UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Gravity survey in the eastern Snake River Plain, Idaho--A progress report

by

Thomas R. LaFehr

1961

Open file report 62-74

This report is preliminary and has not been edited for conformity with Geological Survey format

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Gravity survey in the eastern Snake River Plain, Idaho--A progress report

Abstract

A regional gravity survey in the eastern Snake River Plain was conducted in the early summer of 1961. Seven hundred and seven gravity stations were established between latitudes 42°15'N and 44°30'N between longitudes 111°30'W and 114°30'W. Three hundred and twenty-five of these stations were located in 2,700 square miles of the eastern part with an average density of one station per 8.3 square miles. The remaining 9,300 square miles were covered by several lines, with an average linear density of one station per 2.0 miles. A simple-Bouguer gravity contour map has been made of the area by standard methods.

The low gravity relief and broad high of the eastern Snake River Plain strongly contrasts with the high amplitude anomalies of the western plain. The major anomalies of the eastern plain consist of 1) a broad high, which is an extension of the large gravity highs of the western plain, 2) a set of elongated alternating lows and highs that trend normal to the axis of the eastern plain, 3) a series of small, local highs on the boundary of the plain, and 4) a prominent low centered over Mud Lake in the northern part of the surveyed area. The basalts of the eastern plain have probably filled troughs or valleys in an undulating subsurface floor rather than a large regional graben.

Introduction

A regional gravity survey of the Snake River Plain, Idaho, was started by H. L. Baldwin and D. P. Hill in 1959 (Baldwin and Hill, 1960; Baldwin, 1960). They mapped a strong positive anomaly in the western part of the plain from the Oregon-Idaho border to Glenns Ferry. The following summer Hill and J. J. Jacobson extended the gravity coverage eastward to the vicinity of Jerome and Gooding (Hill and Jacobson, 1961; Hill, 1961). As a result of the two summers' field work they defined three en echelon gravity highs in the western Snake River Plain. An earlier geophysical investigation by Bonini and Lavin (1957) revealed in much less detail a gravity high across the whole of the plain, starting near the Oregon-Idaho border and terminating northeast of St. Anthony, Idaho.

This progress report is concerned with an extension of the regional gravity coverage from the Twin Falls-Shoshone vicinity to the east and northeast, terminating at Yellowstone Park. The objective of this study is to provide geophysical information as an aid to studying the structure and composition of the earth's crust. The party of T. R. LaFehr and D. L. Tourtelot was in the field from June 6 to August 1, 1961, and worked under the supervision of L. C. Pakiser and D. J. Stuart. Professor Paul A. Rodgers, of the Geophysics Department at the Colorado School of Mines was advisor.

Geography

The Snake River traverses over 400 miles from the Teton Mountains, Wyoming, across southern Idaho to the Oregon-Idaho border. Over the major part of this course it follows the crescent-shaped, broad structural depression known as the Snake River Plain. Most of this plain lies north of the meandering river. The plain can be divided into two parts, western and eastern, along longitude 114°30' in the vicinity of Shoshone and Twin Falls. The western plain trends west and northwest; the eastern plain trends east and northeast.

The distinctive bend in the axis of the plain roughly divides the area surveyed in 1959 and 1960 from that surveyed in 1961 (fig. 1). The area under consideration in this report, the eastern plain, is more than 12,000 square miles, is nearly 200 miles long, and has an average width of about 60 miles. This is considerably larger than the western part of the Snake River Plain. Although the plain is relatively flat, the elevation increases to the northeast at the rate of about 8 feet per mile. The average elevation of the eastern plain is about 4,800 feet. The gentle relief of about 200 to 300 feet in most places is broken by cones rising from 400 to 2,500 feet above the plain. Big Southern Butte, with an elevation of 7,550 feet, is the most conspicuous of these.

Gravity profiles were surveyed to the northwest and southeast of the eastern Snake River Plain into the bordering mountains. The Pioneer Mountains, Sawtooth Mountains, Lost River Range, Lemhi Range, Beaverhead Mountains, and Centennial Mountains rise to elevations of

Figure 1. Gravity coverage and date of field work, Snake River Plain, Idaho

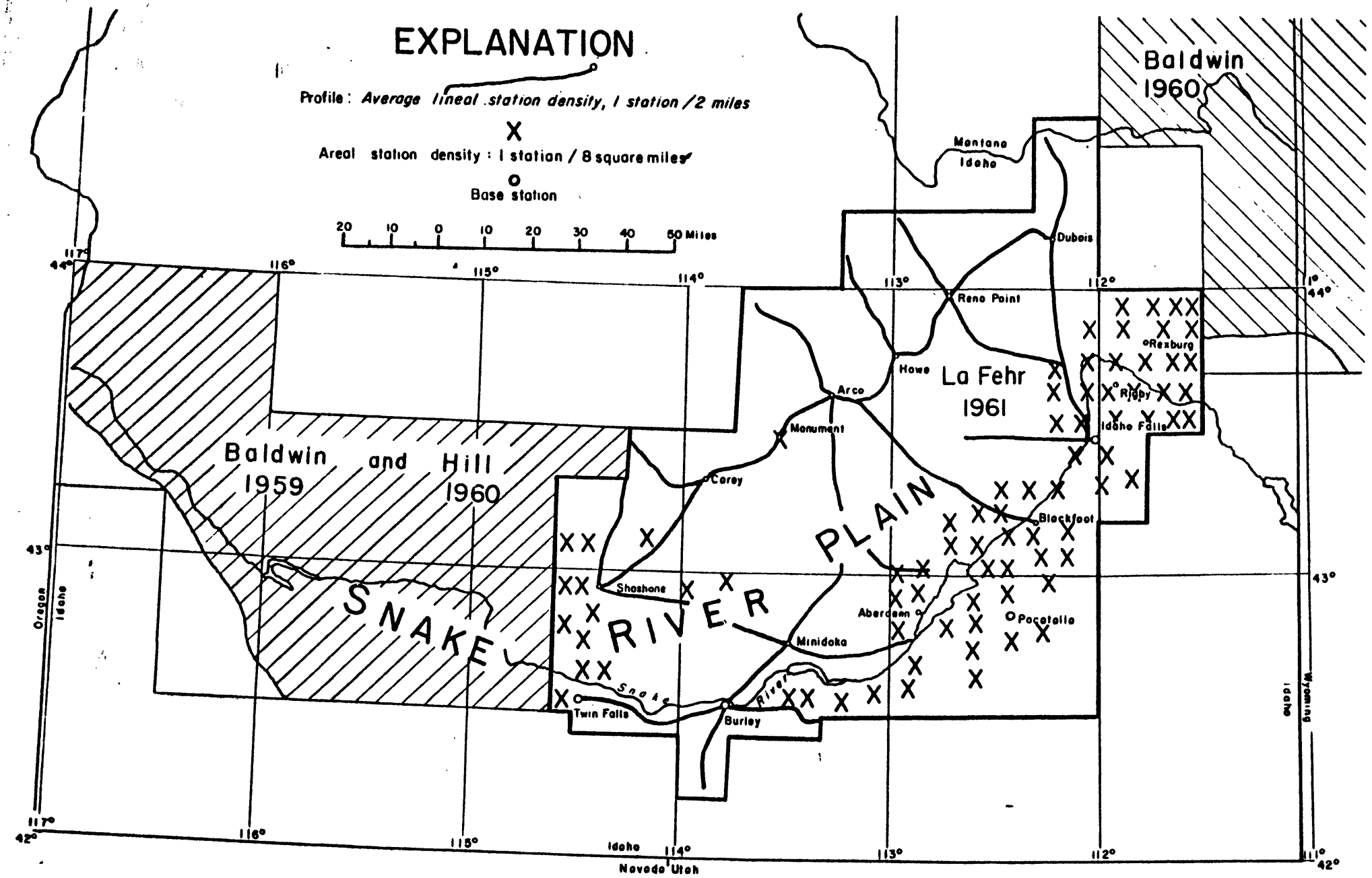

Figure 1— Gravity coverage and date of field work, Snake River Plain, Idaho

6,000 to 12,000 feet north and northwest of the Plain. The Cotterell Range, Sublett Mountains, Rockland Mountains, Bannock Range, Portneuf Range, Blackfoot Mountains, Caribou Range, and Big Hole Mountains rise to elevations of 7,000 to 10,000 feet south and southeast of the plain. The axes of the mountains are nearly at right angles to the axis of the Snake River Plain.

Gravity stations were established in the counties of Twin Falls, Jerome, Lincoln, Blaine, Minidoka, Cassia, Butte, Power, Bingham, Bannock, Jefferson, Bonneville, Madison, Clark, and Fremont.

Geology

The Snake River Plain is a structural depression filled with extensive flows of basalt of Pliocene and younger age. This widespread evidence of volcanic activity makes the area one of high interest and difficult interpretation. The youngest flows covered the older volcanic rocks and the still older structures nearly everywhere in the eastern plain except on the periphery. This problem of concealment of geologic information is not so acute in the western plain. The western plain is considered to be a basalt-filled depression also, but mapping of several zones of high-angle faults along the boundaries (Malde, 1959) has revealed a graben of considerable proportions. Malde (oral communication, 1961) suggests that the boundaries of the eastern plain might be determined also by zones of faulting. Earlier workers (Kirkham, 1931) concluded that the entire plain is a great transverse downwarp. This interpretation is clearly inadequate in

explaining the 9,000 feet of displacement (Malde, 1959) and the 70-milligal gravity anomaly found in the western plain. The geology is much less clear in the eastern plain.

The eastern plain is transverse to a complex of Paleozoic and Mesozoic rocks that have undergone intense deformation and intermittent intrusion during a wide range of time. They consist largely of miogeosynclinal sediments, now in the form of folds and thrust blocks, arranged in a series of parallel ridges (King, 1959, p. 142), and the complex is overlain by less deformed Tertiary sedimentary rocks and flows which tend to conceal the older structure over large areas (Stearns and others, 1939, p. 42). Stratigraphic and structural units of pre-Pliocene age are presumed to be continuous beneath the eastern Snake River Plain (Kirkham, 1931, p. 482).

Of particular structural importance is a widespread series of rhyolite flows of Miocene or Pliocene age (Stearns and others, 1938, p. 34). Their role in outlining the structure of the Snake River Plain cannot be overlooked, because their occurrence implies that the base of the basalts of the Snake River Group has been reached. They occur abundantly in the mountains on both sides of the plain and provide Kirkham's (1931, p. 471-481) first line of evidence for downwarping.

Rhyolite of Tertiary age is less deformed than the rocks it overlies, but it is deformed more than the basalts of the Snake River which overlie it. There is ample evidence that the rhyolite floor to the later lava flows has considerable relief. It towers above the

the plain at Big Southern and East Twin Buttes. A well just south of Craters of the Moon National Monument reached the silicic lava at a depth of 918 feet (Stearns and others, 1938, p. 64). Another well northwest of St. Anthony penetrated 1,050 feet of basalt flows of the Snake River without reaching the rhyolite. Most of the wells in the eastern plain are shallow, ranging from 200 to 900 feet deep, and do not reach the bottom of the basalts of Pleistocene age. The logs of the wells reveal far less clastic material interbedded with the basalts than is found in the western plain (Stearns, 1938, p. 64; Youngquist and Kiilsgaard, 1951). The rhyolite is also reached in places where the Snake River has cut through the basalt, such as Shoshone Falls, Big Falls, and American Falls (Kirkham, 1931, p. 480).

Field Methods

The gravity coverage for the summer field session of 1961 (fig. 1) was necessarily very different from the coverage of the preceding two summers. Except for the 1:250,000 Army Map Service (AMS) 2-degree sheets, map coverage is absent over most of the Snake River Plain not previously covered by a gravity survey. Of the 707 stations established, 355 were along U. S. Coast and Geodetic survey lines and highways which cross the area in several places. The average lineal station density of these lines is 1 gravity station per 2 miles. Horizontal control for these stations was obtained from the AMS sheets. Horizontal and vertical control was obtained from 7.5-minute and 15-minute U. S. Geological Survey quadrangle maps covering about 2,700 square miles

in the eastern portion of the area mapped. The 325 stations in that area represent an average station density of about 1 gravity station in 8.3 square miles. Fifteen locations with spot elevations were taken from the AMS sheets. Control on the remaining 12 stations was obtained from the 1:32,500 U. S. Geological Survey map of Craters of the Moon National Monument.

Worden gravity meter Z-134 was used throughout the survey. This meter has a constant of 0.4836 mgal per scale division and a range of about 300 scale divisions. Instrument drift ranged from 0.2 scale division in a four-hour period on cool days to 1.2 scale divisions in a four-hour period on exceptionally hot days. The average drift for the entire survey was about 0.1 scale division per hour. The meter drifted toward larger readings throughout the survey. The drift was assumed to be linear within a four-hour period. Repeated readings taken within each four-hour period generally verified this assumption.

The following information was recorded in the field: (1) station number, (2) time of reading, (3) meter reading, (4) elevation of station, and (5) description of station location. In addition, the location of each station was plotted on field maps. At the end of each field day these data were reduced to observed gravity to keep a continual check on the accuracy of the survey. At the end of each week, the data were reduced to simple-Bouguer gravity and plotted on a map. The simple-Bouguer gravity was computed by standard means, assuming the density to be a constant 2.67 g per cm^3 to sea level. This yields a combined slab and free-air correction, or elevation correction, of 0.06 mgal per foot. The correction for latitude was based on Nettleton's (1940, p.

139-143) tables of values of theoretical gravity from the International Gravity Formula. All calculations were carried out to 0.0. mgal in order to reduce rounding errors.

Accuracy

Observed gravity

Four of Hill's 1960 base stations were used in establishing the first base stations of this survey. Base stations were established by obtaining at the proposed new location at least three independent, drift-controlled differences from at least two already established base stations. The new observed-gravity values obtained had to agree to within 0.2 mgal to consider that station a base. In general, they agreed to within 0.1 mgal. As the field work progressed, two lines of base stations were produced independently. The southern line (fig. 1) started at Twin Falls and ended at Dubois. The northern line started at Shoshone and ended at Howe. These two lines were tied together at the end of the survey at Reno Point. The values obtained at Reno Point show a maximum difference of 0.14 mgal between the two lines. The average difference obtained in 5 independent readings at Reno Point is 0.09 mgal.

Field stations were established using the single-loop method, in which a base station was read before and after a series of field stations. A station previously established in another loop was included in the new loop to keep a continuous check on the accuracy of the survey. A check on the assumed linearity of the instrument drift was made by

repeating a station within the same loop. In general, the drift curve obtained between base readings was parallel to the drift curve obtained between the repeated field readings, implying linear drift.

The total number of repeat readings, including those obtained as ties between loops and those obtained as repeated readings within the same loop, was 140, or 19.9 percent of the total number of new stations in all. Of these, 98 percent showed a difference with the previous readings of less than 0.20 mgal, 92 percent less than 0.10 mgal, and 61 percent less than 0.05 mgal; all differences were less than 0.25 mgal. The accuracy of the survey is shown graphically on figure 2. This histogram shows the number of repeats for given differences in repeat readings. In addition to instrumental and personal errors, it reflects the rounding errors encountered when using milligal rather than scale-division differences taken directly from the meter. The convention adopted in representing the abscissa intervals is that each indicated abscissa value belongs to the inside rectangle. For example, the ordinate value 12 represents the number of repeats whose milligal differences fall within +0.06 and +0.11, inclusive. Rather than assume an equal number of positive and negative errors, the sign of each difference was fixed according to the following rule: an increase from the first to the second reading requires a positive sign; a decrease requires a negative sign. The average error for the survey is computed at ±0.06 mgal.

The above checks on the accuracy of the survey are all internal to the Snake River Plain gravity survey, all of which is based on

Figure 2. - Histogram of repeat readings

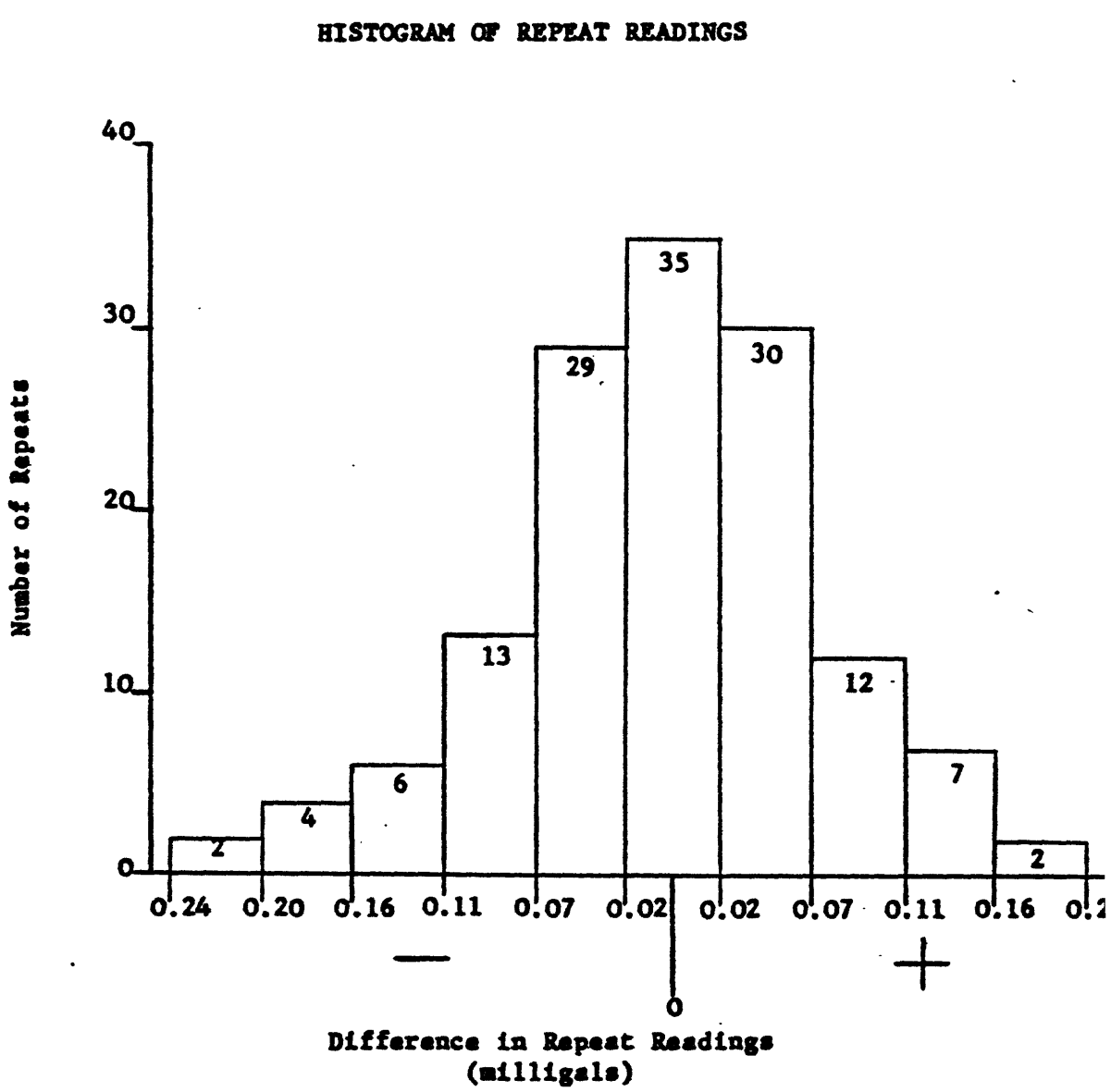

Figure 2. - Histogram of repeat readings
Particular ordinate values reflect total number of readings for the indica abscissa intervals. Each indicated abscissa value belongs to its inside rectangle.

Woollard's (1958) airport station at Boise. It was of interest to have two external checks as well. One such tie was made with a gravity survey in the Yellowstone Plateau by Baldwin (Pakiser and Baldwin, 1961), which was based on Woollard's airport station at Bozeman. The station occupied for this purpose was Baldwin's base station in West Yellowstone, Montana. The value for that station obtained by the Snake River survey differs from Baldwin's value by 0.14 mgal.

The other external tie was with D. R. Mabey's (written communication, (1961) regional network in Nevada. The station tied was located 6 miles southeast of Pocatello in the Portneuf River Canyon. Unfortunately, an exact tie was not obtained because the two parties chose slightly different locations. The two locations differ in elevation by 6 feet. Allowing for the free-air correction for 6 feet, the difference between Mabey's value and that of this survey is 0.03 mgal.

Bouguer gravity

The accuracy of the simple-Bouguer gravity values depends upon the accuracy of the elevation, latitude, and observed gravity of each station. The elevations for all stations except the 15 spot elevations taken from the AMS 1:250,000 sheets are known to within 1 foot. The maximum error thus introduced is 0.06 mgal. About half of the latitudes were picked from the AMS 1:250,000 sheets, for which the accuracy is 5 seconds. This could introduce a maximum error of 0.2 mgal. The observed gravity is accurate to within 0.24 mgal. Thus the maximum error in the simple-Bouguer gravity is 0.5 mgal. The influence of the terrain is generally

11. Stations in the mountain valleys have terrain affects of about 1 milligal. One terrain correction was necessary--that of the East Butte station. This was a 15-milligal correction. The error in the absolute value of gravity could, of course, be greater than the relative error between simple-Bouguer values because accumulated errors, error in Woollard's stations, and error in the density assumption are not taken into account (Baldwin, 1960). However, the error between nearby stations should, in general, be much less than 0.50 mgal.

Results

The most significant result of this survey (fig. 3, a detailed simple-Bouguer gravity map in pocket) is that it has revealed a distinct contrast between the gravity fields over the western and eastern parts of the Snake River Plain. Geologists have heretofore used unified interpretations to explain the occurrence of the one great Snake River Plain. But it should now be clear, insofar as the crust underlying the plain is concerned, that any interpretation satisfying the gravity field in the eastern plain will not satisfy the high amplitude anomalies in the western plain.

It may be significant, also, that the break in the gravity pattern, which is between strong relief in the western plain and relative lack of relief in the eastern plain, seems to occur approximately where the axis of the plain is most strongly bent. The simple-Bouguer gravity values are high well into the eastern plain. The values on the axis of the plain are everywhere higher than the corresponding values on the edges

 (page 15 follows)

Figure 4. Generalized gravity map of the eastern Snake River Plain, Idaho

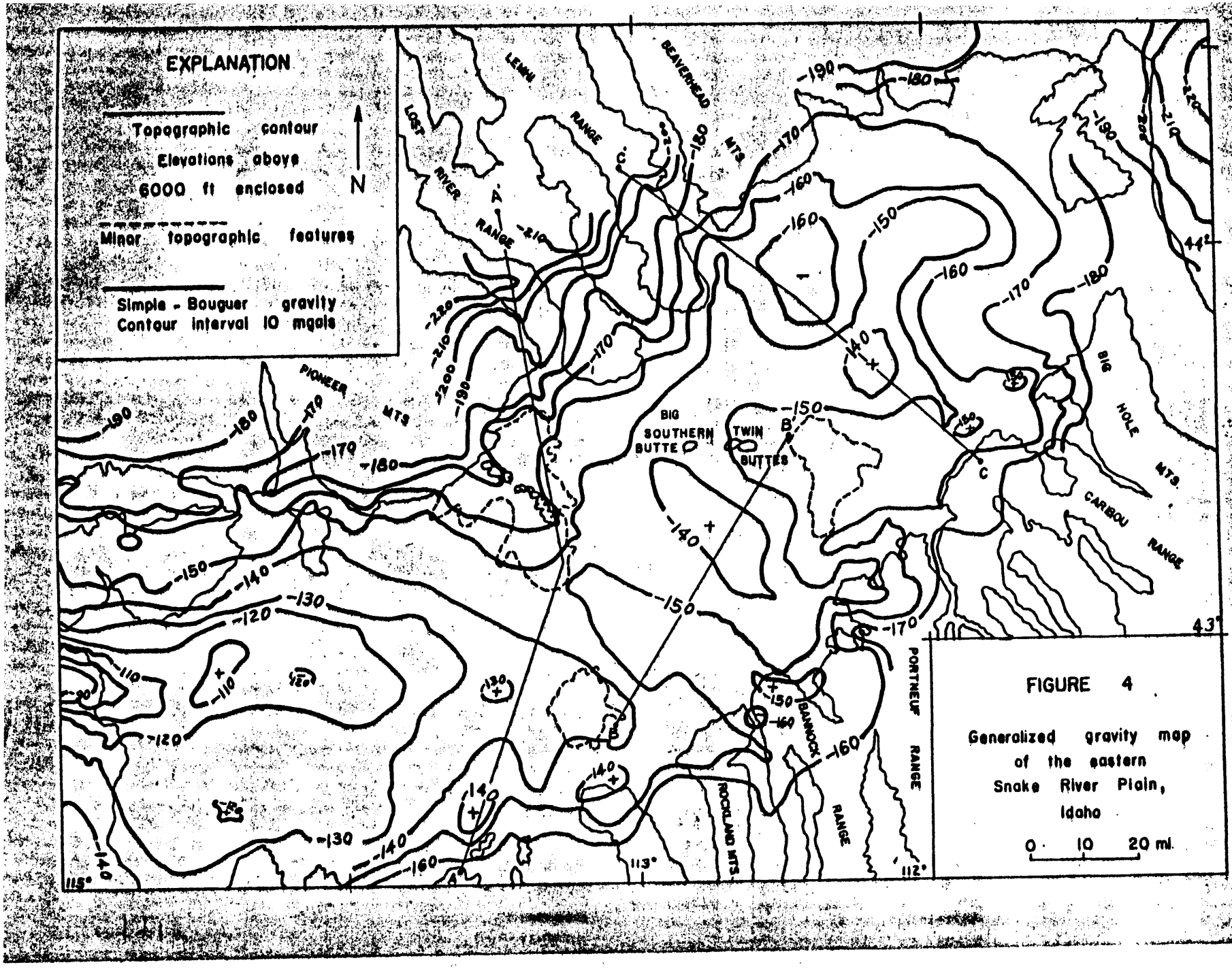

FIGURE 4

Generalized gravity map of the eastern Snake River Plain, Idaho

0 10 20 mi.

Figure 5. Gravity profile A-A'.

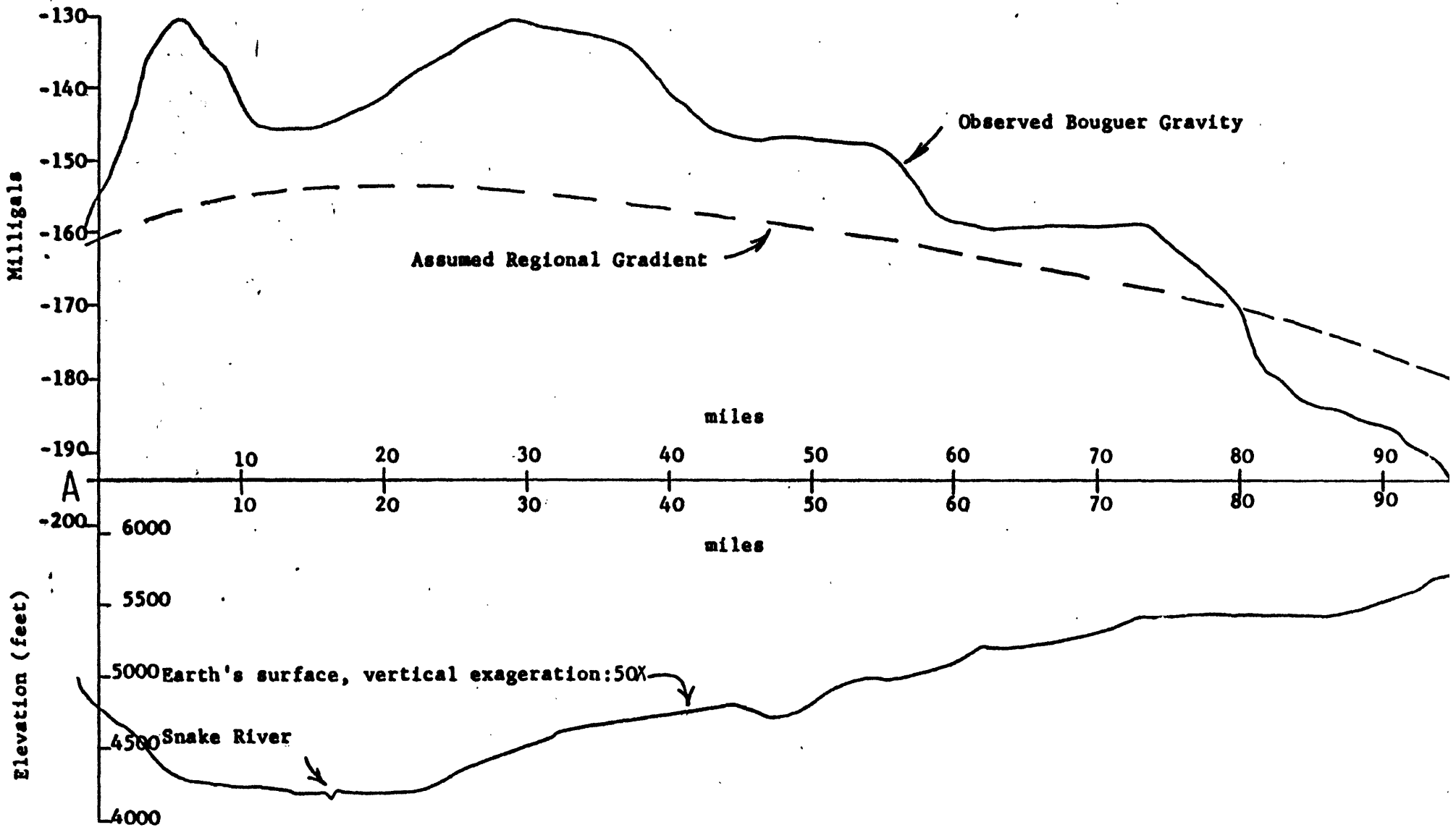

Figure 5. - Gravity Profile A-A'

of the plain. But the gradients are much more gentle in the eastern plain, and the trends of the anomalies are not parallel to the axis of the plain. The entire eastern plain is outlined on the gravity map (fig. 4) as a broad, low-amplitude high, relative to the surrounding mountains. The gravity field is characterized by steep gradients around the perimeter and low relief within the plain. Profile A-A' (fig. 5) reflects both the broad high and the low relief.

Description of the anomalies

In general terms, the gravity field over the eastern plain has at least four prominent features: (1) a broad high, which is an extension of the large gravity highs of the western plain, from the western edge of the surveyed area to 10 miles north of Minidoka, (2) a set of alternating low and high elongated anomalies which are normal to the axis of the eastern Snake River Plain, (3) a series of small, local highs with concentric contours which occur on the south and southeast boundary of the plain, and (4) a prominent low centered 18 miles southeast of Reno Point in the northern part of the surveyed area.

The line of large gravity highs of the western plain extends 40 miles into the eastern plain with diminishing amplitude. In this region there is a downward gradient to the east of about ½ mgal per mile. The gravity contours are much the same as they are in the western plain, but with wider spacing. Within this elongated high, a 7-mgal closed high was found in the vicinity of Shoshone. It is somewhat lower in amplitude, but it appears to be associated with the line of highs mapped

previously in the western plain. Within this broad high a 6-mgal closed elongated low was found. However, this low may be the result of inadequate control of the contours. The trend of the en echelon highs of the western plain turns slightly to the north in the vicinity of Shoshone, giving the false impression that they may be turning with the axis of the Snake River Plain. Actually this high bends again slightly to the south, giving an overall trend which does not deviate very much from a straight line parallel to the axis of the western plain. In its eastern vicinity, the trend of this high makes a sharp angle with the northeasterly trending Snake River Plain.

The elongated anomalies farther east trend normal to the axis of the eastern plain. This set of alternating low and high anomalies could be increased to four if the nose of the above mentioned high is included, and to five if a smaller and more nearly circular high to the northeast is included. These elongated anomalies are perhaps the most striking features of the eastern plain. Profile B-B' (fig. 6) crosses the two largest of these anomalies and terminates just beyond the lowest point in the third. The gravity difference between the highest maximum and its adjacent low is 23 mgals. The first of these features is a closed 4-mgal low near Aberdeen within a broader and longer gravity low extending out from the mountain complex near Pocatello. This feature can be seen to cut across the entire Snake River Plain, a distance of about 70 miles; its axis in the northern area is essentially coincident with the great rift in Craters of The Moon National Monument. The anomaly in the Monument area has a gradient of about 2 mgals per mile, compared

Figure 6. Gravity profile B-B'.

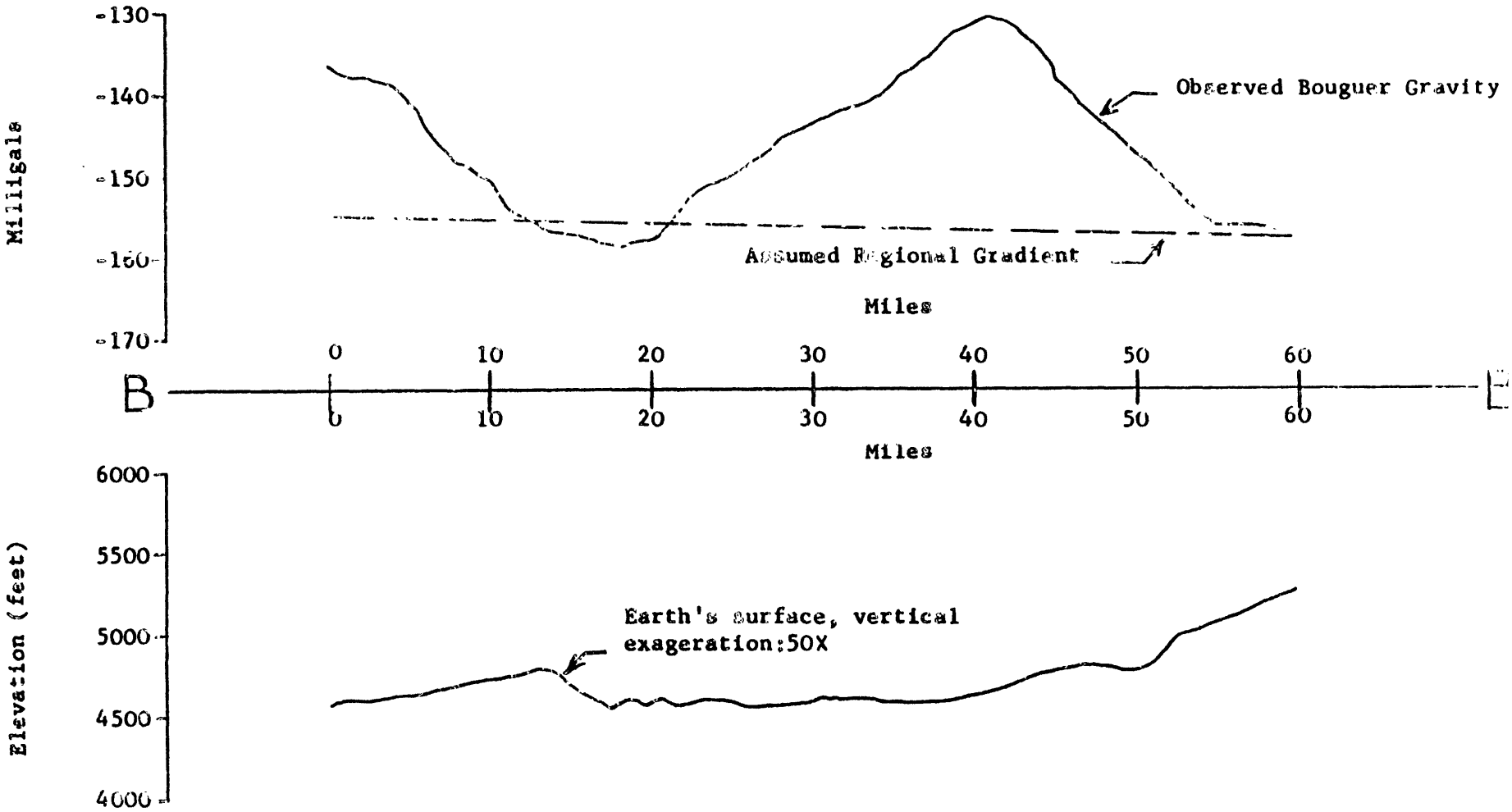

Figure 6. - Gravity Profile B-B'

to 1 mgal per mile just north of Aberdeen. The anomaly in the north is about 20 miles wide, compared to 16 miles in the south. The two features may not be related.

The second of the elongated anomalies is a closed 12-mgal high between Arco and Blackfoot. Its amplitude with respect to the assumed regional gravity is 25 mgals. It is 36 miles long, 14 miles wide, and trends northwest.

The third of the elongated anomalies, west of Idaho Falls, extends northwest into the eastern plain about 30 miles and has an average width of about 22 miles. Its size and shape imply that it might contain a closed low similar to the first of these features near Aberdeen, but gravity information is absent for more than 160 square miles of its interior. The amplitude of this anomaly is at least 12 mgals.

The highs along the boundary of the plain are a series of four small circular and oblong closed gravity highs overlapping the south and southeastern boundary of the Snake River Plain, and a fifth, somewhat larger in areal extent, offset from the southeastern boundary 22 miles northwest, and located west of Rigby in the northern end of the plain.

The first of these, centered 11 miles east of Burley, is crossed by profile A-A' (fig. 5); it is 5½ miles wide and 8½ miles long, and has an amplitude of 14 mgals. The second, centered 24 miles east of the first and 16 miles southeast of Lake Walcott, is 7 miles wide and 12½ miles long, and has an amplitude of 10 mgals. The third, centered 38 miles northeast of the second at Pocatello, is crescent shaped; it

is 4½ miles wide and 13 miles long, and has an amplitude of 8 mgals. The fourth, centered at Heise Hot Springs along the Snake River 12 miles east of Rigby, is 3½ miles wide and 6 miles long, and has an amplitude of 10 mgals. The fifth, centerd 13 miles west of Rigby, is crossed by profile C-C' (fig. 7). This anomaly is 12 miles wide and 15 miles long, and has an amplitude of 10 mgals.

A prominent low is centered at Mud Lake, 18 miles southeast of Reno Point. Lack of control to the north prohibits an adequate definition of the boundary of this anomaly, but it extends at least 8 miles north and south and 14 miles east and west. It is an 8-mgal closed low with gradients of 2½ mgals per mile outside the closure, giving a total amplitude of -23 mgals, as illustrated at the 45th mile on profile C-C' (fig. 7). The amplitude with respect to the assumed regional gravity is -7 mgals. This low is the only prominent feature entirely on the Snake River Plain not directly on basalt flows. The Mud Lake region is a sizeable accumulation of lacustrine deposits of Quaternary age.

There are other anomalies in the gravity field which may have considerable significance. The concave eastward pattern near Rexburg is well into the plain, although it doesn't have much relief until it approaches the high west of Rigby. The northward-trending nose east of Blackfoot is on the boundary of the plain. There may well be other important features not uncovered as a result of lack of control. Any of the boundary highs, for example, could be located in areas near the northwestern boundary of the plain without distorting the gravity field

Figure 7. Gravity profile C-C'.

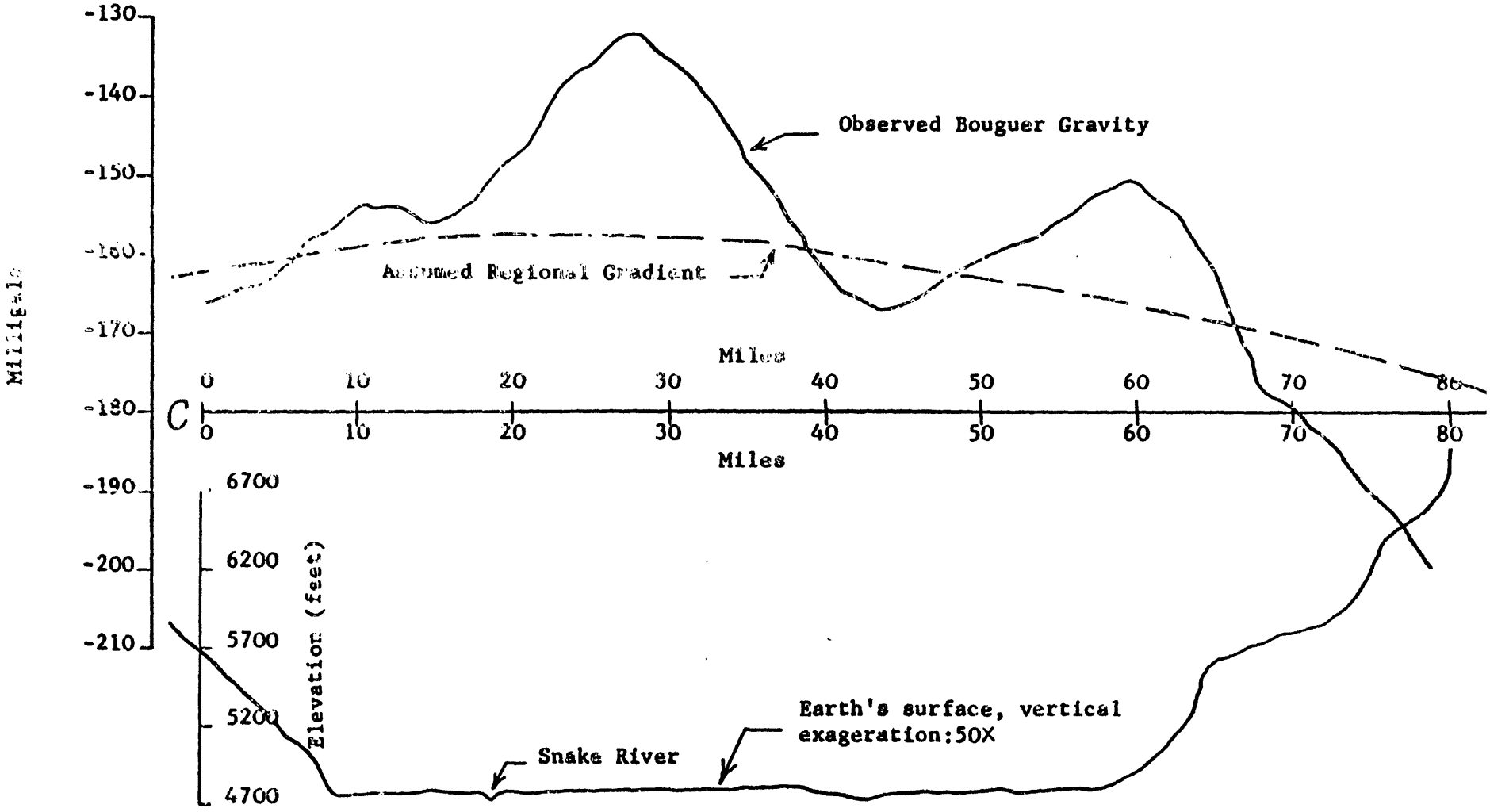

Figure 7. - Gravity Profile C-C'

in the regions of existing control. However, nothing of the size of the anomalies in the western plain could be accommodated in any region of no control in the eastern plain without drastically upsetting the observed gravity pattern in well-controlled areas.

Preliminary interpretation

Two-dimensional analysis does not appear to be profitable in interpreting the anomalies of the eastern plain, as it was, for example, in the western plain. The irregularity of the gravity field of the eastern plain requires, for this preliminary report, a more general approach. Because of the lack of two-dimensional symmetry, profiles A-A', B-B', and C-C' are used only as an aid in describing the anomalies. However, the three profiles are reduced to residual gravity and shown over generalized geologic sections on figure 8. The disturbing masses are fixed in their positions by depth-estimation formulas given by Bott and Smith (1958). These solutions are interpretive and, of course, are not unique (LaFehr, 1962).

The formulas used for this preliminary interpretation are $h \leq \frac{|x_1 - x_2| \lambda^{1/3}}{\lambda^{2/3} - 1}$ in the cases involving the highs along the boundary of the plain and $h \leq \frac{|x_1 - x_2| \lambda^{\frac{1}{2}}}{\lambda - 1}$ in the cases involving the elongated anomalies normal to the axis of the plain. In these formulas h represents the depth to the top surface of the disturbing mass; x_1 represents the horizontal coordinate (in all cases the horizontal-coordinate axes are the profile lines A-A', B-B', and C-C') corresponding to the attraction of gravity $A(x_1)$ at that pont; x_2 represents the horizontal coordinate corresponding to the attraction of gravity $A(x_2)$ at that point; and λ is the ration $A(x_1)/A(x_2) > 1$.

Figure 8. Residual gravity profiles and preliminary, generalised geologic cross sections.

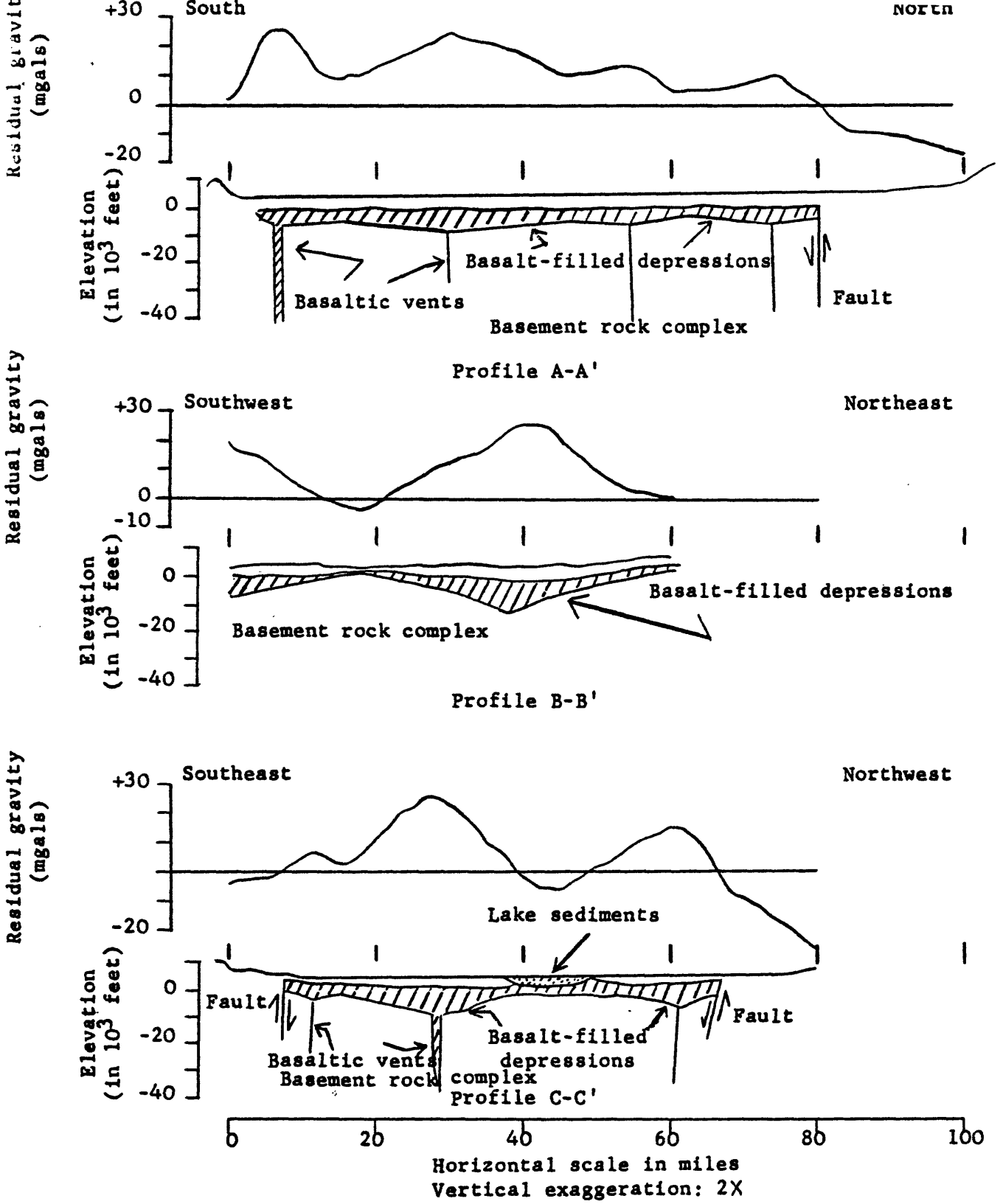

Figure 8. - Residual gravity profiles and preliminary, generalized geologic cross-sections.

The limiting depth depends strongly on the selection of the coordinates x_1 and x_2 (LaFehr, 1962). To obtain the best limiting depth, the inequality is changed to an equation, $f = \frac{x_1 - x\ \lambda^{\frac{1}{3}}}{\lambda - 1}$, in which f is a maximum possible depth, x_1 is a parameter at which $A(x_1)$ is the attraction, x is the independent variable at which A(x) is the attraction, and $\lambda = A(x_1)/A(x) > 1$. This function is programmed for a high-speed digital computer, which permits sampling of the entire anomaly in a short time. The result is a function, continuous everywhere except at $x = x_1$, that displays a turning point or minimum.

If the geometry of the disturbing mass is assumed, the turning point of the dependent variable, f, or the depth at which $\frac{df}{dx} = 0$, has additional significance. This function has been computed for a variety of mass distributions of simple geometric shapes. In most cases the turning point is the depth to the approximate center of the body (LaFehr, 1962). The actual depth, h, to the top surface of the body is obtained when the mass can be approximated by a plane, line, or point on the surface $z = h$.

On the basis of gravity data alone, the Bott and Smith functions yield limiting depths only; if the shape of the body is assumed, the functions give estimated depths. The latter are incorporated in this interpretation.

The question concerning the continuity of the mountains beneath the Snake River Plain is not answered by the gravity field. The elongated anomalies might at first suggest this. The first of the three seems to connect the Pioneer Mountains on the north to the

Bannock Range on the south (fig. 4), but the other two do not extend across the plain. All three are broader than the topographic features from which they extend. If the Lost River or Lemhi Ranges continue beneath the plain from the north, it is not evident on the gravity map. The alternating lows and highs imply some sort of subsurface relief, however, although it may not be related directly to the mountains whose axes are cut nearly at right angles by the Snake River Plain depression. The density contrast is presumed to be that between basalt (about 3.0 g per cm^3) and the basement complex (about 2.7 g per cm^3). Preliminary depth estimation using the Bott and Smith (1958, p. 1) formulae shows the center of the disturbing mass for the major high along profile B-B' (fig. 3) to be approximately 12,000 feet deep. Such a depth implies that this high may be produced by basalt underlying the silicic volcanic rocks and is not related in age to the basalts of the Snake River Group.

The boundary highs may be approximated by the gravity field of one or more vertical cylinders, possibly caused by volcanic vents. These may represent the principal channels of escape for the earlier basalts that spilled out over the plain. It may be significant that they are aligned on the south and southeast boundary, except for the fifth. It is perhaps along a fault, delineating this edge of the plain, that the magma found its escape. On first inspection the center of these vents would be placed at a depth of about 15,000 feet. The fourth of these highs is centered at Heise Hot Springs, one of only two hot springs in the area. (The other is Lidy Hot Springs, midway

between Dubois and Reno Point. A distortion in the gravity field occurs two miles west of it, but lack of control makes it impossible to confirm or deny an anomaly there.) Its steep gradient and confined area lead to a depth estimate of 8,500 feet to its center of mass. It is not uncommon for hot springs to be located at remnant volcanic vents, so there may be two lines of evidence for such a vent. The fifth of the circular and oblong highs, west of Rigby, is broader than the rest and has a less steep gradient. The depth to its center of mass is estimated at 20,000 feet.

Those disturbing masses which produce the line of highs in the western plain may well extend into the eastern plain, but they are of decreasing size, and, of course, they influence the gravity field some distance beyond their termination.

The Mud Lake low is attributed to an accumulation of sediments less than 2,000 feet thick. The density contrast is assumed to be 0.5 g per cm^3.

It is also of interest to note the gravity anomalies at the 80th mile on profile A-A' and at the 72d mile on profile C-C'. Their shapes could be indicative of faulting, which would be in accord with the scant surface geologic information. The lighter rocks of the mountains have been faulted up with respect to the heavier rocks of the plain.

Conclusions

The eastern Snake River Plain is a tectonic depression filled with several hundred to a few thousand feet of recent basalt flows and several thousand feet of older basalt flows. It differs from the western plain in both mode and volume of extrusions. The crust underlying the western plain has been extensively faulted and probably contains fissure flows which have filled a graben. The formation of the eastern depression has undoubtedly been accompanied by faulting, but the displacements are less than in the western plain. The principal avenues of escape for the early lavas in the eastern plain have probably been central vents rather than large fissures. The basalts have filled troughs or valleys in an undulating subsurface floor rather than a large regional graben.

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BASE STATION NETWORK

SNAKE RIVER PROJECT
1961

STATION	OBSERVED GRAVITY (-979,000.00 milligals)	LOCATION	DESCRIPTION
1B	1061.12	Twin Falls	On BM G68, USCGS Idaho Level Line 60, at the post office, 12 ft. NW of N entrance.
2B	1097.33	Shoshone	1 ft. W of BM X3, USCGS Idaho 39, N corner of courthouse yard, 24 ft. SW of the NE sidewalk, 4 ft. SE of the NW sidewalk.
21B	1020.04	Burley	3 ft. lower and 4 ft. N of BM F30, USCGS Idaho 28, in the N face of the City Hall, at NW corner.
31B	1031.12	Minidoka	4.5 ft. lower and 1 ft. N of BM S30, USCGS Idaho 28, in the N face of the railroad station, at the NE corner.
65B	1033.69	Carey	On BM V117, USCGS Idaho 18, in the NE end of SW concrete wingwall of a wooden bridge over Little Wood river.
81B	958.47	Monument	On BM S119, USCGS Idaho 18, 0.35 miles SW of entrance to Craters of the Moon National Monument, in the top of a lava outcrop projecting 2 ft. above the ground, 31 ft. NW of the center line of the highway.

STATION	OBSERVED GRAVITY (-979,000.00 milligals)	LOCATION	DESCRIPTION
93B	1012.15	Arco	3.5 ft. lower and 2 ft. left of BM X36, USCGS Idaho 14, at N corner of Public School. Station is opposite 4th bicycle rack.
153B	1065.36	Howe	1 ft. NW of BM U34, USCGS Idaho 18, in a clearing .2 mile S of the post office at Howe, 324 ft. S of the SE corner of a cemetery fence, 48 ft. W of center line of State Highway 22.
172B	1080.90	Reno Point	On BM B57, USCGS Idaho 80, .7 mile NE along State Highway 22 from junction of State Highways 28 and 22, 79 ft. E of center line.
175B	1039.63	Blackfoot	On concrete entrance abutment, directly below BM X37, USCGS Idaho 14, on Shilling Street at the High School, 6 ft. N of center of front entrance.
176B	1023.81	Pocatello	On BM P81, USCGS Idaho 39, at the post office in the top of the loading platform, 4 ft. NW of the steps.
220B	1024.54	Aberdeen	1 ft. S of BM G109, USCGS Idaho 102, at intersection of State Highway 39 and Boise Street, 53'W of center line of Main Street, 43'N of center line of Boise Street.

STATION	OBSERVED GRAVITY (-979,000.00 milligals)	LOCATION	DESCRIPTION
289B	1056.10	Idaho Falls	On BM H46, USCGS Idaho 50, at the post office front entrance, top of north steps.
467B	1082.38	Dubois	2 ft. directly below BM T30, USCGS Idaho 18, at the foot of the NE column of the Public School.
486B	1061.66	Rigby	On USGS BM 4843, on NW corner of road intersection at + 13, 18, 19, 24, T 4N, R 38E.
493B	1060.10	Rexburg	1 ft. W of tree and in line with a row of trees in NW corner of road intersection at + 19, 20, 29, 30, T 6N, R 40E.

GRAVITY DATA FOR SNAKE RIVER PROJECT

1961

STATION	LATITUDE	LONGITUDE	ELEVATION (feet)	OBSERVED GRAVITY (-979,000.00 mgals)	BOUGUER GRAVITY (mgals)
1B	42°33.42'	114°27.83'	3744	1061.12	-123.4
2B	42°56.10'	114°24.56'	3964	1097.33	-108.0
3	42°33.78'	114°27.38'	3728	1062.91	-123.1
4	42°33.13'	114°28.45'	3741	1061.36	-122.9
5	42°31.40'	114°30.94'	3858	1050.82	-123.9
6	42°31.12'	114°32.09'	3956	1043.81	-124.6
7	42°32.63'	114°26.49'	3826	1057.98	-120.5
8	42°32.40'	114°24.07'	3834	1053.38	-124.2
9	42°32.10'	114°21.70'	3911	1047.82	-124.9
10	42°31.55'	114°19.54'	3965	1041.68	-126.8
11	42°31.88'	114°17.13'	4022	1039.26	-126.3
12	42°31.87'	114°14.92'	4121	1032.64	-127.0
13	42°31.75'	114°12.75'	4161	1029.44	-127.6
14	42°30.88'	114°10.95'	4121	1030.12	-128.0
15	42°29.57'	114°09.73'	4082	1026.30	-132.1
16	42°31.90'	113°47.74'	4157	1022.14	-135.3
17	42°29.40'	114°07.52'	4112	1025.77	-130.7
18	42°30.33'	114°05.48'	4112	1029.35	-126.5
19	42°30.90'	114°03.72'	4148	1030.31	-126.2
20	42°31.15'	114°01.35'	4162	1028.91	-127.1
21B	42°32.40'	113°47.41'	4162	1019.97	-137.8
22	42°34.63'	114°27.71'	3691	1066.25	-123.3
23	42°35.40'	114°27.43'	3693	1070.50	-120.1
24	42°36.13'	114°27.18'	3593	1069.34	-128.3
25	42°36.90'	114°27.83'	3646	1070.02	-125.6
26	42°40.83'	114°30.21'	3719	1071.47	-125.8
27	42°41.20'	114°29.26'	3814	1065.67	-126.3
28	42°40.82'	114°27.70'	3809	1065.38	-126.3
29	42°39.10'	114°20.88'	3885	1058.94	-125.7
30	42°35.80'	114°24.11'	3368	1085.59	-125.1
31B	42°45.25'	113°29.38'	4282	1031.12	-138.9
32	42°56.10'	114°24.56'	3965	1097.18	-108.1
33	42°55.23'	114°21.76'	4004	1090.51	-111.1
34	42°54.20'	114°18.75'	4060	1080.79	-115.9
35	42°54.47'	114°15.78'	4074	1078.61	-117.7
36	42°54.38'	114°14.38'	4083	1076.78	-118.8
37	42°54.28'	114°11.79'	4101	1074.60	-119.8
38	42°54.20'	114°09.60'	4113	1073.49	-120.1
39	42°54.10'	114°03.46'	4201	1068.75	-119.4
40	42°54.12'	114°07.25'	4153	1071.17	-119.8
41	42°54.15'	114°05.03'	4192	1069.23	-119.5

STATION	LATITUDE	LONGITUDE	ELEVATION (feet)	OBSERVED GRAVITY (-979,000.00 mgals)	BOUGUER GRAVITY (mgals)
42	42°54.00'	114°01.65'	4219	1069.00	-117.9
43	42°53.77'	113°59.34'	4229	1070.78	-115.2
44	42°53.78'	113°56.91'	4224	1071.94	-114.3
45	42°53.10'	113°54.73'	4220	1070.97	-114.0
46	42°52.48'	113°52.46'	4225	1069.28	-115.0
47	42°51.70'	113°50.26'	4229	1064.98	-117.9
48	42°50.63'	113°48.33'	4261	1056.95	-122.4
49	42°39.03'	114°26.75'	3775	1067.40	-123.7
50	42°39.92'	114°26.59'	3806	1066.91	-123.7
51	42°43.38'	114°26.67'	4101	1053.27	-124.8
52	42°46.01'	114°25.89'	3896	1070.20	-124.1
53	42°49.45'	114°26.06'	3898	1082.29	-117.1
54	42°50.91'	114°26.01'	3968	1083.35	-114.0
55	42°53.05'	114°25.06'	4476	1063.14	-106.4
56	42°37.57'	114°16.03'	3880	1057.92	-124.7
57	42°40.80'	114°21.86'	3847	1061.40	-128.0
58	42°59.80'	114°24.03'	4040	1093.90	-112.5
59	43°01.57'	114°23.53'	4190	1079.29	-120.7
60	43°02.70'	114°23.49'	4265	1069.81	-127.4
61	43°07.30'	114°20.52'	4650	1043.99	-137.0
62	43°17.05'	114°18.11'	5000	1018.02	-156.6
63	43°19.93'	114°16.70'	4883	1020.63	-165.3
64	43°20.03'	114°07.33'	4875	1037.70	-148.9
65B	43°18.53'	113°56.69'	4786	1033.69	-155.9
66	43°04.30'	114°07.99'	4385	1069.72	-122.7
67	43°06.88'	114°09.27'	4590	1051.82	-132.1
68	43°05.15'	114°12.82'	4570	1054.72	-127.8
69	43°02.51'	114°12.86'	4320	1074.79	-118.8
70	42°56.60'	114°22.34'	4006	1093.70	-109.9
71	42°58.14'	114°18.38'	4068	1089.59	-112.6
72	42°59.35'	114°16.48'	4107	1087.61	-114.0
73	43°00.99'	114°13.64'	4188	1082.58	-116.7
74	43°03.00'	114°09.31'	4298	1074.41	-121.2
75	43°05.39'	114°05.32'	4403	1063.04	-129.9
76	43°07.03'	114°04.49'	4446	1061.21	-131.6
77	43°10.38'	114°03.19'	4567	1056.22	-134.4
78	43°11.92'	114°02.32'	4621	1052.07	-137.6
79	43°13.10'	114°00.75'	4674	1045.34	-142.9
80	43°18.15'	114°02.65'	4828	1036.06	-150.5
81B	43°27.66'	113°33.79'	5925	958.47	-176.6
82	43°27.12'	113°34.63'	5925	958.01	-176.2
83	43°26.75'	113°35.67'	5838	965.31	-173.6
84	43°26.20'	113°37.00'	5812	968.94	-170.7
85	43°23.57'	113°38.29'	5449	994.95	-162.5
86	43°23.36'	113°40.58'	5265	1006.71	-161.5
87	43°22.62'	113°43.71'	5142	1017.15	-157.3

STATION	LATITUDE	LONGITUDE	ELEVATION (feet)	OBSERVED GRAVITY (-979,000.00 mgals)	BOUGUER GRAVITY (mgals)
88	43°21.92'	113°45.83'	5010	1022.81	-158.5
89	43°22.00'	113°48.40'	4907	1020.39	-167.2
90	43°20.55'	113°52.75'	4814	1028.03	-163.0
91	43°20.15'	113°54.70'	4764	1031.90	-161.5
92	43°17.68'	113°58.80'	4992	1016.72	-159.3
93B	43°38.17'	113°18.17'	5323	1012.15	-174.8
94	43°27.55'	113°35.58'	6003	953.54	-176.7
95	43°27.82'	113°35.92'	5967	952.81	-180.0
96	43°28.20'	113°35.08'	5935	958.23	-177.0
97	43°28.49'	113°34.13'	5944	957.99	-177.2
98	43°28.13'	113°32.96'	5872	962.44	-176.5
99	43°26.76'	113°32.04'	5868	963.79	-173.3
100	43°24.41'	113°30.38'	5691	972.54	-171.8
101	43°26.41'	113°31.04'	5748	970.95	-172.8
102	43°28.65'	113°32.58'	5714	978.30	-170.9
103	43°34.44'	113°30.46'	5644	989.71	-172.4
104	43°35.57'	113°28.58'	5504	993.53	-178.7
105	43°35.78'	113°26.17'	5340	999.87	-182.5
106	43°35.76'	113°23.75'	5351	1005.09	-176.5
107	43°36.05'	113°21.17'	5338	1002.62	-180.3
108	43°36.68'	113°18.92'	5306	1003.54	-182.2
109	43°35.88'	113°18.96'	5309	1004.99	-179.5
110	43°35.04'	113°18.92'	5300	1007.65	-176.1
111	43°34.20'	113°18.90'	5287	1011.33	-171.9
112	43°33.12'	113°18.92'	5320	1012.39	-167.2
113	43°32.44'	113°18.38'	5320	1014.81	-163.8
114	43°31.76'	113°17.42'	5360	1013.55	-161.9
115	43°31.16'	113°16.71'	5395	1014.13	-158.3
116	43°30.47'	113°16.25'	5406	1015.05	-155.4
117	43°29.75'	113°15.79'	5389	1016.50	-153.9
118	43°29.03'	113°15.13'	5324	1019.26	-154.0
119	43°28.18'	113°14.75'	5389	1014.57	-153.4
120	43°27.45'	113°14.25'	5408	1011.96	-153.8
121	43°25.89'	113°13.29'	5421	1008.81	-153.8
122	43°25.53'	113°10.13'	5201	1027.04	-148.3
123	43°24.57'	113°13.63'	5518	999.58	-155.2
124	43°23.74'	113°13.54'	5511	998.75	-155.2
125	43°22.70'	113°13.38'	5483	998.32	-155.8
126	43°21.81'	113°13.67'	5318	1009.83	-152.9
127	43°21.00'	113°13.59'	5228	1014.38	-152.5
128	43°20.00'	113°13.63'	5200	1014.57	-152.5
129	43°19.10'	113°13.72'	5156	1016.70	-151.6
130	43°18.37'	113°13.76'	5152	1016.55	-150.9
131	43°17.30'	113°13.30'	5183	1013.75	-150.3
132	43°16.65'	113°13.18'	5081	1016.45	-152.7

STATION	LATITUDE	LONGITUDE	ELEVATION (feet)	OBSERVED GRAVITY (-979,000.00 mgals)	BOUGUER GRAVITY (mgals)
133	43°15.72'	113°13.38'	5098	1017.61	-149.1
134	43°14.90'	113°13.59'	5090	1017.81	-148.2
135	43°14.05'	113°13.51'	5052	1019.07	-147.9
136	43°13.20'	113°13.76'	5034	1019.50	-147.3
137	43°12.28'	113°13.47'	5023	1018.39	-147.7
138	43°11.17'	113°14.30'	5084	1012.92	-147.8
139	43°09.56'	113°14.83'	4981	1016.26	-148.3
140	43°08.95'	113°14.63'	4984	1013.84	-149.6
141	43°08.21'	113°14.46'	4984	1012.25	-150.1
142	43°06.70'	113°14.55'	4918	1015.00	-149.0
143	43°36.95'	113°16.21'	5330	1019.89	-164.9
144	43°32.53'	113°07.92'	5103	1035.75	-156.0
145	43°30.68'	113°04.75'	5058	1040.10	-151.5
146	43°29.44'	113°01.42'	5069	1040.54	-148.6
147	43°28.53'	112°59.33'	5055	1043.00	-145.6
148	43°27.36'	112°57.42'	5025	1049.48	-139.1
149	43°26.42'	112°55.96'	4982	1054.90	-134.9
150	43°24.69'	112°52.67'	5032	1051.56	-132.6
151	43°24.28'	112°50.46'	5040	1048.90	-134.5
152	43°23.30'	112°48.38'	4992	1050.55	-134.5
153B	43°46.97'	113°00.33'	4831	1065.36	-164.4
154	43°43.85'	113°01.59'	4913	1057.61	-162.5
155	43°42,10'	113°01.80'	5053	1046.92	-162.6
156	43°40.51'	113°02.55'	5040	1046.78	-160.7
157	43°39.08'	113°03.89'	5201	1038.31	-157.3
158	43°38.33'	113°05.85'	5234	1037.83	-155.0
159	43°37.50'	113°08.17'	5275	1031.49	-157.4
160	43°41.15'	113°20.18'	5403	1001.22	-185.4
161	43°42.62'	113°21.02'	5435	997.35	-189.6
162	43°44.15'	113°21.85'	5474	997.26	-189.6
163	43°45.93'	113°22.81'	5564	992.71	-191.5
164	43°47.51'	113°23.77'	5614	985.70	-197.8
165	43°48.97'	113°24.86'	5612	985.79	-200.1
166	43°50.58'	113°25.95'	5649	986.33	-199.7
167	43°51.90'	113°27.70'	5687	981.44	-204.3
168	43°52.55'	113°29.67'	5743	962.97	-220.4
169	43°53.25'	113°31.84'	5792	956.00	-225.5
170	43°39.55'	113°19.30'	5360	1009.05	-177.8
171	43°46.99'	112°57.99'	4805	1053.55	-177.7
172B	43°59.79'	112°43.36'	5117	1080.82	-151.0
173	43°34.48'	113°12.79'	5271	1027.53	-157.0
174	43°35.65'	113°14.54'	5306	1024.72	-159.5
175B	43°11.24'	112°20.53'	4505	1039.63	-155.9
176B	42°51.68'	112°22.00'	4471	1023.76	-144.5
177	42°45.70'	113°30.86'	4304	1030.49	-138.9
178	42°46.18'	113°33.12'	4273	1033.63	-138.3

STATION	LATITUDE	LONGITUDE	ELEVATION (feet)	GRAVITY (-979,000.00 mgals)	BOUGUER GRAVITY (mgals)
179	42°46.70'	113°35.38'	4274	1035.91	-136.7
180	42°47.20'	113°37.64'	4273	1036.92	-136.5
181	42°47.69'	113°39.90'	4294	1037.17	-135.7
182	42°49.66'	113°46.40'	4302	1048.38	-127.0
183	42°50.12'	113°47.34'	4279	1052.79	-124.7
184	42°48.67'	113°44.38'	4350	1040.65	-130.4
185	42°48.19'	113°42.08'	4340	1037.41	-133.5
186	42°44.77'	113°30.21'	4269	1030.83	-139.2
187	42°43.49'	113°31.81'	4238	1030.06	-139.9
188	42°42.15'	113°33.33'	4186	1030.73	-140.4
189	42°40.87'	113°34.89'	4172	1029.91	-140.1
190	42°39.59'	113°36.70'	4166	1027.49	-141.0
191	42°38.47'	113°38.26'	4162	1027.78	-139.2
192	42°36.80'	113°40.42'	4158	1026.53	-138.2
193	42°35.40'	113°42.43'	4154	1023.43	-139.5
194	42°34.19'	113°44.06'	4152	1021.30	-139.9
195	42°32.95'	113°45.74'	4155	1019.85	-139.3
196	42°46.65'	113°28.27'	4316	1036.63	-133.4
197	42°47.75'	113°27.70'	4338	1034.46	-135.9
198	42°50.54'	113°25.97'	4471	1036.05	-130.5
199	42°52.22'	113°25.11'	4506	1036.00	-131.0
200	42°53.60'	113°25.06'	4591	1032.18	-131.8
201	42°55.13'	113°24.15'	4608	1033.59	-131.7
202	42°56.31'	113°23.12'	4634	1032.38	-133.1
203	43°05.90'	113°15.12'	4840	1018.30	-149.2
204	43°04.55'	113°15.78'	4834	1018.74	-147.1
205	43°03.12'	113°15.95'	4845	1015.31	-147.7
206	43°01.76'	113°16.90'	4819	1015.89	-146.6
207	43°00.71'	113°18.46'	4786	1019.76	-143.2
208	42°59.80'	113°20.11'	4777	1022.13	-140.0
209	42°58.53'	113°21.35'	4702	1027.73	-137.0
210	42°57.02'	113°22.29'	4673	1029.57	-134.4
211	42°48.75'	113°26.26'	4360	1037.46	-133.1
212	42°44.88'	113°27.49'	4294	1030.20	-138.5
213	42°44.41'	113°25.36'	4320	1029.96	-136.5
214	42°43.90'	113°23.06'	4319	1029.43	-136.3
215	42°43.40'	113°20.80'	4259	1031.99	-136.6
216	42°42.93'	113°18.53'	4277	1027.83	-139.0
217	42°42.50'	113°16.36'	4294	1021.45	-143.7
218	42°42.31'	113°14.01'	4323	1019.03	-144.1
219	42°42.80'	113°11.75'	4377	1012.65	-148.0
220B	42°56.34'	112°50.07'	4404	1024.54	-154.8
221	42°31.99'	113°51.21'	4162	1025.07	-132.2
222	42°32.08'	113°53.50'	4147	1031.02	-127.3
223	42°31.88'	113°55.79'	4142	1034.79	-123.6
224	42°31.49'	113°58.12'	4182	1031.84	-123.5

STATION	LATITUDE	LONGITUDE	ELEVATION (feet)	OBSERVED GRAVITY (-979,000.00 mgals)	BOUGUER GRAVITY (mgals)
225	42°31.06'	113°44.39'	4178	1008.72	-146.2
226	42°30.89'	113°41.53'	4191	1004.61	-149.3
227	42°31.09'	113°39.97'	4191	1006.21	-148.0
228	42°31.22'	113°37.48'	4203	1011.00	-142.7
229	42°31.40'	113°35.15'	4255	1020.14	-130.7
230	42°32.00'	113°32.98'	4312	1017.38	-131.0
231	42°32.35'	113°29.88'	4412	990.59	-152.3
232	42°31.84'	113°27.96'	4470	986.24	-152.4
233	42°31.06'	113°26.24'	4518	977.72	-156.8
234	42°31.03'	113°24.02'	4450	982.22	-156.4
235	42°31.02'	113°22.41'	4420	987.78	-152.6
236	42°31.00'	113°20.30'	4398	981.74	-159.9
237	42°30.91'	113°17.16'	4341	984.88	-160.1
238	42°33.05'	113°13.45'	4275	997.99	-154.4
239	42°33.80'	113°11.69'	4363	1005.24	-142.7
240	42°33.98'	113°09.32'	4429	1007.27	-137.0
241	42°37.16'	113°28.28'	4328	1006.64	-148.5
242	42°37.16'	113°25.36'	4318	1010.32	-145.4
243	42°37.15'	113°22.94'	4283	1019.12	-138.7
244	42°37.13'	113°20.03'	4276	1018.49	-139.7
245	42°36.06'	113°16.96'	4279	1010.17	-146.2
246	42°37.50'	113°05.19'	4212	1027.34	-135.2
247	42°47.01'	112°51.23'	4402	1025.89	-139.5
248	42°50.05'	112°52.11'	4388	1024.58	-146.2
249	42°51.79'	112°52.15'	4395	1027.49	-145.5
250	42°53.56'	112°52.17'	4414	1028.45	-146.1
251	42°55.35'	112°52.17'	4412	1026.42	-150.9
252	42°48.67'	112°48.98'	4406	1025.21	-142.5
253	42°49.62'	112°47.08'	4414	1021.97	-146.6
254	42°50.85'	112°45.35'	4415	1017.47	-152.9
255	42°57.96'	112°49.68'	4399	1022.46	-159.6
256	42°59.70'	112°49.69'	4435	1024.69	-157.8
257	42°59.71'	112°54.46'	4480	1022.12	-157.7
258	42°59.70'	112°59.15'	4718	1007.32	-158.2
259	42°57.95'	112°58.09'	4664	1008.87	-157.2
260	42°47.49'	112°58.96'	4608	1009.16	-144.6
261	42°43.25'	113°09.45'	4411	1015.25	-144.0
262	42°43.78'	113°07.15'	4427	1018.54	-140.5
263	42°44.23'	113°04.81'	4445	1018.98	-139.7
264	42°44.68'	113°02.51'	4462	1017.14	-141.2
265	42°45.00'	113°00.25'	4479	1013.22	-144.6
266	42°45.24'	112°57.82'	4473	1012.60	-145.9
267	42°45.63'	112°55.67'	4408	1019.12	-143.9
268	42°47.50'	112°53.65'	4390	1023.72	-143.2
269	42°49.23'	112°58.95'	4599	1010.03	-146.9
270	43°02.32'	112°48.01'	4430	1033.34	-153.3

STATION	LATITUDE	LONGITUDE	ELEVATION (feet)	OBSERVED GRAVITY (-979,000.00 mgals)	BOUGUER GRAVITY (mgals)
271	43°03.24'	112°50.40'	4473	1034.60	-150.9
272	43°03.29'	112°52.50'	4513	1030.25	-152.9
273	43°03.38'	112°55.01'	4583	1023.09	-156.0
274	43°03.23'	112°57.28'	4760	1011.87	-156.4
275	43°02.70'	113°00.21'	4886	1005.29	-154.6
276	43°10.31'	113°10.48'	5229	999.68	-151.1
277	43°09.69'	113°08.49'	5319	993.69	-150.8
278	43°08.45'	113°06.67'	5387	985.66	-152.8
279	43°06.27'	113°05.23'	5171	994.07	-154.1
280	43°04.82'	113°05.81'	5154	992.14	-154.9
281	43°03.06'	113°06.18'	5235	982.81	-156.7
282	43°02.70'	113°02.47'	5001	998.86	-154.1
283	43°01.40'	112°43.86'	4376	1034.16	-154.4
284	43°03.14'	112°43.85'	4390	1039.93	-149.7
285	43°04.89'	112°43.85'	4436	1043.40	-146.8
286	43°06.39'	112°43.85'	4476	1045.33	-144.7
287	43°07.74'	112°44.31'	4460	1050.12	-142.9
288	43°10.11'	112°40.27'	4500	1056.36	-137.8
289B	43°29.66'	112°02.34'	4711	1056.10	-154.8
290	42°39.67'	112°55.49'	4664	987.25	-151.4
291	42°39.66'	112°52.11'	4895	965.83	-159.0
292	42°36.83'	112°50.65'	5044	941.84	-169.8
293	42°41.18'	112°52.09'	4850	980.67	-149.1
294	42°35.36'	112°34.40'	4960	960.46	-154.0
295	42°38.34'	112°35.25'	4856	969.02	-156.2
296	42°42.06'	112°35.67'	4722	993.20	-145.6
297	42°44.44'	112°36.76'	4640	997.94	-149.4
298	42°54.05'	112°34.37'	4460	1027.34	-145.2
299	42°53.52'	112°36.63'	4442	1021.54	-151.2
300	42°52.66'	112°40.00'	4430	1015.35	-156.9
301	42°51.64'	112°43.28'	4417	1019.46	-152.0
302	42°54.45'	112°30.93'	4433	1021.78	-152.9
303	42°56.13'	112°30.93'	4468	1025.79	-149.4
304	42°57.84'	112°30.94'	4458	1031.74	-146.6
305	42°59.60'	112°30.93'	4432	1035.71	-146.8
306	42°55.23'	112°25.58'	4720	1003.11	-155.6
307	42°47.76'	112°21.25'	4497	1009.50	-151.4
308	42°47.87'	112°15.00'	4633	1002.87	-150.0
309	42°47.57'	112°18.08'	4521	1005.48	-153.6
310	42°49.70'	112°24.62'	4465	1010.56	-155.1
311	43°11.79'	112°23.69'	4467	1040.55	-158.1
312	43°11.82'	112°28.43'	4443	1048.38	-151.8
313	43°09.22'	112°32.04'	4461	1053.94	-141.3
314	43°07.49'	112°32.06'	4437	1054.62	-139.4
315	43°06.61'	112°35.59'	4439	1051.96	-140.7
316	43°04.87'	112°35.60'	4422	1047.46	-143.5

STATION	LATITUDE	LONGITUDE	ELEVATION (feet)	OBSERVED GRAVITY (-979,000.00 mgals)	BOUGUER GRAVITY (mgals)
317	43°02.90'	112°35.88'	4392	1044.47	-145.4
318	43°02.49'	112°39.05'	4378	1041.56	-148.5
319	42°50.94'	112°58.07'	4496	1016.75	-148.9
320	42°52.67'	112°58.05'	4584	1012.55	-150.4
321	42°54.39'	112°58.03'	4632	1009.50	-153.2
322	42°56.22'	112°55.60'	4567	1015.30	-154.0
323	43°08.55'	112°40.83'	4477	1052.69	-140.6
324	43°10.49'	112°43.85'	4555	1050.99	-140.5
325	43°12.96'	112°44.31'	4573	1056.27	-137.8
326	43°11.85'	112°37.97'	4525	1060.18	-135.1
327	43°14.42'	112°23.69'	4490	1041.95	-159.3
328	43°14.90'	112°28.44'	4471	1051.77	-151.4
329	43°14.46'	112°32.03'	4497	1057.23	-143.7
330	43°11.83'	112°32.03'	4461	1053.90	-145.2
331	43°11.84'	112°35.59'	4510	1059.17	-137.0
332	43°14.46'	112°35.58'	4524	1063.52	-135.8
333	43°14.47'	112°39.08'	4569	1063.18	-133.4
334	43°14.29'	112°41.64'	4607	1060.42	-133.6
335	43°12.29'	112°40.27'	4552	1058.54	-135.8
336	43°09.23'	112°36.37'	4487	1055.40	-138.3
337	43°07.42'	112°27.36'	4451	1045.82	-147.3
338	43°05.73'	112°30.25'	4406	1051.57	-141.7
339	43°04.06'	112°32.98'	4390	1049.11	-142.6
340	43°00.17'	112°36.03'	4358	1040.94	-146.8
341	43°02.20'	112°30.82'	4420	1042.19	-144.9
342	43°02.20'	112°23.81'	4469	1039.19	-145.0
343	42°53.23'	112°23.79'	4881	998.47	-147.6
344	42°56.98'	112°27.04'	4491	1024.00	-151.0
345	43°00.46'	112°28.53'	4453	1038.12	-144.4
346	43°02.21'	112°28.49'	4425	1043.01	-143.8
347	43°03.95'	112°27.29'	4440	1044.17	-144.4
348	43°05.75'	112°27.28'	4446	1045.48	-145.4
349	43°09.20'	112°26.07'	4465	1043.98	-151.0
350	43°09.15'	112°21.47'	4490	1040.11	-153.3
351	43°01.66'	112°21.93'	4561	1026.48	-151.4
352	43°02.18'	112°19.64'	4737	1005.87	-162.2
353	43°02.32'	112°17.40'	4780	996.44	-169.2
354	43°00.44'	112°16.64'	4819	992.43	-168.1
355	42°58.06'	112°15.04'	5089	981.60	-159.2
356	43°03.98'	112°16.39'	4778	1003.07	-165.3
357	43°05.67'	112°16.62'	4863	1014.10	-151.6
358	43°08.71'	112°19.03'	4723	1032.57	-146.2
359	43°15.42'	112°32.98'	4541	1060.28	-139.4
360	43°16.08'	112°35.18'	4591	1062.26	-135.5
361	43°17.05'	112°37.17'	4618	1064.87	-132.7
362	43°17.97'	112°39.16'	4667	1064.10	-131.9

STATION	LATITUDE	LONGITUDE	ELEVATION (feet)	OBSERVED GRAVITY (-979,000.00 mgals)	BOUGUER GRAVITY (mgals)
363	43°18.98'	112°41.19'	4727	1060.76	-133.1
364	43°20.29'	112°42.64'	4765	1059.26	-134.3
365	43°21.19'	112°44.63'	4848	1054.77	-135.2
366	43°22.42'	112°46.21'	4924	1051.96	-135.3
367	43°16.28'	112°29.63'	4514	1055.49	-147.1
368	42°43.42'	112°24.95'	5166	959.30	-154.9
369	42°41.74'	112°26.67'	5967	904.99	-158.6
370	42°48.72'	112°38.03'	4490	1002.00	-160.7
371	42°47.24'	112°37.89'	4542	999.78	-157.6
372	42°45.94'	112°37.24'	4570	998.47	-155.3
373	42°41.81'	112°38.23'	4834	986.14	-145.6
374	42°40.56'	112°39.55'	4966	969.02	-152.9
375	42°50.51'	112°37.96'	4445	1003.93	-164.2
376	42°52.22'	112°38.01'	4406	1017.04	-156.0
377	43°29.84'	112°07.13'	4722	1057.45	-153.1
378	43°29.97'	112°09.72'	4730	1056.49	-153.7
379	43°28.05'	112°09.74'	4686	1055.28	-154.7
380	43°26.38'	112°09.74'	4651	1054.79	-154.8
381	43°24.64'	112°09.75'	4631	1053.88	-154.3
382	43°22.99'	112°09.76'	4604	1052.33	-155.0
383	43°22.91'	112°12.13'	4647	1048.99	-155.6
384	43°21.33'	112°10.90'	4611	1047.20	-157.2
385	43°19.82'	112°10.90'	4601	1044.11	-158.6
386	43°18.73'	112°11.55'	4575	1043.82	-158.8
387	43°18.09'	112°13.91'	4559	1042.95	-159.7
388	43°17.00'	112°15.99'	4544	1041.06	-160.8
389	43°17.01'	112°18.61'	4540	1041.93	-160.2
390	43°17.52'	112°27.84'	4514	1054.55	-149.9
391	43°20.12'	112°26.58'	4801	1038.64	-152.5
392	43°21.21'	112°27.46'	4785	1044.54	-149.2
393	43°15.29'	112°22.49'	4502	1042.66	-159.2
394	43°16.57'	112°22.46'	4492	1045.61	-158.8
395	43°18.33'	112°20.70'	4569	1043.57	-158.8
396	43°20.48'	112°19.52'	4657	1042.41	-157.9
397	43°22.10'	112°19.61'	4707	1043.43	-156.3
398	43°11.78'	112°17.72'	4519	1045.48	-150.1
399	43°11.78'	112°15.45'	4530	1045.00	-149.9
400	43°13.51'	112°15.42'	4535	1042.05	-155.2
401	43°13.50'	112°13.04'	4547	1042.24	-154.2
402	43°15.24'	112°13.05'	4559	1037.45	-160.9
403	43°14.79'	112°10.67'	4569	1038.03	-159.0
404	43°15.22'	112°08.34'	4588	1044.76	-151.8
405	43°14.09'	112°09.38'	4602	1040.65	-153.4
406	43°12.08'	112°11.49'	4574	1045.77	-146.9
407	43°11.45'	112°13.59'	4540	1044.37	-149.4

STATION	LATITUDE	LONGITUDE	ELEVATION (feet)	OBSERVED GRAVITY (-979,000.00 mgals)	BOUGUER GRAVITY (mgals)
408	43°09.56'	112°11.48'	4721	1030.88	-149.2
409	43°08.39'	112°10.92'	4769	1023.57	-151.9
410	43°07.53'	112°08.94'	4870	1019.03	-149.1
411	43°07.57'	112°08.12'	4989	1011.44	-149.6
412	43°16.96'	112°08.34'	4581	1039.15	-160.5
413	43°16.46'	112°04.78'	4784	1021.93	-164.8
414	43°15.02'	112°01.33'	4794	1015.60	-168.3
415	43°13.98'	112°01.22'	4901	1009.02	-166.9
416	43°12.69'	112°00.31'	4978	1001.43	-168.0
417	43°18.69'	112°04.80'	4636	1036.58	-162.3
418	43°18.69'	112°08.35'	4596	1039.63	-161.7
419	43°16.96'	112°10.64'	4578	1039.19	-160.5
420	43°28.08'	112°06.13'	4679	1057.84	-152.6
421	43°25.50'	112°06.14'	4648	1056.49	-151.9
422	43°22.89'	112°06.16'	4641	1050.15	-154.8
423	43°21.29'	112°05.98'	4626	1047.11	-156.3
424	43°21.30'	112°08.57'	4608	1047.06	-157.5
425	43°21.29'	112°03.60'	4638	1047.45	-155.2
426	43°23.75'	112°03.77'	4649	1053.54	-152.2
427	43°23.74'	112°00.80'	4667	1050.30	-154.3
428	43°25.39'	112°00.17'	4682	1050.97	-155.2
429	43°24.64'	111°57.80'	4850	1035.50	-159.5
430	43°27.25'	111°57.78'	4706	1049.14	-158.4
431	43°27.23'	111°55.19'	4958	1031.92	-160.5
432	43°29.84'	111°55.39'	4745	1051.94	-157.2
433	43°29.82'	111°57.80'	4737	1055.18	-154.4
434	43°29.81'	112°00.19'	4729	1055.81	-154.2
435	43°27.21'	112°00.18'	4700	1053.97	-153.9
436	43°25.48'	112°03.77'	4668	1054.99	-152.2
437	43°27.23'	112°03.76'	4676	1056.97	-152.4
438	43°31.53'	112°04.93'	4736	1058.03	-154.2
439	43°34.09'	112°04.94'	4794	1059.44	-153.1
440	43°36.70'	112°04.93'	4817	1067.17	-148.0
441	43°36.72'	112°07.34'	4831	1069.16	-145.2
442	43°34.11'	112°07.33'	4789	1062.15	-150.8
443	43°31.56'	112°07.02'	4757	1058.86	-152.1
444	43°32.39'	112°08.81'	4787	1058.57	-151.9
445	43°33.27'	112°10.94'	4914	1052.38	-151.8
446	43°32.83'	112°14.53'	4882	1050.10	-155.3
447	43°30.89'	112°14.51'	4840	1048.85	-156.1
448	43°30.66'	112°12.07'	4877	1047.35	-155.1
449	43°35.00'	112°14.52'	4881	1059.00	-149.7
450	43°36.45'	112°14.51'	4868	1067.08	-144.6
451	43°35.88'	112°10.93'	4936	1063.35	-143.4
452	43°36.73'	112°08.52'	4898	1066.06	-144.3

STATION	LATITUDE	LONGITUDE	ELEVATION (feet)	OBSERVED GRAVITY (-979,000.00 mgals)	BOUGUER GRAVITY (mgals)
453	43°38.46'	112°09.64'	4896	1075.88	-137.2
454	43°38.45'	112°14.49'	4855	1075.59	-139.9
455	43°41.10'	112°14.00'	4852	1083.62	-136.0
456	43°41.06'	112°12.29'	4850	1086.42	-133.3
457	43°41.09'	112°09.77'	4802	1089.27	-133.3
458	43°41.04'	112°07.31'	4774	1087.34	-136.9
459	43°43.24'	112°01.34'	4790	1073.51	-153.0
460	43°43.66'	112°07.31'	4774	1090.24	-137.9
461	43°44.96'	112°07.30'	4772	1090.44	-139.8
462	43°44.52'	112°09.69'	4762	1093.63	-136.5
463	43°44.56'	112°12.10'	4777	1093.19	-136.1
464	43°44.11'	112°13.69'	4778	1091.86	-136.7
465	43°42.84'	112°12.87'	4792	1091.64	-134.2
466	43°43.01'	112°09.70'	4784	1091.26	-135.3
467B	44°10.35'	112°13.86'	5134	1082.38	-164.2
468	43°31.54'	112°02.54'	4725	1057.79	-155.1
469	43°31.56'	112°00.17'	4756	1056.44	-154.6
470	43°31.55'	111°57.80'	4769	1056.34	-153.9
471	43°31.54'	111°55.41'	4782	1057.84	-151.6
472	43°31.53'	111°52.80'	5223	1034.34	-148.7
473	43°32.31'	111°52.75'	5447	1018.19	-152.6
474	43°33.28'	111°53.89'	5134	1035.26	-155.7
475	43°34.15'	111°53.87'	4851	1060.31	-148.9
476	43°34.13'	111°55.38'	4832	1062.34	-148.0
477	43°34.12'	111°57.78'	4801	1060.02	-152.2
478	43°34.09'	112°00.19'	4769	1058.81	-155.5
479	43°34.09'	112°02.27'	4742	1060.69	-155.3
480	43°36.70'	112°02.53'	4758	1069.01	-149.7
481	43°36.71'	112°00.17'	4784	1065.63	-151.5
482	43°36.72'	111°57.78'	4815	1066.93	-148.4
483	43°36.73'	111°55.38'	4841	1060.79	-152.9
484	43°36.76'	111°52.99'	4878	1055.23	-156.3
485	43°39.35'	111°52.99'	4879	1055.86	-159.5
486B	43°40.22'	111°55.37'	4843	1061.66	-157.2
487	43°40.18'	111°57.78'	4822	1067.42	-152.6
488	43°39.32'	112°00.17'	4796	1072.69	-147.6
489	43°39.32'	112°00.04'	4783	1074.14	-146.9
490	43°41.05'	112°01.34'	4789	1076.12	-147.2
491	43°41.92'	112°03.73'	4776	1081.83	-143.6
492	43°44.55'	112°03.75'	4779	1080.18	-149.0
493B	43°49.58'	111°46.62'	4868	1060.10	-171.4
494	43°33.12'	112°31.58'	5293	1025.83	-155.3
495	43°33.15'	112°34.54'	5363	1020.22	-156.8
496	43°33.15'	112°37.58'	5259	1028.00	-155.3
497	43°30.06'	112°39.75'	6675	926.50	-167.3
498	43°32.32'	112°19.83'	5103	1035.45	-155.9

STATION	LATITUDE	LONGITUDE	ELEVATION (feet)	OBSERVED GRAVITY (-979,000.00 mgals)	BOUGUER GRAVITY (mgals)
499	43°31.60'	112°15.67'	4869	1048.46	-155.9
500	43°20.78'	111°47.19'	5705	971.57	-166.3
501	43°18.70'	111°47.68'	6076	948.26	-164.3
502	43°15.22'	111°45.81'	6270	920.16	-175.5
503	43°52.17'	111°46.61'	4878	1066.48	-168.2
504	43°52.17'	111°50.23'	4843	1070.35	-166.4
505	43°49.39'	111°50.23'	4839	1063.73	-169.1
506	43°46.54'	111°50.64'	4846	1061.26	-166.9
507	43°46.53'	111°53.81'	4826	1062.32	-167.0
508	43°49.58'	111°52.86'	4830	1065.85	-167.8
509	43°52.17'	111°53.80'	4839	1068.56	-168.5
510	43°52.18'	111°59.36'	4954	1066.82	-163.3
511	43°49.67'	111°59.73'	4848	1069.68	-163.0
512	43°47.50'	111°59.29'	4827	1065.42	-165.3
513	43°45.85'	111°58.92'	4812	1064.89	-164.3
514	43°44.55'	111°58.96'	4802	1067.21	-160.6
515	43°41.94'	111°58.96'	4809	1069.87	-153.6
516	43°42.83'	111°52.79'	4863	1059.95	-161.6
517	43°44.57'	111°55.37'	4828	1064.21	-162.1
518	43°49.56'	111°43.03'	5105	1040.08	-177.1
519	43°52.15'	111°41.83'	4924	1061.50	-170.4
520	43°50.18'	111°38.07'	5145	1040.08	-175.6
521	43°52.14'	111°38.25'	4989	1054.30	-173.7
522	43°54.76'	111°39.43'	4949	1064.65	-169.7
523	43°57.35'	111°38.22'	4988	1067.98	-167.9
524	43°58.23'	111°41.81'	4964	1076.25	-162.4
525	43°39.35'	111°50.59'	4908	1054.31	-159.3
526	43°38.48'	111°48.21'	4939	1051.94	-158.5
527	43°38.91'	111°45.86'	4958	1051.89	-158.1
528	43°38.47'	111°43.21'	4986	1054.45	-153.2
529	43°38.32'	111°40.69'	5008	1059.77	-146.3
530	43°38.34'	111°36.47'	6230	971.08	-161.7
531	43°39.27'	111°34.44'	6200	972.82	-163.2
532	43°39.42'	111°32.22'	6562	951.50	-163.0
533	43°35.02'	111°50.61'	5001	1047.25	-154.3
534	43°35.01'	111°48.22'	5129	1039.22	-154.7
535	43°35.00'	111°45.26'	5160	1038.06	-153.9
536	43°31.54'	111°48.24'	5538	1011.03	-153.1
537	43°31.53'	111°51.52'	5351	1027.47	-147.8
538	43°46.24'	112°09.36'	4757	1097.64	-135.4
539	43°47.08'	112°09.86'	4756	1095.71	-138.7
540	43°47.82'	112°10.36'	4756	1095.22	-140.3
541	43°49.45'	112°11.41'	4827	1089.27	-144.4
542	43°50.96'	112°11.91'	4914	1085.21	-145.5
543	43°52.38'	112°12.16'	4901	1086.42	-147.2
544	43°54.12'	112°12.44'	4814	1092.32	-149.1

TION	LATITUDE	LONGITUDE	ELEVATION (feet)	OBSERVED GRAVITY (-979,000.00 mgals)	BOUGUER GRAVITY (mgals)
5	43°55.60'	112°12.77'	4812	1092.90	-151.1
6	43°57.52'	112°13.40'	4803	1096.29	-151.1
7	43°59.40'	112°13.78'	4805	1098.85	-151.1
8	44°01.10'	112°14.03'	4842	1096.77	-153.5
9	44°02.34'	112°14.08'	4864	1095.32	-155.5
0	44°04.10'	112°14.08'	4881	1094.54	-157.9
1	44°05.58'	112°14.08'	4931	1092.47	-159.2
2	44°07.25'	112°14.08'	4996	1090.05	-160.2
3	44°09.65'	112°14.12'	5083	1083.23	-165.4
4	44°14.76'	112°13.40'	5373	1074.21	-164.7
5	44°16.35'	112°12.81'	5484	1069.03	-165.6
6	44°17.91'	112°12.18'	5584	1061.78	-169.2
7	44°19.80'	112°10.37'	5845	1044.95	-173.3
8	44°21.55'	112°10.96'	5878	1045.00	-173.9
9	44°24.05'	112°11.78'	5991	1035.86	-180.0
0	44°25.75'	112°12.46'	6285	1016.27	-184.5
1	44°27.85'	112°13.43'	6560	995.24	-192.2
2	44°29.12'	112°13.94'	6498	999.83	-193.2
3	44°31.85'	112°16.10'	6725	985.90	-197.7
4	44°11.02'	112°15.55'	5192	1081.65	-162.6
5	44°12.12'	112°18.03'	5210	1083.88	-160.9
6	44°13.02'	112°20.65'	5230	1082.04	-162.9
7	44°12.92'	112°23.13'	5280	1081.22	-160.6
8	44°11.25'	112°23.47'	5149	1088.67	-158.5
9	44°10.34'	112°25.53'	5043	1091.42	-160.7
0	44°07.70'	112°32.18'	4987	1091.57	-159.9
1	43°50.58'	112°26.99'	4787	1071.67	-166.1
2	43°50.55'	112°28.33'	4790	1073.56	-164.0
3	43°51.48'	112°31.17'	4785	1081.97	-157.3
4	43°54.05'	112°35.46'	4802	1089.95	-152.1
5	43°55.06'	112°37.06'	4793	1091.59	-152.5
6	43°55.98'	112°38.61'	4800	1092.32	-152.8
7	43°57.14'	112°40.46'	4879	1091.69	-150.4
8	43°58.30'	112°42.23'	4995	1088.21	-148.7
9	44°00.80'	112°43.70'	5152	1078.59	-152.6
80	43°52.95'	112°33.70'	4784	1087.87	-153.6
81	43°50.55'	112°24.86'	4790	1071.14	-166.4
82	43°50.55'	112°22.44'	4788	1071.62	-166.0
83	43°50.52'	112°20.06'	4786	1073.90	-163.8
84	43°50.35'	112°16.96'	4819	1079.12	-156.4
85	43°50.40'	112°14.67'	4970	1075.68	-150.8
86	43°48.55'	113°01.38'	4864	1060.19	-169.9
87	43°49.95'	113°02.51'	4915	1049.79	-179.3
88	43°51.71'	113°03.93'	4994	1045.15	-181.9
89	43°53.23'	113°05.34'	5082	1042.34	-181.7

ATION	LATITUDE	LONGITUDE	ELEVATION (feet)	OBSERVED GRAVITY (-979,000.00 mgals)	BOUGUER GRAVITY (mgals)
90	43°54.69'	113°06.64'	5152	1040.45	-181.6
91	43°56.13'	113°07.82'	5281	1026.62	-189.8
92	43°57.81'	113°08.57'	5311	1009.79	-207.4
93	43°59.35'	113°10.25'	5426	995.82	-216.7
94	44°01.24'	113°11.64'	5550	1004.47	-203.5
95	44°02.98'	113°12.73'	5725	999.30	-200.8
96	43°47.30'	112°55.57'	4797	1054.09	-178.2
97	43°47.83'	112°53.02'	4793	1064.63	-168.7
98	43°48.35'	112°50.39'	4857	1067.68	-162.5
99	43°49.75'	112°49.51'	4863	1072.81	-159.1
00	43°51.25'	112°48.89'	4915	1070.92	-160.2
01	43°52.82'	112°48.11'	4935	1070.73	-161.5
02	43°54.50'	112°47.02'	4935	1077.06	-157.7
03	43°56.12'	112°46.01'	5007	1078.03	-154.8
04	43°57.73'	112°44.87'	5067	1079.87	-151.9
05	44°02.75'	112°39.87'	4934	1086.44	-160.8
06	44°03.85'	112°38.40'	4918	1085.19	-164.6
07	44°05.65'	112°35.84'	5046	1075.37	-169.5
08	44°06.60'	112°34.08'	5157	1084.12	-155.5
09	43°49.63'	112°09.15'	4784	1094.19	-142.3
10	43°49.69'	112°06.85'	4846	1087.96	-144.9
11	43°49.65'	112°04.47'	4875	1080.56	-150.5
12	44°09.88'	112°55.03'	6152	988.00	-196.9
13	44°05.78'	112°51.89'	5850	1015.71	-181.1
14	44°02.04'	112°47.69'	5440	1053.38	-162.4
15	42°26.39'	113°51.50'	4282	990.06	-152.0
16	42°24.83'	113°52.28'	4312	981.74	-156.3
17	42°23.24'	113°53.13'	4344	974.15	-159.1
18	42°21.65'	113°53.89'	4378	963.27	-166.3
19	42°19.82'	113°53.97'	4413	954.08	-169.9
20	42°18.10'	113°54.01'	4453	943.78	-175.2
21	42°14.70'	113°53.60'	4543	925.59	-182.9
22	42°28.84'	113°50.07'	4230	1003.36	-145.2
23	42°30.40'	113°49.21'	4209	1012.88	-139.3
24	42°52.25'	113°32.06'	4355	1045.67	-130.4
25	42°52.55'	113°36.68'	4380	1043.83	-131.2
26	42°57.05'	113°37.95'	4350	1052.24	-131.4
27	42°56.98'	113°44.96'	4255	1063.03	-126.2
28	43°53.04'	111°49.02'	4850	1071.71	-166.0
29	43°54.77'	111°51.39'	4868	1072.34	-166.9
30	43°53.91'	111°53.79'	4848	1069.77	-169.4
31	43°54.88'	111°55.88'	4837	1078.86	-162.4
32	43°55.28'	111°59.11'	4898	1080.31	-157.9
33	43°56.55'	111°59.21'	4877	1087.76	-153.6
34	43°56.52'	111°54.65'	4882	1082.06	-158.9

TATION	LATITUDE	LONGITUDE	ELEVATION (feet)	OBSERVED GRAVITY (-979,000.00 mgals)	BOUGUER GRAVITY (mgals)
635	43°56.51'	111°52.58'	4869	1080.07	-161.7
636	43°55.64'	111°49.00'	4852	1078.86	-162.7
637	43°57.38'	111°50.20'	4884	1083.41	-158.7
638	43°57.35'	111°46.62'	4914	1079.78	-160.5
639	43°59.60'	111°46.62'	4939	1088.78	-153.4
640	43°59.11'	111°46.61'	4920	1087.86	-154.7
641	43°59.96'	111°44.23'	4960	1085.59	-155.9
642	43°59.99'	111°40.58'	5033	1073.59	-163.5
643	43°56.49'	111°43.02'	4938	1073.21	-164.4
644	43°54.76'	111°43.01'	4923	1070.21	-165.7
645	43°54.77'	111°46.61'	4867	1076.06	-163.2
646	43°53.02'	111°43.02'	4913	1064.94	-168.9
647	43°46.52'	111°47.03'	5089	1046.17	-167.4
648	43°47.84'	111°45.24'	5234	1033.21	-173.6
649	43°46.30'	111°43.46'	5259	1030.75	-172.3
650	43°45.40'	111°42.19'	5312	1027.02	-171.5
651	43°45.21'	111°39.86'	5460	1015.90	-173.4
652	43°46.69'	111°39.84'	5373	1020.06	-176.7
653	43°47.83'	111°40.01'	5291	1025.18	-178.2
654	43°47.83'	111°41.93'	5231	1030.17	-176.8
655	43°53.86'	111°30.49'	5528	1025.43	-172.8
656	43°53.86'	111°33.47'	5289	1041.19	-171.4
657	43°51.26'	111°33.48'	5518	1018.32	-176.6
658	43°51.49'	111°30.31'	5633	1011.06	-177.3
659	43°49.68'	111°30.45'	6121	974.21	-182.2
660	43°43.70'	111°50.67'	4876	1058.75	-163.3
661	43°43.47'	111°48.99'	4893	1057.54	-163.2
662	43°43.69'	111°47.05'	4904	1057.33	-163.1
663	43°43.69'	111°45.85'	4911	1057.25	-162.7
664	43°43.07'	111°44.79'	5147	1042.55	-162.3
665	43°42.80'	111°43.48'	5363	1027.80	-163.7
666	43°42.80'	111°41.98'	5482	1018.95	-165.4
667	43°42.79'	111°39.57'	5592	1009.81	-168.0
668	43°41.91'	111°36.19'	5998	983.06	-169.0
669	43°41.20'	111°34.84'	6321	957.24	-174.4
670	43°46.22'	111°37.42'	5461	1016.09	-174.7
671	43°44.27'	111°34.98'	6137	973.00	-174.3
672	43°43.62'	111°32.08'	6240	963.48	-176.6
673	43°45.77'	111°33.40'	6249	964.83	-178.0
674	43°46.21'	111°30.99'	6231	967.06	-177.5
675	43°47.70'	111°31.29'	6135	974.60	-178.0
676	43°47.76'	111°34.39'	5589	1006.61	-178.3
677	43°49.53'	111°35.86'	5335	1025.52	-177.8
678	43°51.26'	111°35.86'	5190	1038.43	-176.2
679	43°52.99'	111°35.86'	5102	1050.72	-171.8

STATION	LATITUDE	LONGITUDE	ELEVATION (feet)	OBSERVED GRAVITY (-979,000.00 mgals)	BOUGUER GRAVITY (mgals)
680	43°54.76'	111°36.66'	5034	1059.18	-170.1
681	43°35.23'	111°43.29'	5267	1033.45	-152.5
682	43°33.00'	111°39.72'	5604	1010.53	-151.8
683	43°31.52'	111°41.55'	5237	1030.46	-151.7
684	43°30.58'	111°38.75'	5946	984.13	-154.0
685	43°32.76'	111°37.49'	5861	994.38	-152.2
686	43°34.39'	111°35.80'	5558	1006.90	-160.3
687	43°32.83'	111°35.13'	6069	967.97	-166.2
688	43°34.09'	111°32.42'	5554	990.22	-176.8
689	43°32.18'	111°31.85'	5679	977.16	-179.5
690	43°34.92'	111°30.16'	5586	995.25	-171.1
691	43°35.79'	111°31.97'	5507	1000.13	-172.2
692	43°36.31'	111°41.09'	5106	1038.92	-158.3
693	42°57.39'	114°24.85'	3930	1101.30	-108.0
694	43°01.58'	114°27.24'	4060	1084.03	-123.7
695	43°02.42'	114°33.21'	3910	1085.19	-132.8
696	43°00.25'	114°32.02'	3855	1104.58	-113.5
697	42°56.74'	114°25.63'	3953	1099.46	-107.5
698	42°56.62'	114°27.90'	3890	1102.46	-108.1
699	42°49.50'	114°28.97'	3845	1087.61	-115.0
700	43°00.75'	114°00.54'	4375	1068.27	-119.4
701	43°59.28'	111°31.06'	5283	1049.22	-171.9
702	43°59.94'	111°34.62'	5059	1066.58	-168.9
703	44°39.90'	111°05.78'	6664	994.94	-204.5
704	43°56.46'	111°35.86'	5047	1060.90	-170.1
705	43°57.00'	111°30.46'	5445	1034.69	-173.2
706	43°58.19'	111°33.45'	5153	1057.13	-170.1
707	43°58.20'	111°35.85'	5062	1064.29	-168.4