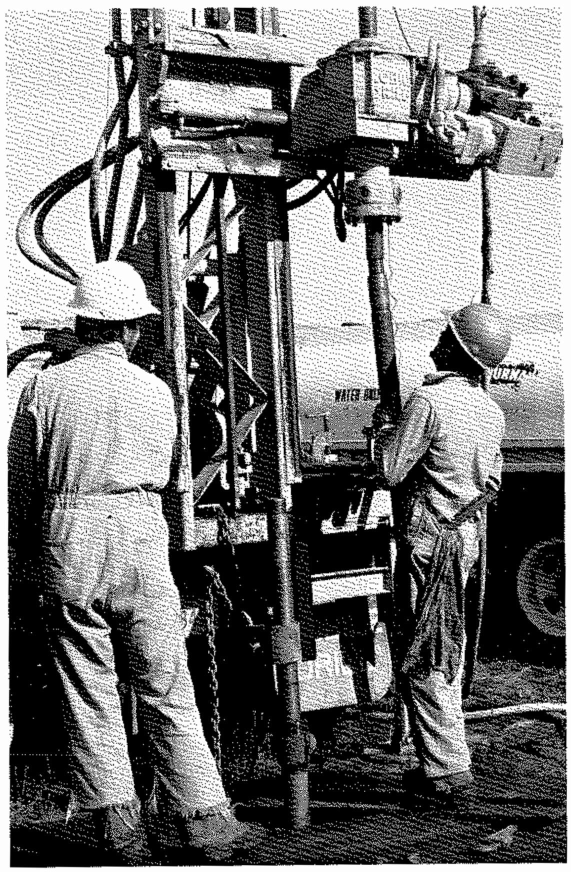
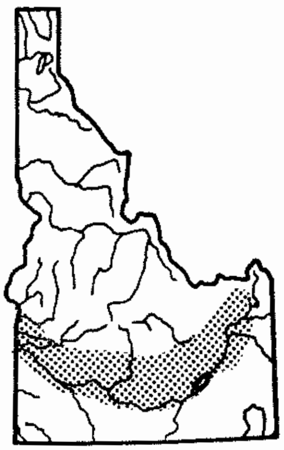
GEOTHERMAL INVESTIGATIONS IN IDAHO

PART 8

HEAT FLOW IN THE SNAKE RIVER PLAIN REGION, SOUTHERN IDAHO



During measurement of heat flow in the Snake Plain, drillers add a section during a coring operation at Horseshoe Bend Summit near Idaho State Highway 55.



IDAHO DEPARTMENT OF WATER RESOURCES
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Part 8

Heat Flow Study of the Snake River Plain Region, Idaho

ERRATA SHEET

Page 6	Top figure below Boise base line should read 18E, 19E, 20E, instead of 8E, 9E, 10E. Top line of bottom left figure should read R. 19 E. instead of R. 9 E.
Page 14	The last sentence of the second paragraph should end "12.5°C." rather than "12.5°."
Page 21	Table 2 well 1S 13E 21aa should be at 43°25' north latitude rather than 43°55' north latitude.
Page 33	Figure 14 caption "(see fig. 21, line B'B)." should read "(see fig. 10, line BB')."
Page 34	Figure 15 caption "(see fig. 21, line A'A)." should read "(see fig. 10, line AA')."
Page 47	Figure 24 well 5N 37E 21db should be 5N 37E 21bb.
Plate 3	Well 17aba located in T. 5 N., R. 40 E., should read 17ab.

WATER INFORMATION BULLETIN NO. 30

GEOTHERMAL INVESTIGATIONS IN IDAHO

Part 8

Heat Flow Study of the Snake River Plain Region, Idaho

by

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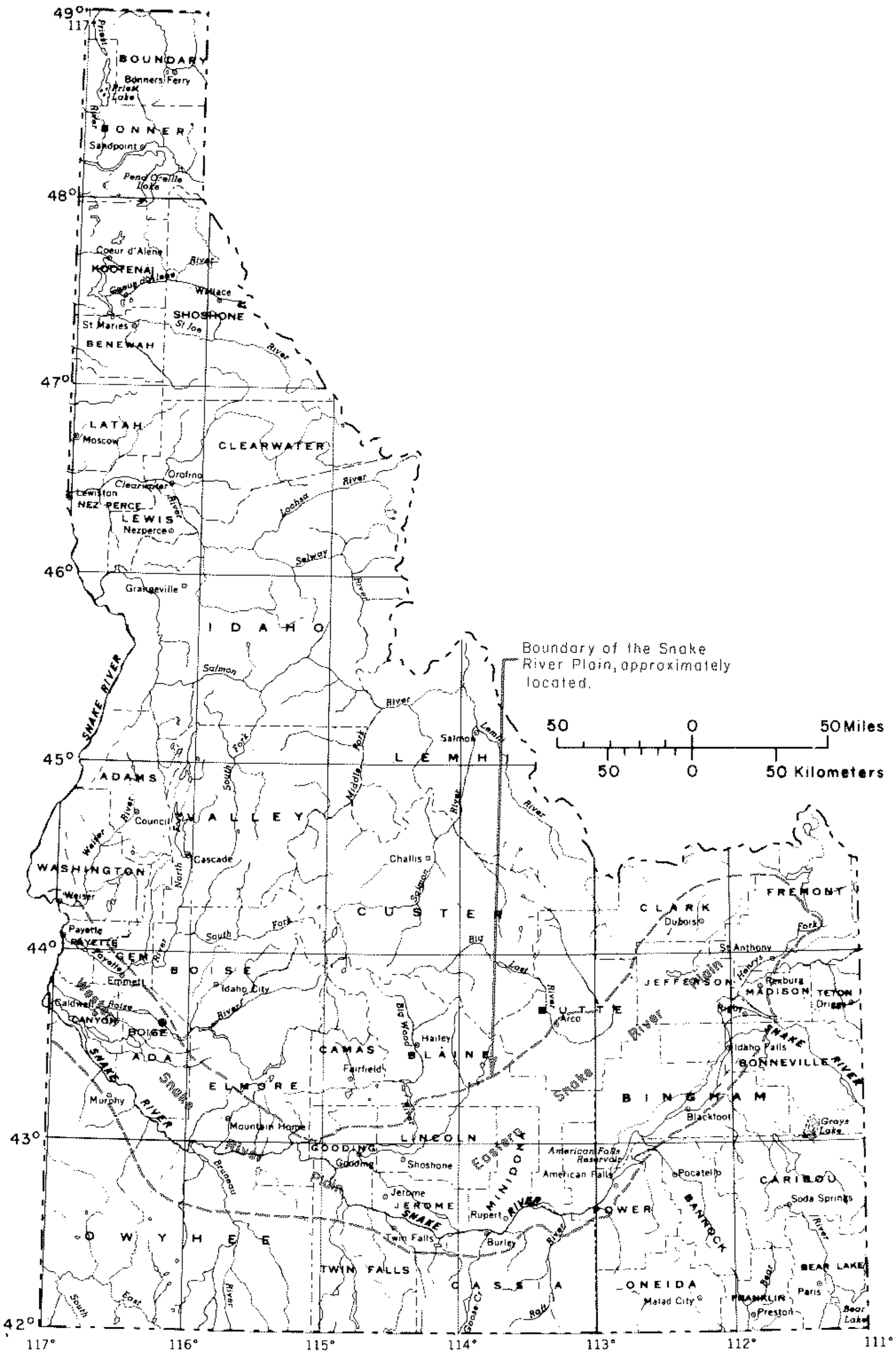


FIGURE 1. Index map of Idaho showing the Snake River Plain and its subdivisions covered by this report.

INTRODUCTION

General Discussion

Heat is produced in the earth mainly from radioactive decay of potassium, uranium and thorium. The heat generated in this manner causes the temperature in the interior of the earth to be greater than the temperature on the surface. In order to obtain equilibrium, heat flows to the surface and is radiated into space. The flow of the heat to the surface may be by *convection or conduction. Convection of heat is transfer* of heat by mass movement (water, for example). Conduction of heat is transfer of heat through a solid by lattice vibrations.

A heat flow study measures the heat which originates within the earth and flows out of the surface of the earth. The units used for heat flow *are quantities of heat (calories) per* unit area (cm^2) per unit time (second). The world-wide average heat flow is about 1.5 x 10^{-6} cal/cm^2sec. Typical low values of heat flow are 0.5 - 1.0 x 10^{-6} cal/cm^2sec and typical high values of heat flow are 2-3 x 10^{-6} cal/cm^2sec. Values higher than 3 x 10^{-6} cal/cm^2sec are not usually found except in geothermal areas. To simplify reference to heat flow in this report the heat flow units *(10^{-6} cal/cm^2sec = microcal/cm^2sec) will be referred to* subsequently as HFU. Thus an average heat flow is 1.5 HFU.

The average heat flow value (1.5 HFU) appears to be very small, but the total flow of heat is diffused over the complete surface of the earth. Using the average heat flow value for the earth (1.5 HFU), the total amount of heat flow through the surface of earth would be 2.55 x 10^{12} cal/sec (1.07 x 10^{13} watts), a very large amount.

By measurement of heat flow in shallow bore holes (30-150 meters in depth) areas of local concentrations of heat at depth may be directly identified. Location and characterization of such geothermal anomalies, which may be due to any one of many causes such as hot water flow along a fault zone, a magma chamber, etc., are the goals of geothermal exploration. A heat flow study, being a direct measurement of heat, is the most direct way in many cases to locate such subsurface heat anomalies.

The Snake River Plain (fig. 1) has recent basaltic lava flows and large numbers of thermal springs and wells (Ross, 1971). These occurrences are evidence that geothermal anomalies exist, but are not sufficient to estimate the geothermal potential of the Snake River Plain. The object of this study is to supply data which, together with available geological and geophysical information, will allow such resource estimates to be made.

The Snake River Plain is elongated east to west and is approximately 500 kilometers in length and 100 kilometers in width. The climate of the Plain is semi-arid and the natural vegetation consists of sage brush, rabbit brush and cheat grass. Large areas of the Plain have been developed for farming by irrigation, and wells drilled for this purpose are a major source of temperature data for this study.

Purpose and Scope

A regional heat flow study of the Snake River Plain was initiated to identify the nature of the geothermal anomaly (if any) related to the recent volcanism and thermal waters in order to evaluate the geothermal potential of the Plain. The investigation of specific anomalies was not the objective of the study. The results of the heat flow study can also be used to place constraints on the regional geotectonic interpretations and, because of the ability of moving water to transport heat, the study also furnishes information on the motions of water in regional aquifer systems.

One hundred and fifteen water wells were logged for geothermal gradients (the changes of temperature with depth) in this study (plate 1). Well cuttings and cores were collected at many of the well sites for thermal conductivity measurements (the property of the rock which measures its ability to conduct heat).

In addition, the Idaho Department of Water Resources contracted the drilling of thirteen 30 meter holes in the Plain. Of these holes, eleven were along two north-south profiles across the western part of the Plain. Two 150 meter holes were also drilled in granitic rocks of the Idaho Batholith on the northern end of each of the profiles. The temperature logging of the water wells was done in the summers of 1974 and 1975 while the drilling of the holes was started in the fall of 1974 and completed in the winter of 1975. The drilled holes were also logged for geothermal gradients and core samples were obtained for thermal conductivity measurements.

The purpose of the geothermal gradients and thermal conductivity measurements is to obtain heat flow values. The reason for the large geographic scatter of wells studied is to obtain heat flow values from as many different areas of the Plain as possible.

Previous Investigations

A heat flow map of the western United States (fig. 2) shows that the State of Idaho lies in a region of high heat flow but no major heat flow studies have been made of the Snake River Plain prior to this study. Previous to the summer of 1974, Blackwell had made several heat flow measurements in central Idaho, north of the Snake River Plain. A few heat flow values have been published along the margins of the Plain (Urban and Diment, 1975 and Sass,et al., 1971). These data will be summarized with the results of this investigation.

Several reports on the geothermal potential of Idaho have been published, but these reports have dealt mainly with the thermal waters. Ross (1971) described the known locations and uses of thermal water for space heating, domestic, industrial and agricultural applications. Other authors have studied the chemistry of the thermal waters in order to determine the aquifer temperatures at depth (Young and Mitchell, 1973; Young and Whitehead, 1975a, 1975b; Mitchell, 1976a, 1976b, 1976c; Rightmire and others, 1976).

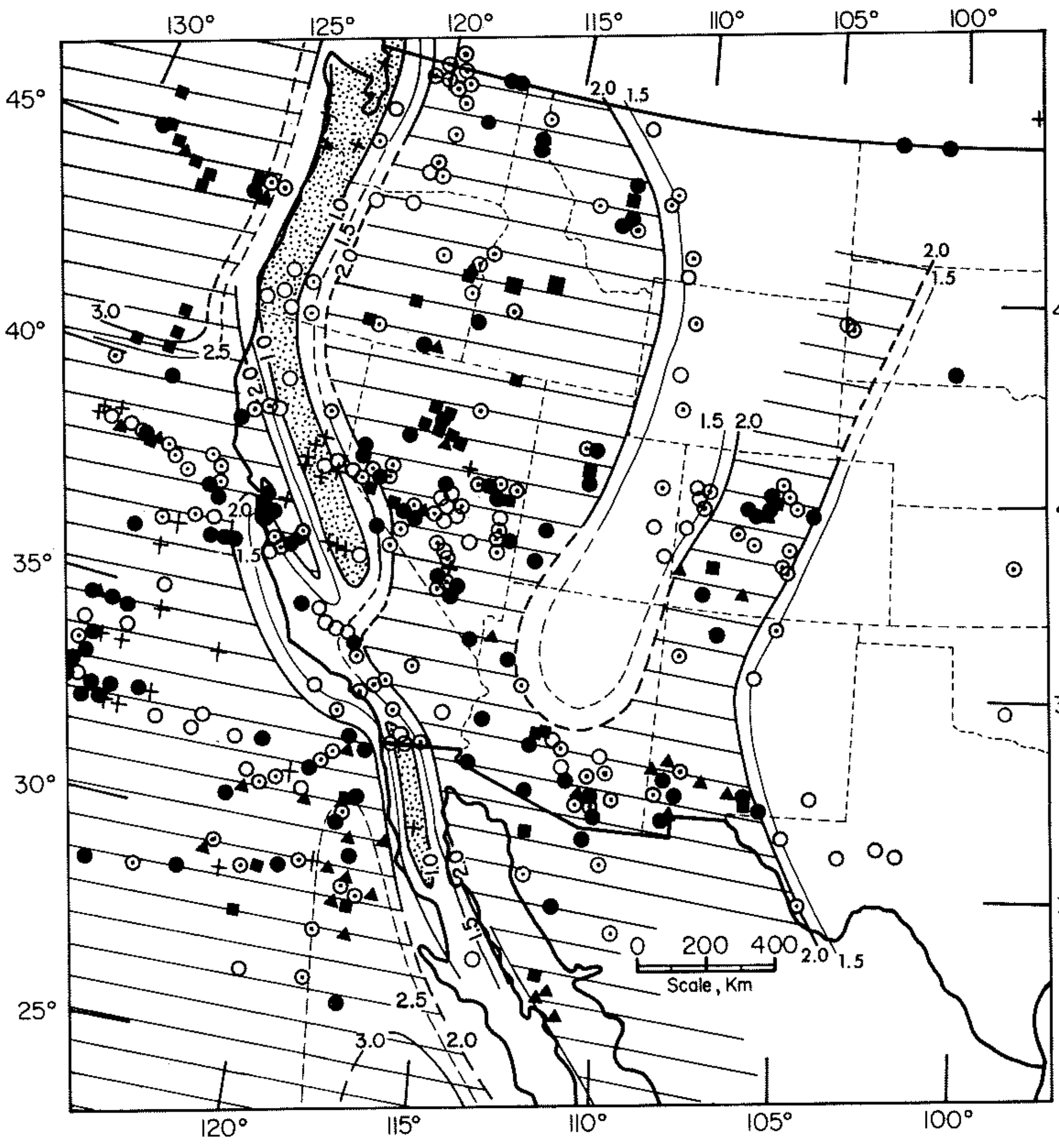


FIGURE 2. Heat flow map of western United States (Roy *et al.*, 1972). Pluses represent heat flow values in the range of 0 to 0.99; open circles, 1.0 to 1.49; dotted circles, 1.5 to 1.99; solid circles, 2.0 to 2.49; solid triangles, 2.5 to 2.99; solid rectangles, >3.0.

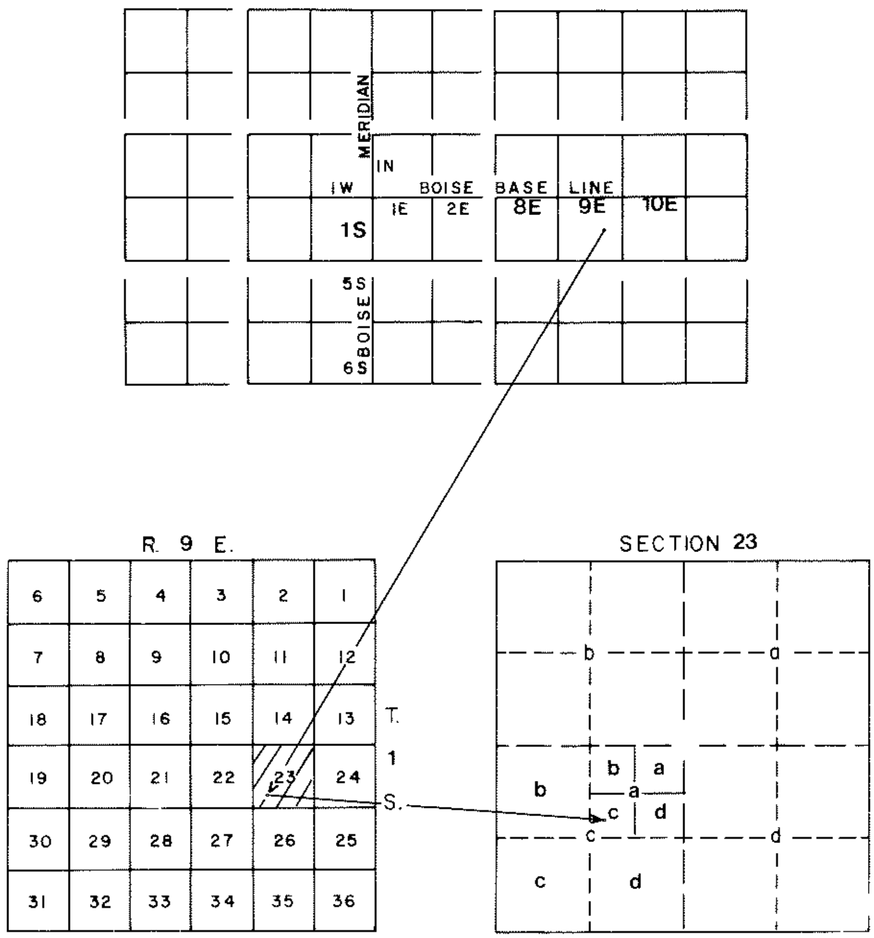


FIGURE 3. Diagram showing the well- and spring-numbering system. (Using well 1S-19E-23cac.)

Pertinent geophysical publications deal with the gravity field of the Plain (Hill, 1963; Bonini, 1963; Mabey and others, 1974) and the magnetic field (U.S. Geological Survey, 1971). Seismic refraction measurements in the western Snake River Plain have been carried out by Hill and Pakiser (1966) and microearthquake studies have been carried out by Pennington and others (1974). An electrical resistivity profile across the eastern part of the Plain was done by Zohdy and Stanley (1973) and Hoover and Tippens (1975) did an audio-magnetotelluric survey on the southern edge of the western part of the Plain (Grandview-Castle Creek KGRA).

At the present time detailed studies are in progress on two geothermal areas in southern Idaho. One study deals with the possible utilization of geothermal waters for large-scale space heating of state-owned buildings in Boise (Stoker, 1975 and Applegate, et al., 1975). The other study involves exploration of a geothermal anomaly in the Raft River Valley and a planned power plant (Madsen and Ingvarsson, 1975) for demonstration of the feasibility of use of low temperature (150°C) water.

Well- and Spring-Numbering System

The numbering system used by the Idaho Department of Water Resources and the U.S. Geological Survey in Idaho indicates the location of wells or springs within the official rectangular subdivision of the public lands, with reference to the Boise baseline and meridian. The first two segments of the number designate the township and range. The third segment gives the section number, followed by three letters and a numeral, which indicate the quarter section, the 40-acre tract, the 10-acre tract, and the serial number of the well within the tract, respectively. In this report the serial number is omitted. Quarter sections are lettered a, b, c, and d in counterclockwise order from the northeast quarter of each section (fig. 3). Within the quarter sections, 40-acre and 10-acre tracts are lettered in the same manner. Well 1S-19E-23cac is in the SE¼NE¼SE¼ Section 23, T. 7 S., R. 19E.

International System of Units

Table 1 and figure 4 are included for the convenience of the reader in making conversions to systems of units other than those used in this report. The c.g.s. units (cm, calories, °C) are used in this report. The English units (feet, BTU, °F) are often used by industry. The International Heat Flow Committee recommends the use of the Systeme International d'Unites (SI) by the scientific community. The SI units are meters, watts, and °K. To assist the reader in understanding the units relating to geothermal studies the following example is given. If an area had a uniform heat flow of 3 HFU and a uniform thermal conductivity of 4 x 10^{-3} cal/cm/sec°C (TCU), then a temperature of 200°C (approximately 400°F) would be reached at about 2,670 meters (8,750 feet).

Geology of the Snake River Plain

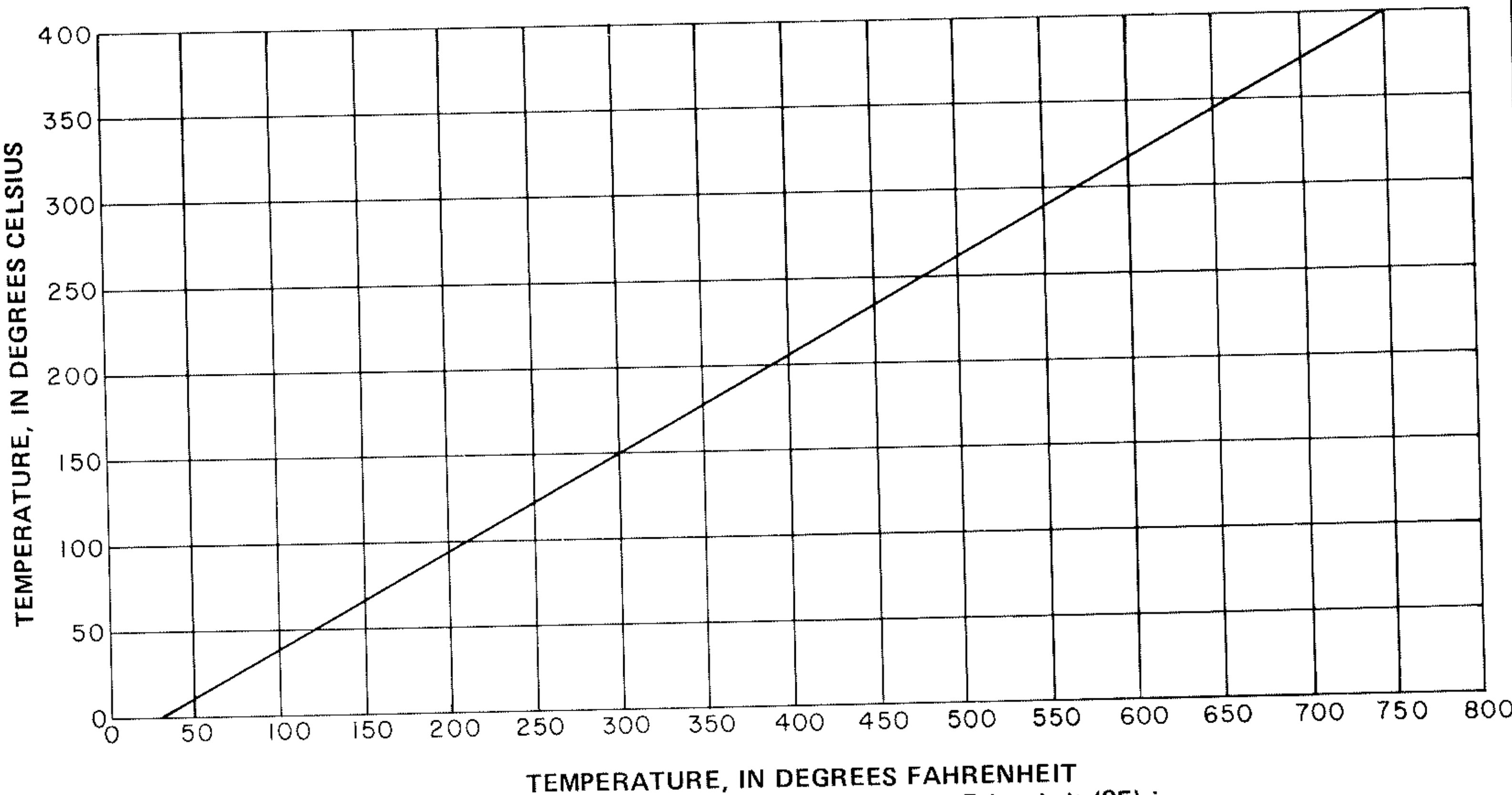
Plate 1 shows a generalized geologic map of Idaho including the Snake River Plain. The Plain is located in southern Idaho and is outlined by the youngest rock types (Late Cenozoic basalt and sediments) on the map (see also fig. 1). The Snake River Plain extends from the Tertiary volcanics of the Blue Mountain Province (Baldwin, 1964) in Oregon all the way to the Island Park and Yellowstone calderas (Christiansen and Blank, 1972) in east Idaho and northwest Wyoming. Cretaceous plutonic rocks of the Idaho batholith and Paleozoic and Mesozoic sediments of the Rocky Mountain Foreland Province make up the northern border,

TABLE 1

TABLE OF CONVERSION FACTORS

To Convert from	To	Multiply by
Length		
centimeters	inches	0.394
meters	feet	3.280
meters	yards	1.094
kilometers	miles	0.621
Area		
sq. centimeters	sq. inches	0.155
sq. centimeters	sq. feet	1.706×10^{-3}
sq. kilometers	sq. miles	0.386
Volume		
liters	gallons	0.264
Energy		
calories	b.t.u.	3.974×10^{-6}
b.t.u.	foot-pounds	777.6
watts	b.t.u./hr	3.414
Thermal Conductivity		
millicalories/(cm/sec^{o}C) or TCU	b.t.u./(ft^{2}hr^{o}F)	2.903
millicalories/(cm/sec^{o}C) or TCU	watts/(cm^{o}C)	0.418
Geothermal Gradient		
^{o}C/(km)	^{o}F/100 ft	5.486
^{o}C/(km)	millikelvins/(meter)	1.000
Heat Flow		
microcalories/(cm^{2}sec) or HFU	b.t.u./(ft^{2}h)	1.327×10^{-2}
microcalories/(cm^{2}sec) or HFU	milliwatts(m^2)	2.390×10^{-3}

and Tertiary silicic volcanics and sediments of the Basin and Range Province comprise the southern border. The western half of the Snake River Plain is divided into two different trends. A deep sediment and volcanic filled basin extends around the southern border of the Idaho batholith and elements of the structure can be followed into northeastern Oregon. A southern, primarily volcanic trend extends westward through southwestern Idaho to the Brothers fault zone in central Oregon and to the Newberry volcano (Walker, et al., 1967 and Green, et al., 1972).



Conversion of degrees Celsius (°C) to degrees Fahrenheit (°F) is based on the equation, °F = 1.8°C + 32.

FIGURE 4. Graph showing Celsius (°C) and Fahrenheit (°F) temperature relationship.

The Snake River Plain is lower in altitude than the surrounding highlands and has a general slope from east to west. The main topographic features are basaltic cinder cones, silicic domes, and canyons cut by the Snake River. The western part of the Snake River Plain appears to be a large graben with systems of faults which are subparallel to the northern and southern borders (Malde and Powers, 1963) whereas the eastern part of the Plain may be a regional downwarp that followed a time-transgressive episode of volcanism which progressed from extreme southwest Idaho to Yellowstone Park (Bonnichsen and Travens, 1975; Armstrong, et al., 1975). Potassium-argon dating of the Quaternary silicic volcanics (mostly rhyolitic ash flows) of the Plain show that ages vary from 9 to 13 million years in western Idaho, 8 to 10 million years in central Idaho and 4 to 5 million years in east Idaho (Armstrong, et al., 1975). The rhyolitic ash flows from the Island Park-Yellowstone area vary in age from 2.6 to .56 million years. The basalt units span the same age range. However, some of the basalts of the Plain were extruded as recently as 2,000 years ago. In contrast, a westward time progression of silicic volcanism (rhyolitic to rhyodacite domes and related ash flows) is observed in the western part of the Plain from eastern Oregon along the Brothers fault zone to the Cascade Range (Bowen, et al., 1976; MacLeod, et al., 1976; and Walker, et al., 1967).

TECHNIQUES OF HEAT FLOW MEASUREMENT

Temperature Gradients and Thermal Conductivities

To obtain a heat flow measurement the geothermal gradients and thermal conductivity of the underlying rocks must be known. The thermal conductivity is a property of the rocks which describes the ability of the rocks to conduct heat. Thermal conductivity measurements on core or cuttings samples from a well can be made in the laboratory. The laboratory technique used in this study is the divided bar measurement for core and cuttings samples (Birch, 1950; Sass, et al., 1971). The units used for thermal conductivity are TCU (millicalories/[cm-sec^{o}C]).

The geothermal gradient is obtained by calculating the change of temperature over some given interval of depth (fig. 5). On a plot of temperature versus depth the slope of a straight line through the points is the geothermal gradient. The units used for the geothermal gradient are ^{o}C/km.

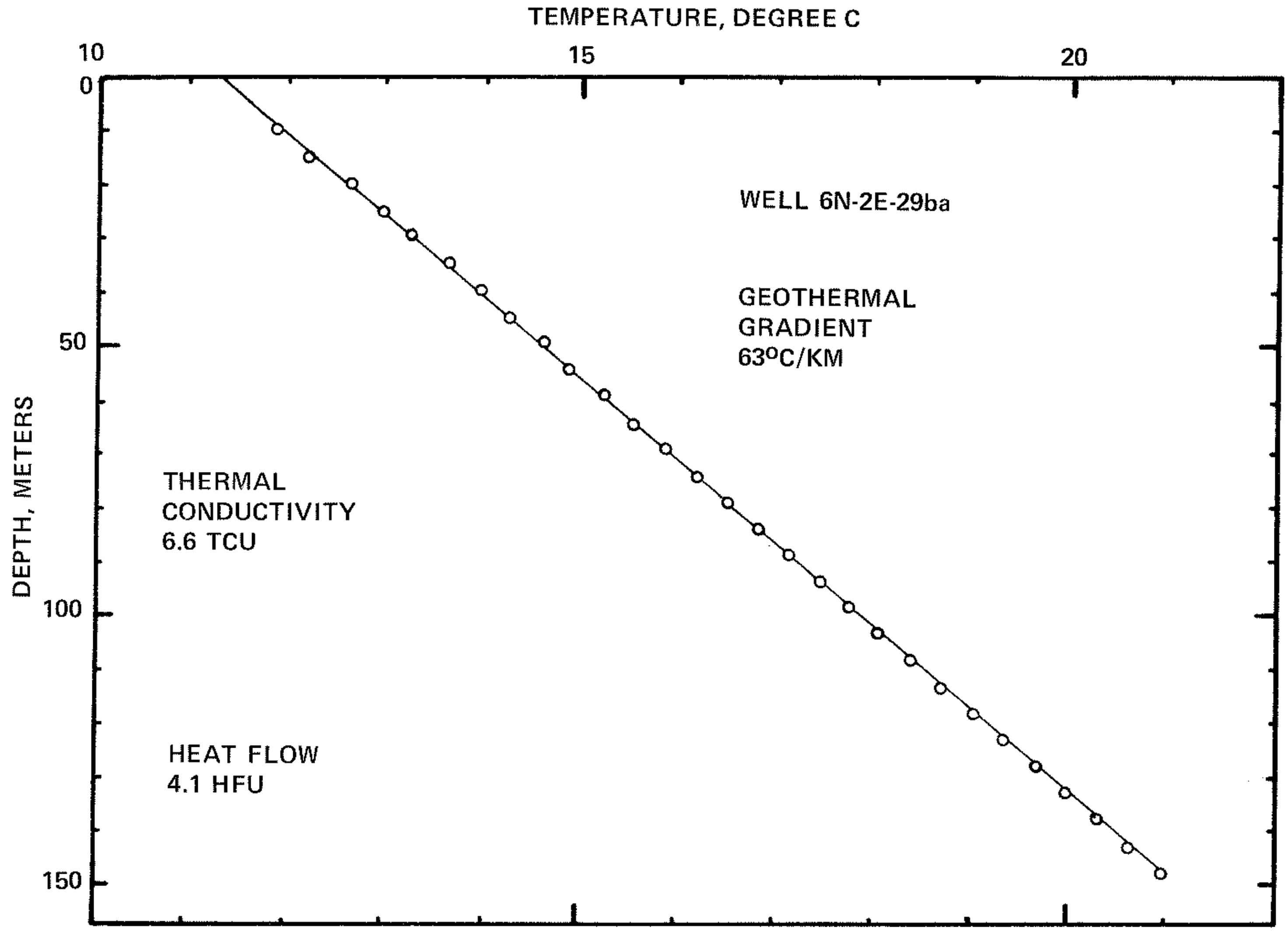
Heat flow is the product of the geothermal gradient and thermal conductivity. The units used for heat flow are HFU (microcalories/[cm^{2}-sec]). For example, the heat flow in the well shown in figure 5 is 4.1 HFU which is the product of the geothermal gradient (63^{o}C/km) and the thermal conductivity (6.57 TCU). The decimal place changes because of the units.

Causes of Variations and Disturbances in Geothermal Gradients

The temperature-depth curve shown in figure 5 represents an ideal case because the thermal conductivity is uniform throughout the depth of the hole and the geothermal gradient has no major disturbances. In general, the geothermal gradient may not be uniform and the causes of this nonuniformity must be understood in order to obtain accurate heat flow values.

The geothermal gradient varies with stratigraphy because of different rock units, but the heat flow remains constant if the rocks are horizontally layered. Figure 6 shows a case where the geothermal gradient varies because of thermal conductivity changes due to changes in stratigraphy. The upper stratigraphic unit is welded tuff with a measured thermal conductivity of 4.90 TCU. The lower stratigraphic unit is a tuffaceous conglomerate with a measured thermal conductivity of 2.33 TCU. The geothermal gradients are 91.3 and 194.8^{o}C/km, respectively. The heat flow, computed by the product of the geothermal gradient and thermal conductivity, is 4.5 HFU in both units in the well and so is constant with depth as is expected.

FIGURE 5. Temperature-depth plot of well 6N-2E-29ba. The plot shows a uniform geothermal gradient.



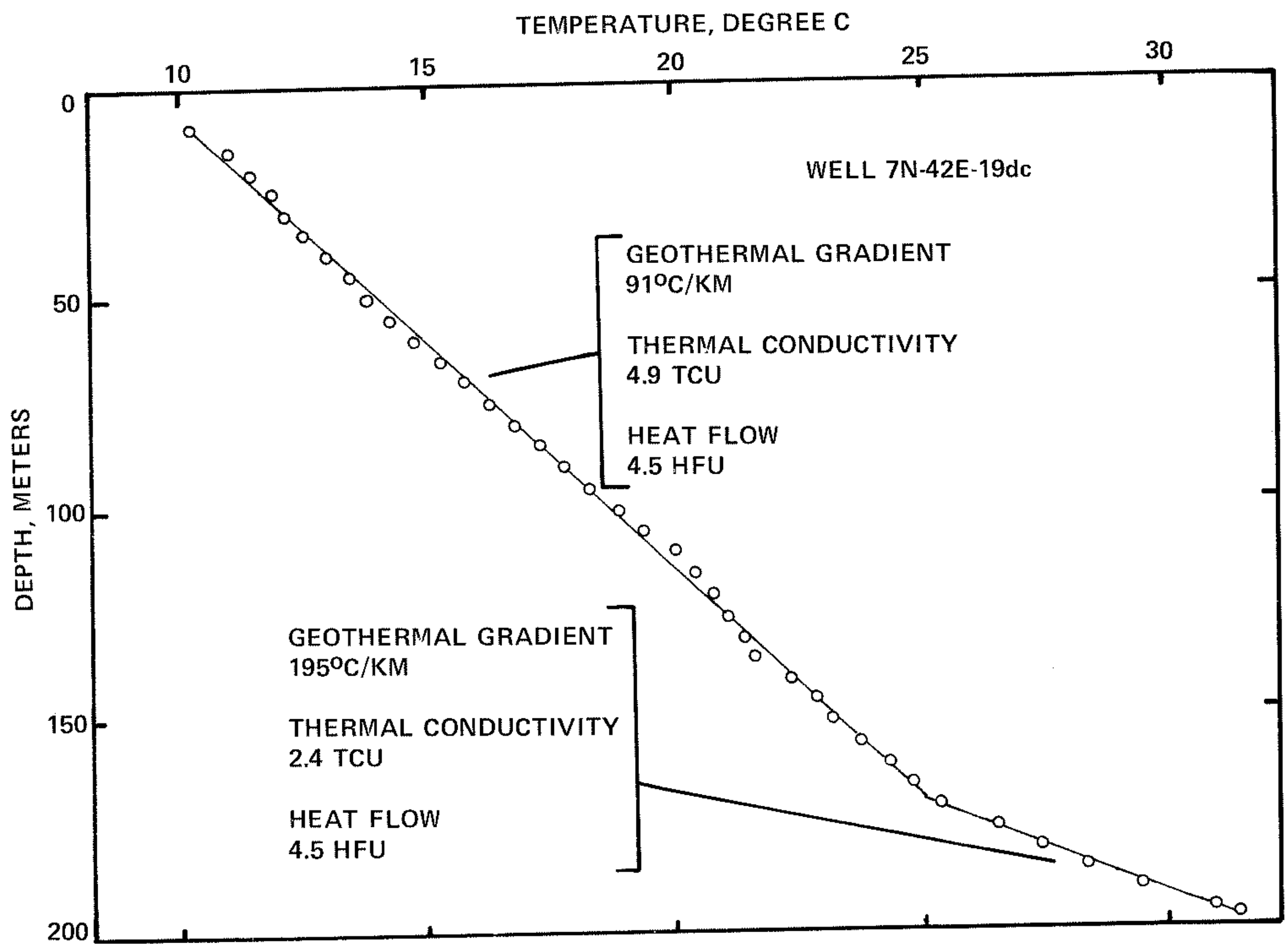


FIGURE 6. Temperature-depth plot of well 7N-42E-19dc. The plot shows a change in geothermal gradient due to a change in thermal conductivity (at 170 m).

Figure 7 shows that wells over 20 meters deep are needed for obtaining the geothermal gradient with a single period of measurement. The departure of the temperatures from the straight line in the upper 15 meters of the well is not caused by thermal conductivity changes but due to annual surface air temperature changes. If the well was measured six months later the annual effect would be reversed (as shown by a dashed line on the figure) but the geothermal gradient below 15-20 meters would remain unchanged. The depth at which the annual surface temperature ceases to affect the geothermal gradient depends upon the thermal conductivity of the rocks and the period of the surface temperature variation (Lachenbruch, 1957; Lovering and Goode, 1963). For rocks like those found in the Snake River Plain the depth of penetration of the annual effect is 10-20 meters.

Disturbances to the geothermal gradients may arise from topographical features, circulation of water, temporal changes in mean annual ground surface temperature, and temperature anomalies at the surface resulting from contrasts in vegetation (Roy, et al., 1972). The geothermal gradient may also have disturbances due to complex geology (lateral thermal conductivity variations) (Lee and Henyey, 1974; Selig and Wallick, 1966). In the Snake River Plain the geographical, cultural and vegetation disturbances are moderate or can be avoided by selection of well sites in flat areas of natural vegetation. Also because the rocks in the Plain are generally gently dipping and layered, disturbances due to geological complications are small. Disturbances due to circulation of water cannot be as easily eliminated and will be discussed in the next section. Slight surface temperature anomalies were observed in some of the water wells logged for geothermal gradient due to the lowering of the surface temperature by contrasting vegetation in irrigated fields. The wells drilled for heat flow are in natural vegetation and do not have surface temperature anomalies caused by contrasts in vegetation. An example of lowering of surface temperature due to irrigation are wells measured in the Blue Gulch area. The wells in irrigated fields had an extrapolated surface temperature of about 11°C while the wells in natural vegetation had an extrapolated surface temperature of 12.5°.

A previously undescribed type of disturbance was observed above the water table in wells drilled in areas where the surface rocks were vesicular basalts (fig. 8). Typically these wells exhale air during the day and inhale air at night. In the temperature-depth curve shown, the disturbance causes the geothermal gradient to be negative to a depth of 90 meters. The water table for the well shown in figure 8 was at 160 meters and the mean annual surface temperature is about 10°C. The effect shown may reverse in the winter, but the wells were only logged in the summer. Because of the large disturbance no geothermal gradient was determined for the well shown. A well with a similar disturbance was measured in the Blue Gulch area (see well 8S-12-23aac). The water table was reached at 70 meters. Below 70 meters the disturbance is not observed and a gradient less than that in the bottom half of the disturbance curve was observed which gave a correct extrapolated surface temperature for the area.

Water Circulation Disturbances

Water circulation disturbances can be confined to a single well or they can be of a regional nature. The influence of circulating water on the rock temperatures is a consequence of the heat transport by thermal convection rather than by thermal conduction through the rocks. The circulating water tends to make the rock temperatures approach the temperature which prevails at the source of the circulating water. Local water disturbances are caused by the movement of water up or down a well between previously unconnected aquifers following connection of the aquifers by the drilling. The circulating water absorbs heat from the higher temperature rocks and liberates heat to lower temperature rocks which

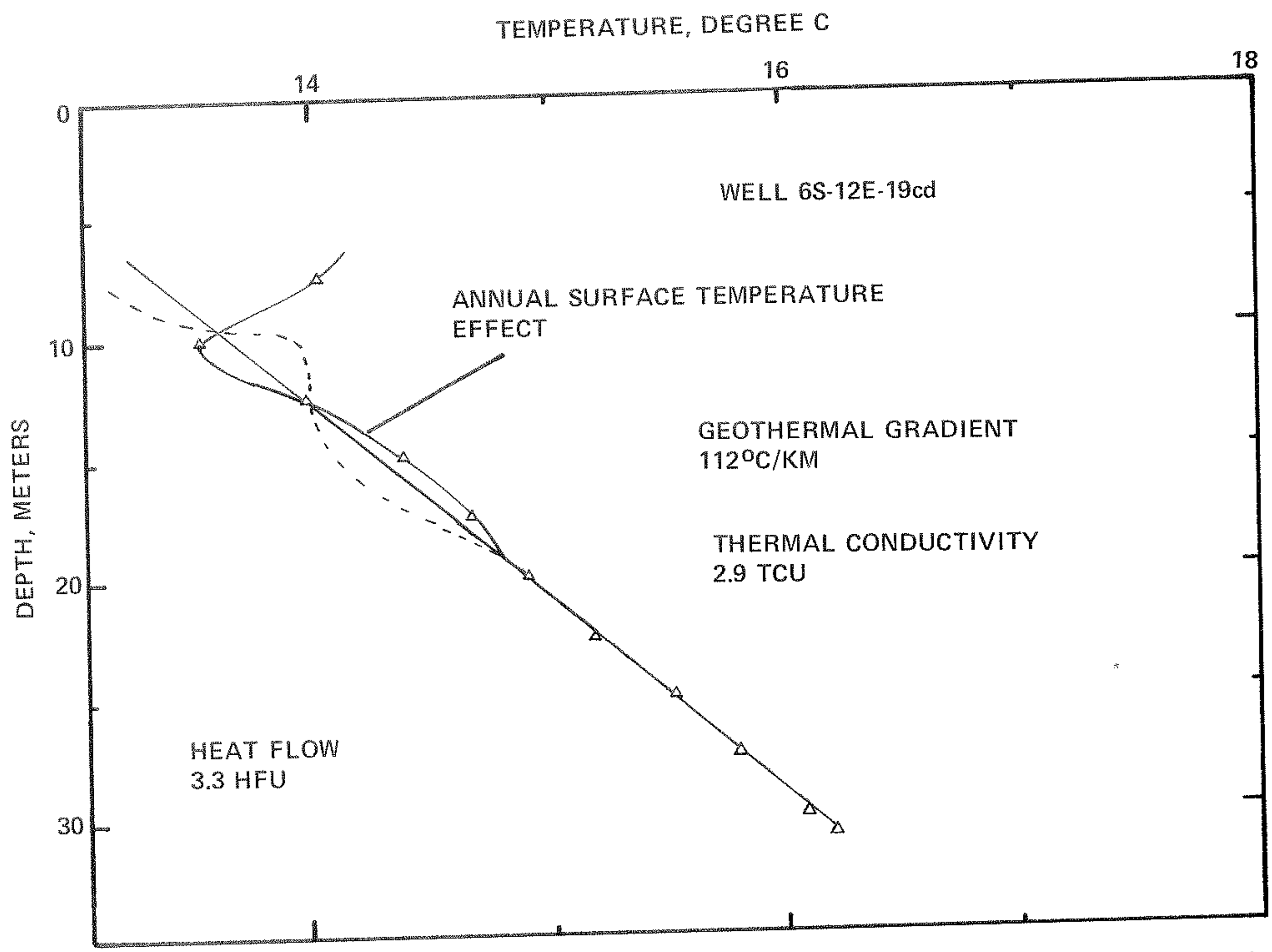
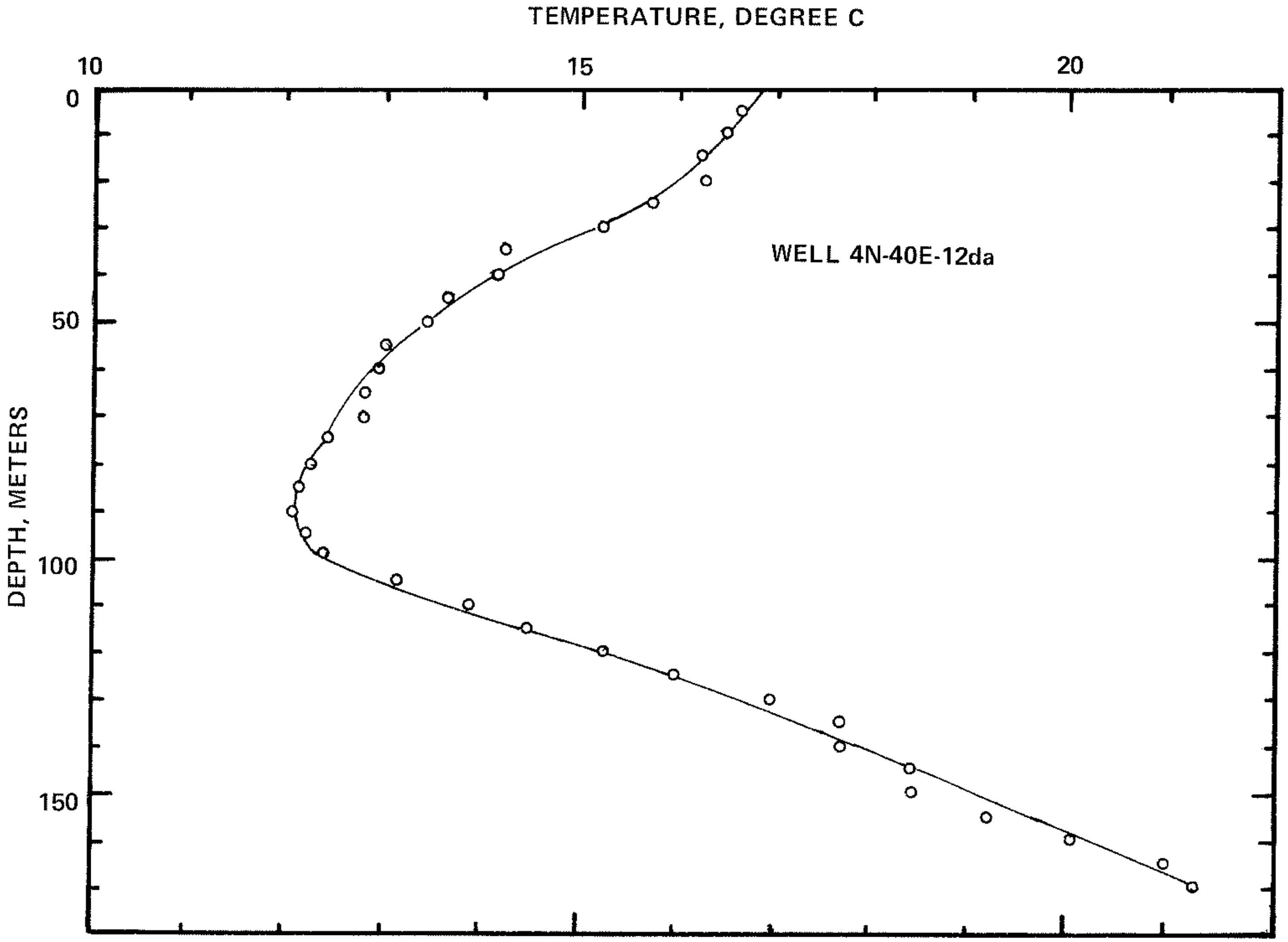


FIGURE 7. Annual surface temperature effect. The annual surface temperature effect causes a disturbance to the upper 20 m of the geothermal gradient.

FIGURE 8. Vesicular basalt disturbance. The geothermal gradient of many wells which penetrate basalt has a similar disturbance. The wells that have this disturbance exhale air during the day and inhale at night.



tends to cause isothermal temperatures in the well in the circulating zone. Local water disturbances can be overcome by installing casing and filling the annulus around the casing with a chemical grout or cement (Roy, et al., 1972).

Regional water disturbances are caused by water movement in and between major aquifers due to differences in pieziometric levels within and between the aquifers. For example, low temperature water may enter an aquifer from the surface, causing the geothermal gradient to be decreased above the aquifer because the lower temperature water absorbs the heat and transports it laterally in the aquifer. "Downstream" where the flow may be up, i.e., the aquifers have positive potential heads, the geothermal gradient above the aquifer will be higher than the regional value while the geothermal gradient in the aquifer will be lower than the regional value (see Domenico and Palciauskes, 1973, for some simple models). Also higher temperature water from a greater depth may enter an aquifer along a fault zone and cause the goethermal gradient to be anomalously high above the aquifer.

Regional water circulation effects will cause similar disturbances in all the wells in the region. For example, figure 9 shows temperature-depth plots of five wells in the same regional flow regime. The variations above 140 meters are caused by regional water disturbances since all the wells are in one rock type (Idavada Volcanics, Malde and Power, 1962). The nearly isothermal section of temperature in well 9S-13E-32cdd between 130 to 190 meters is an example of local water disturbance where the water flow in the well is up from a lower aquifer which has a higher pieziometric level to an upper aquifer with a lower pieziometric level. The temperature-depth plots show that grouting, although expensive and time consuming, is necessary in a heat flow study so that local water circulation is eliminated and observed water disturbance, if any, is due only to the regional water flow regime.

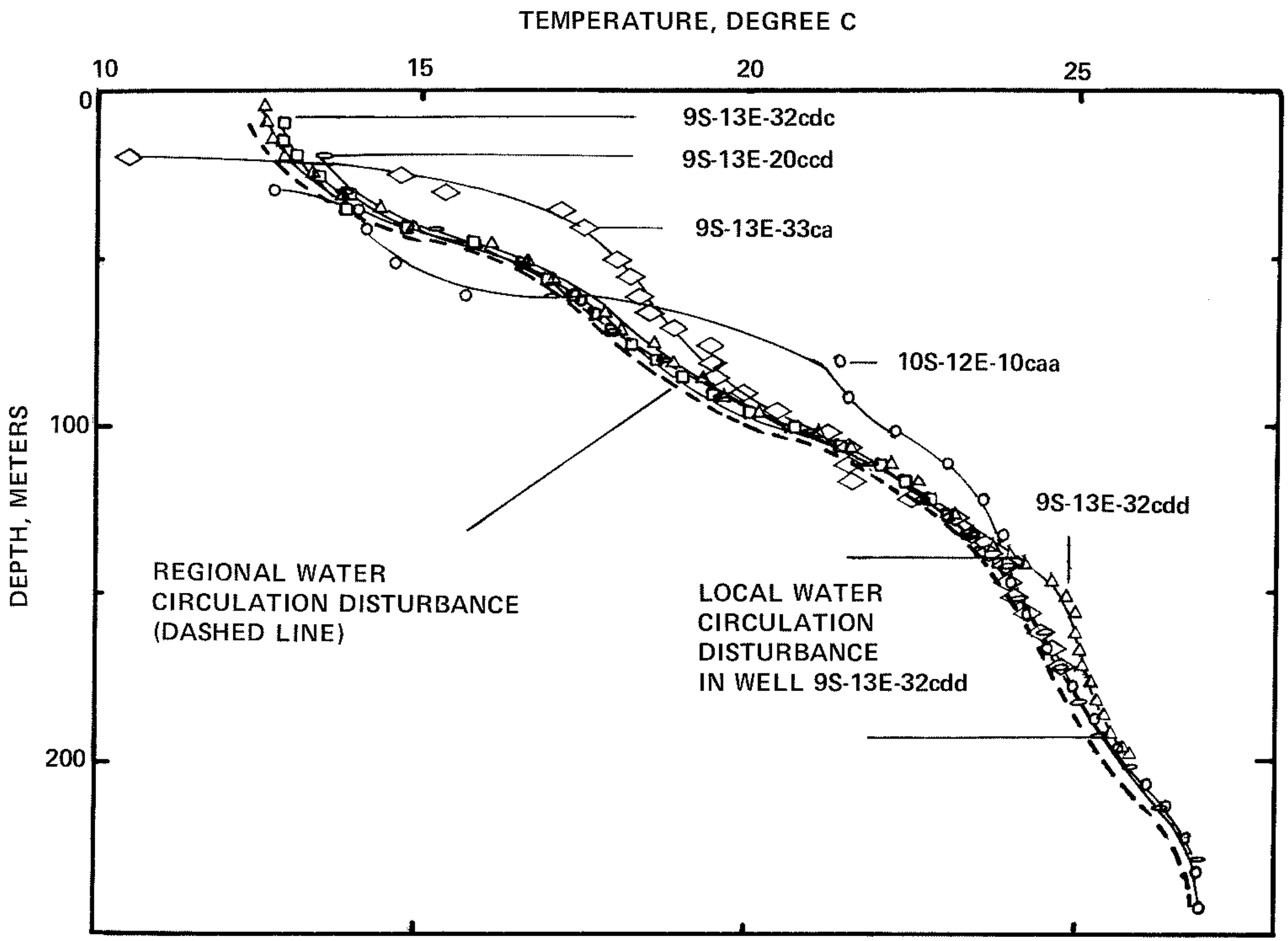
Credibility of Heat Flow Values

The large amount of generally self-consistent data generated by this investigation give credibility to the patterns observed. Most of the wells used for geothermal gradients were water wells which obviously were not grouted to stop water flow. Hence, bore hole water disturbances are present in some of the wells. Thus in many cases interpretation of the type of influences present are necessary in order to determine the geothermal gradient appropriate for the deeper heat flow values. Some of the gradients were interpreted by grouping wells in the same area. Geothermal gradients from deeper wells in the same area usually agree with gradients of shallow wells.

The major problem in the heat flow determinations is the lack of knowledge of the *in situ* porosity of the rocks, which effects directly the thermal conductivities and interpretation of the disturbances present in the geothermal gradients. An example where the rock unit porosity may be greater than the porosity of the core samples is the Idavada Volcanics at the southern margin of the western part of the Plain. The rock unit porosity may be much higher than the porosity of the core samples because of fracturing, jointing, and unsampled ash horizons which could cause an increase in porosity. An increase in porosity would cause a reduction in calculated thermal conductivity and heat flow. Also the porosity of the sediments in the center of the Plain is uncertain. From core samples, the porosity of the sediments of the western Snake River Plain was found to be about 35%, but the porosity could vary both laterally and with depth.

The heat flow values from the Snake River Plain do make definite patterns. The presence of these patterns indicates that on the whole the heat flow information is internally consistent and gives reliable information of the heat flow of the Plain in spite of the many problems in collecting and interpreting the data.

FIGURE 9. Five temperature-depth plots to show the effects of regional and local water circulation disturbances.



DISCUSSION OF HEAT FLOW IN SELECTED AREAS

Heat Flow Data

Plate 1 shows the locations of the wells in southern Idaho in which geothermal gradients were obtained. More detailed location maps are included for the Blue Gulch and Rexburg-St. Anthony areas where the wells are too closely spaced to be separately identified on plate 1. The heat flow information resulting from this study is shown on plate 2 and is listed in table 2. Details of the measurements are given in the Appendix. The column *Interval of Geothermal Gradient* in table 2 refers to the depth interval of the temperature-depth data which were used to determine the gradient. The errors shown in the column *Geothermal Gradient* are standard errors. The gradients in parentheses and with superscript "a" are the upper and lower limits of the geothermal gradients that were determined from the analysis of temperature-depth plots. The wells for which only upper and lower limits are given for the geothermal gradients have large disturbances and true gradients are uncertain. The values listed in the column *Thermal Conductivities* are the harmonic averages and standard errors of the thermal conductivities of the samples measured. The column *Thermal Conductivity Samples* gives the number of samples used for obtaining the average thermal conductivity and identifies the nature of the samples studied (core or cuttings). Table 3 shows the corrected and uncorrected values of the geothermal gradient of wells in table 2 to which topographical corrections were made.

Unpublished heat flow values in central Idaho obtained prior to this study (Blackwell, unpublished data), mostly in granitic rocks of the Idaho batholith, are shown in table 4. The uncorrected and corrected values of heat flow in table 4 are heat flow values before and after topographical corrections to the geothermal gradient. All the thermal conductivity measurements were made on core samples.

Some heat flow values in the general area of southern Idaho have been published by various authors. Urban and Diment (1975) published heat flow values in southern Idaho. Sass, et al., (1971) listed one value in northern Nevada, and Bowen and Blackwell (1976) published values from the western Snake River Basin in eastern Oregon.

Heat production measurements for the radioactive elements (uranium, thorium and potassium) were made on core samples for the two 150 meter holes drilled in the Idaho batholith. Heat production values (with standard error) of $0.9 \pm 0.4 \times 10^{13}$ calories/cm^{3}sec and $5.4 \pm 0.8 \times 10^{13}$ calories/cm^{3}sec were obtained from 4 core samples of well 6N-2E-29ba and 5 core samples of well 1S-9E-23cac, respectively. If the thickness of the granitic rocks of the batholith is ten kilometers, the heat flow contribution of the radioactive elements to the total surface heat flow would be 0.09 HFU and 0.54 HFU, respectively.

TABLE 2

HEAT FLOW DATA IN THE SNAKE RIVER PLAIN REGION, IDAHO

Well Location	North Latitude	West Longitude	Elevation (meters)	Depth of Hole (meters)	Range of Geothermal Gradient (meters)	Geothermal Gradient (°C/km)	Thermal Conductivity (millicalories / cm/sec°C)	Heat Flow (microcalories / cm²sec)	Thermal Conductivity Samples No.	Type
15N-43E-24aab	44°37′	111°19′	2023.5	62.0		-	-	-	-	-
12N-44E-20adb	44°21′	111°17′	1916.8	32.5		-	-	-	-	-
11N-6W-3dbb	44°19′	117°02′	719.5	122.0		(55.0-60.0)[a]	4.26±.17	(2.4-2.8)	4	Cuttings
11N-6W-9abb	44°19′	117°03′	707.3	95.0	60-90	70.4±5.4	4.26±.17	3.0	4	Cuttings
11N-6W-9dab	44°18′	117°04′	689.0	28.0	5-25	79.5±8.3	4.26±.17	3.4	4	Cuttings
10N-42E-24aba	44°11′	111°27′	1886.6	65.5		-	-	-		-
9N-42E-20ccd	44°05′	111°32′	1582.3	53.5	35-53	51.2±4.8	4.42	2.3	1	Cuttings
9N-43E-19cbd	44°05′	111°26′	1605.2	5.0		-	-	-		-
9N-44E-21aad	44°06′	111°15′	1725.6	33.5		-	-	-		-
7N-2W-29bba	43°55′	116°36′	730.8	88.0	5-85	57.1±1.6	4.26±.17	2.4	4	Cuttings
7N-39E-34ccb	43°54′	111°51′	1471.6	70.0	30-65	16.0±5.4	-	-		-
7N-40E-16bcc	43°56′	111°45′	1487.8	40.0		-	-	-		-
7N-42E-15ab	43°56′	111°29′	1646.3	85.0	35-80	23.4±1.9	4.56	1.1	1	Cuttings
7N-42E-17ab	43°56′	111°32′	1626.8	120.0	35-105	122.6±4.1	4.90±.20	5.9	4	Core
7N-42E-17ba	43°53′	111°32′	1622.0	100.0	45-100	110.7±5.3	4.90±.20	5.4	4	Core
7N-42E-18bc	43°56′	111°33′	1593.6	170.0		-	-	-		-
7N-42E-19ab	43°56′	111°33′	1623.5	150.0	70-150	94.7±3.7	4.90±.20	4.6	4	Core
7N-42E-19cd	43°55′	111°33′	1629.6	109.6	82-108	(98.2±7.5)[b]	4.90±.20	4.8	4	Core
7N-42E-19dc	43°55′	111°33′	1626.8	196.5	15-170	91.3±4.6	4.90±.20	4.5	4	Core
					175-195	194.8±10.7	2.33	4.5	1	Core
7N-42E-29bd	43°55′	111°32′	1635.4	101.0	10-60	117.3±9.3	4.90±.20	5.7	4	Core
					65-100	137.0±11.1	4.19	5.7	1	Core
7N-42E-30ad	43°54′	111°32′	1533.5	107.0	20-105	(116.2±7.2)[b]	4.90±.20	6.1	4	Core
7N-42E-32bb	43°54′	111°32′	1632.6	150.0	20-140	167.7±8.1	4.90±.20	8.2	4	Core
7N-42E-33bd	43°56′	111°31′	1647.9	130.0		(89.0-112.0)[a]	4.90±.20	(4.4-5.5)	4	Core
7N-43E-12bb	43°57′	111°20′	1760.7	113.0		-	-	-		-
7N-43E-21aa	43°56′	111°23′	1724.1	215.0	55-115	24.1±7.5	4.56	1.1	1	Cuttings
7N-43E-30ccc	43°54′	111°26′	1732.6	255.2		(112.0-123.0)[a]	4.90±.20	(5.5-6.0)	4	Core
7N-43E-32bc	43°53′	111°24′	1748.2	240.0		-	-	-		
6N-4W-17bdb	43°52′	116°51′	824.7	20.0		-	-	-		-
6N-4W-18bbd	43°52′	116°52′	759.1	40.0		(60.0-94.0)[a]	4.46	(2.6-4.0)	1	Cuttings
6N-4W-31cdc	43°49′	116°52′	759.1	40.0		(54.0-104.0)[a]	4.26±.14	(2.3-4.4)	4	Cuttings
6N-4W-31dcd	43°49′	116°52′	836.9	75.0		(53.0-66.0)[a]	4.26±.14	(1.8-2.8)	4	Cuttings
6N-4W-32aad	43°49′	116°50′	835.4	50.0		(38.0-70.0)[a]	4.26±.14	(1.6-3.0)	4	Cuttings

6N-2E-29ba*	43°50′	116°15′	1294.8	150.3	5-150	(60.2±0.2)[b]	6.57±.09	4.0	15	Core
6N-36E-11aba	43°52′	112°11′	1468.6	155.0		-	-	-		-
6N-37E-29ac	43°49′	112°07′	1452.4	160.0		-	-	-		-
6N-38E-25ac	43°49′	111°56′	1471.3	161.0	70-160	20.7±9.2	-	-		-
6N-41E-11cdb	43°51′	111°36′	1591.5	110.0	20-100	118.2±6.9	4.90±.20	5.8	4	Core
5N-36E-2bda	43°48′	112°12′	1452.4	150.0		-	-	-		-
5N-36E-22bb	43°45′	112°13′	1455.2	181.0	140-180	22.8±7.8	-	-		-
5N-37E-21bb	43°45′	112°07′	1455.8	145.0		-	-	-		-
5N-38E-22bb	43°45′	111°58′	1467.1	11.5		-	-	-		-
5N-40E-17aba	43°46′	111°46′	1573.2	145.0		(41.0-51.0)[a]	4.31	(1.8-2.2)	1	Cuttings
4N-26E-21abb	43°40′	113°22′	1643.3	179.0		-	-	-		-
4N-35E-14aaa	43°41′	112°18′	1505.8	130.0	70-130	14.4-6.4	-	-		-
4N-40E-1dcb	43°42′	111°42′	1671.3	248.0		(22.0-36.0)[a]	-	-		-
4N-40E-10cad	43°41′	111°44′	1551.8	80.0		(82.0-88.0)[a]	4.33	(3.5-3.8)	1	Cuttings
4N-40E-12da	43°41′	111°41′	1709.8	170.0		-	-	-		-
4N-41E-6db	43°43′	111°41′	1690.5	125.0	5-80	18.5±1.7	-	-		-
4N-41E-4bda	43°43′	111°38′	1738.7	153.0	50-80	46.8±12.5	4.37	2.0	1	Cuttings
3N-1E-32ad	43°33′	116°22′	818.0	62.5		(40.0-51.0)[a]	3.47	(1.4-1.8)	1	Cuttings
3N-1E-35dd*	43°33′	116°18′	833.8	30.0	20-30	11.0±1.0	4.73±.08	.5	2	Core
3N-2E-3ca	43°38′	116°11′	859.8	95.0		-	-	-		-
3N-26E-22ab	43°35′	113°21′	1619.5	228.0	25-225	27.0±11.1	-	-		-
2N-3W-6dbd	43°32′	116°44′	797.0	75.0	10-75	93.0±2.43	-	-		-
2N-26E-22dda	43°29′	113°20′	1634.8	209.0		-	-	-		-
1N-2E-29dd*	43°23′	116°14′	889.3	31.1	12-30	32.6±4.3	3.40	1.1	1	Core
1S-3E-14ad	43°20′	116°03′	963.4	110.0		-	-	-		-
1S-5E-35bdb	43°18′	115°50′	1024.4	58.0		(55.0-73.0)[a]	3.45	(1.9-2.5)	1	Cuttings
1S-9E-23cac*	43°19′	115°21′	1561.0	153.0	95-150	(46.7±0.5)[b]	6.30±.05	2.9	6	Core
1S-12E-13baa	43°21′	114°59′	1552.1	65.0	15-65	88.1±8.5	3.28±.13	2.9	3	Cuttings
1S-13E-21aa	43°55′	114°20′	1544.2	47.0		(59.0-91.0)[a]	3.28±.13	(1.9-3.0)	3	Cuttings
2S-2W-4c	43°16′	116°35′	786.6	11.0		-	-	-		-
2S-2W-16d	43°15′	116°35′	875.0	142.0	45-125	51.0±2.9	3.96	2.0	1	Cuttings
2S-2W-36ba	43°13′	116°31′	859.8	100.0		(33.0-53.0)[a]	3.48	(1.1-1.8)	1	Cuttings
2S-2W-36cb	43°12′	116°32′	887.2	358.0		(34.0-60.0)[a]	3.48	(1.2-2.0)	1	Cuttings
2S-1E-14dd*	43°15′	116°19′	960.4	31.1	15-30	62.7±3.5	4.76	3.0	1	Core
2S-4E-9ddd	43°16′	115°59′	951.8	160.0		(37.0-42.0)[a]	4.62	(1.7-1.9)	1	Cuttings
2S-4E-11bbd	43°16′	115°57′	960.4	145.0		(36.0-42.0)[a]	4.62	(1.7-1.9)	1	Cuttings
2S-4E-36dc	43°12′	115°56′	938.7	83.0		(31.0-44.0)[a]	4.58	(1.4-2.0)	1	Cuttings
2S-5E-15ca	43°15′	115°51′	998.5	90.0		-	-	-		-
2S-5E-30dcb	43°13′	115°54′	947.6	90.0		(38.0-60.0)[a]	4.58	(1.7-2.7)	1	Cuttings
2S-5E-36bdc	43°12′	115°49′	968.0	15.0		-	-	-		-
2S-6E-11dac	43°15′	115°42′	1036.6	520.0		(43.0-86.0)[a]	3.49	(1.5-3.0)	1	Cuttings
2S-8E-18ac*	43°15′	115°33′	1512.2	31.4	10-30	24.7±2.0	5.47	1.4	1	Core
2S-20E-1acc	43°17′	114°02′	1460.4	52.0		(55.0-63.0)[a]	32.8±.13	(1.8-2.1)	3	Cuttings
3S-5E-7a	43°11′	115°54′	939.0	80.0		(51.0-113.0)[a]	3.29	(1.7-3.7)	1	Cuttings

Table 2. Heat Flow Data in the Snake River Plain, Idaho (Continued)

Well Location	North Latitude	West Longitude	Elevation (meters)	Depth of Hole (meters)	Range of Geothermal Gradient (meters)	Geothermal Gradient (°C/km)	Thermal Conductivity (millicalories / cm/sec°C)	Heat Flow (microcalories / cm²sec)	Thermal Conductivity Samples No.	Thermal Conductivity Samples Type
3S-6E-35bdb	43°18′	115°50′	958.8	190.0		(66.0-91.0)[a]	2.68	(1.8-2.4)	1	Cuttings
3S-7E-9ac*	43°05′	115°41′	1054.9	29.8	8-28	-9.0±16.9	4.25	-0.4	1	Core
3S-12E-35bdb	43°07′	115°00′	4810.0	190.0	20-190	20.5±16.6	-	-	-	-
4S-1E-36ba*	43°02′	116°17′	769.8	32.0	18-30	45.6±1.26	3.65±.21	1.7	2	Cuttings
4S-5E-21ca	43°03′	115°52′	916.2	110.0		-	-	-		-
4S-6E-14ba*	43°05′	115°42′	942.1	32.0	15-30	34.7±4.13	4.46±.13	1.5	2	Core
4S-7E-17cb	43°05′	115°39′	942.1	79.0		(63.0-82.0)[a]	2.69	(1.7-2.2)	1	Cuttings
4S-7E-18ad	43°05′	115°40′	942.1	119.0		(44.0-81.0)[a]	2.72	(1.2-2.2)	1	Cuttings
4S-10E-30baa	43°03′	115°19′	1053.4	410.0	100-410	92.3±7.9	3.31	3.1	1	Cuttings
5S-4W-3acc	43°01′	116°48′	1905.5	390.0	130-390	(52.3±0.9)[b]	5.16±2.1	2.6	13	Core
5S-1E-29da	42°57′	116°20′	914.6	59.0		-	-	-	-	-
5S-12E-16bcb	43°00′	115°03′	974.1	30.0		-	-	-	-	-
5S-12E-26cb*	42°57′	115°00′	1018.3	31.5	15-30	50.0±2.76	3.69	1.8	1	Core
6S-2E-30cb*	42°57′	116°16′	1091.5	32.5	8-15	174.7±11.6	2.29	4.0	1	Cuttings
					18-32	124.6±3.8	3.33	4.1	1	Cuttings
6S-3E-11ccb	42°54′	116°05′	795.7	60.0		(46.0-90.0)[a]	2.96	(1.4-2.7)	1	Cuttings
6S-3E-14bcb	42°54′	116°05′	805.8	55.0		(44.0-112.0)[a]	2.96	(1.3-3.3)	1	Cuttings
6S-6E-18ba*	42°52′	116°00′	888.7	32.0	15-30	56.7±2.4	3.24	1.8	1	Cuttings
6S-12E-19cd*	42°53′	115°05′	983.2	30.8	15-30	112.7±7.3	2.90	3.3	1	Cuttings
6S-13E-16aad	42°54′	114°54′	1001.5	100.0		-	-	-		-
7S-4E-9cc*	42°49′	116°00′	895.4	32.0		110.7±11.8	3.01±.01	3.3	2	Cuttings
7S-5E-19bd	42°48′	116°05′	826.8	26.0		-	-	-		-
8S-1E-10dd*	42°44′	116°20′	1481.4	31.2	13-20	(153.9±7.3)[b]	2.30	3.5	1	Cuttings
					23-32	(77.3±1.1)[b]	4.32	3.3	1	Core
8S-12E-23aac	42°43′	115°01′	1062.5	165.0		(55.0-76.0)[a]	4.85±.23	(2.7-3.7)	8[c]	Core
8S-12E-26acd	42°42′	115°00′	1069.5	77.0		(46.0-98.0)[a]	-	-		-
8S-12E-26daa	42°42′	115°00′	1070.1	75.5		(40.0-130.0)[a]	-	-		-
8S-29E-34cb	42°41′	113°04′	1337.8	125.0	60-120	62.0±6.9	-	-		-
9S-12E-24ad	42°38′	114°59′	1160.4	440.0		(51.0-59.0)[a]	4.85±.23	(2.5-2.9)	8[c]	Core
9S-13E-18cc	42°38′	114°59′	1160.1	302.0		(47.0-56.0)[a]	4.85±.23	(2.3-2.7)	8[c]	Core
9S-13E-20acc	42°38′	114°57′	1150.9	7.5		-	-	-	-	Core
9S-13E-20ccd	42°37′	114°59′	1160.1	226.0		(52.0-65.0)[a]	4.85±.23	(2.5-3.1)	8[c]	Core
9S-13E-31bd	42°37′	114°59′	1158.5	175.0		(48.0-69.0)[a]	4.85±.23	(2.3-3.3)	8[c]	Core
9S-13E-32cdc	42°36′	114°57′	1158.5	212.0		(60.0-69.0)[a]	4.85±.23	(2.9-3.3)	8[c]	Core
9S-13E-32cdd	42°36′	114°58′	1160.1	137.0		(54.0-83.0)[a]	4.85±.23	(2.6-4.0)	8[c]	Core
9S-13E-33ca	42°36′	114°58′	1147.9	175.0		(54.0-67.0)[a]	4.85±.23	(2.6-3.2)	8[c]	Core

9S-13E-33cb	42°36′	114°57′	1147.9	146.0	(58.0-73.0)[a]	4.85±.23	(2.8-3.5)	8[c]	Core
9S-26E-7aab	42°11′	114°42′	1280.5	236.0	(70.0-80.0)[a]	-	-		-
10S-12E-1cd	42°35′	114°59′	1135.1	221.0	(55.0-76.0)[a]	4.85±.23	(2.8-3.7)	8[c]	Core
10S-12E-10caa	42°34′	115°01′	1182.9	240.0	(61.0-69.0)[a]	4.85±.23	(2.9-3.3)	8[c]	Core
10S-12E-11dbd	42°34′	115°01′	1134.1	210.0	(45.0-60.0)[a]	4.85±.23	(2.2-2.9)	8[c]	Core
10S-12E-12ab	42°35′	115°01′	1128.0	127.0	(33.0-90.0)[a]	4.85±.23	(1.6-4.4)	8[c]	Core
10S-13E-5cb	42°35′	114°58′	1151.8	197.0	(49.0-71.0)[a]	4.85±.23	(2.4-3.4)	8[c]	Core
11S-15E-34cab	42°26′	114°40′	1383.5	8.5	-	-	-		-
11S-21E-9dda	42°29′	113°59′	1318.6	165.0	(45.0-58.0)[a]	4.85±.23	(2.2-2.8)	8[c]	Core
12S-15E-26acc	42°21′	114°39′	1380.2	233.0	(35.0-38.0)[a]	4.85±.23	(1.7-1.8)	8[c]	Core
12S-15E-27baa	42°22′	114°41′	1377.4	157.0	(48.0-50.0)[a]	4.85±.23	(2.2-2.3)	8[c]	Core
12S-20E-1acc	42°24′	114°04′	1309.5	191.0	-	-	-		-
12S-20E-25cbb	42°21′	114°04′	1423.5	120.0	(53.0-80.0)[a]	4.85±.23	(2.5-3.9)	8[c]	Core
12S-21E-31bcc	42°20′	114°03′	1411.0	97.0	(77.0-88.0)[a]	4.85±.23	(3.7-4.3)	8[c]	Core
13S-15E-11aa	42°19′	114°39′	1394.8	95.0	(57.0-85.0)[a]	3.17	(1.8-2.8)	1	Cuttings
13S-16E 10dd	42°18′	114°39′	1410.4	70.0	(66.0-99.0)[a]	3.24	(2.1-3.2)	1	Cuttings
13S-21E-5ccd	42°19′	114°01′	1409.1	112.0	(77.0-88.0)[a]	4.85±.23	(3.7-4.3)	8[c]	Core
14S-15E-23cd	42°11′	114°40′	1521.3	92.0	-	2.48	-	1	Cuttings
14S-15E-26bb	42°11′	114°40′	1515.2	65.0	(111.0-186.0)[a]	2.56	(2.8-4.6)	1	Cuttings
14S-15E-28bad	42°11′	114°42′	1517.1	52.0	(108.0-160.0)[a]	2.56	(2.8-6.4)	1	Cuttings

(*) Hole drilled for heat flow.
([a]) The lower and upper limits on gradient. In cases where the gradient had large disturbances, no depth interval is shown.
([b]) Topographical corrections have been made to the gradient.
([c]) Average of 8 rhyolite samples from the Blue Gulch area.
(-) Gradient too disturbed or hole not deep enough for gradient estimates and thermal conductivity measurements were not made.

TABLE 3

TOPOGRAPHICAL CORRECTIONS TO HEAT FLOW DATA IN TABLE 2

Well Location	Interval of Geothermal Gradient (meters)	Geothermal Gradient °C/Km Before	After
7N-42E-19cd	82-108	72.3±5.9	98.2±7.5
7N-42E-30ad	20-105	133.2±8.3	116.2±7.2
6N-2E-29ba	5-150	63.2±.2	60.2±.2
1S-9E-23cac	95-150	47.2±.5	46.7±.5
5S-4W-3acc	130-390	52.3±.9	50.4±9.1
8S-1E-10dd	13-20	170.4±8.1	153.9±7.3
	23-32	88.0±1.3	77.3±1.1

Regional Synthesis

Figure 10 shows a heat flow map of the southern half of Idaho constructed from the data discussed above. The contours are dashed where inferred. The contour map shows anomalous heat flow in the eastern Snake River Plain adjacent to the Island Park Caldera and on the margins of the western part of the Snake River Plain. The low heat flow in the eastern part of the Plain is determined from shallow (<200 m) holes and is caused by the Snake Plain aquifer. Deeper drill holes may show high heat flow values below the aquifer. The contours in the Oregon portion of the map are from data discussed by Bowen and Blackwell (1976). The map is intended to show the regional heat flow pattern and does not show localized anomalies. Lines A'A and B'B indicate the location of the two heat flow and geothermal gradient profiles (fig. 11).

The heat flow profiles show anomalous heat flow (approximately 3 HFU) on the margins and the lower values of heat flow (approximately 1.7 ± 0.2 HFU) in the center of the Plain. Most of the heat flow values in the center of the western part of the Plain, based on water well data, are also about 1.7 HFU. Well 5S-4W-3acc and the data of Urban and Diment (1975) show heat flow values from 2.2 to 3.1 HFU in basement rocks on the southern margin of the western Snake River Plain. Based on the heat generation of the granitic rocks and the mantle heat flow of the Basin Range Province (1.4 HFU) the expected value of surface heat flow on the borders of the Plain would be 1.7 to 1.8 HFU. The values of 2.2 to 3.1 HFU show that a regional geothermal anomaly is present which makes a contribution of .4 to 1.6 HFU to the surface heat flow.

The Bouguer gravity and residual magnetic profiles (fig. 11) shown on the figure were constructed from the maps of Mabey (1976). The Bouguer gravity profiles show gravity highs in the Plain with relative lows along the margins. Thus the gravity data seem to indicate an inverse relationship to the heat flow data. The gravity profiles suggest the

TABLE 4

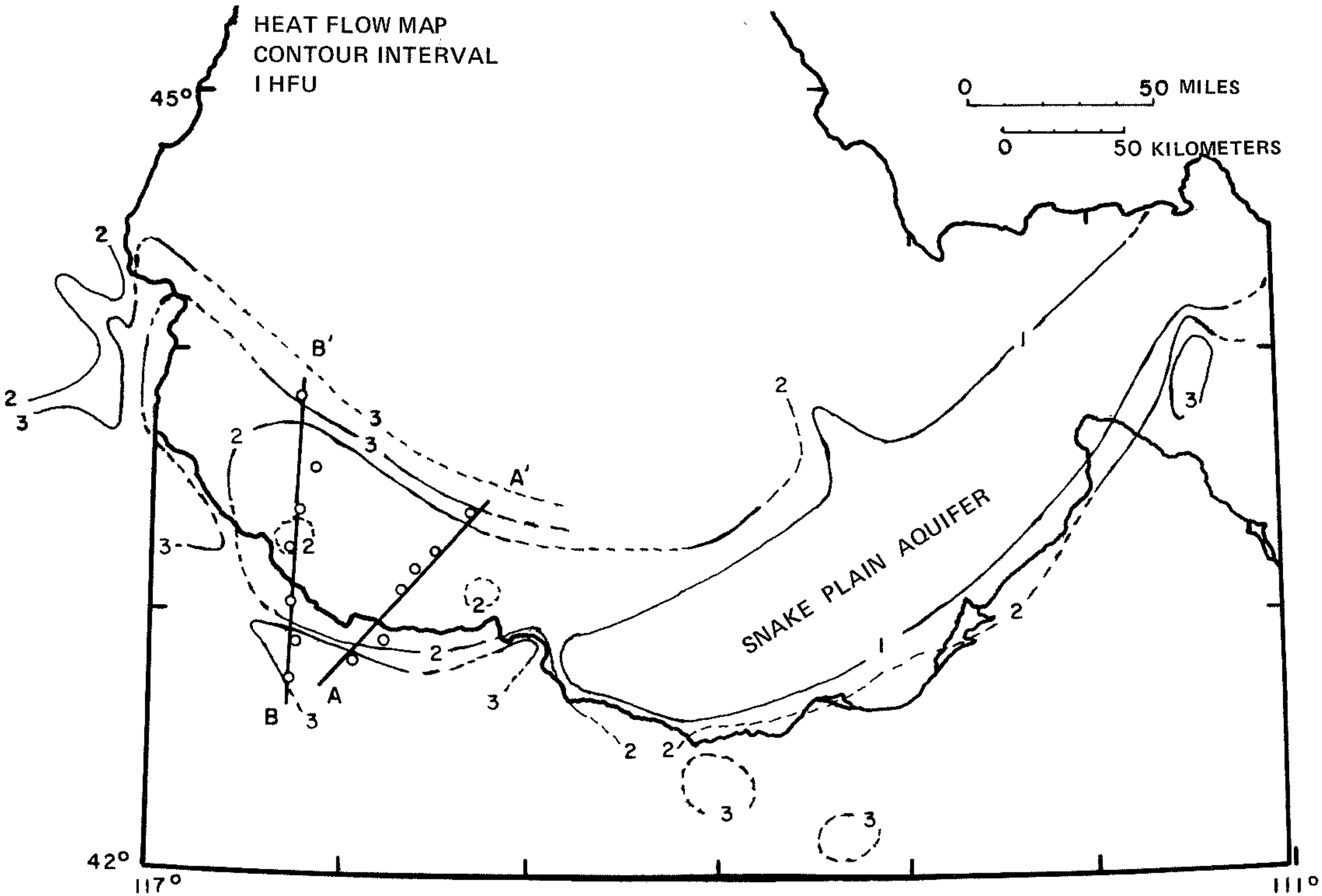
HEAT FLOW VALUES IN CENTRAL IDAHO

Well Location	North Latitude	West Longitude	Interval of Geothermal Gradient (meters)	Geothermal Gradient (^{o}C/Km)	Thermal Conductivity (millicalories / cm/sec^{o}C)	No.	Heat Flow (microcalories / cm^{2}sec) Uncorr.	Corr.	Rock Type
21N-3W-2bc	45^{o}07′	116^{o}40′	49-95	21.0±0.6	6.49±0.11	15	1.4	1.3	Mesozoic Volcanics
16N-4W-11bc	44^{o}44′	116^{o}47′	240-290	23.2±0.6	6.74±0.25	17	1.6	1.7	Granite
14N-27E-7bd	44^{o}29′	113^{o}29′	210-250	24.5±0.5	6.50	9	1.6	1.5	Granite
*	44^{o}25′	114^{o}23′	55-105	37.8±2.9	8.07±0.25	11	3.1	2.3	Paleozoic Sediments
12N-18E-3ac	44^{o}24′	114^{o}19′	70-170	66.6±9.8	9.75±0.64	25	7.0	4.7	Paleozoic Sediments
12N-18E-3ca	44^{o}24′	114^{o}19′	55-85	68.7±12.8	9.22±0.46	5	6.4	4.2	Paleozoic Sediments
8N-5E-16cc	44^{o}02′	115^{o}53′	50-100	79.5±0.9	7.30±0.30	9	5.8	4.3	Granite
8N-6E-18ad	44^{o}02′	115^{o}47′	175-400	36.3±7.9	9.14±1.12	11	3.3	3.0	Granite
5N-5E-3cd	43^{o}47′	115^{o}51′	120-590	26.0	7.23±0.53	6	1.9	2.0	Granite
4N-6E-12bc	43^{o}42′	115^{o}41′	190-245	21.0±1.1	8.71	7	1.7	1.9	Granite

*In Challis National Forest which is not divided into townships and range.

All thermal conductivity measurements were on core samples.

FIGURE 10. Generalized heat flow map of southern Idaho. The I HFU contour in the eastern part of the Snake River Plain is from shallow water wells. The dashed contours are inferred.



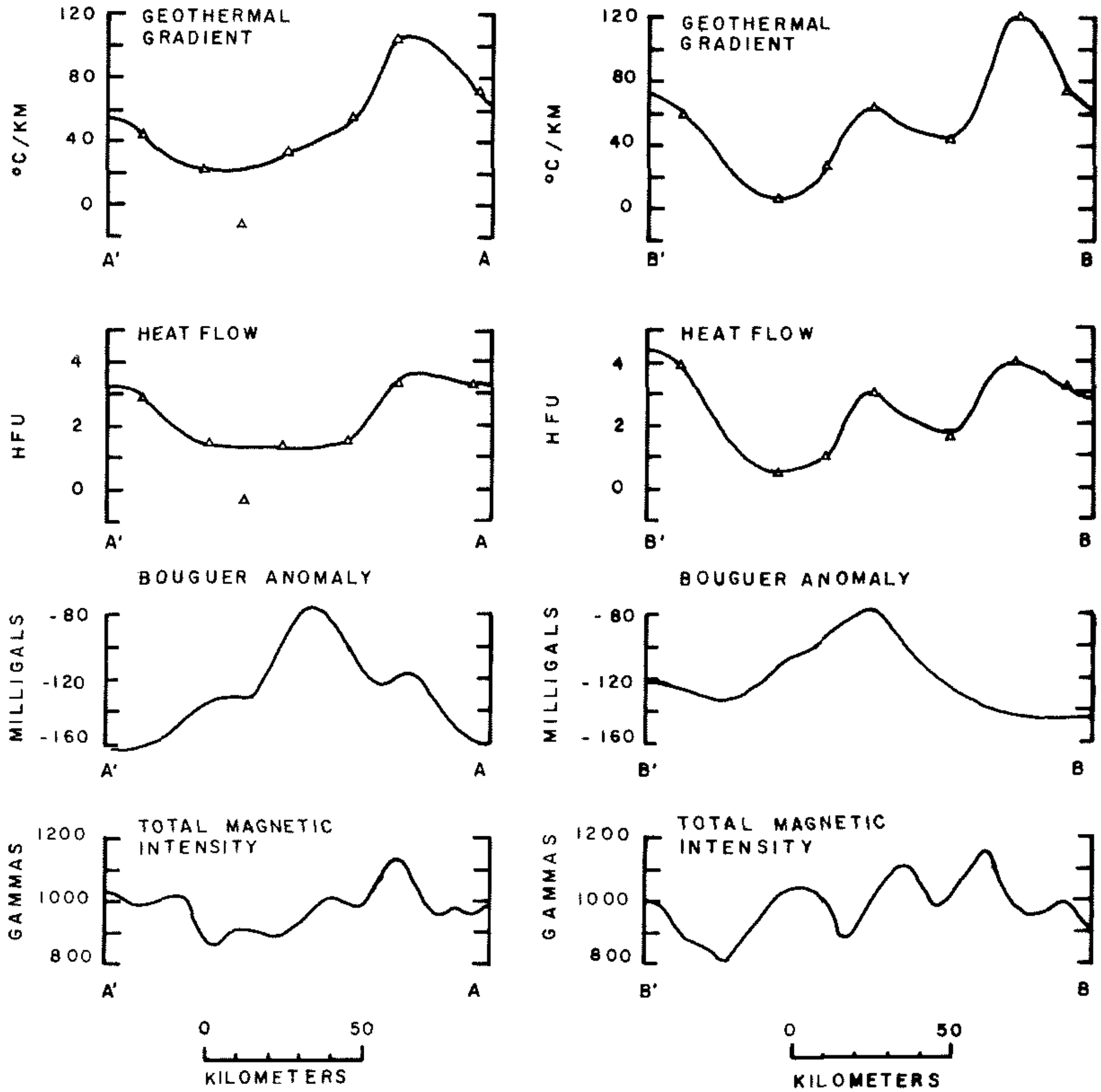


FIGURE 11. Geothermal gradient, heat flow, Bouguer gravity and residual magnetic north-south profiles A'A and B'B) across the Snake River Plain. The gravity and-magnetic profiles are from Mabey (1976).

presence of lower density rocks on the edges than in the center of the Plain. The lower values of the gravity profiles may be caused by greater sediment thickness and the center of the Plain may have relatively more basalt. Models which fit the gravity profiles across the western part of the Plain were constructed by Mabey (1976) and Hill (1963).

The residual magnetic anomaly profile shows magnetic highs on the southern margin and magnetic lows on the northern margin. The magnetic highs and lows seem to bound the lower values of heat flow characteristic of the center of the Plain. The magnetic profiles do not show any distinct feature at the center of the Plain. The relative positive magnetic anomaly on the southern edge and the relative negative magnetic anomaly on the northern edge probably mark the south and north edges of a magnetic layer (basalt) which underlies the Plain (Mabey, 1976).

Western Snake River Plain

General Consideration

Four important factors (Young and Whitehead, 1975a) that should be considered for the evaluation of a geothermal area are the presence of:

1. Heat source or sources;

2. Reservoir for hot water;

3. Flow regime for circulation of hot water; and

4. Source of recharge to replace discharge water.

Of the four factors listed, a heat flow study is used to locate concentrations of heat energy and to evaluate the size of geothermal anomalies. Regions in which high heat flow and large concentrations of heat energy are present have higher temperatures at shallow depths than regions of lower heat flow and more diffuse concentrations of heat energy. High temperature at shallow depths indicates that geothermal anomalies may be present.

The thermal conductivities of rock units must be known in order to determine the geothermal gradients at depth. Histograms of bulk thermal conductivity values from measurements made as part of this study of basalts, clays and silts, clays mixed with quartz fragments, and silicic volcanic rocks are shown in figure 12. A histogram of the conductivity measurements of the granitic core samples is also included for comparison. The harmonic means and standard errors of the thermal conductivities are given as well. The porosity, specific heat, and density of the rock types used in the models are listed in table 5 (the pore space of the rock is assumed to be filled with water and the method for calculation of the *in situ* thermal conductivities is from Saas, et al., 1971). Also listed are the thermal conductivity, density and specific heat of water. The value of 30% for the porosity of the sediments is used because the sediments occur at depths above one kilometer (Heling, 1969; Bush, 1969). Below one kilometer the sediments will become more tightly packed and the porosity will be lower. A value of 10% for the porosity of the basalt is used, but the porosity value may be higher or lower depending upon the unknown vesicularity of the basalt. The pore space of older basalts may be filled with sediments or secondary materials since the older basalts are often buried at great depth. An assumed 5% porosity for the

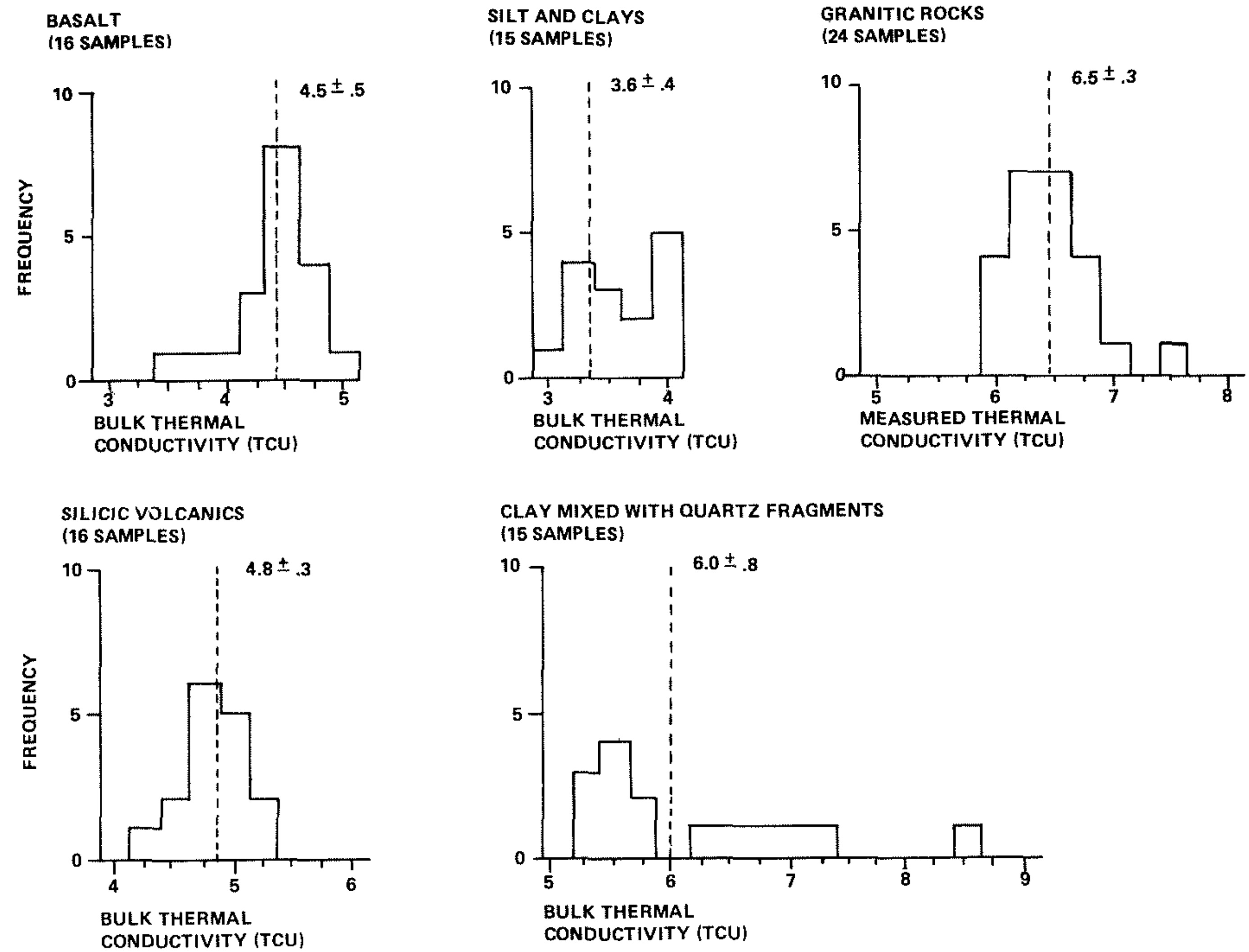


FIGURE 12. Histograms of thermal conductivities at 25°C. The data used to construct the bulk thermal conductivity histograms are from cuttings. The data used to construct the granitic rock thermal conductivity histograms are from core samples. The harmonic means and standard errors of the thermal conductivities are shown. The *in situ* thermal conductivities are in table 5.

TABLE 5

POROSITY, DENSITY, SPECIFIC HEAT AND THERMAL CONDUCTIVITY AT 25°C OF ROCK TYPES IN THE WESTERN SNAKE RIVER PLAIN

	Bulk Thermal Conductivity (millicalories / cm/sec°C)	Percent of Porosity	*In Situ** Thermal Conductivity (millicalories / cm/sec°C)	Density (grams / cm^3)	Bulk Specific Heat (calories / gram °C)
Basalt	4.46±0.44	10	3.97±0.37	2.9	.2
Silts and clays	3.61±0.37	30	2.72±0.25	2.7	.2
Clay mixed with quartz fragments	6.00±0.76	30	3.88±0.49	2.7	.2
Silicic volcanics	4.81±0.27	5	4.52±0.25	2.7	.2
Granite	-	5	6.45±0.34	2.7	.2
Water	1.38	-	-	1.0	1.0

*The *in situ* thermal conductivity values were calculated from the given values of the bulk thermal conductivity and porosity.

silicic volcanics is based on porosity measurements of the silicic volcanic core samples. The non-welded tuffs will have a higher porosity and so the total porosity of the silicic volcanics may be larger than the value assumed. The porosity of the hard rocks (basalt, silicic volcanics and granitic rocks) does not vary as greatly with depth as does the sediment porosity and is, therefore, assumed to be constant in this discussion.

In order to determine the stored heat energy and a relative estimate of the geothermal potential in the western part of the Snake River Plain, three one-dimensional interpretational models (fig. 13) based on data and cross sections of Hill and Pakiser (1966), Malde and Powers (1962), Taubeneck (1971), Mabey (1976), and Bowen and Blackwell (1975) were constructed. The models are somewhat arbitrary, but they are useful in examining the geothermal potential of the Plain.

The geothermal potential of the northern border, middle and southern border of the western part of the Plain will be discussed separately. A term that will be used when discussing the geothermal potential is *base heat energy*.

> *Base heat energy* is defined as the quantity of heat energy which is stored in the rock below an area of one square kilometer down to a depth of 3.05 kilometers which is in excess of the heat needed to keep the rock temperature at 150°C (1sq. kilometer is a little more than 1/3 of a section; 3.05 kilometers is 10,000 feet; and 150°C is 302°F).

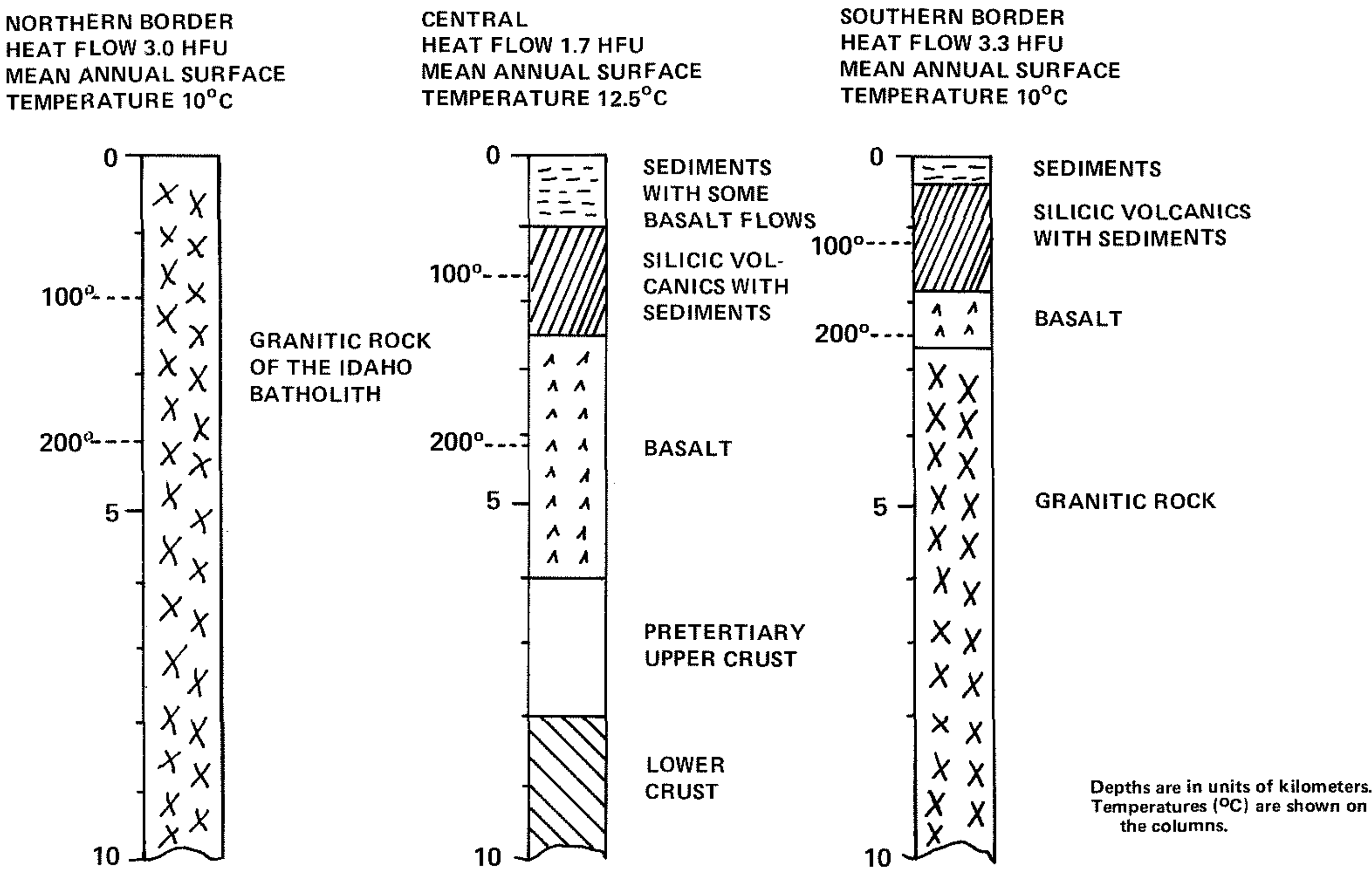


FIGURE 13. One-dimensional geologic models of the western Snake River Plain. The interpretive models are based on data and cross sections of Hill and Pakiser (1966), Malde and Powers (1962), Taubeneck (1971), Mabey (1976), and Bowen and Blackwell (1975). The 100 and 200°C temperatures are calculated values using the heat flow values and the mean annual surface temperatures shown and the values of thermal conductivity, density, and specific heat shown in table 5.

The temperature of 150°C is used because hot water systems which are flashed to steam for the production of electricity must exceed this temperature (Renner, et al., 1975; Combs and Muffler, 1973). The *base heat energy* is a calculated value which may be used to estimate the amount of energy which can be extracted from the rocks.

Most of the heat flow values obtained for this study are in the western half of the Snake River Plain (plates 1 and 2). Also eleven 30 meter holes were drilled to make two north-south heat flow profiles across the western part of the Plain. The temperature-depth plots of the wells along each profile are shown in figures 14 and 15. At the northern end of each profile two 150 meter holes were drilled. Temperature-depth plots of the 150 meter holes are shown in figure 16. Core samples were obtained from the bottom of the 30 meter holes for thermal conductivity measurements. The holes were cased with one-inch PVC pipe which was plugged at the bottom. The annulus around the PVC casing was filled by a chemical grout to prevent water circulation in the hole. The PVC casing was filled with water. The two 150 meter holes were drilled with a diamond drill core rig and were cased with one-inch iron water pipe which was plugged at the bottom. The 150 meter holes were also grouted and the casing filled with water. In addition, two other 30 meter heat flow wells were drilled in the western part of the Plain along a third profile which could not be completed because of lack of funds.

The heat flow values obtained in the central part of the western Snake River Plain are similar to heat flow values in the Basin and Range Province (Roy, et al., 1972) but the heat flow values obtained on the northern and southern borders are anomalously high. The results are discussed in more detail in the following section.

The heat flow values in the western part of the Plain are not believed to be significantly affected by lateral movements of ground water since no discharge system for a major aquifer system can be found in the western part of the Plain. Also, the current recharge to aquifers in the western part of the Plain is not sufficient to replace ground water extracted by wells (Ralston and Chapman, 1970; Rightmire, et al., 1976). In addition, Rightmire, et al., (1976) did a study of hydrogen and oxygen isotopes of the water obtained from aquifers along the southern margin of the western part of the Plain, and suggested that the water in the aquifer systems accumulated over a long period of time. Hence, the aquifer systems in the western part of the Plain mainly act as large reservoirs and in which little lateral movement of ground water appears to occur which would affect surface heat flow.

Northern Border of the Western Snake River Plain

The wells used to compute the *base heat energy* of the northern border are 6N-2E-29ba and 1S-9E-23cac. Well 6N-2E-29ba has a heat flow of 4.0 HFU and a terrain corrected geothermal gradient of 60.5 $\pm$ 0.1°C/km. The mean annual surface temperature is about 10°C. The temperatures of 100°C at 1.5 kilometers and 200°C at 3.1 kilometers are calculated by extrapolating the 60.5°C/km gradient. By use of the one-dimensional model (fig. 13) and the values for thermal conductivities, densities, and specific heat flow shown in table 5, the *base heat energy* is 1.4×10^{16} calories/km^2 or 1.6×10^7 megawatt hours/km^2. Using well 1S-9E-23cac which has a heat flow of 2.9 HFU and a terrain correct geothermal gradient of 46.7 $\pm$ 0.5°C/km, the temperatures of 100°C and 200°C at 1.9 and 4.0 kilometers are determined by extrapolation. The *base heat energy* is 1.0×10^{16} calories/km^2 (1.2×10^7 megawatt hours/km^2). The high heat flow values and the large

FIGURE 14. Six 30 meter holes drilled along a north-south heat flow profile across the Snake River Plain (see fig. 21, line B'B).

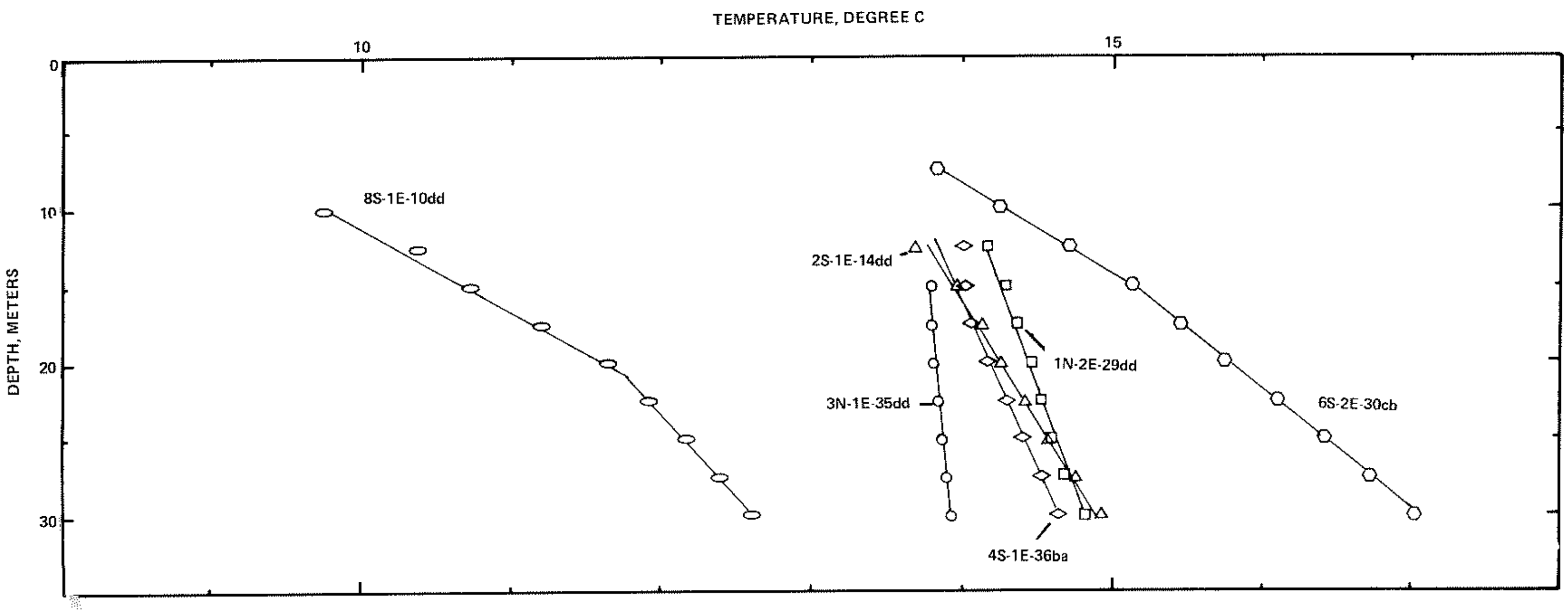
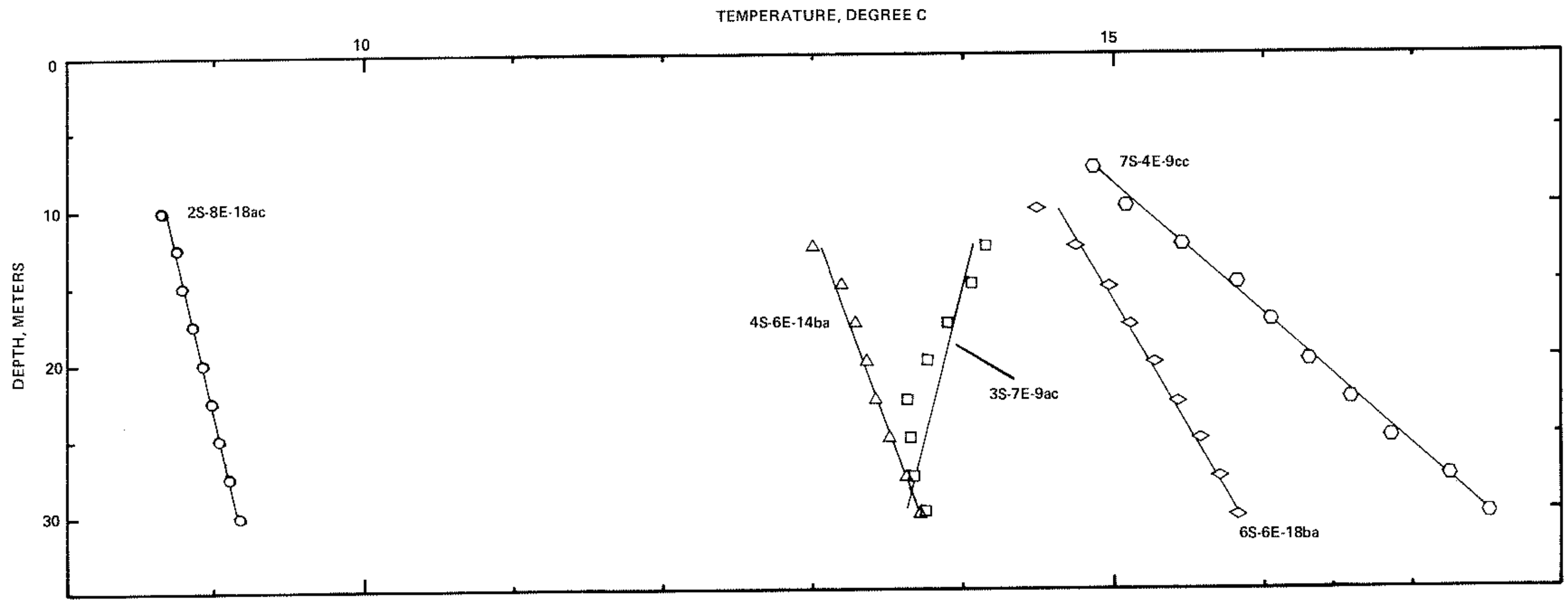


FIGURE 15. Five 30 meter holes drilled along a north-south heat flow profile across the Snake River Plain (see fig. 21, line A'A).



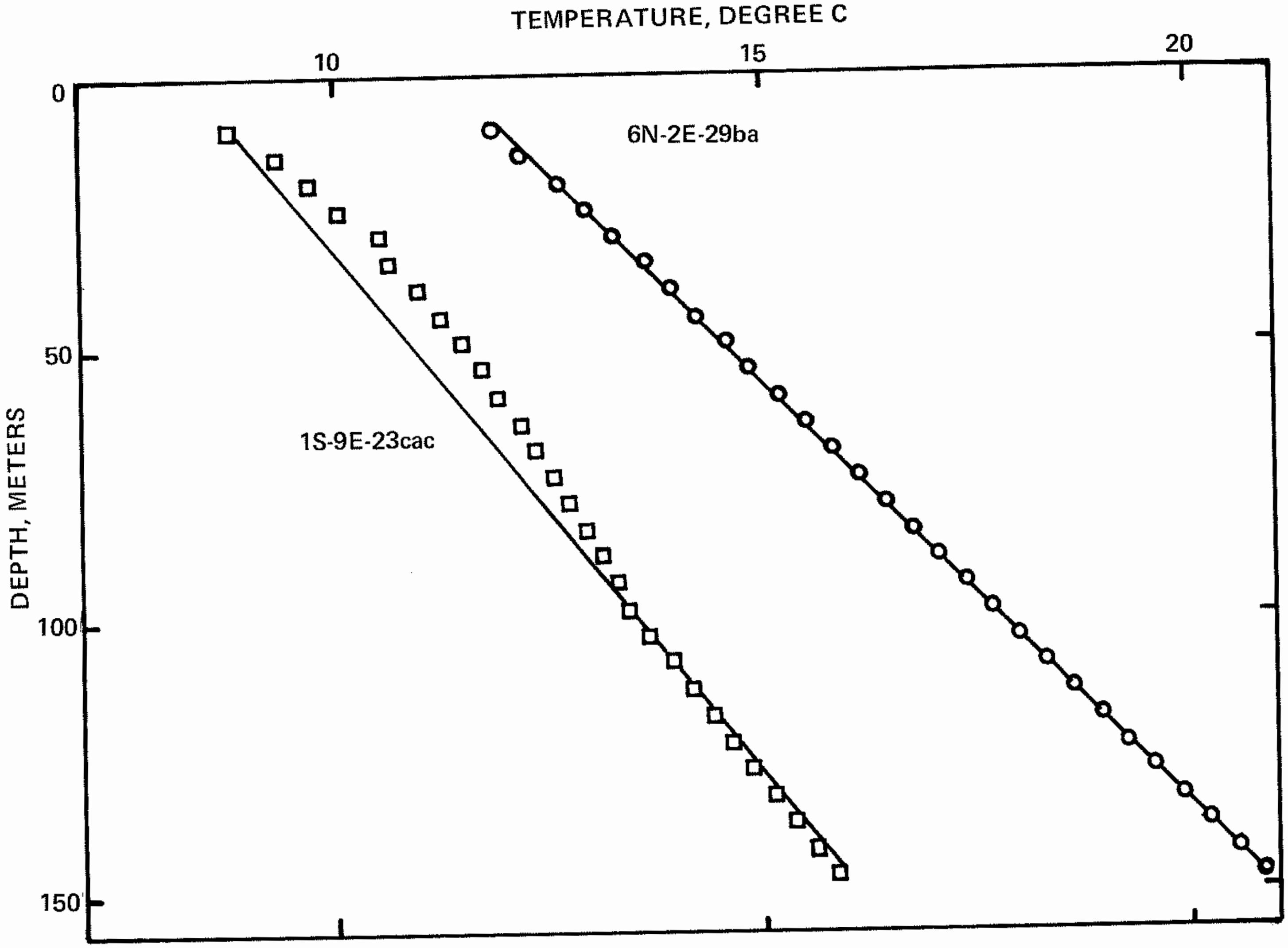


FIGURE 16. Temperature-depth plots for the two 150 meter holes drilled on the northern end of each of the two north-south heat flow profiles (see fig. 10, lines A'A and B'B).

concentration of stored heat energy indicate the geothermal anomalies may be present at moderate or shallow depths through leakages (for example, water circulation along fault zones).

Center of the Western Snake River Plain

The heat flow value used for calculating the geothermal potential of the central part is 1.7 HFU. The geothermal gradient for each stratigraphic layer in the one-dimensional model (fig. 13) changes because of the different thermal conductivities. Using a surface temperature of 12.5°C and the values of thermal conductivities, densities and specific heat shown in table 5, the temperatures of 100°C and 200°C would be reached at 1.7 and 4.1 kilometers, respectively. Even though the heat flow is less in the middle of the Plain, the thermal conductivity of the rocks near the surface is also low which results in relatively high geothermal gradients. The average geothermal gradient with standard error for the center of the western Snake River Plain is 52.7 + 21.0 °C/km. Using the simple one-dimensional model (fig. 13) and the values on table 5, the *base heat energy* is 8.5×10^{10} calories/km^2 which is approximately a factor of 2×10^5 less then the northern border. Localized geothermal anomalies could lie in the center of the Plain, however, which could have high temperatures at shallower depths.

Southern Border of the Western Snake River Plain

The southern border of the western Snake River Plain has an average heat flow value of 3.3 HFU (wells 6S-2E-30cb and 6S-6E-18ba). Using the values of table 5 and the one-dimensional geologic model (fig. 13), the temperatures of 100°C and 200°C would be reached at 1.2 and 2.4 kilometers, respectively. The *base heat energy* is 7.5×10^{16} calories/km^2 (8.7×10^7 megawatt hours/km^2). The southern border of the western part of the Plain has the greatest potential for shallow geothermal anomalies. The model for the western border of the Snake River Plain is interpretative and the depths of the temperatures and *base heat energy* stored varies greatly depending on the exact geologic section present in a given area.

The Blue Gulch Area

The Blue Gulch area (plate 2) is located on the south-central edge of the Snake River Plain between longitudes 114°55'W and 115°5'W and between latitudes 42°32'N and 42°44'N. The elevation varies from 1,223 to 914 meters with a general northwest slope. A generalized geologic map (after Malde, Powers and Marshall, 1963) shows the geological formations and features of the area (fig. 17). The Idavada Volcanics (Malde and Powers, 1962) is the oldest rock unit exposed in the area and is predominantly rhyolite. The overlying units are basalts and sediments.

Cross sections AB and CD (fig. 18, after Chapman and Ralston, 1970) show the rock units cut by every well with the exception of well 9S-13E-20acc which was logged to a depth of only 7.5 meters. All the other wells penetrate into the rhyolite and were logged to depths below the rhyolite-basalt contact.

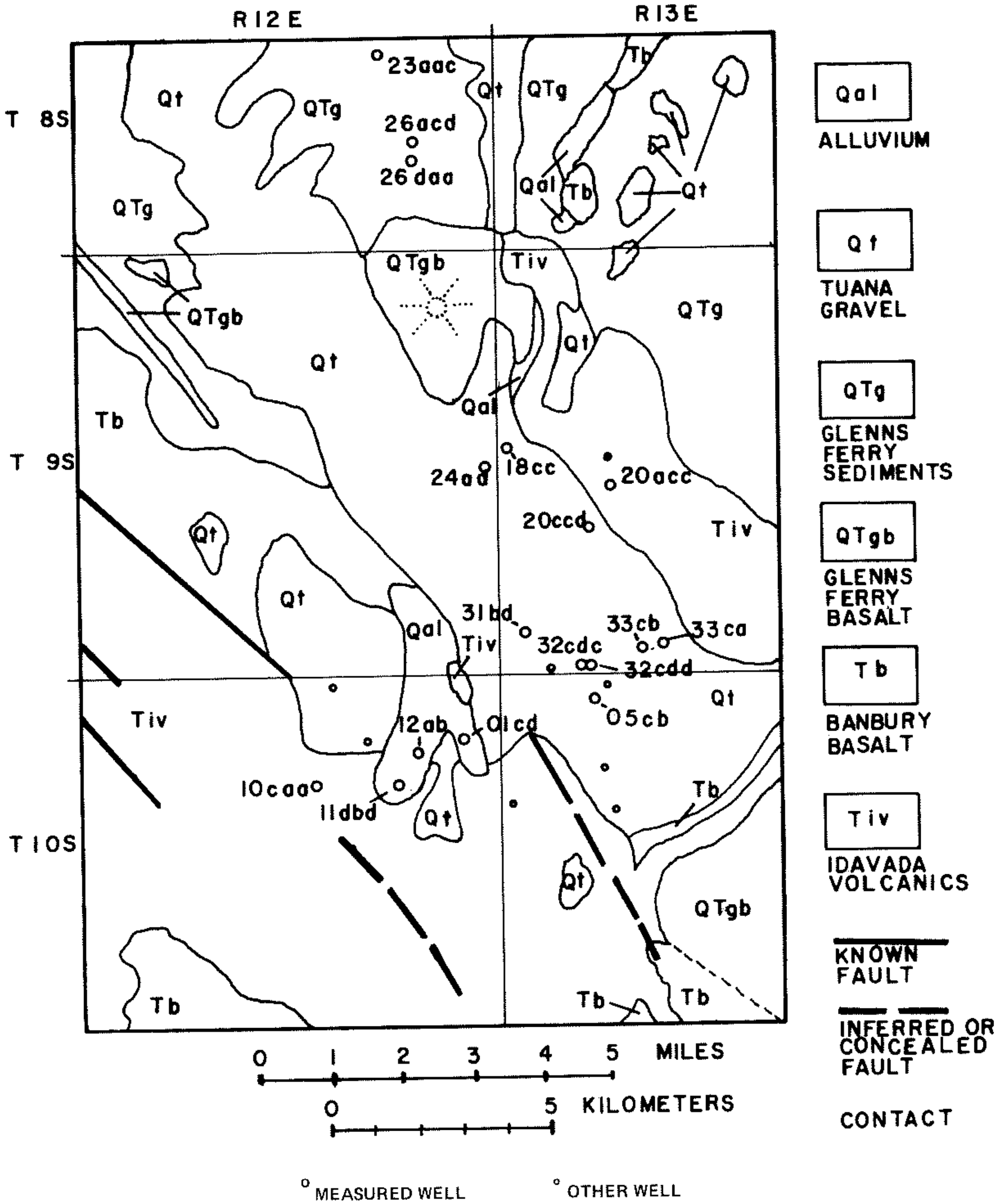


FIGURE 17. Geologic map of the Blue Gulch area (after Malde, Powers and Marshall, 1963).

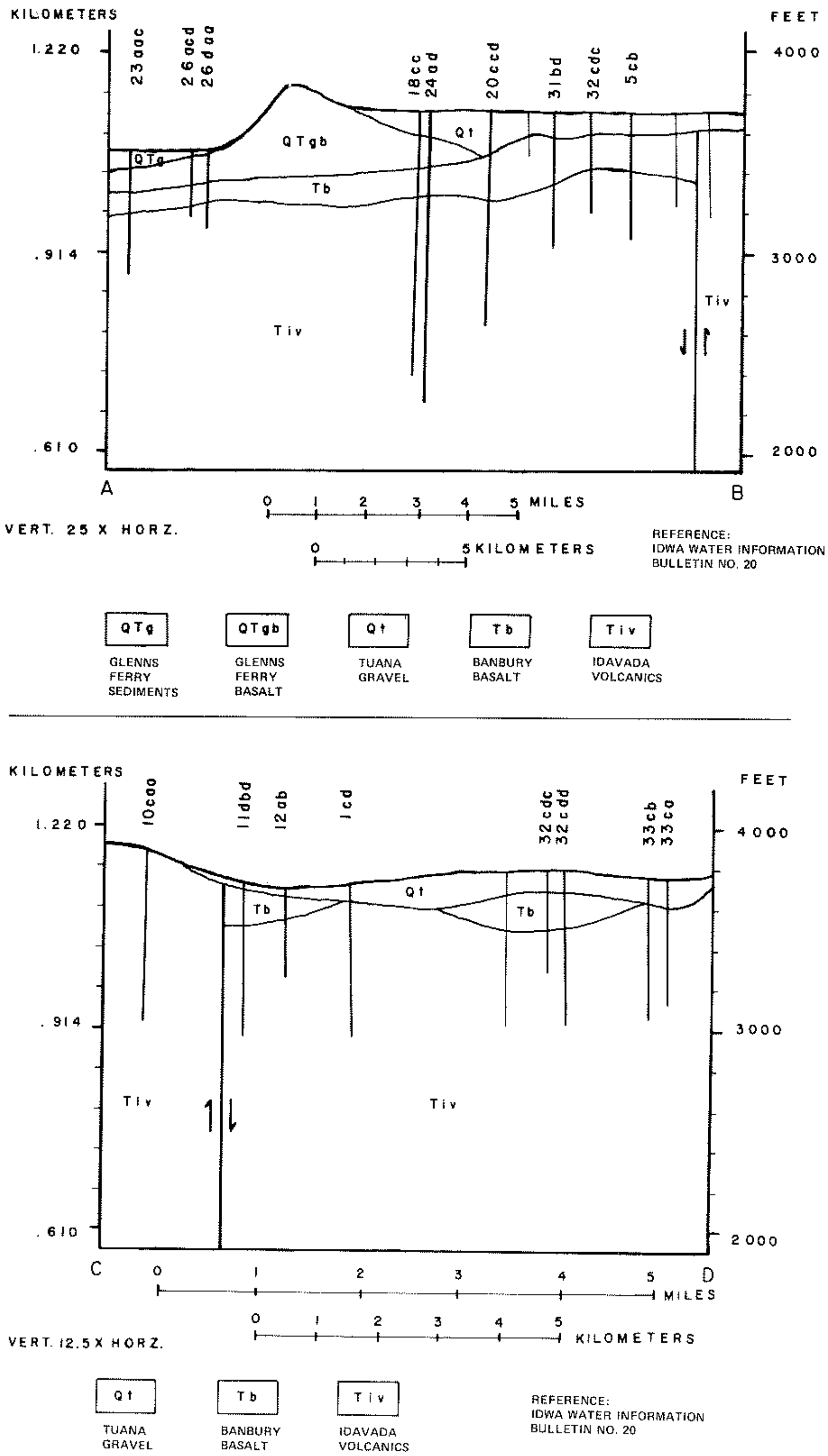


FIGURE 18. Cross sections AB and CD of the Blue Gulch area. The numbered wells were measured for geothermal gradients.

The rhyolite (Idavada Volcanics) is a series of welded silicic ash flows and is reported to be major aquifer (Chapman and Ralston, 1970). The total thickness of the rhyolite is unknown, but a well penetrated 520 meters of rhyolite without reaching the lower contact. Several northwest trending faults cut the rhyolite and crude columnar jointing and horizontal fracturing is observed in many exposures. Drillers logs indicate that this jointing and fracturing occurs at depth and the temperature-depth plots (figures 9 and 19) of the wells logged in the Blue Gulch area show evidence of ground water movement.

Figure 19 shows that in many of the wells in the Blue Gulch area a high gradient is observed near the surface and a lower gradient at depth. The gradients in the bottom parts of the wells vary from 26 to 56°C/km. The variations of the deeper gradients are mainly caused by water disturbances since below 100 meters all the wells penetrate one rock unit (rhyolite). Some of the variations could also be caused by variations in the porosity of the rhyolite, but this possibility cannot be evaluated without more information. The deepest well (9S-10E-24ad) has a bottom hole temperature of 35.7°C but has a low gradient from 480 to 230 meters. The low gradient is probably caused by upward movement of water in the well. Although the wells do not flow, the deeper aquifers in the Blue Gulch area have higher pieziometric levels (are artesian) than the shallow aquifers (Chapman and Ralston, 1970) and the flow between aquifers is always from a deeper aquifer into a shallower aquifer (fig. 19). Well 10S-12E-12ab had a high temperature (27.9°C) at a depth of only 127 meters. The high temperature is interpreted to indicate an upward flow of water from a deeper aquifer. As further evidence for this interpretation, the large change in gradients at 75 meters (from about 55°C/km at 205°C/km) is far too large to be caused by lithologic variation. The geothermal gradient for the Blue Gulch area from the surface to 300-400 meters is about 55°C/km. The temperature-depth plot corresponding to such a gradient is shown in figure 19 as the solid line below well 9S-13E-18cc. This line essentially connects the bottom hole temperatures of wells with water flow disturbances and is parallel to gradients in wells which seem least disturbed by upward water flow, such as well 9S-13E-18cc.

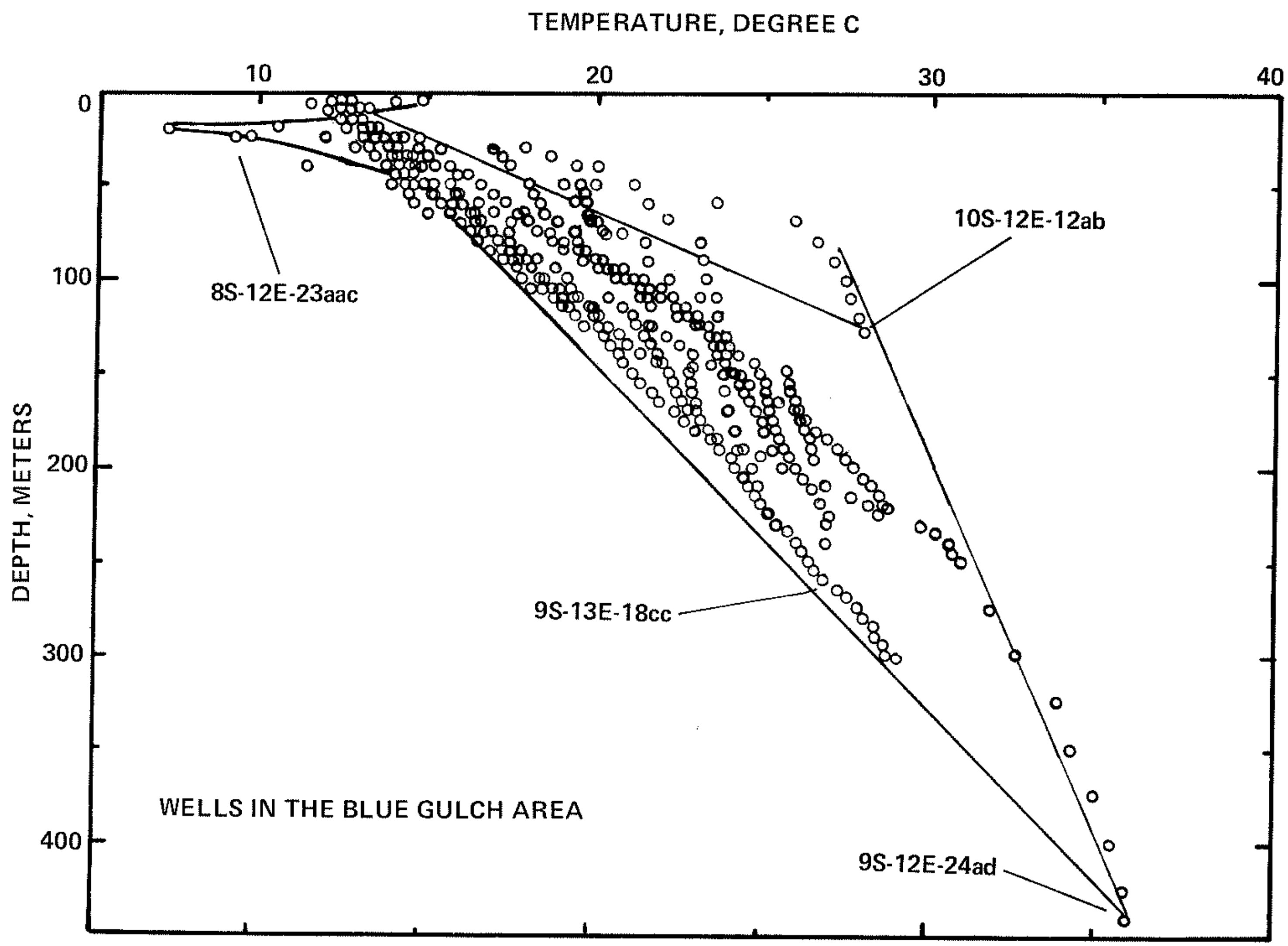
The higher gradients in the upper parts of the wells are caused partly by thermal conductivity changes but are mainly due to water disturbances. A vesicular basalt disturbance is present in one well (8S-12E-23aac) which was drilled in the Glenns Ferry Basalt, the youngest basalt unit in the area. Hence, the geothermal gradients in the shallow parts of the wells do not represent the true geothermal gradient for the Blue Gulch area.

The thermal conductivity of the rhyolite in the Blue Gulch area is 4.85 $\pm$ .23 TCU. This value is from measurements on 8 core samples of the Idavada Volcanics. The best value of the geothermal gradient is 55 $\pm$ 5°C/km. Thus the heat flow value for the Blue Gulch area is 2.7 HFU. The reason for the high value of heat flow could be partially due to a regional heat source, but the major contribution is believed to be caused by heat transfer in regional aquifers.

Snake Plain Aquifer

Figure 20 (after Mundorff and others, 1964) shows the generalized boundaries of the Snake Plain aquifer, which covers most of the eastern part of the Snake River Plain. The discharge of the aquifer is about 114 kiloliters per second and occurs primarily at Thousand Springs (located near Hagerman, Idaho). The rapid flow of water transports the heat laterally through the aquifer and causes low surface heat flow. Deep wells which penetrate

FIGURE 19. Temperature-depth plots of the measured wells in the Blue Gulch area.



ABSTRACT

The Snake River Plain of Idaho has recent lava flows and a large number of thermal springs and wells. These springs and wells are evidence that geothermal anomalies exist, but are not sufficient to estimate the geothermal potential of the Plain. A heat flow study was initiated which, together with available geological and geophysical information, allows a better definition of the geothermal resource and evaluation of the geothermal potential. Local geothermal anomalies were not the objects of this study and have not been studied in detail.

The quality of the heat flow values obtained varies as interpretation was necessary to determine geothermal gradients for many of the holes which had disturbances. Most of the disturbances observed in the geothermal gradients are due to the effects of circulating water in aquifers and of circulating air in vesicular basalt. A major problem in determining the heat flow values is the lack of knowledge of the *in situ* porosity of the rocks.

The heat flow values obtained for the Eastern Snake River Plain are from shallow wells (<200 m), hence the heat flow there is low (<0.5 HFU) because of the water movement in the Snake Plain aquifer. High heat flow values may be obtained beneath the Snake Plain aquifer from deeper holes. The heat flow values in the western part of the Plain are not thought to be disturbed by regional water motion in major aquifer systems, and a major geothermal anomaly exists there. The heat flow values in the center of this region of the Plain are typical high heat flow values (1.7 HFU) for the Western United States (compared to the Basin and Range Province, for example,) while anomalously high heat flow values (3 HFU or greater) occur on the borders of the Plain.

The anomalous regional heat flow pattern around the Snake River Plain, together with other geophysical and geological data, suggest the presence of a major crustal heat source. With the exception of the area of the Snake Plain aquifer, high geothermal gradients were found in all areas of southern Idaho (40 to 100°C/km). Temperatures hot enough for space heating can be found most anywhere in the Plain at relatively shallow depths (1-2 km). Temperatures hot enough for electrical power generation (200°C) can be found beneath southern Idaho almost anywhere at depths of 3-4 kilometers. The Plain is fault bounded and hot water circulating along the fault zones from depths can be a very important geothermal resource at shallow depths. The margins of the Plain have the highest heat flow values, are the most faulted, and have possibly the highest geothermal resource potential. Further regional geothermal studies of the margins of the Plain are recommended in order to investigate the extent of the geothermal anomalies.

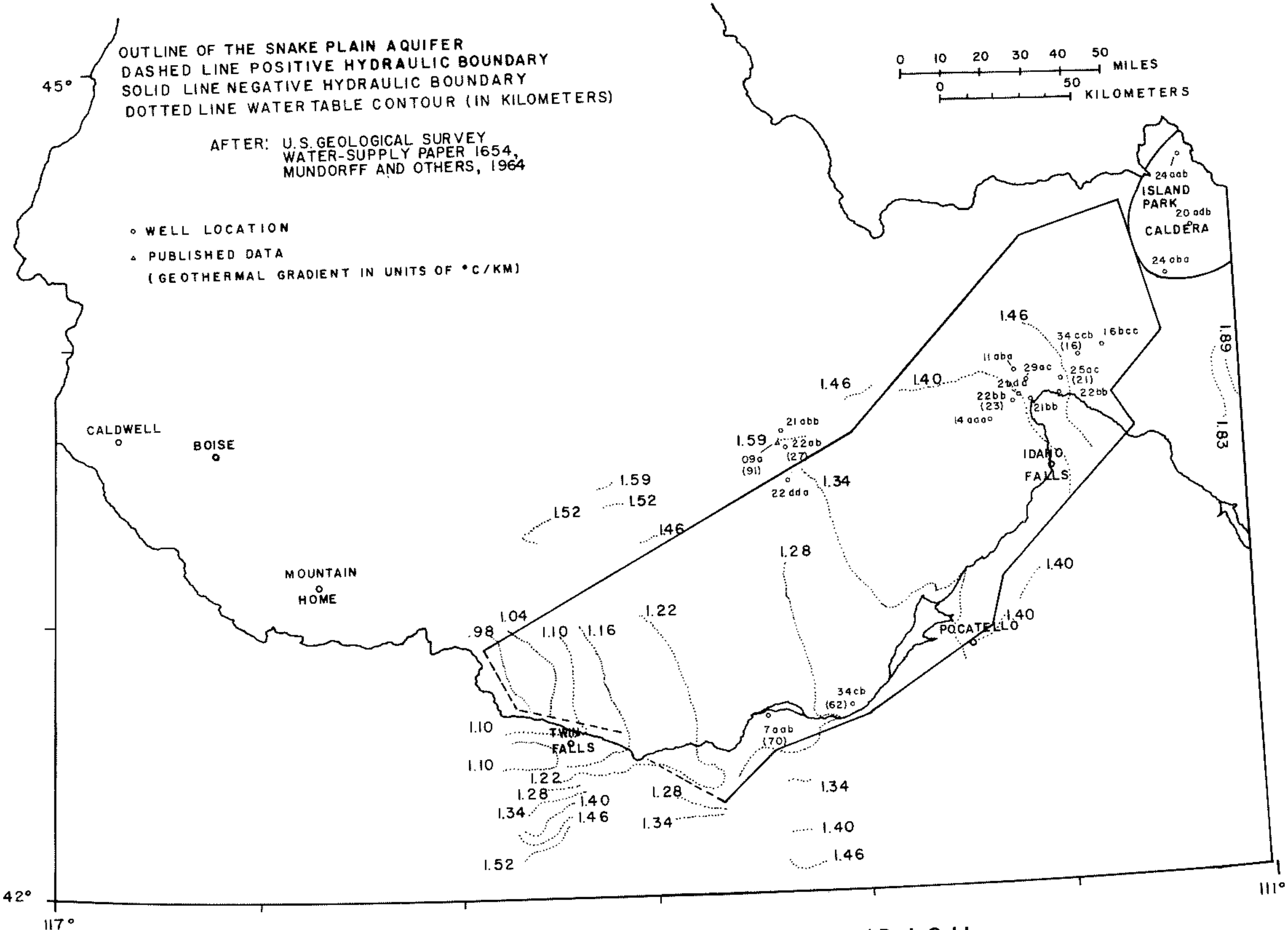


FIGURE 20. Locations of Snake Plain Aquifer and Island Park Caldera.

through the aquifer are needed to obtain heat flow in this region of Idaho. Typical temperature-depth curves from the eastern portion of the aquifer are shown in figure 23.

On the edges of the aquifer high geothermal gradients have been observed. Ross (1971) reported temperatures in a well (3N-27E-9a) on the northern boundary of the aquifer which give an average geothermal gradient of 91°C/km. Wells 9S-26E-7aab and 8S-29E-34cbc (this study), on the southern boundary, have geothermal gradients of 78° and 62°C/km, respectively (table 2). High heat flow may exist below the aquifer, but none of the wells measured as part of this study penetrated below the aquifer.

There are several silicic volcanic domes in the center of the Snake Plain aquifer (some of the larger domes are shown on plate 1 as Qsv). Armstrong, et al., (1975) have reported dates from some of these silicic volcanic domes as young as 0.6 and 0.3 million years. It is possible that high surface heat flow and high temperatures may occur in the vicinity of the domes, but no data were obtained near any of the domes during this study.

Island Park Caldera

The caldera (shown by outline in fig. 20) was formed by the first of three volcanic cycles of the Yellowstone Plateau (Christiansen and Blank, 1972; Hamilton, 1965). The ages of the volcanic eruptives associated with the Island Park caldera range from greater than 1.9 to 1.2 million years. Christiansen (1975) suggested that no major silicic magma body still exists below Island Park caldera, but that the granitic plutons present are still cooling and significant geothermal resources may be present at moderate depth.

The temperature-depth plots (fig. 21) of wells measured in the Island Park caldera show isothermal temperatures due to downward and lateral movement of ground water. However, the deepest well measured was only 65 meters. Therefore, to obtain heat flow values, deeper wells are needed to get below the zone of ground water circulation.

The Island Park region is at the highest elevation of all the Snake River Plain and receives major runoff from the even higher margin of the Yellowstone caldera immediately to the east. The center of the caldera has been covered by young basalt flows (Hamilton, 1965). These factors combine to make the region a major recharge zone for the Snake Plain aquifer, and rapid movement of water in the basalt cover destroys any shallow gradient present. Yet in terms of its size and age the geothermal potential of the Island Park caldera may be rivaled only by the Yellowstone system (see Smith and Shaw, 1975). The geologic situation is so favorable for the presence of geothermal resources that drilling for heat flow studies to depths deep enough to penetrate below the surface layers of the basalts and in surface rhyolite exposures is strongly recommended.

Rexburg-St. Anthony Area

The Rexburg-St. Anthony area is located in the eastern part of the Snake River Plain between 111°19′ and 112°W longitude and between 43°40′ and 44°N latitude. The elevation ranges from 1,500 to 2,000 meters with a slope from northeast to southwest. Plate 3 (after Prostka and Hackman, 1974) shows the geological units. Rhyolite ranging in age from Pliocene to Pleistocene is the oldest unit encountered. The overlying units are ash flow tuff, basalts and sediments. There are many volcanic cinder cones in the areas mapped as basalt which are not shown.

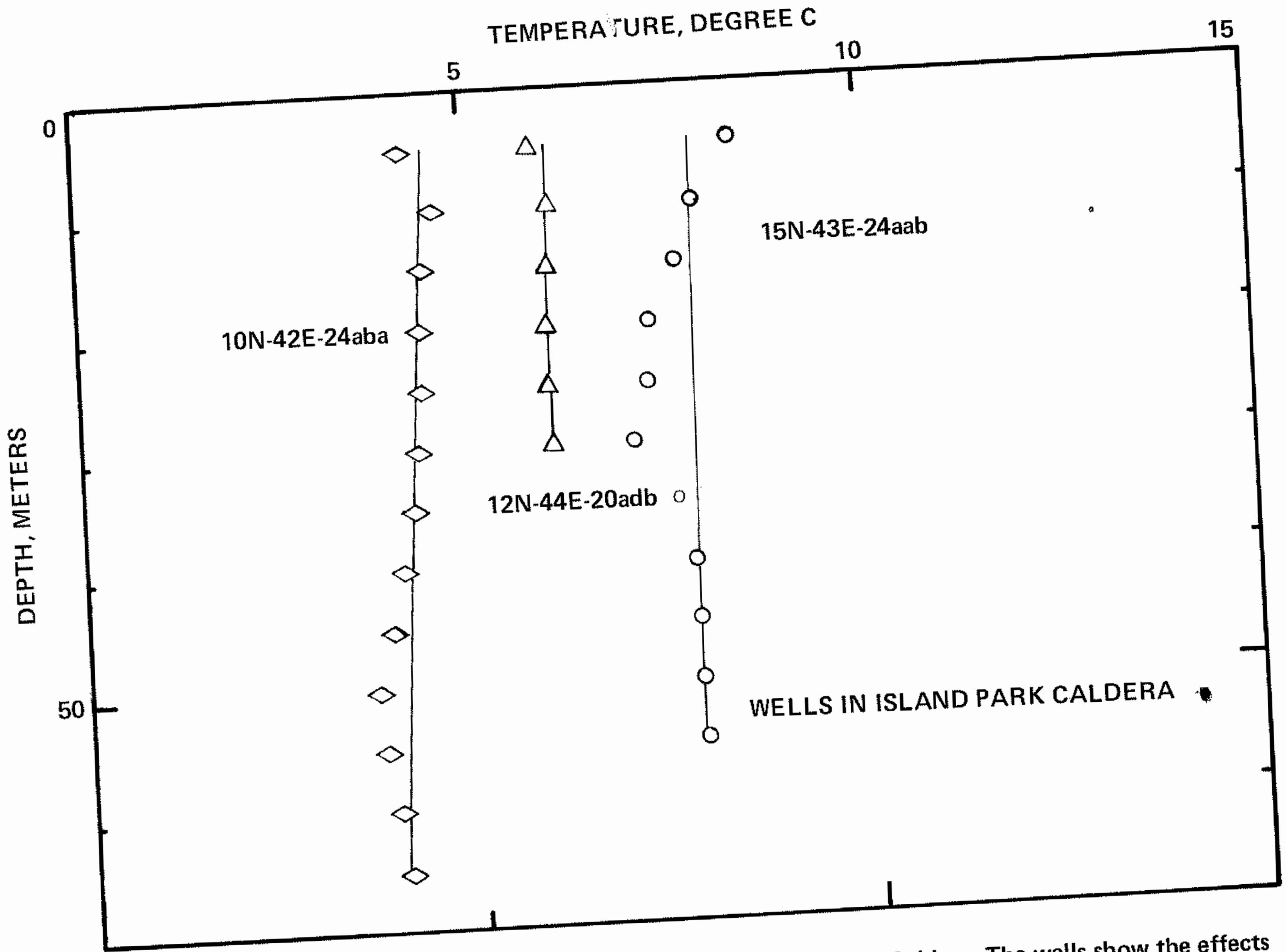


FIGURE 21. Temperature-depth plots of three wells in the Island Park Caldera. The wells show the effects of downward and/or lateral movement of water.

The area is at the eastern boundary of the Snake Plain aquifer (fig. 20). The basalt units shown on the geological map are very porous and form part of the recharge path for water entering the Snake Plain aquifer.

The cross section CDEF (fig. 22) from Haskett (1972) shows that in general, basalts and sediments overlie the rhyolite. The Huckleberry Ridge Tuff is the youngest rhyolite unit in the area and overlies earlier basalts of the Snake River Group. All the rhyolites (actually ash flow tuffs) are shown as Cv (Cenozoic volcanics), because the units cannot be separated on well logs. The various tuffs represent distinct eruptions from the Island Park and Yellowstone calderas to the north of the area (Christiansen and Blank, 1972).

The 12.5°C isotherm (taken from temperature-depth logs) is shown on cross section CDEF. Where the basalt units occur in the upper parts of the wells the 12.5°C temperature is found close to the base of the basalt. In the other wells the 12.5°C temperature is reached very close to the surface because the mean annual temperature in this area is about 10°C. The temperature-depth plots in the rhyolite (fig. 23) show a steady increase of temperature with depth. The temperature versus depth curves from typical wells in the basalt (fig. 24) show that the temperatures are almost isothermal in the basalt, because of the regionally circulating water in the Snake Plain aquifer. Thus the lower gradients in the basalts and the depression of the 12.5°C temperature close to the base of the basalts show the effect of circulating water in the basalts.

The rhyolite in the Rexburg-St. Anthony area is reported to be a major aquifer (Haskett, 1975) but most of the measured wells in the rhyolite have pieziometric tubes or are above the water table. The geothermal gradients of the measured wells in the rhyolite do not show water disturbances and indicate conductive heat flow through the rhyolite.

A profile of the geothermal gradients in the rhyolite is plotted above the cross section. An area of heat flow values greater than 4 HFU is located in townships 6N and 7N and ranges 41E, 42E, and 43E where the high geothermal gradient is located. The high value of heat flow indicates a geothermal anomaly and further exploration of the area is recommended.

Central Idaho

The heat flow values in central Idaho were measured in mining exploration drill holes. Core samples were available for thermal conductivity measurements from all the drill holes. The depths of the holes range from 100 to 600 meters and terrain corrections have been made to all of the determinations. Significant geothermal anomalies, based on 2 or more anomalously high heat flow values, were found near Bayhorse, Idaho and along the south fork of the Payette River east of Garden Valley. Several hot springs with aquifer temperatures based on geochemistry in excess of 100°C are located along the south fork of the Payette River (Young and Mitchell, 1973). The river follows one of the major lineaments typical of the central Idaho region. Deep circulation through fracture zones controlling development of the lineaments might explain the origin of the hot springs and high heat flow values in central Idaho, but the presence of major crustal thermal anomalies cannot be ruled out. Based on the heat flow data, the geothermal anomalies associated with the hot springs must be much larger than the area of surface manifestations, because the anomalous heat flow values along the south fork of the Payette River are 5 and 8 km, respectively, from the nearest hot spring. Further studies of the geothermal character of central Idaho are in progress at this time. In view of the many thermal manifestations (see

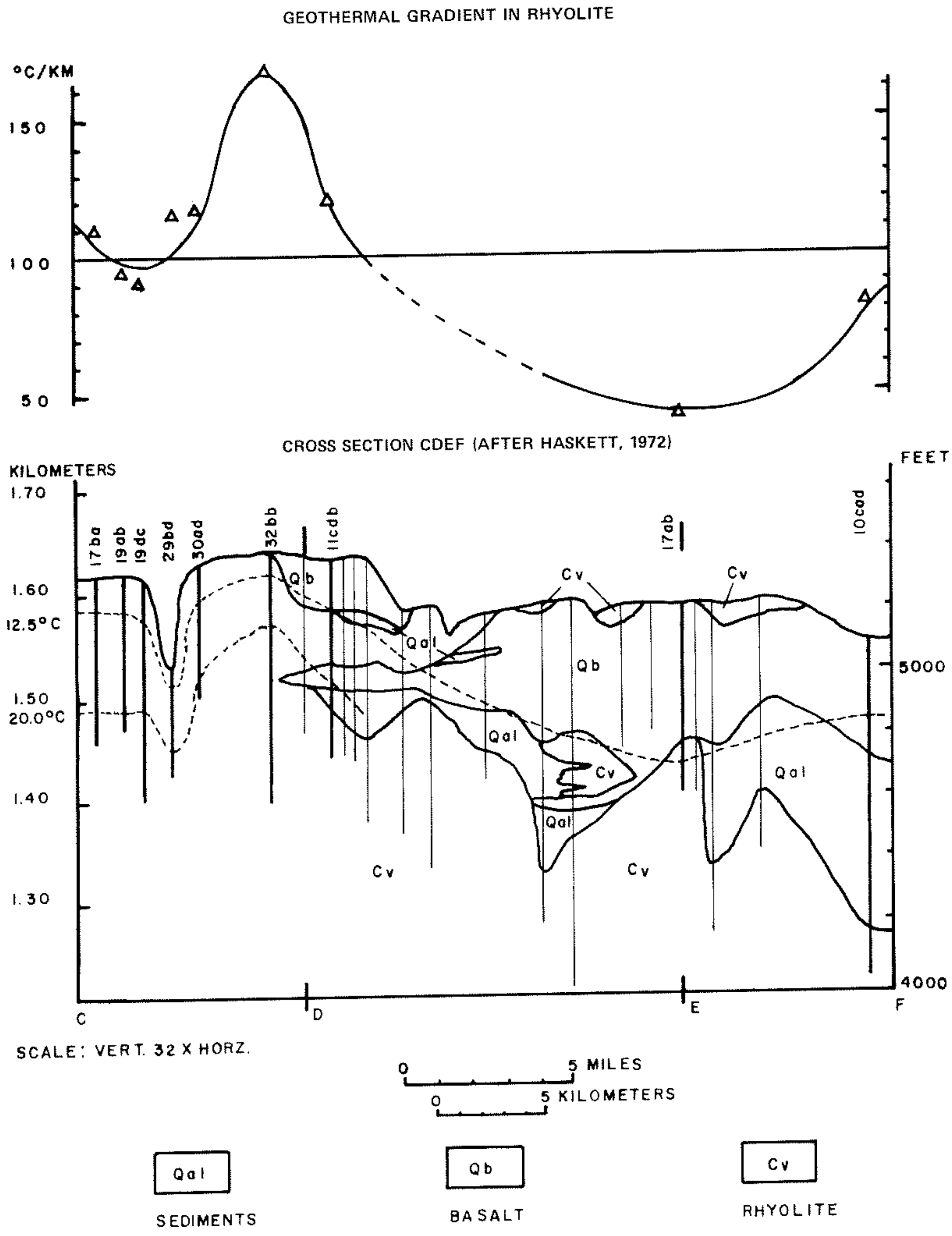
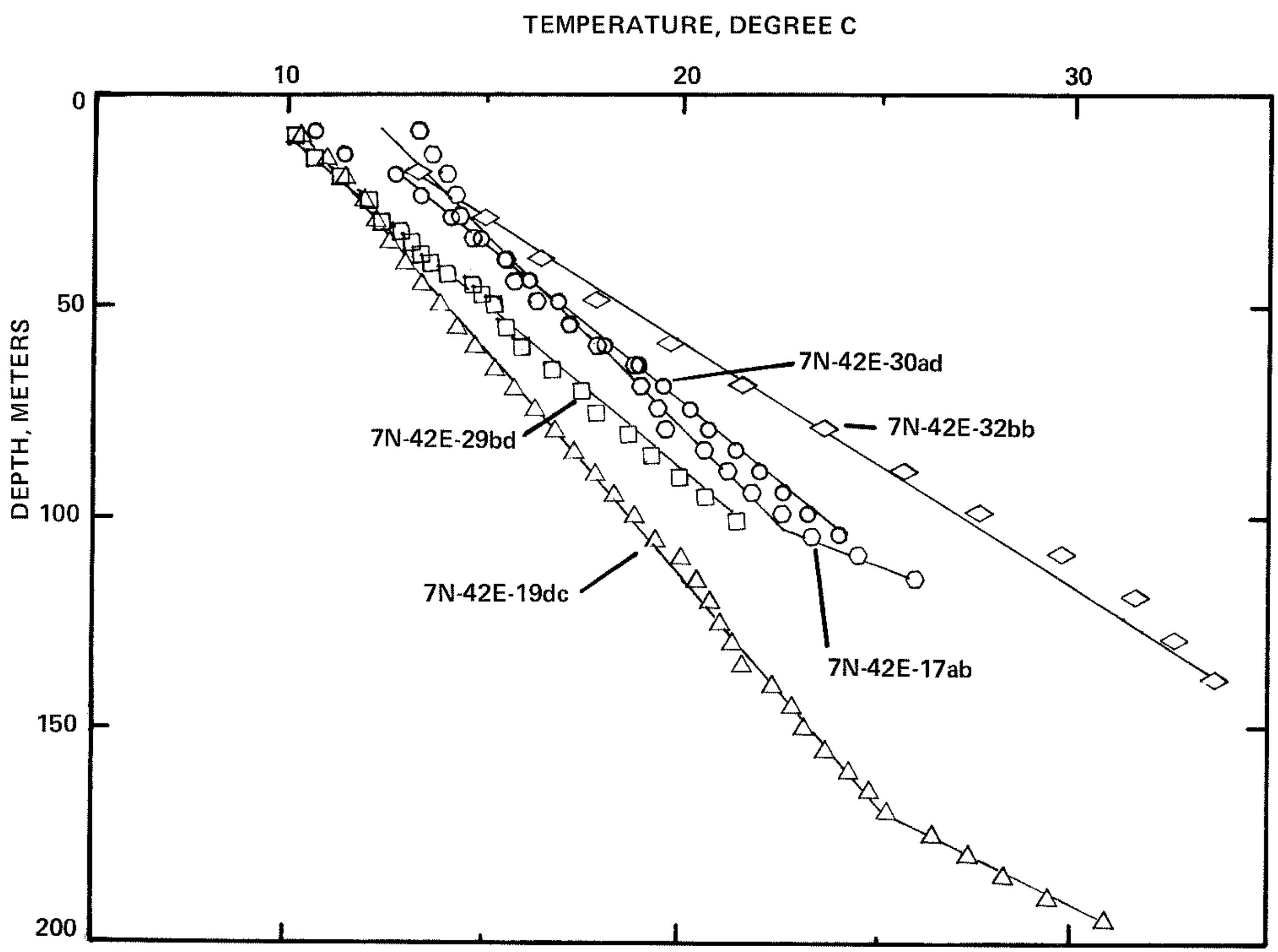


FIGURE 22. Cross section CDEF of the Rexburg-St. Anthony area (Haskett, 1972). The 12.5 and 20°C isotherms are constructed from temperature-depth logs. The profile of the geothermal gradient is constructed from the terrain corrected gradients in the rhyolite intervals of the well.

FIGURE 23. Temperature-depth plots of wells in the Rexburg-St. Anthony area which penetrate rhyolite.



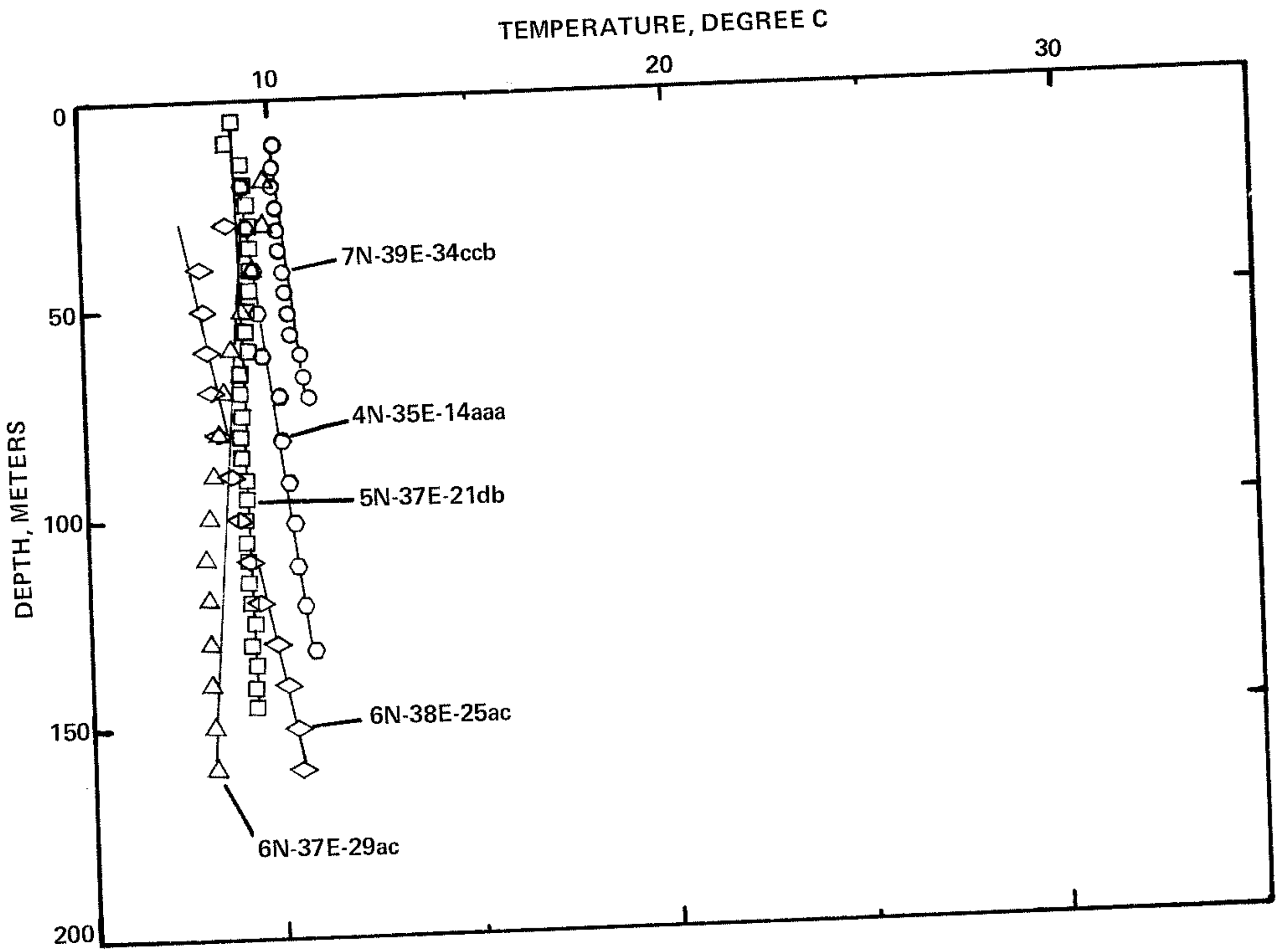


FIGURE 24. Temperature-depth plots of wells which penetrate the basalt on the eastern edge of the Snake Plain Aquifer.

Ross, 1971) and anomalous heat flow values, significant geothermal potential may be present in central Idaho, but not enough data are available to evaluate the geothermal regime at this time.

Other Areas with Heat Flow Values Greater than 2.5 HFU

There are several areas (plate 1) which have heat flow values greater than 2.5 HFU. These areas will be discussed separately.

Two wells (14S-15E-26bb and 14S-15E-28bad) located near Rogerson (close to the Idaho-Nevada border) have heat flow values of 2.8 HFU. The wells were shallow (less than 100 meters deep) and the geothermal gradients have large disturbances. Measurements of deeper holes are needed to test the validity of the reported heat flow values.

Four wells in the general area of Burley (11S-21E-9dda, 12S-20E-25cbb, 12S-21E-31bcc and 13S-21E-5ccd) have heat flow values that range from 2.8 to 3.7 HFU. The depths of these wells are from 97 to 197 meters. The geothermal gradients do have some disturbances so the quality of the heat flow values is poor. Ross (1971) reports a hot spring in the area. Further investigation in this area is recommended.

Four wells (6N-4W-18bbd, 6N-4W-31cdc, 6N-4W-31dcd and 6N-4W-32aad) at the extreme western part of the Plain close to the Idaho-Oregon border, have heat flow values which range from 2.3 to 2.6 HFU. The measured depths of these wells are all less than 100 meters. The geothermal gradients have disturbances so deeper holes should be drilled in this area.

Three wells (11N-6W-3dbb, 11N-6W-9abb and 11N-6W-9dab) located near Weiser, have heat flow values which range from 2.5 to 3.4 HFU. The depths of these holes range from 28 to 122 meters. Young and Whitehead (1975a) have discussed the geothermal characteristics of the Weiser area and describe the hot springs in this area. Further geothermal investigation is recommended for this area.

SUMMARY AND CONCLUSIONS

High heat flow values (2.5 HFU or greater) were found in many areas of the Snake River Plain and further studies in these areas are recommended. The areas are as follows:

1. The Blue Gulch area has a heat flow of 2.7 HFU. Heat flow values further to the south away from the fault zones are needed to identify the origin of the high heat flow as being due to a crustal geothermal anomaly or heat transfer in a regional aquifer system.

2. A geothermal anomaly was located in the Rexburg-St. Anthony area where heat flow values are greater than 4 HFU. The size and shape of the heat flow pattern suggest the geothermal anomaly is hot water circulating along a fault zone. Further study is needed to evaluate the geothermal resources in this area.

3. The Snake Plain aquifer and the Island Park caldera have low geothermal gradients. These gradients were obtained from wells which were drilled in basalt. The low gradients are caused by downward and lateral circulation of water. The relatively young ages of silicic volcanism in these areas, however, suggest that high temperatures may be present at depth. Heat flow drilling in the silicic volcanics is recommended.

4. The western Snake River Plain has heat flow values of about 1.7 HFU in the center and anomalous heat flow values of 2.2 to greater than 3 HFU on the margins. Taking into account the heat production of radioactive elements of the granitic rocks and the mantle heat flow of the Basin Range Province (1.4 HFU) the predicted heat flow on the margins of the Plain would be 1.7 to 1.8 HFU. Hence, the excess heat flow of .5 to 1.6 HFU is due to a crustal geothermal anomaly. Drilling of heat flow holes along profiles away from the south and north margins of the Plain should be done to study the size and intensity of the anomaly.

5. High heat flow values are found near Rogerson (south central Idaho near the Nevada border), and near Parma and Weiser (southwest Idaho near the Oregon border). The heat flow values in these areas are questionable since they were obtained from shallow wells (less than 100 meters). Deeper holes should be drilled to verify the high heat flow values.

6. The high heat flow values near Burley are believed to be due to a significant geothermal anomaly. The geology near Burley is similar to the geology at Raft River and further geothermal studies in the Burley area are recommended.

The heat flow anomaly along the margins of the western Snake River Plain is tentatively identified as a residual thermal effect of the silicic volcanic episode. If this model is correct much greater heat flow values should occur in the eastern portion of the Snake River Plain than are found in the western part because of the time progression of the silicic volcanism from west to east. Alternatively the high heat flow may be due to local anomalies along the margins and the time progression of volcanism may not imply a difference in geothermal potential between the eastern and western portions of the Snake River Plain.

With the exception of the area of the Snake Plain aquifer, the geothermal gradients of all areas of the Plain are high. Temperatures hot enough for space heating can be found at shallow depths (1-2 kilometers) anywhere in the Plain. Temperatures hot enough for electrical power generation (200°C) can be found beneath most of southern Idaho at depths of 3-4 kilometers. In many places the rocks at these depths are sedimentary and volcanic units that may have significant porosity and permeability. In addition, high temperature fluid may be encountered at shallower depths than those mentioned if suitable circulation and reservoir systems are present. The Cow Hollow anomaly near Vale, Oregon described by Bowen and Blackwell (1975) may be an example of such a shallow system. However, based on the data of this report, the region which shows the most promise is the southern border of the western part of the Snake River Plain.

Since the temperature of 200°C is reached at depths of 2.4 - 4.1 km *everywhere* along the margins of, and *inside*, the western Snake River Plain, future improvements in technology which might allow exploitation to depths of 5 km (15,000 feet) or more would increase the geothermal potential values estimated here by many orders of magnitude. In the central part of the Plain porous volcanic rocks may be present at these depths that could deliver large flows of fluid suitable for electrical power generation. Along the margins crystalline rocks would be encountered at these depths and geothermal exploitation would depend on the existence of hydrothermal systems in fracture zones or of development of the *dry-hot* rock geothermal concept to practical usefulness.

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APPENDIX A

Temperature-Depth Logs of Measured Wells in Southern Idaho

The measured temperatures, in °C and °F, at 5 meter depth intervals (16.4 ft) are given in the following table. The computed geothermal gradients in °C/km and °F/100 ft are also listed for each 5 meter interval. In several cases these values are listed for each 2½ or 10 meter interval, and in a few cases at irregular intervals due to convective disturbance in the well.

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
15N-43E-24aab (Date measured 8-5-75)					
5.0	16.4	8.50	47.30		
10.0	32.8	8.00	46.40	-100.0	-5.5
15.0	49.2	7.74	45.93	-52.0	-2.9
20.0	65.6	7.37	45.27	-74.0	-4.1
25.0	82.0	7.33	45.19	-8.0	-0.4
27.5	90.2	7.14	44.85	-76.0	-4.2
30.0	98.4	7.11	44.80	-12.0	-0.7
32.5	106.6	7.23	45.01	48.0	2.6
35.0	114.8	7.55	45.59	128.0	7.0
37.5	123.0	7.69	45.84	56.0	3.1
40.0	131.2	7.83	46.09	56.0	3.1
45.0	147.6	7.85	46.13	4.0	0.2
50.0	164.0	7.86	46.15	2.0	0.1
55.0	180.4	7.86	46.15	0.0	0.0
60.0	196.8	7.86	46.15	0.0	0.0
62.0	203.4	7.89	46.20	15.0	0.8
12N-44E-20adb (Date measured 8-5-75)					
5.0	16.4	5.94	42.69		
10.0	32.8	6.13	43.03	38.0	2.1
12.5	41.0	6.14	43.05	4.0	0.2
15.0	49.2	6.10	42.98	-16.0	-0.9
17.5	57.4	6.07	42.93	-12.0	-0.7
20.0	65.6	6.07	42.93	0.0	0.0
22.5	73.8	6.02	42.84	-20.0	-1.1
25.0	82.0	6.04	42.87	8.0	0.4
27.5	90.2	6.06	42.91	8.0	0.4
30.0	98.4	6.08	42.94	8.0	0.4
32.5	106.6	6.10	42.98	8.0	0.4
11N-6W-3dbb (Date measured 9-25-75)					
5.0	16.4	23.28	73.90		
10.0	32.8	23.66	74.59	76.0	4.2
15.0	49.2	24.23	75.61	114.0	6.3
20.0	65.6	24.55	76.19	64.0	3.5

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		11N-6W-3dbb *(Continued)*			
25.0	82.0	24.92	76.86	74.0	4.1
30.0	98.4	25.27	77.49	70.0	3.8
35.0	114.8	25.56	78.01	58.0	3.2
40.0	131.2	25.85	78.53	58.0	3.2
45.0	147.6	26.25	79.25	80.0	4.4
50.0	164.0	26.56	79.81	62.0	3.4
55.0	180.4	26.87	80.37	62.0	3.4
60.0	196.8	27.23	81.01	72.0	4.0
65.0	213.2	27.55	81.59	64.0	3.5
70.0	229.6	27.84	82.11	58.0	3.2
75.0	246.0	28.16	82.69	64.0	3.5
80.0	262.4	28.44	83.19	56.0	3.1
85.0	278.8	28.70	83.66	52.0	2.9
90.0	295.2	28.89	84.00	38.0	2.1
95.0	311.6	29.06	84.31	34.0	1.9
100.0	328.0	29.24	84.63	36.0	2.0
105.0	344.4	29.41	84.94	34.0	1.9
110.0	360.8	29.56	85.21	30.0	1.6
115.0	377.2	29.69	85.44	26.0	1.4
120.0	393.6	30.25	86.45	112.0	6.1
122.0	400.2	30.36	86.65	55.0	3.0
		11N-6W-9abb (Date measured 9-25-75)			
5.0	16.4	16.00	60.80		
10.0	32.8	16.12	61.02	24.0	1.3
15.0	49.2	16.38	61.48	52.0	2.9
20.0	65.6	16.60	61.88	44.0	2.4
25.0	82.0	16.77	62.19	34.0	1.9
30.0	98.4	17.03	62.65	52.0	2.9
35.0	114.8	17.21	62.98	36.0	2.0
40.0	131.2	17.36	63.25	30.0	1.6
45.0	147.6	17.57	63.63	42.0	2.3
50.0	164.0	17.66	63.79	18.0	1.0
55.0	180.4	17.91	64.24	50.0	2.7
60.0	196.8	18.04	64.47	26.0	1.4
65.0	213.2	18.15	64.67	22.0	1.2
70.0	229.6	18.43	65.17	56.0	3.1
75.0	246.0	18.82	65.88	78.0	4.3
80.0	262.4	19.16	66.49	68.0	3.7
85.0	278.8	19.53	67.15	74.0	4.1

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		11N-6W-9abb *(Continued)*			
90.0	295.2	19.91	67.84	76.0	4.2
95.0	311.6	20.16	68.29	50.0	2.7
		11N-6W-9dab (Date measured 9-25-75)			
5.0	16.4	14.01	57.22		
10.0	32.8	14.40	57.92	78.0	4.3
15.0	49.2	14.91	58.84	102.0	5.6
20.0	65.6	15.24	59.43	66.0	3.6
25.0	82.0	15.60	60.08	72.0	4.0
28.0	91.8	15.96	60.73	120.0	6.6
		10N-42E-24aba (Date measured 8-6-75)			
5.0	16.4	4.24	39.63		
10.0	32.8	4.65	40.37	82.0	4.5
15.0	49.2	4.51	40.12	-28.0	-1.5
20.0	65.6	4.44	39.99	-14.0	-0.8
25.0	82.0	4.42	39.96	-4.0	-0.2
30.0	98.4	4.35	39.83	-14.0	-0.8
35.0	114.8	4.25	39.65	-20.0	-1.1
40.0	131.2	4.10	39.38	-30.0	-1.6
45.0	147.6	3.89	39.00	-42.0	-2.3
50.0	164.0	3.70	38.66	-38.0	-2.1
55.0	180.4	3.77	38.79	14.0	0.8
60.0	196.8	3.92	39.06	30.0	1.6
65.0	213.1	4.00	39.20	16.0	0.9
65.5	214.8	4.01	39.22	20.0	1.1
		9N-42E-20ccd (Date measured 8-7-75)			
5.0	16.4	7.64	45.75		
10.0	32.8	8.65	47.57	202.0	11.1
15.0	49.2	8.79	47.82	28.0	1.5
20.0	65.6	8.86	47.95	14.0	0.8
25.0	82.0	8.98	48.16	24.0	1.3
30.0	98.4	9.13	48.43	30.0	1.6

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		9N-42E-20ccd *(Continued)*			
35.0	114.8	9.28	48.70	30.0	1.6
40.0	131.2	9.47	49.05	38.0	2.1
45.0	147.6	9.71	49.48	48.0	2.6
50.0	164.0	9.99	49.98	56.0	3.1
53.5	175.5	10.21	50.38	62.9	3.4
		9N-43E-19cbd (Date measured 8-5-75)			
5.0	16.4	8.23	46.81	0.0	0.0
		9N-44E-21aad (Date measured 8-5-75)			
5.0	16.4	5.50	41.90		
10.0	32.8	6.28	43.30	156.0	8.6
15.0	49.2	6.40	43.52	24.0	1.3
20.0	65.6	6.40	43.52	0.0	0.0
25.0	82.0	6.50	43.70	20.0	1.1
30.0	98.4	6.55	43.79	10.0	0.5
32.5	106.6	6.58	43.84	12.0	0.7
33.5	109.9	6.59	43.86	10.0	0.5
		7N-2W-29bba (Date measured 8-9-74)			
10.0	32.8	13.06	55.51		
15.0	49.2	13.39	56.10	66.0	3.6
20.0	65.6	13.63	56.53	48.0	2.6
25.0	82.0	13.93	57.07	60.0	3.3
30.0	98.4	14.23	57.61	60.0	3.3
35.0	114.8	14.53	58.15	60.0	3.3
40.0	131.2	14.83	58.69	60.0	3.3
45.0	147.6	15.09	59.16	52.0	2.9
50.0	164.0	15.41	59.74	64.0	3.5
55.0	180.4	15.73	60.31	64.0	3.5
60.0	196.8	16.00	60.80	54.0	3.0
65.0	213.2	16.29	61.32	58.0	3.2
70.0	229.6	16.57	61.83	56.0	3.1
75.0	246.0	16.85	62.33	56.0	3.1

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		7N-2W-29bba *(Continued)*			
80.0	262.4	17.09	62.76	48.0	2.6
88.0	288.6	17.50	63.50	51.3	2.8
		7N-39E-34ccb (Date measured 8-14-74)			
10.0	32.8	10.17	50.31		
15.0	49.2	10.14	50.25	-6.0	-0.3
20.0	65.6	10.12	50.22	-4.0	-0.2
25.0	82.0	10.17	50.31	10.0	0.5
30.0	98.4	10.18	50.32	2.0	0.1
35.0	114.8	10.23	50.41	10.0	0.5
40.0	131.2	10.30	50.54	14.0	0.8
45.0	147.6	10.35	50.63	10.0	0.5
50.0	164.0	10.41	50.74	12.0	0.7
55.0	180.4	10.44	50.79	6.0	0.3
60.0	196.8	10.68	51.22	48.0	2.6
65.0	213.2	10.74	51.33	12.0	0.7
70.0	229.6	10.84	51.51	20.0	1.1
		7N-40E-16bcc (Date measured 8-15-74)			
20.0	65.6	14.13	57.44		
25.0	82.0	11.04	51.87	-619.0	-34.0
30.0	98.4	10.45	50.81	-118.0	-6.5
35.0	114.8	11.00	51.80	110.0	6.0
40.0	131.2	11.33	52.39	66.0	3.6
		7N-42E-15ab (Date measured 8-14-75)			
5.0	16.4	9.43	48.97		
10.0	32.8	7.27	45.09	-432.0	-23.7
15.0	49.2	7.54	45.57	54.0	3.0
20.0	65.6	7.73	45.91	38.0	2.1
25.0	82.0	7.79	46.02	12.0	0.7
30.0	98.4	8.08	46.54	58.0	3.2
35.0	114.8	8.15	46.67	14.0	0.8
40.0	131.2	8.27	46.89	24.0	1.3

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		7N-42E-15ab *(Continued)*			
45.0	147.6	8.37	47.07	20.0	1.1
50.0	164.0	8.38	47.08	2.0	0.1
55.0	180.4	8.50	47.30	24.0	1.3
60.0	196.8	8.72	47.70	44.0	2.4
65.0	213.2	8.61	47.50	-22.0	-1.2
70.0	229.6	8.75	47.75	28.0	1.5
75.0	246.0	9.03	48.25	56.0	3.1
80.0	262.4	9.14	48.45	22.0	1.2
85.0	278.8	9.32	48.78	36.0	2.0
		7N-42E-17ab (Date measured 8-17-75)			
5.0	16.4	12.85	55.13		
10.0	32.8	13.32	55.98	94.0	5.2
15.0	49.2	13.61	56.50	58.0	3.2
20.0	65.6	14.01	57.22	80.0	4.4
25.0	82.0	14.21	57.58	40.0	2.2
30.0	98.4	14.32	57.78	22.0	1.2
35.0	114.8	14.67	58.41	70.0	3.8
40.0	131.2	15.49	59.88	164.0	9.0
45.0	147.6	15.69	60.24	40.0	2.2
50.0	164.0	16.27	61.29	116.0	6.4
55.0	180.4	17.08	62.74	162.0	8.9
60.0	196.8	17.82	64.08	148.0	8.1
65.0	213.2	18.75	65.75	186.0	10.2
70.0	229.6	18.93	66.07	36.0	2.0
75.0	246.0	19.31	66.76	76.0	4.2
80.0	262.4	19.57	67.23	52.0	2.9
85.0	278.8	20.51	68.92	188.0	10.3
90.0	295.2	21.17	70.11	132.0	7.2
95.0	311.6	21.73	71.11	112.0	6.1
100.0	328.0	22.51	72.52	156.0	8.6
105.0	344.4	23.25	73.85	148.0	8.1
110.0	360.8	24.47	76.05	244.0	13.4
115.0	377.2	25.68	78.55	278.0	15.3
120.0	393.6	26.14	79.05	56.0	3.1

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		7N-42E-17ba (Date measured 8-15-74)			
10.0	32.8	9.50	49.10		
20.0	65.6	11.55	52.79	205.0	11.2
30.0	98.4	12.87	55.17	132.0	7.2
40.0	131.2	13.13	55.63	26.0	1.4
50.0	164.0	14.40	57.92	127.0	7.0
60.0	196.8	15.20	59.36	80.0	4.4
70.0	229.6	16.58	61.84	138.0	7.6
80.0	262.4	17.25	63.05	67.0	3.7
90.0	295.2	18.32	64.98	107.0	5.9
100.0	328.0	19.77	67.59	145.0	8.0
		7N-42E-18bc (Date measured 8-21-75)			
10.0	32.8	33.80	92.84		
20.0	65.6	29.96	85.93	-384.0	-21.1
30.0	98.4	24.22	75.60	-574.0	-31.5
40.0	131.2	20.50	68.90	-372.0	-20.4
50.0	164.0	31.92	89.46	1142.0	62.7
60.0	196.8	37.39	99.30	547.0	30.0
70.0	229.6	38.47	101.25	108.0	5.9
80.0	262.4	40.21	104.38	174.0	9.5
90.0	295.2	38.15	100.67	-206.0	-11.3
100.0	328.0	37.71	99.88	-44.0	- 2.4
110.0	360.8	19.52	67.14	-1819.0	-99.8
120.0	393.6	23.30	73.94	378.0	20.7
130.0	426.4	25.52	77.94	222.0	12.2
140.0	459.2	27.43	81.37	191.0	10.5
150.0	492.0	31.78	89.20	435.0	23.9
160.0	524.8	33.08	91.54	130.0	7.1
170.0	557.6	32.30	90.14	-78.0	-4.3
		7N-42E-19ab (Date measured 8-1-74)			
10.0	32.8	8.95	48.11		
20.0	65.6	10.65	51.17	170.0	9.3
30.0	98.4	12.16	53.89	151.0	8.3
40.0	131.2	13.00	55.40	84.0	4.6
50.0	164.0	13.60	56.48	60.0	3.3

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		7N-42E-19ab *(Continued)*			
60.0	196.8	14.09	57.36	49.0	2.7
70.0	229.6	15.02	59.04	93.0	5.1
80.0	262.4	15.98	60.76	96.0	5.3
90.0	295.2	16.67	62.01	69.0	3.8
100.0	*328.0*	*17.32*	63.18	65.0	3.6
110.0	360.8	18.31	64.96	99.0	5.4
120.0	393.6	19.26	66.67	95.0	5.2
130.0	426.4	20.37	68.67	111.0	6.1
140.0	459.2	21.34	70.41	97.0	5.3
150.0	492.0	22.30	72.14	96.0	5.3
		7N-42E-19cd (Date measured 8-9-75)			
4.3	14.2	10.53	50.95		
8.7	28.4	9.83	49.69	-161.3	-8.9
13.0	42.6	10.58	51.04	173.2	9.5
17.3	56.8	11.06	51.91	110.9	6.1
21.7	71.1	11.24	52.23	41.5	2.3
26.0	85.3	*11.16*	52.09	-18.5	-1.0
30.3	99.5	12.05	53.69	205.5	11.3
34.7	113.7	12.82	55.08	177.4	9.7
39.0	127.9	12.77	54.99	-11.5	-0.6
43.3	142.1	13.63	56.53	198.6	10.9
47.7	156.4	14.24	57.63	140.6	7.7
52.0	170.6	14.46	58.03	50.8	2.8
56.3	184.8	14.54	58.17	18.5	1.0
60.7	199.0	14.65	58.37	25.3	1.4
65.0	213.2	14.73	58.51	18.5	1.0
69.3	227.4	14.86	58.75	30.0	1.6
73.7	241.6	14.87	58.77	2.3	0.1
78.0	255.8	15.02	59.04	34.6	1.9
82.3	270.0	15.20	59.36	41.6	2.3
86.7	284.3	15.49	59.88	66.8	3.7
91.0	298.5	15.83	60.49	78.5	4.3
95.3	312.7	16.11	61.00	64.7	3.5
99.7	326.9	16.37	61.47	59.9	3.3
104.0	341.1	16.80	62.24	99.3	5.4
108.3	355.3	16.98	62.56	41.6	2.3
109.7	359.7	17.10	62.78	89.5	4.9

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		7N-42E-19dc (Date measured 8-9-75)			
5.0	16.4	9.31	48.76	194.0	10.6
10.0	32.8	10.28	50.50	144.0	7.9
15.0	49.2	11.00	51.80	82.0	4.5
20.0	65.6	11.41	52.54	98.0	5.4
25.0	82.0	11.90	53.42	52.0	2.9
30.0	98.4	12.16	53.89	76.0	4.2
35.0	114.8	12.54	54.57	88.0	4.8
40.0	131.2	12.98	55.36	84.0	4.6
45.0	147.6	13.40	56.12	78.0	4.3
50.0	164.0	13.79	56.82	82.0	4.5
55.0	180.4	14.20	57.56	98.0	5.4
60.0	196.8	14.69	58.44	100.0	5.5
65.0	213.2	15.19	59.34	100.0	5.5
70.0	229.6	15.69	60.24	102.0	5.6
75.0	246.0	16.20	61.16	100.0	5.5
80.0	262.4	16.70	62.06	102.0	5.6
85.0	278.8	17.21	62.98	102.0	5.6
90.0	295.2	17.72	63.90	102.0	5.6
95.0	311.6	18.23	64.81	104.0	5.7
100.0	328.0	18.75	65.75	102.0	5.6
105.0	344.4	19.26	66.67	126.0	6.9
110.0	360.8	19.89	67.80	80.0	4.4
115.0	377.2	20.29	68.52	70.0	3.8
120.0	393.6	20.64	69.15	52.0	2.9
125.0	410.0	29.90	69.62	58.0	3.2
130.0	426.4	21.19	70.14	50.0	2.7
135.0	442.8	21.44	70.59	154.0	8.5
140.0	459.2	22.21	71.98	98.0	5.4
145.0	475.6	22.70	72.86	56.0	3.1
150.0	492.0	22.98	73.36	114.0	6.3
155.0	508.4	23.55	74.39	118.0	6.5
160.0	524.8	24.14	75.45	106.0	5.8
165.0	541.2	24.67	76.41	96.0	5.3
170.0	557.6	25.15	77.27	230.0	12.6
175.0	574.0	26.30	79.34	178.0	9.8
180.0	590.4	27.19	80.94	184.0	10.1
185.0	606.8	28.11	82.60	218.0	12.0
190.0	623.2	29.20	84.56	298.0	16.4
195.0	639.6	30.69	87.24	346.7	19.0
196.5	644.5	31.21	88.18		

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		7N-42E-29bd (Date measured 8-8-75)			
5.0	16.4	9.01	48.22		
10.0	32.8	10.14	50.25	226.0	12.4
15.0	49.2	10.65	51.17	102.0	5.6
20.0	65.6	11.29	52.32	128.0	7.0
25.0	82.0	12.04	53.67	150.0	8.2
30.0	98.4	12.34	54.21	60.0	3.3
32.5	106.6	12.79	55.02	180.0	9.9
35.0	114.8	13.12	55.62	132.0	7.2
40.0	131.2	13.64	56.55	104.0	5.7
42.5	139.4	14.00	57.20	144.0	7.9
45.0	147.6	14.70	58.46	280.0	15.4
47.5	155.8	14.90	58.82	80.0	4.4
50.0	164.0	15.20	59.36	120.0	6.6
55.0	180.4	15.54	59.97	68.0	3.7
60.0	196.8	15.93	60.67	78.0	4.3
65.0	213.2	16.65	61.97	144.0	7.9
70.0	229.6	17.41	63.34	152.0	8.3
75.0	246.0	17.83	64.09	84.0	4.6
80.0	262.4	18.62	65.52	158.0	8.7
85.0	278.8	19.25	66.65	126.0	6.9
90.0	295.2	19.90	67.82	130.0	7.1
95.0	311.6	20.60	69.08	140.0	7.7
100.0	328.0	21.41	70.54	162.0	8.9
101.0	331.3	21.56	70.81	150.0	8.2
		7N-42E-30ad (Date measured 8-9-75)			
5.0	16.4	13.13	55.63		
10.0	32.8	10.40	50.72	-546.0	-30.0
15.0	49.2	11.13	52.03	146.0	8.0
20.0	65.6	12.40	54.32	254.0	13.9
25.0	82.0	13.11	55.60	142.0	7.8
30.0	98.4	13.82	56.88	142.0	7.8
35.0	114.8	14.60	58.28	156.0	8.6
40.0	131.2	15.19	59.34	118.0	6.5
45.0	147.6	15.86	60.55	134.0	7.4
50.0	164.0	16.56	61.81	140.0	7.7
55.0	180.4	16.83	62.29	54.0	3.0
60.0	196.8	17.77	63.99	188.0	10.3
65.0	213.2	18.57	65.43	160.0	8.8

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		7N-42E-30ad *(Continued)*			
70.0	229.6	19.25	66.65	136.0	7.5
75.0	246.0	19.91	67.84	132.0	7.2
80.0	262.4	20.35	68.63	88.0	4.8
85.0	278.8	21.08	69.94	146.0	8.0
90.0	295.2	21.67	71.01	118.0	6.5
95.0	311.6	22.29	72.12	124.0	6.8
100.0	328.0	22.92	73.26	126.0	6.9
105.0	344.4	23.70	74.66	156.0	8.6
107.0	351.0	24.12	75.42	210.0	11.5
		7N-42E-32bb (Date measured 7-31-74)			
10.0	32.8	7.50	45.50		
20.0	65.6	13.27	55.89	577.0	31.7
30.0	98.4	14.88	58.79	161.0	8.8
40.0	131.2	16.37	61.47	149.0	8.2
50.0	164.0	17.77	63.99	140.0	7.7
60.0	196.8	19.67	67.41	190.0	10.4
70.0	229.6	21.46	70.63	179.0	9.8
80.0	262.4	23.54	74.37	208.0	11.4
90.0	295.2	25.56	78.01	202.0	11.1
100.0	328.0	27.46	81.43	190.0	10.4
110.0	360.8	29.54	85.17	208.0	11.4
120.0	393.6	31.39	88.50	185.0	10.2
130.0	426.4	32.37	90.27	98.0	5.4
140.0	459.2	33.40	92.12	103.0	5.7
150.0	492.0	33.75	92.75	35.0	1.9
		7N-42E-33bd (Date measured 8-18-74)			
10.0	32.8	10.10	50.18		
20.0	65.6	12.72	54.90	262.0	14.4
30.0	98.4	14.00	57.20	128.0	7.0
40.0	131.2	14.89	58.80	89.0	4.9
50.0	164.0	15.37	59.67	48.0	2.6
60.0	196.8	16.19	61.14	82.0	4.5
70.0	229.6	17.16	62.89	97.0	5.3
80.0	262.4	18.03	64.45	87.0	4.8

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		7N-42E-33bd *(Continued)*			
90.0	295.2	18.85	65.93	82.0	4.5
100.0	328.0	19.86	67.75	101.0	5.5
110.0	360.8	21.05	69.89	119.0	6.5
120.0	393.6	23.73	74.71	268.0	14.7
130.0	426.4	25.01	77.02	128.0	7.0
		7N-43E-12bb (Date measured 8-16-76)			
5.0	16.4	7.64	45.75		
10.0	32.8	7.43	45.37	-42.0	-2.3
15.0	49.2	7.32	45.18	-22.0	-1.2
20.0	65.6	7.02	44.64	-60.0	-3.3
25.0	82.0	7.06	44.71	8.0	0.4
30.0	98.4	6.97	44.55	-18.0	-1.0
35.0	114.8	7.05	44.69	16.0	0.9
40.0	131.2	7.06	44.71	2.0	0.1
45.0	147.6	7.14	44.85	16.0	0.9
50.0	164.0	7.12	44.82	-.40	-0.2
55.0	180.4	7.20	44.96	16.0	0.9
60.0	196.8	7.27	45.09	14.0	0.8
65.0	213.2	7.32	45.18	10.0	0.5
70.0	229.6	7.40	45.32	16.0	0.9
75.0	246.0	7.47	45.45	14.0	0.8
80.0	262.4	7.55	45.59	16.0	0.9
85.0	278.8	7.60	45.68	10.0	0.5
90.0	295.2	7.66	45.79	12.0	0.7
95.0	311.6	7.75	45.95	18.0	1.0
100.0	328.0	7.85	46.13	20.0	1.1
105.0	344.4	7.89	46.20	8.0	0.4
110.0	360.8	8.06	46.51	34.0	1.9
113.0	370.6	8.15	46.67	30.0	1.6
		7N-43E-21aa (Date measured 8-12-75)			
5.0	16.4	9.73	49.51		
10.0	32.8	9.49	49.08	-48.0	-2.6
15.0	49.2	9.98	49.96	98.0	5.4
20.0	65.6	10.36	50.65	76.0	4.2
25.0	82.0	9.92	49.86	-88.0	-4.8

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		7N-43E-21aa *(Continued)*			
30.0	98.4	10.02	50.04	20.0	1.1
35.0	114.8	10.02	50.04	0.0	0.0
40.0	131.2	10.13	50.23	22.0	1.2
45.0	147.6	10.13	50.23	0.0	0.0
50.0	164.0	10.22	50.40	18.0	1.0
55.0	180.4	10.32	50.58	20.0	1.1
60.0	196.8	10.39	50.70	14.0	0.8
65.0	213.2	10.42	50.76	6.0	0.3
70.0	229.6	10.52	50.94	20.0	1.1
75.0	246.0	10.61	51.10	18.0	1.0
80.0	262.4	10.69	51.24	16.0	0.9
90.0	295.2	10.85	51.53	16.0	0.9
100.0	328.0	11.02	51.84	17.0	0.9
110.0	360.8	11.20	52.16	18.0	1.0
120.0	393.6	11.37	52.47	17.0	0.9
130.0	426.4	11.54	52.77	17.0	0.9
140.0	459.2	11.66	52.99	12.0	0.7
145.0	475.6	12.55	54.59	178.0	9.8
150.0	492.0	12.62	54.72	14.0	0.8
175.0	574.0	12.93	55.27	12.4	0.7
200.0	656.0	13.06	55.51	5.2	0.3
205.0	672.4	13.16	55.69	20.0	1.1
210.0	688.8	13.18	55.72	4.0	0.2
215.0	705.2	13.24	55.83	12.0	0.7

7N-43E-30ccc
(Date measured 8-14-75)

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
10.0	32.8	9.02	48.24		
15.0	49.2	9.53	49.15	102.0	5.6
20.0	65.6	9.87	49.77	68.0	3.7
25.0	82.0	10.31	50.56	88.0	4.8
30.0	98.4	10.72	51.30	82.0	4.5
35.0	114.8	11.59	52.86	174.0	9.5
40.0	131.2	12.68	54.82	218.0	12.0
45.0	147.6	13.33	55.99	130.0	7.1
50.0	164.0	13.96	57.13	126.0	6.9
55.0	180.4	14.49	58.08	106.0	5.8
60.0	196.8	14.96	58.93	94.0	5.2

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		7N-43E-30ccc *(Continued)*			
65.0	213.2	15.60	60.08	128.0	7.0
70.0	229.6	16.05	60.89	90.0	4.9
75.0	246.0	16.59	61.86	108.0	5.9
80.0	262.4	17.14	62.85	110.0	6.0
85.0	278.8	17.64	63.75	100.0	5.5
90.0	295.2	18.20	64.76	112.0	6.1
95.0	311.6	18.76	65.77	112.0	6.1
100.0	328.0	19.22	66.60	92.0	5.0
105.0	344.4	19.75	67.55	106.0	5.8
110.0	360.8	20.33	68.59	116.0	6.4
115.0	377.2	20.82	69.48	98.0	5.4
120.0	393.6	21.38	70.48	112.0	6.1
125.0	410.0	21.86	71.35	96.0	5.3
130.0	426.4	22.52	72.54	132.0	7.2
135.0	442.8	23.05	73.49	106.0	5.8
140.0	459.2	23.93	75.07	176.0	9.7
145.0	475.6	25.35	77.63	284.0	15.6
150.0	492.0	25.55	77.99	40.0	2.2
155.0	508.4	25.67	78.21	24.0	1.3
160.0	524.8	25.75	78.35	16.0	0.9
165.0	541.2	25.81	78.46	12.0	0.7
170.0	557.6	25.91	78.64	20.0	1.1
17.50	574.0	26.06	78.91	30.0	1.6
180.0	590.4	26.17	79.11	22.0	1.2
185.0	606.8	26.26	79.27	18.0	1.0
190.0	623.2	26.36	79.45	20.0	1.1
195.0	639.6	26.42	79.56	12.0	0.7
200.0	656.0	26.51	79.72	18.0	1.0
205.0	672.4	26.60	79.88	18.0	1.0
210.0	688.8	26.66	79.99	12.0	0.7
215.0	705.2	27.53	81.55	174.0	9.5
220.0	721.6	29.44	84.99	382.0	21.0
225.0	738.0	30.66	87.19	244.0	13.4
230.0	754.4	31.91	89.44	250.0	13.7
235.0	770.8	35.01	95.02	620.0	34.0
240.0	787.2	38.19	100.74	636.0	34.9
245.0	803.6	38.55	101.39	72.0	4.0
250.0	820.0	39.05	102.29	100.0	5.5
255.0	836.4	39.74	103.53	138.0	7.6
255.3	837.2	39.89	103.80	600.0	32.9

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		7N-43E-32bc (Date measured 8-21-73)			
5.0	16.4	6.14	43.05		
50.0	164.0	9.01	48.22	63.8	3.5
120.0	393.6	9.91	49.84	12.9	0.7
130.0	426.4	10.00	50.00	9.0	0.5
140.0	459.2	10.15	50.27	15.0	0.8
150.0	492.0	10.28	50.50	13.0	0.7
160.0	524.8	10.41	50.74	13.0	0.7
170.0	557.6	10.54	50.97	13.0	0.7
180.0	590.4	10.67	51.21	13.0	0.7
190.0	623.2	10.79	51.42	12.0	0.7
200.0	656.0	10.92	51.66	13.0	0.7
210.0	688.8	11.03	51.85	11.0	0.6
220.0	721.6	11.13	52.03	10.0	0.5
230.0	754.4	11.23	52.21	10.0	0.5
240.0	787.2	11.34	52.41	11.0	0.6
		6N-4W-17bdb (Date measured 7-26-74)			
10.0	32.8	9.50	49.10		
15.0	49.2	13.68	56.62	836.0	45.9
20.0	65.6	14.71	58.48	206.0	11.3
		6N-4W-18bbd (Date measured 7-26-74)			
10.0	32.8	14.23	57.61		
20.0	65.6	15.02	59.04	79.0	4.3
30.0	98.4	15.69	60.24	67.0	3.7
40.0	131.2	17.21	62.98	152.0	8.3
		6N-4W-31cdc (Date measured 7-26-74)			
10.0	32.8	14.99	58.98		
15.0	49.2	16.36	61.45	274.0	15.0
20.0	65.6	16.74	62.13	76.0	4.2
30.0	98.4	17.43	63.37	69.0	3.8
40.0	131.2	18.75	65.75	132.0	7.2

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

6N-4W-31dcd
(Date measured 6-15-74)

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
5.0	16.4	10.52	50.94		
10.0	32.8	14.15	57.47	726.0	39.8
15.0	49.2	14.49	58.08	68.0	3.7
20.0	65.6	15.19	59.34	140.0	7.7
25.0	82.0	15.38	59.68	38.0	2.1
30.0	98.4	15.58	60.04	40.0	2.2
35.0	114.8	15.88	60.58	60.0	3.3
40.0	131.2	16.12	61.02	48.0	2.6
45.0	147.6	16.79	62.22	134.0	7.4
50.0	164.0	17.16	62.89	74.0	4.1
55.0	180.4	17.36	63.25	40.0	2.2
60.0	196.8	17.58	63.64	44.0	2.4
65.0	213.2	17.77	63.99	38.0	2.1
70.0	229.6	18.05	64.49	56.0	3.1
75.0	246.0	18.20	64.76	30.0	1.6

6N-4W-32aad
(Date measured 7-26-74)

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
10.0	32.8	13.77	56.79		
15.0	49.2	14.80	58.64	206.0	11.3
20.0	65.6	15.17	59.31	74.0	4.1
30.0	98.4	15.52	59.94	35.0	1.9
40.0	131.2	16.03	60.85	51.0	2.8
50.0	164.0	16.59	61.86	56.0	3.1

6N-2E-29ba
(Date measured 2-3-76)

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
5.0	16.4	10.55	50.99		
10.0	32.8	11.88	53.38	266.0	14.6
15.0	49.2	12.18	53.92	60.0	3.3
20.0	65.6	12.64	54.75	92.0	5.0
25.0	82.0	12.94	55.29	60.0	3.3
30.0	98.4	13.25	55.85	62.0	3.4
35.0	114.8	13.63	56.53	76.0	4.2
40.0	131.2	13.94	57.09	62.0	3.4
45.0	147.6	14.23	57.61	58.0	3.2
50.0	164.0	14.57	58.23	68.0	3.7
55.0	180.4	14.83	58.69	52.0	2.9

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		6N-2E-29ba *(Continued)*			
60.0	196.8	15.20	59.36	74.0	4.1
65.0	213.2	15.51	59.92	62.0	3.4
70.0	229.6	15.81	60.46	60.0	3.3
75.0	246.0	16.14	61.05	66.0	3.6
80.0	262.4	16.44	61.59	60.0	3.3
85.0	278.8	16.75	62.15	62.0	3.4
90.0	295.2	17.07	62.73	64.0	3.5
95.0	311.6	17.38	63.28	62.0	3.4
100.0	328.0	17.68	63.82	60.0	3.3
105.0	344.4	17.98	64.36	60.0	3.3
110.0	360.8	18.30	64.94	64.0	3.5
115.0	377.2	18.61	65.50	62.0	3.4
120.0	393.6	18.94	66.09	66.0	3.6
125.0	410.0	19.24	66.63	60.0	3.3
130.0	426.4	19.56	67.21	64.0	3.5
135.0	442.8	19.87	67.77	62.0	3.4
140.0	459.2	20.19	68.34	64.0	3.5
145.0	475.6	20.51	68.92	64.0	3.5
150.0	492.0	20.82	69.48	62.0	3.4
150.3	493.0	20.91	69.64	300.0	16.5
		6N-36E-11aba (Date measured 8-26-72)			
10.0	32.8	9.89	49.80	170.0	9.3
15.0	49.2	10.74	51.33	74.0	4.1
20.0	65.6	11.11	52.00	58.0	3.2
25.0	82.0	11.40	52.52	-130.0	-7.1
30.0	98.4	10.75	51.35	0.0	0.0
35.0	114.8	10.75	51.35	0.0	0.0
40.0	131.2	10.75	51.35	0.0	0.0
45.0	147.6	10.75	51.35	0.0	0.0
50.0	164.0	10.75	51.35	0.0	0.0
55.0	180.4	10.75	51.35	-4.0	-0.2
60.0	196.8	10.73	51.31	0.0	0.0
65.0	213.2	10.73	51.31	-2.0	-0.1
70.0	229.6	10.72	51.30	0.0	0.0
75.0	246.0	10.72	51.30	-26.0	-1.4
80.0	262.4	10.59	51.06	6.0	0.3
85.0	278.8	10.62	51.12	-14.0	-0.8
90.0	295.2	10.55	50.99	-2.0	-0.1
95.0	311.6	10.54	50.97		

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		6N-36E-11aba *(Continued)*			
100.0	328.0	10.34	50.61	-40.0	-2.2
105.0	344.4	10.32	50.58	-4.0	-0.4
110.0	360.8	10.25	50.45	-14.0	-0.8
115.0	377.2	10.14	50.25	-22.0	-1.2
120.0	393.6	9.78	49.60	-72.0	-4.0
125.0	410.0	9.59	49.26	-38.0	-2.1
130.0	426.4	9.56	49.21	-6.0	-0.3
135.0	442.8	9.50	49.10	-12.0	-0.7
140.0	459.2	9.38	48.88	-24.0	-1.3
145.0	475.6	9.32	48.78	-12.0	-0.7
150.0	492.0	9.32	48.78	0.0	0.0
155.0	508.4	9.33	48.79	2.0	0.1
		6N-37E-29ac (Date measured 7-1-74)			
10.0	32.8	8.86	47.95		
20.0	65.6	9.87	49.77	101.0	5.5
30.0	98.4	9.77	49.59	-10.0	-0.5
40.0	131.2	9.52	49.14	-25.0	-1.4
50.0	164.0	9.19	48.54	-33.0	-1.8
60.0	196.8	8.91	48.04	-28.0	-1.5
70.0	229.6	8.70	47.66	-21.0	-1.2
80.0	262.4	8.52	47.34	-18.0	-1.0
90.0	295.2	8.35	47.03	-17.0	-0.9
100.0	328.0	8.19	46.74	-16.0	-0.9
110.0	360.8	8.09	46.56	-10.0	-0.5
120.0	393.6	8.08	46.54	-1.0	-0.1
130.0	426.4	8.09	46.56	1.0	0.1
140.0	459.2	8.10	46.58	1.0	0.1
150.0	492.0	8.12	46.62	2.0	0.1
160.0	524.8	8.12	46.62	0.0	0.0
		6N-38E-25ac (Date measured 8-1-74)			
10.0	32.8	11.73	53.11		
20.0	65.6	11.22	52.20	-51.0	-2.8
30.0	98.4	8.78	47.80	-244.0	-13.4
40.0	131.2	8.06	46.51	-72.0	-4.0

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

6N-38E-25ac *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
50.0	164.0	8.07	46.53	1.0	0.1
60.0	196.8	8.13	46.63	6.0	0.3
70.0	229.6	8.23	46.81	10.0	0.5
80.0	262.4	8.40	47.12	17.0	0.9
90.0	295.2	8.66	47.59	26.0	1.4
100.0	328.0	8.79	47.82	13.0	0.7
110.0	360.8	8.93	48.07	14.0	0.8
120.0	393.6	9.20	48.56	27.0	1.5
130.0	426.4	9.59	49.26	39.0	2.1
140.0	459.2	9.84	49.71	25.0	1.4
150.0	492.0	10.04	50.07	20.0	1.1
160.0	524.8	10.12	50.22	8.0	0.4
161.0	528.1	10.13	50.23	10.0	0.5

6N-41E-11cdb
(Date measured 8-15-74)

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
10.0	32.8	7.25	45.05		
20.0	65.6	9.52	49.14	227.0	12.5
30.0	98.4	11.39	52.50	187.0	10.3
40.0	131.2	12.64	54.75	125.0	6.9
50.0	164.0	14.32	57.78	168.0	9.2
60.0	196.8	15.50	59.90	118.0	6.5
70.0	229.6	16.43	61.57	93.0	5.1
80.0	262.4	16.96	62.53	53.0	2.9
90.0	295.2	18.14	64.65	118.0	6.5
100.0	328.0	19.45	67.01	131.0	7.2
110.0	360.8	21.22	70.20	177.0	9.7

5N-36E-2bda
(Date measured 8-18-71)

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
125.0	410.0	10.07	50.13		
130.0	426.4	10.68	51.22	122.0	6.7
135.0	442.8	10.68	51.22	0.0	0.0
140.0	459.2	10.68	51.22	0.0	0.0
145.0	475.6	10.68	51.22	0.0	0.0
150.0	492.0	10.68	51.22	0.0	0.0

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		5N-36E-22bb (Date measured 8-13-75)			
5.0	16.4	9.87	49.77		
10.0	32.8	10.07	50.13	40.0	2.2
15.0	49.2	10.35	50.63	56.0	3.1
20.0	65.6	9.55	49.19	-160.0	-8.8
25.0	82.0	9.51	49.12	-8.0	-0.4
30.0	98.4	9.49	49.08	-4.0	-0.2
35.0	114.8	9.49	49.08	0.0	0.0
40.0	131.2	9.63	49.33	28.0	1.5
45.0	147.6	9.74	49.53	22.0	1.2
50.0	164.0	9.94	49.89	40.0	2.2
55.0	180.4	9.67	49.41	-54.0	-3.0
60.0	196.8	9.71	49.48	8.0	0.4
65.0	213.2	9.76	49.57	10.0	0.5
70.0	229.6	9.84	49.71	16.0	0.9
75.0	246.0	10.18	50.32	68.0	3.7
80.0	262.4	10.46	50.83	56.0	3.1
85.0	278.8	10.36	50.65	-20.0	-1.1
90.0	295.2	10.34	50.61	-4.0	-0.2
95.0	311.6	10.41	50.74	14.0	0.8
100.0	328.0	10.50	50.90	18.0	1.0
105.0	344.4	10.73	51.31	46.0	2.5
110.0	360.8	11.27	52.29	108.0	5.9
115.0	377.2	11.27	52.29	0.0	0.0
120.0	393.6	11.28	52.30	2.0	0.1
125.0	410.0	11.28	52.30	0.0	0.0
130.0	426.4	11.28	52.30	0.0	0.0
135.0	442.8	11.29	52.32	2.0	0.1
140.0	459.2	11.35	52.43	12.0	0.7
145.0	475.6	11.43	52.57	16.0	0.9
150.0	492.0	11.50	52.70	14.0	0.8
155.0	508.4	11.61	52.90	22.0	1.2
160.0	524.8	11.74	53.13	26.0	1.4
165.0	541.2	11.87	53.37	26.0	1.4
170.0	557.6	12.01	53.62	28.0	1.5
175.0	574.0	12.12	53.82	22.0	1.2
180.0	590.4	12.29	54.12	34.0	1.9
181.0	593.7	12.31	54.16	20.0	1.1

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		5N-37E-21bb (Date measured 8-13-75)			
5.0	16.4	9.09	48.36	-34.0	-1.9
10.0	32.8	8.92	48.06	62.0	3.4
15.0	49.2	9.23	48.61	8.0	0.4
20.0	65.6	9.27	48.69	18.0	1.0
25.0	82.0	9.36	48.85	6.0	0.3
30.0	98.4	9.39	48.90	-4.0	-0.2
35.0	114.8	9.37	48.87	0.0	0.0
40.0	131.2	9.37	48.87	-10.0	-0.5
45.0	147.6	9.32	48.78	-16.0	-0.9
50.0	164.0	9.24	48.63	-10.0	-0.5
55.0	180.4	9.19	48.54	16.0	0.9
60.0	196.8	9.27	48.69	-46.0	-2.5
65.0	213.2	9.04	48.27	-4.0	-0.2
70.0	229.6	9.02	48.24	-2.0	-1.0
75.0	246.0	9.01	48.22	-2.0	-1.0
80.0	262.4	9.00	48.20	0.0	0.0
85.0	278.8	9.00	48.20	14.0	0.8
90.0	295.2	9.07	48.33	4.0	0.2
95.0	311.6	9.09	48.36	-14.0	-0.8
100.0	328.0	9.02	48.24	0.0	0.0
105.0	344.4	9.02	48.24	4.0	0.2
110.0	360.8	9.04	48.27	2.0	0.1
115.0	377.2	9.05	48.29	4.0	0.2
120.0	393.6	9.07	48.33	14.0	0.8
125.0	410.0	9.14	48.45	-10.0	-0.5
130.0	426.4	9.09	48.36	2.0	0.1
135.0	442.8	9.10	48.38	0.0	0.0
140.0	459.2	9.10	48.38	4.0	0.2
145.0	475.6	9.12	48.42		
		5N-38E-22bb (Date measured 8-13-75)			
5.0	16.4	10.23	50.41	-52.0	-2.9
10.0	32.8	9.97	49.95	-300.0	-16.5
11.5	37.7	9.52	49.14		

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

5N-40E-17aba
(Date measured 8-14-74)

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
50.0	164.0	8.00	46.40		
60.0	196.8	8.20	46.76	20.0	1.1
70.0	229.6	9.22	48.60	102.0	5.6
80.0	262.4	9.60	49.28	38.0	2.1
90.0	295.2	9.65	49.37	5.0	0.3
100.0	328.0	10.22	50.40	57.0	3.1
110.0	360.8	10.85	51.53	63.0	3.5
120.0	393.6	11.00	51.80	15.0	0.8
130.0	426.4	11.32	52.38	32.0	1.8
140.0	459.2	12.56	54.61	124.0	6.8
145.0	475.6	12.67	54.81	22.0	1.2

4N-26E-21abb
(Date measured 9-19-75)

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
5.0	16.4	13.70	56.66		
10.0	32.8	10.40	50.72	-660.0	-36.2
15.0	49.2	8.14	46.65	-452.0	-24.8
20.0	65.6	8.09	46.56	-10.0	-0.5
25.0	82.0	8.25	46.85	32.0	1.8
30.0	98.4	8.65	47.57	80.0	4.4
35.0	114.8	8.96	48.13	62.0	3.4
40.0	131.2	9.19	48.54	46.0	2.5
45.0	147.6	9.45	49.01	52.0	2.9
50.0	164.0	9.60	49.28	30.0	1.6
55.0	180.4	9.63	49.33	6.0	0.3
60.0	196.8	9.66	49.39	6.0	0.3
65.0	213.2	9.69	49.44	6.0	0.3
70.0	229.6	9.70	49.46	2.0	0.1
75.0	246.0	9.76	49.57	12.0	0.7
80.0	262.4	9.78	49.60	4.0	0.2
85.0	278.8	9.73	49.51	-10.0	-0.5
90.0	295.2	9.66	49.39	-14.0	-0.8
95.0	311.6	9.63	49.33	-6.0	-0.3
100.0	328.0	9.63	49.33	0.0	0.0
105.0	344.4	9.61	49.30	-4.0	-0.2
110.0	360.8	9.59	49.26	-4.0	-0.2
115.0	377.2	9.52	49.14	-14.0	-0.8
120.0	393.6	9.48	49.06	-8.0	-0.4
125.0	410.0	9.51	49.12	6.0	0.3
130.0	426.4	9.54	49.17	6.0	0.3

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
			4N-26E-21abb *(Continued)*		
135.0	442.8	9.58	49.24	8.0	0.4
140.0	459.2	9.62	49.32	8.0	0.4
145.0	475.6	9.61	49.30	-2.0	-0.1
150.0	492.0	9.66	49.39	10.0	0.5
155.0	508.4	9.69	49.44	6.0	0.3
160.0	524.8	9.71	49.48	4.0	0.2
165.0	541.2	9.72	49.50	2.0	0.1
170.0	557.6	9.73	49.51	2.0	0.1
175.0	574.0	9.77	49.59	8.0	0.4
179.0	587.1	9.83	49.69	15.0	0.8
			4N-35E-14aaa (Date measured 8-1-74)		
10.0	32.8	7.60	45.68		
20.0	65.6	9.27	48.69	167.0	9.2
30.0	98.4	9.34	48.81	7.0	0.4
40.0	131.2	9.49	49.08	15.0	0.8
50.0	164.0	9.59	49.26	10.0	0.5
60.0	196.8	9.62	49.32	3.0	0.2
70.0	229.6	10.01	50.02	39.0	2.1
80.0	262.4	10.01	50.02	0.0	0.0
90.0	295.2	10.18	50.32	17.0	0.9
100.0	328.0	10.28	50.50	10.0	0.5
110.0	360.8	10.32	50.58	4.0	0.2
120.0	393.6	10.48	50.86	16.0	0.9
130.0	426.4	10.65	51.17	17.0	0.9
			4N-40E-1dcb (Date measured 8-20-75)		
25.0	82.0	10.80	51.44		
50.0	164.0	9.91	49.84	-35.6	-2.0
75.0	246.0	9.95	49.91	1.6	0.1
100.0	328.0	10.84	51.51	35.6	2.0
125.0	410.0	11.97	53.55	45.2	2.5
150.0	492.0	14.63	58.33	106.4	5.8
155.0	508.4	14.66	58.39	6.0	0.3
160.0	524.8	14.75	58.55	18.0	1.0
165.0	541.2	14.79	58.62	8.0	0.4
170.0	557.6	14.83	58.69	8.0	0.4

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		4N-40E-1dcb *(Continued)*			
175.0	574.0	14.92	58.86	18.0	1.0
180.0	590.4	15.05	59.09	26.0	1.4
185.0	606.8	15.26	59.47	42.0	2.3
190.0	623.2	15.53	59.95	54.0	3.0
195.0	639.6	15.68	60.22	30.0	1.6
200.0	656.0	15.71	60.28	6.0	0.3
205.0	672.4	15.74	60.33	6.0	0.3
210.0	688.8	15.81	60.46	14.0	0.8
215.0	705.2	15.83	60.49	4.0	0.2
220.0	721.6	15.91	60.64	16.0	0.9
225.0	738.0	16.02	60.84	22.0	1.2
230.0	754.4	16.20	61.16	36.0	2.0
235.0	770.8	16.27	61.29	14.0	0.8
240.0	787.2	16.36	61.45	18.0	1.0
245.0	803.6	16.41	61.54	10.0	0.5
248.0	813.4	16.61	61.90	66.7	3.7
		4N-40E-10cad (Date measured 8-14-74)			
10.0	32.8	7.19	44.94		
20.0	65.6	7.70	45.86	51.0	2.8
30.0	98.4	8.87	47.97	117.0	6.4
40.0	131.2	9.32	48.78	45.0	2.5
50.0	164.0	11.75	53.15	243.0	13.3
60.0	196.8	12.73	54.91	98.0	5.4
70.0	229.6	12.80	55.04	7.0	0.4
80.0	262.4	12.93	55.27	13.0	0.7
		4N-40E-12da (Date measured 8-20-75)			
5.0	16.4	16.61	61.90		
10.0	32.8	16.47	61.65	-28.0	-1.5
15.0	49.2	16.18	61.12	-58.0	-3.2
20.0	65.6	16.24	61.23	12.0	0.7
25.0	82.0	15.67	60.21	-114.0	-6.3
30.0	98.4	15.20	59.36	-94.0	-5.2
35.0	114.8	14.21	57.58	-198.0	-10.9
40.0	131.2	14.13	57.43	-16.0	-0.9
45.0	147.6	13.61	56.50	-104.0	-5.7

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		4N-40E-12da *(Continued)*			
50.0	164.0	13.41	56.14	-40.0	-2.2
55.0	180.4	12.98	55.36	-86.0	-4.7
60.0	196.8	12.93	55.27	-10.0	-0.5
65.0	213.2	12.80	55.04	-26.0	-1.4
70.0	229.6	12.77	54.99	-6.0	-0.3
75.0	246.0	12.42	54.36	-70.0	-3.8
80.0	262.4	12.25	54.05	-34.0	-1.9
85.0	278.8	12.12	53.82	-26.0	-1.4
90.0	295.2	12.05	53.69	-14.0	-0.8
95.0	311.6	12.15	53.87	20.0	1.1
100.0	328.0	12.34	54.21	38.0	2.1
105.0	344.4	13.12	55.62	156.0	8.6
110.0	360.8	13.83	56.89	142.0	7.8
115.0	377.2	14.42	57.96	118.0	6.5
120.0	393.6	15.19	59.34	154.0	8.5
125.0	410.0	15.92	60.66	146.0	8.0
130.0	426.4	16.88	62.38	192.0	10.5
135.0	442.8	17.58	63.64	140.0	7.7
140.0	459.2	17.61	63.70	6.0	0.3
145.0	475.6	18.31	64.96	140.0	7.7
150.0	492.0	18.34	65.01	6.0	0.3
155.0	508.4	19.06	66.31	144.0	7.9
160.0	524.8	19.92	67.86	172.0	9.4
165.0	541.2	20.88	69.58	192.0	10.5
170.0	557.6	21.17	70.11	58.0	3.2
		4N-41E-4bda (Date measured 8-21-75)			
5.0	16.4	10.49	50.88		
10.0	32.8	9.07	48.33	-284.0	-15.6
15.0	49.2	8.40	47.12	-134.0	-7.4
20.0	65.6	8.01	46.42	-78.0	-4.3
25.0	82.0	7.81	46.06	-40.0	-2.2
30.0	98.4	7.68	45.82	-26.0	-1.4
35.0	114.8	7.67	45.81	-2.0	-0.1
40.0	131.2	7.81	46.06	28.0	1.5
45.0	147.6	8.07	46.53	52.0	2.9
50.0	164.0	8.42	47.16	70.0	3.8
55.0	180.4	8.64	47.55	44.0	2.4
60.0	196.8	8.77	47.79	26.0	1.4
65.0	213.2	8.91	48.04	28.0	1.5

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		4N-41E-4bda *(Continued)*			
70.0	229.6	9.32	48.78	82.0	4.5
75.0	246.0	10.24	50.43	184.0	10.1
80.0	262.4	12.38	54.28	428.0	23.5
85.0	278.8	12.43	54.37	10.0	0.5
90.0	295.2	12.59	54.66	32.0	1.8
95.0	311.6	12.73	54.91	28.0	1.5
100.0	328.0	12.81	55.06	16.0	0.9
105.0	344.4	12.83	55.09	4.0	0.2
110.0	360.8	12.84	55.11	2.0	0.1
115.0	377.2	12.85	55.13	2.0	0.1
120.0	393.6	12.86	55.15	2.0	0.1
125.0	410.0	12.88	55.18	4.0	0.2
130.0	426.4	12.91	55.24	6.0	0.3
135.0	442.8	12.94	55.29	6.0	0.3
140.0	459.2	12.96	55.33	4.0	0.2
145.0	475.6	12.98	55.36	4.0	0.2
150.0	492.0	12.99	55.38	2.0	0.1
153.0	501.8	12.99	55.38	0.0	0.0
		4N-41E-6db (Date measured 8-22-75)			
5.0	16.4	9.33	48.79		
10.0	32.8	9.03	48.25	-60.0	-3.3
15.0	49.2	8.84	47.91	-38.0	-2.1
20.0	65.6	8.79	47.82	-10.0	-0.5
25.0	82.0	8.83	47.89	8.0	0.4
30.0	98.4	8.87	47.97	8.0	0.4
35.0	114.8	8.97	48.15	20.0	1.1
40.0	131.2	9.01	48.22	8.0	0.4
45.0	147.6	9.04	48.27	6.0	0.3
50.0	164.0	9.18	48.52	28.0	1.5
55.0	180.4	9.39	48.90	42.0	2.3
60.0	196.8	9.45	49.01	12.0	0.7
65.0	213.2	9.53	49.15	16.0	0.9
70.0	229.6	9.63	49.33	20.0	1.1
75.0	246.0	9.66	49.39	6.0	0.3
80.0	262.4	9.72	49.50	12.0	0.7
85.0	278.8	9.86	49.75	28.0	1.5
90.0	295.2	9.96	49.93	20.0	1.1
95.0	311.6	10.36	50.65	80.0	4.4

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		4N-41E-6db *(Continued)*			
100.0	328.0	10.40	50.72	8.0	0.4
105.0	344.4	10.42	50.76	4.0	0.2
110.0	360.8	10.43	50.77	2.0	0.1
115.0	377.2	10.44	50.79	2.0	0.1
120.0	393.6	10.45	50.81	2.0	0.1
125.0	410.0	10.46	50.83	2.0	0.1
		3N-1E-32ad (Date measured 8-11-75)			
5.0	16.4	16.92	62.46		
10.0	32.8	14.29	57.72	-526.0	-28.9
15.0	49.2	13.01	55.42	-256.0	-14.0
20.0	65.6	12.81	55.06	-40.0	-2.2
25.0	82.0	10.50	50.90	-462.0	-25.4
30.0	98.4	11.62	52.92	224.0	12.3
35.0	114.8	12.94	55.29	264.0	14.5
40.0	131.2	13.59	56.46	130.0	7.1
45.0	147.6	14.17	57.51	116.0	6.4
50.0	164.0	14.53	58.15	72.0	4.0
55.0	180.4	15.19	59.34	132.0	7.2
60.0	196.8	15.08	59.14	-22.0	-1.2
62.5	205.0	15.08	59.14	0.0	0.0
		3N-1E-35dd (Date measured 8-23-75)			
5.0	16.4	14.12	57.42		
7.5	24.6	13.16	55.69	-384.0	-21.1
10.0	32.8	13.34	56.01	72.0	4.0
12.5	41.0	13.66	56.59	128.0	7.0
15.0	49.2	13.77	56.79	44.0	2.4
17.5	57.4	13.77	56.79	0.0	0.0
20.0	65.6	13.78	56.80	4.0	0.2
22.5	73.8	13.81	56.86	12.0	0.7
25.0	82.0	13.83	56.89	8.0	0.4
27.5	90.2	13.86	56.95	12.0	0.7
30.0	98.4	13.89	57.00	12.0	0.7

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		3N-2E-2ca (Date measured 7-29-74)			
20.0	65.6	38.64	101.55		
25.0	82.0	40.19	104.34	310.0	17.0
30.0	98.4	42.75	108.95	512.0	28.1
35.0	114.8	44.94	112.89	438.0	24.0
40.0	131.2	46.10	114.98	232.0	12.7
45.0	147.6	46.54	115.77	88.0	4.8
50.0	164.0	46.88	116.38	68.0	3.7
55.0	180.4	47.13	116.83	50.0	2.7
60.0	196.8	47.45	117.41	64.0	3.5
65.0	213.2	47.84	118.11	78.0	4.3
70.0	229.6	48.19	118.74	70.0	3.8
75.0	246.0	48.49	119.28	60.0	3.3
80.0	262.4	49.00	120.20	102.0	5.6
85.0	278.8	49.83	121.69	166.0	9.1
90.0	295.2	50.12	122.22	58.0	3.2
95.0	311.6	50.78	123.40	132.0	7.2
		3N-26E-22ab (Date measured 9-19-75)			
25.0	82.0	8.71	47.68		
50.0	164.0	9.35	48.83	25.6	1.4
75.0	246.0	10.00	50.00	26.0	1.4
100.0	328.0	10.53	50.95	21.2	1.2
125.0	410.0	10.13	50.23	-16.0	-0.9
150.0	492.0	11.14	52.05	40.4	2.2
175.0	574.0	13.14	55.65	80.0	4.4
200.0	656.0	13.34	56.01	8.0	0.4
225.0	738.0	13.36	56.05	0.8	0.0
228.0	747.8	13.35	56.03	-3.3	-0.2
		2N-3W-6dbd (Date measured 8-8-74)			
10.0	32.8	12.25	54.05		
20.0	65.6	13.27	55.89	102.0	5.6
30.0	98.4	14.28	57.70	101.0	5.5
40.0	131.2	15.13	59.23	85.0	4.7
50.0	164.0	16.08	60.94	95.0	5.2

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		2N-3W-6dbd *(Continued)*			
60.0	196.8	17.06	62.71	98.0	5.4
70.0	229.6	18.03	64.45	97.0	5.3
75.0	246.0	18.48	65.26	90.0	4.9
		2N-26E-22dda (Date measured 9-20-75)			
25.0	82.0	8.19	46.74		
50.0	164.0	7.87	46.17	-12.8	-0.7
75.0	246.0	7.84	46.11	-1.2	-0.1
100.0	328.0	7.76	45.97	-3.2	-0.2
125.0	410.0	7.77	45.99	0.4	0.0
150.0	492.0	7.85	46.13	3.2	0.2
175.0	574.0	7.96	46.33	4.4	0.2
200.0	656.0	8.25	46.85	11.6	0.6
209.0	685.5	8.41	47.14	17.8	1.0
		1N-2E-29dd (Date measured 8-23-75)			
5.0	16.4	14.78	58.60		
7.5	24.6	13.72	56.70	-424.0	-23.3
10.0	32.8	13.91	57.04	76.0	4.2
12.5	41.0	14.16	57.49	100.0	5.5
15.0	49.2	14.28	57.70	48.0	2.6
17.5	57.4	14.35	57.83	28.0	1.5
20.0	65.6	14.44	57.99	36.0	2.0
22.5	73.8	14.50	58.10	24.0	1.3
25.0	82.0	14.57	58.23	28.0	1.5
27.5	90.2	14.65	58.37	32.0	1.8
30.0	98.4	14.79	58.62	56.0	3.1
31.1	102.2	14.87	58.77	69.6	3.8
		1S-3E-14ad (Date measured 8-7-74)			
10.0	32.8	10.07	50.13		
20.0	65.6	12.47	54.45	240.0	13.2
30.0	98.4	12.98	55.36	51.0	2.8

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		1S-3E-14ad *(Continued)*			
40.0	131.2	13.44	56.19	46.0	2.5
50.0	164.0	13.75	56.75	31.0	1.7
60.0	196.8	14.35	57.83	60.0	3.3
70.0	229.6	14.60	58.28	25.0	1.4
80.0	262.4	14.72	58.50	12.0	0.7
90.0	295.2	14.78	58.60	6.0	0.3
100.0	328.0	15.38	59.68	60.0	3.3
110.0	360.8	15.85	60.53	47.0	2.6
		1S-5E-35bdb (Date measured 7-22-74)			
5.0	16.4	11.97	53.55		
10.0	32.8	14.45	58.01	496.0	27.2
15.0	49.2	15.15	59.27	140.0	7.7
20.0	65.6	15.55	59.99	80.0	4.4
30.0	98.4	16.08	60.94	53.0	2.9
35.0	114.8	16.20	61.16	24.0	1.3
40.0	131.2	17.15	62.87	190.0	10.4
50.0	164.0	18.13	64.63	98.0	5.4
55.0	180.4	18.19	64.74	12.0	0.7
58.0	190.2	18.26	64.87	23.3	1.3
		1S-9E-23cac (Date measured 2-3-76)			
5.0	16.4	7.50	45.50		
10.0	32.8	8.76	47.77	252.0	13.8
15.0	49.2	9.32	48.78	112.0	6.1
20.0	65.6	9.73	49.51	82.0	4.5
25.0	82.0	10.04	50.07	62.0	3.4
30.0	98.4	10.51	50.92	94.0	5.2
35.0	114.8	10.63	51.13	24.0	1.3
40.0	131.2	10.98	51.76	70.0	3.8
45.0	147.6	11.24	52.23	52.0	2.9
50.0	164.0	11.48	52.66	48.0	2.6
55.0	180.4	11.69	53.04	42.0	2.3
60.0	196.8	11.91	53.44	44.0	2.4
65.0	213.2	12.15	53.87	48.0	2.6
70.0	229.6	12.31	54.16	32.0	1.8

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		1S-9E-23cac *(Continued)*			
75.0	246.0	12.51	54.52	40.0	2.2
80.0	262.4	12.71	54.88	40.0	2.2
85.0	278.8	12.92	55.26	42.0	2.3
90.0	295.2	13.09	55.56	34.0	1.9
95.0	311.6	13.25	55.85	32.0	1.8
100.0	328.0	13.39	56.10	28.0	1.5
105.0	344.4	13.61	56.50	44.0	2.4
110.0	360.8	13.89	57.00	56.0	3.1
115.0	377.2	14.14	57.45	50.0	2.7
120.0	393.6	14.37	57.87	46.0	2.5
125.0	410.0	14.59	58.26	44.0	2.4
130.0	426.4	14.84	58.71	50.0	2.7
135.0	442.8	15.07	59.13	46.0	2.5
140.0	459.2	15.31	59.56	48.0	2.6
145.0	475.6	15.55	59.99	48.0	2.6
150.0	492.0	15.79	60.42	48.0	2.6
153.0	501.8	15.97	60.75	60.0	3.3
		1S-12E-13baa (Date measured 7-19-74)			
5.0	16.4	8.13	46.63		
10.0	32.8	8.91	48.04	156.0	8.6
15.0	49.2	9.42	48.96	102.0	5.6
20.0	65.6	9.78	49.60	72.0	4.0
25.0	82.0	10.11	50.20	66.0	3.6
30.0	98.4	10.45	50.81	68.0	3.7
35.0	114.8	10.83	51.49	76.0	4.2
40.0	131.2	11.55	52.79	144.0	7.9
50.0	164.0	12.42	54.36	87.0	4.8
55.0	180.4	12.80	55.04	76.0	4.2
60.0	196.8	13.34	56.01	108.0	5.9
65.0	213.2	13.75	56.75	82.0	4.5
		1S-13E-21aa (Date measured 7-27-74)			
10.0	32.8	14.53	58.15		
15.0	49.2	15.35	59.63	164.0	9.0
20.0	65.6	15.75	60.35	80.0	4.4

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		1S-13E-21aa *(Continued)*			
25.0	82.0	16.05	60.89	60.0	3.3
30.0	98.4	16.61	61.90	112.0	6.1
35.0	114.8	17.15	62.87	108.0	5.9
40.0	131.2	17.26	63.07	22.0	1.2
45.0	147.6	17.32	63.18	12.0	0.7
47.0	154.2	17.36	63.25	20.0	1.1
		2S-2W-4c (Date measured 7-29-75)			
5.0	16.4	4.81	40.66		
10.0	32.8	5.95	42.71	228.0	12.5
11.0	36.1	6.13	43.03	180.0	9.9
		2S-2W-16d (Date measured 7-16-75)			
5.0	16.4	14.14	57.45		
10.0	32.8	14.99	58.98	170.0	9.3
15.0	49.2	15.59	60.06	120.0	6.6
20.0	65.6	16.13	61.03	108.0	5.9
25.0	82.0	16.56	61.81	86.0	4.7
30.0	98.4	17.18	62.92	124.0	6.8
35.0	114.8	19.00	66.20	364.0	20.0
40.0	131.2	19.10	66.38	20.0	1.1
45.0	147.6	19.22	66.60	24.0	1.3
50.0	164.0	19.44	66.99	44.0	2.4
55.0	180.4	19.65	67.37	42.0	2.3
60.0	196.8	19.90	67.82	50.0	2.7
65.0	213.2	20.16	68.29	52.0	2.9
70.0	229.6	20.51	68.92	70.0	3.8
75.0	246.0	20.78	69.40	54.0	3.0
80.0	262.4	21.06	69.91	56.0	3.1
85.0	278.8	21.36	70.45	60.0	3.3
90.0	295.2	21.74	71.13	76.0	4.2
95.0	311.6	21.94	71.49	40.0	2.2
100.0	328.0	22.31	72.16	74.0	4.1
105.0	344.4	22.53	72.55	44.0	2.4
110.0	360.8	22.88	73.18	70.0	3.8
115.0	377.2	23.09	73.56	42.0	2.3

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		2S-2W-16d *(Continued)*			
120.0	393.6	23.28	73.90	38.0	2.1
125.0	410.0	23.47	74.25	38.0	2.1
130.0	426.4	23.67	74.61	40.0	2.2
135.0	442.8	23.85	74.93	36.0	2.0
140.0	459.2	24.04	75.27	38.0	2.1
142.0	465.8	24.13	75.43	45.0	2.5
		2S-2W-36ba (Date measured 8-10-74)			
10.0	32.8	14.55	58.19		
20.0	65.6	17.34	63.21	279.0	15.3
30.0	98.4	19.50	67.10	216.0	11.9
40.0	131.2	20.30	68.54	80.0	4.4
50.0	164.0	20.80	69.44	50.0	2.7
60.6	196.8	20.93	69.67	13.0	0.7
70.0	229.6	21.42	70.56	49.0	2.7
80.0	262.4	21.89	71.40	47.0	2.6
90.0	295.2	22.01	71.62	12.0	0.7
100.0	328.0	22.12	71.82	11.0	0.6
		2S-2W-36cb (Date measured 8-11-74)			
10.0	32.8	15.41	59.74		
20.0	65.6	17.52	63.54	211.0	11.6
30.0	98.4	19.20	66.56	168.0	9.2
40.0	131.2	21.00	69.80	180.0	9.9
50.0	164.0	22.43	72.37	143.0	7.8
60.0	196.8	23.20	73.76	77.0	4.2
70.0	229.6	23.64	74.55	44.0	2.4
80.0	262.4	24.26	75.67	62.0	3.4
90.0	295.2	24.75	76.55	49.0	2.7
100.0	328.0	25.17	77.31	42.0	2.3
110.0	360.8	25.57	78.03	40.5	2.2
120.0	393.6	25.58	78.05	1.0	0.1
130.0	426.4	25.59	78.06	0.5	0.0
140.0	459.2	25.60	78.08	1.0	0.1
150.0	492.0	25.60	78.09	0.5	0.0
160.0	524.8	25.61	78.10	0.5	0.0
170.0	557.6	25.62	78.12	1.0	0.1

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

2S-2W-36cb *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
180.0	590.4	25.66	78.19	4.0	0.2
190.0	623.2	25.68	78.23	2.5	0.1
200.0	656.0	25.71	78.28	2.5	0.1
210.0	688.8	25.74	78.34	3.5	0.2
220.0	721.6	25.85	78.53	10.5	0.6
230.0	754.4	25.98	78.77	13.5	0.7
240.0	787.2	26.09	78.96	10.5	0.6
250.0	820.0	27.08	80.74	99.0	5.4
260.0	852.8	27.09	80.76	1.0	0.1
270.0	885.6	27.13	80.83	4.0	0.2
280.0	918.4	27.17	80.91	4.0	0.2
290.0	951.2	28.16	82.70	99.5	5.5
300.0	984.0	28.23	82.81	6.5	0.4
310.0	1016.8	28.39	83.10	16.0	0.9
320.0	1049.6	28.42	83.16	3.5	0.2
330.0	1082.4	28.43	83.18	1.0	0.1
340.0	1115.2	28.60	83.48	16.5	0.9
350.0	1148.0	29.68	85.42	108.0	5.9
358.0	1174.2	30.18	86.32	62.5	3.4

2S-1E-14dd
(Date measured 8-23-75)

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
5.0	16.4	12.64	54.75		
7.5	24.6	13.12	55.62	192.0	10.5
10.0	32.8	13.41	56.14	116.0	6.4
12.5	41.0	13.67	56.61	104.0	5.7
15.0	49.2	13.96	57.13	116.0	6.4
17.5	57.4	14.12	57.42	64.0	3.5
20.0	65.6	14.24	57.63	48.0	2.6
22.5	73.8	14.40	57.92	64.0	3.5
25.0	82.0	14.56	58.21	64.0	3.5
27.5	90.2	14.72	58.50	64.0	3.5
30.0	98.4	14.90	58.82	72.0	4.0
31.1	102.0	14.98	58.96	72.7	4.0

2S-4E-9ddd
(Date measured 8-27-75)

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
5.0	16.4	13.09	55.56		
10.0	32.8	13.48	56.26	78.0	4.3

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		2S-4E-9ddd *(Continued)*			
15.0	49.2	13.55	56.39	14.0	0.8
20.0	65.6	13.73	56.71	36.0	2.0
25.0	82.0	14.11	57.40	76.0	4.2
30.0	98.4	14.33	57.79	44.0	2.4
35.0	114.8	14.57	58.23	48.0	2.6
40.0	131.2	14.78	58.60	42.0	2.3
45.0	147.6	15.23	59.41	90.0	4.9
50.0	164.0	15.48	59.86	50.0	2.7
55.0	180.4	15.74	60.33	52.0	2.9
60.0	196.8	15.95	60.71	42.0	2.3
65.0	213.2	16.06	60.91	22.0	1.2
70.0	229.6	16.30	61.34	48.0	2.6
75.0	246.0	16.48	61.66	36.0	2.0
80.0	262.4	16.93	62.47	90.0	4.9
85.0	278.8	17.23	63.01	60.0	3.3
90.0	295.2	17.38	63.28	30.0	1.6
95.0	311.6	17.57	63.63	38.0	2.1
100.0	328.0	17.77	63.99	40.0	2.2
105.0	344.4	17.92	64.26	30.0	1.6
110.0	360.8	18.15	64.67	46.0	2.5
115.0	377.2	18.38	65.08	46.0	2.5
120.0	393.6	18.56	65.41	36.0	2.0
125.0	410.0	18.77	65.79	42.0	2.3
130.0	426.4	18.94	66.09	34.0	1.9
135.0	442.8	19.07	66.33	26.0	1.4
140.0	459.2	19.28	66.70	42.0	2.3
145.0	475.6	19.50	67.10	44.0	2.4
150.0	492.0	19.70	67.46	40.0	2.2
155.0	508.4	19.87	67.77	34.0	1.9
160.0	524.8	20.00	68.00	26.0	1.4
		2S-4E-11bbd (Date measured 8-26-75)			
5.0	16.4	13.83	56.89		
10.0	32.8	13.91	57.04	16.0	0.9
15.0	49.2	14.02	57.24	22.0	1.2
20.0	65.6	14.19	57.54	34.0	1.9
25.0	82.0	14.29	57.72	20.0	1.1
30.0	98.4	14.52	58.14	46.0	2.5
35.0	114.8	14.57	58.23	10.0	0.5
40.0	131.2	14.61	58.30	8.0	0.4

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		2S-4E-11bbd *(Continued)*			
45.0	147.6	14.65	58.37	8.0	0.4
50.0	164.0	14.65	58.37	0.0	0.0
55.0	180.4	14.60	58.28	-10.0	-0.5
60.0	196.8	14.84	58.71	48.0	2.6
65.0	213.2	15.81	60.46	194.0	10.6
70.0	229.6	16.07	60.93	52.0	2.9
75.0	246.0	16.25	61.25	36.0	2.0
80.0	262.4	16.43	61.57	36.0	2.0
85.0	278.8	16.72	62.10	58.0	3.2
90.0	295.2	16.93	62.47	42.0	2.3
95.0	311.6	17.10	62.78	34.0	1.9
100.0	328.0	17.30	63.14	40.0	2.2
105.0	344.4	17.50	63.50	40.0	2.2
110.0	360.8	17.64	63.75	28.0	1.5
115.0	377.2	17.89	64.20	50.0	2.7
120.0	393.6	18.25	64.85	72.0	4.0
125.0	410.0	18.41	65.14	32.0	1.8
130.0	426.4	18.60	65.48	38.0	2.1
135.0	442.8	18.81	65.86	42.0	2.3
140.0	459.2	19.02	66.24	42.0	2.3
145.0	475.6	19.15	66.47	26.0	1.4
		2S-4E-36dc (Date measured 8-23-75)			
5.0	16.4	12.39	54.30		
10.0	32.8	12.55	54.59	32.0	1.8
15.0	49.2	12.68	54.82	26.0	1.4
20.0	65.6	12.78	55.00	20.0	1.1
25.0	82.0	12.89	55.20	22.0	1.2
30.0	98.4	12.97	55.35	16.0	0.9
35.0	114.8	13.10	55.58	26.0	1.4
40.0	131.2	13.25	55.85	30.0	1.6
45.0	147.6	13.32	55.98	14.0	0.8
50.0	164.0	13.52	56.34	40.0	2.2
55.0	180.4	13.76	56.77	48.0	2.6
60.0	196.8	13.97	57.15	42.0	2.3
65.0	213.2	14.11	57.40	28.0	1.5
70.0	229.6	14.36	57.85	50.0	2.7
75.0	246.0	14.99	58.98	126.0	6.9
80.0	262.4	15.01	59.02	4.0	0.2
83.0	272.2	15.11	59.20	33.3	1.8

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		2S-5E-15ca (Date measured 7-25-74)			
10.0	32.8	13.04	55.47	25.0	1.4
20.0	65.6	13.29	55.92	15.0	0.8
30.0	98.4	13.44	56.19	20.0	1.1
40.0	131.2	13.64	56.55	107.0	5.9
50.0	164.0	14.71	58.48	8.0	0.4
60.0	196.8	14.79	58.62	426.0	23.4
70.0	229.6	19.05	66.29	130.0	7.1
80.0	262.4	20.35	68.63	379.0	20.8
90.0	295.2	24.14	75.45		
		2S-5E-39dcb (Date measured 8-24-75)			
5.0	16.4	13.02	55.44	-68.0	0.0
10.0	32.8	12.68	54.82	-10.0	-0.5
15.0	49.2	12.63	54.73	-6.0	-0.3
20.0	65.6	12.60	54.68	-16.0	-0.9
25.0	82.0	12.52	54.54	14.0	0.8
30.0	98.4	12.59	54.66	20.0	1.1
35.0	114.8	12.69	54.84	20.0	1.1
40.0	131.2	12.79	55.02	42.0	2.3
45.0	147.6	13.00	55.40	120.0	6.6
50.0	164.0	13.60	56.48	84.0	4.6
55.0	180.4	14.02	57.24	64.0	3.5
60.0	196.8	14.34	57.81	38.0	2.1
65.0	213.2	14.53	58.15	32.0	1.8
70.0	229.6	14.69	58.44	32.0	1.8
75.0	246.0	14.85	58.73	70.0	3.8
80.0	262.4	15.20	59.36	156.0	8.6
85.0	278.8	15.98	60.76	20.0	1.1
90.0	295.2	16.08	60.94		
		2S-5E-36bdc (Date measured 8-2-75)			
5.0	16.4	14.02	57.24	-4.0	-0.2
10.0	32.8	14.00	57.20	-18.0	-1.0
15.0	49.2	13.91	57.04		

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
			2S-6E-11dac (Date measured 7-20-74)		
10.0	32.8	12.18	53.92		
20.0	65.6	9.85	49.73	-233.0	-12.8
30.0	98.4	12.38	54.28	253.0	13.9
40.0	131.2	13.00	55.40	62.0	3.4
50.0	164.0	13.39	56.10	39.0	2.1
60.0	196.8	13.77	56.79	38.0	2.1
70.0	229.6	14.15	57.47	38.0	2.1
80.0	262.4	14.65	58.37	50.0	2.7
90.0	295.2	15.01	59.02	36.0	2.0
100.0	328.0	15.29	59.52	28.0	1.5
110.0	360.8	15.73	60.31	44.0	2.4
120.0	393.6	16.47	61.65	74.0	4.1
130.0	426.4	17.37	63.27	90.0	4.9
140.0	459.2	18.41	65.14	104.0	5.7
150.0	492.0	20.02	68.04	161.0	8.8
160.0	524.8	21.88	71.38	186.0	10.2
170.0	557.6	23.60	74.48	172.0	9.4
180.0	590.4	25.27	77.49	167.0	9.2
190.0	623.2	26.63	79.93	136.0	7.5
200.0	656.0	27.71	81.88	108.0	5.9
210.0	688.8	29.37	84.87	166.0	9.1
220.0	721.6	30.63	87.13	126.0	6.9
230.0	754.4	30.94	87.69	31.0	1.7
240.0	787.2	33.40	92.12	246.0	13.5
250.0	820.0	34.60	94.28	120.0	6.6
260.0	852.8	36.12	97.02	152.0	8.3
270.0	885.6	37.14	98.85	102.0	5.6
280.0	918.4	38.46	101.23	132.0	7.2
290.0	951.2	39.64	103.35	118.0	6.5
300.0	984.0	39.69	103.44	5.0	0.3
310.0	1016.8	40.26	104.47	57.0	3.1
320.0	1049.6	43.95	111.11	369.0	20.2
330.0	1082.4	44.84	112.71	89.0	4.9
340.0	1115.2	45.14	113.25	30.0	1.6
350.0	1148.0	45.35	113.63	21.0	1.2
375.0	1230.0	45.37	113.67	0.8	0.0
400.0	1312.0	45.42	113.76	2.0	0.1
425.0	1394.0	45.69	114.24	11.0	0.6
450.0	1476.0	46.71	116.08	41.0	2.2
475.0	1558.0	47.68	117.82	39.0	2.1
500.0	1640.0	48.03	118.45	14.0	0.8

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		2S-6E-11dac *(Continued)*			
				10.0	0.5
510.0	1672.8	48.13	118.63		
				28.0	1.5
520.0	1705.6	48.41	119.14		
		2S-8E-18ac (Date measured 8-22-75)			
5.0	16.4	8.92	48.06		
7.5	24.6	8.35	47.03	-228.0	-12.5
10.0	32.8	8.62	47.52	108.0	5.9
12.5	41.0	8.72	47.70	40.0	2.2
15.0	49.2	8.76	47.77	16.0	0.9
17.5	57.4	8.82	47.88	24.0	1.3
20.0	65.6	8.89	48.00	28.0	1.5
22.5	73.8	8.94	48.09	20.0	1.1
25.0	82.0	8.99	48.18	20.0	1.1
27.5	90.2	9.06	48.31	28.0	1.5
30.0	98.4	9.13	48.43	28.0	1.5
31.4	103.0	9.19	48.54	42.9	2.4
		2S-20E-1acc (Date measured 7-27-74)			
10.0	32.8	8.28	46.90		
15.0	49.2	9.30	48.74	204.0	11.2
20.0	65.6	9.93	49.87	126.0	6.9
30.0	98.4	10.52	50.94	59.0	3.2
40.0	131.2	11.00	51.80	48.0	2.6
50.0	164.0	11.58	52.84	58.0	3.2
52.0	170.6	12.20	53.96	310.0	17.0
		3S-5E-7a (Date measured 8-24-75)			
5.0	16.4	13.40	56.12		
10.0	32.8	13.27	55.89	-26.0	-1.4
15.0	49.2	13.29	55.92	4.0	0.2
20.0	65.6	13.15	55.67	-28.0	-1.5
25.0	82.0	13.10	55.58	-10.0	-0.5
30.0	98.4	13.06	55.51	-8.0	-0.4

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		3S-5E-7a *(Continued)*			
35.0	114.8	13.64	56.55	116.0	6.4
40.0	131.2	14.05	57.29	82.0	4.5
45.0	147.6	14.25	57.65	40.0	2.2
50.0	164.0	14.73	58.51	96.0	5.3
55.0	180.4	15.23	59.41	100.0	5.5
60.0	196.8	15.84	60.51	122.0	6.7
65.0	213.2	16.47	61.65	126.0	6.9
70.0	229.6	17.20	62.96	146.0	8.0
75.0	246.0	18.64	65.55	288.0	15.8
80.0	262.4	18.66	65.59	4.0	0.2
		3S-7E-9ac (Date measured 8-22-75)			
5.0	16.4	15.33	59.59		
7.5	24.6	14.00	57.20	-532.0	-29.2
10.0	32.8	14.06	57.31	24.0	1.3
12.5	41.0	14.13	57.43	28.0	1.5
15.0	49.2	14.04	57.27	-36.0	-2.0
17.5	57.4	13.88	56.98	-64.0	-3.5
20.0	65.6	13.74	56.73	-56.0	-3.1
22.5	73.8	13.61	56.50	-52.0	-2.9
25.0	82.0	13.63	56.53	8.0	0.4
27.5	90.2	13.64	56.55	4.0	0.2
29.8	97.7	13.72	56.70	34.8	1.9
		3S-12E-35bdb (Date measured 7-23-74)			
10.0	32.8	12.05	53.69		
20.0	65.6	13.11	55.60	106.0	5.8
30.0	98.4	13.38	56.08	27.0	1.5
40.0	131.2	13.44	56.19	6.0	0.3
50.0	164.0	13.50	56.30	6.0	0.3
60.0	196.8	13.64	56.55	14.0	0.8
70.0	229.6	13.76	56.77	12.0	0.7
80.0	262.4	14.05	57.29	29.0	1.6
90.0	295.2	14.30	57.74	25.0	1.4
100.0	328.0	14.40	57.92	10.0	0.5
110.0	360.8	15.03	59.05	63.0	3.5
120.0	393.6	15.07	59.13	4.0	0.2

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		2S-4E-36dc *(Continued)*			
				19.0	1.0
130.0	426.4	15.26	59.47	2.0	0.1
140.0	459.2	15.28	59.50	1.0	0.1
150.0	492.0	15.29	59.52	5.0	0.3
160.0	524.8	15.34	59.61	4.0	0.2
170.0	557.6	15.38	59.68	0.0	0.0
180.0	590.4	15.38	59.68	8.0	0.4
190.0	623.2	15.46	59.83		
		4S-1E-36ba (Date measured 8-23-75)			
5.0	16.4	14.21	57.58	-252.0	-13.8
7.5	24.6	13.58	56.44	100.0	5.5
10.0	32.8	13.83	56.89	64.0	3.5
12.5	41.0	13.99	57.18	0.0	0.0
15.0	49.2	13.99	57.18	20.0	1.1
17.5	57.4	14.04	57.27	44.0	2.4
20.0	65.6	14.15	57.47	48.0	2.6
22.5	73.8	14.27	57.69	44.0	2.4
25.0	82.0	14.38	57.88	48.0	2.6
27.5	90.2	14.50	58.10	44.0	2.4
30.0	98.4	14.61	58.30	40.0	2.2
32.0	105.0	14.69	58.44		
		4S-5E-21ca (Date measured 8-7-74)			
10.0	32.8	17.02	62.64	115.0	6.3
20.0	65.6	18.17	64.71	94.0	5.2
30.0	98.4	19.11	66.40	96.0	5.3
40.0	131.2	20.07	68.13	31.0	1.7
50.0	164.0	20.38	68.68	42.0	2.3
60.0	196.8	20.80	69.44	21.0	1.2
70.0	229.6	21.01	69.82	56.0	3.1
80.0	262.4	21.57	70.83	41.0	2.3
90.0	295.2	21.98	71.56	46.0	2.5
100.0	328.0	22.44	72.39	44.0	2.4
110.0	360.8	22.88	73.18		

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
4S-6E-14ba (Date measured 8-22-75)					
5.0	16.4	13.90	57.02		
7.5	24.6	12.69	54.84	-484.0	-26.6
10.0	32.8	12.73	54.91	16.0	0.9
12.5	41.0	12.99	55.38	104.0	5.7
15.0	49.2	13.18	55.72	76.0	4.2
17.5	57.4	13.27	55.89	36.0	2.0
20.0	65.6	13.34	56.01	28.0	1.5
22.5	73.8	13.40	56.12	24.0	1.3
25.0	82.0	13.49	56.28	36.0	2.0
27.5	90.2	13.61	56.50	48.0	2.6
30.0	98.4	13.70	56.66	36.0	2.0
32.0	105.0	13.78	56.80	40.0	2.2
4S-7E-17cb (Date measured 7-30-75)					
5.0	16.4	1.06	33.91		
10.0	32.8	9.88	49.78	1764.0	96.8
15.0	49.2	7.70	45.86	-436.0	-23.9
20.0	65.6	6.34	43.41	-272.0	-14.9
25.0	82.0	5.74	42.33	-120.0	-6.6
30.0	98.4	4.98	40.96	-152.0	-8.6
35.0	114.8	4.68	40.42	-60.0	-3.3
40.0	131.2	4.52	40.14	-32.0	-1.8
45.0	147.6	4.62	40.32	20.0	1.1
50.0	164.0	4.88	40.78	52.0	2.9
55.0	180.4	6.36	43.45	296.0	16.2
60.0	196.8	6.95	44.51	118.0	6.5
65.0	213.2	7.49	45.48	108.0	5.9
70.0	229.6	8.02	46.44	106.0	5.8
75.0	246.0	8.14	46.65	24.0	1.3
79.0	259.1	8.31	46.96	42.5	2.3
4S-7E-18ad (Date measured 7-30-75)					
5.0	16.4	19.86	67.75		
10.0	32.8	18.64	65.55	-244.0	-13.4
15.0	49.2	17.36	63.25	-256.0	-14.0
20.0	65.6	17.53	63.55	34.0	1.9

4S-7E-18ad *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
25.0	82.0	17.07	62.73	-92.0	-5.0
30.0	98.4	16.69	62.04	-76.0	-4.2
35.0	114.8	15.78	60.40	-182.0	-10.0
40.0	131.2	15.67	60.21	-22.0	-1.2
45.0	147.6	15.47	59.85	-40.0	-2.2
50.0	164.0	15.01	59.02	-92.0	-5.0
55.0	180.4	14.88	58.78	-26.0	-1.4
60.0	196.8	15.38	59.68	100.0	5.5
65.0	213.2	15.11	59.20	-54.0	-3.0
70.0	229.6	15.37	59.67	52.0	2.9
75.0	246.0	15.52	59.94	30.0	1.6
80.0	262.4	16.77	62.19	250.0	13.7
85.0	278.8	18.05	64.49	256.0	14.0
90.0	295.2	19.46	67.03	282.0	15.5
95.0	311.6	20.39	68.70	186.0	10.2
100.0	328.0	20.81	69.46	84.0	4.6
105.0	344.4	21.26	70.27	90.0	4.9
110.0	360.8	21.33	70.39	14.0	0.8
115.0	377.2	21.40	70.52	14.0	0.8
119.0	390.3	22.28	72.10	220.0	12.1

4S-10E-30baa
(Date measured 7-25-74)

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
10.0	32.8	5.50	41.90		
20.0	65.6	8.26	46.87	276.0	15.1
30.0	98.4	14.23	57.61	597.0	32.8
40.0	131.2	17.66	63.79	343.0	18.8
50.0	164.0	18.40	65.12	74.0	4.1
60.0	196.8	16.93	62.47	-147.0	-8.1
70.0	229.6	17.00	62.60	7.0	0.4
80.0	262.4	25.45	77.81	845.0	46.4
90.0	295.2	25.92	78.66	47.0	2.6
100.0	328.0	26.56	79.81	64.0	3.5
110.0	360.8	27.42	81.36	86.0	4.7
120.0	393.6	28.78	83.80	136.0	7.5
130.0	426.4	30.14	86.25	136.0	7.5
140.0	459.2	30.71	87.28	57.0	3.1
150.0	492.0	31.31	88.36	60.0	3.3
160.0	524.8	32.02	89.64	71.0	3.9
170.0	557.6	32.85	91.13	83.0	4.6
180.0	590.4	33.71	92.68	86.0	4.7

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		4S-10E-30baa *(Continued)*			
190.0	623.2	34.66	94.39	95.0	5.2
200.0	656.0	35.51	95.92	85.0	4.7
210.0	688.8	36.55	97.79	104.0	5.7
220.0	721.6	37.47	99.45	92.0	5.0
230.0	754.4	37.98	100.36	51.0	2.8
240.0	787.2	38.79	101.82	81.0	4.4
250.0	820.0	40.28	104.50	149.0	8.2
260.0	852.8	41.00	105.80	72.0	4.0
270.0	885.6	42.16	107.89	116.0	6.4
280.0	918.4	43.91	111.04	175.0	9.6
290.0	951.2	45.88	114.58	197.0	10.8
300.0	984.0	48.12	118.62	224.0	12.3
310.0	1016.8	49.11	120.40	99.0	5.4
320.0	1049.6	49.81	121.66	70.0	3.8
330.0	1082.4	50.24	122.43	43.0	2.4
340.0	1115.2	50.84	123.51	60.0	3.3
350.0	1148.0	51.61	124.90	77.0	4.2
360.0	1180.8	52.23	126.01	62.0	3.4
370.0	1213.6	52.93	127.27	70.0	3.8
380.0	1246.4	53.63	128.53	70.0	3.8
390.0	1279.2	54.20	129.56	57.0	3.1
400.0	1312.0	54.85	130.73	65.0	3.6
410.0	1344.8	55.47	131.85	62.0	3.4
		5S-4W-3acc (Date measured 8-28-74)			
10.0	32.8	2.50	36.50	343.0	18.8
20.0	65.6	5.93	42.67	100.0	5.5
30.0	98.4	6.93	44.47	59.0	3.2
40.0	131.2	7.52	45.54	40.0	2.2
50.0	164.0	7.92	46.26	46.0	2.5
60.0	196.8	8.38	47.08	81.0	4.4
80.0	262.4	10.00	50.00	2.0	0.1
90.0	295.2	10.02	50.04	28.0	1.5
100.0	328.0	10.30	50.54	27.0	1.5
110.0	360.8	10.57	51.03	27.0	1.5
120.0	393.6	10.84	51.51	39.0	2.1
130.0	426.4	11.23	52.21	35.0	1.9
140.0	459.2	11.58	52.84	39.0	2.1
150.0	492.0	11.97	53.55	49.0	2.7
160.0	524.8	12.46	54.43	39.0	2.1
170.0	557.6	12.85	55.13		

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		5S-4W-3acc *(Continued)*			
180.0	590.4	12.99	55.38	14.0	0.8
185.0	606.8	13.22	55.80	46.0	2.5
190.0	623.2	13.42	56.16	40.0	2.2
195.0	639.6	13.65	56.57	46.0	2.5
200.0	656.0	13.90	57.02	50.0	2.7
205.0	672.4	14.15	57.47	50.0	2.7
210.0	688.8	14.44	57.99	58.0	3.2
215.0	705.2	14.70	58.46	52.0	2.9
220.0	721.6	14.96	58.93	52.0	2.9
225.0	738.0	15.22	59.40	52.0	2.9
230.0	754.4	15.47	59.85	50.0	2.7
235.0	770.8	15.72	60.30	50.0	2.7
240.0	787.2	15.96	60.73	48.0	2.6
245.0	803.6	16.22	61.20	52.0	2.9
250.0	820.0	16.56	61.81	68.0	3.7
255.0	836.4	16.86	62.35	60.0	3.3
260.0	852.8	16.99	62.58	26.0	1.4
265.0	869.2	17.10	62.78	22.0	1.2
270.0	885.6	17.25	63.05	30.0	1.6
275.0	902.0	17.44	63.39	38.0	2.1
280.0	918.4	17.64	63.75	40.0	2.2
285.0	934.8	17.81	64.06	34.0	1.9
290.0	951.2	18.06	64.51	50.0	2.7
295.0	967.6	18.27	64.89	42.0	2.3
300.0	984.0	18.47	65.25	40.0	2.2
305.0	1000.4	18.68	65.62	42.0	2.3
310.0	1016.8	18.92	66.06	48.0	2.6
315.0	1033.2	19.16	66.49	48.0	2.6
320.0	1049.6	19.38	66.88	44.0	2.4
325.0	1066.0	19.58	67.24	40.0	2.2
330.0	1082.4	19.84	67.71	52.0	2.9
335.0	1098.8	20.05	68.09	42.0	2.3
340.0	1115.2	20.28	68.50	46.0	2.5
345.0	1131.6	20.51	68.92	46.0	2.5
350.0	1148.0	20.68	69.22	34.0	1.9
355.0	1164.4	20.98	69.76	60.0	3.3
360.0	1180.8	21.39	70.50	82.0	4.5
365.0	1197.2	21.74	71.13	70.0	3.8
370.0	1213.6	22.04	71.67	60.0	3.3
375.0	1230.0	22.30	72.14	52.0	2.9
380.0	1246.4	22.56	72.61	52.0	2.9
385.0	1262.8	22.78	73.00	44.0	2.4
390.0	1279.2	23.00	73.40	44.0	2.4

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		5S-1E-29da (Date measured 8-20-74)			
10.0	32.8	22.65	72.77		
20.0	65.6	29.54	85.17	689.0	37.8
25.0	82.0	30.79	87.42	250.0	13.7
30.0	98.4	31.76	89.17	194.0	10.6
35.0	114.8	32.24	90.03	96.0	5.3
40.0	131.2	33.09	91.56	170.0	9.3
45.0	147.6	37.37	99.27	856.0	47.0
50.0	164.0	40.75	105.35	676.0	37.1
55.0	180.4	42.74	108.93	398.0	21.8
59.0	193.5	42.95	109.31	52.5	2.9
		5S-12E-16bcb (Date measured 7-18-74)			
10.0	32.8	12.78	55.00		
20.0	65.6	17.92	64.26	514.0	28.2
30.0	98.4	30.45	86.81	1253.0	68.8
		5S-12E-26cb (Date measured 8-26-75)			
5.0	16.4	15.55	59.99		
7.5	24.6	13.47	56.25	-832.0	-45.7
10.0	32.8	13.70	56.66	92.0	5.0
12.5	41.0	14.07	57.33	148.0	8.1
15.0	49.2	14.33	57.79	104.0	5.7
17.5	57.4	14.47	58.05	56.0	3.1
20.0	65.6	14.61	58.30	56.0	3.1
22.5	73.8	14.74	58.53	52.0	2.9
25.0	82.0	14.86	58.75	48.0	2.6
27.5	90.2	14.97	58.95	44.0	2.4
30.0	98.4	15.08	59.14	44.0	2.4
31.5	103.3	15.14	59.25	40.0	2.2

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
6S-2E-30cb (Date measured 8-23-75)					
5.0	16.4	14.80	58.64		
7.5	24.6	13.83	56.89	-388.0	-21.3
10.0	32.8	14.24	57.63	164.0	9.0
12.5	41.0	14.71	58.48	188.0	10.3
15.0	49.2	15.13	59.23	168.0	9.2
17.5	57.4	15.45	59.81	128.0	7.0
20.0	65.6	15.74	60.33	116.0	6.4
22.5	73.8	16.09	60.96	140.0	7.7
25.0	82.0	16.41	61.54	128.0	7.0
27.5	90.2	16.71	62.08	120.0	6.6
30.0	98.4	17.00	62.60	116.0	6.4
32.5	106.6	17.31	63.16	124.0	6.8
6S-3E-11ccb (Date measured 8-20-74)					
10.0	32.8	13.57	56.43		
15.0	49.2	14.28	57.70	142.0	7.8
20.0	65.6	15.09	59.16	162.0	8.9
25.0	82.0	15.83	60.49	148.0	8.1
30.0	98.4	16.38	61.48	110.0	6.0
35.0	114.8	16.83	62.29	90.0	4.9
40.0	131.2	17.16	62.89	66.0	3.6
45.0	147.6	17.46	63.43	60.0	3.3
50.0	164.0	17.70	63.86	48.0	2.6
55.0	180.4	17.93	64.27	46.0	2.5
60.0	196.8	18.19	64.74	52.0	2.9
6S-3E-14bcb (Date measured 8-20-74)					
10.0	32.8	14.09	57.36		
15.0	49.2	14.55	58.19	92.0	5.0
20.0	65.6	14.77	58.59	44.0	2.4
25.0	82.0	15.33	59.59	112.0	6.1
30.0	98.4	15.36	59.65	6.0	0.3
35.0	114.8	15.43	59.77	14.0	0.8
40.0	131.2	15.87	60.57	88.0	4.8
45.0	147.6	16.65	61.97	156.0	8.6
50.0	164.0	16.70	62.06	10.0	0.5
55.0	180.4	16.74	62.13	8.0	0.4

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		6S-6E-18ba (Date measured 8-24-75)			
5.0	16.4	16.29	61.32		
7.5	24.6	14.20	57.56	-836.0	-45.9
10.0	32.8	14.47	58.05	108.0	5.9
12.5	41.0	14.74	58.53	108.0	5.9
15.0	49.2	14.96	58.93	88.0	4.8
17.5	57.4	15.10	59.18	56.0	3.1
20.0	65.6	15.26	59.47	64.0	3.5
22.5	73.8	15.41	59.74	60.0	3.3
25.0	82.0	15.56	60.01	60.0	3.3
27.5	90.2	15.69	60.24	52.0	2.9
30.0	98.4	15.81	60.46	48.0	2.6
32.0	105.0	15.91	60.64	50.0	2.7
		6S-12E-19cd (Date measured 8-26-75)			
5.0	16.4	16.38	61.48		
7.5	24.6	14.02	57.24	-944.0	-51.8
10.0	32.8	13.52	56.34	-200.0	-11.0
12.5	41.0	13.97	57.15	180.0	9.9
15.0	49.2	14.37	57.87	160.0	8.8
17.5	57.4	14.66	58.39	116.0	6.4
20.0	65.6	14.89	58.80	92.0	5.0
22.5	73.8	15.17	59.31	112.0	6.1
25.0	82.0	15.51	59.92	136.0	7.5
27.5	90.2	15.77	60.39	104.0	5.7
30.0	98.4	16.06	60.91	116.0	6.4
30.8	101.0	16.18	61.12	150.0	8.2
		6S-13E-16aad (Date measured 7-18-74)			
10.0	32.8	12.45	54.41		
20.0	65.6	14.78	58.60	233.0	12.8
30.0	98.4	15.17	59.31	39.0	2.1
40.0	131.2	16.15	61.07	98.0	5.4
50.0	164.0	16.90	62.42	75.0	4.1
60.0	196.8	16.91	62.44	1.0	0.1
70.0	229.6	16.91	62.44	0.0	0.0
80.0	262.4	16.92	62.46	1.0	0.1
90.0	295.2	16.93	62.47	1.0	0.1
100.0	328.0	16.95	62.51	2.0	0.1

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		7S-4E-9cc (Date measured 8-24-75)			
5.0	16.4	16.22	61.20	-548.0	-30.1
7.5	24.6	14.85	58.73	88.0	4.8
10.0	32.8	15.07	59.13	148.0	8.1
12.5	41.0	15.44	59.79	148.0	8.1
15.0	49.2	15.81	60.46	88.0	4.8
17.5	57.4	16.03	60.85	100.0	5.5
20.0	65.6	16.28	61.30	112.0	6.1
22.5	73.8	16.56	61.81	104.0	5.7
25.0	82.0	16.82	62.28	156.0	8.6
27.5	90.2	17.21	62.98	104.0	5.7
30.0	98.4	17.47	63.45	95.0	5.2
32.0	105.0	17.66	63.79		
		7S-5E-19bd (Date measured 8-20-74)			
10.0	32.8	21.06	69.91	227.0	12.5
20.0	65.6	23.33	73.99	80.0	4.4
26.0	85.3	23.81	74.86		
		8S-1E-10dd (Date measured 8-23-75)			
5.0	16.4	10.74	51.33	-232.0	-12.7
7.5	24.6	10.16	50.29	-172.0	-9.4
10.0	32.8	9.73	49.51	248.0	13.6
12.5	41.0	10.35	50.63	136.0	7.5
15.0	49.2	10.69	51.24	192.0	10.5
17.5	57.4	11.17	52.11	176.0	9.7
20.0	65.6	11.61	52.90	108.0	5.9
22.5	73.8	11.88	53.38	96.0	5.3
25.0	82.0	12.12	53.82	88.0	4.8
27.5	90.2	12.34	54.21	88.0	4.8
30.0	98.4	12.56	54.61	112.0	6.1
31.3	102.5	12.70	54.86		

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		8S-12E-23aac (Date measured 6-25-74)			
15.0	49.2	26.52	79.74		
20.0	65.6	25.46	77.83	-212.0	-11.6
25.0	82.0	25.10	77.18	-72.0	-4.0
30.0	98.4	22.21	71.98	-578.0	-31.7
35.0	114.8	18.61	65.50	-720.0	-39.5
40.0	131.2	11.35	52.43	-1452.0	-79.7
50.0	164.0	13.88	56.98	253.0	13.9
55.0	180.4	15.97	60.75	418.0	22.9
60.0	196.8	15.99	60.78	4.0	0.2
65.0	213.2	16.93	62.47	188.0	10.3
70.0	229.6	17.38	63.28	90.0	4.9
75.0	246.0	17.38	63.28	0.0	0.0
80.0	262.4	17.50	63.50	24.0	1.3
85.0	278.8	17.67	63.81	34.0	1.9
90.0	295.2	17.84	64.11	34.0	1.9
95.0	311.6	18.06	64.51	44.0	2.4
100.0	328.0	18.29	64.92	46.0	2.5
105.0	344.4	18.46	65.23	34.0	1.9
110.0	360.8	18.73	65.71	54.0	3.0
115.0	377.2	18.95	66.11	44.0	2.4
120.0	393.6	19.33	66.79	76.0	4.2
125.0	410.0	19.60	67.28	54.0	3.0
150.0	492.0	21.05	69.89	58.0	3.2
165.0	541.2	21.81	71.26	50.7	2.8
		8S-12E-26acd (Date measured 6-26-74)			
20.0	65.6	7.27	45.09		
25.0	82.0	11.94	53.49	934.0	51.3
30.0	98.4	14.69	58.44	550.0	30.2
35.0	114.8	14.93	58.87	48.0	2.6
40.0	131.2	19.40	66.92	894.0	49.1
50.0	164.0	19.52	67.14	12.0	0.7
55.0	180.4	19.60	67.28	16.0	0.9
60.0	196.8	19.65	67.37	10.0	0.5
65.0	213.2	19.73	67.51	16.0	0.9
70.0	229.6	19.81	67.66	16.0	0.9
75.0	246.0	20.27	68.49	92.0	5.0
77.0	252.6	20.80	69.44	265.0	14.5

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		8S-12E-26daa (Date measured 6-26-74)			
30.0	98.4	15.27	59.49	205.0	11.2
40.0	131.2	17.32	63.18	170.0	9.3
50.0	164.0	19.02	66.24	30.0	1.6
60.0	196.8	19.32	66.78	68.0	3.7
70.0	229.6	20.00	68.00	50.0	2.7
75.0	246.0	20.25	68.45	120.0	6.6
75.5	247.6	20.31	68.56		
		8S-29E-34cb (Date measured 8-13-74)			
10.0	32.8	10.99	51.78	94.0	5.2
20.0	65.6	11.93	53.47	-18.0	-1.0
30.0	98.4	11.75	53.15	13.0	0.7
40.0	131.2	11.88	53.38	6.0	0.3
50.0	164.0	11.94	53.49	8.0	0.4
60.0	196.8	12.02	53.64	52.0	2.9
70.0	229.6	12.54	54.57	44.0	2.4
75.0	246.0	12.76	54.97	64.0	3.5
80.0	262.4	13.08	55.54	32.0	1.8
85.0	278.8	13.24	55.83	60.0	3.3
90.0	295.2	13.54	56.37	64.0	3.5
95.0	311.6	13.86	56.95	38.0	2.1
100.0	328.0	14.05	57.29	74.0	4.1
105.0	344.4	14.42	57.96	46.0	2.5
110.0	360.8	14.65	58.37	84.0	4.6
115.0	377.2	15.07	59.13	76.0	4.2
120.0	393.6	15.45	59.81	110.0	6.0
125.0	410.0	16.00	60.80		
		9S-12E-24ad (Date measured 7-7-74)			
5.0	16.4	12.45	54.41	-14.0	-0.8
10.0	32.8	12.38	54.28	4.0	0.2
15.0	49.2	12.40	54.32	26.0	1.4
20.0	65.6	12.53	54.55	102.0	5.6
25.0	82.0	13.04	55.47	32.0	1.8
30.0	98.4	13.20	55.76	42.0	2.3
35.0	114.8	13.41	56.14		

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		9S-12E-24ad *(Continued)*			
40.0	131.2	13.91	57.04	100.0	5.5
45.0	147.6	14.24	57.63	66.0	3.6
50.0	164.0	14.71	58.48	94.0	5.2
55.0	180.4	15.17	59.31	92.0	5.0
60.0	196.8	15.96	60.73	158.0	8.7
65.0	213.2	16.32	61.38	72.0	4.0
70.0	229.6	16.59	61.86	54.0	3.0
75.0	246.0	16.89	62.40	60.0	3.3
80.0	262.4	17.14	62.85	50.0	2.7
85.0	278.8	17.42	63.36	56.0	3.1
90.0	295.2	17.69	63.84	54.0	3.0
95.0	311.6	18.05	64.49	72.0	4.0
100.0	328.0	18.46	65.23	82.0	4.5
105.0	344.4	18.71	65.68	50.0	2.7
110.0	360.8	18.95	66.11	48.0	2.6
115.0	377.2	19.20	66.56	50.0	2.7
120.0	393.6	19.96	67.93	152.0	8.3
125.0	410.0	20.06	68.11	20.0	1.1
130.0	426.4	20.21	68.38	30.0	1.6
135.0	442.8	20.39	68.70	36.0	2.0
140.0	459.2	20.63	69.13	48.0	2.6
145.0	475.6	20.81	69.46	36.0	2.0
150.0	492.0	21.05	69.89	48.0	2.6
155.0	508.4	21.29	70.32	48.0	2.6
160.0	524.8	21.64	70.95	70.0	3.8
165.0	541.2	21.89	71.40	50.0	2.7
170.0	557.6	22.28	72.10	78.0	4.3
175.0	574.0	22.60	72.68	64.0	3.5
180.0	590.4	22.94	73.29	68.0	3.7
185.0	606.8	23.38	74.08	88.0	4.8
190.0	623.2	24.19	75.54	162.0	8.9
195.0	639.6	24.84	76.71	130.0	7.1
200.0	656.0	25.52	77.94	136.0	7.5
205.0	672.4	26.13	79.03	122.0	6.7
210.0	688.8	26.78	80.20	130.0	7.1
215.0	705.2	27.54	81.57	152.0	8.3
220.0	721.6	28.05	82.49	102.0	5.6
225.0	738.0	28.34	83.01	58.0	3.2
230.0	754.4	29.58	85.24	248.0	13.6
235.0	770.8	30.06	86.11	96.0	5.3
240.0	787.2	30.46	86.83	80.0	4.4
245.0	803.6	30.52	86.94	12.0	0.7
250.0	820.0	30.78	87.40	52.0	2.9

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		9S-12E-24ad *(Continued)*			
275.0	902.0	31.62	88.92	33.6	1.8
300.0	984.0	32.46	90.43	33.6	1.8
325.0	1066.0	33.60	92.48	45.6	2.5
350.0	1148.0	34.03	93.25	17.2	0.9
375.0	1230.0	34.70	94.46	26.8	1.5
400.0	1312.0	35.27	95.49	22.8	1.3
425.0	1394.0	35.62	96.12	14.0	0.8
440.0	1443.2	35.70	96.26	5.3	0.3
		9S-13E-18cc (Date measured 9-1-75)			
5.0	16.4	14.97	58.95		
10.0	32.8	13.25	55.85	-344.0	-18.9
15.0	49.2	12.85	55.13	-80.0	-4.4
20.0	65.6	12.88	55.18	6.0	0.3
25.0	82.0	13.08	55.54	40.0	2.2
30.0	98.4	13.24	55.83	32.0	1.8
35.0	114.8	13.45	56.21	42.0	2.3
40.0	131.2	13.75	56.75	60.0	3.3
45.0	147.6	14.04	57.27	58.0	3.2
50.0	164.0	14.33	57.79	58.0	3.2
55.0	180.4	14.38	57.88	10.0	0.5
60.0	196.8	14.62	58.32	48.0	2.6
65.0	213.2	14.99	58.98	74.0	4.1
70.0	229.6	15.99	60.78	200.0	11.0
75.0	246.0	16.71	62.08	144.0	7.9
80.0	262.4	17.39	63.30	136.0	7.5
85.0	278.8	17.82	64.08	86.0	4.7
90.0	295.2	18.26	64.87	88.0	4.8
95.0	311.6	18.79	65.82	106.0	5.8
100.0	328.0	19.10	66.38	62.0	3.4
105.0	344.4	19.25	66.65	30.0	1.6
110.0	360.8	19.55	67.19	60.0	3.3
115.0	377.2	19.84	67.71	58.0	3.2
120.0	393.6	20.09	68.16	50.0	2.7
125.0	410.0	20.32	68.56	46.0	2.5
130.0	426.4	20.64	69.15	64.0	3.5
135.0	442.8	20.91	69.64	54.0	3.0
140.0	459.2	21.28	70.30	74.0	4.1
145.0	475.6	21.86	71.35	116.0	6.4
150.0	492.0	22.69	72.84	166.0	9.1

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		9S-13E-18cc *(Continued)*			
155.0	508.4	22.73	72.91	8.0	0.4
160.0	524.8	22.84	73.11	22.0	1.2
165.0	541.2	22.95	73.31	22.0	1.2
170.0	557.6	23.01	73.42	12.0	0.7
175.0	574.0	23.11	73.60	20.0	1.1
180.0	590.4	23.34	74.01	46.0	2.5
185.0	606.8	23.55	74.39	42.0	2.3
190.0	623.2	23.71	74.68	32.0	1.8
195.0	639.6	23.94	75.09	46.0	2.5
200.0	656.0	24.14	75.45	40.0	2.2
205.0	672.4	24.36	75.85	44.0	2.4
210.0	688.8	24.54	76.17	36.0	2.0
215.0	705.2	24.75	76.55	42.0	2.3
220.0	721.6	24.92	76.86	34.0	1.9
225.0	738.0	25.12	77.22	40.0	2.2
230.0	754.4	25.34	77.61	44.0	2.4
235.0	770.8	25.72	78.30	76.0	4.2
240.0	787.2	25.89	78.60	34.0	1.9
245.0	803.6	26.10	78.98	42.0	2.3
250.0	820.0	26.30	79.34	40.0	2.2
255.0	836.4	26.50	79.70	40.0	2.2
260.0	852.8	26.75	80.15	50.0	2.7
265.0	869.2	27.13	80.83	76.0	4.2
270.0	885.6	27.39	81.30	52.0	2.9
275.0	902.0	27.68	81.82	58.0	3.2
280.0	918.4	27.91	82.24	46.0	2.5
285.0	934.8	28.19	82.74	56.0	3.1
290.0	951.2	28.32	82.98	26.0	1.4
295.0	967.6	28.48	83.26	32.0	1.8
300.0	984.0	28.58	83.44	20.0	1.1
302.0	990.6	28.90	84.02	160.0	8.8

		9S-13E-20acc (*Date measured* 9-8-75)			
5.0	16.4	11.50	52.70	-8.0	-0.4
7.5	24.6	11.48	52.66		

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		9S-13E-20ccd (Date measured 7-7-74)			
10.0	32.8	16.88	62.38	-336.0	-18.4
20.0	65.6	13.52	56.34	108.0	5.9
30.0	98.4	14.60	58.28	60.0	3.3
40.0	131.2	15.20	59.36	90.0	4.9
60.0	196.8	17.00	62.60	95.0	5.2
70.0	229.6	17.95	64.31	84.0	4.6
80.0	262.4	18.79	65.82	71.0	3.9
90.0	295.2	19.50	67.10	162.0	8.9
100.0	328.0	21.12	70.02	16.0	0.9
110.0	360.8	21.28	70.30	136.0	7.5
120.0	393.6	22.64	72.75	83.0	4.6
130.0	426.4	23.47	74.25	50.0	2.7
140.0	459.2	23.97	75.15	16.0	0.9
150.0	492.0	24.13	75.43	28.0	1.5
160.0	524.8	24.41	75.94	26.0	1.4
170.0	557.6	24.67	76.41	29.0	1.6
190.0	623.2	25.25	77.45	58.0	3.2
200.0	656.0	25.83	78.49	47.0	2.6
210.0	688.8	26.30	79.34	37.0	2.0
220.0	721.6	26.67	80.01	38.3	2.1
226.0	741.3	26.90	80.42		
		9S-13E-31bd (Date measured 9-4-75)			
5.0	16.4	12.11	53.80	-18.0	-1.0
10.0	32.8	12.02	53.64	158.0	8.7
15.0	49.2	12.81	55.06	106.0	5.8
20.0	65.6	13.34	56.01	60.0	3.3
25.0	82.0	13.64	56.55	42.0	2.3
30.0	98.4	13.85	56.93	64.0	3.5
35.0	114.8	14.17	57.51	52.0	2.9
40.0	131.2	14.43	57.97	42.0	2.3
45.0	147.6	14.64	58.35	48.0	2.6
50.0	164.0	14.88	58.78	60.0	3.3
55.0	180.4	15.18	59.32	56.0	3.1
60.0	196.8	15.46	59.83	48.0	2.6
65.0	213.2	15.70	60.26	46.0	2.5
70.0	229.6	15.93	60.67	60.0	3.3
75.0	246.0	16.23	61.21	46.0	2.5
80.0	262.4	16.46	61.63		

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		9S-13E-31bd *(Continued)*			
				64.0	3.5
85.0	278.8	16.78	62.20	90.0	4.9
90.0	295.2	17.23	63.01	96.0	5.3
95.0	311.6	17.71	63.88	116.0	6.4
100.0	328.0	18.29	64.92	118.0	6.5
105.0	344.4	18.88	65.98	104.0	5.7
110.0	360.8	19.40	66.92	110.0	6.0
115.0	377.2	19.95	67.91	222.0	12.2
120.0	393.6	21.06	69.91	20.0	1.1
125.0	410.0	21.16	70.09	46.0	2.5
130.0	426.4	21.39	70.50	36.0	2.0
135.0	442.8	21.57	70.83	46.0	2.5
140.0	459.2	21.80	71.24	30.0	1.6
145.0	475.6	21.95	71.51	36.0	2.0
150.0	492.0	22.13	71.83	22.0	1.2
155.0	508.4	22.24	72.03	26.0	1.4
160.0	524.8	22.37	72.27	36.0	2.0
165.0	541.2	22.55	72.59	34.0	1.9
170.0	557.6	22.72	72.90	64.0	3.5
175.0	574.0	23.04	73.47		
		9S-13E-32cdc (Date measured 8-31-75)			
5.0	16.4	14.78	58.60		
				-362.0	-19.9
10.0	32.8	12.97	55.35	-8.0	0.0
15.0	49.2	12.93	55.27	54.0	3.0
20.0	65.6	13.20	55.76	60.0	3.3
25.0	82.0	13.50	56.30	72.0	4.0
30.0	98.4	13.86	56.95	6.0	0.3
35.0	114.8	13.89	57.00	184.0	10.1
40.0	131.2	14.81	58.66	208.0	11.4
45.0	147.6	15.85	60.53	142.0	7.8
50.0	164.0	16.56	61.81	88.0	4.8
55.0	180.4	17.00	62.60	66.0	3.6
60.0	196.8	17.33	63.19	60.0	3.3
65.0	213.2	17.63	63.73	52.0	2.9
70.0	229.6	17.89	64.20	76.0	4.2
75.0	246.0	18.27	64.89	56.0	3.1
80.0	262.4	18.55	65.39	86.0	4.7
85.0	278.8	18.98	66.16	104.0	5.7
90.0	295.2	19.50	67.10	112.0	6.1
95.0	311.6	20.06	68.11		

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		9S-13E-32cdc *(Continued)*			
100.0	328.0	20.78	69.40	144.0	7.9
105.0	344.4	21.41	70.54	126.0	6.9
110.0	360.8	21.83	71.29	84.0	4.6
115.0	377.2	22.36	72.25	106.0	5.8
120.0	393.6	22.76	72.97	80.0	4.4
125.0	410.0	23.00	73.40	48.0	2.6
130.0	426.4	23.42	74.16	84.0	4.6
135.0	442.8	23.71	74.68	58.0	3.2
137.0	449.4	24.00	75.20	145.0	8.0
		9S-13E-32cdd (Date measured 8-31-75)			
5.0	16.4	12.68	54.82		
10.0	32.8	12.70	54.86	4.0	0.2
15.0	49.2	12.84	55.11	28.0	1.5
20.0	65.6	12.98	55.36	28.0	1.5
25.0	82.0	13.40	56.12	84.0	4.6
30.0	98.4	13.88	56.98	96.0	5.3
35.0	114.8	14.40	57.92	104.0	5.7
40.0	131.2	15.60	60.08	240.0	13.2
45.0	147.6	16.14	61.05	108.0	5.9
50.0	164.0	16.56	61.81	84.0	4.6
55.0	180.4	16.88	62.38	64.0	3.5
60.0	196.8	17.24	63.03	72.0	4.0
65.0	213.2	17.80	64.04	112.0	6.1
70.0	229.6	18.11	64.60	62.0	3.4
75.0	246.0	18.59	65.46	96.0	5.3
80.0	262.4	18.74	65.73	30.0	1.6
85.0	278.8	19.44	66.99	140.0	7.7
90.0	295.2	19.94	67.89	100.0	5.5
95.0	311.6	20.44	68.79	100.0	5.5
100.0	328.0	21.07	69.93	126.0	6.9
105.0	344.4	21.57	70.83	100.0	5.5
110.0	360.8	22.20	71.96	126.0	6.9
115.0	377.2	22.59	72.66	78.0	4.3
120.0	393.6	22.76	72.97	34.0	1.9
125.0	410.0	23.15	73.67	78.0	4.3
130.0	426.4	23.42	74.16	54.0	3.0
135.0	442.8	23.49	74.28	14.0	0.8
140.0	459.2	24.21	75.58	144.0	7.9

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		9S-13E-32cdd *(Continued)*			
145.0	475.6	24.63	76.33	84.0	4.6
150.0	492.0	24.87	76.77	48.0	2.6
155.0	508.4	24.99	76.98	24.0	1.3
160.0	524.8	25.00	77.00	2.0	0.1
165.0	541.2	25.08	77.14	16.0	0.9
170.0	557.6	25.13	77.23	10.0	0.5
175.0	574.0	25.22	77.40	18.0	1.0
180.0	590.4	25.31	77.56	18.0	1.0
185.0	606.8	25.42	77.76	22.0	1.2
190.0	623.2	25.54	77.97	24.0	1.3
195.0	639.6	25.68	78.22	28.0	1.5
200.0	656.0	25.87	78.57	38.0	2.1
205.0	672.4	26.08	78.94	42.0	2.3
210.0	688.8	26.23	79.21	30.0	1.6
212.0	695.4	26.38	79.48	75.0	4.1
		9S-13E-33ca (Date measured 6-27-74)			
20.0	65.6	10.55	50.99		
25.0	82.0	14.68	58.42	826.0	45.3
30.0	98.4	15.37	59.67	138.0	7.6
35.0	114.8	17.14	62.85	354.0	19.4
40.0	131.2	17.47	63.45	66.0	3.6
50.0	164.0	17.98	64.36	51.0	2.8
55.0	180.4	18.14	64.65	32.0	1.8
60.0	196.8	18.28	64.90	28.0	1.5
65.0	213.2	18.44	65.19	32.0	1.8
70.0	229.6	18.83	65.89	78.0	4.3
75.0	246.0	19.36	66.85	106.0	5.8
80.0	262.4	19.42	66.96	12.0	0.7
85.0	278.8	19.42	66.96	0.0	0.0
90.0	295.2	19.53	67.15	22.0	1.2
95.0	311.6	20.32	68.58	158.0	8.7
100.0	328.0	20.62	69.12	60.0	3.3
105.0	344.4	21.37	70.47	150.0	8.2
110.0	360.8	21.43	70.57	12.0	0.7
115.0	377.2	21.58	70.84	30.0	1.6
120.0	393.6	22.42	72.36	168.0	9.2
125.0	410.0	22.92	73.26	100.0	5.5
130.0	426.4	23.29	73.92	74.0	4.1
135.0	442.8	23.45	74.21	32.0	1.8

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		9S-13E-33ca *(Continued)*			
				30.0	1.6
140.0	459.2	23.60	74.48	42.0	2.3
145.0	475.6	23.81	74.86	38.0	2.1
150.0	492.0	24.00	75.20	40.0	2.2
155.0	508.4	24.20	75.56	34.0	1.9
160.0	524.8	24.37	75.87	38.0	2.1
165.0	541.2	24.56	76.21	28.0	1.5
170.0	557.6	24.70	76.46	36.0	2.0
175.0	574.0	24.88	76.78		
		9S-13E-33cb (Date measured 6-27-74)			
25.0	82.0	9.23	48.61	258.8	14.2
50.0	164.0	15.70	60.26	115.2	6.3
75.0	246.0	18.58	65.44	89.2	4.9
100.0	328.0	20.81	69.46	29.2	1.6
125.0	410.0	21.54	70.77	61.4	3.4
146.0	478.9	22.83	73.09		
		9S-26E-7aab (Date measured 7-12-74)			
10.0	32.8	13.44	56.19	125.0	6.9
20.0	65.6	14.69	58.44	1.0	0.1
30.0	98.4	14.70	58.46	22.0	1.2
40.0	131.2	14.92	58.86	3.0	0.2
50.0	164.0	14.95	58.91	24.0	1.3
60.0	196.8	15.19	59.34	66.0	3.6
70.0	229.6	15.85	60.53	227.0	12.5
80.0	262.4	18.12	64.62	155.0	8.5
90.0	295.2	19.67	67.41	193.0	10.6
100.0	328.0	21.60	70.88	157.0	8.6
110.0	360.8	23.17	73.71	127.0	7.0
120.0	393.6	24.44	75.99	86.0	4.7
130.0	426.4	25.30	77.54	125.0	6.9
140.0	459.2	26.55	79.79	95.0	5.2
150.0	492.0	27.50	81.50	63.0	3.5
160.0	524.8	28.13	82.63	102.0	5.6
170.0	557.6	29.15	84.47	92.0	5.0
180.0	590.4	30.07	86.13	48.0	2.6
190.0	623.2	30.55	86.99		

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		9S-26E-7aab *(Continued)*			
200.0	656.0	30.83	87.49	28.0	1.5
210.0	688.8	30.93	87.67	10.0	0.5
220.0	721.6	31.05	87.89	12.0	0.7
230.0	754.4	31.09	87.96	4.0	0.2
236.0	774.1	31.28	88.30	31.7	1.7
		10S-12E-1cd (Date measured 9-5-75)			
5.0	16.4	14.07	57.33		
10.0	32.8	12.42	54.36	-330.0	0.0
15.0	49.2	12.70	54.86	56.0	3.1
20.0	65.6	13.34	56.01	128.0	7.0
25.0	82.0	13.82	56.88	96.0	5.3
30.0	98.4	14.06	57.31	48.0	2.6
35.0	114.8	14.55	58.19	98.0	5.4
40.0	131.2	14.59	58.26	8.0	0.4
45.0	147.6	14.61	58.30	4.0	0.2
50.0	164.0	14.93	58.87	64.0	3.5
55.0	180.4	15.10	59.18	34.0	1.9
60.0	196.8	15.41	59.74	62.0	3.4
65.0	213.2	16.38	61.48	194.0	10.6
70.0	229.6	16.43	61.57	10.0	0.5
75.0	246.0	16.80	62.24	74.0	4.1
80.0	262.4	17.12	62.82	64.0	3.5
85.0	278.8	17.14	62.85	4.0	0.2
90.0	295.2	17.52	63.54	76.0	4.2
95.0	311.6	17.65	63.77	26.0	1.4
100.0	328.0	17.77	63.99	24.0	1.3
105.0	344.4	18.03	64.45	52.0	2.9
110.0	360.8	20.33	68.59	460.0	25.2
115.0	377.2	20.73	69.31	80.0	4.4
120.0	393.6	21.11	70.00	76.0	4.2
125.0	410.0	21.66	70.99	110.0	6.0
130.0	426.4	22.08	71.74	84.0	4.6
135.0	442.8	22.46	72.43	76.0	4.2
140.0	459.2	22.87	73.17	82.0	4.5
145.0	475.6	23.38	74.08	102.0	5.6
150.0	492.0	23.90	75.02	104.0	5.7
155.0	508.4	24.56	76.21	132.0	7.2
160.0	524.8	25.07	77.13	102.0	5.6
165.0	541.2	25.43	77.77	72.0	4.0

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		10S-12E-1cd *(Continued)*			
170.0	557.6	25.90	78.62	94.0	5.2
175.0	574.0	26.22	79.20	64.0	3.5
180.0	590.4	26.52	79.74	60.0	3.3
185.0	606.8	26.79	80.22	54.0	3.0
190.0	623.2	27.15	80.87	72.0	4.0
195.0	639.6	27.36	81.25	42.0	2.3
200.0	656.0	27.63	81.73	54.0	3.0
205.0	672.4	27.92	82.26	58.0	3.2
210.0	688.8	28.17	82.71	50.0	2.7
215.0	705.2	28.39	83.10	44.0	2.4
220.0	721.6	28.50	83.30	22.0	1.2
221.0	724.9	28.63	83.53	130.0	7.1
		10S-12E-10caa (Date measured 6-27-74)			
25.0	82.0	9.72	49.50		
30.0	98.4	12.79	55.02	614.0	33.7
35.0	114.8	14.02	57.24	246.0	13.5
40.0	131.2	14.14	57.45	24.0	1.3
50.0	164.0	14.60	58.28	46.0	2.5
60.0	196.8	15.72	60.30	112.0	6.1
70.0	229.6	17.84	64.11	212.0	11.6
80.0	262.4	21.40	70.52	356.0	19.5
90.0	295.2	21.51	70.72	11.0	0.6
100.0	328.0	22.22	72.00	71.0	3.9
110.0	360.8	23.04	73.47	82.0	4.5
120.0	393.6	23.58	74.44	54.0	3.0
130.0	426.4	23.85	74.93	27.0	1.5
140.0	459.2	23.93	75.07	8.0	0.4
150.0	492.0	24.18	75.52	25.0	1.4
160.0	524.8	24.47	76.05	29.0	1.6
170.0	557.6	24.70	76.46	23.0	1.3
180.0	590.4	24.99	76.98	29.0	1.6
190.0	623.2	25.45	77.81	46.0	2.5
200.0	656.0	25.92	78.66	47.0	2.6
210.0	688.8	26.31	79.36	39.0	2.1
220.0	721.6	26.65	79.97	34.0	1.9
230.0	754.4	26.79	80.22	14.0	0.8
240.0	787.2	26.81	80.26	2.0	0.1

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		10S-12E-11bdb (Date measured 7-7-74)			
25.0	82.0	14.22	57.60		
30.0	98.4	16.90	62.42	536.0	29.4
40.0	131.2	17.43	63.37	53.0	2.9
50.0	164.0	19.94	67.89	251.0	13.8
60.0	196.8	21.54	70.77	160.0	8.8
70.0	229.6	22.10	71.78	56.0	3.1
80.0	262.4	23.05	73.49	95.0	5.2
90.0	295.2	23.17	73.71	12.0	0.7
100.0	328.0	23.26	73.87	9.0	0.5
110.0	360.8	23.51	74.32	25.0	1.4
120.0	393.6	23.55	74.39	4.0	0.2
130.0	426.4	23.60	74.48	5.0	0.3
140.0	459.2	23.66	74.59	6.0	0.3
150.0	492.0	23.77	74.79	11.0	0.6
160.0	524.8	23.80	74.84	3.0	0.2
170.0	557.6	23.91	75.04	11.0	0.6
180.0	590.4	24.13	75.43	22.0	1.2
190.0	623.2	24.38	75.88	25.0	1.4
200.0	656.0	24.60	76.28	22.0	1.2
210.0	688.8	24.78	76.60	18.0	1.0

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		10S-12E-12ab (Date measured 6-28-74)			
25.0	82.0	13.98	57.16		
30.0	98.4	17.85	64.13	774.0	42.5
40.0	131.2	20.04	68.07	219.0	12.0
50.0	164.0	21.08	69.94	104.0	5.7
60.0	196.8	23.60	74.48	252.0	13.8
70.0	229.6	25.90	78.62	230.0	12.6
80.0	262.4	26.53	79.75	63.0	3.5
90.0	295.2	27.05	80.69	52.0	2.9
100.0	328.0	27.42	81.36	37.0	2.0
110.0	360.8	27.53	81.55	11.0	0.6
120.0	393.6	27.76	81.97	23.0	1.3
127.0	416.6	27.92	82.26	22.9	1.3

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		10S-13E-5cb (Date measured 9-6-75)			
5.0	16.4	12.71	54.88	34.0	1.9
10.0	32.8	12.88	55.18	38.0	2.1
15.0	49.2	13.07	55.53	36.0	2.0
20.0	65.6	13.25	55.85	26.0	1.4
25.0	82.0	13.38	56.08	-12.0	0.0
30.0	98.4	13.32	55.98	38.0	2.1
35.0	114.8	13.51	56.32	60.0	3.3
40.0	131.2	13.81	56.86	96.0	5.3
45.0	147.6	14.29	57.72	186.0	10.2
50.0	164.0	15.22	59.40	132.0	7.2
55.0	180.4	15.88	60.58	124.0	6.8
60.0	196.8	16.50	61.70	84.0	4.6
65.0	213.2	16.92	62.46	134.0	7.4
70.0	229.6	17.59	63.66	132.0	7.2
75.0	246.0	18.25	64.85	154.0	8.5
80.0	262.4	19.02	66.24	112.0	6.1
85.0	278.8	19.58	67.24	116.0	6.4
90.0	295.2	20.16	68.29	128.0	7.0
95.0	311.6	20.80	69.44	124.0	6.8
100.0	328.0	21.42	70.56	100.0	5.5
105.0	344.4	21.92	71.46	80.0	4.4
110.0	360.8	22.32	72.18	68.0	3.7
115.0	377.2	22.66	72.79	60.0	3.3
120.0	393.6	22.96	73.33	70.0	3.8
125.0	410.0	23.31	73.96	54.0	3.0
130.0	426.4	23.58	74.44	60.0	3.3
135.0	442.8	23.88	74.98	76.0	4.2
140.0	459.2	24.26	75.67	84.0	4.6
145.0	475.6	24.68	76.42	198.0	10.9
150.0	492.0	25.67	78.21	6.0	0.3
155.0	508.4	25.70	78.26	14.0	0.8
160.0	524.8	25.77	78.39	22.0	1.2
165.0	541.2	25.88	78.58	18.0	1.0
170.0	557.6	25.97	78.75	20.0	1.1
175.0	574.0	26.07	78.93	20.0	1.1
180.0	590.4	26.17	79.11	34.0	1.9
185.0	606.8	26.34	79.41	10.0	0.5
190.0	623.2	26.39	79.50	4.0	0.2
195.0	639.6	26.41	79.54	45.0	2.5
197.0	646.2	26.50	79.70		

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		11S-15E-34cab (Date measured 6-29-74)			
5.0	16.4	7.25	45.05	1885.7	103.5
8.5	27.9	13.85	56.93		
		11S-21E-9dda (Date measured 9-18-75)			
5.0	16.4	11.01	51.82	-82.0	-4.5
10.0	32.8	10.60	51.08	-60.0	-3.3
15.0	49.2	10.30	50.54	-92.0	0.0
20.0	65.6	9.84	49.71	18.0	1.0
25.0	82.0	9.93	49.87	14.0	0.8
30.0	98.4	10.00	50.00	32.0	1.8
35.0	114.8	10.16	50.29	30.0	1.6
40.0	131.2	10.31	50.56	18.0	1.0
45.0	147.6	10.40	50.72	90.0	4.9
50.0	164.0	10.85	51.53	268.0	14.7
55.0	180.4	12.19	53.94	110.0	6.0
60.0	196.8	12.74	54.93	74.0	4.1
65.0	213.2	13.11	55.60	72.0	4.0
70.0	229.6	13.47	56.25	86.0	4.7
75.0	246.0	13.90	57.02	66.0	3.6
80.0	262.4	14.23	57.61	42.0	2.3
85.0	278.8	14.44	57.99	32.0	1.8
90.0	295.2	14.60	58.28	44.0	2.4
95.0	311.6	14.82	58.68	40.0	2.2
100.0	328.0	15.02	59.04	38.0	2.1
105.0	344.4	15.21	59.38	44.0	2.4
110.0	360.8	15.43	59.77	42.0	2.3
115.0	377.2	15.64	60.15	36.0	2.0
120.0	393.6	15.82	60.48	46.0	2.5
125.0	410.0	16.05	60.89	60.0	3.3
130.0	426.4	16.35	61.43	26.0	1.4
135.0	442.8	16.48	61.66	82.0	4.5
140.0	459.2	16.89	62.40	240.0	13.2
145.0	475.6	18.09	64.56	4.0	0.2
150.0	492.0	18.11	64.60	0.0	0.0
155.0	508.4	18.11	64.60	2.0	0.1
160.0	524.8	18.12	64.62	2.0	0.1
165.0	541.2	18.13	64.63		

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		12S-15E-26acc (Date measured 9-13-75)			
5.0	16.4	12.43	54.37	-246.0	-13.5
10.0	32.8	11.20	52.16	60.0	3.3
15.0	49.2	11.50	52.70	12.0	0.7
20.0	65.6	11.56	52.81	14.0	0.8
25.0	82.0	11.63	52.93	18.0	1.0
30.0	98.4	11.72	53.10	18.0	1.0
35.0	114.8	11.81	53.26	22.0	1.2
40.0	131.2	11.92	53.46	30.0	1.6
45.0	147.6	12.07	53.73	28.0	1.5
50.0	164.0	12.21	53.98	32.0	1.8
55.0	180.4	12.37	54.27	30.0	1.6
60.0	196.8	12.52	54.54	40.0	2.2
65.0	213.2	12.72	54.90	38.0	2.1
70.0	229.6	12.91	55.24	30.0	1.6
75.0	246.0	13.06	55.51	38.0	2.1
80.0	262.4	13.25	55.85	40.0	2.2
85.0	278.8	13.45	56.21	42.0	2.3
90.0	295.2	13.66	56.59	36.0	2.0
95.0	311.6	13.84	56.91	46.0	2.5
100.0	328.0	14.07	57.33	38.0	2.1
105.0	344.4	14.26	57.67	42.0	2.3
110.0	360.8	14.47	58.05	42.0	2.3
115.0	377.2	14.68	58.42	48.0	2.6
120.0	393.6	14.92	58.86	40.0	2.2
125.0	410.0	15.12	59.22	48.0	2.6
130.0	426.4	15.36	59.65	70.0	3.8
135.0	442.8	15.71	60.28	20.0	1.1
140.0	459.2	15.81	60.46	22.0	1.2
145.0	475.6	15.92	60.66	46.0	2.5
150.0	492.0	16.15	61.07	12.0	0.7
155.0	508.4	16.21	61.18	70.0	3.8
160.0	524.8	16.56	61.81	56.0	3.1
165.0	541.2	16.84	62.31	8.0	0.4
170.0	557.6	16.88	62.38	36.0	2.0
175.0	574.0	17.06	62.71	72.0	4.0
180.0	590.4	17.42	63.36	42.0	2.3
185.0	606.8	17.63	63.73	-2.0	-0.1
190.0	623.2	17.62	63.72	14.0	0.8
195.0	639.6	17.69	63.84	202.0	11.1
200.0	656.0	18.70	65.66	4.0	0.2
205.0	672.4	18.72	65.70	2.0	0.1
210.0	688.8	18.73	65.71		

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		12S-15E-26acc *(Continued)*			
215.0	705.2	18.74	65.73	2.0	0.1
220.0	721.6	18.75	65.75	2.0	0.1
225.0	738.0	18.76	65.77	2.0	0.1
230.0	754.4	18.76	65.77	0.0	0.0
233.0	764.2	18.77	65.79	3.3	0.2
240.0	787.2	25.89	78.60	34.0	1.9
		12S-15E-27baa (Date measured 9-13-75)			
5.0	16.4	11.27	52.29		
10.0	32.8	11.29	52.32	4.0	0.2
15.0	49.2	11.37	52.47	16.0	0.9
20.0	65.6	11.43	52.57	12.0	0.7
25.0	82.0	11.48	52.66	10.0	0.5
30.0	98.4	11.63	52.93	30.0	1.6
35.0	114.8	11.94	53.49	62.0	3.4
40.0	131.2	12.16	53.89	44.0	2.4
45.0	147.6	12.30	54.14	28.0	1.5
50.0	164.0	12.77	54.99	94.0	5.2
55.0	180.4	13.03	55.45	52.0	2.9
60.0	196.8	13.16	55.69	26.0	1.4
65.0	213.2	13.36	56.05	40.0	2.2
70.0	229.6	13.54	56.37	36.0	2.0
75.0	246.0	13.79	56.82	50.0	2.7
80.0	262.4	13.96	57.13	34.0	1.9
85.0	278.8	14.19	57.54	46.0	2.5
90.0	295.2	14.36	57.85	34.0	1.9
95.0	311.6	14.54	58.17	36.0	2.0
100.0	328.0	14.76	58.57	44.0	2.4
105.0	344.4	14.95	58.91	38.0	2.1
110.0	360.8	15.21	59.38	52.0	2.9
115.0	377.2	15.37	59.67	32.0	1.8
120.0	393.6	15.68	60.22	62.0	3.4
125.0	410.0	15.94	60.69	52.0	2.9
130.0	426.4	16.30	61.34	72.0	4.0
135.0	442.8	16.46	61.63	32.0	1.8
140.0	459.2	16.69	62.04	46.0	2.5
145.0	475.6	16.84	62.31	30.0	1.6
150.0	492.0	17.15	62.87	62.0	3.4
155.0	508.4	17.38	63.28	46.0	2.5
157.0	515.0	17.43	63.37	25.0	1.4

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		12S-20E-1acc (Date measured 9-17-75)			
5.0	16.4	12.50	54.50	-198.0	-10.9
10.0	32.8	11.51	52.72	-66.0	-3.6
15.0	49.2	11.18	52.12	80.0	4.4
20.0	65.6	11.58	52.84	42.0	2.3
25.0	82.0	11.79	53.22	8.0	0.4
30.0	98.4	11.83	53.29	12.0	0.7
35.0	114.8	11.89	53.40	4.0	0.2
40.0	131.2	11.91	53.44	0.0	0.0
45.0	147.6	11.91	53.44	8.0	0.4
50.0	164.0	11.95	53.51	-4.0	-0.2
55.0	180.4	11.93	53.47	4.0	0.2
60.0	196.8	11.95	53.51	2.0	0.1
65.0	213.2	11.96	53.53	4.0	0.2
70.0	229.6	11.98	53.56	6.0	0.3
75.0	246.0	12.01	53.62	16.0	0.9
80.0	262.4	12.09	53.76	132.0	7.2
85.0	278.8	12.75	54.95	60.0	3.3
90.0	295.2	13.05	55.49	12.0	0.7
95.0	311.6	13.11	55.60	18.0	1.0
100.0	328.0	13.20	55.76	2.0	0.1
105.0	344.4	13.21	55.78	8.0	0.4
110.0	360.8	13.25	55.85	12.0	0.7
115.0	377.2	13.31	55.96	54.0	3.0
120.0	393.6	13.58	56.44	236.0	13.0
125.0	410.0	14.76	58.57	4.0	0.2
130.0	426.4	14.78	58.60	-4.0	-0.2
135.0	442.8	14.76	58.57	22.0	1.2
140.0	459.2	14.87	58.77	0.0	0.0
145.0	475.6	14.87	58.77	12.0	0.7
150.0	492.0	14.93	58.87	6.0	0.3
155.0	508.4	14.96	58.93	0.0	0.0
160.0	524.8	14.96	58.93	0.0	0.0
165.0	541.2	14.96	58.93	78.0	4.3
170.0	557.6	15.35	59.63	26.0	1.4
175.0	574.0	15.48	59.86	22.0	1.2
180.0	590.4	15.59	60.06	-8.0	-0.4
185.0	606.8	15.55	59.99	2.0	0.1
190.0	623.2	15.56	60.01	20.0	1.1
191.0	626.5	15.58	60.04		

Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		12S-20E-25cbb (Date measured 9-18-75)			
5.0	16.4	15.93	60.67		
10.0	32.8	13.74	56.73	-438.0	-24.0
15.0	49.2	13.36	56.05	-76.0	-4.2
20.0	65.6	13.44	56.19	16.0	0.9
25.0	82.0	13.62	56.52	36.0	2.0
30.0	98.4	13.89	57.00	54.0	3.0
35.0	114.8	14.12	57.42	46.0	2.5
40.0	131.2	14.41	57.94	58.0	3.2
45.0	147.6	14.69	58.44	56.0	3.1
50.0	164.0	14.96	58.93	54.0	3.0
55.0	180.4	15.11	59.20	30.0	1.6
60.0	196.8	15.21	59.38	20.0	1.1
65.0	213.2	15.26	59.47	10.0	0.5
70.0	229.6	15.31	59.56	10.0	0.5
75.0	246.0	15.37	59.67	12.0	0.7
80.0	262.4	15.45	59.81	16.0	0.9
85.0	278.8	15.47	59.85	4.0	0.2
90.0	295.2	15.76	60.37	58.0	3.2
95.0	311.6	16.24	61.23	96.0	5.3
100.0	328.0	16.70	62.06	92.0	5.0
105.0	344.4	17.11	62.80	82.0	4.5
110.0	360.8	17.47	63.45	72.0	4.0
115.0	377.2	17.74	63.93	54.0	3.0
120.0	393.6	17.96	64.33	44.0	2.4
		12S-21E-31bcc (Date measured 9-17-75)			
5.0	16.4	13.51	56.32		
10.0	32.8	13.93	57.07	84.0	4.6
15.0	49.2	14.73	58.51	160.0	8.8
20.0	65.6	15.31	59.56	116.0	6.4
25.0	82.0	15.84	60.51	106.0	5.8
30.0	98.4	16.43	61.57	118.0	6.5
35.0	114.8	17.03	62.65	120.0	6.6
40.0	131.2	17.44	63.39	82.0	4.5
45.0	147.6	18.31	64.96	174.0	9.5
50.0	164.0	18.33	64.99	4.0	0.2
55.0	180.4	18.47	65.25	28.0	1.5
60.0	196.8	18.66	65.59	38.0	2.1
65.0	213.2	19.16	66.49	100.0	5.5

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		12S-21E-31bcc *(Continued)*			
70.0	229.6	19.61	67.30	90.0	4.9
75.0	246.0	19.98	67.96	74.0	4.1
80.0	262.4	20.32	68.58	68.0	3.7
85.0	278.8	20.62	69.12	60.0	3.3
90.0	295.2	20.99	69.78	74.0	4.1
95.0	311.6	21.46	70.63	94.0	5.2
97.0	318.2	21.48	70.66	10.0	0.5
		13S-15E-11aa (Date measured 9-12-75)			
5.0	16.4	11.35	52.43		
10.0	32.8	11.02	51.84	-66.0	-3.6
15.0	49.2	11.52	52.74	100.0	5.5
20.0	65.6	12.10	53.78	116.0	6.4
25.0	82.0	12.54	54.57	88.0	4.8
30.0	98.4	13.02	55.44	96.0	5.3
35.0	114.8	13.35	56.03	66.0	3.6
40.0	131.2	13.71	56.68	72.0	4.0
45.0	147.6	14.05	57.29	68.0	3.7
50.0	164.0	14.45	58.01	80.0	4.4
55.0	180.4	14.83	58.69	76.0	4.2
60.0	196.8	15.16	59.29	66.0	3.6
65.0	213.2	16.04	60.87	176.0	9.7
70.0	229.6	16.10	60.98	12.0	0.7
75.0	246.0	16.19	61.14	18.0	1.0
80.0	262.4	16.29	61.32	20.0	1.1
85.0	278.8	16.42	61.56	26.0	1.4
90.0	295.2	16.53	61.75	22.0	1.2
95.0	311.6	16.59	61.86	12.0	0.7
		13S-16E-10dd (Date measured 9-9-75)			
5.0	16.4	11.64	52.95		
10.0	32.8	11.68	53.02	8.0	0.4
15.0	49.2	11.94	53.49	52.0	2.9

Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		13S-16E-10dd *(Continued)*			
20.0	65.6	12.29	54.12	70.0	3.8
25.0	82.0	14.21	57.58	384.0	21.1
30.0	98.4	14.42	57.96	42.0	2.3
35.0	114.8	14.46	58.03	8.0	0.4
40.0	131.2	14.92	58.86	92.0	5.0
45.0	147.6	15.37	59.67	90.0	4.9
50.0	164.0	15.77	60.39	80.0	4.4
55.0	180.4	16.24	61.23	94.0	5.2
60.0	196.8	16.82	62.28	116.0	6.4
65.0	213.2	17.14	62.85	64.0	3.5
70.0	229.6	17.26	63.07	24.0	1.3

		13S-21E-5ccd (Date measured 9-17-75)			
5.0	16.4	15.88	60.58		
10.0	32.8	15.93	60.67	10.0	0.5
15.0	49.2	16.40	61.52	94.0	5.2
20.0	65.6	17.27	63.09	174.0	9.5
25.0	82.0	17.82	64.08	110.0	6.0
30.0	98.4	18.25	64.85	86.0	4.7
35.0	114.8	18.57	65.43	64.0	3.5
40.0	131.2	18.66	65.59	18.0	1.0
45.0	147.6	19.06	66.31	80.0	4.4
50.0	164.0	19.33	66.79	54.0	3.0
55.0	180.4	19.49	67.08	32.0	1.8
60.0	196.8	19.70	67.46	42.0	2.3
65.0	213.2	19.85	67.73	30.0	1.6
70.0	229.6	20.01	68.02	32.0	1.8
75.0	246.0	20.30	68.54	58.0	3.2
80.0	262.4	20.65	69.17	70.0	3.8
85.0	278.8	20.99	69.78	68.0	3.7
90.0	295.2	21.32	70.38	66.0	3.6
95.0	311.6	21.68	71.02	72.0	4.0
100.0	328.0	22.08	71.74	80.0	4.4
105.0	344.4	22.66	72.79	116.0	6.4
110.0	360.8	22.72	72.90	12.0	0.7
112.0	367.4	22.79	73.02	35.0	1.9

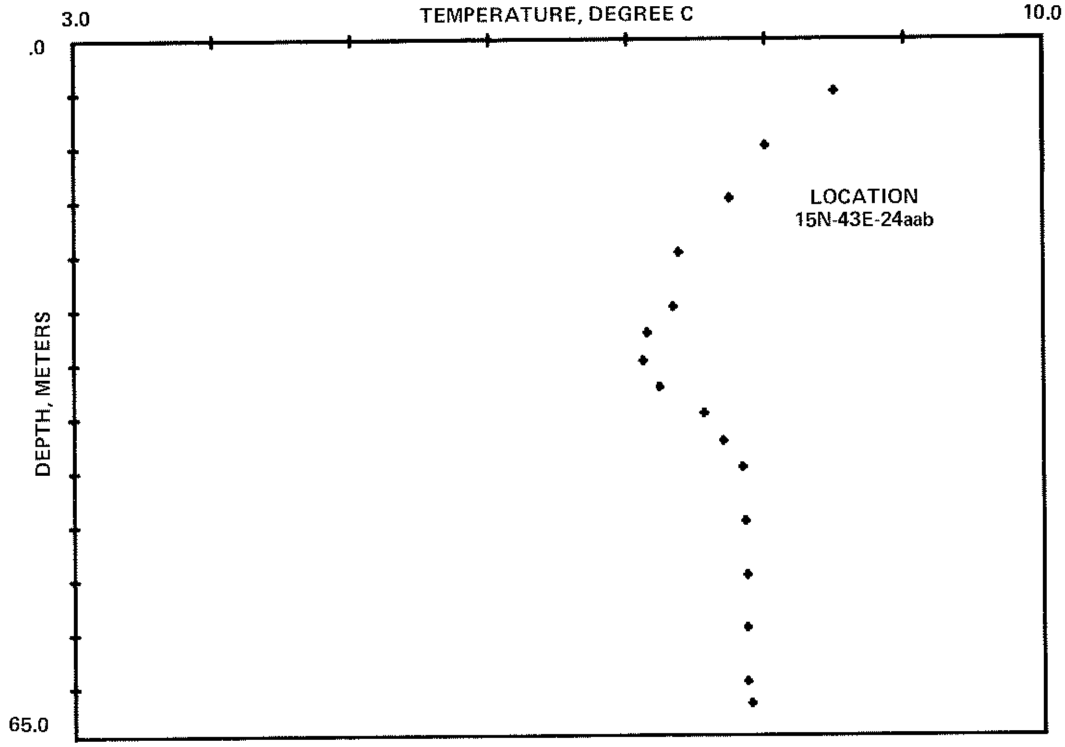
Temperature-Depth Logs of Measured Wells in Southern Idaho *(Continued)*

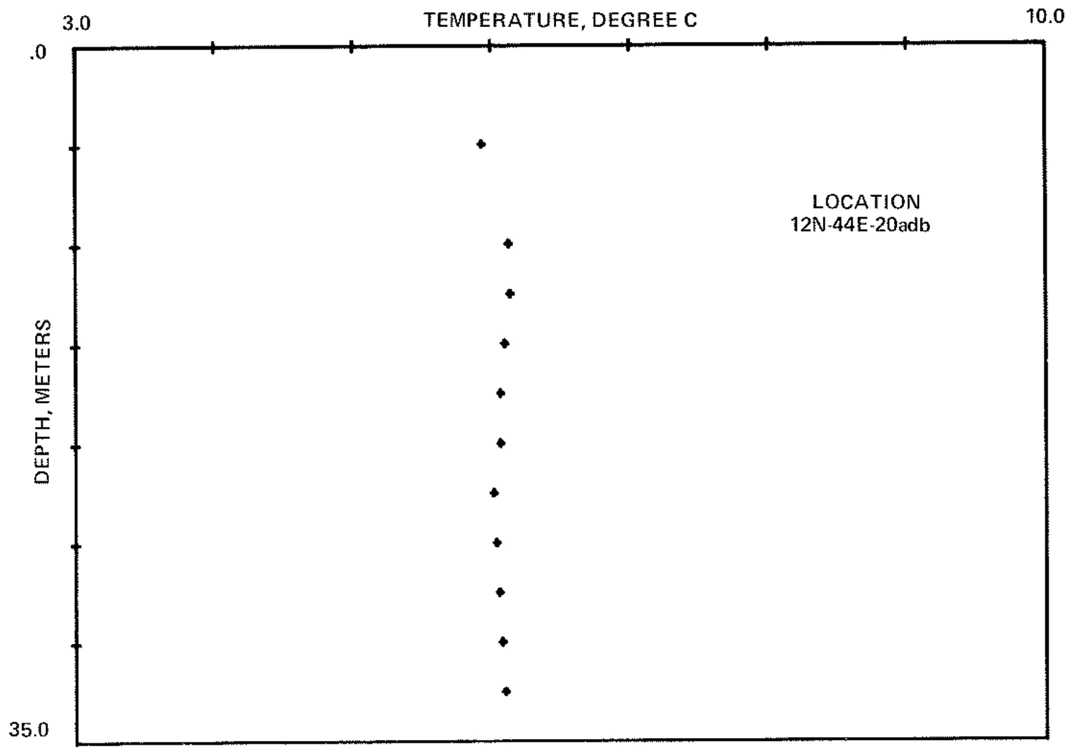
Depth Meters	Depth Feet	Temperature °C	Temperature °F	Geothermal Gradient °C/Km	Geothermal Gradient °F/100 Ft
		14S-15E-23cd (Date measured 7-12-74)			
10.0	32.8	12.37	54.27		
20.0	65.6	13.41	56.14	104.0	5.7
30.0	98.4	16.20	61.16	279.0	15.3
40.0	131.2	18.31	64.96	211.0	11.6
50.0	164.0	21.05	69.89	274.0	15.0
60.0	196.8	23.55	74.39	250.0	13.7
70.0	229.6	26.38	79.48	283.0	15.5
80.0	262.4	26.57	79.83	19.0	1.0
90.0	295.2	26.73	80.11	16.0	0.9
92.0	301.8	26.80	80.24	35.0	1.9
		14S-15E-26bb (Date measured 7-12-74)			
10.0	32.8	13.64	56.55		
20.0	65.6	15.55	59.99	191.0	10.5
30.0	98.4	15.83	60.49	28.0	1.5
40.0	131.2	15.84	60.51	1.0	0.1
50.0	164.0	18.40	65.12	256.0	14.0
60.0	196.8	22.85	73.13	445.0	24.4
65.0	213.2	23.85	74.93	200.0	11.0
		14S-15E-28bad (Date measured 7-12-74)			
10.0	32.8	6.74	44.13		
20.0	65.6	13.52	56.34	678.0	37.2
30.0	98.4	14.33	57.79	81.0	4.4
40.0	131.2	18.68	65.62	435.0	23.9
50.0	164.0	19.93	67.87	125.0	6.9
52.0	170.6	19.97	67.95	20.0	1.1

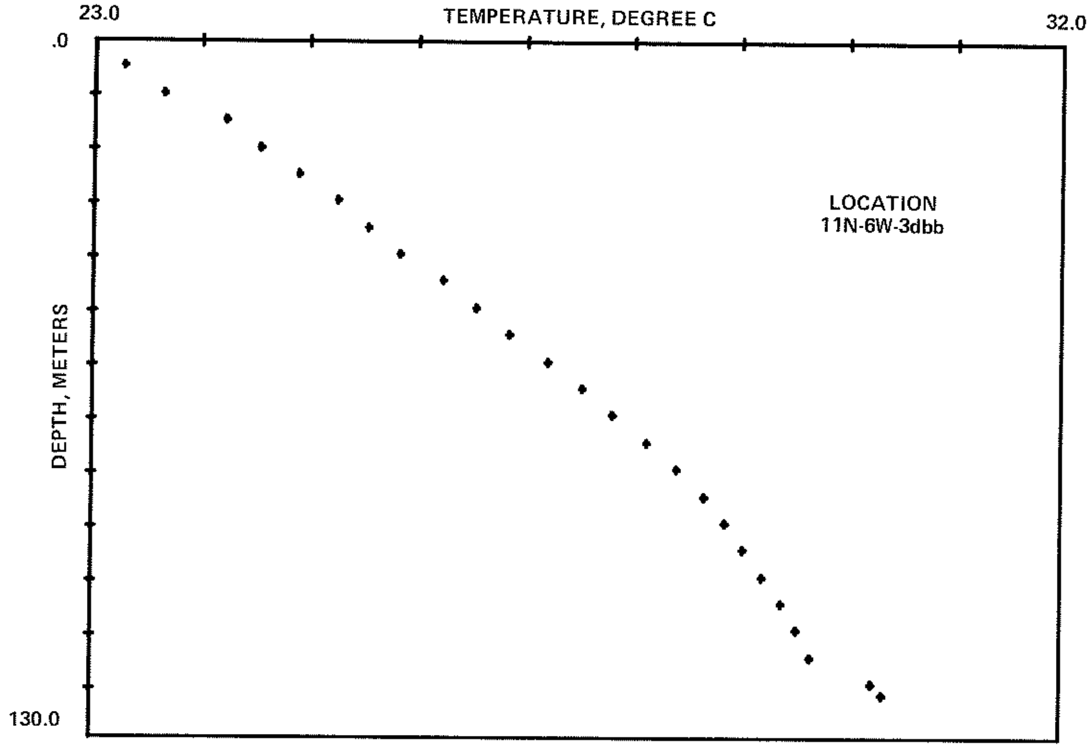
APPENDIX B

Temperature-Depth Diagrams

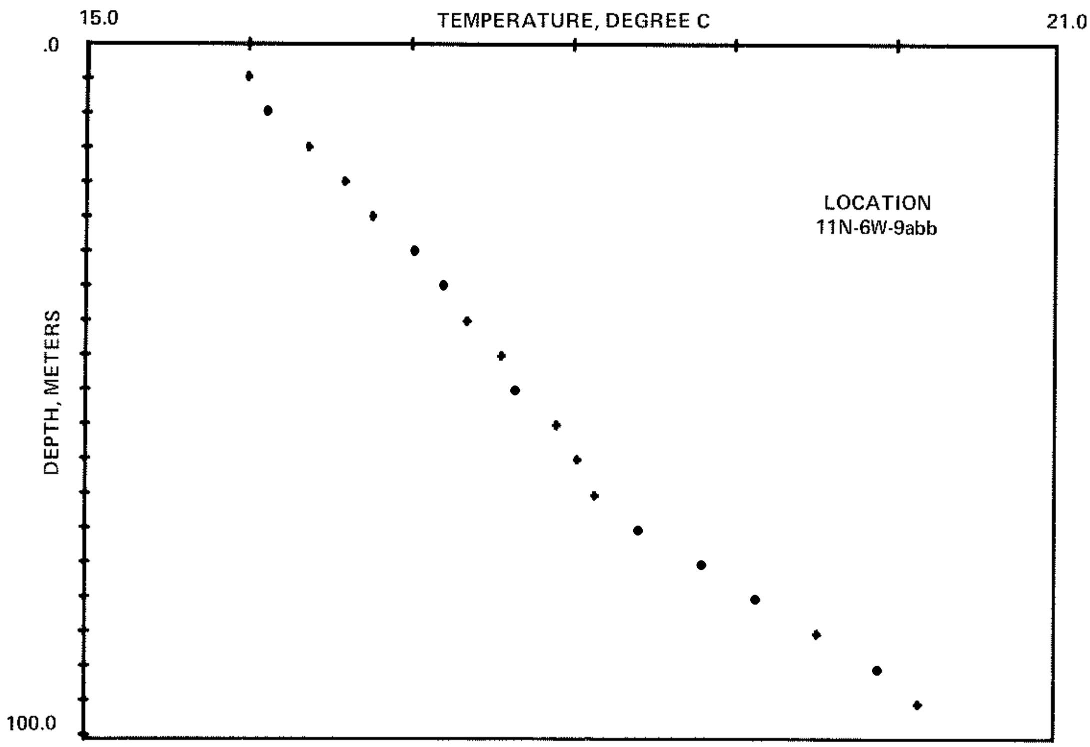
Temperature vs. depth diagrams plotted from data of Appendix A from measured wells in southern Idaho.


TEMPERATURE, DEGREE C
3.0
10.0
.0
65.0
DEPTH, METERS
LOCATION
15N-43E-24aab

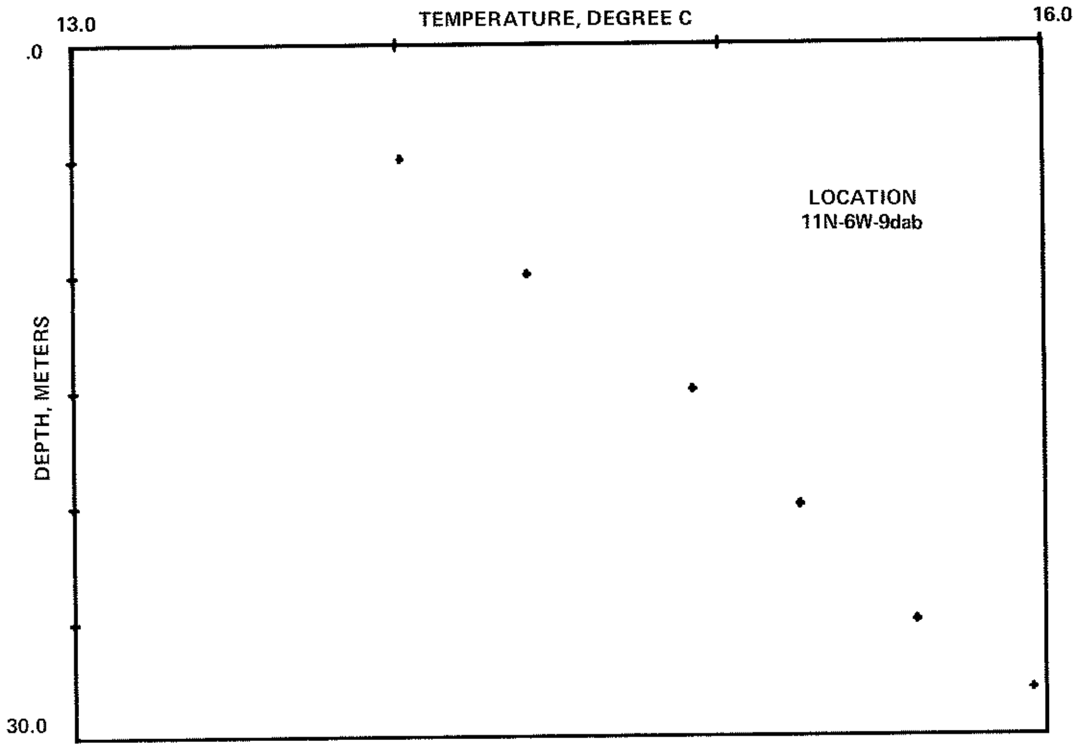

TEMPERATURE, DEGREE C
3.0
10.0
.0
35.0
DEPTH, METERS
LOCATION
12N-44E-20adb

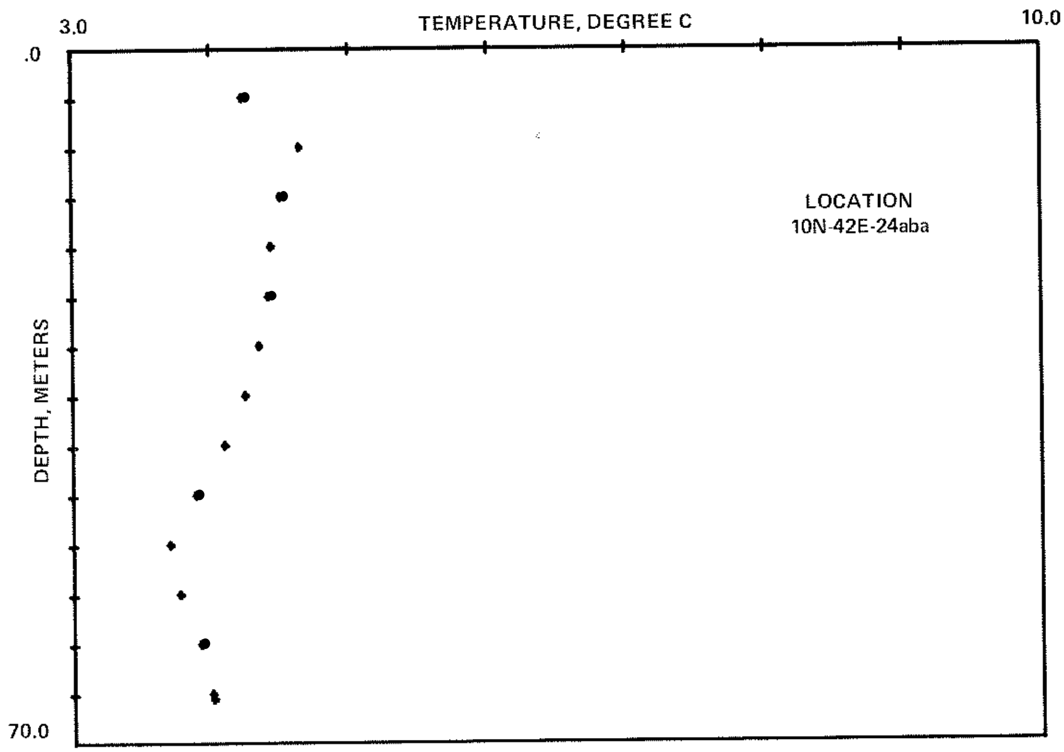


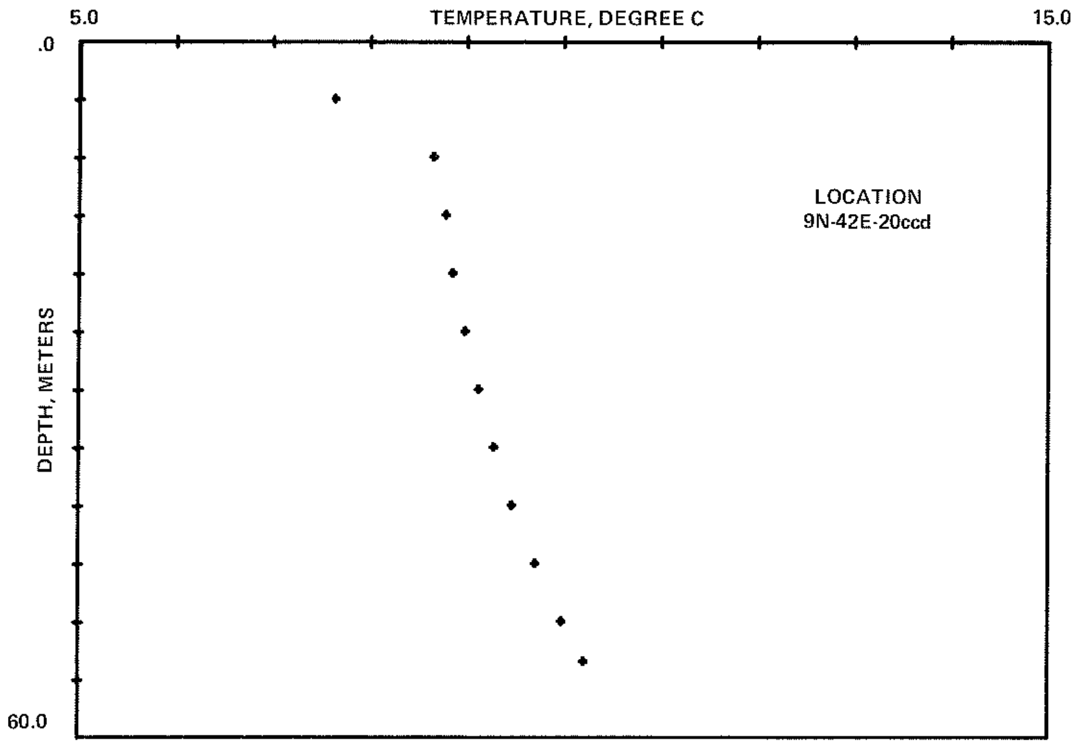
23.0
TEMPERATURE, DEGREE C
32.0
.0
DEPTH, METERS
130.0
LOCATION
11N-6W-3dbb

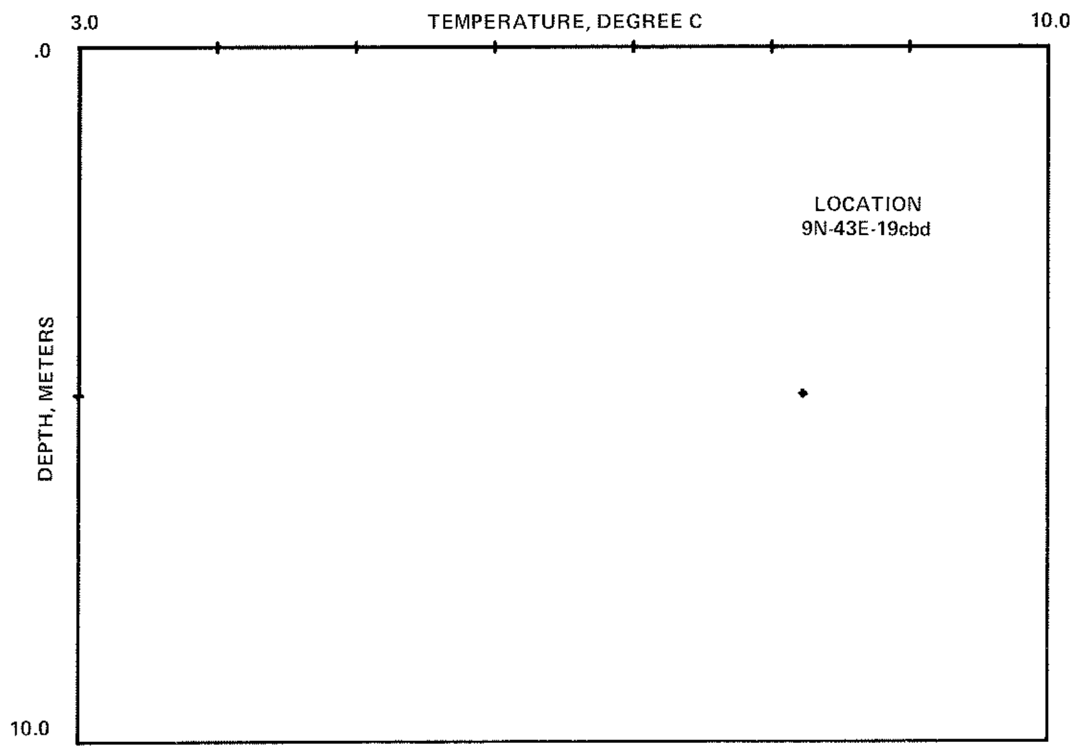


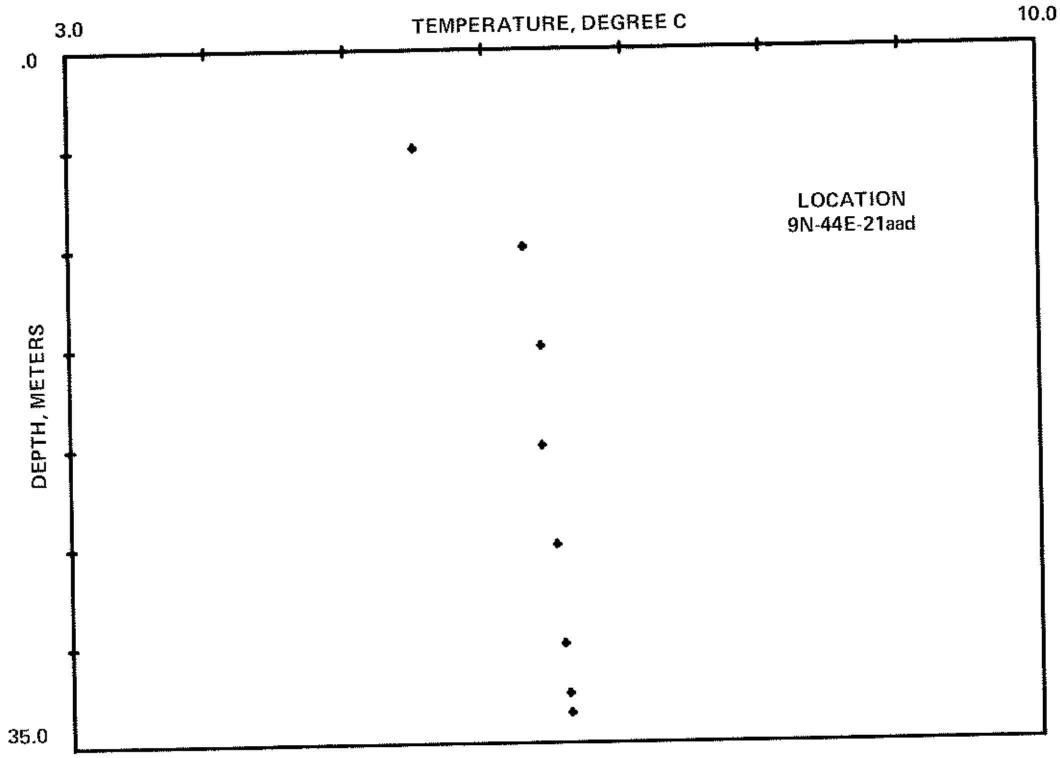
15.0
TEMPERATURE, DEGREE C
21.0
.0
DEPTH, METERS
100.0
LOCATION
11N-6W-9abb

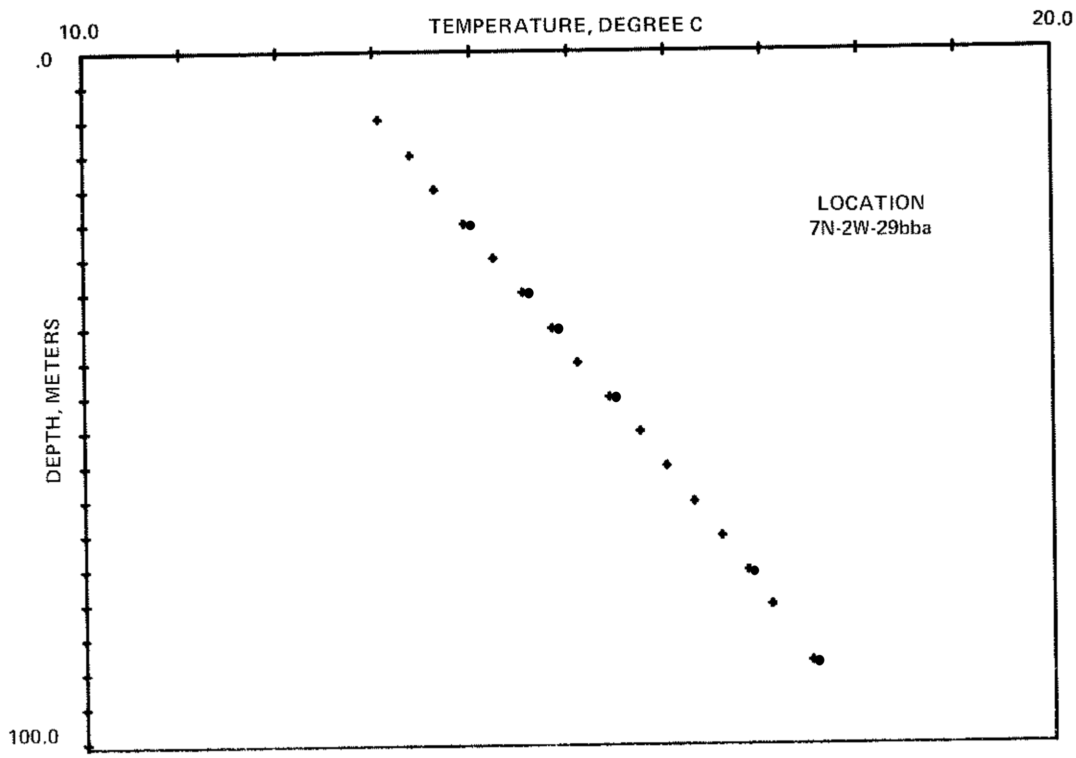

TEMPERATURE, DEGREE C
13.0
16.0
.0
30.0
DEPTH, METERS
LOCATION
11N-6W-9dab

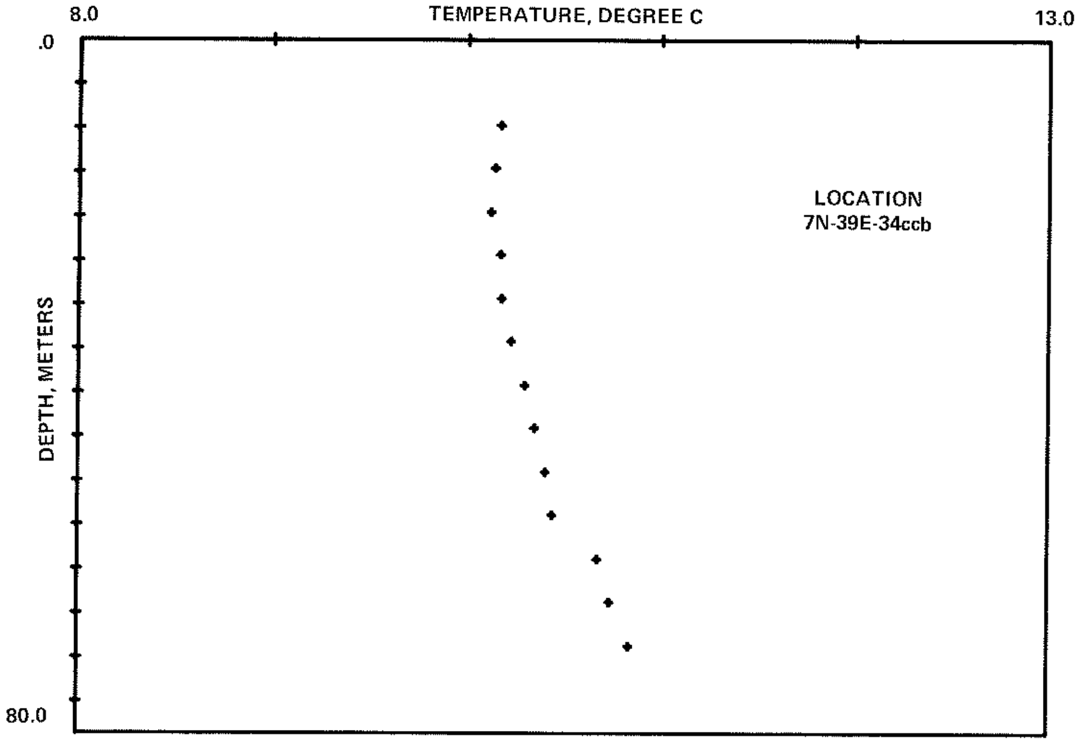

TEMPERATURE, DEGREE C
3.0
10.0
.0
70.0
DEPTH, METERS
LOCATION
10N-42E-24aba

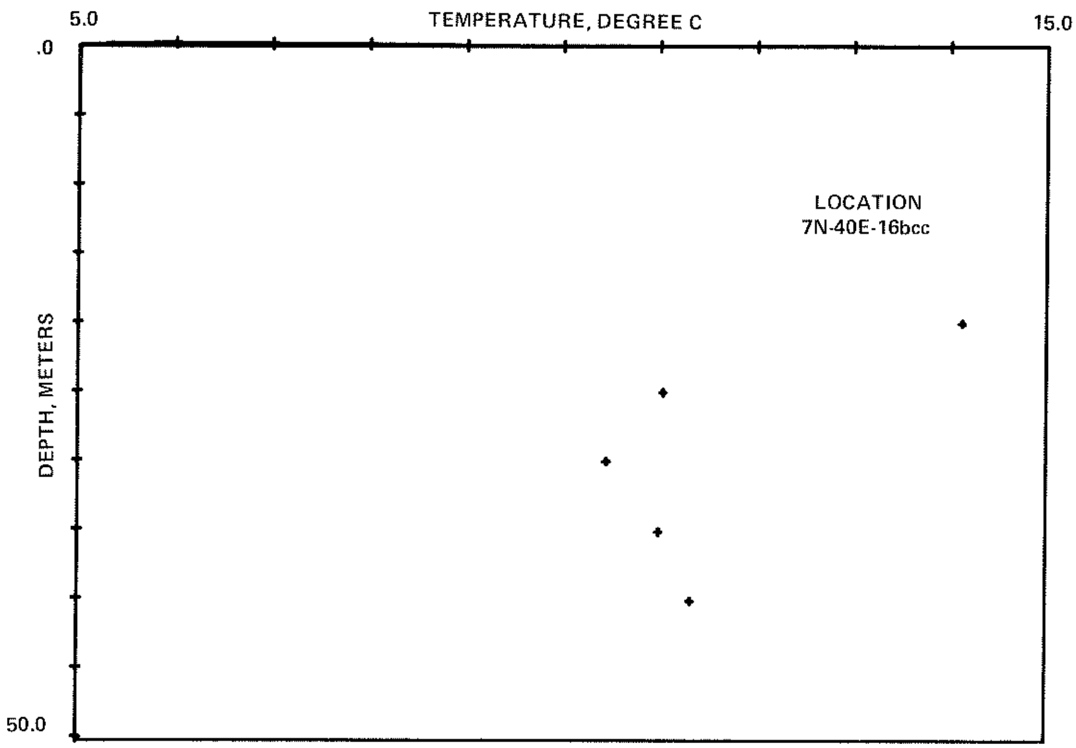

5.0
TEMPERATURE, DEGREE C
15.0
.0
60.0
DEPTH, METERS
LOCATION
9N-42E-20ccd

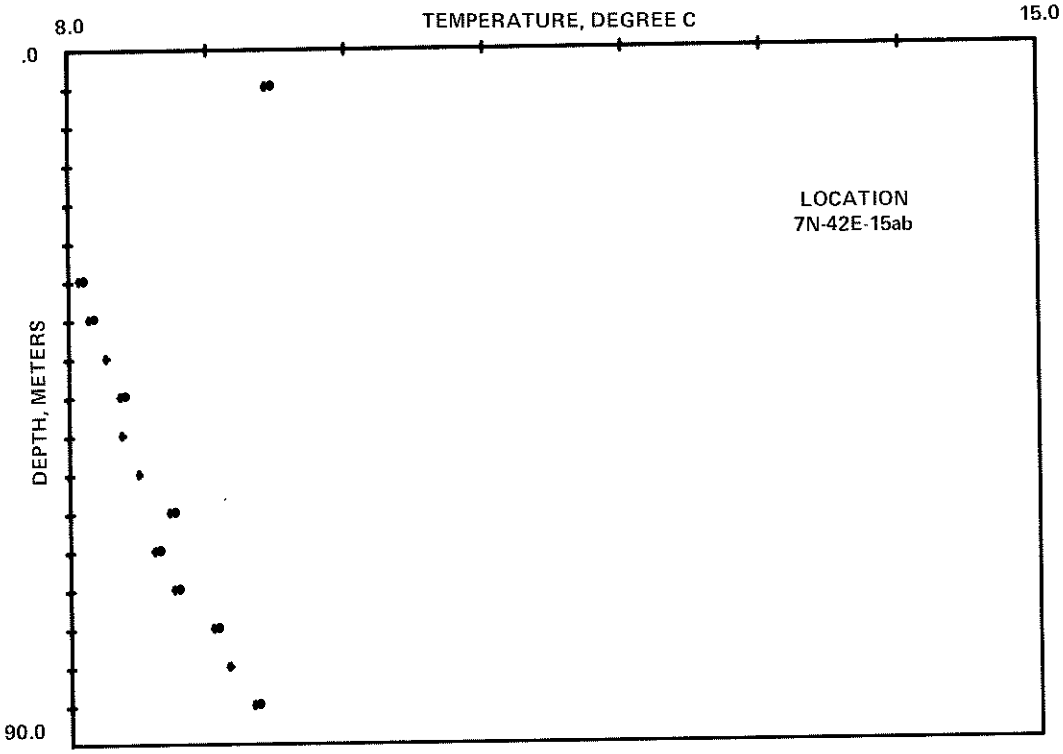

3.0
TEMPERATURE, DEGREE C
10.0
.0
10.0
DEPTH, METERS
LOCATION
9N-43E-19cbd

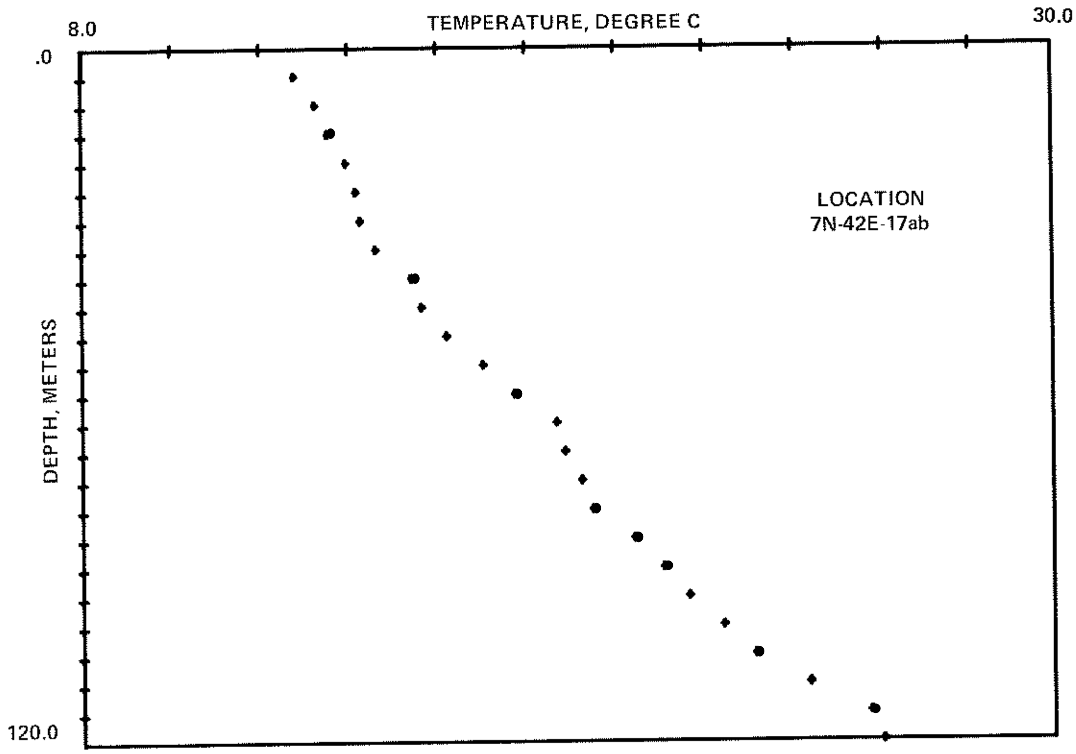

TEMPERATURE, DEGREE C
3.0
10.0
.0
35.0
DEPTH, METERS
LOCATION
9N-44E-21aad

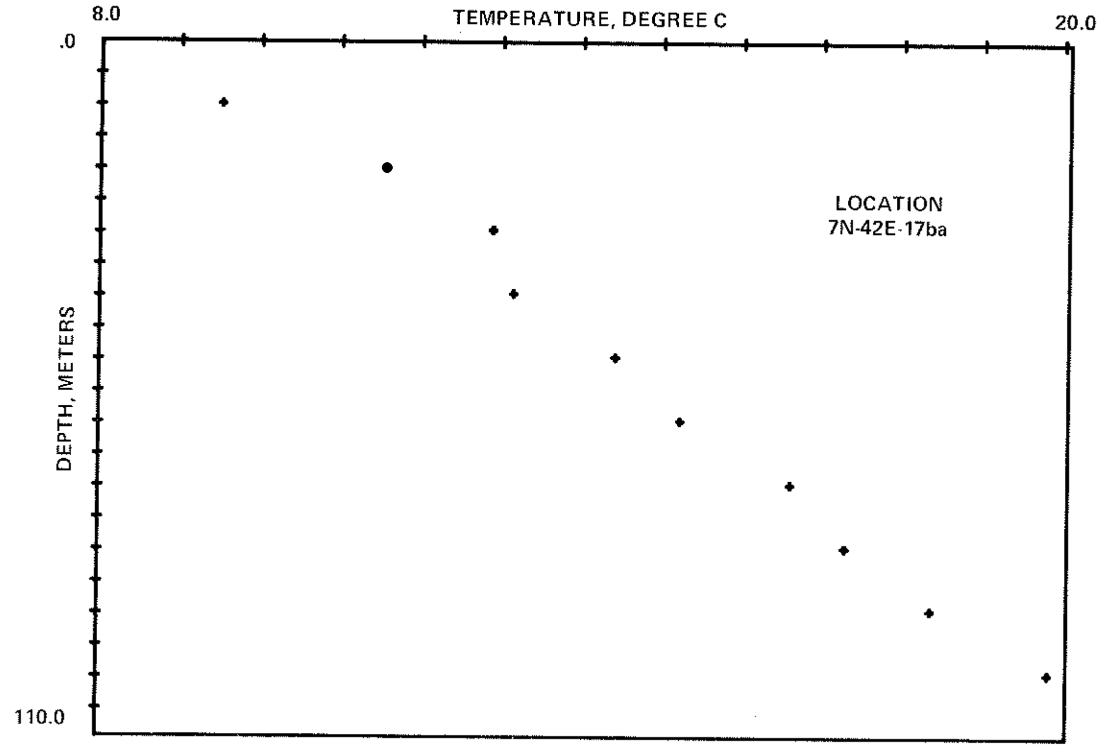

TEMPERATURE, DEGREE C
10.0
20.0
.0
100.0
DEPTH, METERS
LOCATION
7N-2W-29bba

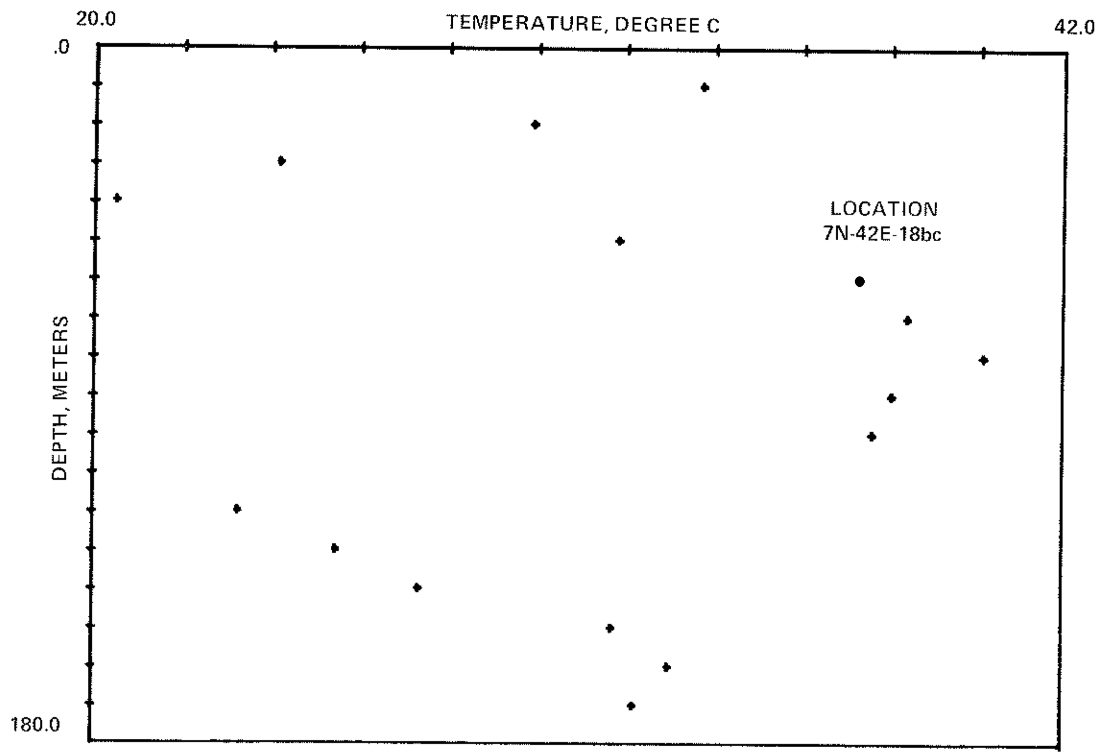

8.0
TEMPERATURE, DEGREE C
13.0
.0
LOCATION
7N-39E-34ccb
DEPTH, METERS
80.0

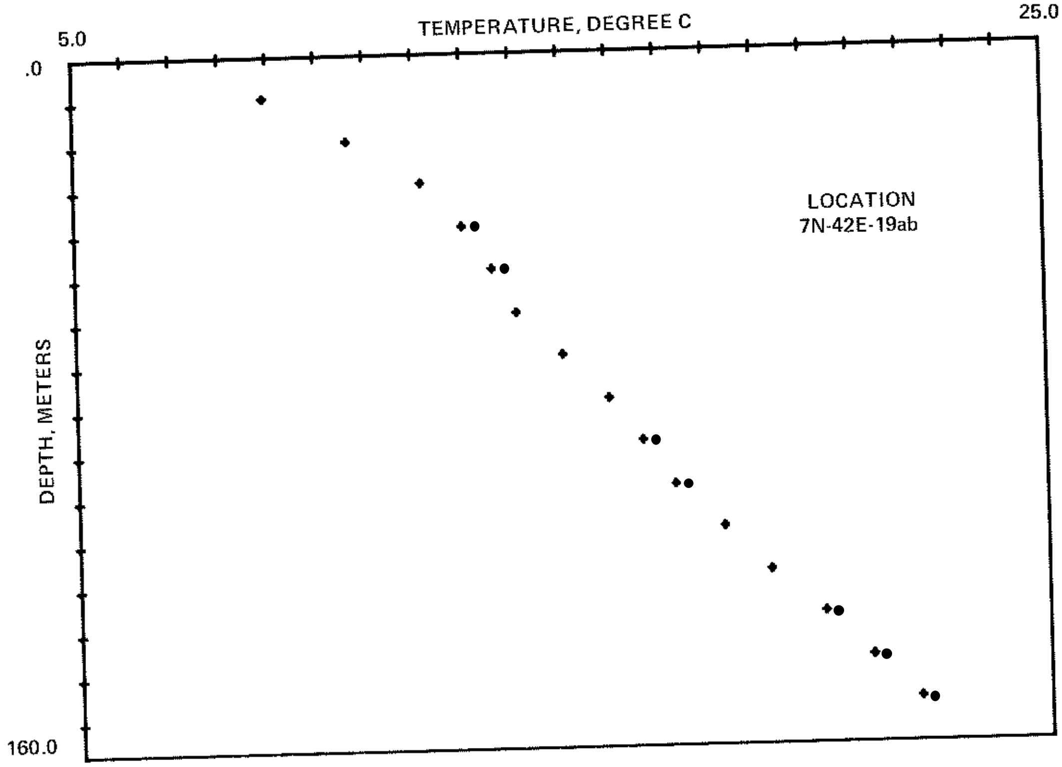

5.0
TEMPERATURE, DEGREE C
15.0
.0
LOCATION
7N-40E-16bcc
DEPTH, METERS
50.0


TEMPERATURE, DEGREE C
8.0
15.0
.0
90.0
DEPTH, METERS
LOCATION
7N-42E-15ab

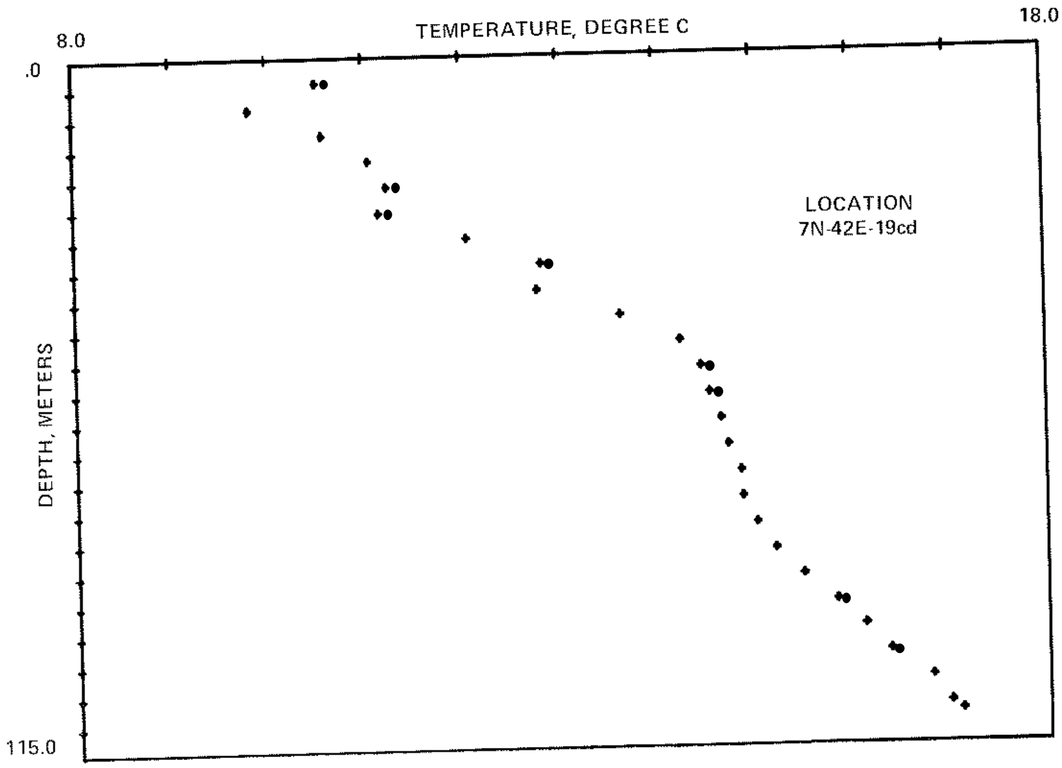

TEMPERATURE, DEGREE C
8.0
30.0
.0
120.0
DEPTH, METERS
LOCATION
7N-42E-17ab


8.0
TEMPERATURE, DEGREE C
20.0
.0
110.0
DEPTH, METERS
LOCATION
7N-42E-17ba

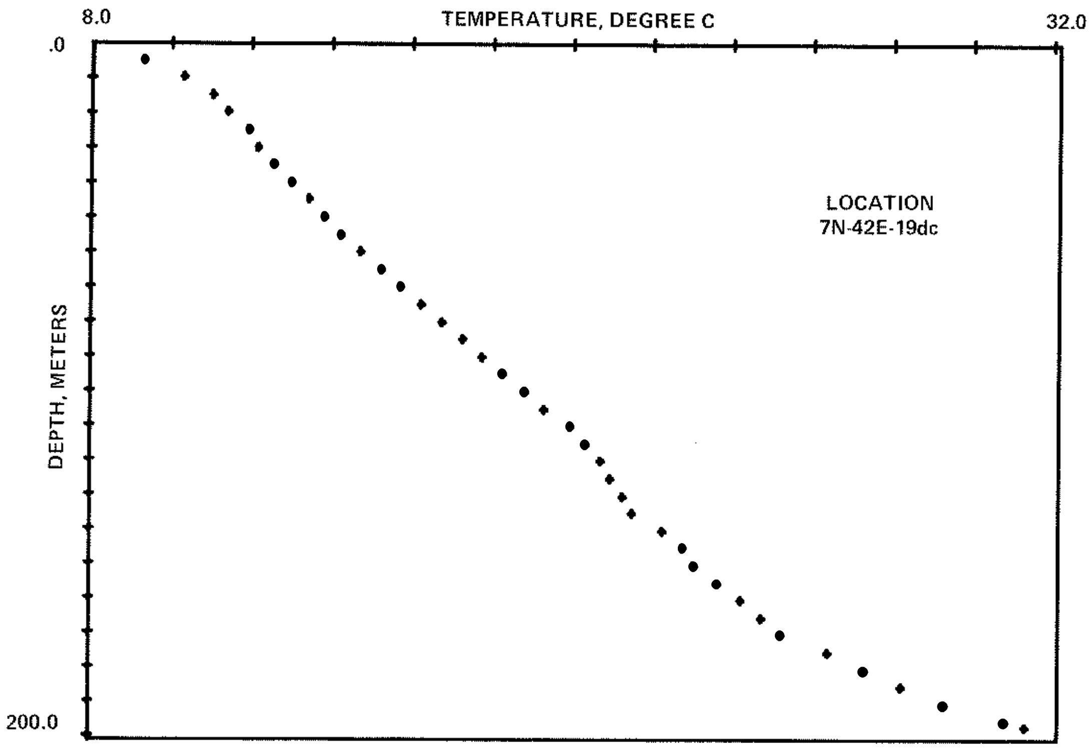

20.0
TEMPERATURE, DEGREE C
42.0
.0
180.0
DEPTH, METERS
LOCATION
7N-42E-18bc

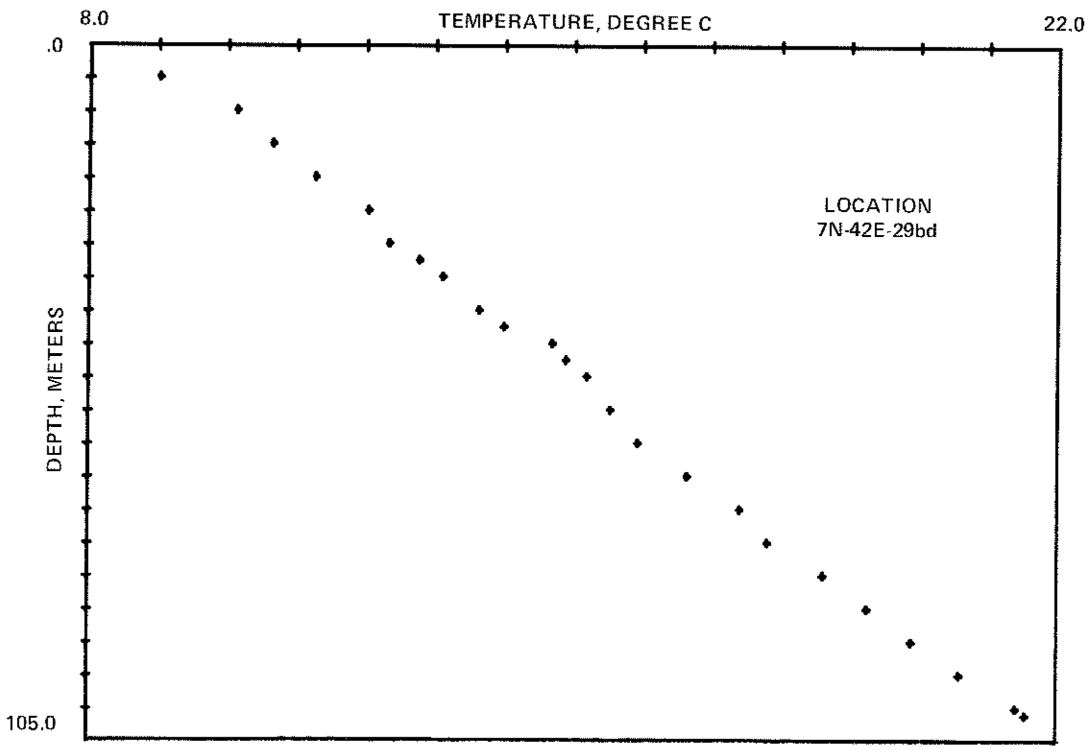


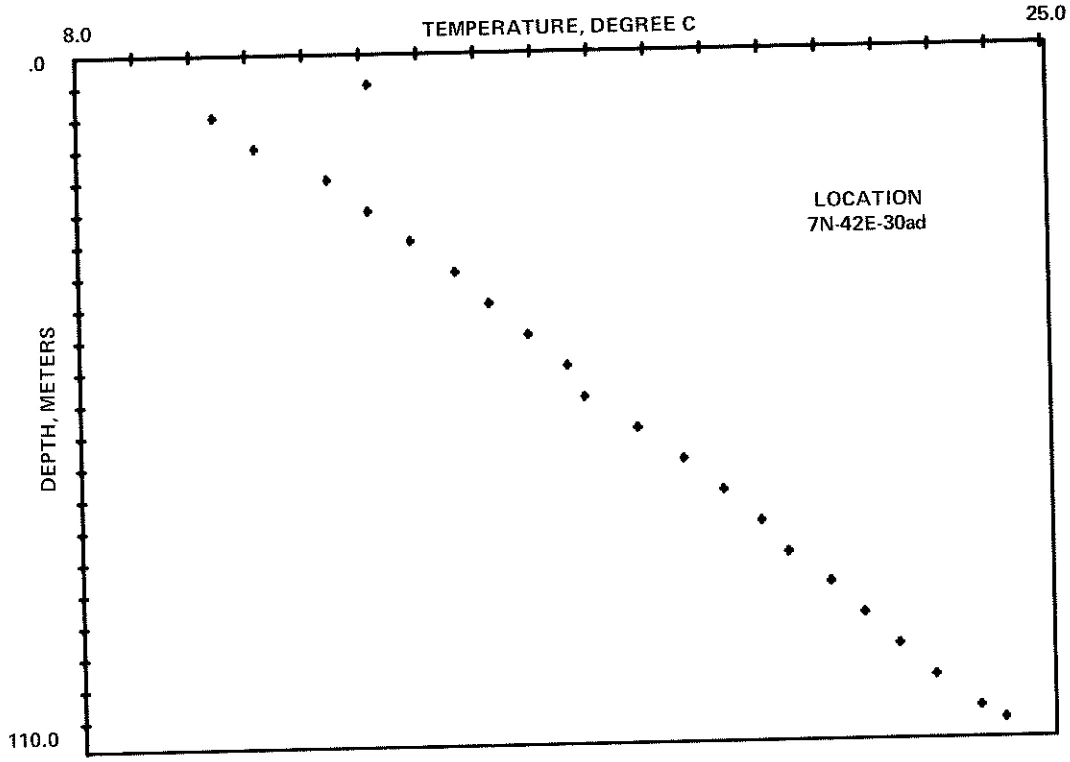
TEMPERATURE, DEGREE C
5.0
25.0
.0
160.0
DEPTH, METERS
LOCATION
7N-42E-19ab

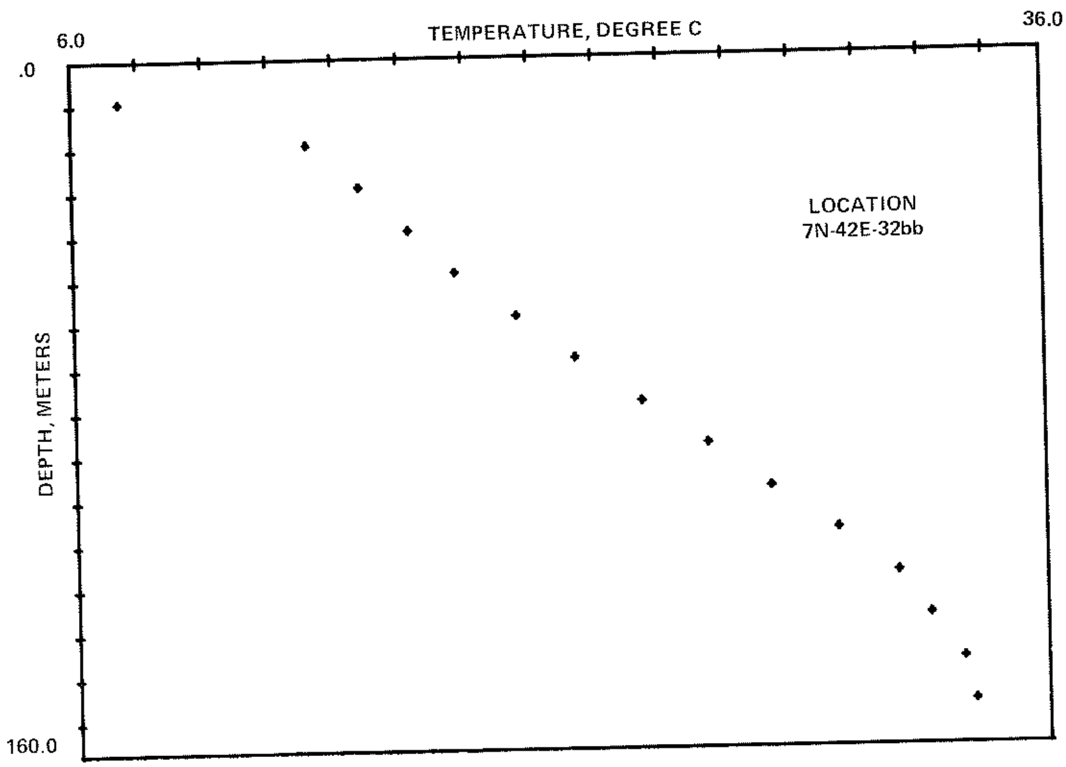


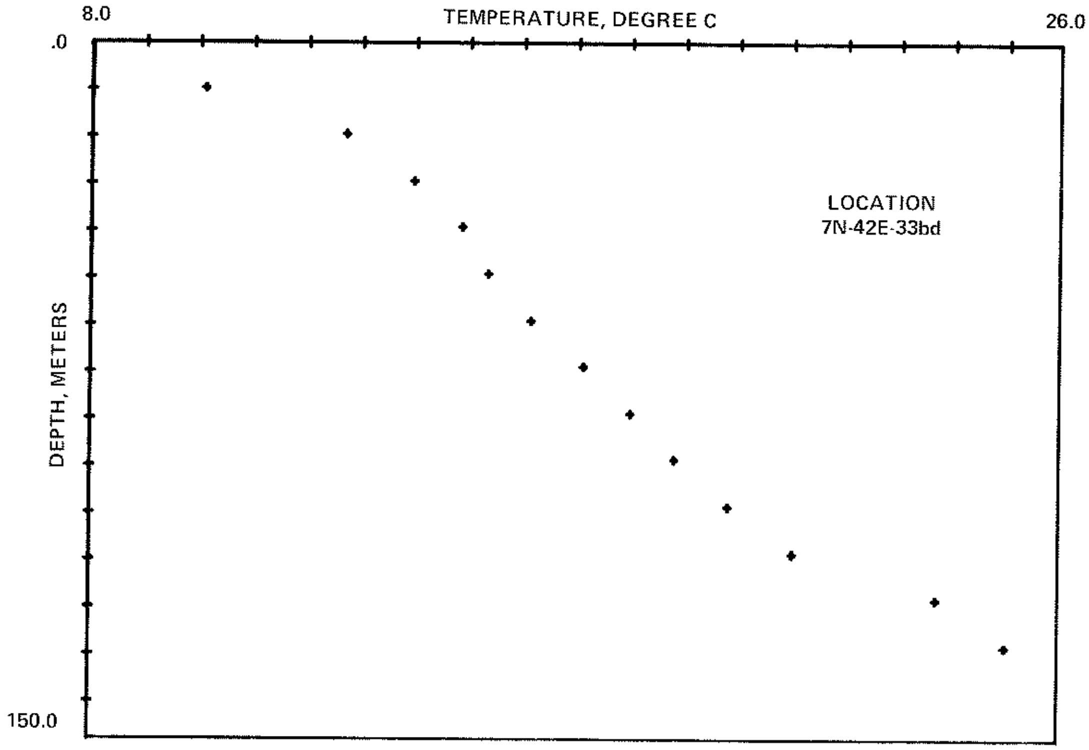
TEMPERATURE, DEGREE C
8.0
18.0
.0
115.0
DEPTH, METERS
LOCATION
7N-42E-19cd

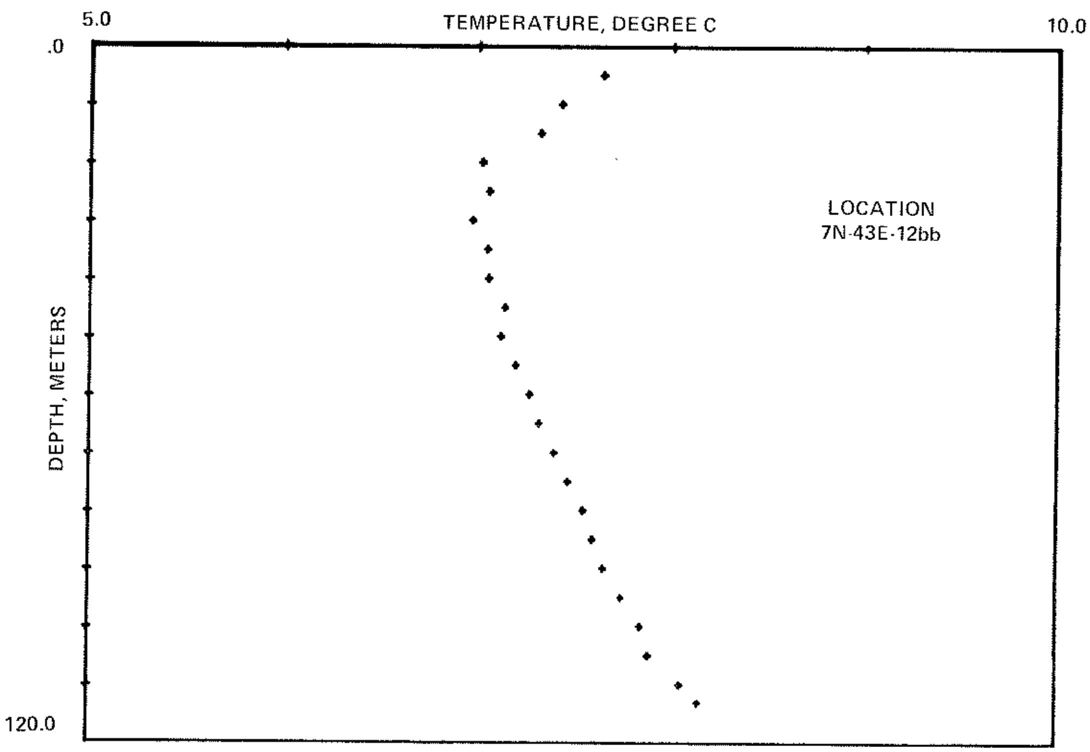

8.0
TEMPERATURE, DEGREE C
32.0
.0
DEPTH, METERS
200.0
LOCATION
7N-42E-19dc

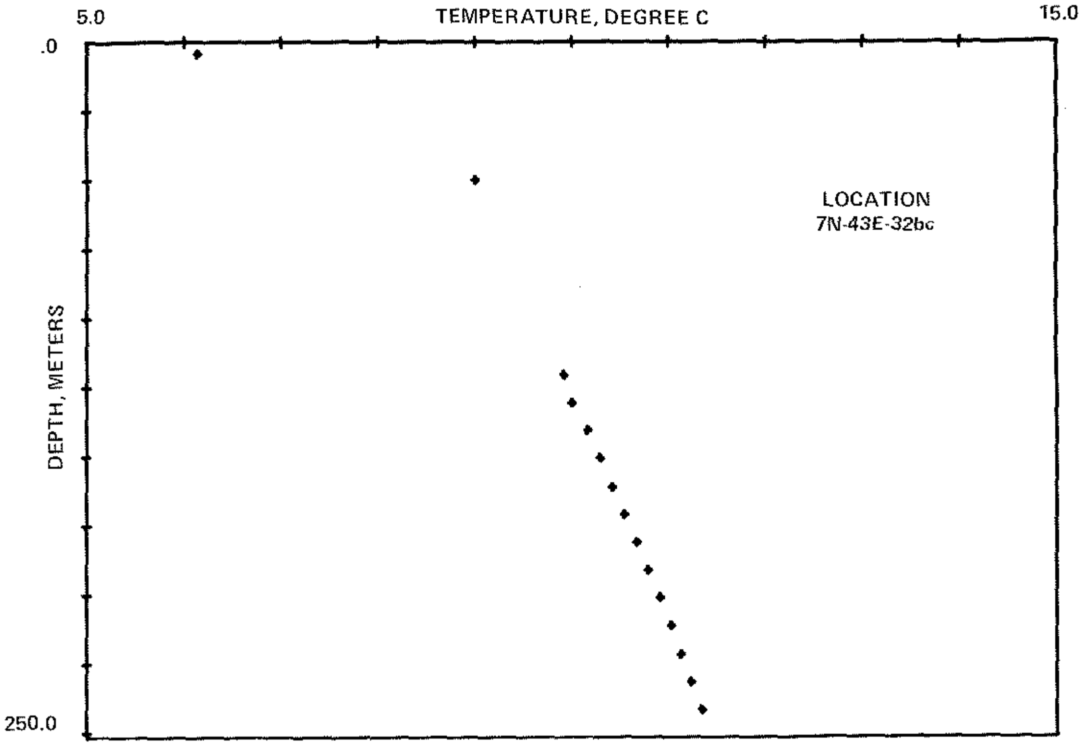

8.0
TEMPERATURE, DEGREE C
22.0
.0
DEPTH, METERS
105.0
LOCATION
7N-42E-29bd


TEMPERATURE, DEGREE C
8.0
25.0
.0
110.0
DEPTH, METERS
LOCATION
7N-42E-30ad

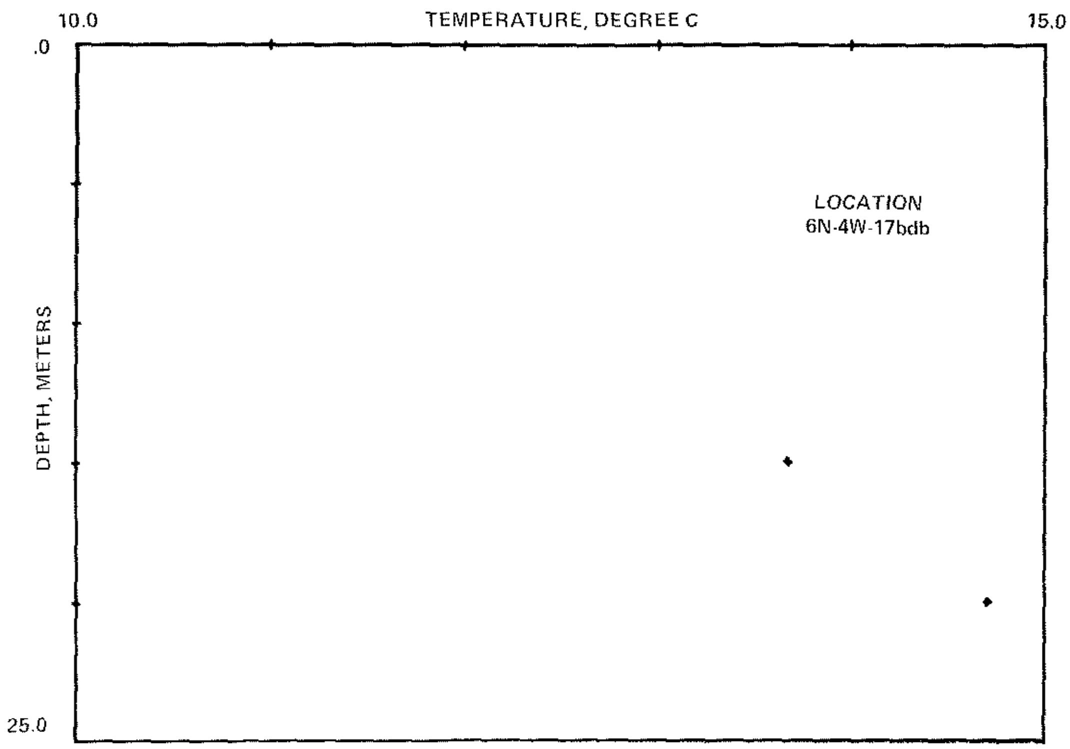

TEMPERATURE, DEGREE C
6.0
36.0
.0
160.0
DEPTH, METERS
LOCATION
7N-42E-32bb


8.0
TEMPERATURE, DEGREE C
26.0
.0
LOCATION
7N-42E-33bd
DEPTH, METERS
150.0

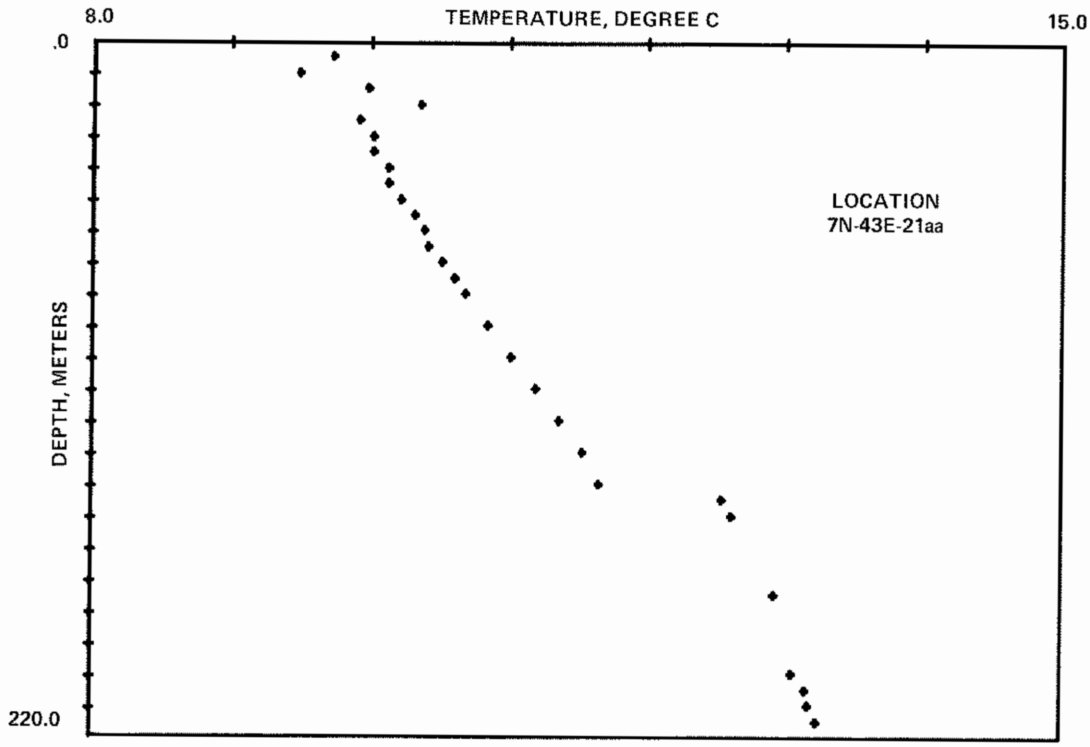

5.0
TEMPERATURE, DEGREE C
10.0
.0
LOCATION
7N-43E-12bb
DEPTH, METERS
120.0

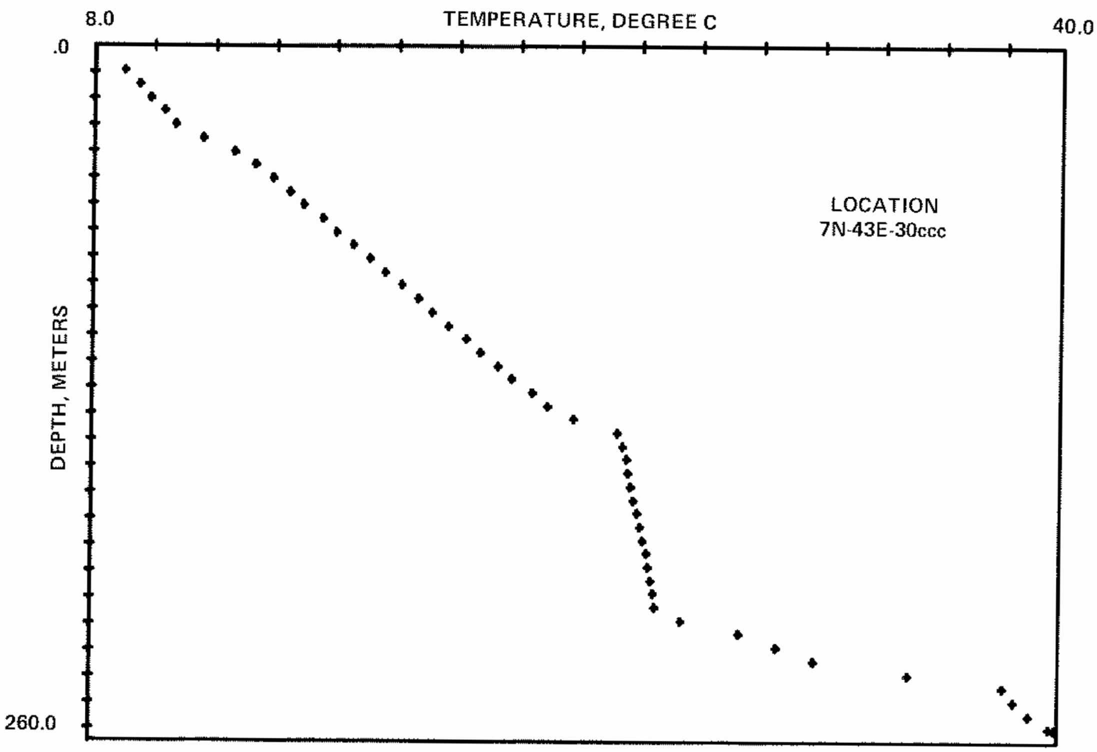


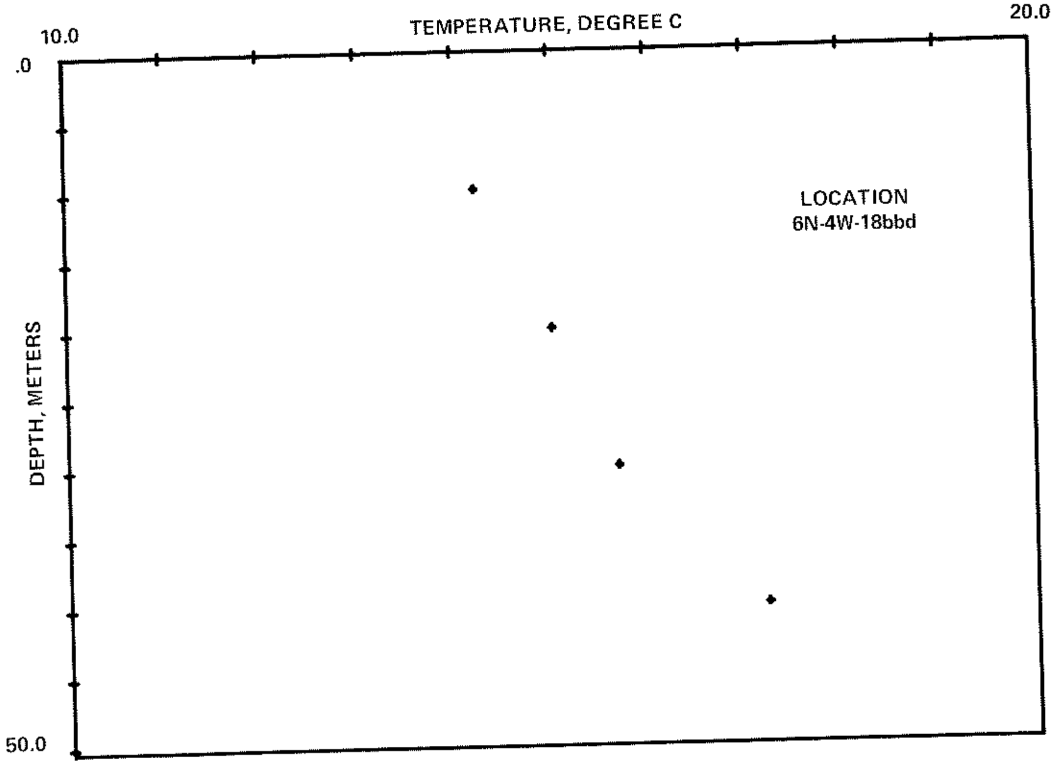
5.0
TEMPERATURE, DEGREE C
15.0
.0
250.0
DEPTH, METERS
LOCATION
7N-43E-32bc

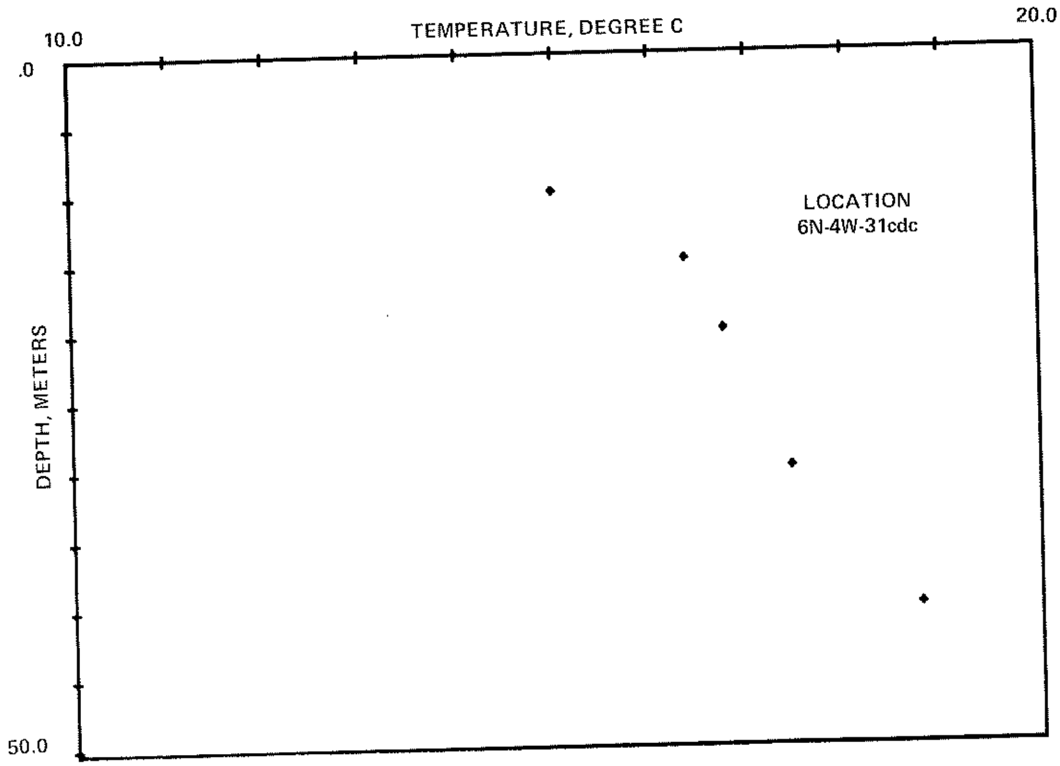


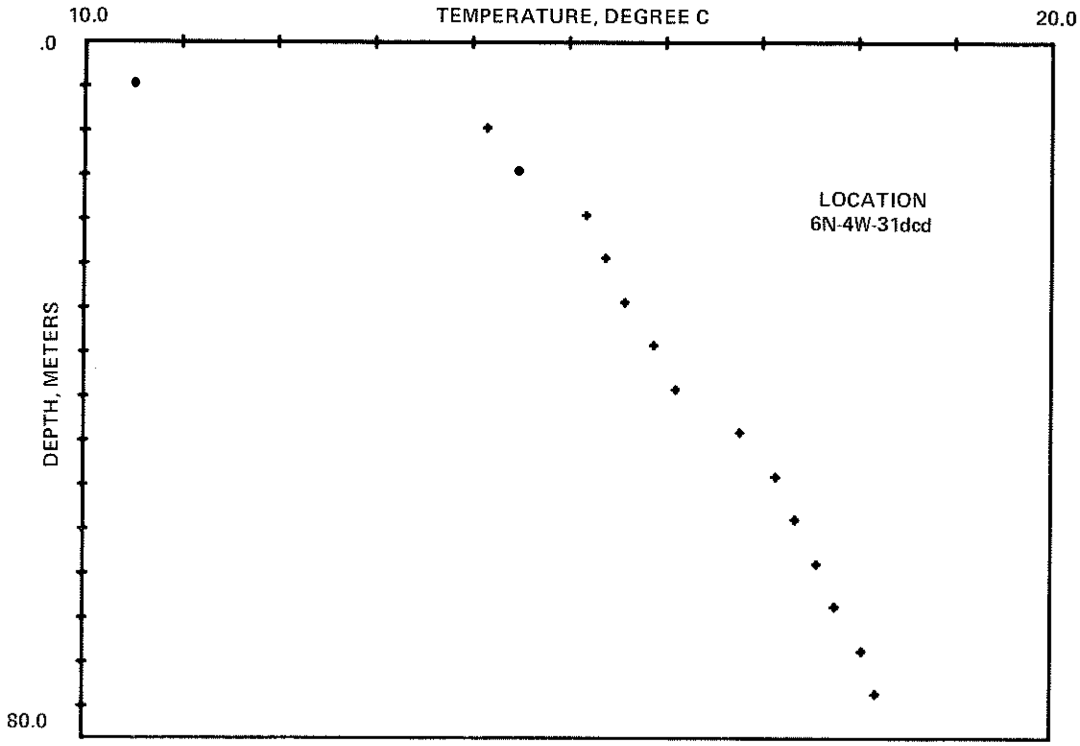
10.0
TEMPERATURE, DEGREE C
15.0
.0
25.0
DEPTH, METERS
LOCATION
6N-4W-17bdb

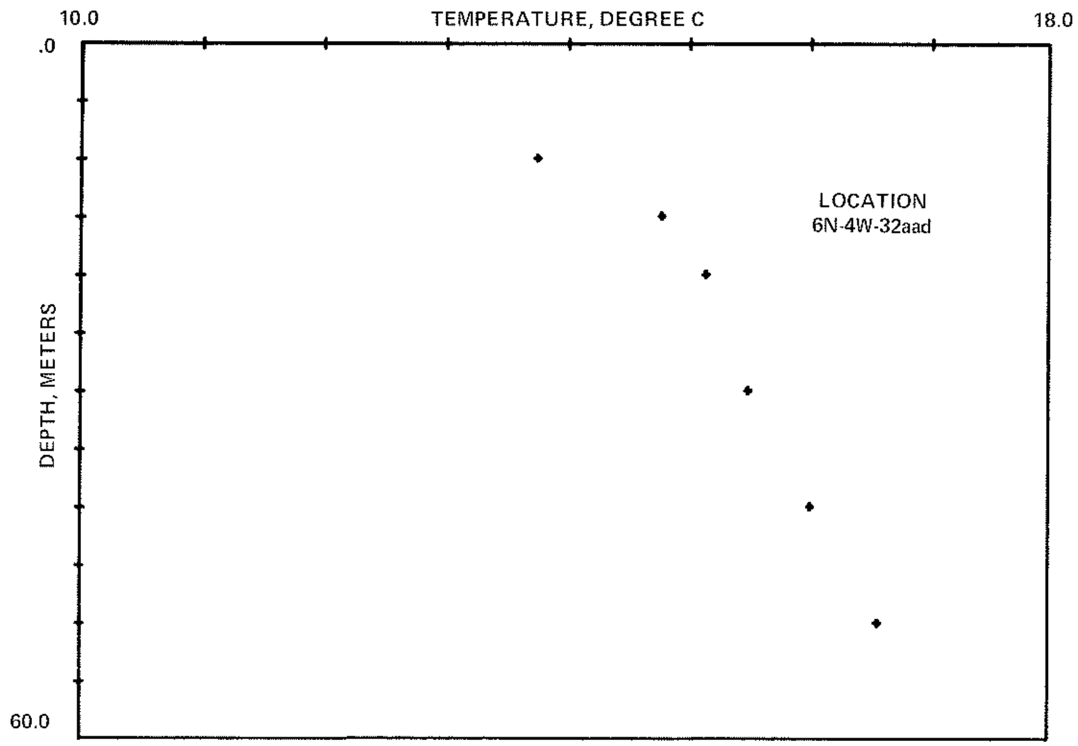

8.0
TEMPERATURE, DEGREE C
15.0
.0
DEPTH, METERS
220.0
LOCATION
7N-43E-21aa

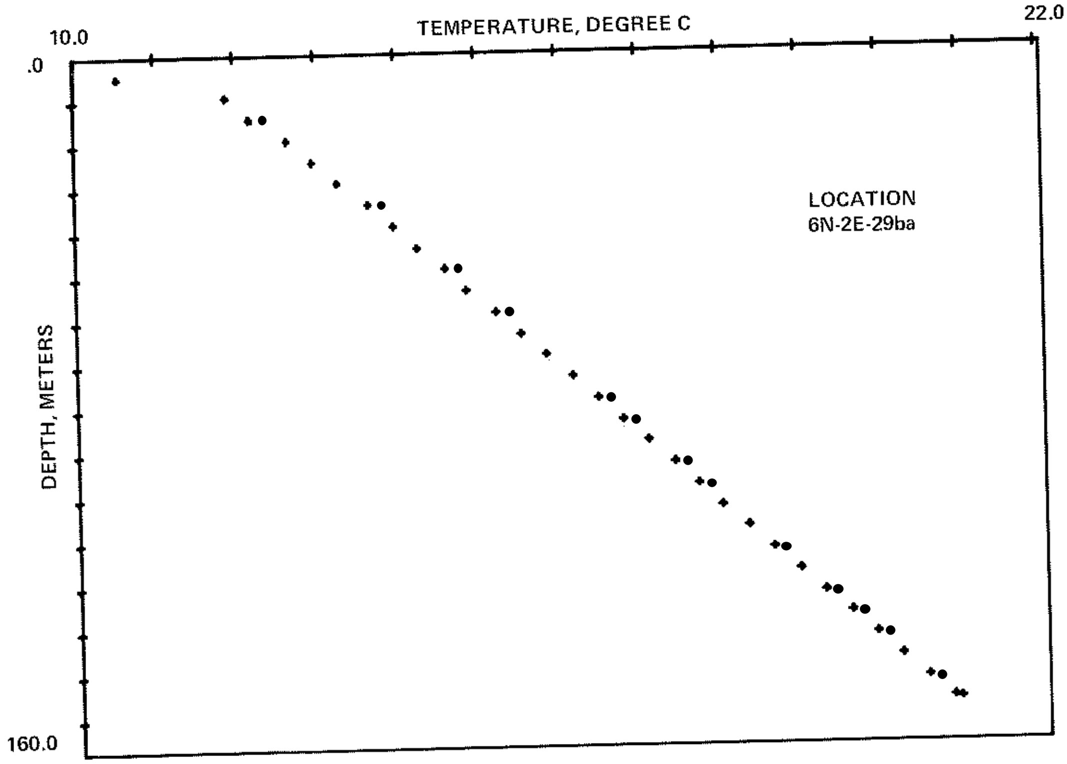

8.0
TEMPERATURE, DEGREE C
40.0
.0
DEPTH, METERS
260.0
LOCATION
7N-43E-30ccc


TEMPERATURE, DEGREE C
10.0
20.0
.0
50.0
DEPTH, METERS
LOCATION
6N-4W-18bbd

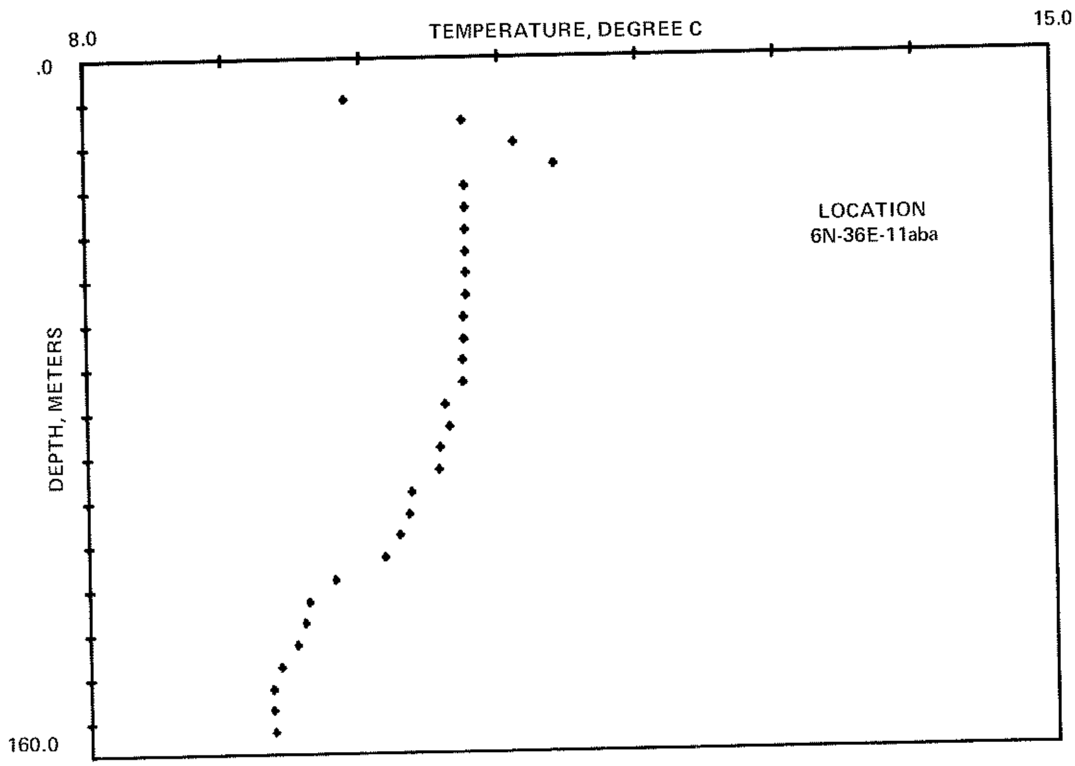

TEMPERATURE, DEGREE C
10.0
20.0
.0
50.0
DEPTH, METERS
LOCATION
6N-4W-31cdc


10.0
TEMPERATURE, DEGREE C
20.0
.0
DEPTH, METERS
80.0
LOCATION
6N-4W-31dcd

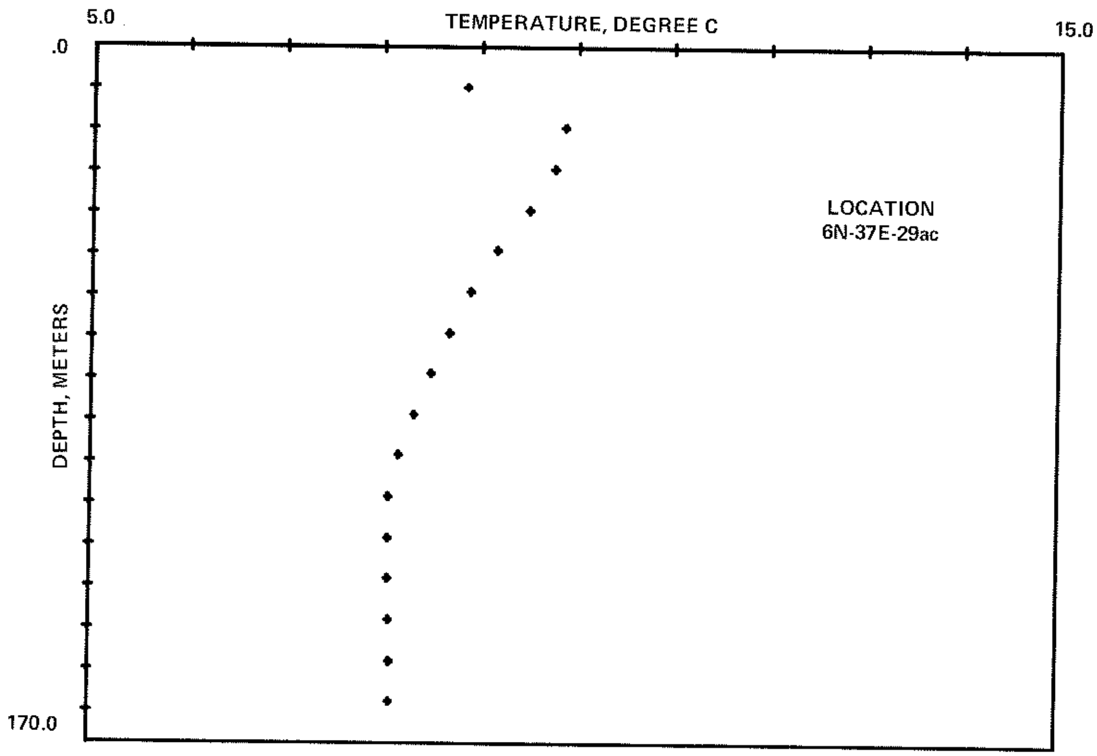

10.0
TEMPERATURE, DEGREE C
18.0
.0
DEPTH, METERS
60.0
LOCATION
6N-4W-32aad



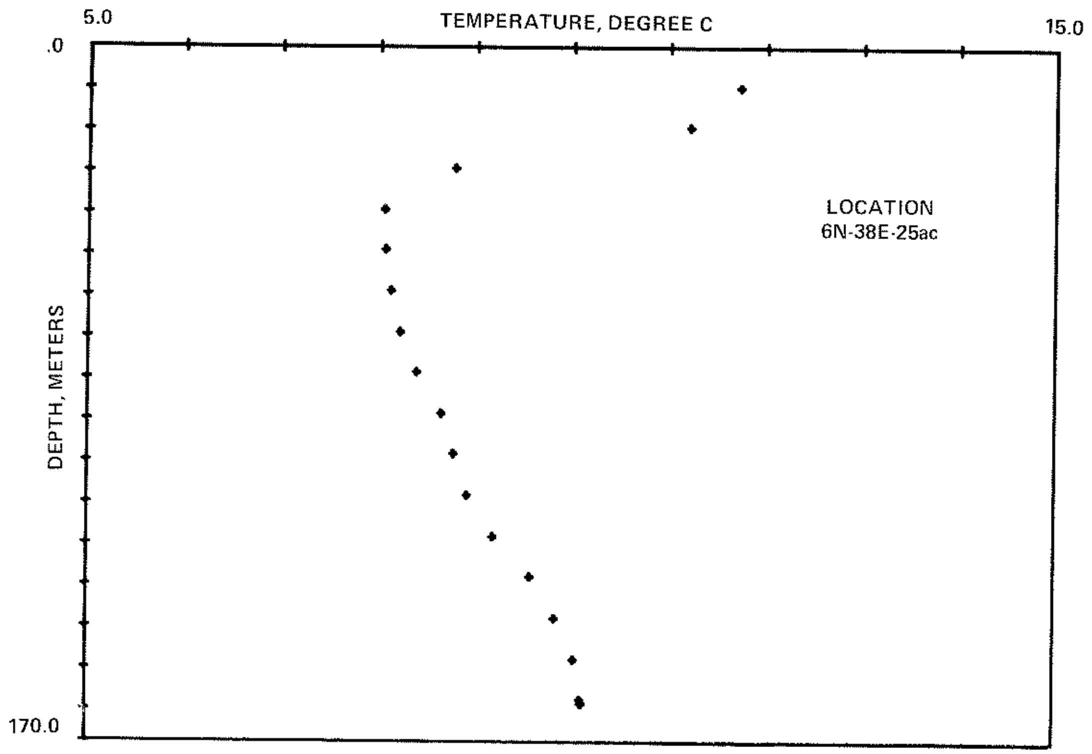
TEMPERATURE, DEGREE C
10.0
22.0
.0
160.0
DEPTH, METERS
LOCATION
6N-2E-29ba



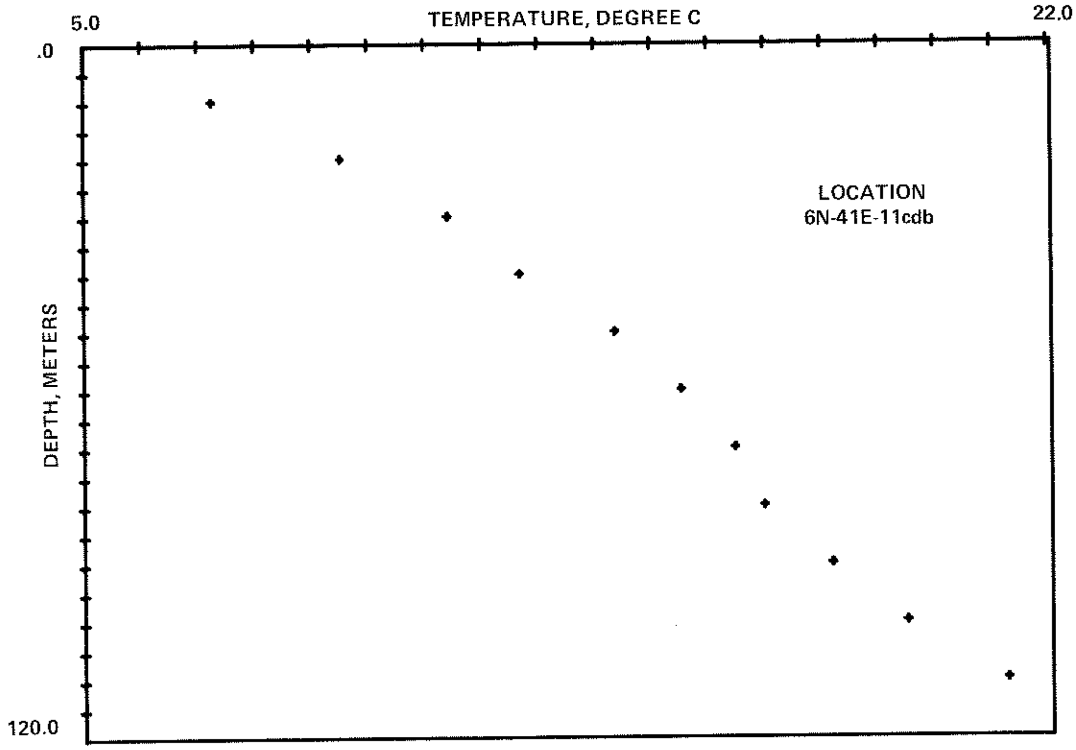
TEMPERATURE, DEGREE C
8.0
15.0
.0
160.0
DEPTH, METERS
LOCATION
6N-36E-11aba

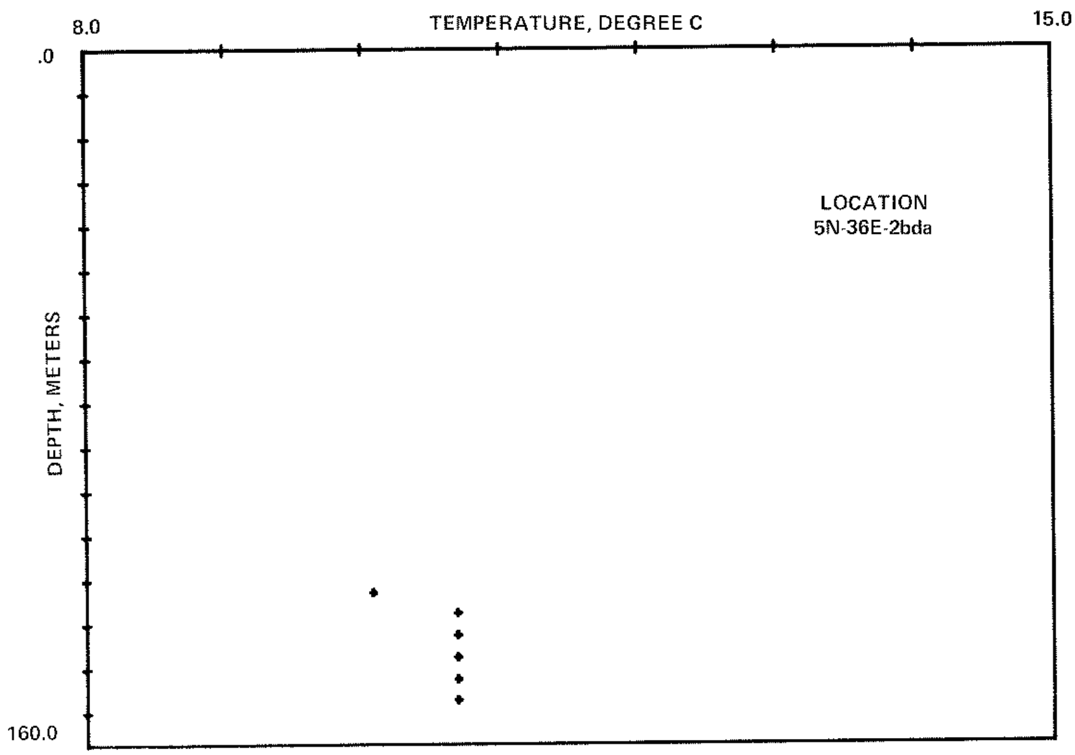


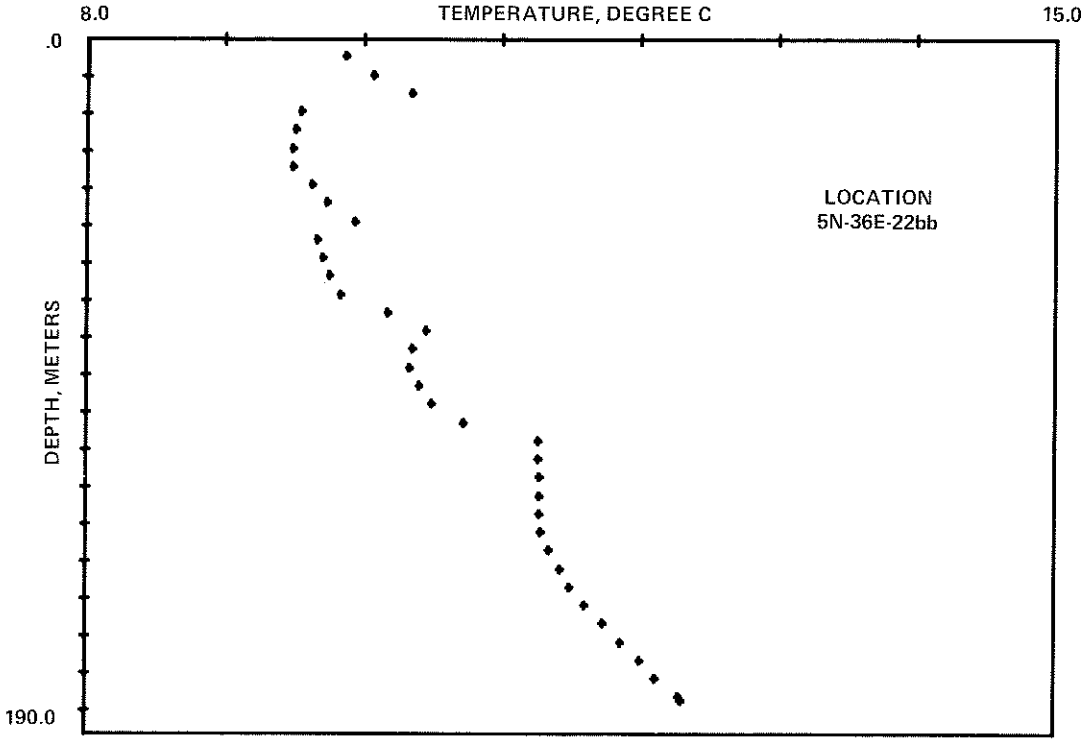
5.0
TEMPERATURE, DEGREE C
15.0
.0
170.0
DEPTH, METERS
LOCATION
6N-37E-29ac



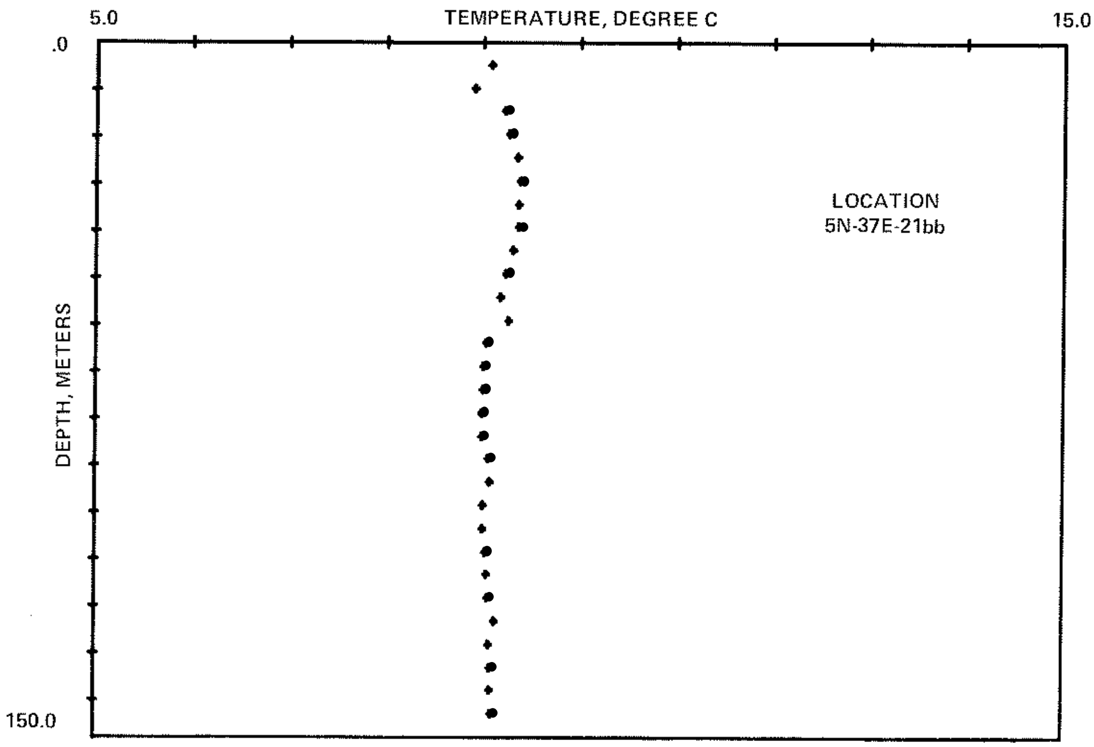
5.0
TEMPERATURE, DEGREE C
15.0
.0
170.0
DEPTH, METERS
LOCATION
6N-38E-25ac


TEMPERATURE, DEGREE C
5.0
22.0
.0
120.0
DEPTH, METERS
LOCATION
6N-41E-11cdb

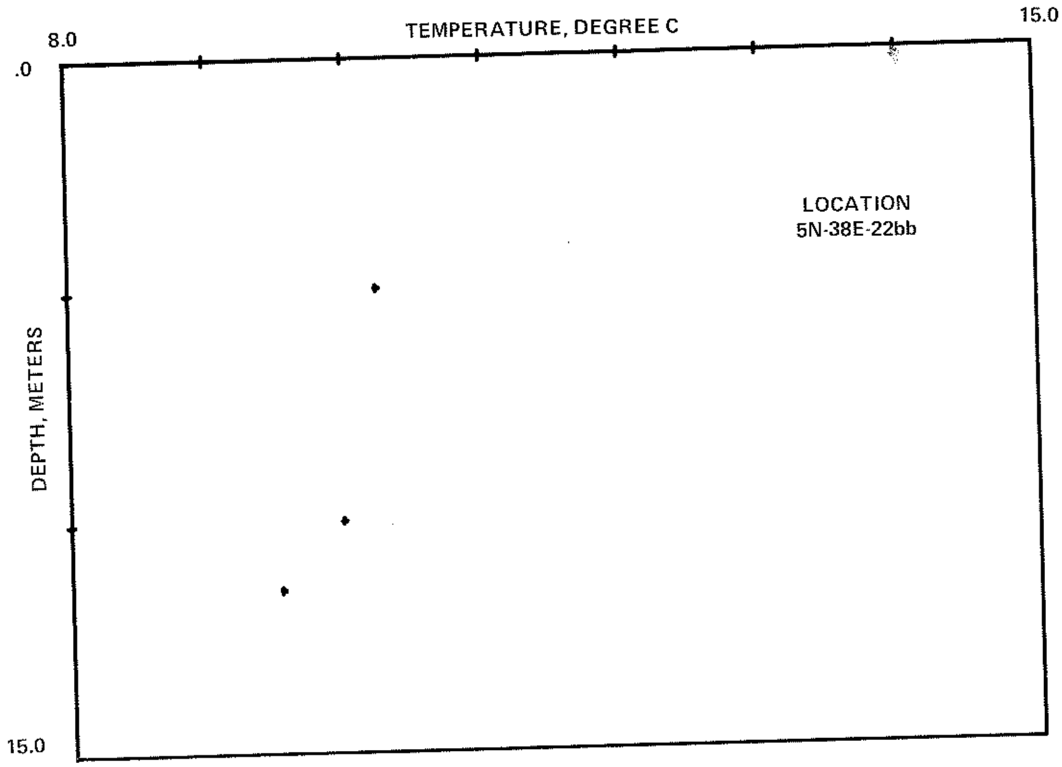

TEMPERATURE, DEGREE C
8.0
15.0
.0
160.0
DEPTH, METERS
LOCATION
5N-36E-2bda

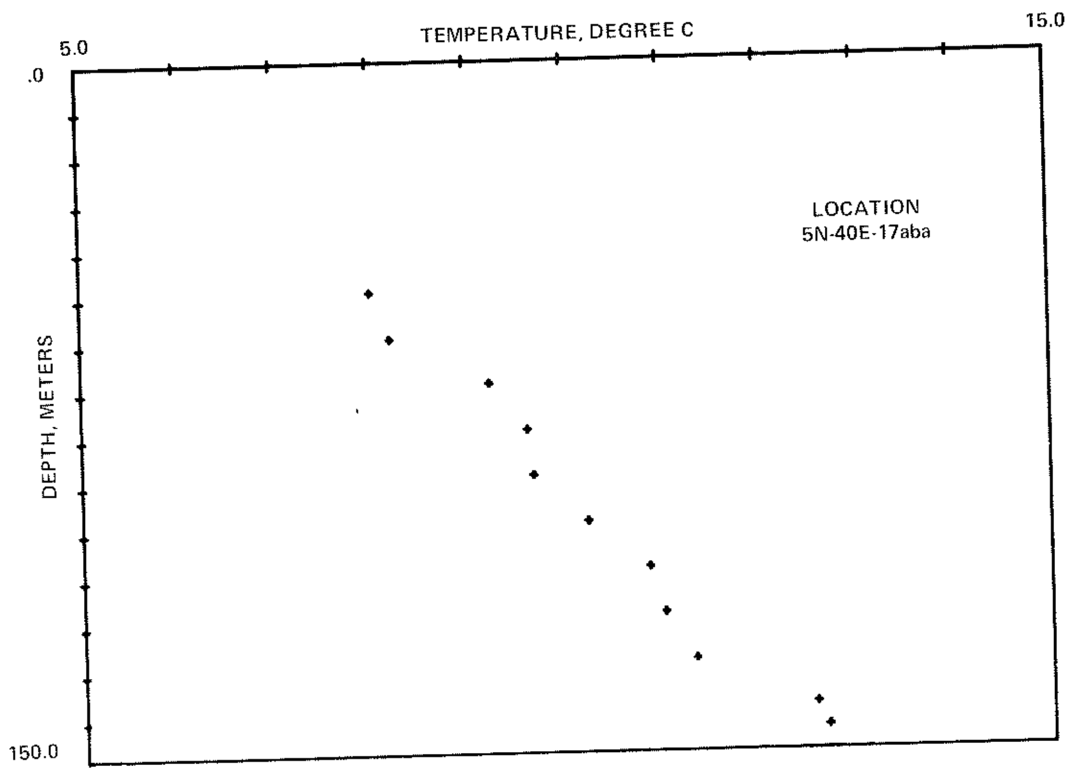


8.0
TEMPERATURE, DEGREE C
15.0
.0
DEPTH, METERS
190.0
LOCATION
5N-36E-22bb



5.0
TEMPERATURE, DEGREE C
15.0
.0
DEPTH, METERS
150.0
LOCATION
5N-37E-21bb


TEMPERATURE, DEGREE C
8.0
15.0
.0
15.0
DEPTH, METERS
LOCATION
5N-38E-22bb


TEMPERATURE, DEGREE C
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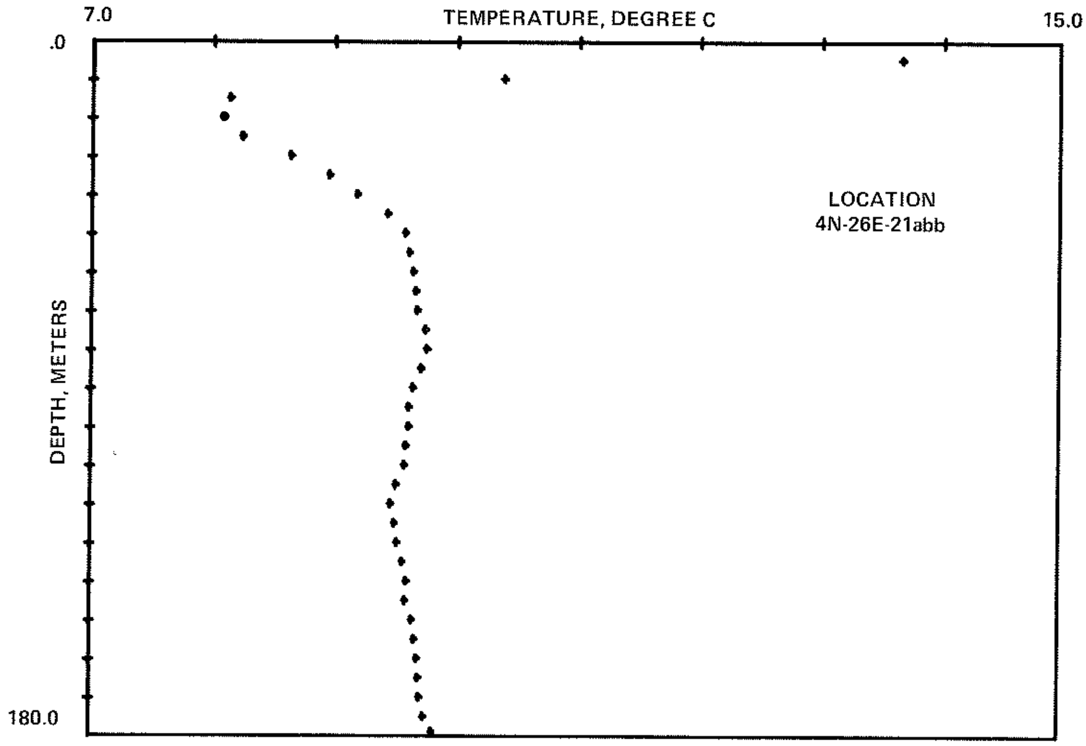
150.0
DEPTH, METERS
LOCATION
5N-40E-17aba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TEMPERATURE, DEGREE C
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LOCATION
4N-26E-21abb
DEPTH, METERS
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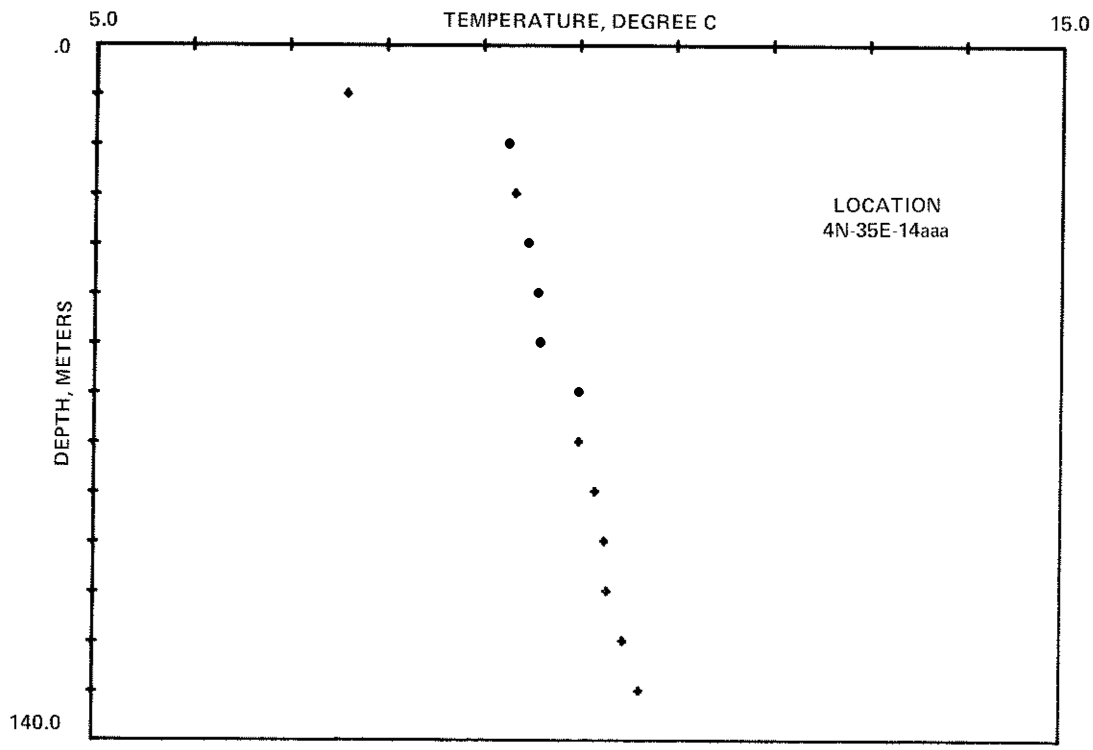
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LOCATION
4N-35E-14aaa
DEPTH, METERS
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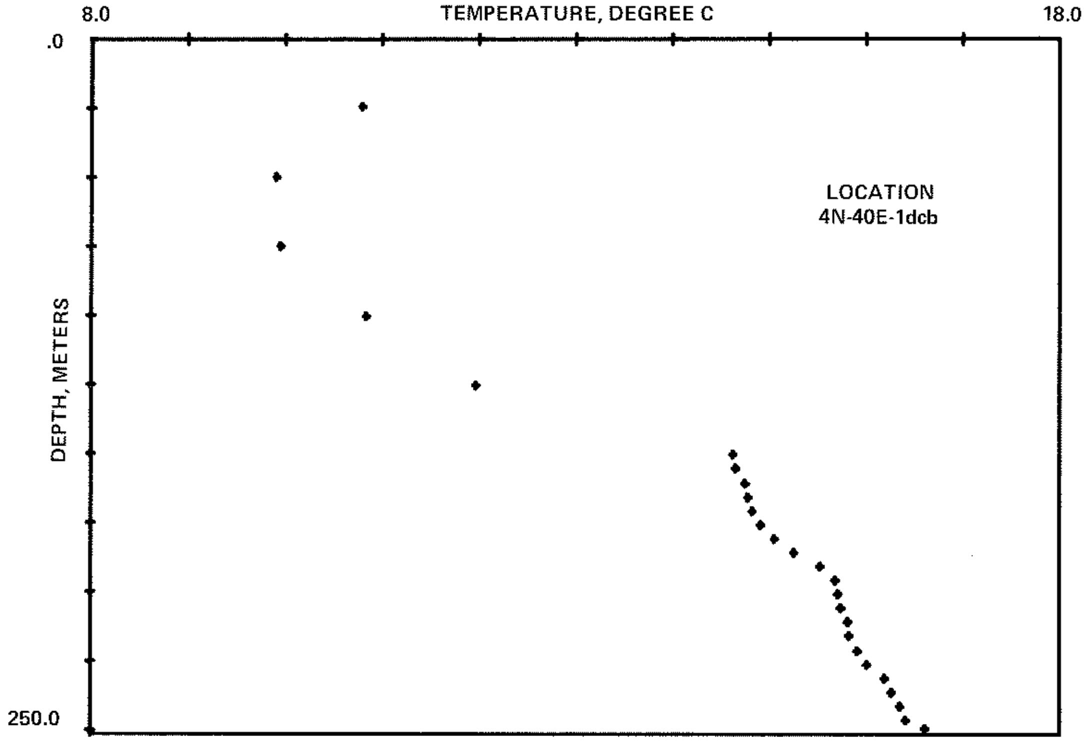
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TEMPERATURE, DEGREE C
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DEPTH, METERS
LOCATION
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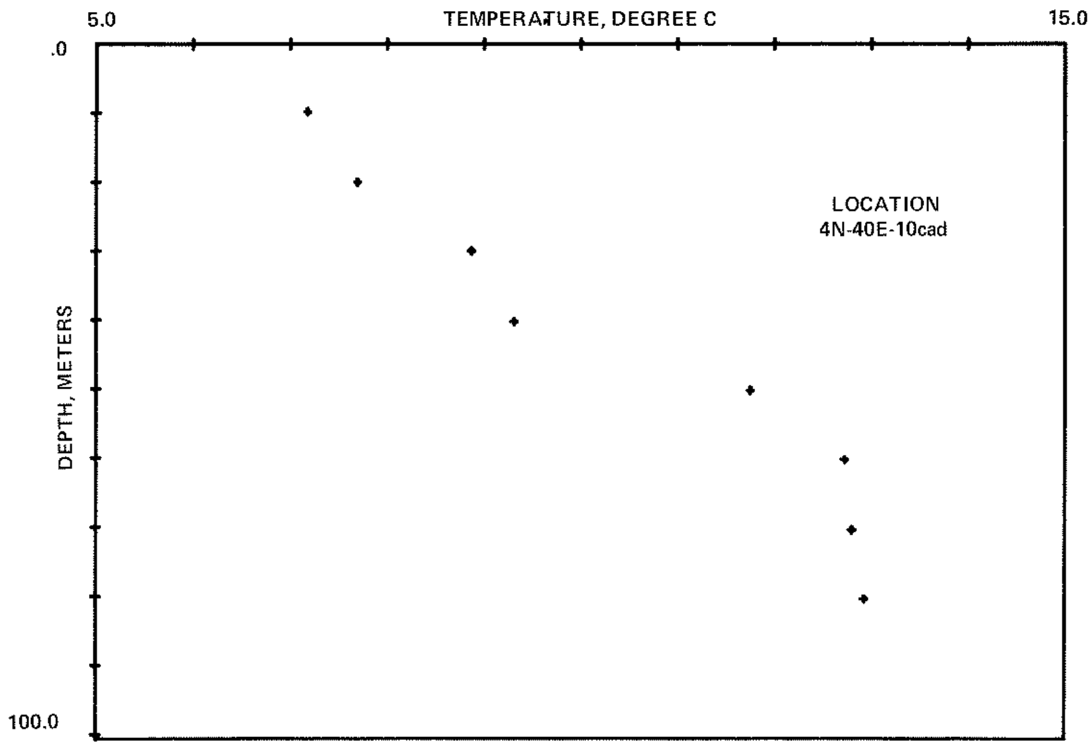
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DEPTH, METERS
LOCATION
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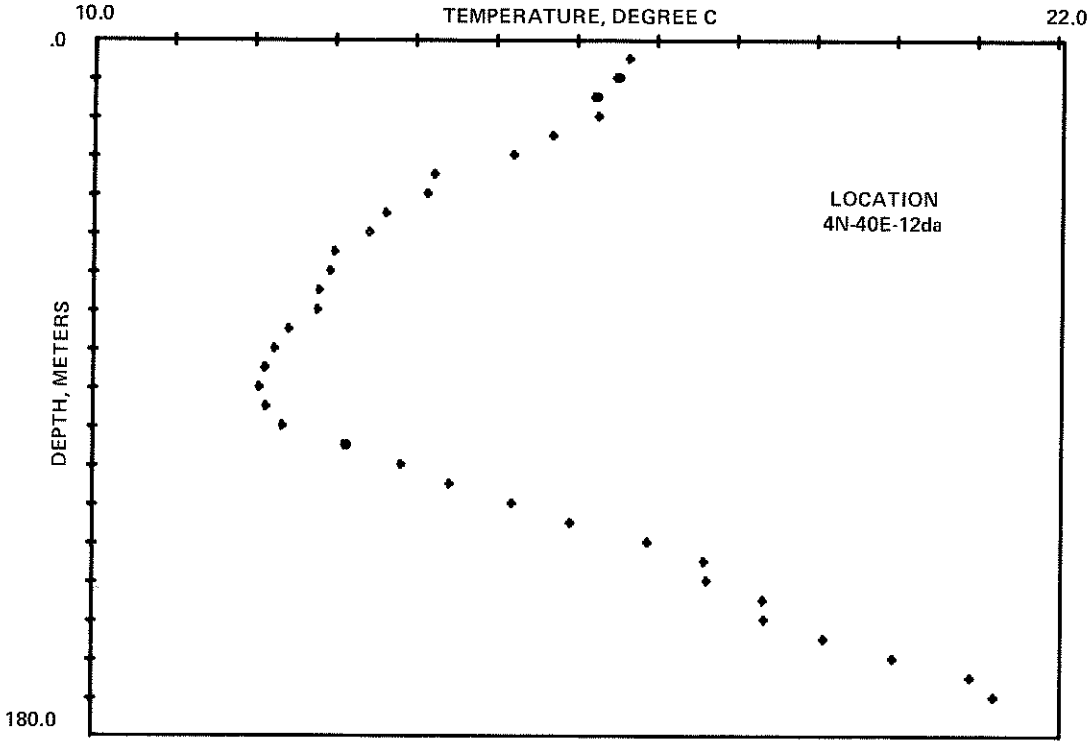
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LOCATION
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DEPTH, METERS
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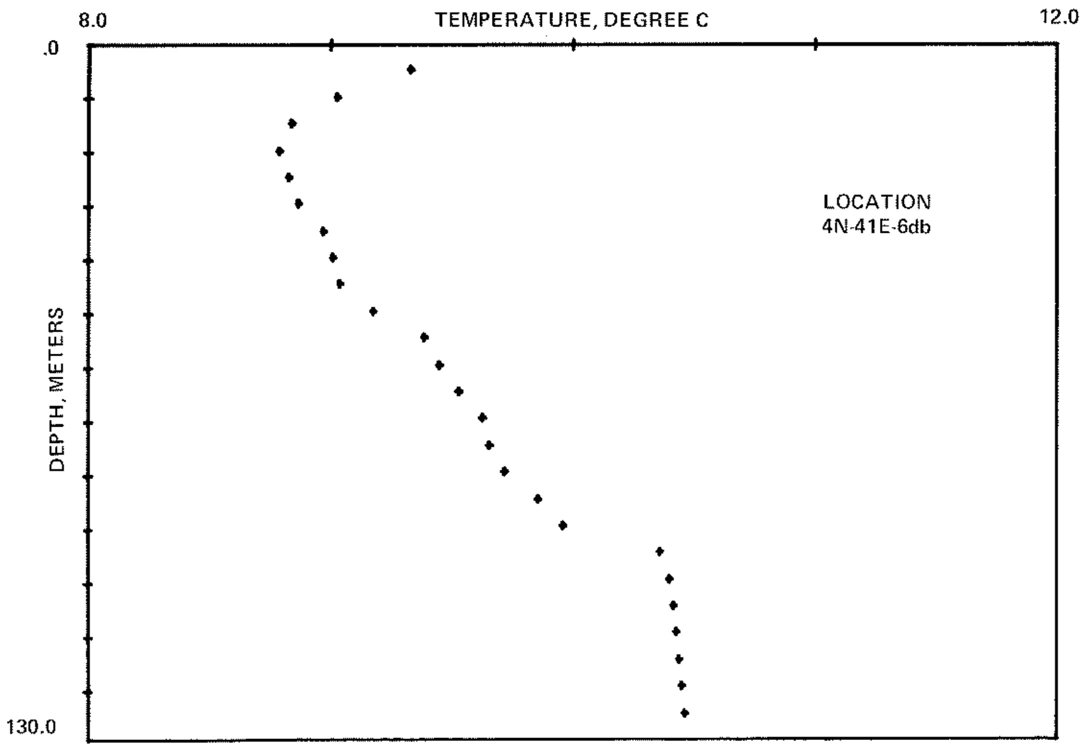
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LOCATION
4N-41E-6db
DEPTH, METERS
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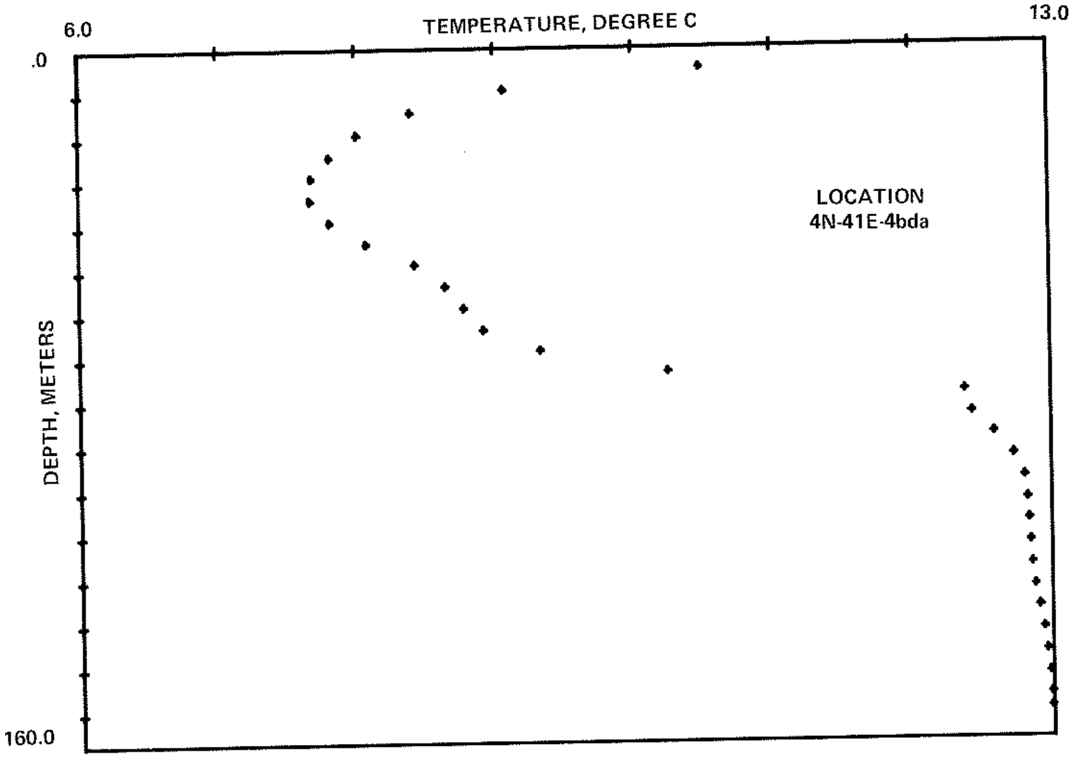
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6.0
13.0
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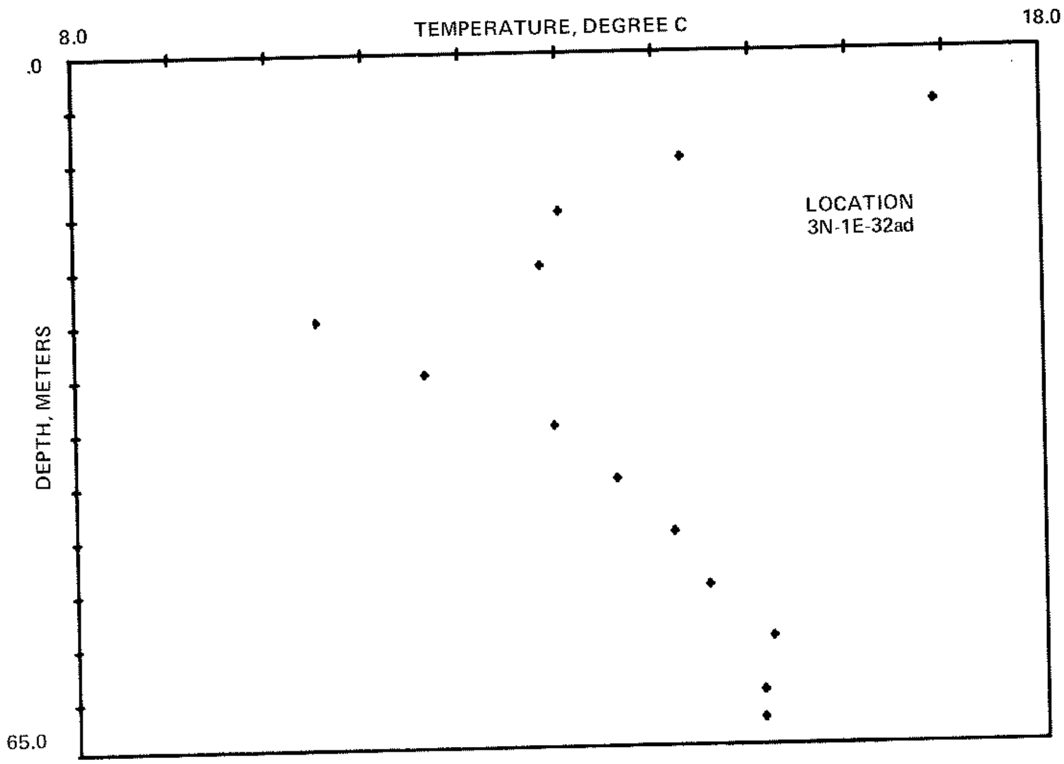
160.0
DEPTH, METERS
LOCATION
4N-41E-4bda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65.0
DEPTH, METERS
LOCATION
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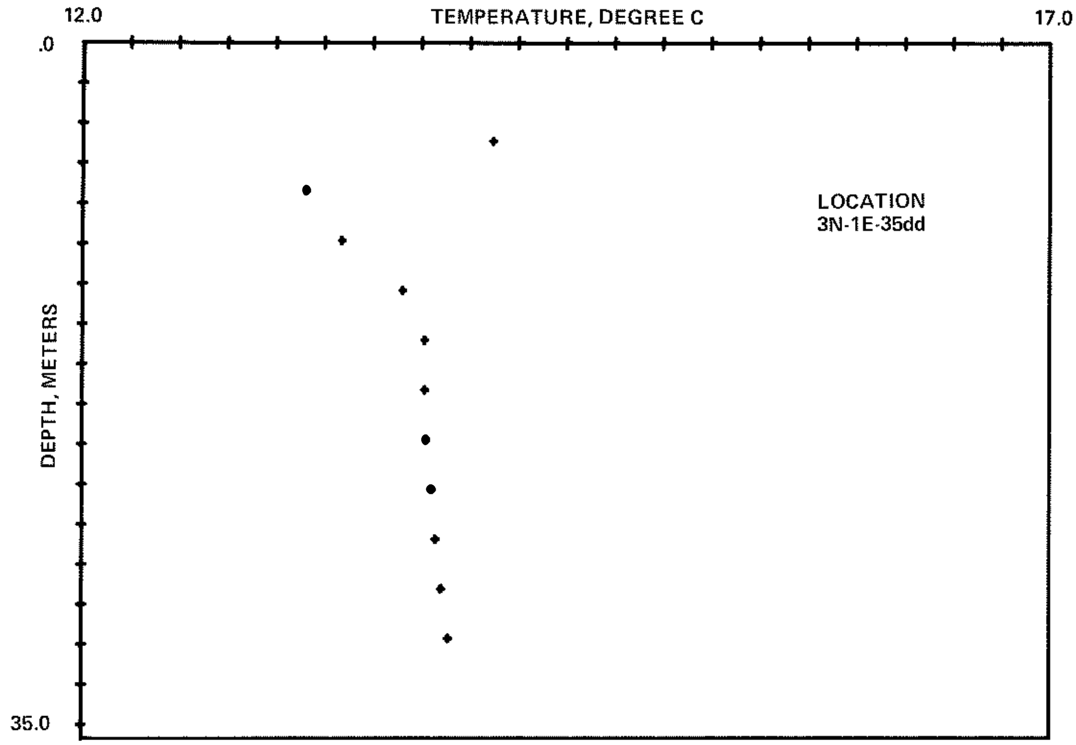
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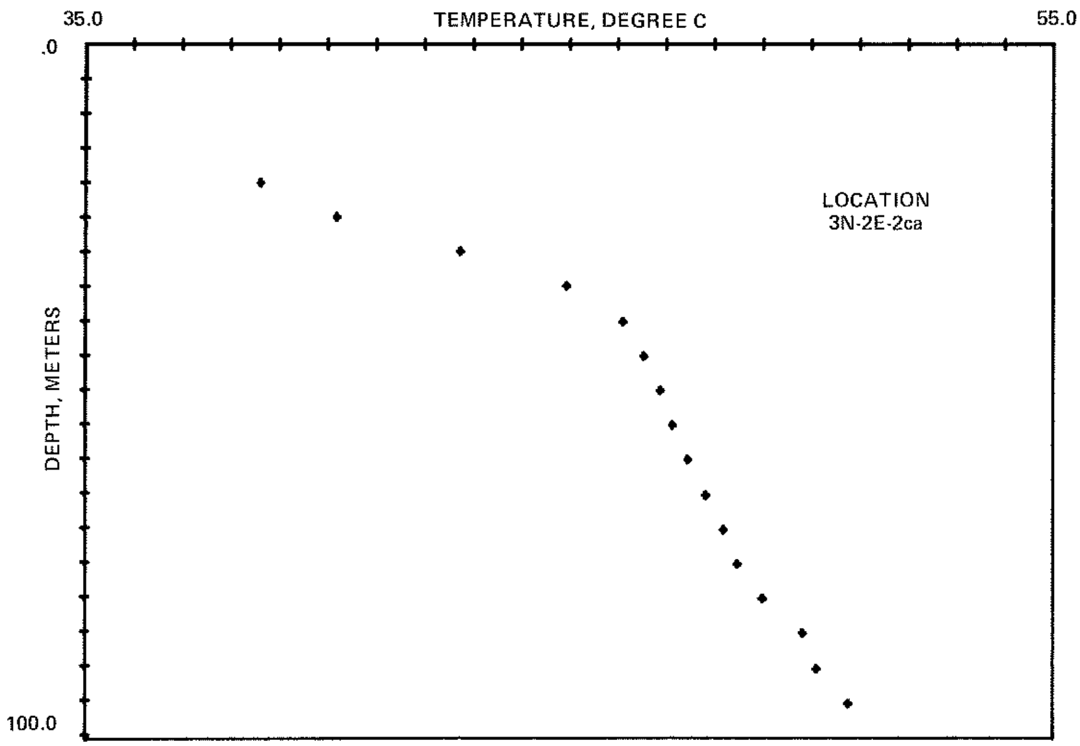
DEPTH, METERS
LOCATION
3N-1E-35dd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55.0
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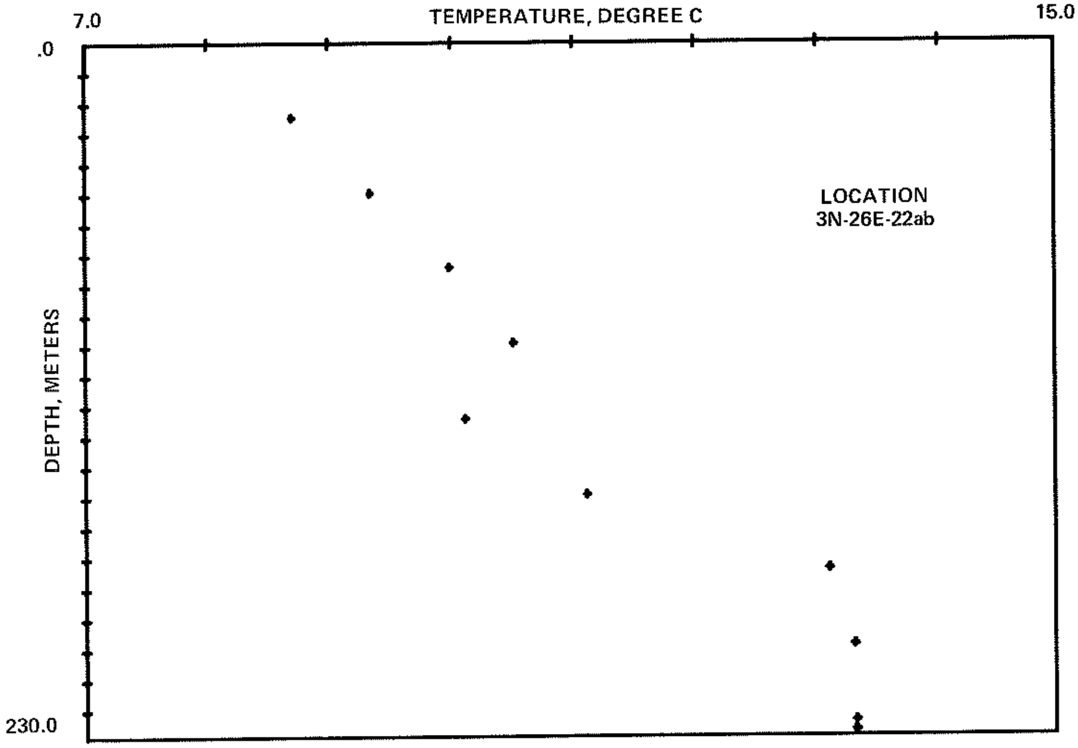
100.0
DEPTH, METERS
LOCATION
3N-2E-2ca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TEMPERATURE, DEGREE C
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LOCATION
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DEPTH, METERS
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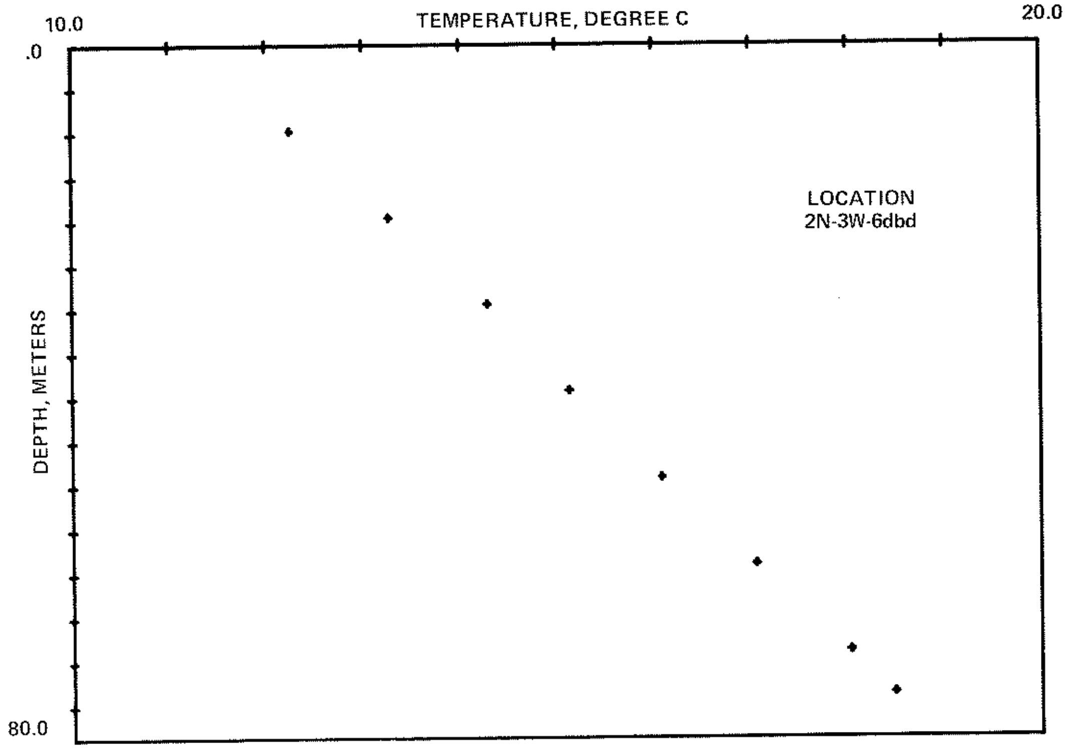
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DEPTH, METERS
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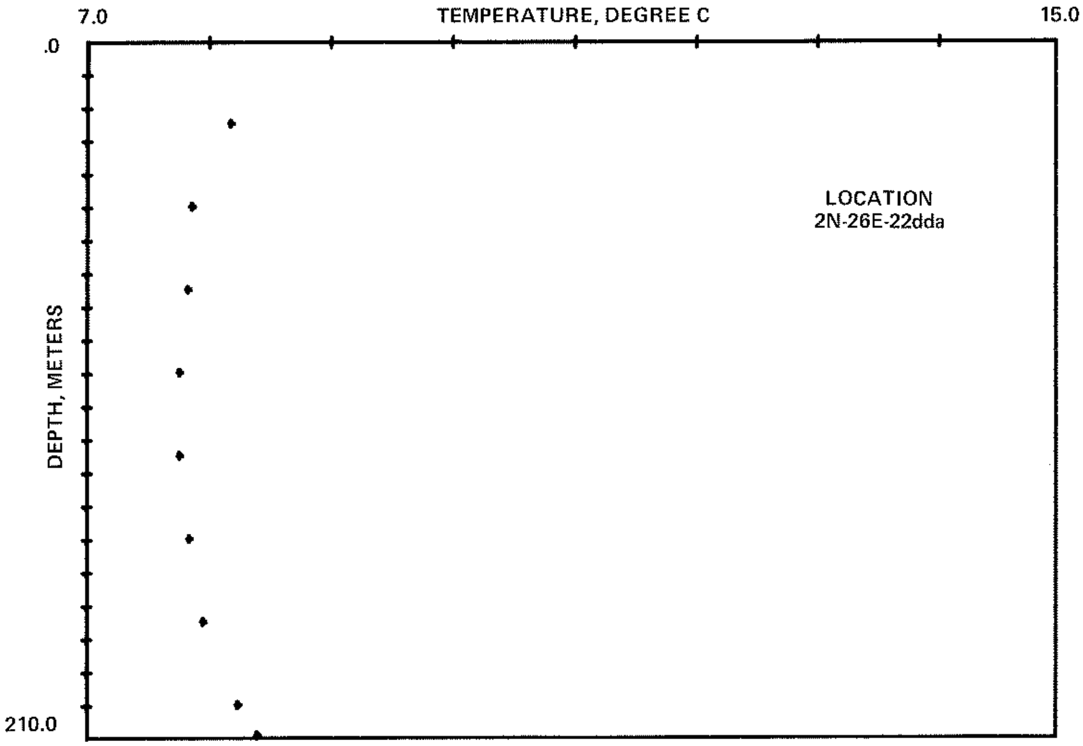

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TEMPERATURE, DEGREE C
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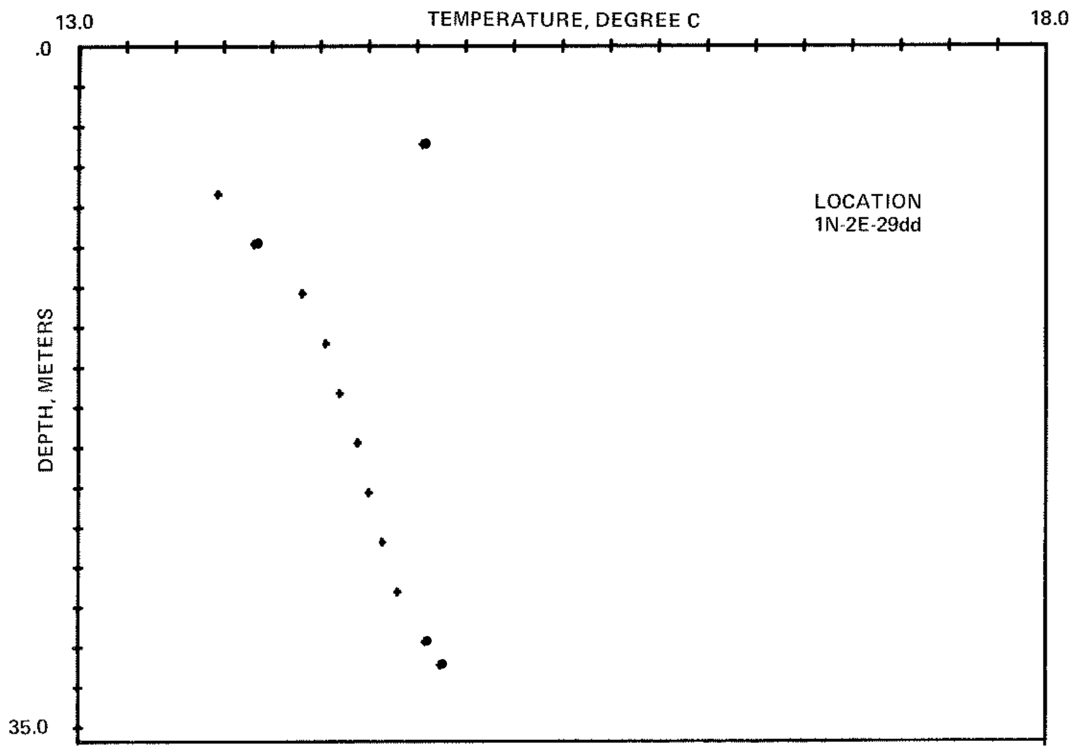
DEPTH, METERS
LOCATION
2N-26E-22dda



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TEMPERATURE, DEGREE C
18.0
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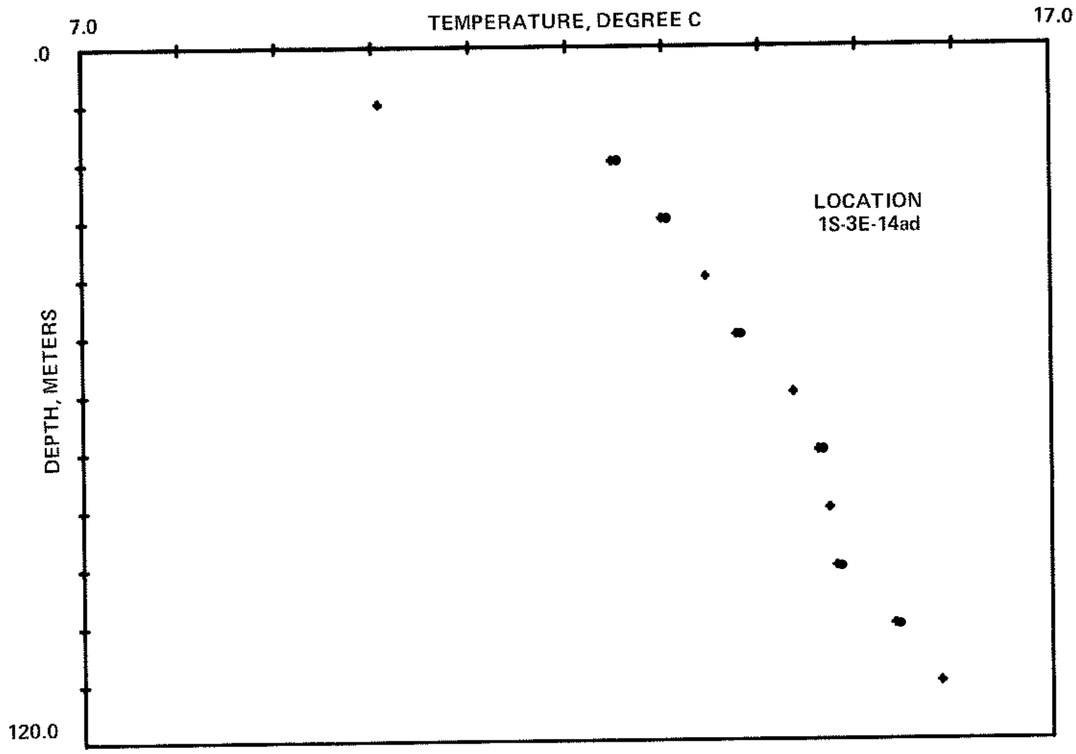
35.0
DEPTH, METERS
LOCATION
1N-2E-29dd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120.0
DEPTH, METERS
LOCATION
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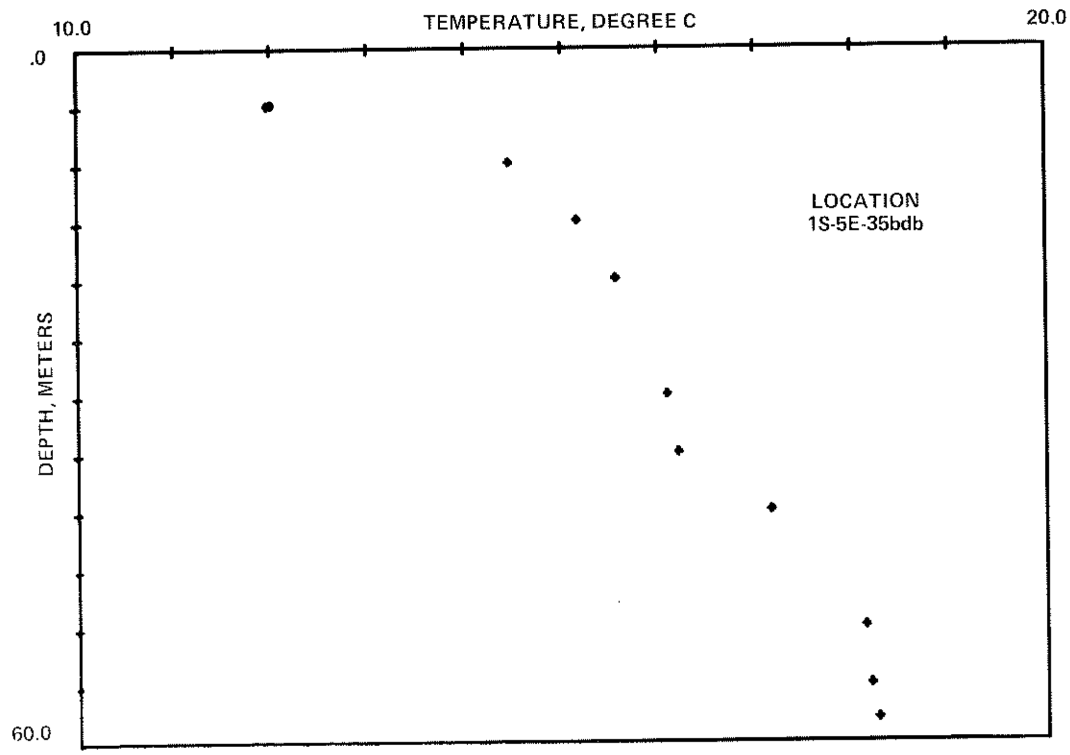
TEMPERATURE, DEGREE C
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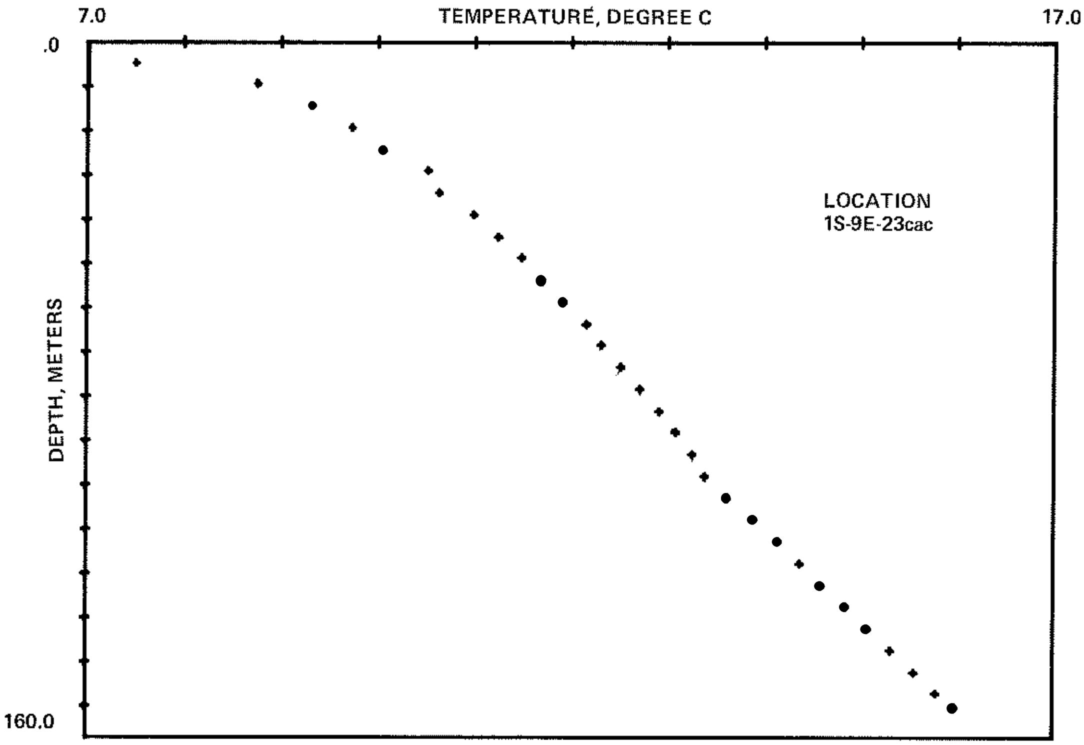
60.0
DEPTH, METERS
LOCATION
1S-5E-35bdb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TEMPERATURE, DEGREE C
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DEPTH, METERS
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LOCATION
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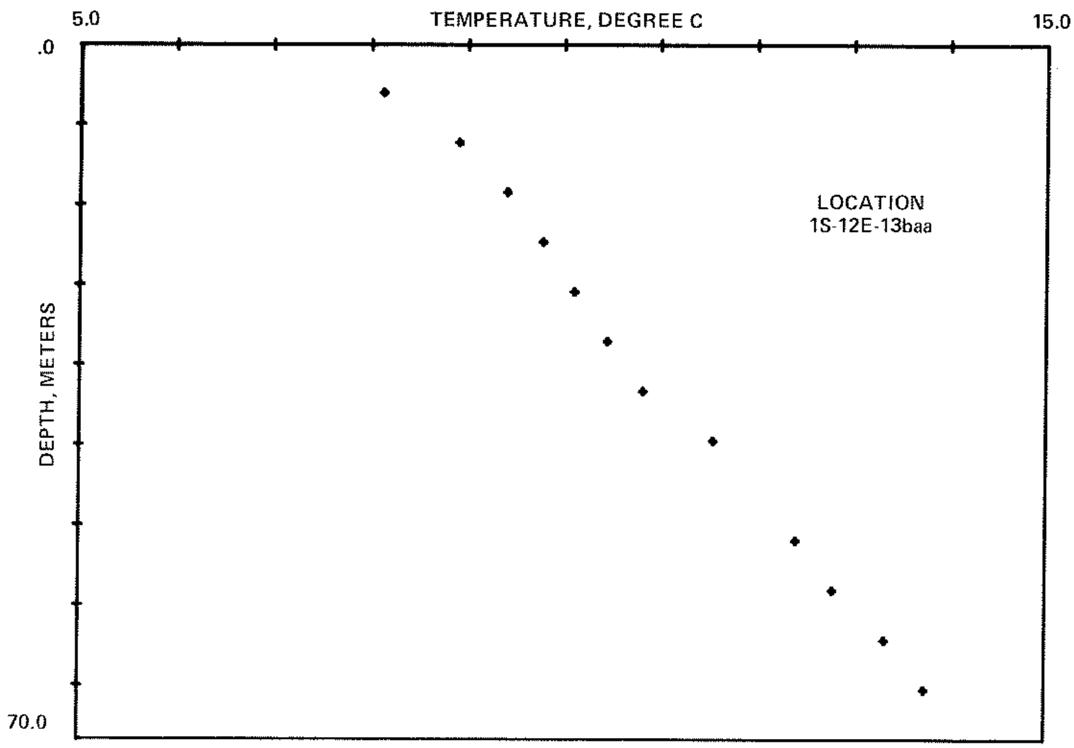
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DEPTH, METERS
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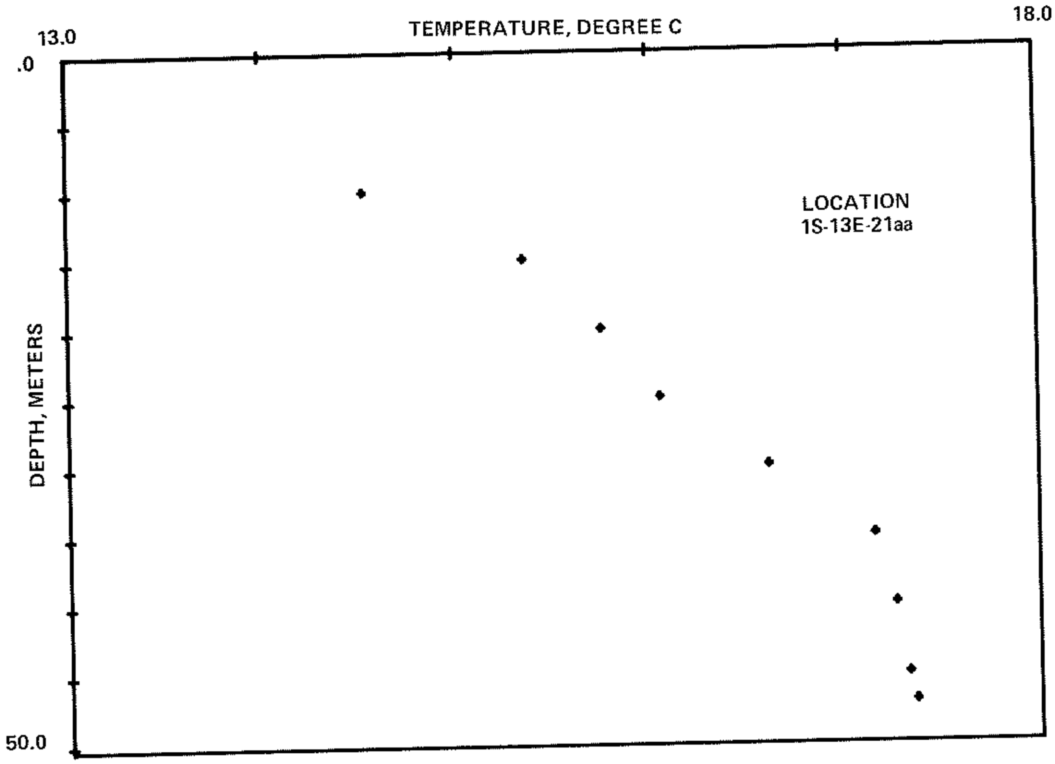

TEMPERATURE, DEGREE C
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50.0
DEPTH, METERS
LOCATION
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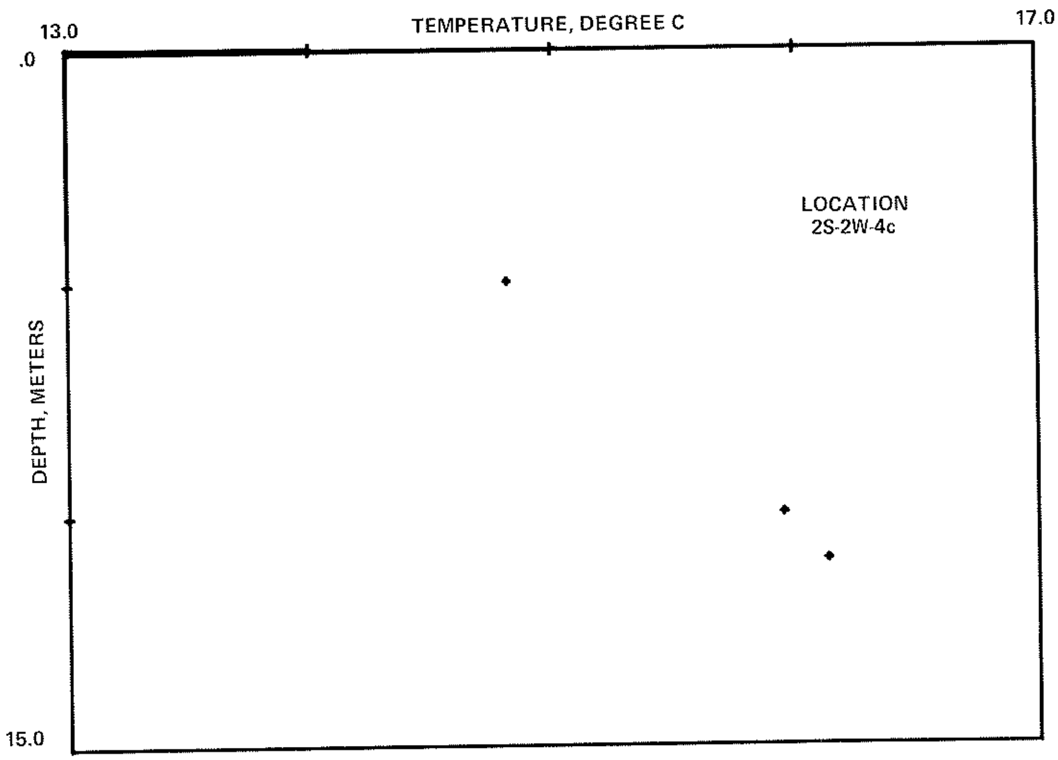

TEMPERATURE, DEGREE C
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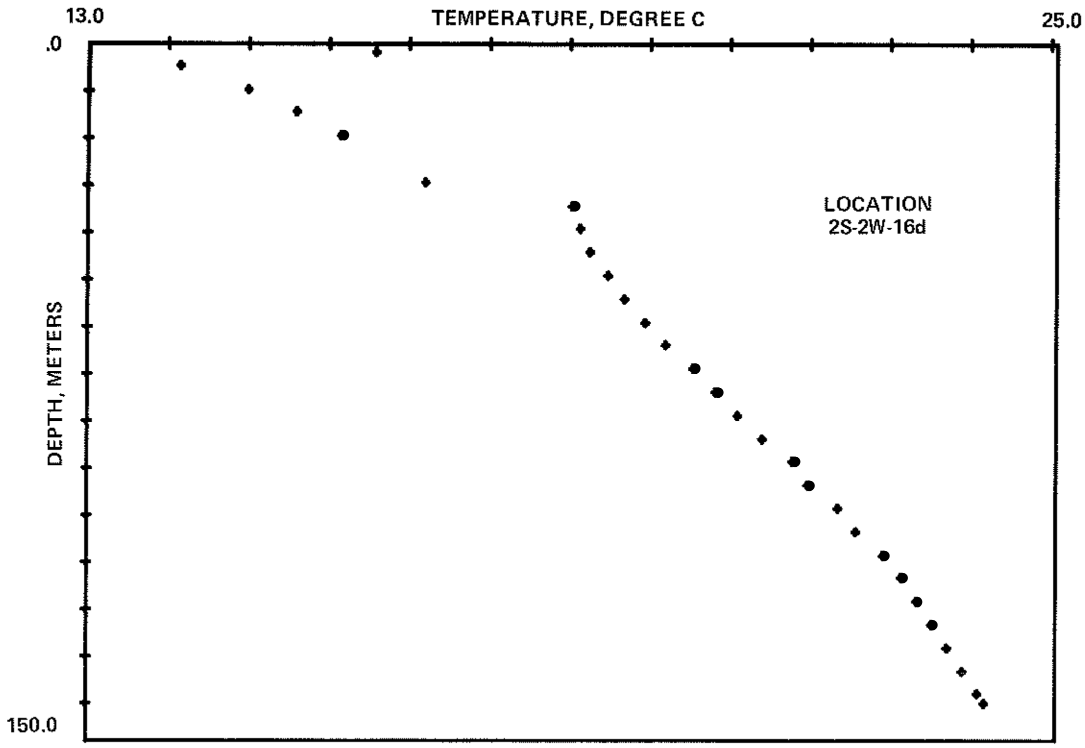
15.0
DEPTH, METERS
LOCATION
2S-2W-4c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TEMPERATURE, DEGREE C
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2S-2W-16d
DEPTH, METERS
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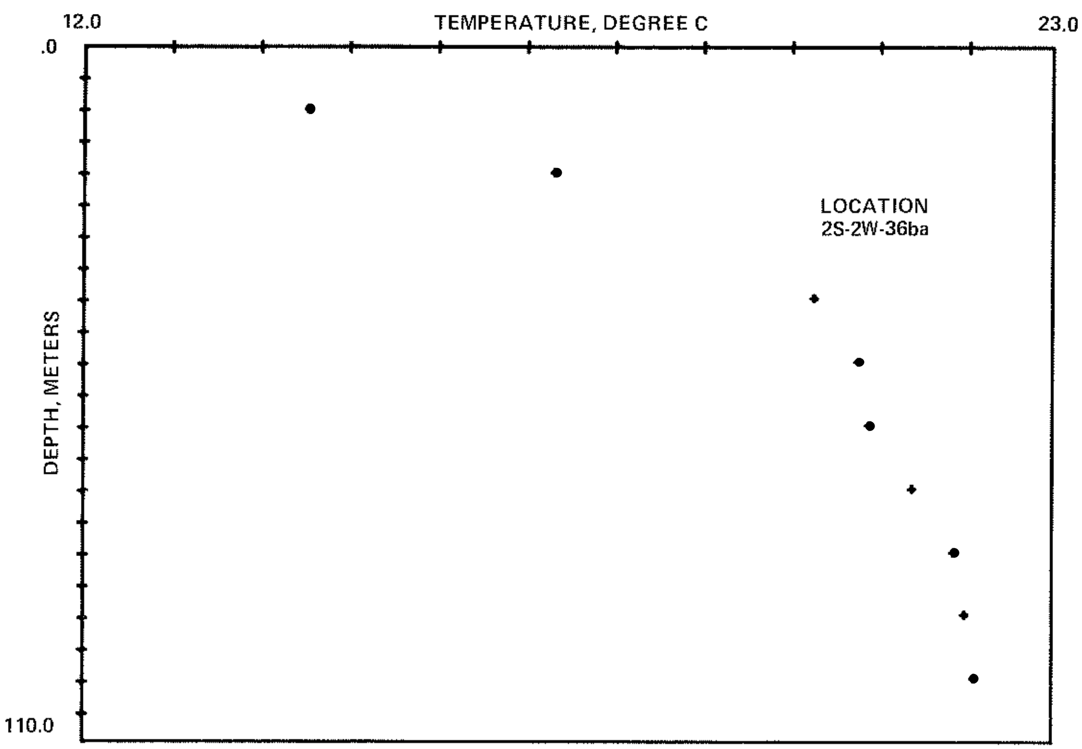
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TEMPERATURE, DEGREE C
23.0
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LOCATION
2S-2W-36ba
DEPTH, METERS
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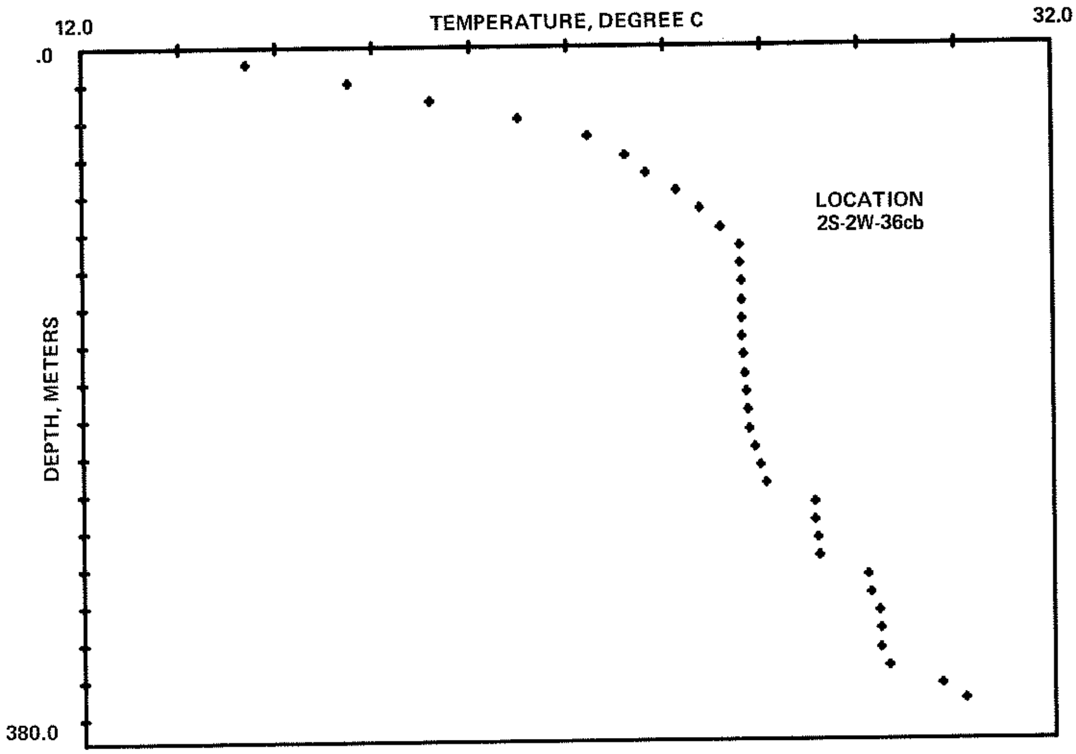
TEMPERATURE, DEGREE C
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32.0
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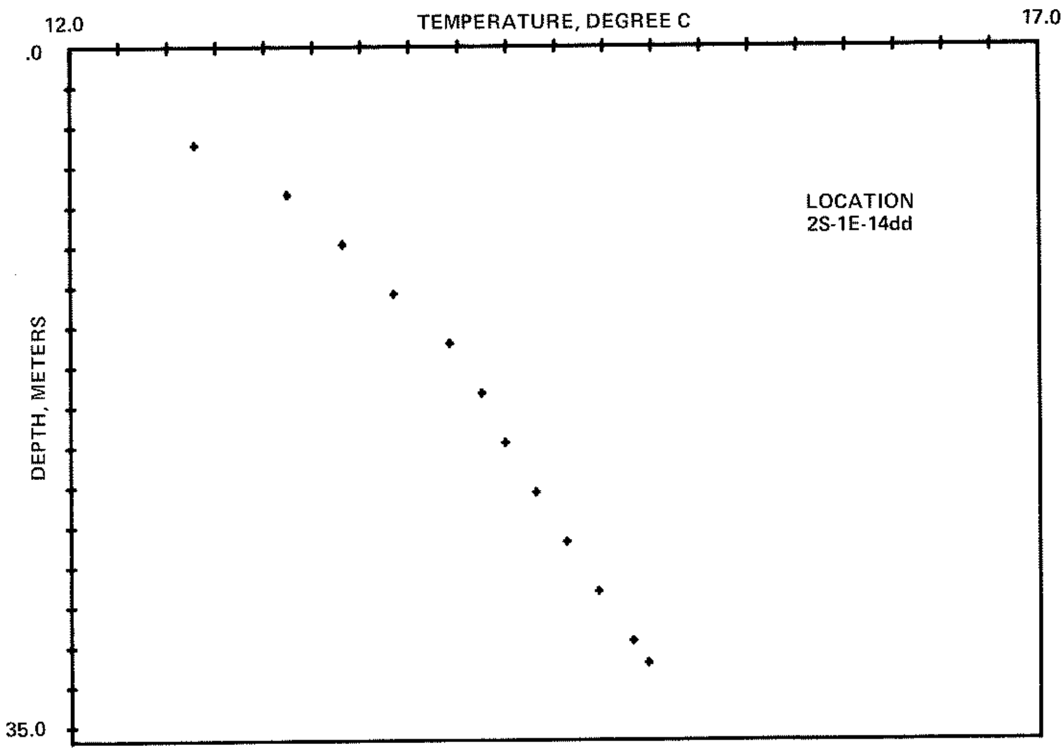
380.0
DEPTH, METERS
LOCATION
2S-2W-36cb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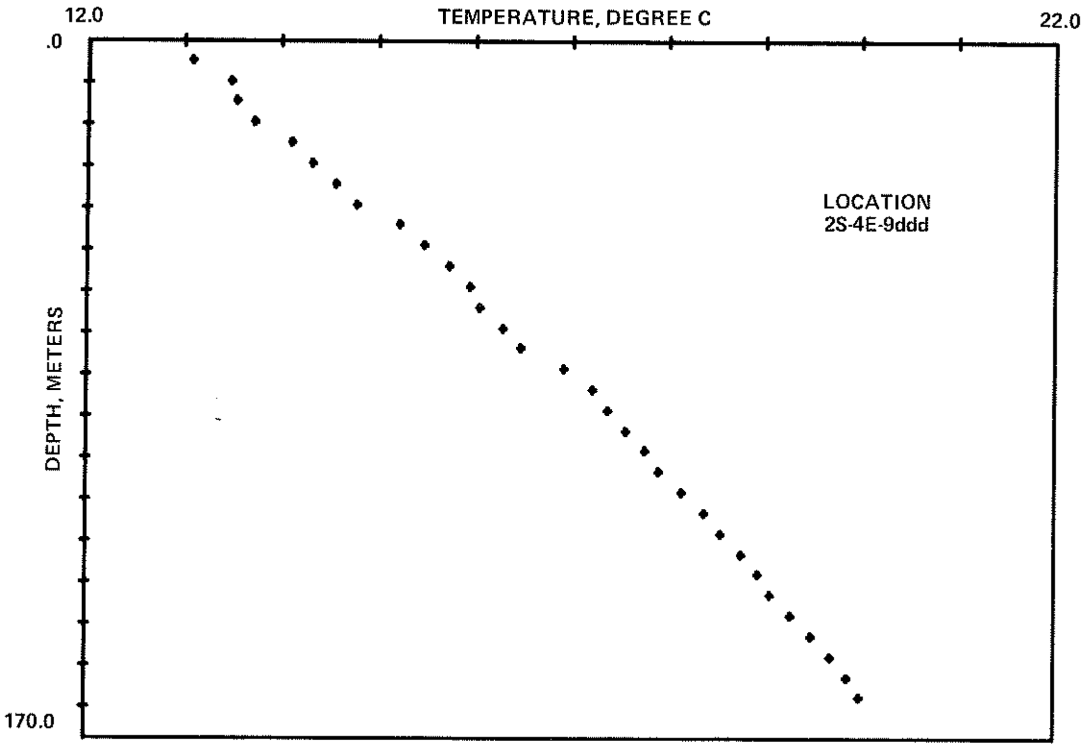
DEPTH, METERS
LOCATION
2S-1E-14dd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TEMPERATURE, DEGREE C
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DEPTH, METERS
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LOCATION
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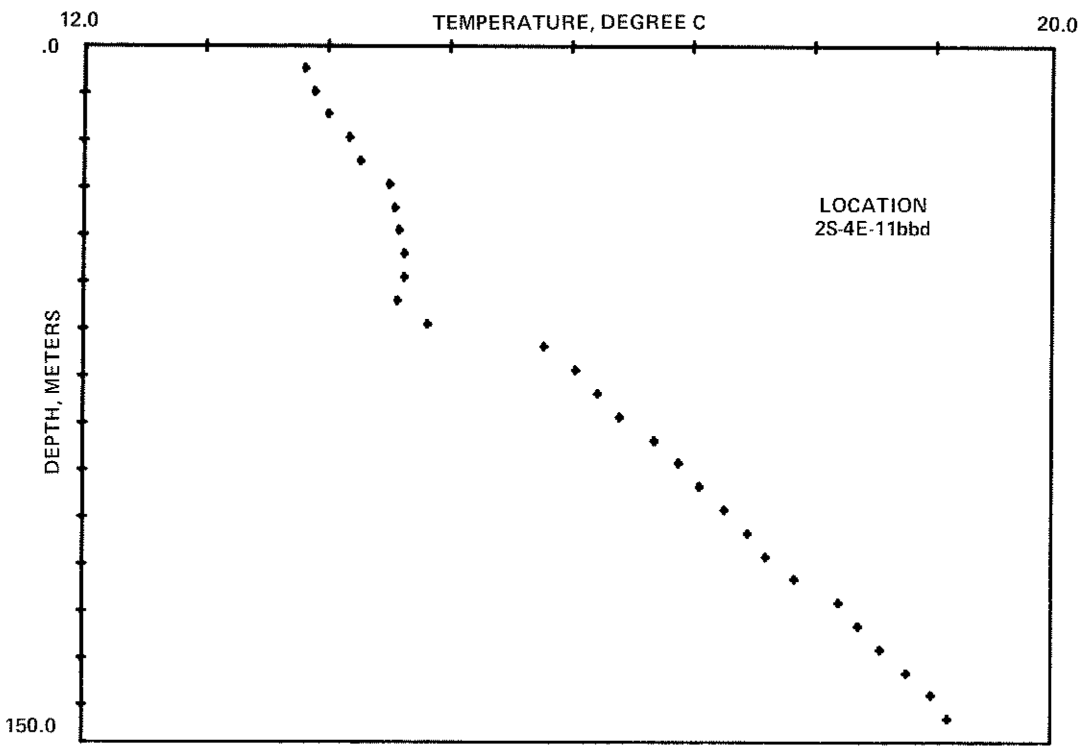
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DEPTH, METERS
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LOCATION
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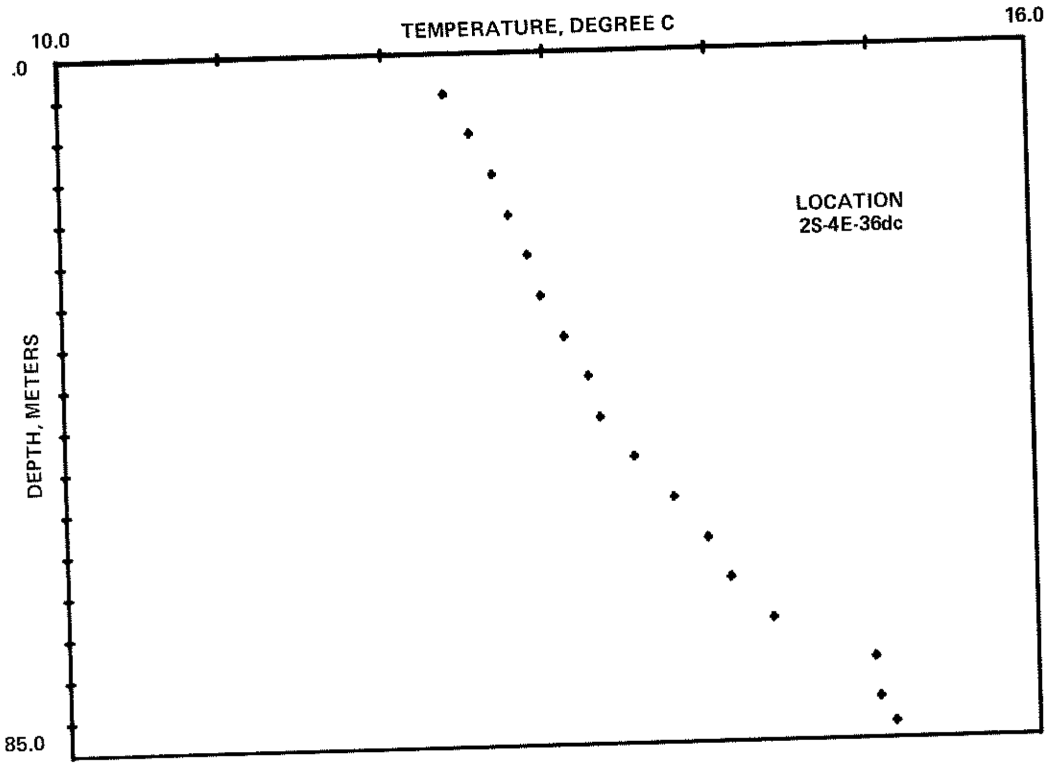
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85.0
DEPTH, METERS
LOCATION
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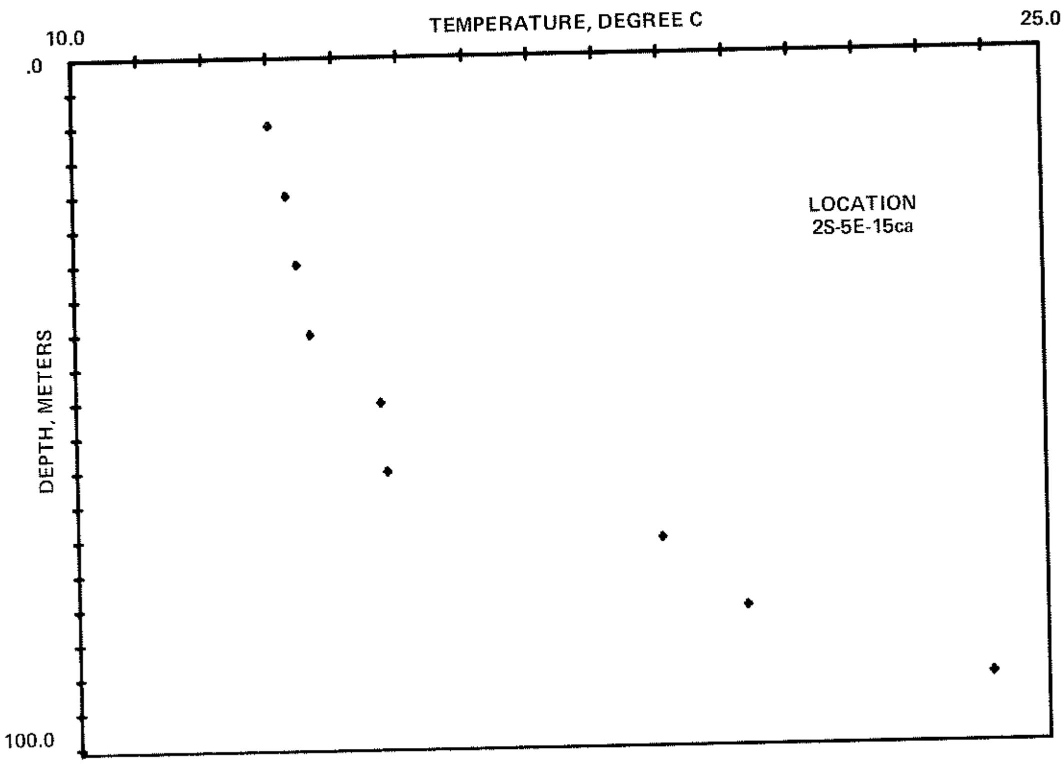
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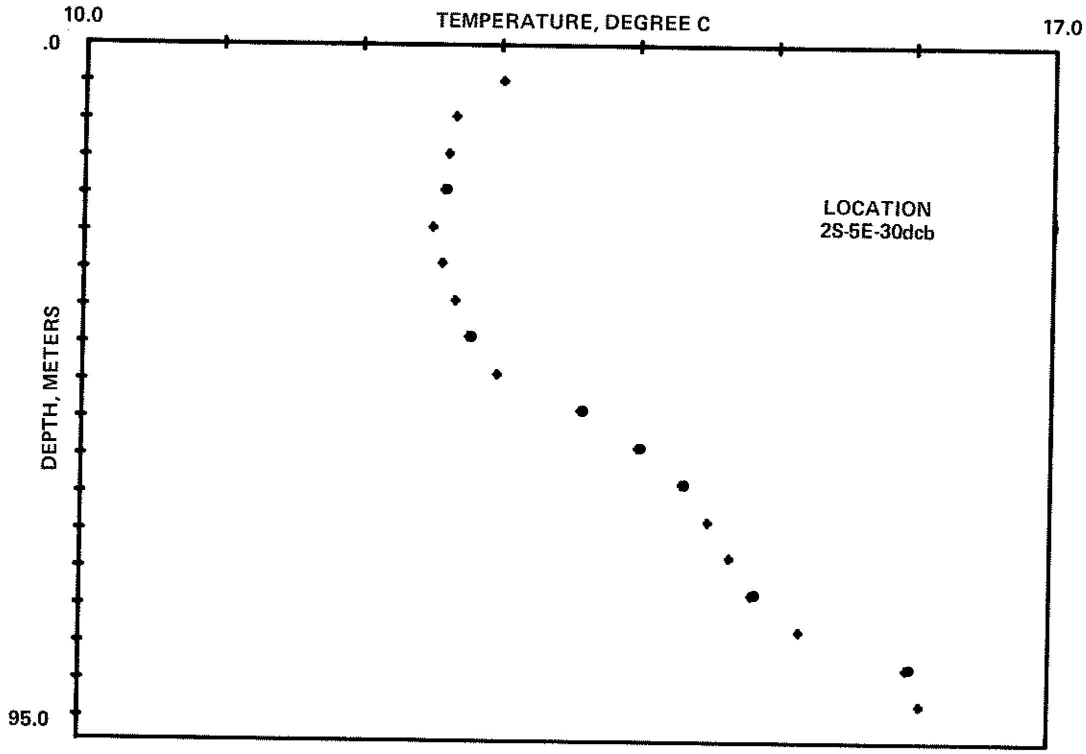
DEPTH, METERS
LOCATION
2S-5E-15ca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TEMPERATURE, DEGREE C
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LOCATION
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DEPTH, METERS
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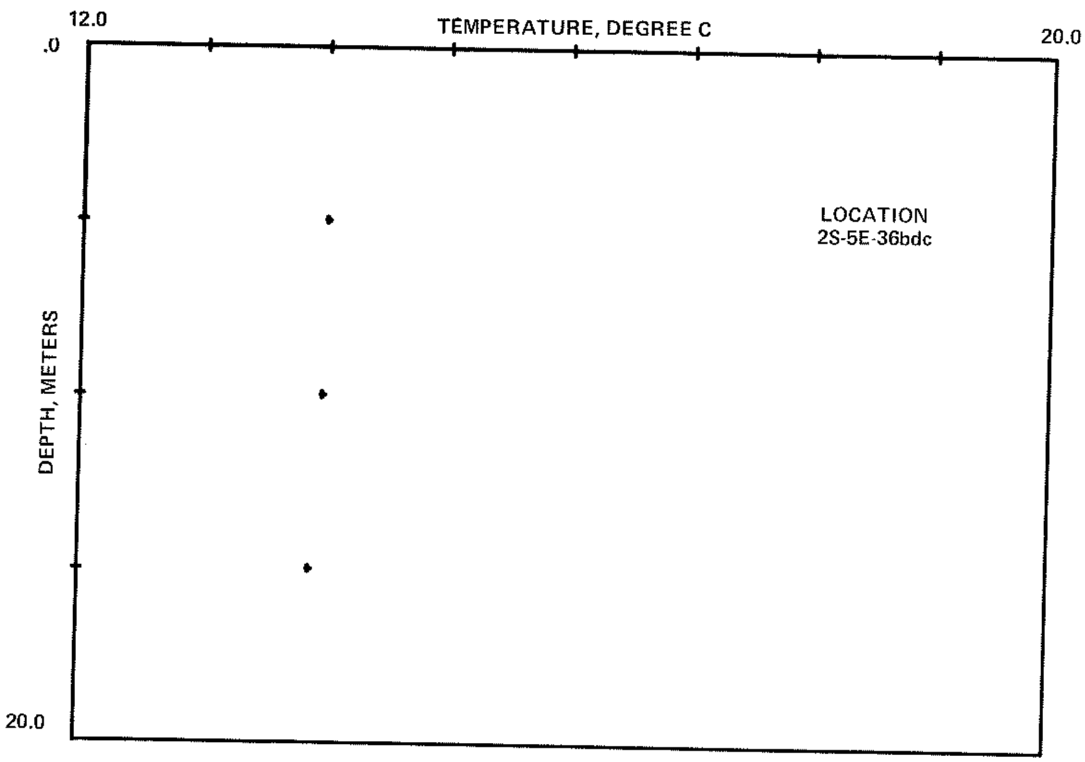
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LOCATION
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DEPTH, METERS
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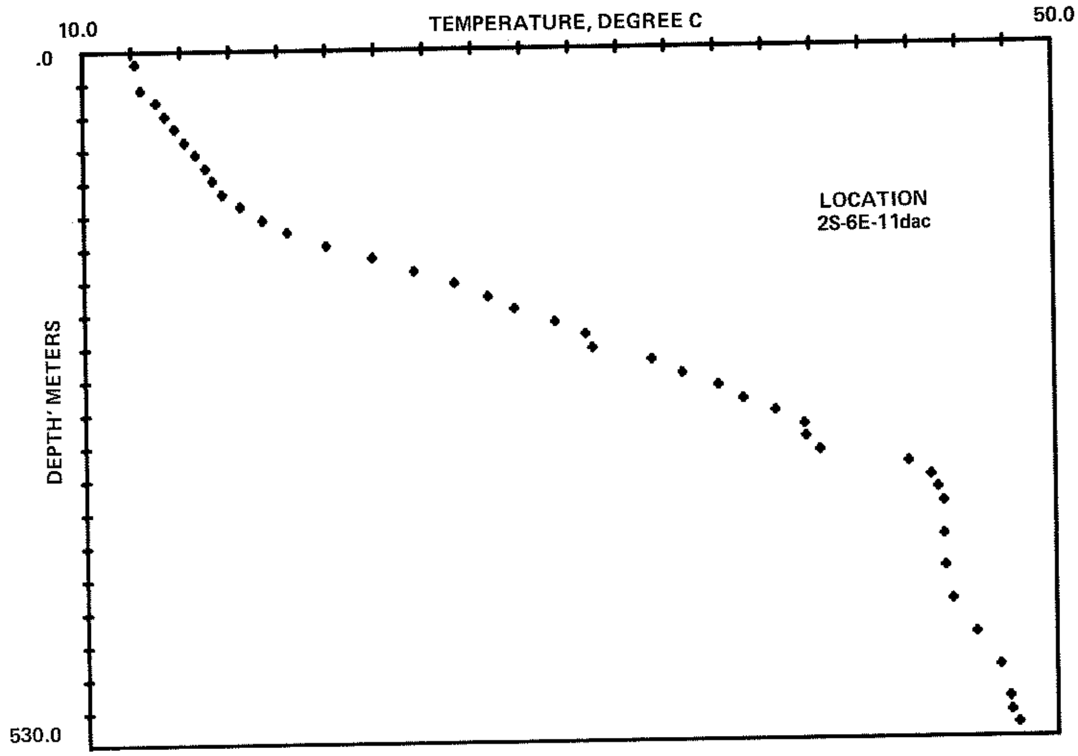
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LOCATION
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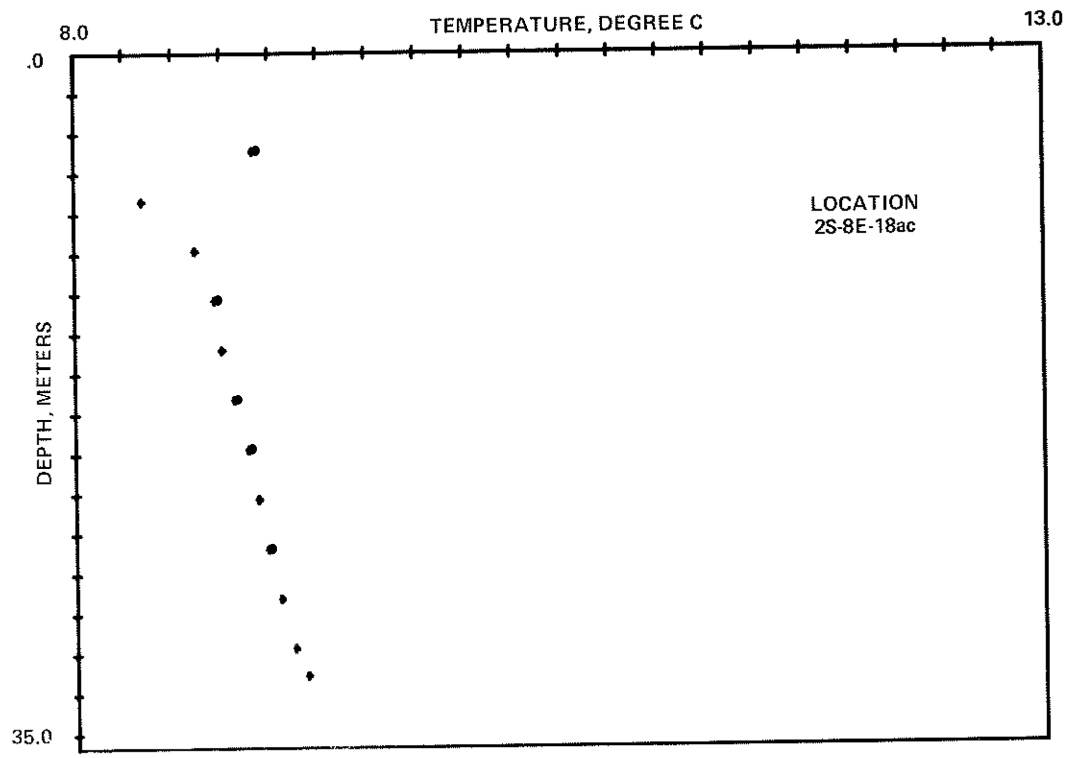
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DEPTH, METERS
LOCATION
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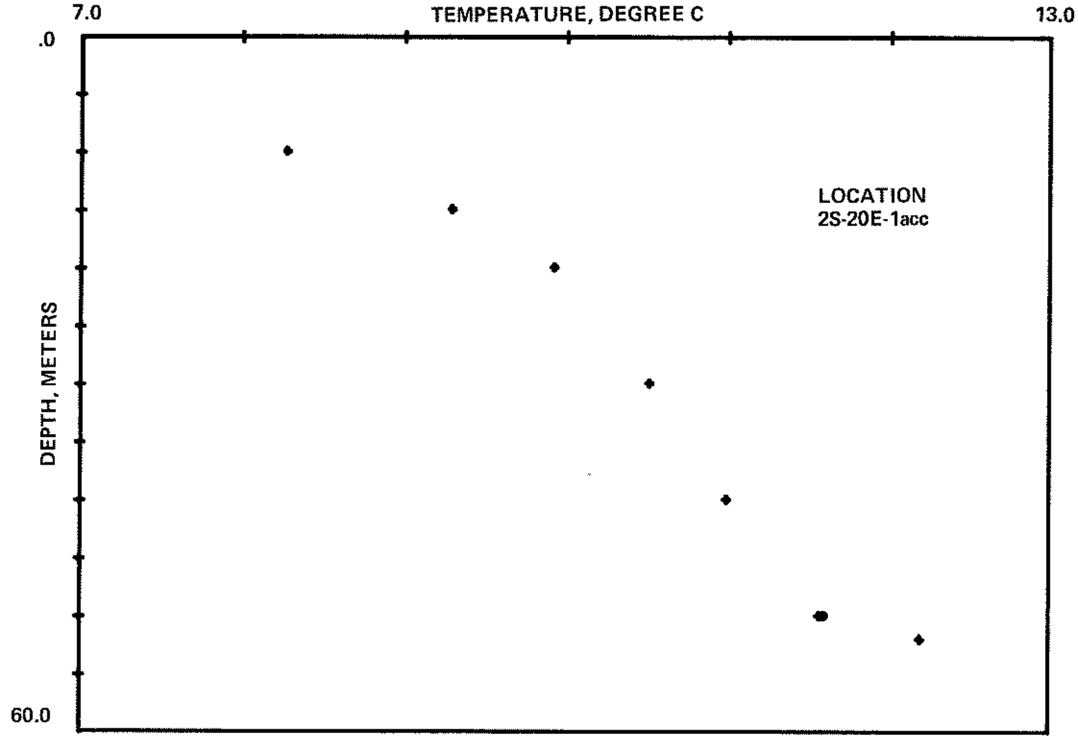
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DEPTH, METERS
LOCATION
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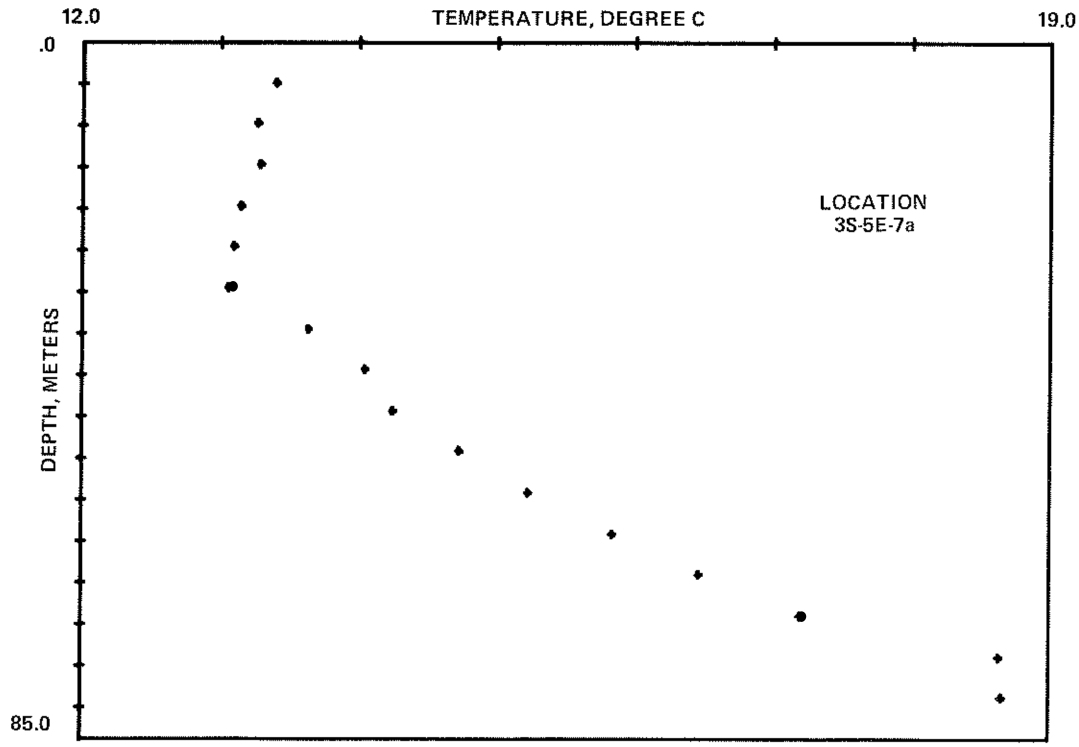
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DEPTH, METERS
LOCATION
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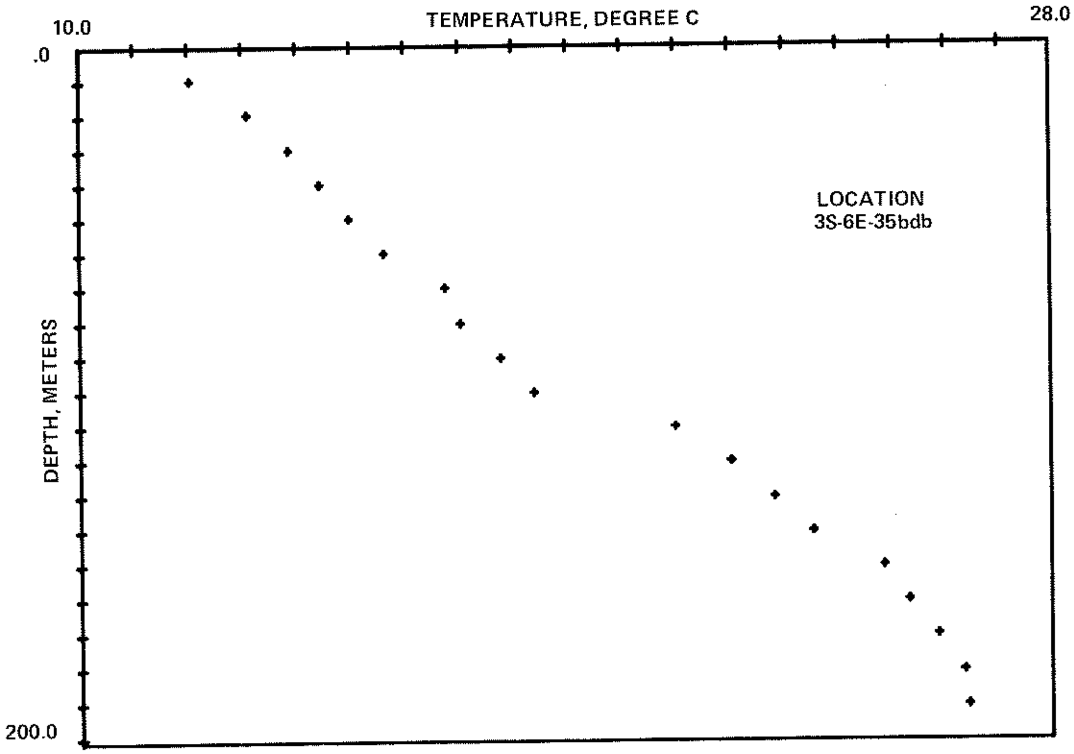
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DEPTH, METERS
LOCATION
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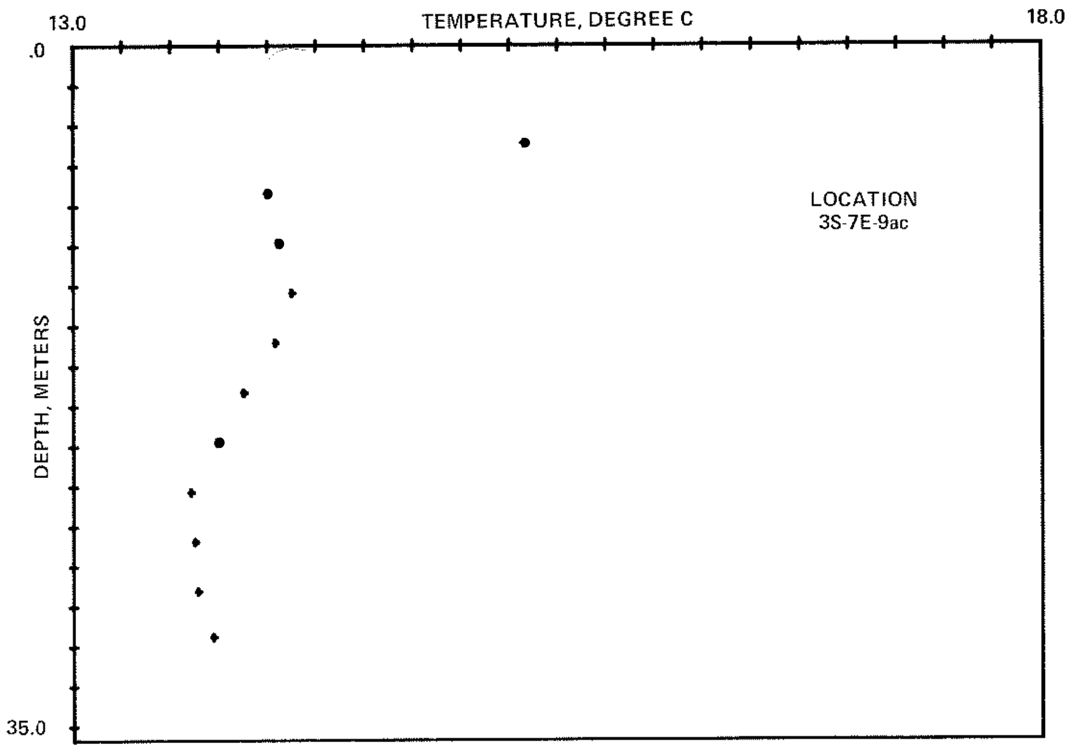
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LOCATION
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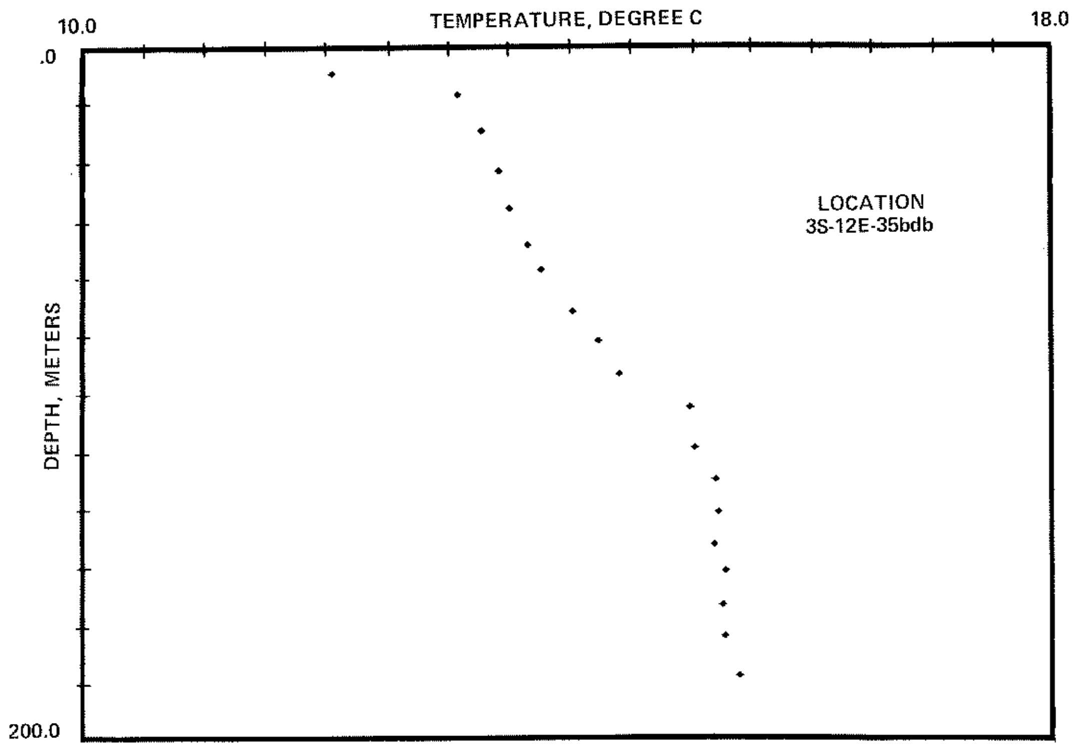
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LOCATION
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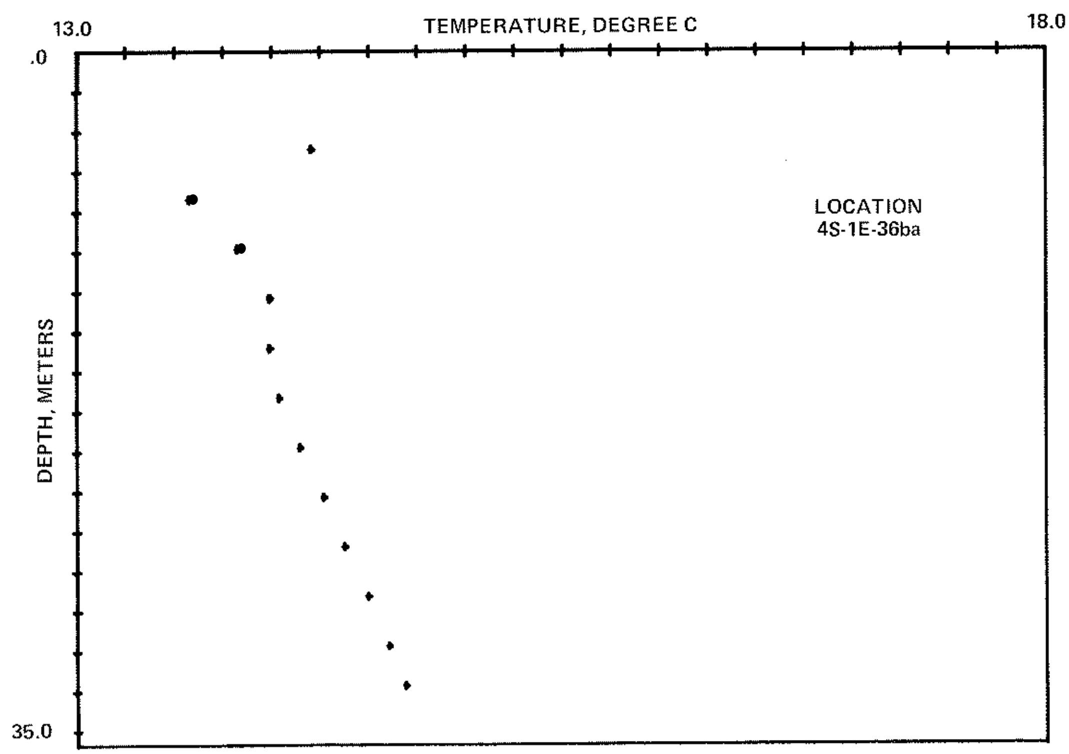
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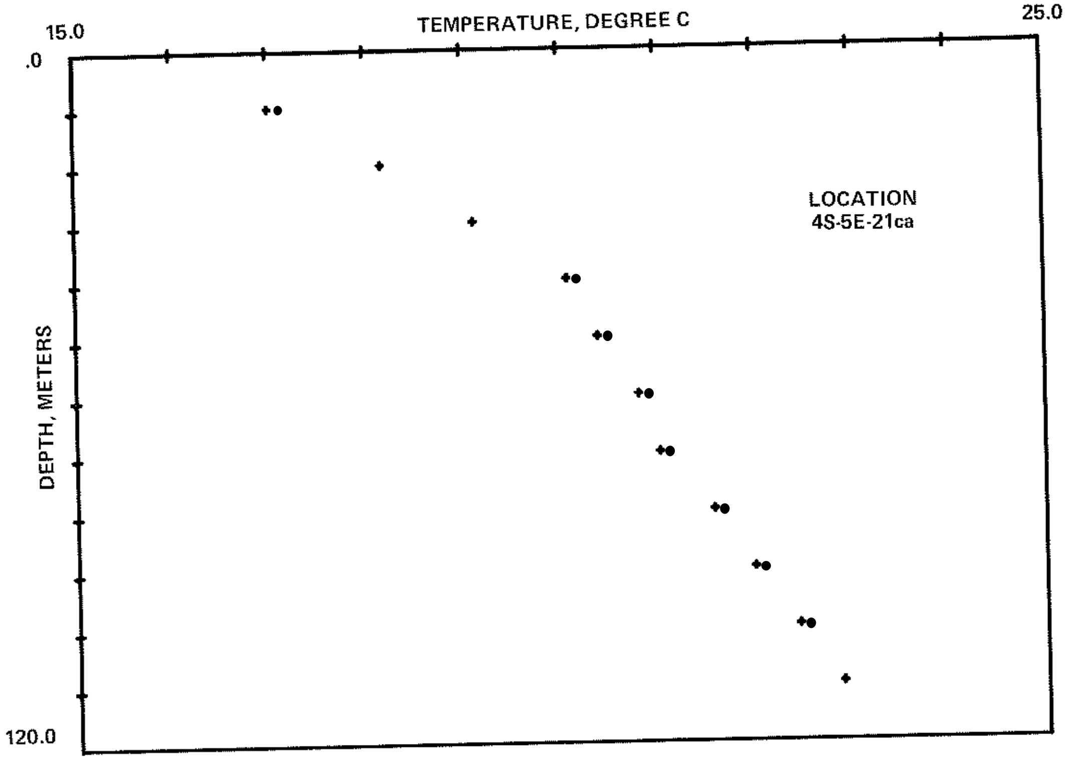
LOCATION
4S-1E-36ba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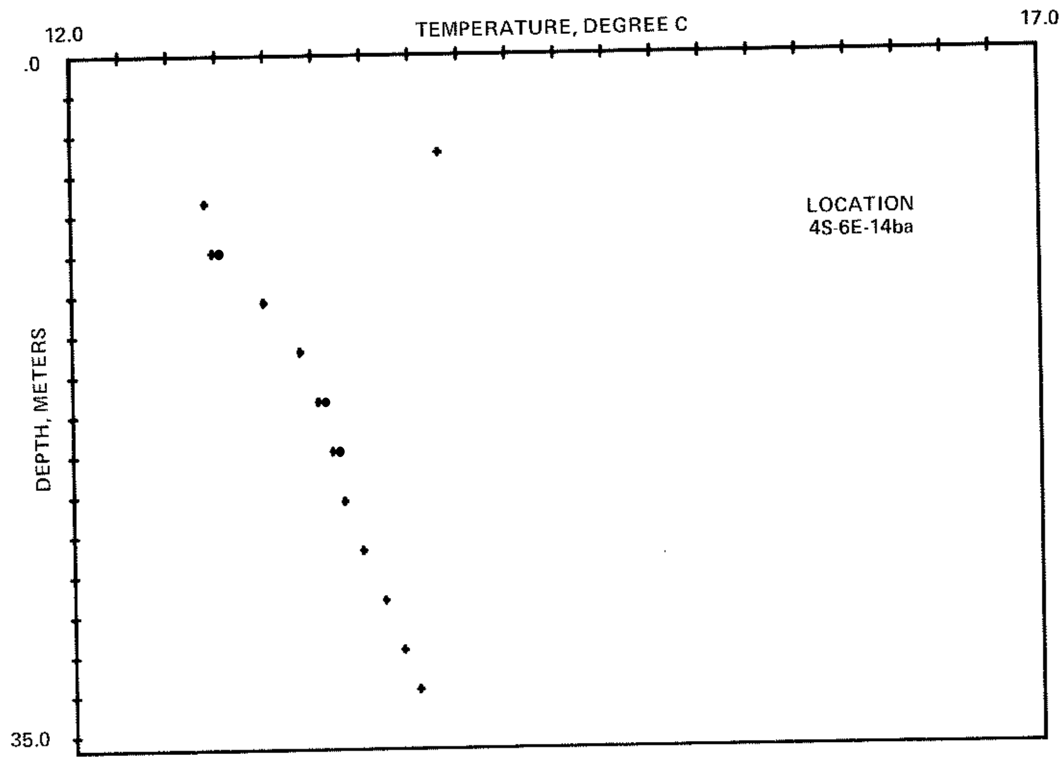
DEPTH, METERS
LOCATION
4S-5E-21ca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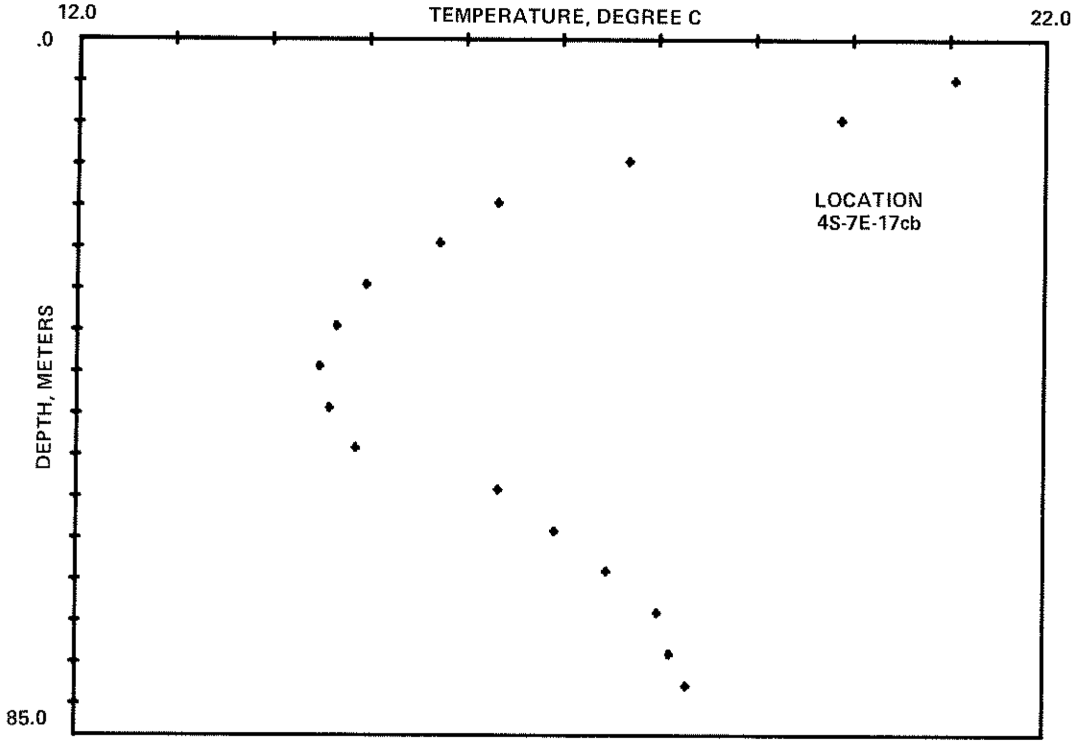
LOCATION
4S-6E-14ba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TEMPERATURE, DEGREE C
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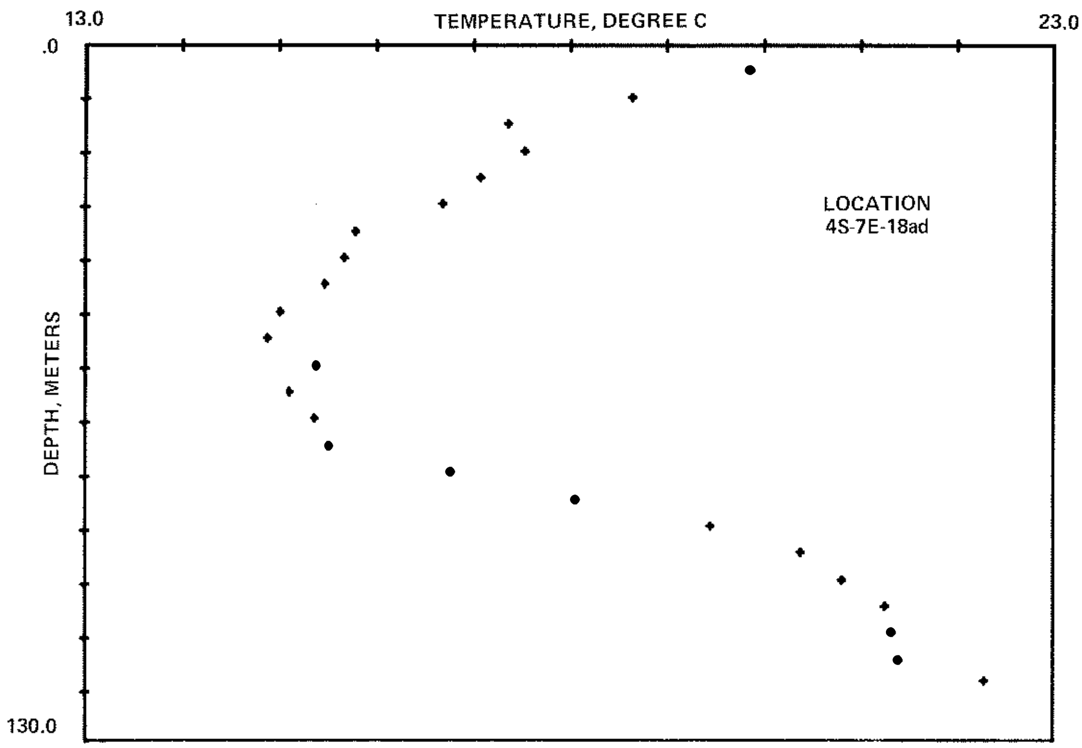
DEPTH, METERS
LOCATION
4S-7E-17cb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LOCATION
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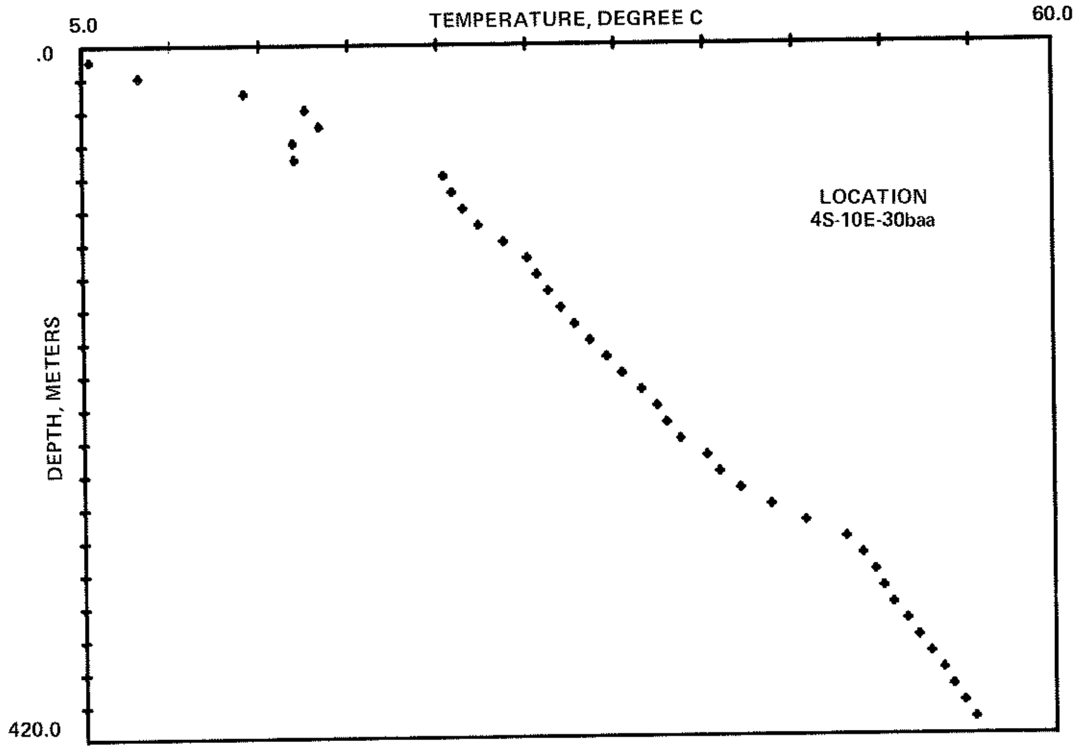
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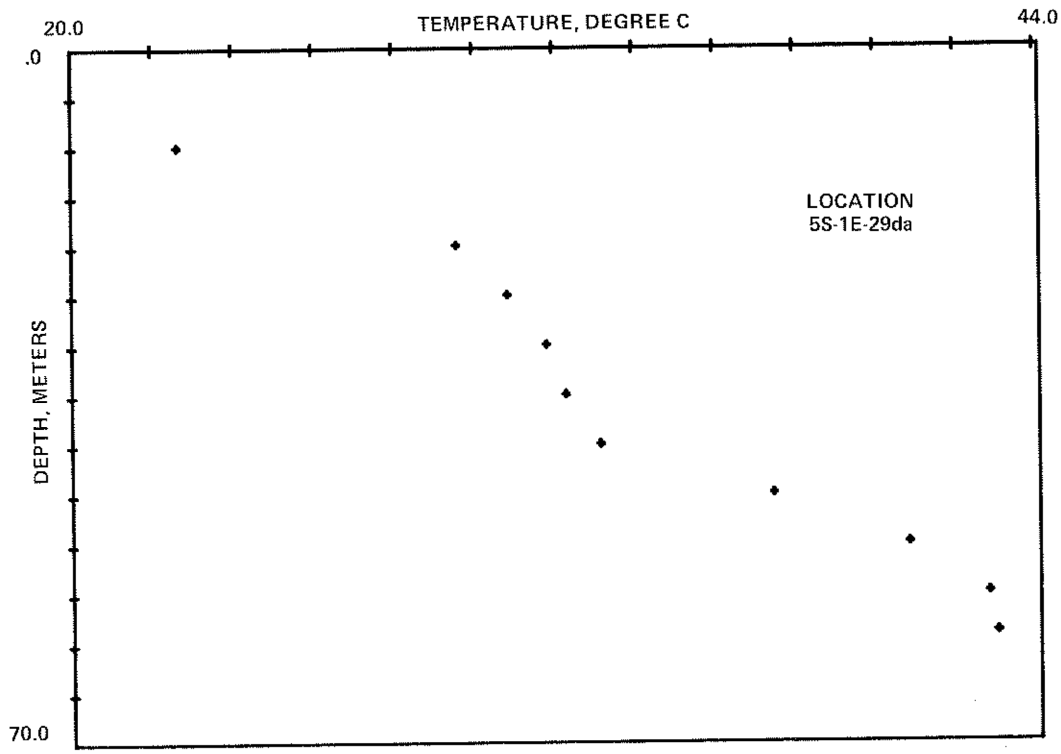
DEPTH, METERS
LOCATION
4S-10E-30baa


TEMPERATURE, DEGREE C
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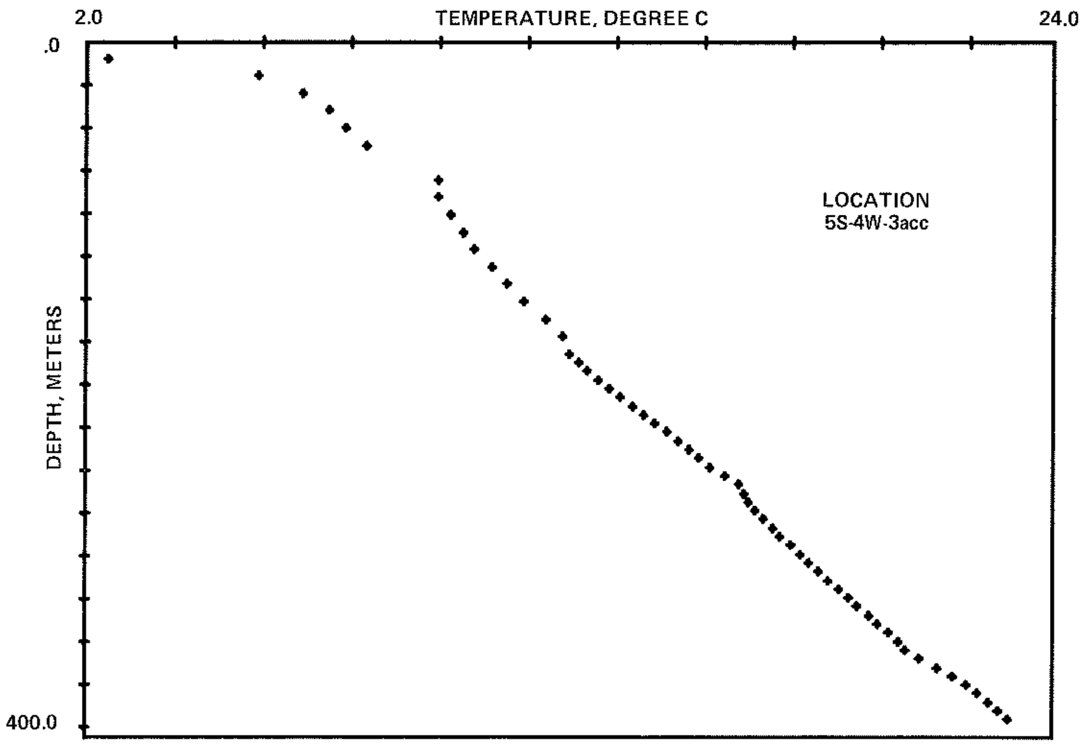
DEPTH, METERS
LOCATION
5S-1E-29da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DEPTH, METERS
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LOCATION
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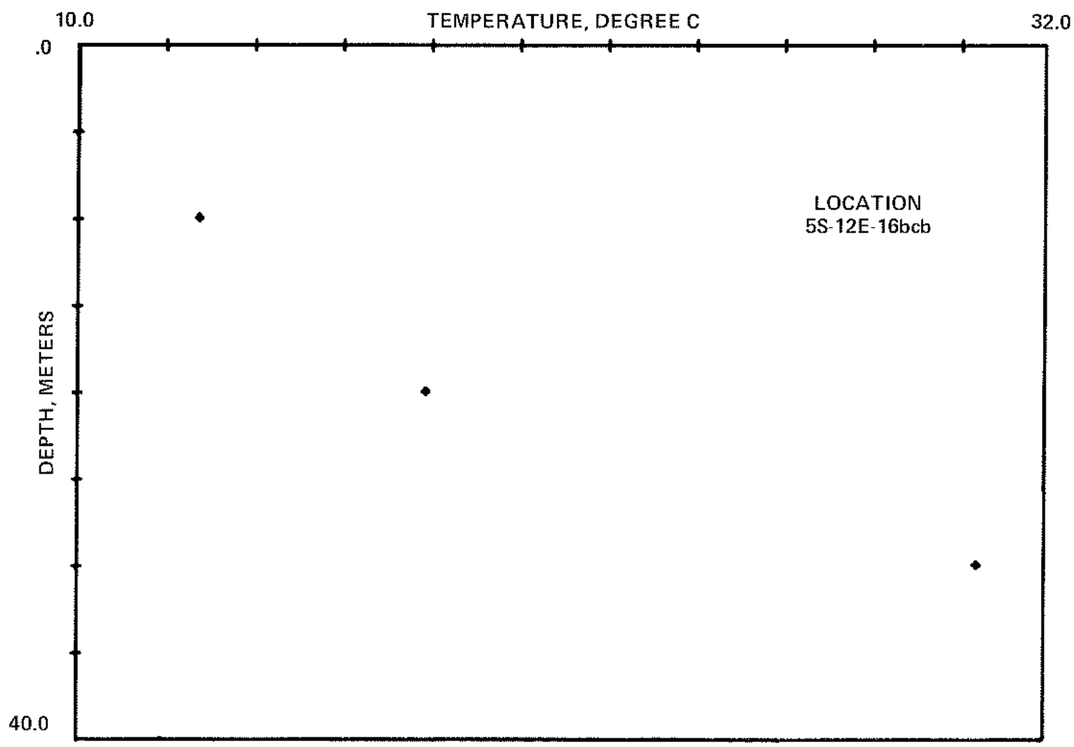
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DEPTH, METERS
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LOCATION
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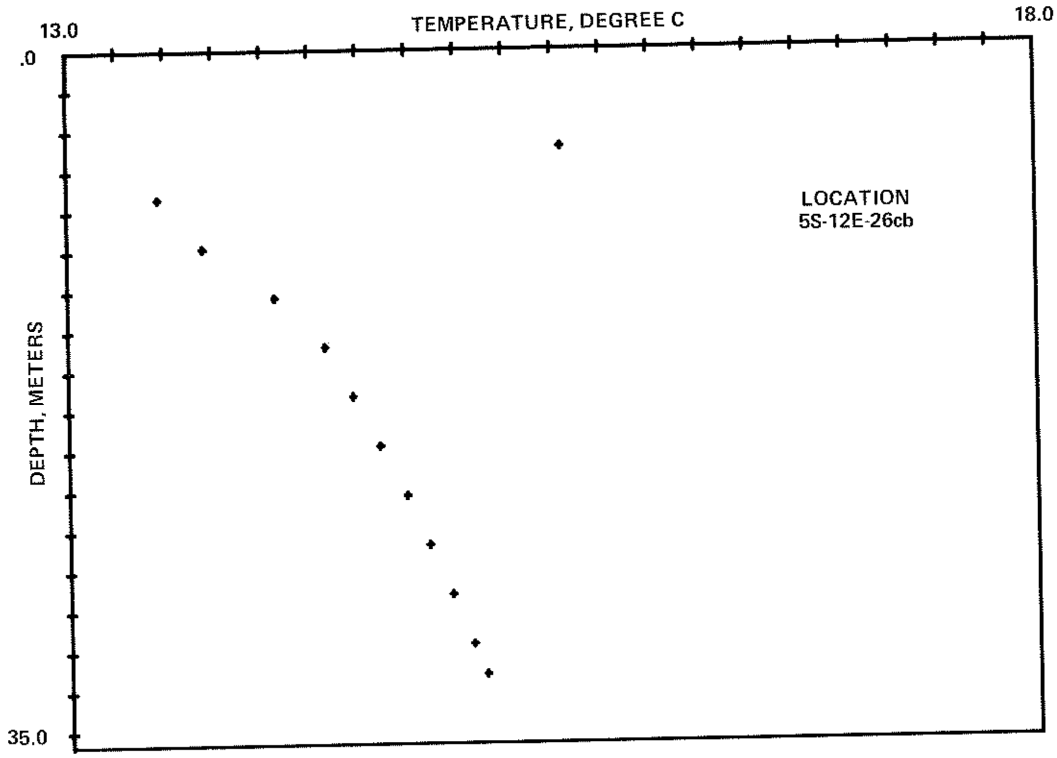

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DEPTH, METERS
LOCATION
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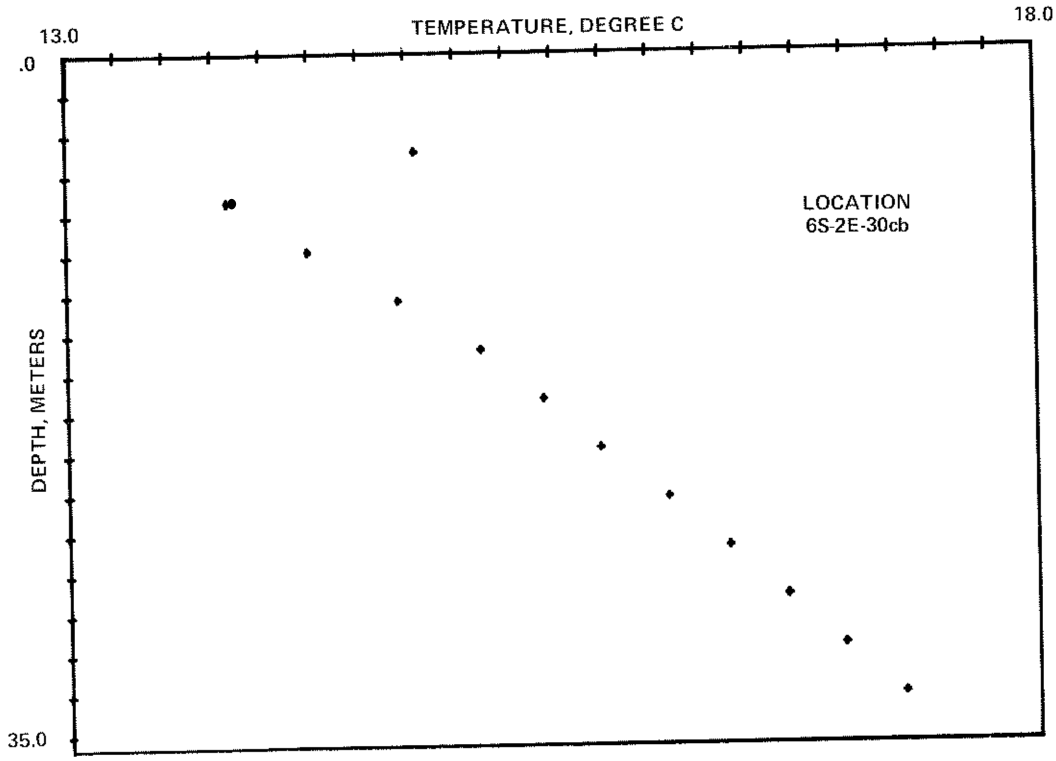

TEMPERATURE, DEGREE C
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DEPTH, METERS
LOCATION
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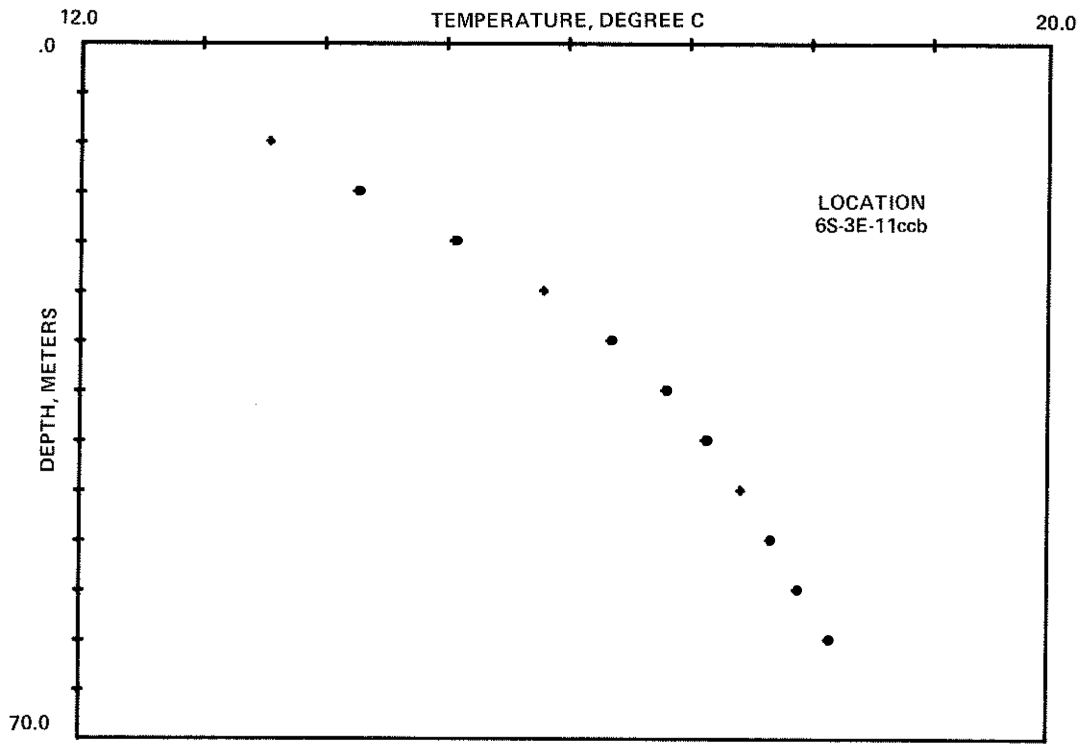
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DEPTH, METERS
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LOCATION
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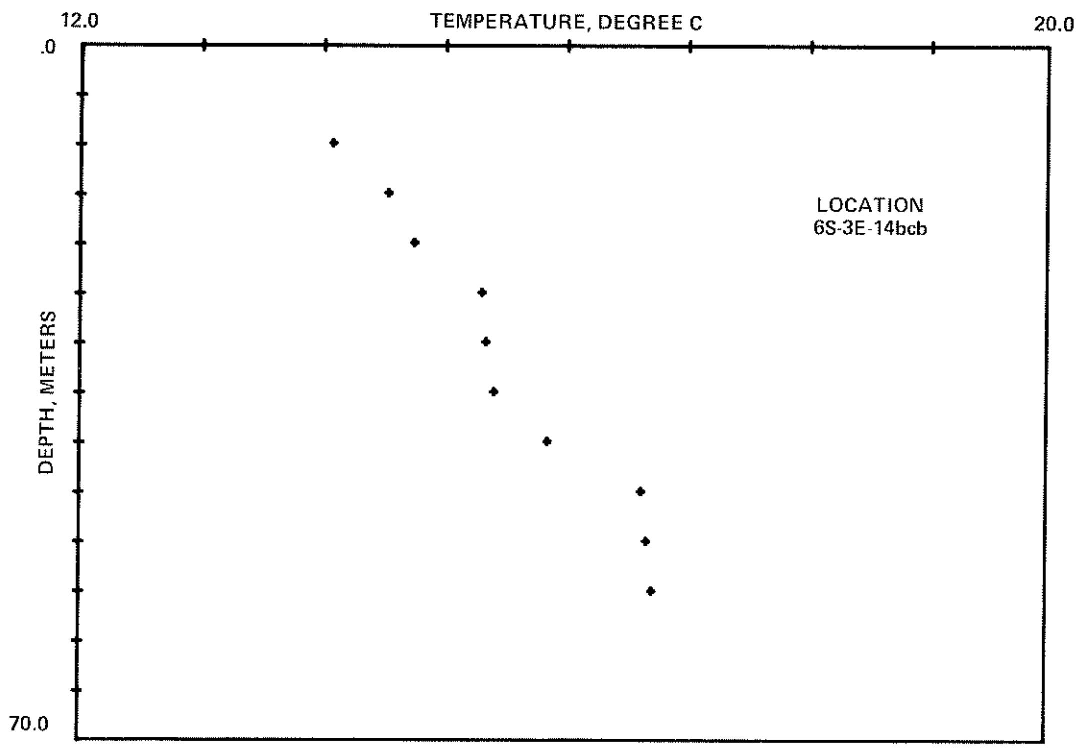
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TEMPERATURE, DEGREE C
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DEPTH, METERS
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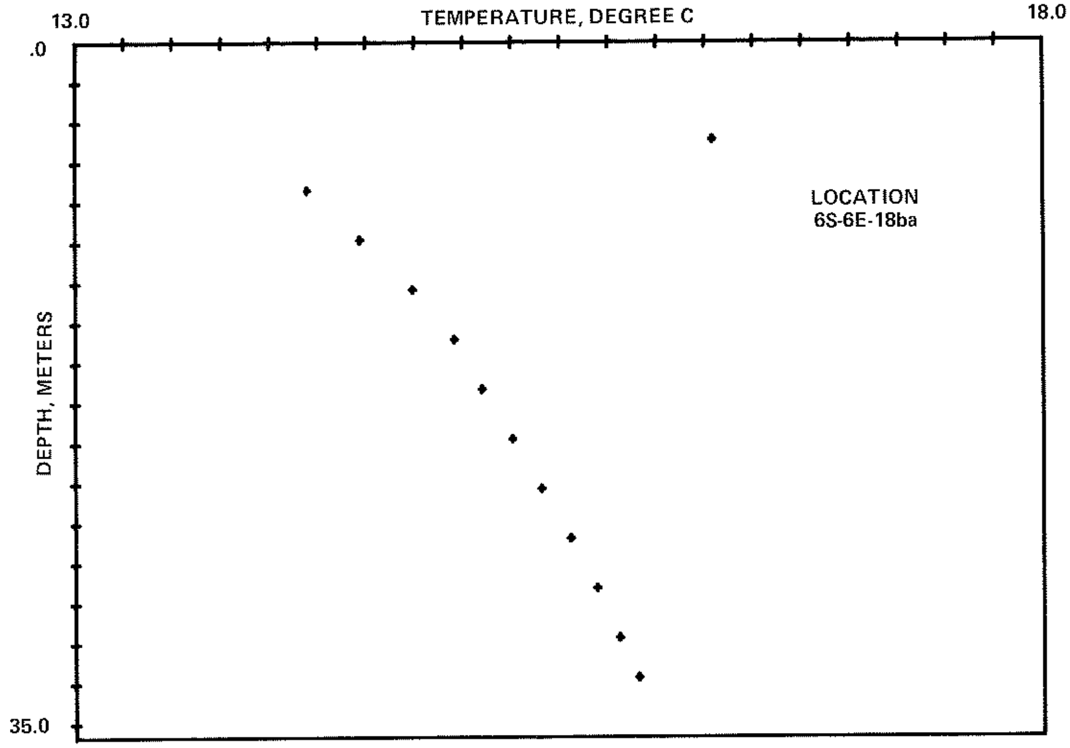
LOCATION
6S-3E-14bcb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TEMPERATURE, DEGREE C
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DEPTH, METERS
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LOCATION
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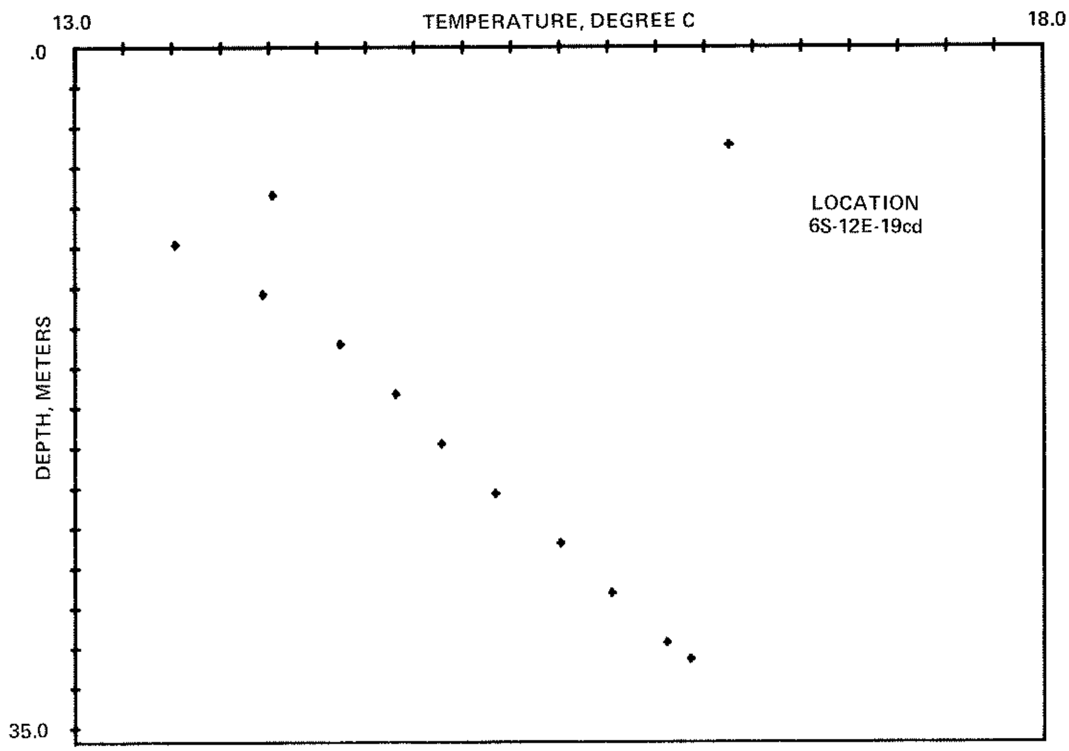
13.0
TEMPERATURE, DEGREE C
18.0
.0
DEPTH, METERS
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LOCATION
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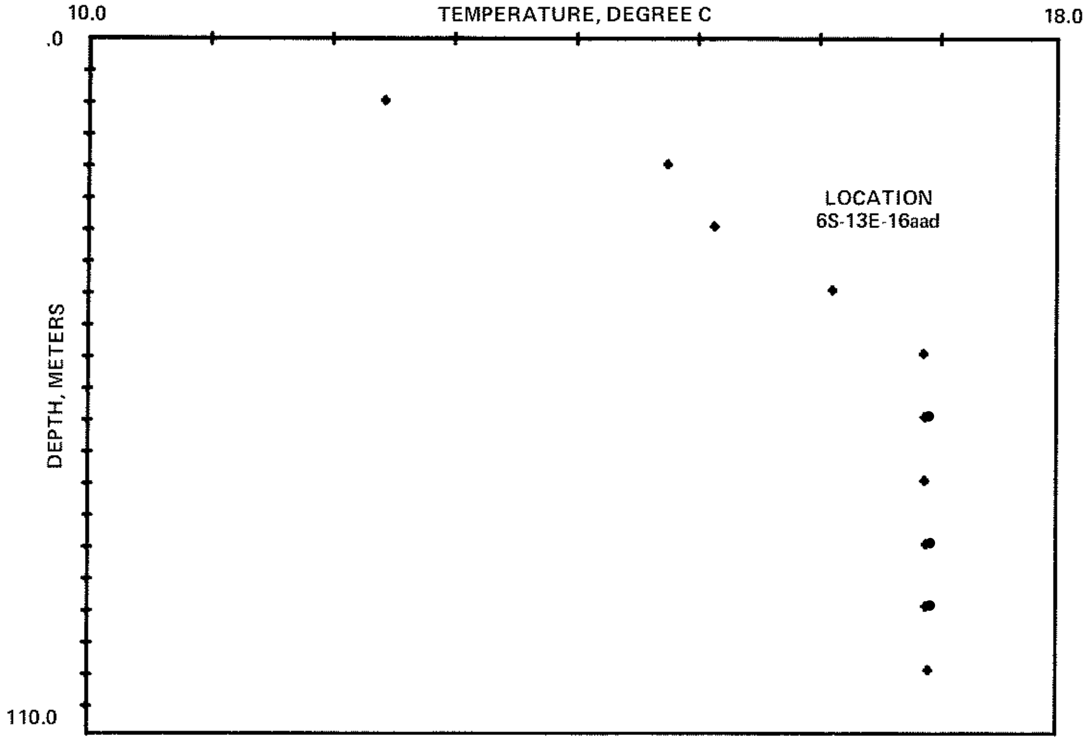
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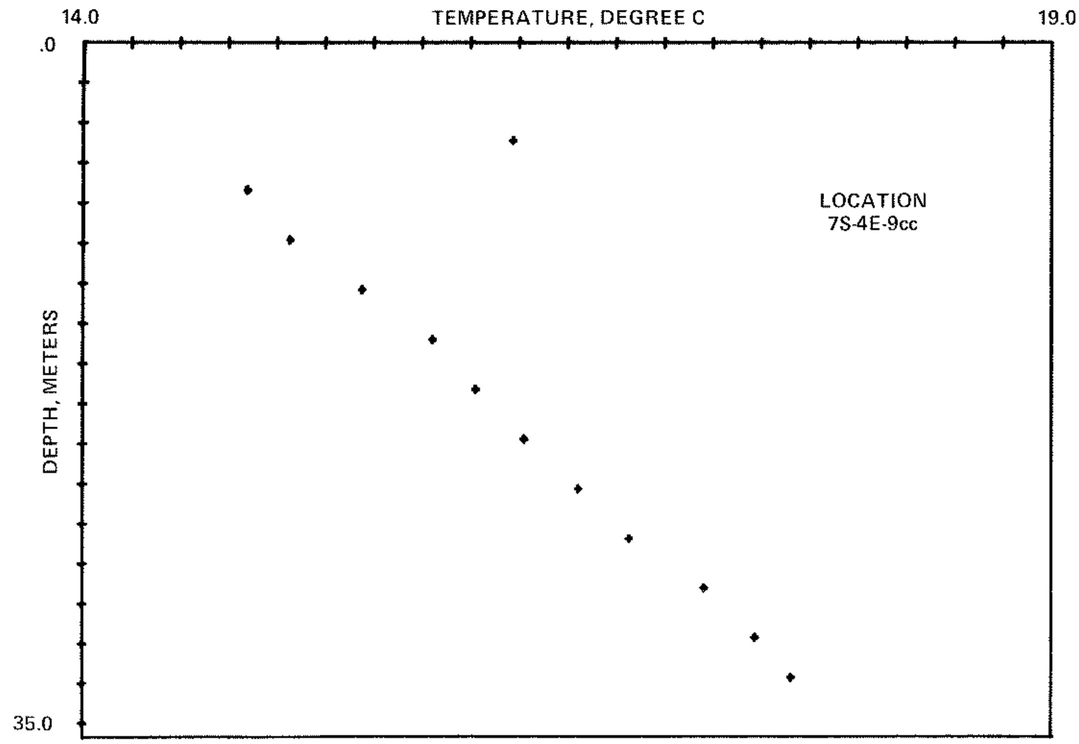
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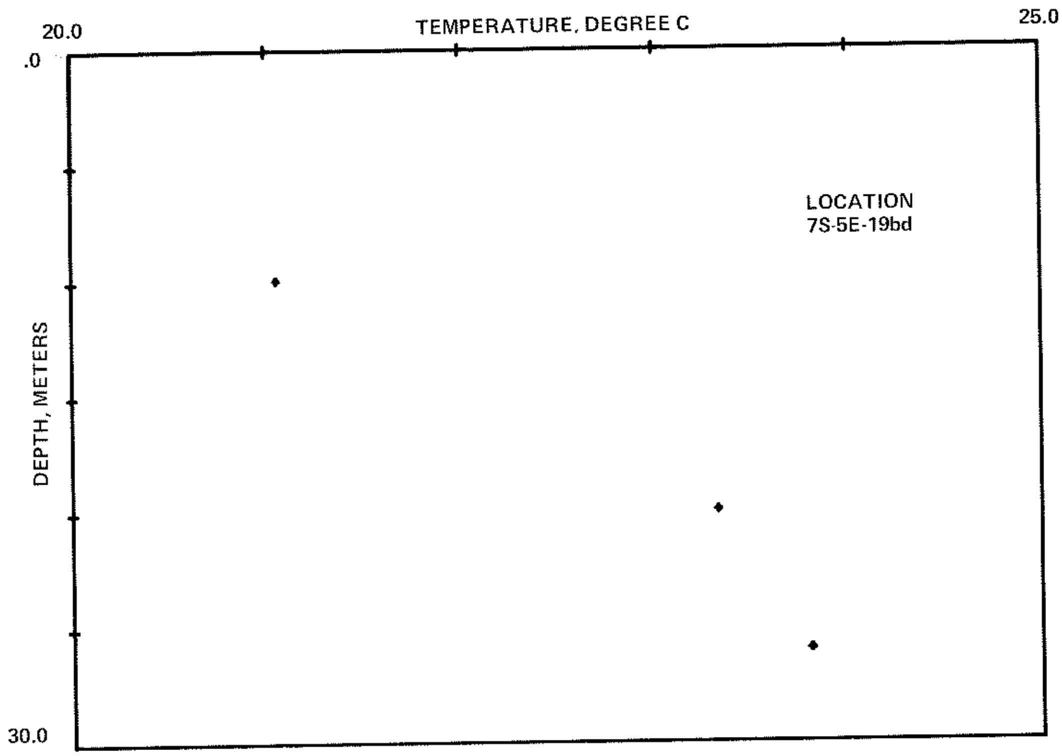
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DEPTH, METERS
LOCATION
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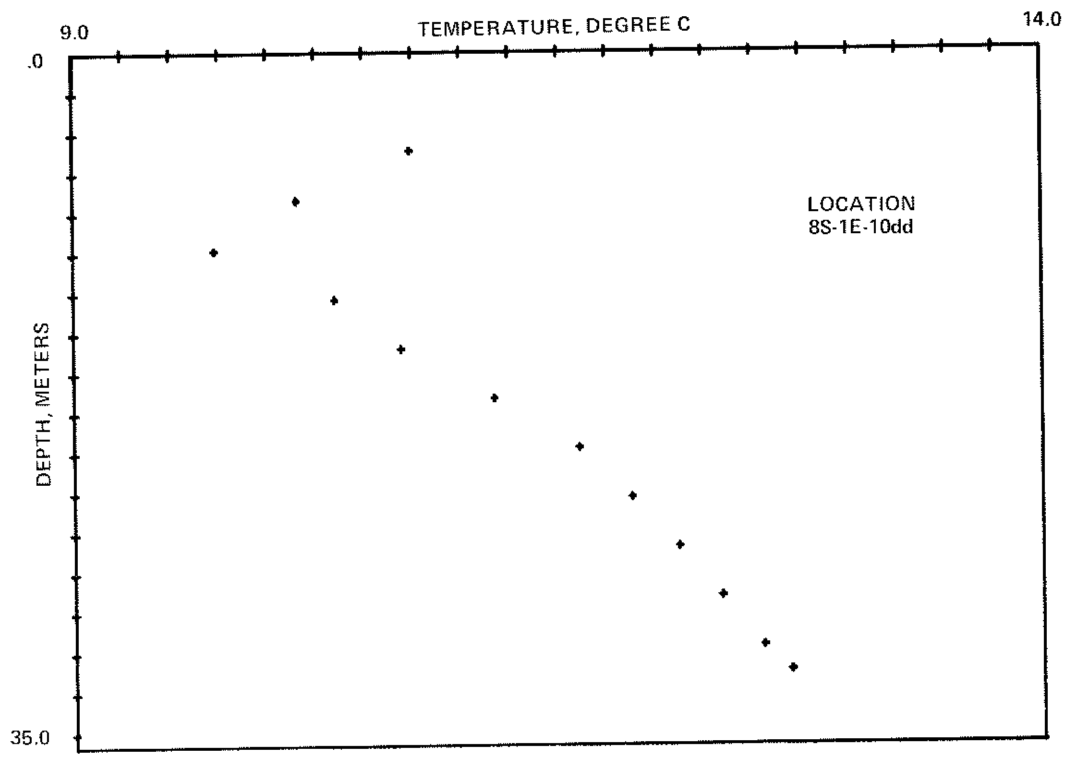
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DEPTH, METERS
LOCATION
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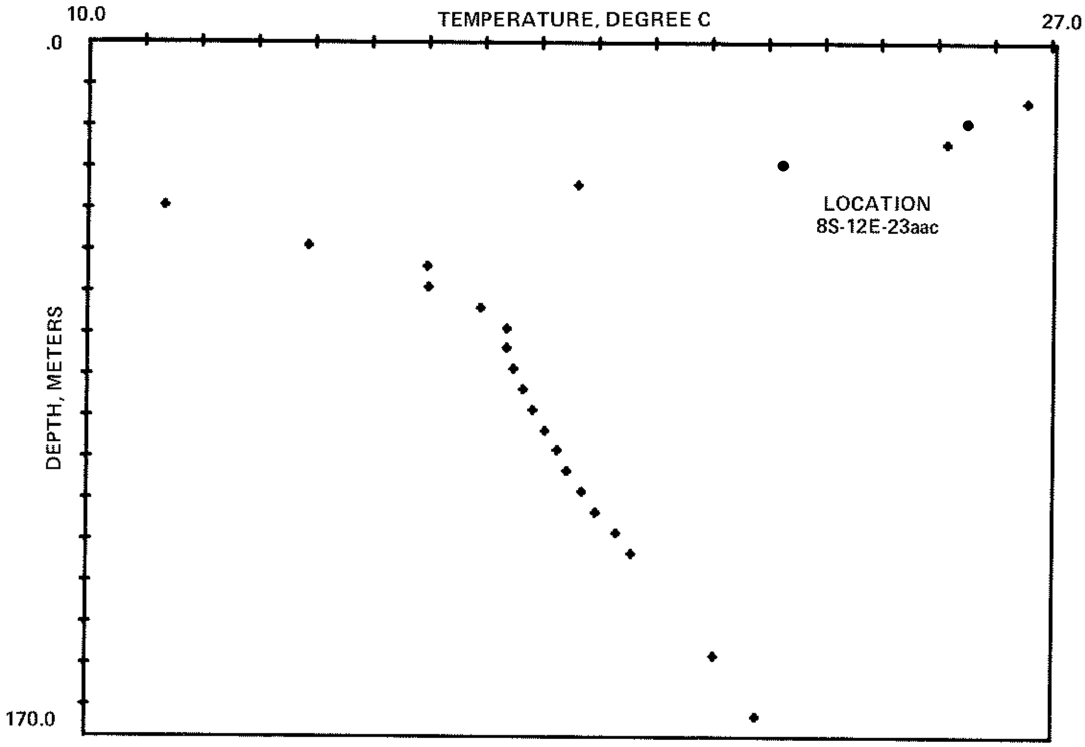
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DEPTH, METERS
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LOCATION
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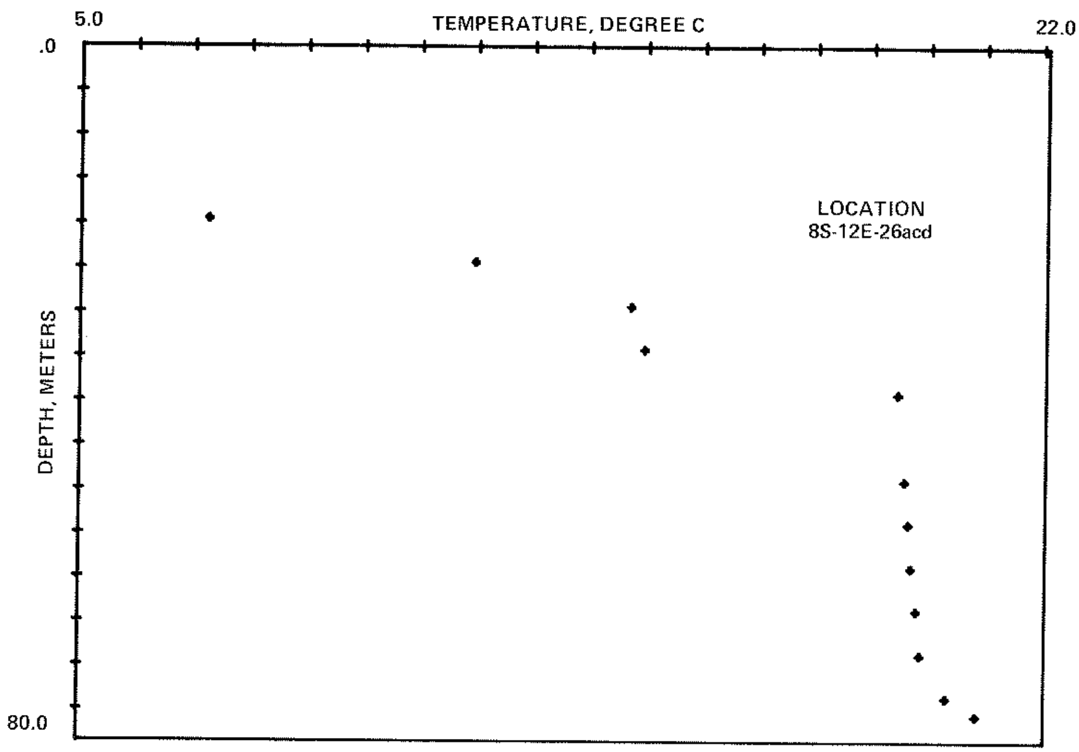
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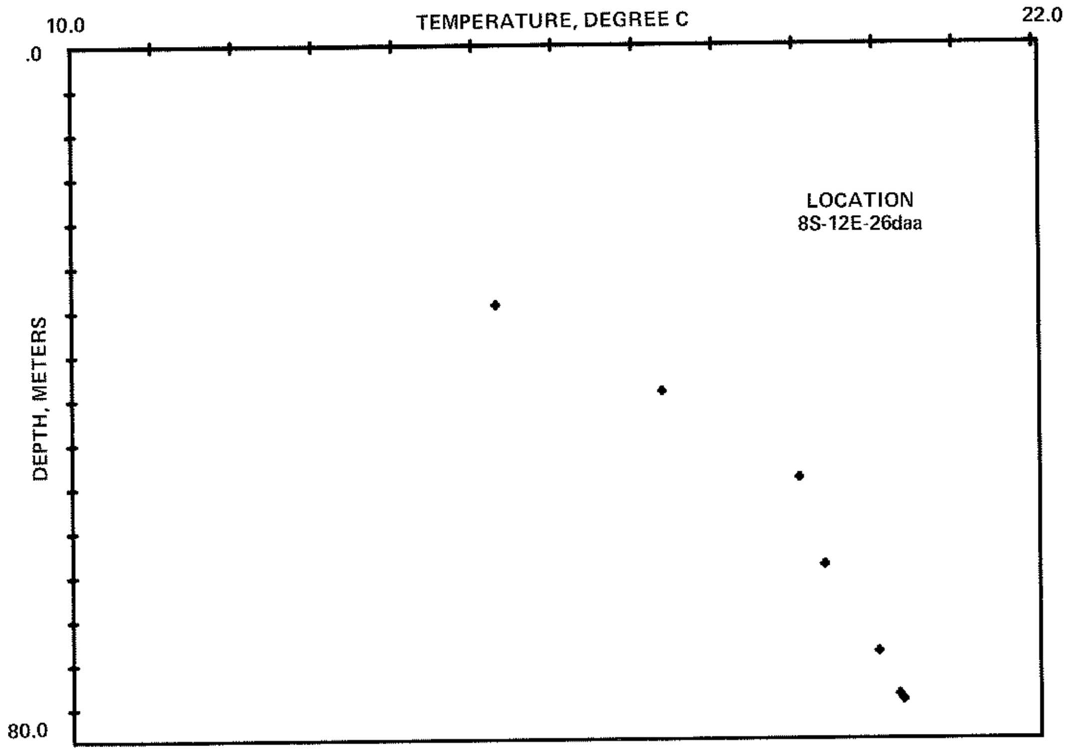
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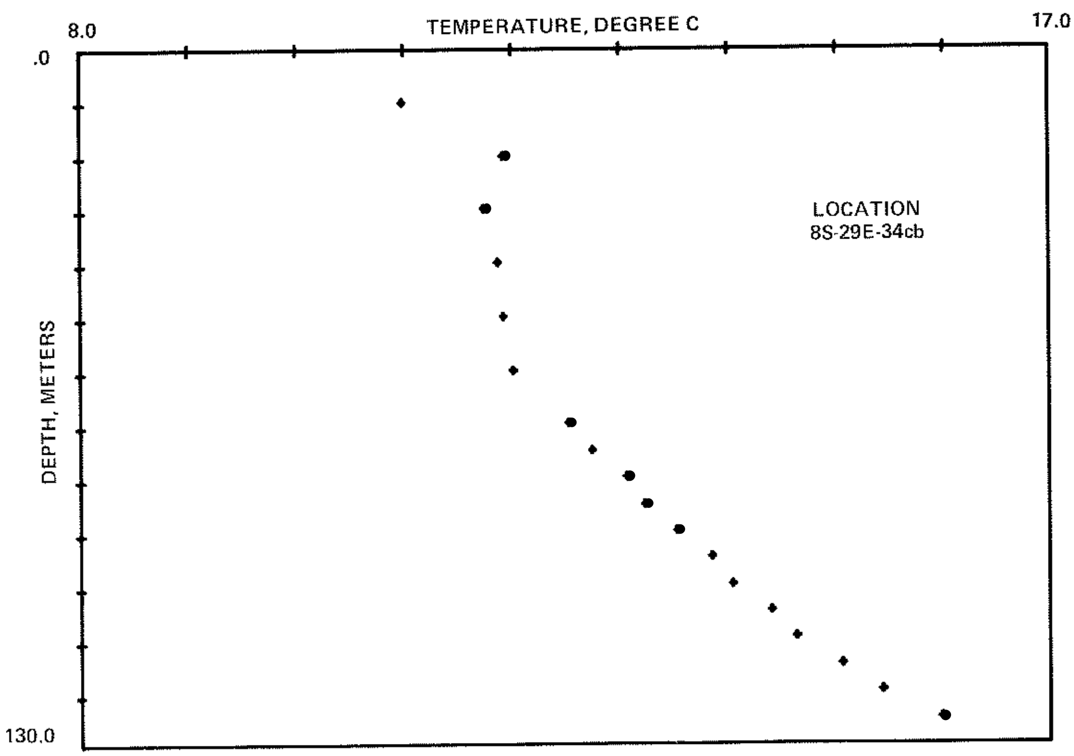
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DEPTH, METERS
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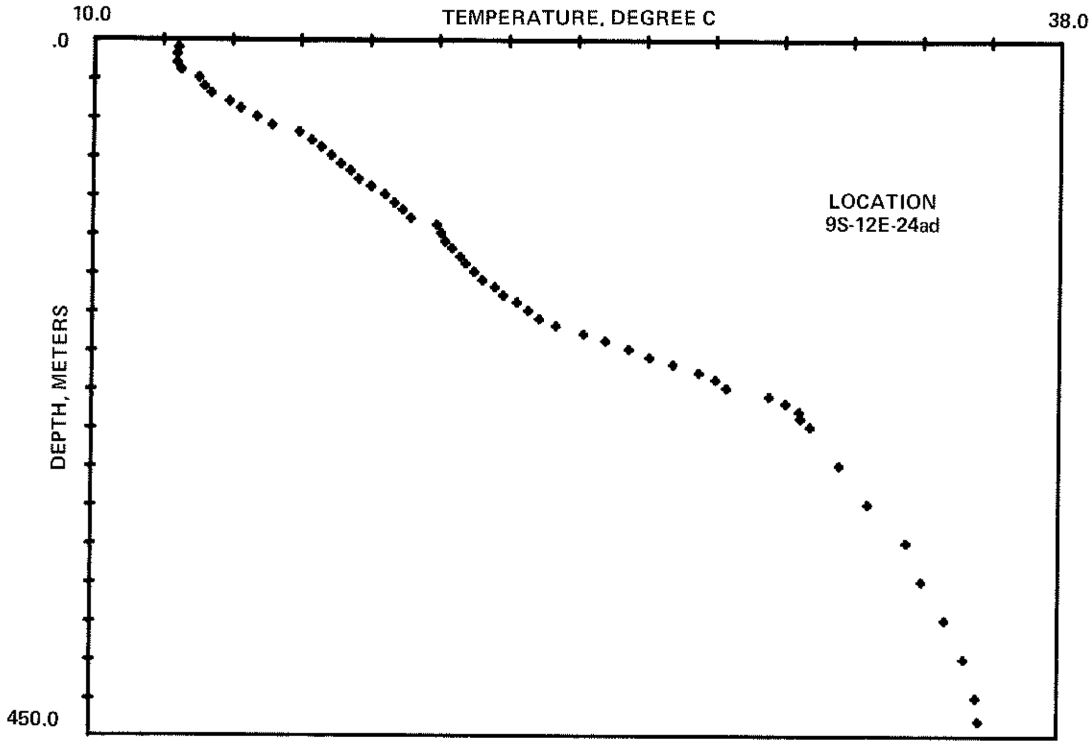
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LOCATION
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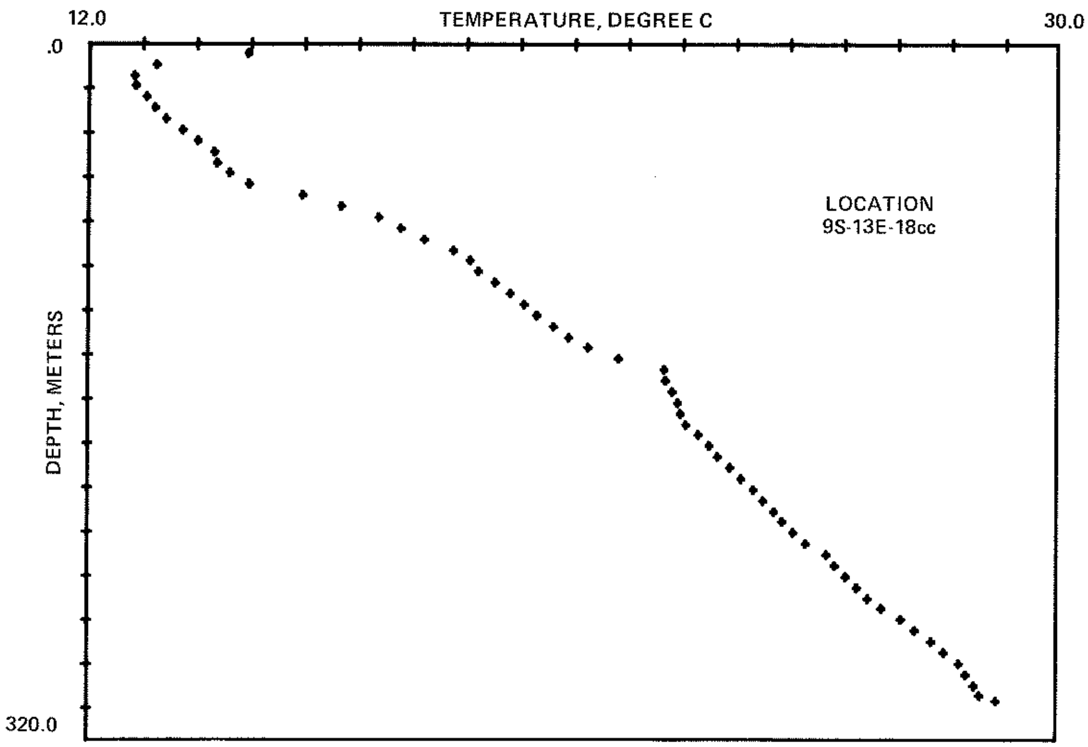
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LOCATION
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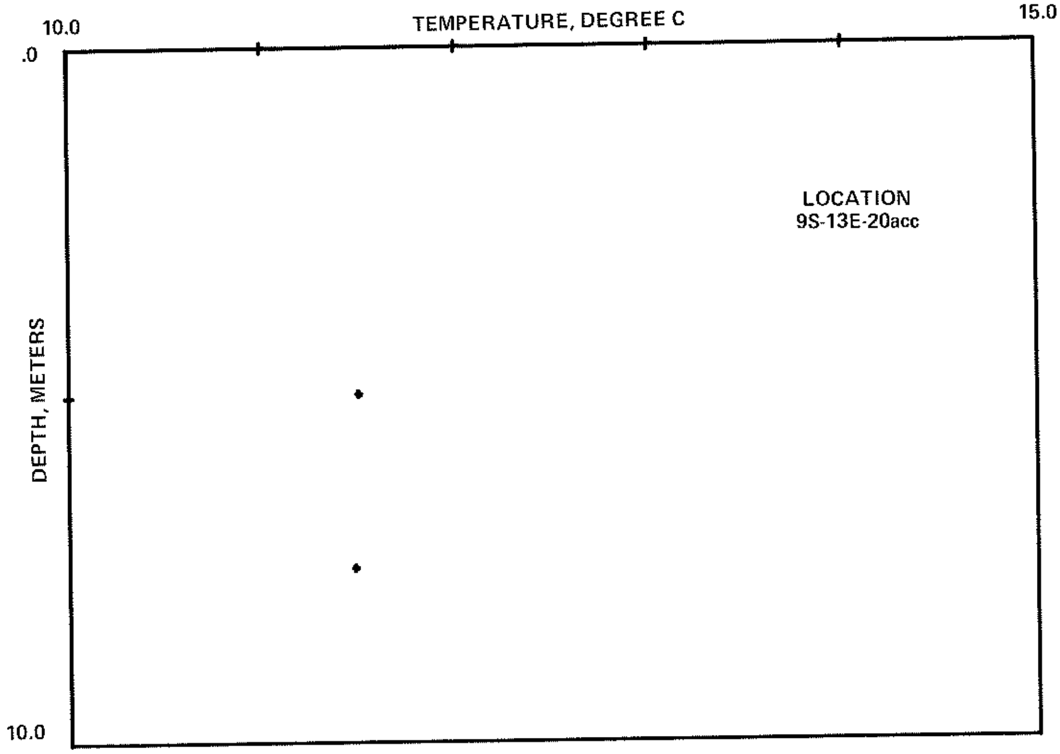
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DEPTH, METERS
LOCATION
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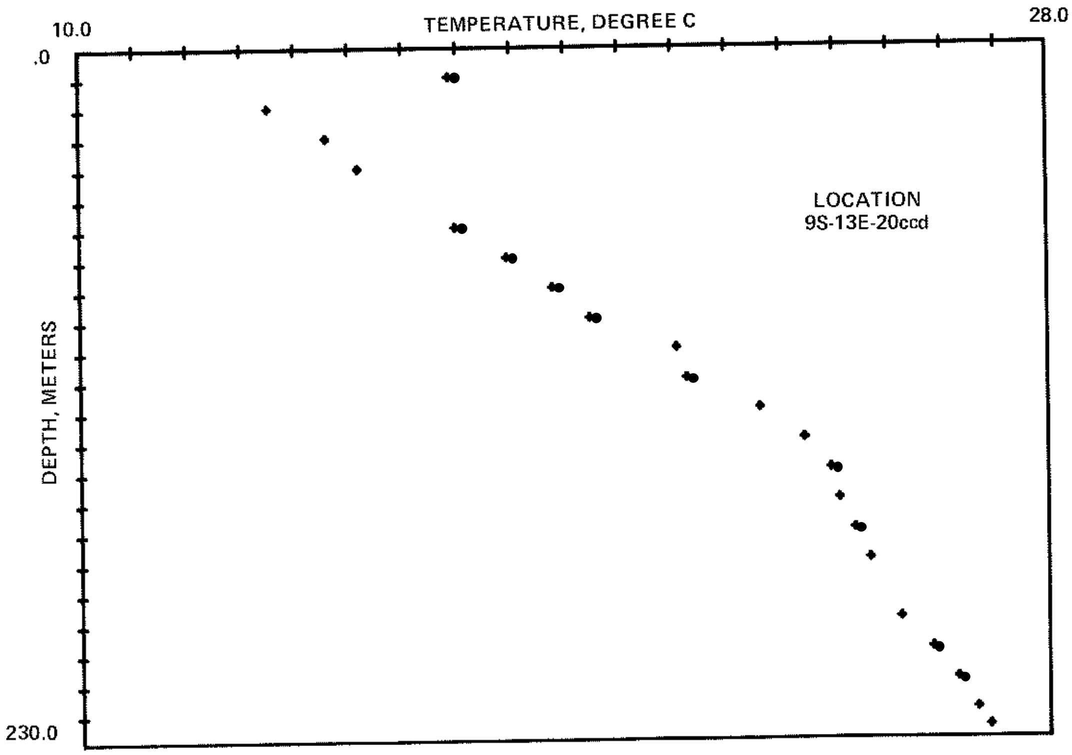
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DEPTH, METERS
LOCATION
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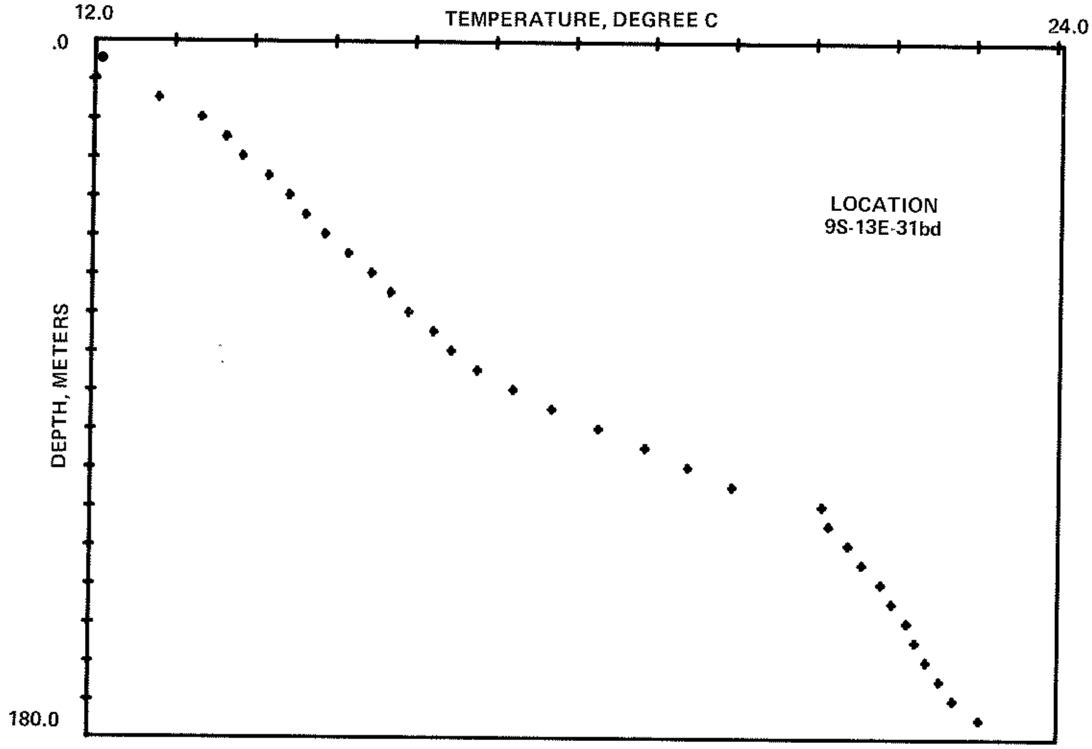
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DEPTH, METERS
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LOCATION
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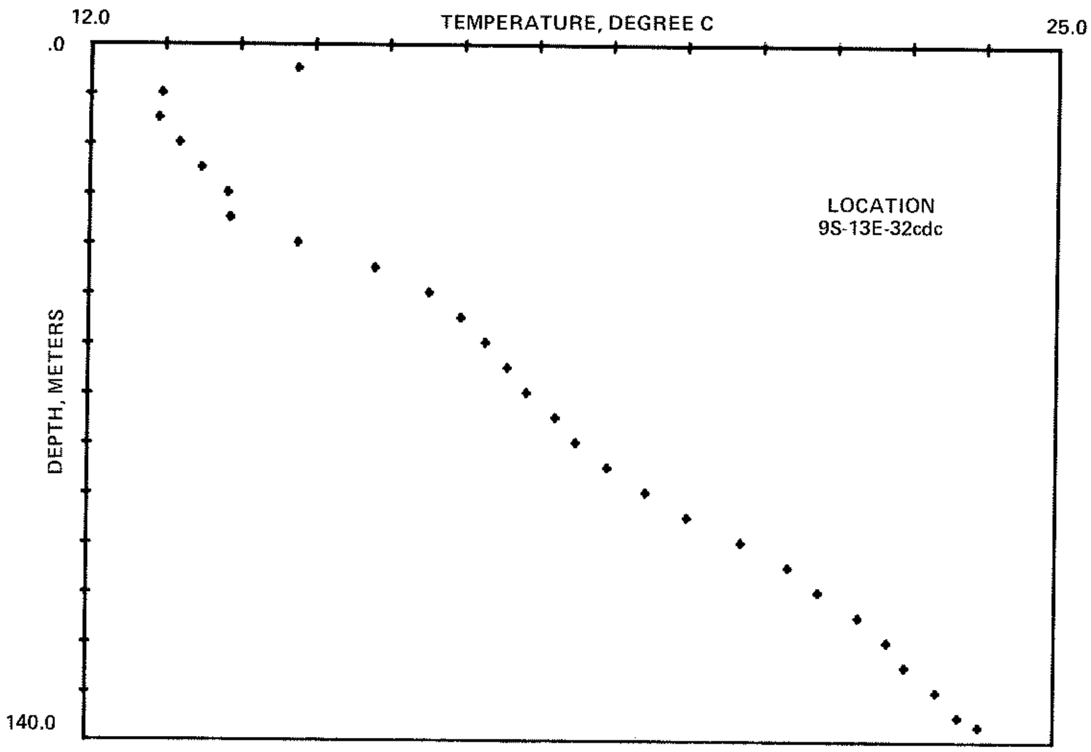
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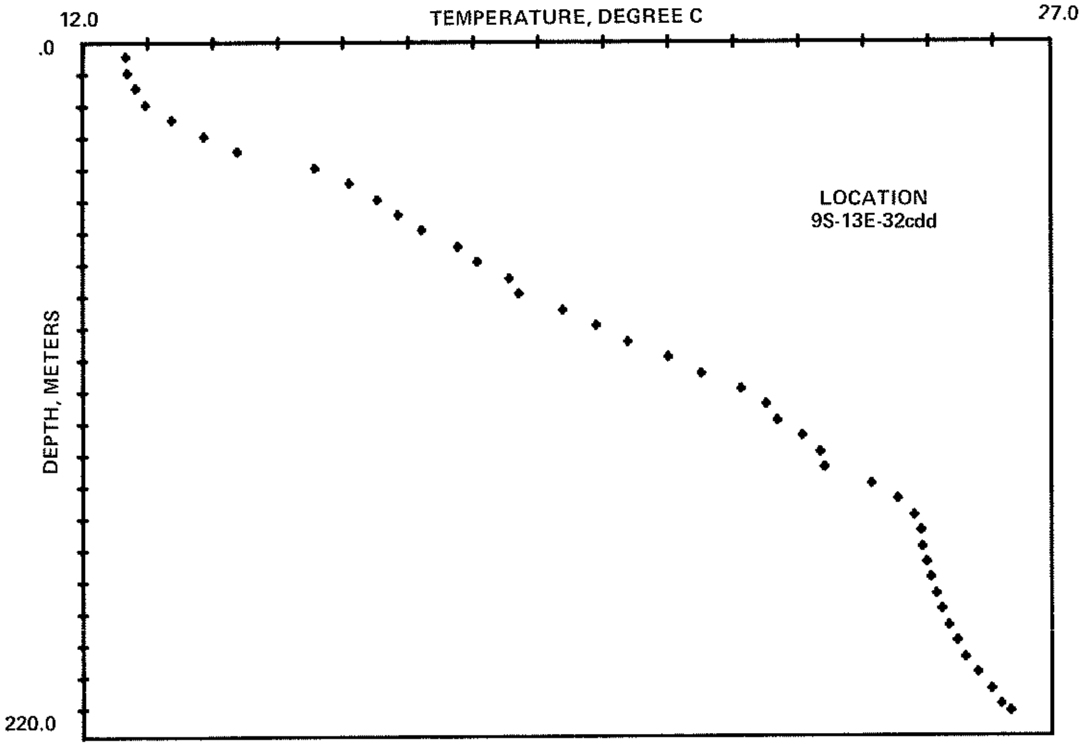
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DEPTH, METERS
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LOCATION
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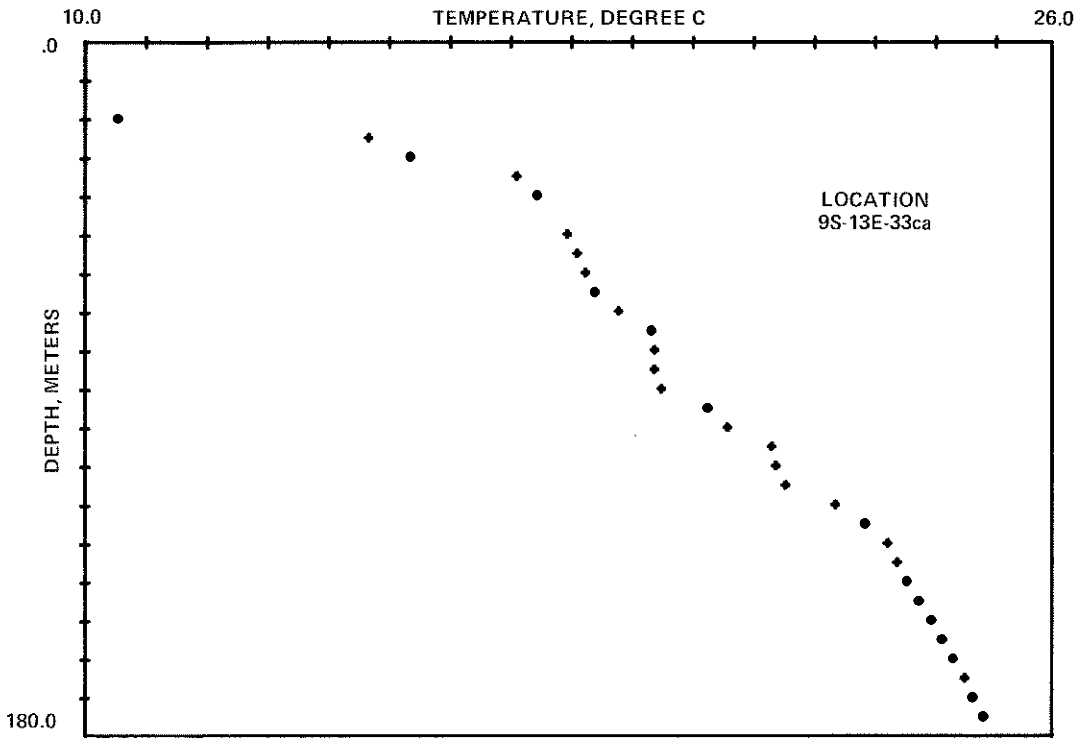
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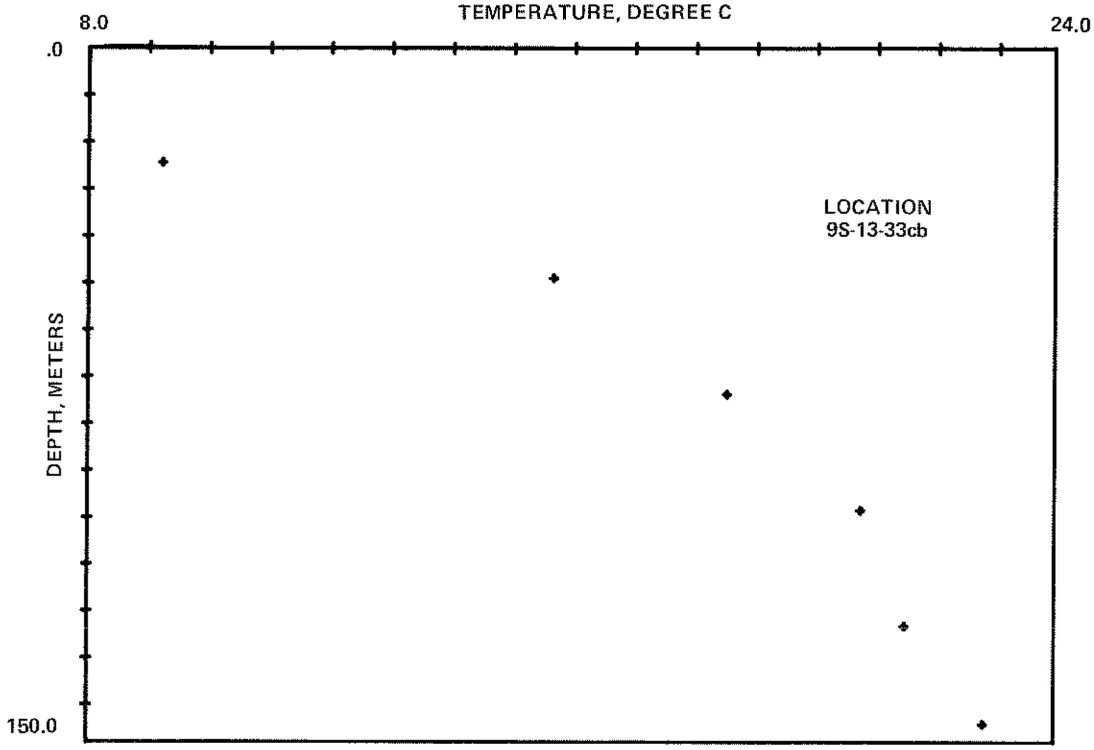
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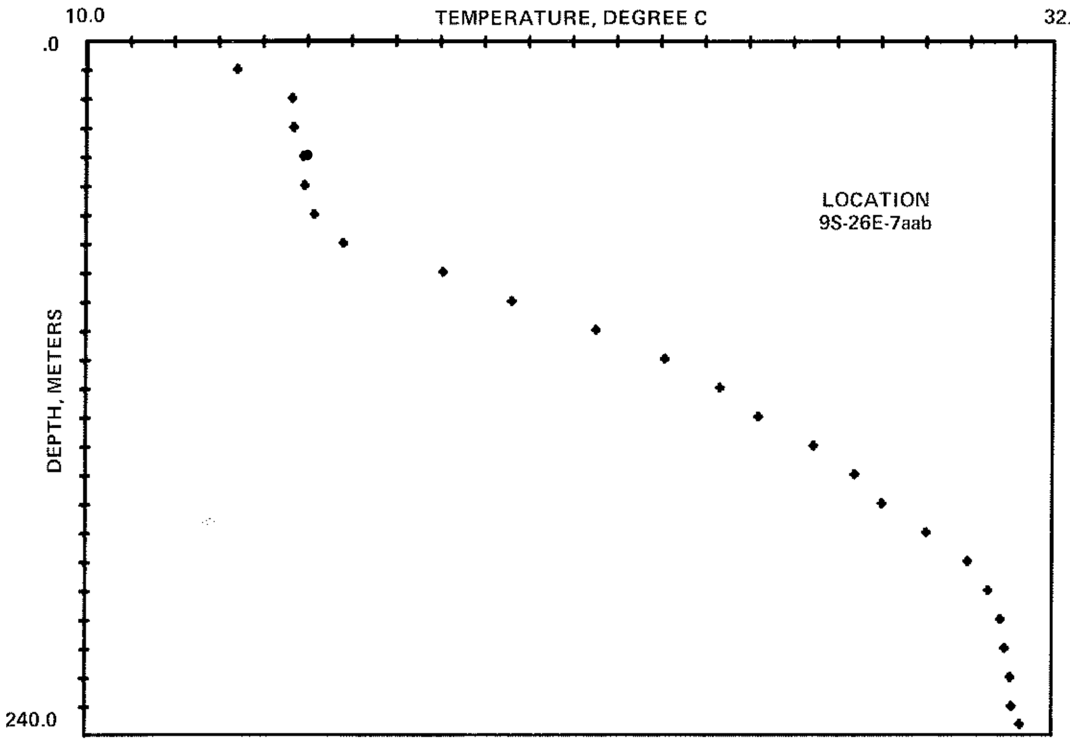
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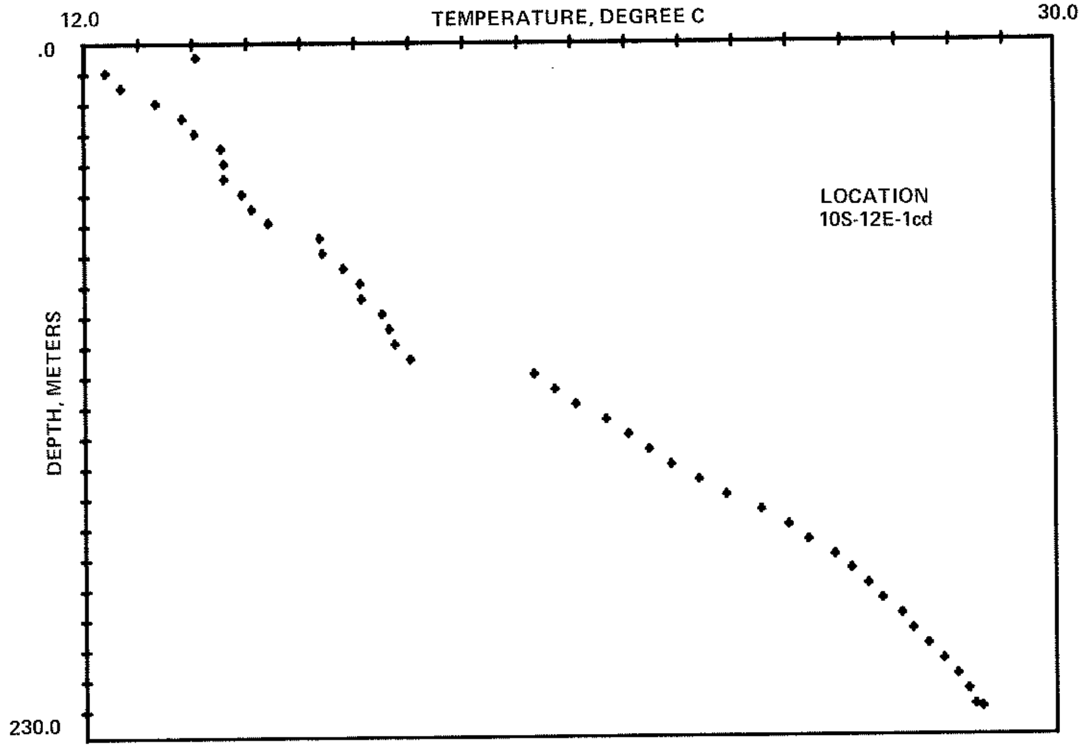
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LOCATION
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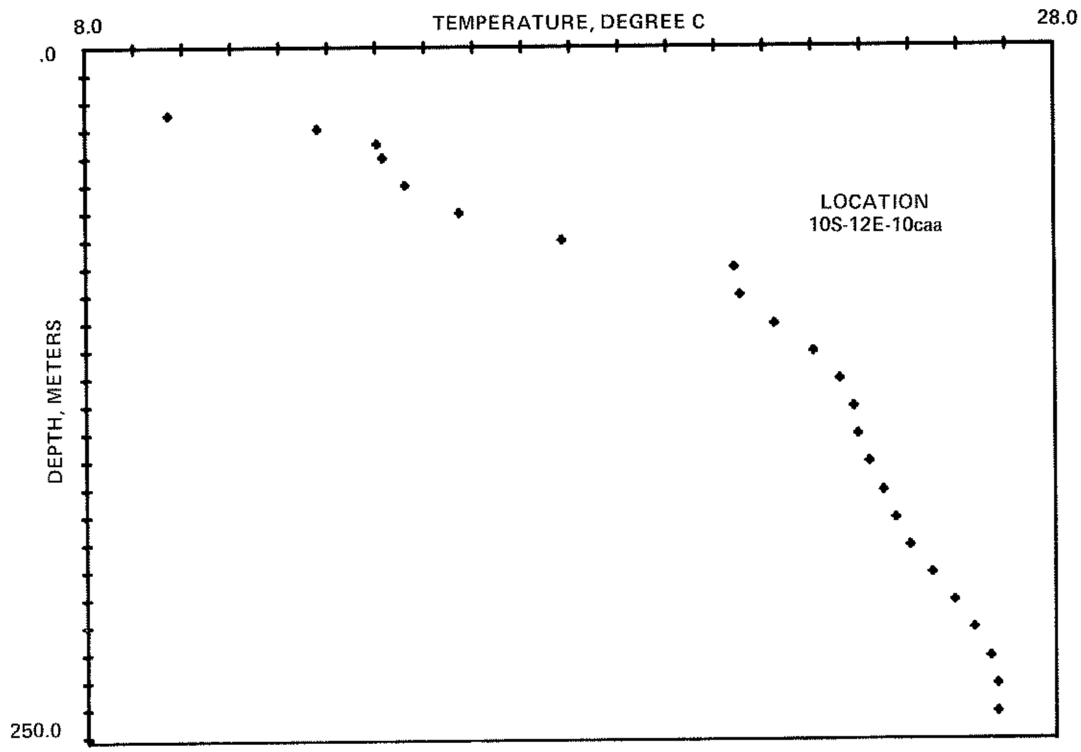
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LOCATION
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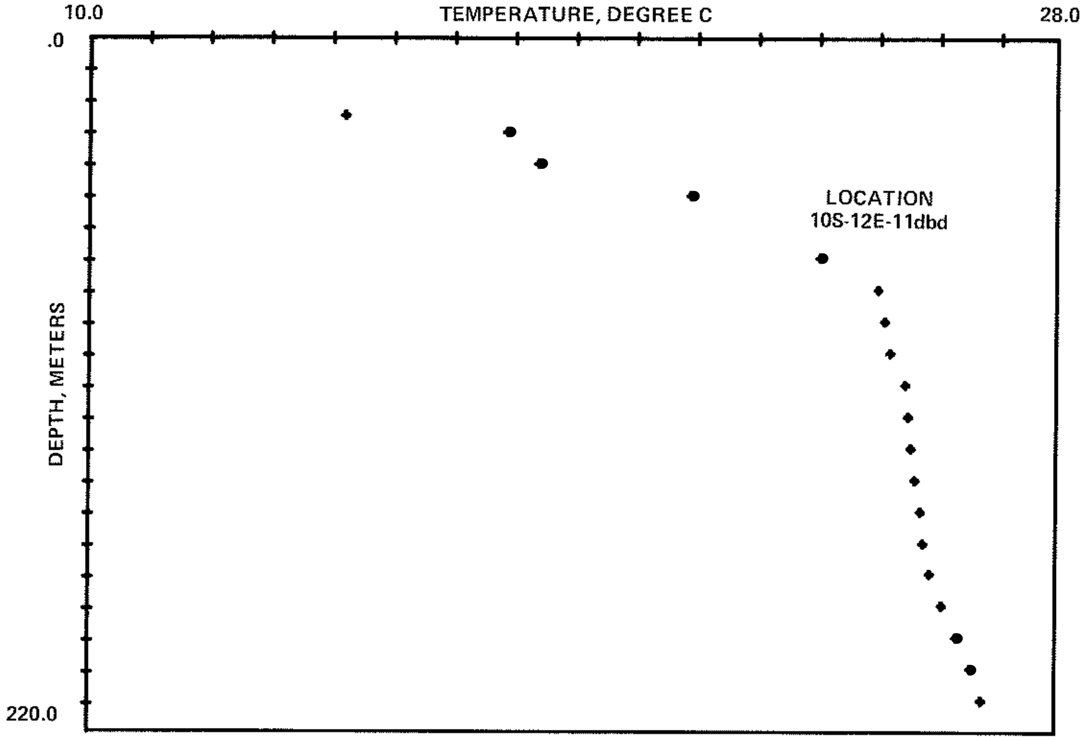
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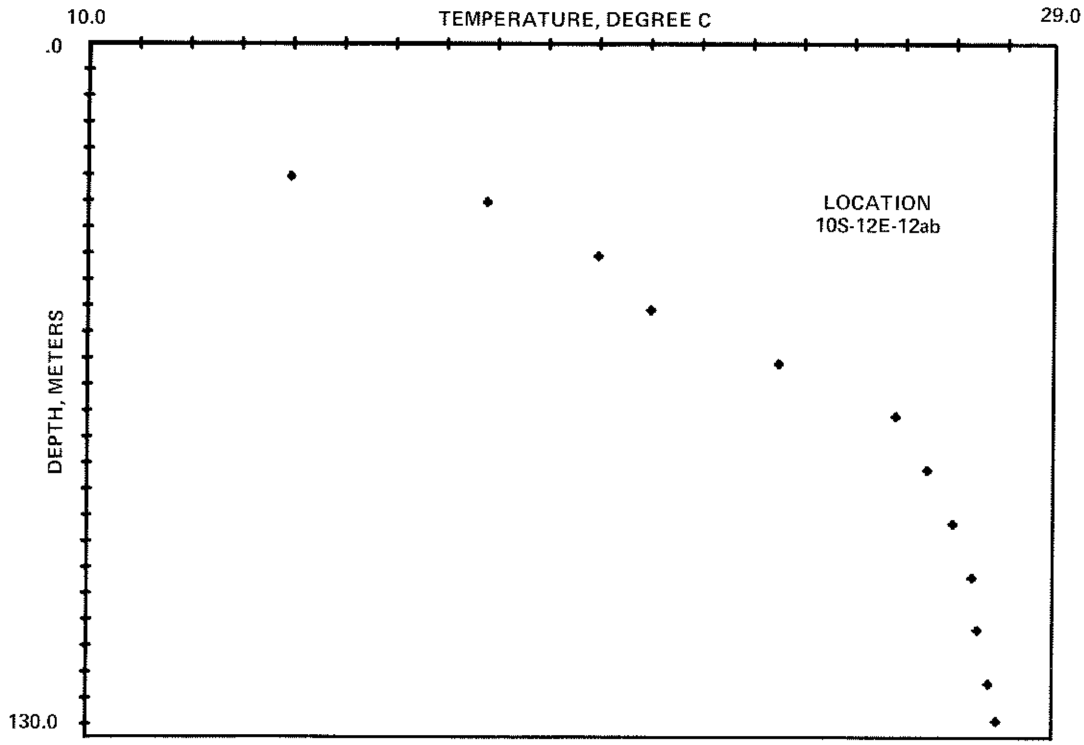
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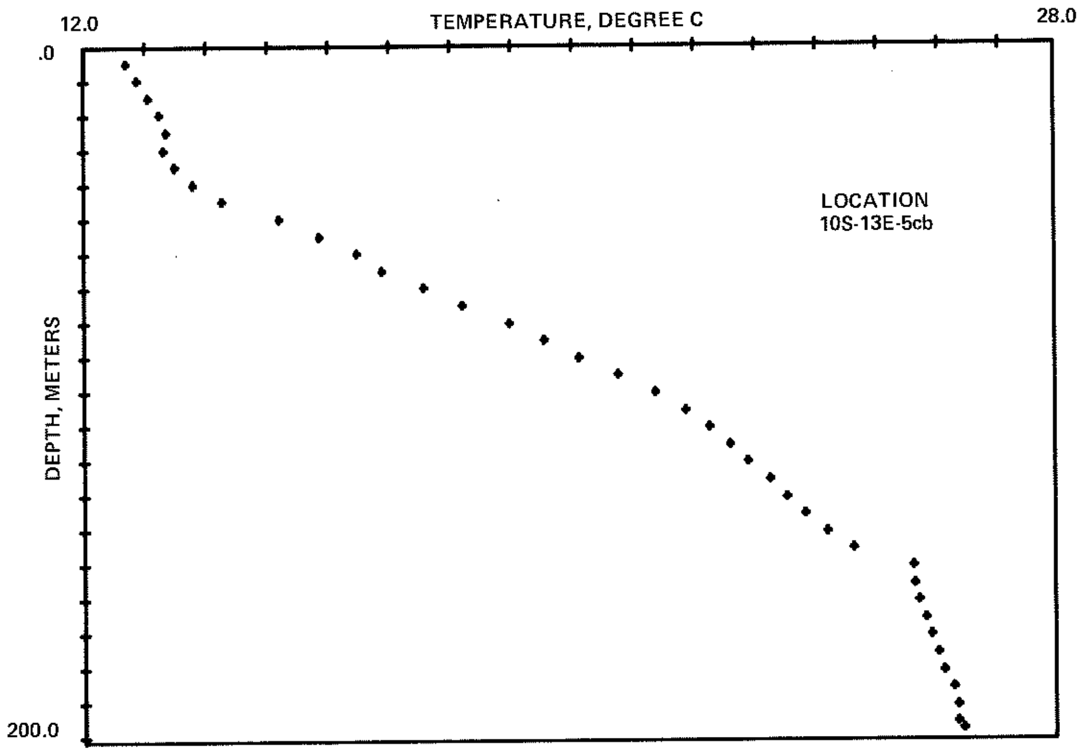
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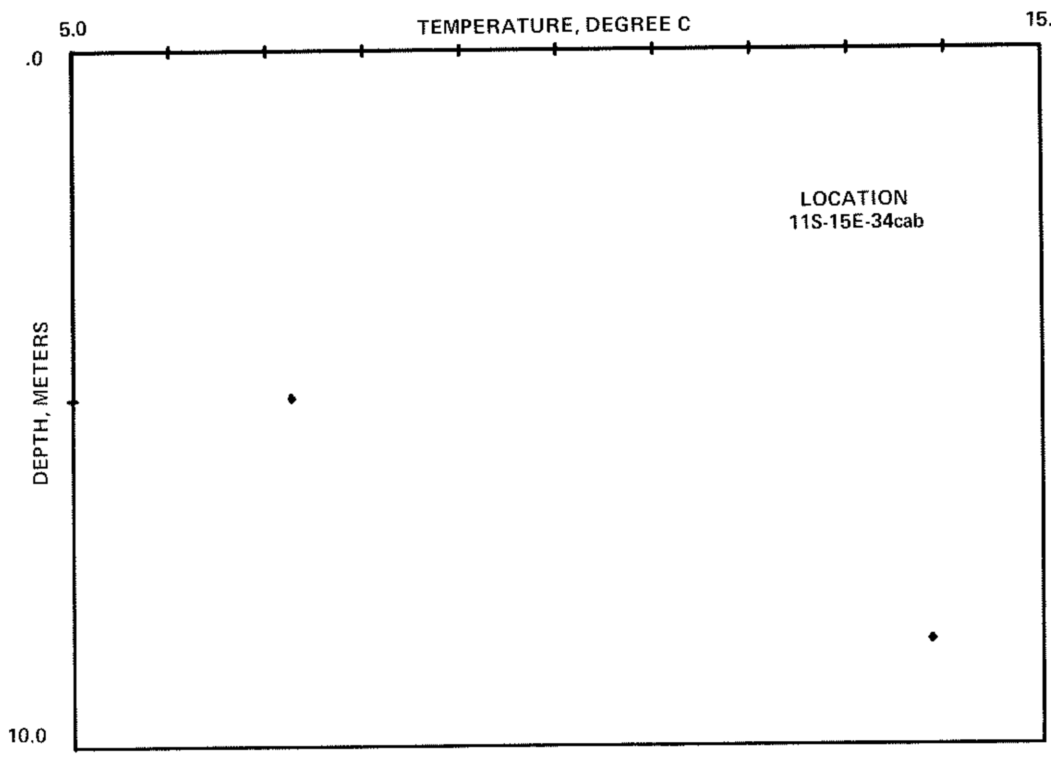
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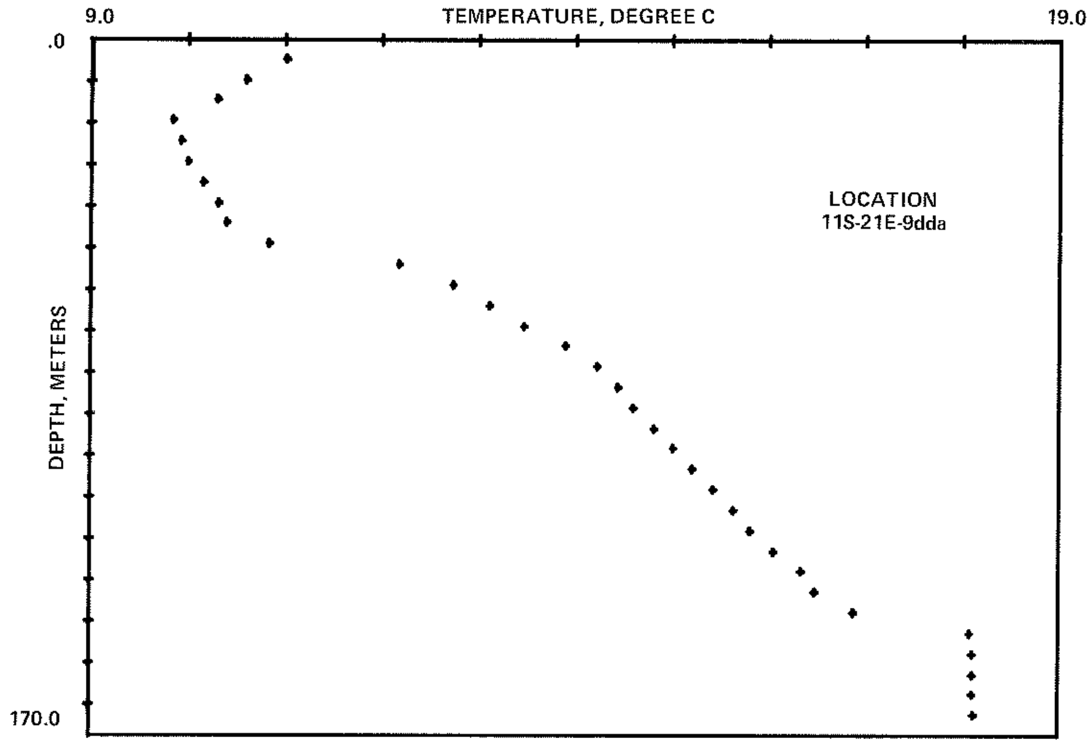

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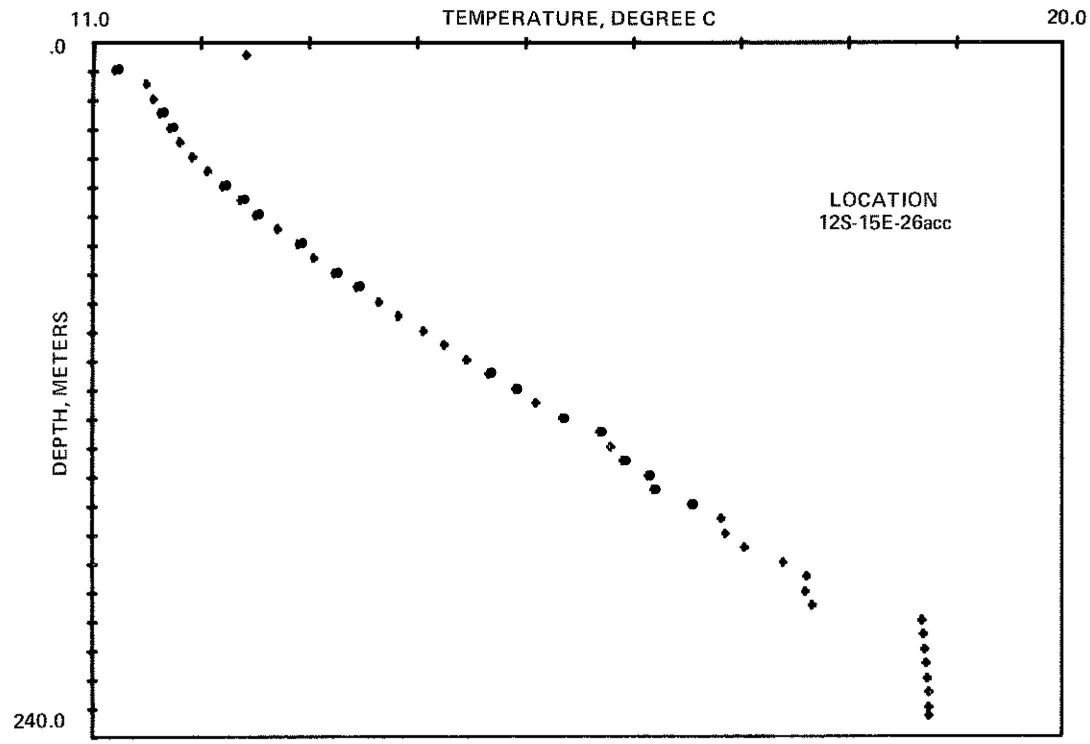

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LOCATION
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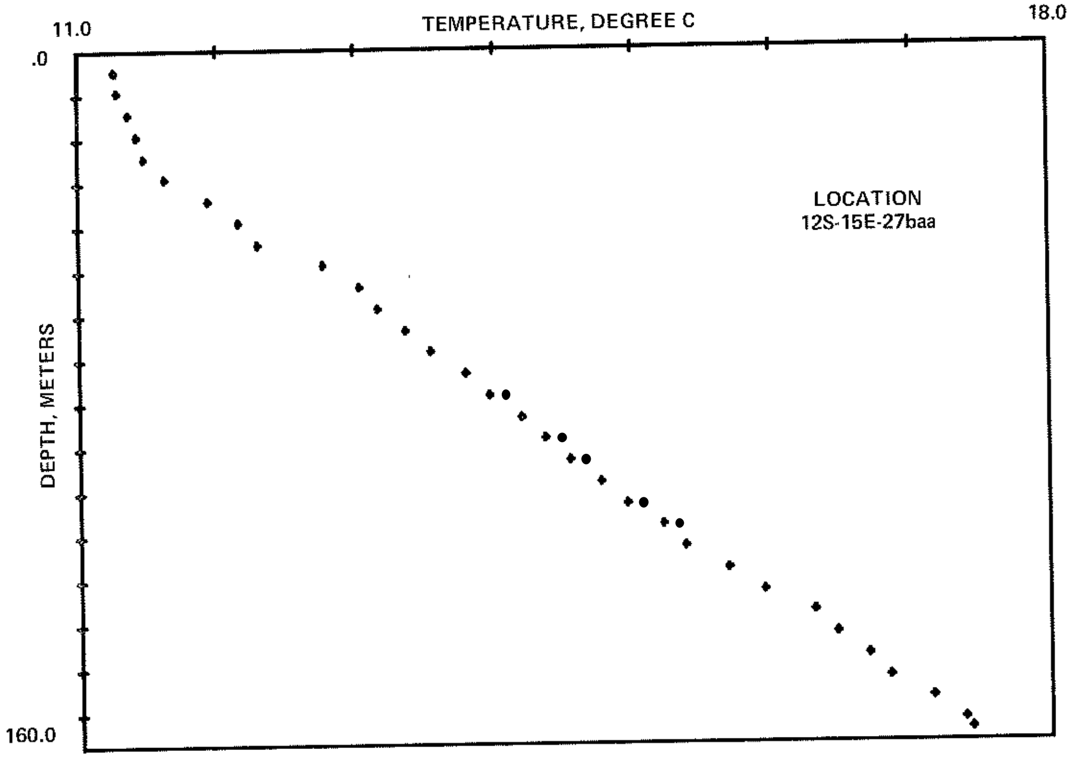
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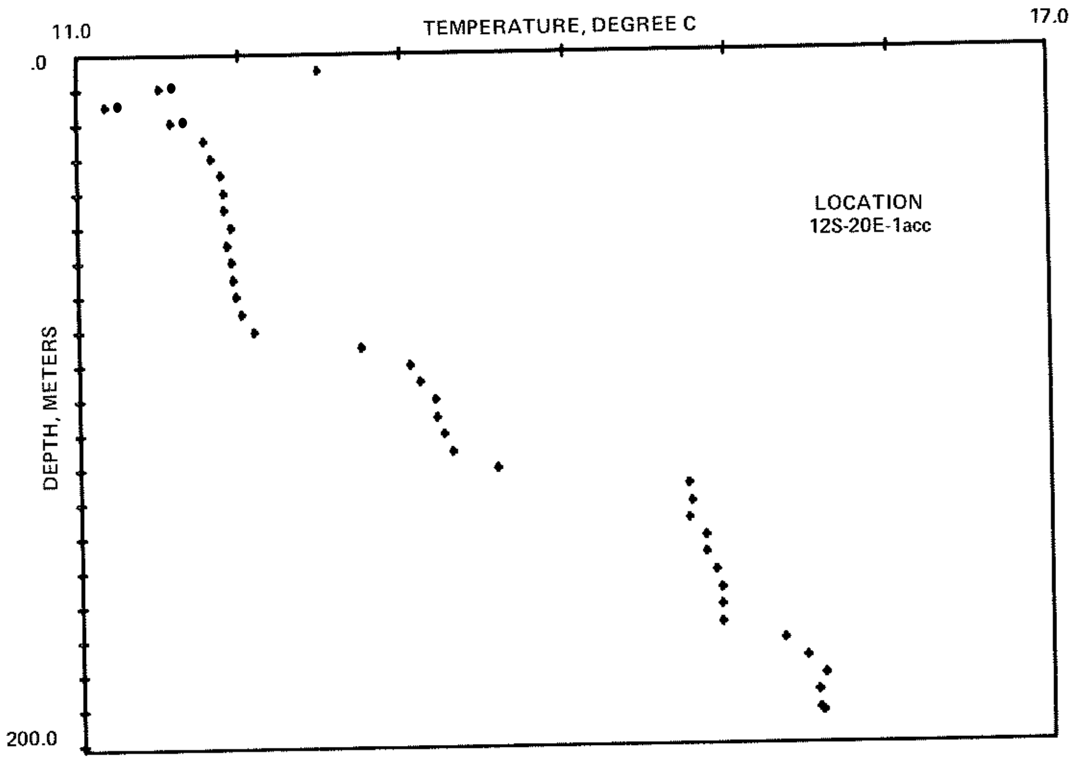
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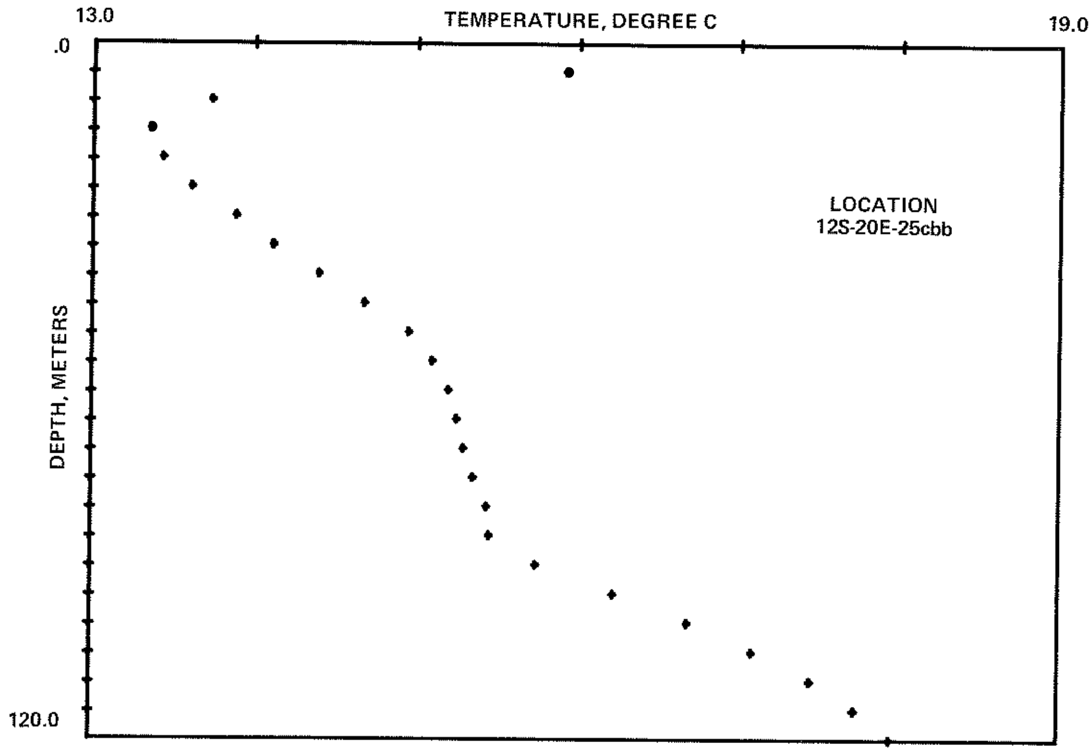

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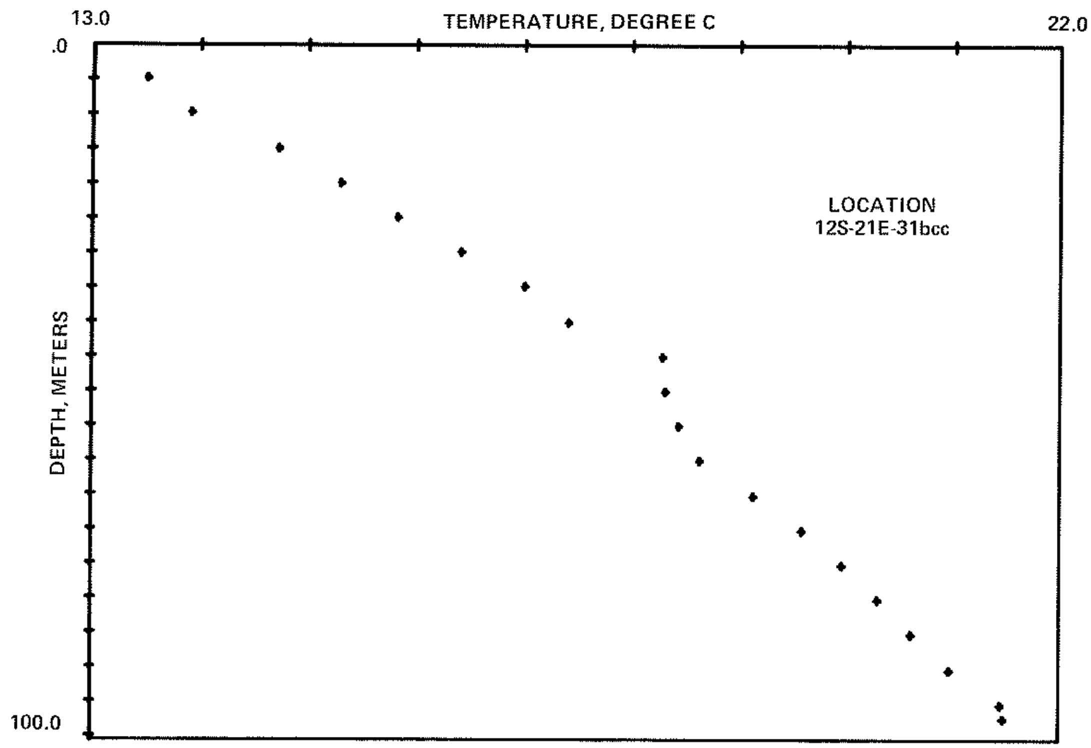

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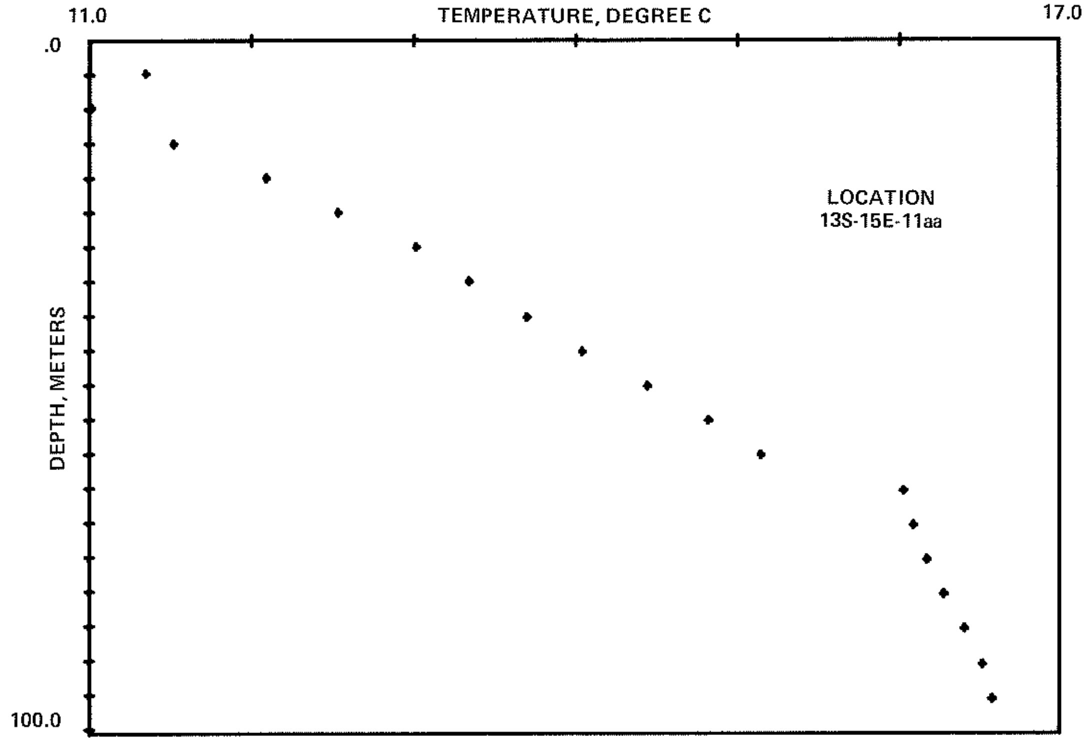

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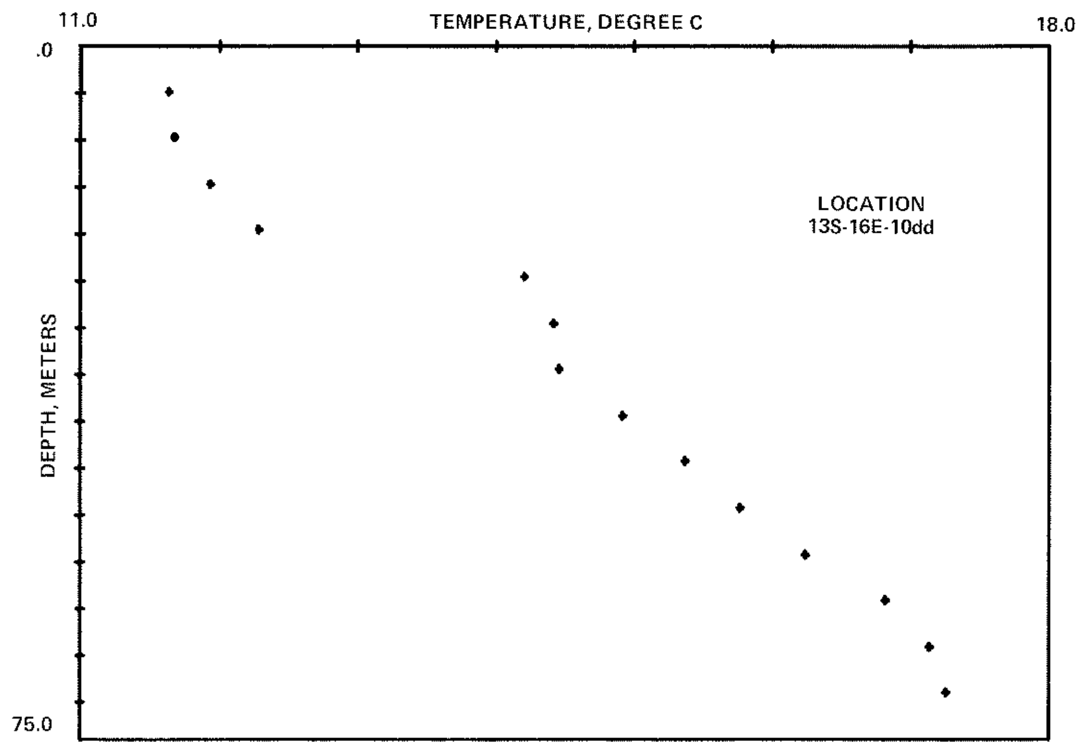

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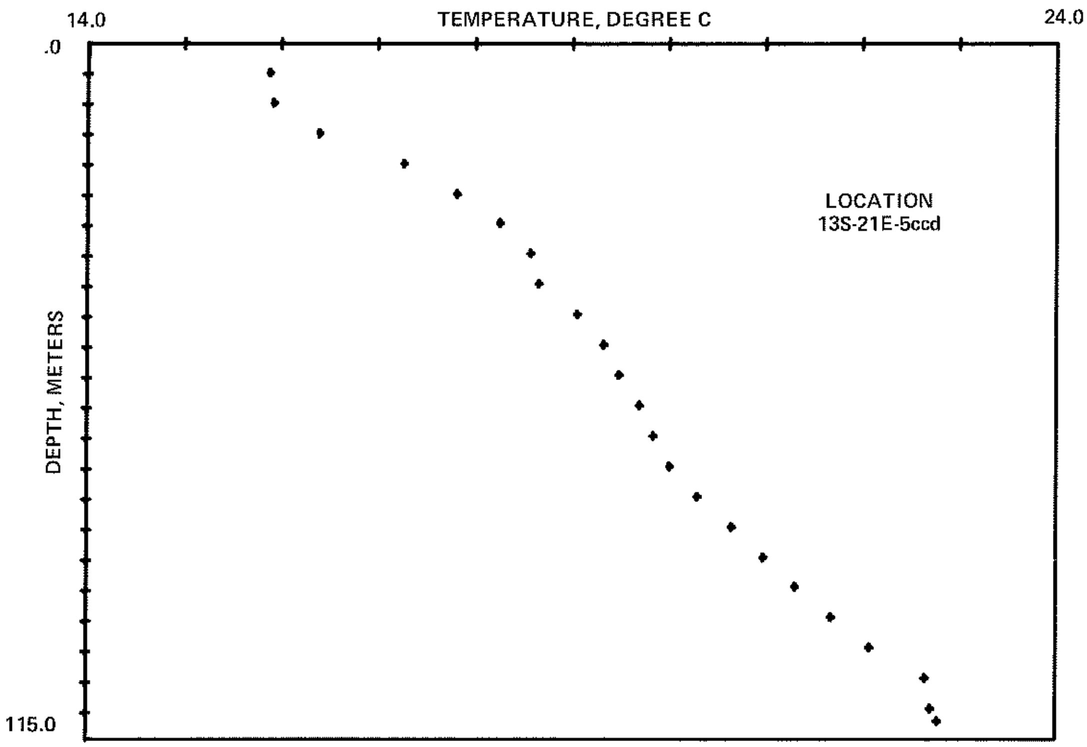
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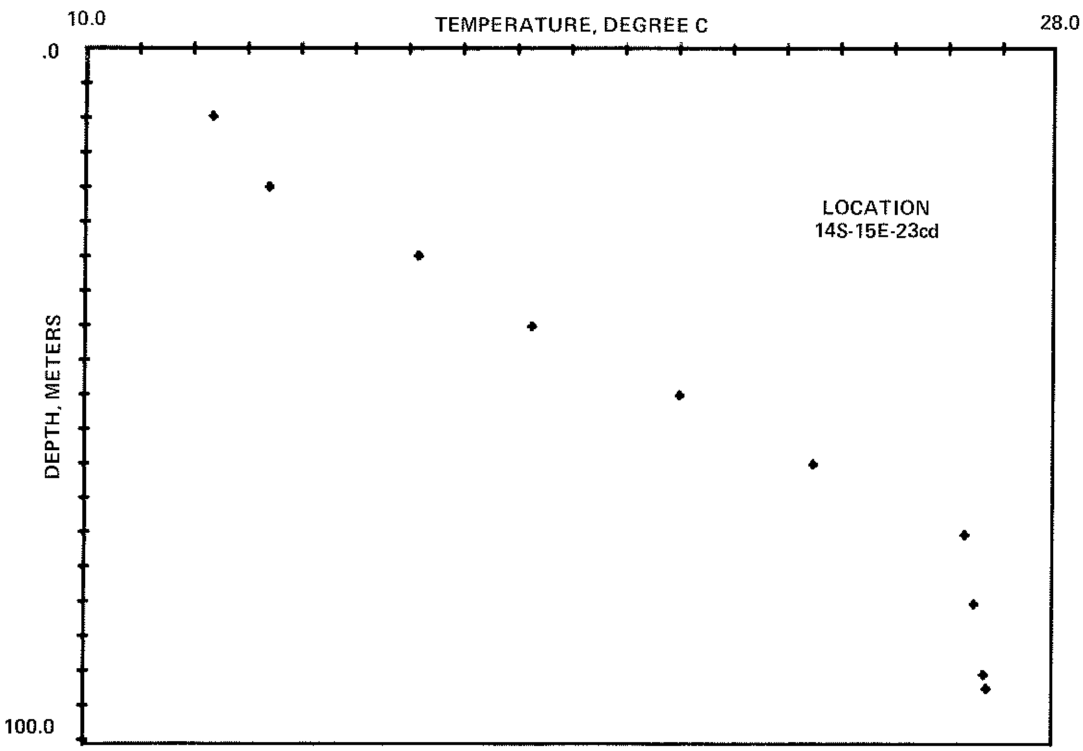
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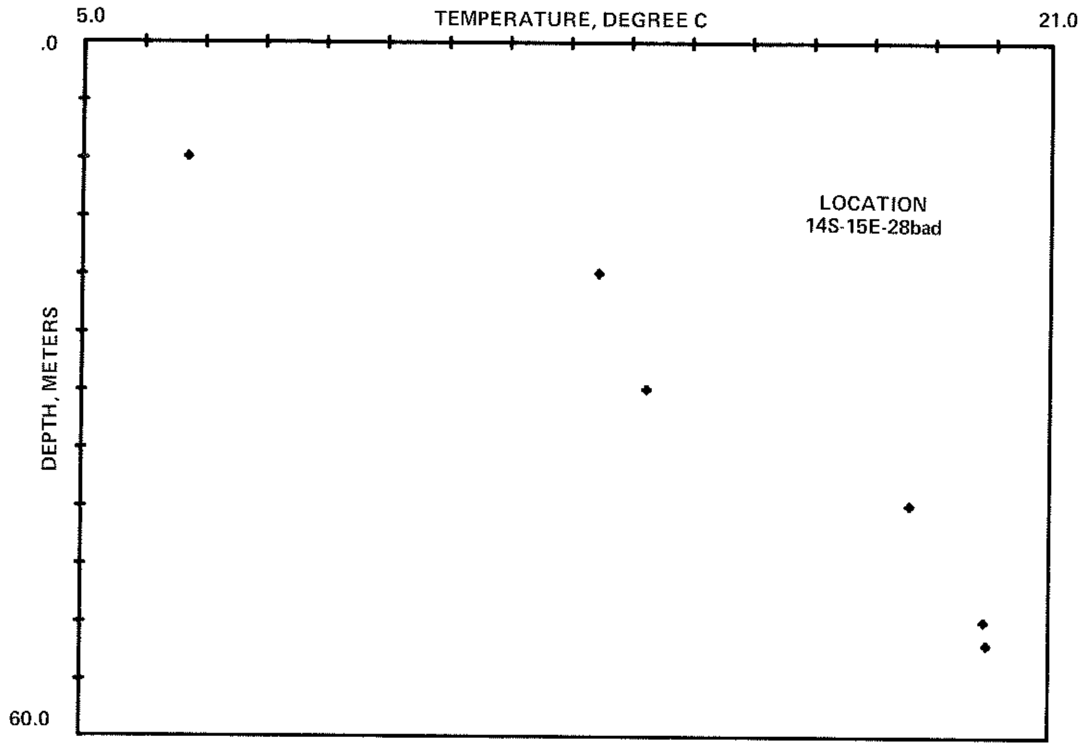
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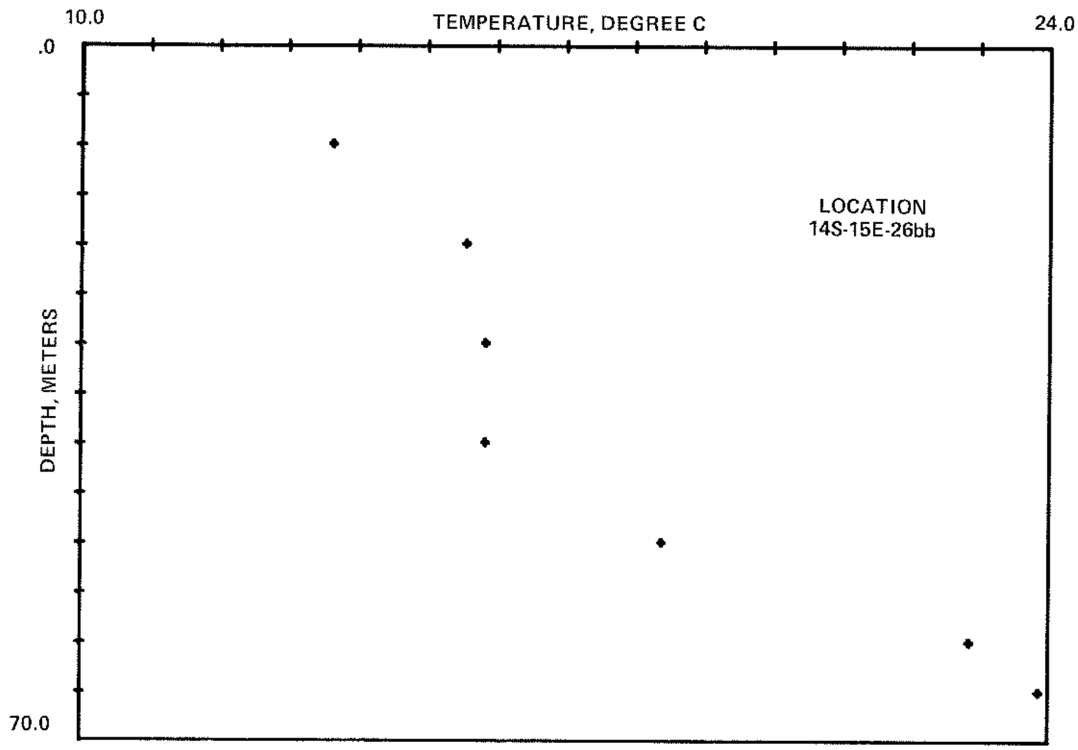
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DEPTH, METERS
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LOCATION
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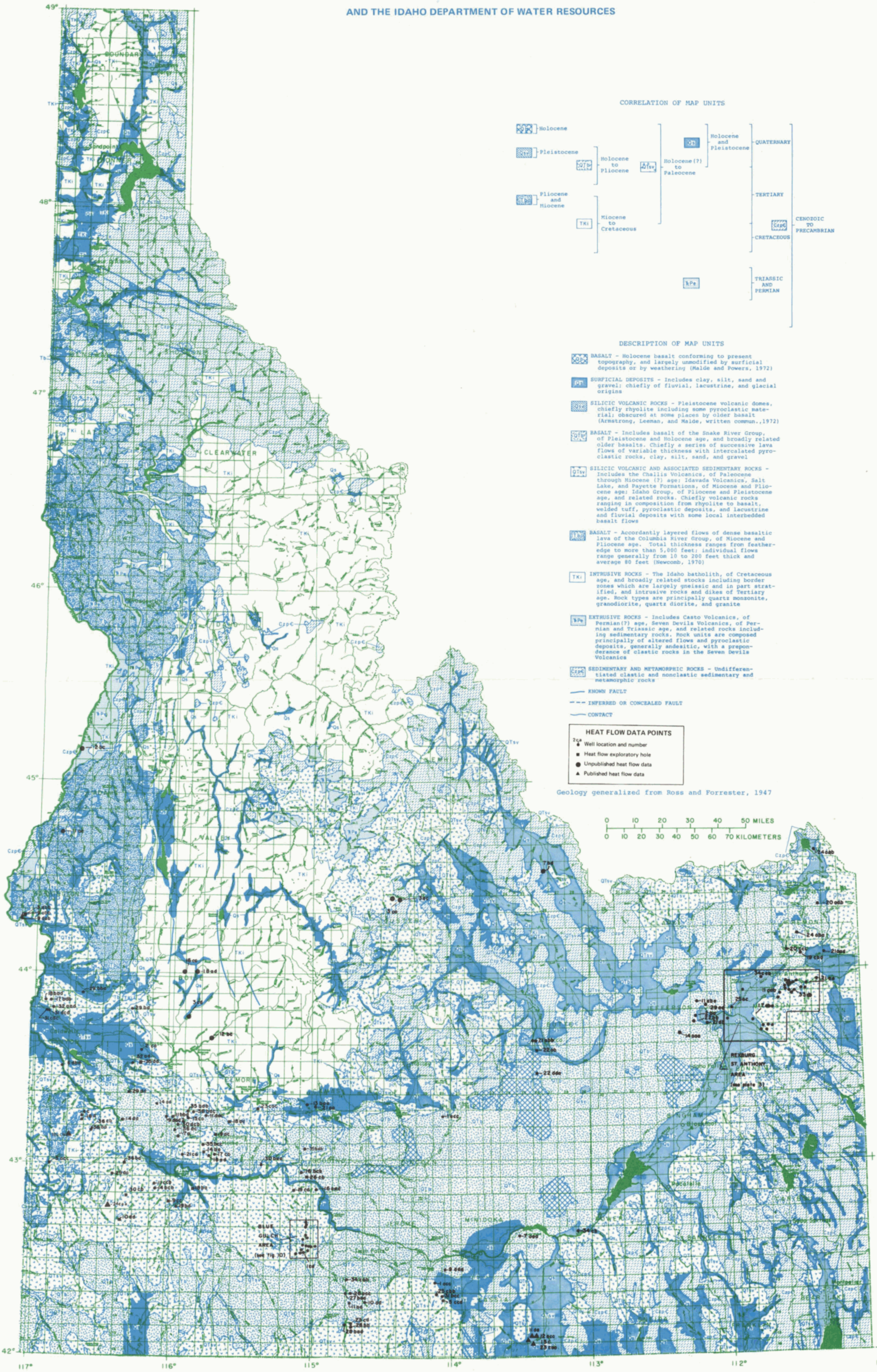
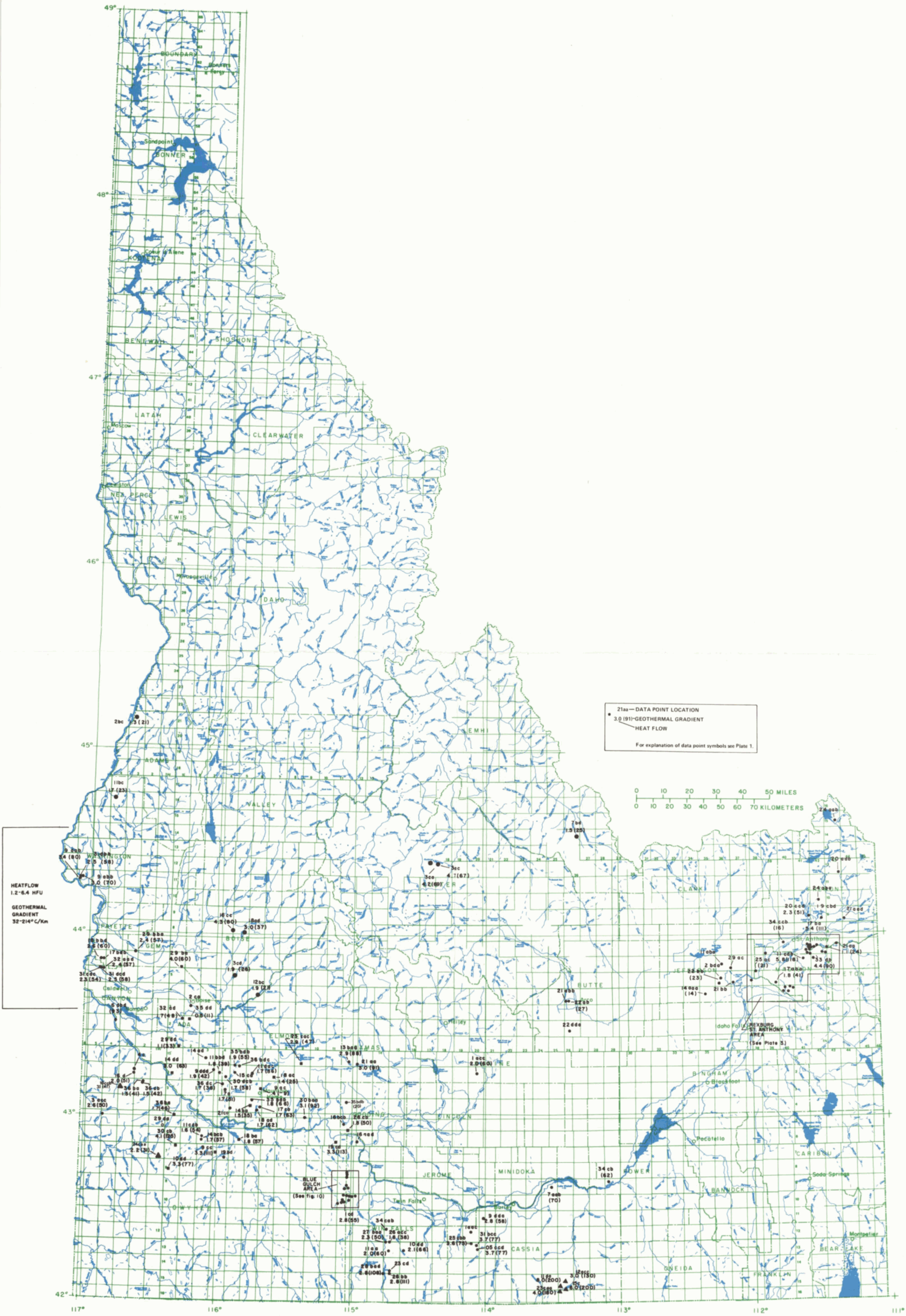
GEOLOGIC MAP

PREPARED JOINTLY BY THE U.S. GEOLOGICAL SURVEY
AND THE IDAHO DEPARTMENT OF WATER RESOURCES



Base from U.S. Geological Survey
Idaho 1:500,000, 1967

PLATE 1. Generalized geology of Idaho and locations of heat flow data points.



Base from U.S. Geological Survey
Idaho 1:500,000, 1967

PLATE 2. Heat flow and geothermal gradients.

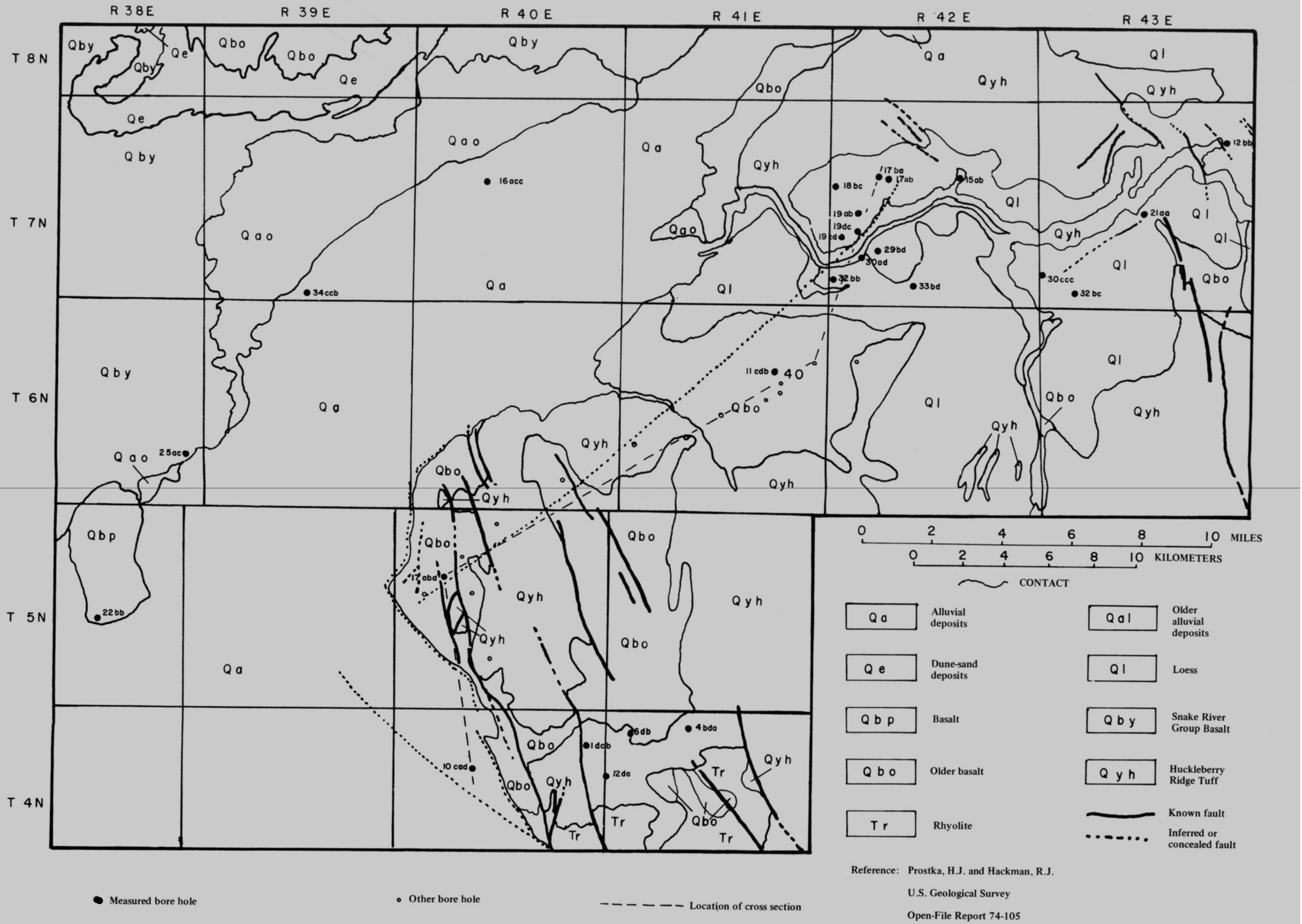


PLATE 3. Geologic map of Rexburg-St. Anthony area.