, TN. 139.
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- LaFehr, T.R., 1991a, An exact solution for the gravity curvature (Bullard B) correction: *Geophysics*, **56**. 1179-1184.
- Brown, P., 2006, 2006 Compilation of Alaska Gravity Data and Historical Reports: U.S. Department of the Interior, U.S. Geological Survey. Data Series 264
- Seigel, H.O., 1994, A guide to high precision land gravimeter surveys: Scintrex Ltd. Ontario, 35-37

APPENDIX A. PLOTS AS FIGURES

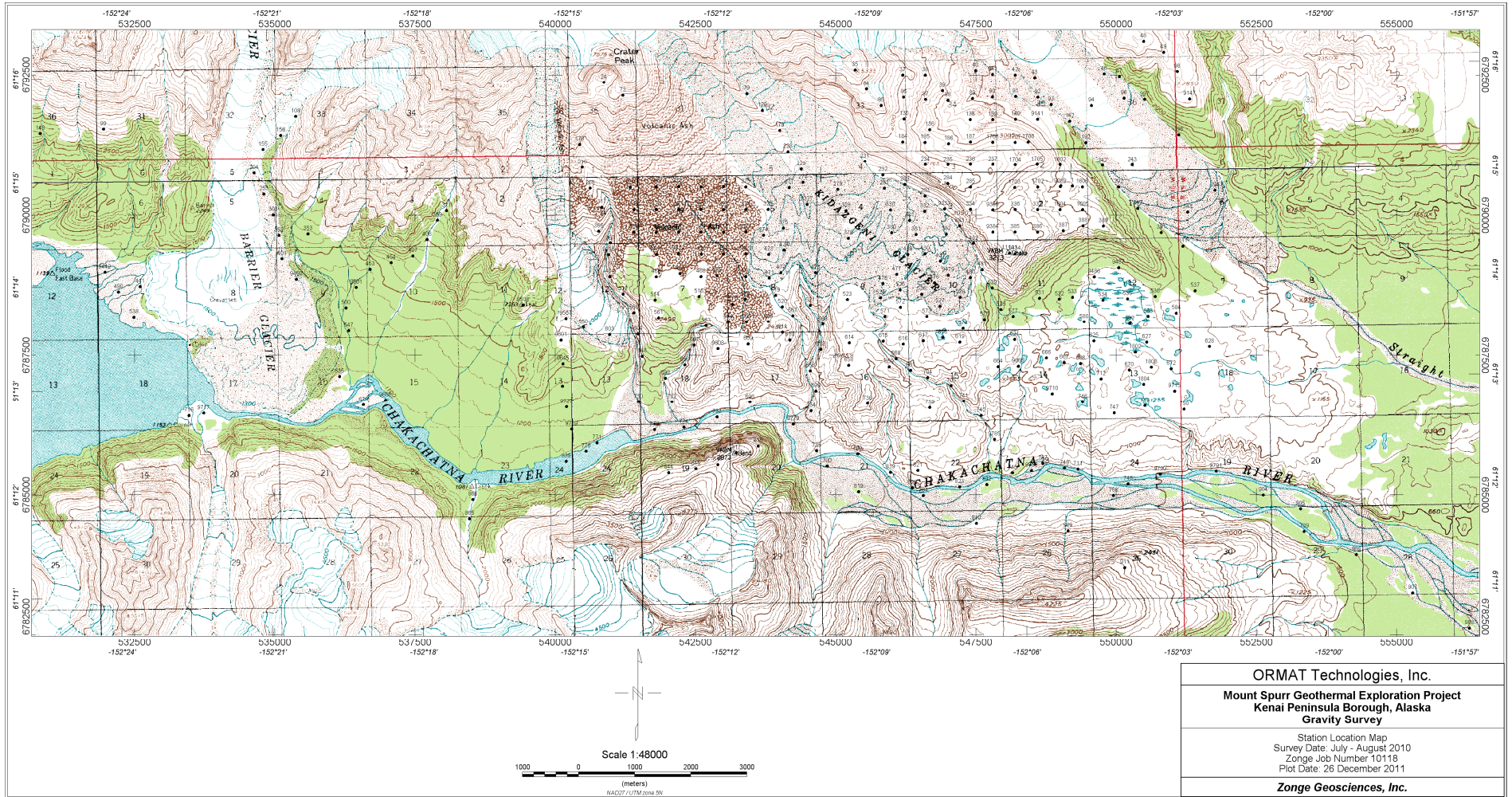


Figure 1, Station Location Map.

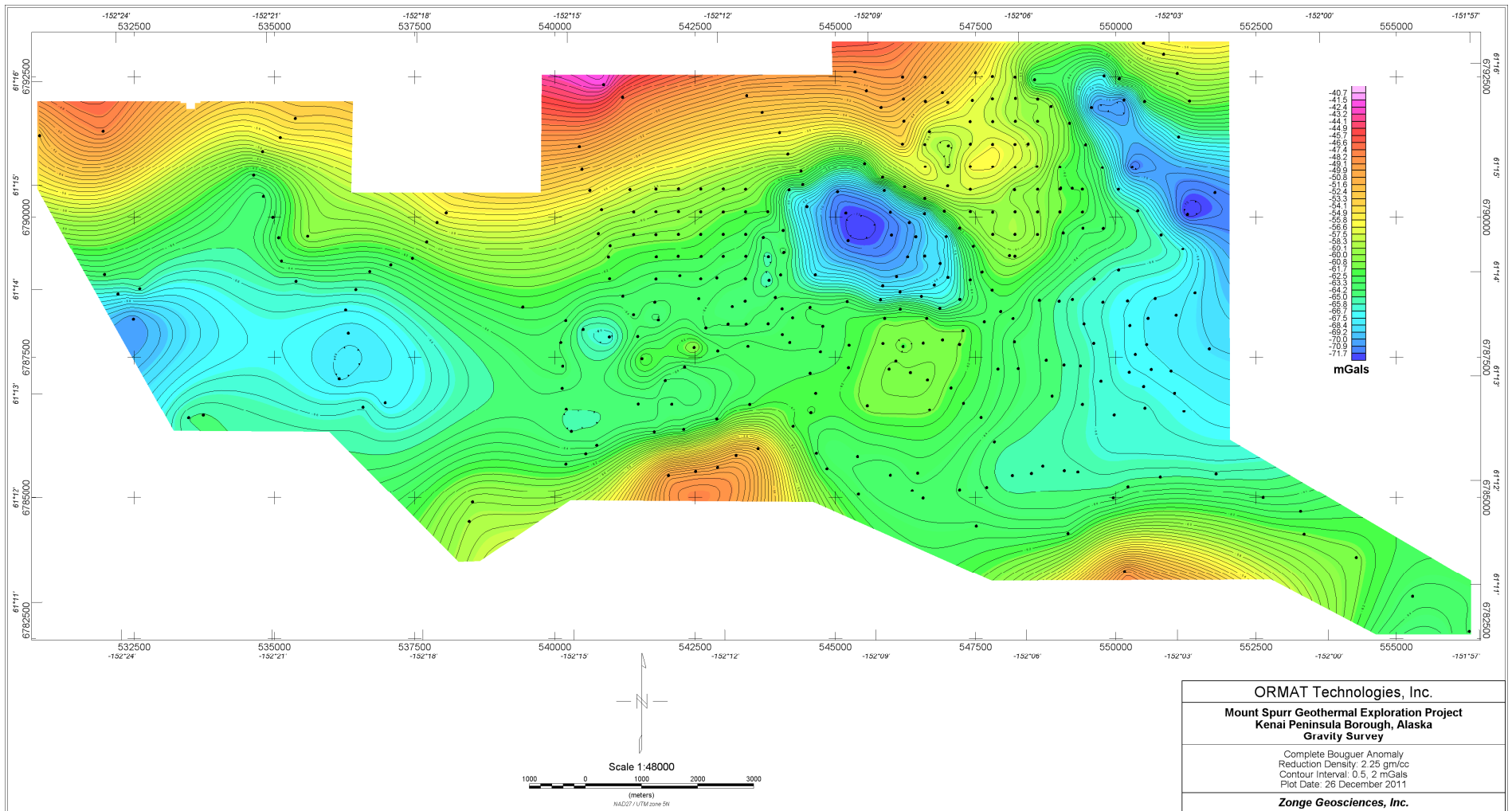


Figure 2, Complete Bouguer Anomaly at a reduction density of 2.25 gm/cm.³

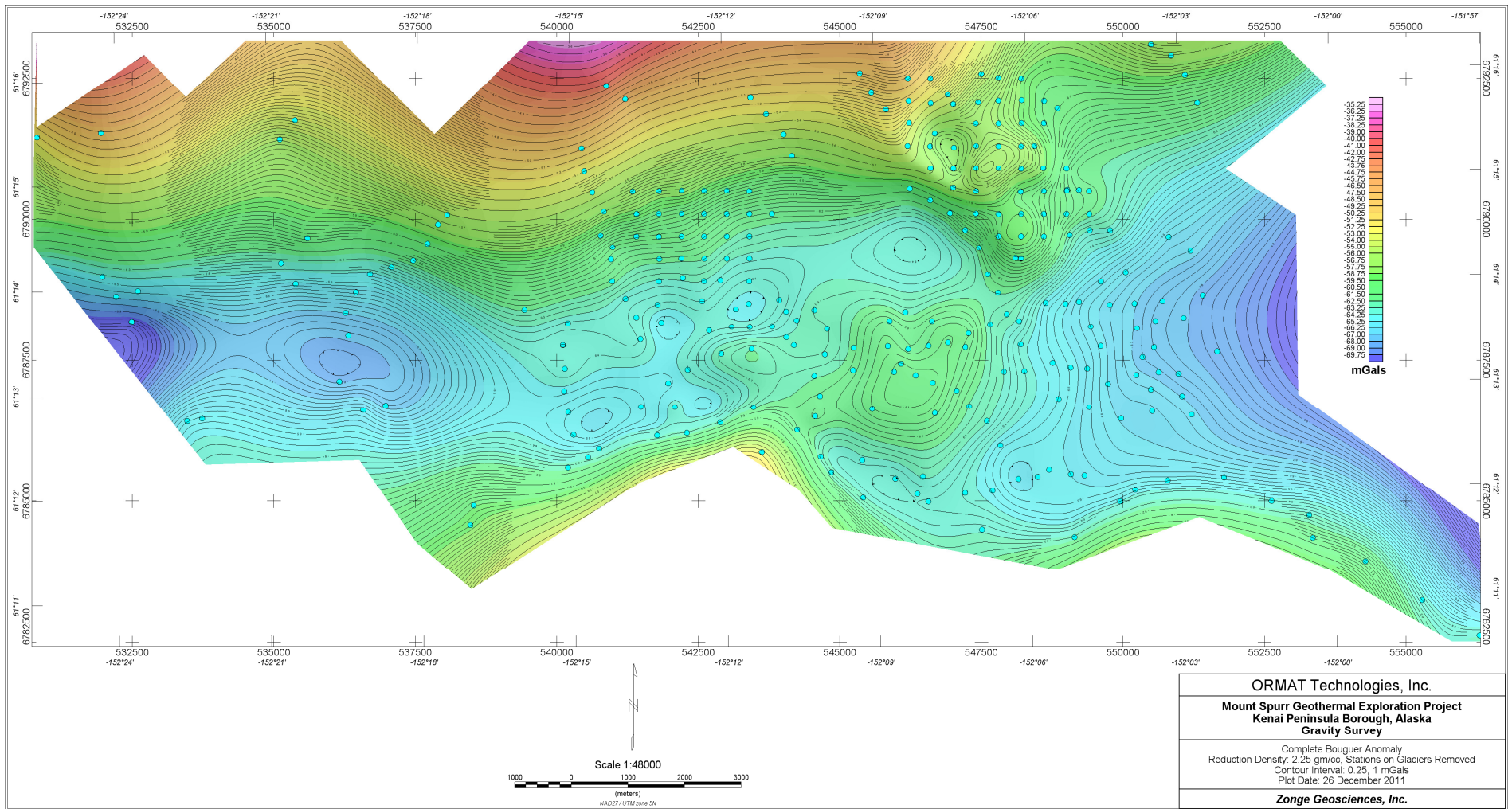


Figure 3, CBA @ 2.25 gm/cm³ with stations on glaciers removed.

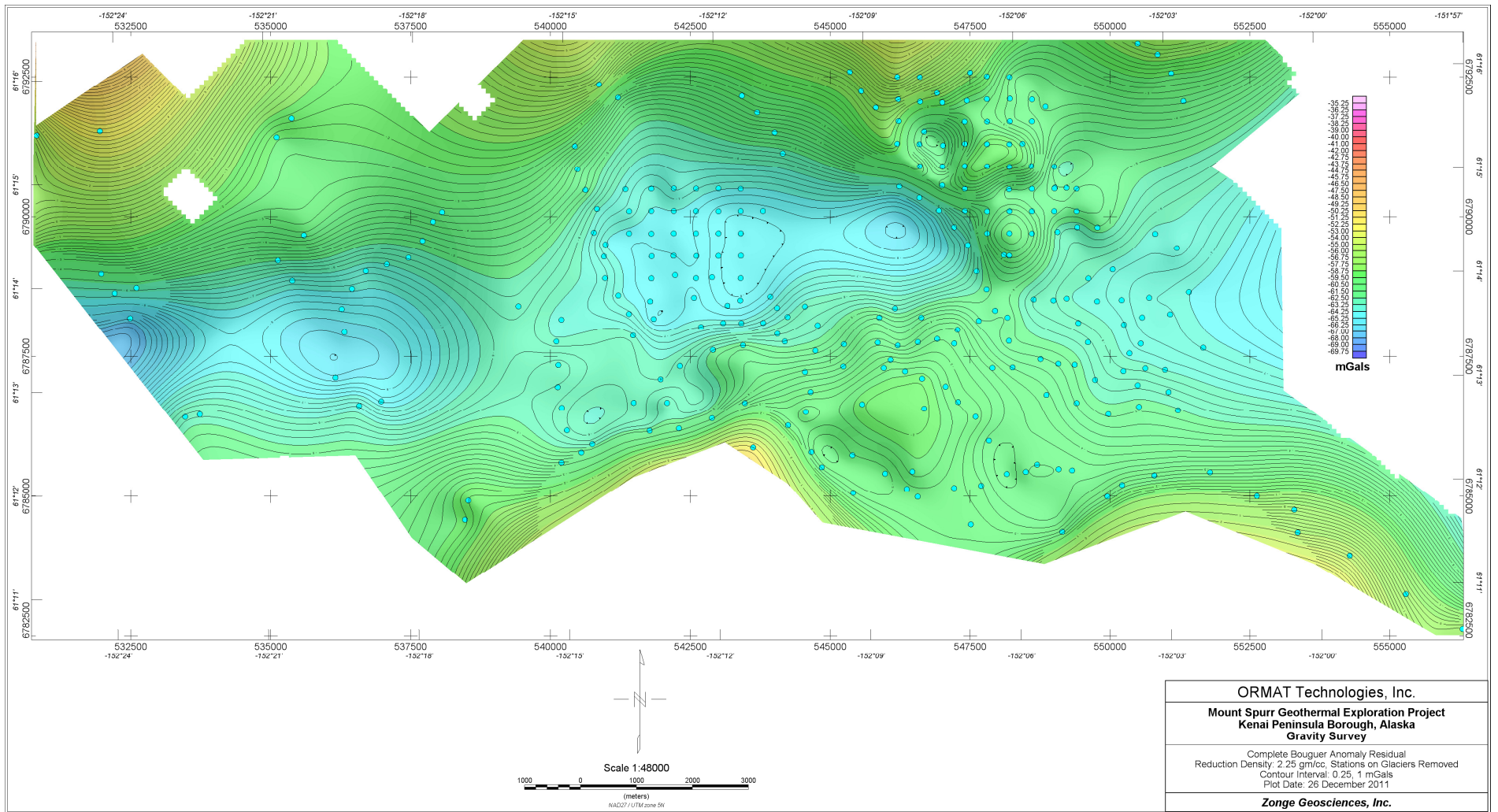


Figure 4, CBA Residual @ 2.25 gm/cm³ with stations on glaciers removed.

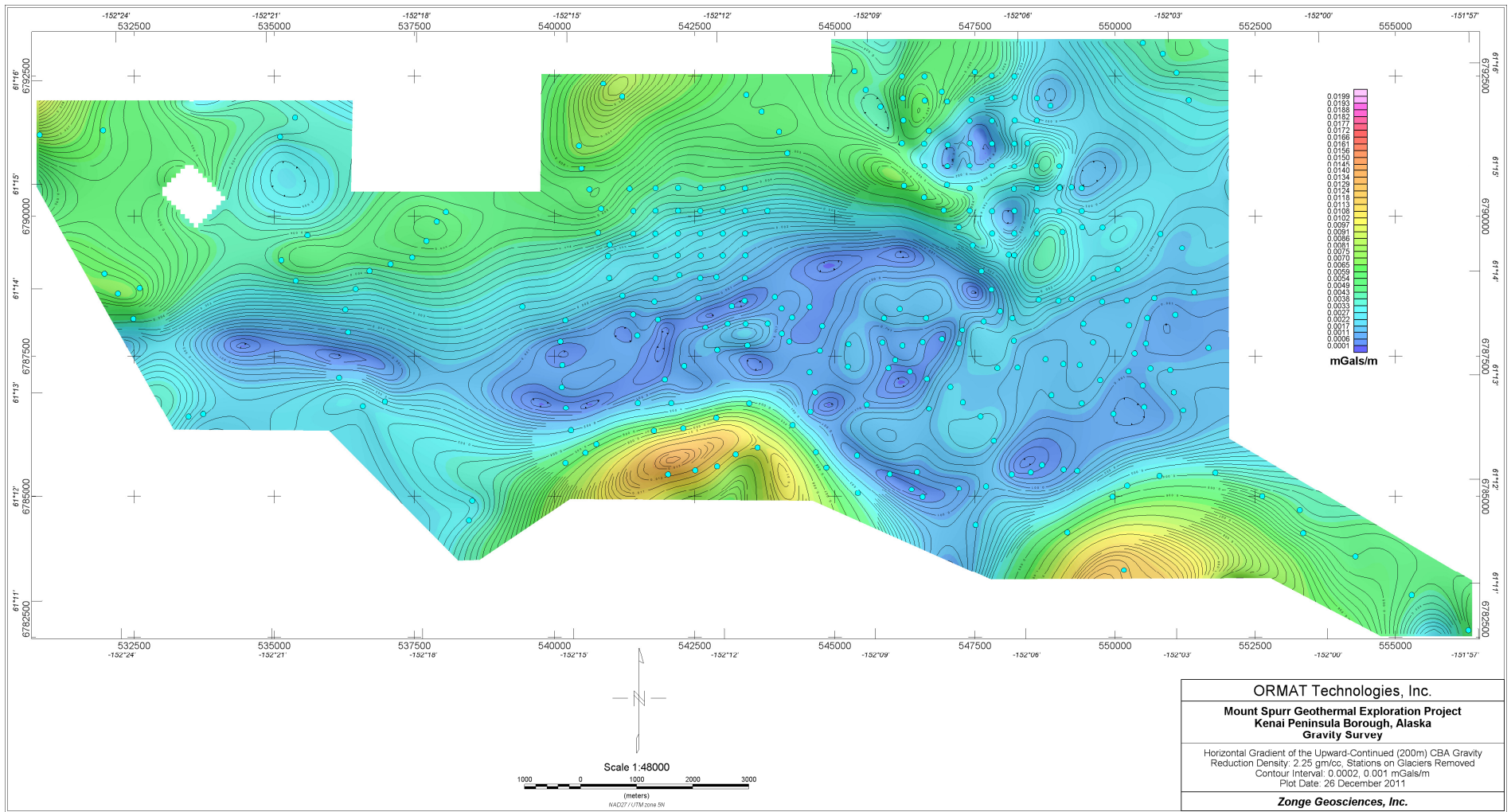


Figure 5, Horizontal gradient of the upward-continued (200m) CBA @ 2.25 gm/ cm³, with stations on the glaciers removed.

APPENDIX B. GRAVITY METER SPECIFICATIONS**Scintrex CG-5 General Specifications**

Reading Resolution	0.001 milligal
Minimum Operating Range	8000 milligals, without resetting
Residual Long-term Drift	Less than 0.02 milligals per day
Typical Repeatability in Field Use	Less than 0.01 milligals standard deviation
Range of Automatic Tilt Correction	+/- 200 arc seconds
Interval Between Readings in Cycling Mode	Adjustable from 6 to 99999 seconds
Noise Rejection	Samples of more than 4 standard deviations (6 if the Seismic Filter is selected) from the average are rejected, if this feature is selected upon initialization of the instrument
Displayed and Recorded Data	Corrected Gravity Standard Deviation Tilt about the X-axis Tilt about the Y-axis Gravity Sensor Temperature Tidal Correction Duration of Measurement Terrain Correction Time at start of measurement and Header Information (including date and initialization constants)

APPENDIX C. GPS RECEIVER SPECIFICATIONS**Leica Geosystems SR530 survey receiver**

<i>Kinematic Survey</i>	L1/L2 P-code and full cycle carrier, or L1 C/A code, L1/L2 full cycle carrier and cross-correlation of the encrypted P-code
Modes:	Continuous Stop and Go Pseudostatic (pseudokinematic) survey Fast Static survey
Accuracy	10mm + 2 ppm baseline rms for Real-time kinematic
Occupation	Continuous: 0.2 sec. Measurement time Stop & Go: 2 sec. (minimum) with 5 satellites
Tracking:	12 channels of L1/L2 P-code and full cycle carrier phase or 12 channels L1 C/A code, L1/L2 full cycle carrier phase and cross correlation of the encrypted P-code

APPENDIX D. GPS BASE DESCRIPTIONS

NGS OPUS SOLUTION REPORT

=====

All computed coordinate accuracies are listed as peak-to-peak values.

For additional information: <http://www.ngs.noaa.gov/OPUS/about.html#accuracy>USER:
RINEX FILE: base198q.10oDATE: July 19, 2010
TIME: 23:51:08 UTC

SOFTWARE: page5 0909.08 master50.pl 081023 START: 2010/07/17 16:06:00
 EPHEMERIS: igr15926.eph [rapid] STOP: 2010/07/18 04:41:00
 NAV FILE: brdc1980.10n OBS USED: 33123 / 34564 : 96%
 ANT NAME: LEIAT502 NONE # FIXED AMB: 121 / 140 : 86%
 ARP HEIGHT: 1.06 OVERALL RMS: 0.018 (m)

REF FRAME: NAD_83 (CORS96) (EPOCH:2003.0000)

ITRF00 (EPOCH:2010.5423)

X:	-2718430.926 (m)	0.023 (m)	-2718431.862 (m)	0.023 (m)
Y:	-1440215.688 (m)	0.011 (m)	-1440214.644 (m)	0.011 (m)
Z:	5569300.380 (m)	0.047 (m)	5569300.702 (m)	0.047 (m)

LAT:	61 14 49.72484	0.009 (m)	61 14 49.72026	0.009 (m)
E LON:	207 54 52.17987	0.002 (m)	207 54 52.08864	0.002 (m)
W LON:	152 5 7.82013	0.002 (m)	152 5 7.91136	0.002 (m)
EL HGT:	750.803 (m)	0.054 (m)	751.248 (m)	0.054 (m)
ORTHO HGT:	740.278 (m)	0.054 (m)	[NAVD88 (Computed using GEOID09)]	

	UTM COORDINATES	STATE PLANE COORDINATES
	UTM (Zone 05)	SPC (5005 AK 5)
Northing (Y) [meters]	6790659.443	808541.930
Easting (X) [meters]	549075.323	602762.115
Convergence [degrees]	0.80175563	1.67858781
Point Scale	0.99962951	1.00002934
Combined Factor	0.99951206	0.99991185

US NATIONAL GRID DESIGNATOR: 5VNH4907590659 (NAD 83)

		BASE STATIONS USED		
PID	DESIGNATION	LATITUDE	LONGITUDE	DISTANCE (m)
DJ3029	KEN5 KENAI 5 CORS ARP	N604030.284	W1512100.570	75175.0
AI0952	TSEA ANCHORAGE CORS ARP	N611114.374	W1495341.819	117905.9
DF7929	UAAG U ALASKA COOP CORS ARP	N611127.856	W1494926.646	121679.3

NEAREST NGS PUBLISHED CONTROL POINT	
UW6245 CHAKA	N611411.492 W1520624.130 1639.0

This position and the above vector components were computed without any knowledge by the National Geodetic Survey regarding the equipment or field operating procedures used.

APPENDIX E. GRAVITY BASE DESCRIPTION

Base	WGS84	WGS84	NAD27 UTM	NAD27 UTM	WGS 84	NAVD 88	Absolute
Station	Latitude	Longitude	Z5N_East	Z5N_North	Ellipsoid Height (m)	Elevation (m)	Gravity (mgal)
1	61.24714579	-152.08551	549221.53	6790514.73	750.803	740.278	981,787.06

Gravity Base 1 Station Description

APPENDIX F. LOOP CLOSURES

Date	Duration	Closure (mG)	Abs_Closure (mG)
16-Jul	6:11:00	-0.023	0.023
17-Jul	10:54:00	-0.204	0.204
18-Jul	13:27:00	0.040	0.040
19-Jul			
20-Jul	12:57:00	-0.001	0.001
21-Jul	9:38:00	0.022	0.022
22-Jul	10:49	0.009	0.009
23-Jul	10:44:00	-0.015	0.015
24-Jul			
25-Jul			
26-Jul	8:49:00	0.019	0.019
27-Jul	10:04:00	0.020	0.020
28-Jul	8:34:00	0.020	0.020
29-Jul			
30-Jul	9:35:00	-0.027	0.027
31-Jul	8:11:00	-0.047	0.047
1-Aug	10:17:00	-0.022	0.022
2-Aug	10:55:00	0.075	0.075
3-Aug	9:35:00	0.082	0.082
4-Aug			
5-Aug			
6-Aug	6:17	0.024	0.024
7-Aug			
8-Aug	8:33	0.026	0.026
9-Aug	9:14	0.031	0.031
10-Aug	10:20	0.029	0.029
11-Aug			
12-Aug	9:16	0.059	0.059
13-Aug	10:24	0.047	0.047
14-Aug	10:27	0.008	0.008
15-Aug	3:02	0.092	0.092
16-Aug			
17-Aug	4:02	0.012	0.012
18-Aug	7:19	0.072	0.072
19-Aug	11:31	0.054	0.054
20-Aug	9:42	0.014	0.014
21-Aug	10:43	0.036	0.036

Date	Duration	Closure (mG)	Abs_Closure (mG)
22-Aug	8:21	0.077	0.077
23-Aug	3:56	0.041	0.041
23-Aug	6:59	0.025	0.025
24-Aug	3:38	-0.029	0.029
24-Aug	1:27	0.050	0.050
24-Aug	6:18	0.000	0.000
25-Aug	4:30	0.063	0.063
25-Aug	5:20	0.018	0.018
		Average Closure	0.039

APPENDIX G. GRAVITY AND GPS REPEATS

Stn	NAD27 UTM Zone 5N		NAVD 88	Obs. Grav mGals	Date	Local Time	Reading CG-5
	East	North	Elev (m)				
141	548601.48	6791705.55	709.67	981797.57	7/20/10	19:07:31	5715.740
9141	548602.25	6791704.92	709.64	981797.60	7/21/10	15:57:17	5715.728
Diff	-0.77	0.63	0.03	-0.03			
9289	549006.53	6790502.34	741.23	981789.05	7/20/10	20:35:45	5707.228
1603	549006.32	6790502.22	741.23	981789.12	7/16/10	18:37:11	5706.950
Diff	0.21	0.12	0.00	-0.07			
272	542202.34	6790503.25	1012.24	981726.12	7/21/10	17:57:31	5644.296
9272	542202.62	6790504.17	1012.30	981726.21	7/23/10	7:35:31	5644.478
Diff	-0.28	-0.92	-0.05	-0.09			
9715	551045.63	6786861.92	368.40	981864.12	7/22/10	8:38:31	5782.265
1805	551045.10	6786861.35	368.37	981864.09	7/18/10	16:39:10	5782.093
Diff	0.53	0.57	0.03	0.03			
373	543400.42	6789701.32	779.77	981776.65	7/23/10	17:29:43	5694.883
9373	543399.49	6789701.62	779.72	981776.60	7/27/10	8:15:36	5695.186
Diff	0.93	-0.30	0.05	0.05			
333	546940.42	6790108.81	769.15	981780.56	7/28/10	12:35:41	5699.168
9333	546940.37	6790109.03	769.15	981780.49	7/30/10	13:55:51	5699.523
9333	546941.08	6790108.70	769.20	981780.53	8/13/10	16:36:23	5701.213
Diff	0.05	-0.22	0.00	0.07			
Diff	0.66	-0.11	0.05	0.02			
779	544245.24	6786267.05	258.96	981882.98	7/30/10	17:48:33	5802.001
9779	544245.14	6786267.25	258.98	981882.96	7/31/10	14:20:30	5802.159
Diff	0.10	-0.20	-0.02	0.01			
785	547833.39	6785991.33	258.19	981885.00	7/31/10	13:20:42	5804.205
9785	547833.39	6785991.39	258.16	981885.03	8/01/10	13:36:53	5804.229
Diff	0.00	-0.06	0.03	-0.03			
442	531972.09	6788976.93	350.37	981864.98	8/09/10	12:35:37	5784.967
9442	531972.04	6788976.94	350.35	981864.99	8/10/10	16:45:40	5785.148
Diff	0.05	-0.01	0.02	-0.01			

Stn	NAD27 UTM Zone 5N		NAVD 88	Obs. Grav mGals	Date	Local Time	Reading CG-5
	East	North	Elev (m)				
680	536974.01	6786696.13	323.81	981865.43	8/10/10	17:01:20	5785.596
9680	536973.89	6786696.65	323.81	981865.42	8/23/10	7:56:44	5787.489
Diff	0.12	-0.52	0.00	0.01			
501	536450.75	6788708.29	395.91	981850.88	8/03/10	10:57:10	5770.171
9501	536450.71	6788708.11	395.91	981850.88	8/13/10	16:14:49	5771.560
Diff	0.04	0.18	0.00	-0.01			
790	550788.57	6785372.64	147.04	981908.14	8/12/10	15:18:54	5828.668
9790	550790.20	6785372.03	145.11	981908.08	8/13/10	17:00:07	5828.762
Diff	-1.63	0.61	1.93	0.06			
147	551311.15	6792063.59	792.12	981779.32	8/13/10	15:50:03	5699.995
9147	551311.72	6792063.25	792.09	981779.37	8/14/10	16:45:03	5700.133
Diff	-0.57	0.34	0.03	-0.05			
418	541806.91	6789291.24	785.96	981774.03	8/15/10	15:32:03	5694.874
9418	541807.03	6789290.99	785.98	981773.95	8/20/10	10:21:38	5695.551
Diff	-0.12	0.25	-0.02	0.08			
419	542197.52	6789300.66	782.48	981775.43	8/19/10	10:20:47	5696.792
9419	542198.03	6789301.69	782.62	981775.37	8/20/10	10:49:52	5696.971
Diff	-0.51	-1.03	-0.14	0.05			
97	550509.77	6792057.45	589.26	981819.46	8/18/10	13:04:25	5740.694
997	550511.05	6792055.72	589.21	981819.42	8/20/10	16:42:11	5741.088
Diff	-1.28	1.73	0.05	0.05			
680	536974.01	6786696.13	323.81	981865.43	8/10/10	17:01:20	5785.596
9680	536973.89	6786696.65	323.81	981865.42	8/23/10	7:56:44	5787.489
Diff	0.12	-0.52	0.00	0.01			
327	544492.03	6790189.14	843.57	981758.11	8/21/10	17:33:22	5679.889
9327	544491.71	6790188.65	843.60	981758.08	8/23/10	9:11:31	5680.132
Diff	0.32	0.49	-0.03	0.04			

Stn	NAD27 UTM Zone 5N		NAVD 88	Obs. Grav mGals	Date	Local Time	Reading CG-5
	East	North	Elev (m)				
479	547006.83	6788924.61	749.34	981781.48	8/22/10	17:26:03	5703.418
9479	547005.13	6788925.06	749.24	981781.51	8/23/10	9:33:47	5703.566
Diff	1.70	-0.45	0.10	-0.04			
538	532485.29	6788180.75	350.39	981859.49	8/17/10	18:38:32	5780.731
9538	532487.16	6788181.44	350.40	981859.48	8/24/10	18:01:14	5781.753
Diff	-1.87	-0.69	-0.02	0.01			
717	533732.39	6786464.71	350.05	981861.61	8/03/10	16:12:33	5781.018
9717	533733.07	6786463.26	349.97	981861.61	8/24/10	18:14:58	5783.886
Diff	-0.68	1.45	0.08	0.00			
786	548492.97	6785434.98	169.90	981901.68	8/14/10	13:13:30	5822.440
9786	548493.24	6785434.68	169.90	981901.72	8/24/10	18:31:56	5824.002
Diff	-0.27	0.30	0.01	-0.04			
416	540954.27	6789287.30	591.19	981806.85	8/01/10	8:30:27	5726.029
9416	540954.57	6789287.03	591.53	981806.84	8/25/10	9:48:18	5729.217
Diff	-0.30	0.27	-0.34	0.01			
434	548199.50	6789300.56	963.65	981735.95	7/22/10	17:12:49	5654.128
9434	548199.28	6789302.67	963.85	981735.98	8/25/10	8:01:15	5658.348
Diff	0.22	-2.11	-0.20	-0.03			
450	535383.82	6788852.75	469.10	981838.44	8/08/10	16:58:08	5758.371
9450	535384.08	6788852.69	469.11	981838.49	8/25/10	9:04:32	5760.864
Diff	-0.26	0.06	-0.01	-0.05			
422	543401.88	6789300.93	747.03	981783.49	7/27/10	8:41:49	5702.077
9422	543401.65	6789300.82	747.06	981783.55	8/25/10	10:21:15	5705.925
Diff	0.23	0.11	-0.03	-0.05			
791	551785.36	6785427.62	136.16	981910.64	8/24/10	9:33:02	5832.887
9791	551785.33	6785427.62	136.21	981910.63	8/25/10	10:35:27	5833.004
Diff	0.03	0.00	-0.06	0.02			