Geological Survey of Canada
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# Norman Wells Pipeline Monitoring Sites Ground Temperature Data File: 1986

by

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ABSTRACT

The Permafrost Research Section of the Geological Survey of Canada, of the Department of Energy, Mines and Resources, in cooperation with the Department of Indian and Northern Affairs and Interprovincial Pipe Line Ltd., has undertaken a long term ground thermal regime monitoring program along the Norman Wells to Zama pipeline. The program is designed to examine the effects of the construction and operation of the Norman Wells pipeline on permafrost and terrain condition and to evaluate the approaches used to minimize terrain disturbance. The program focuses on thirteen main monitoring sites representing a cross section of the terrain conditions encountered by the buried, "ambient" temperature, oil pipeline as it traverses the discontinuous permafrost zone. These monitoring sites, six of which were established in 1984 and seven in 1985, are instrumented with multithermistor cables. Twelve additional cables were installed in 1986; 5 at 3 new IPL thaw settlement sites and 7 at 4 existing government monitoring locations. This report is a collection of the data gathered in 1986 from all cables at the government monitoring sites (in total over 140 cables). Data are presented in tabular form and as plots of ground temperature envelopes.

RESUME

Le Ministère d'énergie, mines et ressources, en collaboration avec le Ministère des affaires indiennes et du nord et la compagnie Interprovincial Pipe Line Ltd., a entrepris un programme de surveillance continue du régime thermique des sols le long de l'oléoduc Norman Wells. Le programme examine les effects thermiques de la construction et du fontionnement de l'oléoduc et évalue les méthodes utiliseés pour minimiser les perturbations du terrain. L'étude se concentre sur 13 emplacements, situés le long du droit de passage et représentant les différents conditions de terrain traversé par l'oléoduc enterré, tout au long de son trajet à travers la zone de pergélisol discontinu. Les stations de mesure, dont 6 établies en 1984 et 7 en 1985, sont équippées de câbles à thermistances multiples, pour mesurer les températures du sol ainsi que la température de la surface extérieure de l'oléoduc. Douze câbles supplémentaires ont été installés en 1986 dont 5 à trois nouveaux sites. Ce rapport présente les données de température recueillies par cette étude en 1986 à tous les emplacements du gouvernement fédéral (un total de plus de 140 câbles à thermistances). Les données sont présentées sous formes de tableaux et de graphiques.

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## 1. INTRODUCTION

The Norman Wells pipeline, the first fully buried oil pipeline in permafrost terrain, traverses the discontinuous permafrost zone of Northwestern Canada in a more or less north-south section. The 324 mm diameter pipeline, buried throughout its entire length at an average depth of 1 m, is owned by Interprovincial Pipe Line (NW) Ltd (IPL) and carries oil from Esso Resources' Norman Wells, N.W.T. oilfield expansion project south 870 km to Zama, northwestern Alberta. The topographic profile, physiographic regions and terrain type distribution along the route are shown in Figure 1. The pipeline provides Canadians with a unique opportunity to assess the impact of construction and operation of an "ambient" temperature pipeline on the ground thermal and moisture regimes, and on the stability and recovery of disturbed northern discontinuous permafrost lands. The experience gained will be useful in the design and environmental protection of future northern pipelines.

The federal department of Indian and Northern Affairs (INAC) signed an Environmental Agreement with IPL in 1982, emphasizing the principle of minimum practicable environmental and land use disturbance, and establishing cooperation in monitoring and evaluating impact management. INAC, in consultation with Energy, Mines and Resources (EMR), established a permafrost and terrain monitoring program to assess permafrost conditions, terrain stability and mitigative measures used along the alignment. This cooperative program developed in 1983 with IPL was reviewed by National Energy Board representatives. It is also part of an overall research and monitoring program on the Norman Wells project under the Norman Wells Research and Monitoring Working Group, coordinated by Environment Canada. The goals of this latter group include 1) comparing actual and predicted impacts, 2) evaluating the effectiveness of concepts and measures used, and 3) preparation

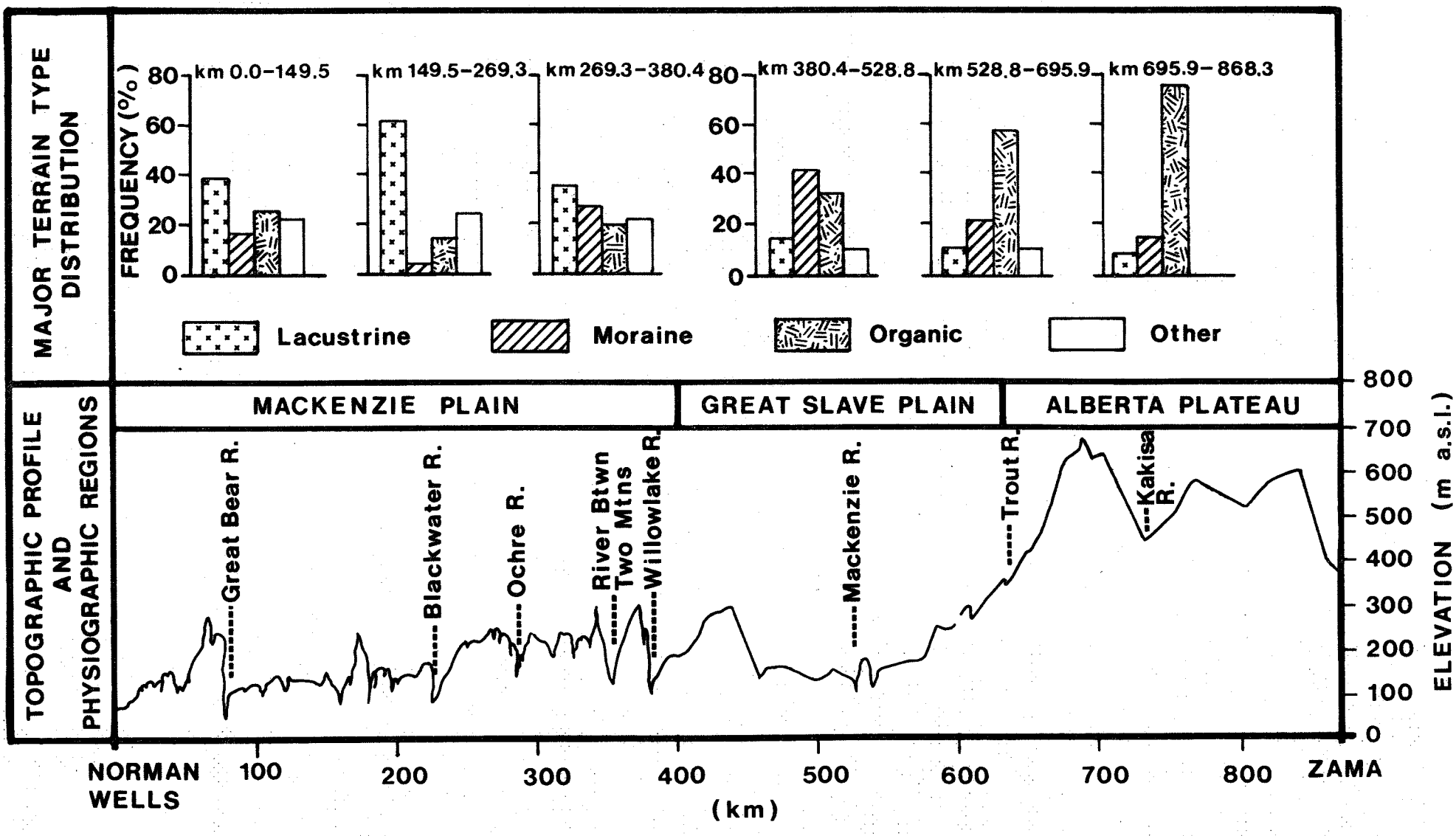



FIGURE 1. Topographic profile, physiographic regions and terrain type distribution along the Norman Wells pipeline route.

of practical guidelines for future pipelines.

The Permafrost Research Section of the Geological Survey (formerly of the Earth Physics Branch) of EMR cooperates in this research and monitoring program and has undertaken geophysical and thermal studies of the short and long term modifications to the alignment area at thirteen main monitoring sites along the route (Figure 2). The sites were selected to include an insulated slope, areas of thaw sensitive terrain and of strong material contrast, and to provide a representation of the soil, permafrost and ground ice conditions throughout the discontinuous permafrost zone. An IPL geotechnical monitoring program includes the instrumentation of 17 wood chip insulated slopes with temperature cables and piezometres, as well as instrumentation or surveys at 4 frost heave sites and surveys at 25 thaw settlement sites (IPL, 1984; IPL, 1986). An IPL operations monitoring program includes weekly, or more frequent, line patrols by helicopter.

The temperature data collected by the government monitoring program supplement the existing ground thermal data base available in the area (Judge, 1973 and 1975; Taylor et al., 1982, and the preceding volumes of that collection ; Geotech, 1984). The program also increases the number of locations in northern terrains with long term observations on permafrost stability and permafrost response to climatic change and natural or man-induced disturbances.

This report presents tables and plots of the ground temperature data collected in 1986 at the EMR/INAC monitoring sites. Data collected during the first two years of monitoring (1984 and 1985) are tabulated in an earlier report (Burgess, 1986).

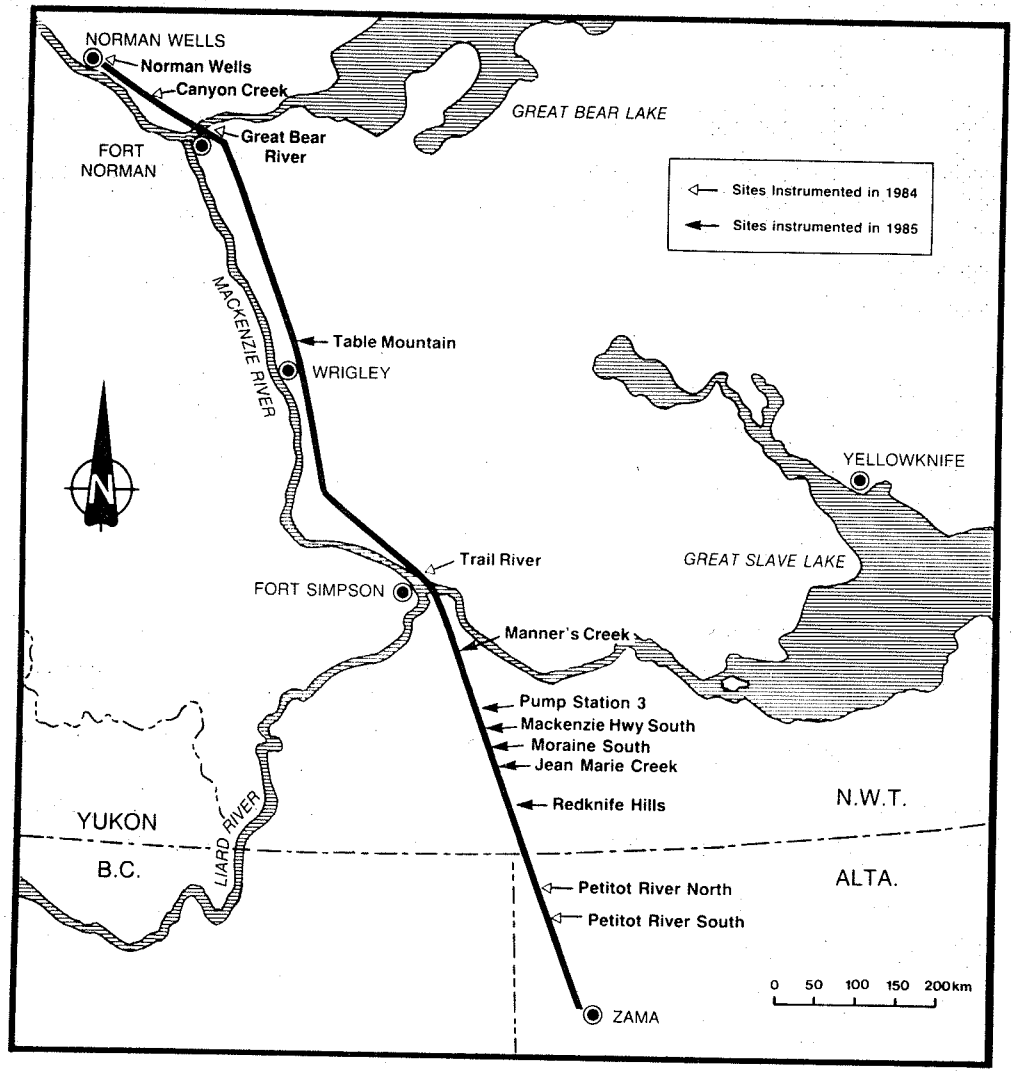



FIGURE 2. Location of principal EMR/INAC ground thermal monitoring sites along the Norman Wells pipeline route.

## 2. THE NORMAN WELLS PIPELINE

The detailed design and construction concepts implemented for the Norman Wells pipeline to minimize terrain disturbance and to assure pipe integrity under potential problem conditions such as thaw settlement, frost heave and slope instability are discussed by Nixon, Stuchly and Pick (1984). A brief summary follows. Right-of-way (ROW) clearance, generally 25 m, and pipe laying were generally undertaken in the winter to minimize disturbance. No permanent workpad was planned or utilized. Whenever practical the pipeline was located in previously cleared alignments, e.g. seismic lines or former telephone lines. Arctic and conventional wheel ditchers were used for trenching, except in bouldery material where caterpillars and backhoes had to be used. Ditch width with the wheel ditchers was approximately 100 cm.

A small diameter pipe, uninsulated except at a few sag bends, was selected to limit energy exchange with the environment and to also provide for increased structural strength. Before delivery to IPL at the Norman Wells Pump Station the oil entering the line at Norman Wells is cooled to near 0°C but thereafter undergoes no further refrigeration. Additional pump stations are located near Wrigley (km 336) and near Fort Simpson (km 585). Oil began to fill the line in March 1985 and the National Energy Board granted leave to open on April 17, 1985. Design flow is approximately 4800 cubic meters per day. All disturbed areas in mineral soils were fertilized and reseeded. Sandbags were piled to form the major type of diversion berm for surface erosion and drainage control (Wishart and Fooks, 1985) and wood chips were used to insulate 54 sensitive permafrost slopes (McRoberts et al., 1985).

It was anticipated (Nixon et al., 1984) for these design and construction features that the pipeline itself, being of low energy input, would not cause

significant thawing of underlying permafrost; the clearing and construction activities, in changing surface thermal conditions, would however cause slow thawing of permafrost at many locations. Based on extensive field observations, continuous geophysical surveys along the entire route, an extensive borehole data bank (over 3500 boreholes), ground regime thermal modelling and thaw settlement analyses and calculations, maximum anticipated thaw depths beneath the ROW in a 25 year operation period were established at 6 m. These studies also established design differential thaw settlements, differential thaw settlement that could occur over a short distance across a transition in terrain conditions, at up to 0.8 m in mineral soil and up to 1.2 m in organic soil deposits.

## 3. GROUND TEMPERATURE MONITORING PROGRAM

### 3.1 Site Selection

The monitoring program focuses on 13 principal sites selected in 1983 to allow some evaluation and quantification of the thermal and environmental efects of a small, buried, uninsulated pipeline in warm and discontinuous permafrost, and of the use of wood chips to insulate thaw sensitive slopes. Their selection process, undertaken in conjunction with the pipeline company and its consultants, involved a close examination of 1) the surficial geology, 2) the lithological and ice log data from geotechnical boreholes along the alignment, 3) available ground thermal data, both from geotechnical boreholes along the route and other wells along the Mackenzie Valley (Judge, 1973) and 4) geophysical surveys to map permafrost conditions (Hardy Associates, 1982). The sites, eleven in the Northwest Territories and two in northwestern

Alberta, include areas of thaw sensitive terrain or of strong material contrast, two slopes (one of which is insulated with wood chips) and provide a representation of the soil, permafrost and ground ice conditions throughout the discontinuous permafrost zone. Brief site descriptions are given in Table 1. Two of the sites are joint sites, with IPL instrumented wood chip slopes and government instrumentation on level terrain. Boreholes for temperature instrumentation were established at the sites using track-mounted drill equipment provided by IPL during the winter pipe laying activities which were spread over the consecutive winters of 1984 and 1985. At most (12) sites a thermistor string is placed around the pipe and 4 instrumented boreholes are located across the ROW along lines called thermal fences.

Six sites were established in 1984 and seven in 1985. Borehole stratigraphic logs, visual ice logs and preliminary geotechnical data were collected as part of the contracted drilling program and are compiled in two contract reports (Hardy Associates (1984 and 1985)). Core and chip samples were retained from the drilling for thermal and electrical properties measurements. An additional large diameter access hole was drilled to 20 m on the ROW and cased with 76 mm PVC for long term geophysical logging; at the 1985 sites this hole was continuously cored.

In 1986, boreholes at 5 IPL thaw settlement sites were selected for instrumentation with EMR/INAC temperature cables (IPL, 1986). Details on these new monitoring locations as well as on new or replacement instrumentation installed at existing monitoring sites are discussed later in this report.

TABLE 1. SITE DESCRIPTIONS

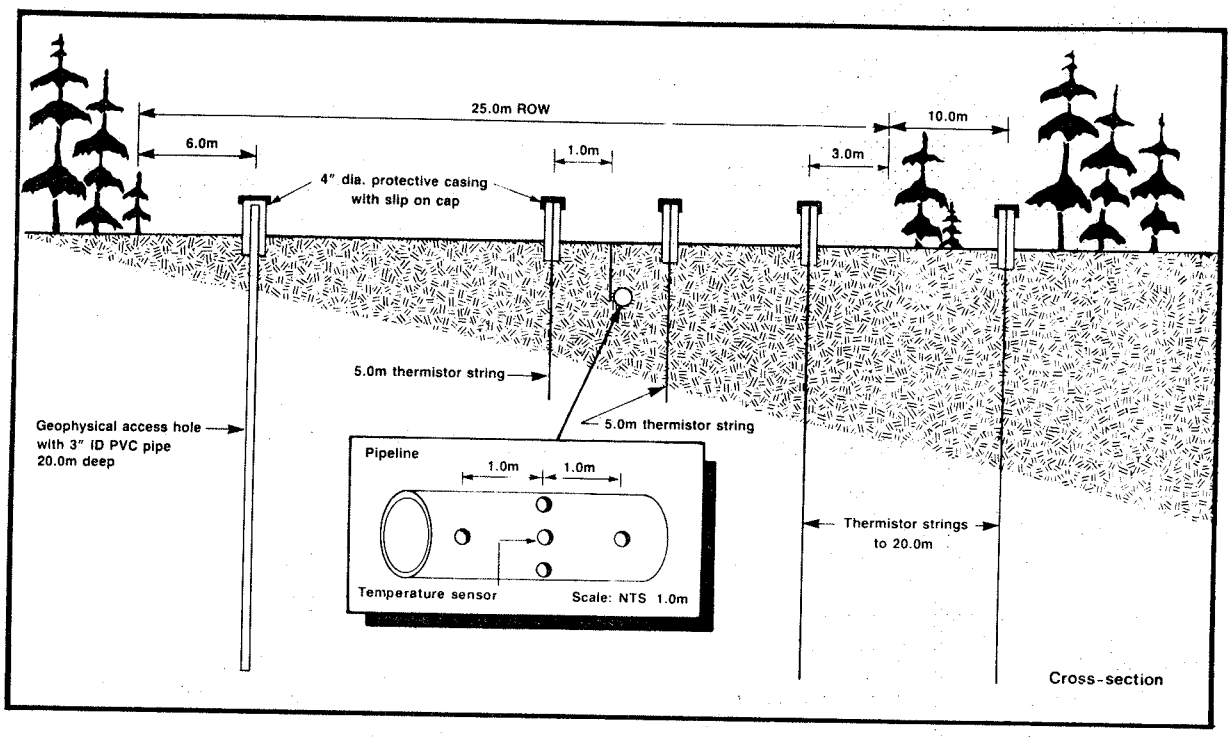
| # | NAME | km | DESCRIPTION (at time of establishment) |
|---|---|---|---|
| 84-1 | Pump Station 1 | .02 | Ice-rich silty clay in widespread permafrost |
| 84-2 | Canyon Creek | | |
| | A | 19.0 | Level location, frozen till with low ice content in widespread permafrost |
| | B | 19.3 | East-facing slope in widespread permafrost with a 1 m insulating woodchip cover |
| | C | 19.6 | West-facing slope in widespread permafrost with erosion control berms |
| 84-3 | Great Bear River | | (Joint IPL site) |
| | A | 79.2 | Stratigraphically complex ice-rich alluvial terrace deposits in widespread permafrost; cliff-base |
| | B | 79.4 | Cliff-top lacustrine deposits with veneer of aeolian deposits |
| 85-7 | Table Mountain | | (Joint IPL site) |
| | A | 271.2 | Ice-rich lacustrine plain (old seismic line) |
| | B | 272.0 | Helipad clearing at bend on top of north facing slope, ice-rich lacustrine plain |
| | C | 272.3 | New clearing on ice-rich lacustrine plain |
| 84-4 | Trail River | | (pipeline previously traversed frozen ground) |
| | A | 478.0 | Unfrozen saturated sands and silts in dune hollow |
| | B | 478.1 | Dry sands and silts in dune crest |
| 85-8 | Manner's Creek | | (rapidly changing permafrost conditions) |
| | A | 557.8 | Thin peat with thick (10 m) permafrost |
| | B | 558.2 | Thick (2.7 m) peat with thin (4 m) permafrost |
| | C | 558.3 | Thin peat (1 m) with thin (1 m) permafrost |
| 85-9 | Pump Station 3 | 583.3 | Frost free granular soils after long frozen section |
| 85-10 | Mackenzie Highway South | | |
| | A | 588.3 | Transition from a helipad clearing in unfrozen terrain to |
| | B | 588.7 | Thin (3 m) permafrost with 2 m peat cover |
| 85-11 | Moraine South | 597.4 | Thin (<4 m) permafrost in helipad clearing |
| 85-12 | Jean Marie Creek | | |
| | A | 608.6 | Thin unfrozen peat plateau |
| | B | 608.7 | Thick ice-rich peat plateau; 4 m permafrost |
| 85-13 | Redknife Hills | | |
| | A | 682.2 | Frozen (6 m) terrain surrounding large fen |
| | B | 682.4 | Frozen (6 m) terrain at fen border |
| | C | 682.6 | Unfrozen terrain in fen |
| 84-5 | Petitot River North | | |
| | A | 783.0 | Ice-rich peat (3.5 m); (15-18 m) permafrost |
| | B | 783.3 | Very thick icy peat (7 m); 12 m permafrost |
| 84-6 | Petitot River South | | |
| | | 819.5 | Thick (5 m) ice-rich peat; 7 m permafrost |

## 3.2 Thermal Fence Layout

Twelve of the 13 main monitoring sites have from one to three instrumented cross-sections, or thermal fences; in total there are 23 fences. Where more than one thermal fence is located at a site, fences are designated A, B, and C in a north to south sequence. At each fence, an example of which is illustrated in Figure 3, 5 temperature sensors, located on the outside of the pipe and installed by IPL prior to trench backfilling, provide an approximate reference value for the pipe induced thermal disturbance. Two 5 m cables are located close to the pipe to examine the immediate effect on soil temperature of pipeline trenching, installation and operation. These two short cables are positioned in one of two possible configurations, either on each side of the ditch (as shown in Figure 3) or at an increasing distance from the ditch on the travel side of the ROW. Two 20 m cables, one on the ROW and the other off-ROW (where disturbance to surface conditions was kept to a minimum with no or varying tree canopy removal, while allowing snow-access of track-mounted drill), investigate the deeper thermal characteristics and enable a comparison of the thermal regime of the disturbed ROW and the surrounding terrain. The thirteenth site, at Redknife Hills, consists of three cables (A,B,C) on the ROW spaced 200 m in a line paralleling the pipe.

## 3.3 New Sites and New Instrumentation - 1986

In March 1986 a drilling program was undertaken at the Table Mountain (85-7) monitoring site to establish new off-ROW reference holes at each of the three fences. Three new holes were drilled in an attempt to achieve less off-ROW disturbance than had occurred during the 1985 drilling. The holes were instrumented with new 20 m cables. The new hole at fence A was deepened to 93 m to provide a reference for long term climate change monitoring in this



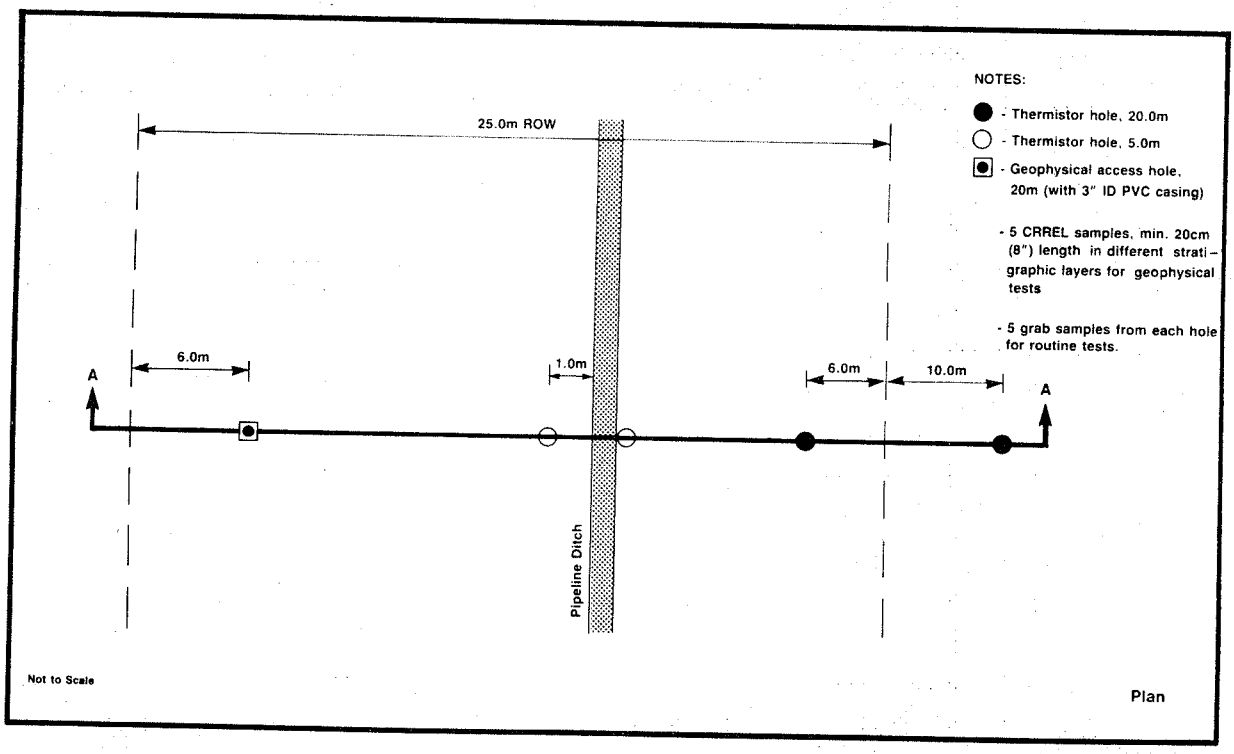




FIGURE 3. Example of a layout of a thermal fence at a monitoring site: a) cross section b) plan view.

area of the Mackenzie Valley; an additional cable was installed to monitor temperatures to the bottom of the hole. Data from these new holes are included in this compilation.

Two additional projects were undertaken to supplement near surface active layer data and wood chip performance evaluation. In August 1986, shallow 1.5 m soil temperature probes were installed, both on and off the right-of-way, at 13 fences (1, 2A, 3A, 7A, 7B, 4B, 8A, 8B, 8C, 10A, 12B, 13C, 5B), as part of a new project undertaken in cooperation with Agriculture Canada. In September 1986, additional instrumentation was installed on the wood chip slope at fence Canyon Creek 84-2B, as part of a new project in cooperation with the National Research Council to evaluate wood chip insulation performance. Data collected as part of these two new projects is housed with the respective departments and is not included in this compilation.

In the summer of 1986, IPL installed two additional thermistor strings in the trench at six of the monitoring fences (2C,3B,7C,4A,8A,9). These cables, one directly above the pipe and the other at the trench wall, are to help better define the energy input from the pipe and disturbed trench. 1986 data listings from these cables are compiled in a separate appendix (C).

In the fall of 1986, drillholes at five IPL thaw settlement monitoring sites were prepared for instrumentation with EMR/INAC temperature cables (IPL, 1986). Two of these sites overlap with existing EMR/INAC monitoring sites (85-7B, 85-12B). The details on the location of these sites, the number of holes drilled, total depth drilled, date of cable installation are listed in Table 2 (source: Hardy BBT Ltd, 1987). 1986 data collected at these sites is included within Appendix A, in order of kilometre post.

TABLE 2: Cable Installations at IPL Thaw Settlement Sites

| Thaw Settlement Site (KP) | Site Name | Thermistor String | Depth Drilled(m) | Cable Installation |
|---|---|---|---|---|
| 95.1 | IPL-PSS6 | 84-4B-T2 | 7.0 | 86.10.08 |
| 135.1 | IPL-PSS10 | HA-128<br>HA-127 | 10.3<br>10.4 | 86.10.11<br>86.10.13 |
| 271.9 | Table Mtn. (85-7B) | HA-132<br>HA-129 | 10.2<br>10.0 | 86.10.16<br>86.10.16 |
| 469.7 | Trail River IPL-PSS24 | HA-130<br>HA-131 | 10.6<br>10.5 | 86.10.29<br>86.10.29 |
| 608.6 | Jean Marie Creek (85-12B) | HA-133<br>HA-134 | 6.8<br>7.4 | 87.05.24<br>87.05.24 |

### 3.4 Temperature Instrumentation and Accuracy

Methods of temperature measurement by the Permafrost Research Section of EMR in shallow northern boreholes have been discussed in detail by Judge (1973). For long term monitoring programs the installation of multisensor temperature cables is favoured, in order to ensure a permanent or semi-permanent installation, to simplify site visits (i.e. not necessary to carry portable logging system) and to permit continuity of observations despite caving-in or freezing of borehole between logging trips. The temperature sensor used in these cables is the thermistor, a semi-conductor device whose electrical resistance varies in an inverse non-linear relationship with temperature. The thermistor is versatile, reliable and simple to use. Three types of thermistors were used in the fabrication of the temperature cables for the Norman Wells monitoring program: 1) YSI44033 sensors, the most frequently used sensors, were placed in all borehole cables in the N.W.T. and all pipe sensors installed in 1985, 2) YSI44032 sensors were used in all the Alberta boreholes (new cables with 44033 sensors were placed in all boreholes at 5B in October 1986 in order to install an automatic data logger) and 3) Atkins sensors were used for all 1984 pipe sensors and 1986 IPL ditch thermistor strings. The shorter cables contain ten thermistor sensors spaced every 50 cm; the longer cables contain eleven, spaced every metre near the surface and then every 2 m or 3 m, at depth.

The thermistors are calibrated by the manufacturers to an accuracy of 0.1 K. Two field measurement systems are in use, 1) a simple digital hand-held multimeter system and 2) a portable data acquisition system (DAS) developed by A-Cubed Inc. with facilities for data storage on cassette tape and hardcopy printout. The resolution of both these systems enables relative

changes of better than 0.01 K to be determined for a sensor. The measurement systems are used interchangeably, depending on personnel and time of year. A field comparison of the two systems with the standard EMR high precision temperature measurement bridge (described in detail in Judge, 1973) revealed agreement generally to within 0.01 K.

In contrast to former shallow cable installations during the 1970's (for the Mackenzie Valley monitoring of the Environmental-Social Program, Northern Pipelines (Judge, 1973)), where the temperature cable was installed immediately after drilling and the borehole backfilled, the Norman Wells pipeline boreholes were lined with PVC casing. The small diameter PVC tubes (25-38 mm) were filled with an environmentally-safe, medium viscosity and non-freezing silicone fluid prior to cable placement. This system allowed for ease in temperature cable installation, which could then occur sometime after the drilling operation without problems of caving-in or freezeback of an open hole. In addition the possibilities of cable stress and sensor failure due to freezing, thawing or heaving of the surrounding soils were avoided. The possibility of leaky cables, where capacitive effects during sensor measurements present problems for automatic data acquisition systems and lengthen the hand-held multimeter measurement time, was also reduced. Furthermore the PVC tubes would facilitate future cable removal, replacement or re-use.

Temperature cable installation occurred throughout the summer of 1984 for the winter 1984 sites, and at or near the time of drilling for the 1985 sites. The time of installation of new cables at IPL thaw settlement sites is given in Table 2. The depth positioning of the cable was relative to the ground surface at the time of cable installation. Thus, although the sensor spacing

along the cable remains constant with time, the absolute depth of the sensors with respect to the surface level at a particular point in time may change as this surface is subjected to heave or settlement. Surveys are conducted annually to record vertical movements in the ground surface to an accuracy of 1 cm over a 20 m x 20 m grid at each, or selected fence. Settlements observed up to September 1986 at the monitoring fences are summarized in Table 3. Cable positions relative to existing ground surface will be remeasured periodically during the monitoring program.

A few replacement cables have been required when, for example several sensors have failed within a thermistor string, or 44032 sensors have been replaced with 44033 (for compatibility with Seadata loggers). Comments on these changes are included in the borehole data listings.

### 3.5 Frequency of Data Collection

Temperature data collection to date has been on a basis of monthly field trips at priority and easily accessible sites. Winter readings have been primarily undertaken by INAC field staff at Norman Wells and Fort Simpson, while EMR or INAC researchers have been responsible for the May to October visits (Table 4). The continuation of this frequency of readings will depend on the level of funding to the program in future years, since access generally requires helicopter travel. The program is designed for 5-10 years of data collection on the thermal regime or until conditions stabilize. Remote sites, i.e. distant from either Norman Wells or Fort Simpson, are not regularly read in the winter; these sites are Table Mountain, Redknife Hills, and Petitot River North and South. Special effort will be made to ensure long term readings at deep holes selected for climate change monitoring.

TABLE 3: SURFACE SETTLEMENT RECORDED AT STUDY SITES

| Fence | Observation Period | Range of Settlement* (cm) Trench Area | ROW |
|---|---|---|---|
| 84-1 | 20/6/84 - 17/9/86 | 0 - 60 | 0 - 80 |
| 84-2A | 21/8/84 - 17/9/86 | 10 - 30 | 0 - 20 |
| 84-2B | 22/8/84 - 17/9/86 | 0 - 30 | 0 - 40 |
| 84-2C | 22/8/84 - 17/9/86 | 0 - 20 | 0 - 30 |
| 84-3A | 22/8/84 - 18/9/86 | 10 - 50 | 0 - 50 |
| 84-3B | 22/8/84 - 18/9/86 | 0 - 20 | 0 - 20 |
| 85-7A | 26/5/85 - 16/9/86 | 10 - 70 | 0 - 50 |
| 85-7B | 26/5/85 - 16/9/86 | 10 - 80 | 0 - 50 |
| 85-7C | 26/5/85 - 16/9/86 | 20 - 60 | 0 - 30 |
| 84-4A | 24/8/84 - 15/9/86 | 0 - 50 | 0 - 20 |
| 84-4B | 24/8/84 - 15/9/86 | 0 - 30 | 0 - 30 |
| 85-8A | 25/5/85 - 12/9/86 | 10 - 50 | 0 - 30 |
| 85-8B | 25/5/85 - 12/9/86 | 10 - 100+ | 0 - 40 |
| 85-8C | 25/5/85 - 12/9/86 | 10 - 80 | 0 - 60 |
| 85-9 | 24/5/85 - 13/9/86 | 0 - 20 | 0 - 10 |
| 85-10A | 23/5/85 - 13/9/86 | 0 - 50 | 0 - 30 |
| 85-10B | 23/5/85 - 13/9/86 | 0 - 100+ | 0 - 40 |
| 85-11 | 23/5/85 - 14/9/86 | backfilled winter/86 | 0 - 20 |
| 85-12A | 22/5/85 - 14/9/86 | 0 - 70 | 0 - 20 |
| 85-12B | 22/5/85 - 14/9/86 | 0 - 100+ | 0 - 50 |

* The range of settlement (cm) determined from the surface elevation surveys is defined by the minimum and maximum amount observed for each of two areas:
1) Trench Area: includes trench and a few meters on either side of the pipe centreline
2)ROW Area: the remainder of the surveyed ROW excluding the trench area.

TABLE 4. SCHEDULE OF FIELD TRIPS AND OBSERVERS - 1986.

Schedule of permafrost and terrain research and monitoring field work from November 1985 through November 1986.

| DATE | OBSERVER | PURPOSE |
|---|---|---|
| 1986 | | |
| January 14, 17 | P. Rivard, N. Sancartier L. Schmidt | Northern data (INAC) |
| January 13-15 | B. Hoover, W. Lafleur K. Beraska, D. Trudeau | Southern data (INAC) |
| February 21 | D. Elliott | Northern data (INAC) |
| February 19-20 | J. Hayes, W. Lafleur | Southern data (INAC) |
| March 3-5 | K. MacInnes, J. Pilon W. Pollard | Northern data (INAC,EMR) (Km. 0-273, 528) |
| March 12, 24, 26 | D. Trudeau, W. Lafleur K. Beraska | Southern data (INAC) |
| April 9-10, 12 | D. Trudeau, B. Hoover W. Lafleur | Southern data (INAC) |
| April 29 | B. Hoover (with IPL) | Southern pipe thermistors (INAC) |
| April 30 | L. Schmidt, N. Sancartier | Northern data (INAC) |
| May 23-28 | M. Burgess, W. Pollard | Data-all sites (EMR) |
| June 19-23 | D. Harry, K. MacInnes | Data-all sites (INAC,EMR) |
| June 27-28 | A. Judge, J. Pilon | Radar survey, Great Bear (EMR) |
| July 14-19 | K. MacInnes | Data-all sites (INAC) |
| August 1-11 | K. MacInnes, C. Tarnocai D. Kroetsch | Data-all sites (INAC) Install soil probes (Ag. Canada) |
| September 18-25 | H. Baker, L. Goodrich | Canyon Cr. equipment (NRC) |
| September 25-30 | K. MacInnes, F. Adlem, H. Baker | Data-all sites (INAC,NRC) |
| October 23-29 | M. Burgess, V. Allen | Data-all sites (EMR) |
| November 12 | D. Elliott, L. Schmidt, P. Rivard | Northern data (INAC) |
| November 19-20 | D. Trudeau, B. Hoover | Southern data (INAC) (Km. 270-607) |
| December 10 | D. Elliott, L. Schmidt | Northern data (INAC) |
| December 16, 17, 19, 22 | D. Trudeau, B. Hoover, W. Lafleur | Southern data (INAC) |

1. Observers include staff from Indian and Northern Affairs Canada (INAC) Region and District (NWT), Energy, Mines and Resources (EMR, Ottawa) Agriculture Canada (Ag.) and National Research Council (NRC). Northern data refers to sites from Km. 0 to 79. Southern data here refers to sites from Km. 477-607 unless indicated. All sites refer to sites from Km. 0 to 818.
2. Automatic data loggers are located at four thermal fences at three sites (Table M., 7A and 7B; Great Bear 3A and Canyon Creek 2A). An additional logger was added to site 5B in October 1986.

In October 1985, fences A and B at Table Mountain were equipped with automatic data loggers (Sea-Data model 1250b) to ensure more continuous data gathering. Fences A at Canyon Creek and A at Great Bear were also equipped with Sea Data loggers, to increase the number of measurements. More frequent measurements were of interest at Canyon Creek A to compliment the automated micrometeorological data collected by the Atmospheric Environment Service of Environment Canada at their station installed in the winter of 1985 (Granberg, 1985). At Great Bear A, where thaw settlement and development of hummocky terrain were active on the ROW, a more detailed monitoring of the ground thermal regime in the ice-rich surficial material was desired. In October 1986 a fifth Sea Data logger was installed at fence 84-5B Petitot River North to ensure a continuous annual record in one of the remote peat plateau sites of northern Alberta. The frequency of measurement for the data loggers is currently set to 3 readings per day. These loggers are connected to the EMR/INAC ground temperature cables (and to the AC/INAC 1.5 m soil probes at 3 fences) but not to the pipe temperature sensors. Logger tape and battery changes are scheduled twice a year. Select logs are added to the data files of monthly manual readings, following tape removal and data reduction; hence the apparent lack of data listings at these sites for part of 1986.

### 3.6 Associated Data

In naturally hummocky off-ROW terrain, the single off-ROW temperature cable does not necessarily provide a representation of the near-surface thermal regime and active layer conditions. An "active layer probe", consisting of a 2 m long stainless steel rod with a thermistor embedded in its tip, is therefore also used to probe the depth and record the temperatures within the

off-ROW active layer. This probing may also be repeated on a continuous transect across the ROW, in the fall at or near the time of maximum active layer development at the selected fences.

Ground probing radar (GPR) and time domain reflectometry (TDR) surveys compliment the thermal observations. The GPR provides a continuous transect across the ROW, to depths of 10 m on average, of the active layer and shallow permafrost characteristics. TDR measurements provide data on soil moisture conditions and electrical properties to depths of 2 m at 3 locations across the thermal fence: next to the pipeline, in the centre of the ROW and off-ROW. These geophysical surveys, discussed by A-Cubed Inc. (1985) and Pilon, Annan and Davis (1985a and 1985b), have to date been conducted at least once per year. Permanent snow depth markers have been located at most fences. Other measurements of snow depths and densities along the thermal fences are also made. A photographic record, and observations on vegetation cover and composition, geomorphic processes, standing or flowing water conditions, drainage or erosion problems, presence of tension cracks, wildlife use, maintenance and remedial measures, complete the ancillary data record.

## 4. GROUND TEMPERATURE DATA BASE

The EMR/INAC Norman Wells pipeline thermal data base is currently maintained by the Permafrost Research Section, Terrain Sciences Division, GSC of EMR. The data base resides on the departmental mainframe Cyber computer and follows the format established by the former Earth Physics Branch for its Canadian Geothermal Data Collection - Northern Wells (see Taylor et al., 1982 for the most recent edition of the collection).

## 4.1 Listings

A complete listing of 1986 borehole temperature readings for each cable at each thermal fence site is presented in Appendix A. The sensor depths listed in the tables and kept on permanent record in the files, are those at the time of cable installation.

The data are grouped by monitoring site and presented in site order along the pipeline route (Norman Wells = kilometrepost 0). Data listings from new cables at IPL thaw settlement sites are included in Appendix A. The data tables include, when available, additional information on 1) latitude, longitude, elevation (m), 2) the distance of the borehole from the pipeline centre line and the location (off versus on ROW), 3) the lithology and ice content, 4) the number and type of thermistors in the cable, and 5) the installation of automatic data loggers. An aerial photographic view of each of the thermal fences, photos and additional information will be available in a site description report currently in preparation.

Measurements of the pipe thermistor sensors taken in 1986 are listed separately in Appendix B; the 1984 sites are listed first, followed by the 1985. The positioning of these sensors on the pipe is shown in Figure 2; three on the side and one on both the top and bottom. Users of this data should note that the depths listed in all data tables were determined from the initial burial depth of the pipe and are not necessarily the current depths, especially in subsided or eroded trench conditions or thaw sensitive terrain (such as occurs for example at the Norman Wells and Great Bear A sites). The relative position of the sensors on the pipe, however, remain fixed.

Appendix C lists the 1986 readings taken on the new ditch thermistor strings installed by IPL in late summer of 1986 at select fences.

### 4.2 Plots

This compilation of 1986 temperature readings also includes graphical presentation of the data. Appendix D contains plots of the temperature envelopes versus depth (minimum and maximum temperature recorded during 1986) for each ground temperature cable (except for those at new thaw settlement sites where a full year of data has not yet been gathered). Appendix E contains temperature versus time plots for each pipe thermistor installation.

## 5. COMMENTS

This report consists solely of a presentation of the ground and pipe temperature data file at the government monitoring sites. A brief discussion of preliminary thermal observation has been given by Burgess et al. (1986a and 1986b), and in annual reports to the Norman Wells Pipeline Research and Monitoring Working Group. A more thorough evaluation of the first 18 months (2 thaw seasons) of pipeline operation will be available in a progress report to INAC currently in preparation. This report will focus on the four northernmost monitoring sites. A second progress report will address a thorough evaluation of the permafrost and terrain performance at the remainder of the monitoring sites.

## 6. ACKNOWLEDGEMENTS

Many organizations have helped to make the overall thermal monitoring project possible. IPL has provided much support and cooperation, and in particular contributed the drilling of the boreholes for all cables in the

N.W.T., as well as the staff for installation of the pipe thermistors and varied assistance for subsequent field work. The assistance of W. Pearce, A. Pick, M. Yerichuk and J. Smith, all of IPL, requires special mention. The design of the EMR/INAC ground thermal monitoring program is principally due to the efforts of Kaye MacInnes (Land Resources, INAC, Yellowknife), Alan Judge and Jean Pilon (both with GSC, EMR). The overall establishment of the program was possible thanks to the assistance of several INAC individuals: W. Dunlop, B. Gauthier, J. Wallace and S. Meldrum. The ground temperature data presented in this report was collected with the help of many people. At INAC, Kaye MacInnes and personnel from the district offices in Norman Wells and Fort Simpson must be thanked. Harry Baker, NRC, also assisted with data collection. At EMR, David Harry and the following personnel from the Permafrost Research Section participated in the data gathering: Vic Allen, Wayne Pollard, and Jean Pilon. Al Taylor, Diana Leblanc-Ross and Catherine Digel also provided much appreciated help in establishing and maintaining the data file.

## 7. FUNDING

The permafrost, terrain and terrain stability monitoring program on the Norman Wells to Zama pipeline is primarily funded by the Northern Affairs Program of INAC, including contributions from the Northern Oil and Gas Action Program (NOGAP). Additional funding or other assistance has been received from EMR's former Earth Physics Branch, the Geological Survey of Canada (Terrain Sciences Division), the Federal Panel on Energy Research and Development, and IPL (NW) Ltd..

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# APPENDIX A

## GROUND TEMPERATURE CABLES DATA LISTINGS

Kilometre posts indicated on the data listings refer to the alignment sheet values. The table below provides the conversion from these to the final surveyed as built chainage.

| SITE | SITE NAME | ALIGNMENT SHEET KMP | AS BUILT CHAINAGE (KMP) |
|---|---|---|---|
| 84-1 | Norman Wells | 0.0 | .02 |
| 84-2A | Canyon Creek North | 18.9 | 19.0 |
| 84-2B | Canyon Creek North | 19.3 | 19.3 |
| 84-2C | Canyon Creek South | 19.5 | 19.6 |
| 84-3A | Great Bear River | 78.7 | 79.2 |
| 84-3B | Great Bear River | 79.1 | 79.4 |
| 95.1 | | | 95.2 |
| 135K | | | 135.1 |
| 85-7A | Table Mountain | 270.8 | 271.2 |
| 85-7B | Table Mountain | 271.5 | 272.0 |
| 85-7C | Table Mountain | 271.8 | 272.3 |
| 470K | | | 470.0 |
| 84-4A | Trail River | 477.3 | 478.0 |
| 84-4B | Trail River | 477.4 | 478.1 |
| 85-8A | Manners Creek | 556.9 | 557.8 |
| 85-8B | Manners Creek | 557.2 | 558.2 |
| 85-8C | Manners Creek | 557.4 | 558.3 |
| 85-9 | Pump Station #3 | 582.5 | 583.3 |
| 85-10A | Mackenzie Highway South | 587.5 | 588.3 |
| 85-10B | Mackenzie Highway South | 587.9 | 588.7 |
| 85-11 | Moraine South | 596.6 | 597.4 |
| 85-12A | Jean Marie Creek | 607.7 | 608.6 |
| 85-12B | Jean Marie Creek | 607.9 | 608.7 |
| 85-13 | Redknife Hills - A | 681.2 | 682.2 |
| | - B | 681.4 | 682.4 |
| | - C | 681.6 | 682.6 |
| 84-5A | Petitot River North | 781.9 | 783.0 |
| 84-5B | Petitot River North | 782.2 | 783.2 |
| 84-6 | Petitot River South | | 819.5 |

SITE 84-1: NORMAN WELLS PUMP STATION- T1

**********

65 DEGREES 17.4 MINUTES NORTH
126 DEGREES 53.2 MINUTES WEST

65 DEGRES 17.4 MINUTES NORD
126 DEGRES 53.2 MINUTES OUEST

ELEVATION 61 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 17 | DATE 86 2 21 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 23 | DATE 86 6 19 | DATE 86 7 18 | DATE 86 8 1 | DATE 86 9 25 | DATE 86 10 28 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -1.4 | -2.3 | -3.8 | -.9 | .1 | 8.8 | 13.2 | 10.3 | 2.1 | -1.3 | -2.6 | -2.7 |
| 1.0 | -.1 | -.1 | -.5 | -1.0 | -.1 | -.2 | 4.2 | 3.6 | 1.5 | -.1 | -.1 | -.2 |
| 1.5 | -.2 | -.1 | -.2 | -.7 | -.4 | -.4 | -.2 | .1 | .3 | -.1 | -.1 | -.1 |
| 2.0 | -.4 | -.3 | -.4 | -.7 | -.7 | -.6 | -.5 | -.5 | -.3 | -.3 | -.3 | -.3 |
| 2.5 | -.7 | -.6 | -.6 | -.7 | -.8 | -.8 | -.7 | -.7 | -.6 | -.5 | -.5 | -.5 |
| 3.0 | -.8 | -.7 | -.8 | -.8 | -.9 | -.9 | -.8 | -.8 | -.7 | -.7 | -.7 | -.6 |
| 3.5 | -1.0 | -.9 | -1.0 | -.9 | -1.0 | -1.0 | -1.0 | -1.0 | -.9 | -.8 | -.8 | -.8 |
| 4.0 | -1.2 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.2 | -1.1 | -1.0 | -1.0 | -1.0 | -.9 |
| 4.5 | -1.4 | -1.2 | -1.3 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.1 | -1.1 | -1.1 | -1.0 |
| 5.0 | -1.4 | -1.2 | -1.3 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.1 | -1.1 | -1.1 | -1.1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE.
FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES.
ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 0.06. EMR-84-1.
-WELL SPUDDED 84 3 4

NW-ZAMA PIPELINE KM 0.06. EMR-84-1.
-DEMARRAGE DU PUITS LE 84 3 4

LACUSTRINE PLAIN: ICE-RICH SILTY CLAY IN WIDESPREAD PERMAFROST.
TREES CLEARED TO 26.5 M IN WINTER 82/83.
CABLE ON R.O.W. 1.5 M W OF PIPELINE,
IN 25 MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED COMMON).

SITE 84-1: NORMAN WELLS PUMP STATION- T2

**********

65 DEGREES 17.4 MINUTES NORTH
126 DEGREES 53.2 MINUTES WEST

65 DEGRES 17.4 MINUTES NORD
126 DEGRES 53.2 MINUTES OUEST

ELEVATION 61 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 17 | DATE 86 2 21 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 23 | DATE 86 6 19 | DATE 86 7 18 | DATE 86 8 1 | DATE 86 9 25 | DATE 86 10 28 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -.2 | -.7 | -1.5 | -1.4 | -.2 | -.2 | 2.1 | 3.3 | 1.8 | -.1 | -.2 | -1.0 |
| 1.0 | -.1 | -.0 | -.1 | -1.0 | -.4 | -.4 | -.3 | -.2 | .5 | -.0 | -.0 | -.1 |
| 1.5 | -.3 | -.2 | -.3 | -.8 | -.7 | -.6 | -.5 | -.4 | -.2 | -.2 | -.2 | -.1 |
| 2.0 | -.6 | -.4 | -.5 | -.7 | -.8 | -.7 | -.6 | -.6 | -.5 | -.4 | -.4 | -.3 |
| 2.5 | | -.6 | -.7 | -.8 | -.8 | -.8 | -.8 | -.7 | -.6 | -.6 | -.6 | -.5 |
| 3.0 | -1.0 | -.9 | -.9 | -.9 | -1.0 | -1.0 | -1.0 | -1.0 | -.9 | -.8 | -.8 | -.8 |
| 3.5 | -1.1 | -.9 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -.9 | -.9 | -.8 | -.8 |
| 4.0 | -1.3 | -1.1 | -1.2 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.0 | -1.0 | -1.0 |
| 4.5 | -1.5 | -1.3 | -1.4 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.2 | -1.2 | -1.2 | -1.1 |
| 5.0 | -1.5 | -1.5 | -1.4 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.2 | -1.2 | -1.2 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 0.06. EMR-84-1.
-WELL SPUDDED 84 3 4

NW-ZAMA PIPELINE KM 0.06. EMR-84-1.
-DEMARRAGE DU PUITS LE 84 3 4

LACUSTRINE PLAIN: ICE-RICH SILTY CLAY IN WIDESPREAD PERMAFROST.
TREES CLEARED TO 26.5 M IN WINTER 82/83.
CABLE ON R.O.W. 2.5 M W OF PIPELINE, IN 25 MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED COMMON).

SITE 84-1: NORMAN WELLS PUMP STATION- T3

**********

65 DEGREES 17.4 MINUTES NORTH
126 DEGREES 53.2 MINUTES WEST

65 DEGRES 17.4 MINUTES NORD
126 DEGRES 53.2 MINUTES OUEST

ELEVATION 61 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 17 | DATE 86 2 21 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 23 | DATE 86 6 19 | DATE 86 7 18 | DATE 86 8 1 | DATE 86 9 25 | DATE 86 10 28 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -1.9 | -2.5 | -3.3 | -1.3 | -.6 | -.3 | 3.0 | 3.3 | 1.5 | -3.1 | -3.7 | -1.3 |
| 2.0 | -.7 | -.9 | -1.5 | -1.0 | -.9 | -.8 | -.6 | -.6 | -.4 | -.9 | -1.4 | -.4 |
| 3.0 | -.9 | -.8 | -.9 | -1.0 | -1.0 | -1.0 | -.9 | -.7 | -.8 | -.7 | -.7 | -.7 |
| 4.0 | -1.3 | -1.1 | -1.2 | -1.1 | -1.2 | -1.1 | -1.1 | -1.1 | -1.0 | -1.0 | -1.0 | -.9 |
| 5.0 | -1.5 | | -1.4 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.2 | -1.2 | -1.2 | -1.1 |
| 6.0 | -1.7 | -1.5 | -1.6 | -1.5 | -1.5 | -1.4 | -1.4 | -1.4 | -1.4 | -1.3 | -1.3 | -1.3 |
| 7.0 | -2.0 | -1.8 | -1.9 | -1.8 | -1.7 | -1.7 | -1.7 | -1.7 | -1.6 | -1.6 | -1.6 | -1.6 |
| 8.0 | -2.1 | -1.9 | -2.0 | -2.0 | -1.9 | -1.8 | -1.8 | -1.8 | -1.8 | -1.7 | -1.7 | -1.7 |
| 9.0 | -2.2 | -2.0 | -2.1 | -2.0 | -2.0 | -2.0 | -1.9 | -1.9 | -1.9 | -1.8 | -1.8 | -1.8 |
| 10.4 | -2.2 | -2.1 | -2.1 | -2.1 | -2.1 | -2.0 | -2.1 | -2.0 | -2.0 | -1.9 | -1.9 | -1.9 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 0.06. EMR-84-1.
-WELL SPUDDED 84 3 4

NW-ZAMA PIPELINE KM 0.06. EMR-84-1.
-DEMARRAGE DU PUITS LE 84 3 4

LACUSTRINE PLAIN: ICE-RICH SILTY CLAY IN WIDESPREAD PERMAFROST.
TREES CLEARED TO 26.5 M IN WINTER 82/83.
CABLE ON R.O.W. 5.8 M W OF PIPELINE,
IN 38 MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED COMMON).

SITE 84-1: NORMAN WELLS PUMP STATION- T4

**********

65 DEGREES 17.4 MINUTES NORTH
126 DEGREES 53.2 MINUTES WEST

65 DEGRES 17.4 MINUTES NORD
126 DEGRES 53.2 MINUTES OUEST

ELEVATION 61 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 17 | DATE 86 2 21 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 23 | DATE 86 6 19 | DATE 86 7 18 | DATE 86 8 1 | DATE 86 9 25 | DATE 86 10 28 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -2.9 | -4.3 | -4.4 | -3.2 | -1.1 | -.6 | -.2 | -.2 | -.1 | -1.6 | -3.5 | -1.2 |
| 2.0 | -1.7 | -2.7 | -3.5 | -3.5 | -2.0 | -1.4 | -1.1 | -1.0 | -.7 | -1.1 | -2.0 | -.7 |
| 3.0 | -1.1 | -1.7 | -2.0 | -2.9 | -2.3 | -1.8 | -1.5 | -1.4 | -1.1 | -1.0 | -1.0 | -1.0 |
| 4.0 | -1.3 | -1.4 | -1.6 | -2.4 | -2.3 | -2.0 | -1.7 | -1.7 | -1.4 | -1.3 | -1.2 | -1.2 |
| 5.0 | -1.5 | -1.4 | -1.6 | -2.0 | -2.2 | -2.1 | -1.9 | -1.8 | -1.6 | -1.5 | -1.5 | -1.4 |
| 6.0 | -1.6 | -1.5 | -1.6 | -1.9 | -2.0 | -2.0 | -1.9 | -1.9 | -1.7 | -1.6 | -1.6 | -1.6 |
| 7.0 | -1.8 | -1.6 | -1.7 | -1.8 | -1.9 | -1.9 | -1.9 | -1.9 | -1.8 | -1.7 | -1.7 | -1.6 |
| 8.0 | -1.9 | -1.8 | -1.8 | -1.8 | -1.9 | -1.9 | -1.9 | -1.9 | -1.9 | -1.8 | -1.8 | -1.8 |
| 9.0 | -2.0 | -1.9 | -1.9 | -1.9 | -1.9 | -1.9 | -1.9 | -2.0 | -1.9 | -1.9 | -1.9 | -1.9 |
| 11.0 | -2.0 | -1.9 | -2.0 | -1.9 | -1.9 | -1.9 | -1.9 | -1.9 | -1.9 | -1.9 | -1.9 | -1.9 |
| 13.6 | -2.0 | -1.9 | -2.0 | -1.9 | -1.9 | -1.9 | -1.9 | | -1.9 | -1.9 | -1.9 | -1.9 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE.
FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES.
ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 0.06. EMR-84-1.
-WELL SPUDDED 84 3 4

NW-ZAMA PIPELINE KM 0.06. EMR-84-1.
-DEMARRAGE DU PUITS LE 84 3 4

LACUSTRINE PLAIN: ICE-RICH SILTY CLAY IN WIDESPREAD PERMAFROST.
TREES CLEARED TO 26.5 M IN WINTER 82/83.
CABLE OFF R.O.W. 24.1 M W OF PIPELINE, IN 38 MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED COMMON).

SITE 84-1: NORMAN WELLS PUMP STATION- T5

**********

65 DEGREES 17.4 MINUTES NORTH
126 DEGREES 53.2 MINUTES WEST

65 DEGRES 17.4 MINUTES NORD
126 DEGRES 53.2 MINUTES OUEST

ELEVATION 61 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 17 | DATE 86 2 21 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 23 | DATE 86 6 19 | DATE 86 7 18 | DATE 86 8 1 | DATE 86 9 25 | DATE 86 10 28 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -.1 | -.4 | -1.4 | -2.0 | -.8 | -.5 | -.2 | .0 | .3 | -.1 | -.1 | -.1 |
| 2.0 | -.6 | -.4 | -.6 | -1.6 | -1.1 | -.9 | -.8 | -.7 | -.5 | -.5 | -.5 | -.5 |
| 3.0 | -.9 | -.8 | -.9 | -1.3 | -1.3 | -1.1 | -1.0 | -1.0 | -.9 | -.8 | -.8 | -.8 |
| 4.0 | -1.2 | -1.0 | -1.2 | -1.2 | -1.3 | -1.3 | -1.2 | -1.2 | -1.1 | -1.0 | -1.0 | -1.0 |
| 6.0 | -1.8 | -1.6 | -1.7 | -1.6 | -1.6 | -1.6 | -1.6 | -1.5 | -1.5 | -1.5 | -1.4 | -1.4 |
| 8.0 | -2.1 | -2.0 | -2.0 | -1.9 | -1.9 | -1.9 | -1.9 | -1.8 | -1.8 | -1.8 | -1.8 | -1.7 |
| 10.0 | -2.2 | -1.9 | -2.2 | -2.1 | -2.1 | -2.1 | -2.0 | -2.0 | -2.0 | -2.0 | -2.0 | -1.9 |
| 12.0 | -2.2 | -2.1 | -2.2 | -2.2 | -2.2 | -2.1 | -2.1 | -2.1 | -2.1 | -2.1 | -2.0 | -2.0 |
| 15.0 | -2.2 | -2.2 | -2.2 | -2.2 | -2.2 | -2.2 | -2.1 | -2.1 | -2.1 | -2.1 | -2.1 | -2.1 |
| 18.0 | -2.1 | -2.0 | -2.1 | -2.1 | -2.1 | -2.0 | -2.0 | -2.0 | -2.0 | -2.0 | -2.0 | -2.0 |
| 19.6 | -2.0 | -2.0 | -2.0 | -2.0 | -2.0 | -2.0 | -2.0 | -2.0 | -2.0 | -2.0 | -2.0 | -2.0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE.
FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES.
ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 0.06. EMR-84-1.
-WELL SPUDDED 84 3 14

NW-ZAMA PIPELINE KM 0.06. EMR-84-1.
-DEMARRAGE DU PUITS LE 84 3 14

LACUSTRINE PLAIN: ICE-RICH SILTY CLAY IN WIDESPREAD PERMAFROST.
TREES CLEARED TO 26.5 M IN WINTER 82/83.
CABLE ON R.O.W. 7.3 M W OF PIPELINE,
IN 25 MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED COMMON).

SITE 84-2A: CANYON CREEK NORTH A - T1

**********

65 DEGREES 14.1 MINUTES NORTH
126 DEGREES 31.3 MINUTES WEST

65 DEGRES 14.1 MINUTES NORD
126 DEGRES 31.3 MINUTES OUEST

ELEVATION 123 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 15 | DATE 86 3 5 | DATE 86 4 2 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 3 | DATE 86 9 26 | DATE 86 10 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -1.2 | -2.1 | -3.2 | -3.4 | -1.8 | -.3 | 4.9 | 8.8 | 8.5 | 2.9 | -.0 |
| 1.0 | -.2 | -1.0 | -1.8 | -2.4 | -1.9 | -.5 | .3 | 4.9 | 5.3 | 2.6 | 0.0 |
| 1.5 | -.1 | -.1 | -.4 | -1.3 | -1.5 | -.6 | -.3 | 1.7 | 2.6 | 1.9 | .0 |
| 2.0 | -.1 | -.1 | -.1 | -.2 | -.9 | -.7 | -.5 | -.1 | .3 | .9 | -.0 |
| 2.5 | -.2 | -.2 | -.2 | -.2 | -.6 | -.7 | -.6 | -.5 | -.4 | -.1 | -.1 |
| 3.0 | -.3 | -.2 | -.2 | -.2 | -.4 | -.5 | -.5 | -.5 | -.4 | -.2 | -.2 |
| 3.5 | -.4 | -.4 | -.4 | -.4 | -.4 | -.5 | -.6 | -.5 | -.5 | -.4 | -.3 |
| 4.0 | -.5 | -.4 | -.4 | -.4 | -.4 | -.5 | -.6 | -.6 | -.5 | -.4 | -.4 |
| 4.5 | -.5 | -.5 | -.5 | -.5 | -.5 | -.5 | -.6 | -.6 | -.6 | -.5 | -.5 |
| 5.0 | -.7 | -.7 | -.6 | -.6 | -.6 | -.6 | -.7 | -.7 | -.7 | -.6 | -.6 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 18.97. EMR-84-2A.
-WELL SPUDDED 84 3 7

NW-ZAMA PIPELINE KM 18.97. EMR-84-2A.
-DEMARRAGE DU PUITS LE 84 3 7

MORAINIC PLAIN:FROZEN TILL WITH LOW ICE
PARTLY CLEARED IN 60'S FOR CNT LINE.
CLEARED TO 25.1 M IN WINTER 82/83.
CABLE ON R.O.W. 2 M W OF PIPELINE IN
25 MM OIL-FILLED PVC TUBE.
10 SENSOR YSI 44033 (PAIRED).
SEA DATA LOGGER INSTALLED 03/85.

NEW SEA DATA LOGGER INSTALLED-16/10/85.

SITE 84-2A: CANYON CREEK NORTH A - T2

**********

65 DEGREES 14.1 MINUTES NORTH
126 DEGREES 31.3 MINUTES WEST

65 DEGRES 14.1 MINUTES NORD
126 DEGRES 31.3 MINUTES OUEST

ELEVATION 123 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 15 | DATE 86 3 5 | DATE 86 4 2 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 3 | DATE 86 9 26 | DATE 86 10 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -1.8 | -2.8 | -4.1 | -4.2 | -1.9 | -.1 | 5.2 | 9.0 | 8.7 | 2.8 | -.1 |
| 1.0 | -.6 | -1.4 | -2.4 | -2.9 | -2.2 | -.5 | 1.2 | 5.5 | 5.8 | 2.8 | -.0 |
| 1.5 | -.1 | -.5 | -1.1 | -2.0 | -2.0 | -.8 | -.4 | 2.2 | 3.2 | 2.1 | -.0 |
| 2.0 | -.1 | -.1 | -.2 | -.8 | -1.6 | -.9 | -.6 | -.1 | .8 | 1.2 | -.0 |
| 2.5 | -.2 | -.2 | -.2 | -.2 | -1.1 | -.9 | -.7 | -.5 | -.3 | .3 | -.1 |
| 3.0 | -.3 | -.3 | -.3 | -.3 | -.8 | -.9 | -.7 | -.6 | -.5 | -.2 | -.2 |
| 3.5 | -.4 | -.4 | -.4 | -.4 | -.6 | -.8 | -.7 | -.7 | -.6 | -.4 | -.4 |
| 4.0 | -.5 | -.5 | -.5 | -.5 | -.5 | -.7 | -.7 | -.7 | -.6 | -.5 | -.5 |
| 4.5 | -.6 | -.6 | -.6 | -.5 | -.6 | -.7 | -.7 | -.7 | -.7 | -.6 | -.6 |
| 5.0 | -.7 | -.6 | -.6 | -.6 | -.6 | -.6 | -.7 | -.7 | -.7 | -.7 | -.6 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 18.97. EMR-84-2A.
-WELL SPUDDED 84 3 7

NW-ZAMA PIPELINE KM 18.97. EMR-84-2A.
-DEMARRAGE DU PUITS LE 84 3 7

MORAINIC PLAIN:FROZEN TILL WITH LOW ICE
PARTLY CLEARED IN 60'S FOR CNT LINE.
CLEARED TO 25.1 M IN WINTER 82/83.
CABLE ON R.O.W. 3 M W OF PIPELINE IN
25 MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).
NEW SEA DATA LOGGER INSTALLED-16/10/85.

SITE 84-2A: CANYON CREEK NORTH A - T3

**********

65 DEGREES 14.1 MINUTES NORTH
126 DEGREES 31.3 MINUTES WEST

65 DEGRES 14.1 MINUTES NORD
126 DEGRES 31.3 MINUTES OUEST

ELEVATION 123 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 15 | DATE 86 3 5 | DATE 86 4 2 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 3 | DATE 86 9 26 | DATE 86 10 28 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -.1 | -1.0 | -2.2 | -3.6 | -3.3 | -1.2 | -.4 | 1.7 | 2.6 | 2.0 | -.0 |
| 2.0 | -.3 | -.3 | -.3 | -1.6 | -2.5 | -1.6 | -1.1 | -.7 | -.5 | -.0 | -.1 |
| 3.0 | -.5 | -.5 | -.5 | -.7 | -1.5 | -1.5 | -1.2 | -1.0 | -.9 | -.6 | -.5 |
| 4.0 | -.7 | -.6 | -.6 | -.7 | -1.0 | -1.2 | -1.1 | -1.0 | -.9 | -.7 | -.6 |
| 6.0 | -.9 | -.9 | -.8 | -.8 | -.8 | -.9 | -.9 | -.9 | -.9 | -.9 | -.8 |
| 8.0 | -1.1 | -1.0 | -1.0 | -1.0 | -.9 | -.9 | -.9 | -.9 | -1.0 | -.9 | -.9 |
| 10.0 | -1.0 | -1.0 | -1.0 | -1.0 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 |
| 12.0 | -.9 | -.9 | -.9 | -.9 | -.9 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 |
| 15.0 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.7 | -.8 | -.8 | -.8 |
| 18.0 | -.6 | -.6 | -.6 | -.6 | -.6 | -.6 | -.6 | -.6 | -.6 | -.6 | -.6 |
| 19.6 | -.6 | -.6 | -.6 | -.6 | -.6 | -.6 | -.6 | -.5 | -.6 | -.6 | -.6 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 18.97.EMR-84-2A.
-WELL SPUDDED 84 3 7

NW-ZAMA PIPELINE KM 18.97.EMR-84-2A.
-DEMARRAGE DU PUITS LE 84 3 7

MORAINIC PLAIN:FROZEN TILL WITH LOW ICE
PARTLY CLEARED IN 60'S FOR CNT LINE
CLEARED TO 25.1 M IN WINTER 82/83
CABLE ON R.O.W 6 M W OF PIPELINE IN
25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).
NEW SEA DATA LOGGER INSTALLED-16/10/85.

SITE 84-2A: CANYON CREEK NORTH A - T4

**********

65 DEGREES 14.1 MINUTES NORTH
126 DEGREES 31.3 MINUTES WEST

65 DEGRES 14.1 MINUTES NORD
126 DEGRES 31.3 MINUTES OUEST

ELEVATION 123 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 5 24 T(C) | DATE 86 6 20 T(C) | DATE 86 7 18 T(C) | DATE 86 8 3 T(C) | DATE 86 9 26 T(C) | DATE 86 10 28 T(C) |
|---|---|---|---|---|---|---|
| 1.0 | -1.1 | -.7 | -.1 | .5 | .3 | -.7 |
| 2.0 | -1.3 | -1.0 | -.7 | -.6 | -.4 | -.3 |
| 3.0 | -1.3 | -1.1 | -1.0 | -.9 | -.7 | -.6 |
| 4.0 | -1.2 | -1.1 | -1.0 | -.8 | -.8 | -.7 |
| 6.0 | -1.0 | -1.1 | -1.0 | -1.0 | -.9 | -.9 |
| 8.0 | -.9 | -1.0 | -1.0 | -1.0 | -.9 | -.9 |
| 10.0 | -.9 | -.9 | -1.0 | -.8 | -.9 | -.9 |
| 12.0 | -.8 | -.8 | -.9 | -.9 | -.9 | -.9 |
| 15.0 | -.9 | -.9 | -.9 | -.8 | -.9 | -.9 |
| 18.0 | | -.9 | -.9 | -.8 | -.9 | -.9 |
| 19.6 | -.8 | -.8 | -.8 | -.7 | -.8 | -.8 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE.
FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES.
ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 18.97. EMR-84-2A.
-WELL SPUDDED 84 3 8

NW-ZAMA PIPELINE KM 18.97. EMR-84-2A.
-DEMARRAGE DU PUITS LE 84 3 8

MORAINIC PLAIN:FROZEN TILL WITH LOW ICE.
PARTLY CLEARED IN 60'S FOR CNT LINE.
CLEARED TO 25.1 M IN WINTER 82/83.
CABLE OFF R.O.W 20 M W OF PIPELINE IN
38MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED)

SITE 84-2B: CANYON CREEK NORTH B - T1

**********

65 DEGREES 14.0 MINUTES NORTH
126 DEGREES 31.1 MINUTES WEST

65 DEGRES 14.0 MINUTES NORD
126 DEGRES 31.1 MINUTES OUEST

ELEVATION 110 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 3 | DATE 86 9 26 | DATE 86 10 28 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -1.5 | -4.0 | -2.5 | -.1 | -.1 | 1.2 | 2.5 | 1.9 | -.4 | -2.7 | -1.7 |
| 1.0 | -.1 | -.2 | -.5 | -.2 | -.2 | -.2 | -.2 | -.2 | -.1 | -.2 | -.2 |
| 1.5 | -.2 | -.2 | -.3 | -.3 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 2.0 | -.2 | -.2 | -.4 | -.4 | -.3 | -.3 | -.2 | -.2 | -.1 | -.2 | -.2 |
| 2.5 | -.2 | -.2 | -.5 | -.4 | -.4 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 |
| 3.0 | -.4 | -.4 | -.5 | -.6 | -.5 | -.5 | -.4 | -.3 | -.3 | -.3 | -.3 |
| 3.5 | -.6 | -.6 | -.7 | -.7 | -.7 | -.6 | -.6 | -.6 | -.6 | -.6 | -.6 |
| 4.0 | -.8 | -.7 | -.8 | -.8 | -.8 | -.8 | -.8 | -.7 | -.7 | -.7 | -.7 |
| 4.5 | -.9 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.7 | -.7 | -.7 | -.7 |
| 5.0 | -1.0 | -.9 | -.9 | -.9 | -.9 | -.9 | -1.0 | -.8 | -.8 | -.8 | -.8 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 19.26. EMR-84-2B
-WELL SPUDDED 84 3 11

NW-ZAMA PIPELINE KM 19.26. EMR-84-2B
-DEMARRAGE DU PUITS LE 84 3 11

STEEP EAST-FACING ICE-RICH SLOPE WITH WOODCHIP COVER. CNT CLEARING IN 60'S. HELIPAD CLEARED IN 70'S. HAND CLEARED TO 21.4M IN WINTER 84.
CABLE ON R.O.W. 1 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 84-2B: CANYON CREEK NORTH B - T2

**********

65 DEGREES 14.0 MINUTES NORTH
126 DEGREES 31.1 MINUTES WEST

65 DEGRES 14.0 MINUTES NORD
126 DEGRES 31.1 MINUTES OUEST

ELEVATION 110 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 3 | DATE 86 9 26 | DATE 86 10 28 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -.2 | -1.8 | -1.6 | -.1 | -.1 | .1 | .4 | .8 | -.0 | -.4 | -.2 |
| 1.0 | -.2 | -.2 | -.3 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 1.5 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.2 | -.2 | -.2 |
| 2.0 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.3 | -.3 | -.3 | -.3 |
| 2.5 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.3 | -.3 | -.3 |
| 3.0 | -.6 | -.6 | -.6 | -.6 | -.6 | -.6 | -.6 | -.5 | -.5 | -.5 | -.5 |
| 3.5 | -.7 | -.7 | -.6 | -.7 | -.7 | -.6 | -.6 | -.6 | -.6 | -.6 | -.6 |
| 4.0 | -.8 | -.7 | -.7 | -.7 | -.7 | -.7 | -.7 | -.7 | -.6 | -.6 | -.6 |
| 4.5 | -.9 | -.9 | -.9 | -.9 | -.9 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 |
| 5.0 | -1.1 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -.9 | -.9 | -.9 | -.9 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE.
FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES.
ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 19.26. EMR-84-2B
-WELL SPUDDED 84 3 11

NW-ZAMA PIPELINE KM 19.26. EMR-84-2B
-DEMARRAGE DU PUITS LE 84 3 11

STEEP EAST-FACING ICE-RICH SLOPE WITH WOODCHIP COVER. CNT CLEARING IN 60'S. HELIPAD CLEARED IN 70'S. HAND CLEARED TO 21.4M IN WINTER 84.
CABLE ON R.O.W. 2 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 84-2B: CANYON CREEK NORTH B - T3

**********

65 DEGREES 14.0 MINUTES NORTH
126 DEGREES 31.1 MINUTES WEST

65 DEGRES 14.0 MINUTES NORD
126 DEGRES 31.1 MINUTES OUEST

ELEVATION 110 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 3 | DATE 86 10 28 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -.2 | -.2 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 2.0 | -.5 | -.5 | -.5 | -.5 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 |
| 3.0 | -.8 | -.8 | -.8 | -.7 | -.7 | -.7 | -.7 | -.7 | -.7 | -.7 |
| 4.0 | -1.0 | -.9 | -.9 | -.9 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 |
| 6.0 | -1.2 | -1.1 | -1.1 | -1.1 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| 8.0 | -1.2 | -1.2 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.0 | -1.0 |
| 10.0 | -1.2 | -1.2 | -1.2 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 |
| 12.0 | -1.2 | -1.2 | -1.2 | -1.2 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 |
| 15.0 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 |
| 18.0 | -.9 | -.9 | -.9 | -.9 | -.9 | | -.9 | -.9 | -.8 | -.9 |
| 20.5 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 19.26. EMR-84-2B
-WELL SPUDDED 84 3 11

NW-ZAMA PIPELINE KM 19.26. EMR-84-2B
-DEMARRAGE DU PUITS LE 84 3 11

STEEP EAST-FACING ICE-RICH SLOPE WITH WOODCHIP COVER. CNT CLEARING IN 60'S. HELIPAD CLEARED IN 70'S. HAND CLEARED TO 21.4M IN WINTER 84.
CABLE ON R.O.W 4.3 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 84-2B: CANYON CREEK NORTH B - T4

**********

65 DEGREES 14.0 MINUTES NORTH
126 DEGREES 31.1 MINUTES WEST

65 DEGRES 14.0 MINUTES NORD
126 DEGRES 31.1 MINUTES OUEST

ELEVATION 110 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 3 | DATE 86 10 1 | DATE 86 10 28 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -3.2 | -6.1 | -6.2 | -2.7 | -1.7 | -.8 | -.5 | -.1 | -.1 | -.2 | -1.7 |
| 2.0 | -1.7 | -4.1 | -5.2 | -3.8 | -2.7 | -2.0 | -1.8 | -1.0 | -.9 | -.8 | -.8 |
| 3.0 | -1.4 | -2.6 | -3.9 | -3.7 | -3.1 | -2.6 | -2.3 | -1.7 | -1.5 | -1.4 | -1.3 |
| 4.0 | -1.6 | -2.0 | -2.8 | -3.0 | -2.9 | -2.7 | -2.5 | -2.1 | -1.8 | -1.8 | -1.6 |
| 6.0 | -1.9 | -1.8 | -1.9 | -2.1 | -2.3 | -2.3 | -2.3 | -2.2 | -2.0 | -2.0 | -1.9 |
| 8.0 | -1.8 | -1.8 | -1.7 | -1.7 | -1.8 | -1.9 | -1.9 | -1.9 | -1.9 | -1.9 | -1.8 |
| 10.0 | -1.8 | -1.7 | -1.7 | -1.6 | -1.7 | -1.7 | -1.7 | -1.8 | -1.7 | -1.7 | -1.7 |
| 12.0 | -1.6 | -1.6 | -1.5 | -1.5 | -1.6 | -1.5 | -1.6 | -1.6 | -1.6 | -1.6 | -1.6 |
| 15.0 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 |
| 18.0 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 |
| 20.6 | -.9 | -.9 | -.8 | -.8 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE.
FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES.
ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 19.26. EMR-84-2B
-WELL SPUDDED 84 3 12

NW-ZAMA PIPELINE KM 19.26. EMR-84-2B
-DEMARRAGE DU PUITS LE 84 3 12

STEEP EAST-FACING ICE-RICH SLOPE WITH WOODCHIP COVER. CNT CLEARING IN 60'S. HELIPAD CLEARED IN 70'S. HAND CLEARED TO 21.4M IN WINTER 84.
CABLE OFF R.O.W. 23.3 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 84-2C: CANYON CREEK SOUTH C - T1

**********

65 DEGREES 13.9 MINUTES NORTH
126 DEGREES 30.8 MINUTES WEST

65 DEGRES 13.9 MINUTES NORD
126 DEGRES 30.8 MINUTES OUEST

ELEVATION 119 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 3 | DATE 86 9 26 | DATE 86 10 27 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -2.1 | -4.4 | -3.2 | -.3 | 6.7 | 11.7 | 10.9 | 4.3 | .5 | -.9 | -2.1 |
| 1.0 | -1.0 | -2.8 | -2.9 | -.8 | 2.3 | 7.8 | 8.0 | 4.8 | .9 | .4 | -.5 |
| 1.5 | -.2 | -1.2 | -2.2 | -1.0 | -.2 | 3.8 | 5.0 | 4.5 | 1.4 | .8 | .0 |
| 2.0 | -.0 | -.1 | -1.1 | -.8 | -.5 | .1 | 2.1 | 3.9 | 1.8 | 1.1 | .3 |
| 2.5 | .0 | -.1 | -.2 | -.3 | -.3 | -.3 | -.2 | 2.9 | 1.8 | 1.2 | .4 |
| 3.0 | .1 | -.0 | -.1 | -.0 | -.0 | -.1 | -.1 | 1.9 | 1.5 | 1.1 | .5 |
| 3.5 | .1 | -.0 | -.1 | -.1 | -.1 | -.1 | -.1 | 1.1 | 1.1 | .8 | .4 |
| 4.0 | .0 | -.1 | -.1 | -.1 | -.1 | | -.1 | .5 | .6 | .5 | .2 |
| 4.5 | .0 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 | .1 | .2 | .2 | .1 |
| 5.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 19.55. EMR-84-2C
-WELL SPUDDED 84 3 8

NW-ZAMA PIPELINE KM 19.55. EMR-84-2C
-DEMARRAGE DU PUITS LE 84 3 8

STEEP WEST-FACING ICE-RICH SLOPE WITH EROSION CONTROL BERM UPSLOPE OF THERMAL INSTRUMENTATION. CNT LINE CLEARING IN 60'S. HELIPAD DOWNSLOPE CLEARED IN 70'S HAND CLEARED TO 21.7M IN JAN. 84. CABLE ON R.O.W. 1 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 10 SENSOR YSI44033 (PAIRED).

SITE 84-2C: CANYON CREEK SOUTH C - T2

**********

65 DEGREES 13.9 MINUTES NORTH
126 DEGREES 30.8 MINUTES WEST

65 DEGRES 13.9 MINUTES NORD
126 DEGRES 30.8 MINUTES OUEST

ELEVATION 119 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 3 | DATE 86 9 26 | DATE 86 10 27 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -2.4 | -4.8 | -3.3 | .1 | 8.7 | 13.6 | 13.0 | 4.1 | .4 | -1.9 | -2.5 |
| 1.0 | -1.2 | -3.3 | -3.1 | -.6 | 4.0 | 9.8 | 9.8 | 5.3 | 1.0 | .4 | -.8 |
| 1.5 | -.2 | -1.9 | -2.6 | -.9 | -.1 | 6.2 | 7.2 | 5.4 | 1.5 | .7 | -.0 |
| 2.0 | -.0 | -.3 | -1.6 | -.9 | -.5 | 1.9 | 4.0 | 4.9 | 2.0 | 1.2 | .3 |
| 2.5 | .0 | -.1 | -.5 | -.6 | -.4 | -.3 | .8 | 3.8 | 2.1 | 1.3 | .4 |
| 3.0 | .1 | -.1 | -.1 | -.1 | -.1 | -.2 | -.1 | 2.7 | 1.9 | 1.3 | .5 |
| 3.5 | .1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | 1.6 | 1.4 | 1.0 | .5 |
| 4.0 | 0.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | .9 | .9 | .7 | .3 |
| 4.5 | -.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | .3 | .4 | .3 | .1 |
| 5.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 19.55. EMR-84-2C
-WELL SPUDDED 84 3 8

NW-ZAMA PIPELINE KM 19.55. EMR-84-2C
-DEMARRAGE DU PUITS LE 84 3 8

STEEP WEST-FACING ICE-RICH SLOPE WITH EROSION CONTROL BERM UPSLOPE OF THERMAL INSTRUMENTATION. CNT LINE CLEARING IN 60'S. HELIPAD DOWNSLOPE CLEARED IN 70'S HAND CLEARED TO 21.7M IN JAN. 84. CABLE ON R.O.W. 2 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 10 SENSOR YSI44033 (PAIRED).

SITE 84-2C: CANYON CREEK SOUTH C - T3

**********

65 DEGREES 13.9 MINUTES NORTH
126 DEGREES 30.8 MINUTES WEST

65 DEGRES 13.9 MINUTES NORD
126 DEGRES 30.8 MINUTES OUEST

ELEVATION 119 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 3 | DATE 86 9 26 | DATE 86 10 27 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -1.4 | -3.0 | -3.0 | -.5 | 4.3 | 9.7 | 9.6 | 5.6 | 1.1 | .2 | -1.4 |
| 2.0 | -.0 | -.3 | -1.4 | -.9 | -.5 | 2.0 | 3.9 | 5.1 | 2.1 | 1.1 | .2 |
| 3.0 | .1 | 0.0 | -.0 | -.0 | -.1 | -.1 | -.1 | 2.7 | 1.8 | 1.2 | .5 |
| 4.0 | -.1 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | .6 | .6 | .4 | .1 |
| 6.0 | -.4 | -.3 | -.3 | -.4 | -.3 | -.4 | -.4 | -.4 | -.4 | -.3 | -.3 |
| 8.0 | -.5 | -.5 | -.5 | -.5 | -.5 | -.5 | -.5 | -.5 | -.5 | -.5 | -.5 |
| 10.0 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 |
| 12.0 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 |
| 15.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.1 | -1.1 | -1.1 | -1.1 |
| 18.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| 19.4 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.1 | -1.1 | -1.1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 19.55. EMR-84-2C.
-WELL SPUDDED 84 3 9

NW-ZAMA PIPELINE KM 19.55. EMR-84-2C.
-DEMARRAGE DU PUITS LE 84 3 9

STEEP WEST-FACING ICE-RICH SLOPE WITH EROSION CONTROL BERM UPSLOPE OF THERMAL INSTRUMENTATION. CNT LINE CLEARING IN 60'S. HELIPAD DOWNSLOPE CLEARED IN 70'S HAND CLEARED TO 21.7M IN JAN. 84. CABLE ON R.O.W. 4.5 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 11 SENSOR YSI44033 (PAIRED).

SITE 84-2C: CANYON CREEK SOUTH C - T4

**********

65 DEGREES 13.9 MINUTES NORTH
126 DEGREES 30.8 MINUTES WEST

65 DEGRES 13.9 MINUTES NORD
126 DEGRES 30.8 MINUTES OUEST

ELEVATION 119 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 3 | DATE 86 9 26 | DATE 86 10 27 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -.4 | -2.8 | -3.2 | -1.3 | -.7 | .2 | .9 | .4 | -.1 | -.1 | -.1 |
| 2.0 | -.4 | -1.5 | -2.7 | -1.8 | -1.3 | -.9 | -.7 | -.5 | -.4 | -.4 | -.4 |
| 3.0 | -.8 | -1.0 | -1.8 | -1.8 | -1.5 | -1.3 | -1.2 | -.9 | -.8 | -.8 | -.7 |
| 4.0 | -1.0 | -1.0 | -1.3 | -1.5 | -1.5 | -1.4 | -1.3 | -1.1 | -1.1 | -1.0 | -1.0 |
| 6.0 | -1.2 | -1.1 | -1.1 | -1.1 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.1 | -1.1 |
| 8.0 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 |
| 10.0 | -1.2 | -1.2 | -1.2 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 |
| 12.0 | -1.2 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 |
| 15.0 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 |
| 18.0 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.0 | -1.1 | -1.1 | -1.1 | -1.0 | -1.0 |
| 20.0 | -1.0 | -.9 | -1.0 | -1.0 | -.9 | -.9 | -.9 | -.9 | -1.0 | -1.0 | -1.0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 19.55. EMR-84 2C
-WELL SPUDDED 84 3 9

NW-ZAMA PIPELINE KM 19.55. EMR-84 2C
-DEMARRAGE DU PUITS LE 84 3 9

STEEP WEST-FACING ICE-RICH SLOPE WITH EROSION CONTROL BERM UPSLOPE OF THERMAL INSTRUMENTATION. CNT LINE CLEARING IN 60'S. HELIPAD DOWNSLOPE CLEARED IN 70'S HAND CLEARED TO 21.7M IN JAN. 84.
CABLE OFF R.O.W.18 M E OF PIPELINE IN 38MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED)

SITE 84-3A: GREAT BEAR RIVER A - T1

**********

64 DEGREES 54.7 MINUTES NORTH
125 DEGREES 34.8 MINUTES WEST

64 DEGRES 54.7 MINUTES NORD
125 DEGRES 34.8 MINUTES OUEST

ELEVATION 70 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 1 15 T(C) | DATE 86 2 15 T(C) | DATE 86 3 19 T(C) | DATE 86 4 2 T(C) | DATE 86 4 30 T(C) | DATE 86 5 24 T(C) | DATE 86 6 20 T(C) | DATE 86 7 18 T(C) | DATE 86 8 2 T(C) | DATE 86 9 26 T(C) | DATE 86 10 27 T(C) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .50 | | | | -7.8 | -4.2 | -.3 | -.7 | 6.0 | 6.9 | 1.9 | -.2 |
| 1.00 | -.2 | -1.9 | -5.1 | -5.2 | -4.3 | -1.3 | -.7 | -.4 | -.2 | .3 | .0 |
| 1.50 | -.5 | -1.2 | -3.7 | -4.0 | -4.0 | -1.9 | -1.2 | -.8 | -.7 | -.4 | -.3 |
| 2.00 | -.8 | -1.1 | -2.6 | -3.1 | -3.5 | -2.2 | -1.5 | -1.2 | -1.0 | -.7 | -.6 |
| 2.50 | -.9 | -1.0 | -2.0 | -2.5 | -3.1 | -2.3 | -1.7 | -1.3 | -1.2 | -.9 | -.8 |
| 3.00 | -1.0 | -1.1 | -1.7 | -2.1 | -2.7 | -2.3 | -1.8 | -1.5 | -1.3 | -1.0 | -.9 |
| 3.50 | -1.2 | -1.2 | -1.5 | -1.8 | -2.4 | -2.3 | -1.9 | -1.6 | -1.5 | -1.2 | -1.0 |
| 4.00 | -1.4 | -1.3 | -1.5 | -1.8 | -2.3 | -2.3 | -2.0 | -1.8 | -1.7 | -1.4 | -1.3 |
| 4.70 | -1.4 | -1.3 | -1.4 | -1.6 | -1.9 | -2.1 | -1.9 | -1.8 | -1.7 | -1.4 | -1.3 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 79.18. EMR-84-3A
-WELL SPUDDED 84 3 21

NW-ZAMA PIPELINE KM 79.18. EMR-84-3A
-DEMARRAGE DU PUITS LE 84 3 21

STRATIGRAPHICALLY COMPLEX,ICE-RICH ALLUVIAL DEPOSITS. MAJOR NORTH-FACING SLOPE. HELIPAD CLEARING IN 70'S. CLEARED TO 43.6M IN JAN. 84. CABLE ON R.O.W. 1.5 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 9 SENSOR YSI44033 (PAIRED). SEA DATA LOGGER INSTALLED-11/10/85.

SITE 84-3A: GREAT BEAR RIVER A - T2

**********

64 DEGREES 54.7 MINUTES NORTH
125 DEGREES 34.8 MINUTES WEST

64 DEGRES 54.7 MINUTES NORD
125 DEGRES 34.8 MINUTES OUEST

ELEVATION 70 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 15 | DATE 86 3 19 | DATE 86 4 2 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 2 | DATE 86 9 26 | DATE 86 10 27 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .50 | -2.2 | -4.3 | -7.6 | -7.2 | -4.4 | -.2 | -.4 | 1.1 | 1.3 | .8 | -.1 |
| 1.00 | -.4 | -2.3 | -5.0 | -5.1 | -4.4 | -1.5 | -.9 | -.6 | -.5 | -.2 | -.2 |
| 1.50 | -.6 | -1.6 | -3.7 | -4.0 | -4.0 | -2.1 | -1.3 | -1.0 | -.8 | -.6 | -.5 |
| 2.00 | -.8 | -1.2 | -2.6 | -3.1 | -3.5 | -2.3 | -1.6 | -1.3 | -1.1 | -.8 | -.7 |
| 2.50 | -.9 | -1.1 | -2.1 | -2.5 | -3.1 | -2.4 | -1.8 | -1.4 | -1.3 | -.9 | -.8 |
| 3.00 | -1.0 | -1.0 | -1.6 | -2.1 | -2.7 | -2.3 | -1.8 | -1.5 | -1.4 | -1.0 | -.9 |
| 3.50 | -1.2 | -1.2 | -1.6 | -1.9 | -2.5 | -2.4 | -2.0 | -1.7 | -1.6 | -1.3 | -1.1 |
| 4.00 | -1.3 | -1.3 | -1.5 | -1.7 | -2.2 | -2.3 | -2.0 | -1.8 | -1.7 | -1.4 | -1.3 |
| 4.70 | -1.5 | -1.4 | -1.5 | -1.6 | -2.0 | -2.2 | -2.0 | -1.9 | -1.8 | -1.5 | -1.4 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 79.18. EMR-84-3A
-WELL SPUDDED 84 3 21

NW-ZAMA PIPELINE KM 79.18. EMR-84-3A
-DEMARRAGE DU PUITS LE 84 3 21

STRATIGRAPHICALLY COMPLEX. ICE-RICH ALLUVIAL DEPOSITS. MAJOR NORTH-FACING SLOPE. HELIPAD CLEARING IN 70'S. CLEARED TO 43.6M IN JAN. 84. CABLE ON R.O.W. 2.5 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 9 SENSOR YSI44033 (PAIRED). SEA DATA LOGGER INSTALLED-11/10/85.

SITE 84-3A: GREAT BEAR RIVER A - T3

**********

64 DEGREES 54.7 MINUTES NORTH
125 DEGREES 34.8 MINUTES WEST

64 DEGRES 54.7 MINUTES NORD
125 DEGRES 34.8 MINUTES OUEST

ELEVATION 70 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 15 | DATE 86 3 19 | DATE 86 4 2 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 2 | DATE 86 9 26 | DATE 86 10 27 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -.6 | -2.5 | -5.3 | -5.5 | -4.6 | -1.5 | -.9 | -.5 | -.3 | .1 | -.2 |
| 2.0 | -.7 | -1.2 | -2.8 | -3.4 | -3.8 | -2.4 | -1.6 | -1.2 | -1.0 | -.6 | -.6 |
| 3.0 | -1.1 | -1.2 | -1.9 | -2.4 | -3.1 | -2.6 | -2.0 | -1.6 | -1.5 | -1.1 | -1.0 |
| 4.0 | -1.3 | -1.3 | -1.5 | -1.9 | -2.5 | -2.5 | -2.1 | -1.8 | -1.7 | -1.3 | -1.2 |
| 6.0 | -1.7 | -1.7 | -1.6 | -1.7 | -1.9 | -2.1 | -2.1 | | -2.0 | -1.7 | -1.6 |
| 8.0 | -2.0 | -1.9 | -1.9 | -1.9 | -1.9 | -1.9 | -2.0 | -2.0 | -2.0 | -1.9 | -1.8 |
| 10.0 | -2.2 | -2.1 | -2.1 | -2.1 | -2.0 | -1.9 | -2.0 | -2.0 | -2.0 | -2.0 | -2.0 |
| 12.0 | -2.3 | -2.2 | -2.2 | -2.2 | -2.1 | -2.0 | -2.0 | -2.0 | -2.1 | -2.1 | -2.0 |
| 15.0 | -2.3 | -2.3 | -2.2 | -2.2 | -2.2 | -2.1 | -2.1 | -2.1 | -2.1 | -2.1 | -2.1 |
| 18.0 | -2.2 | -2.2 | -2.2 | -2.2 | -2.2 | -2.1 | -2.1 | -2.1 | -2.1 | -2.1 | -2.1 |
| 22.1 | -2.1 | -2.1 | -2.1 | -2.1 | -2.1 | -2.0 | -2.0 | -2.0 | -2.0 | -2.0 | -2.0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 79.18. EMR-84-3A
-WELL SPUDDED 84 3 17

NW-ZAMA PIPELINE KM 79.18. EMR-84-3A
-DEMARRAGE DU PUITS LE 84 3 17

STRATIGRAPHICALLY COMPLEX. ICE-RICH ALLUVIAL DEPOSITS. MAJOR NORTH-FACING SLOPE. HELIPAD CLEARING IN 70'S. CLEARED TO 43.6M IN JAN. 84. CABLE ON R.O.W. 4.8 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 11 SENSOR YSI44033 (PAIRED). SEA DATA LOGGER INSTALLED-11/10/85.

SITE 84-3A: GREAT BEAR RIVER A - T4

**********

64 DEGREES 54.7 MINUTES NORTH
125 DEGREES 34.8 MINUTES WEST

64 DEGRES 54.7 MINUTES NORD
125 DEGRES 34.8 MINUTES OUEST

ELEVATION 70 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 1 15 T(C) | DATE 86 2 15 T(C) | DATE 86 3 19 T(C) | DATE 86 4 2 T(C) | DATE 86 4 30 T(C) | DATE 86 5 24 T(C) | DATE 86 6 20 T(C) | DATE 86 7 18 T(C) | DATE 86 8 2 T(C) | DATE 86 9 26 T(C) | DATE 86 10 27 T(C) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| .5 | | | -5.7 | -5.7 | -5.4 | -1.9 | -1.2 | -.8 | -.7 | -.5 | -1.0 |
| 1.0 | | | -5.0 | -5.1 | -5.0 | -2.5 | -1.7 | -1.3 | -1.1 | -.8 | -.9 |
| 1.5 | | | -4.5 | -4.5 | -4.6 | -3.1 | -2.2 | -1.7 | -1.6 | -1.2 | -1.1 |
| 2.0 | | | -3.9 | -4.0 | -4.2 | -3.3 | -2.5 | -2.0 | -1.8 | -1.4 | -1.3 |
| 2.5 | | | -3.5 | -3.7 | -4.0 | -3.4 | -2.7 | -2.2 | -2.1 | -1.6 | -1.5 |
| 3.0 | | | -3.2 | -3.4 | -3.7 | -3.4 | -2.8 | -2.4 | -2.2 | -1.8 | -1.7 |
| 4.0 | -1.8 | -2.2 | -2.6 | -2.8 | -3.1 | -3.1 | -2.8 | -2.5 | -2.3 | -2.0 | -1.8 |
| 5.0 | -2.0 | -2.2 | -2.5 | -2.6 | -2.9 | -3.0 | -2.9 | -2.7 | -2.6 | -2.2 | -2.1 |
| 6.0 | -1.8 | -1.9 | -2.1 | -2.2 | -2.4 | -2.5 | -2.5 | -2.4 | -2.4 | -2.1 | -2.0 |
| 7.0 | -2.1 | -2.1 | -2.2 | -2.3 | -2.5 | -2.6 | -2.6 | -2.6 | -2.6 | -2.4 | -2.3 |
| 8.0 | -2.1 | -2.1 | -2.2 | -2.2 | -2.3 | -2.4 | -2.5 | -2.5 | -2.5 | -2.4 | -2.3 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 79.18. EMR-84-3A
-WELL SPUDDED 84 3 18

NW-ZAMA PIPELINE KM 79.18. EMR-84-3A
-DEMARRAGE DU PUITS LE 84 3 18

STATIGRAPHICALLY COMPLEX. ICE-RICH ALLUVIAL DEPOSITS. MAJOR NORTH-FACING SLOPE. HELIPAD CLEARING IN 70'S. CLEARED TO 46.3M IN JAN. 84. CABLE OFF R.O.W. 22.5 M W OF PIPELINE IN 38MM OIL-FILLED PVC TUBE. 11 SENSOR YSI44033 (PAIRED) SEA DATA LOGGER INSTALLED - 11/10/85.

SITE 84-3B: GREAT BEAR RIVER B - T1

**********

64 DEGREES 54.7 MINUTES NORTH
125 DEGREES 34.5 MINUTES WEST

64 DEGRES 54.7 MINUTES NORD
125 DEGRES 34.5 MINUTES OUEST

ELEVATION 93 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 2 | DATE 86 9 26 | DATE 86 10 27 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -3.5 | -5.6 | -2.4 | 2.7 | 7.3 | 10.5 | 10.3 | 2.1 | -1.1 | -.7 | -.7 |
| 1.0 | -.2 | -1.1 | -1.7 | -.4 | .5 | 4.5 | 4.9 | 2.1 | -.0 | -.1 | -.1 |
| 1.5 | -.2 | -.2 | -1.3 | -.7 | -.5 | -.2 | 1.0 | 1.0 | -.2 | -.2 | -.2 |
| 2.0 | -.3 | -.3 | -.6 | -.9 | -.8 | -.4 | -.3 | -.2 | -.3 | -.3 | -.3 |
| 2.5 | -.3 | -.3 | -.7 | -.9 | -.8 | | -.4 | -.2 | -.2 | -.2 | -.2 |
| 3.0 | -.4 | -.4 | -.7 | -1.0 | -.8 | -.7 | -.5 | -.3 | -.4 | -.4 | -.3 |
| 3.5 | -.6 | -.5 | -.8 | -1.0 | -1.0 | -.8 | -.7 | -.5 | -.5 | -.5 | -.5 |
| 4.0 | | | | | | | | | | | |
| 5.0 | -1.0 | -.9 | -1.0 | -1.1 | -1.2 | -1.2 | -1.1 | -1.0 | -.9 | -.9 | -.9 |
| 6.3 | -1.3 | -1.2 | -1.2 | -1.2 | -1.3 | -1.3 | -1.3 | -1.2 | -1.2 | -1.1 | -1.1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 79.39. EMR-84-3B
-WELL SPUDDED 84 3 21

NW-ZAMA PIPELINE KM 79.39. EMR-84-3B
-DEMARRAGE DU PUITS LE 84 3 21

ICE-RICH LACUSTRINE DEPOSITS OVERLAIN BY VENEER OF AEOLIAN DEPOSITS. CLIFF TOP. HAND CLEARED TO 16.3M IN JAN. 84. CABLE ON R.O.W. 2 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 10 SENSOR YSI44033 (PAIRED).

SITE 84-3B: GREAT BEAR RIVER B - T2

**********

64 DEGREES 54.7 MINUTES NORTH
125 DEGREES 34.5 MINUTES WEST

64 DEGRES 54.7 MINUTES NORD
125 DEGRES 34.5 MINUTES OUEST

ELEVATION 93 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 2 | DATE 86 9 26 | DATE 86 10 27 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -3.7 | -5.4 | -3.1 | 2.7 | 7.4 | 10.1 | 10.2 | 2.0 | -1.3 | -6.0 | -4.3 |
| 1.0 | -.5 | -1.7 | -2.5 | -.4 | .8 | 4.5 | 5.1 | 2.2 | -.1 | -.4 | -.3 |
| 1.5 | -.1 | -.1 | -2.1 | -.7 | -.4 | .1 | 1.5 | 1.3 | -.1 | -.1 | -.1 |
| 2.0 | -.2 | -.2 | -1.5 | -1.0 | -.7 | -.2 | -.2 | .1 | -.1 | -.1 | -.1 |
| 2.5 | -.3 | -.3 | -1.3 | -1.2 | -.9 | -.5 | -.4 | -.3 | -.2 | -.2 | -.2 |
| 3.0 | -.4 | -.4 | -1.2 | -1.2 | -1.0 | -.7 | -.6 | -.4 | -.4 | -.3 | -.3 |
| 3.5 | -.6 | -.5 | -1.1 | -1.3 | -1.1 | -.8 | -.7 | -.5 | -.5 | -.5 | -.4 |
| 4.0 | -.7 | -.6 | -1.1 | -1.3 | -1.1 | -1.0 | -.8 | -.6 | -.6 | -.6 | -.5 |
| 5.0 | -.9 | -.8 | -1.0 | -1.2 | -1.2 | -1.1 | -1.0 | -.9 | -.8 | -.8 | -.7 |
| 6.3 | -1.3 | -1.2 | -1.2 | -1.3 | -1.3 | -1.3 | -1.3 | -1.2 | -1.2 | -1.1 | -1.1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 79.39. EMR-84-3B
-WELL SPUDDED 84 3 21

NW-ZAMA PIPELINE KM 79.39. EMR-84-3B
-DEMARRAGE DU PUITS LE 84 3 21

ICE-RICH LACUSTRINE DEPOSITS OVERLAIN BY VENEER OF AEOLIAN DEPOSITS. CLIFF TOP. HAND CLEARED TO 16.3M IN JAN. 84. CABLE ON R.O.W. 3 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 10 SENSOR YSI44033 (PAIRED).

SITE 84-3B: GREAT BEAR RIVER B - T3

**********

64 DEGREES 54.7 MINUTES NORTH
125 DEGREES 34.5 MINUTES WEST

64 DEGRES 54.7 MINUTES NORD
125 DEGRES 34.5 MINUTES OUEST

ELEVATION 93 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 2 | DATE 86 9 26 | DATE 86 10 27 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -.2 | | -3.6 | -.6 | -.2 | 3.4 | 4.1 | 2.0 | -.0 | -.1 | -.1 |
| 2.0 | -.2 | -.2 | -2.4 | -1.4 | -.9 | -.3 | -.3 | -.1 | -.1 | -.1 | -.1 |
| 3.0 | -.4 | -.4 | -1.9 | -1.6 | -1.2 | -.8 | -.7 | -.4 | -.4 | -.4 | -.4 |
| 4.0 | -.7 | -.7 | -1.5 | -1.6 | -1.3 | -1.1 | -1.0 | -.7 | -.6 | -.6 | -.6 |
| 6.0 | | | | | | | | | | | |
| 8.0 | -1.7 | -1.7 | -1.6 | -1.6 | -1.6 | -1.6 | -1.6 | -1.6 | -1.6 | -1.6 | -1.5 |
| 10.0 | -1.9 | -1.8 | -1.8 | -1.7 | -1.7 | | -1.7 | -1.7 | -1.7 | -1.7 | -1.7 |
| 12.0 | -1.8 | -1.8 | -1.8 | -1.8 | -1.8 | -1.7 | -1.7 | -1.7 | -1.7 | -1.7 | -1.7 |
| 15.0 | -1.8 | -1.8 | -1.7 | -1.7 | -1.7 | -1.7 | -1.7 | -1.7 | -1.7 | -1.7 | -1.7 |
| 18.0 | -1.7 | -1.7 | -1.7 | -1.7 | -1.7 | -1.7 | -1.7 | -1.7 | -1.7 | -1.7 | -1.8 |
| 21.4 | -1.6 | -1.6 | -1.6 | -1.6 | -1.6 | -1.6 | -1.6 | -1.6 | -1.6 | -1.6 | -1.6 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 79.39. EMR-84-3B
-WELL SPUDDED 84 3 19

NW-ZAMA PIPELINE KM 79.39. EMR-84-3B
-DEMARRAGE DU PUITS LE 84 3 19

ICE-RICH LACUSTRINE DEPOSITS OVERLAIN BY VENEER OF AEOLIAN DEPOSITS. CLIFF TOP. HAND CLEARED TO 16.3M IN JAN. 84. CABLE ON R.O.W. 5 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 11 SENSOR YSI44033 (PAIRED).

SITE 84-3B: GREAT BEAR RIVER B - T4

**********

64 DEGREES 54.7 MINUTES NORTH
125 DEGREES 34.5 MINUTES WEST

64 DEGRES 54.7 MINUTES NORD
125 DEGRES 34.5 MINUTES OUEST

ELEVATION 93 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 2 | DATE 86 9 26 | DATE 86 10 27 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -3.5 | -5.6 | -5.7 | -2.3 | -1.4 | -.8 | -.6 | -.4 | -.3 | -.3 | -1.7 |
| 2.0 | -2.6 | -4.5 | -5.2 | -3.2 | -2.1 | -1.4 | -1.2 | -.8 | -.7 | -.7 | -1.1 |
| 3.0 | -2.1 | -3.8 | -4.7 | -3.7 | -2.6 | -2.0 | -1.7 | -1.2 | -1.1 | -1.0 | -1.1 |
| 4.0 | -1.8 | -3.1 | -4.1 | -3.7 | -2.9 | -2.3 | -2.1 | -1.6 | -1.4 | -1.4 | -1.3 |
| 6.0 | -1.8 | -2.1 | -2.7 | -2.9 | -2.9 | -2.7 | -2.6 | -2.2 | -2.1 | -2.0 | -1.9 |
| 8.0 | -2.0 | -1.9 | -2.1 | -2.2 | -2.3 | -2.4 | -2.4 | -2.2 | -2.2 | -2.1 | -2.1 |
| 10.0 | -2.0 | -1.9 | -1.9 | -2.0 | -2.0 | -2.0 | -2.1 | -2.1 | -2.1 | -2.1 | -2.0 |
| 12.0 | -1.9 | -1.9 | -1.8 | -1.8 | -1.8 | -1.8 | -1.9 | -1.9 | -1.9 | -1.9 | -1.9 |
| 15.0 | -1.8 | -1.8 | -1.7 | -1.7 | -1.7 | -1.7 | -1.7 | -1.8 | -1.8 | -1.8 | -1.8 |
| 18.0 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 |
| 20.9 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 79.39. EMR-84-3B
-WELL SPUDDED 84 3 19

NW-ZAMA PIPELINE KM 79.39. EMR-84-3B
-DEMARRAGE DU PUITS LE 84 3 19

ICE-RICH LACUSTRINE DEPOSITS OVERLAIN BY VENEER OF AEOLIAN DEPOSITS. CLIFF TOP. HAND CLEARED TO 16.3M IN JAN. 84. CABLE OFF R.O.W. 23 M W OF PIPELINE IN 25 MM OIL-FILLED PVC TUBE. 11 SENSOR YSI44033 (PAIRED).

SITE 85-7A: TABLE MOUNTAIN A - CABLE T1

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 255 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 1 15 T(C) | DATE 86 2 15 T(C) | DATE 86 3 2 T(C) | DATE 86 4 2 T(C) | DATE 86 5 2 T(C) | DATE 86 5 25 T(C) | DATE 86 10 26 T(C) |
|---|---|---|---|---|---|---|---|
| .5 | | | | | | 11.7 | -1.9 |
| 1.0 | | | | | | -.2 | -.1 |
| 1.5 | | | | | | -.2 | -.0 |
| 2.0 | -.3 | -.3 | -.3 | -.3 | -.3 | -.4 | -.2 |
| 2.5 | -.5 | -.5 | -.5 | -.5 | -.4 | -.5 | -.5 |
| 3.0 | -.7 | -.6 | -.6 | -.6 | -.6 | -.6 | -.6 |
| 3.5 | -.7 | -.7 | -.7 | -.6 | -.6 | -.7 | -.7 |
| 4.0 | -.8 | -.7 | -.7 | -.7 | -.7 | -.9 | -.6 |
| 4.5 | -.9 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 |
| 5.0 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 270.8. EMR-85-7A
-WELL SPUDDED 85 2 18

NW-ZAMA PIPELINE KM 270.8. EMR-85-7A
-DEMARRAGE DU PUITS LE 85 2 18

ICE-RICH LACUSTRINE PLAIN WITH THICK PERMAFROST (>20M). PREVIOUSLY CLEARED 6-12M WIDE. CABLE ON R.O.W. 2.2 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 10 SENSOR YSI44033 (PAIRED). SEA DATA LOGGER INSTALLED - #88 BOX NOT TO BE OPENED. CABLES NOT TO BE UNPLUGGED (TAPE ID: 850 701).

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SITE 85-7A: TABLE MOUNTAIN A - CABLE T2

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 255 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 1 15 T(C) | DATE 86 2 15 T(C) | DATE 86 3 2 T(C) | DATE 86 4 2 T(C) | DATE 86 5 2 T(C) | DATE 86 5 25 T(C) | DATE 86 10 26 T(C) |
|---|---|---|---|---|---|---|---|
| .5 | | | | -1.8 | -.2 | .9 | -.2 |
| 1.0 | .0 | 0.0 | -.0 | -.1 | -.2 | -.3 | .1 |
| 1.5 | -.3 | -.3 | -.3 | -.3 | -.5 | -.5 | -.2 |
| 2.0 | -.4 | -.4 | -.4 | -.4 | -.4 | -.5 | -.3 |
| 2.5 | -.6 | -.5 | -.5 | -.5 | -.5 | -.6 | -.5 |
| 3.0 | -.7 | -.7 | -.6 | -.6 | -.6 | -.6 | -.6 |
| 3.5 | -.8 | -.8 | -.7 | -.7 | -.7 | -.7 | -.7 |
| 4.0 | -.7 | -.7 | -.7 | -.7 | -.7 | -.7 | -.6 |
| 4.5 | -.8 | -.7 | -.7 | -.7 | -.7 | -.7 | -.7 |
| 5.0 | -.8 | -.8 | -.8 | -.8 | -.7 | -.8 | -.7 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 270.8. EMR-85-7A
-WELL SPUDDED 85 2 24

NW-ZAMA PIPELINE KM 270.8. EMR-85-7A
-DEMARRAGE DU PUITS LE 85 2 24

ICE-RICH LACUSTRINE PLAIN WITH THICK PERMAFROST (>20M). PREVIOUSLY CLEARED 6-12M WIDE. CABLE ON R.O.W. 1.5 M E OF PIPELINE IN 25 MM OIL-FILLED PVC TUBE. 10 SENSOR YSI44033 (PAIRED). SEA DATA LOGGER INSTALLED - #88. BOX NOT TO BE OPENED. CABLES NOT TO BE UNPLUGGED (TAPE ID: 850 701).

SITE 85-7A: TABLE MOUNTAIN A - CABLE T3

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 255 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 15 | DATE 86 3 2 | DATE 86 4 2 | DATE 86 5 2 | DATE 86 5 25 | DATE 86 10 26 |
|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -.2 | -.2 | -.3 | -.8 | -.8 | -.5 | .0 |
| 2.0 | -.6 | -.6 | -.6 | -.6 | -.7 | -.7 | -.4 |
| 3.0 | -.8 | -.8 | -.8 | -.7 | -.7 | -.8 | -.6 |
| 4.0 | -.9 | -.9 | -.9 | -.9 | -.8 | -.8 | -.7 |
| 6.0 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.7 |
| 8.0 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.7 |
| 10.0 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.7 |
| 12.0 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 |
| 14.0 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.7 |
| 17.0 | -.7 | -.7 | -.7 | -.7 | -.7 | -.7 | -.6 |
| 20.0 | -.7 | -.7 | -.7 | -.7 | -.7 | -.7 | -.7 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 270.8. EMR-85-7A
-WELL SPUDDED 85 2 27

NW-ZAMA PIPELINE KM 270.8. EMR-85-7A
-DEMARRAGE DU PUITS LE 85 2 27

ICE-RICH LACUSTRINE PLAIN WITH THICK PERMAFROST (>20M). PREVIOUSLY CLEARED 6-12M WIDE. CABLE ON R.O.W. 6.5 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 11 SENSOR YSI44033 (PAIRED). SEA DATA LOGGER INSTALLED #88. BOX NOT TO BE OPENED, CABLES NOT TO BE UNPLUGGED (TAPE ID:850 701).

SITE 85-7A: TABLE MOUNTAIN A - CABLE T4

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 255 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 1 15 T(C) | DATE 86 2 15 T(C) | DATE 86 3 2 T(C) | DATE 86 4 2 T(C) | DATE 86 5 2 T(C) | DATE 86 5 25 T(C) | DATE 86 10 26 T(C) |
|---|---|---|---|---|---|---|---|
| 1.0 | | | | | | -.7 | -.3 |
| 2.0 | -.7 | -.7 | -.7 | -.8 | -.9 | -.9 | -.6 |
| 3.0 | -.8 | -.8 | -.8 | -.7 | -.8 | -.8 | -.7 |
| 4.0 | -.9 | -.8 | -.8 | -.8 | -.8 | -.8 | |
| 6.0 | -1.0 | -1.0 | -1.0 | -.9 | -.9 | -.9 | -.9 |
| 8.0 | -1.0 | -1.0 | -1.0 | -1.0 | -.9 | -.9 | -.9 |
| 10.0 | -1.0 | -.9 | -1.0 | -.9 | -.9 | -.9 | -.9 |
| 12.0 | -.8 | -.8 | -.8 | -.8 | -.8 | -.9 | -.9 |
| 14.0 | -.9 | -.8 | -.9 | -.8 | -.8 | -.9 | -.9 |
| 17.0 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 |
| 20.0 | -.7 | -.7 | -.7 | -.7 | -.7 | -.7 | -.7 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 270.8. EMR-85-7A
-WELL SPUDDED 85 2 27

NW-ZAMA PIPELINE KM 270.8. EMR-85-7A
-DEMARRAGE DU PUITS LE 85 2 27

ICE-RICH LACUSTRINE PLAIN WITH THICK PERMAFROST (>20M). PREVIOUSLY CLEARED 6-12M WIDE. CABLE OFF R.O.W. 14.5 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE 11 SENSOR YSI44033 (PAIRED).
SEA DATA LOGGER INSTALLED #88.
BOX NOT TO BE OPENED, CABLES NOT TO BE UNPLUGGED (TAPE ID: 850 701).

SITE 85-7A: TABLE MTN A - HA108

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 255 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 4 17 | DATE 86 5 25 | DATE 86 6 21 | DATE 86 7 17 | DATE 86 8 10 | DATE 86 9 29 | DATE 86 10 26 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -1.7 | -1.3 | -.9 | -.7 | -.6 | -.4 | -.4 | -.4 | -.3 |
| 2.0 | -.4 | -1.1 | -1.0 | -.9 | -.9 | -.7 | -.7 | -.7 | -.6 |
| 4.0 | -.7 | -.9 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -.9 |
| 6.0 | -.8 | -.9 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| 8.0 | -.8 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| 10.0 | -.7 | -.8 | -.8 | -.8 | -.9 | -.9 | -.9 | -.9 | -.9 |
| 12.0 | | -.8 | -.9 | -.8 | -.9 | -.9 | -.9 | -.9 | -.9 |
| 14.0 | -.7 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 |
| 16.0 | -.6 | -.7 | -.7 | -.7 | -.7 | -.8 | -.8 | -.8 | -.7 |
| 18.0 | -.5 | -.6 | -.6 | -.6 | -.6 | -.6 | -.6 | -.6 | -.6 |
| 20.0 | -.3 | -.5 | -.5 | -.5 | -.5 | -.5 | -.6 | | |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 270.8
-WELL SPUDDED 86 3 1

NW-ZAMA PIPELINE KM 270.8
-DEMARRAGE DU PUITS LE 86 3 1

NEW OFF-ROW DEEP HOLE, WEST SIDE.
44033 PAIRED CABLE.
LITHOLOGY INFO TO COME.

SITE 85-7A: TABLE MTN - HA111

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 255 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 4 17 | DATE 86 5 25 | DATE 86 6 21 | DATE 86 7 17 | DATE 86 8 10 | DATE 86 9 29 | DATE 86 10 26 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 13.0 | -.7 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 |
| 21.0 | -.3 | -.4 | -.5 | -.5 | -.5 | -.5 | -.5 | -.4 | -.5 |
| 29.0 | -.1 | -.1 | -.1 | -.1 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 37.0 | .2 | .2 | .2 | .2 | .1 | .1 | .1 | .1 | .1 |
| 45.0 | .6 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 |
| 53.0 | 1.0 | .9 | .9 | .9 | .9 | .9 | .9 | .9 | .9 |
| 61.0 | | 1.2 | 1.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 69.0 | 1.5 | 1.5 | | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 |
| 77.0 | 1.9 | 1.8 | 1.7 | 1.8 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 |
| 85.0 | 2.1 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |
| 93.0 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 270.8

NW-ZAMA PIPELINE KM 270.8

NEW OFF-ROW DEEP HOLE, WEST SIDE. 44033 PAIRED CABLE. PVC INSTALLED TO 93 M. LITHOLOGIES TO COME.

SITE 85-7B: TABLE MOUNTAIN B - CABLE T1

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 260 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 1 15 T(C) | DATE 86 2 15 T(C) | DATE 86 3 10 T(C) | DATE 86 4 2 T(C) | DATE 86 4 30 T(C) | DATE 86 5 25 T(C) | DATE 86 10 26 T(C) |
|---|---|---|---|---|---|---|---|
| .5 | | | -2.8 | -2.7 | -.3 | 4.0 | -.7 |
| 1.0 | | | -.8 | -1.0 | -.7 | -.3 | -.1 |
| 1.5 | -.3 | -.3 | -.3 | -.3 | -.4 | -.4 | -.1 |
| 2.0 | -.4 | -.4 | -.4 | -.4 | -.4 | -.5 | -.2 |
| 2.5 | -.6 | -.6 | -.6 | -.5 | -.5 | -.6 | -.4 |
| 3.0 | -.8 | -.7 | -.7 | -.7 | -.7 | -.7 | -.6 |
| 3.5 | -.9 | -.8 | -.8 | -.8 | -.8 | -.7 | -.7 |
| 4.0 | -1.1 | -1.0 | -1.0 | -1.0 | -.9 | -.9 | -.8 |
| 4.5 | -1.1 | -1.1 | -1.0 | -1.0 | -1.0 | -1.0 | -.9 |
| 5.0 | -1.1 | -1.1 | -1.1 | -1.0 | -1.0 | -1.0 | -.9 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 271.5. EMR-85-7B
-WELL SPUDDED 85 2 17

NW-ZAMA PIPELINE KM 271.5. EMR-85-7B
-DEMARRAGE DU PUITS LE 85 2 17

THICK PERMAFROST (>20M). NORTH-FACING SLOPE. PREVIOUSLY CLEARED 6-12M WIDE. CABLE ON R.O.W. 2.1 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).
SAE DATA LOGGER INSTALLED.

SITE 85-7B: TABLE MOUNTAIN B - CABLE T2

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 260 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 1 15 T(C) | DATE 86 2 15 T(C) | DATE 86 3 10 T(C) | DATE 86 4 2 T(C) | DATE 86 4 30 T(C) | DATE 86 5 25 T(C) | DATE 86 10 26 T(C) |
|---|---|---|---|---|---|---|---|
| .5 | | | -2.6 | -1.4 | -.6 | .4 | .1 |
| 1.0 | | | -.2 | -.4 | -.4 | -.2 | .4 |
| 1.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | .4 |
| 2.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | .2 |
| 2.5 | -.3 | -.3 | -.3 | -.3 | -.2 | -.2 | .0 |
| 3.0 | -.6 | -.5 | -.5 | -.5 | -.5 | -.5 | -.4 |
| 3.5 | -.6 | -.6 | -.6 | -.6 | -.6 | -.5 | -.5 |
| 4.0 | -.8 | -.7 | -.7 | -.7 | -.7 | -.7 | -.6 |
| 4.5 | -.8 | -.7 | -.7 | -.7 | -.7 | -.7 | -.7 |
| 5.0 | -.9 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 271.5. EMR-85-7B
-WELL SPUDDED 85 2 17

NW-ZAMA PIPELINE KM 271.5. EMR-85-7B
-DEMARRAGE DU PUITS LE 85 2 17

THICK PERMAFROST (>20M). NORTH-FACING SLOPE. PREVIOUSLY CLEARED 6-12M WIDE. CABLE ON R.O.W. 1.4 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).
SEA DATA LOGGER INSTALLED.

SITE 85-7B: TABLE MOUNTAIN B - CABLE T3

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 260 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 15 | DATE 86 3 10 | DATE 86 4 2 | DATE 86 4 30 | DATE 86 5 25 | DATE 86 10 26 |
|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | | | | | -.7 | -.1 | 0.0 |
| 2.0 | -.2 | -.2 | -.2 | -.3 | -.5 | -.4 | -.0 |
| 3.0 | -.6 | -.5 | -.5 | -.5 | -.5 | -.5 | -.5 |
| 4.0 | -.7 | -.7 | -.7 | -.7 | -.7 | -.6 | -.6 |
| 6.0 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 |
| 8.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -.9 |
| 10.0 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.0 | -1.0 |
| 12.0 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.1 | -1.1 |
| 14.0 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 |
| 17.0 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 |
| 20.0 | -1.1 | -1.1 | -1.1 | -1.1 | -1.0 | -1.0 | -1.0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 271.5. EMR-85-7B
-WELL SPUDDED 85 2 17

NW-ZAMA PIPELINE KM 271.5. EMR-85-7B
-DEMARRAGE DU PUITS LE 85 2 17

THICK PERMAFROST (>20M). NORTH-FACING SLOPE. PREVIOUSLY CLEARED 6-12M WIDE. CABLE ON R.O.W. 9 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).
SEA DATA LOGGER INSTALLED.

SITE 85-7B: TABLE MOUNTAIN B - CABLE T4

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 260 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 1 15 T(C) | DATE 86 2 15 T(C) | DATE 86 3 10 T(C) | DATE 86 4 2 T(C) | DATE 86 4 30 T(C) | DATE 86 5 25 T(C) | DATE 86 10 26 T(C) |
|---|---|---|---|---|---|---|---|
| 1.0 | | | -1.1 | -1.7 | -1.6 | -.6 | -.0 |
| 2.0 | -.7 | -.6 | -.7 | -.9 | -1.3 | -1.1 | -.6 |
| 3.0 | -1.0 | -1.0 | -1.0 | -.8 | -1.1 | -1.2 | -1.0 |
| 4.0 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 |
| 6.0 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.2 | -1.2 |
| 8.0 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 | -1.3 | -1.3 |
| 10.0 | -1.3 | -1.3 | -1.4 | -1.3 | -1.3 | -1.3 | -1.3 |
| 12.0 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 |
| 14.0 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 |
| 17.0 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 |
| 20.0 | -1.2 | -1.2 | -1.3 | -1.2 | -1.2 | -1.2 | -1.2 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 271.5. EMR-85-7B
-WELL SPUDDED 85 2 17

NW-ZAMA PIPELINE KM 271.5. EMR-85-7B
-DEMARRAGE DU PUITS LE 85 2 17

THICK PERMAFROST (>20M). NORTH-FACING SLOPE. PREVIOUSLY CLEARED 6-12M WIDE. CABLE OFF R.O.W. 20.8 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 11 SENSOR YSI44033 (PAIRED). SEA DATA LOGGER INSTALLED.

SITE 85-7B: TABLE MTN - HA110

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 260 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 4 17 | DATE 86 5 25 | DATE 86 6 21 | DATE 86 7 17 | DATE 86 8 10 | DATE 86 9 29 | DATE 86 10 26 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -5.0 | -1.7 | -1.0 | -.6 | -.5 | -.3 | -.3 | -2.3 | -1.3 |
| 2.0 | -2.8 | -2.2 | -1.7 | -1.4 | -1.2 | -.9 | -.9 | -.9 | -.8 |
| 4.0 | -1.2 | -1.6 | -1.6 | -1.5 | -1.5 | -1.3 | -1.3 | -1.2 | -1.2 |
| 6.0 | -1.2 | -1.3 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 | -1.3 |
| 8.0 | -1.4 | -1.3 | -1.3 | -1.3 | -1.3 | -1.4 | -1.3 | -1.4 | -1.3 |
| 10.0 | -1.2 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 |
| 12.0 | | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 |
| 14.0 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 | -1.3 |
| 16.0 | -1.1 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 |
| 18.0 | -1.1 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 |
| 20.0 | -1.1 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 271.5
-WELL SPUDDED 86 3 10

NW-ZAMA PIPELINE KM 271.5
-DEMARRAGE DU PUITS LE 86 3 10

NEW OFF-ROW HOLE, WEST SIDE.
44033 PAIRED CABLE.
DRILLING INFO TO COME.

SITE 85-7B: TABLE MOUNTAIN - HA129

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 260 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 10 26 |
|---|---|
| Z(M) | T(C) |
| .5 | .0 |
| 1.0 | .0 |
| 2.0 | -.4 |
| 3.0 | -.9 |
| 4.0 | -1.1 |
| 5.0 | -1.2 |
| 6.0 | -1.3 |
| 7.0 | -1.4 |
| 8.0 | -1.4 |
| 9.0 | -1.3 |
| 10.0 | -1.4 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 271.5. EMR-86-HA129
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 271.5. EMR-86-HA129
-DEMARRAGE DU PUITS LE 0 0 0

CABLE IS LOCATED 20M SOUTH OF FENCE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 85-7B: TABLE MOUNTAIN - HA132

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 260 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 10 26 |
|---|---|
| Z(M) | T(C) |
| .5 | .4 |
| 1.0 | .9 |
| 2.0 | .8 |
| 3.0 | .2 |
| 4.0 | -.2 |
| 5.0 | -.4 |
| 6.0 | -.5 |
| 7.0 | -.8 |
| 8.0 | -.7 |
| 9.0 | -.8 |
| 10.0 | -.8 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 272.0. EMR-86-HA132
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 272.0. EMR-86-HA132
-DEMARRAGE DU PUITS LE 0 0 0

CABLE IS LOCATED 5M NORTH OF FENCE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 85-7C: TABLE MOUNTAIN C - CABLE T1

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 255 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 3 3 | DATE 86 5 25 | DATE 86 6 21 | DATE 86 7 17 | DATE 86 8 10 | DATE 86 9 29 | DATE 86 10 27 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -5.1 | 1.9 | 6.8 | 12.6 | 10.4 | .8 | -4.3 | -8.8 | -3.2 |
| 1.0 | -2.3 | -.8 | -.1 | 1.2 | 2.7 | 1.8 | -.6 | -2.9 | -.6 |
| 1.5 | -.8 | -1.2 | -.8 | -.5 | -.3 | .5 | -.0 | -.6 | -.2 |
| 2.0 | -.8 | -1.3 | -1.0 | -.8 | -.7 | -.4 | -.3 | -.3 | -.4 |
| 2.5 | -.9 | -1.3 | -1.2 | -1.1 | -1.0 | -.8 | -.7 | -.7 | -.7 |
| 3.0 | -1.1 | -1.3 | -1.3 | -1.2 | -1.1 | -.9 | -.9 | -.9 | -.9 |
| 3.5 | -1.2 | -1.3 | -1.3 | -1.2 | -1.2 | -1.1 | -1.0 | -1.0 | -1.0 |
| 4.0 | -1.3 | -1.3 | -1.2 | -1.2 | -1.2 | -1.1 | -1.1 | -1.1 | -1.0 |
| 4.5 | -1.5 | -1.4 | -1.4 | -1.5 | -1.3 | -1.3 | -1.3 | -1.2 | -1.2 |
| 5.0 | -1.4 | -1.3 | -1.3 | -1.5 | -1.3 | -1.3 | -1.2 | -1.2 | -1.2 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 271.8. EMR-85-7C
-WELL SPUDDED 85 2 25

NW-ZAMA PIPELINE KM 271.8. EMR-85-7C
-DEMARRAGE DU PUITS LE 85 2 25

THICK PERMAFROST (>20M). SOUTH-FACING SLOPE. PREVIOUSLY CLEARED 6-12M WIDE. CABLE ON R.O.W. 2.1 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).
3 PVC CAPS SWITCHED TO 7B.

SITE 85-7C: TABLE MOUNTAIN C - CABLE T2

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 255 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 3 3 | DATE 86 5 25 | DATE 86 6 21 | DATE 86 7 17 | DATE 86 8 10 | DATE 86 9 29 | DATE 86 10 27 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -3.6 | .5 | 3.1 | 9.3 | 9.4 | 1.2 | -3.6 | -6.0 | -3.1 |
| 1.0 | -.9 | -.6 | 1.0 | 2.9 | 3.6 | 1.7 | .0 | -1.3 | -.2 |
| 1.5 | -.5 | -.8 | -.6 | -.3 | .2 | .7 | -.3 | -.0 | -.2 |
| 2.0 | -.6 | -1.0 | -.8 | -.7 | -.5 | -.3 | -.2 | -.2 | -.4 |
| 2.5 | -.6 | -1.1 | -1.0 | -1.0 | -.9 | -.7 | -.6 | -.6 | -.7 |
| 3.0 | -1.0 | -1.1 | -1.1 | -1.1 | -1.0 | -.9 | -.8 | | -.9 |
| 3.5 | -1.1 | -1.2 | -1.2 | -1.2 | -1.1 | -1.0 | -1.0 | -1.0 | -1.0 |
| 4.0 | -1.3 | -1.2 | -1.2 | -1.3 | -1.2 | -1.2 | -1.1 | -1.1 | -1.2 |
| 4.5 | -1.4 | -1.3 | -1.3 | -1.3 | | | | | -1.3 |
| 5.0 | -1.4 | -1.3 | -1.3 | -1.3 | -1.3 | -1.2 | -1.2 | | -1.3 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 271.8. EMR-85-7C
-WELL SPUDDED 85 2 25

NW-ZAMA PIPELINE KM 271.8. EMR-85-7C
-DEMARRAGE DU PUITS LE 85 2 25

THICK PERMAFROST (>20M). SOUTH-FACING SLOPE. PREVIOUSLY CLEARED 6-12M WIDE. CABLE ON R.O.W. 1.25 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 10 SENSOR YSI44033 (PAIRED).

SITE 85-7C: TABLE MOUNTAIN C - CABLE T3

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 255 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 3 3 | DATE 86 5 25 | DATE 86 6 21 | DATE 86 7 17 | DATE 86 8 10 | DATE 86 9 29 | DATE 86 10 27 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -4.0 | -1.0 | -.6 | -.1 | .4 | .2 | -.3 | -.9 | -.9 |
| 2.0 | -1.7 | -1.8 | -1.3 | -1.0 | -.8 | -.6 | -.6 | -.5 | -.5 |
| 3.0 | -1.2 | -1.8 | -1.6 | -1.4 | -1.2 | -1.0 | -1.0 | -.9 | -.9 |
| 4.0 | -1.3 | -1.6 | -1.6 | -1.5 | -1.4 | -1.3 | -1.2 | -1.2 | -1.1 |
| 6.0 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 | -1.3 | -1.3 |
| 8.0 | -1.4 | -1.4 | -1.4 | -1.4 | -1.4 | -1.3 | -1.3 | -1.3 | -1.3 |
| 10.0 | -1.3 | -1.3 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 |
| 12.0 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 |
| 14.0 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 |
| 17.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| 20.0 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 271.8. EMR-85-7C
-WELL SPUDDED 85 2 27

NW-ZAMA PIPELINE KM 271.8. EMR-85-7C
-DEMARRAGE DU PUITS LE 85 2 27

THICK PERMAFROST (>20M). SOUTH-FACING SLOPE. PREVIOUSLY CLEARED 6-12M WIDE. CABLE ON R.O.W. 7 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 85-7C: TABLE MOUNTAIN C - CABLE T4

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 255 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 3 3 | DATE 86 5 25 | DATE 86 6 21 | DATE 86 7 17 | DATE 86 8 10 | DATE 86 9 29 | DATE 86 10 27 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -2.4 | -1.2 | -.8 | -.4 | -.2 | -.1 | -.1 | -.6 | -1.0 |
| 2.0 | -1.3 | -1.6 | -1.3 | -1.1 | -.9 | -.8 | -.7 | -.7 | -.7 |
| 3.0 | -1.1 | -1.6 | -1.5 | -1.4 | -1.3 | -1.1 | -1.1 | -1.0 | -1.1 |
| 4.0 | -1.2 | -1.4 | -1.4 | -1.4 | -1.3 | -1.3 | -1.2 | -1.2 | -1.2 |
| 6.0 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 |
| 8.0 | -1.3 | -1.2 | -1.2 | -1.3 | -1.2 | -1.2 | -1.2 | -1.2 | -1.3 |
| 10.0 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.3 |
| 12.0 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.2 | -1.3 |
| 14.0 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 |
| 17.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| 20.0 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 | -1.0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 271.8. EMR-85-7C
-WELL SPUDDED 85 2 27

NW-ZAMA PIPELINE KM 271.8. EMR-85-7C
-DEMARRAGE DU PUITS LE 85 2 27

THICK PERMAFROST (>20M). SOUTH-FACING SLOPE. PREVIOUSLY CLEARED 6-12M WIDE. CABLE OFF R.O.W. 19.5 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 11 SENSOR YSI44033 (PAIRED).

SITE 85-7C: TABLE MTN - HA109

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 255 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 4 17 | DATE 86 5 25 | DATE 86 6 21 | DATE 86 7 17 | DATE 86 8 10 | DATE 86 9 29 | DATE 86 10 27 | DATE 86 11 19 |
|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -1.3 | -1.0 | -.7 | -.5 | -.4 | -.3 | -.8 | |
| 2.0 | -.6 | -.8 | -.8 | -.7 | -.6 | -.5 | -.9 | |
| 4.0 | -.8 | -.8 | -.9 | -.8 | -.8 | -.8 | -.8 | -.9 |
| 6.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| 8.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 | -1.0 |
| 10.0 | -1.0 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 | -1.1 |
| 12.0 | | -1.0 | -1.0 | -.9 | -1.0 | -1.0 | -1.0 | -1.0 |
| 14.0 | -.9 | -.9 | -.9 | -.9 | -.9 | -1.0 | -1.0 | -1.0 |
| 16.0 | -.8 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 | -.9 |
| 18.0 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 |
| 20.0 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 | -.8 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 271.8
-WELL SPUDDED 86 3 11

NW-ZAMA PIPELINE KM 271.8
-DEMARRAGE DU PUITS LE 86 3 11

NEW OFF-ROW HOLE, WEST SIDE.
44033 PAIRED CABLE.
DRILLING INFO TO COME.

SITE 84-4A: TRAIL RIVER A - CABLE T1 (NEW)

**********

62 DEGREES 5.2 MINUTES NORTH
121 DEGREES 59.6 MINUTES WEST

62 DEGRES 5.2 MINUTES NORD
121 DEGRES 59.6 MINUTES OUEST

ELEVATION 153 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 19 | DATE 86 3 4 | DATE 86 4 9 | DATE 86 5 28 | DATE 86 6 22 | DATE 86 7 16 | DATE 86 8 9 | DATE 86 9 29 | DATE 86 10 29 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | .3 | .1 | .0 | | .1 | .1 | 4.4 | 7.2 | 6.8 | 4.2 | 2.5 | 1.3 |
| 2.0 | 1.1 | .8 | .7 | .6 | .7 | .6 | 2.0 | 4.3 | 5.5 | 4.3 | 3.3 | 2.3 |
| 3.0 | 1.8 | 1.5 | 1.4 | | 1.2 | 1.1 | 1.4 | 2.5 | 3.9 | 3.8 | 3.2 | 2.7 |
| 4.0 | 2.2 | 1.8 | 1.7 | 1.5 | 1.4 | 1.4 | 1.1 | 1.8 | 2.9 | 3.2 | 3.0 | 2.7 |
| 6.0 | 2.3 | 2.1 | 2.0 | 1.8 | 1.7 | 1.7 | 1.6 | 1.6 | 2.0 | 2.3 | 2.1 | 2.3 |
| 8.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 1.8 | 1.8 | 1.7 | 1.8 | 1.9 | 1.9 | 2.0 |
| 10.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 2.0 |
| 12.0 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.0 | 2.1 |
| 15.0 | 2.2 | 2.2 | 2.2 | 2.2 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.1 | 2.3 |
| 18.0 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.3 | 2.5 |
| 20.0 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.3 | 2.5 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 477.3. EMR-84-4A
-WELL SPUDDED 84 2 29

NW-ZAMA PIPELINE KM 477.3. EMR-84-4A
-DEMARRAGE DU PUITS LE 84 2 29

DUNE HOLLOW. UNFROZEN SATURATED SANDS AND SILTS WITH HIGH WATER TABLE.
CLEARED TO 24.1M IN WINTER 82/83.
BLADED. HOLLOWS SAND FILLED.
CABLE ON R.O.W. 4.5 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).
CABLE TO FULL DEPTH IN HOLE.

SITE 84-4A: TRAIL RIVER A - CABLE T2

**********

62 DEGREES 5.2 MINUTES NORTH
121 DEGREES 59.6 MINUTES WEST

62 DEGRES 5.2 MINUTES NORD
121 DEGRES 59.6 MINUTES OUEST

ELEVATION 153 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 19 | DATE 86 3 4 | DATE 86 5 28 | DATE 86 6 22 | DATE 86 7 16 | DATE 86 8 9 | DATE 86 9 29 | DATE 86 10 29 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | .4 | .2 | .2 | .1 | .1 | .5 | 3.2 | 4.9 | 3.5 | 2.1 | 1.1 |
| 2.0 | .9 | .8 | .8 | .6 | .5 | .5 | 1.7 | 3.7 | 3.4 | 2.6 | 1.9 |
| 3.0 | 1.4 | 1.4 | 1.4 | 1.1 | 1.0 | .9 | 1.2 | 2.6 | 2.9 | 2.6 | 2.4 |
| 4.0 | 1.8 | 1.8 | 1.8 | 1.5 | 1.4 | 1.3 | 1.3 | 2.0 | 2.5 | 2.5 | 2.7 |
| 6.0 | 2.0 | 2.0 | 2.0 | 1.7 | 1.7 | 1.6 | 1.5 | 1.7 | 2.1 | | 2.5 |
| 8.0 | 1.8 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 2.0 |
| 10.0 | 1.9 | 1.9 | 1.9 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.9 | 1.8 | 2.0 |
| 12.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 1.9 | 2.0 |
| 15.0 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.1 | 2.2 |
| 18.0 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.4 | 2.3 | 2.4 |
| 20.0 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.4 | 2.5 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 477.3. EMR-84-4A
-WELL SPUDDED 84 2 29

NW-ZAMA PIPELINE KM 477.3. EMR-84-4A
-DEMARRAGE DU PUITS LE 84 2 29

DUNE HOLLOW. UNFROZEN SATURATED SANDS AND SILTS WITH HIGH WATER TABLE. CLEARED TO 24.1M IN WINTER 82/83. BLADED. HOLLOWS SAND FILLED. CABLE OFF R.O.W. 20.5 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 10 SENSOR YSI44033 (PAIRED)

SITE 84-4A: TRAIL RIVER A - CABLE T3

**********

62 DEGREES 5.2 MINUTES NORTH
121 DEGREES 59.6 MINUTES WEST

62 DEGRES 5.2 MINUTES NORD
121 DEGRES 59.6 MINUTES OUEST

ELEVATION 153 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 19 | DATE 86 3 4 | DATE 86 4 9 | DATE 86 5 28 | DATE 86 6 22 | DATE 86 7 16 | DATE 86 8 9 | DATE 86 9 29 | DATE 86 10 29 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | .2 | -.0 | -.1 | -.2 | -.1 | .0 | 8.8 | 9.9 | 6.3 | 2.7 | .9 | .3 |
| 1.0 | .5 | .3 | .3 | .1 | .1 | .2 | 6.0 | 8.1 | 6.3 | 3.3 | 1.7 | .8 |
| 1.5 | .9 | .6 | .6 | .4 | .3 | .5 | 3.9 | 6.2 | 5.8 | 3.6 | 2.3 | 1.4 |
| 2.0 | 1.3 | 1.0 | .9 | .7 | .6 | .7 | 2.7 | 4.8 | 5.3 | 3.8 | 2.7 | 1.9 |
| 2.5 | 1.7 | 1.4 | 1.3 | 1.1 | .9 | .9 | 2.0 | 3.6 | 4.6 | 3.9 | 3.0 | 2.3 |
| 3.0 | 2.0 | 1.6 | 1.5 | 1.3 | 1.1 | 1.1 | 1.6 | 2.7 | 3.9 | 3.7 | 3.1 | 2.6 |
| 3.5 | 2.1 | 1.8 | 1.7 | 1.5 | 1.3 | 1.3 | 1.4 | 2.2 | 3.4 | 3.5 | 3.1 | 2.7 |
| 4.0 | 2.2 | 1.9 | 1.8 | 1.6 | 1.4 | 1.4 | 1.4 | 1.8 | 3.0 | 3.2 | 2.9 | 2.7 |
| 4.5 | 2.2 | 1.9 | 1.8 | 1.6 | 1.5 | 1.4 | 1.4 | 1.6 | 2.6 | 2.9 | 2.7 | 2.5 |
| 5.0 | 2.2 | 2.0 | 1.9 | 1.7 | 1.6 | 1.5 | 1.5 | 1.6 | 2.4 | 2.7 | 2.6 | 2.5 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 477.3. EMR-84-4A
-WELL SPUDDED 84 3 1

NW-ZAMA PIPELINE KM 477.3. EMR-84-4A
-DEMARRAGE DU PUITS LE 84 3 1

DUNE HOLLOW. UNFROZEN SATURATED SANDS AND SILTS WITH HIGH WATER TABLE. CLEARED TO 24.1M IN WINTER 82/83 BLADED. HOLLOWS SAND-FILLED. CABLE ON R.O.W. 1.0 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 11 SENSOR YSI44033 (PAIRED).

SITE 84-4A: TRAIL RIVER A - CABLE T4

**********

62 DEGREES 5.2 MINUTES NORTH
121 DEGREES 59.6 MINUTES WEST

62 DEGRES 5.2 MINUTES NORD
121 DEGRES 59.6 MINUTES OUEST

ELEVATION 153 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 19 | DATE 86 3 4 | DATE 86 4 9 | DATE 86 5 28 | DATE 86 6 22 | DATE 86 7 16 | DATE 86 8 9 | DATE 86 9 29 | DATE 86 10 29 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -.1 | -.7 | -.9 | -.7 | -.1 | 1.6 | 8.4 | | 6.8 | 3.0 | .9 | -.4 |
| 1.0 | .4 | .1 | .1 | .0 | -.0 | -.0 | 5.6 | 8.3 | 6.9 | 3.7 | 2.0 | .6 |
| 1.5 | .9 | .5 | .4 | .3 | .2 | .2 | 3.9 | 6.7 | 6.5 | 4.1 | 2.6 | 1.3 |
| 2.0 | 1.4 | 1.0 | .9 | | .6 | .6 | 2.6 | 5.2 | 5.9 | 4.4 | 3.2 | 2.0 |
| 2.5 | 1.6 | 1.2 | 1.1 | .9 | .7 | .7 | 1.7 | 3.7 | 5.0 | 4.1 | 3.3 | 2.2 |
| 3.0 | 1.9 | 1.5 | 1.4 | 1.2 | 1.0 | 1.0 | 1.4 | 2.7 | 4.3 | 3.9 | 3.3 | 2.6 |
| 3.5 | 2.1 | 1.7 | 1.6 | 1.4 | 1.2 | 1.2 | 1.3 | 2.1 | 3.6 | 3.6 | 3.2 | 2.6 |
| 4.0 | 2.1 | 1.8 | 1.7 | 1.5 | 1.3 | 1.2 | 1.2 | 1.7 | 3.2 | 3.3 | 3.0 | 2.6 |
| 4.5 | 2.1 | 1.8 | 1.7 | 1.6 | 1.4 | 1.4 | 1.3 | 1.6 | 2.8 | 3.0 | 2.8 | 2.5 |
| 5.0 | 2.1 | 1.9 | 1.8 | 1.7 | 1.5 | 1.5 | | 1.6 | 2.6 | 2.8 | 2.6 | 2.4 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 477.3. EMR-84-4A
-WELL SPUDDED 84 3 1

NW-ZAMA PIPELINE KM 477.3. EMR-84-4A
-DEMARRAGE DU PUITS LE 84 3 1

DUNE HOLLOW. UNFROZEN SATURATED SANDS AND SILTS WITH HIGH WATER TABLE. CLEARED TO 24.1M IN WINTER 82/83 BLADED. HOLLOWS SAND-FILLED. CABLE ON R.O.W. 2.3 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 11 SENSOR YSI44033 (PAIRED).

SITE 84-4B: TRAIL RIVER B - T1 (NEW)

**********

62 DEGREES 5.3 MINUTES NORTH
121 DEGREES 59.4 MINUTES WEST

62 DEGRES 5.3 MINUTES NORD
121 DEGRES 59.4 MINUTES OUEST

ELEVATION 165 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 19 | DATE 86 3 4 | DATE 86 5 28 | DATE 86 6 22 | DATE 86 7 16 | DATE 86 8 9 | DATE 86 9 29 | DATE 86 10 29 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -.4 | -1.8 | -2.5 | .3 | 6.8 | 12.9 | 13.1 | 7.9 | 3.5 | 1.3 | -.6 |
| 3.0 | 2.2 | 1.6 | 1.5 | .8 | .7 | 1.6 | 3.4 | 5.3 | 5.0 | 4.2 | 3.5 |
| 5.0 | 2.3 | 2.2 | 2.1 | 1.7 | 1.6 | 1.5 | 1.6 | 2.3 | 2.7 | 2.7 | 2.9 |
| 7.0 | 2.0 | 2.0 | 2.0 | 1.9 | 1.8 | 1.7 | 1.7 | 1.8 | | 2.0 | 2.0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE.
FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES.
ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 477.4. EMR-84-4B
-WELL SPUDDED 84 3 1

NW-ZAMA PIPELINE KM 477.4. EMR-84-4B
-DEMARRAGE DU PUITS LE 84 3 1

DUNE CREST. UNFROZEN DRY SANDS AND SILTS WITH LOW WATER TABLE.
CLEARED TO 24.5 M IN WINTER 82/83.
BLADED AND DUNE CREST LOWERED ¬1 M.
CABLE ON R.O.W. 5 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).
ONLY 4 SENSORS AS OF FEB.85 WITH NEW DEPTHS OF APPROX. 1,4,7&9 M.

SITE 84-4B: TRAIL RIVER B - CABLE T2

**********

62 DEGREES 5.3 MINUTES NORTH
121 DEGREES 59.4 MINUTES WEST

62 DEGRES 5.3 MINUTES NORD
121 DEGRES 59.4 MINUTES OUEST

ELEVATION 165 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 19 | DATE 86 3 4 | DATE 86 5 28 | DATE 86 6 22 | DATE 86 7 16 | DATE 86 8 9 | DATE 86 9 29 | DATE 86 10 29 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -5.6 | -5.3 | -5.4 | 7.6 | 10.4 | 16.1 | 13.3 | 6.1 | 1.7 | .2 | -2.2 |
| 1.0 | -1.9 | -2.5 | -3.0 | 2.4 | 6.3 | 11.2 | 11.1 | 6.7 | 2.8 | 1.6 | .2 |
| 1.5 | .1 | -.7 | -.9 | -.0 | 3.4 | 7.9 | 9.4 | 7.1 | 3.7 | 2.6 | 1.2 |
| 2.0 | .7 | .2 | .1 | -.0 | 1.8 | 5.7 | 7.9 | 7.2 | 4.5 | 3.4 | 1.9 |
| 2.5 | 1.2 | .7 | .6 | .2 | 1.0 | 4.2 | 6.7 | 7.0 | 5.0 | 4.1 | 2.7 |
| 3.0 | 1.6 | 1.0 | .9 | .4 | .7 | 3.1 | 5.5 | 6.6 | 5.3 | 5.1 | 3.1 |
| 3.5 | 2.0 | 1.4 | 1.3 | .7 | .7 | 2.4 | 4.4 | 6.0 | 5.3 | 4.7 | 3.5 |
| 4.0 | 2.2 | | 1.3 | .9 | .9 | 1.8 | 3.6 | 5.4 | 5.1 | 4.6 | 3.7 |
| 4.5 | 2.4 | 1.9 | 1.7 | 1.0 | 1.0 | 1.5 | 2.8 | 4.7 | 4.7 | 4.5 | 3.6 |
| 5.5 | 2.5 | 2.1 | 2.0 | 1.3 | 1.2 | 1.5 | 2.4 | 4.1 | 4.4 | 4.3 | 3.7 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 477.4. EMR-84-4B
-WELL SPUDDED 84 3 1

NW-ZAMA PIPELINE KM 477.4. EMR-84-4B
-DEMARRAGE DU PUITS LE 84 3 1

DUNE CREST. UNFROZEN DRY SANDS AND SILTS WITH LOW WATER TABLE.
CLEARED TO 24.5 M IN WINTER 82/83.
BLADED AND DUNE CREST LOWERED ¬ 1 M.
CABLE ON R.O.W. 1.5 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44032 (PAIRED).

SITE 84-4B: TRAIL RIVER B - CABLE T3

**********

62 DEGREES 5.3 MINUTES NORTH
121 DEGREES 59.4 MINUTES WEST

62 DEGRES 5.3 MINUTES NORD
121 DEGRES 59.4 MINUTES OUEST

ELEVATION 165 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 19 | DATE 86 3 4 | DATE 86 4 9 | DATE 86 5 28 | DATE 86 6 22 | DATE 86 7 16 | DATE 86 8 9 | DATE 86 9 29 | DATE 86 10 29 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -5.2 | -5.8 | -6.4 | -5.6 | 7.4 | 12.7 | 19.0 | 15.1 | 6.1 | .9 | -3.4 | -5.3 |
| 1.0 | -2.0 | -3.2 | -3.9 | -4.3 | 2.5 | 9.2 | 15.0 | 14.0 | 7.5 | 2.8 | .9 | -2.0 |
| 1.5 | .0 | -1.3 | -1.9 | -3.0 | -.1 | 5.7 | 11.4 | 12.3 | 8.1 | 3.7 | 2.0 | .2 |
| 2.0 | .8 | .2 | .1 | -1.7 | .0 | 2.9 | 8.3 | 10.3 | 8.3 | 4.7 | 3.1 | 1.4 |
| 2.5 | 1.2 | .6 | .5 | -.6 | .1 | 1.3 | 5.9 | 8.5 | 8.0 | 5.2 | 3.8 | 2.1 |
| 3.0 | 1.7 | 1.1 | .9 | .2 | .3 | .7 | 4.3 | 6.9 | 7.6 | 5.6 | 4.4 | 2.8 |
| 3.5 | 2.0 | 1.4 | 1.2 | .5 | .5 | .5 | 2.9 | 5.4 | 6.8 | 5.6 | 4.7 | 3.2 |
| 4.0 | 2.3 | | 1.5 | .9 | .8 | .7 | 2.2 | 4.4 | 6.2 | 5.6 | 4.8 | 3.6 |
| 4.5 | 2.6 | 2.0 | 1.8 | 1.2 | 1.0 | .9 | 1.8 | 3.6 | 5.5 | 5.3 | 4.8 | 3.8 |
| 5.5 | 2.7 | 2.2 | 2.1 | 1.6 | 1.4 | 1.2 | 1.4 | 2.4 | 4.2 | 4.5 | 4.4 | 3.8 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 477.4. EMR-84-4B
-WELL SPUDDED 84 3 1

NW-ZAMA PIPELINE KM 477.4. EMR-84-4B
-DEMARRAGE DU PUITS LE 84 3 1

DUNE CREST. UNFROZEN DRY SANDS AND SILTS WITH LOW WATER TABLE.
CLEARED TO 24.5 M IN WINTER 82/83.
BLADED AND DUNE CREST LOWERED ¬ 1 M.
CABLE ON R.O.W. 1 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 84-4B: TRAIL RIVER B - CABLE T4

**********

62 DEGREES 5.3 MINUTES NORTH
121 DEGREES 59.4 MINUTES WEST

62 DEGRES 5.3 MINUTES NORD
121 DEGRES 59.4 MINUTES OUEST

ELEVATION 165 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 19 | DATE 86 3 4 | DATE 86 4 9 | DATE 86 5 28 | DATE 86 6 22 | DATE 86 7 16 | DATE 86 8 9 | DATE 86 9 29 | DATE 86 10 29 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -2.6 | -4.1 | -4.9 | -4.2 | -.1 | 2.8 | 7.2 | 8.2 | 6.5 | 3.2 | 1.1 | -1.2 |
| 2.0 | .0 | -.5 | -.8 | -1.8 | -.9 | -.8 | .3 | 3.3 | 4.9 | 2.9 | 1.5 | -.5 |
| 3.0 | | | | | | | | | | | | |
| 4.0 | | | | | | | | | | | | |
| 6.0 | 1.7 | 1.5 | 1.5 | 1.3 | 1.0 | .9 | .9 | .9 | 1.7 | 2.2 | 2.6 | 2.5 |
| 8.0 | | | | | | | | | | | | |
| 10.0 | 1.5 | 1.6 | 1.6 | 1.5 | 1.5 | 1.5 | 1.4 | 1.4 | 1.3 | 1.4 | 1.6 | 1.5 |
| 12.0 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.5 | 1.5 | 1.4 | 1.4 | 1.5 |
| 15.0 | 1.5 | 1.5 | 1.5 | 1.5 | 1.4 | 1.4 | 1.4 | 1.4 | 1.3 | 1.3 | 1.3 | 1.3 |
| 18.0 | 1.8 | 1.8 | 1.8 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.6 | 1.6 | 1.8 | 1.6 |
| 20.0 | 1.8 | 1.8 | 1.8 | | 1.8 | 1.8 | 1.8 | | 1.7 | 1.7 | 1.8 | 1.7 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 477.4. EMR-84-4B
-WELL SPUDDED 84 3 1

NW-ZAMA PIPELINE KM 477.4. EMR-84-4B
-DEMARRAGE DU PUITS LE 84 3 1

DUNE CREST. UNFROZEN DRY SANDS AND SILTS WITH LOW WATER TABLE. CLEARED TO 24.5M IN WINTER 82/83. BLADED, AND DUNE CREST LOWERED ¬ 1 M. CABLE AT EDGE OF R.O.W. 15.5 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 11 SENSOR YSI44033 (PAIRED).

SITE 85-8A: MANNERS CREEK A - CABLE T1

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 5.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 5.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 13 | DATE 86 2 18 | DATE 86 3 12 | DATE 86 4 21 | DATE 86 5 28 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 6 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -.8 | -.7 | -.9 | -.5 | -.0 | .5 | 3.0 | 4.7 | 2.9 | 1.0 | -.4 | -.5 |
| 1.0 | -.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.0 | 2.2 | 2.1 | .9 | .3 | -.0 |
| 1.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.0 | 1.1 | .6 | .2 | -.1 |
| 2.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | .0 | .1 | .1 | -.0 |
| 2.5 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.1 | -.1 | -.1 | |
| 3.0 | -.3 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 3.5 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.2 | -.3 | -.2 | -.2 | -.2 |
| 4.0 | -.5 | -.5 | -.4 | -.4 | -.4 | -.4 | -.4 | -.3 | -.4 | -.4 | -.4 | -.4 |
| 4.5 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.3 | -.3 | -.3 | -.3 |
| 5.0 | -.5 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.3 | -.4 | -.4 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 556.9. EMR-85-8A
-WELL SPUDDED 85 2 22

NW-ZAMA PIPELINE KM 556.9. EMR-85-8A
-DEMARRAGE DU PUITS LE 85 2 22

THIN PEAT WITH THICK (10M) PERMAFROST.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 1.0 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 85-8A: MANNERS CREEK A - CABLE T2

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 5.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 5.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 13 | DATE 86 2 18 | DATE 86 3 12 | DATE 86 4 21 | DATE 86 5 28 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 6 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -1.5 | -1.4 | -1.6 | -.8 | .4 | 2.9 | 7.1 | 8.1 | 4.1 | 1.3 | -.3 | -1.3 |
| 1.0 | -.0 | -.2 | -.4 | -.3 | -.0 | .0 | 3.6 | 5.2 | 3.5 | 1.5 | .4 | .0 |
| 1.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | 1.3 | 2.8 | 2.6 | 1.2 | .4 | .0 |
| 2.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | .5 | 1.3 | .7 | .3 | -.0 |
| 2.5 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.1 | .0 | -.0 | -.1 |
| 3.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.1 | -.1 | -.1 | -.1 |
| 3.5 | -.3 | -.3 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 4.0 | -.4 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 |
| 4.5 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 |
| 5.0 | -.5 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.3 | -.3 | -.4 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 556.9. EMR-85-8A
-WELL SPUDDED 85 2 22

NW-ZAMA PIPELINE KM 556.9. EMR-85-8A
-DEMARRAGE DU PUITS LE 85 2 22

THIN PEAT WITH THICK(10M) PERMAFROST.
NO PREVIOUS CLEARING.
CABLE ON R.O.W 1.6 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 85-8A: MANNERS CREEK A - CABLE T3

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 5.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 5.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 13 | DATE 86 2 18 | DATE 86 3 12 | DATE 86 4 21 | DATE 86 5 28 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 6 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -.5 | -1.4 | -1.5 | -1.1 | -.1 | -.1 | .2 | .9 | .6 | .0 | -1.2 | -.3 |
| 2.0 | -.2 | -.2 | -.4 | -.7 | -.3 | -.2 | -.2 | -.2 | -.1 | -.1 | -.1 | -.1 |
| 3.0 | -.3 | | -.3 | -.5 | -.4 | -.3 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 |
| 4.0 | -.5 | -.5 | -.5 | -.5 | -.5 | -.5 | -.4 | -.5 | -.4 | -.4 | -.4 | -.4 |
| 6.0 | -.5 | | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 | -.4 |
| 8.0 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 |
| 10.0 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 |
| 12.0 | -.1 | | -.1 | | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 14.0 | 0.0 | 0.0 | 0.0 | .0 | 0.0 | .0 | .0 | 0.0 | 0.0 | .0 | .0 | -.0 |
| 17.0 | .3 | .4 | .3 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .3 |
| 20.0 | .6 | | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE.
FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES.
ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 556.9. EMR-85-8A
-WELL SPUDDED 85 3 6

NW-ZAMA PIPELINE KM 556.9. EMR-85-8A
-DEMARRAGE DU PUITS LE 85 3 6

THIN PEAT WITH THICK (10M) PERMAFROST.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 9.7 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 85-8A: MANNERS CREEK A - CABLE T4

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 5.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 5.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 13 | DATE 86 2 18 | DATE 86 3 12 | DATE 86 4 21 | DATE 86 5 28 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 6 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -1.8 | -2.6 | -2.2 | -1.1 | -.2 | -.2 | -.1 | -.1 | -.1 | -.1 | -1.7 | -.9 |
| 2.0 | -.3 | -.5 | -1.0 | -1.0 | -.5 | -.4 | -.4 | -.3 | -.3 | -.3 | -.3 | -.3 |
| 3.0 | -.3 | -.4 | -.6 | -.8 | -.6 | -.5 | -.4 | -.4 | -.3 | -.3 | -.3 | -.3 |
| 4.0 | -.3 | -.3 | -.4 | -.6 | -.5 | -.5 | -.4 | -.4 | -.4 | -.3 | -.3 | -.3 |
| 6.0 | -.3 | -.3 | -.3 | -.3 | -.4 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.4 |
| 8.0 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 |
| 10.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 12.0 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 | 0.0 | -.0 | -.0 | -.0 | -.0 | |
| 14.0 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 |
| 17.0 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .4 |
| 20.0 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 556.9. EMR-85-8A
-WELL SPUDDED 85 3 3

NW-ZAMA PIPELINE KM 556.9. EMR-85-8A
-DEMARRAGE DU PUITS LE 85 3 3

THIN PEAT WITH THICK (10M) PERMAFROST.
NO PREVIOUS CLEARING.
CABLE OFF R.O.W. 22.4 M W OF PIPELINE
IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 85-8B: MANNERS CREEK B - CABLE T1

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 5.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 5.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 13 | DATE 86 2 18 | DATE 86 3 12 | DATE 86 4 21 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 6 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | | -1.1 | -1.3 | -1.0 | -.2 | -.2 | -.2 | -.2 | -.1 | -.1 | -.3 | -.2 |
| 1.0 | | -.2 | -.3 | -.4 | -.2 | -.2 | -.2 | -.2 | -.2 | -.1 | -.1 | -.1 |
| 1.5 | -.2 | -.3 | -.2 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 |
| 2.0 | -.3 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 2.5 | -.2 | -.2 | -.1 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 3.0 | -.2 | -.1 | -.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 3.5 | -.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 4.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 4.5 | -.0 | -.1 | -.0 | -.1 | -.1 | -.1 | -.0 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 5.0 | .1 | .0 | .1 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 557.2. EMR-85-8B
-WELL SPUDDED 85 2 22

NW-ZAMA PIPELINE KM 557.2. EMR-85-8B
-DEMARRAGE DU PUITS LE 85 2 22

THICK PEAT WITH THIN (4M) PERMAFROST.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 1.6 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 85-8B: MANNERS CREEK B - CABLE T2

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 5.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 5.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 13 | DATE 86 2 18 | DATE 86 3 12 | DATE 86 4 21 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 6 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -3.3 | -2.7 | -2.3 | -1.0 | -.1 | .1 | 1.2 | 2.4 | 1.4 | .1 | -2.0 | -1.7 |
| 1.0 | -.5 | -.9 | -.4 | -.4 | -.2 | -.1 | -.1 | -.1 | -.1 | -.1 | -.2 | -.1 |
| 1.5 | -.1 | -.1 | -.1 | -.2 | -.2 | -.2 | -.1 | -.1 | .2 | .2 | .1 | -.1 |
| 2.0 | -.1 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 2.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.0 | -.1 | -.1 | -.1 | -.1 |
| 3.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 3.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 4.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 4.5 | .0 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 |
| 5.0 | .1 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 | .0 | -.1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 557.2. EMR-85-8B
-WELL SPUDDED 85 2 22

NW-ZAMA PIPELINE KM 557.2. EMR-85-8B
-DEMARRAGE DU PUITS LE 85 2 22

THICK PEAT WITH THIN (4M) PERMAFROST.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. .95 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 85-8B: MANNERS CREEK B - CABLE T3

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 5.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 5.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 13 | DATE 86 2 18 | DATE 86 3 12 | DATE 86 4 21 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 6 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -.6 | -1.5 | -.5 | -.4 | -.3 | -.2 | -.0 | .3 | .3 | -.1 | -.5 | -1.1 |
| 2.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 3.0 | -.2 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | |
| 4.0 | -.1 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | 0.0 | .0 | 0.0 | -.0 |
| 6.0 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 |
| 8.0 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 |
| 10.0 | .6 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 |
| 12.0 | .8 | .7 | .7 | .6 | .6 | .7 | .7 | .6 | .6 | .6 | .6 | .6 |
| 14.0 | 1.0 | .8 | .8 | .8 | .8 | .8 | .8 | .9 | | .8 | .8 | .8 |
| 17.0 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 20.0 | 1.5 | | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.4 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 557.2. EMR-85-8B
-WELL SPUDDED 85 3 6

NW-ZAMA PIPELINE KM 557.2. EMR-85-8B
-DEMARRAGE DU PUITS LE 85 3 6

THICK PEAT WITH THIN (4M) PERMAFROST.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 7.5 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 85-8B: MANNERS CREEK B - CABLE T4

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 5.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 5.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 13 | DATE 86 2 18 | DATE 86 3 12 | DATE 86 4 21 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 6 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | | -2.7 | -1.8 | -.3 | -.2 | -.2 | -.1 | .6 | .7 | .1 | -4.2 | -2.7 |
| 2.0 | | -1.6 | -.5 | -.2 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -1.9 | -1.1 |
| 3.0 | -.2 | -.4 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -1.1 | -.3 |
| 4.0 | -.0 | -.0 | 0.0 | 0.0 | 0.0 | 0.0 | .0 | 0.0 | 0.0 | 0.0 | -.2 | -.0 |
| 6.0 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 |
| 8.0 | .2 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 |
| 10.0 | .4 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 |
| 12.0 | .6 | | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .7 |
| 14.0 | .8 | .9 | .9 | .9 | .9 | .9 | .9 | .9 | .9 | .9 | .9 | .9 |
| 17.0 | 1.3 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 | 1.1 |
| 20.0 | 1.5 | 1.4 | 1.4 | 1.4 | 1.4 | 1.5 | 1.5 | 1.5 | 1.5 | 1.4 | 1.4 | 1.4 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 557.2. EMR-85-8B
-WELL SPUDDED 85 3 5

NW-ZAMA PIPELINE KM 557.2. EMR-85-8B
-DEMARRAGE DU PUITS LE 85 3 5

THICK PEAT WITH THIN (4M) PERMAFROST.
NO PREVIOUS CLEARING.
CABLE OFF R.O.W. 19 M E OF PIPELINE IN 38MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 85-8C: MANNERS CREEK C - CABLE T1

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 5.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 5.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 1 13 T(C) | DATE 86 2 18 T(C) | DATE 86 3 12 T(C) | DATE 86 4 21 T(C) | DATE 86 5 27 T(C) | DATE 86 6 22 T(C) | DATE 86 7 15 T(C) | DATE 86 8 6 T(C) | DATE 86 9 29 T(C) | DATE 86 10 25 T(C) | DATE 86 11 20 T(C) | DATE 86 12 16 T(C) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| .5 | -2.9 | -5.0 | -4.6 | -1.5 | -.2 | .2 | 1.5 | 2.4 | 1.3 | .0 | -3.3 | -2.7 |
| 1.0 | -.2 | -2.6 | -2.3 | -1.3 | -.4 | -.4 | -.3 | -.3 | -.2 | -.2 | -.9 | -.2 |
| 1.5 | -.3 | -.6 | -.9 | -.8 | -.4 | -.3 | -.3 | -.3 | -.2 | -.2 | -.2 | -.3 |
| 2.0 | -.2 | -.3 | -.4 | -.5 | -.4 | -.4 | -.3 | -.3 | -.3 | -.3 | -.3 | -.2 |
| 2.5 | -.2 | -.2 | -.2 | -.3 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 3.0 | -.1 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | |
| 3.5 | -.1 | -.0 | -.1 | -.0 | -.0 | -.1 | -.0 | -.1 | -.0 | -.0 | -.0 | -.1 |
| 4.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 4.5 | -.1 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 | -.0 | -.1 |
| 5.0 | .0 | .1 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .1 | .0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 557.4. EMR-85-8C
-WELL SPUDDED 85 2 22

NW-ZAMA PIPELINE KM 557.4. EMR-85-8C
-DEMARRAGE DU PUITS LE 85 2 22

THIN PEAT WITH THIN (4M) PERMAFROST.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 1.2 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 85-8C: MANNERS CREEK C - CABLE T2

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 5.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 5.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 13 | DATE 86 2 18 | DATE 86 4 21 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 6 | DATE 86 9 29 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -2.2 | -3.7 | -.3 | -.1 | .6 | 4.8 | 9.0 | 3.8 | .3 | -5.3 | -2.5 |
| 1.0 | -.4 | -.6 | -.2 | -.2 | -.1 | -.1 | .6 | 1.3 | .4 | -1.1 | -.1 |
| 1.5 | -.2 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | .4 | .2 | .1 | .0 |
| 2.0 | -.2 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.0 | -.0 | -.0 |
| 2.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 3.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.1 | -.2 |
| 3.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.0 | -.1 | -.0 | -.0 | -.0 | -.1 |
| 4.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 4.5 | -.0 | .0 | 0.0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | 0.0 |
| 5.0 | -.0 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 557.4. EMR-85-8C
-WELL SPUDDED 85 2 22

NW-ZAMA PIPELINE KM 557.4. EMR-85-8C
-DEMARRAGE DU PUITS LE 85 2 22

THIN PEAT WITH THIN (4M) PERMAFROST.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 1.45 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 85-8C: MANNERS CREEK C - CABLE T3

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 5.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 5.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 2 18 | DATE 86 1 12 | DATE 86 4 21 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 6 | DATE 86 9 29 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -.5 | -.2 | -.2 | -.2 | -.2 | -.1 | -.1 | .0 | -.0 | -1.5 | -.6 |
| 2.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.1 | -.2 | -.2 | -.1 | -.1 | -.1 |
| 3.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 4.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 6.0 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 |
| 8.0 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 |
| 10.0 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 |
| 12.0 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .6 | .7 |
| 14.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| 17.0 | 1.4 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| 20.0 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 557.4. EMR-85-8C
-WELL SPUDDED 85 3 6

NW-ZAMA PIPELINE KM 557.4. EMR-85-8C
-DEMARRAGE DU PUITS LE 85 3 6

THIN PEAT WITH THIN (4M) PERMAFROST.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 8.55 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 85-8C: MANNERS CREEK C - CABLE T4

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 5.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 5.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 13 | DATE 86 2 18 | DATE 86 3 12 | DATE 86 4 21 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 6 | DATE 86 9 29 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | | -.3 | -.3 | -.4 | -.2 | -.2 | -.2 | -.2 | -.2 | -.1 | -.2 | -.3 |
| 2.0 | | -.2 | -.2 | -.2 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 |
| 3.0 | | -.1 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 4.0 | -.0 | -.0 | -.0 | -.1 | -.1 | -.1 | -.0 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 6.0 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 |
| 8.0 | .3 | .3 | .2 | .2 | .2 | .2 | .3 | .2 | .2 | .2 | .3 | .2 |
| 10.0 | .5 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 |
| 12.0 | .7 | .7 | .7 | .6 | .7 | .7 | .7 | .7 | .7 | .6 | .6 | .6 |
| 14.0 | .9 | .9 | .8 | .8 | .8 | .8 | .9 | .8 | .8 | .8 | .8 | .8 |
| 17.0 | 1.1 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| 20.0 | 1.4 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 557.4. EMR-85-8C
-WELL SPUDDED 85 3 6

NW-ZAMA PIPELINE KM 557.4. EMR-85-8C
-DEMARRAGE DU PUITS LE 85 3 6

THIN PEAT WITH THIN (4M) PERMAFROST.
NO PREVIOUS CLEARING.
CABLE OFF R.O.W. 20 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 85-9: PUMP STATION 3 - T1

**********

61 DEGREES 23.0 MINUTES NORTH
120 DEGREES 55.0 MINUTES WEST

61 DEGRES 23.0 MINUTES NORD
120 DEGRES 55.0 MINUTES OUEST

ELEVATION 217 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 7 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -4.3 | -6.4 | -3.3 | -4.2 | 2.8 | 9.4 | 14.3 | 13.0 | 6.6 | .9 | -7.3 | -5.6 |
| 1.0 | -1.4 | -2.4 | -1.3 | -1.6 | 1.0 | 5.7 | 11.2 | 11.6 | 7.0 | 3.5 | -1.3 | -1.7 |
| 1.5 | .3 | -.0 | -.4 | -.4 | -.1 | 3.3 | 8.5 | 9.9 | 7.0 | 4.1 | 1.0 | .2 |
| 2.0 | .7 | .4 | .2 | .1 | .1 | 1.7 | 6.2 | 8.1 | 6.8 | 4.6 | 2.6 | 1.4 |
| 2.5 | 1.0 | .7 | .4 | .4 | .3 | 1.0 | 4.4 | 6.4 | 6.3 | 4.8 | | 1.9 |
| 3.0 | 1.2 | .9 | .7 | .6 | .5 | .8 | 3.2 | 5.1 | 5.9 | 4.8 | 3.6 | 2.4 |
| 3.5 | 1.4 | 1.1 | .9 | .8 | .6 | .8 | 2.3 | 4.0 | 5.3 | 4.7 | 3.7 | 2.7 |
| 4.0 | 1.5 | 1.2 | 1.0 | .9 | .7 | .8 | 1.8 | 3.2 | 4.7 | 4.4 | 3.7 | 2.9 |
| 4.5 | 1.7 | 1.4 | 1.2 | 1.1 | .9 | .9 | 1.5 | 2.6 | 4.1 | 4.2 | 3.7 | 3.1 |
| 5.0 | 1.8 | 1.5 | 1.4 | 1.3 | 1.1 | 1.0 | 1.4 | 2.2 | 3.7 | 3.9 | 3.6 | 3.1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 582.5. EMR-85-9
-WELL SPUDDED 85 2 25

NW-ZAMA PIPELINE KM 582.5. EMR-85-9
-DEMARRAGE DU PUITS LE 85 2 25

FROST-FREE GRANULAR SOILS.
PIPE PREVIOUSLY TRAVERSED LONG STRETCH OF FROZEN GROUND.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 2.2 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 85-9: PUMP STATION 3 - T2

**********

61 DEGREES 23.0 MINUTES NORTH
120 DEGREES 55.0 MINUTES WEST

61 DEGRES 23.0 MINUTES NORD
120 DEGRES 55.0 MINUTES OUEST

ELEVATION 217 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 7 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -13.4 | -10.0 | -4.6 | -5.2 | 22.5 | 32.2 | 23.2 | 19.3 | 8.4 | -.9 | -12.9 | -11.8 |
| 1.0 | -2.5 | -2.1 | -1.1 | -1.2 | 4.9 | 10.4 | 14.5 | 12.7 | 6.3 | 1.7 | -1.9 | -2.6 |
| 1.5 | .1 | .0 | -.1 | -.1 | -.1 | 8.3 | 11.6 | 11.5 | 6.8 | 3.4 | 1.1 | .3 |
| 2.0 | .6 | .4 | .2 | .2 | .2 | 5.8 | 8.8 | 9.6 | 6.8 | 4.2 | 2.1 | 1.0 |
| 2.5 | .9 | .6 | .5 | .4 | .3 | 3.8 | 6.4 | 7.8 | 6.4 | 4.4 | 2.7 | 1.4 |
| 3.0 | 1.2 | .9 | .7 | .6 | .5 | 2.6 | 4.9 | 6.4 | 6.3 | 4.9 | 3.5 | 2.2 |
| 3.5 | 1.4 | 1.1 | .9 | .8 | .7 | 1.9 | 3.8 | 5.3 | 5.9 | 5.0 | 3.7 | 2.7 |
| 4.0 | 1.6 | 1.3 | 1.1 | 1.0 | .8 | 1.5 | 2.9 | 4.3 | 5.3 | 4.8 | 4.0 | 3.0 |
| 4.5 | 1.8 | 1.4 | 1.2 | 1.1 | 1.0 | 1.2 | 2.3 | 3.4 | 4.7 | 4.5 | 4.0 | 3.2 |
| 5.0 | 1.9 | 1.6 | 1.4 | 1.2 | 1.1 | | 1.9 | 2.9 | 4.3 | 4.3 | 3.9 | 3.3 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE.
FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES.
ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 582.5. EMR-85-9
-WELL SPUDDED 85 2 25

NW-ZAMA PIPELINE KM 582.5. EMR-85-9
-DEMARRAGE DU PUITS LE 85 2 25

FROST-FREE GRANULAR SOILS.
PIPE PREVIOUSLY TRAVERSED LONG STRETCH OF FROZEN GROUND.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 1.9 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 85-9: PUMP STATION 3 - T3

**********

61 DEGREES 23.0 MINUTES NORTH
120 DEGREES 55.0 MINUTES WEST

61 DEGRES 23.0 MINUTES NORD
120 DEGRES 55.0 MINUTES OUEST

ELEVATION 217 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 7 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | .5 | .3 | .2 | .2 | .2 | 6.0 | 9.1 | 10.1 | 7.5 | 4.8 | 1.9 | 1.0 |
| 2.0 | 1.2 | .9 | .9 | .7 | .6 | 2.8 | 5.1 | 6.7 | 6.8 | 5.4 | 3.8 | 2.5 |
| 3.0 | 1.6 | 1.3 | 1.1 | 1.0 | .9 | 1.5 | 3.0 | 4.4 | 5.5 | 5.1 | 4.2 | 3.2 |
| 4.0 | 1.9 | 1.6 | 1.4 | 1.3 | 1.2 | 1.3 | 2.0 | 2.9 | 4.4 | 4.4 | 4.1 | 3.5 |
| 6.0 | 2.0 | 1.9 | 1.7 | 1.6 | 1.5 | 1.4 | 1.5 | 1.8 | 2.7 | 3.0 | 3.2 | 3.1 |
| 8.0 | 2.0 | 2.0 | 1.9 | 1.9 | 1.8 | 1.7 | 1.7 | 1.7 | 2.0 | 2.3 | 2.5 | 2.6 |
| 10.0 | 1.9 | 2.0 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.9 | 2.0 | 2.1 |
| 12.0 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.8 |
| 14.0 | 2.1 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| 17.0 | 2.2 | 2.3 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 |
| 20.0 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 582.5. EMR-85-9
-WELL SPUDDED 85 2 25

NW-ZAMA PIPELINE KM 582.5. EMR-85-9
-DEMARRAGE DU PUITS LE 85 2 25

FROST-FREE GRANULAR SOILS.
PIPE PREVIOUSLY TRAVERSED LONG STRETCH OF FROZEN GROUND.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 6 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 85-9: PUMP STATION 3 - T4

**********

61 DEGREES 23.0 MINUTES NORTH
120 DEGREES 55.0 MINUTES WEST

61 DEGRES 23.0 MINUTES NORD
120 DEGRES 55.0 MINUTES OUEST

ELEVATION 217 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 7 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -.6 | -.4 | -.2 | -.3 | -.1 | 4.3 | 7.8 | 8.2 | 6.4 | 4.2 | -.1 | .0 |
| 2.0 | .7 | .6 | .4 | .3 | .2 | 1.5 | 3.9 | 5.1 | 5.5 | 4.4 | 3.0 | 1.8 |
| 3.0 | 1.2 | 1.0 | .8 | .7 | .6 | .9 | 2.0 | 3.2 | 4.4 | 4.1 | 3.4 | 2.5 |
| 4.0 | 1.4 | 1.3 | 1.0 | 1.0 | .8 | .8 | 1.3 | 2.0 | 3.3 | 3.4 | 3.2 | 2.7 |
| 6.0 | 1.7 | 1.6 | 1.4 | 1.4 | 1.2 | 1.2 | 1.2 | 1.3 | 2.0 | 2.3 | 2.4 | 2.5 |
| 8.0 | 1.7 | 1.8 | 1.6 | 1.6 | 1.5 | 1.5 | 1.5 | 1.4 | 1.6 | 1.8 | 1.9 | 2.1 |
| 10.0 | 1.8 | 1.9 | 1.8 | 1.8 | 1.7 | 1.7 | 1.7 | 1.6 | 1.6 | 1.7 | 1.8 | 1.8 |
| 12.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.8 | 1.8 | 1.8 | 1.8 | 1.7 | 1.7 | 1.8 | 1.8 |
| 14.0 | 2.0 | 2.0 | 1.9 | 2.0 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 | 1.9 |
| 17.0 | 2.2 | 2.2 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |
| 20.0 | 2.3 | | | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 | 2.3 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 582.5. EMR-85-9
-WELL SPUDDED 85 2 25

NW-ZAMA PIPELINE KM 582.5. EMR-85-9
-DEMARRAGE DU PUITS LE 85 2 25

FROST-FREE GRANULAR SOILS.
PIPE PREVIOUSLY TRAVERSED LONG STRETCH OF FROZEN GROUND.
NO PREVIOUS CLEARING.
CABLE OFF R.O.W 18.6 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 85-10A: MACKENZIE HWY S - T1

**********

61 DEGREES 21.0 MINUTES NORTH
120 DEGREES 52.0 MINUTES WEST

61 DEGRES 21.0 MINUTES NORD
120 DEGRES 52.0 MINUTES OUEST

ELEVATION 243 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -2.1 | -2.4 | -1.0 | -.8 | 3.6 | 9.1 | 12.6 | 11.4 | 6.5 | 3.0 | -1.1 | -1.6 |
| 1.0 | .2 | .1 | .3 | .2 | .5 | 5.8 | 8.9 | 9.5 | 6.7 | 4.3 | 1.0 | .5 |
| 1.5 | .8 | .7 | .6 | .5 | .7 | 4.0 | 6.8 | 8.0 | 6.6 | 4.8 | 2.7 | 1.8 |
| 2.0 | .9 | .7 | .6 | .6 | .6 | 2.6 | 5.0 | 6.4 | 6.0 | 4.8 | 3.4 | 2.2 |
| 2.5 | 1.1 | .9 | .8 | .7 | .7 | 1.8 | 3.7 | 5.1 | 5.6 | 4.7 | 3.7 | |
| 3.0 | 1.2 | 1.0 | .9 | .9 | .8 | 1.4 | 2.9 | 4.2 | 5.1 | 4.6 | 3.8 | 2.9 |
| 3.5 | 1.2 | 1.1 | 1.0 | .9 | .9 | 1.2 | 2.2 | 3.4 | 4.5 | 4.3 | 3.8 | 3.0 |
| 4.0 | 1.1 | 1.0 | .8 | .9 | .8 | 1.0 | 1.7 | 2.7 | 3.9 | 3.9 | 3.4 | 2.9 |
| 4.5 | 1.1 | 1.0 | .9 | .9 | .8 | .9 | 1.4 | 2.2 | 3.4 | 3.5 | 3.3 | 2.9 |
| 5.0 | 1.3 | 1.2 | 1.1 | 1.1 | 1.0 | 1.0 | 1.3 | 1.9 | 3.1 | 3.3 | 3.2 | 2.9 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 587.5. EMR-85-10A
-WELL SPUDDED 85 2 27

NW-ZAMA PIPELINE KM 587.5. EMR-85-10A
-DEMARRAGE DU PUITS LE 85 2 27

THIN PEAT OVER UNFROZEN TILL AND SHALLOW BEDROCK. NO PREVIOUS CLEARING. CABLE ON R.O.W. 2 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 85-10A: MACKENZIE HWY S - T2

**********

61 DEGREES 21.0 MINUTES NORTH
120 DEGREES 52.0 MINUTES WEST

61 DEGRES 21.0 MINUTES NORD
120 DEGRES 52.0 MINUTES OUEST

ELEVATION 243 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -2.3 | -1.6 | -1.0 | -1.0 | 4.2 | 11.7 | 15.3 | 12.6 | 6.7 | 1.6 | -2.2 | -2.0 |
| 1.0 | .5 | .5 | .3 | .3 | 1.2 | 7.2 | 10.7 | 10.7 | 7.0 | 4.0 | 2.0 | .7 |
| 1.5 | 1.1 | 1.0 | .9 | .8 | 1.3 | 5.1 | 8.2 | 9.1 | 7.0 | 4.8 | 3.0 | 1.7 |
| 2.0 | 1.3 | 1.1 | 1.1 | .9 | 1.1 | 3.5 | 6.1 | 7.4 | 6.6 | 5.0 | 3.6 | 2.3 |
| 2.5 | 1.4 | 1.2 | 1.1 | 1.0 | 1.0 | 2.4 | 4.6 | 6.0 | 6.1 | 5.0 | 3.9 | 2.7 |
| 3.0 | 1.4 | 1.3 | 1.1 | 1.1 | 1.0 | 1.8 | 3.4 | 4.8 | 5.5 | 4.9 | 4.0 | 3.0 |
| 3.5 | 1.4 | 1.2 | 1.0 | 1.0 | .9 | 1.3 | 2.5 | 3.8 | 4.8 | 4.4 | 3.7 | 2.8 |
| 4.0 | 1.4 | 1.2 | 1.1 | 1.0 | .9 | 1.2 | 2.0 | 3.1 | 4.3 | 4.2 | 3.7 | 3.1 |
| 4.5 | 1.3 | 1.2 | 1.1 | 1.0 | .9 | 1.0 | 1.6 | 2.5 | 3.7 | 3.8 | 3.5 | 3.0 |
| 5.0 | 1.5 | 1.3 | 1.2 | 1.2 | 1.1 | 1.1 | 1.5 | 2.2 | 3.4 | 3.5 | 3.4 | 3.1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 587.5. EMR-85-10A
-WELL SPUDDED 85 2 27

NW-ZAMA PIPELINE KM 587.5. EMR-85-10A
-DEMARRAGE DU PUITS LE 85 2 27

THIN PEAT OVER UNFROZEN TILL AND SHALLOW BEDROCK. NO PREVIOUS CLEARING. CABLE ON R.O.W. 1.5 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 10 SENSOR YSI44033 (PAIRED).

SITE 85-10A: MACKENZIE HWY S - T3

**********

61 DEGREES 21.0 MINUTES NORTH
120 DEGREES 52.0 MINUTES WEST

61 DEGRES 21.0 MINUTES NORD
120 DEGRES 52.0 MINUTES OUEST

ELEVATION 243 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -1.0 | -1.1 | -.2 | -.2 | .0 | 4.2 | 8.6 | 9.4 | 6.5 | 3.6 | -1.1 | -.8 |
| 2.0 | .7 | .5 | .4 | .4 | .4 | 1.6 | 4.6 | 6.3 | 6.0 | 4.4 | 3.0 | 2.0 |
| 3.0 | 1.0 | .8 | .7 | .7 | .6 | .8 | 2.4 | 3.9 | 4.9 | 4.3 | 3.5 | 2.6 |
| 4.0 | 1.1 | 1.0 | .9 | .8 | .7 | .8 | 1.5 | 2.6 | 3.8 | 3.7 | 3.1 | 2.6 |
| 6.0 | 1.3 | 1.2 | 1.2 | 1.1 | 1.1 | 1.0 | 1.1 | 1.4 | 2.3 | 2.6 | 2.7 | 2.6 |
| 8.0 | 1.3 | 1.3 | 1.2 | 1.2 | 1.2 | 1.1 | 1.1 | 1.2 | 1.7 | 1.9 | 2.1 | 2.2 |
| 10.0 | 1.4 | 1.4 | 1.4 | 1.4 | 1.3 | 1.3 | 1.3 | 1.3 | 1.4 | 1.6 | 1.7 | 1.9 |
| 12.0 | 1.3 | 1.4 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.4 | 1.5 | 1.5 |
| 14.0 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.4 | 1.5 | | 1.5 |
| 17.0 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 |
| 20.0 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | 1.7 | | 1.6 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 587.5. EMR-85-10A
-WELL SPUDDED 85 2 27

NW-ZAMA PIPELINE KM 587.5. EMR-85-10A
-DEMARRAGE DU PUITS LE 85 2 27

THIN PEAT OVER UNFROZEN TILL AND SHALLOW BEDROCK. NO PREVIOUS CLEARING. CABLE ON R.O.W. 6 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE. 11 SENSOR YSI44033 (PAIRED). PVC CASING SHORTENED.

SITE 85-10A: MACKENZIE HWY S - T4

**********

61 DEGREES 21.0 MINUTES NORTH
120 DEGREES 52.0 MINUTES WEST

61 DEGRES 21.0 MINUTES NORD
120 DEGRES 52.0 MINUTES OUEST

ELEVATION 243 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -.4 | -.2 | -.1 | -.1 | .0 | .0 | 2.8 | 3.4 | 3.8 | 2.8 | 1.9 | 1.2 |
| 2.0 | .5 | .4 | .3 | .3 | .3 | .3 | .8 | 1.7 | 3.0 | 2.5 | 2.1 | 1.5 |
| 3.0 | .8 | .8 | .6 | .6 | .5 | .5 | .6 | 1.1 | 2.3 | 2.3 | 2.2 | 1.8 |
| 4.0 | 1.0 | .9 | .8 | .8 | .7 | .7 | .7 | .9 | 1.8 | 1.9 | 1.9 | 1.8 |
| 6.0 | 1.3 | 1.2 | 1.1 | 1.1 | 1.0 | 1.0 | 1.0 | 1.0 | 1.3 | 1.5 | 1.6 | 1.7 |
| 8.0 | 1.2 | 1.3 | 1.2 | 1.2 | 1.1 | 1.1 | 1.1 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 |
| 10.0 | 1.3 | 1.4 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.4 | 1.4 |
| 12.0 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| 14.0 | 1.4 | 1.5 | 1.5 | 1.5 | 1.5 | 1.4 | 1.5 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 |
| 17.0 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| 20.0 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 | 1.6 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 587.5. EMR-85-10A
-WELL SPUDDED 85 2 27

NW-ZAMA PIPELINE KM 587.5. EMR-85-10A
-DEMARRAGE DU PUITS LE 85 2 27

THIN PEAT OVER UNFROZEN TILL AND SHALLOW BEDROCK. NO PREVIOUS CLEARING. CABLE OFF R.O.W. 19 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 85-10B: MACKENZIE HWY S. B - T1

**********

61 DEGREES 21.0 MINUTES NORTH
120 DEGREES 52.0 MINUTES WEST

61 DEGRES 21.0 MINUTES NORD
120 DEGRES 52.0 MINUTES OUEST

ELEVATION 242 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -2.1 | -1.8 | -.6 | -5.2 | 3.4 | 7.3 | 13.8 | 12.2 | 5.9 | 1.2 | -2.6 | -2.8 |
| 1.0 | -.1 | -.1 | -.1 | -.7 | -.1 | -.1 | 3.2 | 7.0 | 5.6 | 3.1 | -.3 | .2 |
| 1.5 | .2 | .2 | .2 | .0 | .2 | .4 | 1.1 | 3.0 | 4.2 | 3.1 | 1.9 | 1.4 |
| 2.0 | .3 | .3 | .3 | .2 | .4 | .4 | .7 | 1.5 | 2.7 | 2.4 | 1.9 | 1.4 |
| 2.5 | .5 | .5 | .4 | .3 | .4 | .5 | .6 | 1.0 | 1.7 | 1.7 | 1.5 | 1.3 |
| 3.0 | .4 | .4 | .4 | .4 | .4 | .4 | .6 | .8 | 1.4 | 1.4 | 1.3 | 1.2 |
| 3.5 | .5 | .5 | .5 | .4 | .5 | .5 | .6 | .7 | 1.2 | 1.3 | 1.3 | 1.2 |
| 4.0 | .5 | .5 | .5 | .3 | .5 | .5 | .5 | .6 | 1.0 | 1.1 | 1.1 | 1.1 |
| 4.5 | .4 | .4 | .4 | .6 | .4 | .4 | .4 | .5 | .7 | .9 | .9 | .9 |
| 5.0 | .5 | .5 | .5 | .6 | .5 | .5 | .5 | .6 | .8 | .9 | .9 | 1.0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 587.9. EMR-85-10B
-WELL SPUDDED 85 2 27

NW-ZAMA PIPELINE KM 587.9. EMR-85-10B
-DEMARRAGE DU PUITS LE 85 2 27

VERY THIN PERMAFROST (FROZEN PEAT) OVER UNFROZEN TILL.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 1.7 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 85-10B: MACKENZIE HWY S. B - T2

**********

61 DEGREES 21.0 MINUTES NORTH
120 DEGREES 52.0 MINUTES WEST

61 DEGRES 21.0 MINUTES NORD
120 DEGRES 52.0 MINUTES OUEST

ELEVATION 242 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -2.0 | -.3 | -1.5 | -3.0 | .8 | 3.5 | 11.3 | 11.0 | 5.5 | 1.4 | -3.4 | -2.7 |
| 1.0 | .0 | -.2 | .2 | -.2 | .4 | 3.2 | 3.8 | 6.7 | 5.4 | 3.1 | -1.7 | -.6 |
| 1.5 | .5 | .5 | .5 | .5 | .6 | 2.2 | 2.9 | 3.8 | 4.3 | 3.2 | 1.3 | 1.2 |
| 2.0 | .7 | .7 | .7 | .7 | .7 | 1.0 | 1.6 | 2.3 | 3.1 | 2.7 | 2.1 | 1.6 |
| 2.5 | .6 | .6 | .6 | .6 | .6 | .7 | .9 | 1.2 | 1.8 | 1.8 | 1.7 | 1.4 |
| 3.0 | .5 | .5 | .5 | .5 | .5 | .5 | .6 | .9 | 1.4 | 1.5 | 1.4 | 1.2 |
| 3.5 | .6 | .6 | .6 | .6 | .6 | .6 | .7 | .8 | 1.2 | 1.3 | 1.3 | 1.2 |
| 4.0 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .7 | 1.0 | 1.1 | 1.1 | 1.0 |
| 4.5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .6 | .8 | .9 | 1.0 | .9 |
| 5.0 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .7 | .8 | .9 | .9 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 587.9. EMR-85-10B
-WELL SPUDDED 85 2 27

NW-ZAMA PIPELINE KM 587.9. EMR-85-10B
-DEMARRAGE DU PUITS LE 85 2 27

VERY THIN PERMAFROST (FROZEN PEAT)
OVER UNFROZEN TILL.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 1.0 M W OF PIPELINE IN
25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

100

SITE 85-10B: MACKENZIE HWY S. B - T3

**********

61 DEGREES 21.0 MINUTES NORTH
120 DEGREES 52.0 MINUTES WEST

61 DEGRES 21.0 MINUTES NORD
120 DEGRES 52.0 MINUTES OUEST

ELEVATION 242 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -4.2 | -4.3 | -2.4 | -3.0 | 7.3 | 9.9 | 12.5 | 10.1 | 5.7 | .0 | -7.6 | -5.7 |
| 1.0 | -.7 | -1.1 | -.3 | -.3 | -.0 | .0 | 1.6 | 3.2 | 2.1 | .2 | -2.9 | -2.2 |
| 1.5 | -.0 | -.0 | -.0 | -.0 | .0 | .0 | .0 | .0 | .0 | .0 | -.8 | -.1 |
| 2.0 | .1 | .1 | .0 | .0 | .1 | .1 | .1 | .1 | .1 | .0 | -.0 | -.1 |
| 2.5 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .2 | .2 | .2 |
| 3.5 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .4 | .4 | .4 | .4 |
| 4.5 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .5 | .5 | .5 |
| 5.5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 |
| 6.5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 |
| 8.5 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .5 | .5 | .5 |
| 10.5 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .7 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE.
FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES.
ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 587.9. EMR-85-10B
-WELL SPUDDED 85 3 9

NW-ZAMA PIPELINE KM 587.9. EMR-85-10B
-DEMARRAGE DU PUITS LE 85 3 9

VERY THIN PERMAFROST (FROZEN PEAT)
OVER UNFROZEN TILL.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 6.8 M W OF PIPELINE IN
25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).
PVC TUBE SHORTENED.

SITE 85-10B: MACKENZIE HWY S. B - T4

**********

61 DEGREES 21.0 MINUTES NORTH
120 DEGREES 52.0 MINUTES WEST

61 DEGRES 21.0 MINUTES NORD
120 DEGRES 52.0 MINUTES OUEST

ELEVATION 242 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -3.9 | -2.4 | -1.9 | -2.0 | .4 | 1.8 | 5.0 | 4.5 | 2.1 | .0 | -2.6 | -2.2 |
| 1.0 | -.9 | -.6 | -.5 | -.7 | -.3 | -.2 | -.2 | -.2 | -.1 | -.1 | -2.1 | -.7 |
| 1.5 | -.2 | -.1 | -.1 | -.2 | -.2 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | |
| 2.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.0 | -.0 | -.0 | -.1 | -.1 | -.1 |
| 2.5 | -.0 | | 0.0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | |
| 3.5 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 |
| 4.5 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | |
| 5.5 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 |
| 6.5 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 |
| 8.5 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 |
| 10.5 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 587.9. EMR-85-10B
-WELL SPUDDED 85 3 9

NW-ZAMA PIPELINE KM 587.9. EMR-85-10B
-DEMARRAGE DU PUITS LE 85 3 9

VERY THIN PERMAFROST (FROZEN PEAT)
OVER UNFROZEN TILL.
NO PREVIOUS CLEARING.
CABLE OFF R.O.W. 17.3 M W OF PIPELINE
IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 85-11: MORAINE SOUTH - CABLE T1

**********

61 DEGREES 18.0 MINUTES NORTH
120 DEGREES 49.0 MINUTES WEST

61 DEGRES 18.0 MINUTES NORD
120 DEGRES 49.0 MINUTES OUEST

ELEVATION 254 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 23 | DATE 86 7 15 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -4.7 | -7.3 | -3.0 | -4.5 | 3.2 | 8.4 | 13.7 | 13.0 | 6.0 | 1.7 | -4.9 | -3.6 |
| 1.0 | -.3 | -1.3 | -.6 | -.8 | -.1 | -.1 | 4.9 | 9.0 | 5.9 | 3.2 | -.5 | -1.0 |
| 1.5 | .1 | .1 | -.0 | -.1 | -.1 | .1 | 2.0 | 6.4 | 5.3 | 3.4 | 1.1 | .6 |
| 2.0 | .2 | .2 | .1 | .1 | .1 | .3 | 1.3 | 4.3 | 4.6 | 3.3 | 2.0 | 1.0 |
| 2.5 | -.1 | -.0 | -.1 | -.1 | -.1 | .0 | .5 | 2.2 | 3.5 | 2.8 | | |
| 3.0 | -.2 | -.1 | -.2 | -.2 | -.2 | -.1 | -.1 | .8 | 2.5 | 2.2 | 1.7 | 1.0 |
| 3.5 | -.2 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.0 | 1.6 | 1.8 | 1.6 | 1.1 |
| 4.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.1 | .8 | 1.3 | 1.3 | 1.0 |
| 4.5 | -.2 | -.1 | -.1 | -.2 | -.1 | -.1 | -.1 | -.1 | .0 | .7 | 1.0 | 1.0 |
| 5.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | .1 | .8 | .9 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 596.6. EMR-85-11
-WELL SPUDDED 85 2 26

NW-ZAMA PIPELINE KM 596.6. EMR-85-11
-DEMARRAGE DU PUITS LE 85 2 26

THIN PERMAFROST (4M).
PREVIOUS HELIPAD CLEARING.
CABLE ON R.O.W. 1.5 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).
OLD HELIPAD ON EAST SIDE OF FENCE.

SITE 85-11: MORAINE SOUTH - CABLE T2

**********

61 DEGREES 18.0 MINUTES NORTH
120 DEGREES 49.0 MINUTES WEST

61 DEGRES 18.0 MINUTES NORD
120 DEGRES 49.0 MINUTES OUEST

ELEVATION 254 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 23 | DATE 86 7 15 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -1.9 | -3.2 | -1.4 | -1.0 | 2.5 | 6.9 | 13.5 | 11.7 | 6.2 | 2.2 | -2.1 | -2.9 |
| 1.0 | .1 | -.6 | -.2 | -.2 | -.1 | 1.3 | 9.5 | 9.8 | 6.6 | 3.6 | .6 | -.0 |
| 1.5 | .3 | .2 | .1 | .1 | .1 | 1.2 | 6.3 | 7.6 | 6.2 | 4.1 | 2.3 | 1.2 |
| 2.0 | .3 | .3 | .2 | .2 | .2 | 1.0 | 4.2 | 5.8 | 5.7 | 4.2 | 2.8 | 1.6 |
| 2.5 | .1 | .1 | .0 | .0 | .1 | .4 | 2.1 | 3.8 | 4.7 | 3.8 | 2.8 | 1.8 |
| 3.0 | -.2 | -.1 | -.1 | -.1 | -.1 | -.1 | .7 | 2.2 | 3.8 | 3.4 | 2.7 | 1.8 |
| 3.5 | -.2 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | .9 | 3.0 | 3.0 | 2.6 | 1.7 |
| 4.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.1 | -.1 | -.1 | 2.2 | 2.6 | 2.4 | 1.8 |
| 4.5 | -.2 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | 1.6 | 2.1 | 2.1 | 1.8 |
| 5.0 | -.2 | -.1 | -.1 | -.2 | -.1 | -.1 | -.1 | -.1 | 1.1 | 1.7 | 1.9 | 1.7 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 596.6. EMR-85-11
-WELL SPUDDED 85 2 26

NW-ZAMA PIPELINE KM 596.6. EMR-85-11
-DEMARRAGE DU PUITS LE 85 2 26

THIN PERMAFROST (4M).
NO PREVIOUS CLEARING
CABLE ON R.O.W. .75 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).
OLD HELIPAD ON EAST SIDE OF FENCE.

SITE 85-11: MORAINE SOUTH - CABLE T3

**********

61 DEGREES 18.0 MINUTES NORTH
120 DEGREES 49.0 MINUTES WEST

61 DEGRES 18.0 MINUTES NORD
120 DEGRES 49.0 MINUTES OUEST

ELEVATION 254 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 23 | DATE 86 7 15 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -2.8 | -2.8 | -1.8 | -2.3 | 11.5 | 13.6 | 13.5 | 14.3 | 6.4 | 1.1 | -3.6 | -4.0 |
| 1.0 | -.7 | -.7 | -.2 | -.3 | -.0 | 7.4 | 11.2 | 10.8 | 7.0 | 3.6 | -.8 | -1.1 |
| 1.5 | .2 | .2 | .1 | .1 | .1 | 4.9 | 8.1 | 9.1 | 7.0 | 4.5 | 1.2 | .4 |
| 2.0 | .3 | .2 | .1 | .1 | .1 | 3.1 | 5.9 | 7.4 | 6.5 | 4.7 | 2.8 | 1.3 |
| 3.0 | .5 | .4 | .3 | .2 | .2 | 1.2 | 3.0 | 4.6 | 5.3 | 4.6 | 3.5 | 2.2 |
| 4.0 | .7 | .6 | .5 | .4 | .4 | .6 | 1.6 | 2.8 | 4.1 | 4.0 | 3.5 | 2.6 |
| 5.0 | .8 | .7 | .6 | .5 | .5 | .5 | 1.0 | 1.7 | 3.0 | 3.2 | 3.1 | 2.6 |
| 6.0 | .8 | .8 | .7 | .6 | .6 | .6 | .7 | 1.1 | 2.2 | 2.5 | 2.6 | 2.4 |
| 8.0 | .8 | .8 | .8 | .7 | .7 | .7 | .7 | .8 | 1.2 | 1.5 | 1.7 | 1.8 |
| 10.0 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .8 | 1.0 | 1.1 | 1.3 |
| 12.0 | .7 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .9 | 1.0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 596.6. EMR-85-11
-WELL SPUDDED 85 3 8

NW-ZAMA PIPELINE KM 596.6. EMR-85-11
-DEMARRAGE DU PUITS LE 85 3 8

THIN PERMAFROST (4M).
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 7.1 M W OF PIPELINE IN 25MM OIL-FILED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).
OLD HELIPAD ON EAST SIDE OF FENCE.

SITE 85-11: MORAINE SOUTH - CABLE T4

**********

61 DEGREES 18.0 MINUTES NORTH
120 DEGREES 49.0 MINUTES WEST

61 DEGRES 18.0 MINUTES NORD
120 DEGRES 49.0 MINUTES OUEST

ELEVATION 254 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 23 | DATE 86 7 15 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -1.4 | -2.0 | -1.2 | -1.2 | 2.0 | 5.9 | 8.2 | 8.4 | 3.6 | .1 | -3.0 | -3.3 |
| 1.0 | -.2 | -.3 | -.4 | -.3 | -.2 | -.2 | 1.6 | 3.3 | 1.9 | .2 | -1.1 | -1.1 |
| 1.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | .5 | .7 | .1 | -.1 | -.1 |
| 2.0 | -.2 | -.1 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.1 | -.1 | -.1 | -.1 |
| 3.0 | -.1 | | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 4.0 | .0 | .0 | 0.0 | 0.0 | .0 | 0.0 | .0 | .0 | .1 | .2 | .2 | .2 |
| 5.0 | .2 | .3 | .2 | .2 | .2 | .2 | .2 | .2 | .3 | .4 | .4 | .4 |
| 6.0 | .2 | | .2 | .2 | | .2 | .2 | .2 | .3 | .4 | | .4 |
| 8.0 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .5 | .5 |
| 10.0 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .6 | .5 | .7 |
| 12.0 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | | .8 | .8 | .8 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 596.6. EMR-85-11
-WELL SPUDDED 85 3 8

NW-ZAMA PIPELINE KM 596.6. EMR-85-11
-DEMARRAGE DU PUITS LE 85 3 8

THIN PERMAFROST (4M).
NO PREVIOUS CLEARING.
CABLE OFF R.O.W. 22.9 M W OF PIPELINE
IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).
OLD HELIPAD ON EAST SIDE OF FENCE.

SITE 85-12A: JEAN MARIE CR A - T1

**********

61 DEGREES 11.0 MINUTES NORTH
120 DEGREES 41.0 MINUTES WEST

61 DEGRES 11.0 MINUTES NORD
120 DEGRES 41.0 MINUTES OUEST

ELEVATION 305 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 23 | DATE 86 7 14 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -3.5 | -5.3 | -2.7 | -5.2 | 6.3 | 11.9 | 19.7 | 15.2 | 6.4 | 1.1 | -10.1 | -10.3 |
| 1.0 | -.9 | -1.0 | -.5 | -.7 | -.1 | .7 | 10.5 | 11.9 | 7.3 | 3.8 | -3.8 | -3.4 |
| 1.5 | .2 | .1 | .1 | .0 | .1 | 1.1 | 6.9 | 9.4 | 7.1 | 4.4 | | -.1 |
| 2.0 | .5 | .3 | .3 | .2 | .2 | 1.1 | 4.5 | 7.1 | 6.4 | 4.5 | 2.7 | 1.6 |
| 2.5 | .6 | .5 | .4 | .3 | .3 | .9 | | 5.1 | 5.6 | 4.4 | | |
| 3.0 | .7 | .5 | .5 | .4 | .4 | .8 | 2.0 | 3.9 | 4.9 | 4.1 | 3.1 | 2.2 |
| 3.5 | .7 | .5 | .4 | .4 | .3 | .6 | 1.4 | 2.9 | 4.1 | 3.8 | 3.1 | 2.2 |
| 4.0 | .6 | .4 | .3 | .3 | .3 | .4 | .9 | 2.0 | 3.4 | 3.3 | 2.8 | 2.1 |
| 4.5 | .8 | .7 | .6 | .6 | .5 | .6 | .9 | 1.7 | 3.0 | 3.1 | 2.8 | 2.3 |
| 5.0 | .8 | .7 | .6 | .6 | .5 | .6 | .8 | 1.4 | 2.6 | 2.8 | 2.6 | 2.2 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 607.7. EMR-85-12A
-WELL SPUDDED 85 2 26

NW-ZAMA PIPELINE KM 607.7. EMR-85-12A
-DEMARRAGE DU PUITS LE 85 2 26

THIN LOW-ICE PEAT PLATEAU.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 1.3 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 85-12A: JEAN MARIE CR A - T2

**********

61 DEGREES 11.0 MINUTES NORTH
120 DEGREES 41.0 MINUTES WEST

61 DEGRES 11.0 MINUTES NORD
120 DEGRES 41.0 MINUTES OUEST

ELEVATION 305 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 23 | DATE 86 7 14 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -2.9 | -3.8 | -1.4 | -2.8 | 4.8 | 11.4 | 15.4 | 12.4 | 6.0 | 2.2 | -5.3 | -5.9 |
| 1.0 | -.1 | -.6 | .1 | -.1 | 1.0 | 5.6 | 9.6 | 10.1 | 6.6 | 4.0 | -2.2 | -1.5 |
| 1.5 | .6 | .5 | .5 | .4 | .8 | 3.4 | 6.4 | 7.9 | 6.4 | 4.4 | 2.0 | .7 |
| 2.0 | .7 | .5 | .4 | .4 | .5 | 1.8 | 4.0 | 5.8 | 5.7 | 4.4 | 3.0 | 2.0 |
| 2.5 | .8 | .6 | .5 | .5 | .5 | 1.2 | 2.7 | 4.4 | 5.1 | 4.3 | 3.3 | 2.3 |
| 3.0 | .8 | .6 | .5 | .5 | .4 | .8 | 1.9 | 3.3 | 4.4 | 4.0 | 3.2 | 2.4 |
| 3.5 | .8 | .7 | .6 | .5 | .5 | .7 | 1.4 | 2.5 | 3.9 | 4.0 | 3.2 | 2.5 |
| 4.0 | .8 | .7 | .6 | .6 | .5 | .6 | 1.0 | 1.9 | 3.2 | 3.3 | 3.0 | 2.4 |
| 4.5 | .8 | .7 | .6 | .6 | .5 | .6 | .8 | 1.5 | 2.8 | 2.9 | 2.8 | 2.4 |
| 5.0 | .9 | .8 | .7 | .7 | .6 | .6 | .8 | 1.3 | 2.4 | 2.7 | 2.6 | 2.3 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 607.7. EMR-85-12A
-WELL SPUDDED 85 2 26

NW-ZAMA PIPELINE KM 607.7. EMR-85-12A
-DEMARRAGE DU PUITS LE 85 2 26

THIN LOW-ICE PEAT PLATEAU.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. .8 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 85-12A: JEAN MARIE CR A - T3A

**********

61 DEGREES 11.0 MINUTES NORTH
120 DEGREES 41.0 MINUTES WEST

61 DEGRES 11.0 MINUTES NORD
120 DEGRES 41.0 MINUTES OUEST

ELEVATION 305 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 23 | DATE 86 7 14 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 22 |
|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -1.3 | | 1.5 | 5.9 | 7.7 | 5.9 | 3.3 | .4 | -2.0 |
| 2.0 | -.0 | 0.0 | .8 | 2.1 | 3.6 | 4.7 | 4.0 | .3 | -.0 |
| 3.0 | .6 | .7 | .8 | 1.3 | 2.3 | 3.8 | 3.8 | 2.1 | 1.6 |
| 4.0 | .8 | .7 | .7 | 1.0 | 1.5 | 2.7 | 3.0 | 2.3 | 2.1 |
| 5.0 | .9 | .9 | .9 | 1.0 | 1.2 | 2.1 | 2.4 | 2.5 | 2.4 |
| 6.0 | 1.2 | 1.1 | 1.1 | 1.1 | 1.2 | 1.7 | 2.0 | 2.2 | 2.3 |
| 8.0 | 1.2 | 1.2 | 1.2 | 1.2 | 1.1 | 1.3 | 1.5 | 1.6 | 1.8 |
| 10.0 | 1.3 | 1.3 | 1.3 | 1.3 | 1.2 | 1.3 | 1.4 | 1.2 | 1.5 |
| 12.0 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.4 | 1.5 |
| 14.0 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.4 | 1.4 | 1.4 | 1.5 |
| 16.4 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 607.7. EMR-85-12A
-WELL SPUDDED 85 3 7

NW-ZAMA PIPELINE KM 607.7. EMR-85-12A
-DEMARRAGE DU PUITS LE 85 3 7

THIN LOW-ICE PEAT PLATEAU.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 5.9 M W OF PIPELINE IN 38MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).
AS OF 7/85 DATA FROM CABLE N. OF FENCE
TWO T3 CABLES: READ ONE 30M NORTH OF FENCE.(T3A)
T3 READ JAN/FEB/MAR 86 INSTEAD OF T3A.

SITE 85-12A: JEAN MARIE CR A - T4

**********

61 DEGREES 11.0 MINUTES NORTH
120 DEGREES 41.0 MINUTES WEST

61 DEGRES 11.0 MINUTES NORD
120 DEGRES 41.0 MINUTES OUEST

ELEVATION 305 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 20 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 23 | DATE 86 7 14 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -2.8 | -3.3 | -1.4 | 1.1 | 1.1 | 9.3 | 9.0 | 4.2 | .7 | -3.3 | -4.0 |
| 1.0 | -1.8 | -2.1 | -1.2 | -.1 | -.0 | 1.1 | 4.2 | 3.0 | 1.3 | -1.7 | -2.1 |
| 1.5 | -.7 | -1.4 | -.7 | -.1 | -.1 | .3 | 2.6 | 2.3 | 1.4 | -.9 | -1.5 |
| 2.0 | -.6 | -.9 | -.5 | .1 | .1 | .4 | 1.6 | 1.9 | 1.4 | -.5 | -1.0 |
| 3.0 | .2 | .1 | .1 | .1 | .1 | .1 | .6 | 1.1 | 1.0 | .4 | .2 |
| 4.0 | .4 | .3 | .2 | .2 | .2 | .2 | .4 | .8 | .9 | .8 | .7 |
| 5.0 | .5 | .5 | .4 | .4 | .4 | .4 | .4 | .7 | .9 | .9 | .8 |
| 6.0 | .6 | .6 | .5 | .5 | .5 | .5 | .5 | .6 | .7 | .8 | .8 |
| 8.0 | .7 | .7 | .6 | .6 | .6 | .6 | .6 | .6 | .7 | .7 | .8 |
| 10.0 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .7 | .8 |
| 12.0 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 607.7. EMR-85-12A
-WELL SPUDDED 85 3 8

NW-ZAMA PIPELINE KM 607.7. EMR-85-12A
-DEMARRAGE DU PUITS LE 85 3 8

THIN LOW-ICE PEAT PLATEAU.
NO PREVIOUS CLEARING.
CABLE OFF R.O.W. 17.9 M W OF PIPELINE
IN 38MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 85-12B: JEAN MARIE CR B - CABLE T1

**********

61 DEGREES 11.0 MINUTES NORTH
120 DEGREES 41.0 MINUTES WEST

61 DEGRES 11.0 MINUTES NORD
120 DEGRES 41.0 MINUTES OUEST

ELEVATION 305 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 23 | DATE 86 7 14 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -5.2 | -6.3 | -4.0 | -4.6 | .9 | 4.0 | 7.7 | 6.9 | 3.3 | .1 | | -10.3 |
| 1.0 | -.7 | -2.4 | -2.2 | -1.8 | -.2 | -.1 | -.1 | -.1 | .3 | .0 | -3.3 | -2.7 |
| 1.5 | -.3 | -.9 | -1.3 | -1.1 | -.3 | -.1 | -.1 | -.1 | -.1 | -.0 | -.2 | -.1 |
| 2.0 | -.2 | -.4 | -.8 | -.8 | -.4 | -.3 | -.2 | -.3 | -.2 | -.1 | -.2 | -.1 |
| 2.5 | -.3 | -.3 | -.5 | -.6 | -.4 | -.3 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 |
| 3.0 | -.3 | -.3 | -.4 | -.4 | -.4 | -.4 | -.3 | -.3 | -.3 | -.2 | -.2 | -.2 |
| 3.5 | -.3 | -.4 | -.2 | -.3 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 4.0 | | | -.3 | -.3 | | | -.3 | | | | | |
| 4.5 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.2 | -.3 | -.2 | -.2 | | -.2 |
| 5.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.1 | | -.1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 607.9. EMR-85-12B
-WELL SPUDDED 85 2 26

NW-ZAMA PIPELINE KM 607.9. EMR-85-12B
-DEMARRAGE DU PUITS LE 85 2 26

THICK ICE-RICH PEAT PLATEAU.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 1.5 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 85-12B: JEAN MARIE CR B - CABLE T2

**********

61 DEGREES 11.0 MINUTES NORTH
120 DEGREES 41.0 MINUTES WEST

61 DEGRES 11.0 MINUTES NORD
120 DEGRES 41.0 MINUTES OUEST

ELEVATION 305 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 23 | DATE 86 7 14 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -5.7 | -6.5 | -4.8 | -5.5 | 4.1 | 9.9 | 14.9 | 10.3 | 5.6 | -.1 | -13.2 | -12.3 |
| 1.0 | -1.5 | -2.5 | -2.5 | -2.5 | 2.3 | .9 | 3.6 | 6.4 | 2.3 | .5 | -3.2 | -3.5 |
| 1.5 | -.2 | -.9 | -1.2 | -1.2 | .4 | .3 | 1.1 | .9 | .6 | .3 | -1.3 | -1.0 |
| 2.0 | -.2 | -.3 | -.6 | -.7 | -.3 | -.2 | -.2 | -.2 | -.1 | -.1 | -.1 | -.1 |
| 2.5 | -.3 | -.3 | -.5 | -.5 | -.4 | -.3 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 |
| 3.0 | -.3 | -.3 | -.4 | -.4 | -.4 | -.4 | -.3 | -.3 | -.3 | -.3 | -.3 | -.2 |
| 3.5 | -.3 | -.2 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 |
| 4.0 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 | -.2 | -.2 | -.2 |
| 4.5 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 5.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 607.9. EMR-85-12B
-WELL SPUDDED 85 2 26

NW-ZAMA PIPELINE KM 607.9. EMR-85-12B
-DEMARRAGE DU PUITS LE 85 2 26

THICK ICE-RICH PEAT PLATEAU.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. .8 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 85-12B: JEAN MARIE CR B - CABLE T3

**********

61 DEGREES 11.0 MINUTES NORTH
120 DEGREES 41.0 MINUTES WEST

61 DEGRES 11.0 MINUTES NORD
120 DEGRES 41.0 MINUTES OUEST

ELEVATION 305 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 23 | DATE 86 7 14 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 0.0 | -10.5 | -14.0 | -8.2 | -8.7 | 20.4 | | 31.9 | 20.9 | 7.3 | .3 | 0.0 | -12.3 |
| 1.0 | -.3 | -2.3 | -3.0 | -2.4 | -.6 | -.2 | -.2 | 0.0 | -.1 | -.1 | -.2 | -.2 |
| 2.0 | -.2 | -.7 | -1.5 | -1.6 | -.7 | -.5 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 |
| 3.0 | -.2 | -.3 | -.6 | -.7 | -.6 | -.4 | -.4 | -.3 | -.3 | -.2 | -.2 | -.2 |
| 4.0 | -.2 | -.2 | -.2 | -.3 | -.3 | -.3 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 |
| 6.0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 | .0 |
| 8.0 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 |
| 10.0 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 | .3 |
| 12.5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 | .5 |
| 17.2 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 | .8 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 607.9. EMR-85-12B
-WELL SPUDDED 85 3 7

NW-ZAMA PIPELINE KM 607.9. EMR-85-12B
-DEMARRAGE DU PUITS LE 85 3 7

THICK ICE-RICH PEAT PLATEAU.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 5.9 M W OF PIPELINE IN 25MM OIL-FILLED PVC. TUBE.
10 SENSOR YSI44033 (PAIRED).

SITE 85-12B: JEAN MARIE CR B - CABLE T4

**********

61 DEGREES 11.0 MINUTES NORTH
120 DEGREES 41.0 MINUTES WEST

61 DEGRES 11.0 MINUTES NORD
120 DEGRES 41.0 MINUTES OUEST

ELEVATION 305 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 27 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 23 | DATE 86 7 14 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | -4.5 | -5.0 | -4.5 | -4.4 | 2.6 | 5.1 | 8.8 | 6.4 | 2.9 | .1 | -4.7 | -4.2 |
| 1.0 | -1.5 | -2.2 | -2.2 | -2.8 | -.3 | -.2 | -.1 | -.1 | -.1 | -.1 | -2.3 | -1.7 |
| 1.5 | -.3 | -.6 | -1.0 | -1.0 | -.3 | -.2 | -.2 | -.2 | -.2 | -.2 | -.6 | -.6 |
| 2.0 | -.1 | -.2 | -.5 | -.4 | -.2 | -.2 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 2.5 | -.1 | -.1 | -.2 | -.4 | -.2 | -.2 | -.1 | -.2 | -.1 | -.1 | -.1 | -.1 |
| 3.5 | -.1 | | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 4.5 | .1 | .1 | .0 | .0 | .1 | .1 | .1 | .1 | .1 | .1 | .1 | .1 |
| 5.5 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 |
| 6.5 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 | .2 |
| 8.0 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 | .4 |
| 9.7 | .4 | .4 | .4 | | .4 | .4 | .5 | .4 | .4 | .4 | .4 | .4 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 607.9. EMR-85-12B
-WELL SPUDDED 85 3 7

NW-ZAMA PIPELINE KM 607.9. EMR-85-12B
-DEMARRAGE DU PUITS LE 85 3 7

THICK ICE-RICH PEAT PLATEAU.
NO PREVIOUS CLEARING.
CABLE OFF R.O.W. 17.9 M W OF PIPELINE
25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE 85-13: REDKNIFE HILLS - A

**********

60 DEGREES 34.0 MINUTES NORTH
120 DEGREES 18.0 MINUTES WEST

60 DEGRES 34.0 MINUTES NORD
120 DEGRES 18.0 MINUTES OUEST

ELEVATION 635 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 5 26 T(C) | DATE 86 6 23 T(C) | DATE 86 7 14 T(C) | DATE 86 8 7 T(C) | DATE 86 9 28 T(C) | DATE 86 10 24 T(C) |
|---|---|---|---|---|---|---|
| 1.0 | -.2 | -.2 | -.1 | .1 | .5 | .1 |
| 2.0 | -.2 | -.2 | -.2 | -.2 | | -.2 |
| 3.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 4.0 | -.1 | -.1 | -.0 | -.0 | -.0 | -.0 |
| 6.0 | -.0 | -.0 | | -.0 | -.0 | -.0 |
| 8.0 | .1 | .1 | .1 | .1 | .1 | .1 |
| 10.0 | .2 | .2 | .2 | .2 | .2 | .2 |
| 12.0 | .3 | .3 | .3 | .3 | .3 | .3 |
| 14.0 | .4 | .4 | .4 | .4 | .4 | |
| 17.0 | .6 | .6 | .6 | .6 | .6 | .6 |
| 20.0 | .7 | .7 | .7 | .7 | .7 | .7 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 681.16. EMR-85-13A
-WELL SPUDDED 85 3 4

NW-ZAMA PIPELINE KM 681.16. EMR-85-13A
-DEMARRAGE DU PUITS LE 85 3 4

THIN FROZEN TERRAIN SURROUNDING FEN.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 3 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAI SITE 85-13: RED).

SITE 85-13: REDKNIFE HILLS - B

**********

60 DEGREES 34.0 MINUTES NORTH
120 DEGREES 18.0 MINUTES WEST

60 DEGRES 34.0 MINUTES NORD
120 DEGRES 18.0 MINUTES OUEST

ELEVATION 635 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 5 26 | DATE 86 6 23 | DATE 86 7 14 | DATE 86 8 7 | DATE 86 9 28 | DATE 86 10 24 |
|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | .0 | 3.2 | 6.2 | 8.5 | 3.8 | 1.3 |
| 1.0 | -.1 | .0 | 0.0 | .4 | 1.5 | .7 |
| 1.5 | -.1 | -.1 | -.1 | -.1 | .0 | .1 |
| 2.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 2.5 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 3.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 4.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 5.5 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 6.5 | -.1 | -.1 | -.0 | -.1 | -.1 | -.1 |
| 8.5 | .1 | .1 | .2 | .1 | .1 | .2 |
| 10.5 | .3 | .3 | .3 | .3 | .3 | .3 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 681.35. EMR-85-13B
-WELL SPUDDED 85 3 4

NW-ZAMA PIPELINE KM 681.35. EMR-85-13B
-DEMARRAGE DU PUITS LE 85 3 4

FROZEN TERRAIN AROUND FEN.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 4 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAI SITE 85-13: RED).

SITE 85-13: REDKNIFE HILLS - C

**********

60 DEGREES 34.0 MINUTES NORTH
120 DEGREES 18.0 MINUTES WEST

60 DEGRES 34.0 MINUTES NORD
120 DEGRES 18.0 MINUTES OUEST

ELEVATION 635 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 5 26 T(C) | DATE 86 6 23 T(C) | DATE 86 7 14 T(C) | DATE 86 8 7 T(C) | DATE 86 9 29 T(C) | DATE 86 10 24 T(C) |
|---|---|---|---|---|---|---|
| .50 | 2.8 | 6.3 | 10.1 | 10.2 | 4.9 | 1.0 |
| 1.00 | -.1 | -.1 | .0 | 5.2 | 5.2 | 2.0 |
| 1.50 | .3 | .5 | .6 | 2.5 | 4.5 | 2.7 |
| 2.00 | 1.0 | 1.0 | 1.0 | 1.7 | 3.6 | 3.1 |
| 2.50 | 1.3 | 1.4 | 1.4 | 1.6 | 2.7 | 2.9 |
| 3.00 | 1.9 | 1.9 | 1.9 | 1.9 | 2.5 | 2.7 |
| 3.50 | 2.1 | 2.0 | 2.0 | 2.0 | 2.3 | 2.6 |
| 4.00 | 2.1 | 2.1 | 2.1 | 2.1 | 2.3 | 2.5 |
| 4.50 | 2.3 | 2.2 | 2.2 | 2.2 | 2.3 | 2.5 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 681.56. EMR-85-13C
-WELL SPUDDED 85 3 4

NW-ZAMA PIPELINE KM 681.56. EMR-85-13C
-DEMARRAGE DU PUITS LE 85 3 4

FENCE IS LOCATED INSIDE FEN.
NO PREVIOUS CLEARING.
CABLE ON R.O.W. 4 M E OF PIPELINE IN 38MM OIL-FILLED PVC TUBE.
9 SENSOR YSI44033 (PAI SITE 85-13: RED).

SITE 84-5A: PETITOT RIVER NORTH A - T1

**********

59 DEGREES 45.0 MINUTES NORTH
119 DEGREES 30.0 MINUTES WEST

59 DEGRES 45.0 MINUTES NORD
119 DEGRES 30.0 MINUTES OUEST

ELEVATION 552 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 5 26 | DATE 86 6 23 | DATE 86 7 14 | DATE 86 8 7 | DATE 86 9 28 | DATE 86 10 23 |
|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .5 | 6.8 | 8.4 | 10.5 | 11.1 | 8.4 | 6.9 |
| 1.0 | .0 | .0 | -.1 | 2.6 | 2.2 | .6 |
| 1.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 2.0 | -.1 | -.1 | -.0 | -.1 | -.1 | -.1 |
| 2.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 3.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 3.5 | -.1 | -.2 | -.2 | -.2 | -.1 | -.1 |
| 4.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 4.5 | -.2 | -.2 | -.1 | -.2 | -.2 | -.2 |
| 5.2 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 781.9. EMR-84-5A
-WELL SPUDDED 84 3 18

NW-ZAMA PIPELINE KM 781.9. EMR-84-5A
-DEMARRAGE DU PUITS LE 84 3 18

ICE-RICH PEAT 3.5 M THICK.
MACHINE-CLEARED TO 25.0M IN WINTER 82/83.
CABLE ON R.O.W. 1.3 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44032 (PAIRED).

SITE 84-5A: PETITOT RIVER NORTH A - T2

**********

59 DEGREES 45.0 MINUTES NORTH
119 DEGREES 30.0 MINUTES WEST

59 DEGRES 45.0 MINUTES NORD
119 DEGRES 30.0 MINUTES OUEST

ELEVATION 552 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 5 26 T(C) | DATE 86 6 23 T(C) | DATE 86 7 14 T(C) | DATE 86 8 7 T(C) | DATE 86 9 28 T(C) | DATE 86 10 23 T(C) |
|---|---|---|---|---|---|---|
| .5 | -.0 | -.0 | 2.1 | -.0 | .1 | .1 |
| 1.0 | .1 | .1 | .1 | .1 | .1 | .1 |
| 1.5 | -.0 | -.0 | .1 | -.0 | -.0 | -.0 |
| 2.0 | -.0 | -.0 | -.1 | -.0 | -.0 | -.0 |
| 2.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 3.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 3.5 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 4.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 4.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 5.6 | -.1 | -.1 | -.2 | -.1 | -.1 | -.1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 781.9. EMR-84-5A
-WELL SPUDDED 84 3 18

NW-ZAMA PIPELINE KM 781.9. EMR-84-5A
-DEMARRAGE DU PUITS LE 84 3 18

ICE-RICH PEAT 3.5M THICK.
MACHINE-CLEARED TO 25M IN WINTER 82/83.
CABLE ON R.O.W. 2.3 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44032 (PAIRED).

SITE 84-5A: PETITOT RIVER NORTH A - T3

**********

59 DEGREES 45.0 MINUTES NORTH
119 DEGREES 30.0 MINUTES WEST

59 DEGRES 45.0 MINUTES NORD
119 DEGRES 30.0 MINUTES OUEST

ELEVATION 552 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 5 26 | DATE 86 6 23 | DATE 86 7 14 | DATE 86 8 7 | DATE 86 9 28 | DATE 86 10 23 |
|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.0 | -.0 | -.0 | -.1 | 2.5 | 1.7 | .5 |
| 2.0 | -.0 | -.0 | -.1 | -.0 | -.0 | -.0 |
| 3.0 | -.1 | -.1 | -.2 | -.1 | -.1 | -.1 |
| 4.0 | -.1 | -.1 | -.3 | -.1 | -.1 | -.0 |
| 6.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 8.0 | -.1 | -.2 | -.1 | -.2 | -.2 | -.1 |
| 10.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.1 |
| 12.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 15.0 | -.1 | -.1 | | -.1 | -.1 | -.1 |
| 18.0 | .0 | .1 | | .1 | .1 | .0 |
| 20.6 | | | | | | |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 781.9. EMR-84-5A
-WELL SPUDDED 84 3 18

NW-ZAMA PIPELINE KM 781.9. EMR-84-5A
-DEMARRAGE DU PUITS LE 84 3 18

ICE-RICH PEAT 3.5 M THICK.
MACHINE-CLEARED TO 25M IN WINTER 82/83.
CABLE ON R.O.W. 4.6 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44032 (PAIRED).

SITE 84-5A: PETITOT RIVER NORTH A - T4

**********

59 DEGREES 45.0 MINUTES NORTH
119 DEGREES 30.0 MINUTES WEST

59 DEGRES 45.0 MINUTES NORD
119 DEGRES 30.0 MINUTES OUEST

ELEVATION 552 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 5 26 T(C) | DATE 86 6 23 T(C) | DATE 86 7 14 T(C) | DATE 86 8 7 T(C) | DATE 86 9 28 T(C) | DATE 86 10 23 T(C) |
|---|---|---|---|---|---|---|
| 1.0 | -.0 | -.0 | -.1 | .0 | .3 | .1 |
| 2.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 3.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 4.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 6.0 | -.2 | -.2 | -.3 | -.2 | -.2 | -.2 |
| 8.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 10.0 | -.1 | -.2 | -.1 | -.2 | -.2 | -.1 |
| 12.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 15.0 | -.0 | -.0 | | -.0 | -.0 | -.0 |
| 18.0 | .0 | 0.0 | | 0.0 | 0.0 | .0 |
| 20.6 | .1 | .1 | | .1 | .1 | .1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 781.9. EMR-84-5A
-WELL SPUDDED 84 3 18

NW-ZAMA PIPELINE KM 781.9. EMR-84-5A
-DEMARRAGE DU PUITS LE 84 3 18

ICE-RICH PEAT 3.5 M THICK.
MACHINE-CLEARED TO 25M IN WINTER 82/83.
CABLE OFF R.O.W. 21.6 M W OF PIPELINE
IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44032 (PAIRED).

122

SITE 84-5B: PETITOT RIVER NORTH B - T1(OLD)

**********

59 DEGREES 45.0 MINUTES NORTH
119 DEGREES 15.0 MINUTES WEST

59 DEGRES 45.0 MINUTES NORD
119 DEGRES 15.0 MINUTES OUEST

ELEVATION 552 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 5 26 T(C) | DATE 86 6 23 T(C) | DATE 86 7 14 T(C) | DATE 86 8 7 T(C) | DATE 86 9 28 T(C) | DATE 86 10 23 T(C) |
|---|---|---|---|---|---|---|
| .5 | .2 | 1.6 | 4.2 | 6.5 | | .8 |
| 1.0 | -.1 | -.1 | -.1 | -.1 | | .1 |
| 1.5 | -.1 | -.1 | -.1 | -.0 | | -.1 |
| 2.0 | -.1 | -.1 | -.0 | -.1 | -.0 | -.0 |
| 2.5 | -.1 | -.1 | -.1 | -.1 | | -.1 |
| 3.0 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 |
| 3.5 | -.2 | -.2 | -.2 | -.2 | -.2 | -.1 |
| 4.0 | -.2 | -.2 | -.2 | -.2 | | -.2 |
| 4.5 | -.2 | -.2 | -.1 | -.2 | -.1 | -.1 |
| 5.5 | -.2 | -.2 | -.2 | -.2 | | -.2 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 782.2. EMR-84-5B
-WELL SPUDDED 84 3 18

NW-ZAMA PIPELINE KM 782.2. EMR-84-5B
-DEMARRAGE DU PUITS LE 84 3 18

VERY THICK ICY PEAT (7M).
MACHINE CLEARED TO 26M IN WINTER 82/83.
CABLE ON R.O.W. 1.3 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44032 (PAIRED).

123

SITE 84-5B: PETITOT RIVER NORTH B - T2(OLD)

**********

59 DEGREES 45.0 MINUTES NORTH
119 DEGREES 15.0 MINUTES WEST

59 DEGRES 45.0 MINUTES NORD
119 DEGRES 15.0 MINUTES OUEST

ELEVATION 552 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 5 26 T(C) | DATE 86 6 23 T(C) | DATE 86 7 14 T(C) | DATE 86 8 7 T(C) | DATE 86 9 28 T(C) | DATE 86 10 23 T(C) |
|---|---|---|---|---|---|---|
| .5 | -.0 | .1 | 2.1 | 6.3 | 3.6 | 1.2 |
| 1.0 | .0 | .0 | .1 | .9 | 1.6 | .8 |
| 1.5 | .1 | .1 | .1 | .1 | .4 | .3 |
| 2.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 2.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 3.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 3.5 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 4.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 4.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 5.7 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 782.2. EMR-84-5B
-WELL SPUDDED 84 3 17

NW-ZAMA PIPELINE KM 782.2. EMR-84-5B
-DEMARRAGE DU PUITS LE 84 3 17

VERY THICK ICY PEAT (7M).
MACHINE CLEARED TO 26M IN WINTER 82/83.
CABLE ON R.O.W. 2.3 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44032 (PAIRED).

SITE 84-5B: PETITOT RIVER NORTH B - T3(OLD)

**********

59 DEGREES 45.0 MINUTES NORTH
119 DEGREES 15.0 MINUTES WEST

59 DEGRES 45.0 MINUTES NORD
119 DEGRES 15.0 MINUTES OUEST

ELEVATION 552 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 5 26 T(C) | DATE 86 6 23 T(C) | DATE 86 7 14 T(C) | DATE 86 8 7 T(C) | DATE 86 9 28 T(C) | DATE 86 10 23 T(C) |
|---|---|---|---|---|---|---|
| 1.0 | -.1 | -.1 | -.1 | -.1 | .1 | -.0 |
| 2.0 | -.2 | -.2 | -.1 | -.2 | -.2 | -.1 |
| 3.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 4.0 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 |
| 6.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 8.0 | -.2 | -.2 | -.1 | -.2 | -.2 | -.1 |
| 10.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 12.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 15.0 | .0 | .0 | .0 | .0 | .0 | .0 |
| 18.0 | .2 | .2 | .2 | .2 | .2 | .2 |
| 20.5 | .4 | .4 | .4 | .4 | .4 | .4 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 782.2. EMR-84-5B
-WELL SPUDDED 84 3 16

NW-ZAMA PIPELINE KM 782.2. EMR-84-5B
-DEMARRAGE DU PUITS LE 84 3 16

VERY THICK ICY PEAT (7M).
MACHINE CLEARED TO 26M IN WINTER 82/83.
CABLE ON R.O.W. 5.8 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44032 (PAIRED).

SITE 84-5B: PETITOT RIVER NORTH B - T4(OLD)

**********

59 DEGREES 45.0 MINUTES NORTH
119 DEGREES 15.0 MINUTES WEST

59 DEGRES 45.0 MINUTES NORD
119 DEGRES 15.0 MINUTES OUEST

ELEVATION 552 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 5 26 T(C) | DATE 86 6 23 T(C) | DATE 86 7 14 T(C) | DATE 86 8 7 T(C) | DATE 86 9 28 T(C) | DATE 86 10 23 T(C) |
|---|---|---|---|---|---|---|
| 1.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 2.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 3.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 4.0 | -.3 | -.3 | -.2 | -.3 | -.3 | -.3 |
| 6.0 | -.3 | -.3 | -.3 | -.3 | -.3 | -.3 |
| 8.0 | -.2 | -.3 | -.2 | -.2 | -.2 | -.2 |
| 10.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 12.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 15.0 | .1 | .1 | .1 | .1 | .1 | .1 |
| 18.0 | .2 | .2 | .2 | .2 | .2 | .2 |
| 20.5 | .3 | .3 | .3 | .3 | .3 | .3 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 782.2. EMR-84-5B
-WELL SPUDDED 84 3 17

NW-ZAMA PIPELINE KM 782.2. EMR-84-5B
-DEMARRAGE DU PUITS LE 84 3 17

VERY THICK ICY PEAT (7M).
MACHINE CLEARED TO 26M IN WINTER 82/83.
CABLE OFF R.O.W. 20.8 M W OF PIPELINE
IN 38MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44032 (PAIRED).

126

SITE 84-6: PETITOT RIVER SOUTH - T1

**********

59 DEGREES 27.0 MINUTES NORTH
119 DEGREES 15.0 MINUTES WEST

59 DEGRES 27.0 MINUTES NORD
119 DEGRES 15.0 MINUTES OUEST

ELEVATION 575 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 5 26 T(C) | DATE 86 6 23 T(C) | DATE 86 7 14 T(C) | DATE 86 8 7 T(C) | DATE 86 9 28 T(C) | DATE 86 10 23 T(C) |
|---|---|---|---|---|---|---|
| .5 | -.0 | .0 | .2 | 1.1 | 1.7 | .3 |
| 1.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 1.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 2.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 2.5 | | -.2 | -.2 | -.2 | -.2 | -.2 |
| 3.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 3.5 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 4.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 4.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 5.5 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 818. EMR-84-6
-WELL SPUDDED 84 3 21

NW-ZAMA PIPELINE KM 818. EMR-84-6
-DEMARRAGE DU PUITS LE 84 3 21

THICK AND VERY ICE-RICH PEAT (5M).
MACHINE CLEARED TO 25M IN WINTER 82/83.
CABLE ON R.O.W. 1.2 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44032 (PAIRED).

127

SITE 84-6: PETITOT RIVER SOUTH - T2

**********

59 DEGREES 27.0 MINUTES NORTH
119 DEGREES 15.0 MINUTES WEST

59 DEGRES 27.0 MINUTES NORD
119 DEGRES 15.0 MINUTES OUEST

ELEVATION 575 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 5 26 T(C) | DATE 86 6 23 T(C) | DATE 86 7 14 T(C) | DATE 86 8 7 T(C) | DATE 86 9 28 T(C) | DATE 86 10 23 T(C) |
|---|---|---|---|---|---|---|
| .5 | -.0 | .5 | 2.8 | 4.8 | 2.4 | .2 |
| 1.0 | -.2 | -.2 | -.1 | -.1 | -.1 | -.1 |
| 1.5 | -.3 | -.3 | -.2 | -.2 | -.2 | -.1 |
| 2.0 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 |
| 2.5 | -.3 | -.3 | -.2 | -.2 | -.2 | -.2 |
| 3.0 | -.4 | -.3 | -.3 | -.3 | -.3 | -.3 |
| 3.5 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 4.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 4.5 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 5.4 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 818. EMR-84-6
-WELL SPUDDED 84 3 19

NW-ZAMA PIPELINE KM 818. EMR-84-6
-DEMARRAGE DU PUITS LE 84 3 19

THICK AND VERY ICE-RICH PEAT (5M).
MACHINE CLEARED TO 25M IN WINTER 82/83.
CABLE ON R.O.W. 2 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44032 (PAIRED).

128

SITE 84-6: PETITOT RIVER SOUTH - T3

**********

59 DEGREES 27.0 MINUTES NORTH
119 DEGREES 15.0 MINUTES WEST

59 DEGRES 27.0 MINUTES NORD
119 DEGRES 15.0 MINUTES OUEST

ELEVATION 575 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 5 26 T(C) | DATE 86 6 23 T(C) | DATE 86 7 14 T(C) | DATE 86 8 7 T(C) | DATE 86 9 28 T(C) | DATE 86 10 23 T(C) |
|---|---|---|---|---|---|---|
| 1.0 | -.3 | -.1 | -.0 | .5 | .4 | .0 |
| 2.0 | -.4 | -.3 | -.2 | -.2 | -.2 | -.1 |
| 3.0 | -.3 | -.3 | -.3 | -.3 | -.2 | -.2 |
| 4.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 6.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 8.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 10.0 | .0 | .0 | .0 | .0 | .0 | .0 |
| 12.0 | .1 | .1 | .1 | .1 | .1 | .1 |
| 15.0 | .3 | .3 | .2 | .3 | .3 | .3 |
| 18.0 | .5 | .5 | .5 | .5 | .5 | .5 |
| 20.6 | .6 | .6 | .6 | .6 | .6 | .6 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 818. EMR-84-6
-WELL SPUDDED 84 3 19

NW-ZAMA PIPELINE KM 818. EMR-84-6
-DEMARRAGE DU PUITS LE 84 3 19

THICK AND VERY ICE-RICH PEAT (5M).
MACHINE CLEARED TO 25M IN WINTER 82/83.
CABLE ON R.O.W. 4 M W OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44032 (PAIRED).

SITE 84-6: PETITOT RIVER SOUTH - T4

**********

59 DEGREES 27.0 MINUTES NORTH
119 DEGREES 15.0 MINUTES WEST

59 DEGRES 27.0 MINUTES NORD
119 DEGRES 15.0 MINUTES OUEST

ELEVATION 575 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 5 26 T(C) | DATE 86 6 23 T(C) | DATE 86 7 14 T(C) | DATE 86 8 7 T(C) | DATE 86 9 28 T(C) | DATE 86 10 23 T(C) |
|---|---|---|---|---|---|---|
| 1.0 | -.0 | -.0 | 0.0 | -.0 | -.0 | .0 |
| 2.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 3.0 | -.2 | -.2 | -.2 | -.2 | -.2 | -.2 |
| 4.0 | -.1 | -.1 | -.1 | -.1 | -.1 | -.1 |
| 6.0 | -.0 | -.0 | 0.0 | -.0 | -.0 | -.0 |
| 8.0 | .1 | .1 | .1 | .1 | .1 | .1 |
| 10.0 | .1 | .1 | .1 | .1 | .1 | .1 |
| 12.0 | .2 | .2 | .3 | .2 | .2 | .2 |
| 15.0 | .5 | .5 | .5 | .5 | .5 | .5 |
| 18.0 | .5 | .5 | .6 | .5 | .5 | .6 |
| 20.7 | .7 | .7 | .7 | .7 | .7 | .7 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 818. EMR-84-6
-WELL SPUDDED 84 3 19

NW-ZAMA PIPELINE KM 818. EMR-84-6
-DEMARRAGE DU PUITS LE 84 3 19

THICK AND VERY ICE-RICH PEAT (5M).
MACHINE-CLEARED TO 25M IN WINTER 82/83.
CABLE OFF R.O.W. 20 M W OF PIPELINE IN 38MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44032 (PAIRED).

130

SITE 84-6: PETITOT RIVER SOUTH - T5(OLD)

**********

59 DEGREES 27.0 MINUTES NORTH
119 DEGREES 15.0 MINUTES WEST

59 DEGRES 27.0 MINUTES NORD
119 DEGRES 15.0 MINUTES OUEST

ELEVATION 575 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 5 26 |
|---|---|
| Z(M) | T(C) |
| 1.0 | 2.2 |
| 2.0 | |
| 3.0 | |
| 4.0 | |
| 5.0 | 1.6 |
| 6.0 | |
| 7.0 | |
| 8.0 | 1.5 |
| 9.0 | |
| 10.1 | |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 818. EMR-84-6
-WELL SPUDDED 84 3 20

NW-ZAMA PIPELINE KM 818. EMR-84-6
-DEMARRAGE DU PUITS LE 84 3 20

THICK AND VERY ICE-RICH PEAT (5M).
MACHINE-CLEARED TO 25M IN WINTER 82/83.
CABLE ON R.O.W. 3 M E OF PIPELINE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44032 (PAIRED).

SITE KM 95.1

**********

0 DEGREES 0.0 MINUTES NORTH
0 DEGREES 0.0 MINUTES WEST

0 DEGRES 0.0 MINUTES NORD
0 DEGRES 0.0 MINUTES OUEST

ELEVATION 110 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

DATE
86 10 29

| Z(M) | T(C) |
|---|---|
| .5 | -1.9 |
| 1.0 | -.2 |
| 1.5 | -.0 |
| 2.0 | -.1 |
| 2.5 | -.2 |
| 3.0 | -.2 |
| 3.5 | -.4 |
| 4.0 | -.4 |
| 4.5 | -.5 |
| 5.5 | -.5 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE.
FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES.
ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 95.1
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 95.1
-DEMARRAGE DU PUITS LE 0 0 0

THERMOKARST POND TO SOUTH OF NEW CABLE,
ON EAST SIDE OF R.O.W. ENCOMPASSING TRENCH.
CABLE IN 25MM OIL-FILLED PVC TUBE.
10 SENSOR YSI44032 (PAIRED).

132

SITE KM 135 - CABLE HA127

**********

0 DEGREES 0.0 MINUTES NORTH
0 DEGREES 0.0 MINUTES WEST

0 DEGRES 0.0 MINUTES NORD
0 DEGRES 0.0 MINUTES OUEST

ELEVATION 130 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 10 29 |
|---|---|
| Z(M) | T(C) |
| .5 | -.2 |
| 1.0 | -.0 |
| 2.0 | -.2 |
| 3.0 | -.3 |
| 4.0 | -.6 |
| 5.0 | -.7 |
| 6.0 | -.7 |
| 7.0 | -.8 |
| 8.0 | -.9 |
| 9.0 | -.8 |
| 10.0 | -.8 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 135. EMR-86-135KM
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 135. EMR-86-135KM
-DEMARRAGE DU PUITS LE 0 0 0

UNFROZEN POCKET, NEGATIVE ROACH,
APPROX. 30 M BETWEEN CABLES.
CABLE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

SITE KM 135 - CABLE HA128

**********

0 DEGREES 0.0 MINUTES NORTH
0 DEGREES 0.0 MINUTES WEST

0 DEGRES 0.0 MINUTES NORD
0 DEGRES 0.0 MINUTES OUEST

ELEVATION 130 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 10 29 |
|---|---|
| Z(M) | T(C) |
| .5 | -.3 |
| 1.0 | .9 |
| 2.0 | 1.5 |
| 3.0 | 1.2 |
| 4.0 | .7 |
| 5.0 | .1 |
| 6.0 | 0.0 |
| 7.0 | -.1 |
| 8.0 | -.1 |
| 9.0 | -.1 |
| 10.0 | -.2 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 135. EMR-86-135KM
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 135. EMR-86-135KM
-DEMARRAGE DU PUITS LE 0 0 0

UNFROZEN POCKET, NEGATIVE ROACH,
APPROX. 30 M BETWEEN CABLES.
CABLE IN 25MM OIL-FILLED PVC TUBE.
11 SENSOR YSI44033 (PAIRED).

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# APPENDIX B

## PIPE TEMPERATURE SENSORS DATA LISTINGS

| Site Number | Site Name | Pipe Sensor Identification Label |
|---|---|---|
| 84-1 | Norman Wells Pump Station | PT1-1 |
| 84-2A | Canyon Creek North A | PT1-3 |
| 84-2B | Canyon Creek North B | PT1-4 |
| 84-2C | Canyon Creek South C | PT1-5 |
| 84-3A | Great Bear River A | EMR11 |
| 84-3B | Great Bear River B | PT1-10 |
| 84-4A | Trail River A | EMR1 |
| 84-4B | Trail River B | PT1-9 |
| 84-5A | Petitot River North A | EMR4 |
| 84-5B | Petitot River North B | EMR5 |
| 84-6 | Petitot River South | EMR6 |
| 85-7A | Table Mountain A | 85-EPT 1 |
| 85-7B | Table Mountain B | 85-EPT 3 |
| 85-7C | Table Mountain C | 85-EPT 2 |
| 85-8A | Manners Creek A | 85-EPT 8 |
| 85-8B | Manners Creek B | 85-EPT 7 |
| 85-8C | Manners Creek C | 85-EPT 12 |
| 85-9 | Pump Station 3 | 85-EPT 9 |
| 85-10A | Mackenzie Highway South A | 85-EPT 4 |
| 85-10B | Mackenzie Highway South B | 85-EPT 5 |
| 85-11 | Moraine South | 85-EPT 11 |
| 85-12A | Jean Marie Creek A | 85-EPT 6 |
| 85-12B | Jean Marie Creek B | 85-EPT 10 |

| Site Number | Site Name | Pipe Diameter (Inches) |
|---|---|---|
| B4-1 | Horton Wells Pump Station | PT1-1 |
| B4-2a | Canyon Creek North A | PT1-3 |
| B4-2b | Canyon Creek North B | PT1-4 |
| B4-3C | Canyon Creek South C | PT1-5 |
| B4-3a | Great Bear River A | 12MB1 |
| B4-3b | Great Bear River B | PT1-10 |
| B4-4 | Trail River A | 6MB1 |
| B4-4a | Trail River B | PT1-2 |
| B5-1A | Pelican River North A | 10MB1 |
| B5-1b | Pelican River North B | 14MB1 |
| B5-1C | Pelican River North C | 16MB1 |
| B5-2A | Table Mountain A | B5-EP1 1 |
| B5-2B | Table Mountain B | B5-EP1 3 |
| B5-2C | Table Mountain C | B5-EP1 2 |
| B5-3A | Manners Creek A | B5-EP1 4 |
| B5-3B | Manners Creek B | B5-EP1 7 |
| B5-3C | Manners Creek C | B5-EP1 12 |
| B5-4 | Pump Station 4 | B5-EP1 6 |
| B5-10A | Mackenzie Highway South A | B5-EP1 9 |
| B5-10B | Mackenzie Highway South B | B5-EP1 8 |
| B5-11 | Moosine South | B5-EP1 11 |
| B5-12A | Dean Marie Creek A | B5-EP1 10 |
| B5-12B | Dean Marie Creek B | B5-EP1 13 |

NORMAN WELLS PUMP STATION - PT1-1

**********

65 DEGREES 17.4 MINUTES NORTH
126 DEGREES 53.2 MINUTES WEST

65 DEGRES 17.4 MINUTES NORD
126 DEGRES 53.2 MINUTES OUEST

ELEVATION 61 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 17 | DATE 86 2 21 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 23 | DATE 86 6 19 | DATE 86 8 1 | DATE 86 9 25 | DATE 86 10 28 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .90 | .0 | -.4 | -.9 | -.6 | -.6 | 1.0 | .1 | .1 | .4 | .5 | -1.2 |
| 1.05 | .0 | -.3 | -1.2 | -.2 | -.6 | .4 | -.4 | -.0 | .5 | .4 | -.1 |
| 1.20 | .1 | -.2 | -.9 | -.2 | -.6 | .1 | -.6 | .0 | .5 | .5 | 0.0 |
| 1.05 | .1 | -.4 | -1.0 | -.2 | -.5 | .8 | -.1 | -.0 | .5 | .5 | -.0 |
| 1.05 | .1 | -.6 | -1.0 | -.3 | -.5 | 2.3 | .4 | -.0 | .6 | .4 | .3 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KMO.06. EMR-84-1. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KMO.06. EMR-84-1. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER: 0.90 M
5 ATKINS SENSORS
SWITCH BOX FAILED. SENSOR POSITIONS NOT ALWAYS CORRECT AS OF OCT. 84.

CANYON CREEK NORTH A - PT1-3

**********

65 DEGREES 14.1 MINUTES NORTH
126 DEGREES 31.3 MINUTES WEST

65 DEGRES 14.1 MINUTES NORD
126 DEGRES 31.3 MINUTES OUEST

ELEVATION 123 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 3 | DATE 86 9 26 | DATE 86 10 28 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .95 | -.9 | -1.7 | -.3 | .6 | 2.9 | 3.2 | 1.5 | .1 | -.1 |
| 1.10 | -1.1 | -1.7 | -.3 | .2 | 2.6 | 3.0 | 1.5 | .2 | -.0 |
| 1.25 | -.9 | -1.6 | -.3 | .1 | 2.4 | 2.9 | 1.5 | .2 | -.0 |
| 1.10 | -1.0 | -1.7 | -.3 | .1 | 2.4 | 3.1 | 1.5 | .2 | -.0 |
| 1.10 | -1.0 | -1.7 | -.3 | .2 | 2.6 | 3.0 | 1.5 | .1 | -.0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 18.97. EMR-84-2A. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 18.97. EMR-84-2A. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER 0.95 M.
5 ATKINS SENSORS.
SWITCH BOX FAILED AFTER JULY 85.

140

CANYON CREEK NORTH B - PT1-4

**********

65 DEGREES 14.0 MINUTES NORTH
126 DEGREES 31.1 MINUTES WEST

65 DEGRES 14.0 MINUTES NORD
126 DEGRES 31.1 MINUTES OUEST

ELEVATION 110 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 3 | DATE 86 9 26 | DATE 86 10 28 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| 1.00 | -1.0 | -1.5 | -.2 | .6 | 2.7 | | 1.4 | .2 | .2 | .1 |
| 1.15 | -.9 | -1.5 | .1 | .8 | 2.8 | | 1.4 | .2 | .2 | .1 |
| 1.30 | -.9 | -1.5 | .3 | .5 | 2.5 | | 1.5 | .3 | .2 | .0 |
| 1.15 | -.9 | -1.5 | .1 | 1.3 | | | 1.5 | .3 | .3 | .3 |
| 1.15 | -.9 | -1.5 | .1 | 1.3 | 2.4 | 3.2 | 1.5 | .2 | .1 | .0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 19.26. EMR-84-2B. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 19.26. EMR-84-2B. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER 1.0 M.
5 ATKINS SENSORS.

1441

CANYON CREEK SOUTH C - PT1-5

**********

65 DEGREES 13.9 MINUTES NORTH
126 DEGREES 30.8 MINUTES WEST

65 DEGRES 13.9 MINUTES NORD
126 DEGRES 30.8 MINUTES OUEST

ELEVATION 119 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 3 | DATE 86 9 26 | DATE 86 10 27 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .95 | -.3 | -1.5 | -1.8 | -.3 | .8 | 3.2 | 3.5 | 1.7 | .2 | .1 | -.2 |
| 1.10 | -.2 | -1.3 | -1.8 | -.4 | 1.3 | 2.8 | 3.3 | 1.7 | .2 | .1 | -.1 |
| 1.25 | -.1 | -1.1 | -1.7 | -.4 | .6 | 2.5 | 3.0 | 1.7 | .3 | .2 | 0.0 |
| 1.10 | -.1 | -1.3 | -1.8 | -.4 | .3 | 2.8 | 3.3 | 1.9 | .3 | .2 | -.0 |
| 1.10 | -.2 | -1.4 | -1.8 | -.4 | 1.0 | 2.9 | 3.3 | 1.7 | .2 | .1 | -.1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 19.55. EMR-84-2C. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 19.55. EMR-84-2C. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER 0.95 M.
5 ATKINS SENSORS.

GREAT BEAR RIVER A - EMR11

**********

64 DEGREES 54.7 MINUTES NORTH
125 DEGREES 34.8 MINUTES WEST

64 DEGRES 54.7 MINUTES NORD
125 DEGRES 34.8 MINUTES OUEST

ELEVATION 70 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 3 5 | DATE 86 4 30 | DATE 86 5 24 | DATE 86 6 20 | DATE 86 7 18 | DATE 86 8 2 | DATE 86 9 26 | DATE 86 10 27 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .90 | -.4 | -1.9 | -2.4 | -.3 | 1.2 | 5.2 | 5.5 | 2.7 | .5 | .2 | -.2 |
| 1.05 | -.3 | -1.8 | -2.5 | -.5 | .5 | 4.6 | 5.0 | 2.6 | .4 | .2 | -.2 |
| 1.20 | -.1 | -1.2 | -2.5 | -.6 | .1 | 4.2 | 4.7 | 2.5 | .4 | .2 | .1 |
| 1.05 | -.1 | -1.4 | -2.4 | -.4 | .4 | 4.6 | 5.0 | 2.6 | .4 | .2 | .0 |
| 1.05 | -.1 | -1.5 | -2.4 | -.4 | .4 | 4.6 | 5.0 | 2.7 | .5 | .3 | .0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 78.7 EMR-84-3A. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 78.7 EMR-84-3A. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER: 0.90 M.
5 ATKINS SENSORS.

GREAT BEAR RIVER B - PT1-10

**********

64 DEGREES 54.7 MINUTES NORTH
125 DEGREES 34.5 MINUTES WEST

64 DEGRES 54.7 MINUTES NORD
125 DEGRES 34.5 MINUTES OUEST

ELEVATION 93 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 1 14 T(C) | DATE 86 3 5 T(C) | DATE 86 5 24 T(C) | DATE 86 6 20 T(C) | DATE 86 7 18 T(C) | DATE 86 8 2 T(C) | DATE 86 9 26 T(C) | DATE 86 10 27 T(C) | DATE 86 11 12 T(C) | DATE 86 12 10 T(C) |
|---|---|---|---|---|---|---|---|---|---|---|
| .85 | | | | | | | | | | |
| 1.00 | -.2 | -1.5 | -.3 | .4 | 4.7 | 5.1 | 2.7 | .5 | .3 | -.1 |
| 1.10 | .0 | -1.0 | -.5 | .2 | 4.0 | 4.5 | 2.5 | .5 | .3 | .1 |
| 1.00 | -.0 | -1.2 | -.4 | .2 | 4.2 | 4.7 | 2.6 | .5 | .3 | .1 |
| 1.00 | -.1 | -1.3 | -.4 | .5 | 4.6 | 5.0 | 2.6 | .5 | .3 | .0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 79.1 EMR-84-3B. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 79.1 EMR-84-3B. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER: 0.85 M.
5 ATKINS SENSORS.

TRAIL RIVER A - EMR1

**********

62 DEGREES 5.2 MINUTES NORTH
121 DEGREES 59.6 MINUTES WEST

62 DEGRES 5.2 MINUTES NORD
121 DEGRES 59.6 MINUTES OUEST

ELEVATION 153 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 19 | DATE 86 3 4 | DATE 86 4 9 | DATE 86 5 28 | DATE 86 6 22 | DATE 86 7 16 | DATE 86 8 9 | DATE 86 9 29 | DATE 86 10 29 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .90 | .1 | -.1 | -.1 | .1 | .3 | 3.7 | 7.5 | 7.9 | 4.8 | 1.9 | .7 | -.0 |
| 1.05 | .2 | -.0 | -.0 | .1 | .3 | 3.5 | 7.3 | 7.8 | 4.7 | 1.9 | .7 | .1 |
| 1.20 | .2 | -.1 | .0 | .1 | .3 | 3.0 | 7.0 | 7.7 | 4.9 | 2.1 | .9 | .1 |
| 1.05 | .2 | .1 | .1 | .1 | .3 | 3.3 | 7.2 | 7.8 | 4.9 | 2.1 | .9 | .2 |
| 1.05 | .1 | -.1 | -.0 | .1 | .3 | 3.5 | 7.2 | 7.7 | 4.7 | 1.9 | .7 | .0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 477.3. EMR-84-4A
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 477.3. EMR-84-4A
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER 0.90 M.
5 ATKINS SENSORS.

TRAIL RIVER B - PT1-9

**********

62 DEGREES 5.3 MINUTES NORTH
121 DEGREES 59.4 MINUTES WEST

62 DEGRES 5.3 MINUTES NORD
121 DEGRES 59.4 MINUTES OUEST

ELEVATION 165 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 19 | DATE 86 3 4 | DATE 86 4 9 | DATE 86 5 28 | DATE 86 6 22 | DATE 86 7 16 | DATE 86 8 9 | DATE 86 9 29 | DATE 86 10 29 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .90 | .2 | -.1 | -.1 | -.1 | .3 | 3.9 | 7.6 | 8.0 | 4.9 | 2.0 | .8 | .1 |
| 1.05 | .3 | .0 | .1 | -.0 | .3 | 3.8 | 7.5 | 8.0 | 5.0 | 2.1 | .9 | .2 |
| 1.20 | .3 | .0 | .1 | .0 | .3 | 3.5 | 7.2 | 7.8 | 4.9 | 2.1 | .9 | .2 |
| 1.05 | .3 | .1 | -.1 | .1 | .3 | 3.7 | 7.4 | 7.9 | 5.0 | 2.1 | .9 | .2 |
| 1.05 | .2 | -.0 | 0.0 | -.0 | .2 | 3.7 | 7.4 | 7.9 | 4.9 | 2.0 | .8 | .1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 477.7. EMR-84-4B. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 477.7. EMR-84-4B. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER: 0.90 M.
5 ATKINS SENSORS.

146

PETITOT RIVER NORTH A - EMR4

**********

59 DEGREES 45.0 MINUTES NORTH
119 DEGREES 30.0 MINUTES WEST

59 DEGRES 45.0 MINUTES NORD
119 DEGRES 30.0 MINUTES OUEST

ELEVATION 552 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 5 26 | DATE 86 6 23 | DATE 86 7 14 | DATE 86 8 7 | DATE 86 9 28 | DATE 86 10 23 |
|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .77 | .3 | 2.4 | 4.1 | 5.3 | 4.1 | 2.6 |
| .92 | .3 | 2.4 | 4.3 | 5.5 | 4.1 | 2.6 |
| 1.07 | .2 | 2.2 | 4.4 | 5.5 | 4.0 | 2.4 |
| .92 | .4 | 2.4 | 4.0 | 5.7 | 4.2 | 2.6 |
| .92 | .3 | 2.3 | 4.2 | 5.6 | 4.0 | 2.5 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 781.9. EMR-84-5A. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 781.9. EMR-84-5A. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER: 0.77 M.
5 ATKINS SENSORS.

PETITOT RIVER NORTH B - EMR5

**********

0 DEGREES 0.0 MINUTES NORTH
0 DEGREES 0.0 MINUTES WEST

0 DEGRES 0.0 MINUTES NORD
0 DEGRES 0.0 MINUTES OUEST

ELEVATION 0 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 5 26 | DATE 86 6 23 | DATE 86 7 14 | DATE 86 8 7 | DATE 86 9 28 | DATE 86 10 23 |
|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .85 | .3 | 2.3 | 4.1 | 5.4 | 4.0 | 2.6 |
| 1.00 | .4 | 2.5 | 4.3 | 5.6 | 4.1 | 2.7 |
| 1.10 | .4 | 2.5 | 4.4 | 5.8 | 4.2 | 2.7 |
| 1.00 | .2 | 2.2 | 4.0 | 5.3 | 3.9 | 2.4 |
| 1.00 | .3 | 2.4 | 4.2 | 5.6 | 4.1 | 2.6 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 782.2. EMR-84-5B. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 782.2. EMR-84-5B. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER: 0.85 M.
5 ATKINS SENSORS.

PETITOT RIVER SOUTH - EMR6

**********

59 DEGREES 27.0 MINUTES NORTH
119 DEGREES 15.0 MINUTES WEST

59 DEGRES 27.0 MINUTES NORD
119 DEGRES 15.0 MINUTES OUEST

ELEVATION 575 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 5 26 T(C) | DATE 86 6 23 T(C) | DATE 86 7 14 T(C) | DATE 86 8 7 T(C) | DATE 86 9 28 T(C) | DATE 86 10 23 T(C) |
|---|---|---|---|---|---|---|
| .80 | .3 | 1.8 | 3.6 | 5.0 | 3.8 | 2.5 |
| .95 | .4 | 2.2 | 3.7 | 4.9 | 3.8 | 2.6 |
| 1.10 | .3 | 2.0 | 3.6 | 4.8 | 3.7 | 2.4 |
| .95 | | 1.9 | 3.4 | 4.6 | 3.6 | 2.4 |
| .95 | .4 | 2.0 | 3.5 | 4.6 | 3.6 | 2.5 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 818.5. EMR-84-6. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 818.5. EMR-84-6. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER 0.80 M.
5 ATKINS SENSORS.

TABLE MOUNTAIN A - 85-EPT 1

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 255 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 3 3 | DATE 86 5 25 | DATE 86 6 21 | DATE 86 7 17 | DATE 86 8 10 | DATE 86 9 29 | DATE 86 10 26 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .90 | -.1 | -.3 | -.2 | 1.4 | 2.6 | 1.7 | .4 | .2 | -.1 |
| 1.05 | -.1 | -.3 | .1 | 1.9 | 2.9 | 1.7 | .4 | .2 | -.1 |
| 1.20 | -.1 | -.3 | -.2 | 1.1 | 2.4 | 1.6 | .4 | .2 | -.1 |
| 1.05 | -.1 | -.3 | -.2 | 1.2 | 2.5 | 1.7 | .4 | .2 | -.1 |
| 1.05 | -.1 | -.3 | -.2 | 1.3 | 2.6 | 1.7 | .4 | .2 | -.0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 270.8. EMR-85-7A. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 270.8. EMR-85-7A. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER: 0.90 M
5 YSI44033 THERMISTORS.

152

TABLE MOUNTAIN B - 85-EPT 3

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 260 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 3 3 | DATE 86 5 25 | DATE 86 6 21 | DATE 86 7 17 | DATE 86 8 10 | DATE 86 9 29 | DATE 86 10 26 | DATE 86 11 19 | DATE 86 12 17 |
|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .90 | -.3 | -.2 | .3 | 1.8 | 3.0 | 1.8 | .4 | .1 | -.1 |
| 1.05 | -.1 | -.2 | -.1 | 1.4 | 2.7 | 1.8 | .4 | .1 | -.0 |
| 1.20 | -.1 | -.3 | -.2 | 1.1 | 2.5 | 1.7 | .4 | .1 | -.0 |
| 1.05 | -.1 | -.2 | -.1 | 1.1 | 2.7 | 1.8 | .4 | .2 | -.0 |
| 1.05 | -.1 | -.2 | .1 | 1.6 | 2.8 | 1.8 | .4 | .2 | -.0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 271.5. EMR-85-7B. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 271.5. EMR-85-7B. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER: 0.90 M
YSI 44033 THERMISTORS.

TABLE MOUNTAIN C - 85-EPT 2

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 255 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 3 3 T(C) | DATE 86 5 25 T(C) | DATE 86 6 21 T(C) | DATE 86 7 17 T(C) | DATE 86 8 10 T(C) | DATE 86 9 29 T(C) | DATE 86 10 27 T(C) | DATE 86 11 19 T(C) | DATE 86 12 17 T(C) |
|---|---|---|---|---|---|---|---|---|---|
| .90 | -.5 | -.2 | .6 | 2.1 | 3.2 | 1.7 | .4 | .2 | -.7 |
| 1.05 | -.3 | -.4 | -.1 | 1.4 | 2.7 | 1.6 | .3 | .1 | -.4 |
| 1.20 | -.2 | -.4 | -.2 | 1.0 | 2.4 | 1.7 | .3 | .1 | -.2 |
| 1.05 | -.2 | -.3 | .1 | 1.5 | 2.8 | 1.8 | .4 | .2 | -.1 |
| 1.05 | -.2 | -.3 | -.0 | 1.4 | 2.7 | 1.7 | .3 | .1 | -.1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 271.8. EMR-85-7C. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 271.8. EMR-85-7C. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER: 0.90 M
5 YSI44033 THERMISTORS.

152

MANNERS CREEK A - 85 EPT8

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 5.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 5.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 13 | DATE 86 2 18 | DATE 86 3 12 | DATE 86 4 21 | DATE 86 5 28 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 6 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .90 | .1 | .1 | -.1 | -.1 | .2 | 2.8 | 6.5 | 7.6 | 5.6 | 3.2 | 1.5 | .5 |
| 1.05 | .2 | .1 | -.1 | -.1 | .3 | 2.9 | 6.3 | 7.5 | 5.6 | 3.3 | 1.6 | .5 |
| 1.20 | .1 | .0 | -.1 | -.1 | .3 | 2.8 | 6.0 | 7.0 | 5.3 | 3.1 | 1.5 | .5 |
| 1.05 | .1 | .1 | -.1 | -.1 | .2 | 2.9 | 6.2 | 7.3 | 5.4 | 3.2 | 1.5 | .5 |
| 1.05 | .1 | .0 | -.1 | -.1 | .2 | 2.8 | 6.2 | 7.4 | 5.5 | 3.2 | 1.5 | .5 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 556.9. EMR-85-8A
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 556.9. EMR-85-8A
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER 0.90 M.
5 YSI44033 THERMISTORS.

MANNERS CREEK B - 85 EPT7

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 121.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 121.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 13 | DATE 86 2 18 | DATE 86 3 12 | DATE 86 4 21 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 6 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .90 | .2 | .0 | -.1 | -.5 | .2 | 2.8 | 6.0 | 7.2 | 5.4 | 3.1 | 1.5 | .5 |
| 1.05 | .1 | .2 | -.0 | -.4 | .3 | 3.1 | 6.3 | 7.5 | 5.6 | 3.3 | 1.6 | .6 |
| 1.20 | -.0 | .1 | -.1 | -.4 | .2 | 2.9 | 6.1 | 7.1 | 5.4 | 3.1 | 1.5 | .5 |
| 1.05 | .2 | .1 | -.1 | -.4 | .2 | 3.0 | 6.3 | 7.4 | 5.6 | 3.2 | 1.5 | .5 |
| 1.05 | .2 | .2 | -.0 | -.3 | .3 | 3.1 | 6.3 | 7.6 | 5.5 | 3.3 | 1.6 | .6 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 557.2. EMR-85-8B. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 557.2. EMR-85-8B. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER 0.90 M
5 YSI44033 THERMISTORS.

154

MANNERS CREEK C - 85 EPT12

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 5.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 5.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 13 | DATE 86 2 18 | DATE 86 3 12 | DATE 86 4 21 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 6 | DATE 86 9 29 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .90 | .1 | .1 | -.0 | -.0 | .2 | 2.9 | 6.5 | 7.7 | 5.6 | 3.3 | 1.6 | .5 |
| 1.05 | .2 | -.0 | -.1 | -.1 | .1 | 2.2 | 4.4 | 5.4 | 4.1 | 3.2 | 1.1 | .4 |
| 1.20 | .2 | -.1 | -.1 | -.1 | -.0 | .9 | 2.2 | 2.6 | 2.3 | 1.2 | .6 | .1 |
| 1.05 | .2 | .0 | .0 | .0 | .2 | 2.2 | 3.7 | 4.1 | 2.8 | 1.7 | .8 | .3 |
| 1.05 | .2 | .1 | .0 | -.0 | .3 | 3.0 | 6.3 | 7.4 | 5.5 | 3.3 | 1.6 | .6 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 557.4. EMR-85-8C. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 557.4. EMR-85-8C. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER: 0.90 M.
5 YSI44033 THERMISTORS.

155

PUMP STATION 3 - 85 EPT9

**********

61 DEGREES 23.0 MINUTES NORTH
120 DEGREES 55.0 MINUTES WEST

61 DEGRES 23.0 MINUTES NORD
120 DEGRES 55.0 MINUTES OUEST

ELEVATION 217 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 7 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .90 | .2 | .1 | .0 | -.0 | .3 | 3.9 | 6.9 | 7.8 | 5.5 | 3.1 | 1.5 | .9 |
| 1.05 | .3 | .1 | .1 | .1 | .4 | 3.7 | 6.7 | 7.7 | 5.6 | 3.3 | 1.7 | .9 |
| 1.20 | .3 | .1 | .1 | .1 | .4 | 3.5 | 6.5 | 7.5 | 5.6 | 3.3 | 1.7 | .9 |
| 1.05 | .3 | .1 | .1 | .1 | .4 | 3.7 | 6.7 | 7.7 | 5.6 | 3.3 | 1.7 | .9 |
| 1.05 | .3 | .1 | .1 | .1 | .4 | 3.6 | 6.6 | 7.6 | 5.5 | 3.2 | 1.6 | .8 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 582.5. EMR-85-9. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 582.5. EMR-85-9. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER: 0.90 M.
5 YSI44033 THERMISTORS.

MACKENZIE HIGHWAY SOUTH A - 85 EPT4

**********

61 DEGREES 21.0 MINUTES NORTH
120 DEGREES 52.0 MINUTES WEST

61 DEGRES 21.0 MINUTES NORD
120 DEGRES 52.0 MINUTES OUEST

ELEVATION 243 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 25 | DATE 86 11 20 | DATE 86 12 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .95 | 2.2 | 2.4 | 2.1 | 2.2 | 3.3 | 6.7 | 9.9 | 10.2 | 7.8 | 5.6 | 3.9 | 2.7 |
| 1.10 | 2.2 | 2.4 | 2.2 | 2.2 | 3.2 | 6.5 | 9.7 | 10.0 | 7.8 | 5.7 | 4.0 | 2.8 |
| 1.25 | 2.3 | 2.4 | 2.2 | 2.2 | 2.6 | 6.0 | 9.0 | 9.8 | 7.9 | 5.8 | 4.1 | 2.9 |
| 1.10 | 2.3 | 2.5 | 2.3 | 2.3 | 2.8 | 6.2 | 9.3 | 10.0 | 8.0 | 5.9 | 4.2 | 3.0 |
| 1.10 | 2.3 | 2.4 | 2.2 | 2.2 | 2.8 | 6.2 | 9.2 | 9.9 | 7.9 | 5.8 | 4.1 | 2.9 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 587.5. EMR-85-10A
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 587.5. EMR-85-10A
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER: 0.95 M.
5 YSI44033 THERMISTORS.

157

MACKENZIE HIGHWAY SOUTH B - 85 EPT5

**********

61 DEGREES 21.0 MINUTES NORTH
120 DEGREES 52.0 MINUTES WEST

61 DEGRES 21.0 MINUTES NORD
120 DEGRES 52.0 MINUTES OUEST

ELEVATION 242 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 22 | DATE 86 7 15 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 19 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .95 | 2.2 | 2.4 | 2.2 | 2.2 | 2.7 | 6.2 | 9.2 | 10.2 | 7.9 | 5.7 | 4.0 | 3.0 |
| 1.10 | 2.2 | 2.3 | 2.2 | 2.2 | 2.6 | 6.0 | 9.0 | 10.0 | 7.8 | 5.7 | 4.0 | 3.0 |
| 1.25 | 2.3 | 2.4 | 2.2 | 2.3 | 2.6 | 6.0 | 8.9 | 9.9 | 7.9 | 5.7 | 4.1 | 3.1 |
| 1.10 | 2.3 | 2.4 | 2.2 | 2.2 | 2.6 | 6.0 | 8.9 | 9.9 | 7.8 | 5.7 | 4.0 | 3.0 |
| 1.10 | 2.2 | 2.4 | 2.2 | 2.2 | 2.6 | 5.9 | 8.9 | 9.9 | 7.8 | 5.7 | 4.0 | 3.0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 587.9. EMR-85-10B. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 587.9. EMR-85-10B. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER: 0.95 M.
5 YSI44033 THERMISTORS.

MORAINE SOUTH - 85 EPT11

**********

61 DEGREES 18.0 MINUTES NORTH
120 DEGREES 49.0 MINUTES WEST

61 DEGRES 18.0 MINUTES NORD
120 DEGRES 49.0 MINUTES OUEST

ELEVATION 254 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 23 | DATE 86 7 15 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .95 | 1.6 | 1.5 | 1.5 | 1.5 | 1.9 | 5.5 | 8.7 | 9.6 | 7.3 | 5.0 | 3.3 | 2.3 |
| 1.10 | 1.6 | 1.6 | 1.5 | 1.5 | 2.0 | 5.3 | 8.3 | 9.3 | 7.3 | 5.2 | 3.4 | 2.4 |
| 1.25 | 1.6 | 1.5 | 1.5 | 1.5 | 2.0 | 5.1 | 8.1 | 8.9 | | | | |
| 1.10 | 1.6 | 1.6 | 1.5 | 1.5 | 2.0 | 5.2 | 8.3 | 9.4 | 7.3 | 5.2 | 3.4 | 2.4 |
| 1.10 | 1.6 | 1.6 | 1.5 | 1.5 | 2.0 | 5.3 | 8.2 | 9.3 | 7.2 | 5.1 | 3.4 | 2.4 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 596.6. EMR-85-11. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 596.6. EMR-85-11. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER: 0.95 M.
5 YSI44033 THERMISTORS.

JEAN MARIE CREEK A - 85 EPT6

**********

61 DEGREES 11.0 MINUTES NORTH
120 DEGREES 41.0 MINUTES WEST

61 DEGRES 11.0 MINUTES NORD
120 DEGRES 41.0 MINUTES OUEST

ELEVATION 305 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 15 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 23 | DATE 86 7 14 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .95 | 1.0 | .9 | .9 | .9 | 1.8 | 5.0 | 7.8 | 8.7 | 6.5 | 4.3 | 2.7 | 1.8 |
| 1.10 | 1.0 | .9 | .9 | .9 | 1.5 | 4.7 | 7.4 | 8.5 | 6.5 | 4.3 | 2.8 | 1.9 |
| 1.25 | 1.0 | 1.0 | 1.0 | .9 | 1.4 | 5.3 | 7.3 | 8.4 | 6.5 | 4.4 | 2.9 | 1.9 |
| 1.10 | 1.0 | .9 | .9 | .9 | 1.5 | 4.7 | 7.5 | 8.6 | 6.5 | 4.3 | 2.8 | 1.9 |
| 1.10 | 1.0 | .9 | .9 | .9 | 1.5 | 4.6 | 7.4 | 8.5 | 6.5 | 4.3 | 2.8 | 1.9 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 607.7. EMR-85-12A. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 607.7. EMR-85-12A. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER: 0.95 M.
5 YSI344033 THERMISTORS.

160

JEAN MARIE CREEK B - 85 EPT10

**********

61 DEGREES 11.0 MINUTES NORTH
120 DEGREES 41.0 MINUTES WEST

61 DEGRES 11.0 MINUTES NORD
120 DEGRES 41.0 MINUTES OUEST

ELEVATION 305 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 1 14 | DATE 86 2 20 | DATE 86 3 24 | DATE 86 4 10 | DATE 86 5 27 | DATE 86 6 23 | DATE 86 7 14 | DATE 86 8 8 | DATE 86 9 28 | DATE 86 10 24 | DATE 86 11 20 | DATE 86 12 22 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) | T(C) |
| .95 | 1.1 | 1.0 | 1.0 | .9 | 4.3 | 4.9 | 7.6 | 8.6 | 6.4 | 4.2 | 2.8 | 1.9 |
| 1.10 | 1.0 | .9 | 1.0 | .9 | 1.9 | 4.6 | 7.2 | 8.3 | 6.3 | 4.2 | 2.8 | 1.9 |
| 1.25 | 1.0 | .9 | .9 | .9 | 1.4 | 4.5 | 7.0 | 8.2 | 6.3 | 4.1 | 2.7 | 1.8 |
| 1.10 | 1.0 | .9 | 1.0 | .9 | 2.0 | 4.7 | 7.4 | 8.4 | 6.4 | 4.2 | 2.8 | 1.9 |
| 1.10 | 1.0 | .9 | .9 | .9 | 3.0 | 4.5 | 7.4 | 8.3 | 6.4 | 4.2 | 2.8 | 1.9 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

KM 607.9. EMR-85-12B. PIPE THERMISTORS.
-DRILLING FOR 1 DAYS
-TOTAL DEPTH 0 METRES

KM 607.9. EMR-85-12B. PIPE THERMISTORS.
-FORAGE PENDANT 1 JOURS
-PROFONDEUR TOTALE 0 METRES

DEPTH OF COVER: 0.95 M.
5 YSI44033 THERMISTORS.

# APPENDIX C

## DITCH THERMISTOR STRINGS DATA LISTINGS

SITÉ 84-2C: CANYON CREEK SOUTH C - DT113A

**********

65 DEGREES 13.9 MINUTES NORTH
126 DEGREES 30.8 MINUTES WEST

65 DEGRES 13.9 MINUTES NORD
126 DEGRES 30.8 MINUTES OUEST

ELEVATION 119 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 9 26 T(C) | DATE 86 10 27 T(C) | DATE 86 11 12 T(C) | DATE 86 12 10 T(C) |
|---|---|---|---|---|
| .10 | .4 | -3.7 | -11.6 | -7.0 |
| .30 | 3.3 | -.2 | -3.8 | -4.4 |
| .60 | | | | |
| .80 | 3.2 | -.2 | -.6 | -2.5 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 19.55. EMR-84-2C
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 19.55. EMR-84-2C
-DEMARRAGE DU PUITS LE 0 0 0

WOODEN DOWEL DIRECTLY ABOVE PIPE.
DITCH THERMISTOR IS LOCATED 1.5M NORTH OF THERMAL FENCE EMR-84-2C.
SURFACE CONDITIONS - DRY GRAVEL
MOUND - NO VEGETATION
4 SENSOR ATKINS.

SITE 84-2C: CANYON CREEK SOUTH C - DT113B

**********

65 DEGREES 13.9 MINUTES NORTH
126 DEGREES 30.8 MINUTES WEST

65 DEGRES 13.9 MINUTES NORD
126 DEGRES 30.8 MINUTES OUEST

ELEVATION 119 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 9 26 T(C) | DATE 86 10 27 T(C) | DATE 86 11 12 T(C) | DATE 86 12 10 T(C) |
|---|---|---|---|---|
| .20 | 2.4 | -1.0 | -5.0 | -4.7 |
| .40 | 3.3 | -.1 | -2.3 | -3.6 |
| .60 | 3.5 | 0.0 | -.9 | -2.9 |
| .80 | 3.6 | .1 | -.2 | -2.2 |
| 1.00 | 3.1 | .2 | 0.0 | -1.5 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 19.55. EMR-84-2C
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 19.55. EMR-84-2C
-DEMARRAGE DU PUITS LE 0 0 0

WOODEN DOWEL IN TRENCH WALL.
DITCH THERMISTOR IS LOCATED 1.5M NORTH OF THERMAL FENCE EMR-84-2C.
SURFACE CONDITIONS - DRY GRAVEL
MOUND - NO VEGETATION.
5 SENSOR ATKINS.

SITE 84-3B: GREAT BEAR RIVER B - DT117A

**********

64 DEGREES 54.7 MINUTES NORTH
125 DEGREES 34.5 MINUTES WEST

64 DEGRES 54.7 MINUTES NORD
125 DEGRES 34.5 MINUTES OUEST

ELEVATION 93 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| | DATE 86 9 26 | DATE 86 10 27 | DATE 86 11 12 | DATE 86 12 10 |
|---|---|---|---|---|
| Z(M) | T(C) | T(C) | T(C) | T(C) |
| .10 | 3.0 | -.4 | -1.7 | -3.0 |
| .40 | 6.1 | 0.0 | -.1 | -2.0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 79.39. EMR-84-3B
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 79.39. EMR-84-3B
-DEMARRAGE DU PUITS LE 0 0 0

WOODEN DOWEL DIRECTLY ABOVE PIPE.
DITCH THERMISTOR IS LOCATED 9.6M SOUTH OF THERMAL FENCE EMR-84-3B
SURFACE CONDITIONS - LEVEL,VERY MOIST, SILTY SAND - GOOD GRASS COVER.
2 SENSOR ATKINS.

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SITE 84-3B: GREAT BEAR RIVER B - DT117B

**********

64 DEGREES 54.7 MINUTES NORTH
125 DEGREES 34.5 MINUTES WEST

64 DEGRES 54.7 MINUTES NORD
125 DEGRES 34.5 MINUTES OUEST

ELEVATION 93 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 10 27 T(C) | DATE 86 11 12 T(C) | DATE 86 12 10 T(C) |
|---|---|---|---|
| .30 | 0.0 | -.4 | -2.5 |
| .50 | .1 | 0.0 | -1.7 |
| .70 | .2 | .1 | -.5 |
| .90 | .2 | .1 | 0.0 |
| 1.10 | .1 | 0.0 | -.1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 79.39. EMR-84-3B
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 79.39. EMR-84-3B
-DEMARRAGE DU PUITS LE 0 0 0

WOODEN DOWEL IN TRENCH WALL.
DITCH THERMISTOR IS LOCATED 9.6M SOUTH OF THERMAL FENCE ENR-84-3B.
SURFACE CONDITIONS - LEVEL,VERY MOIST, SILTY SAND - GOOD GRASS COVER.
5 SENSOR ATKINS.

SITE 85-7C: TABLE MOUNTAIN C - DT114A

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 255 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 10 27 T(C) | DATE 86 12 17 T(C) |
|---|---|---|
| .20 | 0.0 | -2.0 |
| .30 | .1 | -.7 |
| .50 | 0.0 | -1.2 |
| .60 | .1 | -.2 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 271.8. EMR-85-7C
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 271.8. EMR-85-7C
-DEMARRAGE DU PUITS LE 0 0 0

WOODEN DOWEL DIRECTLY ABOVE PIPE.
DITCH THERMISTOR IS LOCATED 26M NORTH OF THERMAL FENCE EMR-85-7C.
SURFACE CONDITIONS - MINOR SUNKEN DITCH WITH GENTLY FLOWING WATER.
4 SENSOR ATKINS.

SITE 85-7C: TABLE MOUNTAIN C - DT114B

**********

63 DEGREES 37.0 MINUTES NORTH
123 DEGREES 37.0 MINUTES WEST

63 DEGRES 37.0 MINUTES NORD
123 DEGRES 37.0 MINUTES OUEST

ELEVATION 255 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 10 27 T(C) | DATE 86 12 17 T(C) |
|---|---|---|
| .20 | 0.0 | -1.7 |
| .40 | 0.0 | -.7 |
| .60 | .1 | -.1 |
| .80 | .1 | -.1 |
| 1.00 | .1 | -.1 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 271.8. EMR-85-7C
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 271.8. EMR-85-7C
-DEMARRAGE DU PUITS LE 0 0 0

WOODEN DOWEL IN TRENCH WALL.
DITCH THERMISTOR IS LOCATED 26M NORTH OF THERMAL FENCE EMR-85-7C.
SURFACE CONDITIONS - MINOR SUNKEN DITCH WITH GENTLY FLOWING WATER.
5 SENSOR ATKINS.

170

SITE 84-4A: TRAIL RIVER A - DT118A

**********

62 DEGREES 5.2 MINUTES NORTH
121 DEGREES 59.6 MINUTES WEST

62 DEGRES 5.2 MINUTES NORD
121 DEGRES 59.6 MINUTES OUEST

ELEVATION 153 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 9 29 T(C) | DATE 86 10 29 T(C) | DATE 86 11 19 T(C) | DATE 86 12 17 T(C) |
|---|---|---|---|---|
| .10 | 4.3 | .1 | | -4.7 |
| .40 | 5.2 | 1.2 | -1.3 | -3.0 |
| .60 | 5.3 | 3.0 | .2 | -1.5 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 477.3. EMR-84-4A
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 477.3. EMR-84-4A
-DEMARRAGE DU PUITS LE 0 0 0

WOODEN DOWEL DIRECTLY ABOVE PIPE.
DITCH THERMISTOR IS LOCATED 4.1M SOUTH OF THERMAL FENCE EMR-84-4A.
SURFACE CONDITIONS - MINOR SUNKEN DITCH DRY SAND - GOOD GRASS COVER.
4 SENSOR ATKINS.

SITE 84-4A: TRAIL RIVER A - DT118B

**********

62 DEGREES 5.2 MINUTES NORTH
121 DEGREES 59.6 MINUTES WEST

62 DEGRES 5.2 MINUTES NORD
121 DEGRES 59.6 MINUTES OUEST

ELEVATION 153 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 9 29 T(C) | DATE 86 10 29 T(C) | DATE 86 11 19 T(C) | DATE 86 12 17 T(C) |
|---|---|---|---|---|
| .20 | 5.0 | .6 | -3.5 | -4.5 |
| .40 | 5.4 | 1.2 | -.7 | -2.8 |
| .60 | 5.6 | 1.7 | .3 | -1.6 |
| .80 | 5.6 | 2.1 | .7 | -.5 |
| 1.00 | 5.5 | 2.4 | 1.0 | 0.0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 477.3. EMR-84-4A
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 477.3. EMR-84-4A
-DEMARRAGE DU PUITS LE 0 0 0

WOODEN DOWEL IN TRENCH WALL.
DITCH THERMISTOR IS LOCATED 4.1M SOUTH OF THERMAL FENCE EMR-84-4A.
SURFACE CONDITIONS - MINOR SUNKEN DITCH DRY SAND - GOOD GRASS COVER.
5 SENSOR ATKINS.

SITE 85-8A: MANNERS CREEK A - DT115A

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 5.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 5.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 10 25 T(C) | DATE 86 11 20 T(C) | DATE 86 12 16 T(C) |
|---|---|---|---|
| .40 | 1.6 | -.1 | -1.0 |
| .50 | 1.9 | .3 | -.4 |
| .70 | 2.2 | .7 | 0.0 |
| .80 | | | |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 556.9. EMR-85-8A
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 556.9. EMR-85-8A
-DEMARRAGE DU PUITS LE 0 0 0

WOODEN DOWEL DIRECTLY ABOVE PIPE.
DITCH THERMISTOR IS LOCATED 10.4M NORTH OF THERMAL FENCE EMR-85-8A
SURFACE CONDITIONS - ORGANICS WITH SILTY SAND - VERY MOIST TO WET - MUCH TALL GRASS.
4 SENSOR ATKINS.

SITE 85-8A: MANNERS CREEK A - DT115B

**********

61 DEGREES 35.0 MINUTES NORTH
121 DEGREES 5.0 MINUTES WEST

61 DEGRES 35.0 MINUTES NORD
121 DEGRES 5.0 MINUTES OUEST

ELEVATION 190 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 10 25 T(C) | DATE 86 11 20 T(C) | DATE 86 12 16 T(C) |
|---|---|---|---|
| .40 | 1.4 | -.3 | -.8 |
| .60 | 1.6 | .3 | -.1 |
| .80 | 1.8 | .6 | .1 |
| 1.00 | 1.9 | .8 | .2 |
| 1.20 | 1.9 | .8 | .2 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 556.9. EMR-85-8A
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 556.9. EMR-85-8A
-DEMARRAGE DU PUITS LE 0 0 0

WOODEN DOWEL IN TRENCH WALL.
DITCH THERMISTOR IS LOCATED 10.4M NORTH OF THERMAL FENCE EMR-85-8A.
SURFACE CONDITIONS - ORGANICS WITH SILTY SAND - VERY MOIST TO WET - MUCH TALL GRASS.
5 SENSOR ATKINS.

SITE 85-9: PUMP STATION 3 - DT116A

**********

61 DEGREES 23.0 MINUTES NORTH
120 DEGREES 55.0 MINUTES WEST

61 DEGRES 23.0 MINUTES NORD
120 DEGRES 55.0 MINUTES OUEST

ELEVATION 217 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 9 28 T(C) | DATE 86 10 25 T(C) | DATE 86 11 20 T(C) | DATE 86 12 19 T(C) |
|---|---|---|---|---|
| 0.00 | 6.8 | 1.0 | -3.8 | -1.3 |
| .20 | 6.3 | 1.9 | -.5 | -.5 |
| .30 | 6.3 | 2.5 | .2 | -.3 |
| .50 | 6.4 | 2.9 | .7 | 0.0 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

NW-ZAMA PIPELINE KM 582.5. EMR-85-9
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 582.5. EMR-85-9
-DEMARRAGE DU PUITS LE 0 0 0

WOODEN DOWEL DIRECTLY ABOVE PIPE.
DITCH THERMISTOR IS LOCATED 1.8M NORTH OF THERMAL FENCE EMR-85-9.
SURFACE CONDITIONS - DRY,SILTY,SAND - GOOD TALL GRASS COVER.
4 SENSOR ATKINS.

SITE 85-9: PUMP STATION 3 - DT116B

**********

61 DEGREES 23.0 MINUTES NORTH
120 DEGREES 55.0 MINUTES WEST

61 DEGRES 23.0 MINUTES NORD
120 DEGRES 55.0 MINUTES OUEST

ELEVATION 217 METRES

SUMMARY OF DEPTH-TEMPERATURE LOGS

DIAGRAPHIES DONNANT LA TEMPERATURE EN FONCTION DE LA PROFONDEUR

| Z(M) | DATE 86 9 28 T(C) | DATE 86 10 25 T(C) | DATE 86 11 20 T(C) | DATE 86 12 19 T(C) |
|---|---|---|---|---|
| .40 | 6.1 | 2.3 | .1 | -.4 |
| .60 | 6.1 | 2.7 | .5 | -.1 |
| .80 | 6.1 | 3.1 | 1.1 | .2 |
| 1.00 | 6.2 | 3.5 | 1.5 | .7 |
| 1.20 | 6.2 | 3.8 | 2.0 | .9 |

TEMPERATURE RESULTS ARE OBTAINED FROM A MULTITHERMISTOR CABLE. FURTHER TEMPERATURE LOGS ARE EXPECTED FOR THIS HOLE.

TEMPERATURES OBTENUES A PARTIR D'UN CABLE A THERMISTORS MULTIPLES. ON PREVOIT ENTREPRENDRE D'AUTRES SONDAGES DE LA TEMPERATURE DE CE PUITS.

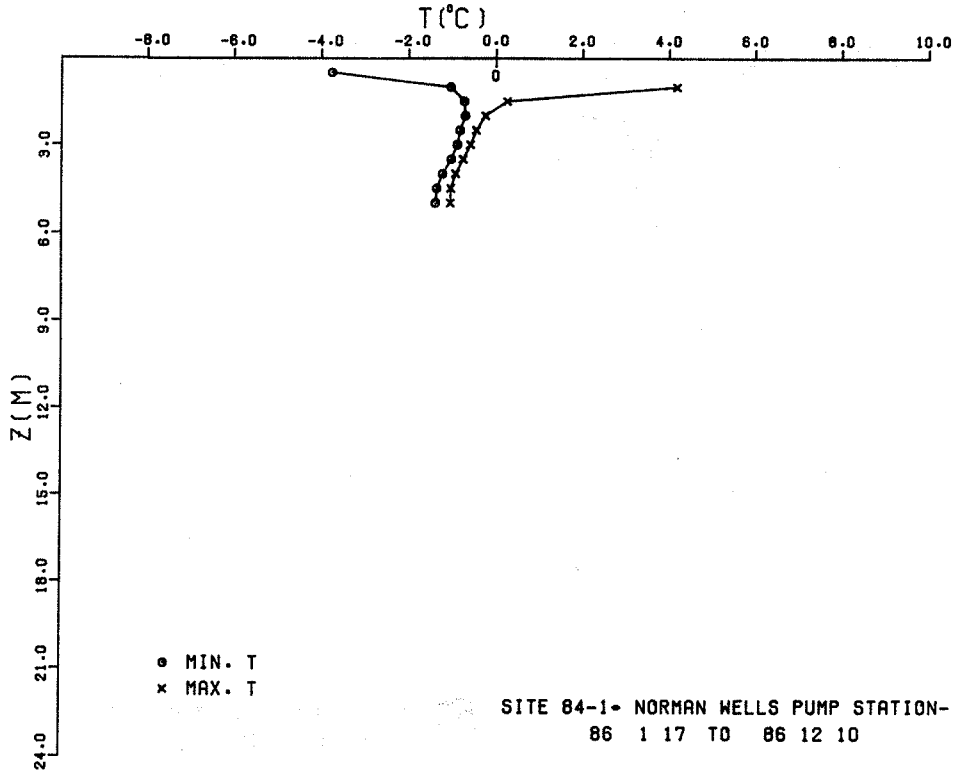
NW-ZAMA PIPELINE KM 582.5. EMR-85-9
-WELL SPUDDED 0 0 0

NW-ZAMA PIPELINE KM 582.5. EMR-85-9
-DEMARRAGE DU PUITS LE 0 0 0

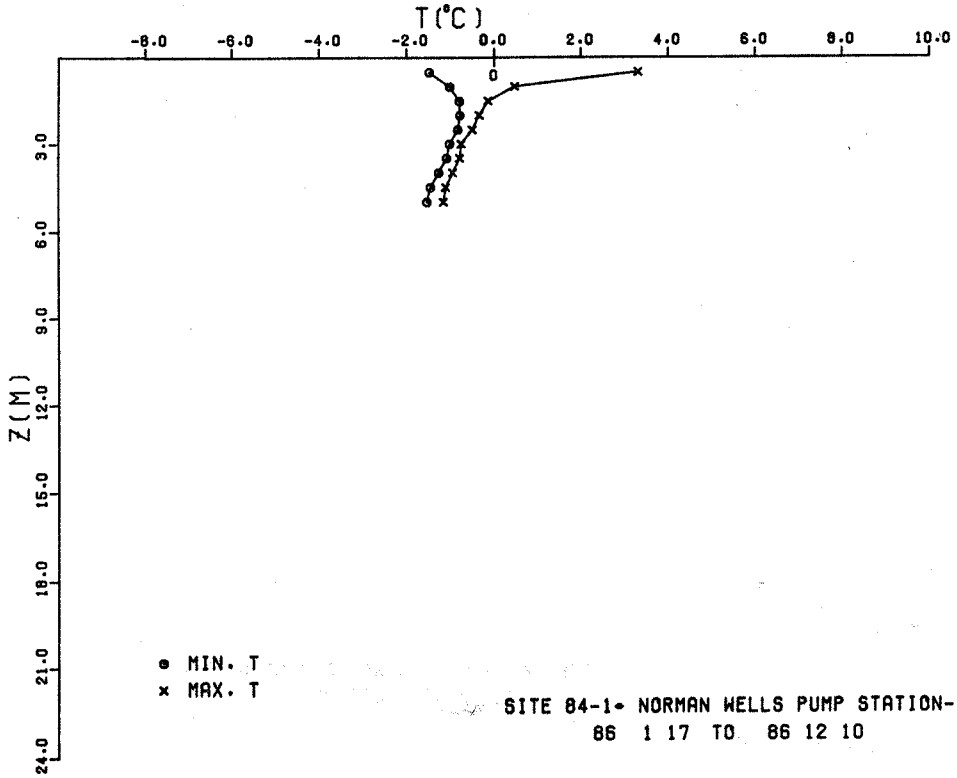
WOODEN DOWEL IN TRENCH WALL
DITCH THERMISTOR IS LOCATED 1.8M NORTH OF THERMAL FENCE EMR-85-9.
SURFACE CONDITIONS - DRY,SILTY,SAND - GOOD TALL GRASS COVER.
5 SENSOR ATKINS.

# APPENDIX D

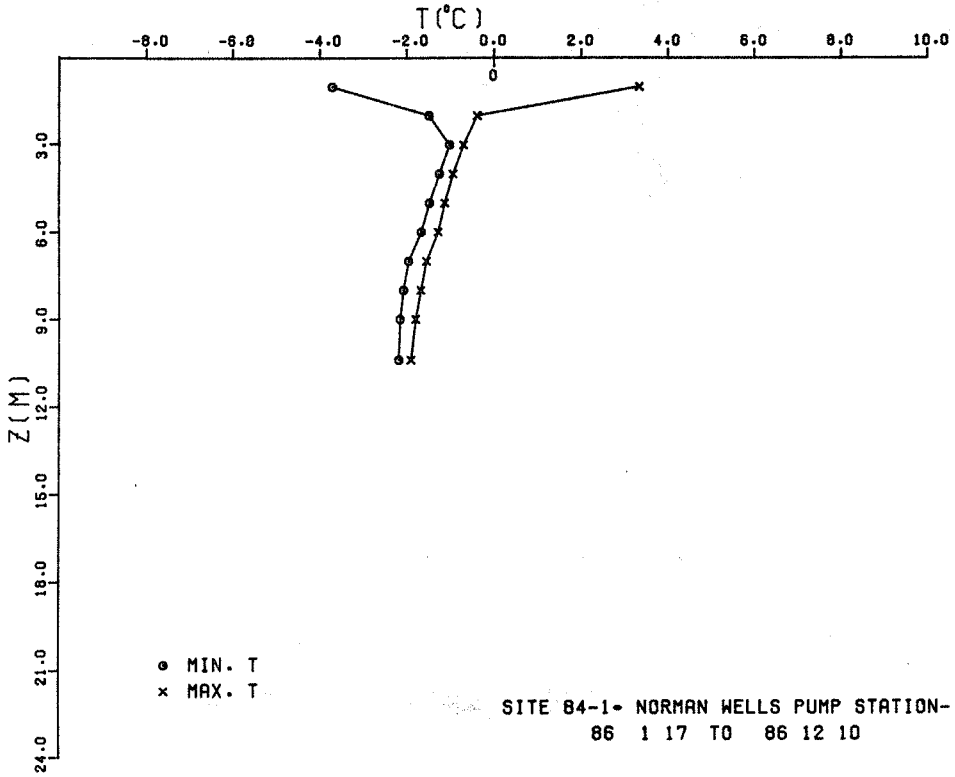
## GROUND TEMPERATURE ENVELOPES



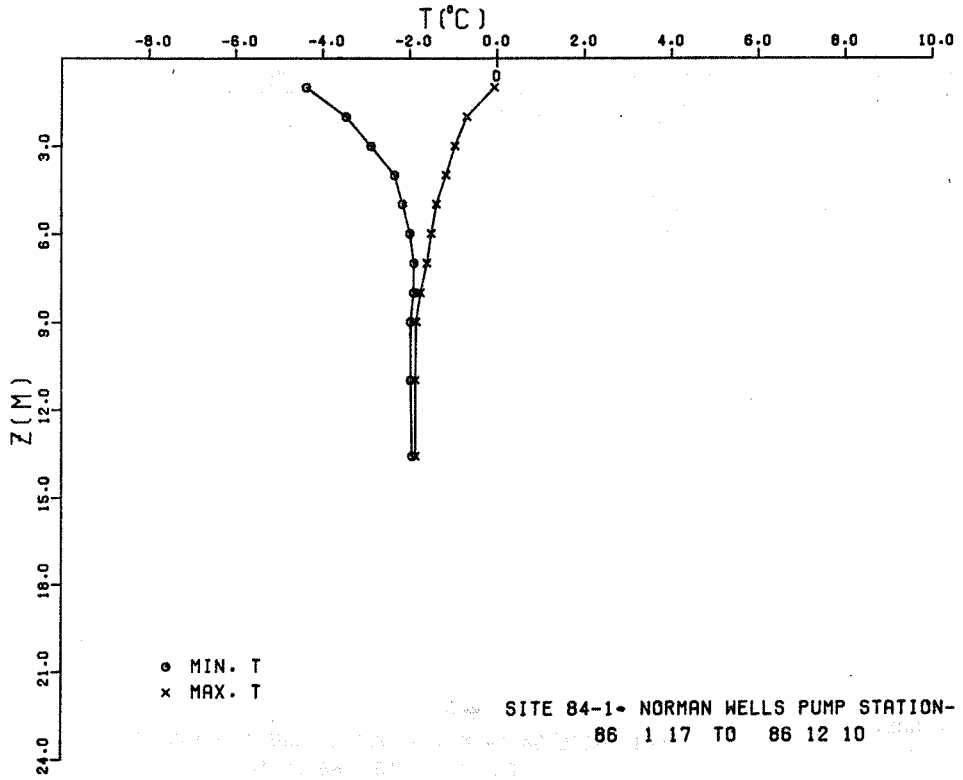

SITE 84-1• NORMAN WELLS PUMP STATION- T1
86 1 17 TO 86 12 10



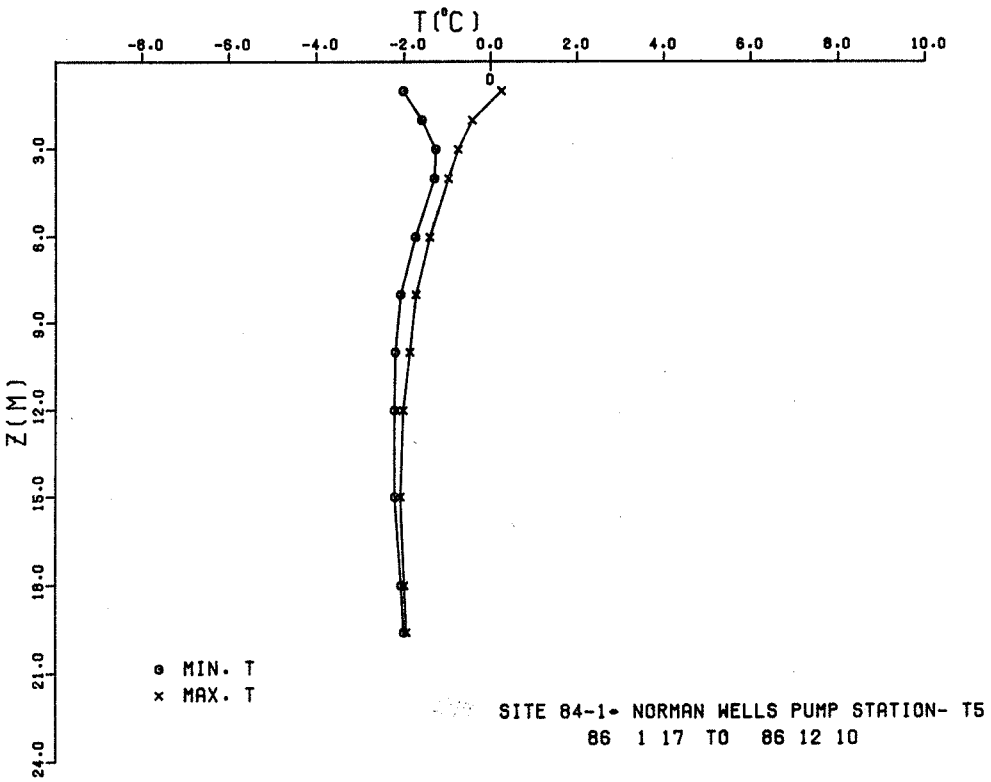

SITE 84-1• NORMAN WELLS PUMP STATION- T2
86 1 17 TO 86 12 10



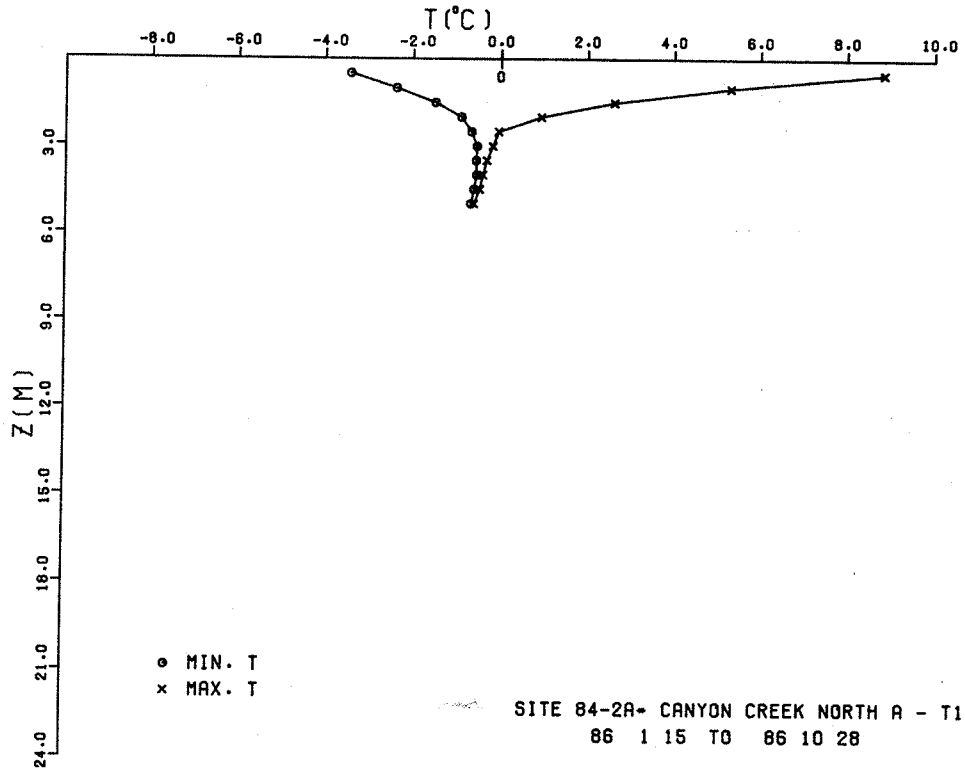

SITE 84-1• NORMAN WELLS PUMP STATION- T3
86 1 17 TO 86 12 10



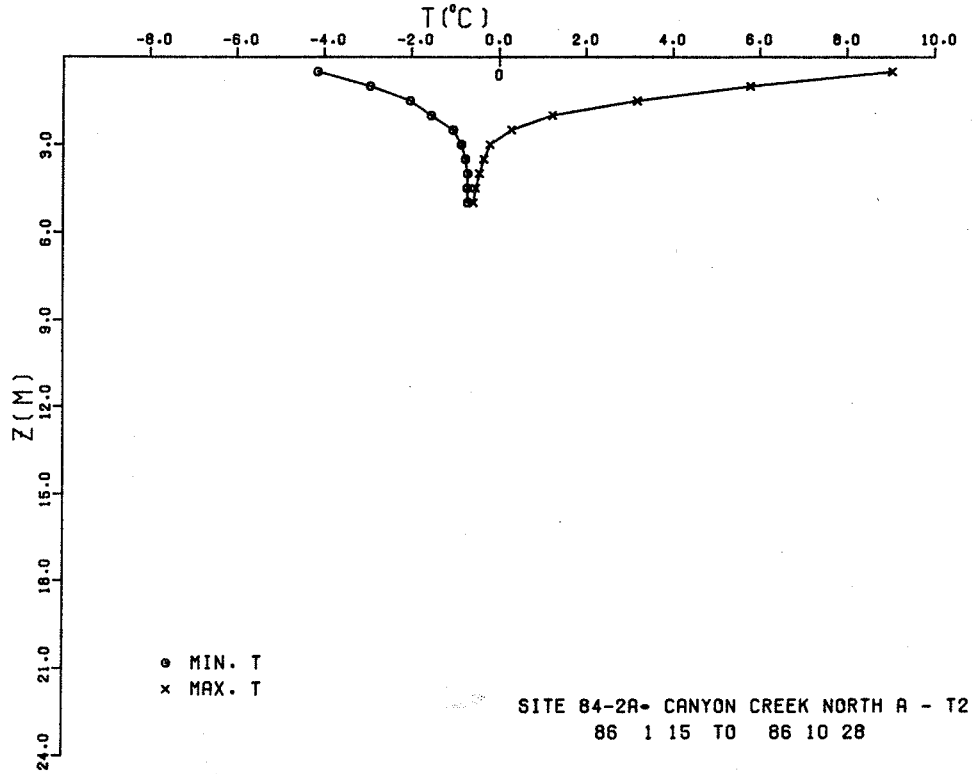

SITE 84-1• NORMAN WELLS PUMP STATION- T4
86 1 17 TO 86 12 10



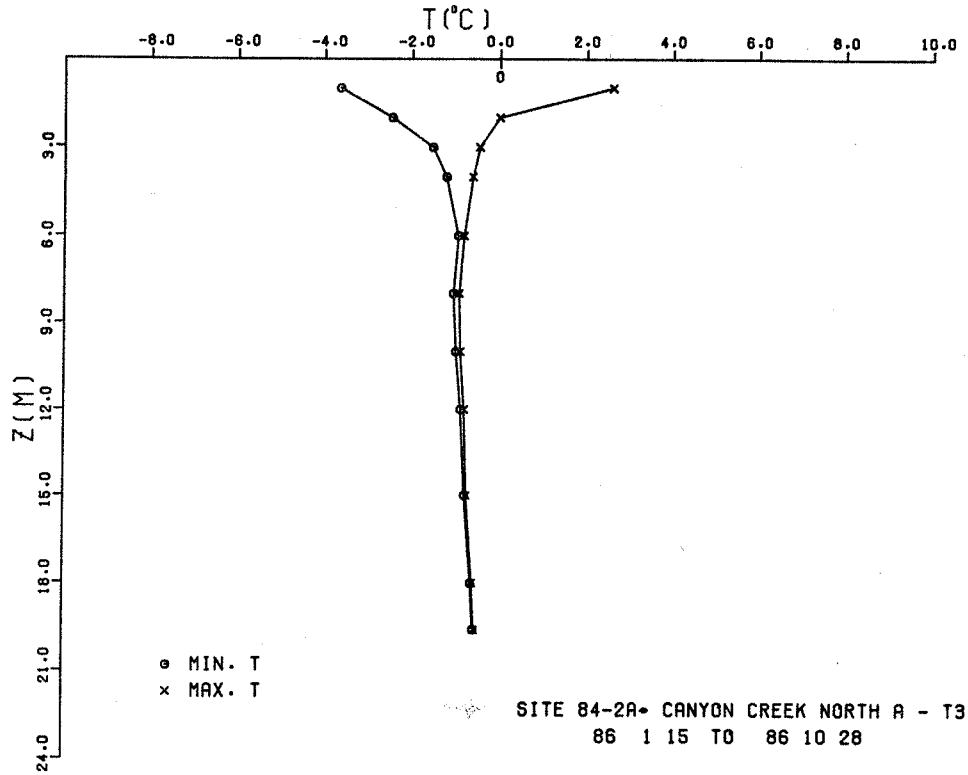

SITE 84-1• NORMAN WELLS PUMP STATION- T5
86 1 17 TO 86 12 10



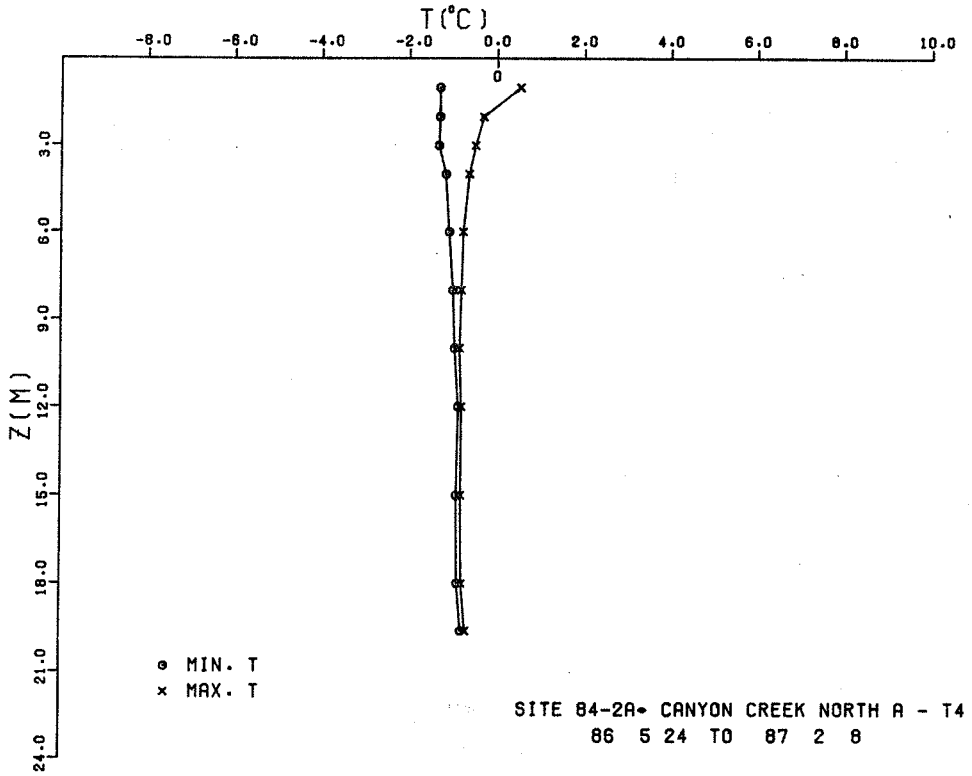

SITE 84-2A- CANYON CREEK NORTH A - T1
86 1 15 TO 86 10 28



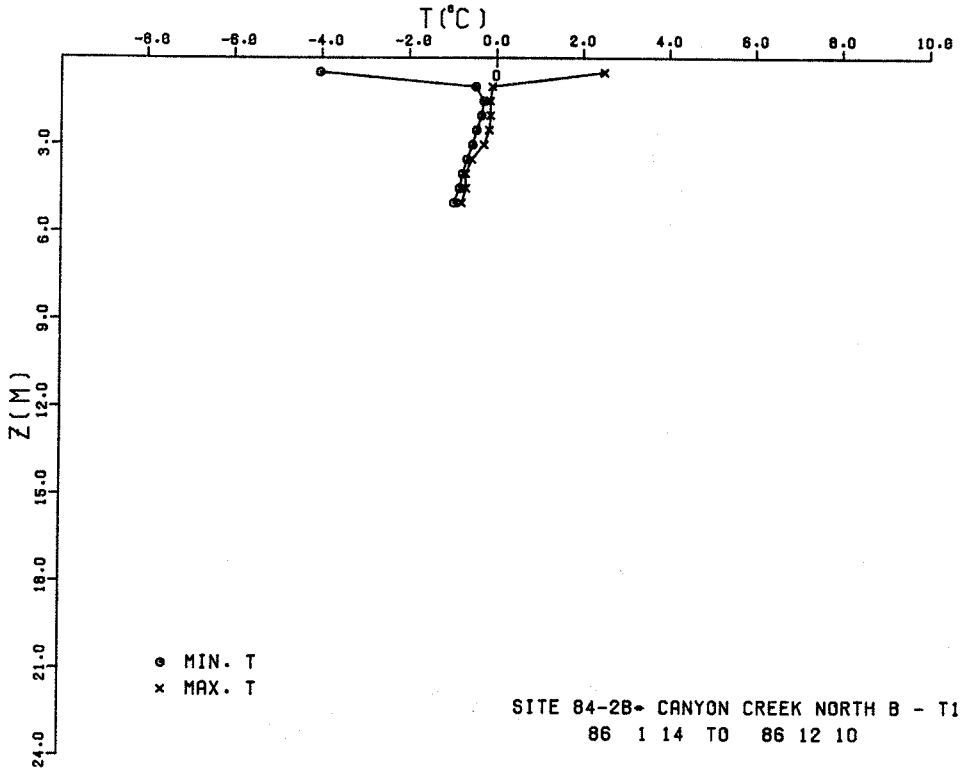

SITE 84-2A- CANYON CREEK NORTH A - T2
86 1 15 TO 86 10 28



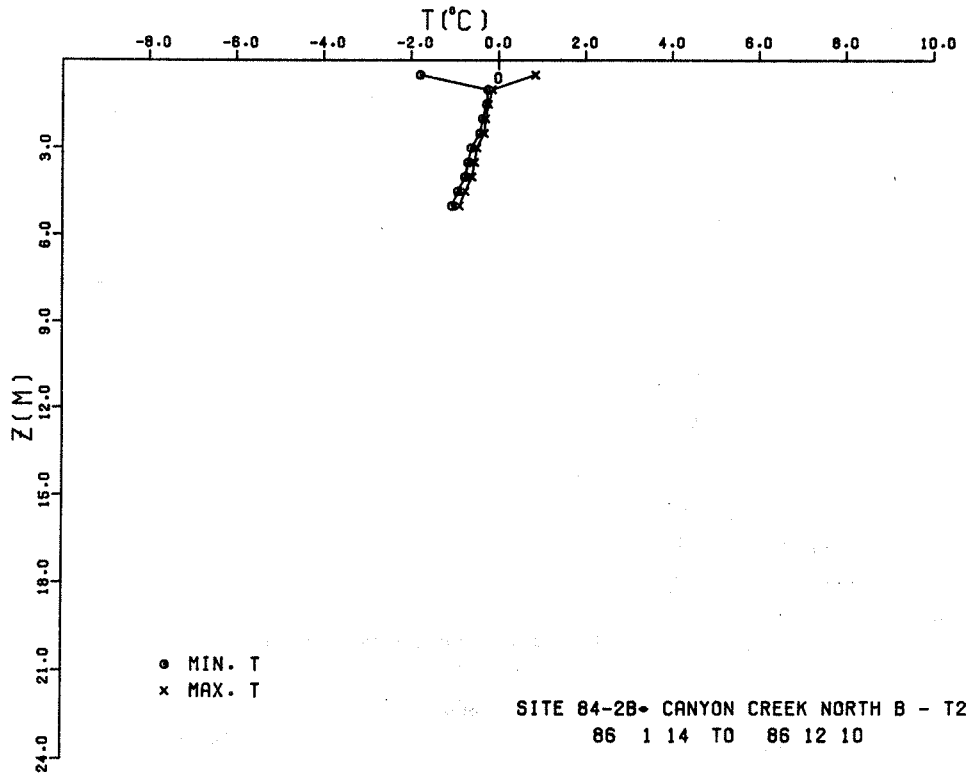

SITE 84-2A• CANYON CREEK NORTH A - T3
86 1 15 TO 86 10 28



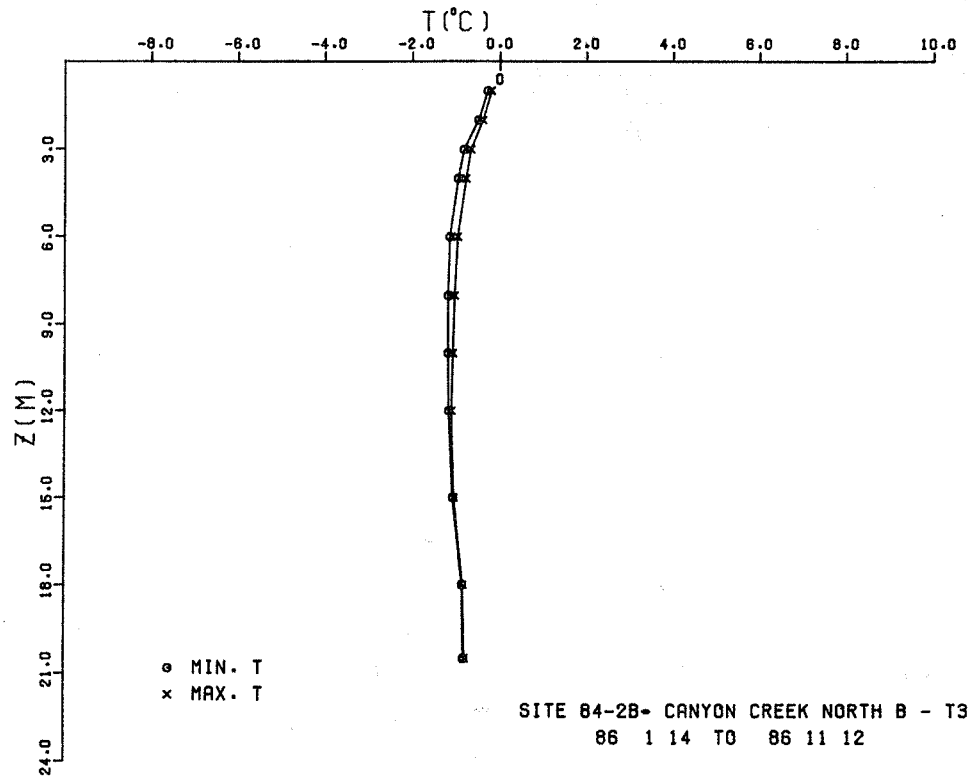

SITE 84-2A• CANYON CREEK NORTH A - T4
86 5 24 TO 87 2 8



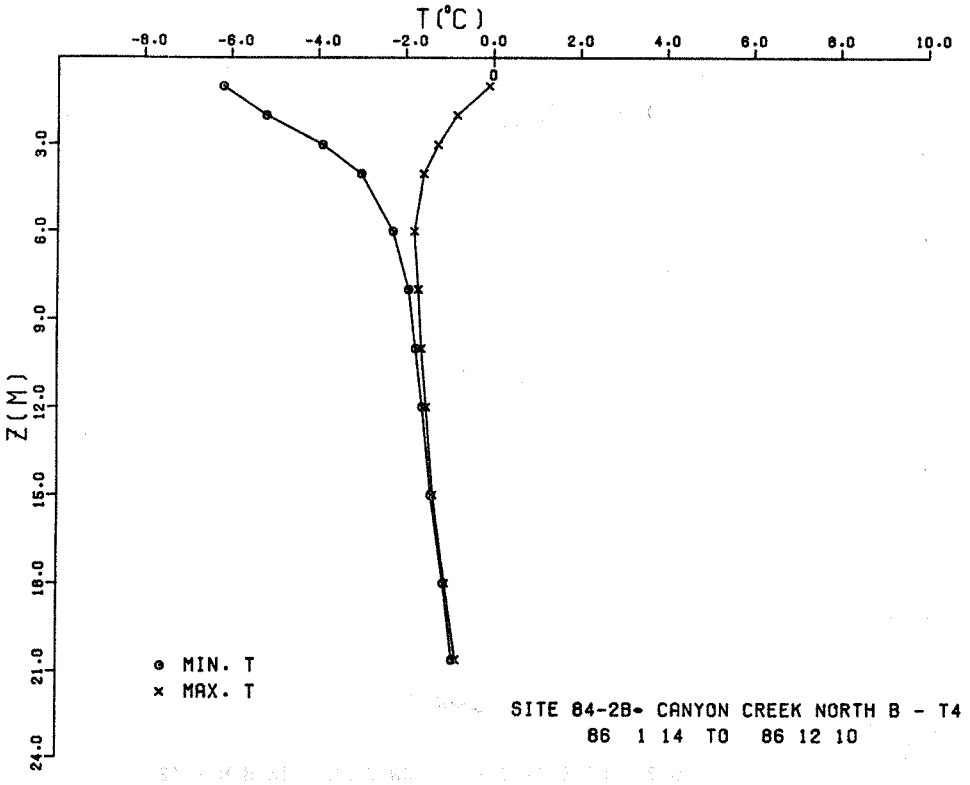

SITE 84-2B• CANYON CREEK NORTH B - T1
86 1 14 TO 86 12 10



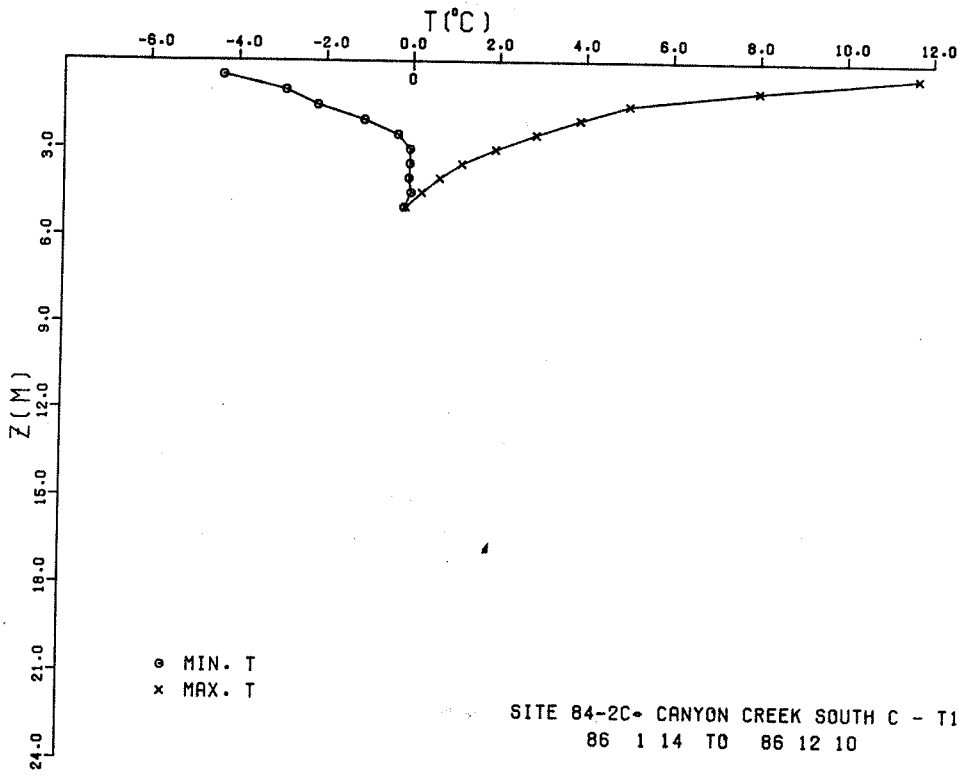

SITE 84-2B• CANYON CREEK NORTH B - T2
86 1 14 TO 86 12 10



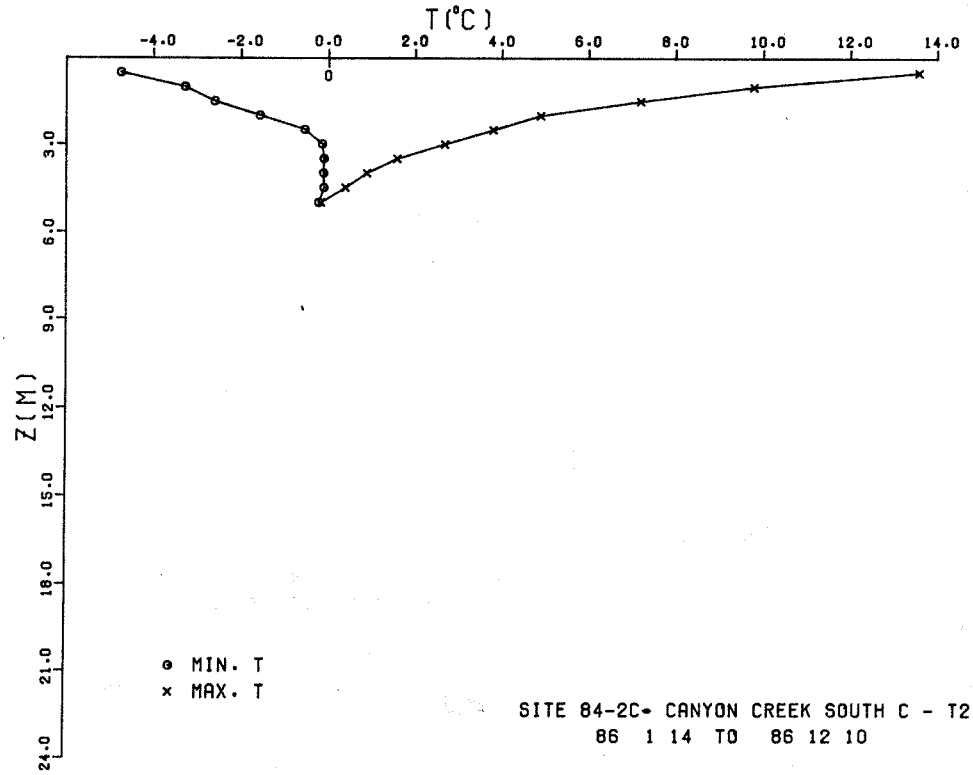

SITE 84-2B- CANYON CREEK NORTH B - T3
86 1 14 TO 86 11 12



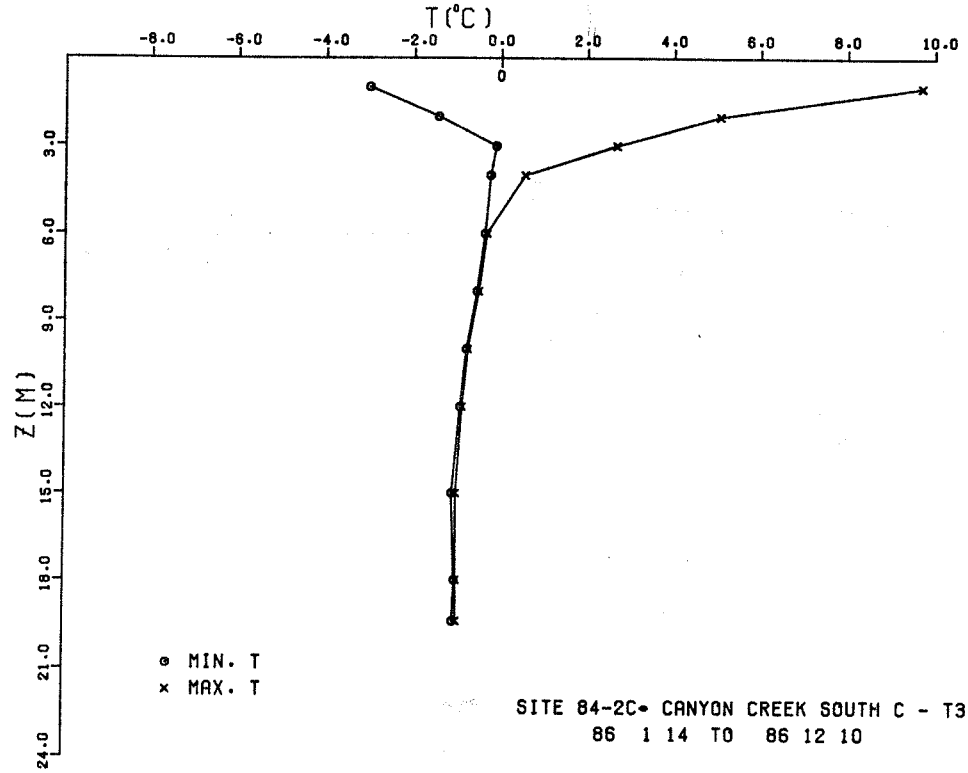

SITE 84-2B- CANYON CREEK NORTH B - T4
86 1 14 TO 86 12 10



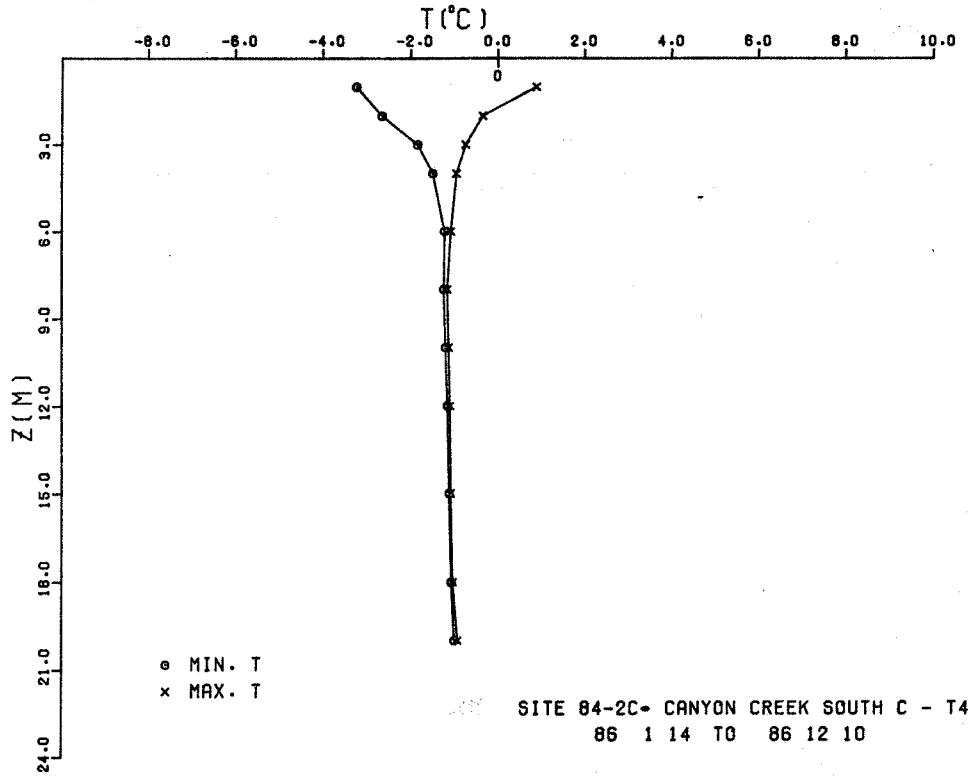

SITE 84-2C• CANYON CREEK SOUTH C - T1
86 1 14 TO 86 12 10



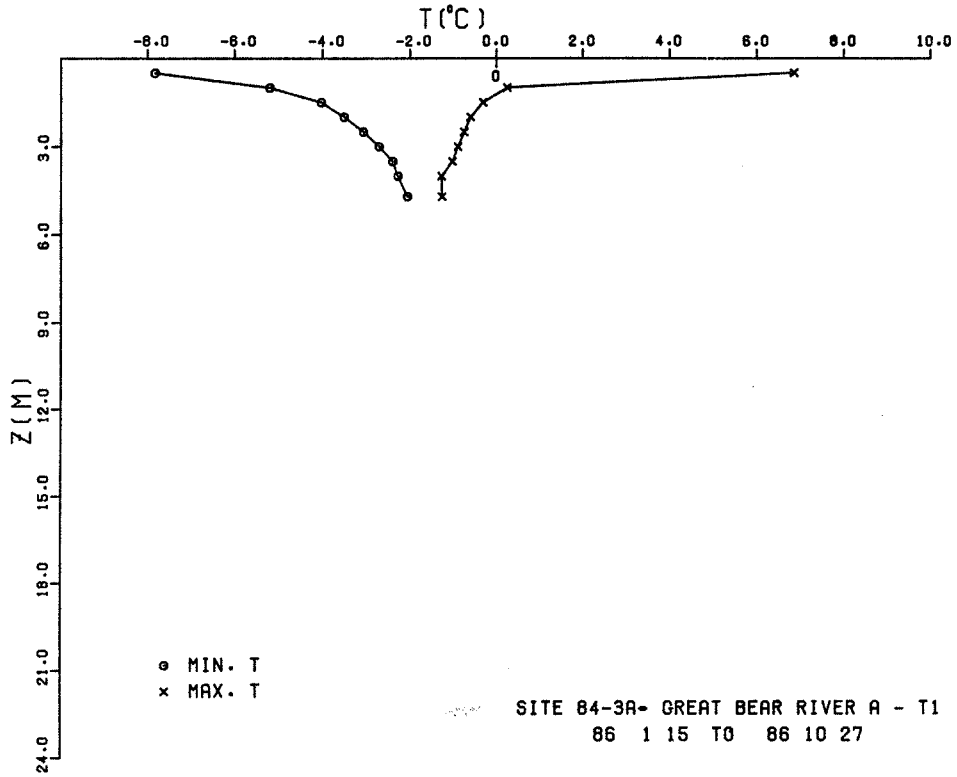

SITE 84-2C• CANYON CREEK SOUTH C - T2
86 1 14 TO 86 12 10



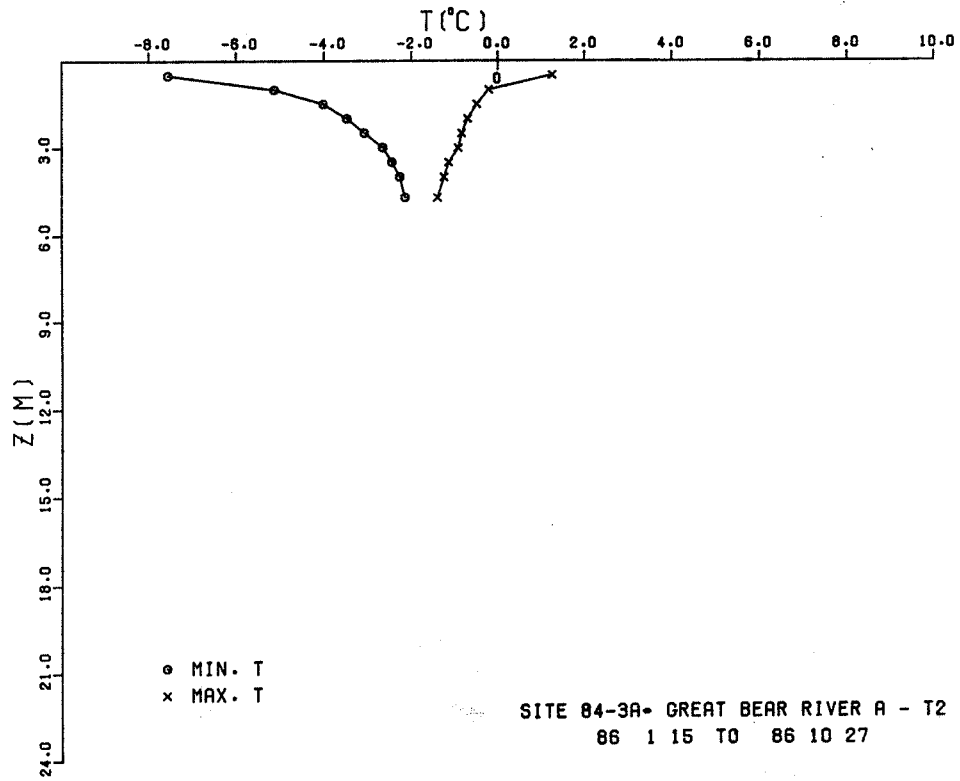

SITE 84-2C• CANYON CREEK SOUTH C - T3
86 1 14 TO 86 12 10



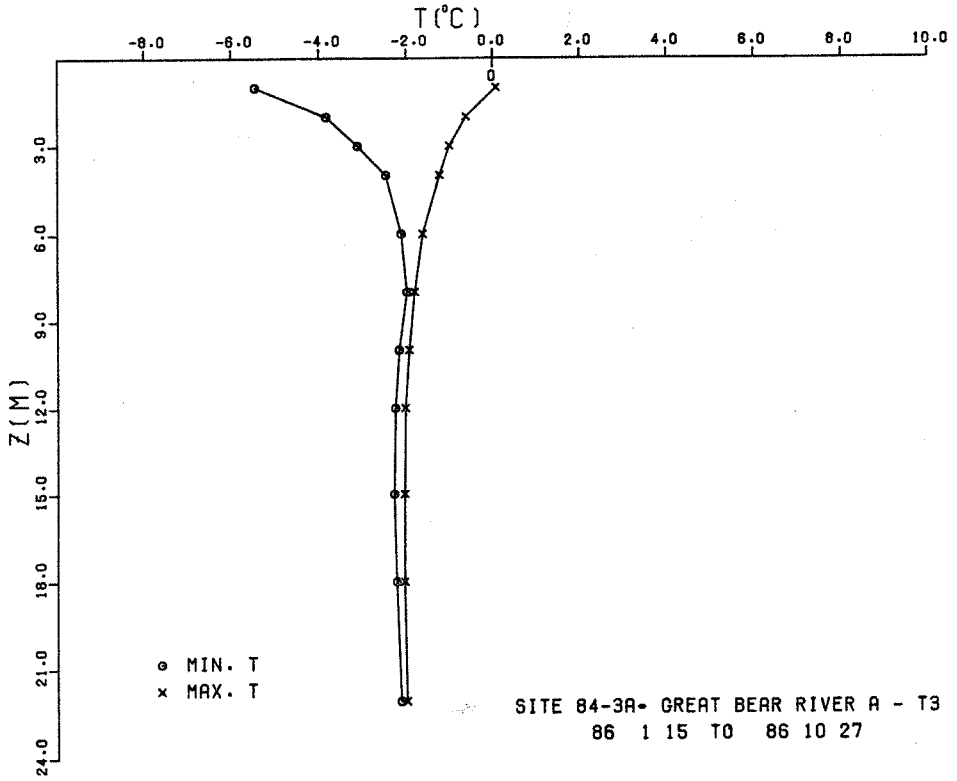

SITE 84-2C• CANYON CREEK SOUTH C - T4
86 1 14 TO 86 12 10



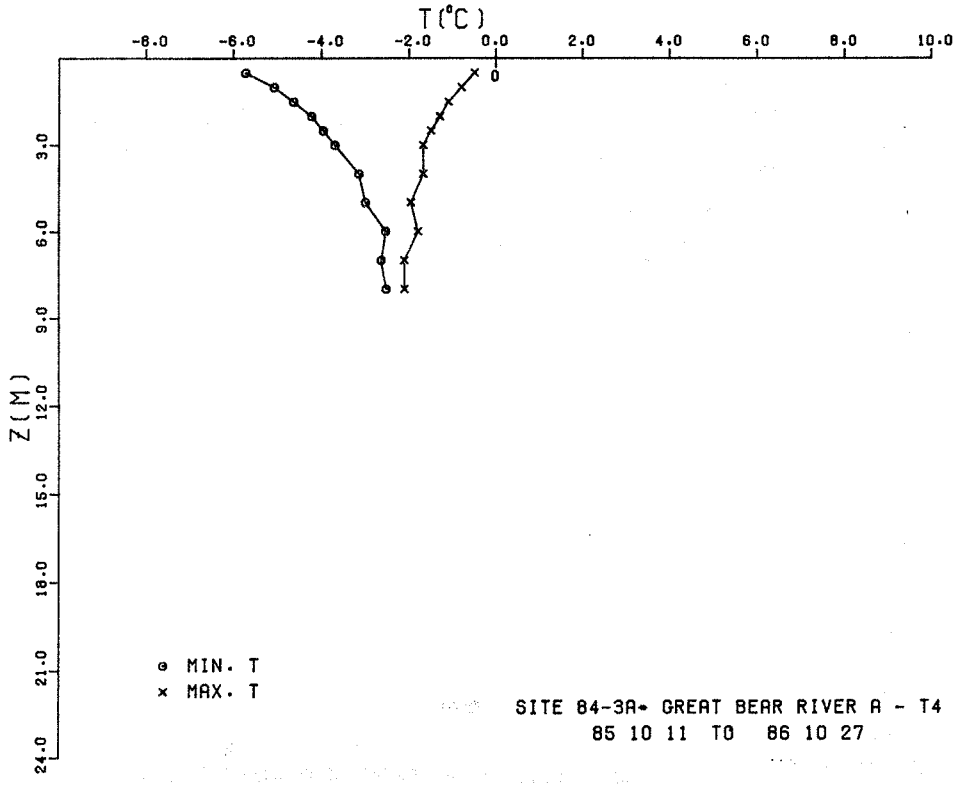

SITE 84-3A- GREAT BEAR RIVER A - T1
86 1 15 TO 86 10 27



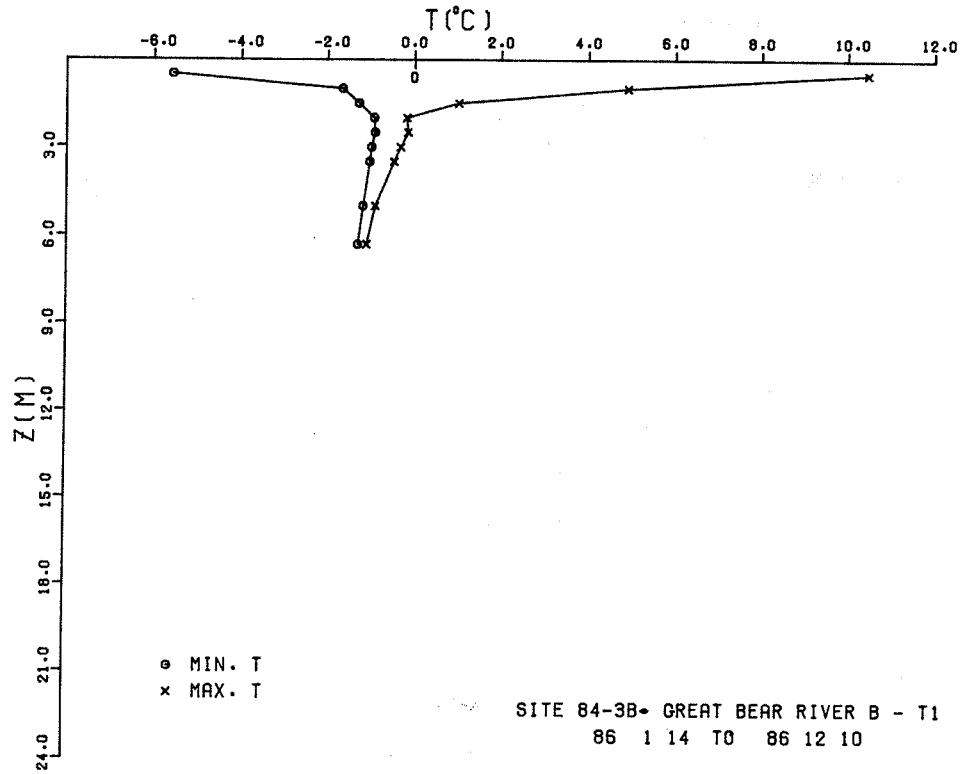

SITE 84-3A- GREAT BEAR RIVER A - T2
86 1 15 TO 86 10 27



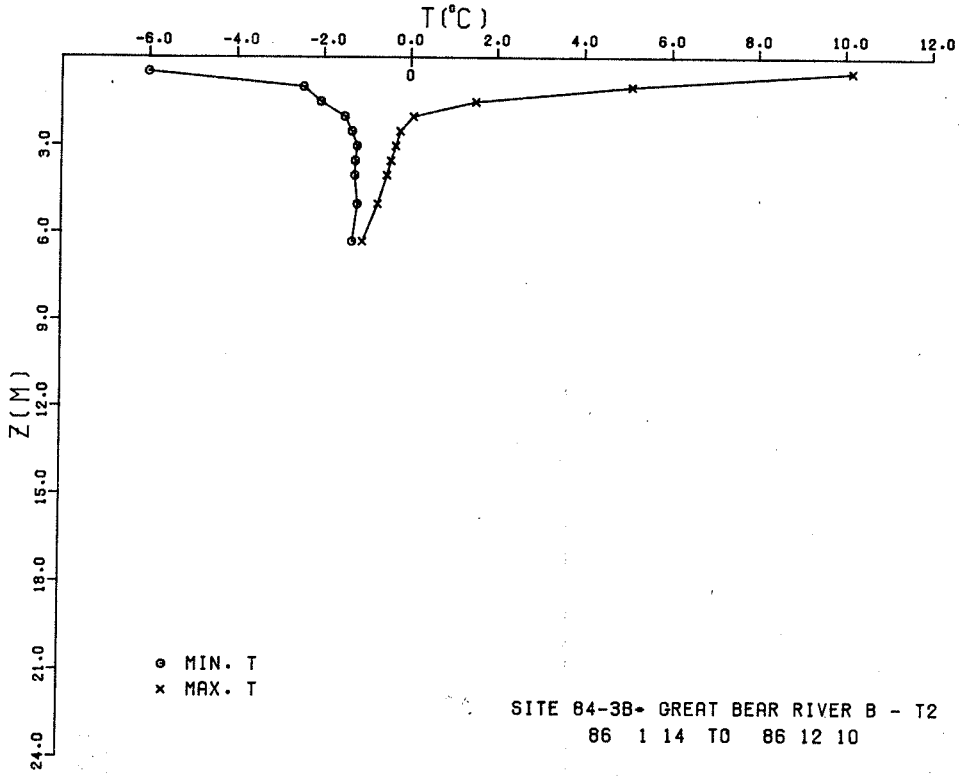

SITE 84-3A• GREAT BEAR RIVER A - T3
86 1 15 T0 86 10 27



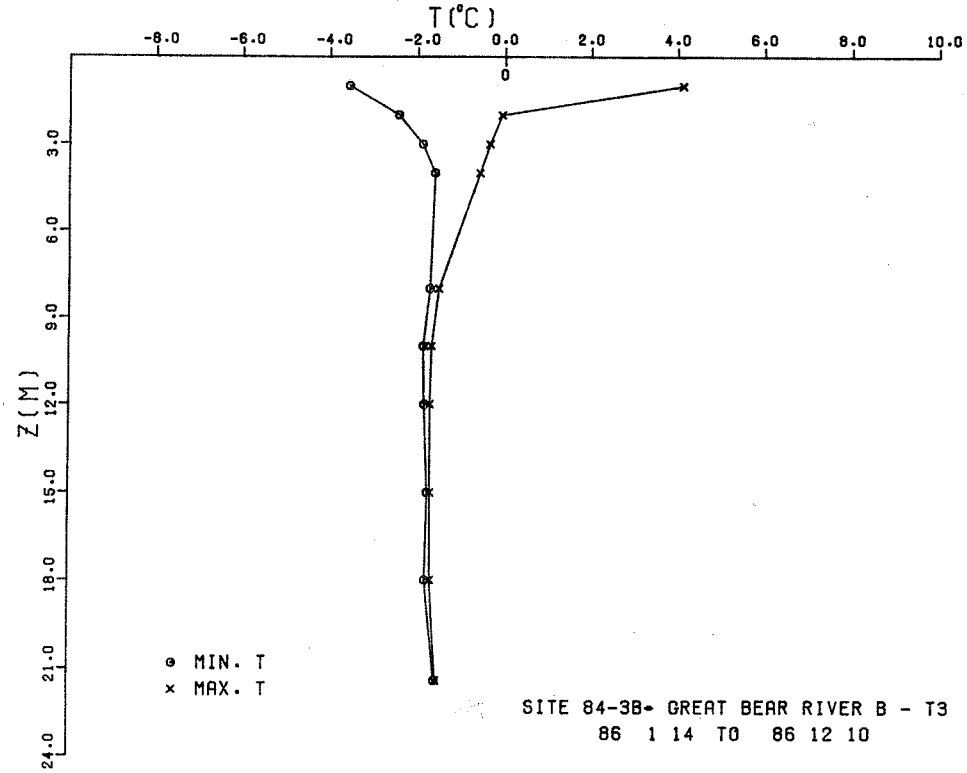

SITE 84-3A• GREAT BEAR RIVER A - T4
85 10 11 T0 86 10 27



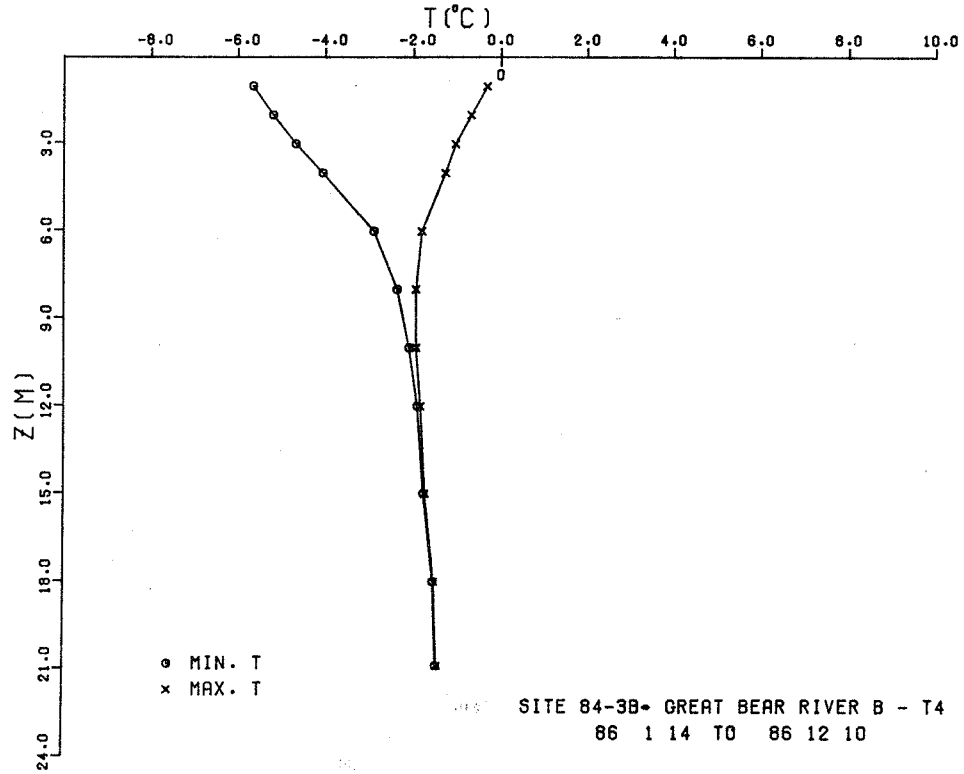

SITE 84-3B- GREAT BEAR RIVER B - T1
86 1 14 TO 86 12 10



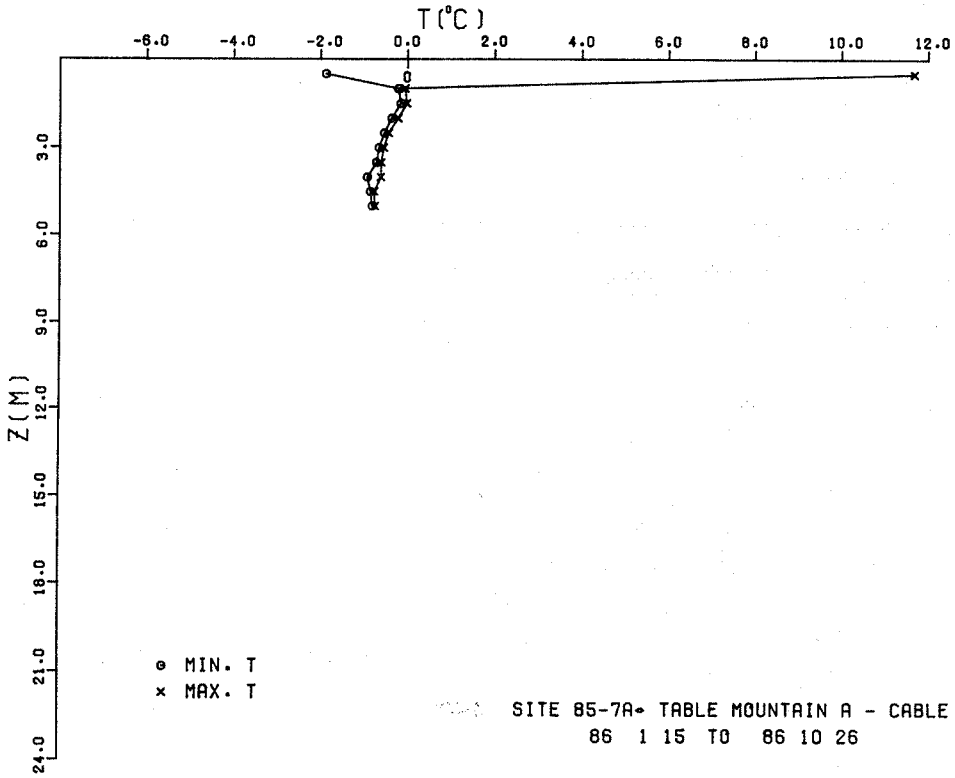

SITE 84-3B- GREAT BEAR RIVER B - T2
86 1 14 TO 86 12 10



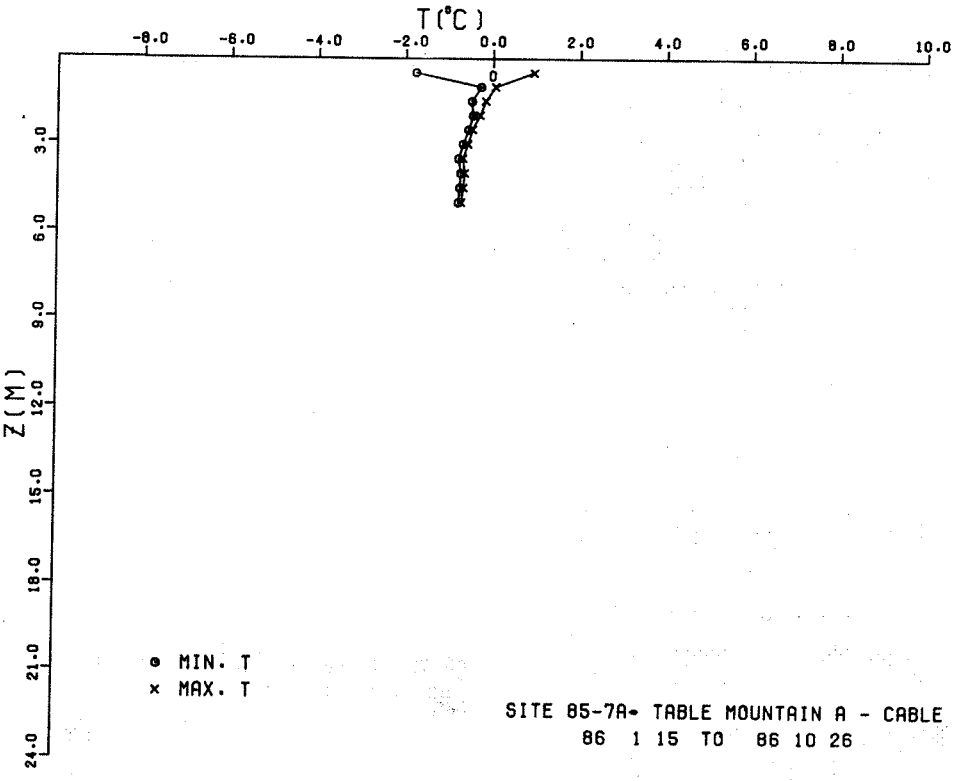

SITE 84-3B• GREAT BEAR RIVER B - T3
86 1 14 TO 86 12 10



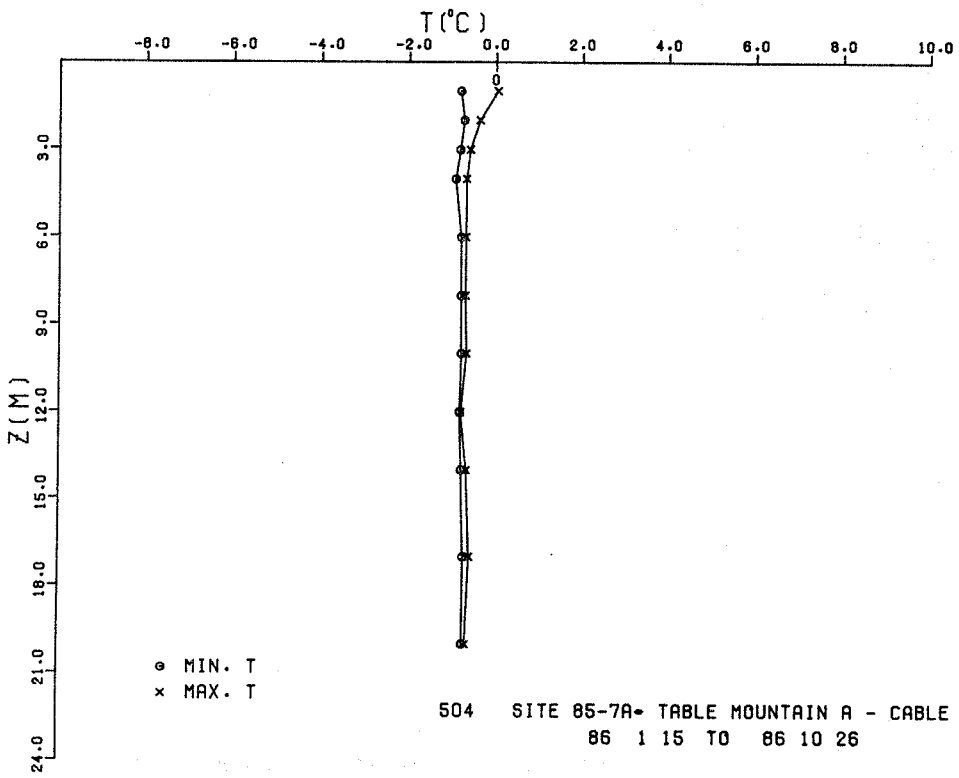

SITE 84-3B• GREAT BEAR RIVER B - T4
86 1 14 TO 86 12 10



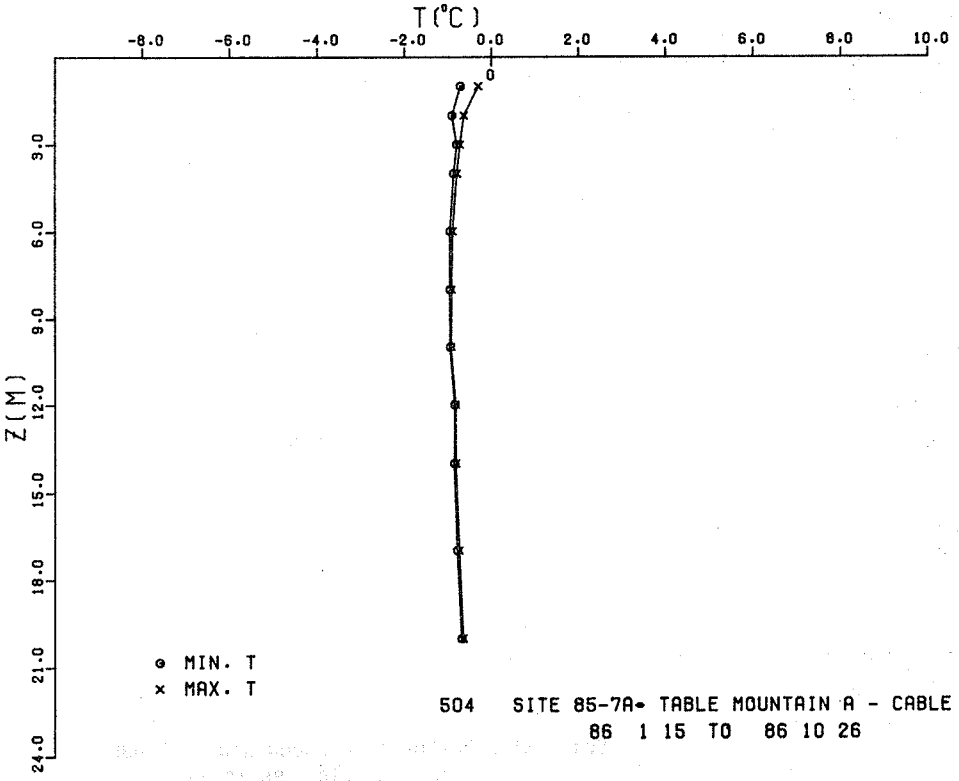

SITE 85-7A• TABLE MOUNTAIN A - CABLE T1
86 1 15 TO 86 10 26



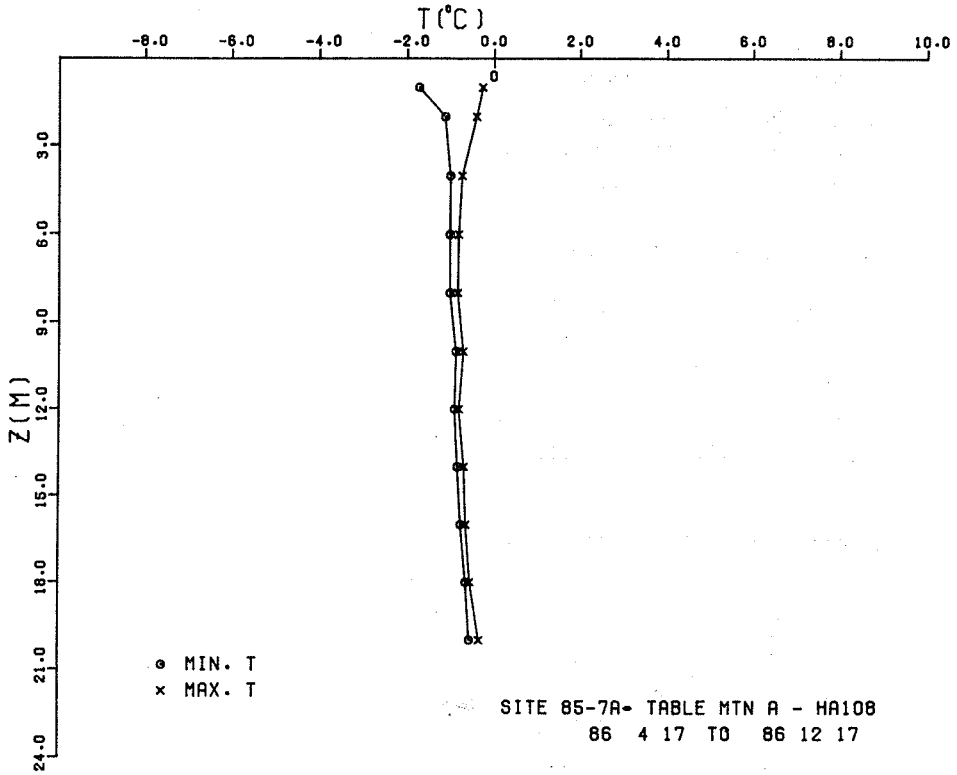

SITE 85-7A• TABLE MOUNTAIN A - CABLE T2
86 1 15 TO 86 10 26

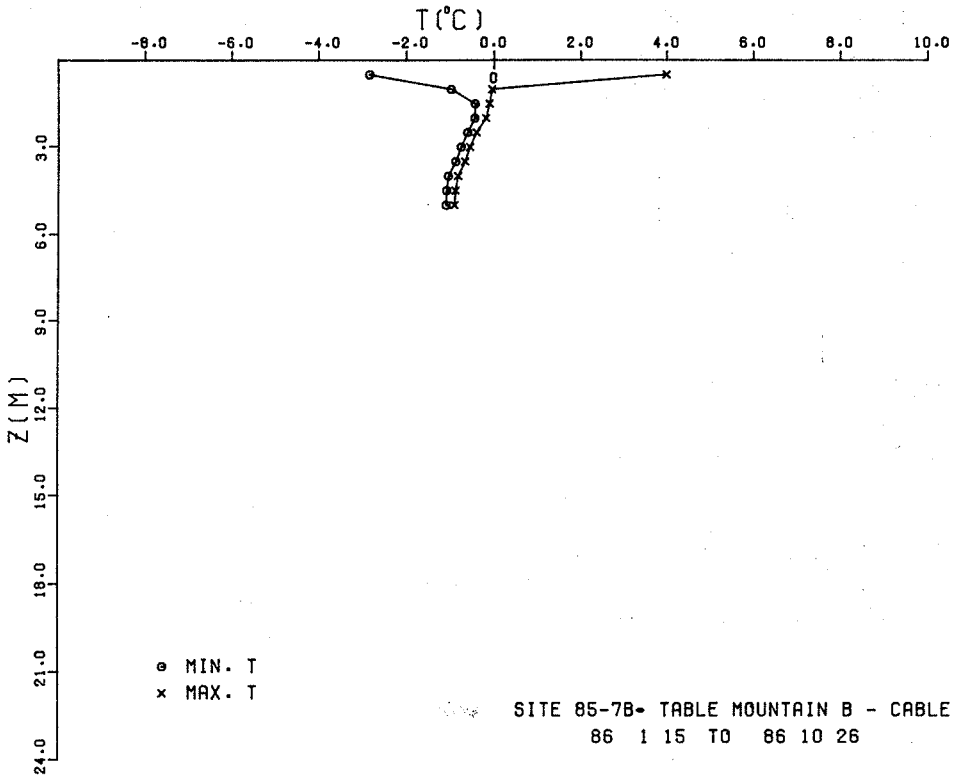



504 SITE 85-7A- TABLE MOUNTAIN A - CABLE T3
86 1 15 TO 86 10 26

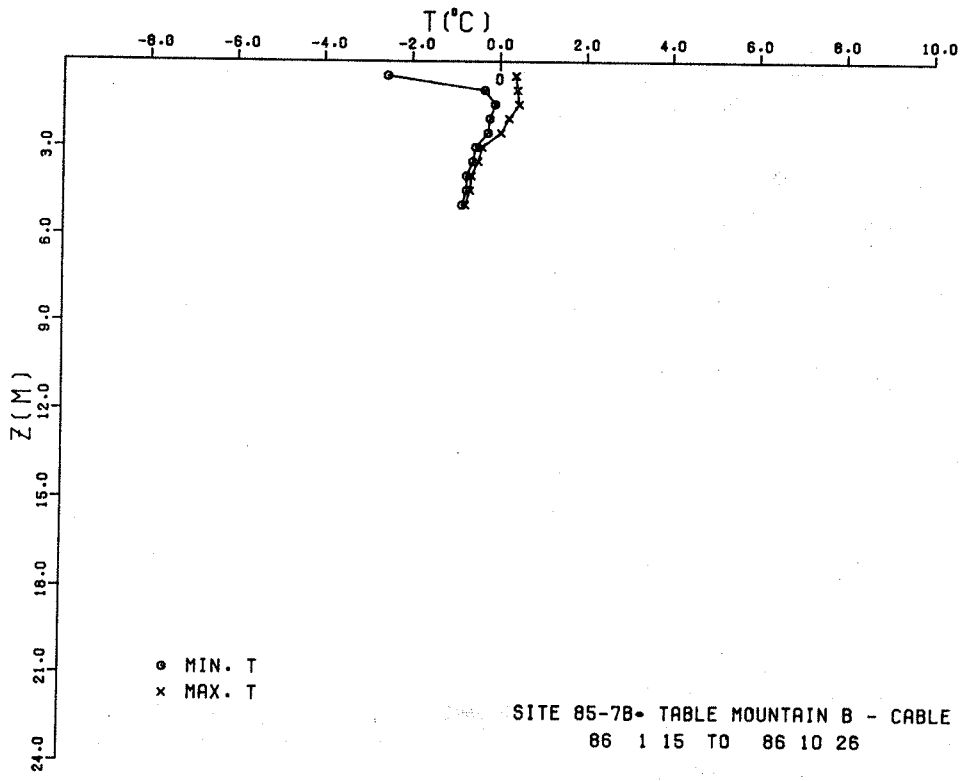



504 SITE 85-7A- TABLE MOUNTAIN A - CABLE T4
86 1 15 TO 86 10 26

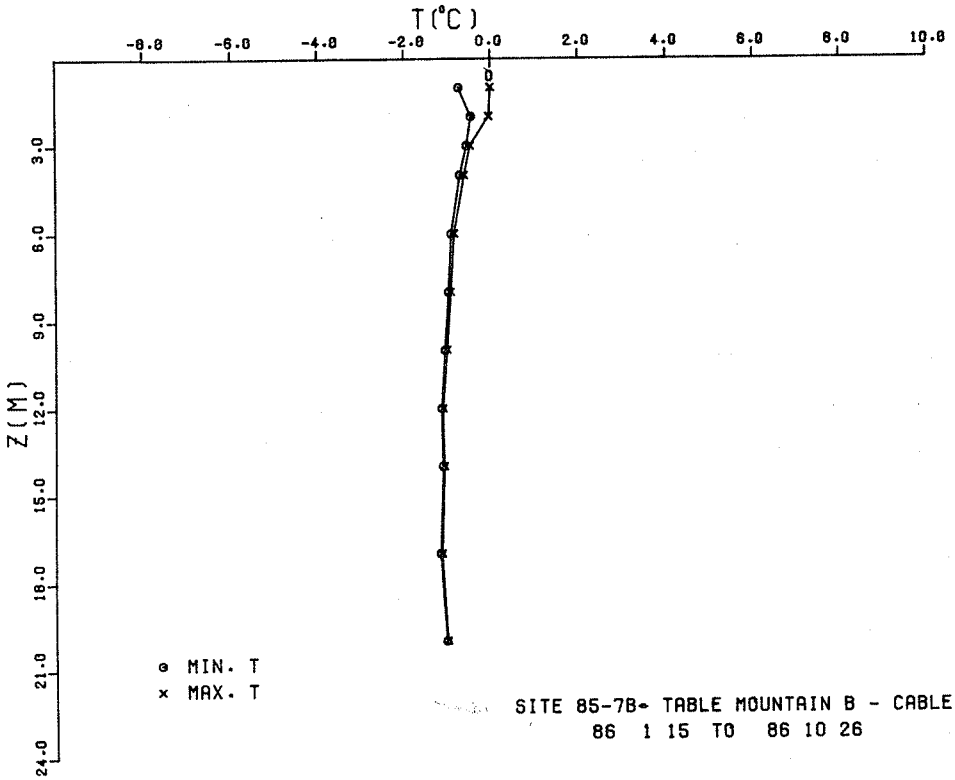

T(°C)
-8.0
-6.0
-4.0
-2.0
0.0
2.0
4.0
6.0
8.0
10.0
Z(M)
3.0
6.0
9.0
12.0
15.0
18.0
21.0
24.0
MIN. T
MAX. T
SITE 85-7A- TABLE MTN A - HA108
86 4 17 TO 86 12 17



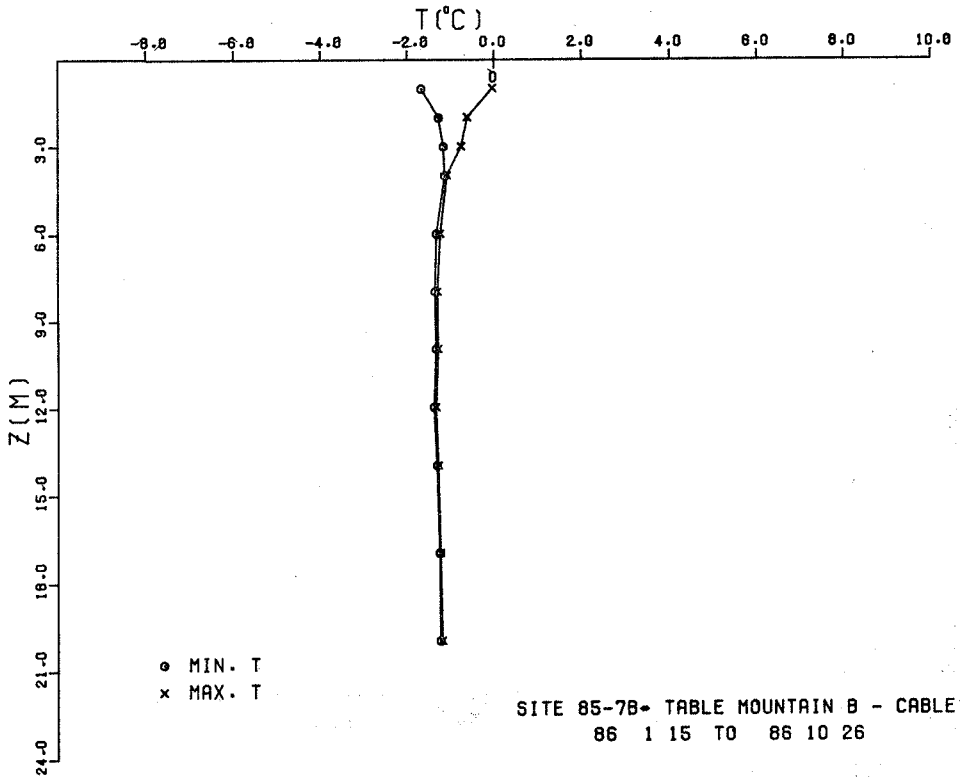

SITE 85-7B- TABLE MOUNTAIN B - CABLE T1
86 1 15 TO 86 10 26



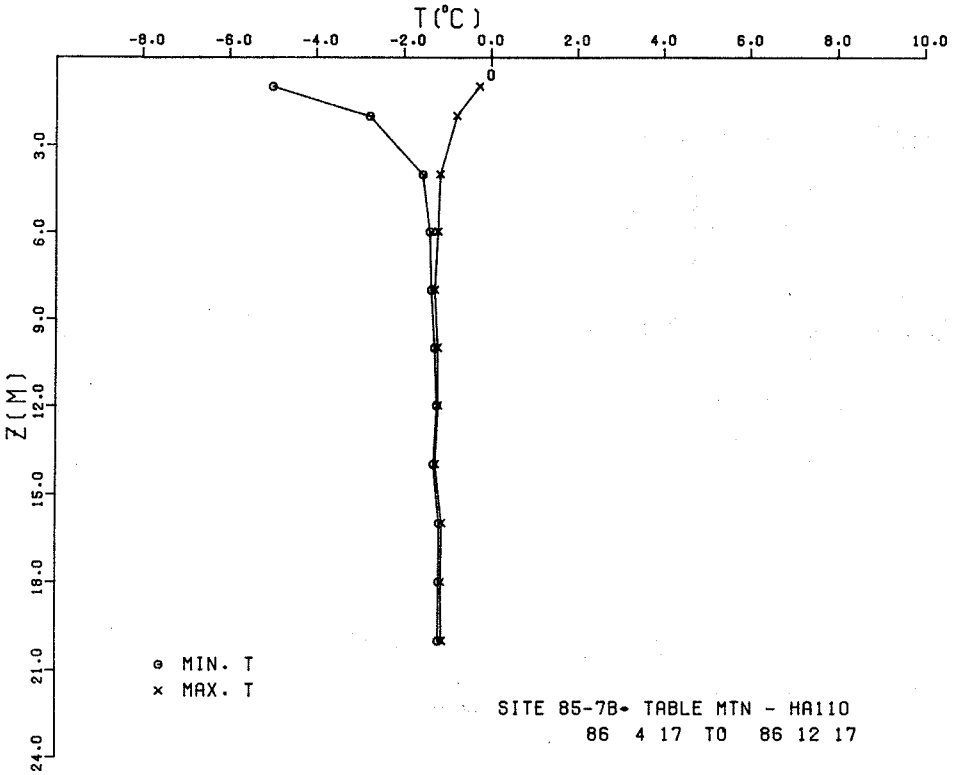

SITE 85-7B- TABLE MOUNTAIN B - CABLE T2
86 1 15 TO 86 10 26



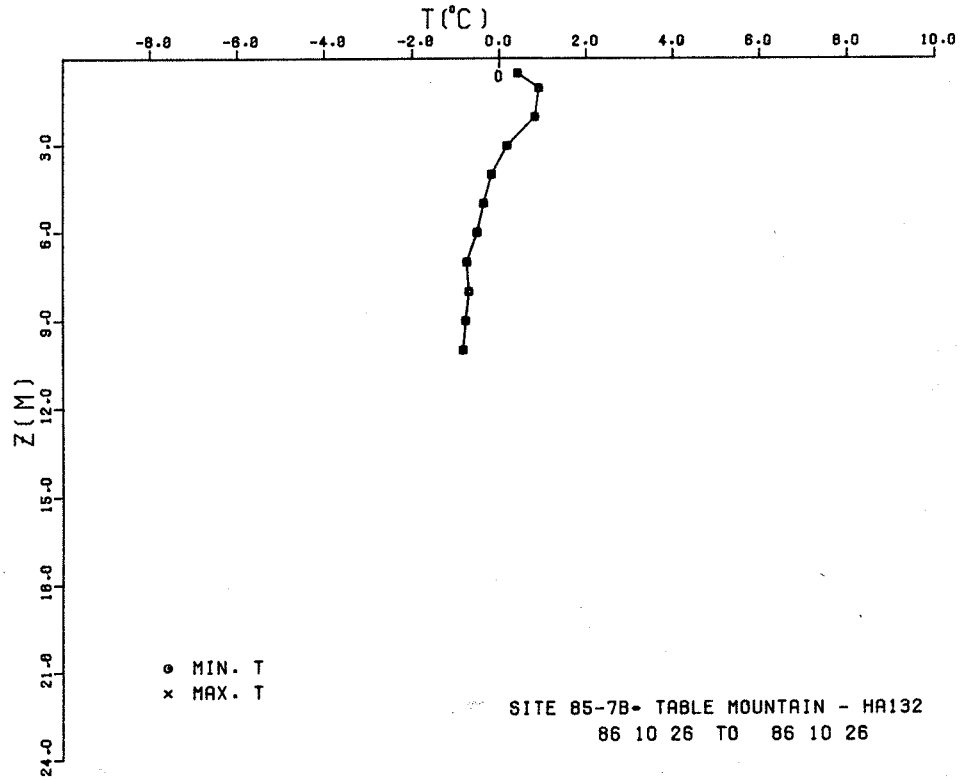

SITE 85-7B- TABLE MOUNTAIN B - CABLE T3
86 1 15 TO 86 10 26



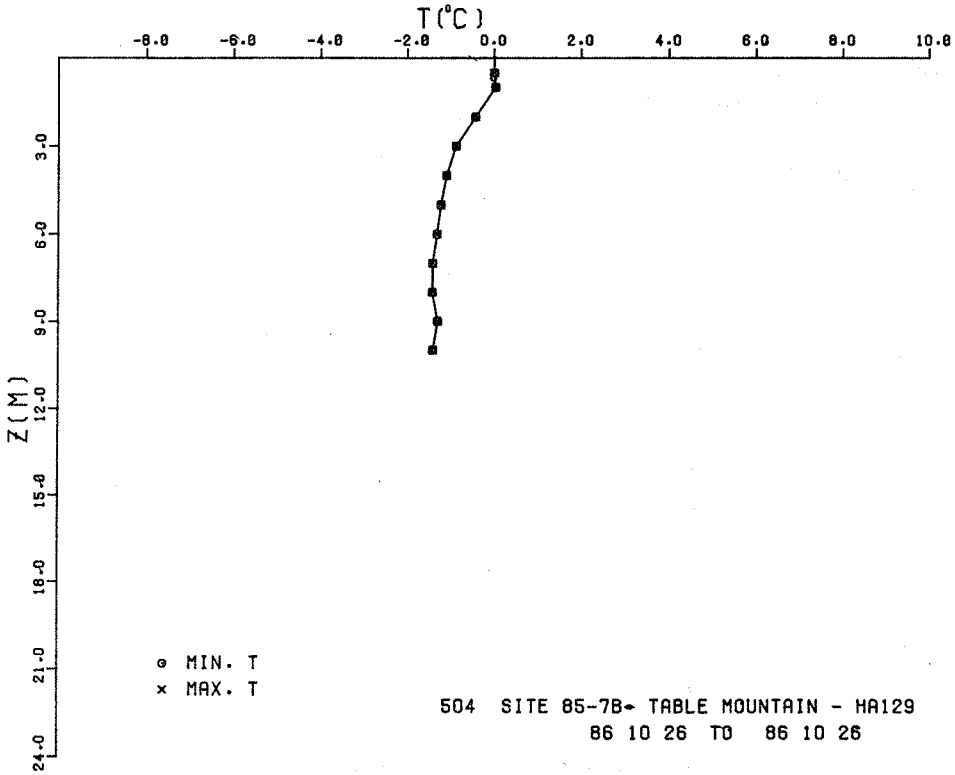

SITE 85-7B- TABLE MOUNTAIN B - CABLE T4
86 1 15 TO 86 10 26



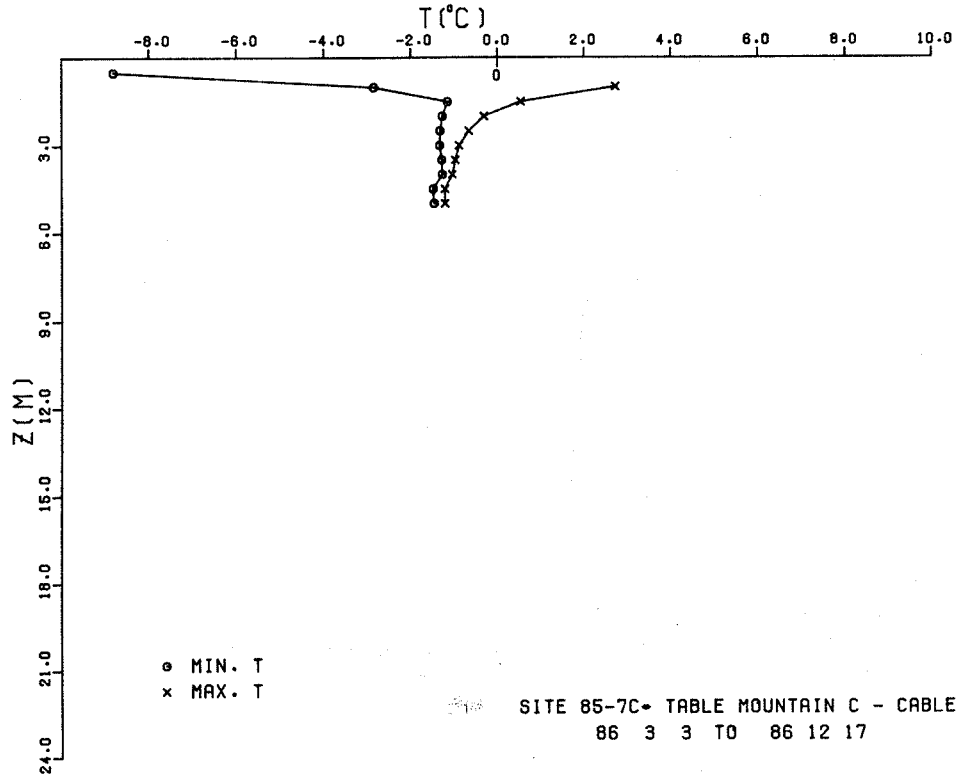

SITE 85-7B- TABLE MTN - HA110
86 4 17 TO 86 12 17



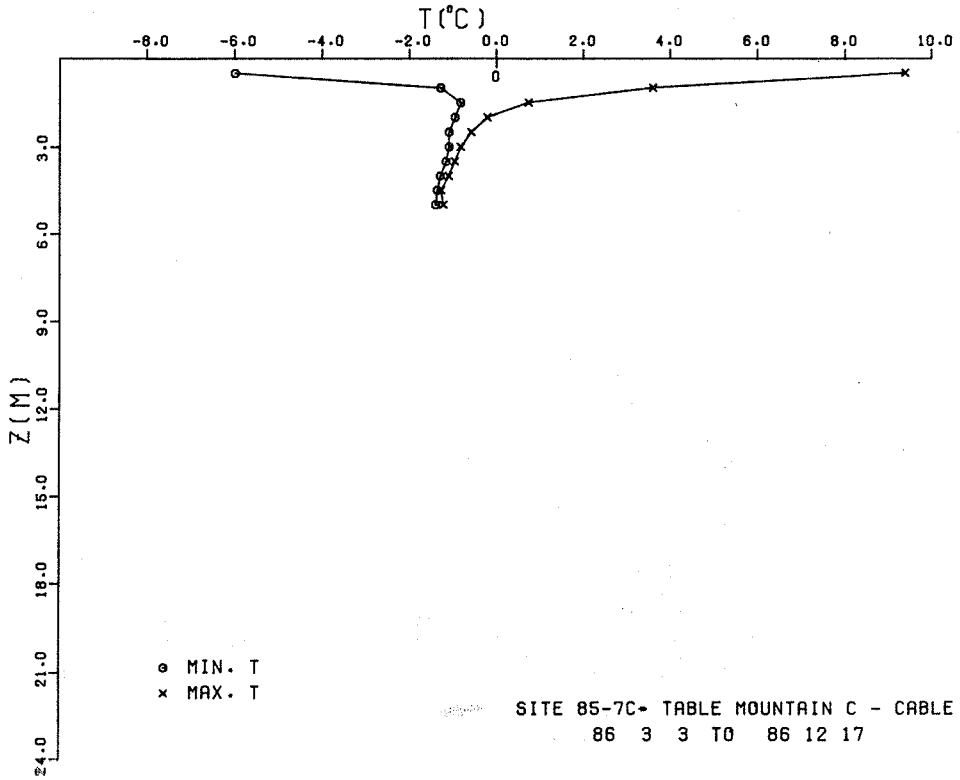

SITE 85-7B- TABLE MOUNTAIN - HA132
86 10 26 TO 86 10 26



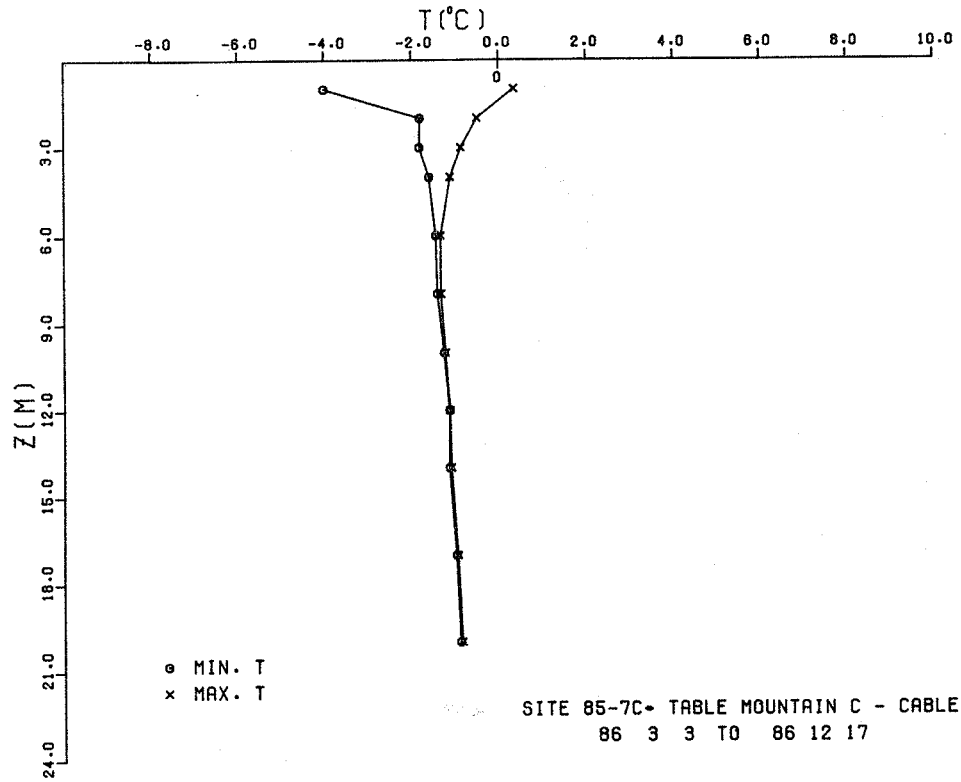

504 SITE 85-7B← TABLE MOUNTAIN - HA129
86 10 26 TO 86 10 26



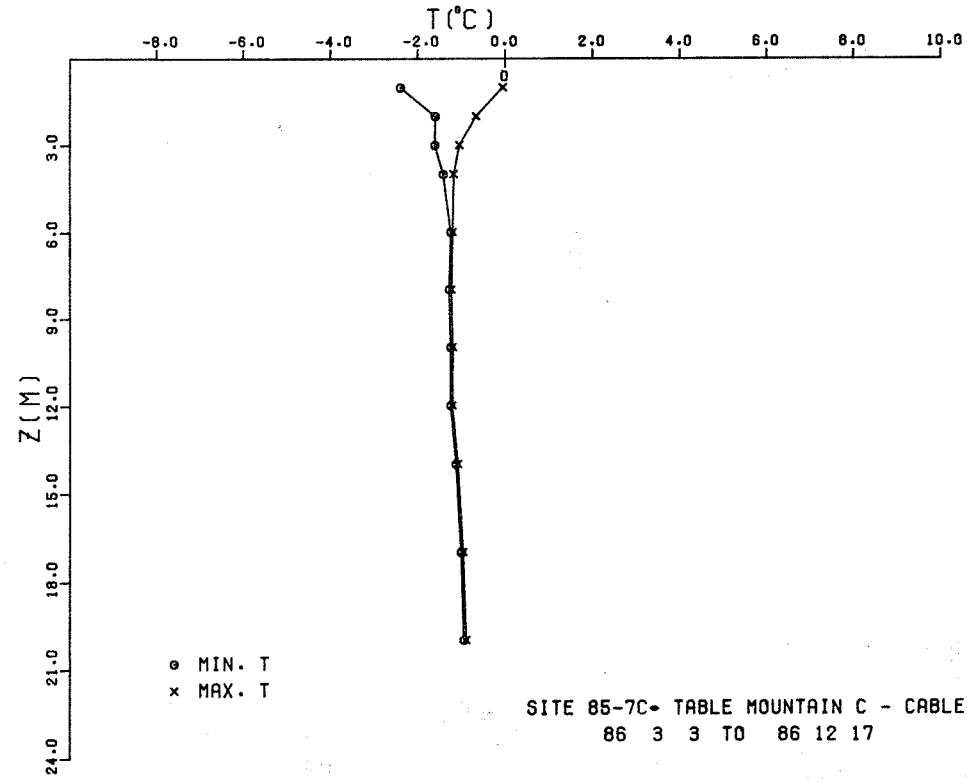

SITE 85-7C- TABLE MOUNTAIN C - CABLE T1
86 3 3 TO 86 12 17



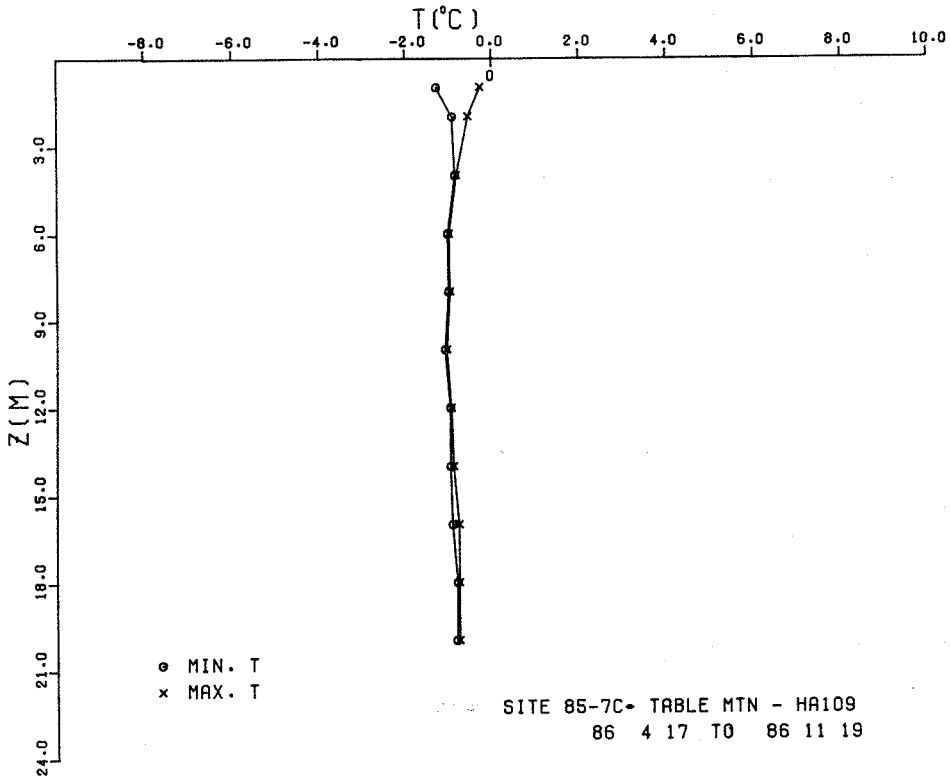

SITE 85-7C- TABLE MOUNTAIN C - CABLE T2
86 3 3 TO 86 12 17

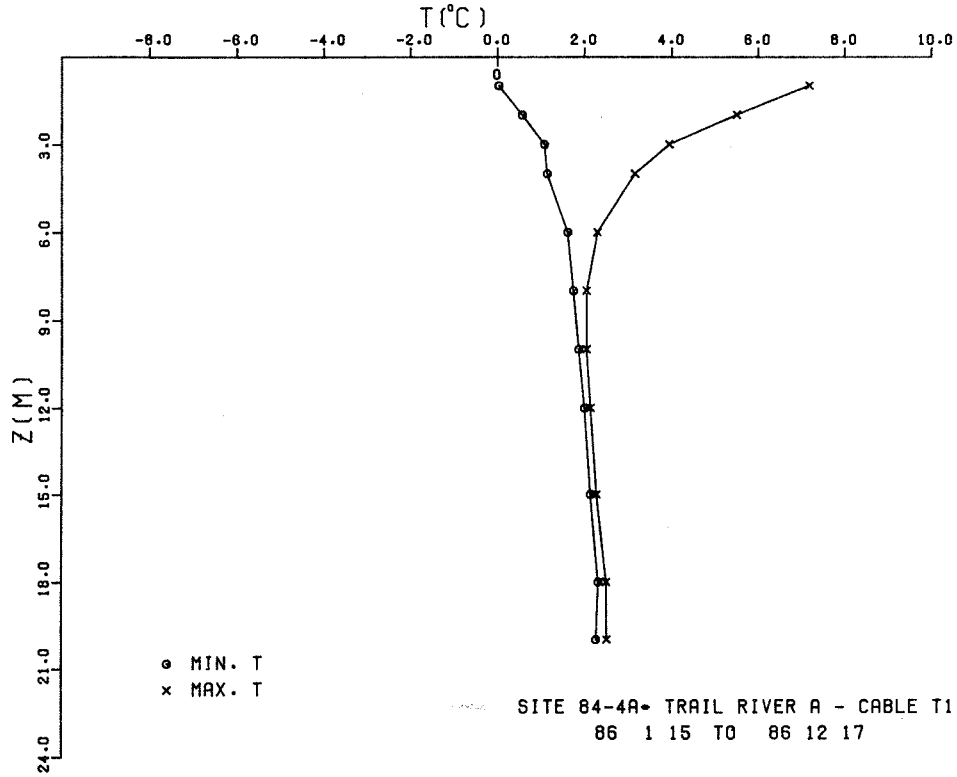


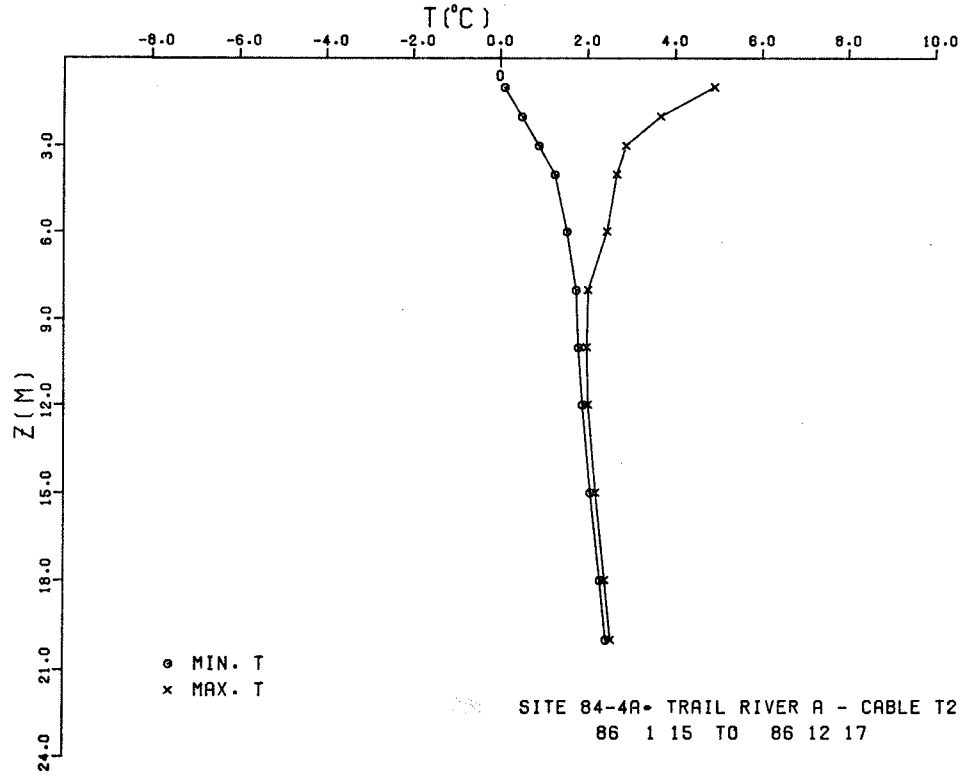

SITE 85-7C• TABLE MOUNTAIN C - CABLE T3
86 3 3 TO 86 12 17

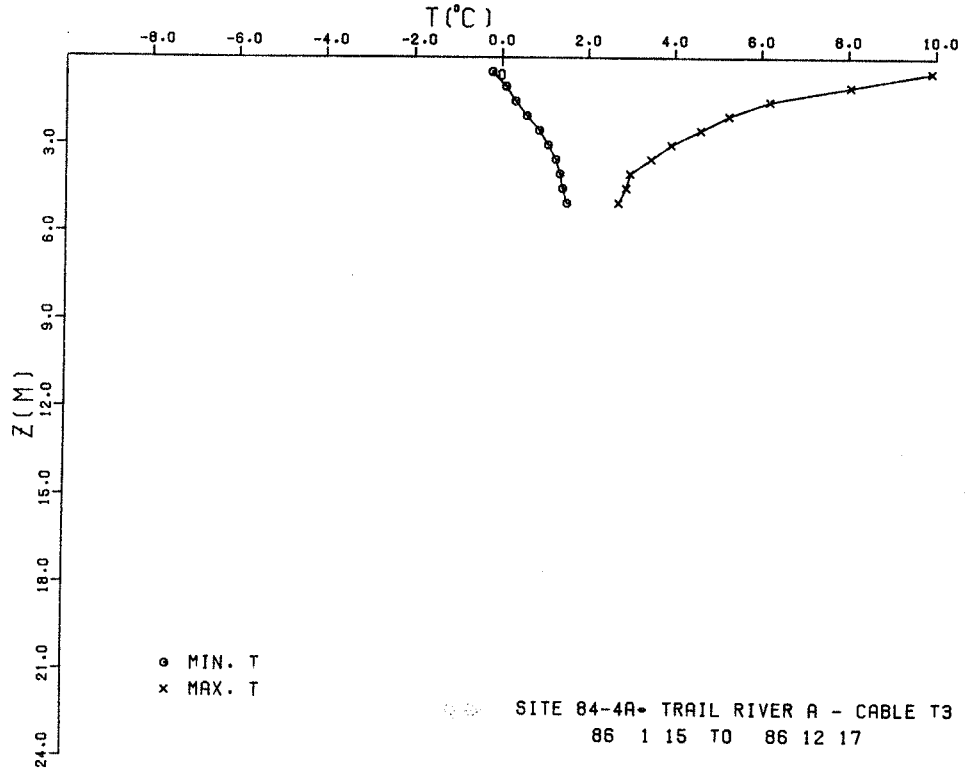



SITE 85-7C• TABLE MOUNTAIN C - CABLE T4
86 3 3 TO 86 12 17

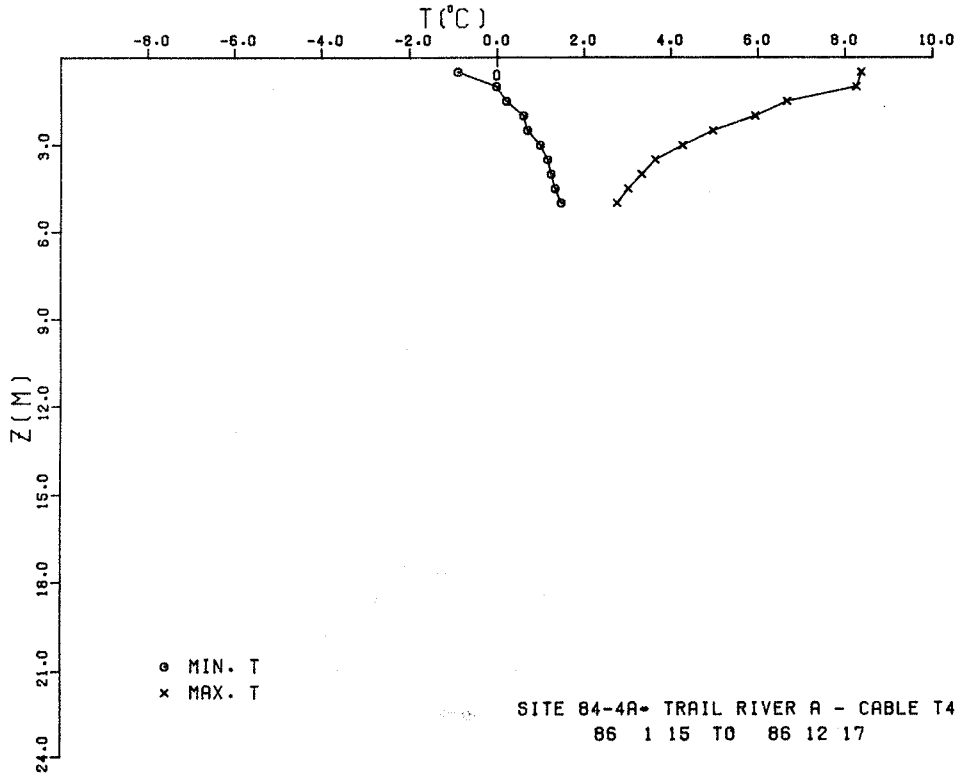

T(°C)
-8.0
-6.0
-4.0
-2.0
0.0
2.0
4.0
6.0
8.0
10.0
Z(M)
3.0
6.0
9.0
12.0
15.0
18.0
21.0
24.0
MIN. T
MAX. T
SITE 85-7C- TABLE MTN - HA109
86 4 17 TO 86 11 19


T(°C)
-8.0
-6.0
-4.0
-2.0
0.0
2.0
4.0
6.0
8.0
10.0
Z(M)
0
3.0
6.0
9.0
12.0
15.0
18.0
21.0
24.0
MIN. T
MAX. T
SITE 84-4A• TRAIL RIVER A - CABLE T1
86 1 15 TO 86 12 17

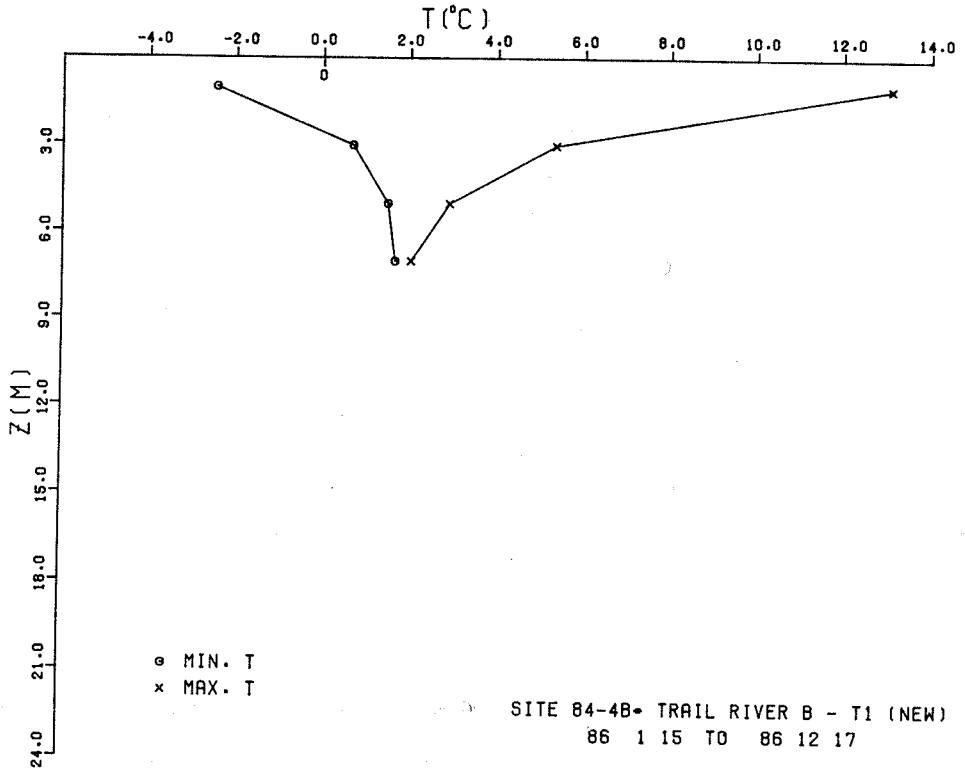

T(°C)
-8.0
-6.0
-4.0
-2.0
0.0
2.0
4.0
6.0
8.0
10.0
Z(M)
0
3.0
6.0
9.0
12.0
15.0
18.0
21.0
24.0
MIN. T
MAX. T
SITE 84-4A• TRAIL RIVER A - CABLE T2
86 1 15 TO 86 12 17



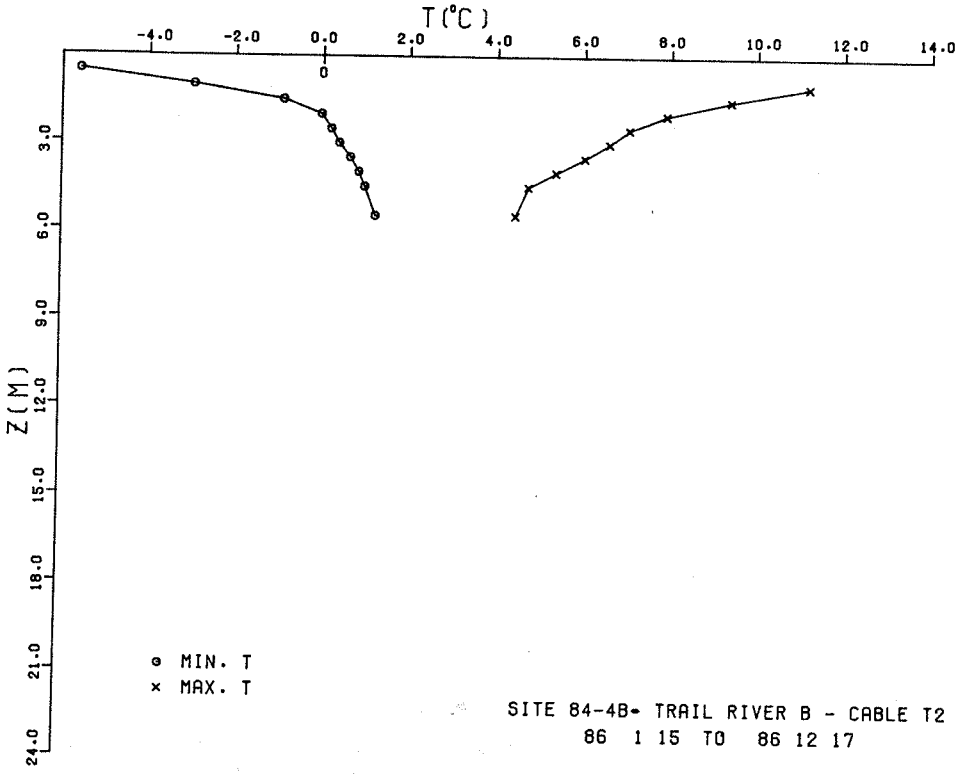

SITE 84-4A• TRAIL RIVER A - CABLE T3
86 1 15 TO 86 12 17



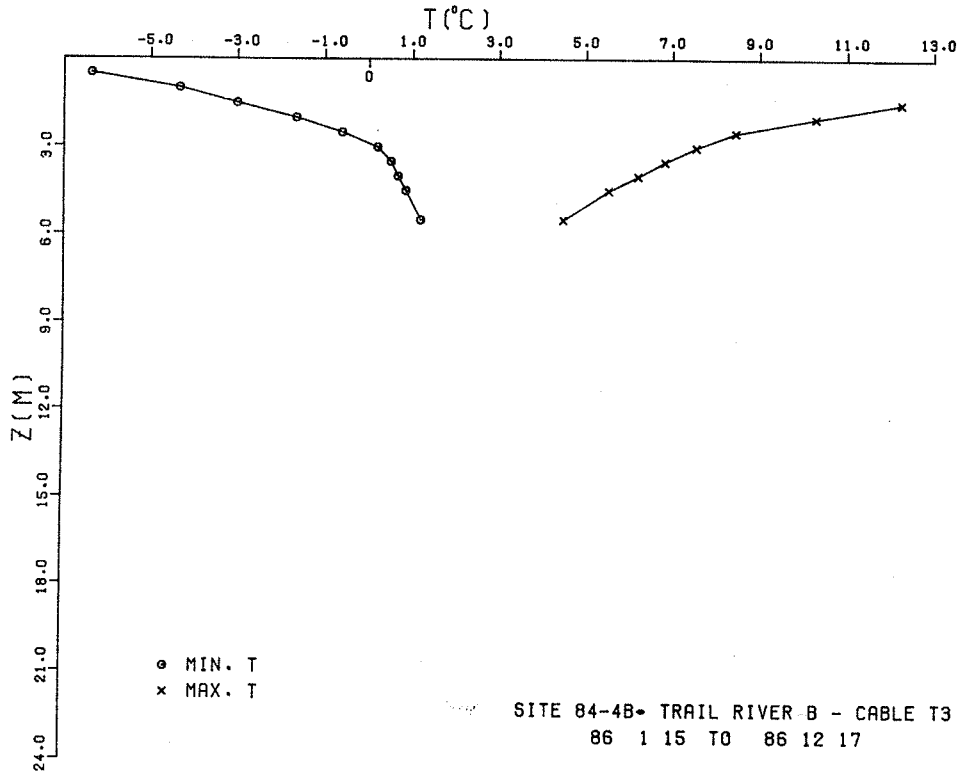

SITE 84-4A• TRAIL RIVER A - CABLE T4
86 1 15 TO 86 12 17



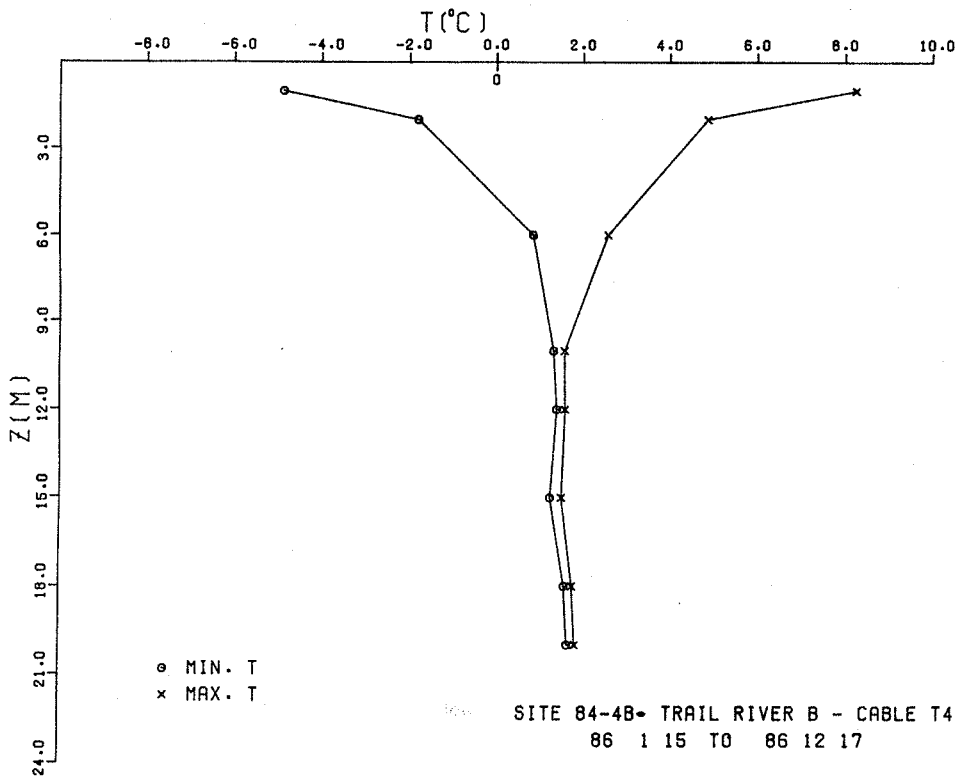

SITE 84-4B- TRAIL RIVER B - T1 (NEW)
86 1 15 TO 86 12 17



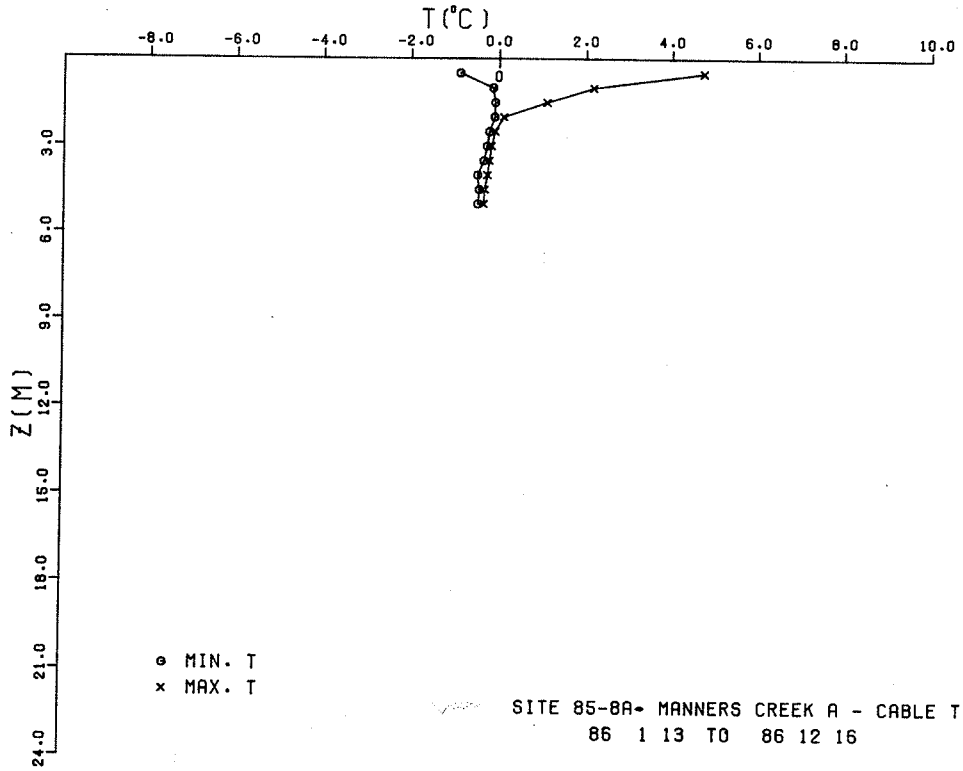

SITE 84-4B- TRAIL RIVER B - CABLE T2
86 1 15 TO 86 12 17



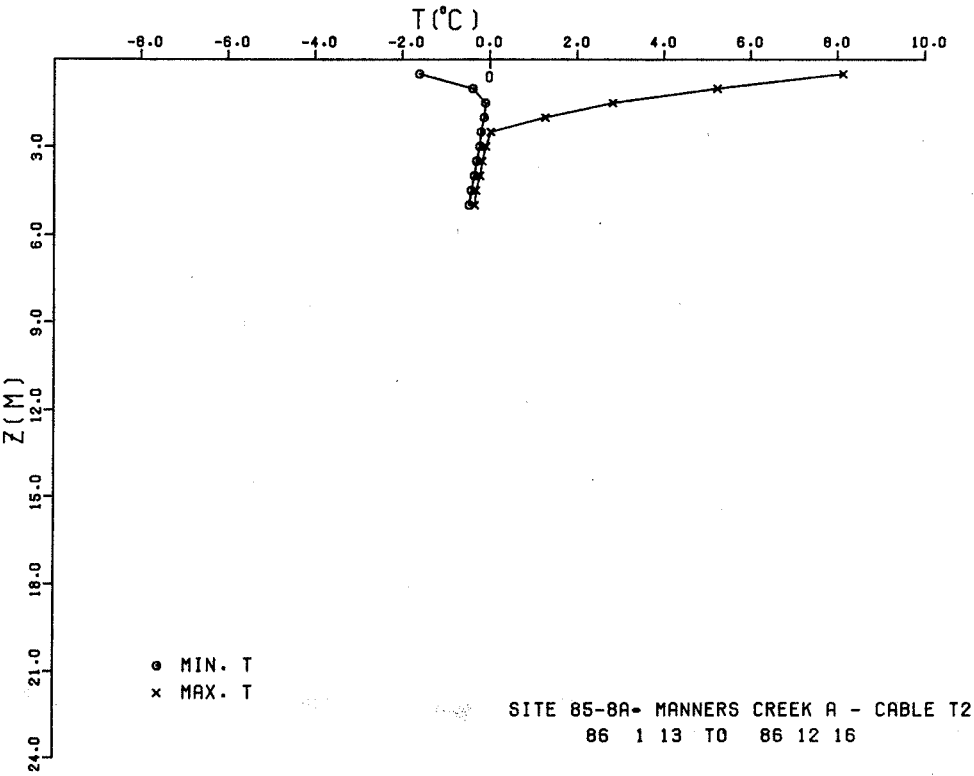

SITE 84-4B• TRAIL RIVER B - CABLE T3
86 1 15 TO 86 12 17



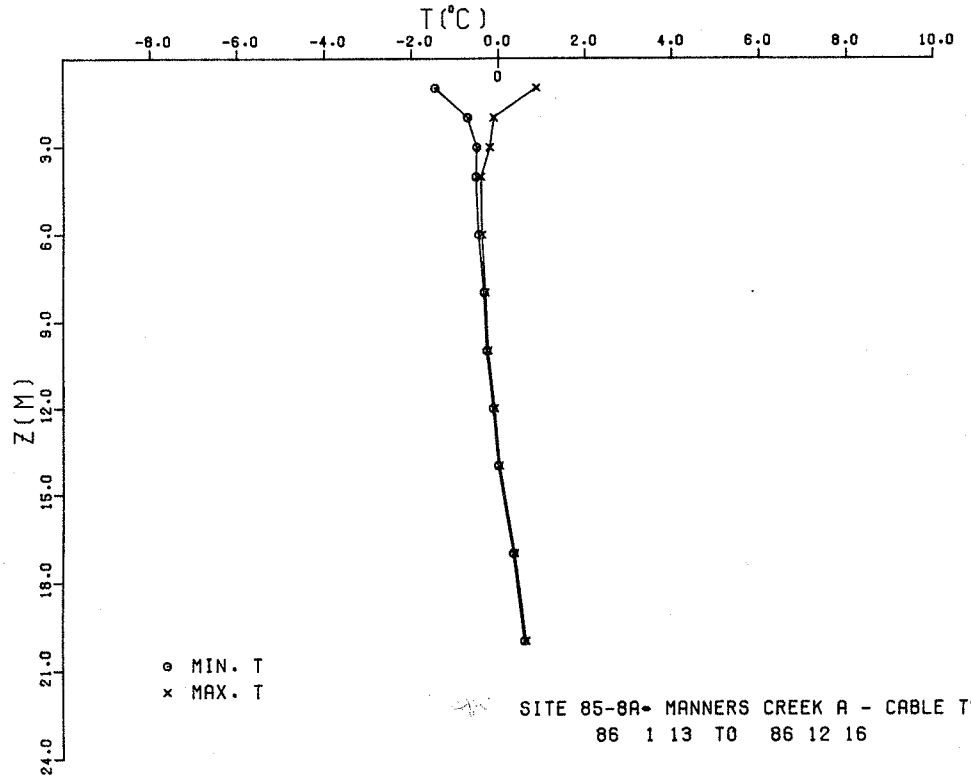

SITE 84-4B• TRAIL RIVER B - CABLE T4
86 1 15 TO 86 12 17



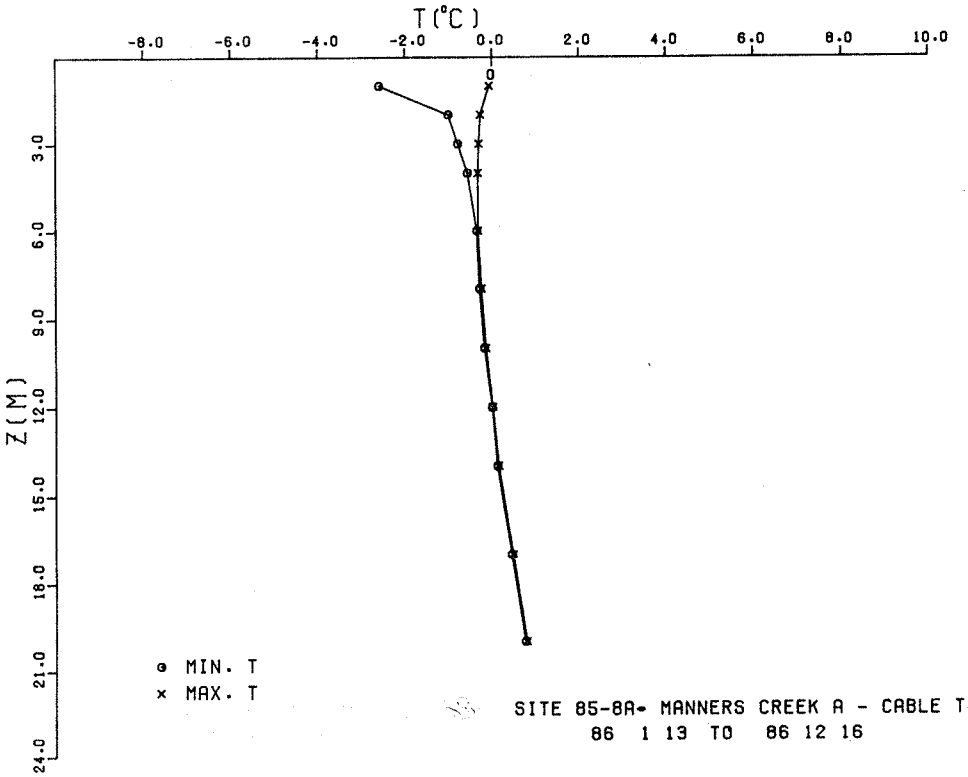

SITE 85-8A- MANNERS CREEK A - CABLE T1
86 1 13 TO 86 12 16



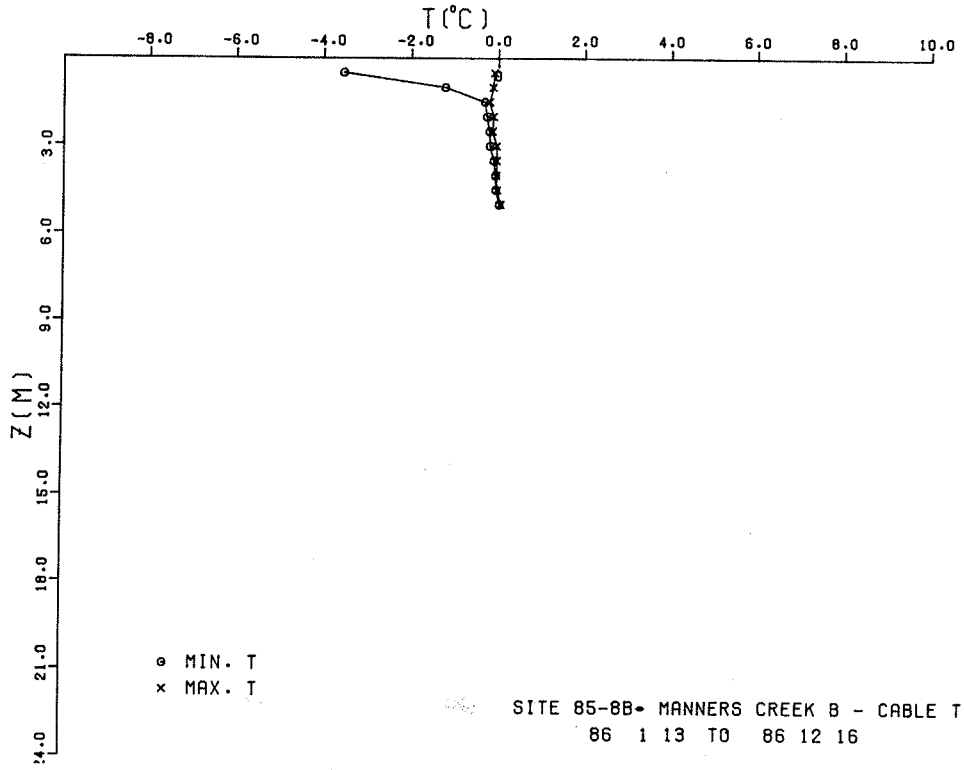

SITE 85-8A- MANNERS CREEK A - CABLE T2
86 1 13 TO 86 12 16



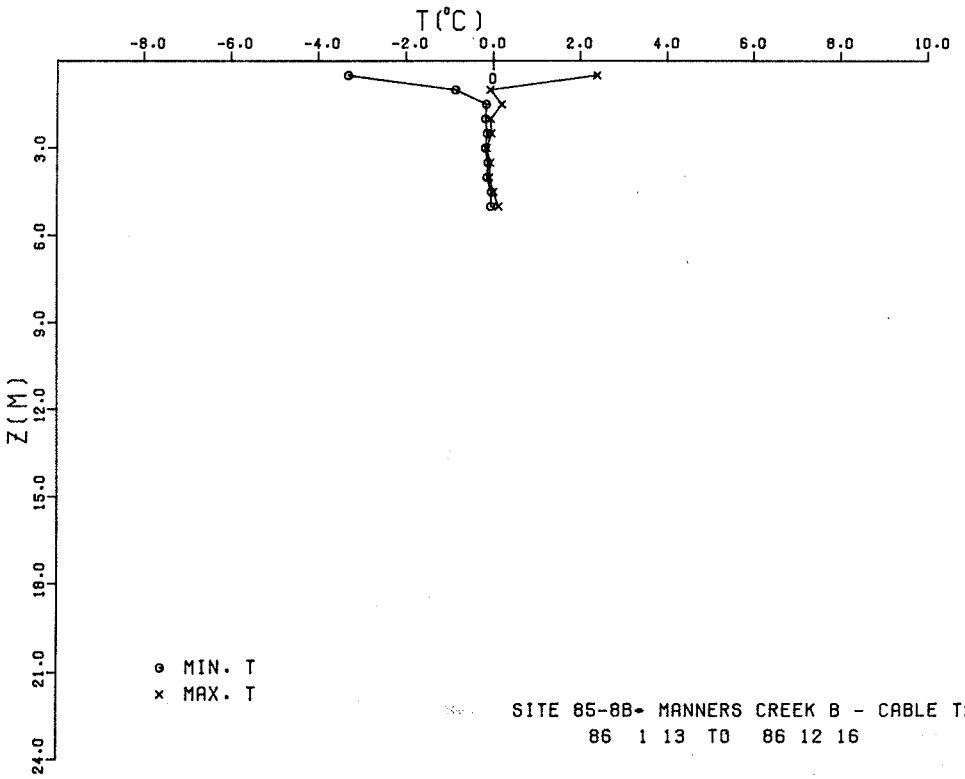

SITE 85-8A- MANNERS CREEK A - CABLE T3
86 1 13 TO 86 12 16



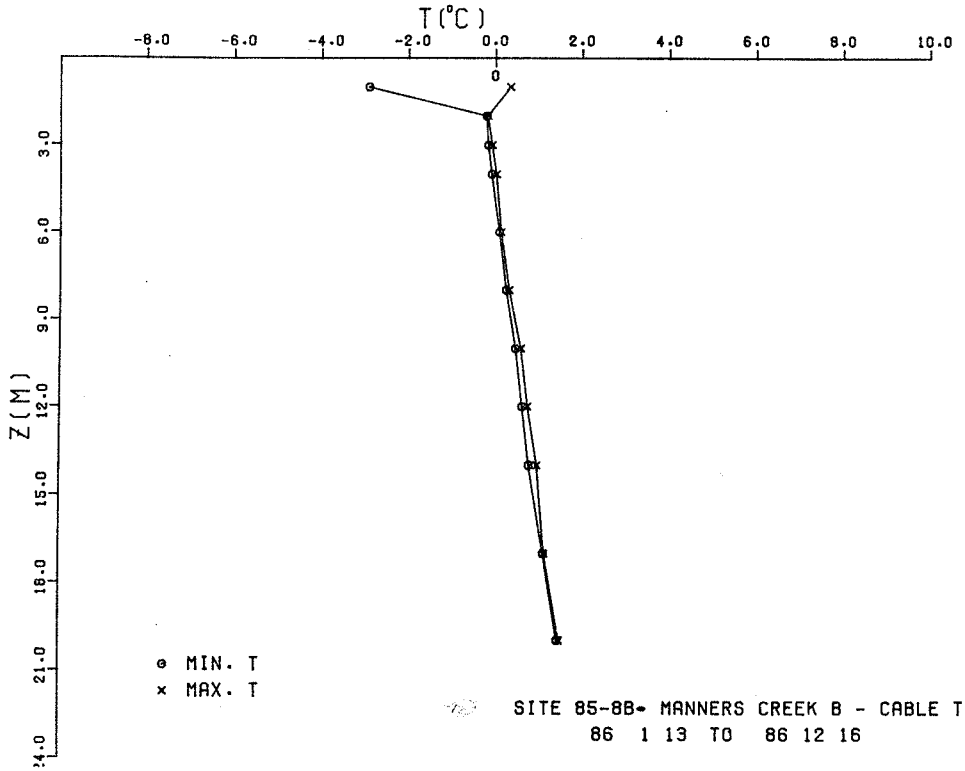

SITE 85-8A- MANNERS CREEK A - CABLE T4
86 1 13 TO 86 12 16



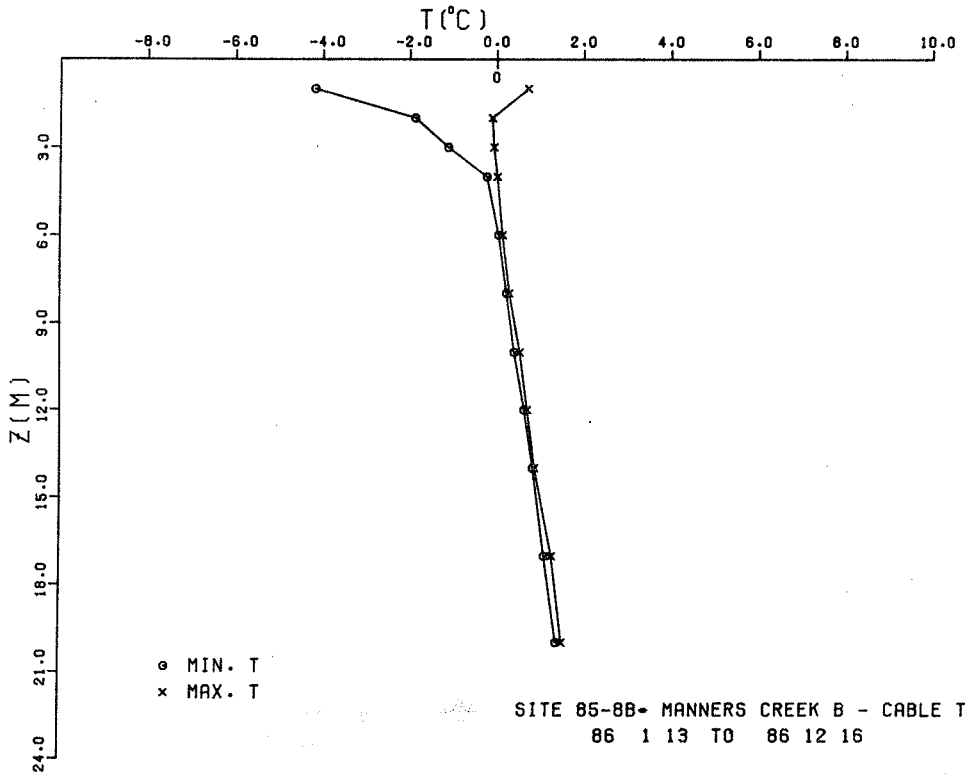

SITE 85-8B• MANNERS CREEK B - CABLE T1
86 1 13 TO 86 12 16



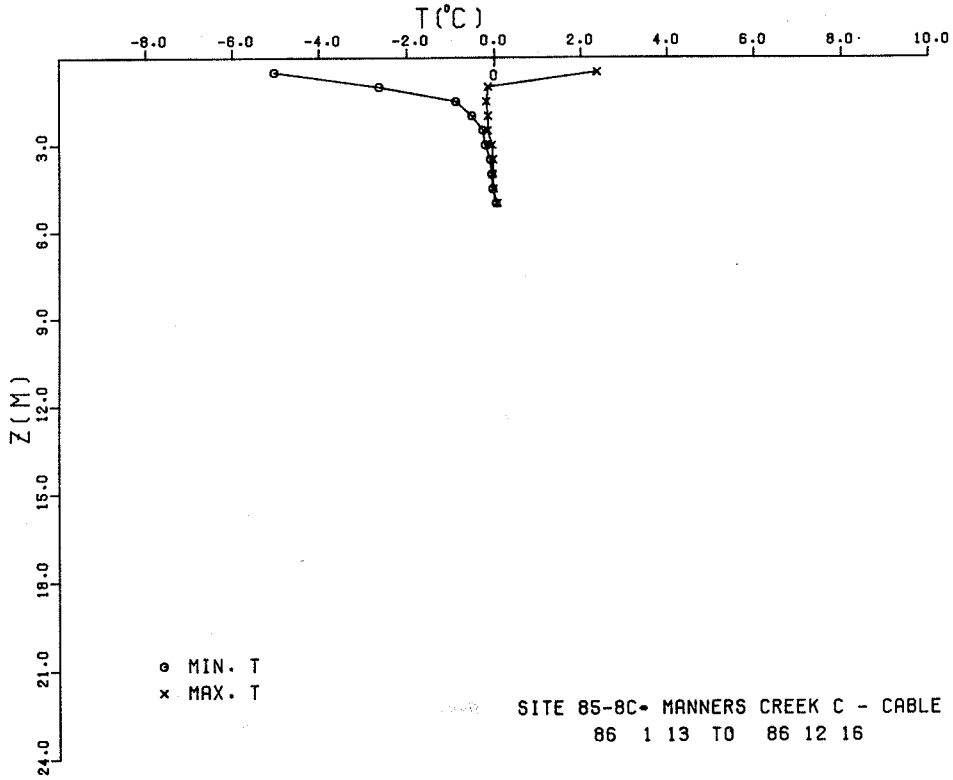

SITE 85-8B• MANNERS CREEK B - CABLE T2
86 1 13 TO 86 12 16



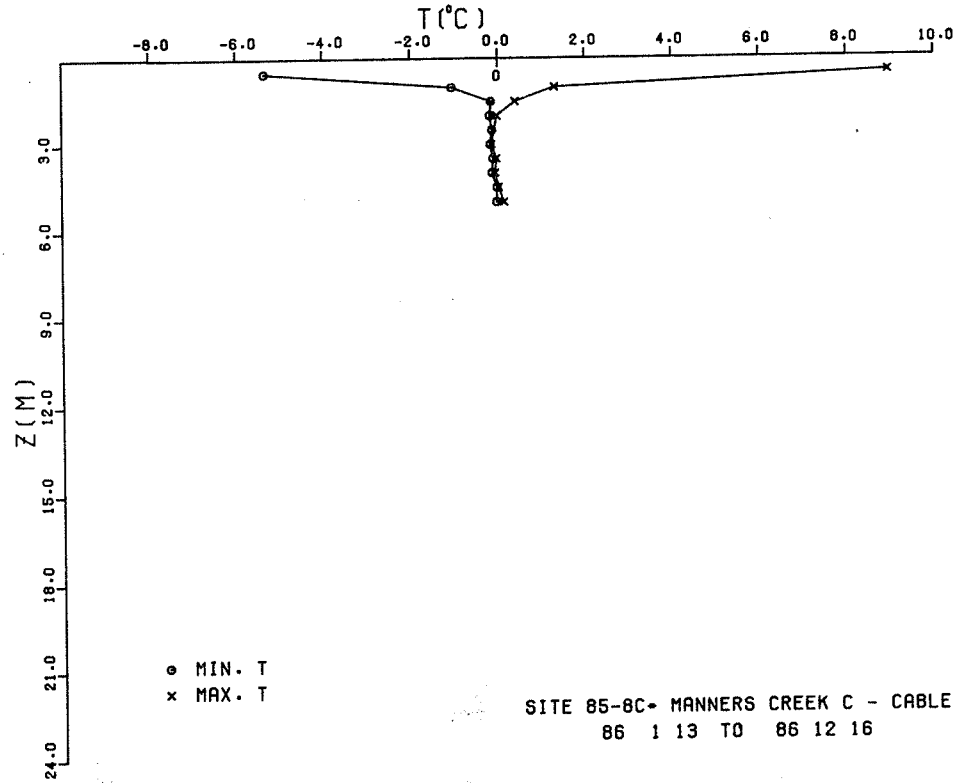

SITE 85-8B- MANNERS CREEK B - CABLE T3
86 1 13 TO 86 12 16



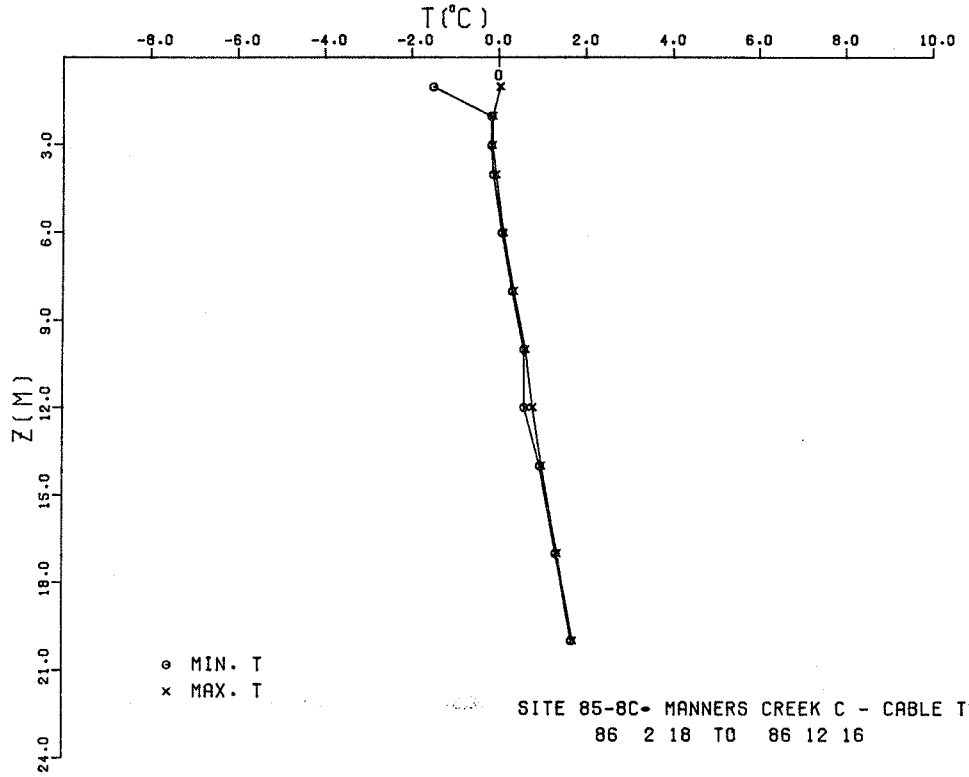

SITE 85-8B- MANNERS CREEK B - CABLE T4
86 1 13 TO 86 12 16



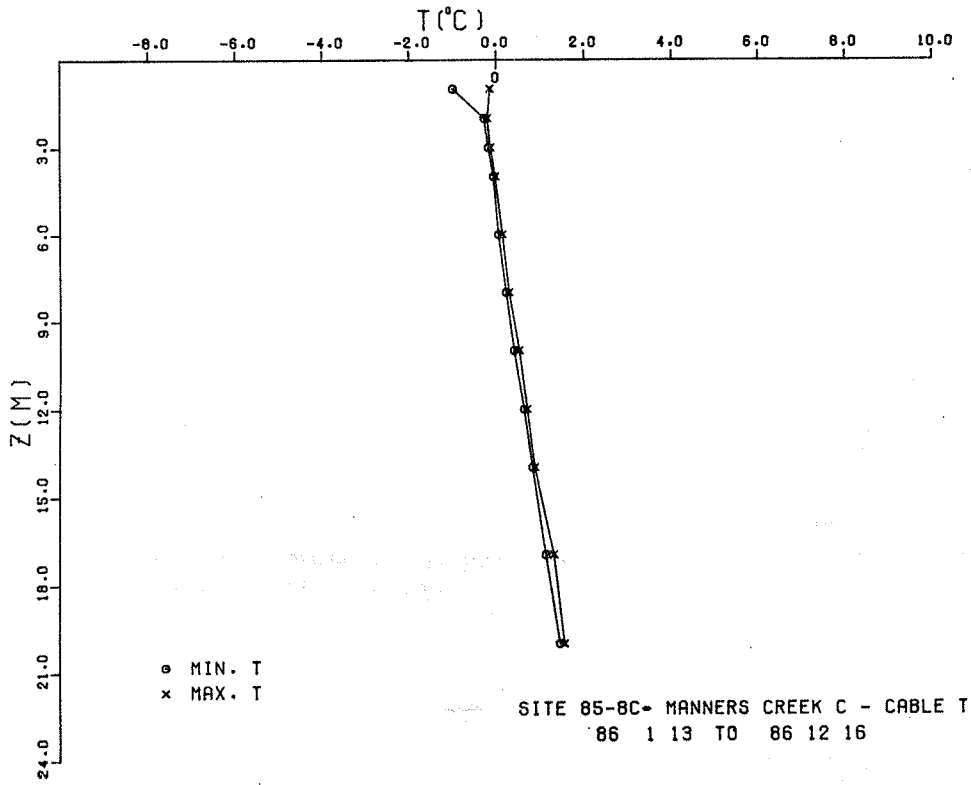

SITE 85-8C- MANNERS CREEK C - CABLE T1
86 1 13 TO 86 12 16



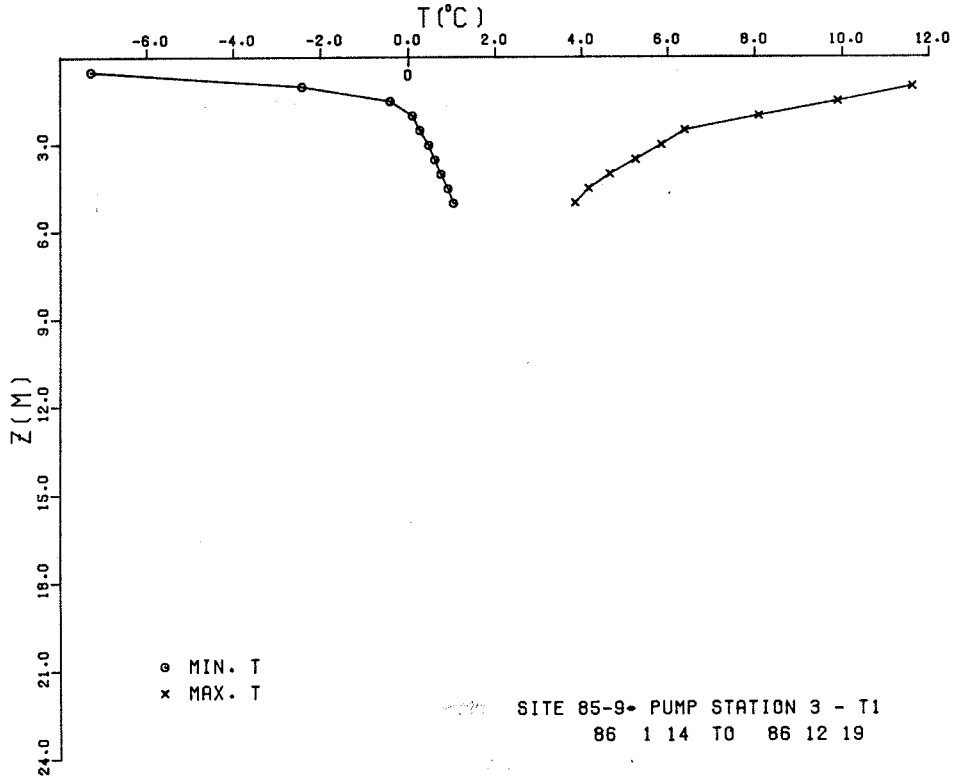

SITE 85-8C- MANNERS CREEK C - CABLE T2
86 1 13 TO 86 12 16



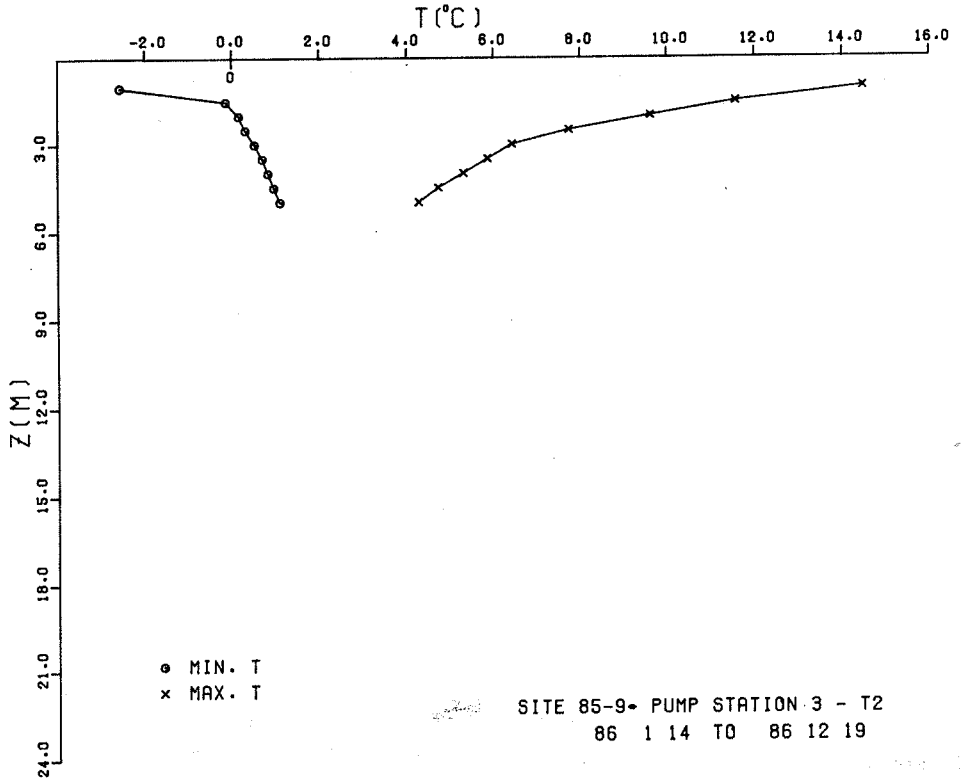

SITE 85-8C- MANNERS CREEK C - CABLE T3
86 2 18 TO 86 12 16



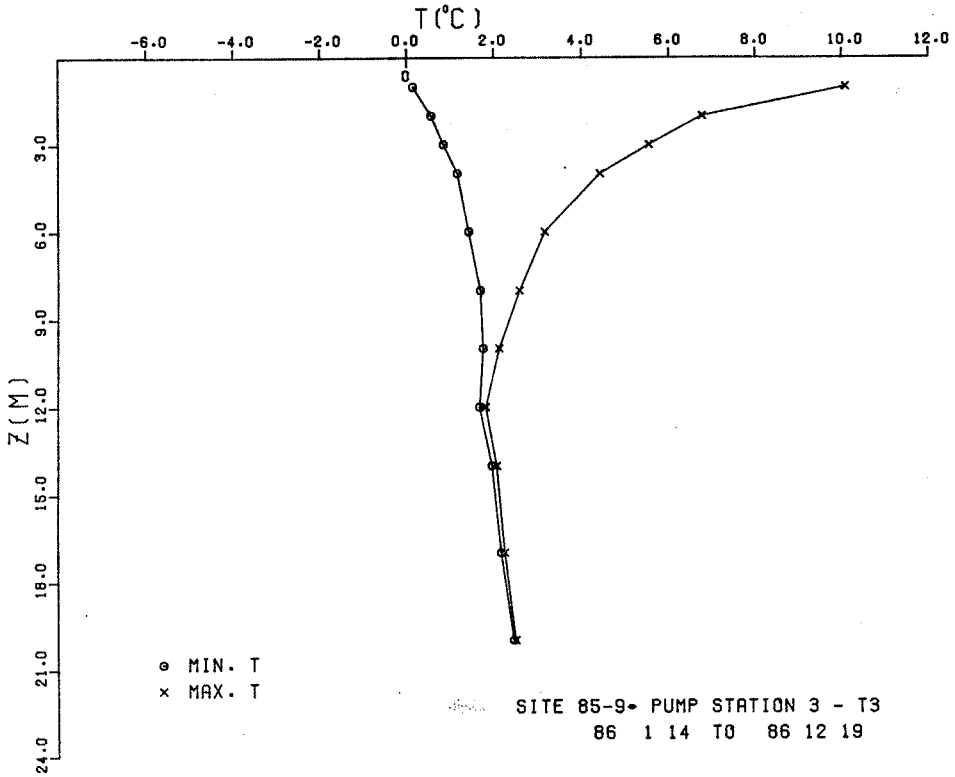

SITE 85-8C- MANNERS CREEK C - CABLE T4
86 1 13 TO 86 12 16



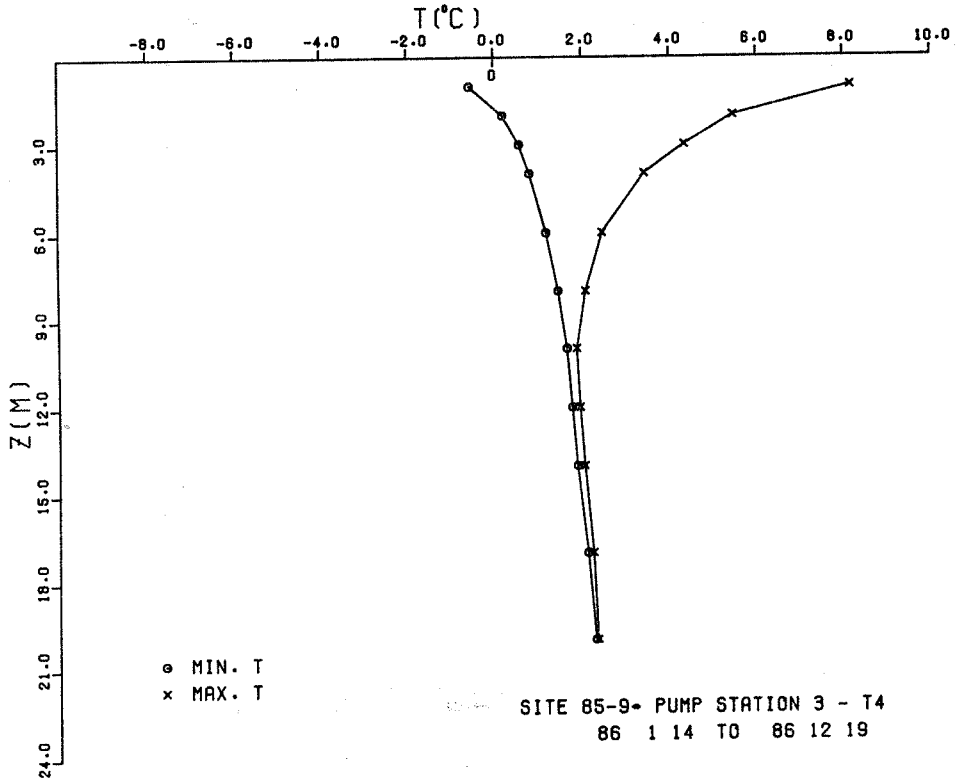

SITE 85-9• PUMP STATION 3 - T1
86 1 14 TO 86 12 19



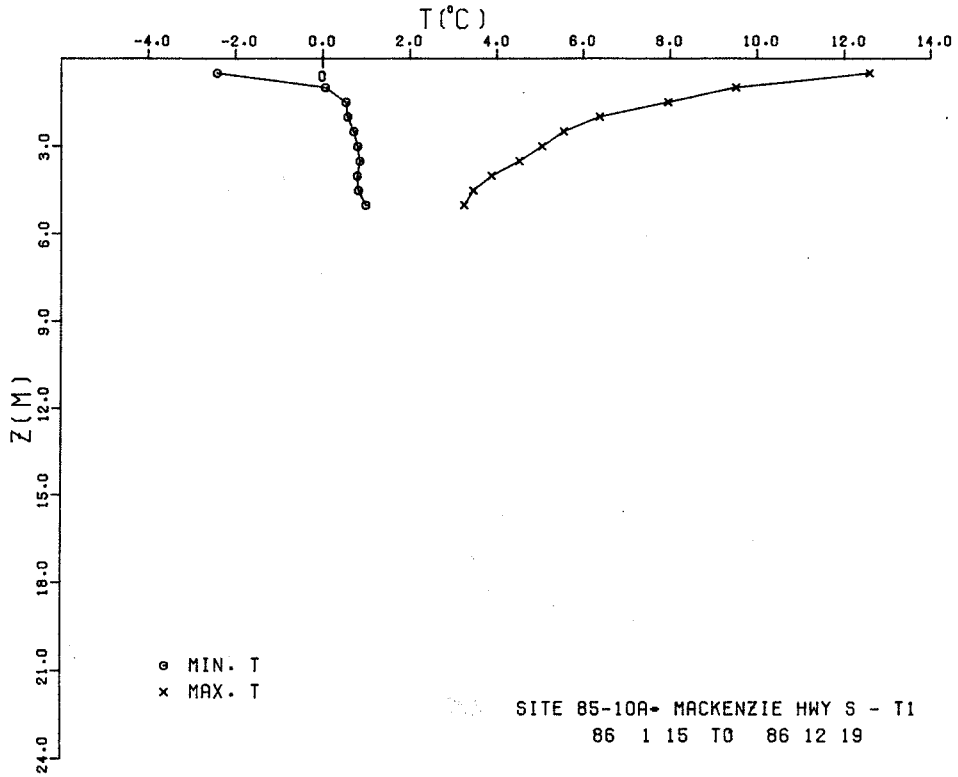

SITE 85-9• PUMP STATION 3 - T2
86 1 14 TO 86 12 19

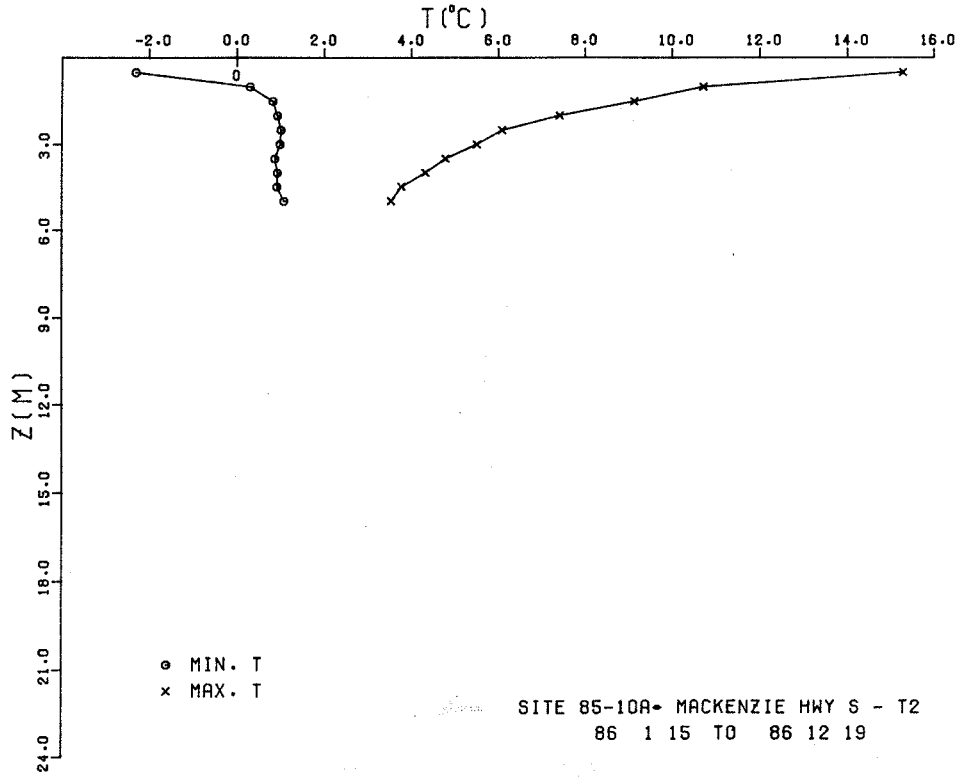


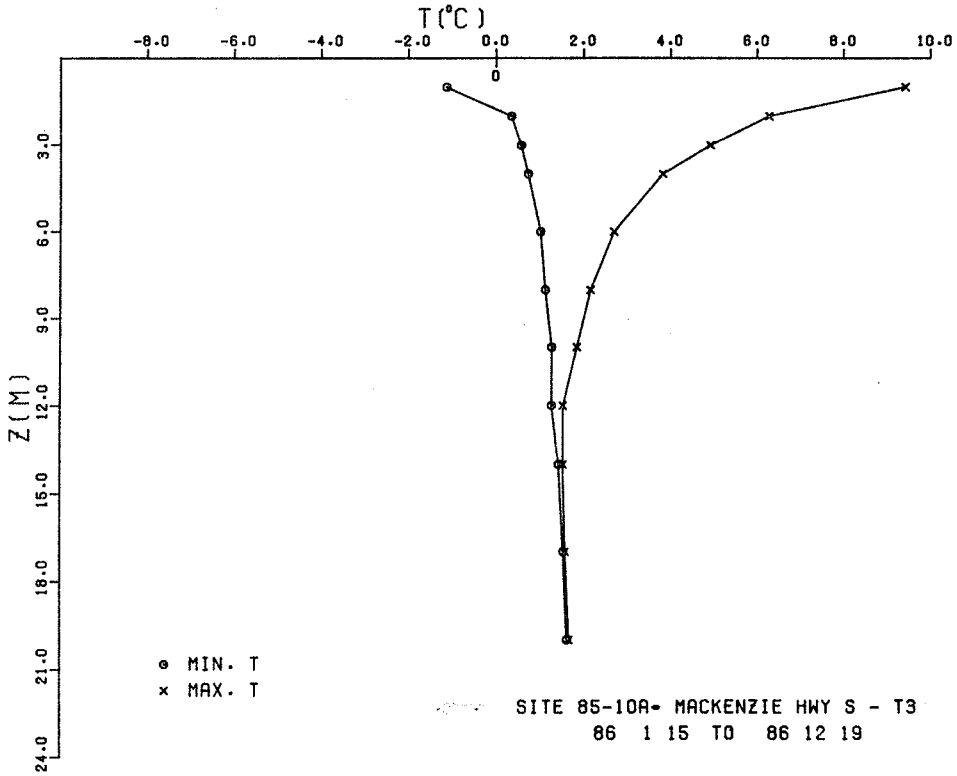

SITE 85-9• PUMP STATION 3 - T3
86 1 14 TO 86 12 19

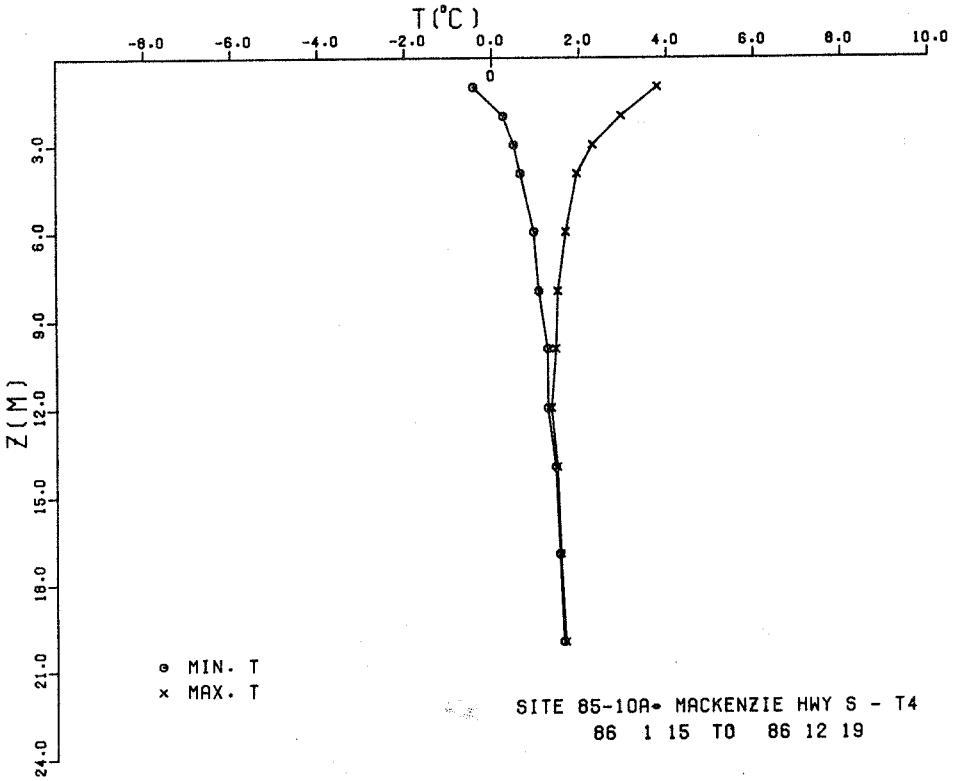


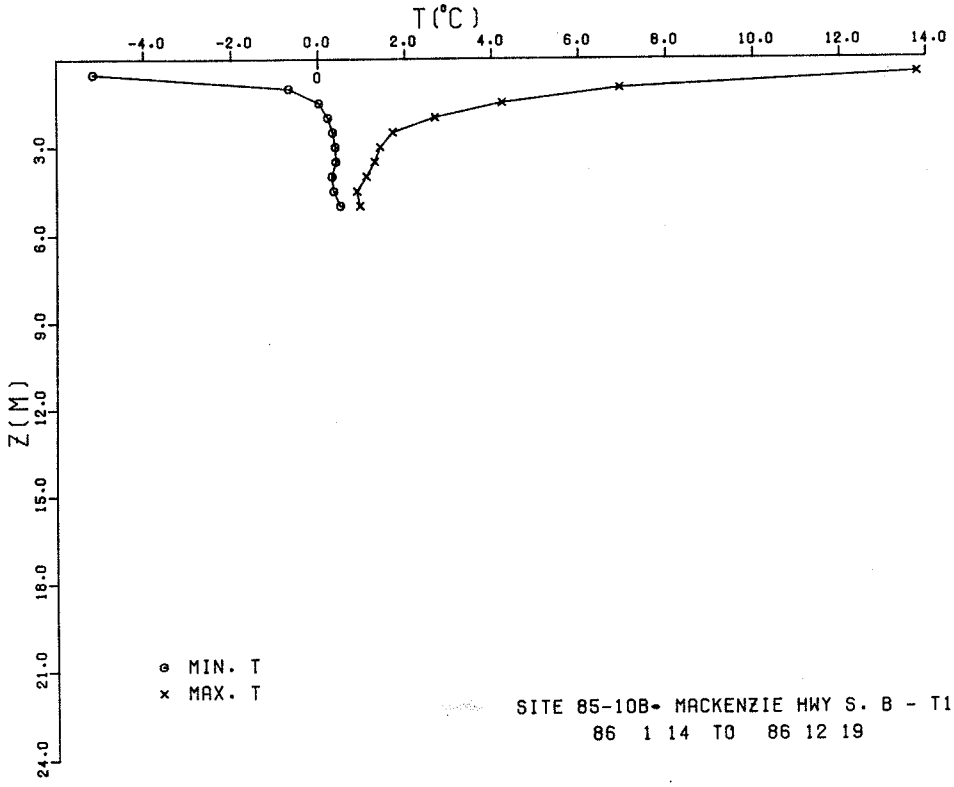

SITE 85-9• PUMP STATION 3 - T4
86 1 14 TO 86 12 19


T(°C)
-4.0
-2.0
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
Z(M)
3.0
6.0
9.0
12.0
15.0
18.0
21.0
24.0
MIN. T
MAX. T
SITE 85-10A- MACKENZIE HWY S - T1
86 1 15 TO 86 12 19

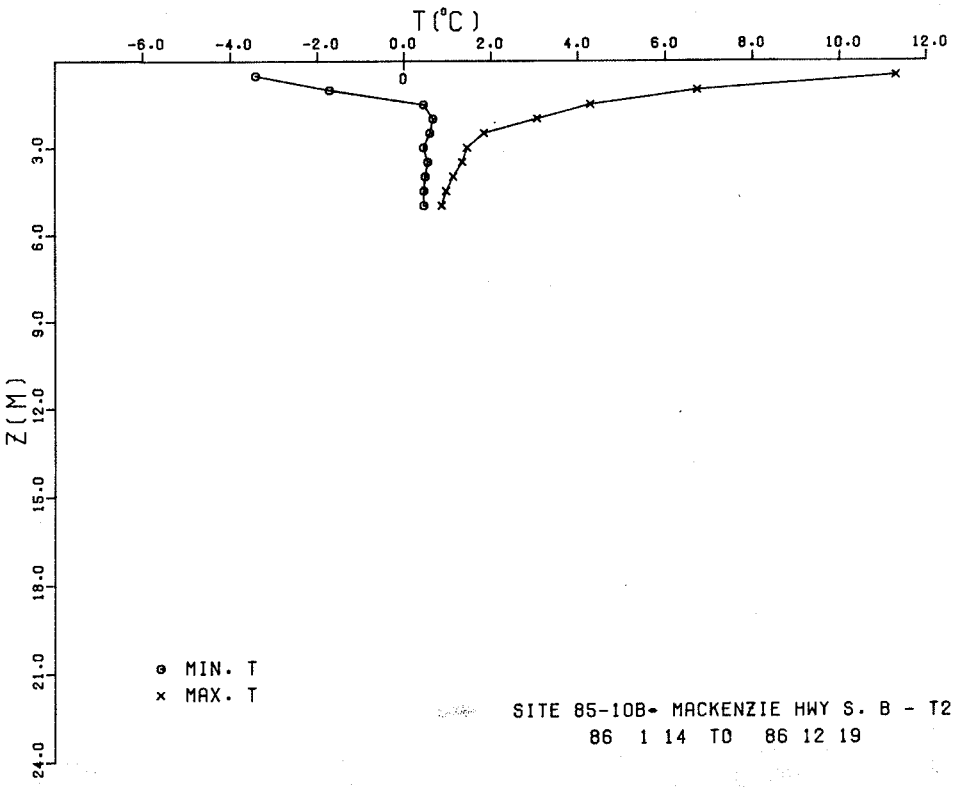

T(°C)
-2.0
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
Z(M)
3.0
6.0
9.0
12.0
15.0
18.0
21.0
24.0
MIN. T
MAX. T
SITE 85-10A- MACKENZIE HWY S - T2
86 1 15 TO 86 12 19


T(°C)
-8.0
-6.0
-4.0
-2.0
0.0
2.0
4.0
6.0
8.0
10.0
0
Z(M)
3.0
6.0
9.0
12.0
15.0
18.0
21.0
24.0
MIN. T
MAX. T
SITE 85-10A• MACKENZIE HWY S - T3
86 1 15 TO 86 12 19

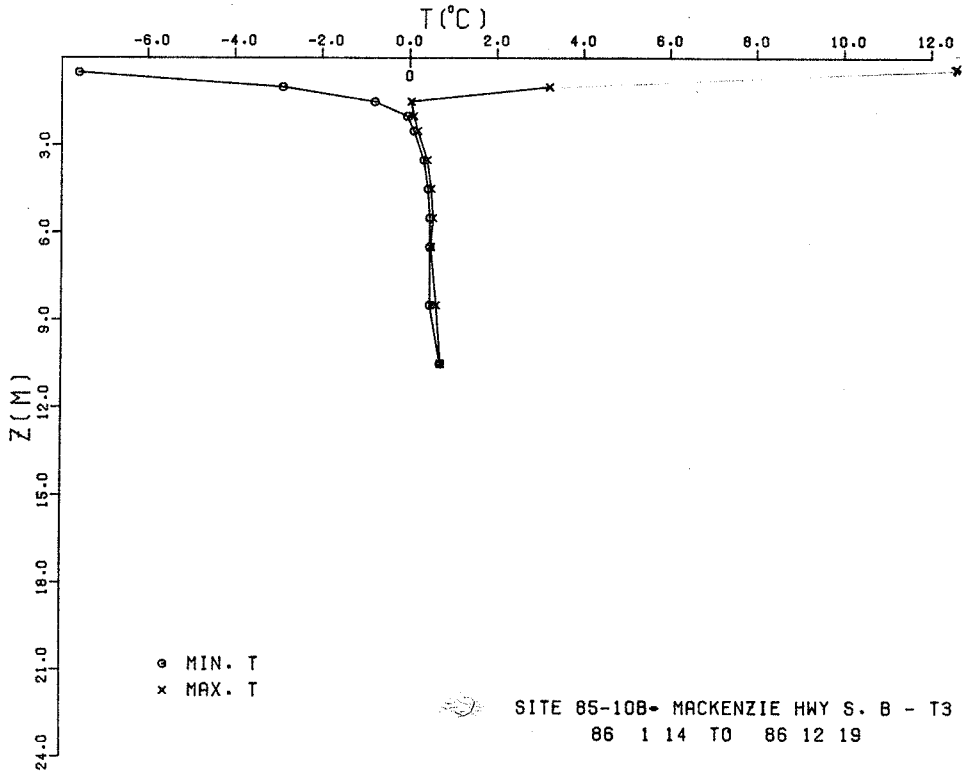

T(°C)
-8.0
-6.0
-4.0
-2.0
0.0
2.0
4.0
6.0
8.0
10.0
0
Z(M)
3.0
6.0
9.0
12.0
15.0
18.0
21.0
24.0
MIN. T
MAX. T
SITE 85-10A• MACKENZIE HWY S - T4
86 1 15 TO 86 12 19



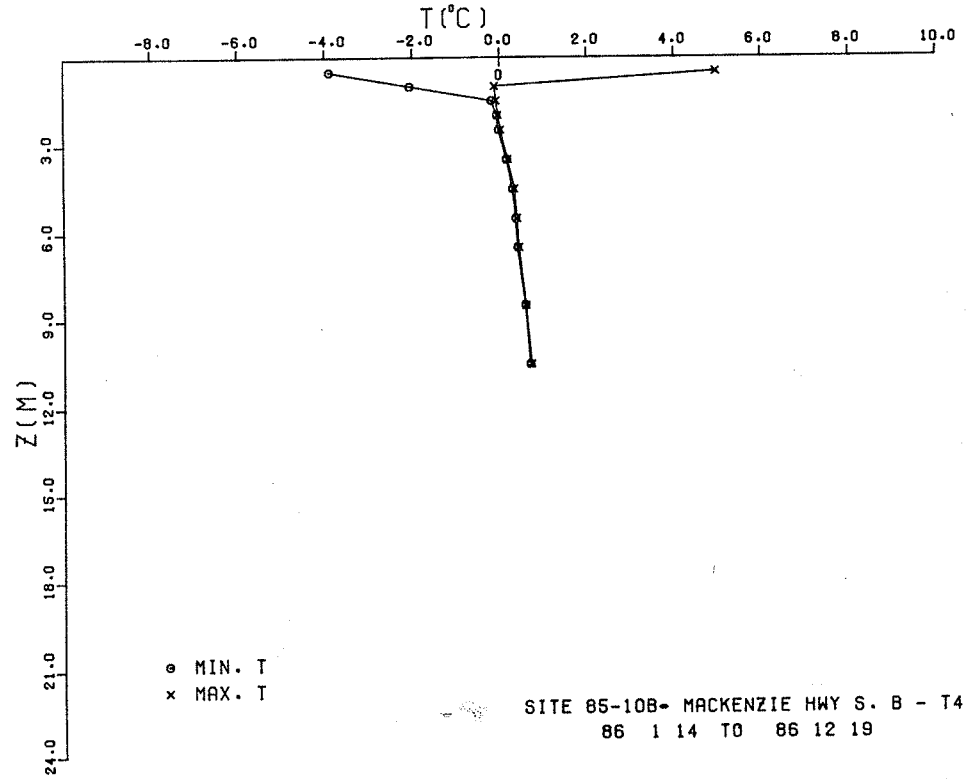

SITE 85-10B- MACKENZIE HWY S. B - T1
86 1 14 TO 86 12 19



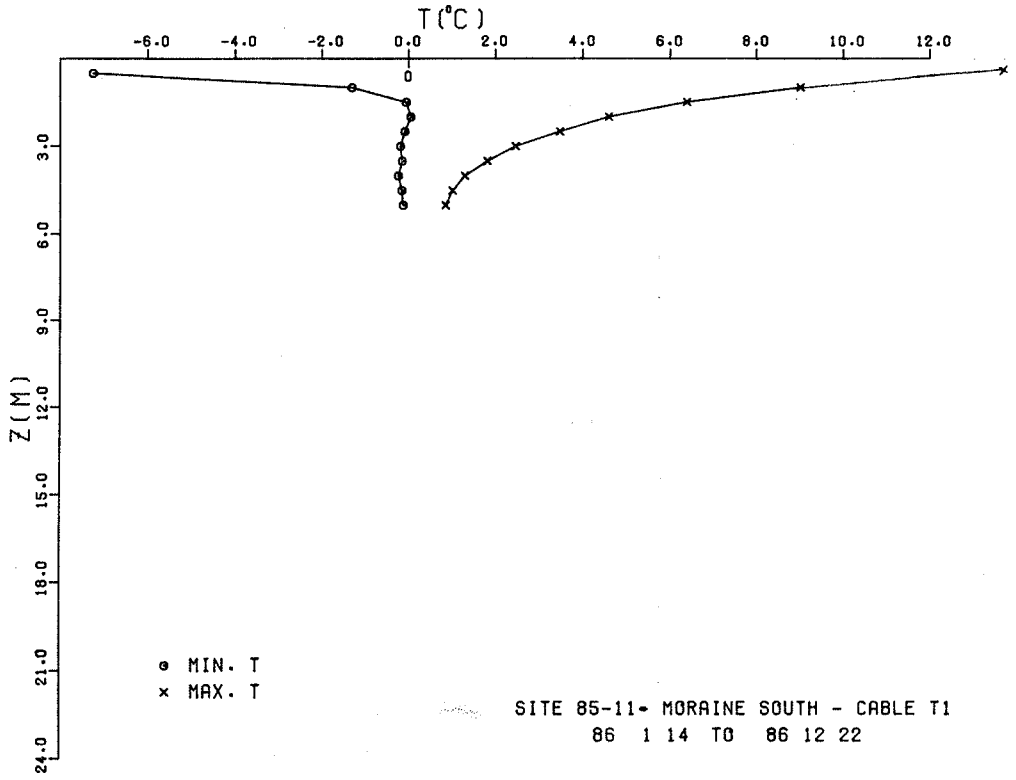

SITE 85-10B- MACKENZIE HWY S. B - T2
86 1 14 TO 86 12 19



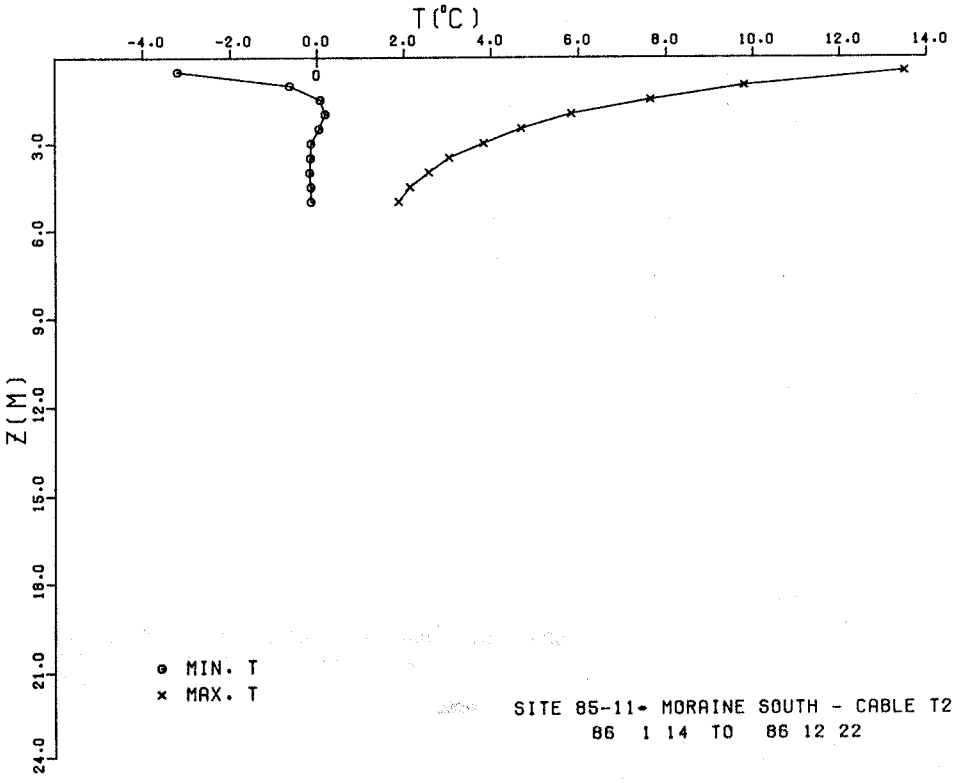

SITE 85-108- MACKENZIE HWY S. B - T3
86 1 14 TO 86 12 19



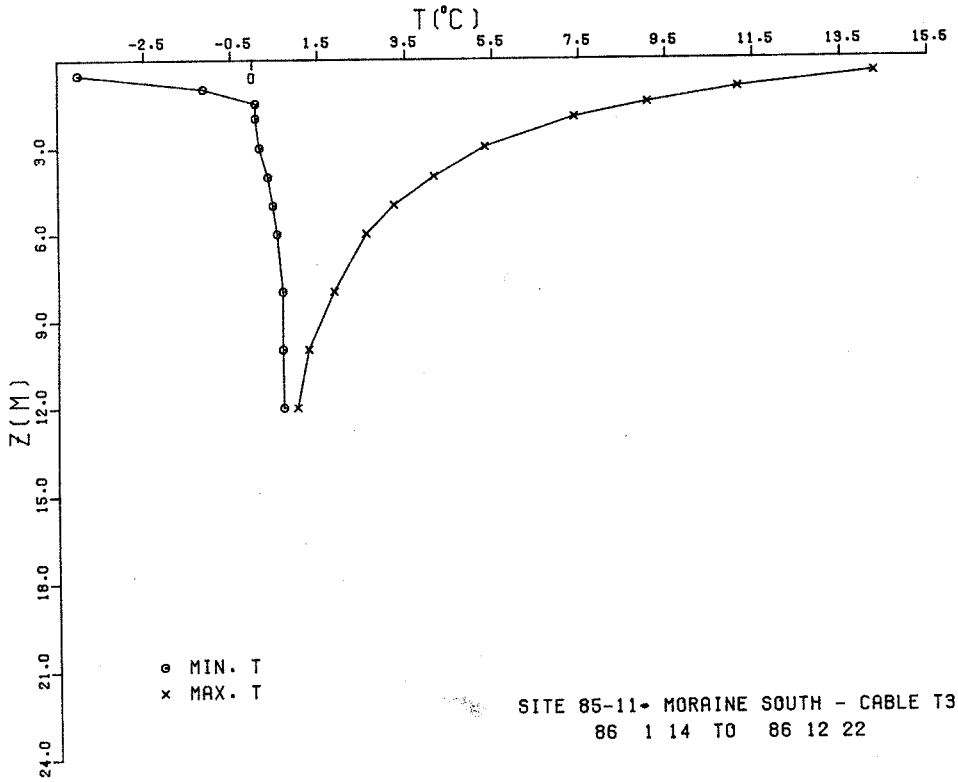

SITE 85-108- MACKENZIE HWY S. B - T4
86 1 14 TO 86 12 19



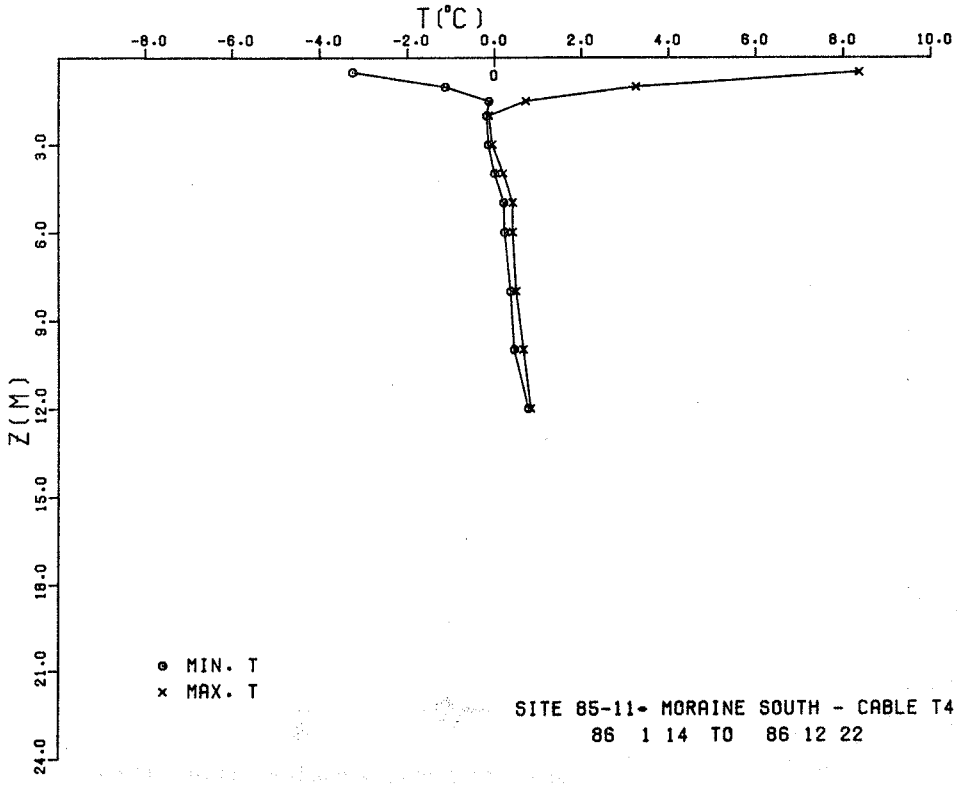

SITE 85-11- MORAINE SOUTH - CABLE T1
86 1 14 TO 86 12 22



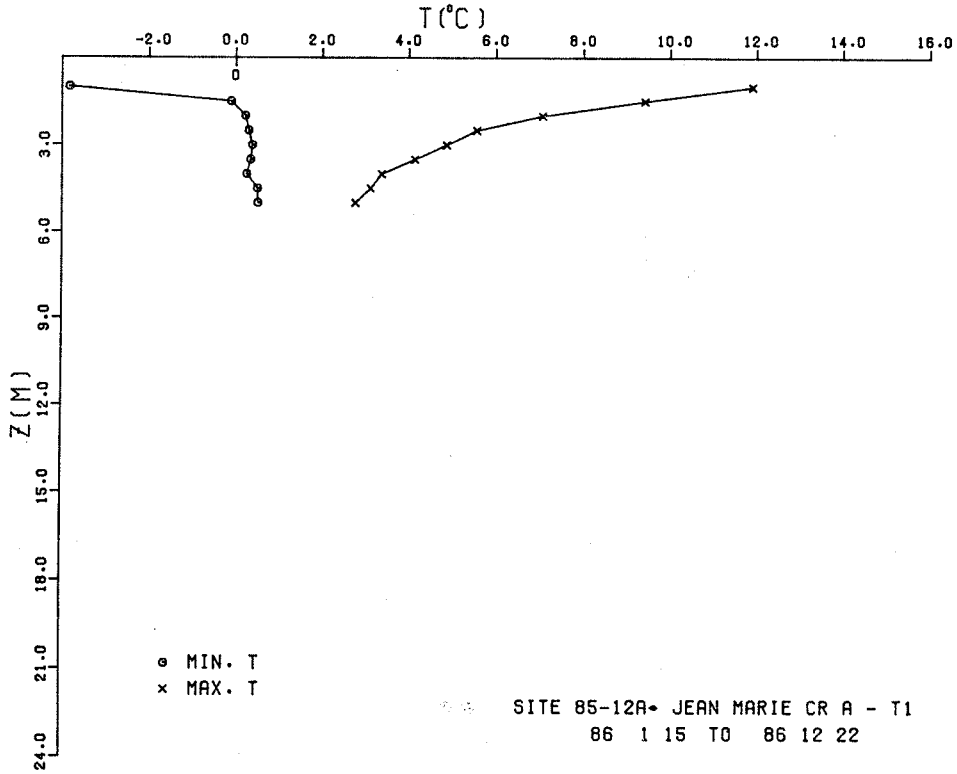

SITE 85-11- MORAINE SOUTH - CABLE T2
86 1 14 TO 86 12 22



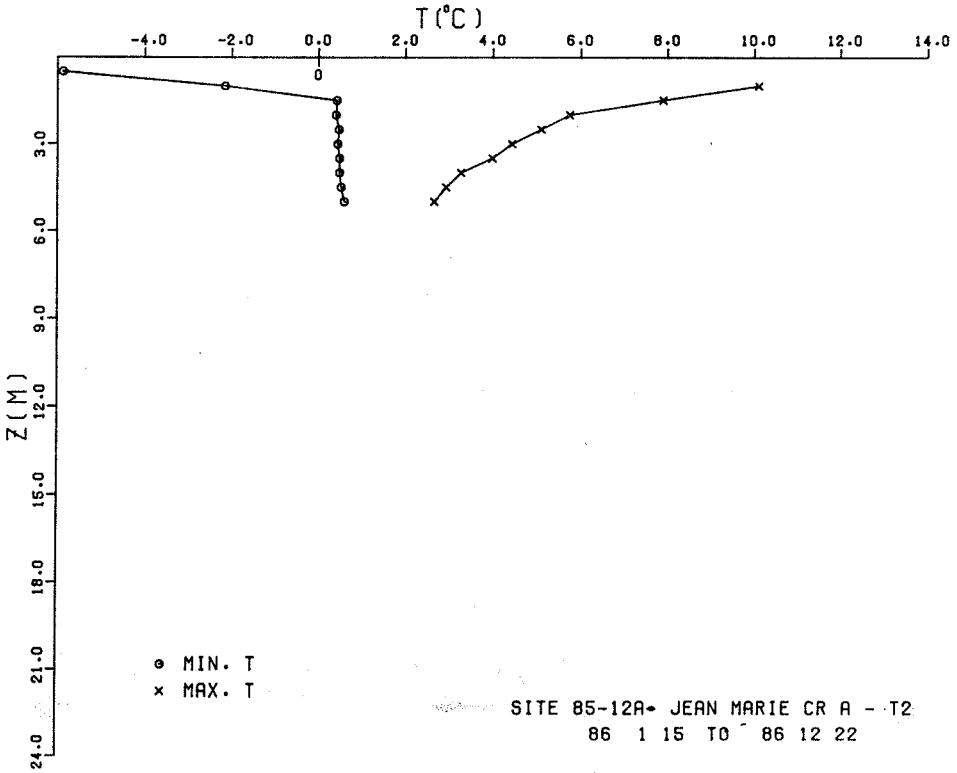

SITE 85-11- MORAINE SOUTH - CABLE T3
86 1 14 TO 86 12 22



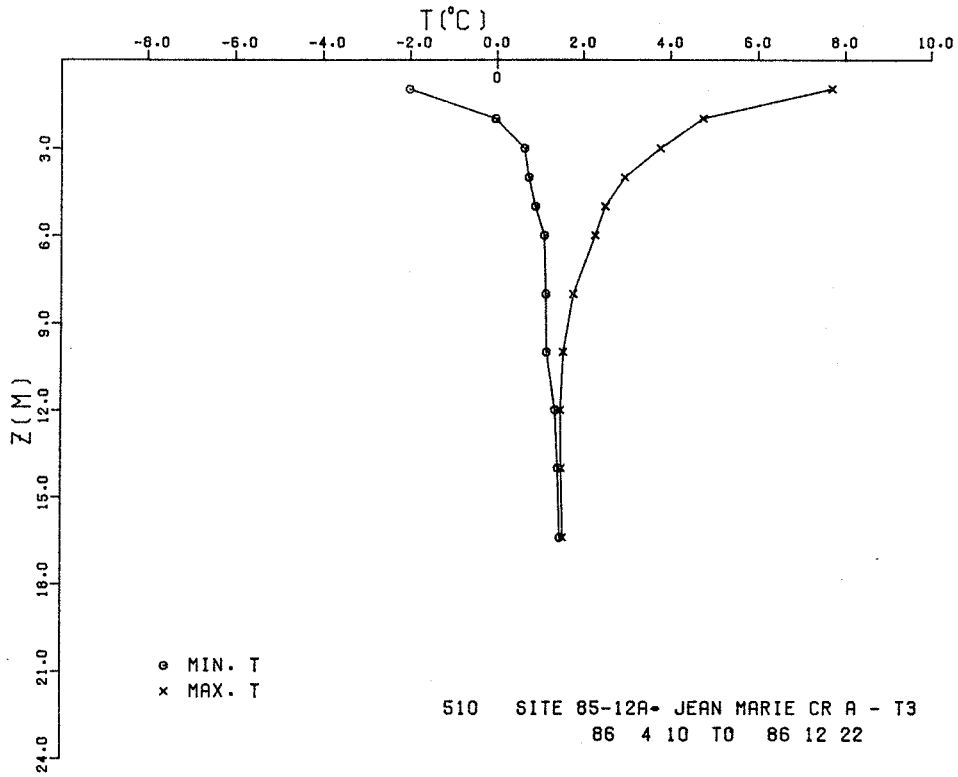

SITE 85-11- MORAINE SOUTH - CABLE T4
86 1 14 TO 86 12 22



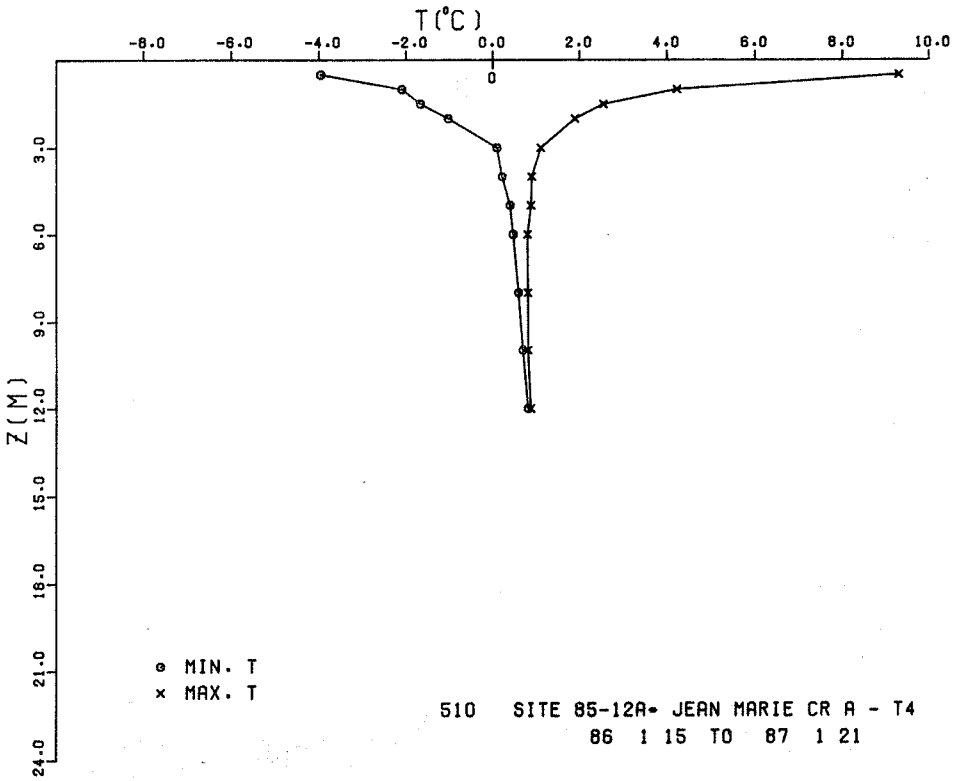

SITE 85-12A• JEAN MARIE CR A - T1
86 1 15 TO 86 12 22



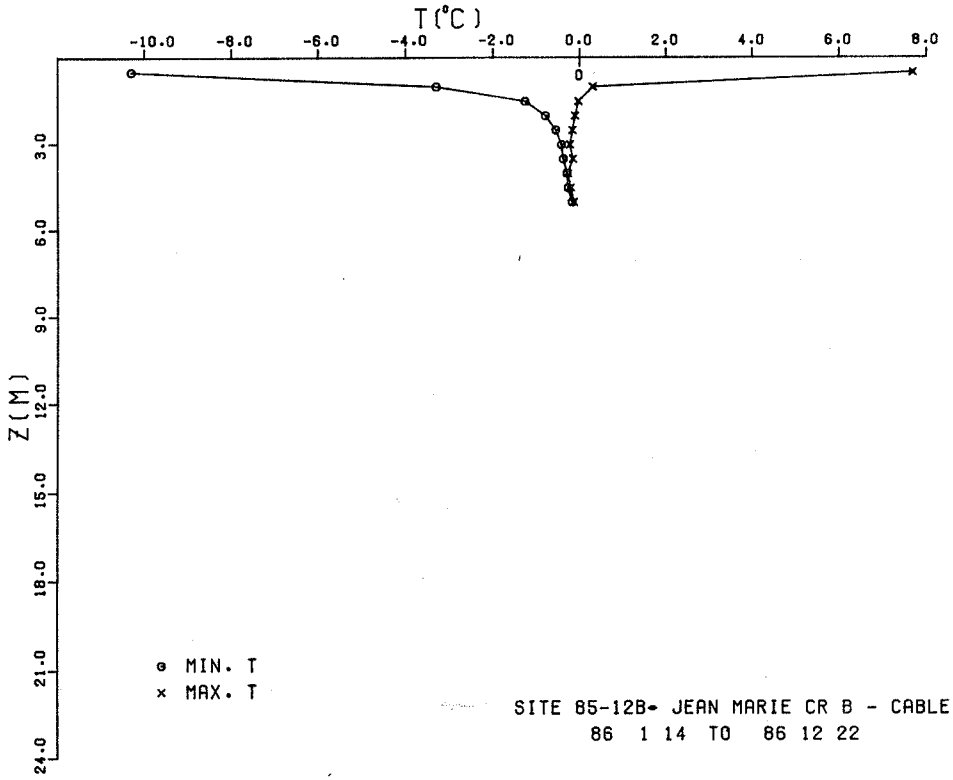

SITE 85-12A• JEAN MARIE CR A - T2
86 1 15 TO 86 12 22



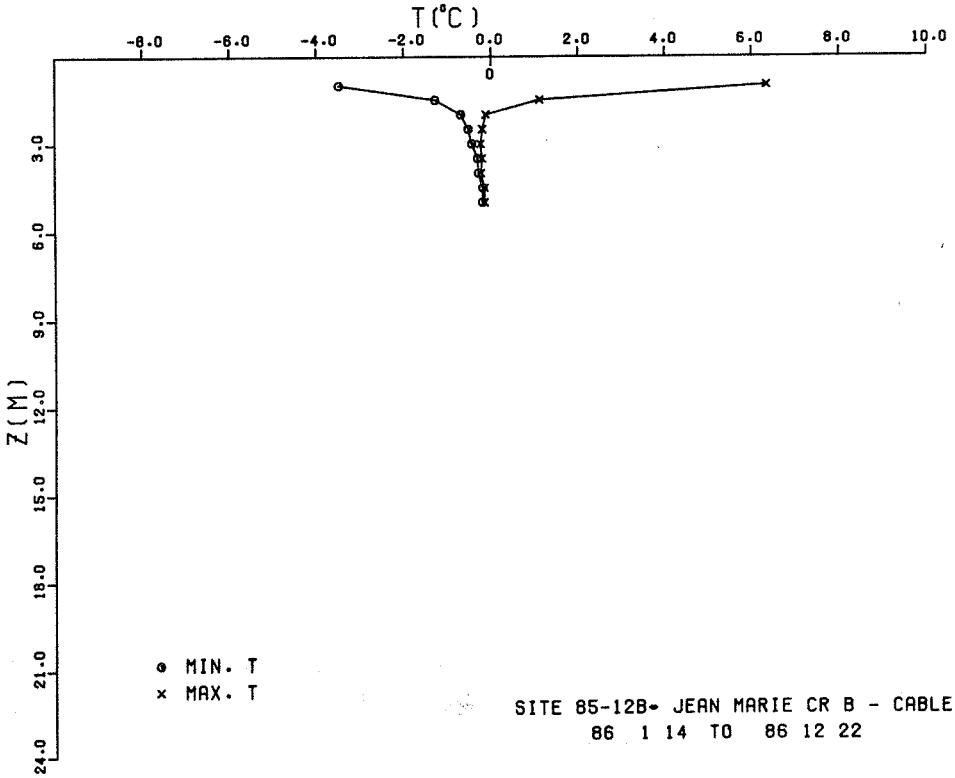

510 SITE 85-12A- JEAN MARIE CR A - T3
86 4 10 TO 86 12 22



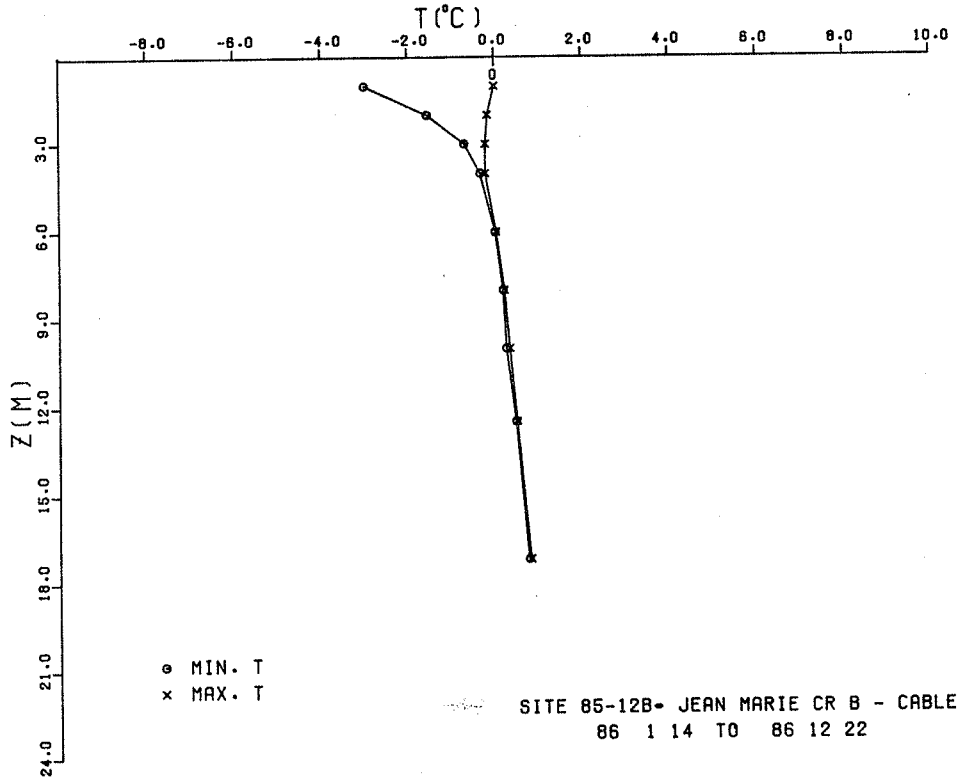

510 SITE 85-12A- JEAN MARIE CR A - T4
86 1 15 TO 87 1 21



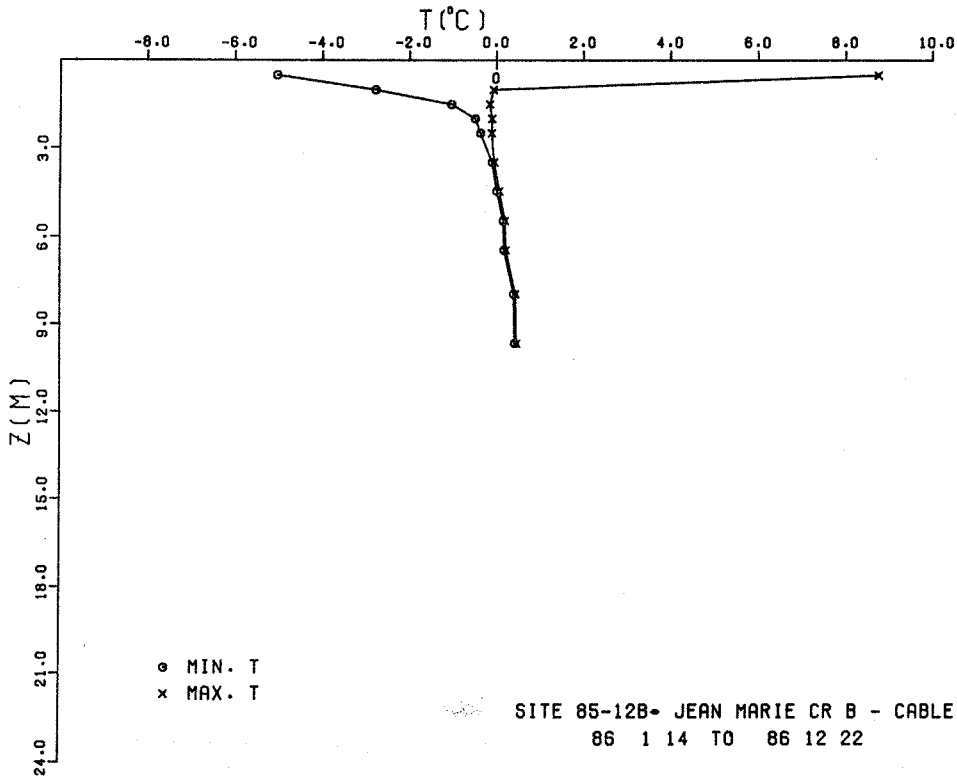

SITE 85-12B- JEAN MARIE CR B - CABLE T1
86 1 14 TO 86 12 22



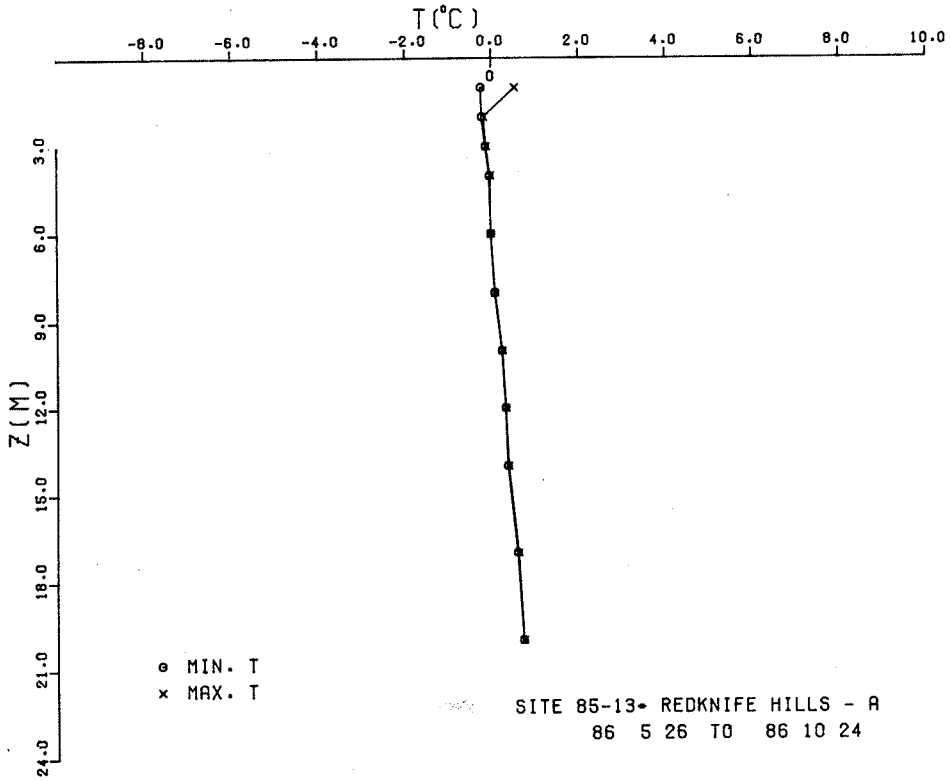

SITE 85-12B- JEAN MARIE CR B - CABLE T2
86 1 14 TO 86 12 22

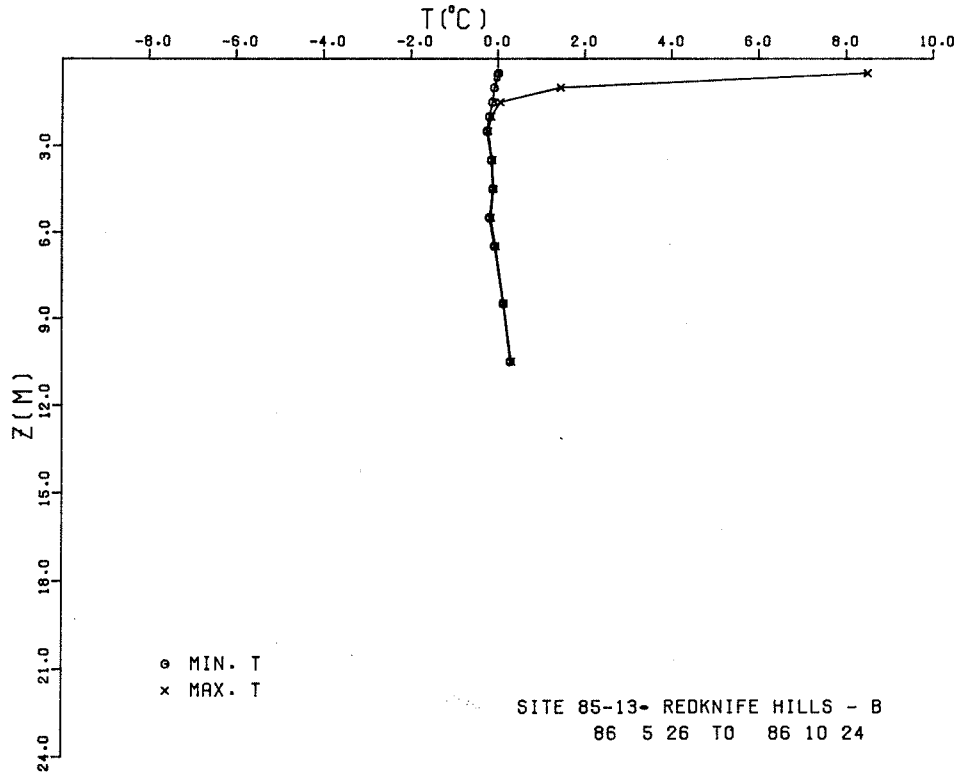



SITE 85-12B- JEAN MARIE CR B - CABLE T3
86 1 14 TO 86 12 22




SITE 85-12B- JEAN MARIE CR B - CABLE T4
86 1 14 TO 86 12 22


T(°C)
-8.0
-6.0
-4.0
-2.0
0.0
2.0
4.0
6.0
8.0
10.0
Z(M)
3.0
6.0
9.0
12.0
15.0
18.0
21.0
24.0
MIN. T
MAX. T
SITE 85-13- REDKNIFE HILLS - A
86 5 26 TO 86 10 24


T(°C)
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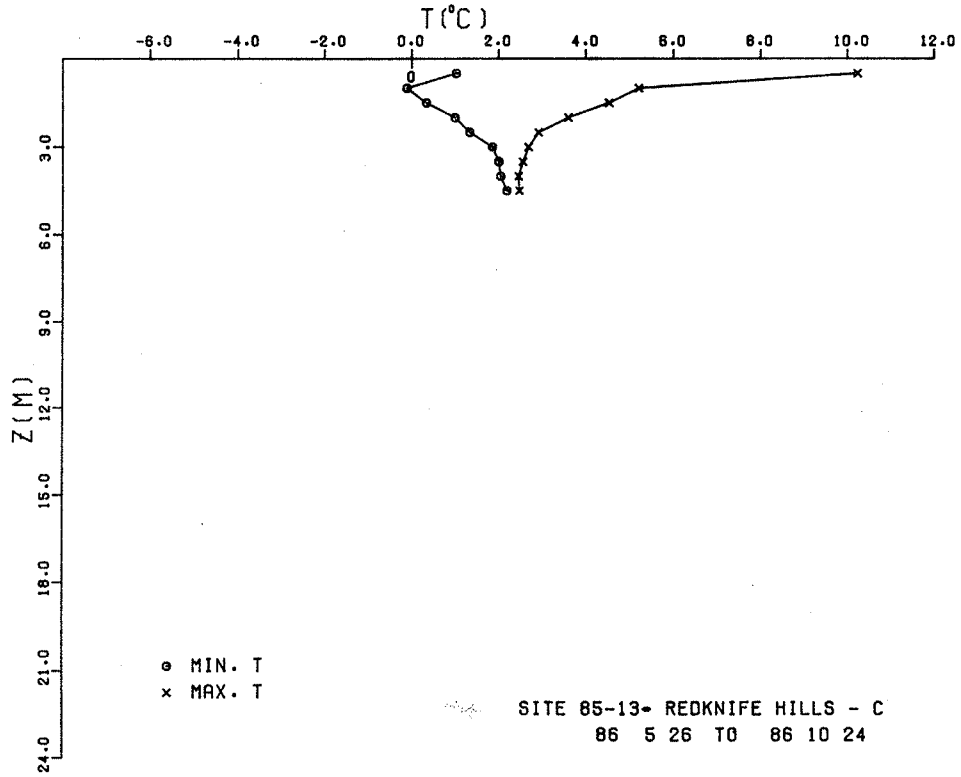
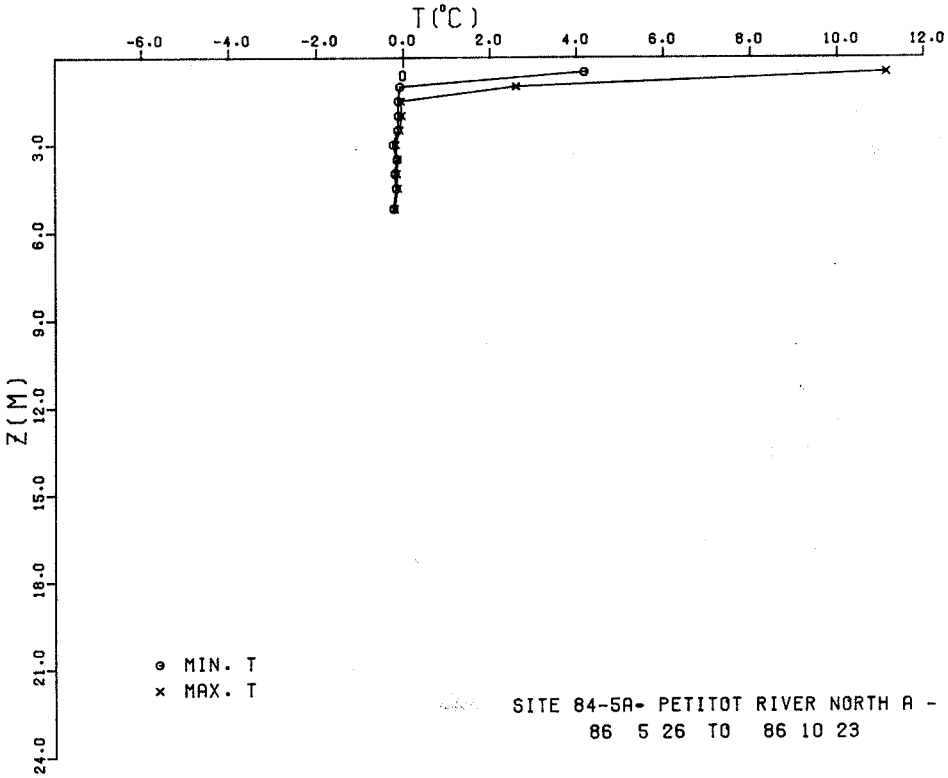
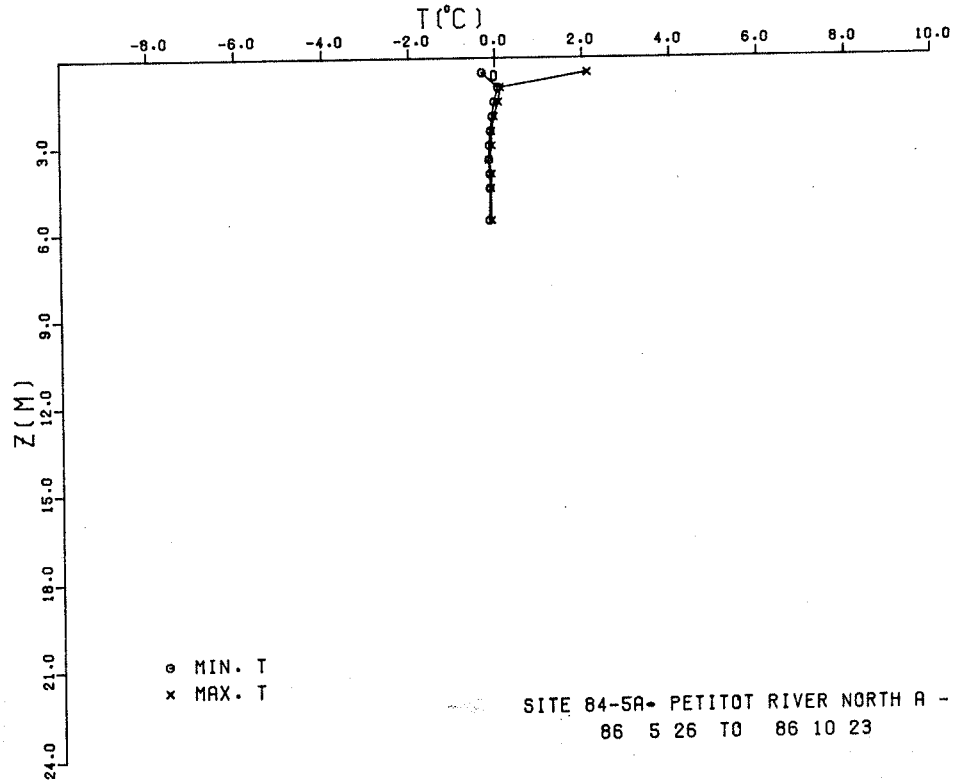
-6.0
-4.0
-2.0
0.0
2.0
4.0
6.0
8.0
10.0
Z(M)
3.0
6.0
9.0
12.0
15.0
18.0
21.0
24.0
MIN. T
MAX. T
SITE 85-13- REDKNIFE HILLS - B
86 5 26 TO 86 10 24



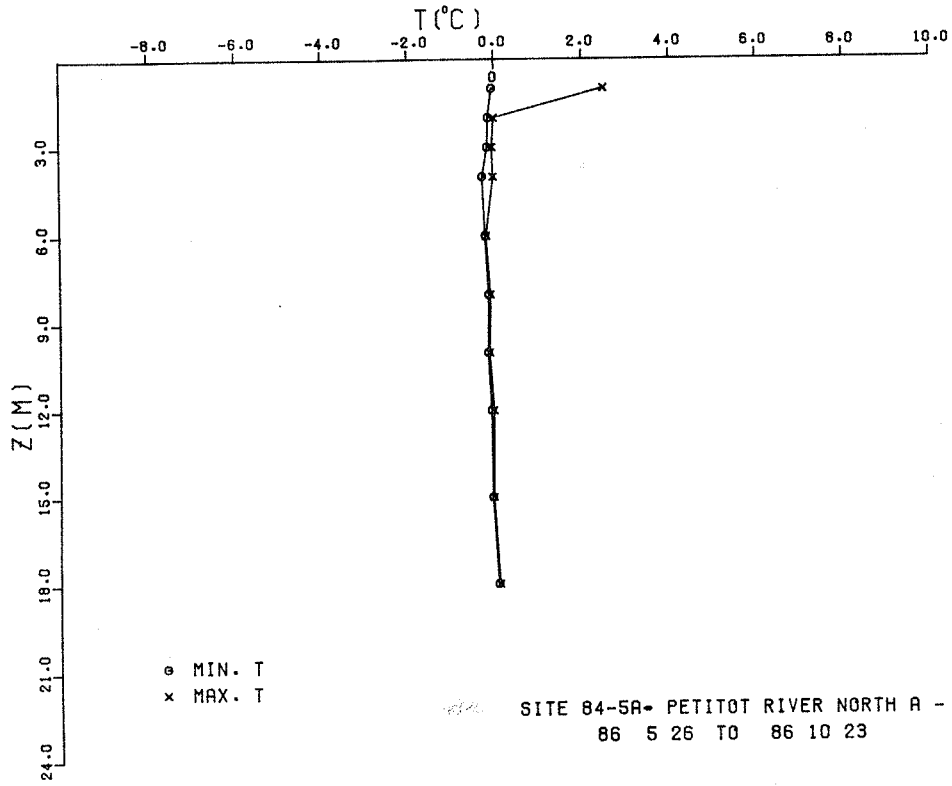

SITE 85-13- REDKNIFE HILLS - C
86 5 26 TO 86 10 24



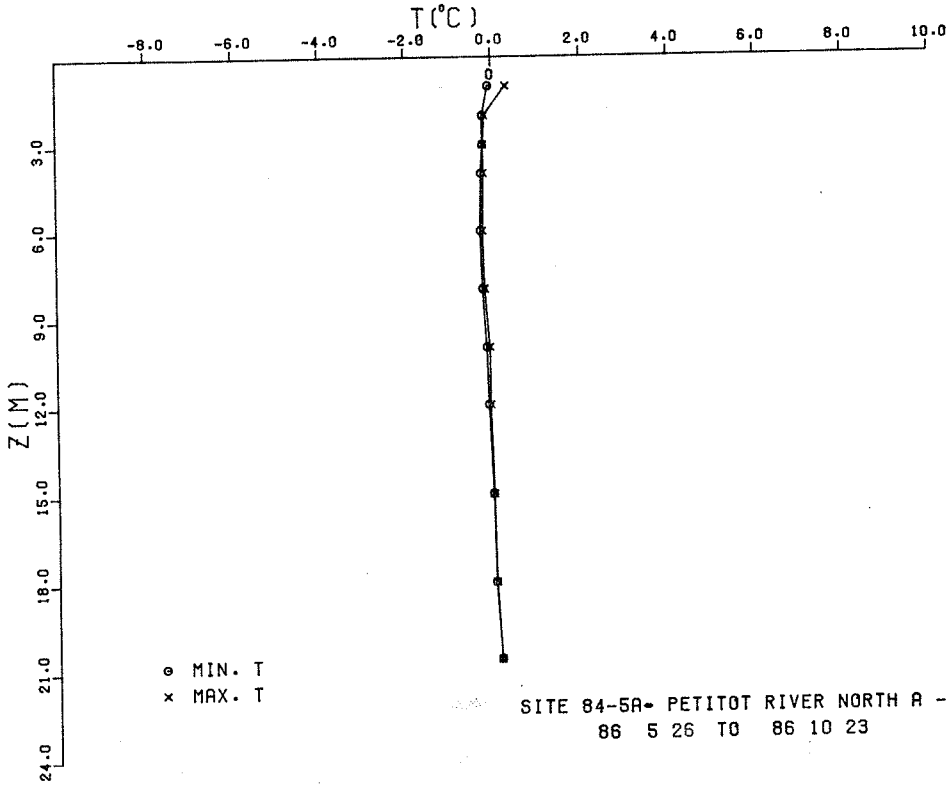

SITE 84-5A- PETITOT RIVER NORTH A - T1
86 5 26 TO 86 10 23



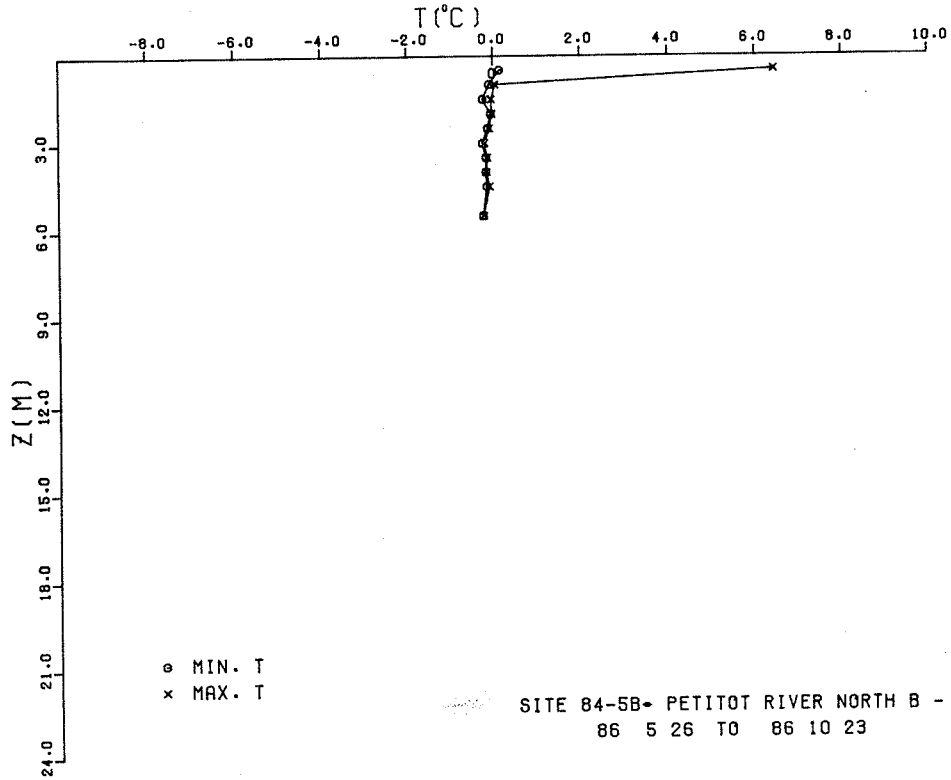

SITE 84-5A- PETITOT RIVER NORTH A - T2
86 5 26 TO 86 10 23



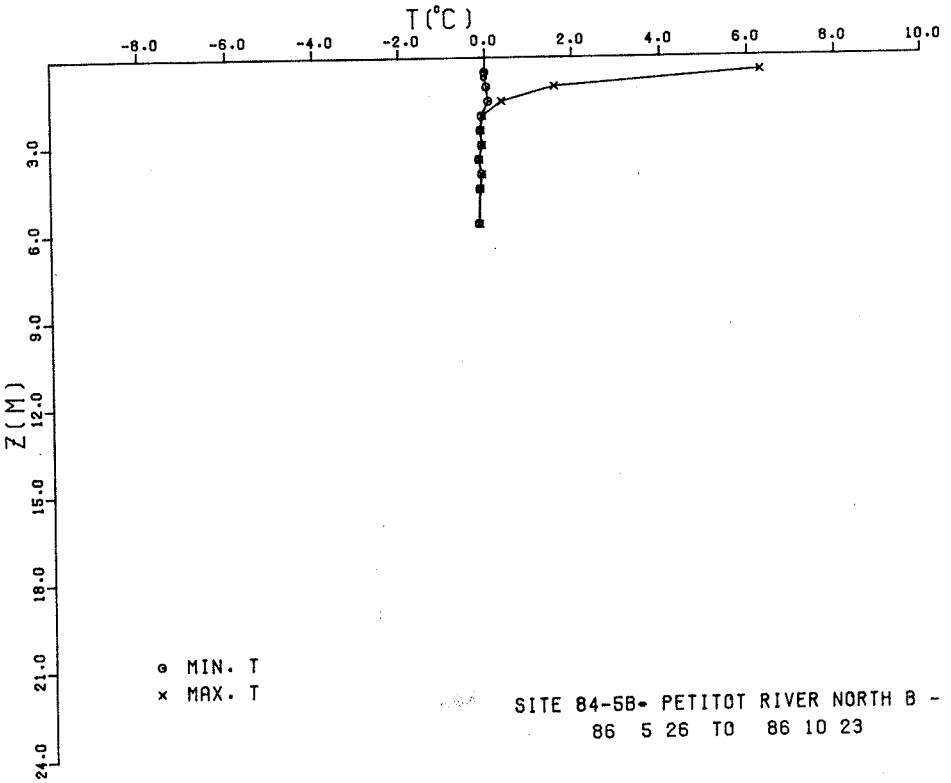

SITE 84-5A- PETITOT RIVER NORTH A - T3
86 5 26 TO 86 10 23



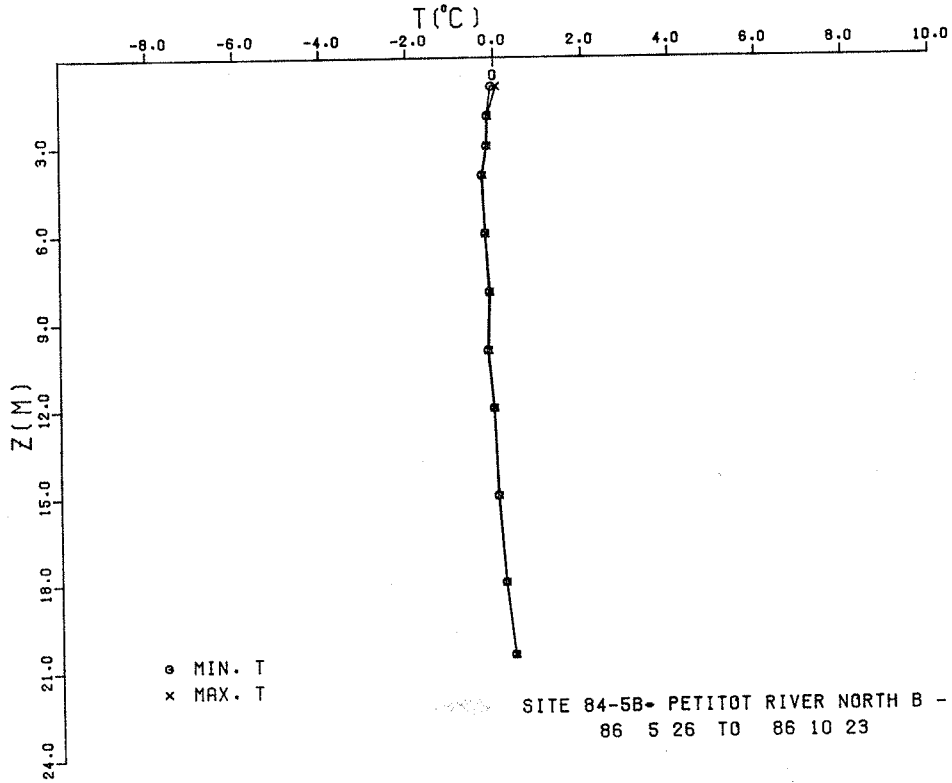

SITE 84-5A- PETITOT RIVER NORTH A - T4
86 5 26 TO 86 10 23



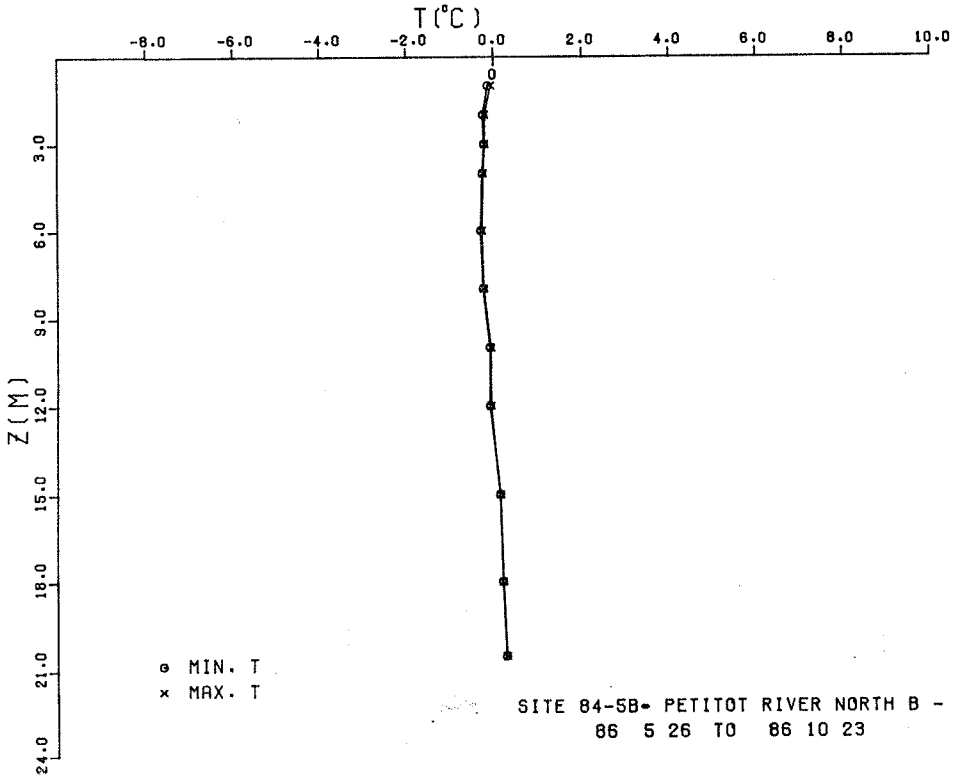

SITE 84-5B- PETITOT RIVER NORTH B - T1
86 5 26 TO 86 10 23



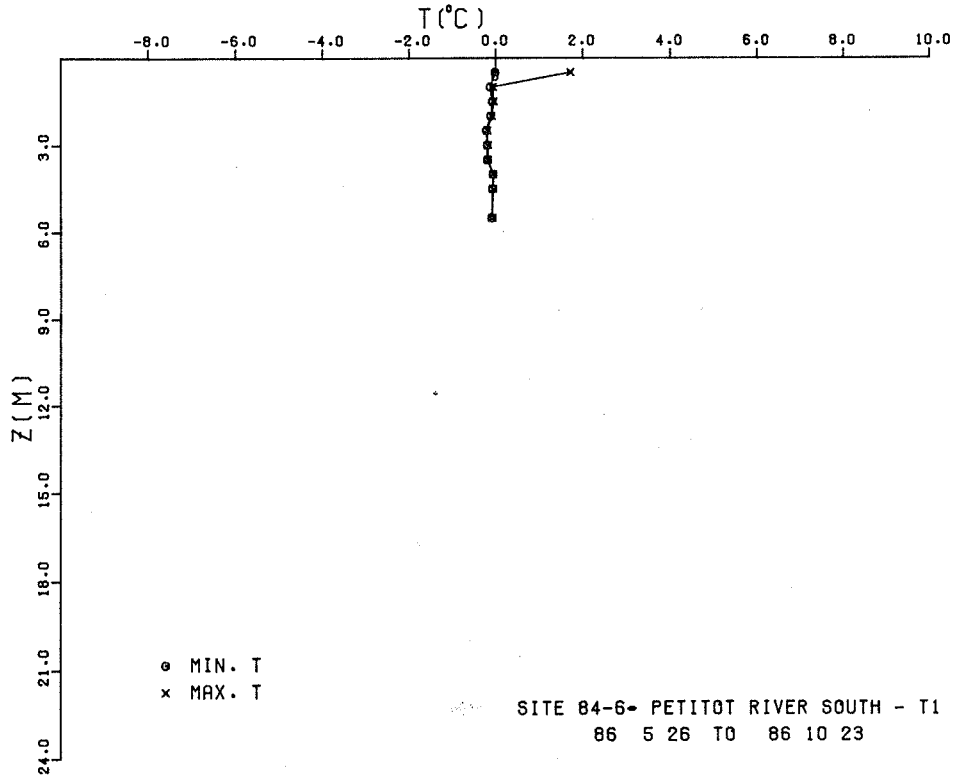

SITE 84-5B- PETITOT RIVER NORTH B - T2
86 5 26 TO 86 10 23



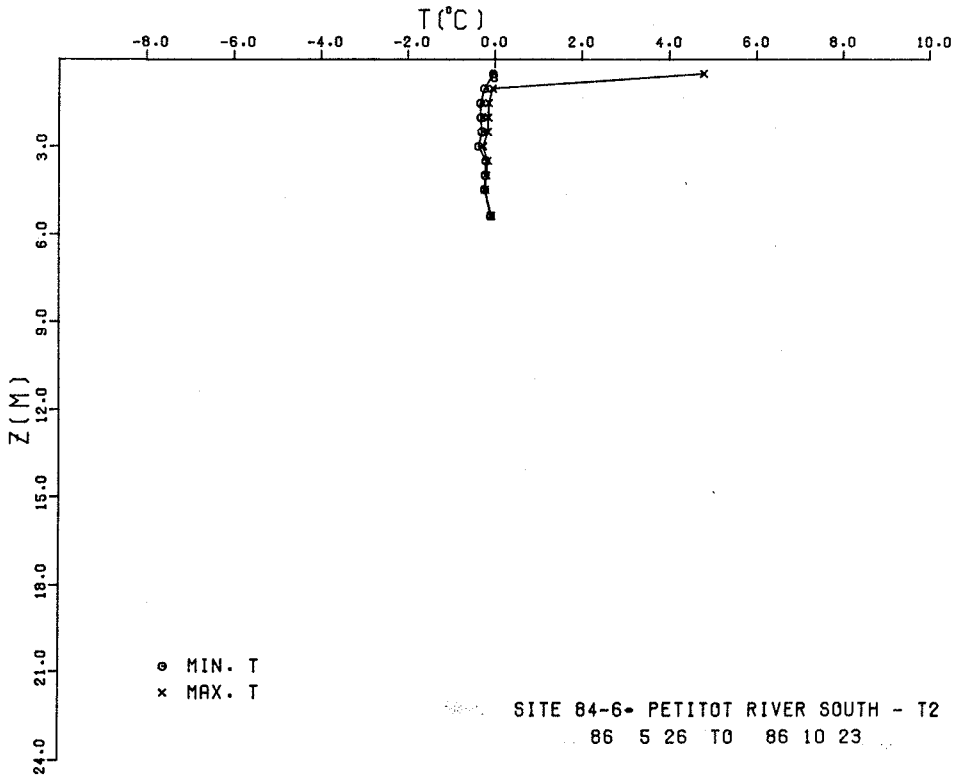

SITE 84-5B• PETITOT RIVER NORTH B - T3
86 5 26 TO 86 10 23



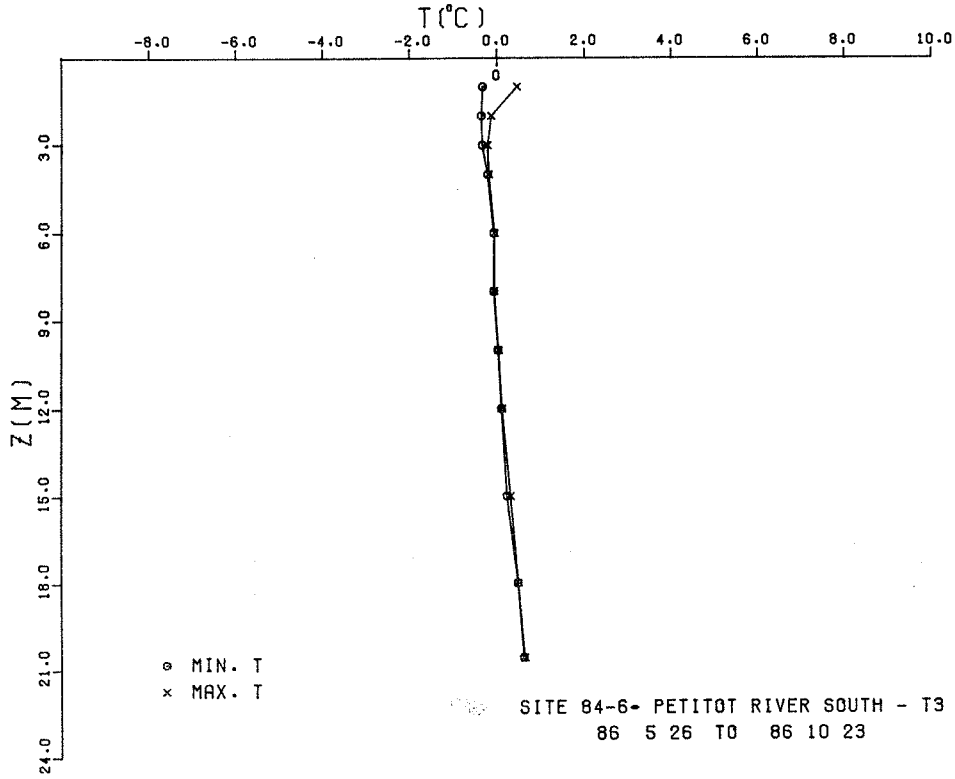

SITE 84-5B• PETITOT RIVER NORTH B - T4
86 5 26 TO 86 10 23



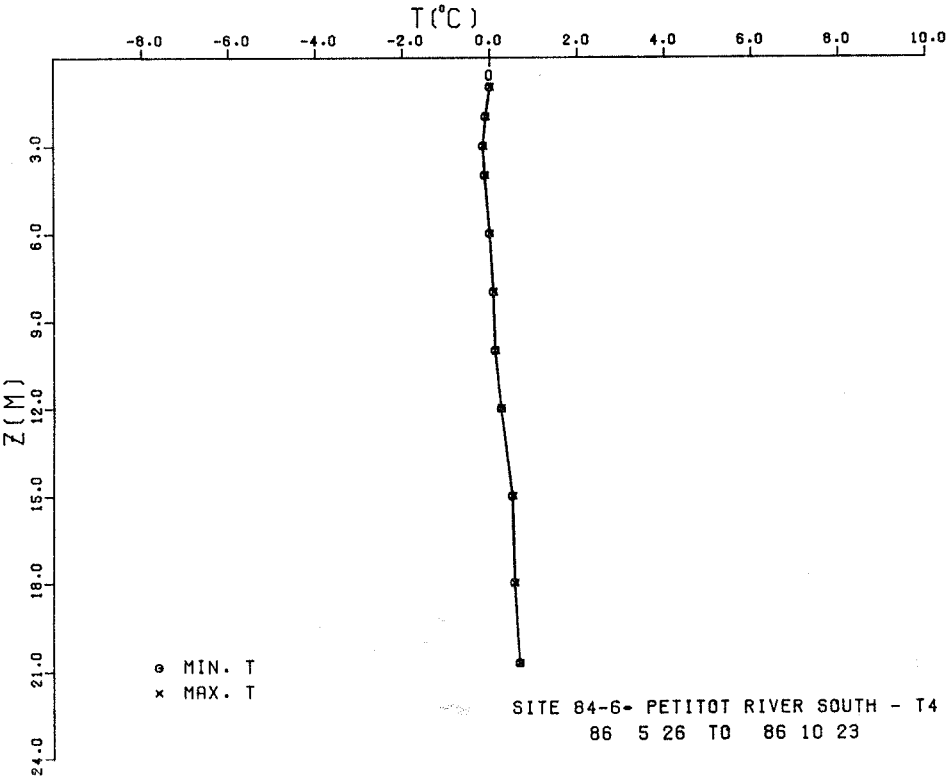

SITE 84-6• PETITOT RIVER SOUTH - T1
86 5 26 TO 86 10 23




SITE 84-6• PETITOT RIVER SOUTH - T2
86 5 26 TO 86 10 23




SITE 84-6- PETITOT RIVER SOUTH - T3
86 5 26 TO 86 10 23

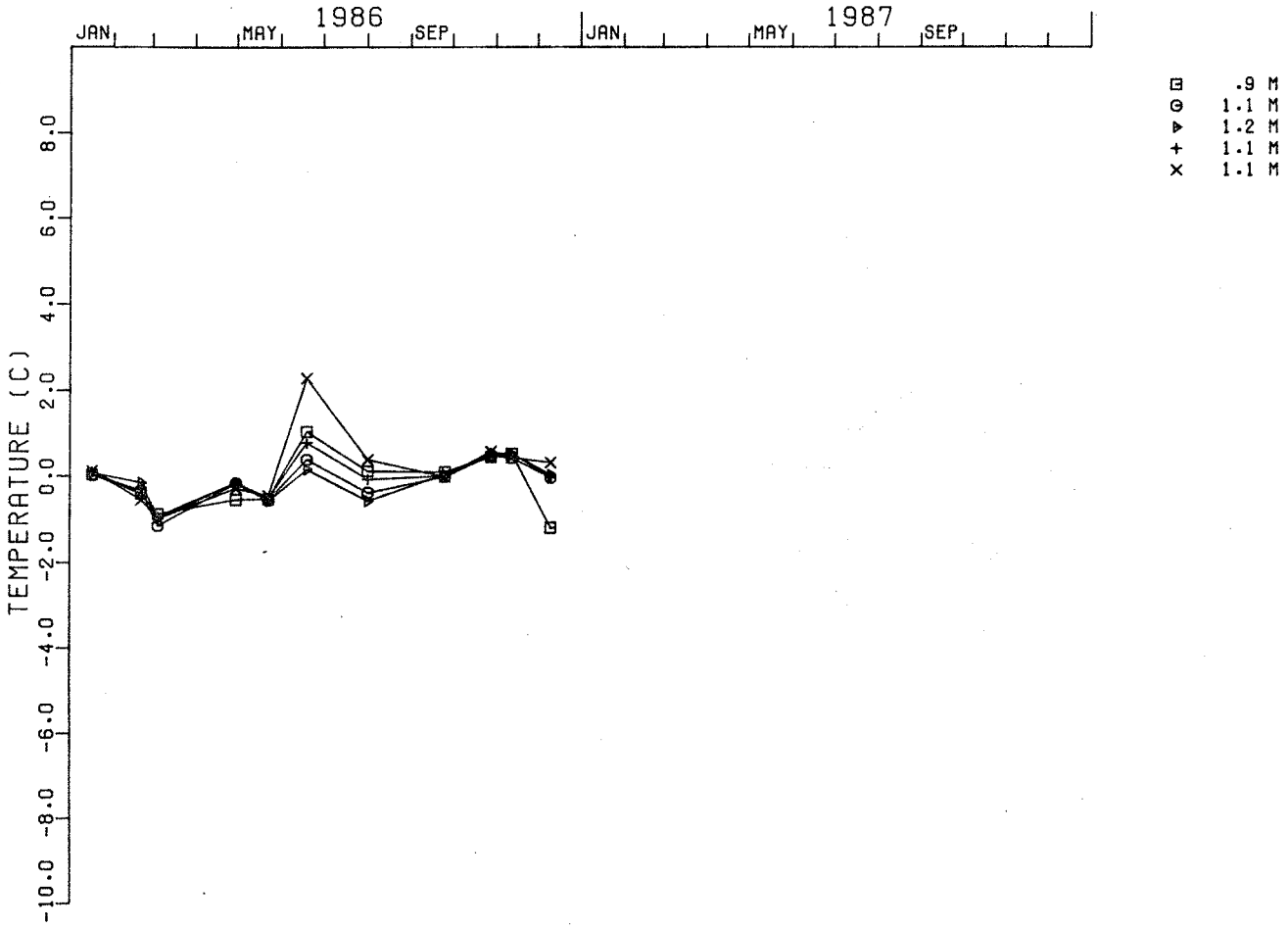



SITE 84-6- PETITOT RIVER SOUTH - T4
86 5 26 TO 86 10 23

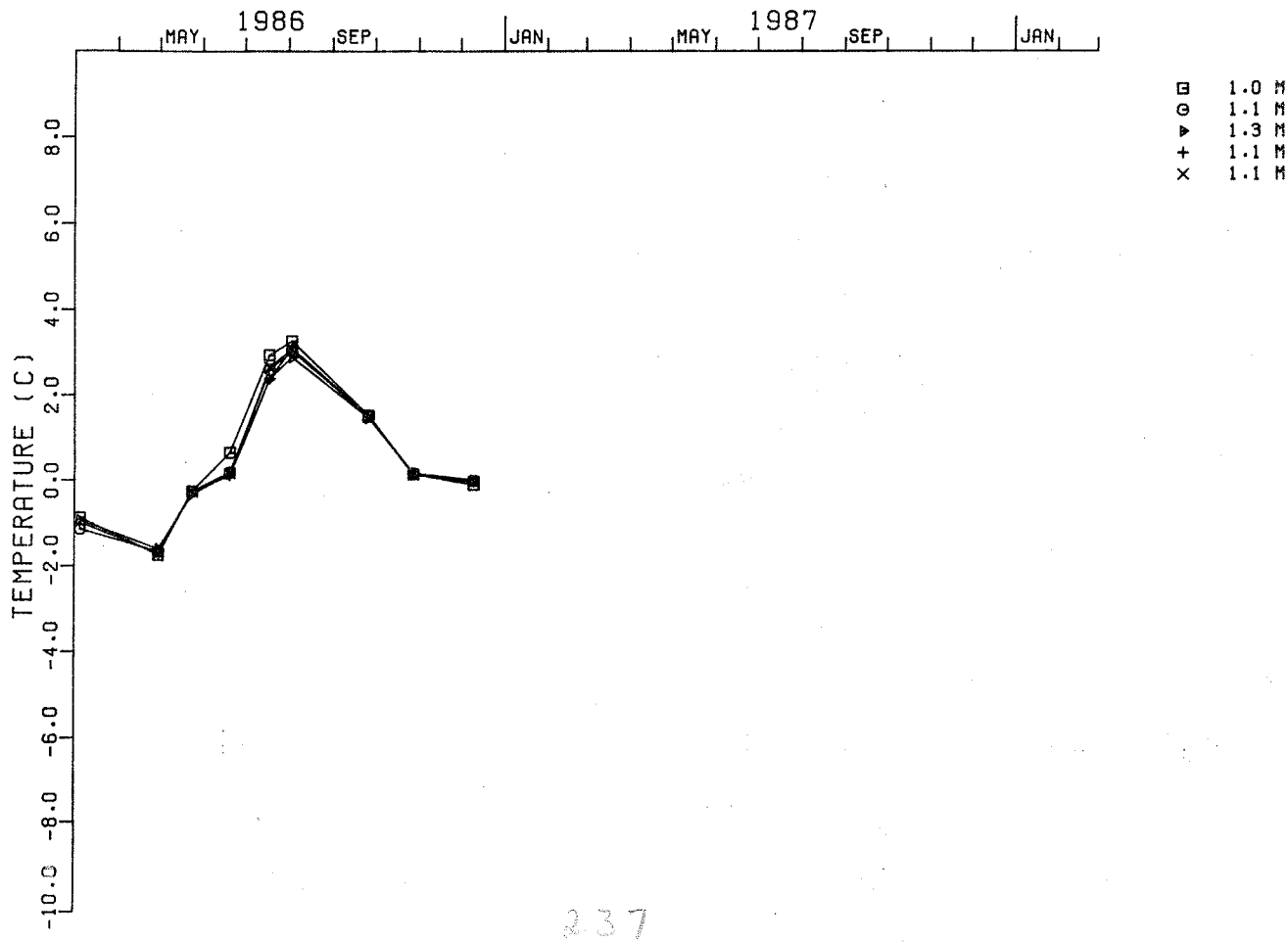
# APPENDIX E

## PLOTS OF TEMPERATURE VS. TIME - PIPE SENSORS

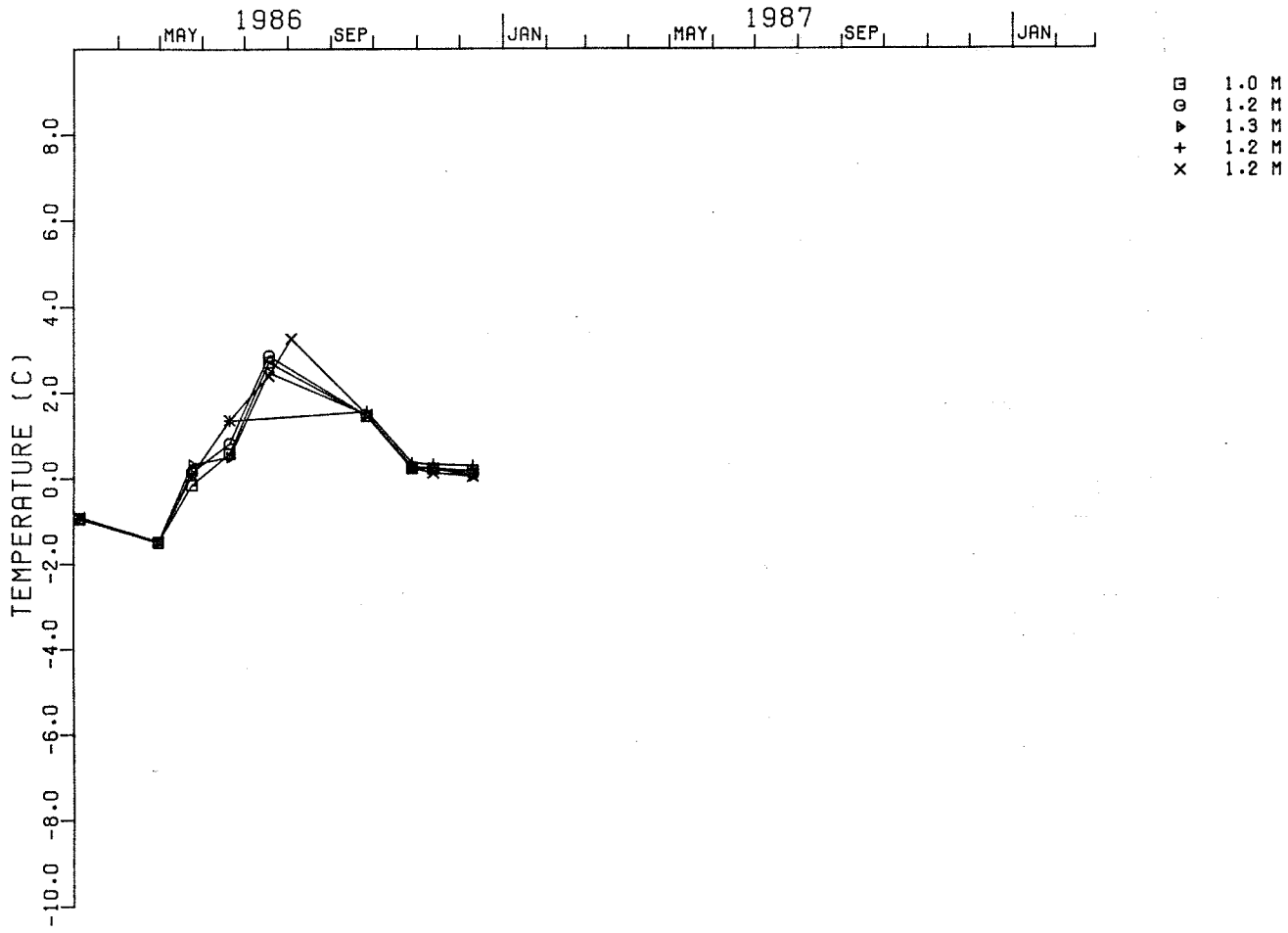
NORMAN WELLS PUMP STATION - PT1-1



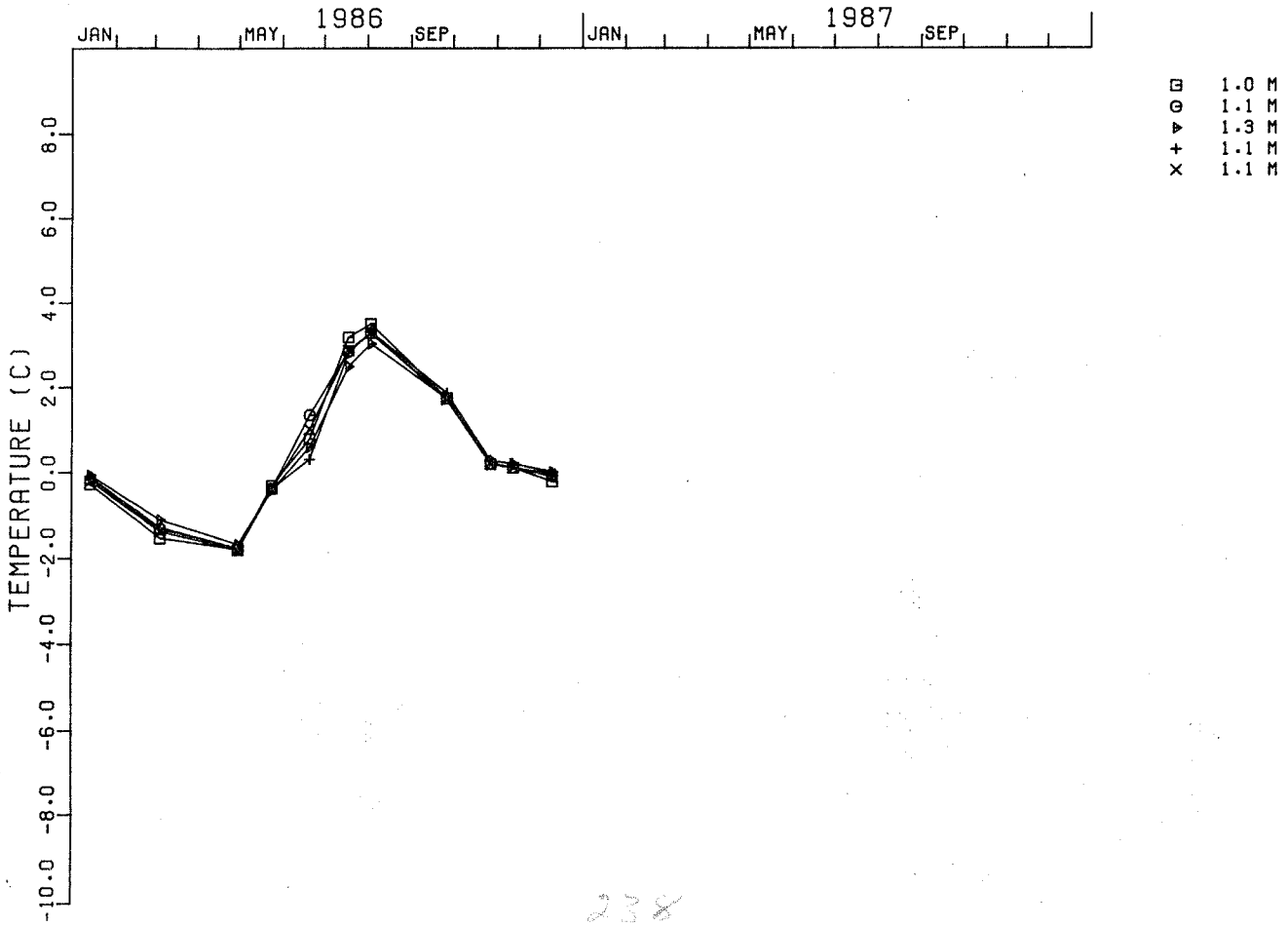

CANYON CREEK NORTH A - PT1-3



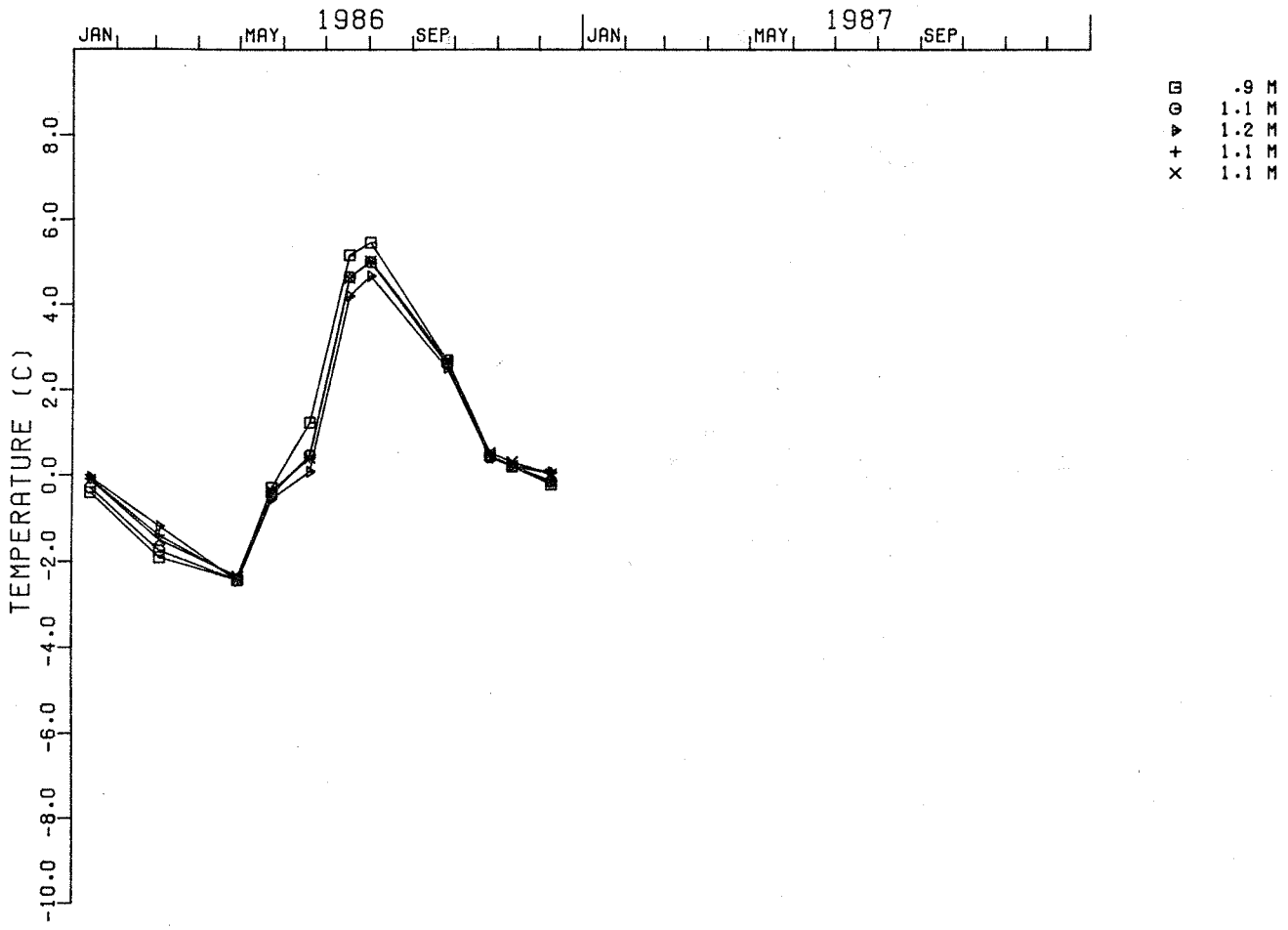
CANYON CREEK NORTH B - PT1-4



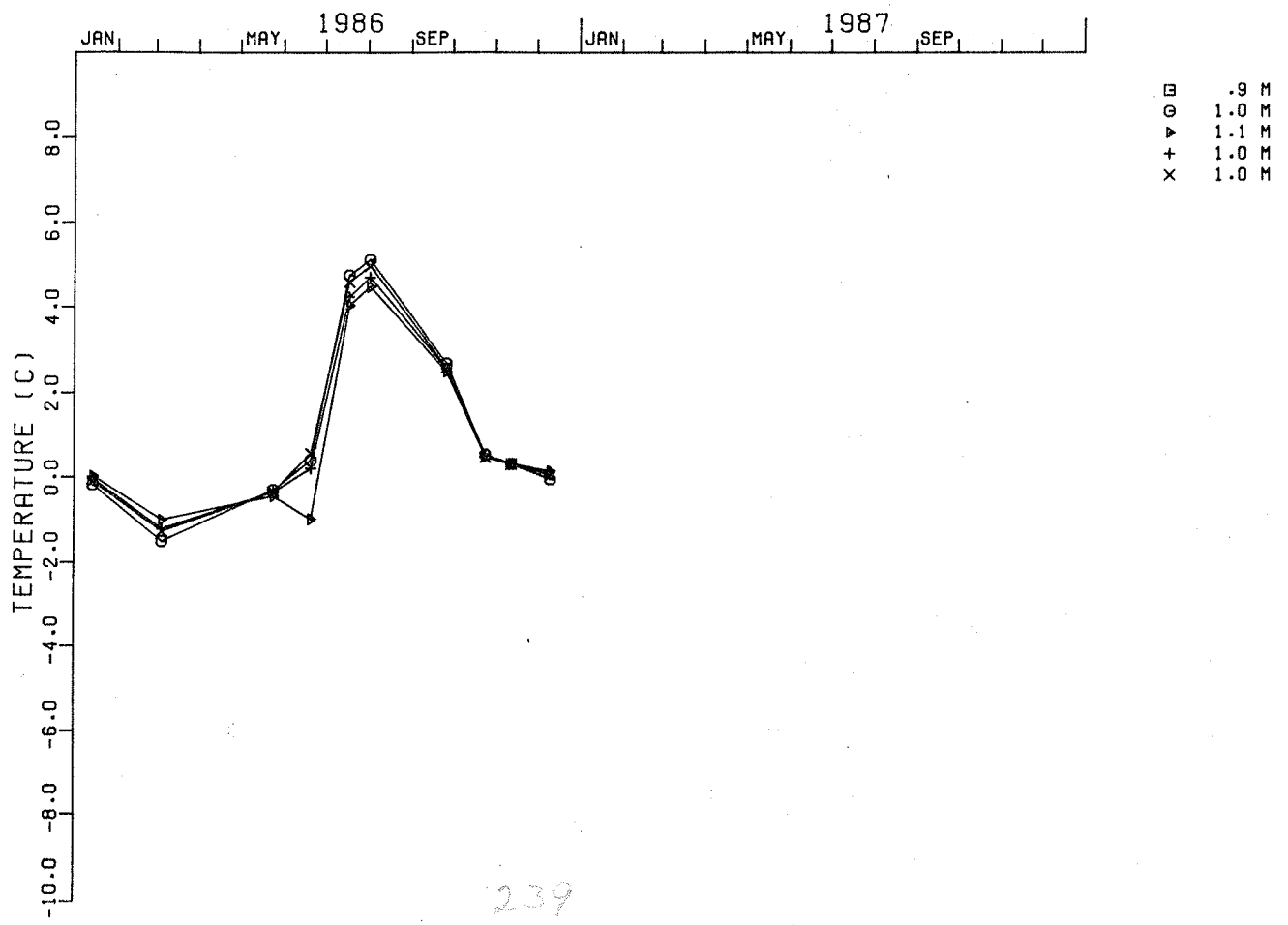

CANYON CREEK SOUTH C - PT1-5



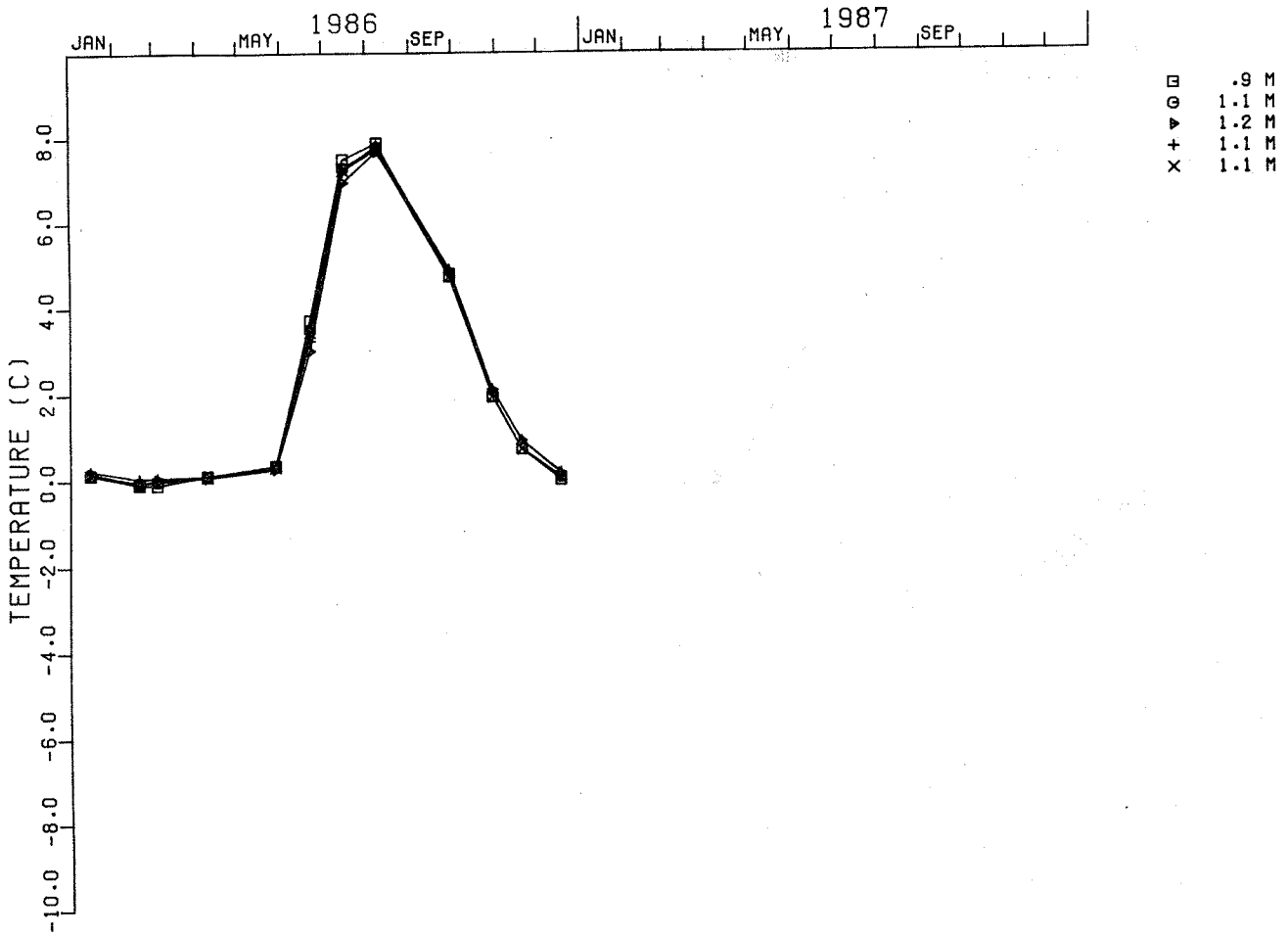
GREAT BEAR RIVER A - EMR11



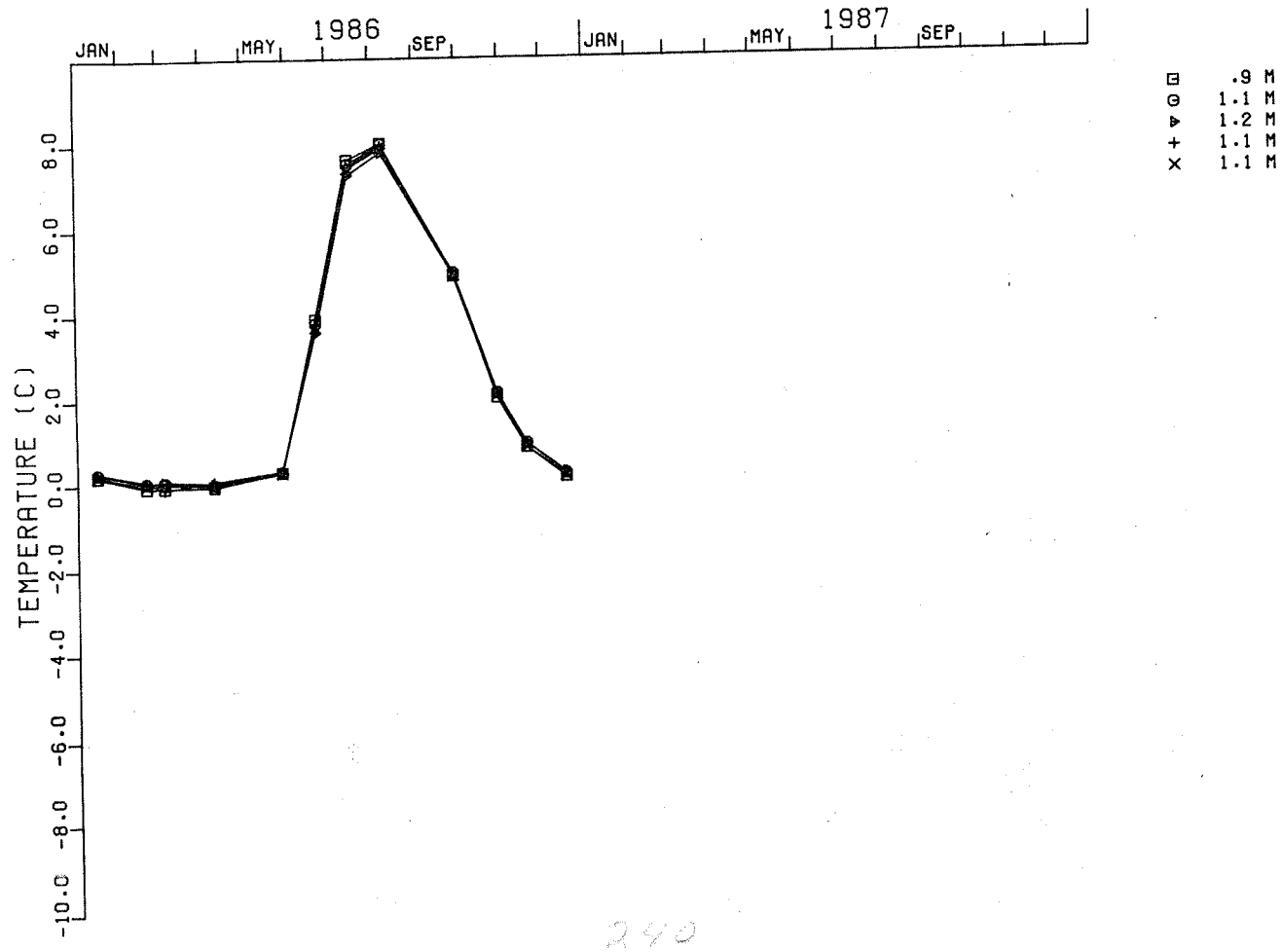

GREAT BEAR RIVER B - PT1-10



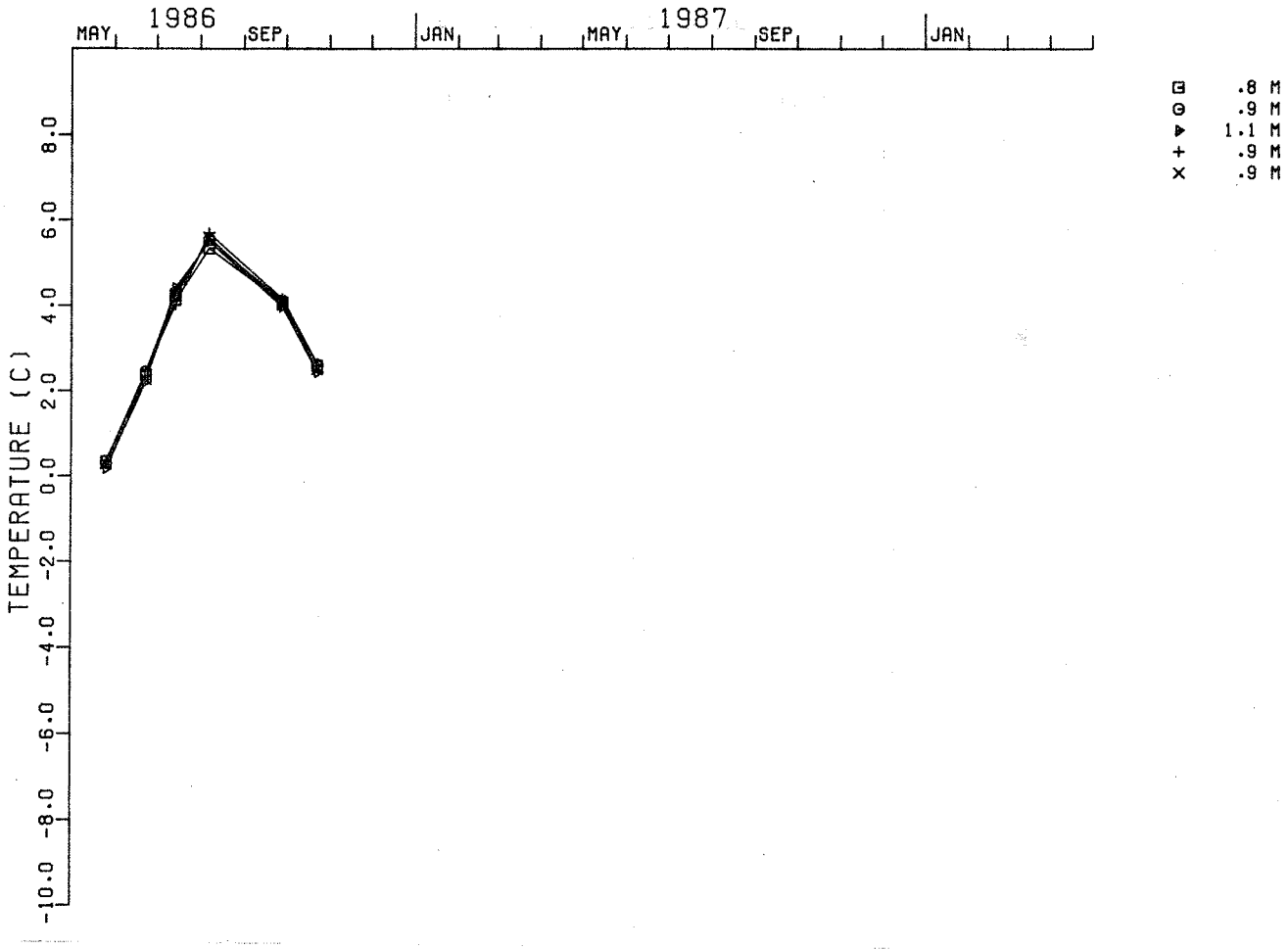
TRAIL RIVER A - E[illegible]1



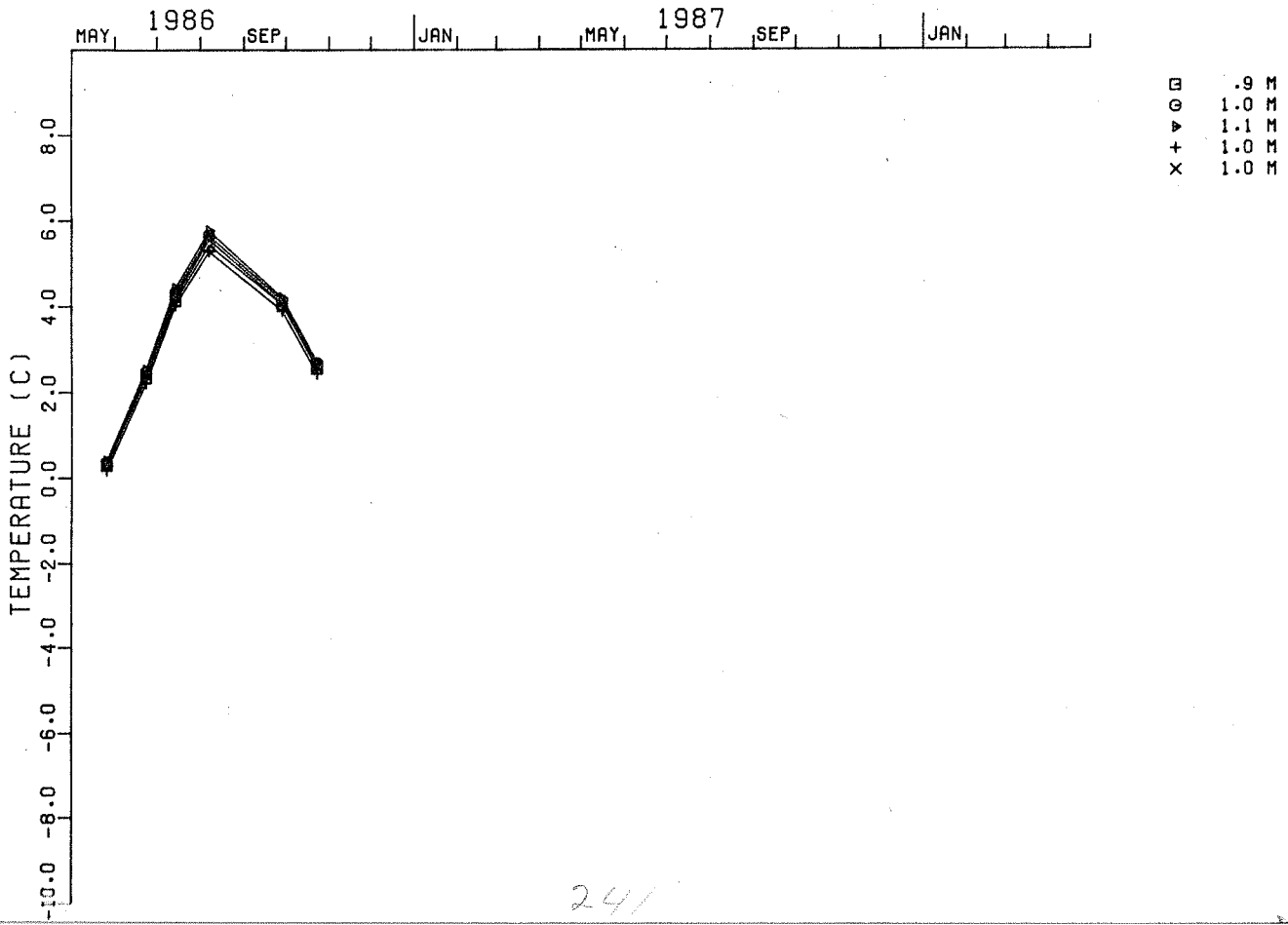

TRAIL RIVER B - PT1-9



PETITOT RIVER NORTH A - EMR4




PETITOT RIVER NORTH B - EMR5



PETITOT RIVER SOUTH - EMR6

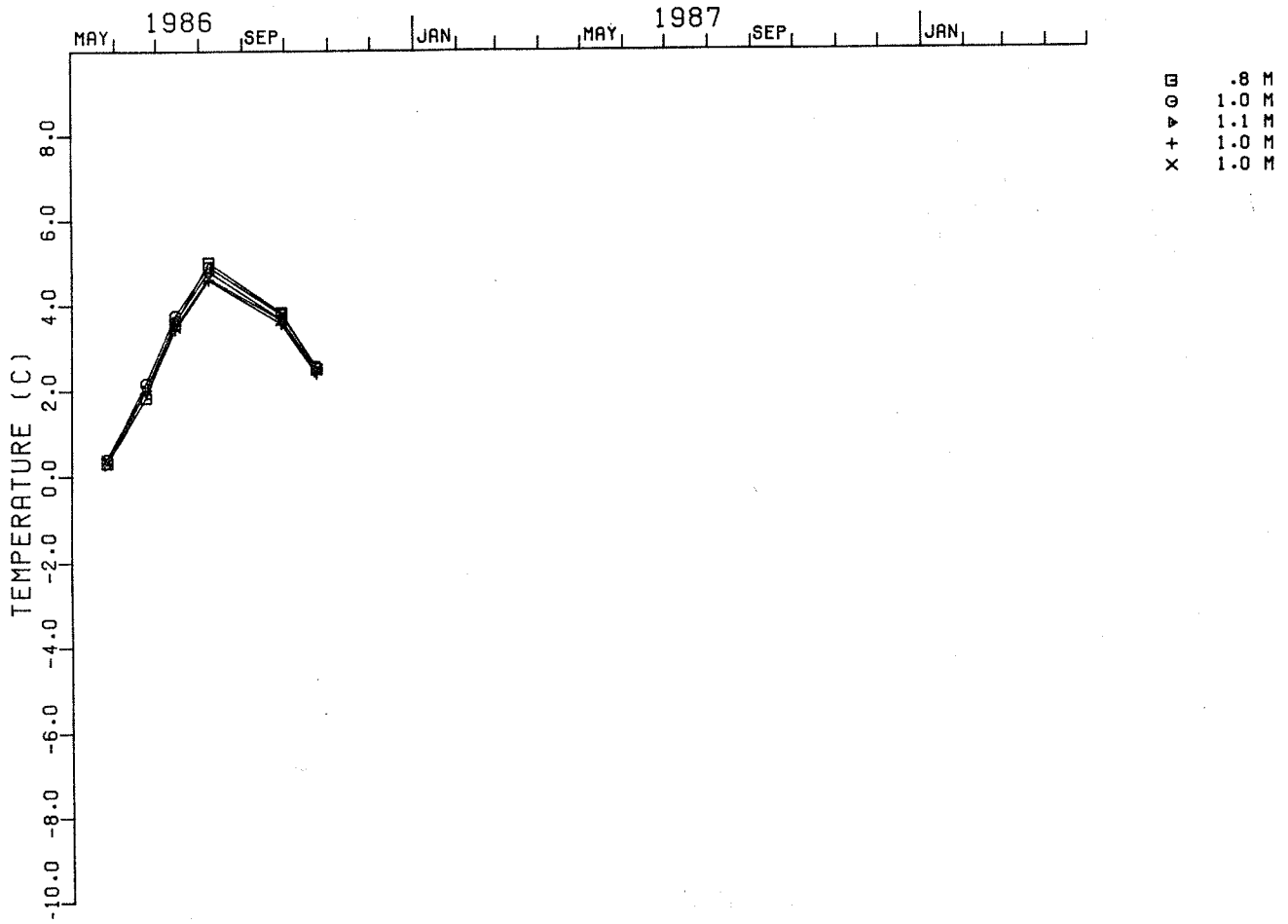


TABLE MOUNTAIN A - 85-EPT 1

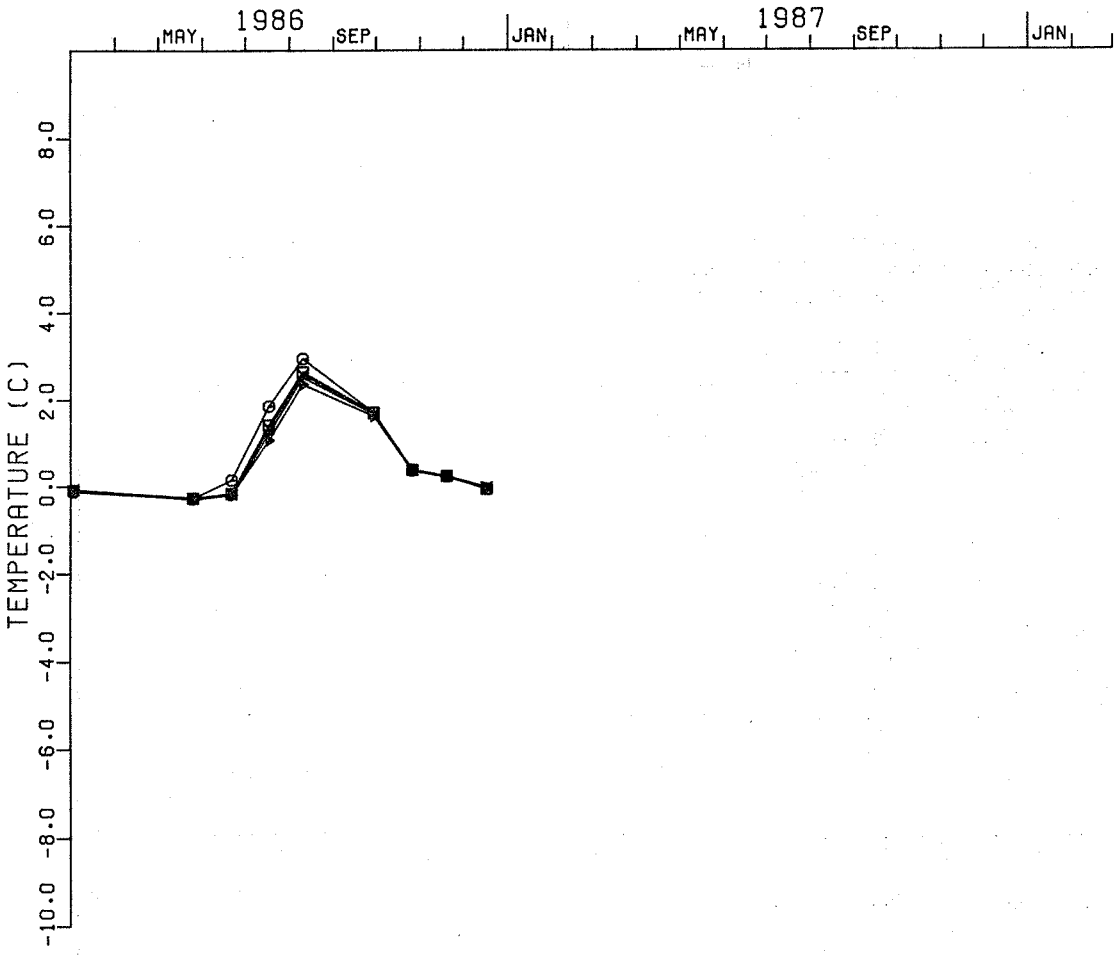



TABLE MOUNTAIN B - 85-EPT 3

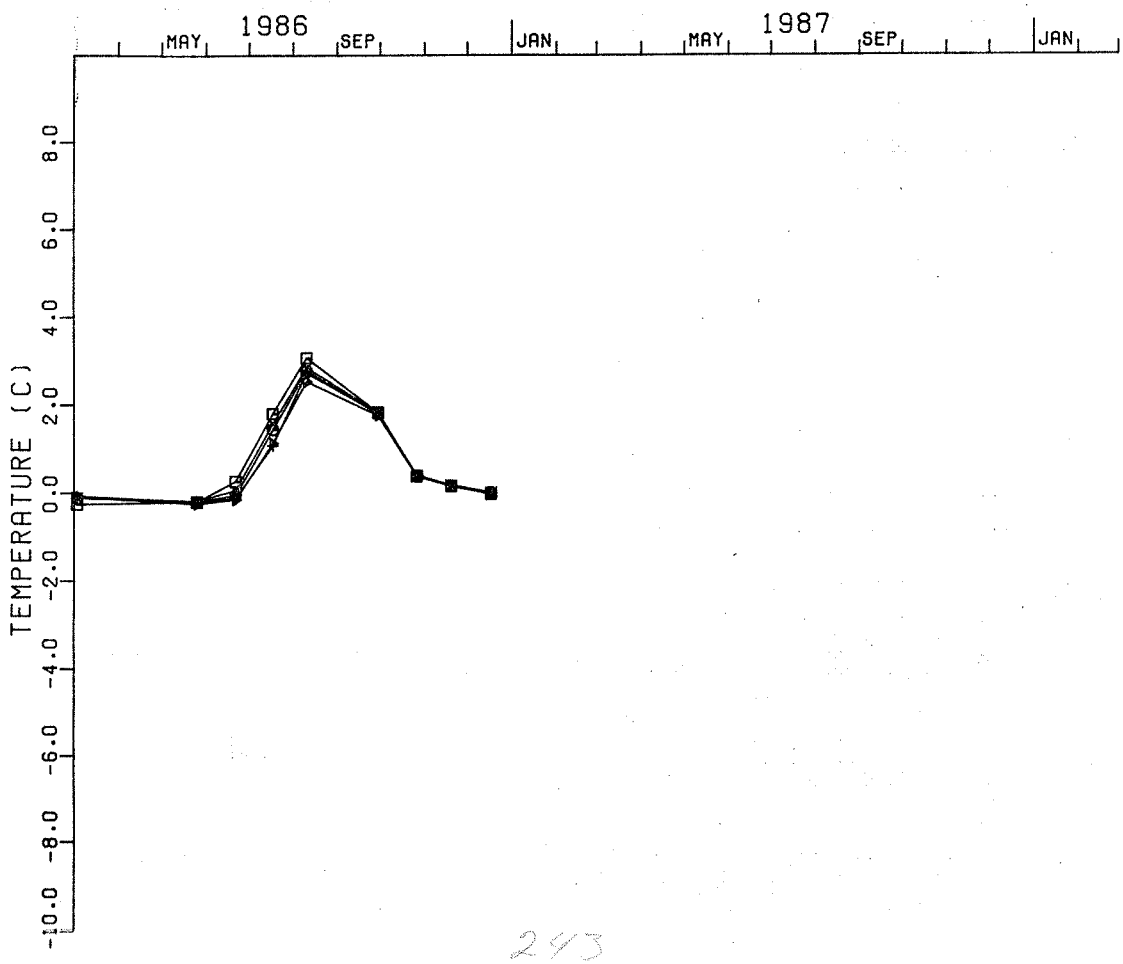
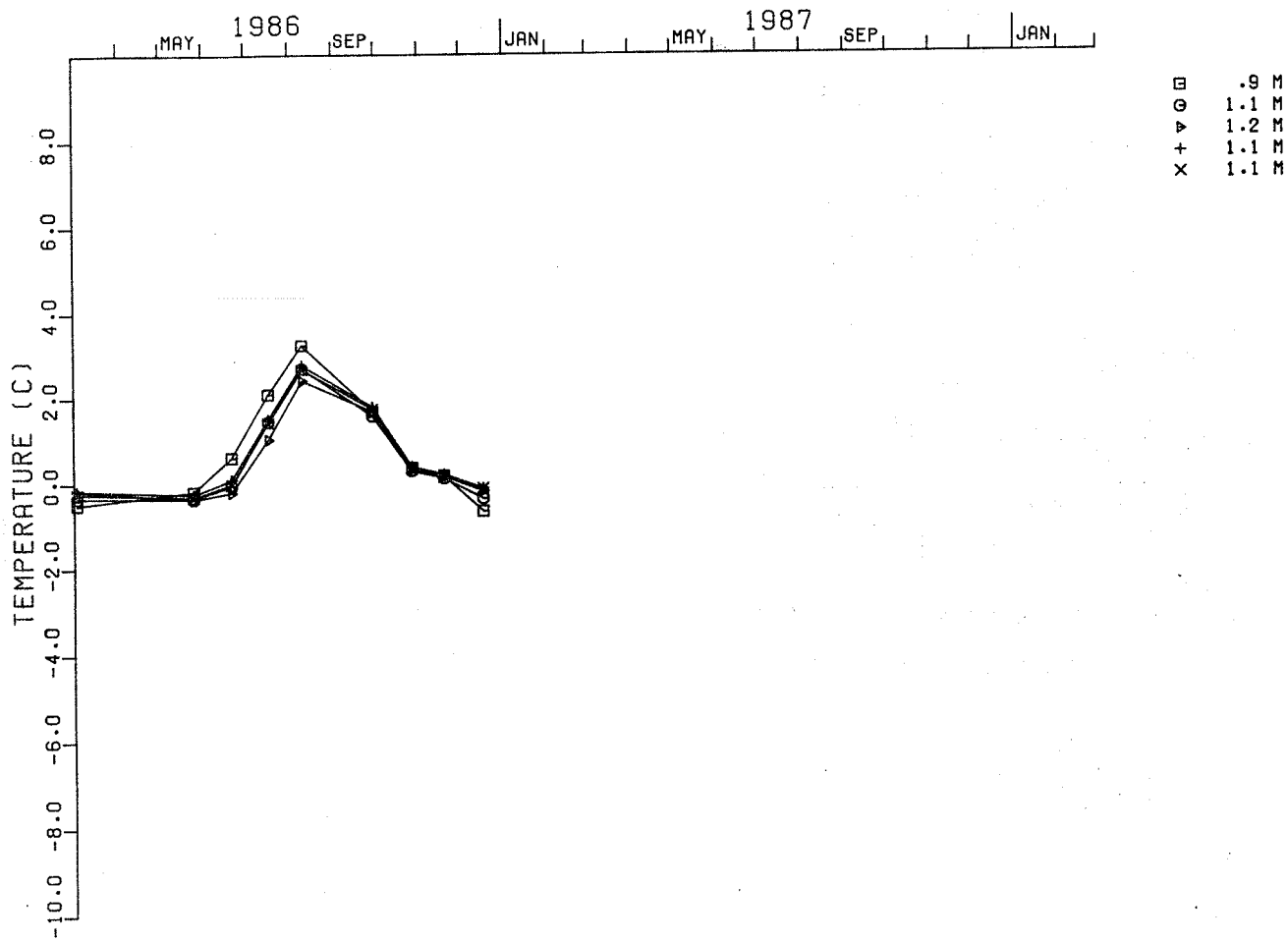
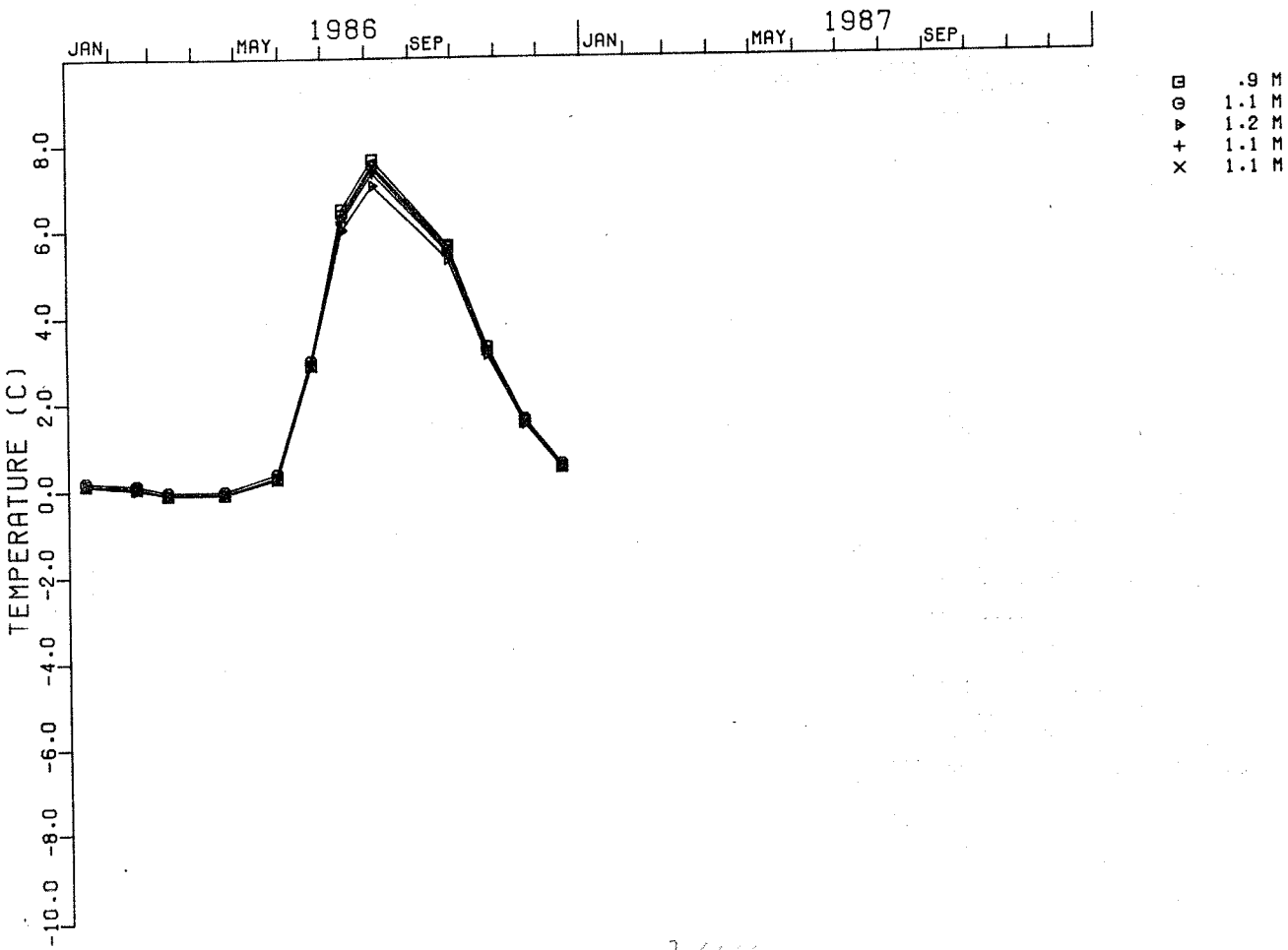


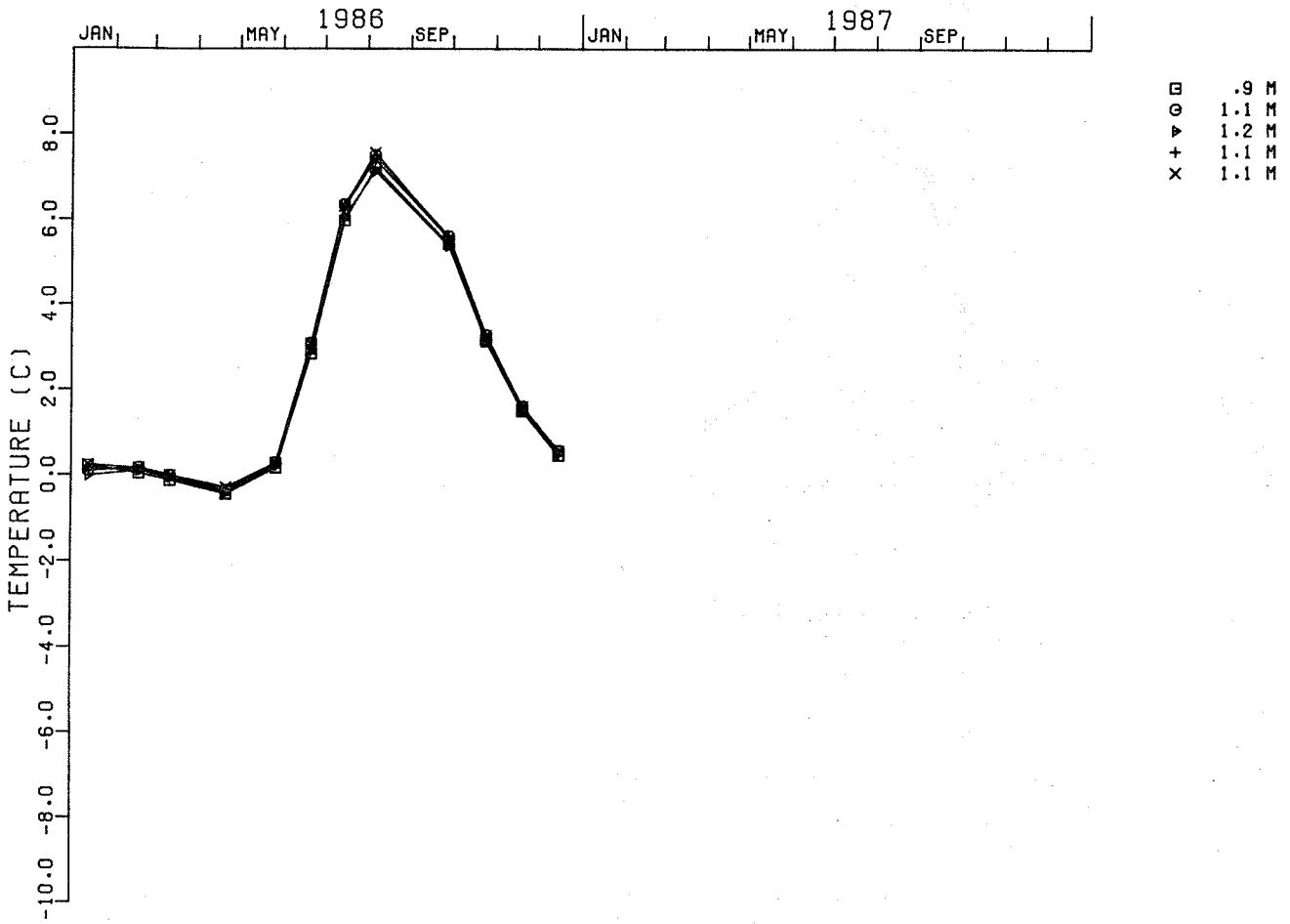
TABLE MOUNTAIN C - 85-EPT 2



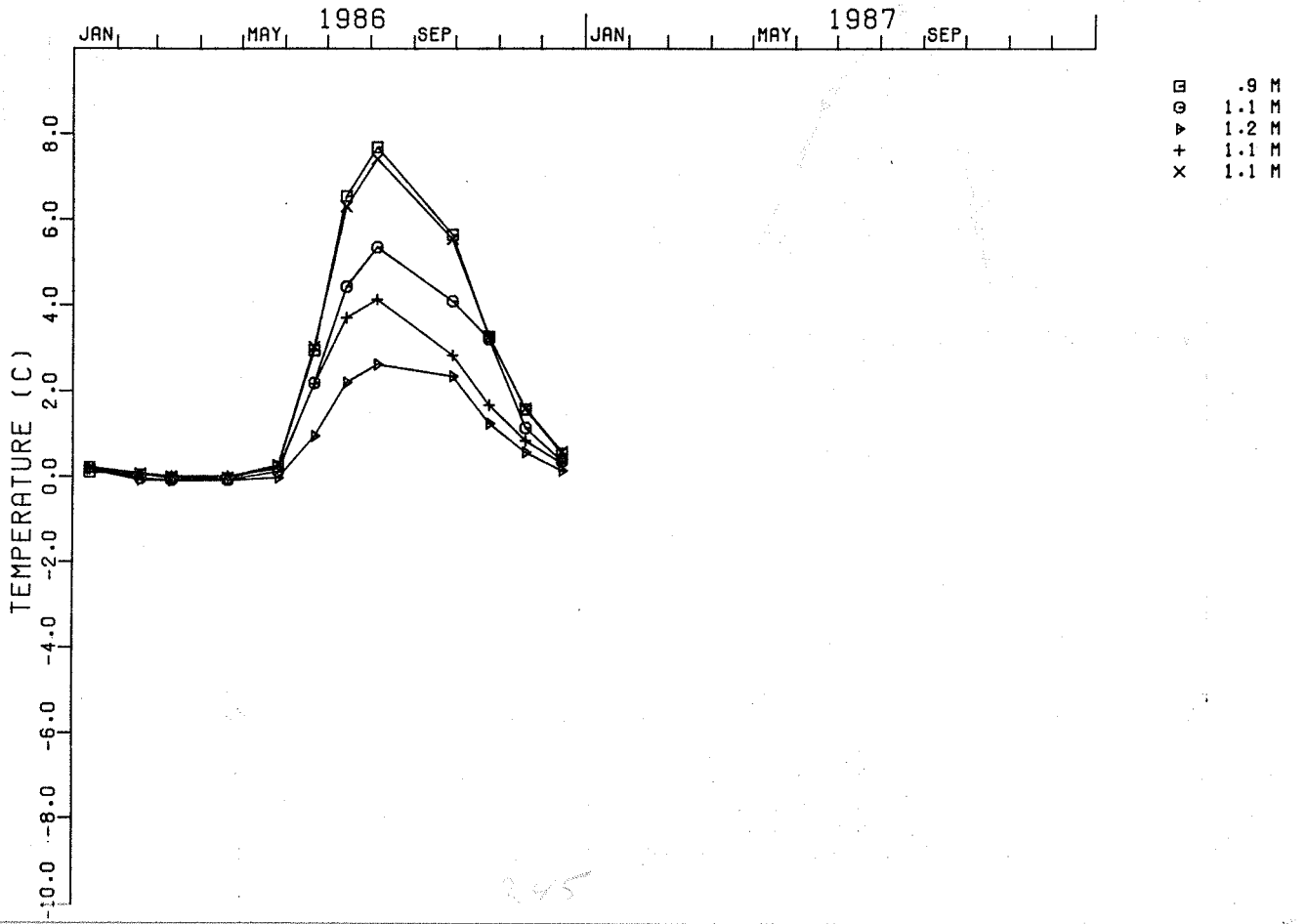

MANNERS CREEK A - 85 EPT8



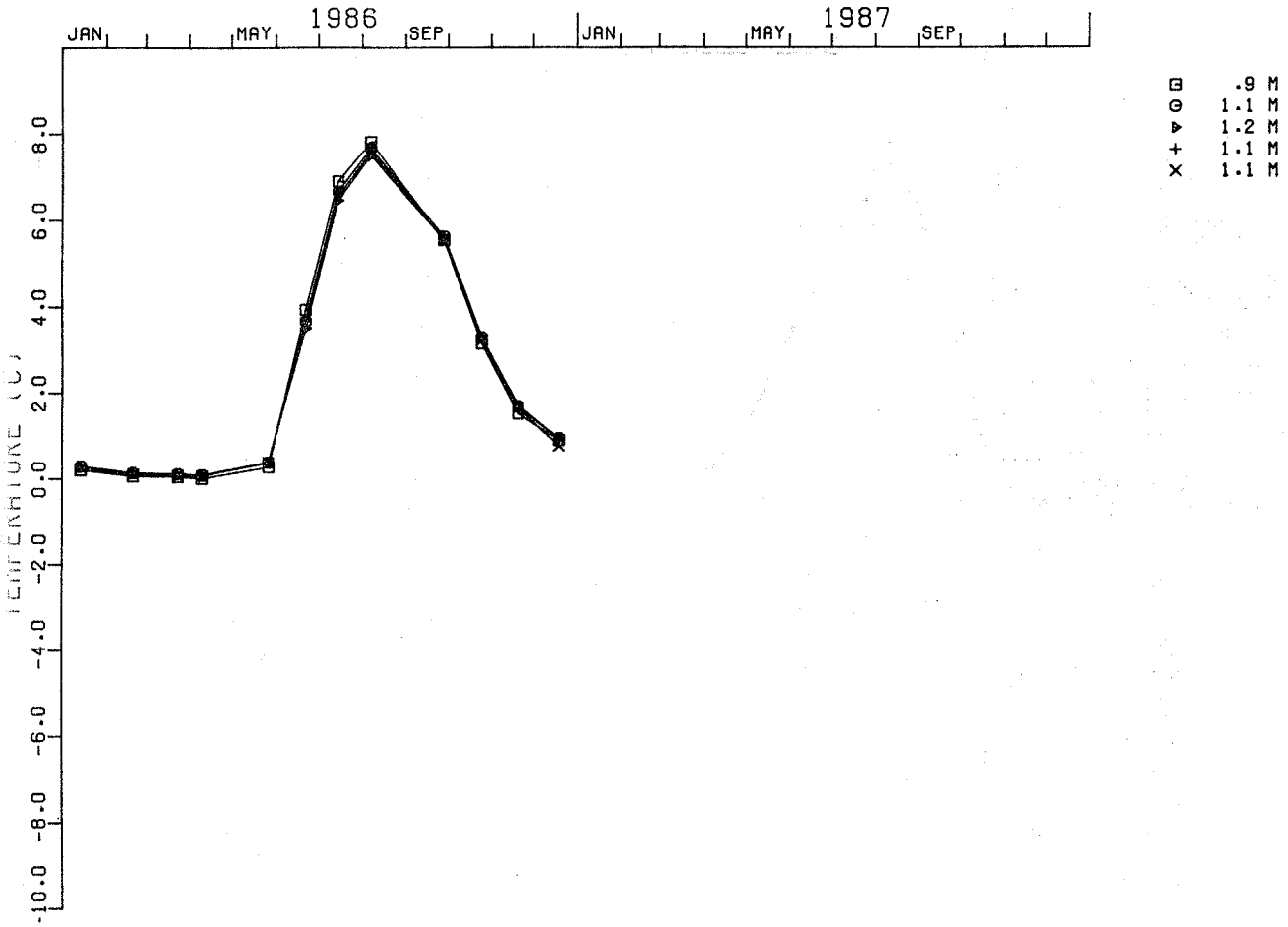
MANNERS CREEK B - 85 EPT7



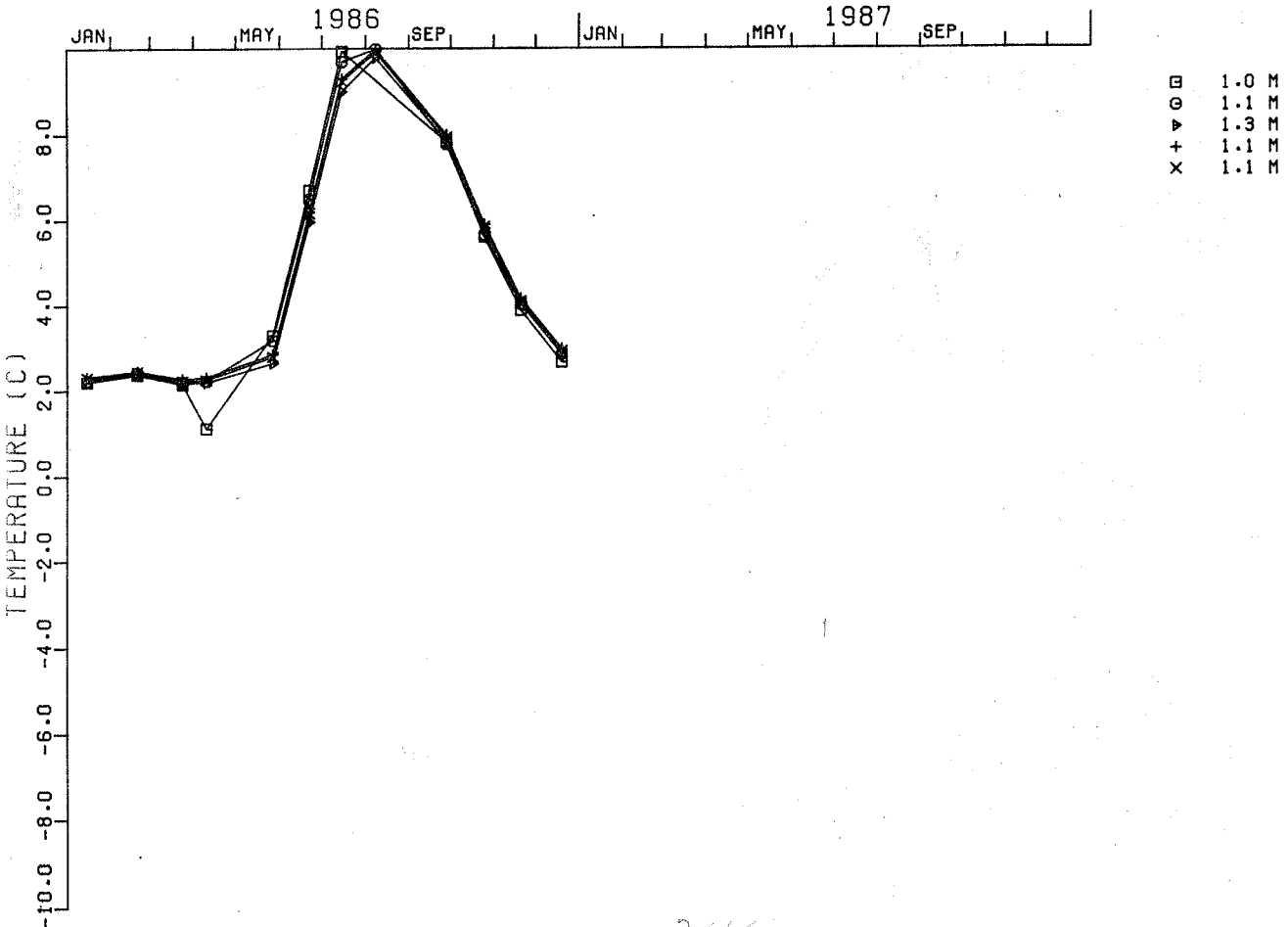

MANNERS CREEK C - 85 EPT12



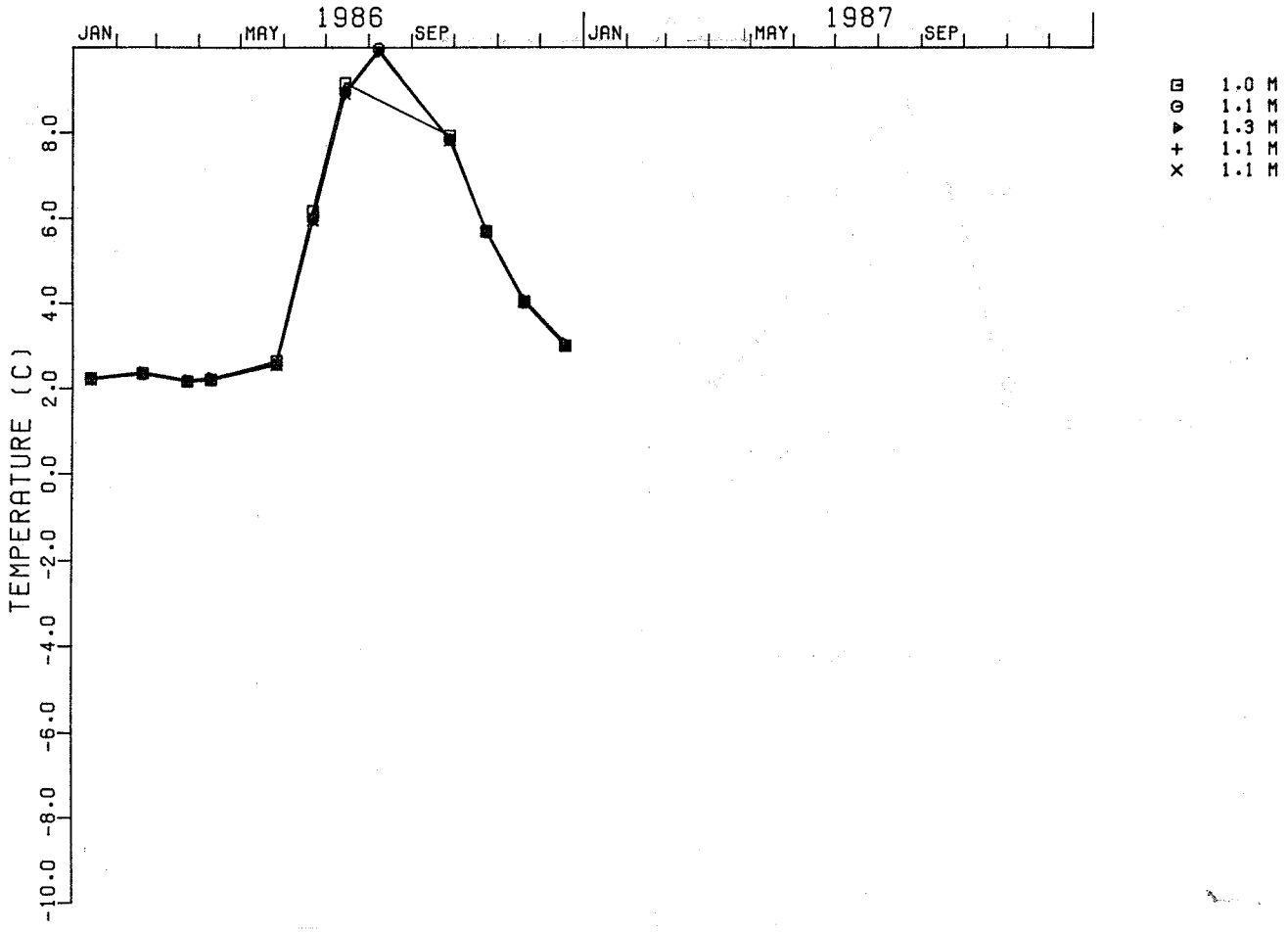
PUMP STATION 3 - 85 EPT9



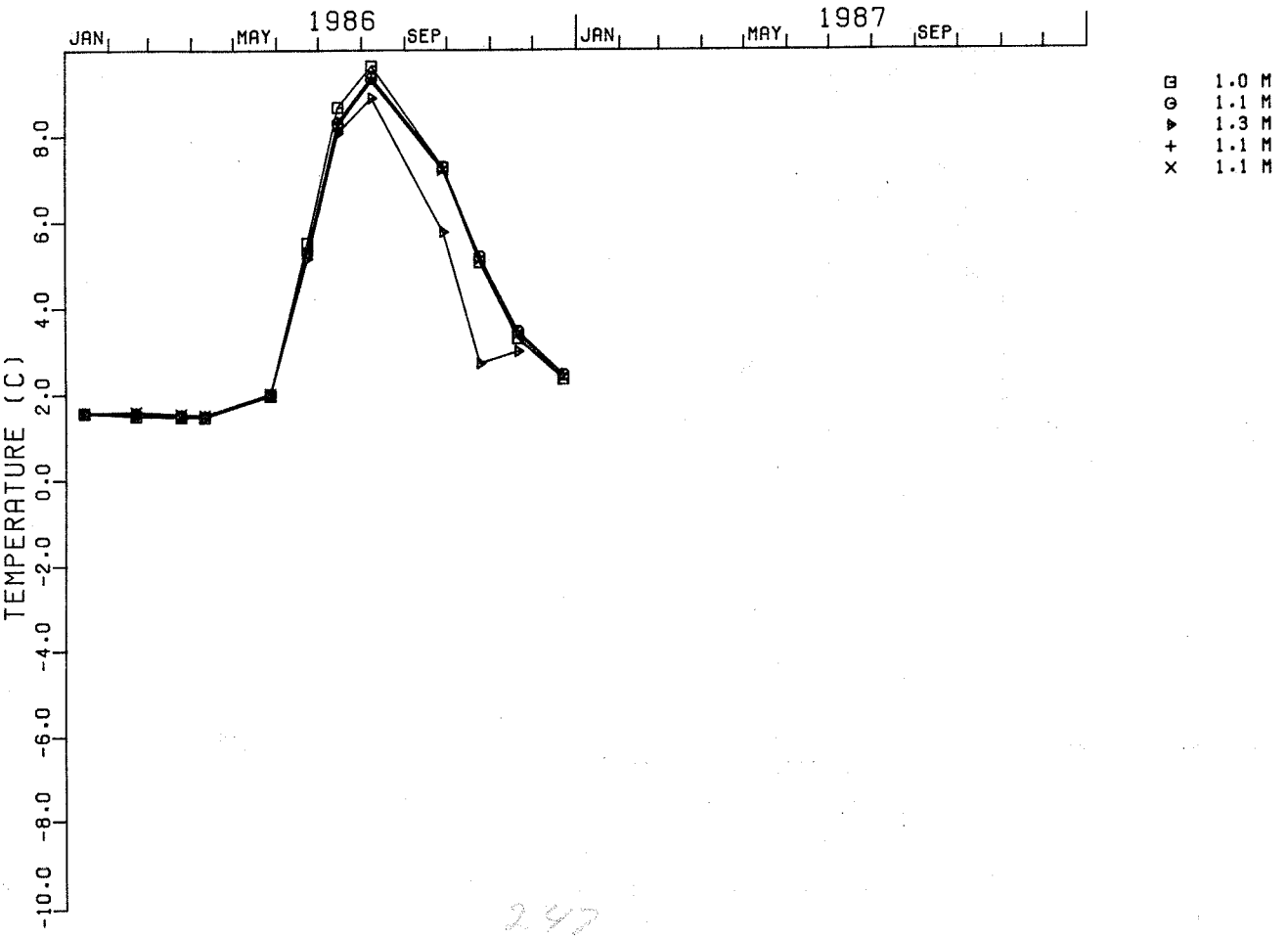

MACKENZIE HIGHWAY SOUTH A - 85 EPT4



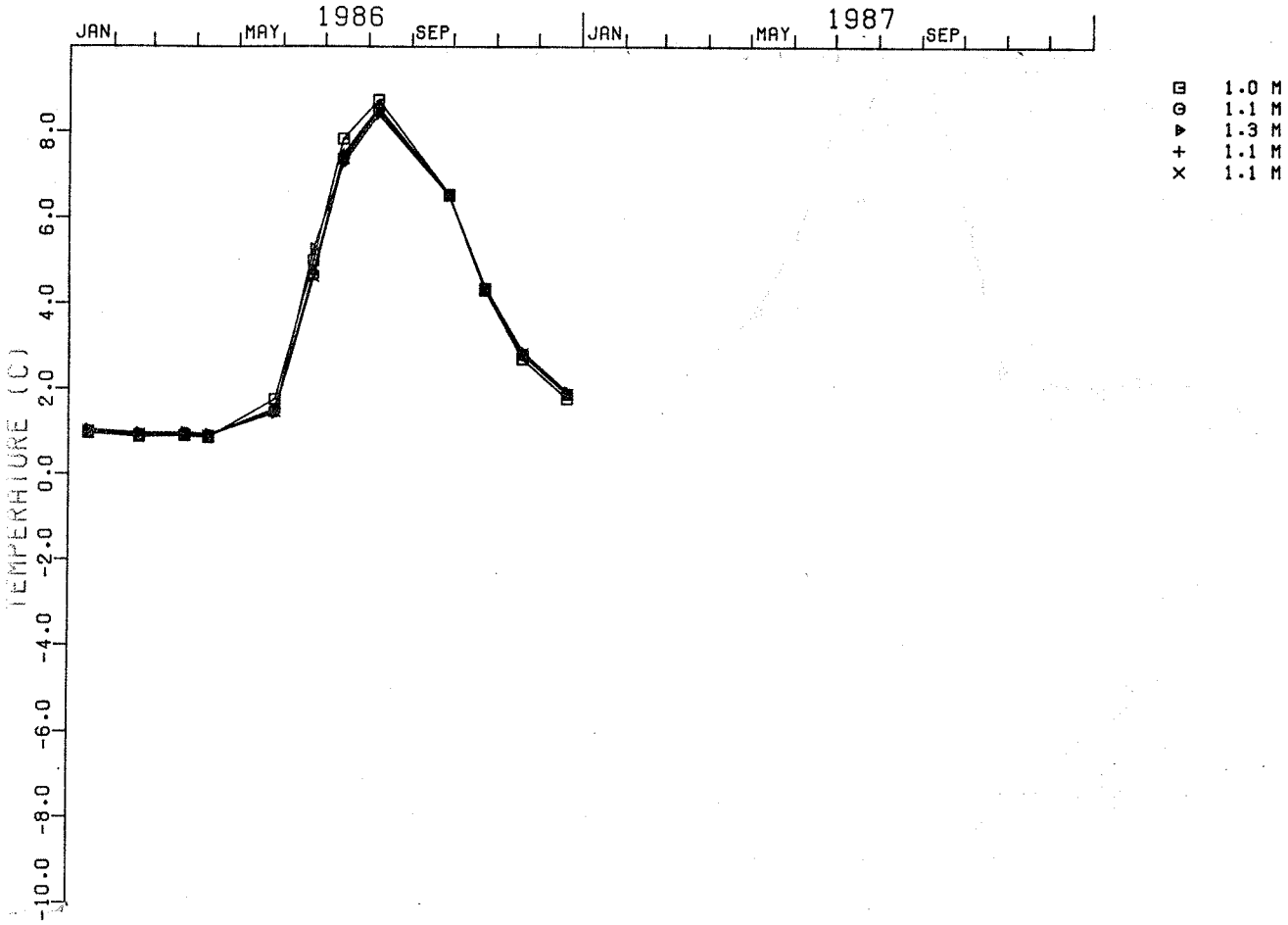
MACKENZIE HIGHWAY SOUTH B - 85 EPT5




MORAINE SOUTH - 85 EPT11



JEAN MARIE CREEK A - 85 EPT6




JEAN MARIE CREEK B - 85 EPT10