

FINAL TECHNICAL REPORT PHASE II

**GEOHERMAL RESOURCE
EXPLORATION & DEFINITION**

**SB Geo, Inc.
DE-FC04-00AL66975**

September 18, 2001

SLIM HOLE 24-33

Steamboat Springs, Nevada

Colin Goranson, Geothermal Resource Engineer

Stratigraphic slim hole 24-33 was drilled in the southwest corner of the Steamboat Springs, Nevada Meyberg Property (see Figure 1). Drilling commenced on April 9, 2001 and was completed on March 10, 2001. The well was drilled with a Boart-Longyear core rig. Cores were obtained from surface to total depth (TD) at 2,000 feet. Temperature and pressure surveys were obtained on May 1, 2001. Currently the well is bridged at 1,771 feet (the pressure/temperature tool would not pass this depth).

The slim hole completion is shown in Figure 2. The well was completed with 4 1/2" casing set and cemented to 250 feet. 3 1/2" casing was set and cemented to surface at a depth of 771 feet. 2.9" hole was cored from 771 feet to total depth at 2,000 feet. Hole problems were encountered below 1,810 feet. The hole is currently bridged at ~1,800 feet. Also shown in this figure are temperature versus depth data and a geologic description. A description of the formations encountered is given in below Table 1.

Several fracture zones were encountered with noticeably large fracture apertures. These zones are probable productive horizons. Actual productive horizons will need to be determined during discharge or injection testing.

Figure 3 is a plot of the slim hole pressure and temperature versus depth. Maximum-recorded temperature is 320 °F at 1,280 feet. The static wellhead pressure is 35 psig. The shallow temperatures versus depth data indicate that the water is boiling in the upper portion of the wellbore. The slim hole will discharge to the surface unassisted.

Appendix A has the daily drilling activity summaries and Appendix B has the Drilling Supervisors Estimated Daily Drilling Costs. Total estimated well cost is ~\$170,000 spent over a 28 day time period.

Further testing of the well is needed to determine productivity characteristics of this portion of the Meyberg Property. The existing data indicates that a large thermal zone with fluids at temperatures between 305 °F to 321 °F exists between depths of 500 feet to 1,500 feet.

SLIM HOLE 24-33

Steamboat Springs, Nevada

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Table 1. Geologic description of slim hole MTH 24-33

Depth (feet)	Formation Description (from Peter van de Kamp)
0' to 20'	Basalt. Red soil
20' to 108'	Granodiorite – altered, soft sandy texture
108' to 240'	Granodiorite – altered gray-green, soft, feldspars altered to clay, biotite altered to chlorite. Fractures w/dips of 40° to 80° are tight.
240' to 1890'	<p>Granodiorite – Firm, hard, slightly altered to fresh, biotite fresh to partly chlorized; feldspars fresh to partly altered to clays. Numerous fractures, many with slickensides and thin (<1/4") zones of mylonitized rock indicating displacive movement. Fracture dips range from 40° to 90° with many > 60°. Many fractures have fillings of chlorite, calcite and quartz.</p> <p>Permeable fractures with openings of 1/8" to 1" wide occur at 587' – 603', 1039' – 1040', 1290' – 1291' and 1809' – 1810 (lower portion of hole not logged as of yet).</p> <p>In the interval from 240' to 1890' there are numerous zones of 2' to 8' of core length with pervasive chlorite and clay alteration yielding softer rock. These zones may be associated with fractures.</p> <p>Limestone-dolomite inclusions in the granodiorite occur at 1367' – 1375' and 1433' to 1436'.</p>

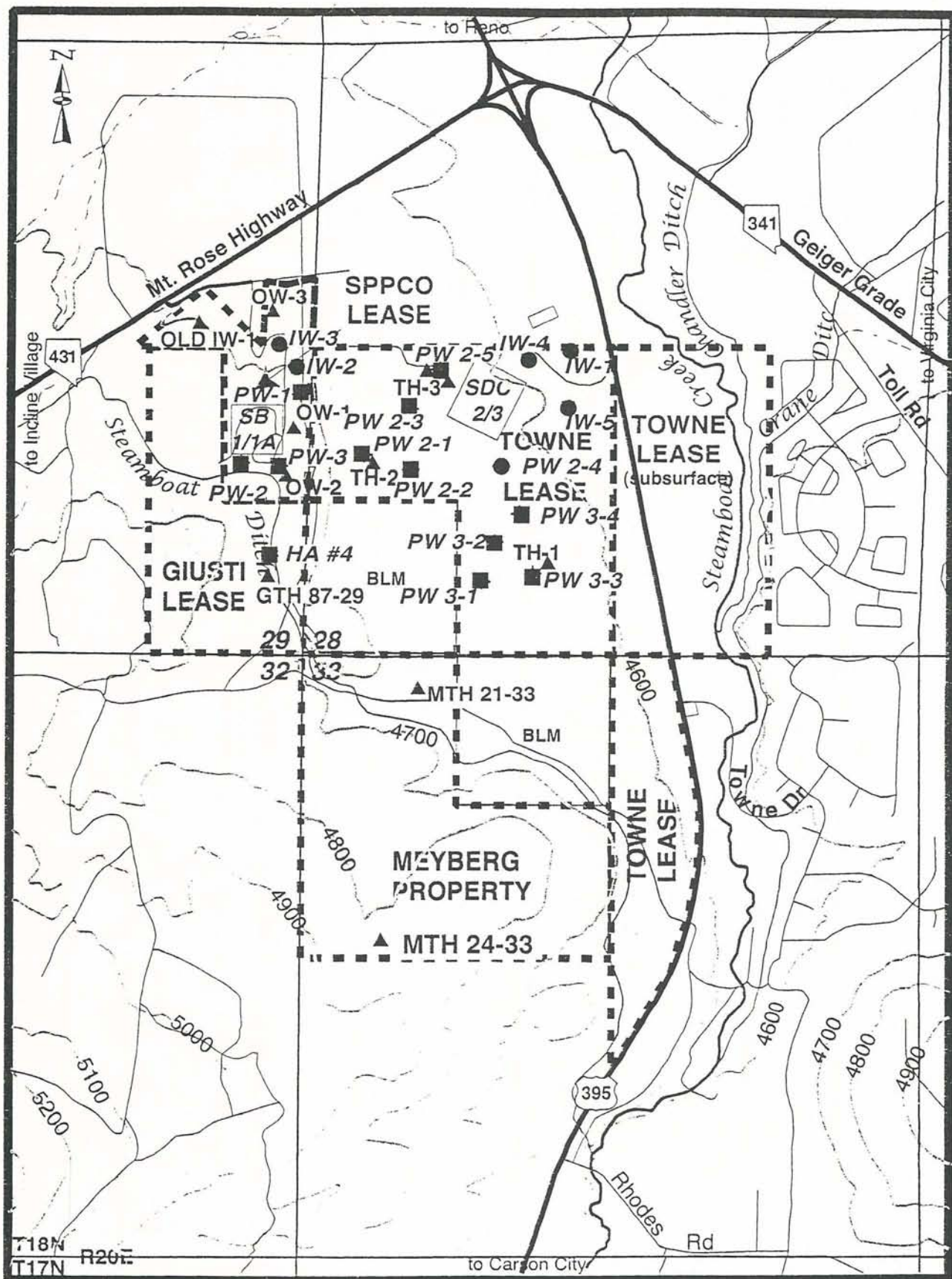


Figure 1) Location of Meyberg Stratigraphic Slim Hole MTH 24-33

Stratigraphic Hole MTH 24-33

Spud 9-Mar-01, TD 10-Apr-01

Elevation 4,850'

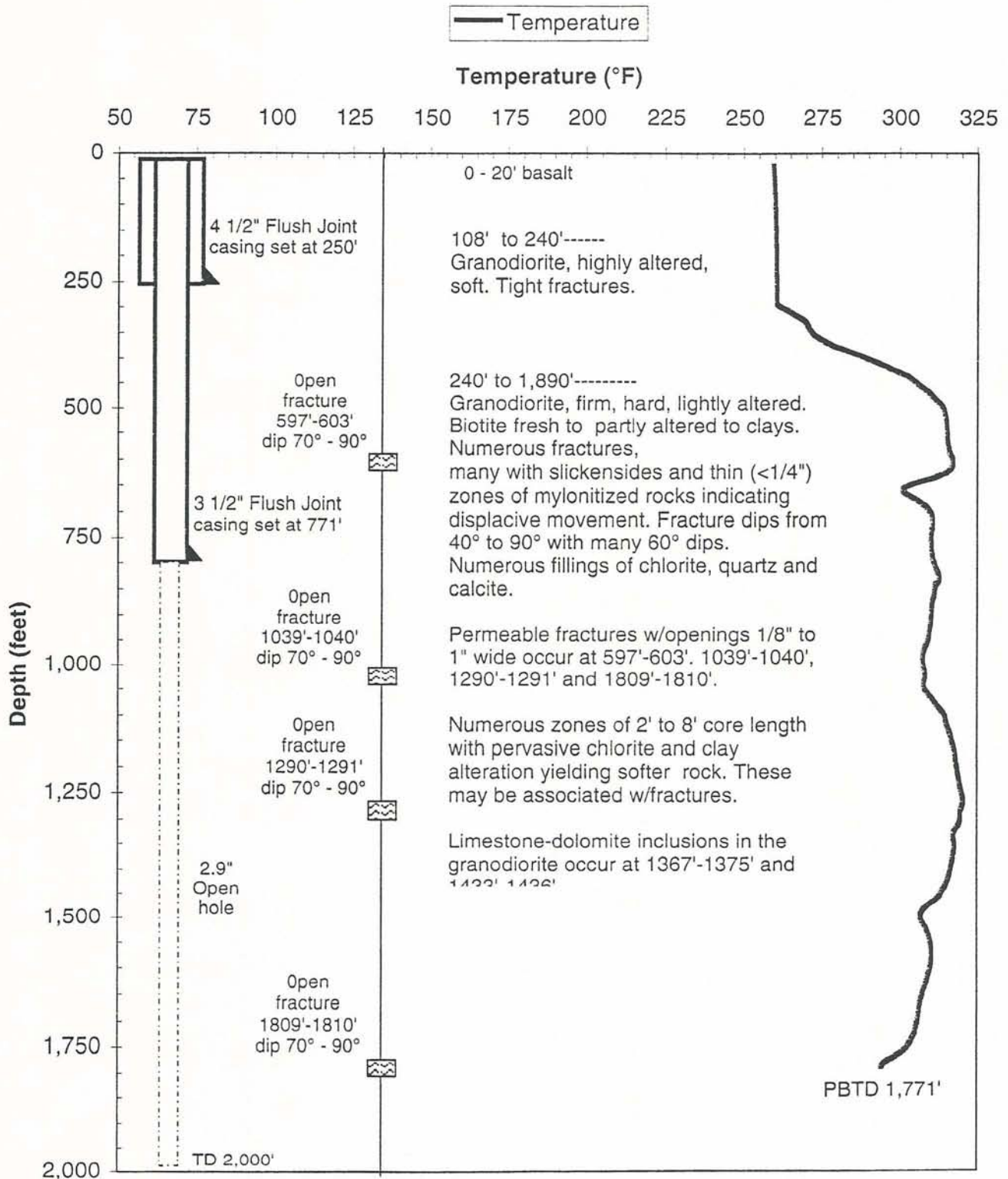


Figure 2) Slimhole MTH 24-33 Completion, Geology and Temperature versus Depth

Stratigraphic Hole MTH 24-33

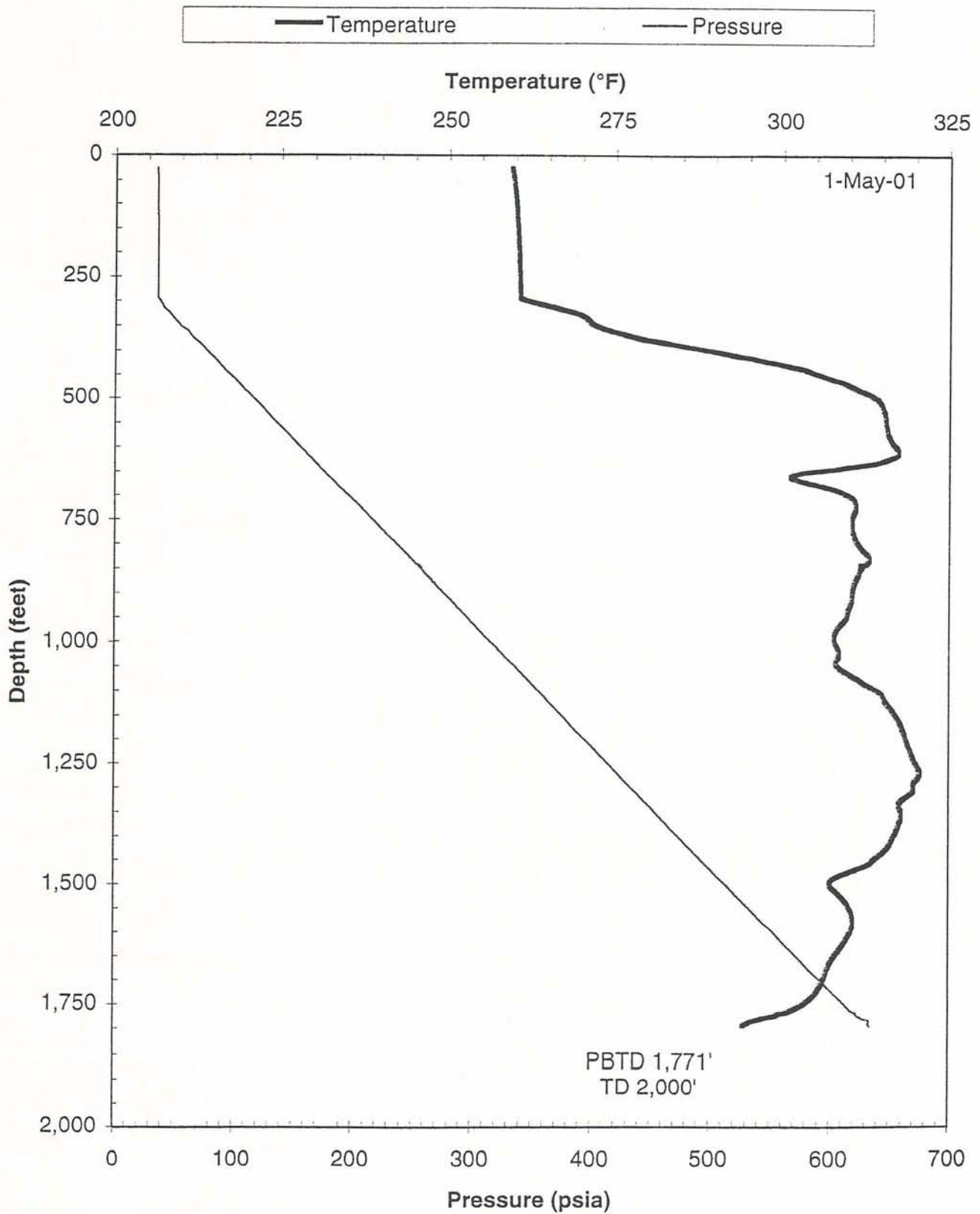


Figure 3) Meyberg Slimhole MTH 24-33 Pressure and Temperature versus Depth Survey Data

SLIM HOLE 12-33

Steamboat Springs, Nevada

Colin Goranson, Geothermal Resource Engineer

Stratigraphic slim hole 12-33 was drilled in the northwest corner of the Steamboat Springs, Nevada Meyberg Property (see Figure 1). Drilling commenced on April 5, 2001 and was completed on April 19, 2001. The well was drilled with a Boart-Longyear core rig. Cores were obtained from surface to total depth (TD) at 973 feet. Temperature and pressure surveys were obtained on May 1, 2001.

The slim hole completion is shown in Figure 2. The well was completed with 4 1/2" casing set and cemented to 150 feet. 3 1/2" casing was set and cemented to surface at a depth of 500 feet. 2.9" hole was cored from 500 feet to total depth at 973 feet. Also shown in this figure are temperature versus depth data and a geologic description. A description of the formations encountered is given in below Table 1.

Several fracture zones were encountered with noticeably large fracture apertures. These zones are probable productive horizons. Actual productive horizons will need to be determined during discharge or injection testing.

Figure 3 is a plot of the slim hole pressure and temperature versus depth. Maximum-recorded temperature is 318°F at 588 feet. The static wellhead pressure is 0 psig. The well does not flow unassisted and has not been discharge tested to date.

Appendix A has the daily drilling activity summaries and Appendix B has the Drilling Supervisors Estimated Daily Drilling Costs. Total estimated well cost is ~\$83,000 spent over a 14 day time period.

Further testing of the well is needed to determine productivity characteristics of this portion of the Meyberg Property. The existing data indicates that a large thermal zone with fluids at temperatures between 305 °F to 318 °F exists between depths of 450 feet to 973 feet in this area of the Meyberg Property.

Table 1. Geologic description of slim hole MTH 12-33

Depth (feet)	Formation Description (from Peter van de Kamp)
0 to 2'	Sandy soil
2' to 77'	Soft altered granodiorite, sandy yellow-brown, clays, Fe-oxide
77' to 152'	Altered granodiorite, gray-green, clay alteration of feldspars
152' to 973'	Granodiorite – mostly hard rock with minor to moderate clay alteration of feldspars, mica. Small faults and fractures are common: most are tight. Fracture fillings include calcite and quartz. Open fractures below 500' depth are partly filled with quartz cement.

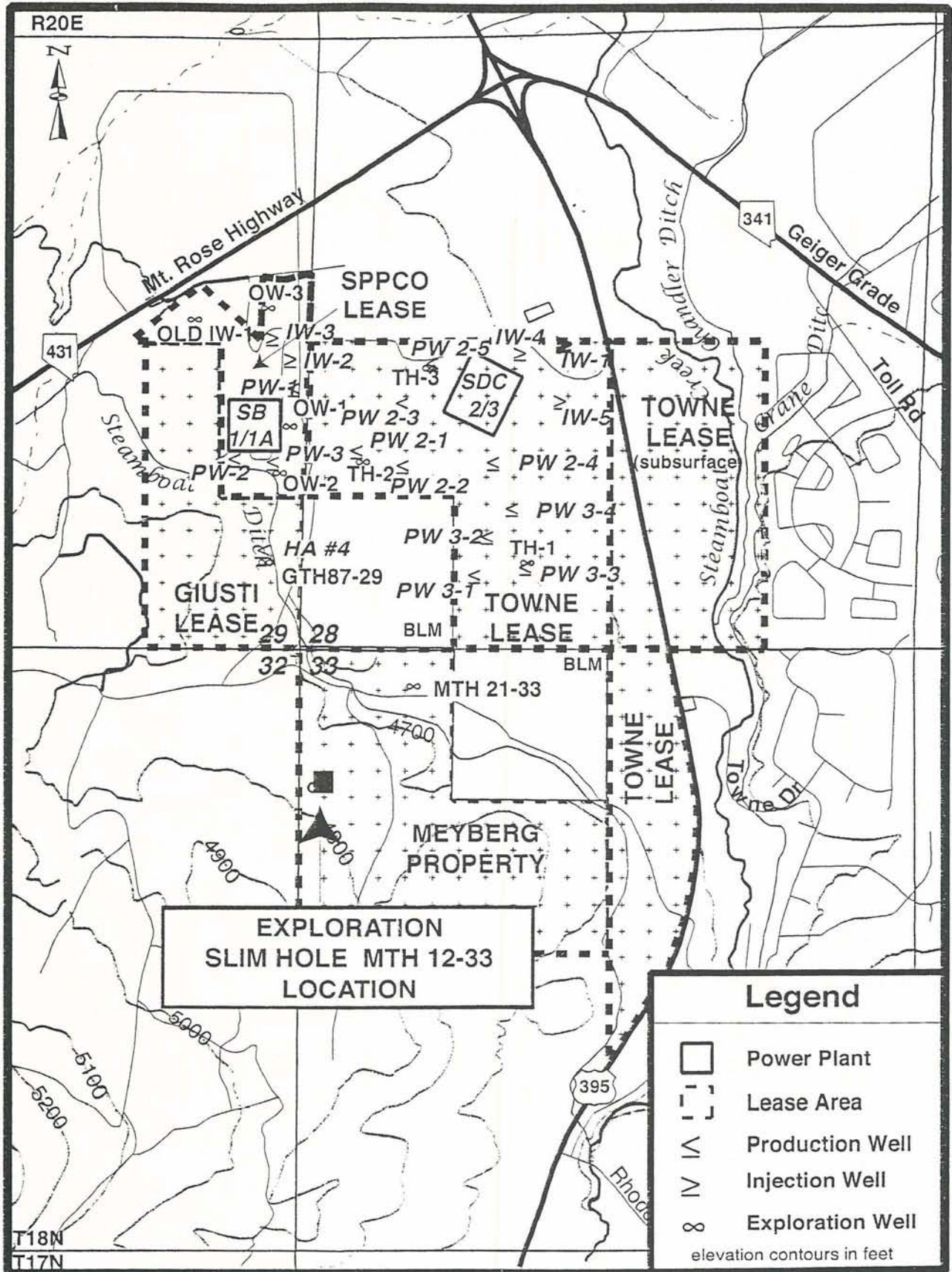


Figure 1) Location of Meyberg Stratigraphic Slim Hole 12-33

Meyberg Stratigraphic Hole MTH 12-33
 Spud 4/10/01 - Completed 4/17/01
 Elevation 4750 feet

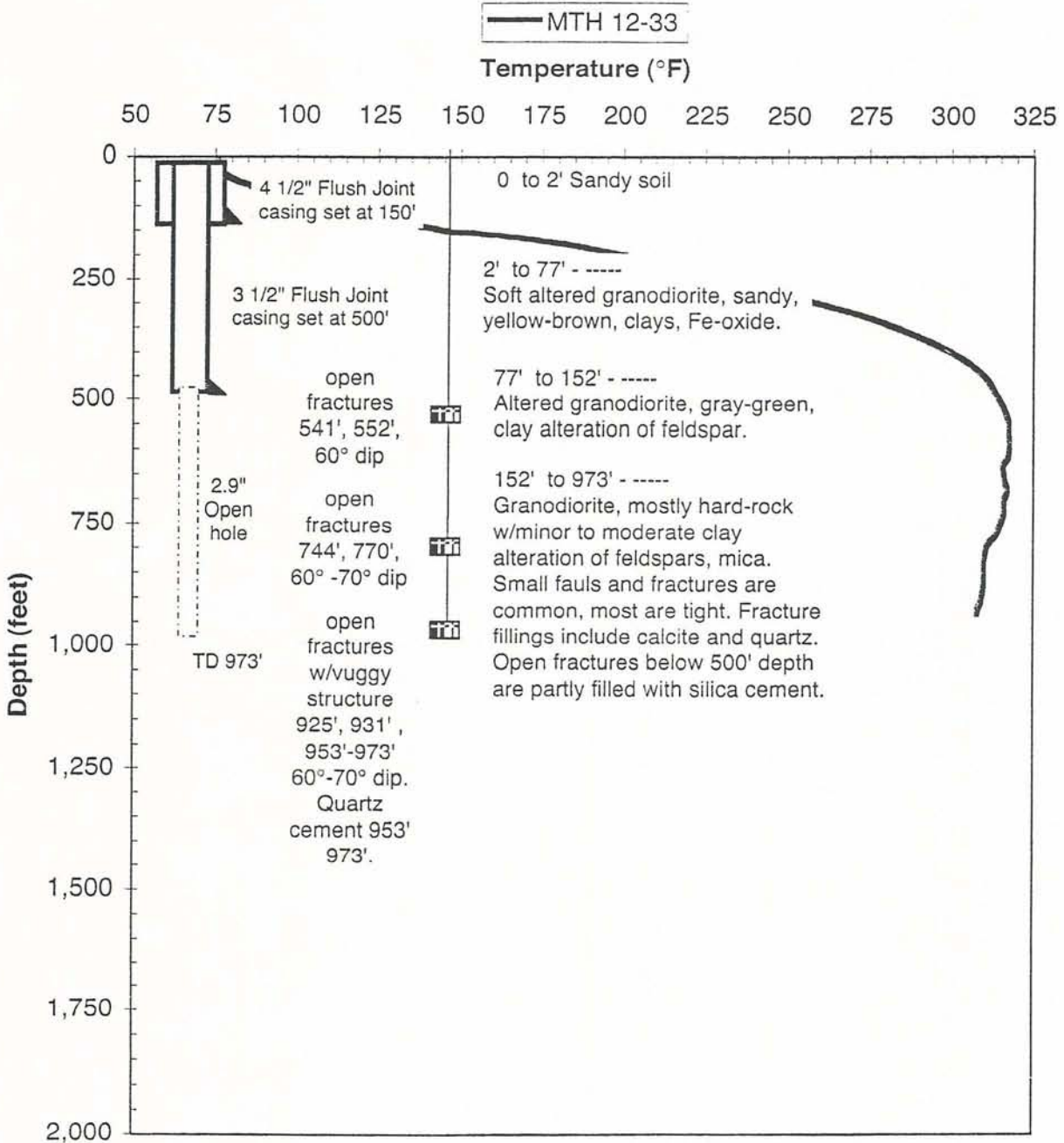


Figure 2) Slimhole MTH 12-33 Completion, Geology and Temperature versus Depth

Stratigraphic Hole MTH 12-33

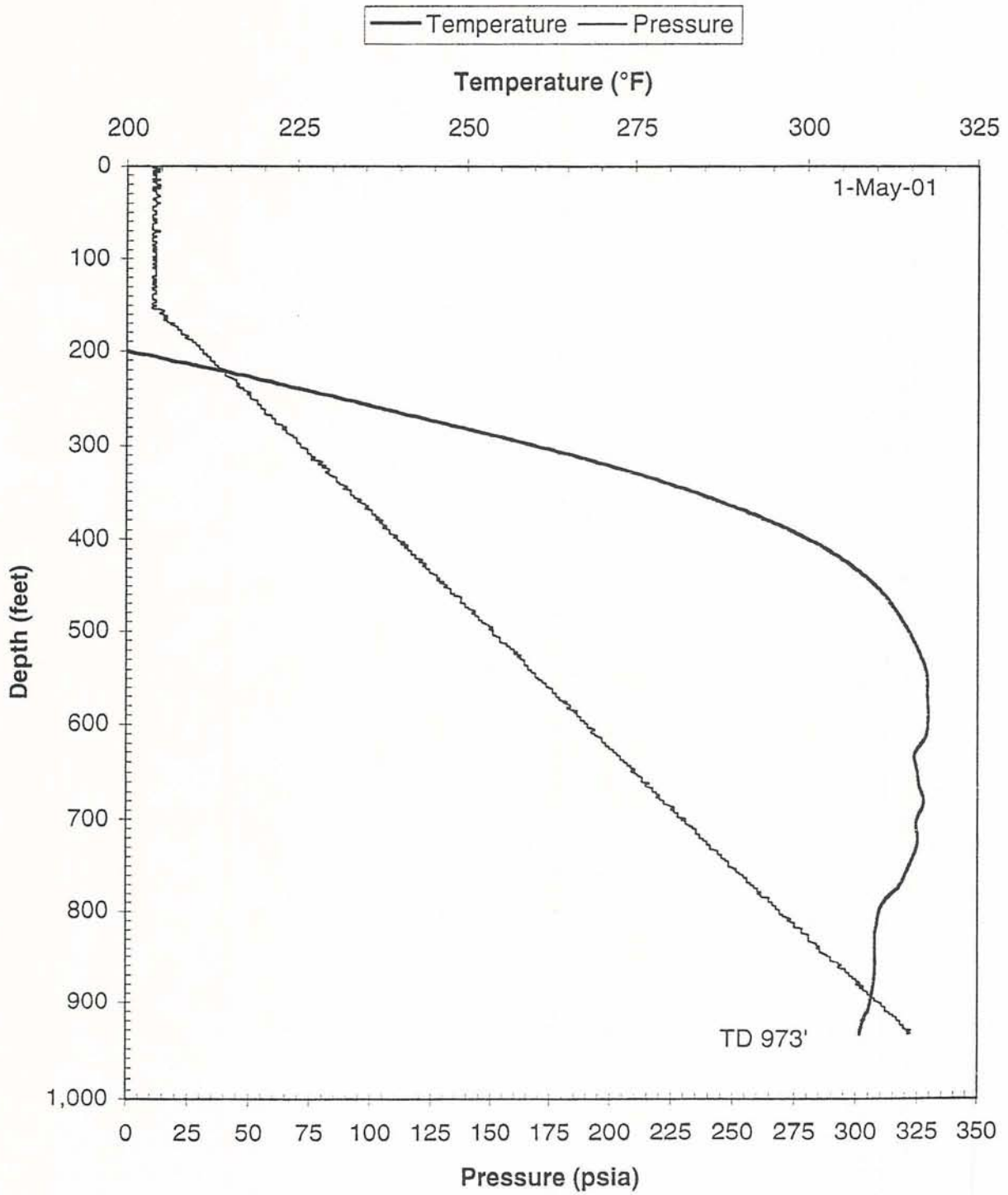


Figure 3) Meyberg Slimhole MTH 12-33 Pressure and Temperature versus Depth Survey Data

Meyberg Stratigraphic Hole MTH 21-33
 Spud 1/17/94 - Completed 1/23/94
 Elevation 4690 feet

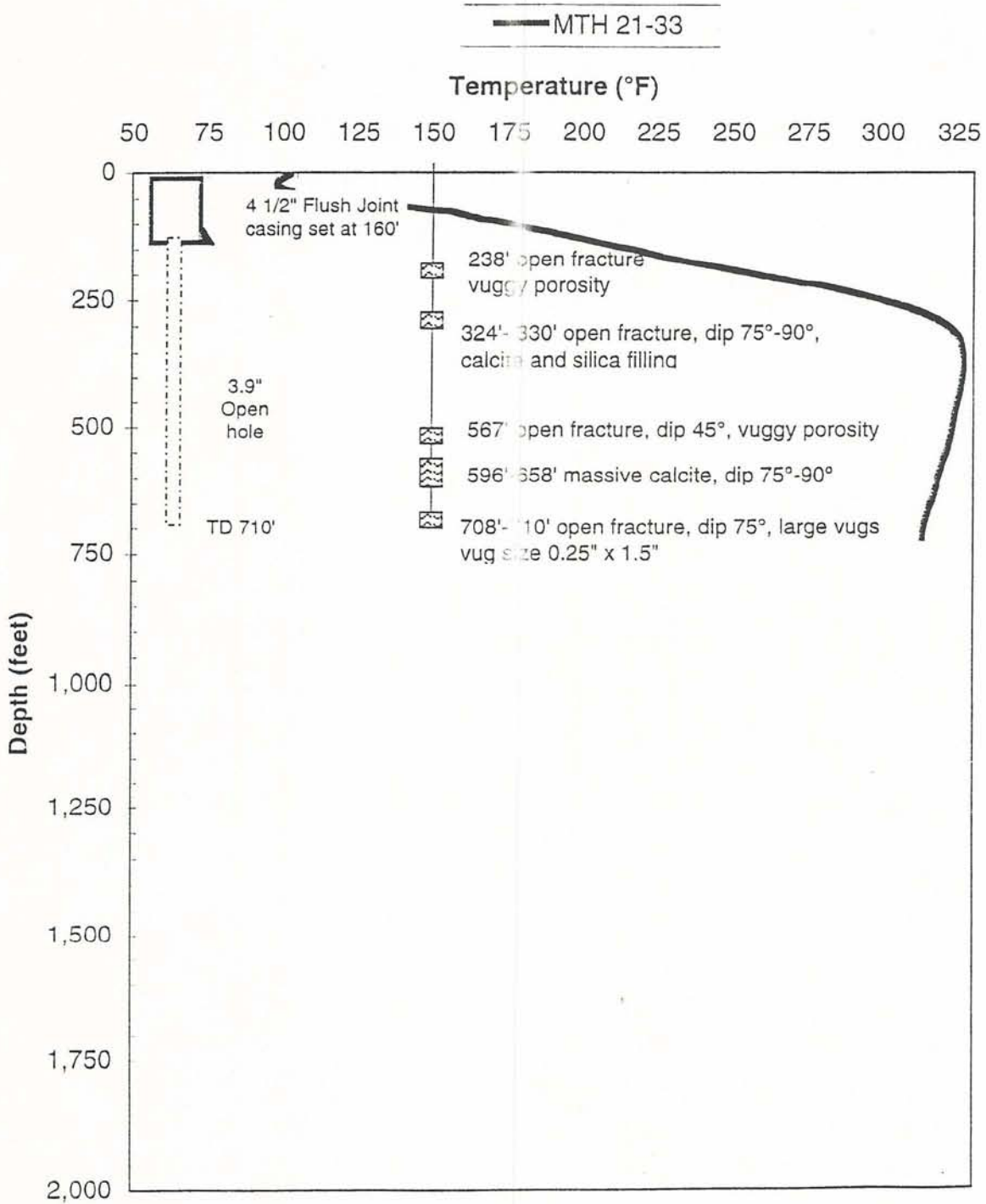


Figure 3) Completion, Geology and Temperature versus Depth for Slimhole MTH 21-33

Meyberg Stratigraphic Hole MTH 24-33
 Spud 3/16/01 - 4/4/01
 Elevation 4850 feet

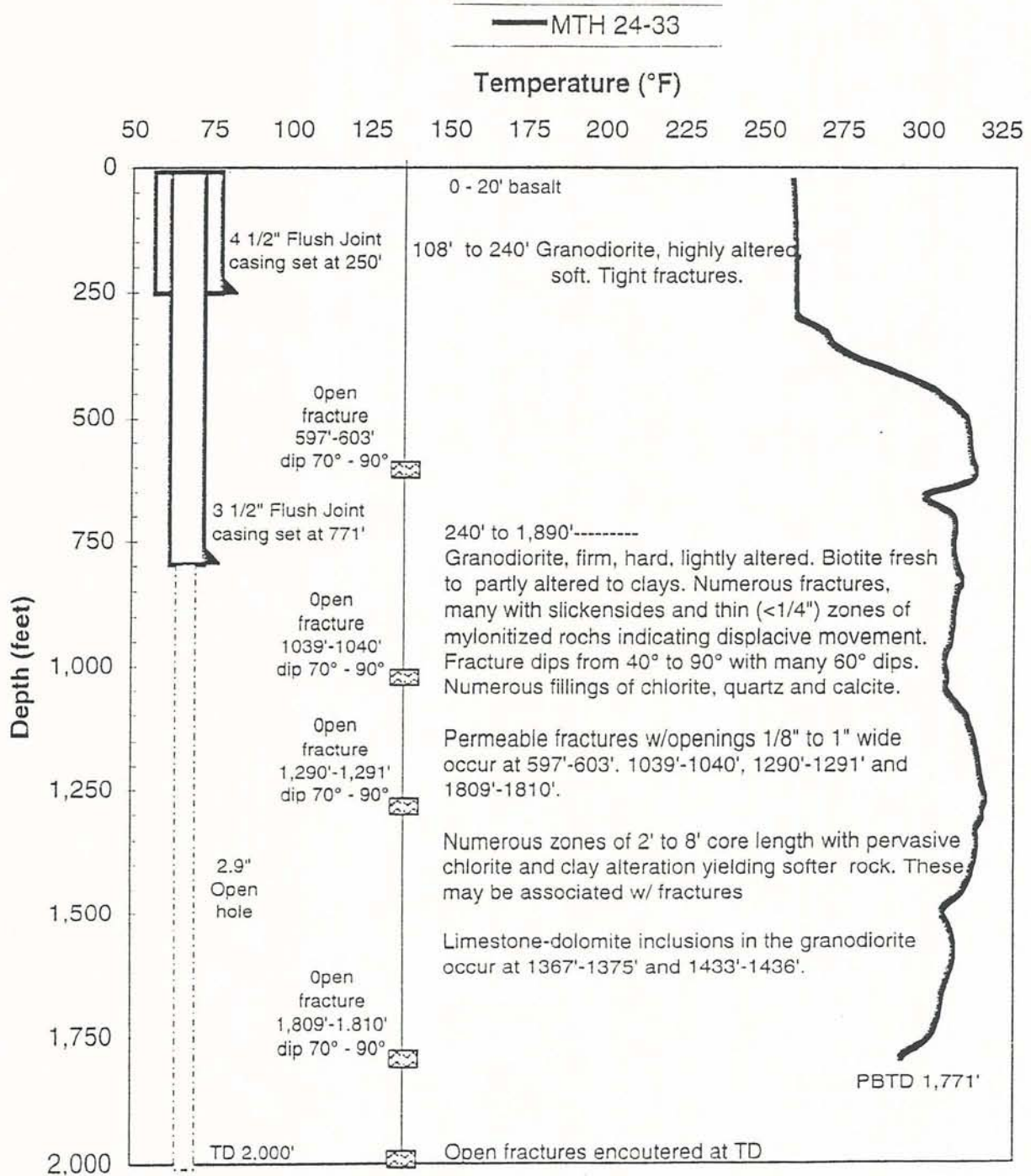


Figure 4) Completion, Geology and Temperature versus Depth for Slimhole MTH 24-33.

Meyberg Stratigraphic Hole MTH 12-33
 Spud 4/10/01 - Completed 4/17/01
 Elevation 4750 feet

